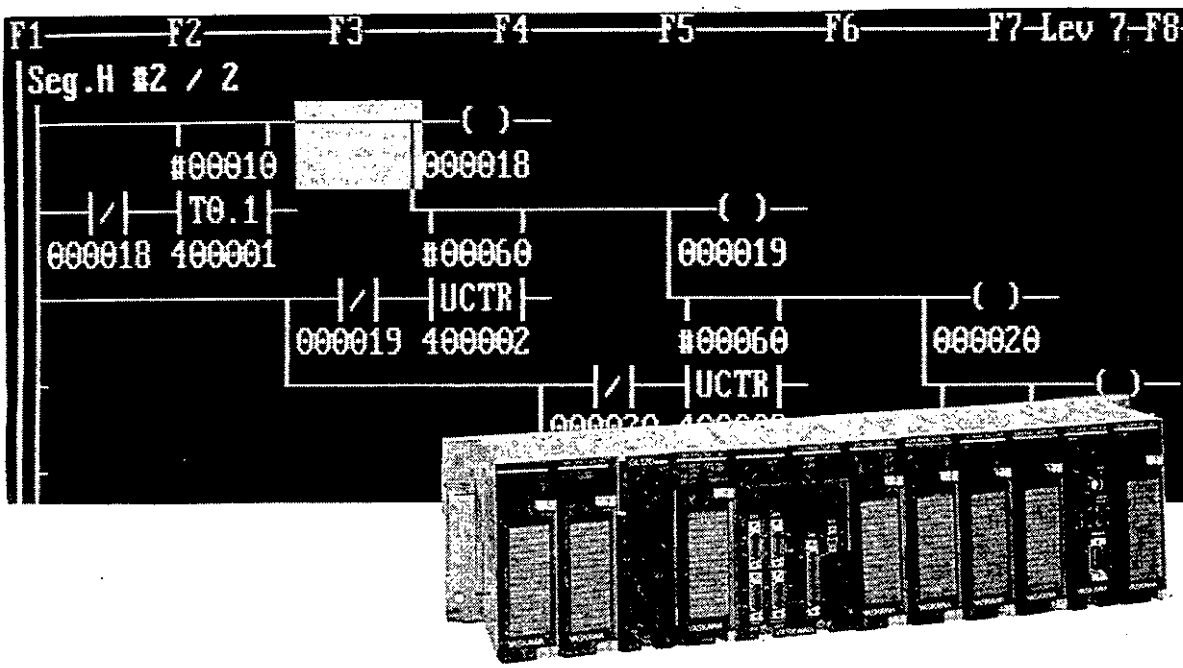
MEMOCON GL120, GL130

ONLINE PROGRAMMER FOR P120 PROGRAMMING PANEL

USER'S MANUAL



YASKAWA

MANUAL NO. SIEZ-C825-60.19B

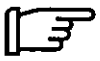
Manual Contents

This manual describes the functions, specifications, and applications of the FMGLON-PP3 Online Programmer for the P120 Programming Panel (in which the Online Programmer is installed) for use with GL120 and GL130 Programmable Controllers.

Please read this manual and any other related documentation carefully, and be sure you understand the information provided before attempting to install, operate, perform maintenance on, or inspect the Online Programmer, P120 Programming Panel or any other related electronic devices or machinery.

Visual Aids

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



Indicates references for additional information.

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.

CONTENTS

CONTENTS

CONTENTS

CONTENTS

Introduction and Precautions

This chapter introduces general information, including basic information and precautions for the use of this manual, the Online Programmer, and the P120 Programming Panel, in which the Online Programmer is installed. **You must read this chapter before attempting to read the rest of the manual or using the product.**

I.1 Overview of Manual

- This manual describes how to operate the FMGLON-PP3 Online Programmer installed in a P120 Programming Panel. Read this manual carefully to ensure the proper use of the P120 and the Online Programmer. Also, keep this manual in a safe place so that it can be referred to whenever necessary.

- MEMOMAIL will also be installed when the Online Programmer is installed (Versions 2.00 onwards). Refer to the following manual for details on MEMOMAIL.

  Name: MEMOCON GL120, GL130
  MEMOMAIL for P120 Programming Panel
  User's Manual
  Manual number: SIEZ-C825-60.19-2

- Refer to the following manuals for related Peripheral Devices, Modules, and Software.

Classification	Manual	Manual number	Contents
CPU Module	MEMOCON GL120, GL130 Hardware User's Manual	SIEZ-C825-20.1	Describes the following for the GL120 and GL130: 1) System configuration 2) System components 3) Functions and specifications 4) Installation and wiring 5) Panel layout and hole dimensions 6) External dimensions
	MEMOCON GL120, GL130 Software User's Manual Vol. 1	SIEZ-C825-20.11	Describes the following for the GL120 and GL130: 1) Operating principles 2) I/O allocation 3) Overview of instructions 4) Instruction processing times
	MEMOCON GL120, GL130 Software User's Manual Vol. 2	SIEZ-C825-20.12	Describes the programming instructions used to create ladder programs for the GL120 and GL130. The following instructions are described in other manuals. 1) Expansion Math Instructions: Software User's Manual, Vol. 3 2) Program Control Instructions: Software User's Manual, Vol. 4 3) Communications Instructions COM: COM Instructions User's Manual FBUS: PC Link Module User's Manual MSTR: MEMOBUS PLUS User's Manual 4) Motion Control (Ladder Motion) Instructions and Motion Language Motion Module MC20 Software User's Manual

Classification	Manual	Manual number	Contents
CPU Module, continued	MEMOCON GL120, GL130 Software User's Manual Vol. 3	SIEZ-C825-20.13	Describes the Expansion Math Instructions (e.g., floating point math instructions) for the GL120 and GL130.
	MEMOCON GL120, GL130 Software User's Manual Vol. 4	SIEZ-C825-20.14	Describes the Program Control Instructions for the GL120 and GL130.
Motion Module	MEMOCON GL120, GL130 Motion Module MC10 User's Manual	SIEZ-C825-20.41	Describes the functions, specifications, and usage of the MC10 Motion Module (1 axis).
	MEMOCON GL120, GL130 Motion Module MC20 Hardware User's Manual	SIEZ-C825-20.51	Describes the functions, specifications, and usage of the MC20 Motion Module (4 axes).
	MEMOCON GL120, GL130 Motion Module MC20 Software User's Manual	SIEZ-C825-20.52	Describes the Motion Instructions and motion program language for the MC20 Motion Module (4 axes).
Communica-tions Modules	MEMOCON GL120, GL130 MEMOBUS PLUS Basics User's Manual	SIEZ-C825-70.5	Describes the functions, specifications, and usage of the MEMOBUS PLUS.
Human-machine Interface	MEMOCON GL120, GL130 MEMOSOFT for P120 Programming Panel User's Manual	SIEZ-C825-60.7	Describes the functions, specifications, and usage of the P120 Programming Panel with MEMOSOFT.
Other products	MEMOCON GL120, GL130 Traceback User's Manual	SIEZ-C825-60.10-4	Describes the specifications and applications of the traceback function.

- Thoroughly check the specifications and conditions, or restrictions of the product before use.

I.2 Precautions

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

I.2.1 Applications Precautions

Abide by the following precautions when installing MEMOCON systems.

⚠ **Caution** Operations such as RUN, STOP, forced output, and program change during operation must be carried out with care. Operational errors may damage the machine or cause accidents.

When using a modem, turn the power supply OFF or ON carefully.

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

Do not use the single sweep function while the machine is operating.

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

I.2.2 Wiring Precautions

Insert the interface cables properly.

Insert the connectors of the various interface cables that are to be connected to the GL120 or GL130 into the communications ports and attach them properly. Improper insertion of interface cables may cause operational errors in the GL120 or GL130.

I.2.3 Safety Precautions

- MEMOCON was not designed or manufactured for use in devices or systems that concern human lives. Users who intend to use the product described in this manual for special purposes such as devices or systems relating to transportation, medical space aviation, atomic power control, or underwater use must contact Yaskawa Electric Corporation beforehand.

- This product has been manufactured under strict quality control guidelines. However, if this product is to be installed in any location in which a failure of MEMOCON involves a life and death situation or in a facility where failure may cause a serious accident, safety devices MUST be installed to minimize the likelihood of any accident.

- Any illustrations, photographs, or examples used in this manual are provided as examples only and may not apply to all product to which this manual is applicable.

- The products and specifications described in this manual or the content and presentation of the manual may be changed without notice to improve the product and/or the manual. A new version of the manual will be re-released under a revised manual number when any changes are made.

- Contact your Yaskawa representative or a Yaskawa office listed on the back of this manual to order a new manual whenever this manual is damaged or lost. Please provide the manual number listed on the front cover of this manual when ordering.

- Contact your Yaskawa representative or a Yaskawa office listed on the back of this manual to order new nameplates whenever a nameplate becomes worn or damaged.

- Yaskawa cannot guarantee the quality of any products which have been modified. Yaskawa assumes no responsibility for any injury or damage caused by a modified product.

I.3 Using this Manual

- **Meaning of Basic Terms**

  In this manual, the following terms indicate the meanings as described below, unless otherwise specified.

  - P120 = P120 Programming Panel
  - PLC = Programmable (Logic) Controller
  - MC = MC20 Motion Module
  - GL120 and GL130 = MEMOCON GL120 and/or MEMOCON GL130 Programmable Controller

- **Description of Technical Terms**

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

- **Key Operation**

  The operation examples that are introduced in this manual are designed so that as much as possible they can be entered as described.

- **Floppy Disk**

  The floppy disk containing this software must be stored properly.

Glossary

The following types of terms are described.

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

I.4 Software Copyright

- Use the software on one P120 only. A separate copy of the software must be purchased separately to use it on a different P120.
- Copying the software for purposes other than backup is prohibited.
- Keep the floppy disks that hold the software in a safe place.
- Reverse compilation and reverse assembly (reverse engineering) of the software is prohibited.
- Allowing third parties to use any part or all of the software without prior consent from the manufacturer is prohibited. This prohibition applies to transfer, exchange, or lending.

Basic P120 Specifications

1

This chapter describes the appearance of the P120 and provides P120 specifications and details of the functions of the fixed function keys.

1.1 Specifications and Overview

This section describes the appearance, components names, and specifications of the P120.

1.1.1 General Specifications

The general specifications of the P120 are shown in the following table.

Item		Specifications
Power	Permissible Voltage Range	Single phase, 85 to 132 VAC
	Permissible Frequency Range	47 to 440 Hz
	Power Consumption	60 VA max.
Environment Conditions	Ambient Operating Temperature	0 to 45 °C
	Storage Temperature	–25 to 60 °C
	Humidity	30% to 90% (with no condensation)
	Altitude	Less than 2,000 m above sea level
	Pollution Level	Pollution level 1 (See note.)
	Gases	No flammable or corrosive gases
	Dust	No excessive dust
Mechanical Operating Conditions	Vibration Resistance	When operating: 0.5 G When not operating: 2.0 G
	Shock Resistance	When operating: 10 G (11 ms) When not operating: 50 G (11 ms)
Drop Resistance		1 m max. (when packaged for shipment)
Dielectric Strength		AC connected to chassis ground: 1,500 VAC for one minute
Insulation Resistance		AC connected to chassis ground: 50 MΩ min. at 500 VDC
EMI Rating		Equivalent to VCCI type 1
Ground		Ground to 100 Ω or less

Note The pollution level is a measure to decide how much the equipment needs to be isolated. Pollution level 1 means there is no pollution.

1.1.2 Performance Specifications

The performance specifications of the P120 are shown in the following table.

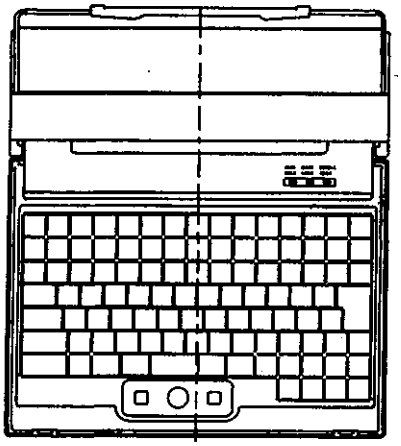
Item	Specifications	
CPU	80486SX, 33 MHz, SL Enhanced	
Memory	Main memory: 4 Mbytes	
	BIOS Flash ROM (256 Kbytes)	
	VRAM (512 Kbytes)	
Keyboard	Special keyboard (106 stroke keys)	
Interfaces	Printer	One Centronics-compatible port
	Serial Ports	One RS-232C port (COM1) One RS-422 port (COM2): For future use
	Expansion bus	One ISA bus slot (AT half size) port (See note 1.)
	CRT	Conforms to VGA, DB connector 15-pin
	Mouse	One PS/2 mouse (Mini DIN 6-pin) port: For future use
Auxiliary Storage	Floppy Disk	One (3 mode) 3.5 inch
	Hard Disk	256 Mbytes
	IC Cards	Conforms to JEIDA V4.1 and PCMCIA V2.0 (for two Type 2, or one Type 3) For future use
Display	LCD with backlight, VGA 640 pixels × 480 pixels TFT color/DSTN color/STN monochrome (16 graduations) (See note 2.)	
Element Status Display	1 point	
Clock	Yes (with battery backup)	
Approximate Mass	4.7 kg	
External Dimensions	260 × 310 × 105 mm	

Note (1) The SA85 MEMOBUS PLUS Network Adapter is already connected to the DISCT-P120□N.

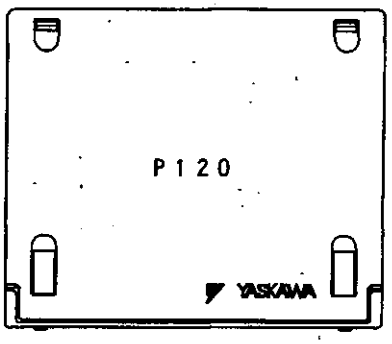
(2) Model DISCT-P120C□: TFT color
Model DISCT-P120D□: DSTN color
Model DISCT-P120M□: STN monochrome

1.1.3 Appearance of the P120

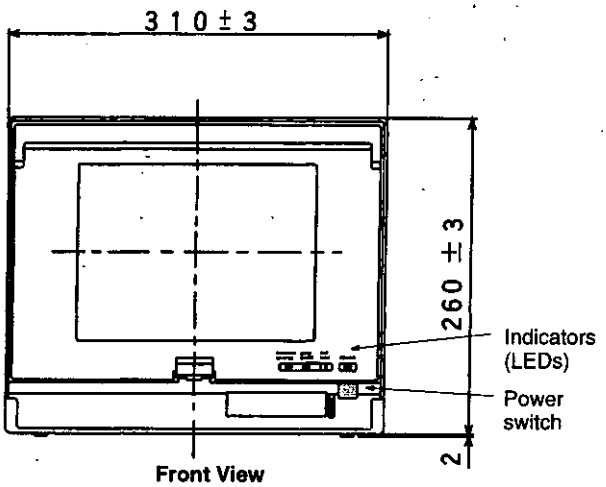
The external appearance of the P120 is shown in the following illustration.



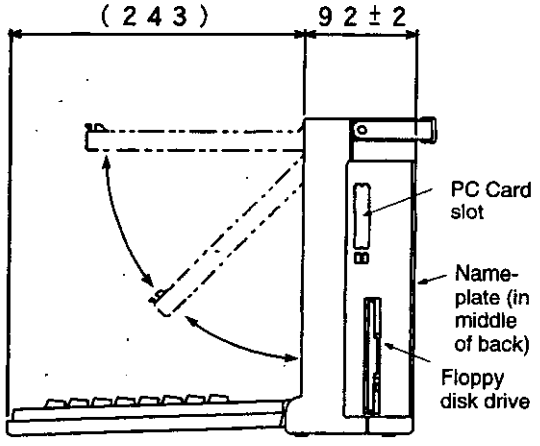
Top View



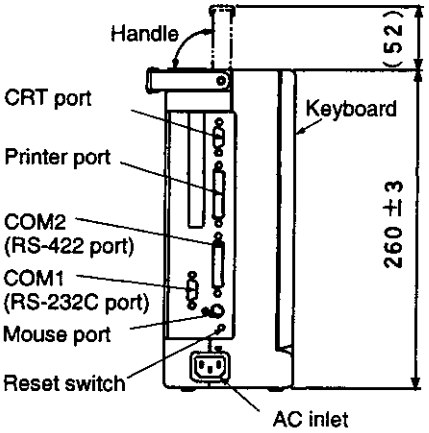
Front View with Keyboard Panel Closed



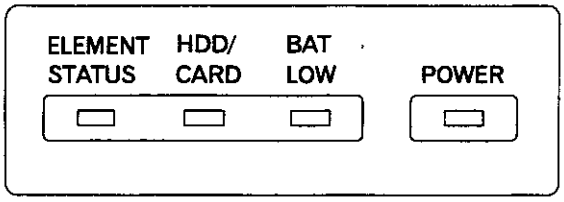
Front View



Right Side View



Left Side View with Keyboard Panel Closed



Indicator Locations (LEDs)

Indicator	Meaning when Lit
ELEMENT STATUS	The reference at the cursor in a ladder program editing screen is ON. (Not lit when the reference is OFF.)
HDD/CARD	The hard disk drive or PC Card is being accessed.
BAT LOW	The voltage of the battery has dropped.
POWER	The power supply to the P120 is ON.

1.2 Communications Port Specifications

This section provides the specifications of the P120's communications port.

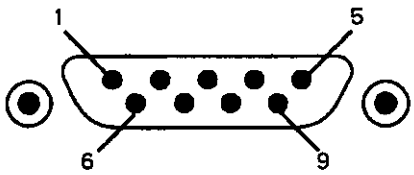
1.2.1 COM1 (RS-232C Port) Specifications

1) Port Specifications

a) Models

D-sub 9-pin connector (male)
Connector model: DESP-JB9PF made by JAE (#4-40 NC inch screws are used for mounting.)

b) Connector Appearance



c) Connector Signal Names

Pin	Signal Name	Details	I/O (See Note 1)
1	CD	Carrier detector	Input
2	RD	Receive data	Input
3	TD	Transmit data	Output
4	DTR	Data terminal ready	Output
5	GND	Signal ground	---
6	DSR	Data set ready	Input
7	RTS	Request to send	Output
8	CTS	Clear to send	Input
9	EI	Element status (See Note 2)	Input

Note (1) The I/O direction is indicated from the P120.

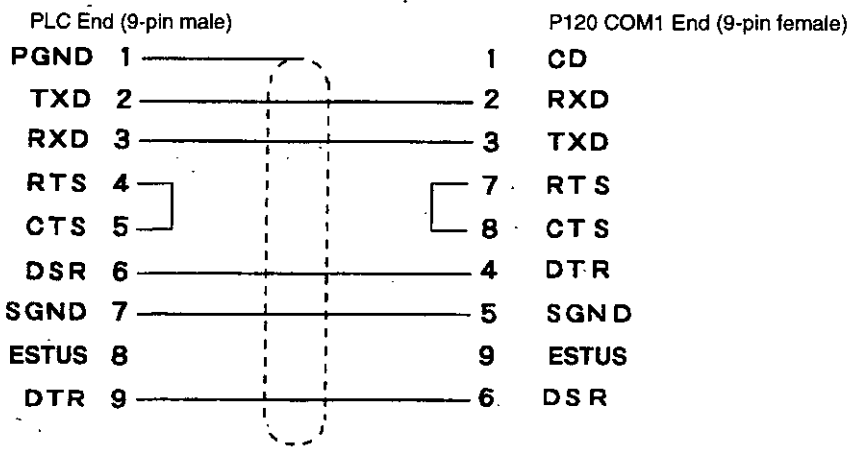
(2) The element status on pin 9 only becomes valid when connected to the RS-232 (MEMOBUS) port of the GL120 or GL130.

2) Communications Cables

a) Models

Cable Length	Model
2.5 m	JZMSZ-120W0203-03
15 m	JZMSZ-120W0203-15

b) Connection Diagram



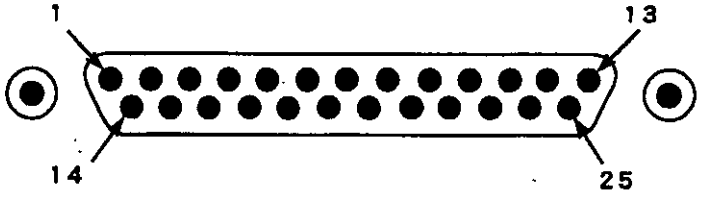
1.2.2 COM2 (RS-232C/RS-422 Port) Specifications

1) Port Specifications

a) Models

D-sub 25-pin connector (male)
Connector model: DBLC-J25PAF-20L9 made by JAE (#4-40 NC inch lock screws are used.)

b) Connector Appearance



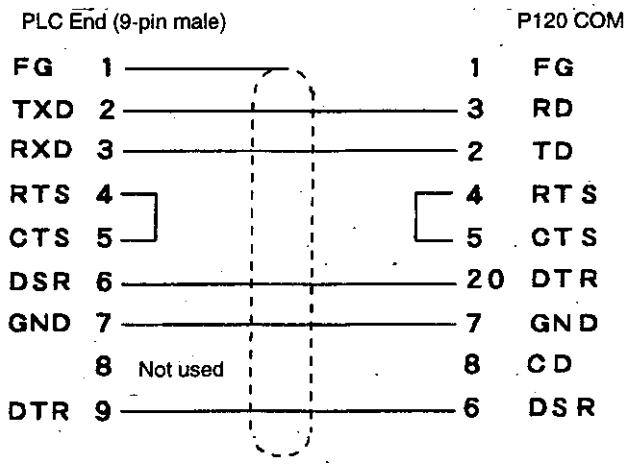
c) Connector Signal Names

Pin	Signal Name	Details	I/O	Port
1	FG	Frame ground	---	RS-485
2	TD	Transmit data	Output	RS-232C
3	RD	Receive data	Input	RS-232C
4	RTS	Request to send	Output	RS-232C
5	CTS	Clear to send	Input	RS-232C
6	DSR	Data set ready	Input	RS-232C
7	GND	Signal ground	---	RS-232C
8	CD	Carrier detect	Input	RS-232C
9	–MPSEL	Multi-point selection	Input	---
10	+RTS	Request to send, positive	Output	RS-485
11	–RTS	Request to send, negative	Output	RS-485
12	TRRTS	Request to send, terminating resistance	---	RS-485
13	GND	Signal ground	---	RS-485
14	+TXD	Transmit data, positive	Output	RS-485
15	–TXD	Transmit data, negative	Output	RS-485
16	TRTXD	Transmit data, terminating resistance	---	RS-485
17	+RXD	Receive data, positive	Input	RS-485
18	–RXD	Receive data, negative	Input	RS-485
19	TRRXD	Receive data, terminating resistance	---	RS-485
20	DTR	Data terminal ready	Output	RS-232C
21	+CTS	Clear to send, positive	Input	RS-485
22	RI	Ring indicator	Input	RS-232C
23	–CTS	Clear to send, negative	Input	RS-485
24	TRCTS	Clear to send, terminating resistance	---	RS-485
25	–485SEL	RS-232C/RS-485 port selection	Input	---

Note The external shell of the connector, frame ground, and lock screws are connected to the signal ground.

2) Communications Cable Specifications

• **Connection Diagram**



Note The above diagram is for connecting a cable to COM2 using COM2 as a RS-232C port.

1.3 Printer Port Specifications

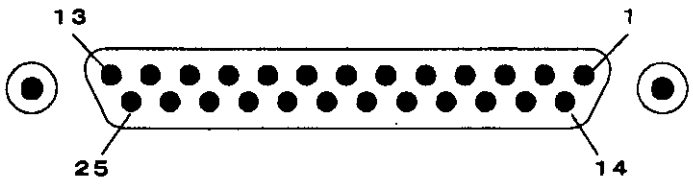
This section provides the specifications for the printer port of the P120.

1) Printer Port Specifications

a) Models

D-sub 25-pin connector (female)
Connector model: DBLC-J25SAF-20L9 made by JAE (#4-40 NC inch screws are used for mounting.)

b) Connector Appearance



c) Connector Signal Names

Pin	Signal Name	I/O (see note)
1	–STROBE	Output
2	DATA0	Output
3	DATA1	Output
4	DATA2	Output
5	DATA3	Output
6	DATA4	Output
7	DATA5	Output
8	DATA6	Output
9	DATA7	Output
10	–ACKNLG	Input
11	BUSY	Input
12	PE	Input
13	SLCT	Input
14	–AUTOFD	Output
15	–ERROR	Input
16	–INIT	Output
17	–SLCTIN	Output
18 to 25	GND	---

Note The I/O direction is indicated from the P120.

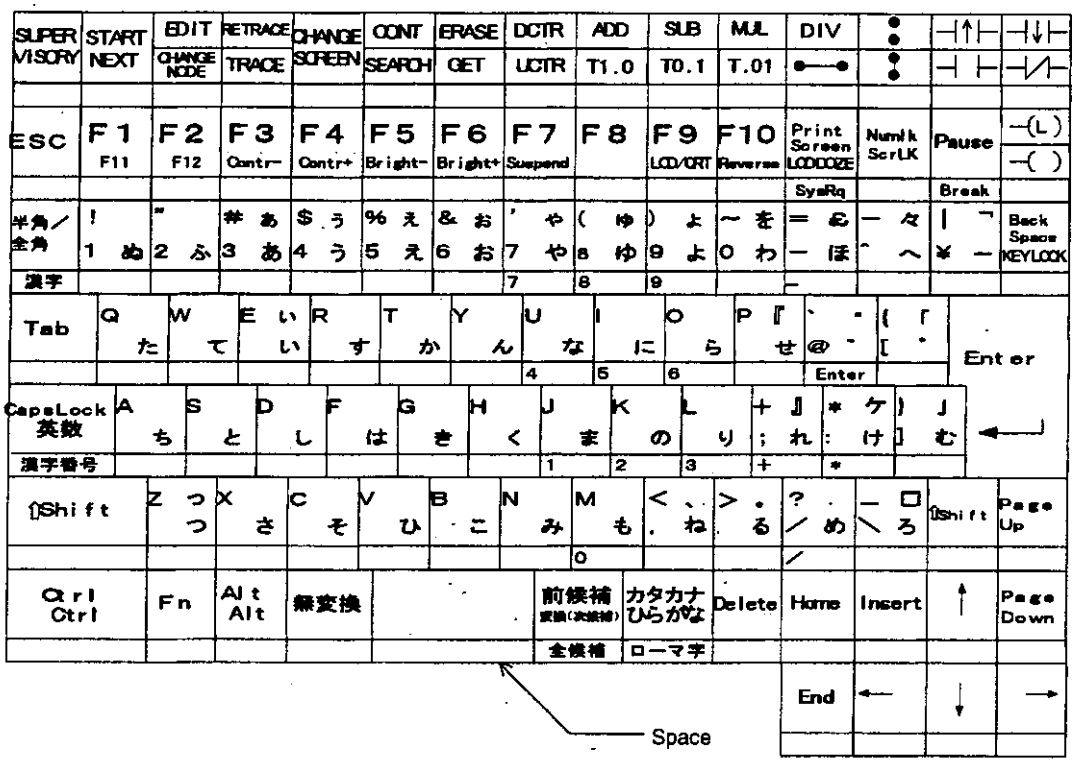
1.4 P120 Keyboard Specifications

This section explains the functions of the fixed function keys of the P120.

1.4.1 Keys

1) Key Arrangement

The following diagram shows the arrangement of keys on the P120.



2) Cursor Keys

The Up Cursor Key (↑) moves the cursor one position up. If the key is held down, the cursor will move continuously.

The Down Cursor Key (↓) moves the cursor one position down. If the key is held down, the cursor will move continuously.

The Left Cursor Key (←) moves the cursor one position left. If the key is held down, the cursor will move continuously.

The Right Cursor Key (→) moves the cursor one position right. If the key is held down, the cursor will move continuously.

3) Variable Function Keys

There are eight variable function keys from F1 to F8. The function of these keys is shown by the labels on the screen. F9 and F10 are not used.

4) Fixed Function Keys

The P120 keyboard has fixed function keys for specific operations. The function of each key is shown in the following table, including the function when the key is pressed in combination with the Shift Key.

Key	Function
SUPERVISORY	When pressed in Program Mode or Monitor Mode, this key displays the Supervisory Functions Screen (for functions such as starting and stopping the GL120 or GL130).
Shift + SUPERVISORY	If these two keys are pressed at the same time, the Initial Display will appear. Use these keys to change the mode.
START NEXT	Ladder Program Screen A new network is added after the network being displayed. The power line and cursor for creating the new network are displayed on the left-hand side of the screen.
Delete	Ladder Program Screen Deletes the element in the displayed network being indicated by the cursor. Also deletes at the same time any vertical short circuit that may exist.
Shift + Delete	Ladder Program Screen When these two keys are pressed at the same time, the entire displayed network is deleted, and the next network is automatically displayed on the screen. If the last network has been deleted, the screen before will be displayed.
Shift + EDIT/CHANGE NODE	When these two keys are pressed at the same time, the following editing operations can be carried out. Ladder Program Screen Expanding or contracting a horizontal or vertical network, moving a contracted network, or copying a network
RETRACE/TRACE	If the cursor is placed over a contact element in a network and this key is pressed, the network will be displayed, including the coil of that contact. If the cursor is again moved over a contact element of that network and the key pressed, the successive networks, together with their coils, can all be displayed. This function is referred to as tracing.
Shift + RETRACE/TRACE	When these two keys are pressed at the same time, the network can be displayed in the opposite direction from the trace function. This function is referred to as retrace.
CHANGE/SCREEN	This key changes the screen's display mode. When this key is pressed while the Ladder Program Screen or the Comment Screen is being displayed, the screen will change to the Expanded Reference Screen.
CONT/SEARCH	• When this key is pressed, previously defined search data is searched for. If network containing that search data is located, it will be displayed. • When this key is pressed, the cursor moves to the search data section.
Shift + CONT/SEARCH	When these two keys are pressed at the same time, a search is made of the next network after the one displayed on the screen.

Key	Function
Tab	When this key is pressed, the cursor will move to another area. If the cursor is in the search data section, it will move to the ladder program area.
ERASE/GET	When this key is pressed and a network number or reference number has been entered previously in the AR (assembly register), the specified network (when the cursor is in the ladder program area) or the reference number (when the cursor is in the reference area) will be displayed.
Shift + ERASE/GET	When these two keys are pressed at the same time, the display of the network (when the cursor is in the ladder program area) or the reference area indicated by the cursor will be cleared from the screen. The contents of the memory remains unchanged.
Page Down	• When this key is pressed, the screen displays the next network (when the cursor is in the ladder program area) or the next reference number (when the cursor is in the reference area). • When this key is pressed, the cursor moves to the next page of a file list.
Page Up	• When this key is pressed the screen displays the previous network or reference number. • When this key is pressed, the cursor moves to the previous page of a file list.
EDIT/CHANGE NODE	Used when creating or modifying a network, or setting search data. When this key is pressed, the label area display changes to the display used for selecting function groups.
PRINT SCREEN LCD DOZE	When this key is pressed, the current screen is printed out in hard copy. Be sure that the printer specified for the parallel port is connected.
ESC	When this key is pressed, it erases the error message displayed in the message area. After the key is pressed, make sure that the operation that was being performed, when the error message appeared, is completed successfully.
Enter	When the cursor is in the ladder program area, using this key stores the contents of the AR (assembly register) as the reference number of the elements indicated by the cursor or a value for arithmetic processing. If there is nothing at the cursor's location, it is necessary to specify beforehand the type of element and the vertical short circuit (if any). If the cursor is at the location of a number of the reference area holding register, this key will store the contents of the AR in the holding register.
⊣↑⊢ /⊣ ⊢ See Note	This key selects a normally open relay.
Shift + ⊣↑⊢ / ⊣ ⊢ See Note	When these two keys are pressed at the same time, a positive transitional relay is selected.
⊣↓⊢ / ⊣/⊢ See Note	This key selects a normally closed relay.
Shift + ⊣↓⊢ / ⊣/⊢ See Note	When these two keys are pressed at the same time, a negative transitional relay is selected.
-(L)- / -( )- See Note	When this key is pressed, a normal coil is selected.
Shift + -(L)- / -( )- See Note	When these two keys are pressed at the same time,a latched coil is selected.
⋮ / ⏐ See Note	When this key is pressed, a vertical short bar is selected.
Shift + ⋮ / ⏐ See Note	When these two keys are pressed at the same time, the vertical short bar is cleared.
DIV/ ⟷ See Note	When this key is pressed, a horizontal short bar is selected.

Key	Function
Shift + DIV/ ⟷ See Note	When these two keys are pressed at the same time, the DIVISION instruction DIV is selected.
DCTR/UCTR	When this key is pressed, the UP COUNTER instruction, UCTR, is selected.
Shift + DCTR/UCTR	When these two keys are pressed at the same time, the DOWN COUNTER instruction, DCTR, is selected.
ADD/T1.0	When this key is pressed, the ONE-SECOND TIMER instruction, T1.0, is selected.
Shift + ADD/T1.0	When these two keys are pressed at the same time, the UNSIGNED SINGLE PRECISION DECIMAL ADDITION instruction, ADD, is selected.
SUB/T0.1	When this key is pressed, the 0.1-SECOND TIMER instruction, T0.1, is selected.
Shift + SUB/T0.1	When these two keys are pressed at the same time, the UNSIGNED SINGLE PRECISION DECIMAL SUBTRACTION instruction, SUB, is selected.
MUL/T.01	When this key is pressed, the 0.01-SECOND TIMER, T.01, is selected.
Shift + MUL/T.01	When these two keys are pressed at the same time, the UNSIGNED SINGLE PRECISION DECIMAL MULTIPLICATION instruction, MUL, is selected.

Note Variable function keys with the same functions as the above keys are also provided in the Online Programmer. (Refer to page 4-5 for details.) Either key can be used.

5) Fn Key

The Fn Key is used to set the P120 display and suspend the system. The method used to adjust the display depends on the display specifications of the P120. Check the model number and the display specifications of the P120 used before making the settings. The functions of the Fn Key are shown in the following table.

Note When using the DISCT-P120D□ or the DISCT-P120M□, the contrast for the display on the P120 may need adjustment. If the display is DSTN color crystal or STN monochrome crystal and the ambient temperature is low when power is supplied, the display may not be discernible. Also, the top of the display may become white. If necessary, adjust the contrast using the Fn Key. The display specifications for P120 models are given in the following table.

Model	Display specifications	Contrast adjustment
DISCT-P120C	TFT color crystal	Not required
DISCT-P120CN	TFT color crystal	Not required
DISCT-P120D	DSTN color crystal	Required
DISCT-P120DN	DSTN color crystal	Required
DISCT-P120M	STN monochrome crystal	Required
DISCT-P120MN	STN monochrome crystal	Required

Key	Function
Fn + F3 (Contr–)	TFT color: Cannot be used. DSTN color/STN monochrome: When these two keys are pressed at the same time, it reduces the contrast.
Fn + F4 (Contr+)	TFT color: Cannot be used. DSTN color/STN monochrome: When these two keys are pressed at the same time, it increases the contrast.
Fn + F5 (Bright–)	When these two keys are pressed at the same time, it makes the LCD backlight darker.
Fn + F6 (Bright+)	When these two keys are pressed at the same time, it makes the LCD backlight brighter.
Fn + F7 (Suspend) + Power Switch	When these two keys are pressed at the same time as the power switch, the system will go into an idle status. The screen will become dark, but the power indicator will flash. Press any key to restore normal operation.
Fn + F9 (LCD/CRT)	When these two keys are pressed at the same time, it switches between the LCD and CRT monitor as the display device.
Fn + F10 (Reverse)	When these two keys are pressed at the same time, it reverses black and white on the LCD display.
Fn + Print Screen (LCD DOZE)	When these two keys are pressed at the same time, it makes the LCD backlight the darkest possible. If they are pressed again when it is in the dark condition, the screen returns to its original brightness.

6) Special Keys

Key	Function
Caps Lock	When this key is pressed and stays locked in position, all characters are input in capital letters. Press it a second time to release it.
Shift	Use the Shift Key to input each key's Shift-position characters. There are two Shift Keys, and either of them may be used.
BackSpace	Use the BackSpace Key to correct characters being input.
Number Lock/Screen Lock (NumLk/ScrLk)	If the NumLk/ScrLk Key is pressed and locked in position, the following keys can be used as a ten-key input pad. M_0 J_1 K_2 L_3 U_4 I_5 O_6 7_7 8_8 9_9

P120 Setup

2

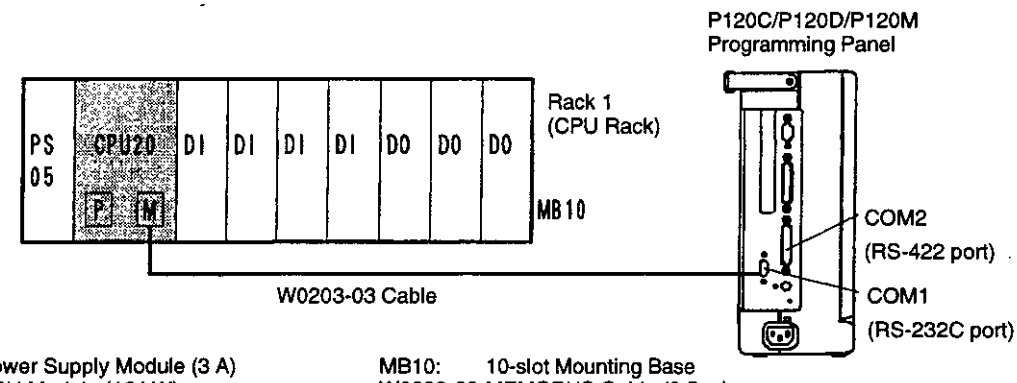
This chapter describes procedures used when connecting the P120 to the PLC, including setting parameters for each Module, installing the Online Programmer, and connecting the Online Programmer to the PLC.

2.1 Connecting the P120 to the GL120 or GL130

This section provides examples of how the P120 is connected to the GL120 or GL130.

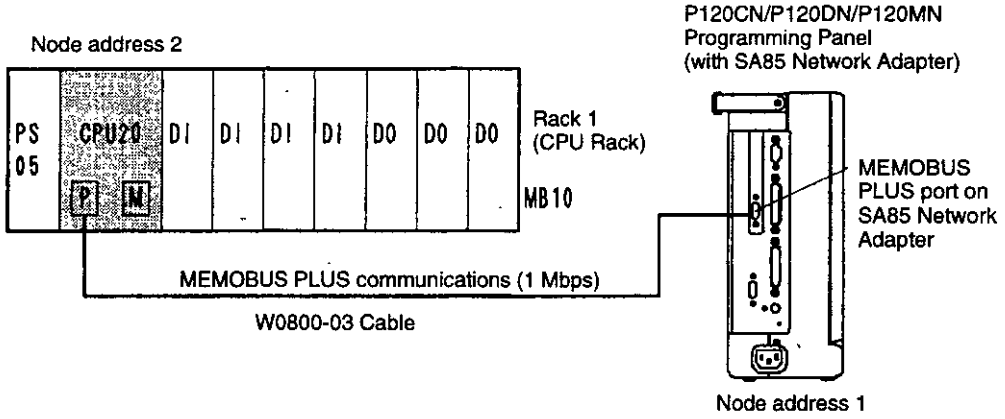
The COM1 port of the P120 is connected by cable to a CPU port on the GL120 or GL130, or to a port on a MEMOBUS Module, PC Link Module, or Remote I/O Receiver Module.

a) Example Using MEMOBUS



PS05:	Power Supply Module (3 A)	MB10:	10-slot Mounting Base
CPU20:	CPU Module (16 kW)	W0203-03:	MEMOBUS Cable (2.5 m)
DI:	12/24-VDC 16-point Input Module	M:	MEMOBUS Port
DO:	12/24-VDC 16-point Output Module	P:	MEMOBUS PLUS Port

b) Example Using MEMOBUS PLUS



PS05:	Power Supply Module (3 A)	MB10:	10-slot Mounting Base
CPU20:	CPU Module (16 kW)	W0800-03:	MEMOBUS PLUS Cable (2.5 m)
DI:	12/24-VDC 16-point Input Module	M:	MEMOBUS Port
DO:	12/24-VDC 16-point Output Module	P:	MEMOBUS PLUS Port

Note (1) Always turn OFF the power to the P120 before connecting or disconnecting cables.

(2) Secure the connector screws to ensure that cables do not become disconnected.

2.2 Communications Parameters for the GL120 or GL130

This section describes how to set the communications parameters for the GL120 or GL130 using the DIP switch and rotary switches.

2.2.1 Setting the MEMOBUS Port of the CPU Module

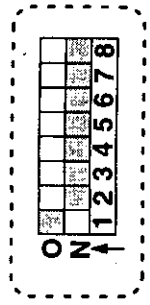
1) Setting Pins 1 and 2 of the DIP Switch

a) Pins 1 and 2 are used to determine the communications parameters of the MEMOBUS port. Refer to the following table and set these pins according to the requirements of your system.

Table 2.1 Setting Communications Parameters for MEMOBUS Port

Pin 1	Pin 2	Function
ON	OFF	Sets the communications mode of the MEMOBUS port to RTU and sets the communications parameters for the MEMOBUS port to the following RTU mode default settings. 1) Slave address: 1 2) Baud rate: 9,600 bps 3) Parity check: Yes 4) Parity: Even 5) Stop bits: 1 6) Data bit length: 8 7) Delay time: 0 ms
	ON	Sets the communications mode of the MEMOBUS port to ASCII and sets the communications parameters for the MEMOBUS port to the following ASCII mode default settings. 1) Slave address: 1 2) Baud rate: 2,400 bps 3) Parity check: Yes 4) Parity: Even 5) Stop bits: 1 6) Data bit length: 7 7) Delay time: 0 ms
OFF	Any	Enables the user to define and set the communications mode and communications parameters for the MEMOBUS port through MEMOSOFT.

◀EXAMPLE▶ b) The following examples show settings of DIP switch pins 1 and 2.



(1) When the DIP switch pins 1 and 2 are set as shown in the diagram on the right, the communications parameters of the MEMOBUS port are set to the following RTU mode default settings.

Communications mode: RTU
Communications parameters:

Slave address:	1
Baud rate:	9,600 bps
Parity check:	Yes
Parity:	Even
Stop bits:	1
Data bit length:	8
Delay time:	0 ms

(2) When connecting the Programming Panel to the CPU Module, the communications parameters must match the above values (except the delay time).

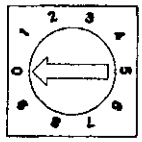
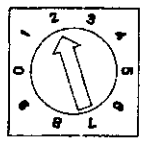
2.2.2 Setting the MEMOBUS PLUS Port of the CPU Module

1) The rotary switches are used to set the node address of the MEMOBUS PLUS port.

2) There are two rotary switches. The top switch is rotary switch 1 and the bottom switch is rotary switch 2. Each switch has positions numbered from 0 to 9.

3) The node address is set between 1 and 64. The following table shows the node address settings.

Table 2.2 Setting the Node Address

Example Setting Node Address 2	Node Address	Rotary Switch 1	Rotary Switch 2
Rotary Switch 1  ×10  ×1 Rotary Switch 2	1 to 9	0	1 to 9
	10 to 19	1	0 to 9
	20 to 29	2	0 to 9
	30 to 39	3	0 to 9
	40 to 49	4	0 to 9
	50 to 59	5	0 to 9
	60 to 64	6	0 to 4

Note (1) The rotary switch settings are enabled only when AC power supply is turned ON to the Power Supply Module of the CPU Rack.

(2) Set the node address to between 1 and 64. Normal communications cannot be run when the node address is set to 0 or to 65 and above.

(3) The same node address must not be used more than once. If the same node address is used more than once, the communications devices with same node address will not be able to run normal communications.

2.2.3 MEMOBUS Module Settings

The functions of the MEMOBUS Module's DIP switch is shown in the following table.

Table 2.3 Functions of MEMOBUS Module DIP Switch

Pin No.	Settings	Function
1	ON	Sets communications mode and parameters of Port 2 to the defaults.
	OFF	Sets communications mode and parameters of Port 2 to user settings.
2	ON	Sets communications mode and parameters of Port 1 to the defaults.
	OFF	Sets communications mode and parameters of Port 1 to user settings.

2.3 Installation

This section describes how to install the Online Programmer for the GL120 and GL130 on the P120.

2.3.1 Installation Preparations

Prepare the following items before installing the Online Programmer.

- P120 Programming Panel
  Model: DISCT-P120□

- Online Programmer System Disk
  Model: FMGLON-PP3

IMPORTANT

The MEMOSOFT (Model: FMSGL-PP3) must be installed into the P120 to use the Online Programmer. Refer to the following manual for the MEMOSOFT installation procedure.

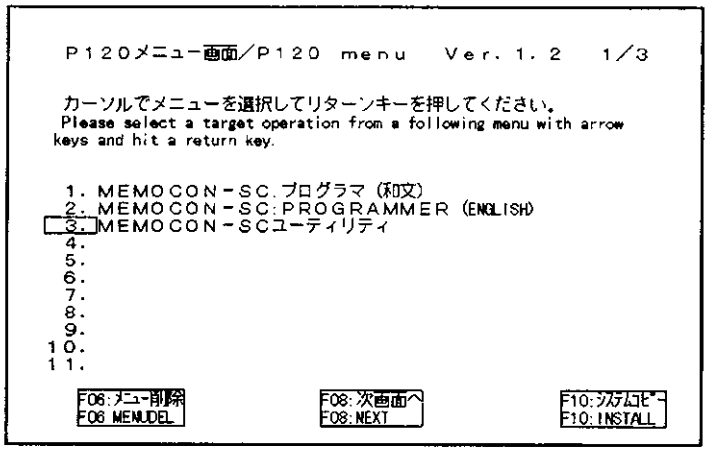
- *MEMOCON GL120, GL130 MEMOSOFT for P120 Programming Panel User's Manual (SIEZ-C825-60.7)*

2.3.2 Installation Procedure

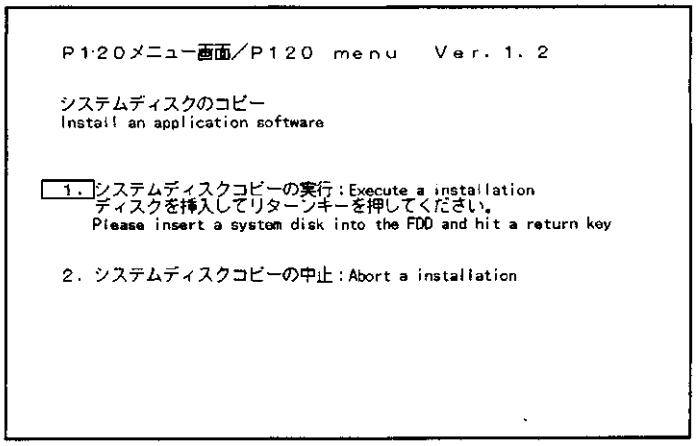
Install the Online Programmer software onto the P120 hard disk using the following procedure. Do not remove the floppy disk or turn OFF the power during the installation procedure.

1) Turn ON the power to the P120.

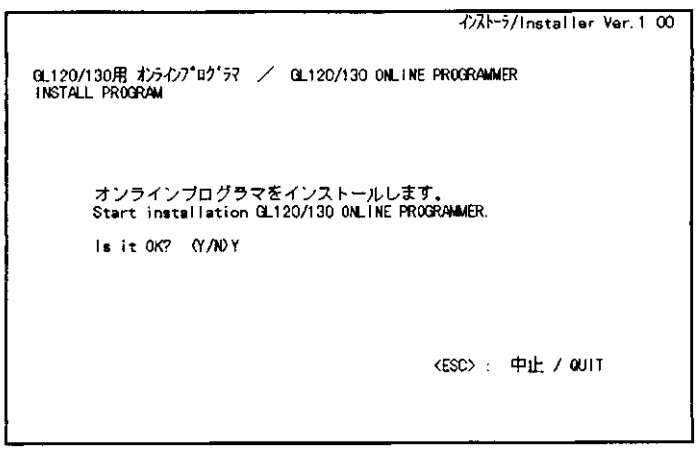
The P120 Menu Screen will be displayed.



2) Press **F10 (INSTALL).**

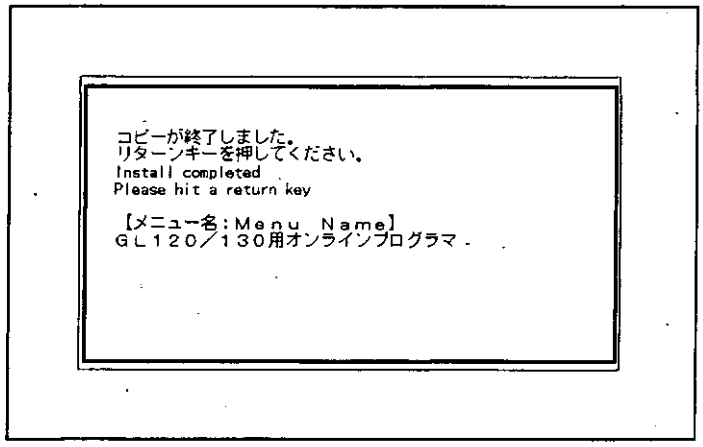


3) Insert the Online Programmer System Disk for the GL120 and GL130 and press the **Enter** Key.

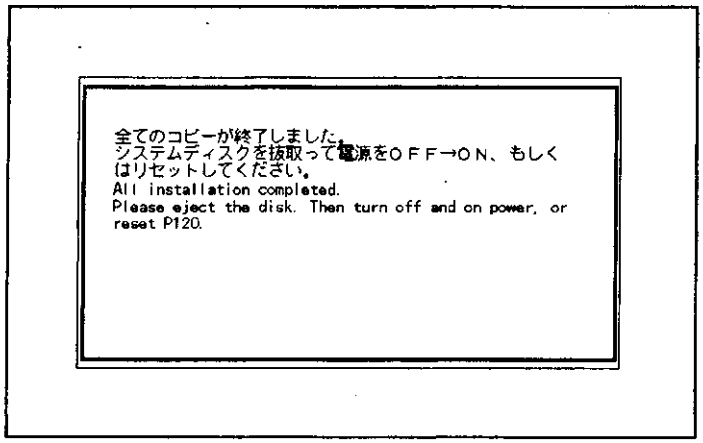


4) Press the **Enter** Key to install and press the **Esc** Key to cancel.

Installation will begin. When installation has been completed, the following screen will be displayed.



5) Press the **Enter** Key.



This completes the installation procedure.

6) Remove the floppy disk, then reset the P120 or turn OFF the power and then turn it ON again. The P120 can be reset by pressing the **Ctrl** + **Alt** + **Delete** Keys.

7) The following applications will be added to the P120 Menu Screen when the Online Programmer is installed.

- GL120/130 Online-Programmer (Japanese version, text appears in Japanese)
- GL120/130 ONLINE-PROGRAMMER (English version)
- GL120/130 MEMOMAIL (Japanese version, some text appears in Japanese)
- GL120/130 MEMOMAIL (ENGLISH)

INFO MEMOMAIL is installed at the same time as the Online Programmer (model number: FMGLON-PP3, version 2.00 onwards).

2.4 Connecting to the GL120 or GL130

This section explains the Attach Operation used to make a software connection between the Online Programmer and the GL120 or GL130 to enable writing programs, monitoring, and communications parameters changes.

2.4.1 Attach Operation

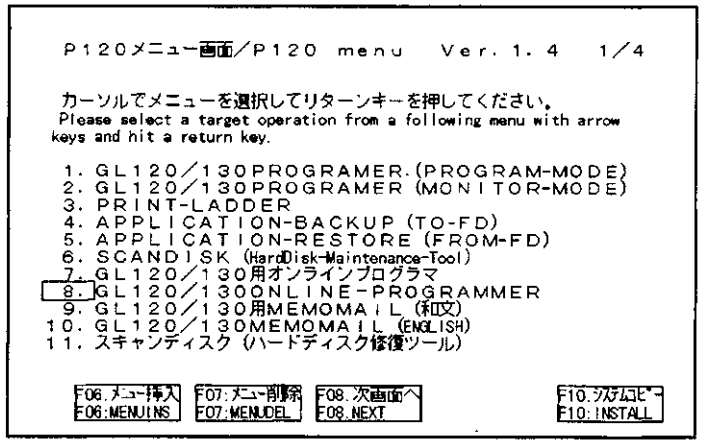
1) "Attach" refers to the creation of a software connection between the P120 and the GL120 or GL130 to enable writing programs and monitoring. If the P120 and GL120 or GL130 is simply connected by cable, communications will not be possible. Communications are enabled by executing the Attach Operation.

2) Use the following procedure to perform the Attach Operation.

   a) For MEMOBUS, use RS-232C Cables to connect the GL120 or GL130 to the P120. For MEMOBUS PLUS, use MEMOBUS PLUS Cables to connect the GL120 or GL130 to the P120.

   b) Turn ON the power to the P120.

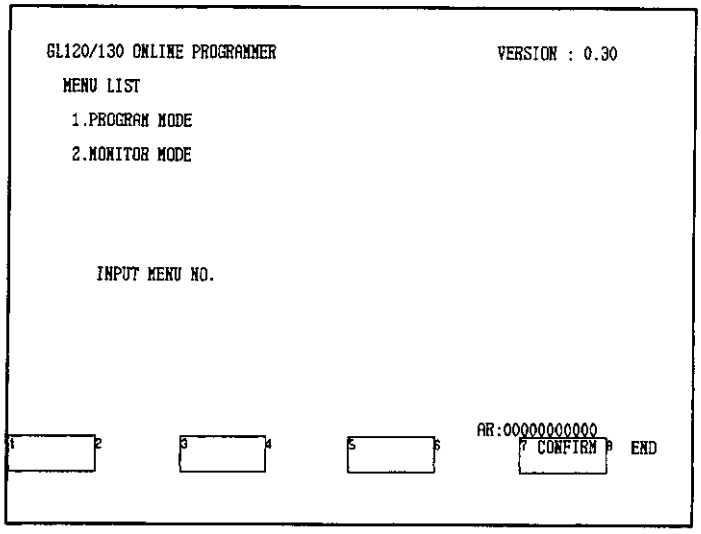
   The P120 Menu Screen will be displayed.



   c) Select ***GL120/130 ONLINE-PROGRAMMER*** using the **Up** or **Down Cursor** Key and press the **Enter** Key.

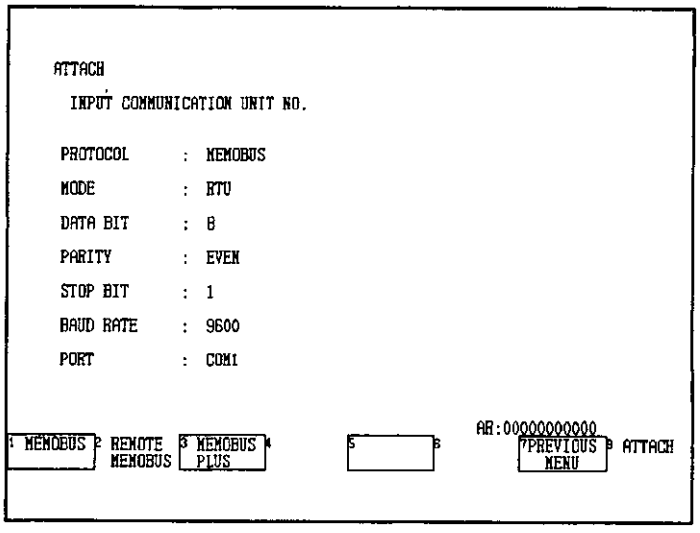
The Online Programmer's Initial Display Screen will appear.

d) Select ***1. PROGRAM MODE*** or ***2. MONITOR MODE*** by entering the number in the AR from the menu (1 or 2) and press **F7 (CONFIRM)**.

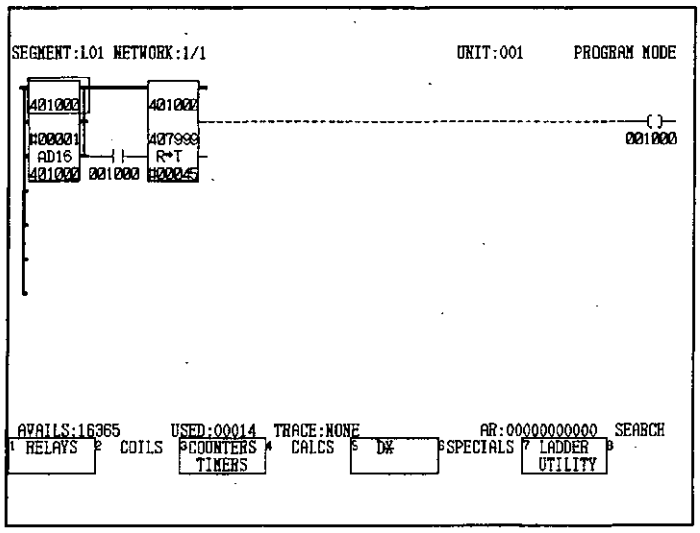


The communications parameters will be displayed.

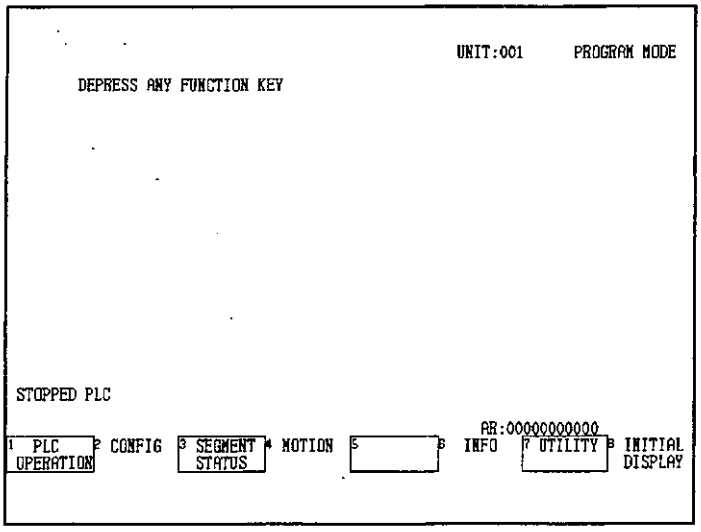
e) Check that the parameters are correct, enter the PLC address, and press **F8 (ATTACH)**.



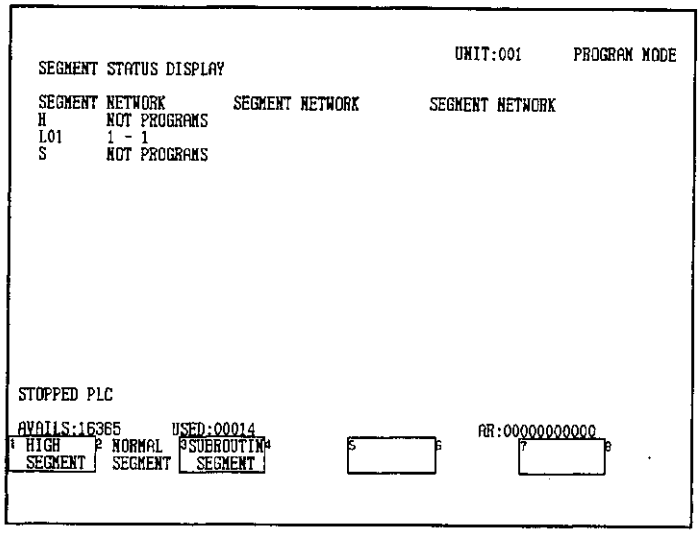
Communications with the PLC will begin, and the first network will be displayed.



f) Press the **SUPERVISORY** Key to display the Supervisory Screen.



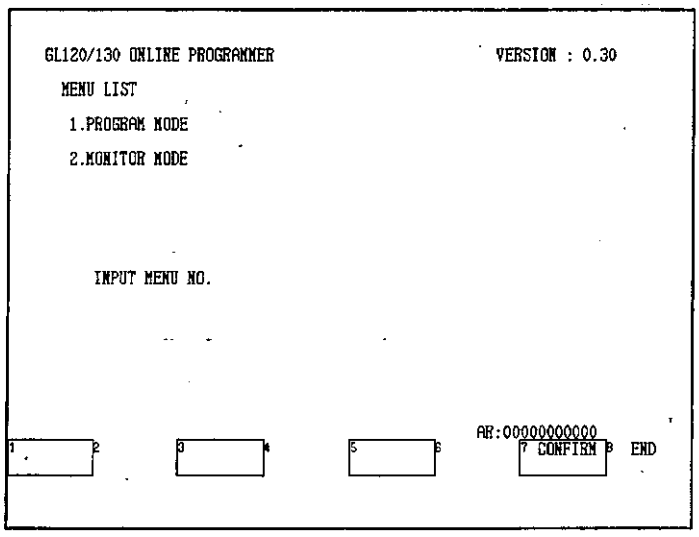
g) Press **F3 (SEGMENT STATUS)**. The Segment Status Display Screen will appear.



2.4.2 Changing Communications Parameters

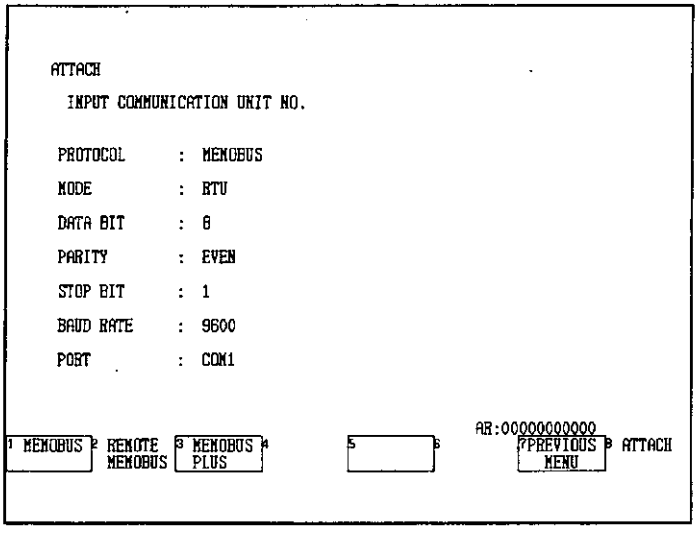
The following example shows the procedure used to change the communications parameters from MEMOBUS to REMOTE MEMOBUS. The communications parameters that were used during the last Attach Operation will have been saved.

1) Select ***1. PROGRAM MODE*** or ***2. MONITOR MODE*** by entering 1 or 2 in the AR.



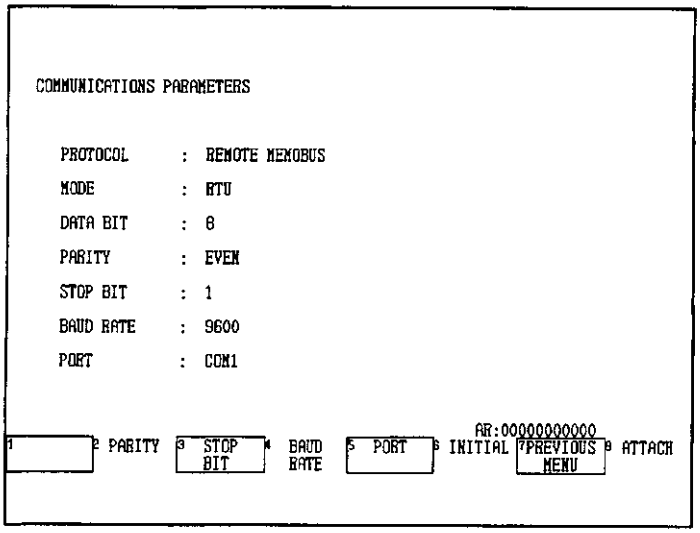
The current communications parameters will be displayed.

2) Press **F2 (REMOTE MEMOBUS)** to select REMOTE MEMOBUS.



The settings for REMOTE MEMOBUS communications parameters will be displayed.

3) Change the settings if required using the **Function** Keys.



4) After setting the parameters, enter the PLC address in the AR and press **F8 (ATTACH)**.

Communications with the PLC will begin.

Supervisory Operations

3

This chapter describes how to perform operations from the Supervisory Screen, such as starting and stopping the PLC and displaying ladder logic programs.

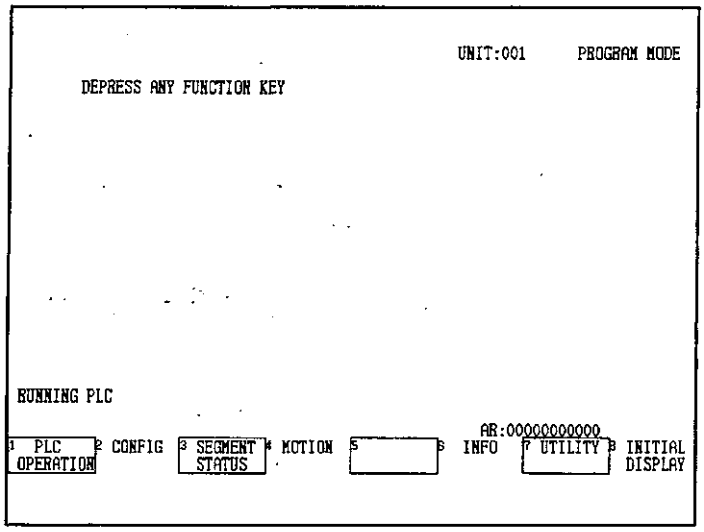
3.1 Supervisory Screen

This section describes operations that are performed from the Supervisory Screen.

3.1.1 Supervisory Screen

1) After performing the Attach Operation, press the **SUPERVISORY** Key.

The following screen will be displayed and the supervisory operations at the bottom of the screen can be performed.



2) The following operations can be performed from the Supervisory Screen.

a) Starting/stopping the PLC

b) Displaying PLC system configuration

c) Displaying the Segment Status Screens:

Displaying high-speed segment ladder programs

Displaying normal segment ladder programs

Displaying subroutine segment ladder programs

d) Displaying/Editing motion details:

Displaying/Editing MC20 parameters

Displaying/Editing MC20 programs

Displaying/Editing MC20 point tables

Displaying/Editing MC10 parameters

e) Displaying PLC and MC20 details:

Displaying PLC status

Monitoring MC20 current values

Monitoring MC20 input and output

Monitoring MC20 status

f) Utilities:

Loader

Traceback

3) The PLC OPERATION Menu will not be displayed in Monitor Mode.

4) To return to the Initial Display, press **F8 (INITIAL DISPLAY)** or press the **Shift + SUPERVISORY** Keys.

3.2 Starting and Stopping the GL120 or GL130

This section describes how to start and stop the CPU Module of the GL120 or GL130.

3.2.1 Start/Stop Operation

1) This operation starts the GL120 or GL130 if it is stopped, and stops the GL120 or GL130 if it is running. When the GL120 or GL130 is started from the stopped condition, the RUN indicator on CPU Module of the GL120 or GL130 will light.

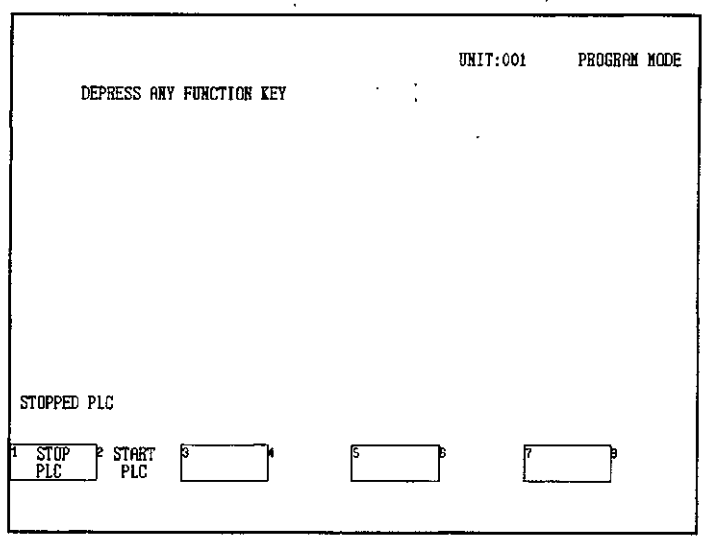
2) Use the following procedure to start the GL120 or GL130.

   a) Perform the Attach Operation.

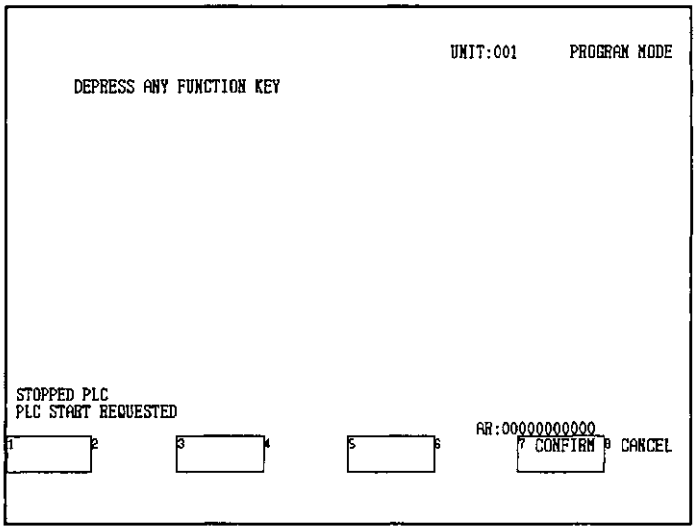
   b) Press the **SUPERVISORY** Key to display the Supervisory Screen.

   c) Press **F1 (PLC OPERATION)**. The menu will change to display the ***PLC OPERATION*** Menu.

   d) Press **F2 (START PLC)**.



e) Press **F7 (CONFIRM)**.



INFO

1) Programs can be input or changed while the GL120 or GL130 is either stopped or running.

2) After pressing **F7 (CONFIRM)**, 5 to 10 seconds will elapse before the RUN indicator on the CPU Module lights.

3) If **F8 (CANCEL)** is pressed instead of **F7 (CONFIRM)**, the screen will return to the Supervisory Screen.

3.3 Displaying Ladder Programs

This section describes the procedure used to display ladder programs from the Supervisory Screen.

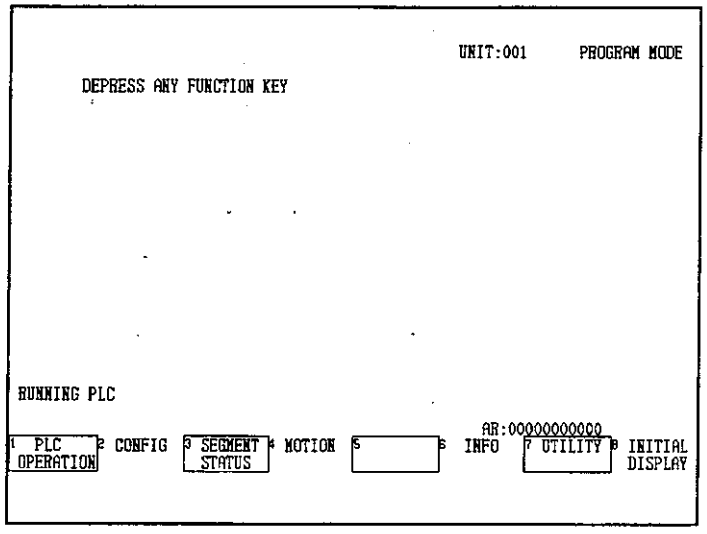
3.3.1 Ladder Program Display Operation

1. Displaying Normal Segments

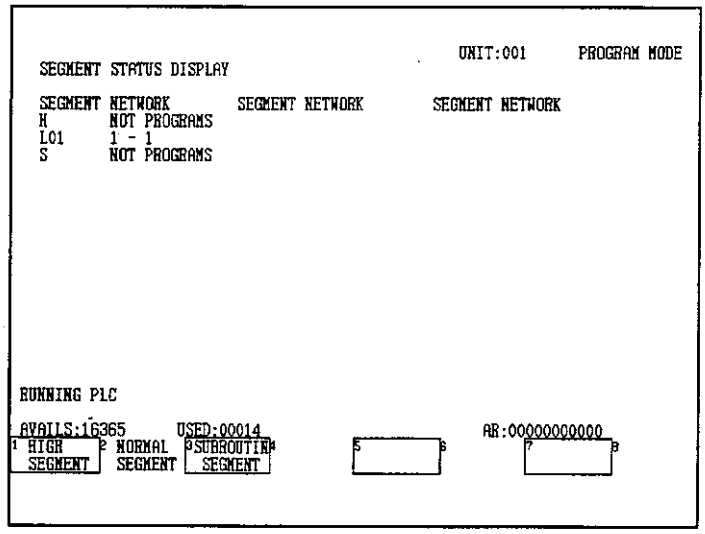
Use the following procedure to display ladder programs from the Supervisory Screen.

1) Press the **SUPERVISORY** Key to display the Supervisory Screen.

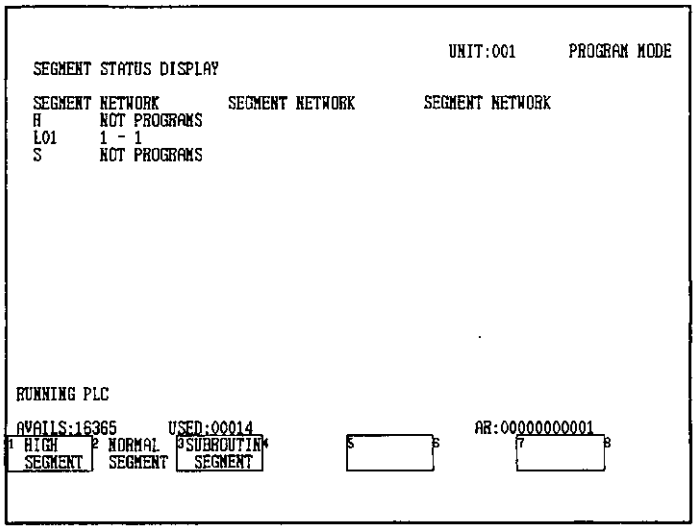
2) Press **F3 (SEGMENT STATUS)**.



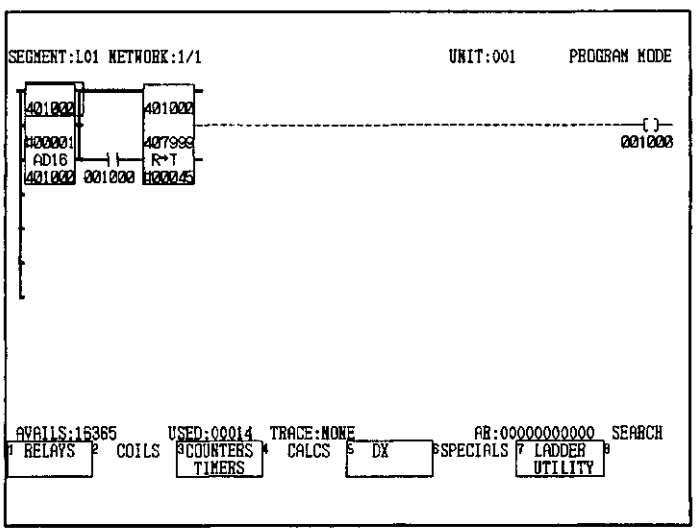
The Segment Status Display Screen will appear.



3) Display normal segment 1 by entering **1** in the AR and then pressing **F2 (NORMAL SEGMENT)**.



The first network of normal segment 1 will be displayed.



2. Displaying High-speed Segments and Subroutine Segments

When high-speed segments or subroutine segments are selected, numbers do not need to be specified in the AR. With the Segment Status Screen displayed, press **F1 (HIGH SEGMENT)** or **F3 (SUBROUTINE SEGMENT)**.

Ladder Logic Programming

4

This chapter describes the procedures necessary for creating ladder logic programs, including inputting elements, such as relays and coils, and networks.

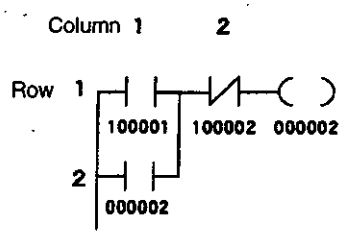
4.1 Inputting Programs

This section describes the procedure used to input and edit elements, such as relays, timers, and various processing instructions.

4.1.1 Inputting Relays and Coils

1) The following example is used here to create a ladder logic program and show how to input relays and coils.

Example:

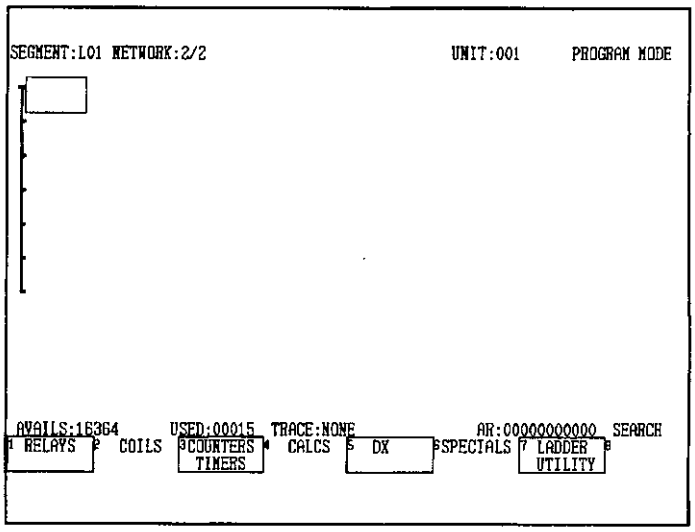


2) Use the following procedure to input relays and coils. The procedures using fixed function keys and variable function keys are described.

1. Using Fixed Function Keys

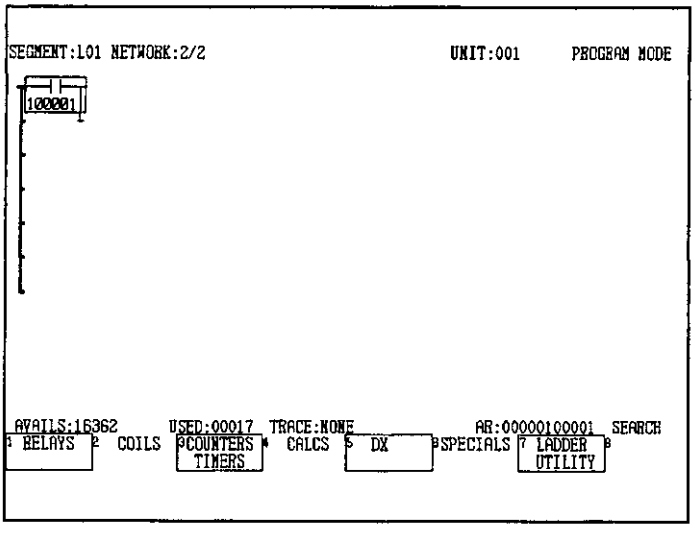
a) Perform the Attach Operation. (This step is not required if program storage is already possible.)

b) Press the **START NEXT** Key.



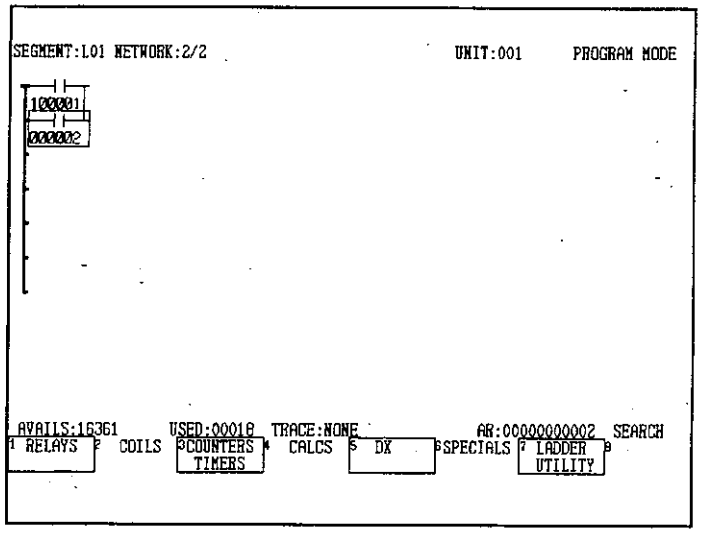
c) Enter **100001** in the AR and press the Key.

d) Press the Key.



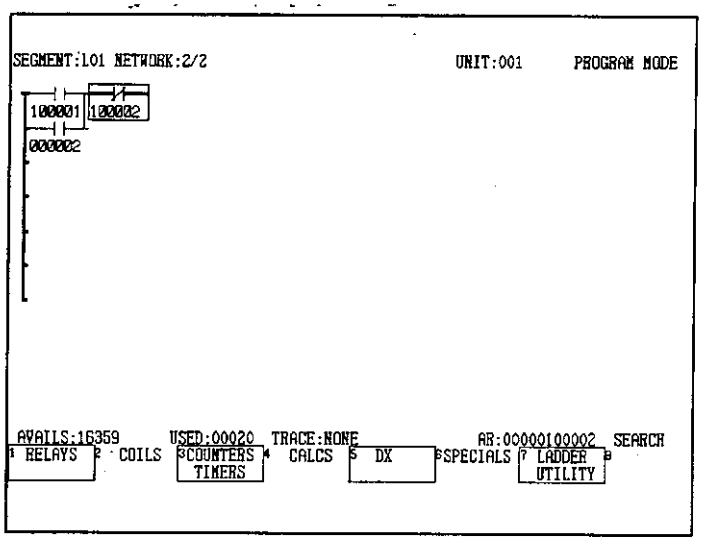
e) Move the cursor down.

f) Enter **2** in the AR and press the Key.



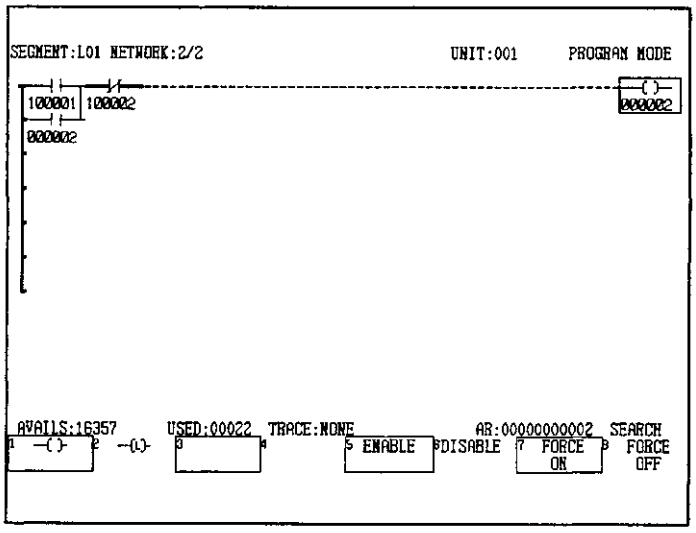
g) Move the cursor to the upper right.

h) Enter **100002** in the AR and press the Key.



i) Move the cursor to the right.

j) Enter **2** in the AR and press the [(↓)] Key.



Note (1) The same reference number cannot be used in more than one coil, but any number of contacts can be used as long as the memory capacity is not exceeded.

(2) Position the cursor in the ladder logic area.

INFO

1) The input and modification of elements is stored immediately in the GL120 or GL130 memory as a result of an operation.

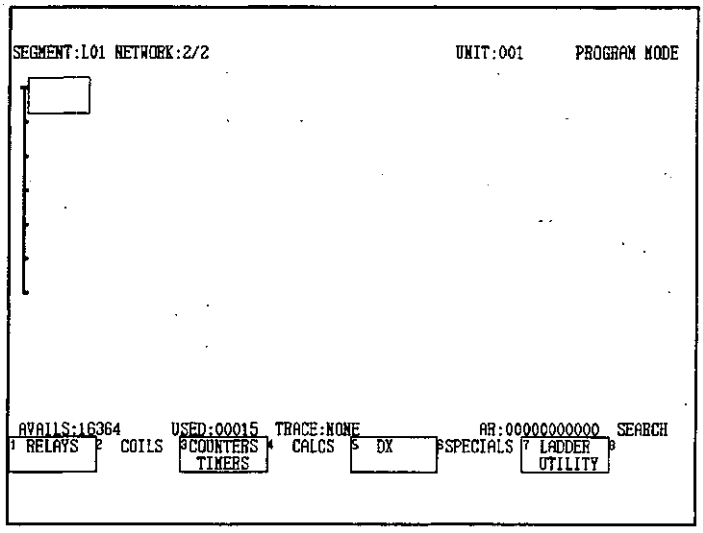
2) Programs can be input and modified while the GL120 or GL130 is running or stopped.

3) Relay and coils can also be input using the variable function keys.

2. Using Variable Function Keys

a) Perform the Attach Operation. (This step is not required if program storage is already possible.)

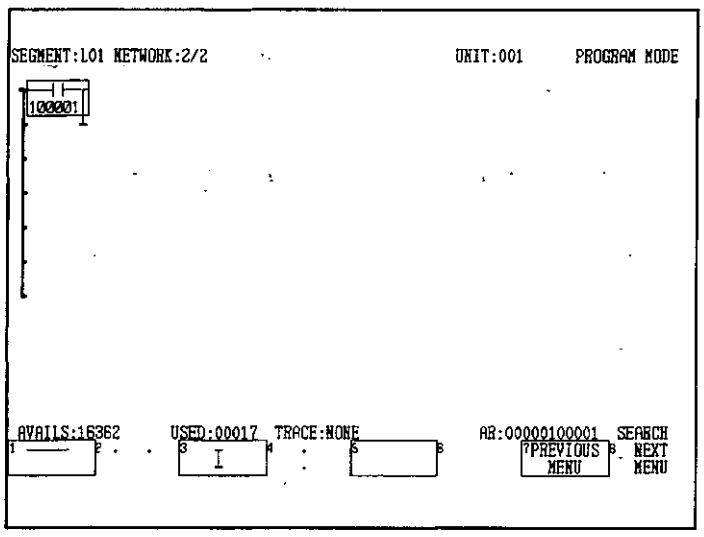
b) Press the **START NEXT** Key.



c) Press **F1 (RELAYS)**.

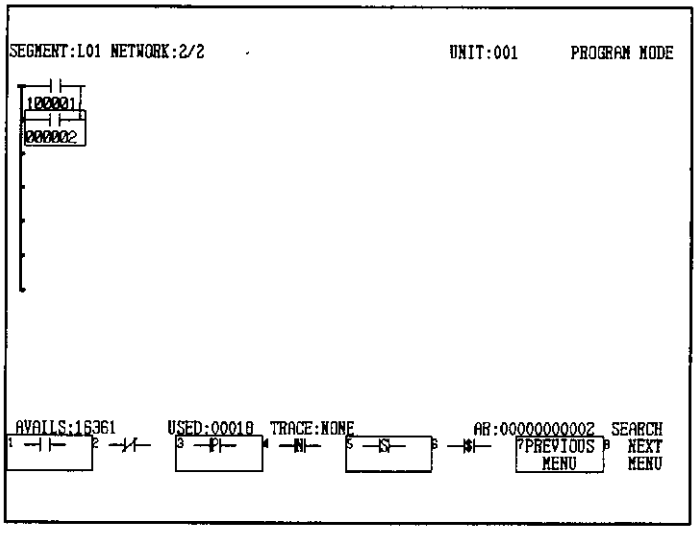
d) Enter **100001** in the AR and press **F1** ( ).

e) Press **F8 (NEXT MENU)**, and after the menu has changed press **F3** ( ).



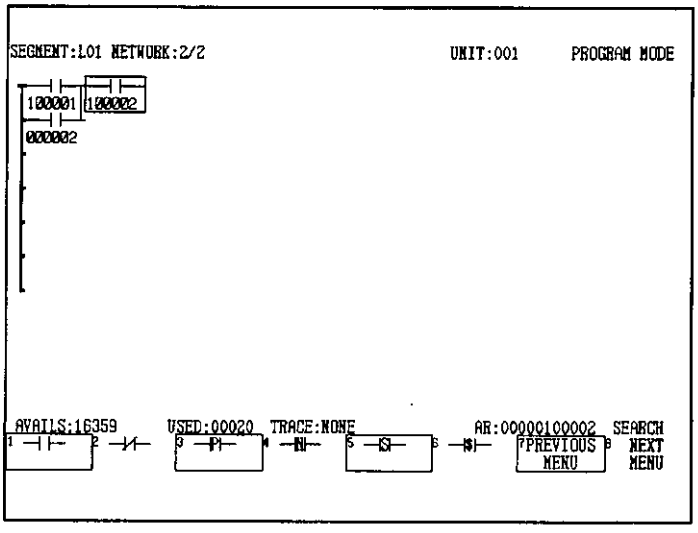
f) Move the cursor down.

g) Enter **2** in the AR and press **F1 (H)**.



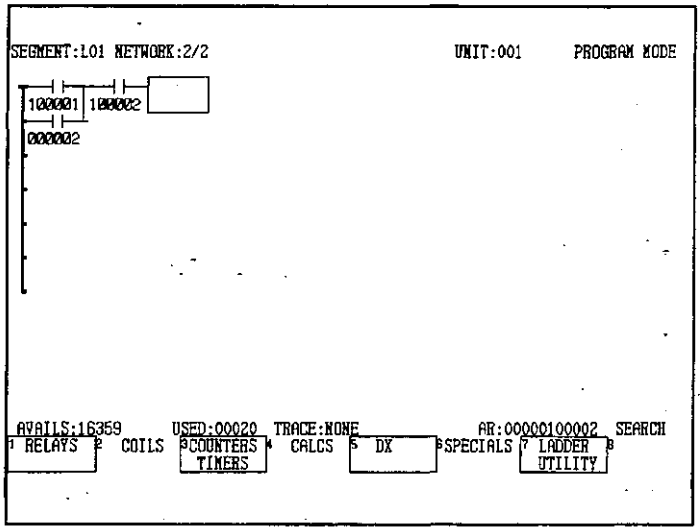
h) Move the cursor to the upper right.

i) Enter **100002** in the AR and and press **F1 (H)**.



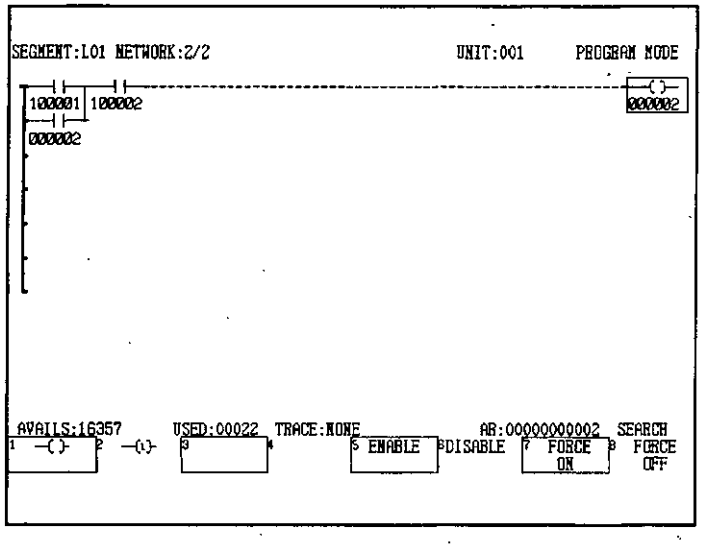
j) Move the cursor to the right.

k) Press the **EDIT/CHANGE NODE** Key.



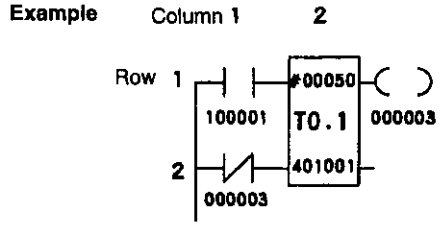
l) Press **F2 (COILS)**.

m) Enter **2** in the AR and press **F1** ( ).



4.1.2 Inputting Timers and Counters

1) The following example is used here to create a ladder logic program and show how to input timers and counters.

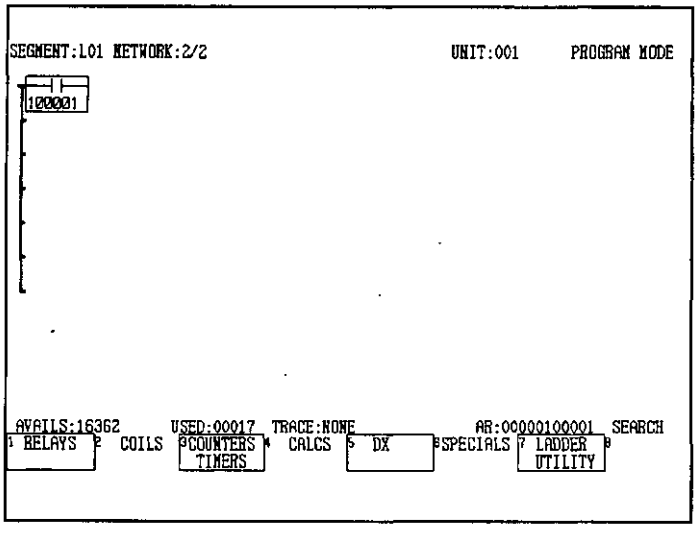


2) Use the following procedure to input timers and counters.

a) Perform the Attach Operation. (This step is not required if program storage is already possible.)

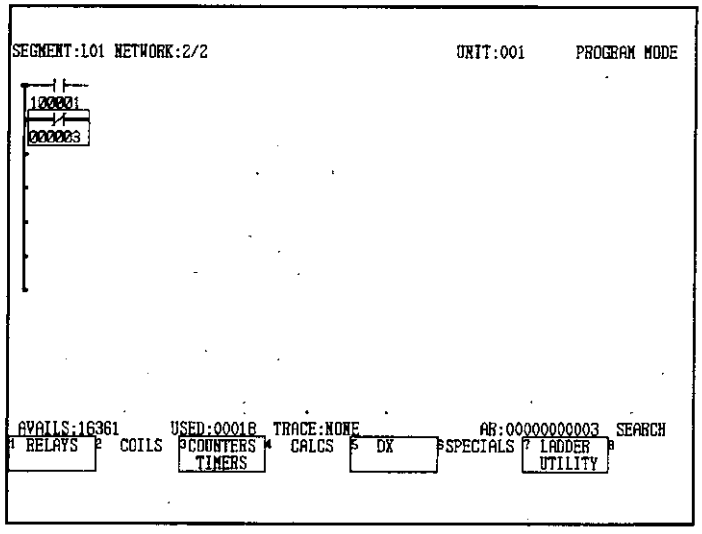
b) Press the **START NEXT** Key.

c) Enter **100001** in the AR and press the [↑] Key.



d) Move the cursor down.

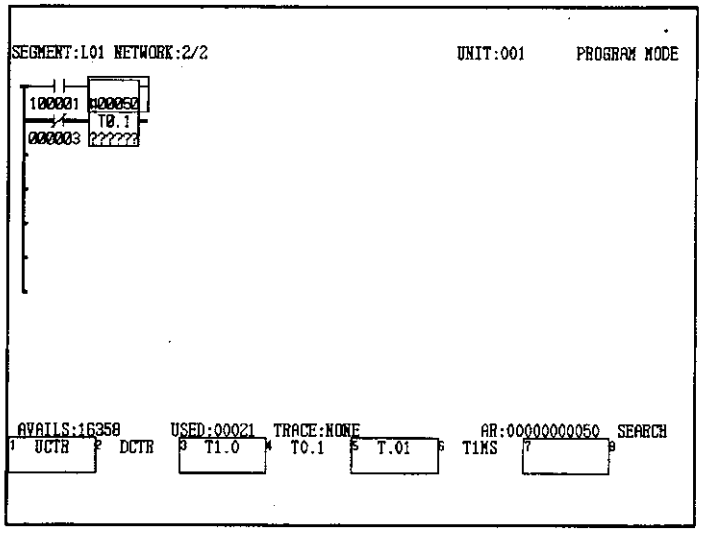
e) Enter **3** in the AR and press the Key.



f) Move the cursor to the upper right.

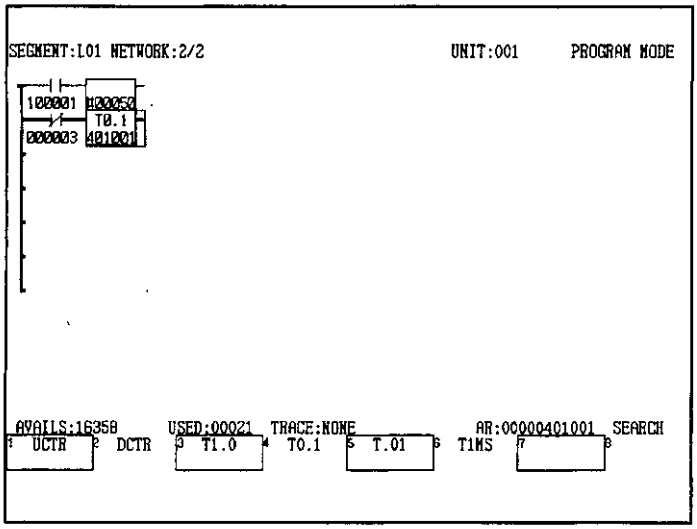
g) Press **F3 (COUNTERS/TIMERS)**.

h) Enter **50** in the AR and press **F4 (T0.1)**.



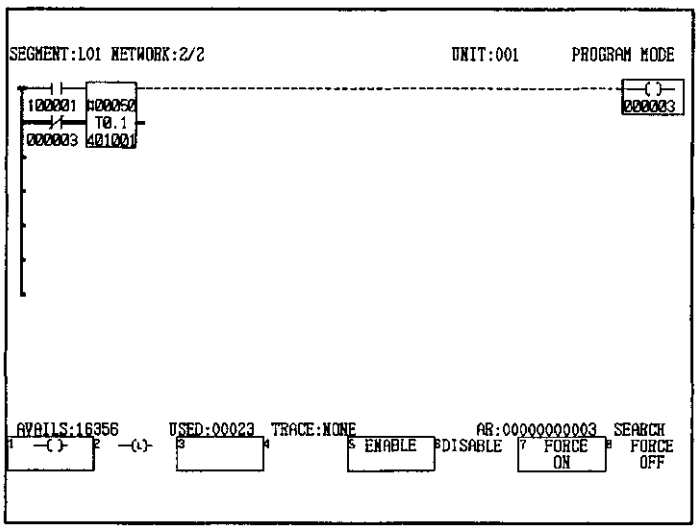
i) Move the cursor down.

j) Enter **401001** in the AR and press the **Enter** Key.



k) Move the cursor to the upper right.

l) Enter **3** in the AR and press the $\dashv(L)\vdash$ Key.



Note (1) Position the cursor in the ladder logic area.

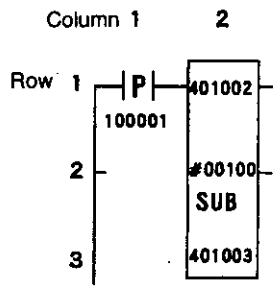
(2) Input the timer and counter elements in rows 1 to 6.

INFO Relays and coils can also be input using the variable function keys.

4.1.3 Inputting Arithmetic Circuits

1) The following example is used here to create a ladder logic program and show how to input arithmetic circuits.

Example:

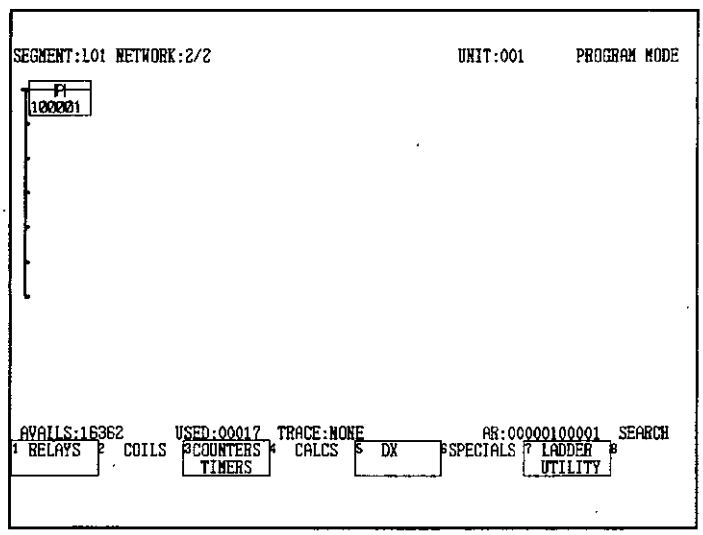


2) Use the following procedure to input arithmetic circuits.

a) Perform the Attach Operation. (This step is not required if program storage is already possible.)

b) Press the **START NEXT** Key.

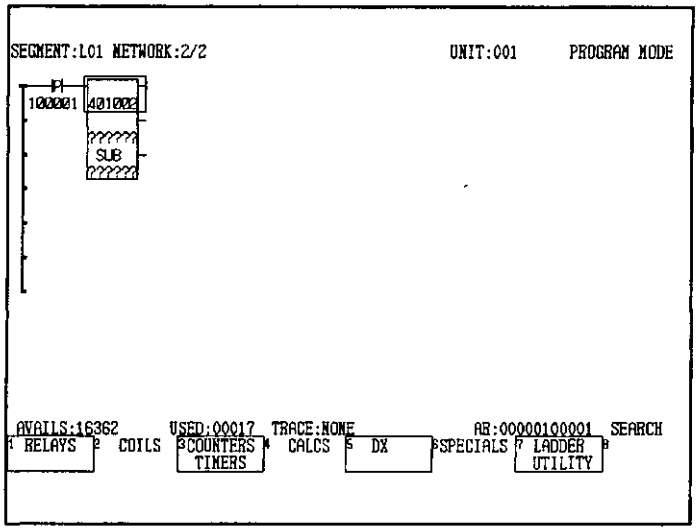
c) Enter **100001** in the AR and press the **Shift** + [↑] Keys.



d) Move the cursor to the right.

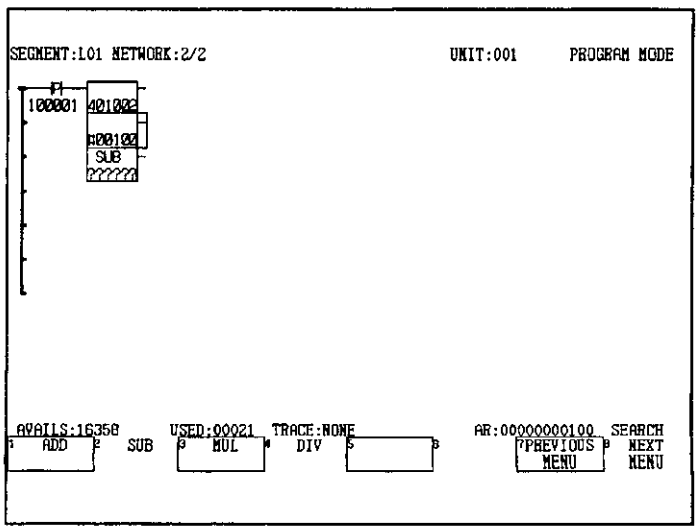
e) Press **F4 (CALCULATIONS)**.

f) Enter **401002** in the AR and press **F2 (SUB)**.



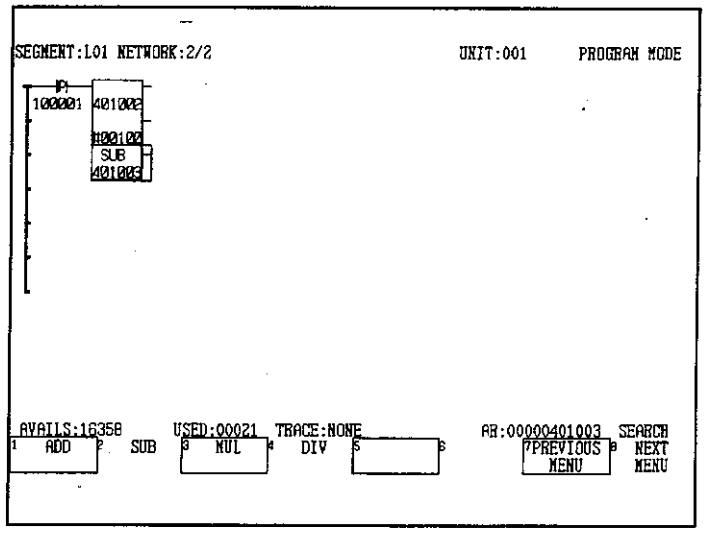
g) Move the cursor down.

h) Enter **100** in the AR and press the **Enter** Key.

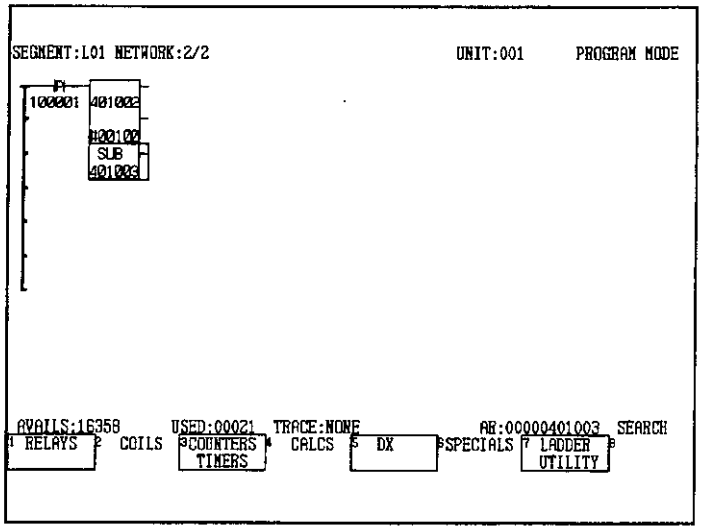


i) Move the cursor down.

j) Enter **401003** in the AR and press the **Enter** Key.



k) Press the **EDIT/CHANGE NODE** Key. The labels will return to those used for selecting functions. (This step can be omitted).



Note (1) Position the cursor in the ladder logic area.

(2) Input the arithmetic elements in rows 1 to 5.

INFO Relays and coils can be input using the variable function keys.

4.1.4 Function Key Selection Labels

1) The following tables show the labels that appear on the screen when selecting functions with function keys.

2) Press **F6 (SPECIALS)** as shown in *Table 4.1* to move to the menus shown in *Table 4.2*.

Table 4.1 Function Key Selection Labels (1)

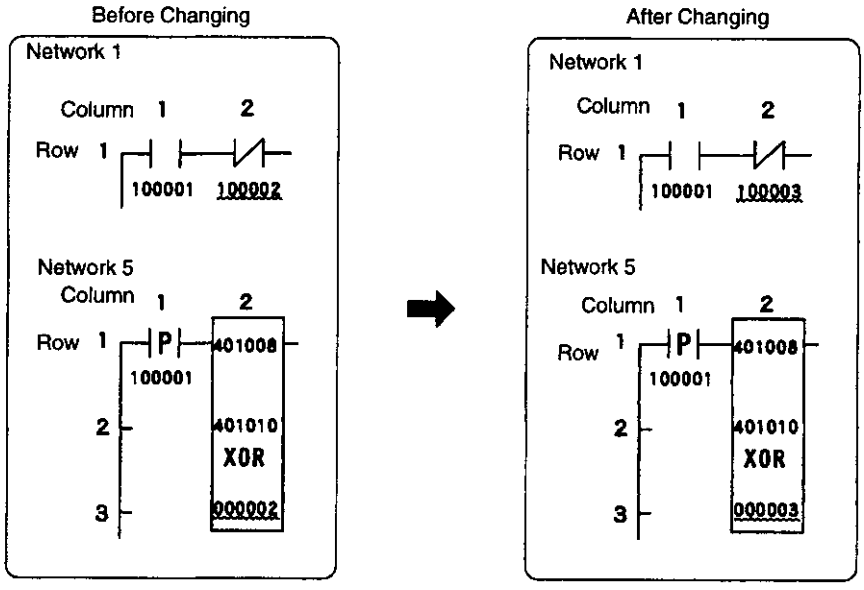
	F1	F2	F3	F4	F5	F6	F7	F8
Main	Relays	Coils	Counters Timers	Math	Data Manipulation (DX)	Specials	Ladder Utility	
Relays	⊣ ⊢	⊣/⊢	⊣P⊢	⊣N⊢	⊣S⊢	⊣S⊢	PREVIOUS MENU	NEXT MENU
	—	:	I	:			PREVIOUS MENU	NEXT MENU
Coils	—( )—	—(L)—			ENABLE	DISABLE	FORCED ON	FORCED OFF
Counters Timers	UCTR	DCTR	T1.0	T0.1	T.01	T1MS		
Math	ADD	SUB	MUL	DIV			PREVIOUS MENU	NEXT MENU
	DADD	DSUB	DMUL	DDIV			PREVIOUS MENU	NEXT MENU
	SADD	SSUB	SMUL	SDIV			PREVIOUS MENU	NEXT MENU
	SDAD	SDSB	SQRT	DSQR	SIN	COS	PREVIOUS MENU	NEXT MENU
	AD16	SU16	MU16	DV16			PREVIOUS MENU	NEXT MENU
	AD32	SU32	TEST				PREVIOUS MENU	NEXT MENU
Data Manipulation (DX)	R→T	T→R	T→T	BLKM	BLKT	TBLK	PREVIOUS MENU	NEXT MENU
	FIN	FOUT	SRCH	TSET	IBKW	IBKR	PREVIOUS MENU	NEXT MENU
	DIBT	DIBR	SIBT	SIBR	STAT		PREVIOUS MENU	NEXT MENU
	AND	OR	XOR	COMP	CMPR	MBIT	PREVIOUS MENU	NEXT MENU
	SENS	BROT	MROT	BCNT			PREVIOUS MENU	NEXT MENU
	NOBT	NCBT	NBIT	SBIT	RBIT		PREVIOUS MENU	NEXT MENU
	BIN	BCD	ATOB	BTOA	CAST	DCST	PREVIOUS MENU	NEXT MENU
	SDAT	SDDT	TWST	SWAP	SORT	BYSL	PREVIOUS MENU	NEXT MENU
	BYCM	NBSL	NBCM	BADD			PREVIOUS MENU	NEXT MENU

Table 4.2 Function Key Selection Labels (2)

	F1	F2	F3	F4	F5	F6	F7	F8
Specials	Control	Communications	Motion	Extended Math	Expanded Memory			
Control	SKPC	SKPR	JSR	LAB	RET	TRON	PREVIOUS MENU	NEXT MENU
	MSON	MSOF	DIN	DOUT	PID2	SCIF	PREVIOUS MENU	NEXT MENU
Communications	COMM	COMR	CKSM	MSTR	WRIT	READ	PREVIOUS MENU	NEXT MENU
	MSND	MRCV	SEND	RECV			PREVIOUS MENU	NEXT MENU
Motion	MOD	SVN	MVL	MVA	MVB	MVC	PREVIOUS MENU	NEXT MENU
	MVD	ZRN	JOG	STP	SMD	MLK	PREVIOUS MENU	NEXT MENU
	MRS	RST	ESP	ARS	MON	POS	PREVIOUS MENU	NEXT MENU
	PRM	VAR	PTBL	ZST			PREVIOUS MENU	NEXT MENU
Extended Math	LOG	ANLOG	CNVIF	ADDIF	SUBIF	MULIF	PREVIOUS MENU	NEXT MENU
	DIVIF	SUBFI	DIVFI	CMPIF	CNVFI	ADDFP	PREVIOUS MENU	NEXT MENU
	SUBFP	MULFP	DIVFP	CMPFP	SQRFP	CHSIN	PREVIOUS MENU	NEXT MENU
	PI	SINE	COS	TAN	ARSIN	ARCOS	PREVIOUS MENU	NEXT MENU
	ARTAN	CNVRD	CNVDR	POW	EXP	LNFP	PREVIOUS MENU	NEXT MENU
	LOGFP	ERLOG					PREVIOUS MENU	NEXT MENU
Expanded Memory	XMRD	XMWT						
Ladder Utility	Scan Control							

4.1.5 Changing Reference Numbers

1) The following example shows how to change reference numbers and constants.

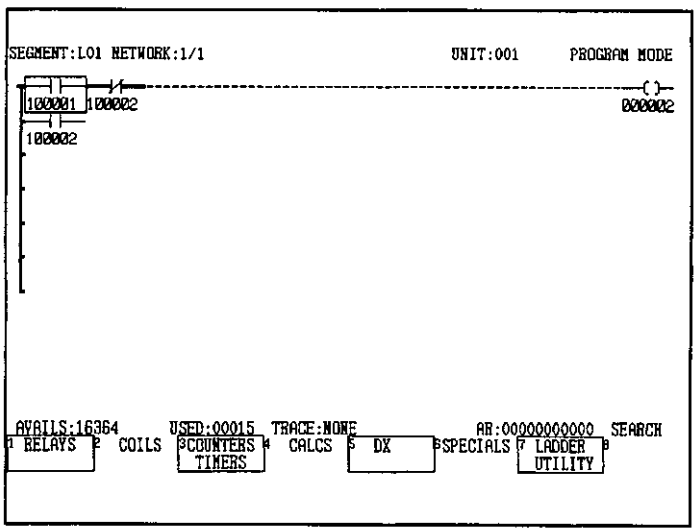


2) Use the following procedure to change reference numbers and constants.

a) Perform the Attach Operation. (This step is not required if program storage is already possible.)

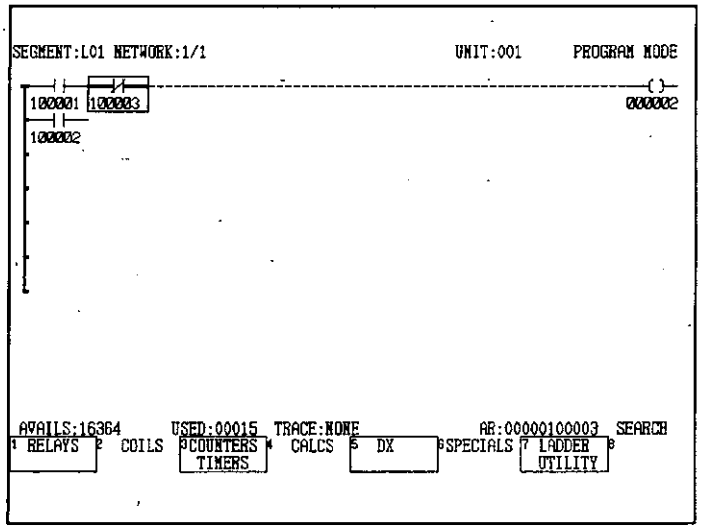
b) Display the network containing the reference to be changed. Here, network 1 is displayed.

c) Enter **1** in the AR and press the **ERASE/GET** Key.



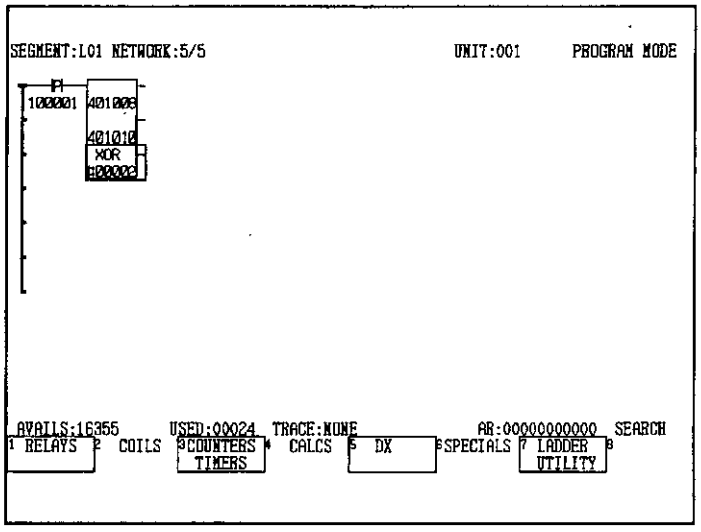
d) Move the cursor to the right.

e) Enter **100003** in the AR and press the **Enter** Key.

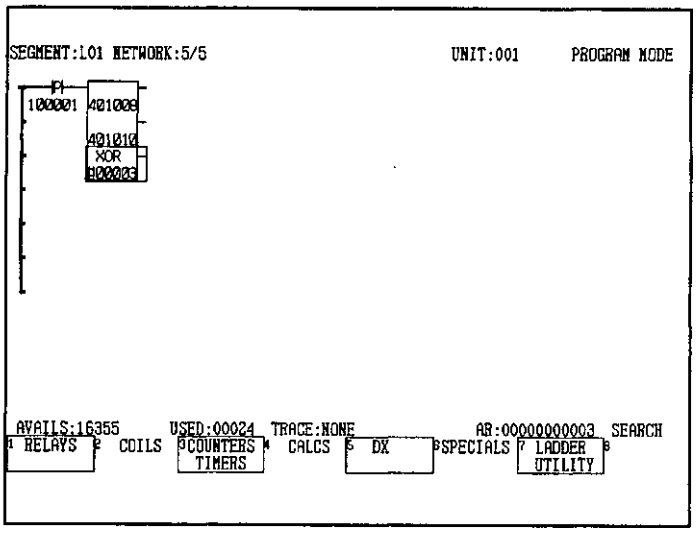


f) Enter **5** in the AR and press the **ERASE/GET** Key.

g) Move the cursor to the location that is to be changed.



3) Enter **3** in the AR and press the **Enter** Key.

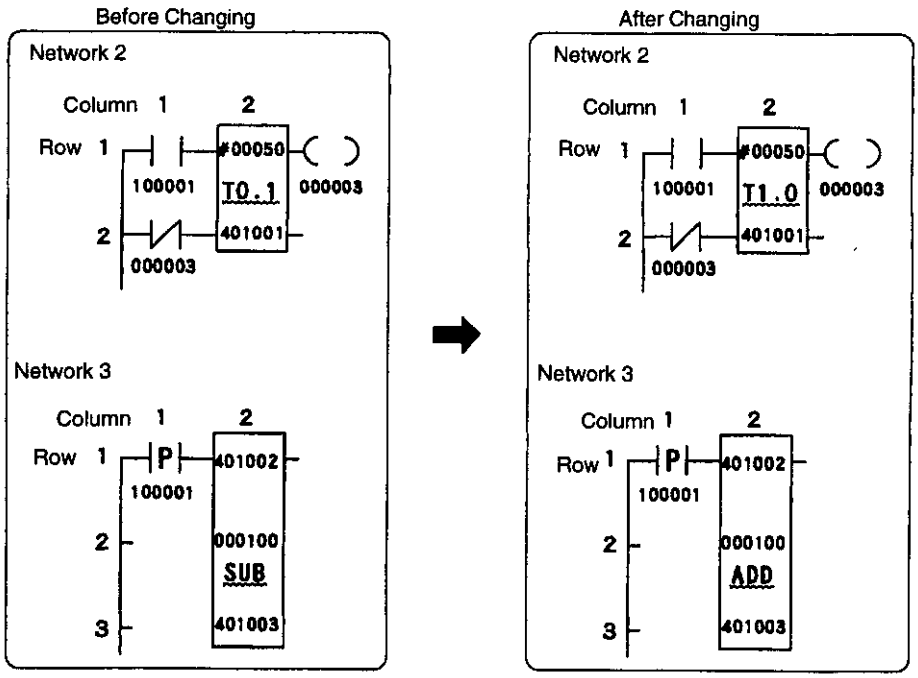


Note Position the cursor in the ladder logic area.

4.1.6 Changing Elements

1) Changing Time Units of Timers and SUB Instruction to ADD Instruction

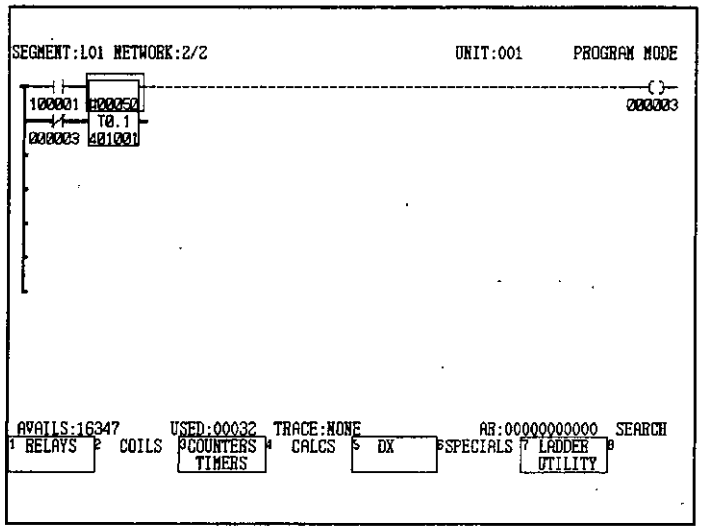
a) This section describes how to change elements, such as changing a SUB instruction to an ADD instruction. The following example is used here to show how elements, such as timers and arithmetic instructions, can be changed.



b) Use the following procedure to change the time units of timers and to change a SUBTRACT circuit to an ADD circuit.

(1) Perform the Attach Operation. (This step is not required if program storage is already possible.)

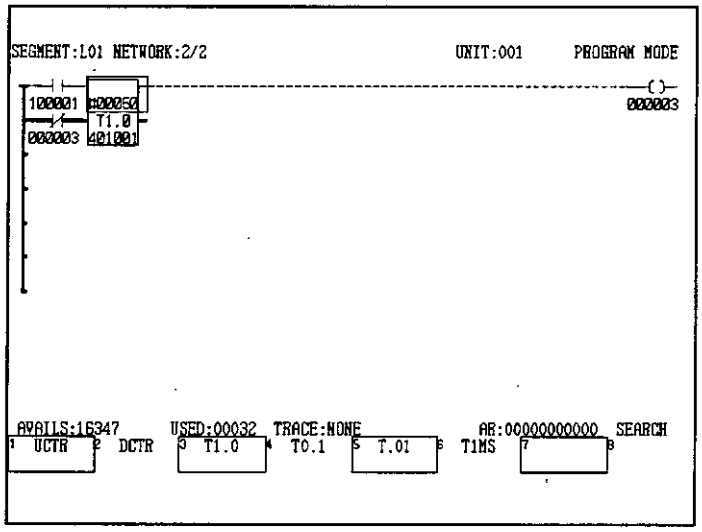
(2) Enter **2** in the AR and press the **ERASE/GET** Key.



(3) Move the cursor to the location of the timer.

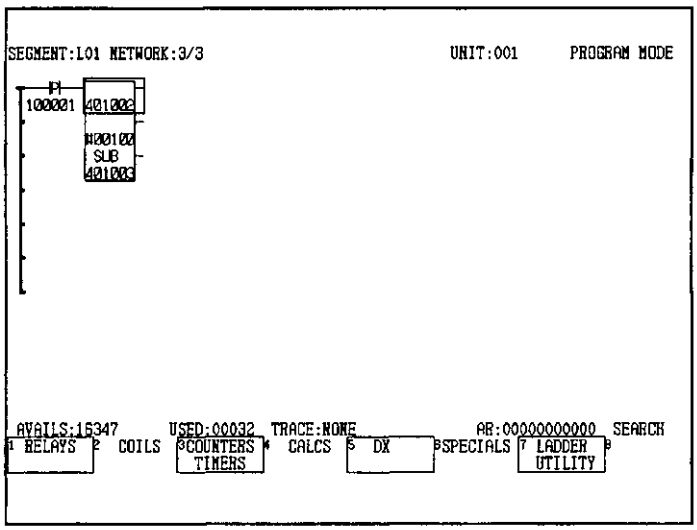
(4) Press **F3 (COUNTERS/TIMERS)**.

(5) Press **F3 (T1.0)**. The timer unit will change to T1.0.



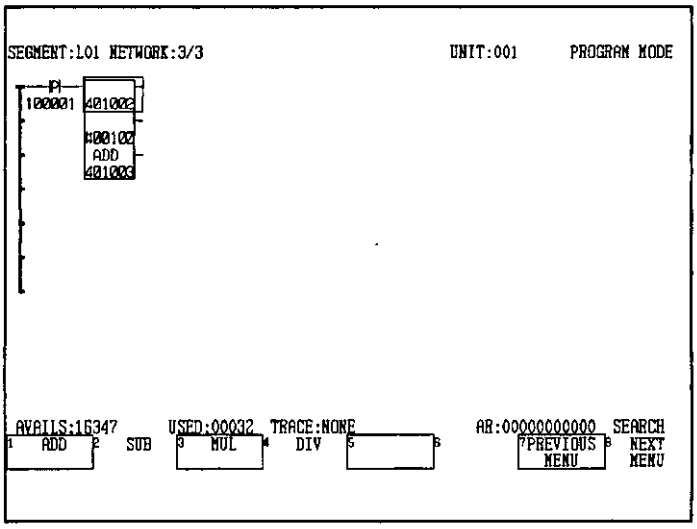
(6) Press the **Page Down** Key to display the next network.

(7) Move the cursor to the location of the SUB instruction.



(8) Press **F4 (CALCULATIONS)**.

(9) Press **F1 (ADD)**. The subtract instruction will change to an ADD instruction.

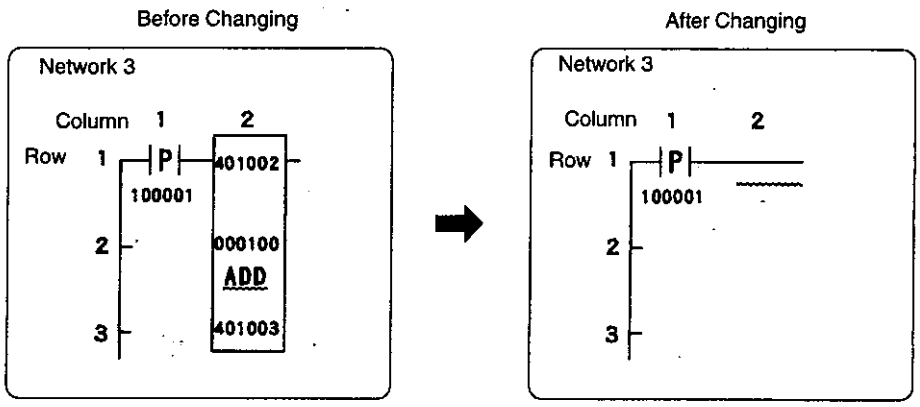


Note Position the cursor in the ladder logic area.

INFO If a symbol cannot be changed directly, an error message will be displayed saying that replacement is not possible and to delete the previous element. If this error message appears, press the **Delete** Key and after the delete operation has been completed, input the new element.

2) Changing the ADD Instruction to a Horizontal Short Circuit

a) The following example is used here to show how an ADD instruction is changed to a horizontal short circuit.

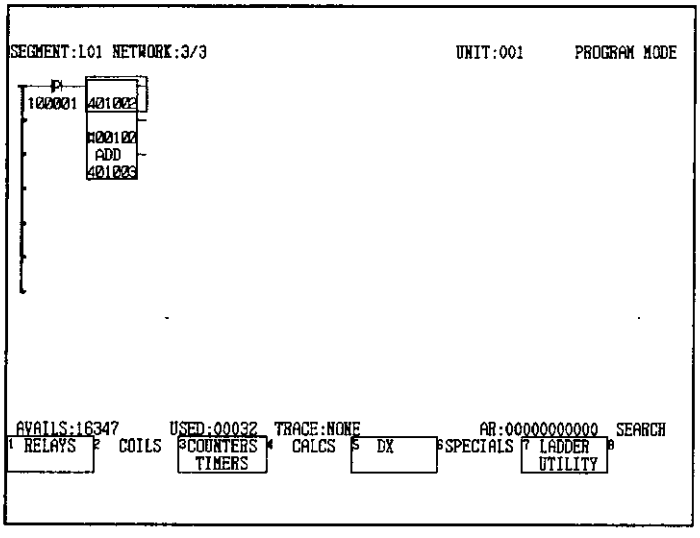


b) Use the following procedure to change an ADD instruction to a horizontal short circuit.

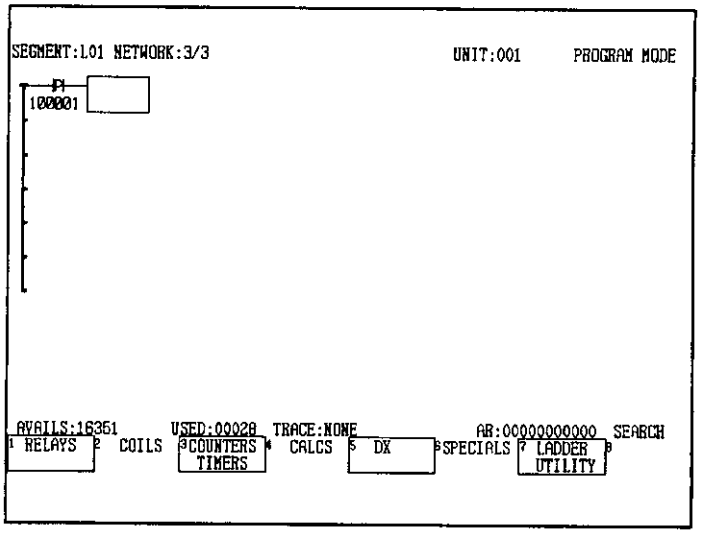
(1) Perform the Attach Operation. (This step is not required if program storage is already possible.)

(2) Enter **3** in the AR and press the **ERASE/GET** Key.

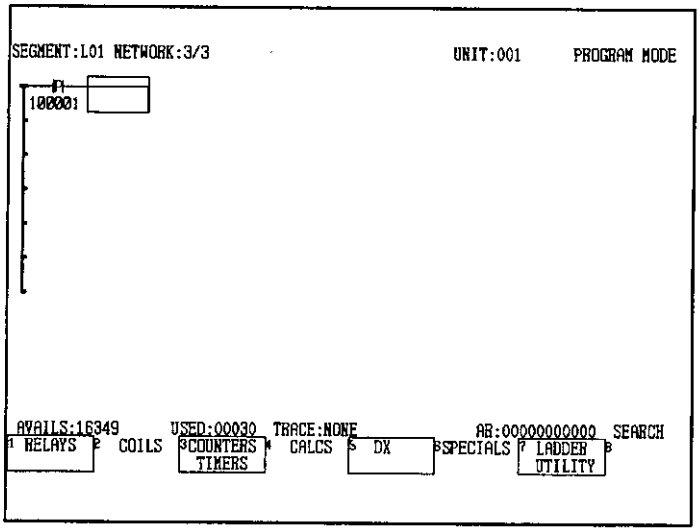
(3) Move the cursor to the location of the ADD instruction.



(4) Press the **Delete** Key and delete the ADD instruction.



(5) Press the [DIV] Key.

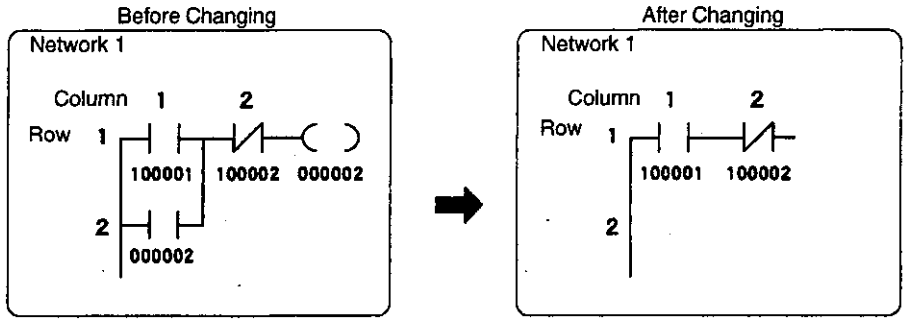


Note Position the cursor in the ladder logic area.

INFO Horizontal short circuits can also be input using the variable function keys.

4.1.7 Deleting Elements

1) The following example is used to show how to delete elements.

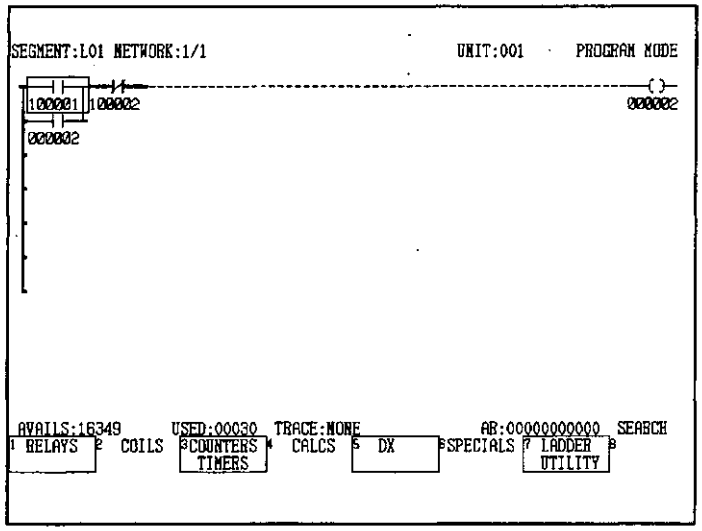


2) Use the following procedure to delete elements.

a) Perform the Attach Operation. (This step is not required if program storage is already possible.)

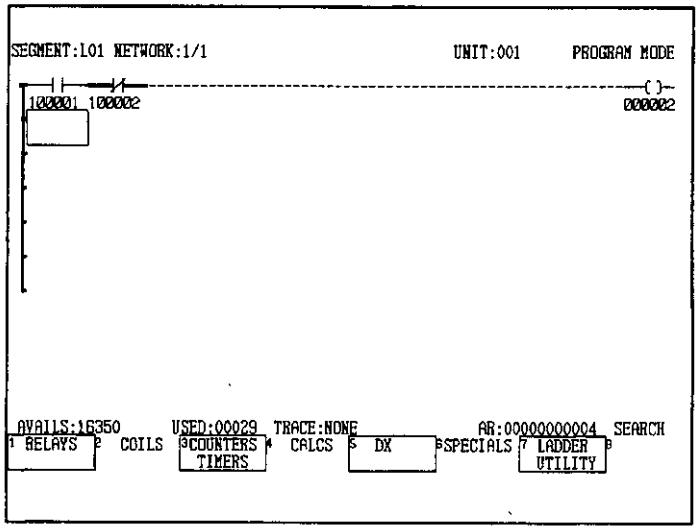
b) Enter **1** in the AR and press the **ERASE/GET** Key.

c) Display network 1. (This step can be omitted if the network is already displayed.)

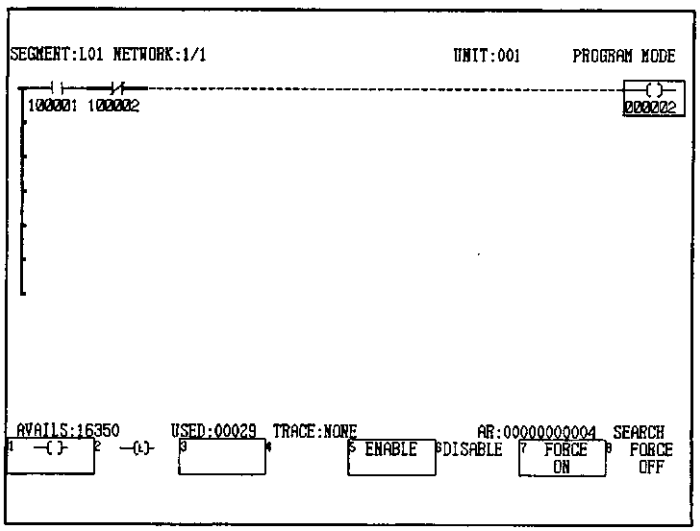


d) To delete a vertical short circuit, press the **Shift** + [↕] Keys.

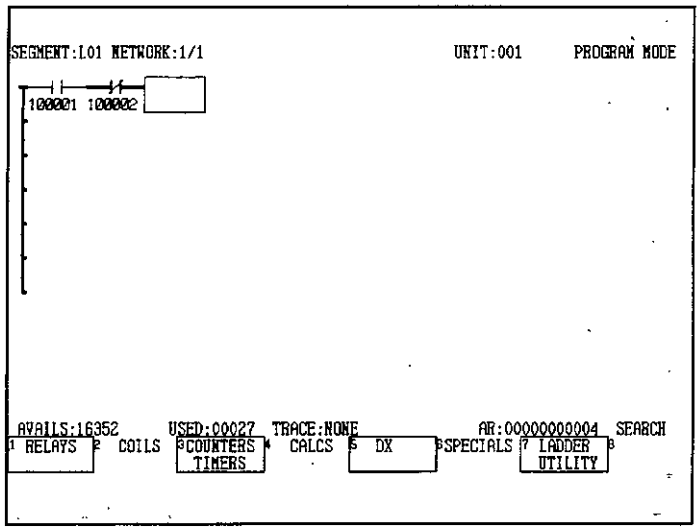
e) Then move the cursor down and press the **Delete** Key.



f) To delete the coil 000002, move the cursor to the position of 000002.



g) Press the **Delete** Key.



Note Position the cursor in the ladder logic area.

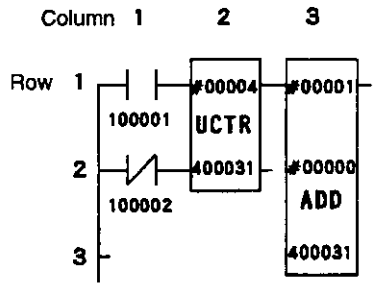
INFO Horizontal short circuits can also be input and deleted using the variable function keys.

4.2 Inputting Mnemonics

This section describes the procedure used to input **mnemonics** into the ladder logic program.

1) Instruction mnemonics can be input for elements, such as timers, counters, and various processing instructions. When mnemonics are used, the procedure for inputting ladder logic programs is quicker than using the procedure described in *4.1 Inputting Programs*.

Example:



INFO **• Mnemonics**

Refer to the tables of instructions in the following manual for mnemonics.

4-1 Instructions in
MEMOCON GL120, GL130 Software User's Manual, Vol. 1 (SIEZ-C825-20.11)

2) Use the following procedure to input mnemonics.

a) Perform the Attach Operation. (This step is not required if program storage is already possible.)

b) Press the **START NEXT** Key.

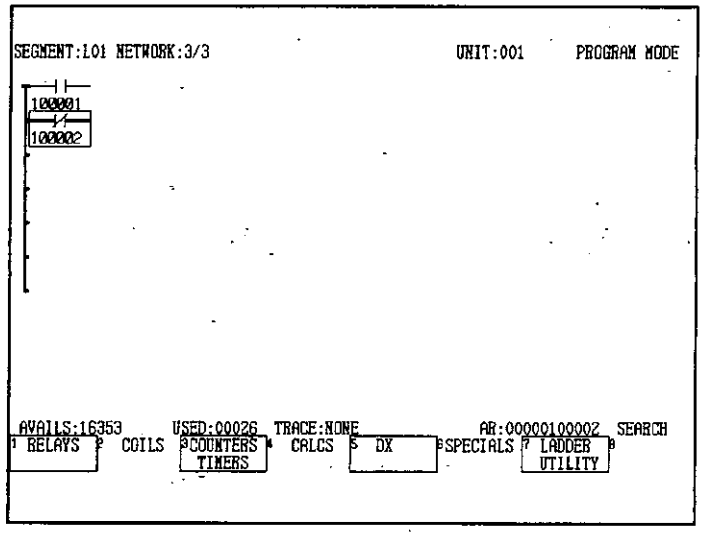
TERMS **Mnemonics**

Mnemonics are abbreviations in machine language that are easier to remember and simplify operations. For the GL120 and GL130, every processing instruction is allocated a mnemonic up to 4 letters long.

Example: DIVISION = DIV

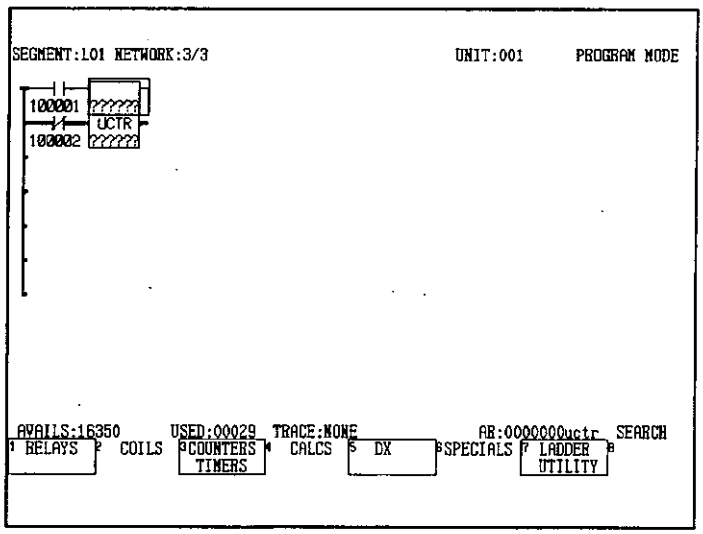
CHECKSUM = CKSM

c) Input an N.O. contact (**100001** in this example) and an N.C. contact (**100002** in this example). (The input procedure is omitted here.)

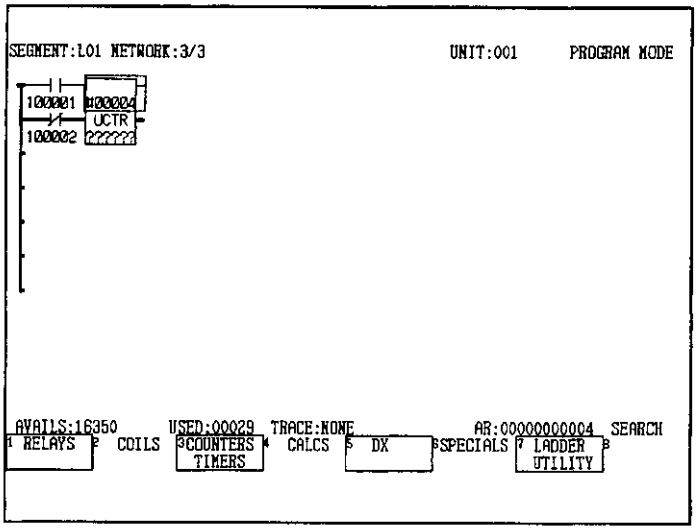


d) An UP COUNTER will be input next. Move the cursor to the right of the N.O contact.

e) Enter **UCTR** in the AR and press the **Enter** Key.

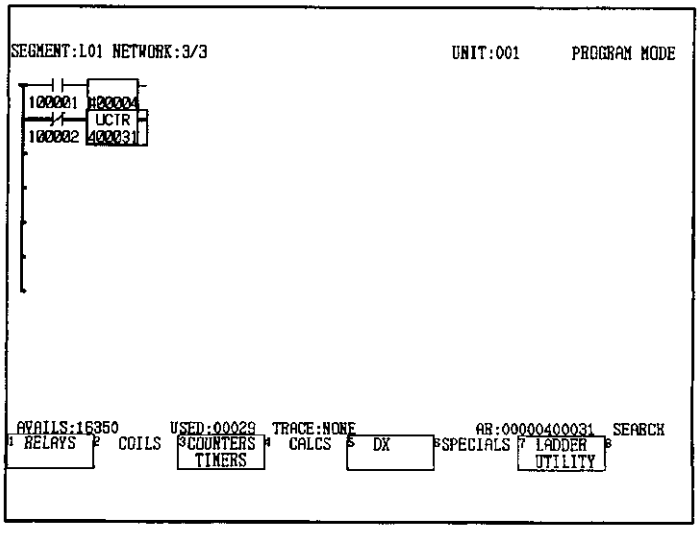


f) Enter **4** in the AR and press the **Enter** Key.



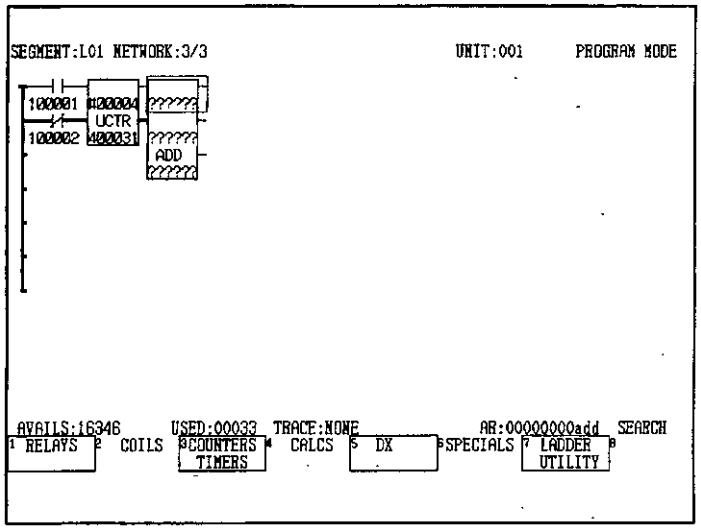
g) Move the cursor down.

h) Enter **400031** in the AR and press the **Enter** Key.

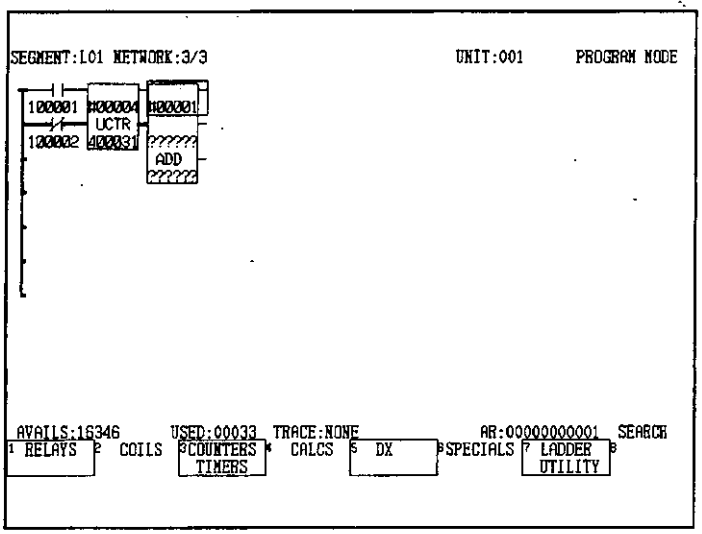


i) Move the cursor to the upper right.

j) Enter **ADD** in the AR and press the **Enter** Key.

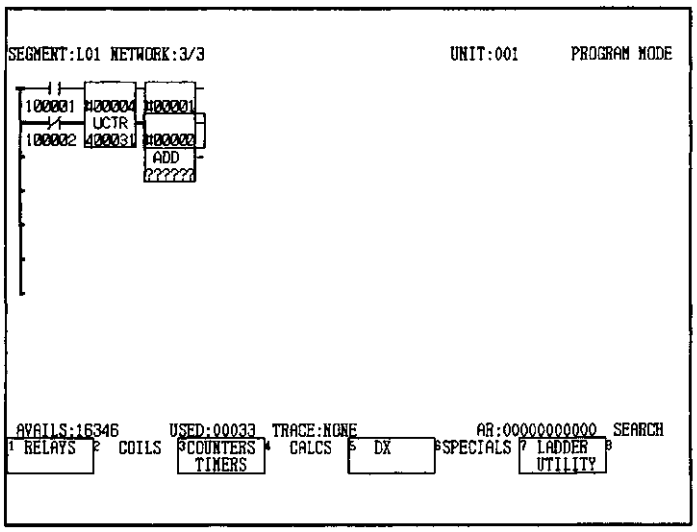


k) Enter **1** in the AR and press the **Enter** Key.



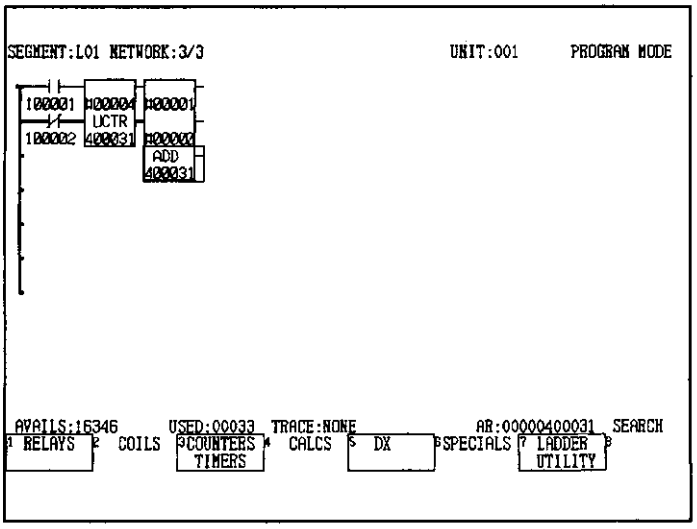
l) Move the cursor down.

m) Enter **0** in the AR and press the **Enter** Key.



n) Move the cursor down.

o) Enter **400031** in the AR and press the **Enter** Key.



Note (1) Position the cursor in the ladder logic area.

(2) Input timers and counters in rows 1 to 6.

(3) Input arithmetic elements in rows 1 to 5.

INFO Relays and coils can also be input using the variable function keys.

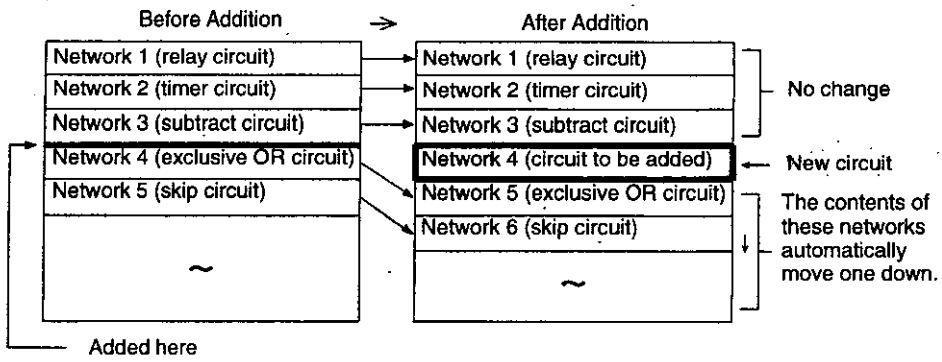
4.3 Network Operations

This section describes the procedures used to edit networks, such as adding, deleting, and displaying networks.

4.3.1 Adding Networks

1) The following example is used to show how to add a network.

In the following example, a new network is added after network 3.

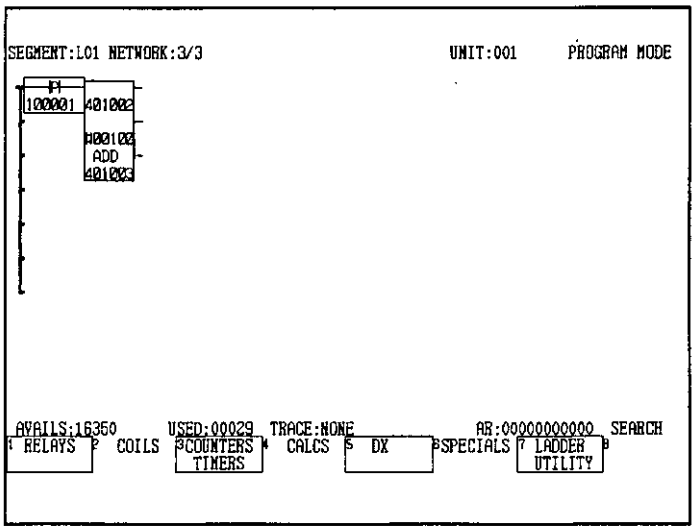


2) Use the following procedure to add a new network.

a) Perform the Attach Operation. (This step is not required if program storage is already possible.)

b) Enter **3** in the AR and press the **ERASE/GET** Key.

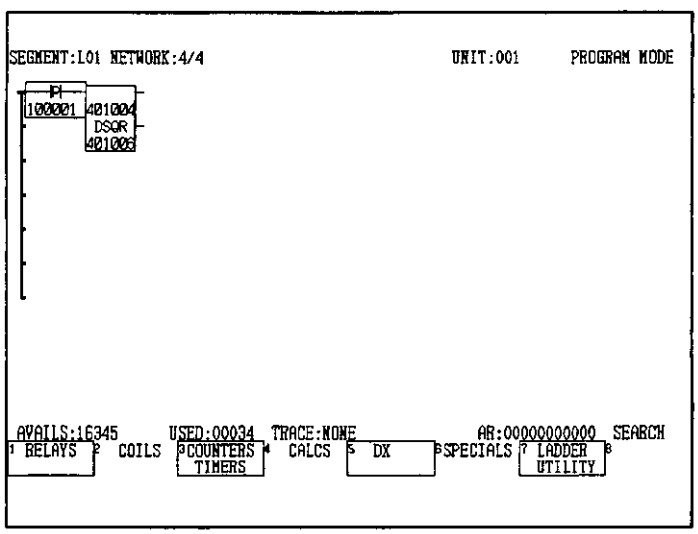
The contents of network 3 will be displayed.



c) Press the **START NEXT** Key.

A new network 4 will be created.

d) Input the target circuit in the network.



Note (1) To add a network, simply display the network before the network to be added and press the **START NEXT** Key.

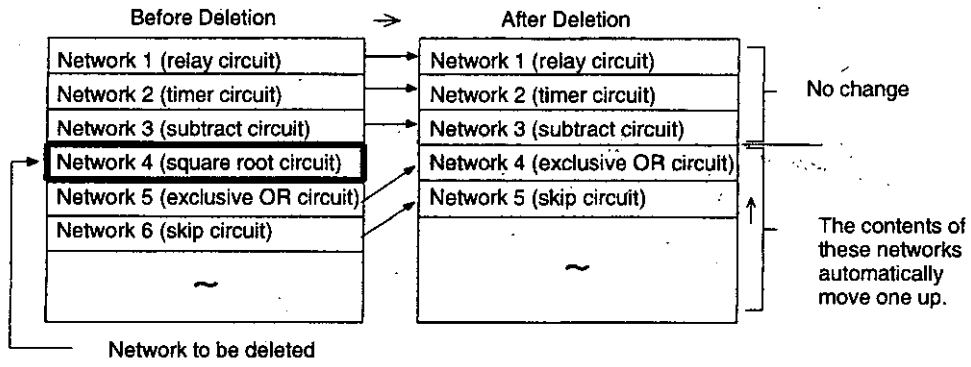
(2) Position the cursor in the ladder logic area.

INFO Press the **Shift** + **ERASE/GET** Keys to add a new network 1, and when network 0 is displayed, press the **START NEXT** Key. A new network 1 will be created.

4.3.2 Deleting Networks

1) The following example is used to show how to delete a network.

In the following example, the contents of network 4 (square root circuit) is deleted.

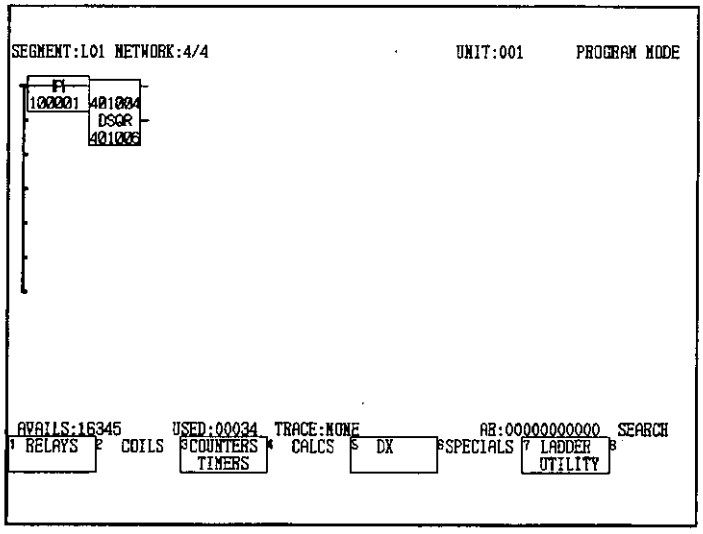


2) Use the following procedure to delete a network.

a) Perform the Attach Operation. (This step is not required if program storage is already possible.)

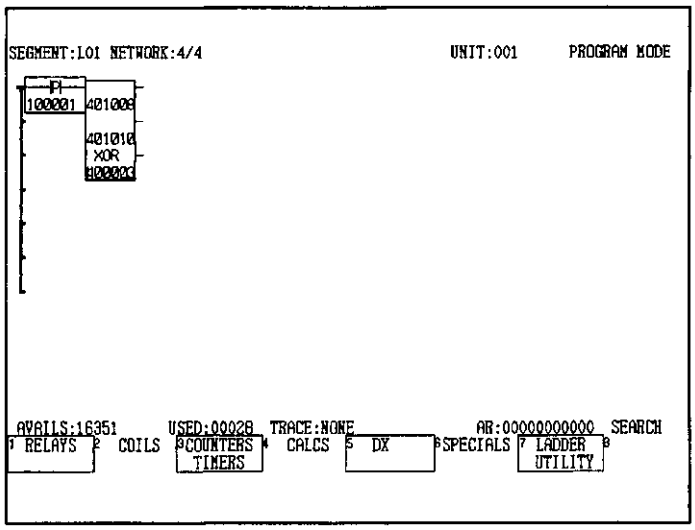
b) Enter **4** in the AR and press the **ERASE/GET** Key.

The contents of network 4 will be displayed.



c) Press the **Shift** + **Delete** Keys.

The next network after the deleted one will be displayed.



Note (1) To delete a network, simply display the network to be deleted and press the **Shift** + **Delete** Keys.

(2) Position the cursor in the ladder logic area.

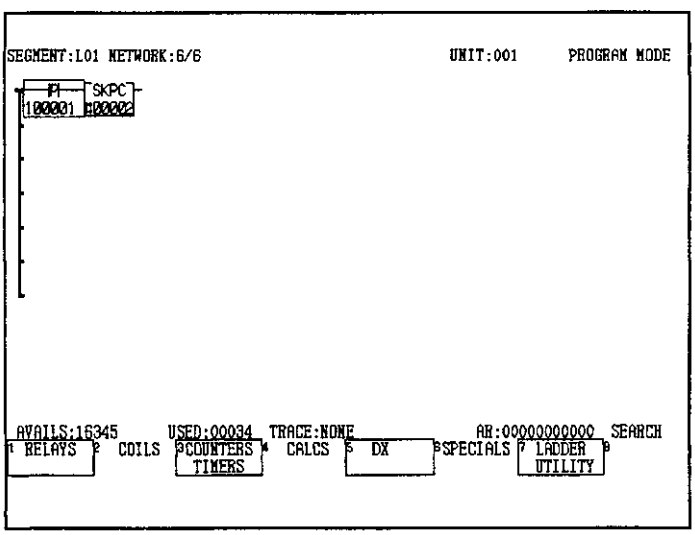
4.3.3 Displaying Networks

1) Any network can be displayed using this operation.

2) Use the following procedure to display any network.

a) Perform the Attach Operation. (This step is not required if program storage is already possible.)

b) Enter the number of the network to be displayed in the AR and press the **ERASE/GET** Key. (In the following example, **6** is entered in the AR to display network 6.)



Note Position the cursor in the ladder logic area.

INFO If a numeric value is set that is larger than the highest network number when the ERASE/GET Key is pressed, an error message will be displayed saying that the network number is too large and the highest existing network number will be given.

4.3.4 Displaying Network Number Sequence

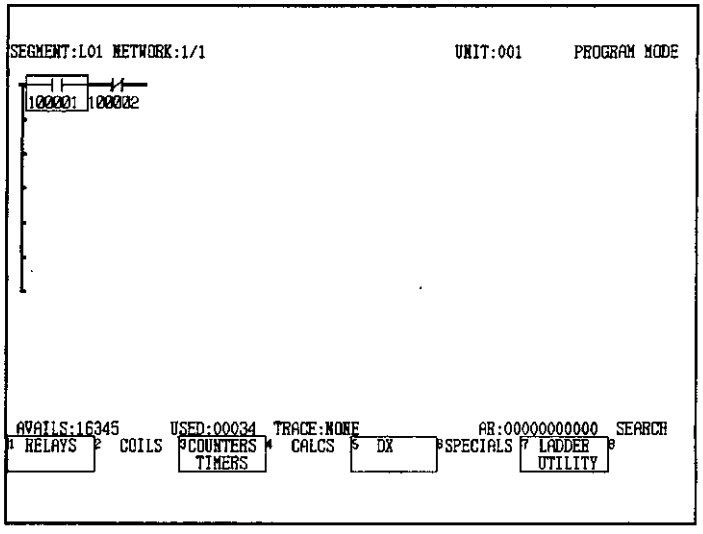
1) Networks can be displayed in order of their network numbers. The network is displayed that is either before or after the currently displayed network.

Display the next network: **Page Down** Key
Display the previous network: **Page Up** Key

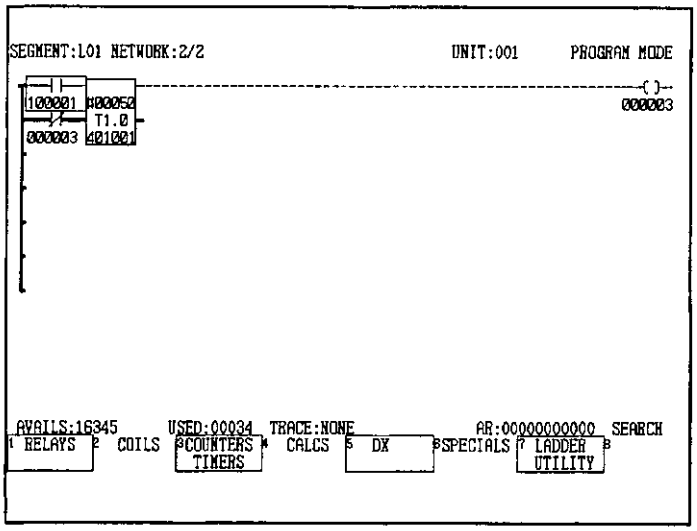
2) Use the following procedure to display the networks in order of network numbers.

a) Perform the Attach Operation. (This step is not required if program storage is already possible.)

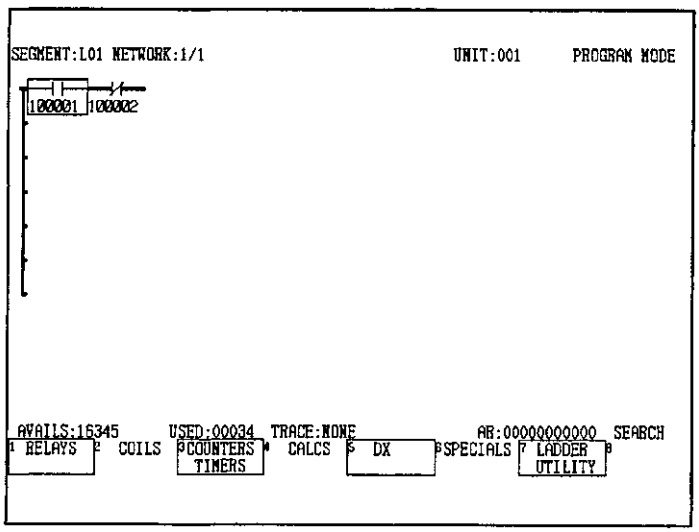
b) Display any network.



c) Press the **Page Down** Key to display the next network in the sequence.



d) Press the **Page Up** Key to display the previous network in the sequence.



Note Position the cursor in the ladder logic area.

INFO The power flow is only displayed when the GL120 or GL130 is running. Even if the GL120 or GL130 is running, however, the power flow of any network that has been skipped is not displayed.

4.3.5 Displaying Power Flow

1) The power flow status of the relays and coils can be displayed with this operation. All contacts that are ON will be highlighted regardless of whether there is power flow from the power rail. Relays or coils that are disabled OFF will not be highlighted.

2) Use the following procedure to display the power flow.

   a) Perform the Attach Operation. (This step is not required if program storage is already possible.)

   b) Display any network.

TERMS **Skip**

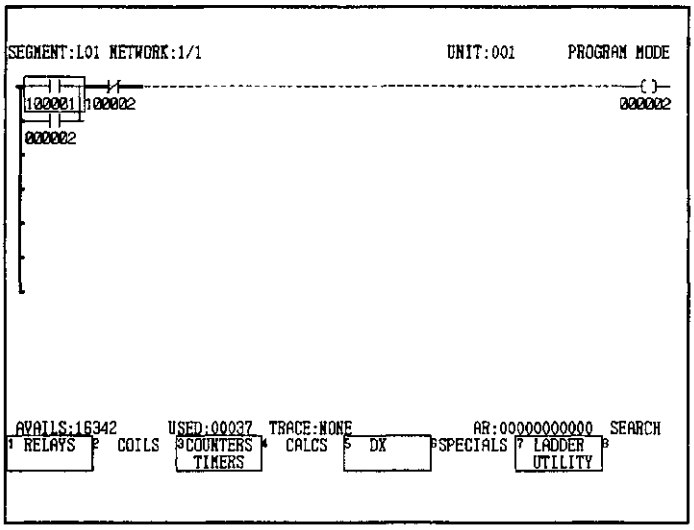
"Skip" means to suspend solving a network in the program. No ladder logic instructions inside a network that is being skipped will be solved. A specified network can be skipped using ladder logic instructions or using the MEMOSOFT. Networks can be skipped in the following 3 ways:

(1) Use the Skip Instructions SKPC and SKPR. The specified number of networks will be skipped.

(2) Set solving the high-speed segment to "OFF" on the Segment Scheduler Screen in MEMOSOFT to skip the high-speed segment.

(3) Set solving a normal segment to "Conditional" on the Segment Scheduler Screen in MEMOSOFT. If the set condition is not satisfied, the specified normal segment will be skipped.

Bold lines will indicate elements with power flow. Thin lines will indicate elements with no power flow.



Reference Data Operations

5

This chapter describes operations using reference data, including the methods used for displaying and editing the data.

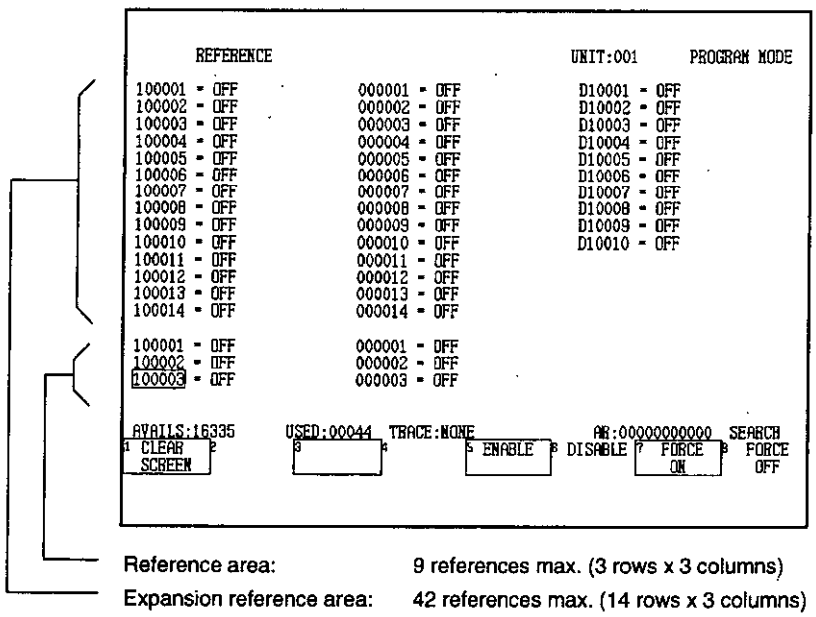
5.1 Reference Display Operations

This section provides the basic operations for displaying reference data, including displaying data in sequence and deleting data.

5.1.1 Displaying Reference Data

1) The operations for displaying the status of references, such as coils, input relays, and link coils are described here.

The following screen shows a display of the expansion reference area.



Reference area: 9 references max. (3 rows x 3 columns)
Expansion reference area: 42 references max. (14 rows x 3 columns)

2) Displaying Reference Data Status

Use the following procedure to display the status of reference data.

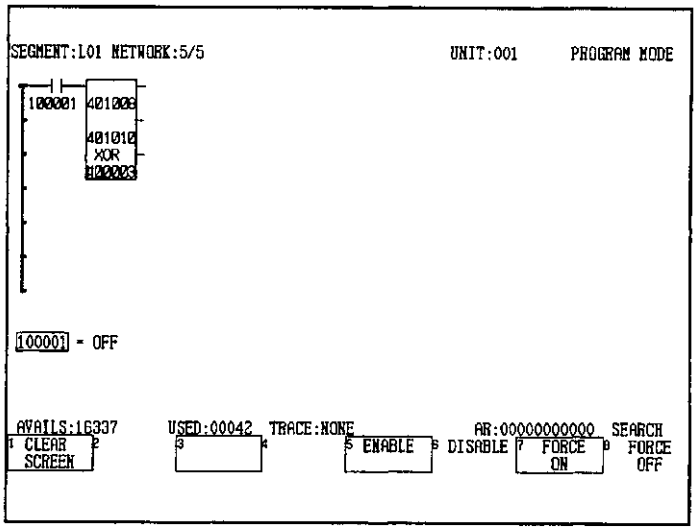
a) Perform the Attach Operation. (This step is not required if program storage is already possible.)

b) Display the network.

c) Move the cursor to the reference area. The size of the cursor in the reference area is smaller than the cursor in the ladder logic area.

d) Enter **100001** in the AR and press the **ERASE/GET** Key.

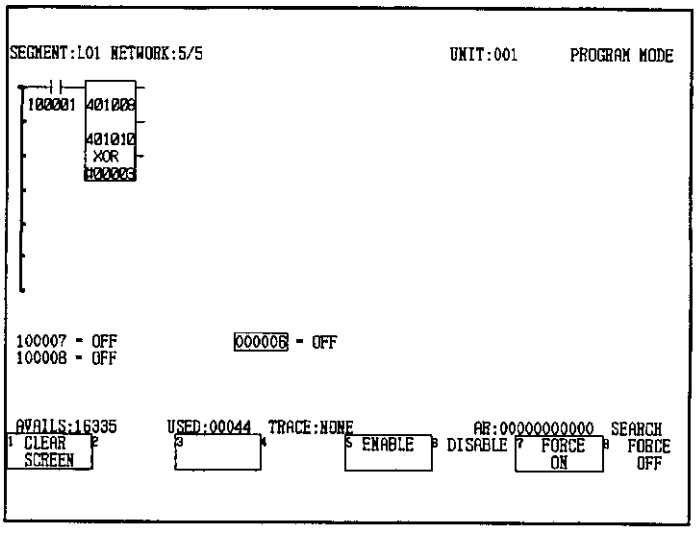
The reference data will be displayed.



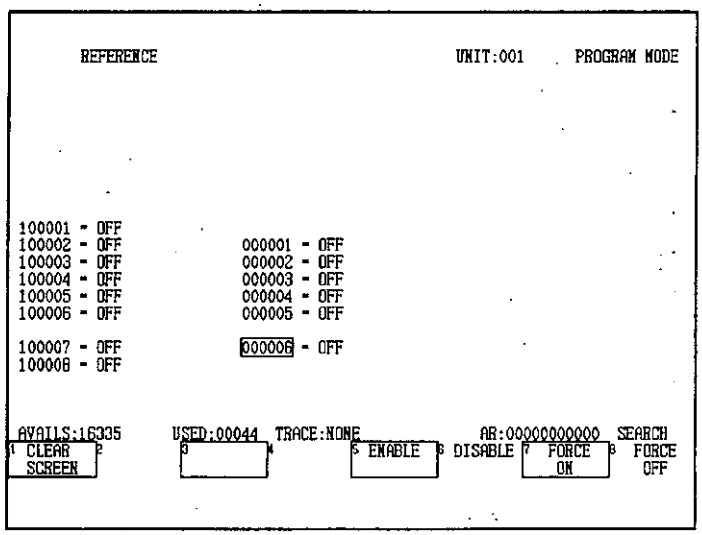
3) Displaying the Expansion Reference Area

The expansion reference area (14 rows x 3 columns) is used to display more data than can be displayed in the reference area (3 rows x 3 columns).

a) When the ladder logic program is displayed, press the **CHANGE SCREEN** Key.



The expansion reference area will be displayed.



4) Displaying Reference Data in Sequence

Reference data can be displayed in sequence from a specified reference number, as shown in the following example. The Page Down and Page Up Keys are used to display reference data in sequence.

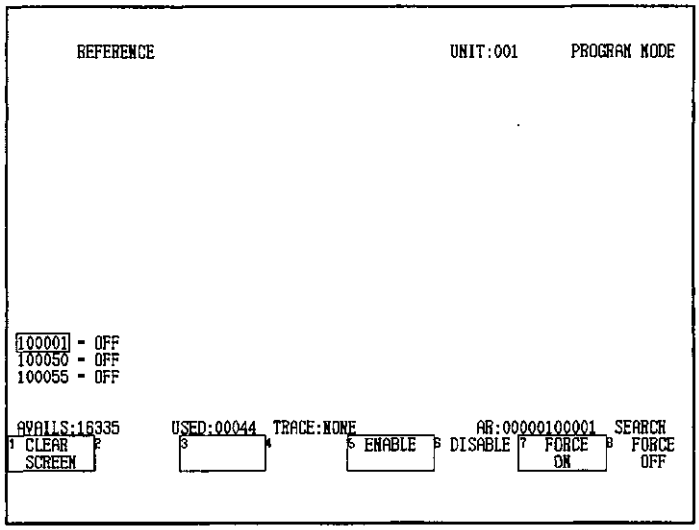
Page Down Key:
Displays the next reference after the specified reference number. The current references are also displayed.

Page Up Key:
Displays the previous references before the specified reference number. The current references are also displayed.

a) Use the following procedure to display references 100001 to 100015 in a series using the Page Down Key.

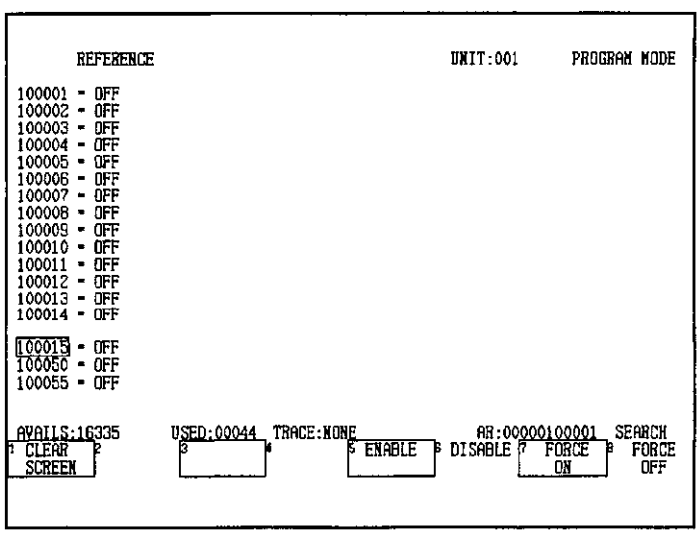
(1) Display the expansion reference area.

(2) Enter **100001** in the AR and press the **ERASE/GET** Key.



(3) Select **100001** using the Cursor Keys, and press the **Page Down** Key 14 times.

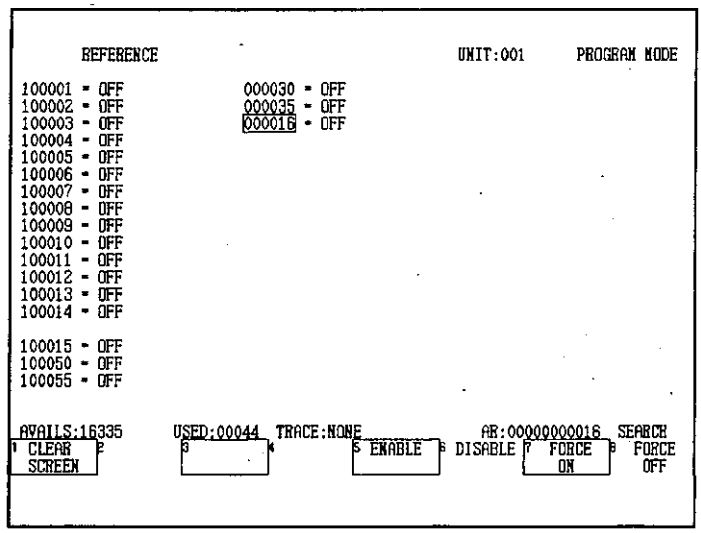
Each reference will be displayed in sequence. The values of the references below the cursor will not change.



b) Use the following procedure to display references 000002 to 000016 in a series using the Page Up Key.

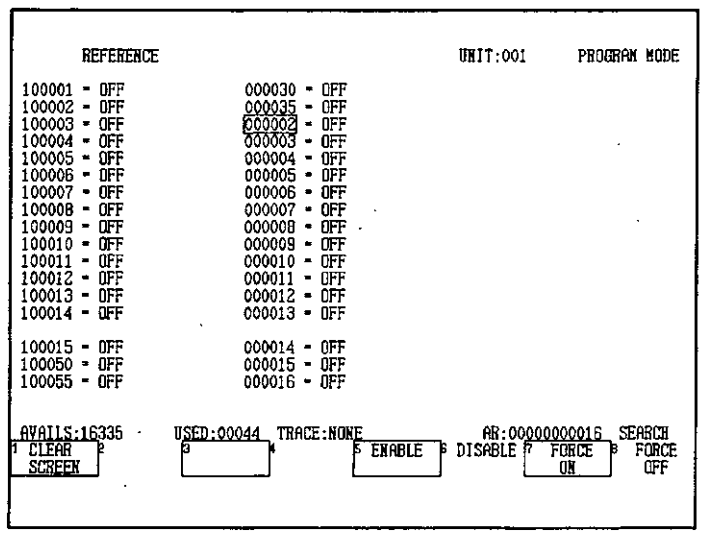
(1) Display the expansion reference area.

(2) Enter **16** in the AR and press the **ERASE/GET** Key.



(3) Select **000016** using the Cursor Keys, and press the **Page Up** Key 14 times.

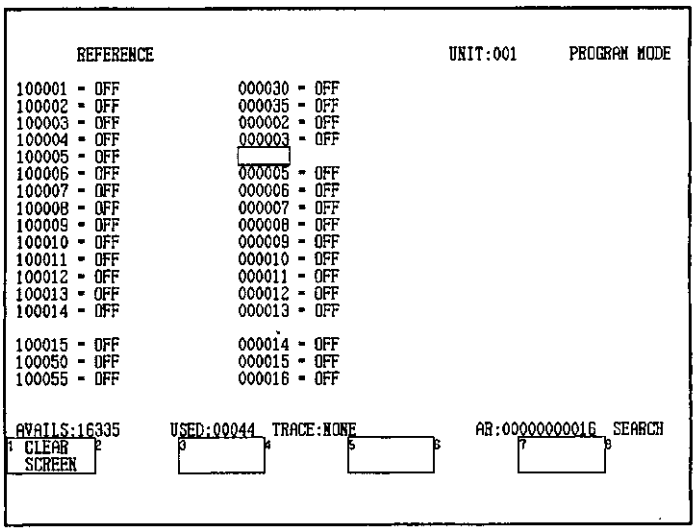
Each reference will be displayed in sequence. The values of the references above the cursor will not change.



5) Deleting Reference Data

To delete reference data that is displayed, select the reference to be deleted using the Cursor Keys and press the **Shift** + **ERASE/GET** Keys.

References cannot be deleted with the Delete Key.

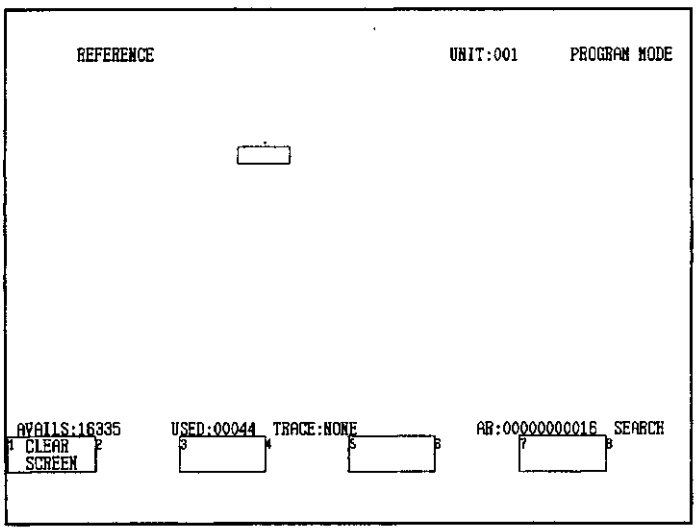


INFO To rewrite references, select the reference with the Cursor Keys, enter the new reference in the AR and press the **ERASE/GET** Key. The reference will be overwritten with the new reference.

6) Deleting All References

To delete all the reference data in the reference area and expansion reference area, press **F1 (CLEAR SCREEN)**.

References cannot be deleted with the Delete Key.



Note (1) Be sure to position the cursor in the reference area or expansion reference area.

(2) Press the **Tab** Key to move from the ladder logic area to the reference area.

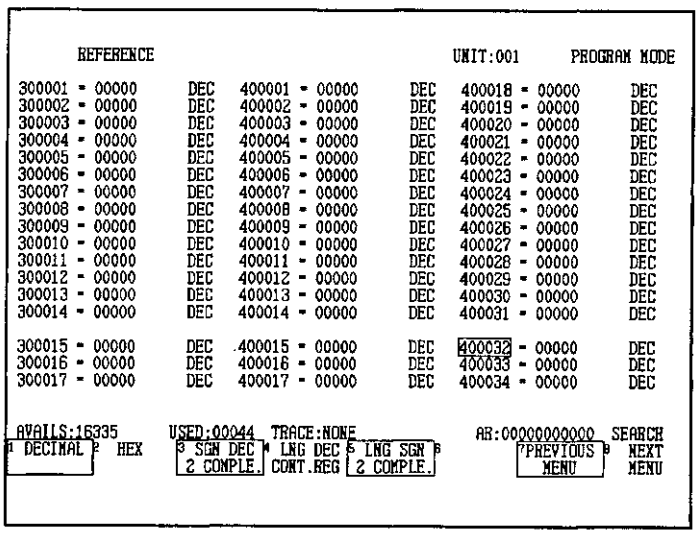
In Monitor Mode, the labels ENABLE, DISABLE, FORCE ON, and FORCE OFF will not be displayed in the label area.

5.2 Editing Operations

This section describes the how to edit reference data, including procedures for switching the display mode and disable operations.

5.2.1 Displaying Register Contents

1) This operation displays the contents of an input register or a holding (output) register. The contents of the register can be displayed in either decimal, hexadecimal, binary, or ASCII. Display in signed decimal or double precision is also possible.

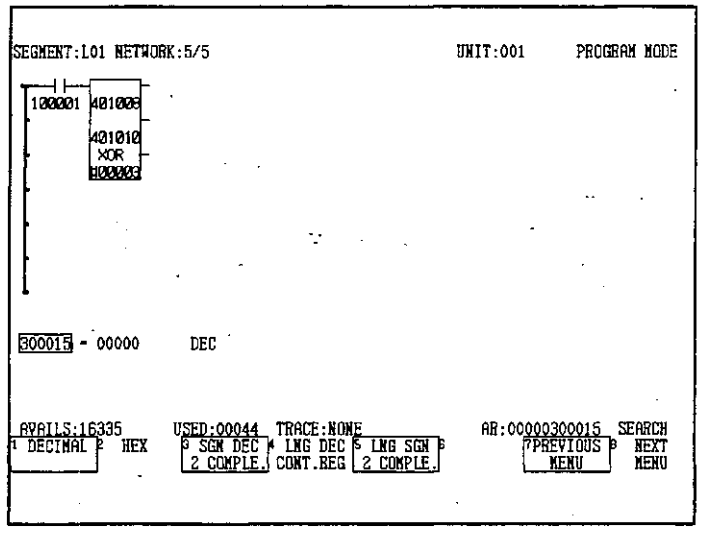


2) Use the following procedure to display the contents of the register.

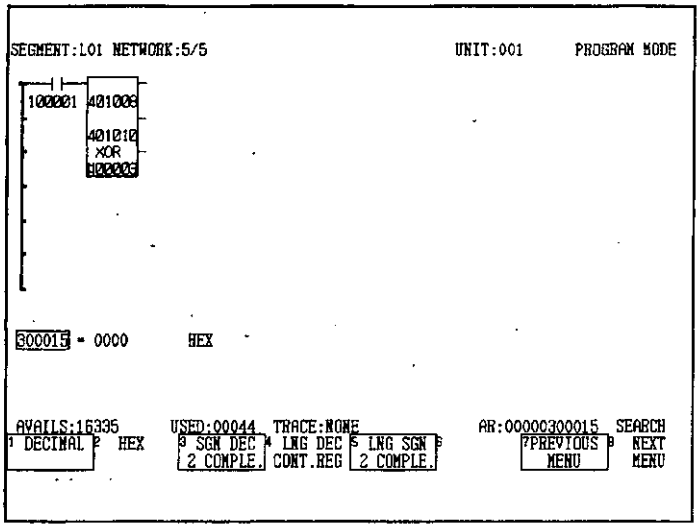
a) Perform the Attach Operation. (This step is not required if program storage is already possible.)

b) Display a network.

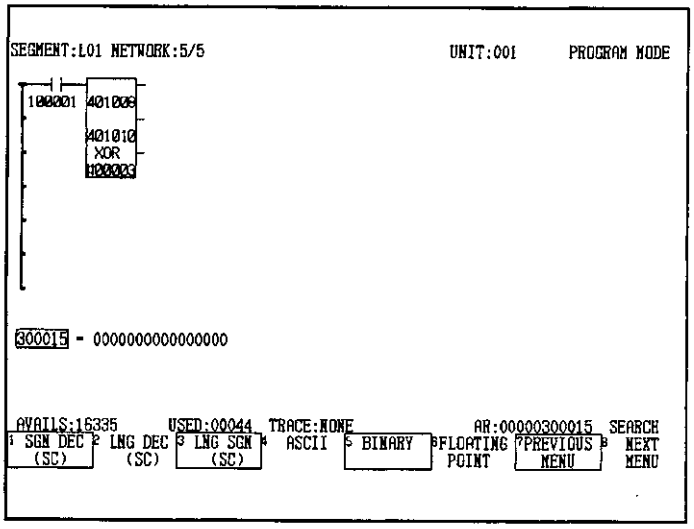
c) Move the cursor to the reference area, enter **300015** in the AR, and press the **ERASE/ GET** Key. (Initially, the display will be in decimal format.)



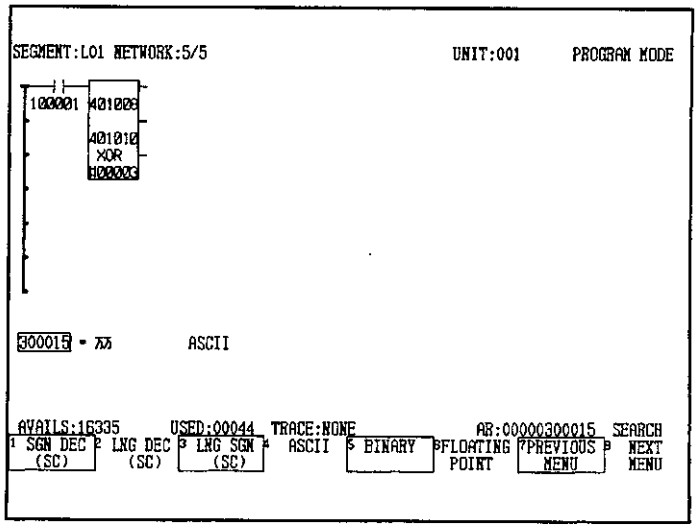
d) To display in hexadecimal format, press **F2 (HEX)**.



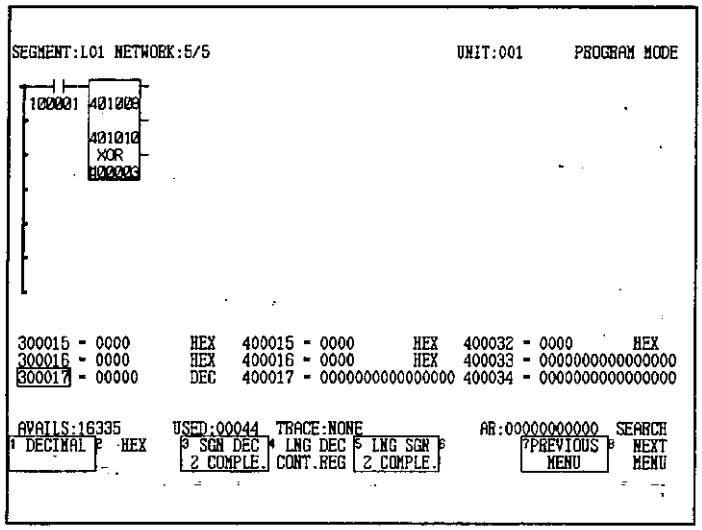
e) To display in binary format, press **F5 (BINARY)**.



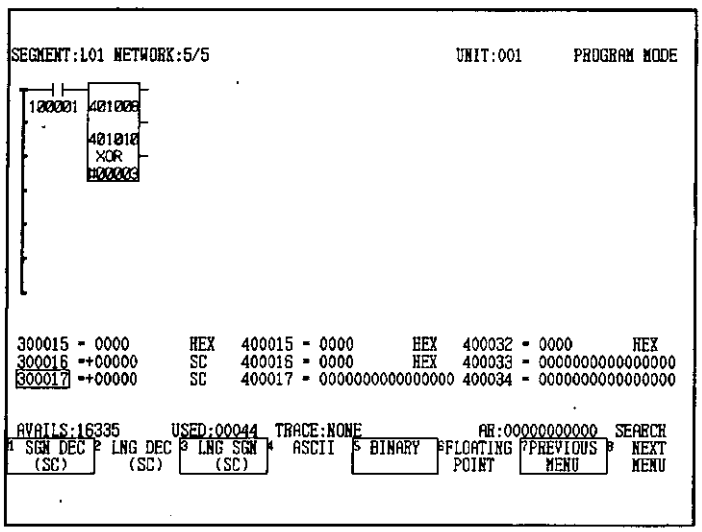
f) To display in ASCII format, press **F4 (ASCII)**. If ASCII characters cannot be displayed, a message will be displayed indicating that ASCII display is not possible.



g) To display in decimal format, press **F1 (DECIMAL)**.



h) To display in signed decimal format, press **F1 (SGN DEC (SC))**.



Note Position the cursor in the reference area or expansion reference area.

INFO

1) The CHANGE SCREEN Key toggles the display. (Using this key will not erase the data from the display.)

2) The cursor that moves on individual bits, and the labels SET BIT, CLEAR BIT, SET ALL, and CLEAR ALL are displayed only in Program Mode and only when the contents of a holding register is displayed in binary format.

5.2.2 Storing Decimal Data in Holding Registers

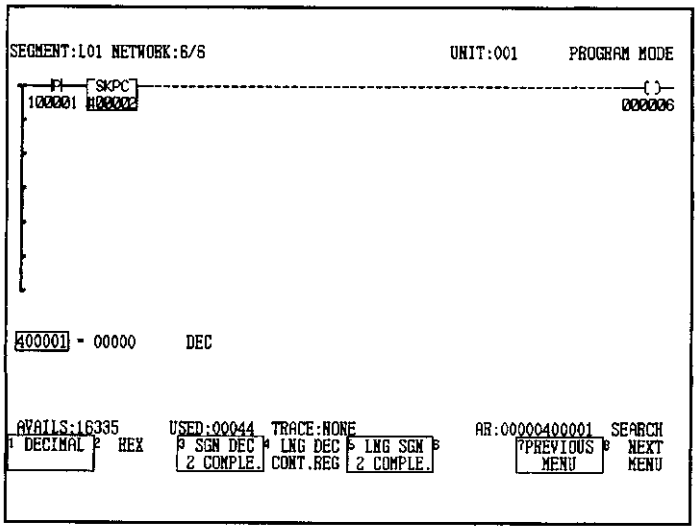
1) This operation stores any numeric value from 00000 to 65535 in a holding (output) register displayed in the reference area or in the expansion reference area.

2) Use the following procedure to store data in decimal format.

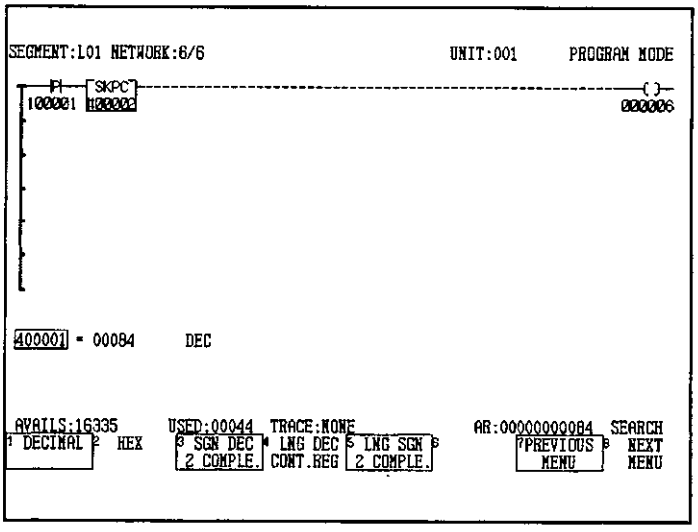
a) Perform the Attach Operation. (This step is not required if program storage is already possible.)

b) Display a network.

c) Move the cursor to the reference area, enter **400001** in the AR, and press the **ERASE/ GET** Key.



d) Enter **84** in the AR and press the **Enter** Key.



e) Move the cursor to the ladder logic area.

Note (1) Position the cursor in the reference area.

(2). Numeric values cannot be stored in input registers from the P120.

5.2.3 Storing Hexadecimal Data in Holding Registers

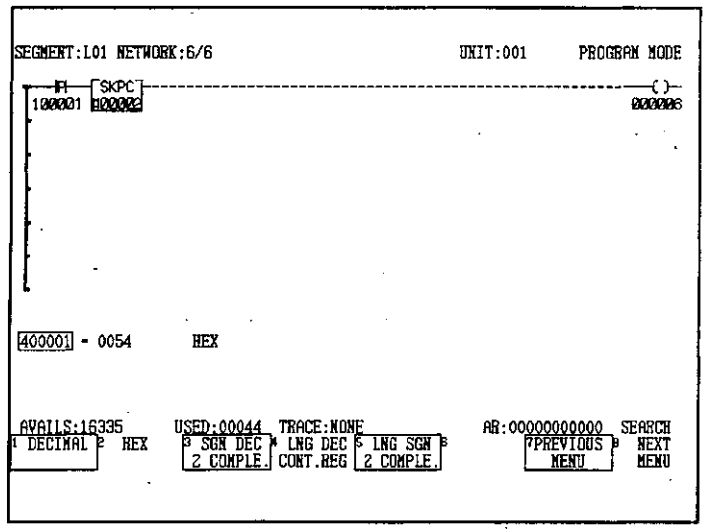
1) This operation stores any numeric value from 0000 to FFFF in any holding (output) register displayed in the reference area or in the expansion reference area.

2) Use the following procedure to store hexadecimal data.

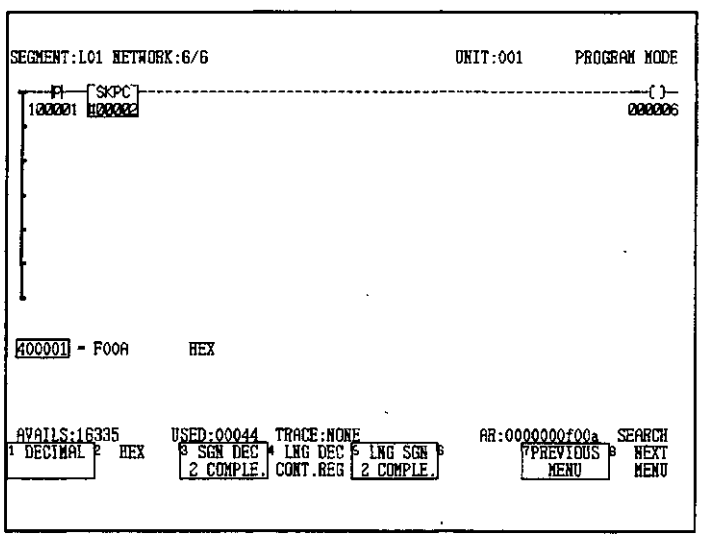
   a) Perform the Attach Operation. (This step is not required if program storage is already possible.)

   b) Display a network.

   c) Press **F2 (HEX).**



   d) Enter **F00A** in the AR and press the **Enter** Key.



e) Move the cursor to the ladder logic area.

Note (1) Position the cursor in the reference area.

(2) Numeric values cannot be stored in input registers from the P120.

5.2.4 Storing Binary Data in Holding Registers

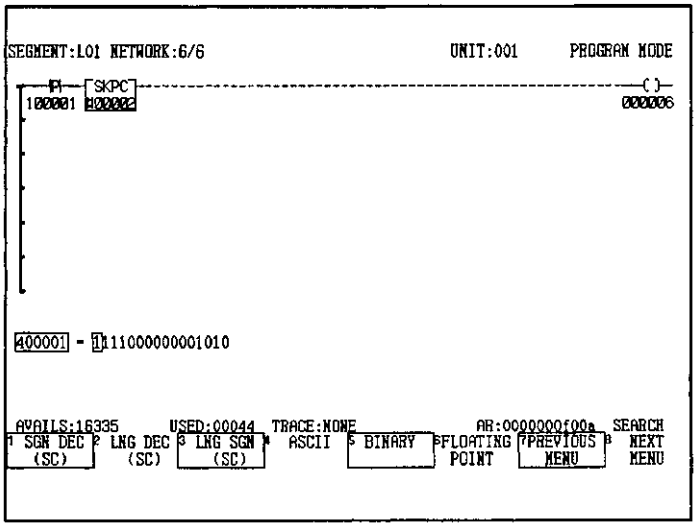
1) This operation stores any numeric value (any 16-bit pattern) in any holding (output) register displayed in the reference area or in the expansion reference area.

2) Use the following procedure to store binary data.

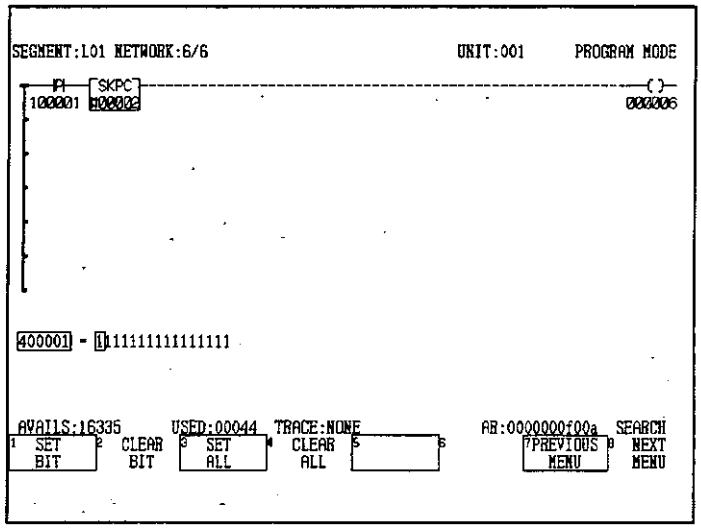
a) Perform the Attach Operation. (This step is not required if program storage is already possible.)

b) Display a network.

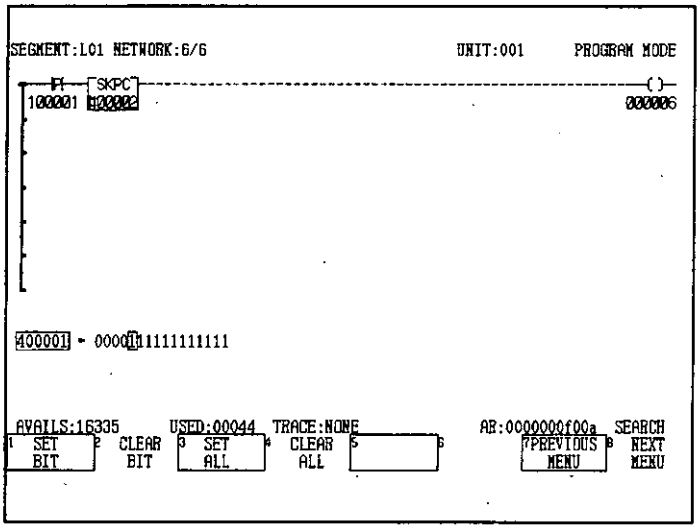
c) Press **F5 (BINARY).**



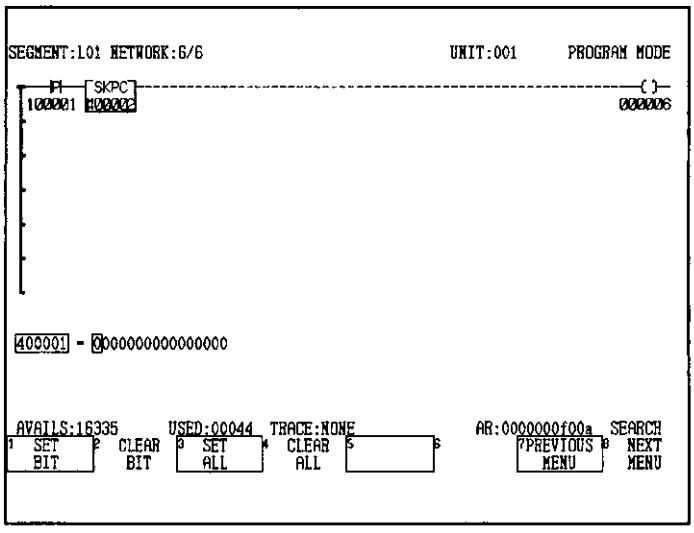
d) Press **F3 (SET ALL)**. All bits will be set to 1.



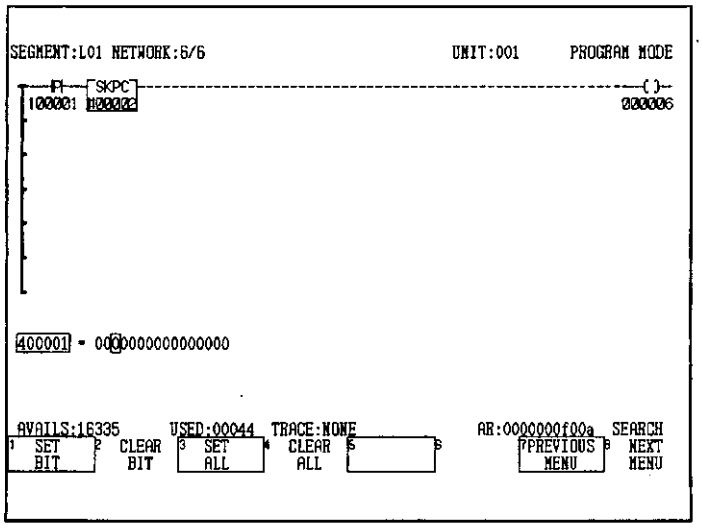
e) Press **F2 (CLEAR BIT)** 4 times. The bits will be cleared and the cursor will move to the right.



f) Press **F4 (CLEAR ALL)**. All bits will be cleared to 0.

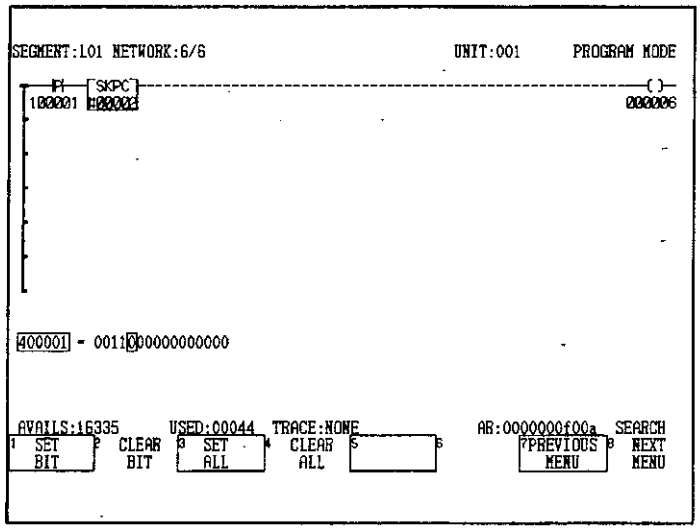


g) Press the **Shift** + **Right Cursor** Keys twice. The small cursor will move two positions to the right.



5

h) Press the **F1 (SET BIT)** twice. The bits will be set and the cursor will move to the right.



i) Move the cursor to the ladder logic area.

Note (1) Position the cursor in the reference area.

(2) Numeric values cannot be stored in input registers from the P120.

5.2.5 Disable Operations

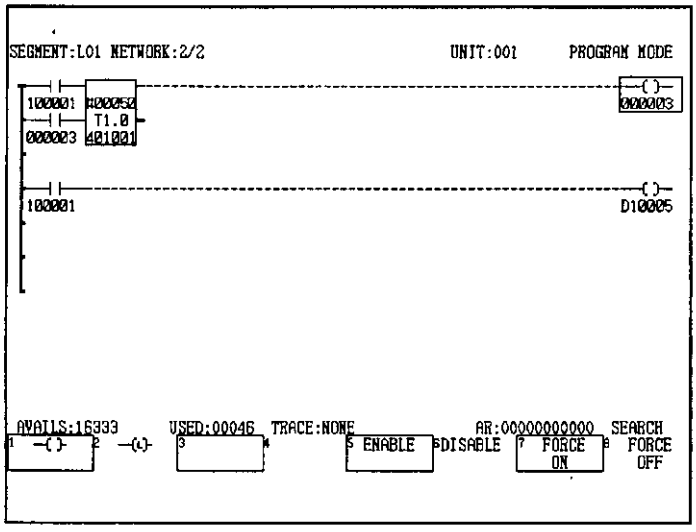
1) Disable operations are used to simulate the operation of a network or for troubleshooting the system.

2) Use the following procedure to disable coils and link coils in the ladder logic area.

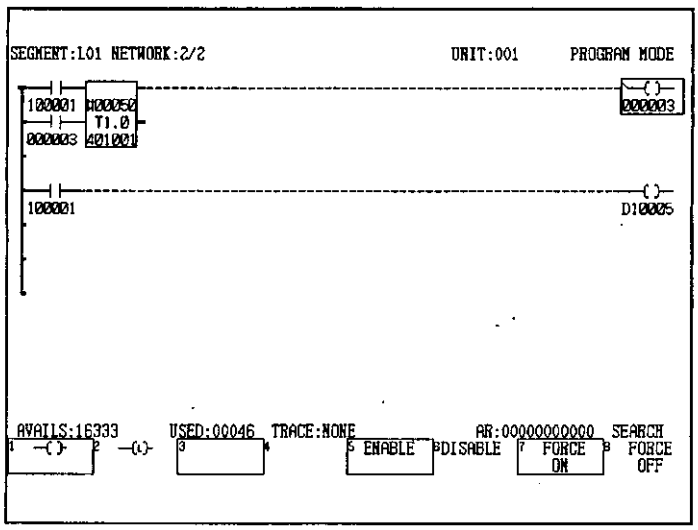
a) Perform the Attach Operation. (This step is not required if program storage is already possible.)

b) Display the network containing the coil to be disabled.

c) Move the cursor to the position of the coil to be disabled.

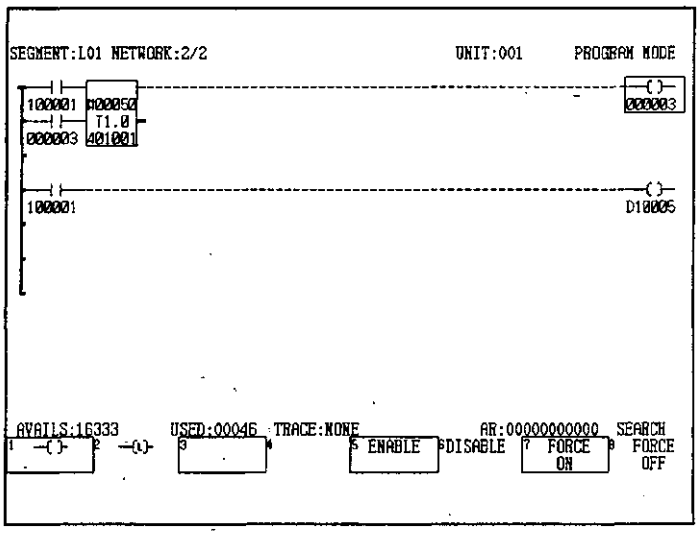


d) Press **F6 (DISABLE)**.



e) To force ON the coil, press **F7 (FORCE ON)**. To force OFF the coil, press **F8 (FORCE OFF)**.

f) Press **F5 (ENABLE)**.



Note (1) Position the cursor in the ladder logic area.

(2) The method described here is valid only for coils that are displayed as ( ) or latch coils that are displayed as (L) in the ladder logic area.

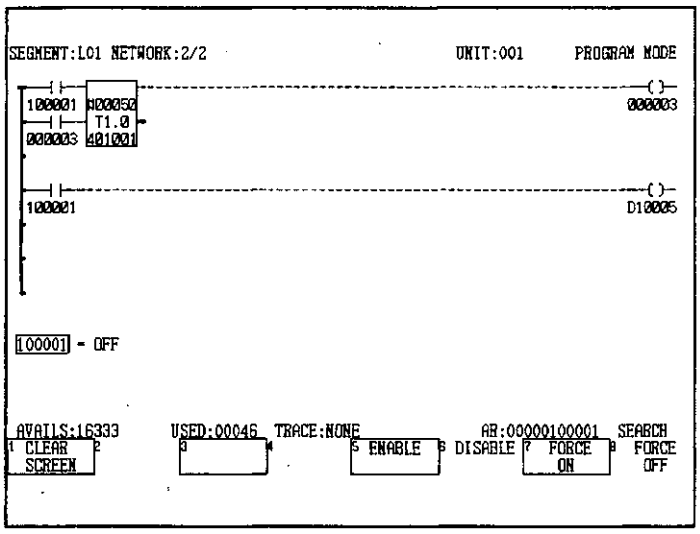
INFO When the disabled coil is no longer required, be sure to enable it again.

3) Use the following procedure to disable items in the reference area.

a) Perform the Attach Operation. (This step is not required if program storage is already possible.)

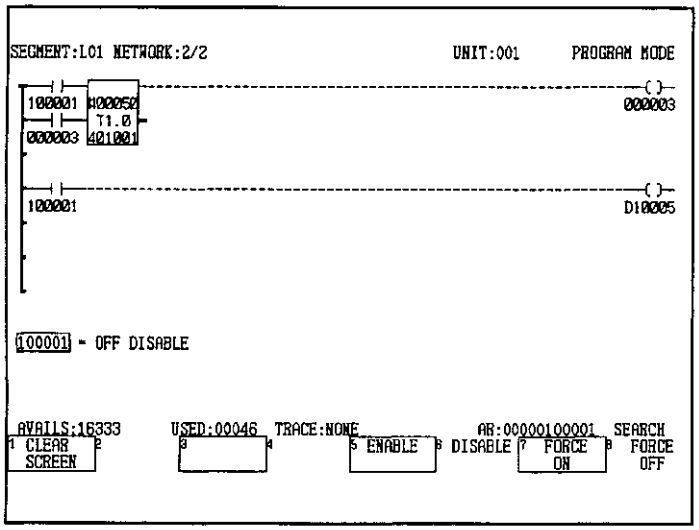
b) Display a network.

c) Move the cursor to the reference area, enter **100001** in the AR, and press the **ERASE/ GET** Key.



d) Press **F6 (DISABLE)**.

e) To force ON the coil, press **F7 (FORCE ON)**. To force OFF the coil, press **F8 (FORCE OFF)**.



f) Press **F5 (ENABLE)**.

Note (1) Position the cursor in the reference area or expansion reference area.

(2) When a coil is used as the destination for a data transfer function, be sure to perform the Disable Operation only after confirming that the data transfer function will not be executed. Although data transfers have priority most of the time, the disabled status will have priority the moment the coil is disabled or the moment the coil is turned ON or OFF in the disabled state.

INFO When a disabled coil or input relay is no longer required, be sure to enable it again.

MC Module Operations

6

This chapter describes the operations used for editing the parameters, programs, and point tables of MC20 Modules and the parameters of MC10 Modules.

6.1 Editing MC20 Module Parameters

This section provides details of the operations used to edit the parameters of MC20 Modules.

6.1.1 Displaying MC20 Module Parameters

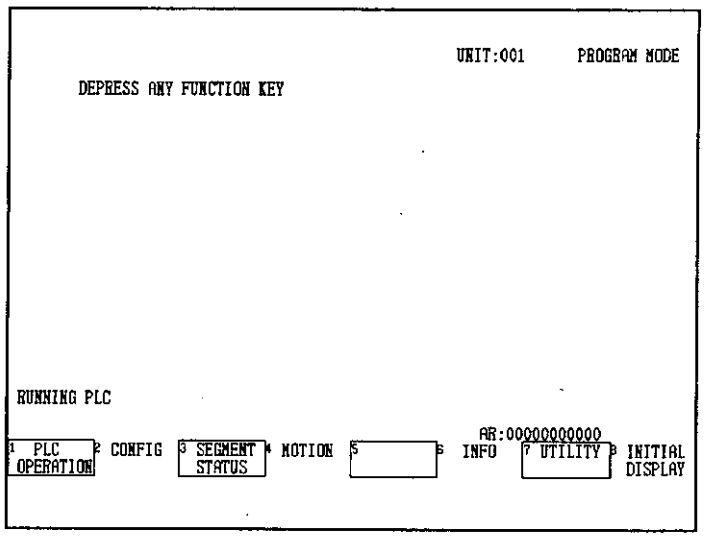
1) The operation used to display the parameters of MC20 Modules is described here.

INFO Refer to the following manual for information on parameters for MC20 Modules:

- *MEMOCON GL120, GL130 Motion Module MC20 Software User's Manual (SIEZ-C825-20.52)*

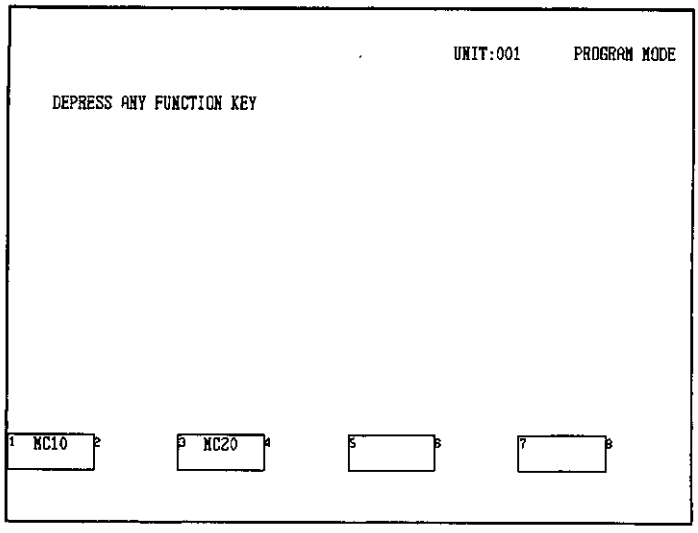
2) Use the following procedure to display the parameters of MC20 Modules.

a) Press **F4 (MOTION)** from the Supervisory Screen.



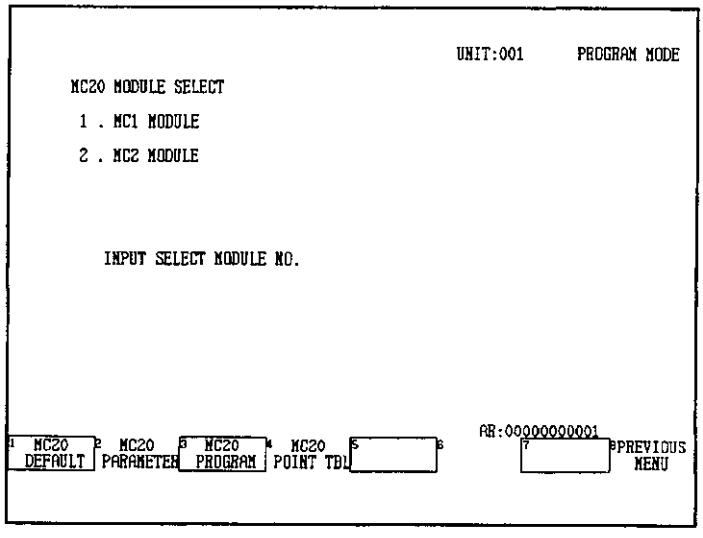
The MC Module Model Selection Screen will be displayed.

b) Press **F3 (MC20)**.



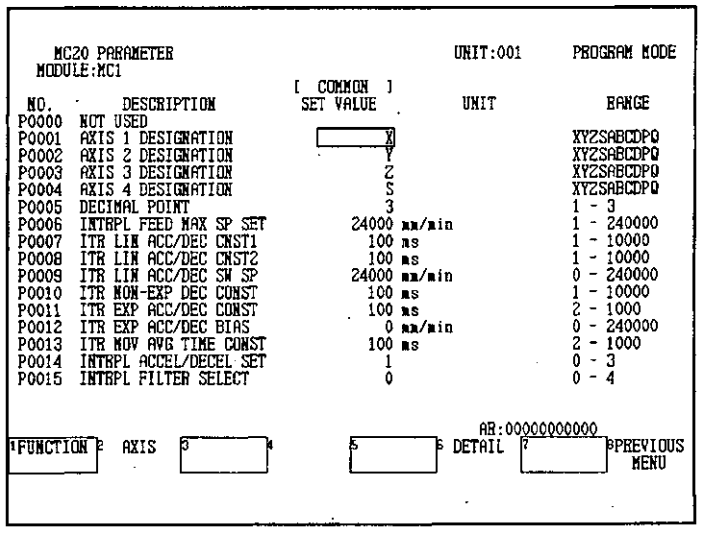
The MC20 Module Screen will be displayed.

c) Enter the Module number in the AR and press **F2 (MC20 PARAMETER)**.



The parameters of the specified MC20 Module will be displayed.

d) Move the cursor using the **Up** or **Down Cursor** Key.



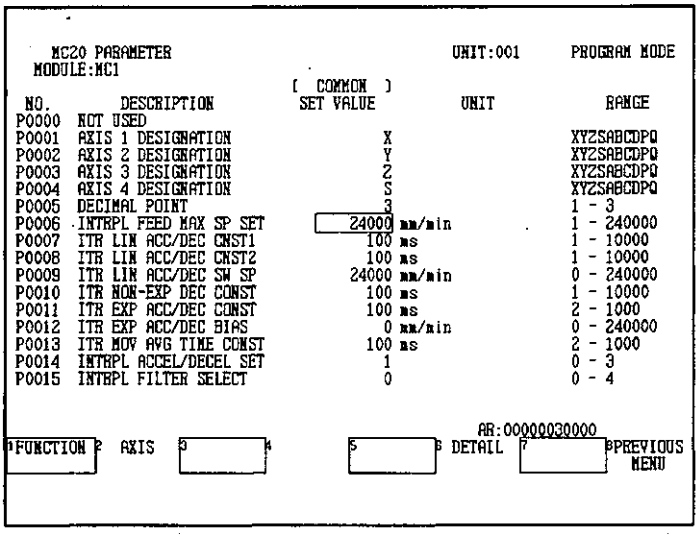
6.1.2 Editing MC20 Module Parameters

1) Parameters that require changes can be basically edited by moving the cursor to the parameter data to be edited and entering the numeric value.

2) Use the following procedure to edit the MC20 Module parameters.

a) Move the cursor to the position of the parameter to be edited and enter the new numeric value.

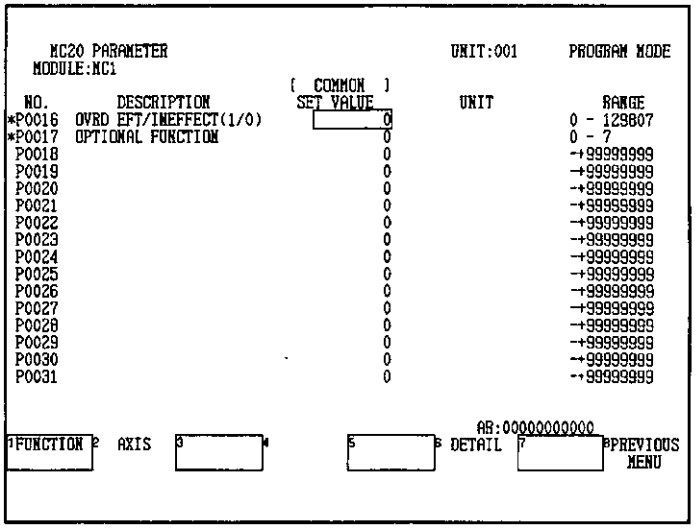
The numeric value that was entered will be displayed in the AR position.



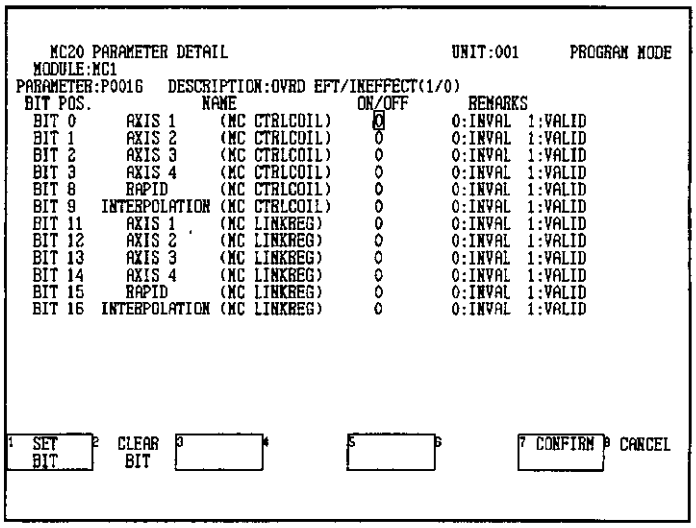
b) After checking the changed numeric value, press the **Enter** Key. The new parameter data will be refreshed.

3) The parameters for bit settings can be easily set using **F6 (DETAIL)** as follows:

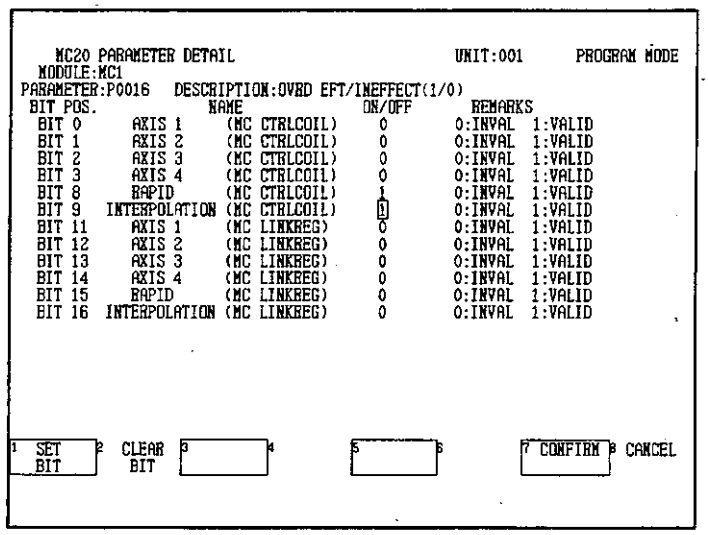
a) Move the cursor to the position of the parameter data for setting bits.



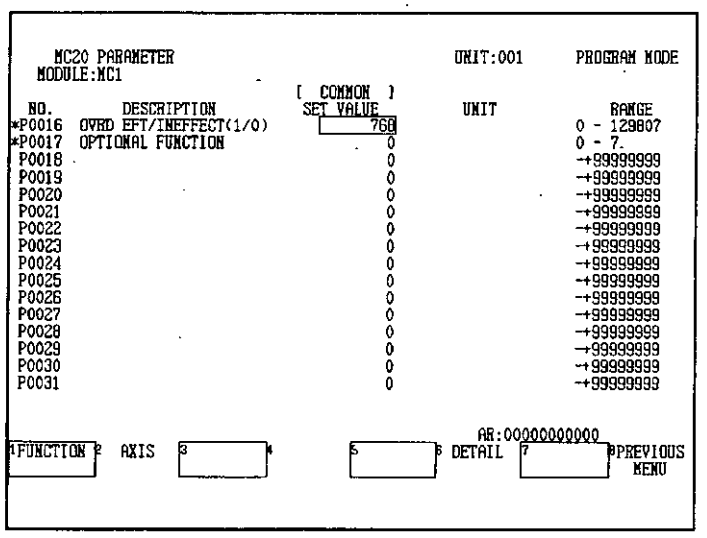
b) Press **F6 (DETAIL)**. The screen for setting bits will be displayed.



c) Move the cursor to the position of the parameter to be changed and press **F1 (SET BIT)** or **F2 (CLEAR BIT)** to change the setting.



d) After changes are complete, press **F7 (CONFIRM)**. If **F7 (CONFIRM)** is not pressed, the changes to the parameter data will not be validated.



6.1.3 Switching Screens

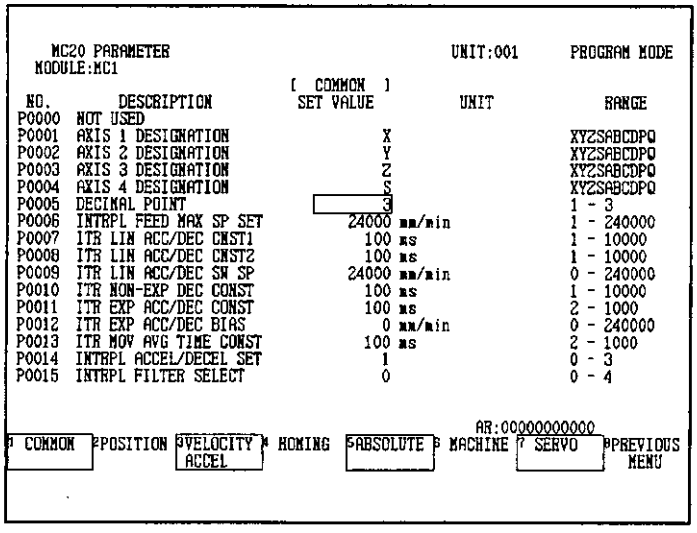
1) The MC20 Module parameters are divided into the following 7 functions and this operation is used to switch between them.

- COMMON: Parameters common to all axes.
- POSITION: Parameters for positioning.

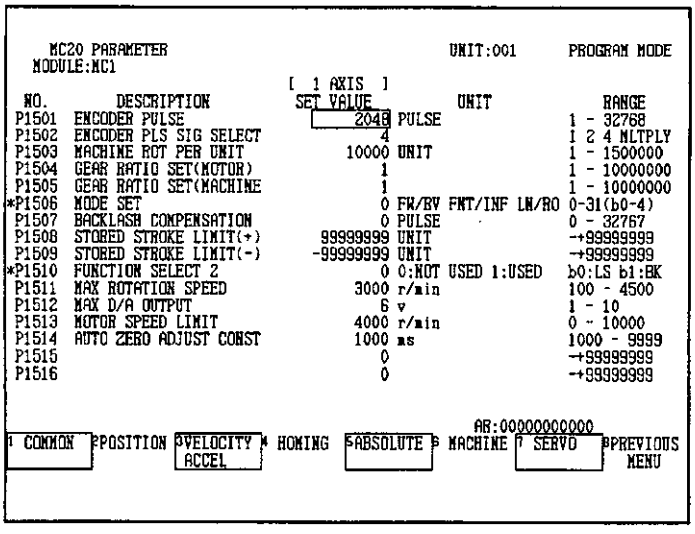
- VELOCITY ACCEL: Parameters for speeds and accelerations.
- HOMING: Parameters for home returns.
- ABSOLUTE: Parameters for absolute value detection.
- MACHINE: Parameters for the machine.
- SERVO: Parameters for the Servo.

The function display can be switched by using the FUNCTION Menu, as follows:

a) Press **F1 (FUNCTION)**. The ***FUNCTION*** Menu will be displayed.



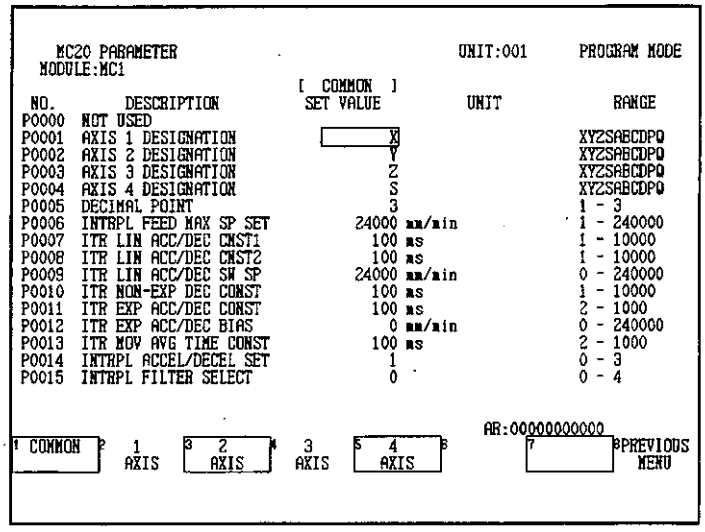
b) Press **F6 (MACHINE)**. The machine parameters will be displayed.



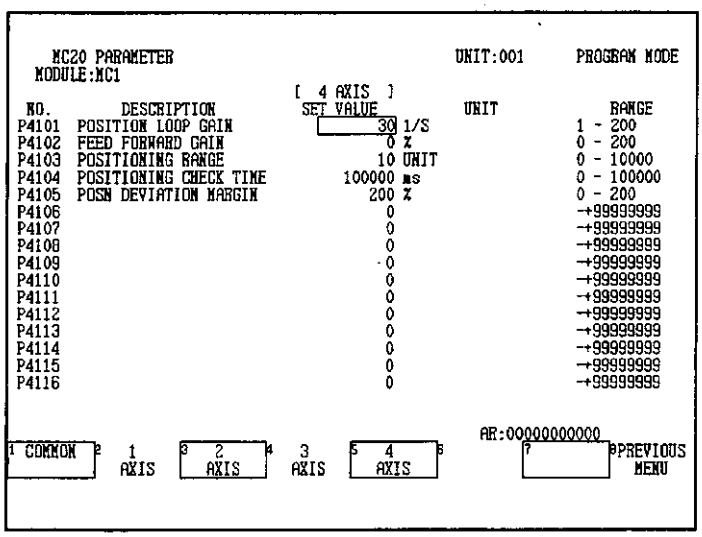
6

2) The screen can be switched to display parameters of each axis by using the AXIS Menu, as follows:

a) Press **F2 (AXIS)**.



b) Press the function key of the axis to be displayed. In this example, press **F5 (4 AXIS)** for axis 4.

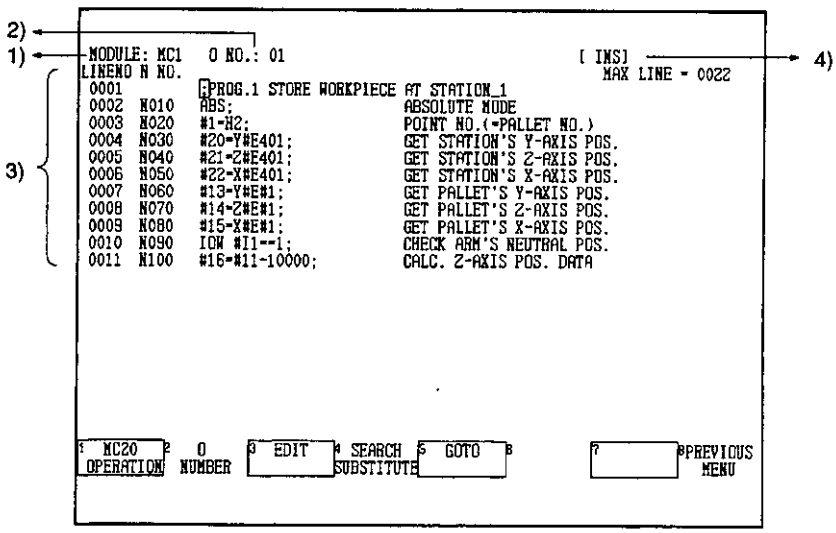


6.2 Editing MC20 Programs

This section describes the structure of the MC Program Edit Screen and basic program input procedures.

6.2.1 MC Program Edit Screen

From the Supervisory Screen, select **MOTION, MC20**, and then **MC20 PROGRAM** to display the MC Program Edit Screen shown below.



1) MC Number

Shows the number of the currently selected Motion Module.

2) O Number

Shows the O number of the currently displayed program.

3) Editing Area

Displays up to 11 lines of the program.

4) Edit Mode

Shows whether Insert or Program Edit Mode is being used.

6.2.2 Displaying MC Programs

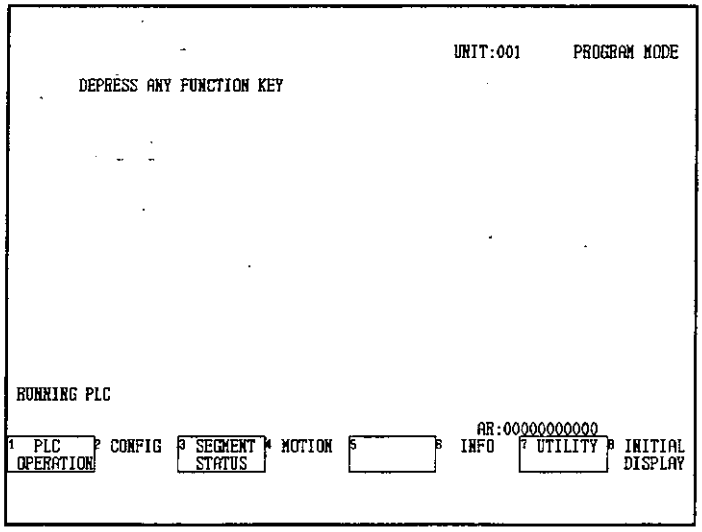
1) The operation used to display motion programs for MC20 Modules is described here.

INFO Refer to the following manual for information on programming MC20 Modules:

- *MEMOCON GL120, GL130 Motion Module MC20 Software User's Manual (SIEZ-C825-20.52)*

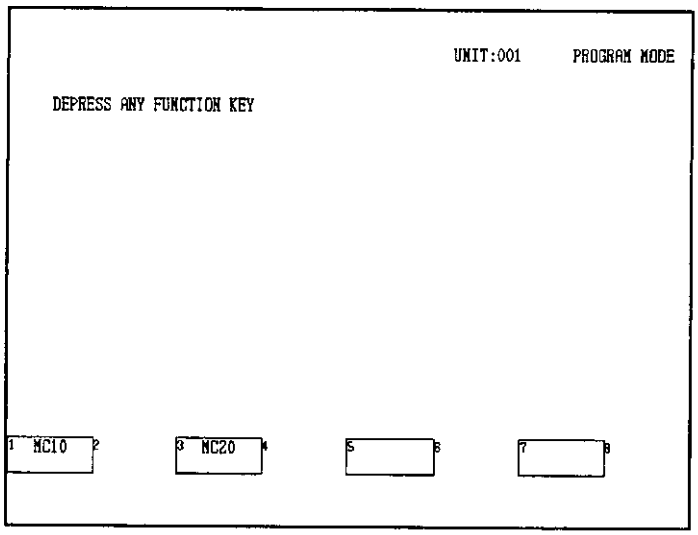
2) Use the following procedure to display motion programs for MC20 Modules.

a) Press **F4 (MOTION)** from the Supervisory Screen.



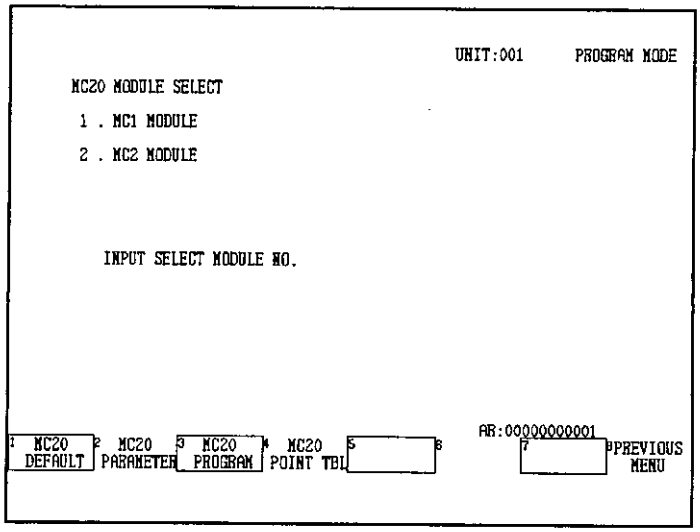
The MC Module Model Selection Screen will be displayed.

b) Press **F3 (MC20)**.



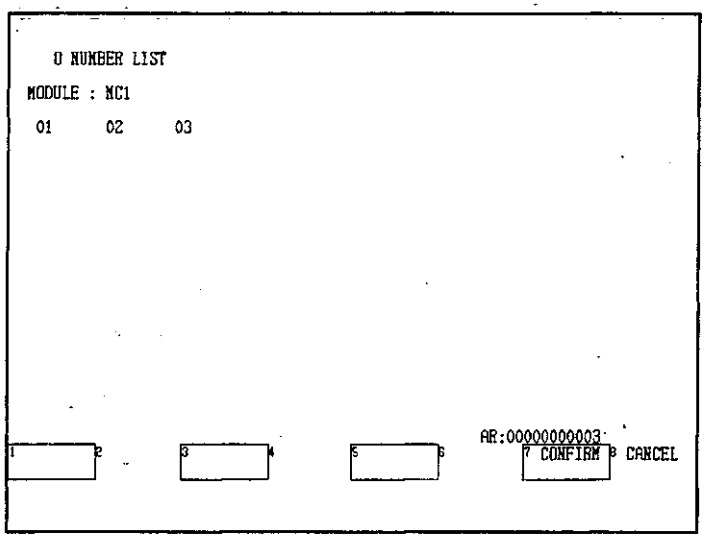
The MC20 Module Screen will be displayed.

c) Enter the Module number in the AR and press **F3 (MC20 PROGRAM)**.



The O Number Screen will be displayed.

d) Enter the O number in the AR and press **F7 (CONFIRM)**.



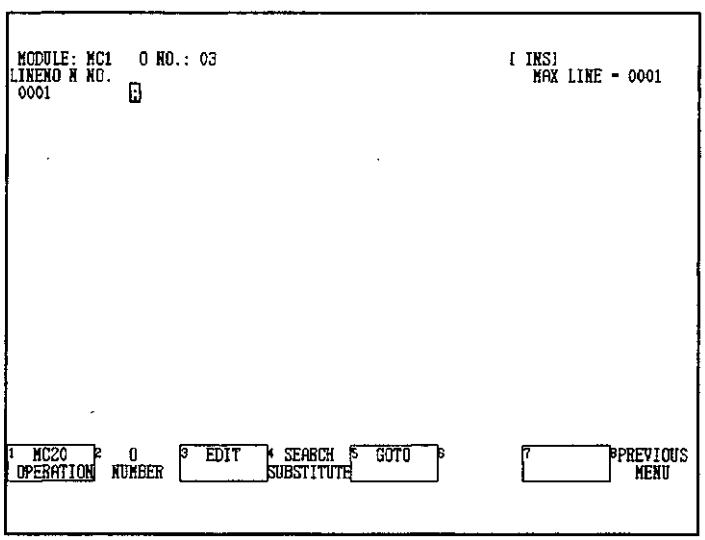
Creating New Programs

If there are no programs in the memory of the MC20, a message asking you to create a new program will be displayed. Use the following procedure to create a new program.

(1) Enter the O number in the AR and press **F7 (CONFIRM)**.

(2) A confirmation message will be displayed. Press **F7 (CONFIRM)** again.

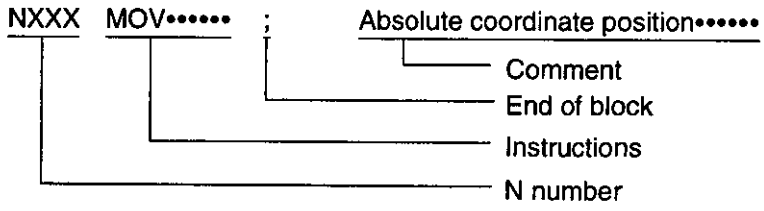
e) The MC Program Edit Screen for the specified O number will be displayed.



6.2.3 Basic Input Procedures

1. Program Structure

1) Program lines consist of the following four elements.



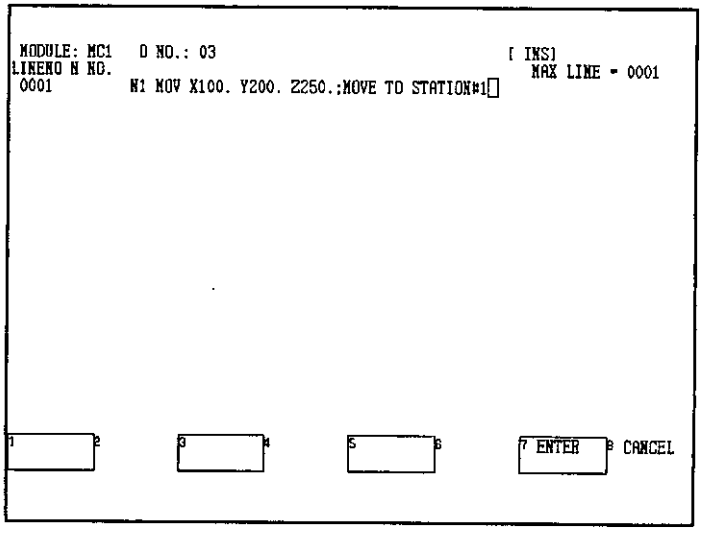
2) The instructions, end of block, and comment combined can be a maximum of 128 characters.

Note **Inputting N Numbers**
When inputting the N number, always insert a space after "NXXX." If a space is not inserted, it will not be recognized as an N number within the program.

2. Inputting Programs

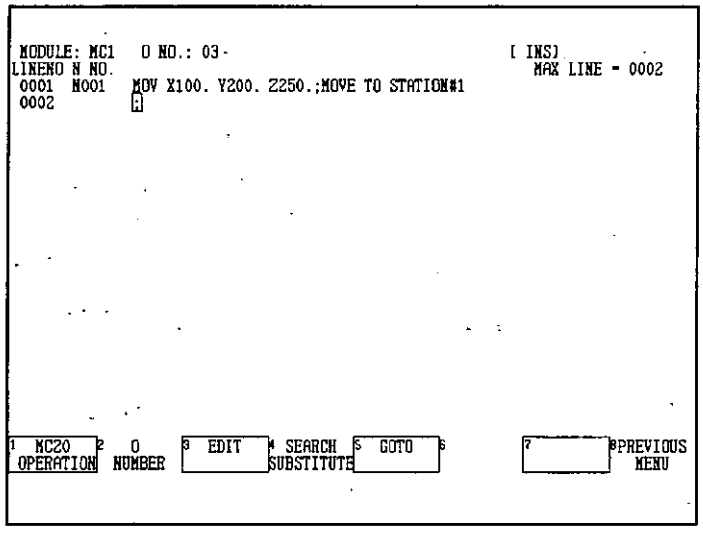
Use the following procedure to input programs.

1) Input the N number, the instructions, and the comment, and then press either the **Enter** Key or **F7 (ENTER)**.



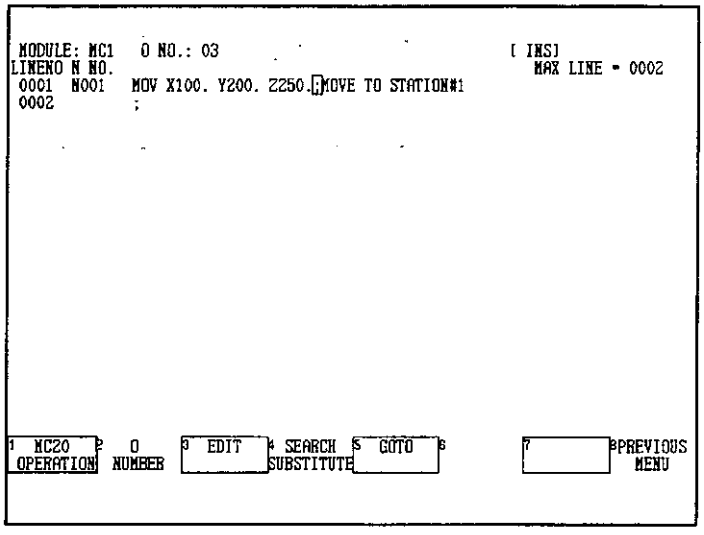
6

2) The input will be registered, and the cursor will move to the next line. The N number will automatically move to the N number area.

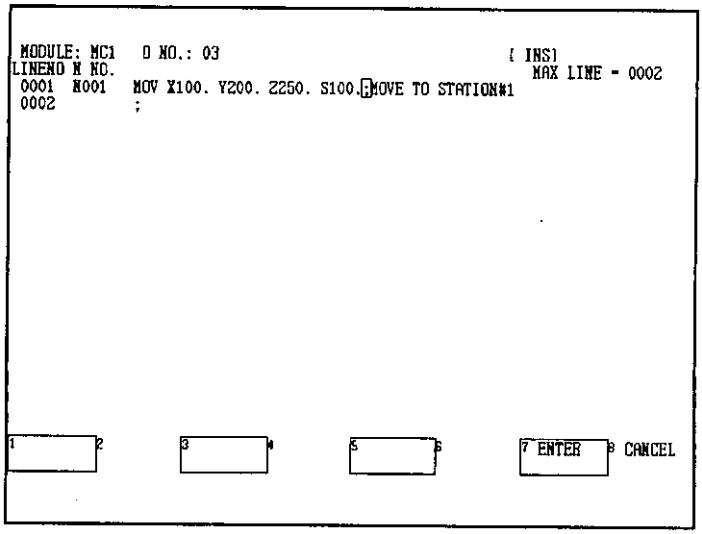


3. Inserting Characters

1) Confirm that the edit mode is Insert Mode and move the cursor to the position at which characters are to be inserted.



2) Input the characters to be inserted. In the following example, "S100" has been input.

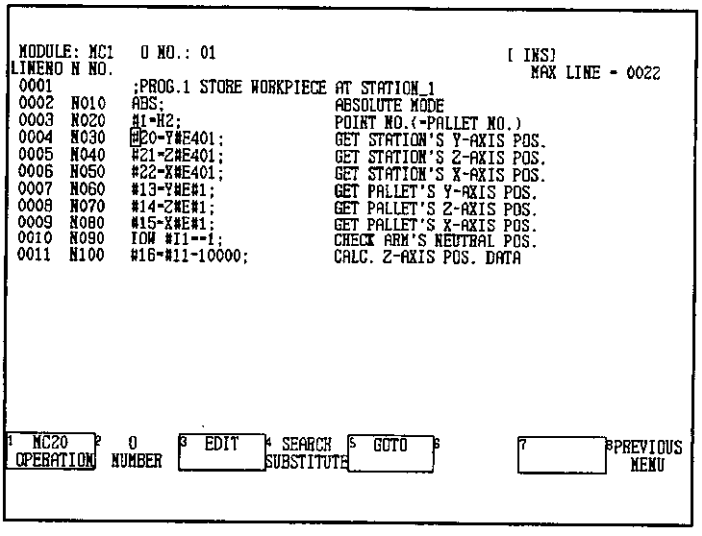


3) Register the input characters by either pressing the **Enter** Key or by pressing **F7 (ENTER)**.

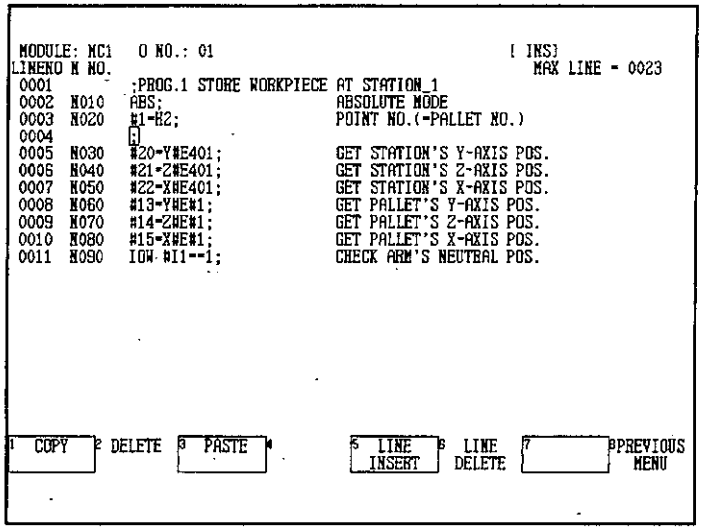
INFO If the edit mode is Program Mode, change it to Insert Mode using the **Insert** Key.

4. Inserting Lines

1) Move the cursor to the position at which the line is to be inserted and press **F3 (EDIT)**.



2) Press **F5 (LINE INSERT)**.



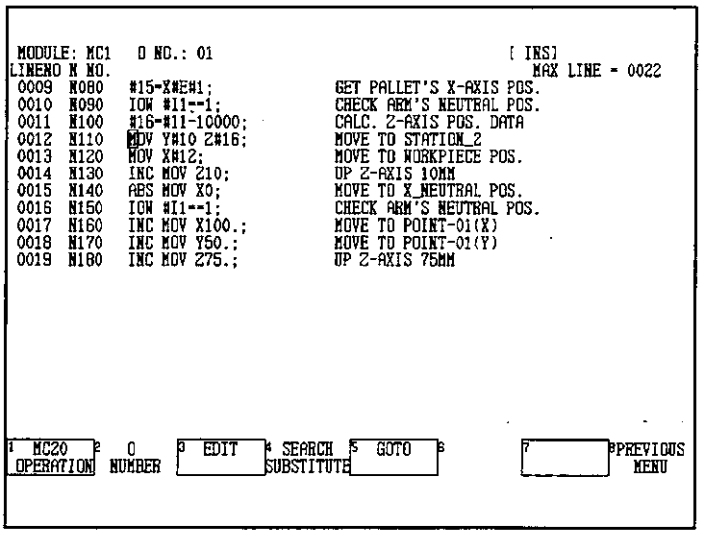
A line will be inserted at the position of the cursor.

INFO To delete a line, move the cursor to the line to be deleted and press **F6 (LINE DELETE)**. To delete two or more consecutive lines, refer to 6.2.5 *Editing*.

5. Editing N Numbers

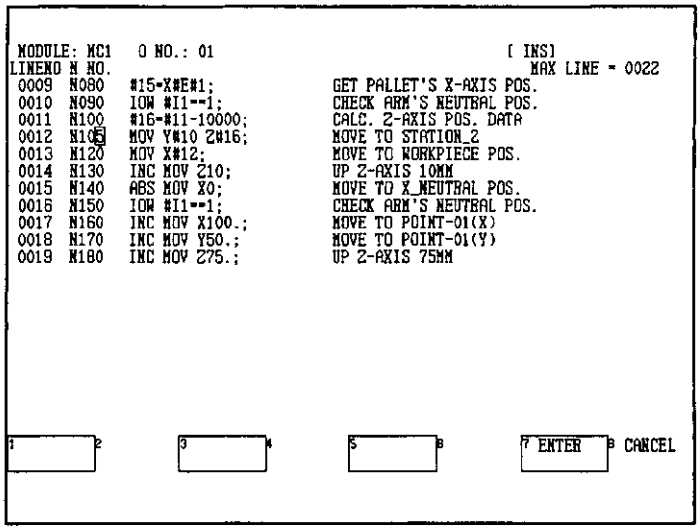
N numbers can be input from the editing area of the program. To perform editing operations, however, such as changing N numbers, the cursor must be at the position of the N number.

1) Press the **Tab** Key.



The cursor will move to the N number area.

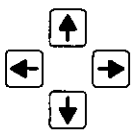
2) Directly input the N number and either press **F7 (ENTER)** or press the **Enter** Key.



INFO After the cursor has been moved to the N number area, it will move within that area. To return the cursor to the program editing area, press the **Tab** Key again.

6. Summary of Key Operations

The basic keys for editing programs are summarized below.



If characters are not being input, use these keys to move the cursor. If characters are being input, use these keys to confirm the input characters and move to the next line.

Confirms input characters and moves the cursor to the next line.

INS Switches the edit mode between Insert Mode and Program Mode. The default edit mode is Insert Mode. Each time this key is pressed, the mode will change. In Insert Mode, the cursor will flash.

DEL Deletes one character at the position of the cursor.

TAB Moves the cursor between the program editing area and the N number area.

HOME Moves the cursor to the first line of the program.

END Moves the cursor to the last line of the program.

PGUP Scrolls up 11 lines.

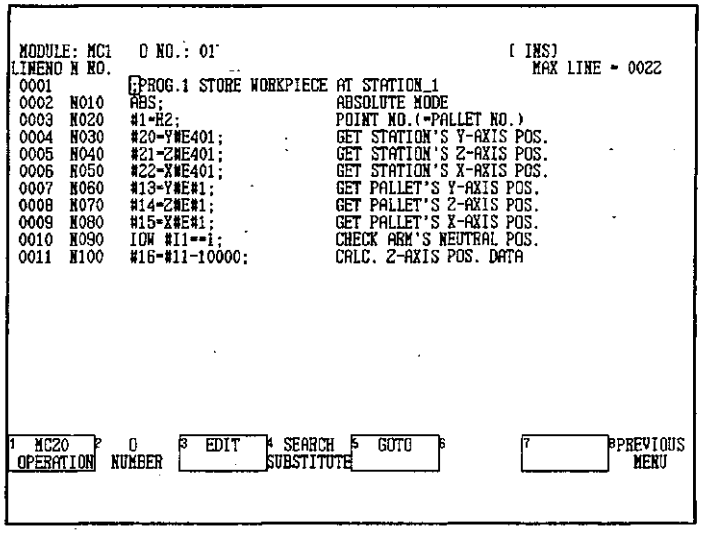
PGDN Scrolls down 11 lines.

6.2.4 Selecting Files

1. Selecting O Numbers

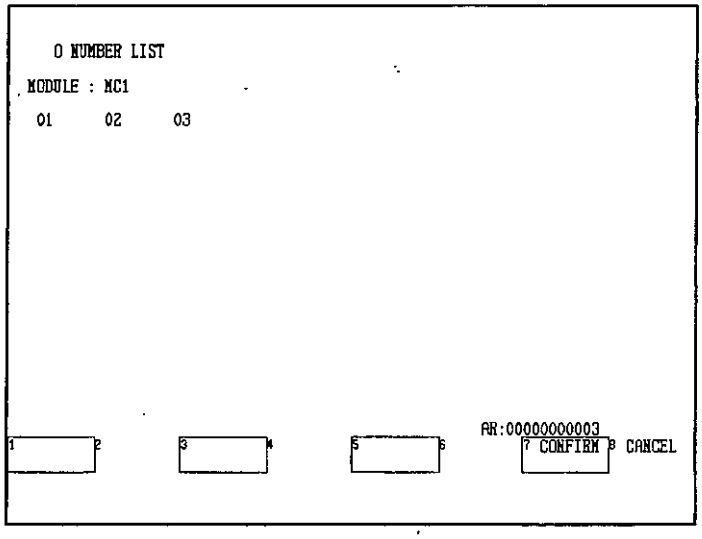
The operation used to change the program being edited is described here.

1) Press **F2 (O NUMBER)**.

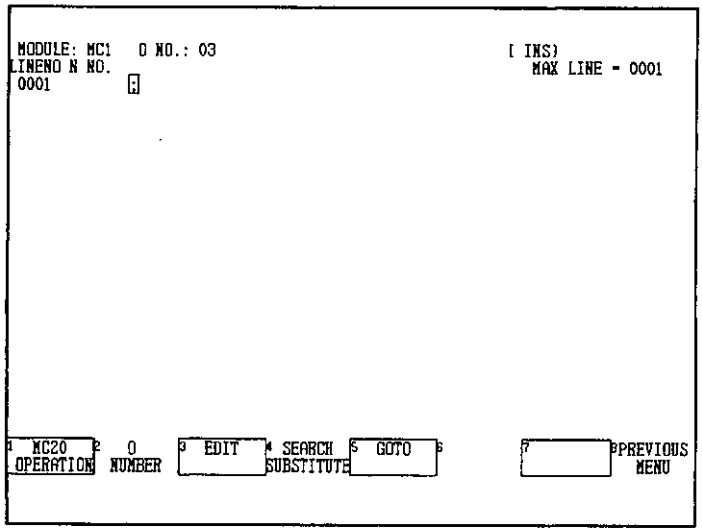


A list of O numbers that have already been created will be displayed.

2) Enter the O number to be edited in the AR and press **F7 (CONFIRM)**.



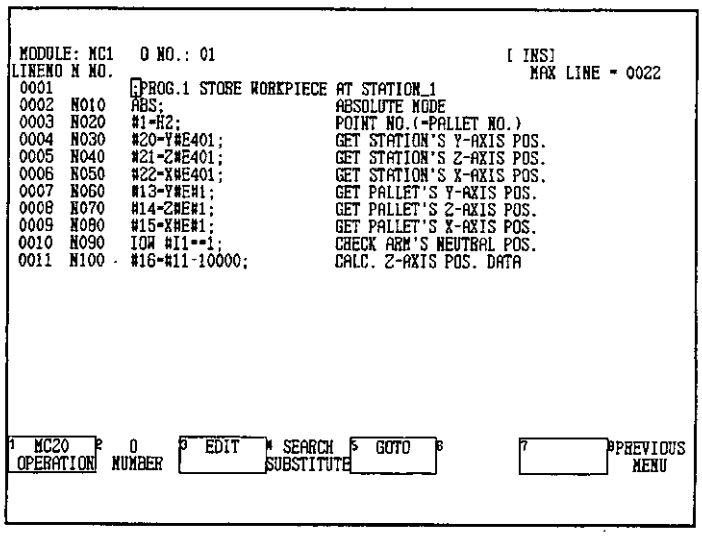
The MC Program Edit Screen for the O number selected will be displayed.



2. Selecting Module Numbers

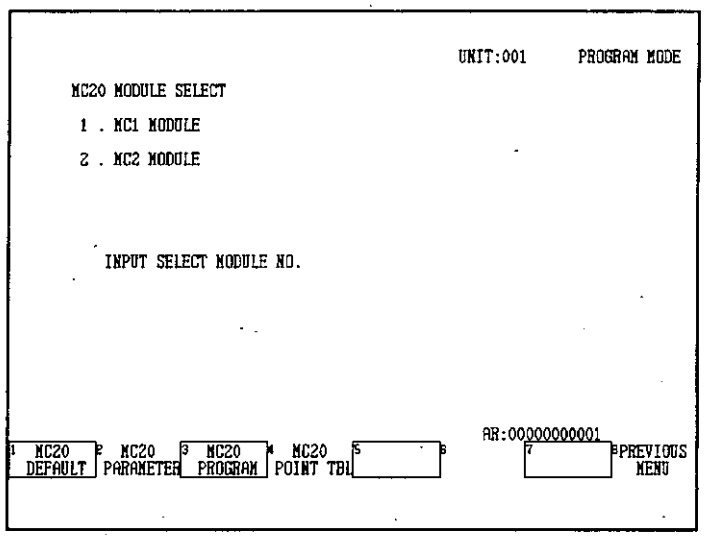
The operation used to change the MC20 being edited is described here. As an example, the following procedure shows how to change from an MC1 Module to an MC2 Module.

1) Press **F8 (PREVIOUS MENU).**



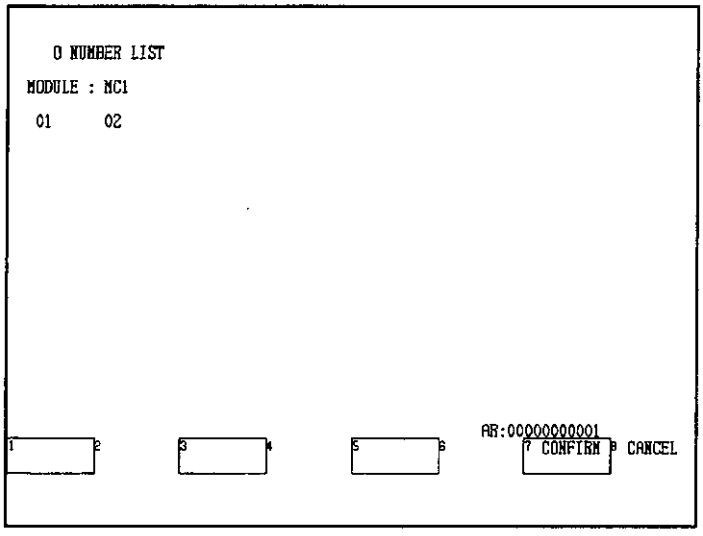
The MC20 Module Screen will be displayed.

2) Enter the Module number in the AR and press **F3 (MC20 PROGRAM)**.



The O Number Screen for the MC20 selected will be displayed.

3) Enter the O number in the AR and press **F7 (CONFIRM)**. If there are no programs in the MC20 memory, create a new program. Refer to *Creating New Programs* on page 6-12 for details on the procedures required for creating new programs.



The MC Program Edit Screen will be displayed.

6.2.5 Editing

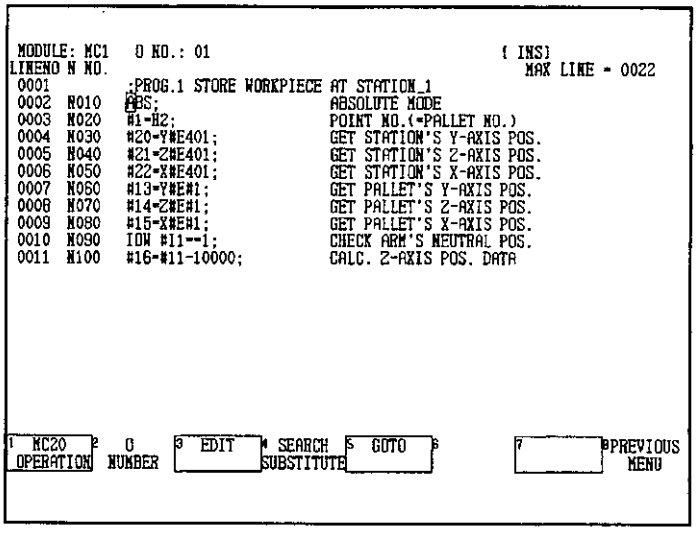
1. Copy

1) The Copy function is used to store lines of program data specified using the cursor. The N number, instructions, and comment will all be stored. The data stored using the Copy function can be inserted in another position using the paste function.

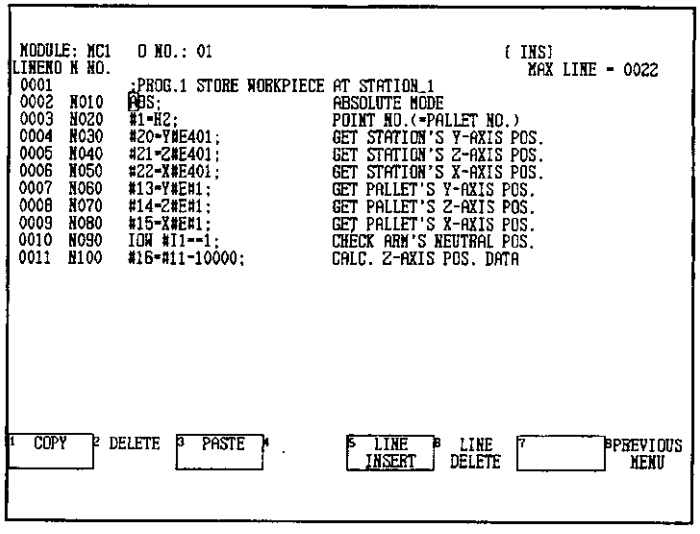
2) Use the following procedure to copy data.

a) Move the cursor to the first or last line of the range to be copied.

b) Press **F3 (EDIT)**.

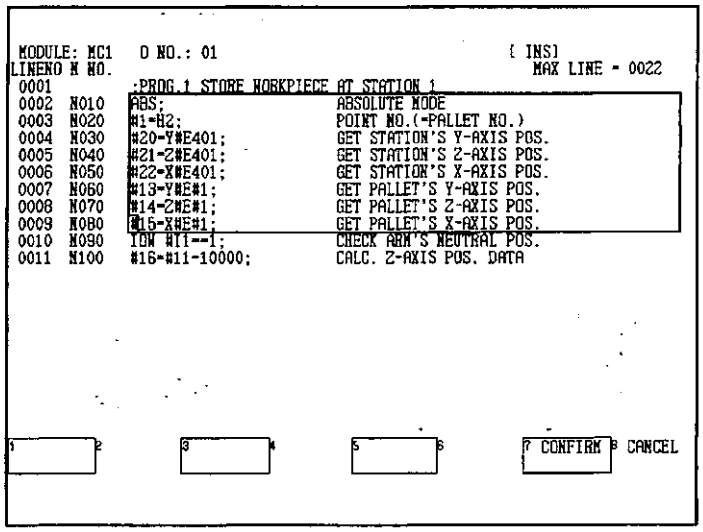


c) Press **F1 (COPY)**.



The line cursor will appear.

d) Select the range of data to be copied by moving the cursor.



e) After selecting the range, press **F7 (CONFIRM)**. The specified range of data will be stored.

INFO

1) Only one set of data can be stored in the P120's memory using the Copy function. If the Copy function is used more than once in succession, the previously stored data will be overwritten. Also, when the MC20 Module Screen is displayed, the data stored in the P120's memory will be deleted. For this reason, it is not possible to copy data between MC20 Module 1 and MC20 Module 2. Use MEMOSOFT for copying program data between different Modules.

2) The maximum size of program data that can be copied is 3, 810 bytes, i.e., up to 30 full lines (127 characters) of program data can be copied.

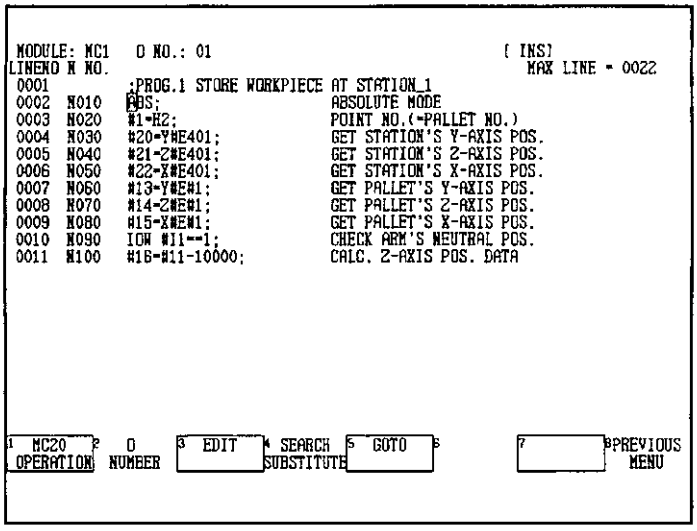
2. Delete

1) The Delete function is used to delete lines of program data specified using the cursor and store them in memory. The N number, instructions, and comment are all deleted. The data stored using the Delete function can be inserted in another position using the paste function. Therefore, in addition to deleting program lines, this function can also be used to move program lines.

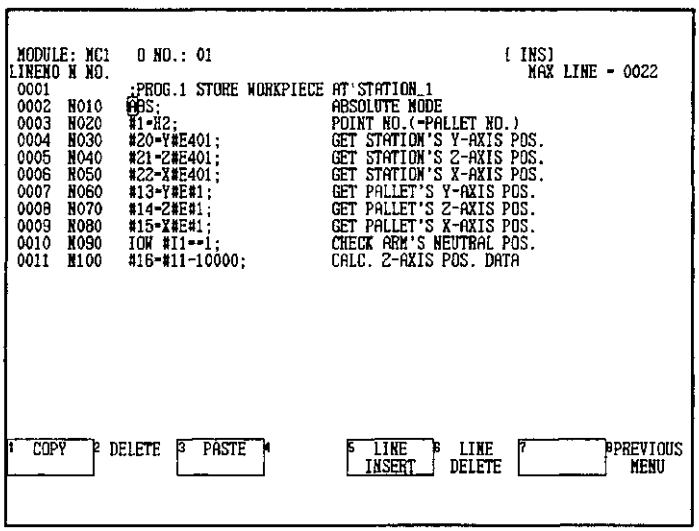
2) Use the following procedure to delete data.

a) Move the cursor to the first or last line of the range to be deleted.

b) Press **F3 (EDIT)**.



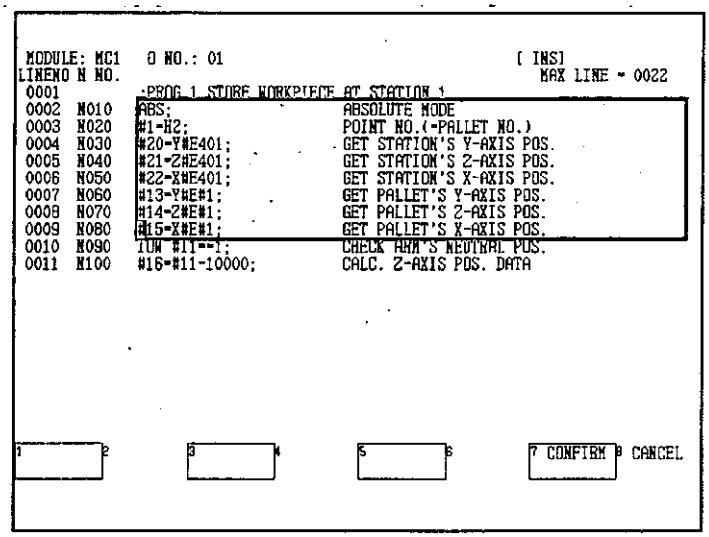
c) Press **F2 (DELETE)**.



The line cursor will appear.

d) Select the range of data to be deleted by moving the cursor.

e) After selecting the range, press **F7 (CONFIRM)**.



The specified range of data will be deleted and subsequent program data will move up.

INFO

1) Only one set of data can be stored in the P120's memory using the Delete function. If the Delete function is used more than once in succession, the previously stored data will be overwritten. Also, when the MC20 Module Screen is displayed, the data stored in the P120's memory will be deleted. For this reason, it is not possible to copy data between MC20 Module 1 and MC20 Module 2. Use MEMOSOFT for copying program data between different Modules.

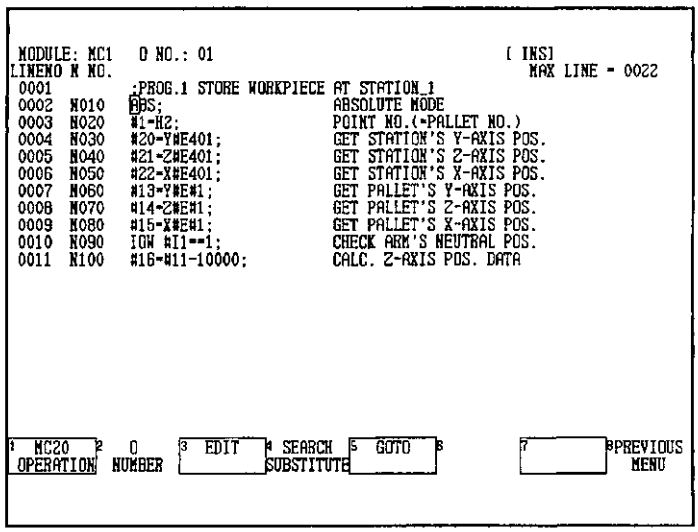
2) It is possible to delete one line of program data by moving the cursor to the line to be deleted and pressing **F6 (LINE DELETE)**. The deleted data is not stored, however, when this method is used.

3. Paste

1) The Paste function is used to insert program data stored using the Copy function or Delete function at the position of the cursor. Here, as an example, the data stored in *1. Copy* is inserted in a program with a different O number.

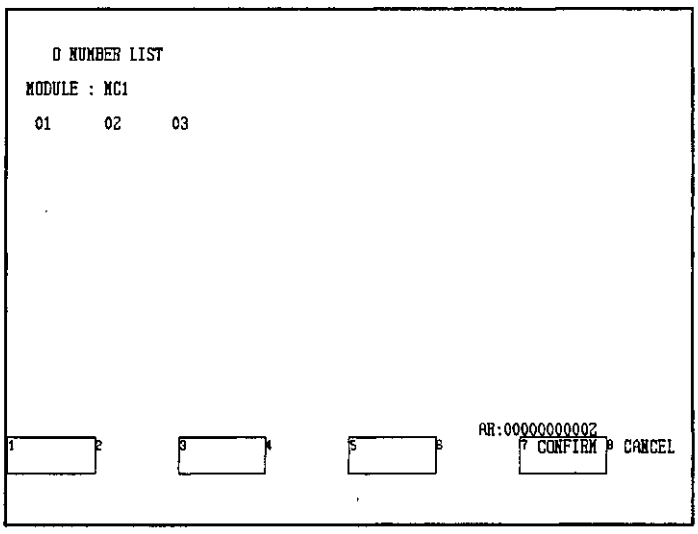
2) Use the following procedure for pasting data.

a) Press **F2 (O NUMBER)**.



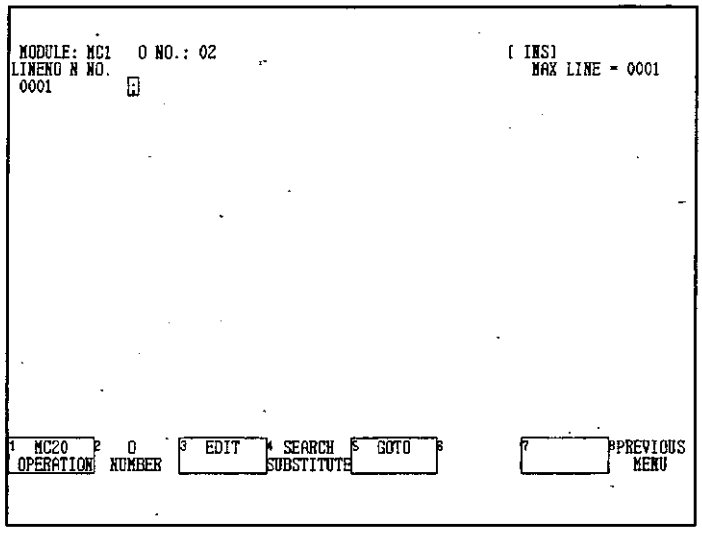
The O Number Screen will be displayed.

b) Select the program for which pasting is to be performed by entering the O number in the AR and pressing **F7 (CONFIRM)**.



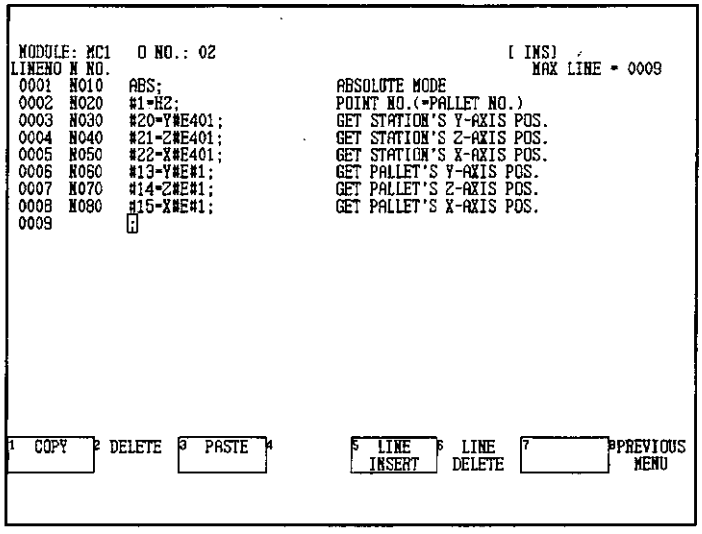
The MC Program Edit Screen for the program will be displayed.

c) Move the cursor to the position at which pasting is to be performed and press **F3 (EDIT)**.



d) Press **F3 (PASTE)**.

The stored data will be inserted starting from the position of the cursor.



6.2.6 Search and Substitute

1. Search

1) The Search function is used to search for character strings in the motion program currently being displayed. The following 3 Search functions are available, depending on the starting position and the search direction.

a) Search All

Use this function to perform searches for character strings from the beginning to the end of the program. The cursor will stop at instances of the specified character string. Press **F7 (CONFIRM)** to search for the next instance. To quit the search press **F8 (CANCEL)**.

b) Search Forward

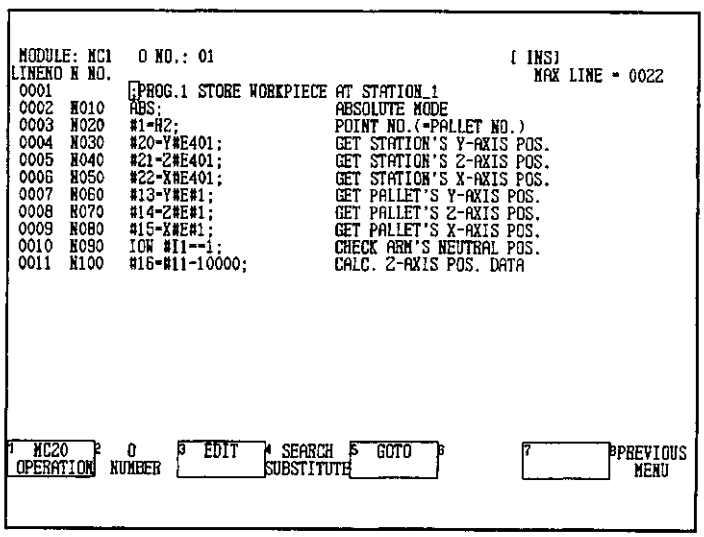
Use this function to perform searches for character strings from the current position of the cursor to the end of the program. The cursor will stop at instances of the specified character string. Press **F7 (CONFIRM)** to search for the next instance. To quit the search press **F8 (CANCEL)**.

c) Search Backward

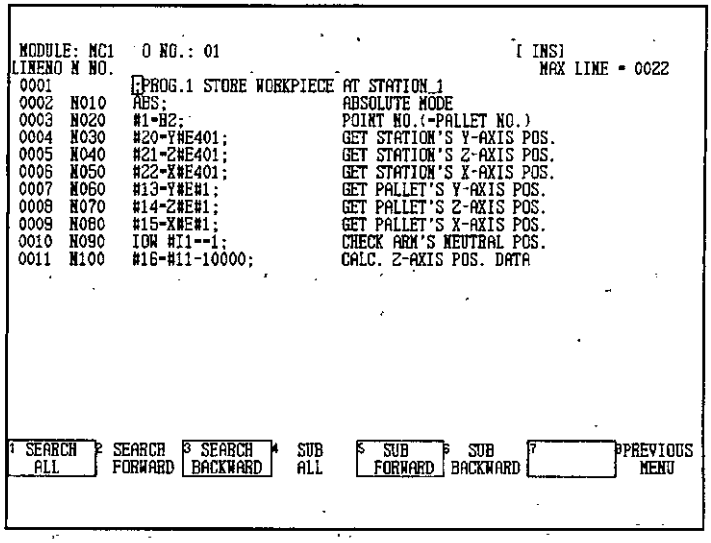
Use this function to perform searches for character strings from the current position of the cursor to the beginning of the program. The cursor will stop at instances of the specified character string. Press **F7 (CONFIRM)** to search for the next instance. To quit the search press **F8 (CANCEL)**.

2) Use the following procedure to search for character strings. Here, the procedure for Search All is given as an example.

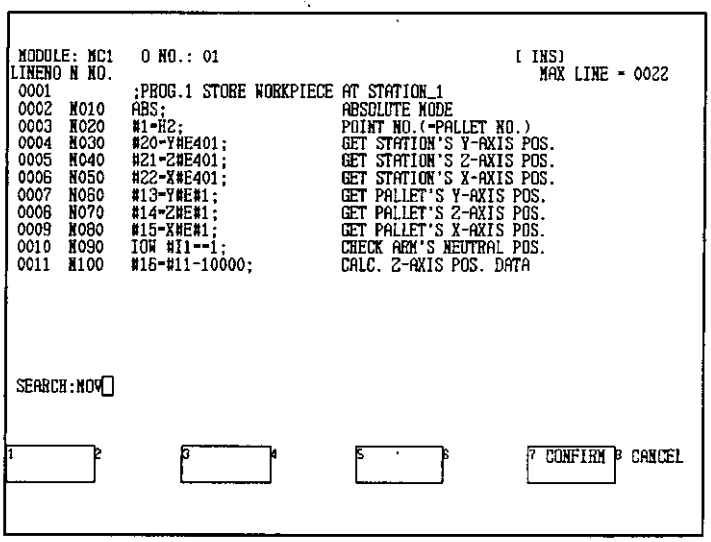
a) Press **F4 (SEARCH SUBSTITUTE)**.



b) Press **F1 (SEARCH ALL).**

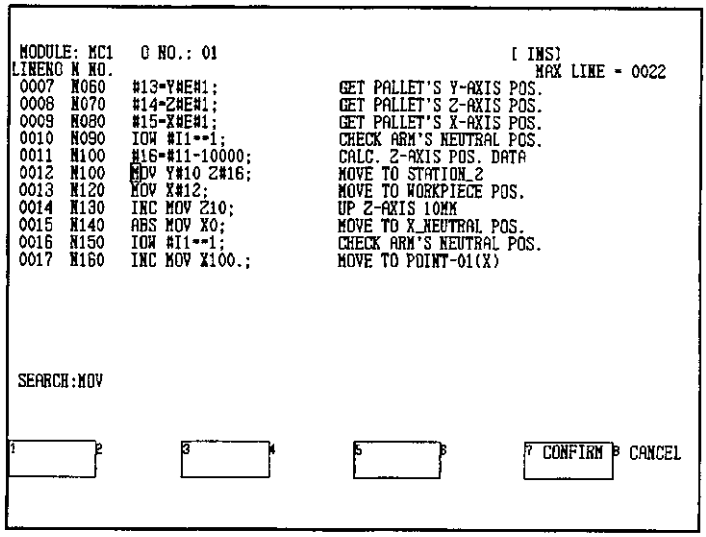


c) Input the character string to be searched for. In this example, the character string "MOV" is input.



d) Press **F7 (CONFIRM).**

A search will be performed from the beginning of the program. If a character string that matches the one input is found, the cursor will stop at the beginning of that character string.



INFO

1) Press **F7 (CONFIRM)** to continue the search. The search will be continued starting from the current position of the cursor. If another operation is required, press **F8 (CANCEL)** to quit the search.

2) When searching for an N number, input 4 characters starting with "N." For example, to search for N number 10, input "N010" and not "N10."

3) The Search function searches for character strings in both motion programs and comments.

4) The Search function can be used to search for character strings of up to 30 characters in length.

2. Substitute

1) The Substitute function is used to replace a specified character string with another character string. The following 3 Substitute functions are available, depending on the starting position and the Search direction.

a) Substitute All

Use this function to perform searches for character strings from the beginning to the end of the program and replace instances of the specified character string with another specified character string.

b) Substitute Forward

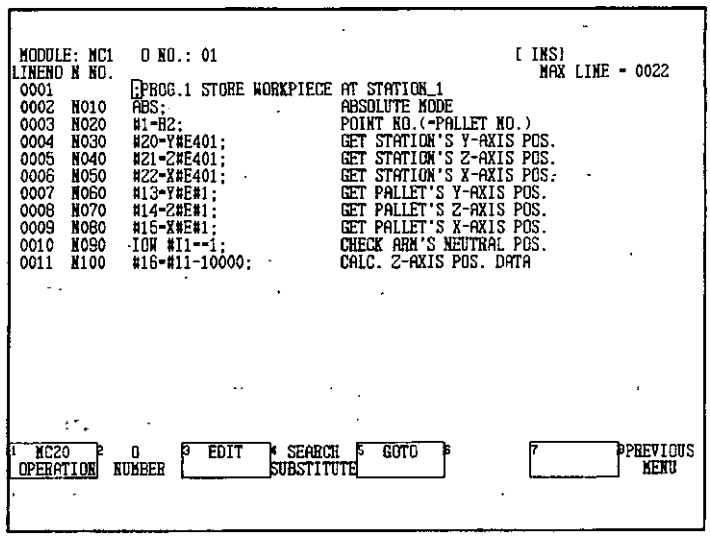
Use this function to perform searches for character strings from the current position of the cursor to the end of the program and replace instances of the specified character string with another specified character string.

c) Substitute Backward

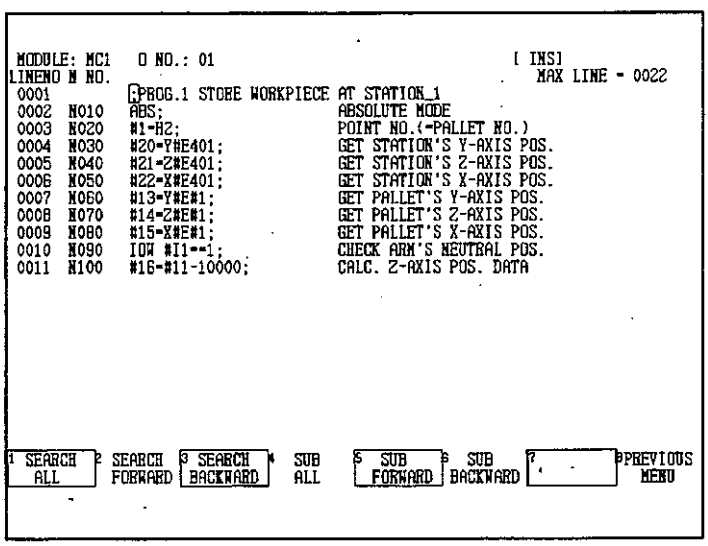
Use this function to perform searches for character strings from the current position of the cursor to the beginning of the program and replace instances of the specified character string with another specified character string.

2) Use the following procedure to search for and replace character strings. Here, the procedure for the Substitute All function is given as an example.

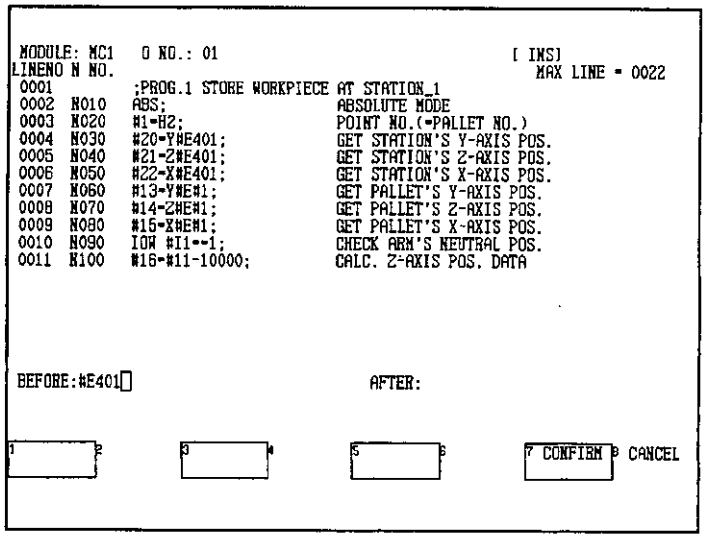
a) Press **F4 (SEARCH SUBSTITUTE)**.



b) Press **F4 (SUB ALL)**.



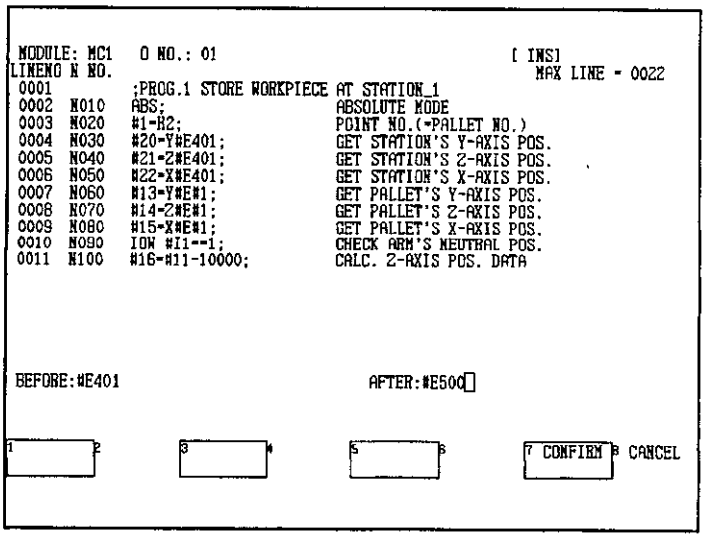
c) Input the character string to be replaced in the **BEFORE** field. Here, as an example, the character string "#E401" has been input.



d) Press the **Tab** Key to move to the **AFTER** field. (The **Tab** Key can be used again to return to the **BEFORE** field.)

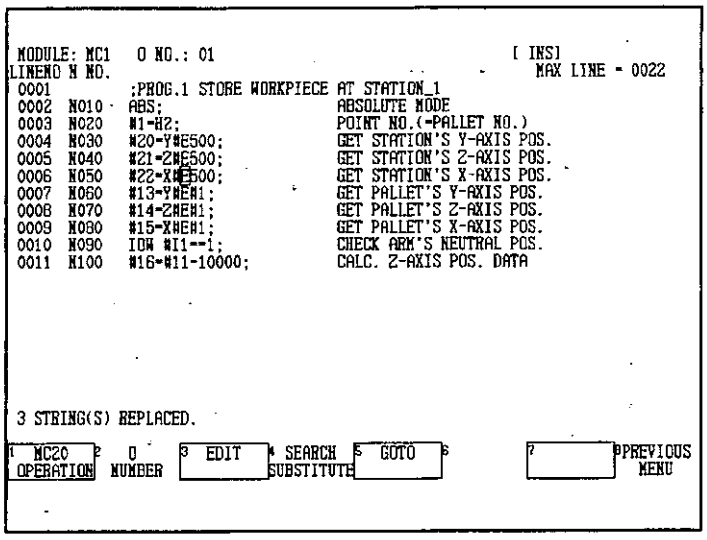
e) Enter the character string. Here, as an example, the character string "#E500" has been entered

f) Press **F7 (CONFIRM).**



6

Instances of character strings that match the character string in the **BEFORE** field will be replaced with the character string in the **AFTER** field, and the results will be displayed.



INFO

1) Character strings of up to 30 characters can be replaced.

2) If there are lines in the program that exceed the maximum length of 128 characters after substitution has been performed, an error will occur.

3) The Substitute function searches for and replaces character strings in both motion programs and comments.

6.2.7 Moving the Cursor

The operations used to move the cursor are described here.

1) The following 3 functions to move the cursor are available.

a) Goto Top Line

Use this function to move the cursor to the top line of the program currently being edited. This operation can also be performed using the **Home** Key.

b) Goto Bottom Line

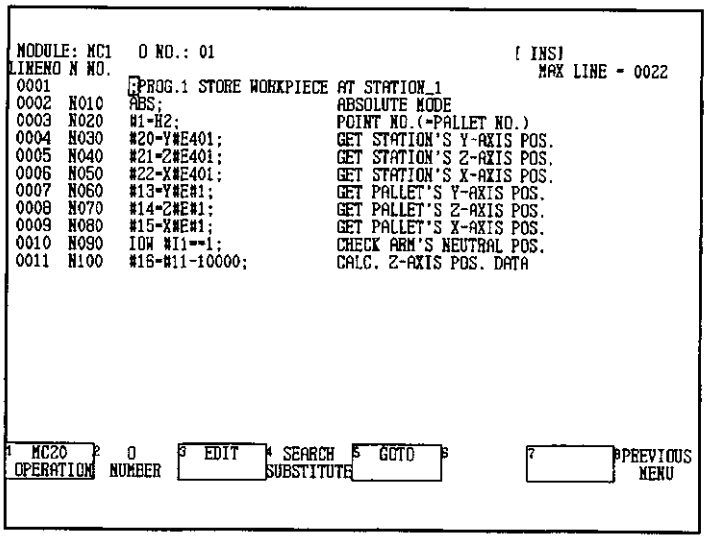
Use this function to move the cursor to the bottom line of the program currently being edited. This operation can also be performed using the **End** Key.

c) Goto Input Line

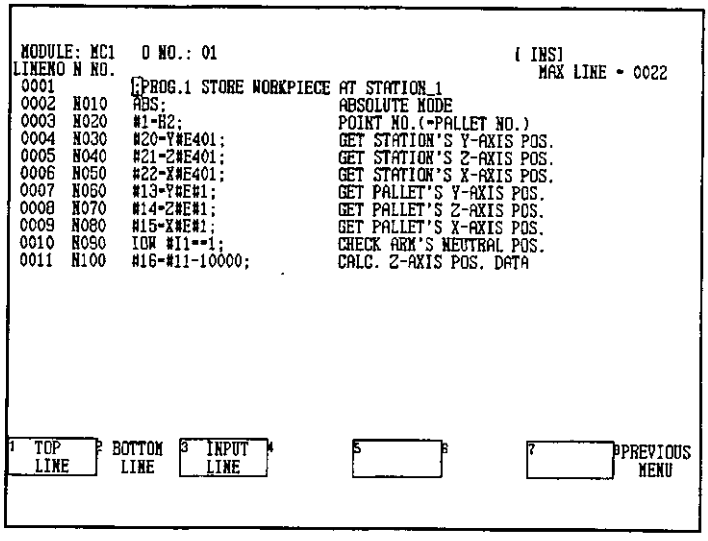
A window in which a line number can be input is displayed. The cursor will move to the line specified.

2) Use the following procedure to move the cursor. Here, as an example, the procedure to move to a specified line is given.

a) Press **F5 (GOTO)**.

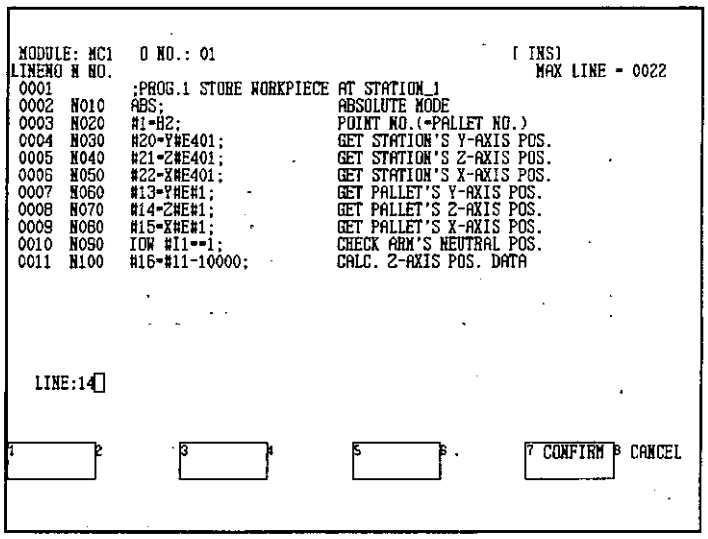


b) Press **F3 (INPUT LINE)**.

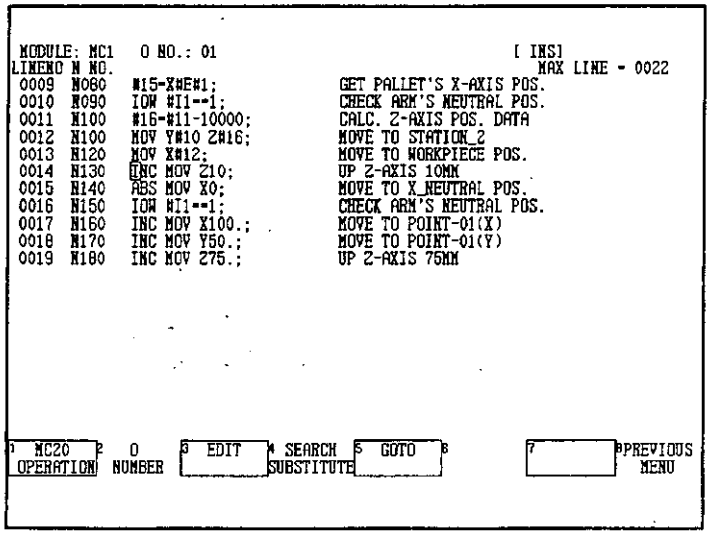


c) Input the number of the line to be moved to.

d) Press **F7 (CONFIRM).**



The cursor will move to the line specified.



6.2.8 MC20 Module Operations

The MC20 Module operations that can be performed using the MC Program Edit Screen are described here.

Note The One Block Execute function for motion programs can only be performed when the MC20 Module is in Online Edit Mode. The operating mode for the MC20 Module is selected by updating the input status of the ladder motion instruction MODE SET (MOD) in the ladder program.

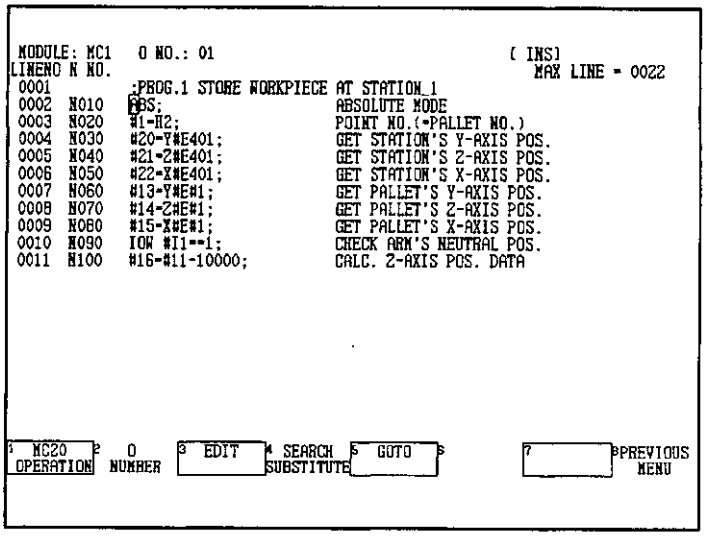
1. One Block Execution

1) Select **1 BLOCK EXECUTE** to execute the line of the program at which the cursor is positioned.

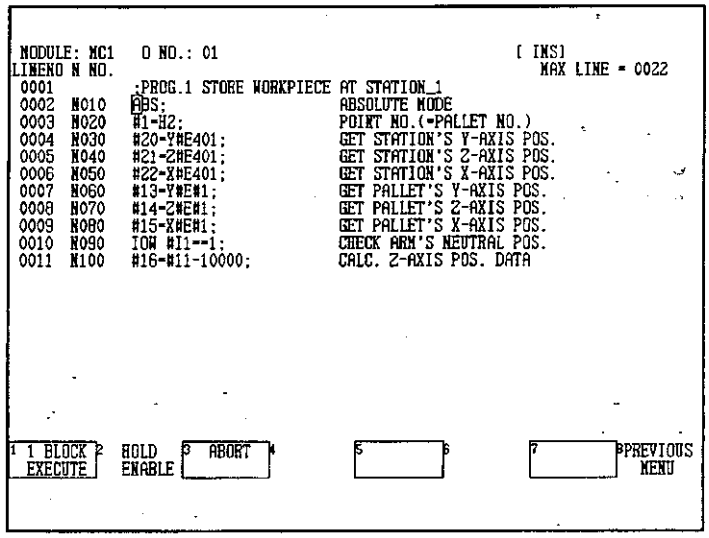
2) Use the following procedure to perform One Block Execute.

a) Move the cursor to the line to be executed.

b) Press **F1 (MC20 OPERATION).**



c) Press **F1 (1 BLOCK EXECUTE)**.



The line where the cursor is positioned will be executed.

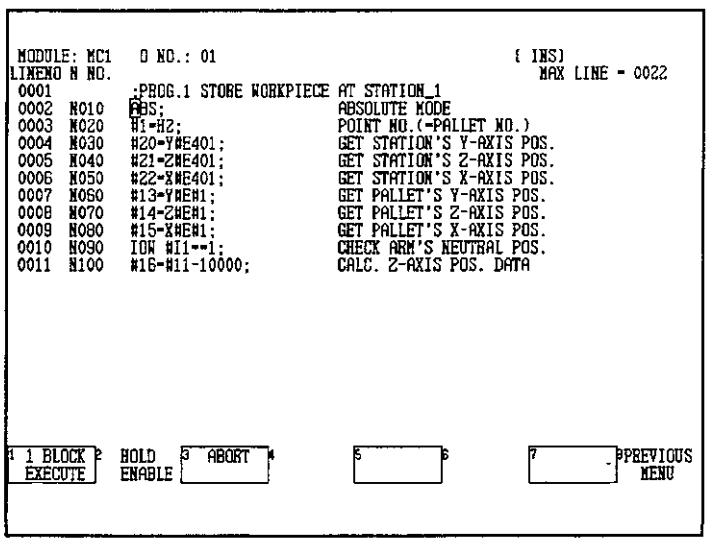
INFO The One Block Execute function is used to execute one line of the program specified on the screen. It is thus necessary to select the program that contains the required line and display it on the screen before performing this operation.

2. Hold

1) The Hold function is used to temporarily stop one-line program execution. This function can be used only when one-line program execution is being performed. Select **HOLD ENABLE** to temporarily stop program execution. Select **HOLD ENABLE** again to cancel the hold and execute the rest of the specified program line.

2) Use the following procedure to hold one-line program execution.

a) Press **F2 (HOLD ENABLE)**.



The one-line program execution will stop.

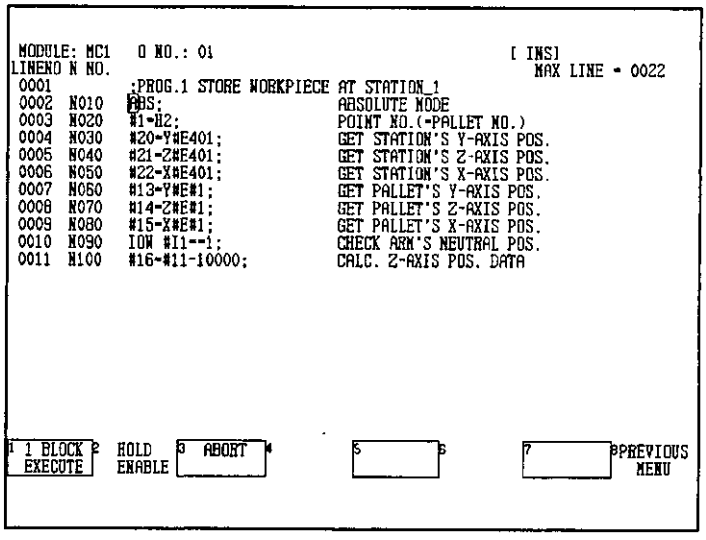
b) Press **F2 (HOLD ENABLE)** again to cancel the hold and execute the rest of the program line.

3. Abort

1) The Abort function is used to stop one-line program execution. This function can be used only when one-line program execution is being performed. Select **ABORT** to stop program execution.

2) Use the following procedure to abort one-line program execution.

a) Press **F3 (ABORT)**.



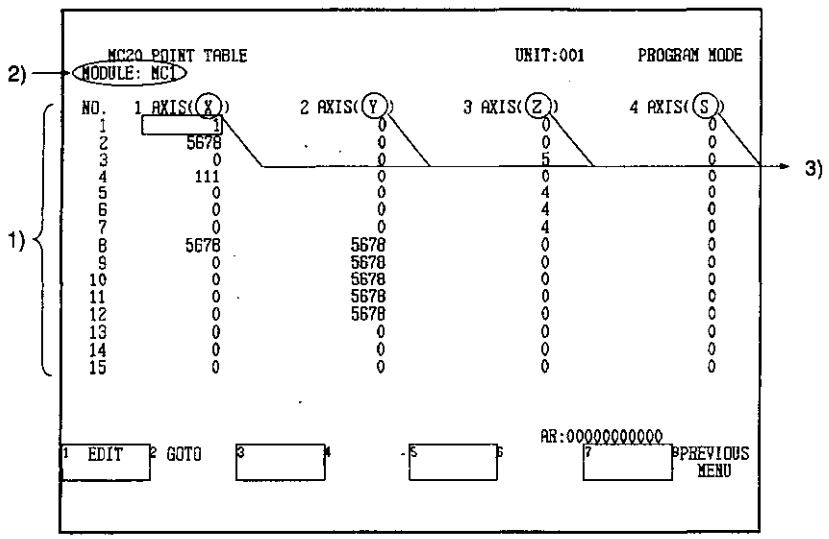
The one-line program execution will stop.

6.3 Editing MC20 Module Point Tables

This section describes operations to edit point tables and moving the cursor to a specified line, and the structure of the Point Table Data Edit Screen.

6.3.1 Point Table Data Edit Screen

From the Supervisory Screen select **MOTION, MC20,** and then **MC20 POINT TBL** to display the Point Table Data Edit Screen shown below.



1) Editing Area

Data for up to 15 points is displayed at the same time. Move the cursor to display the previous or subsequent data. It is possible to edit point table data for up to 500 points (1 to 500).

2) MC Module Number

Displays the Module number for the currently selected MC Module.

3) Axis Name

Displays the name of the axis specified with parameters. If there are no axes specified, "–" will be displayed.

6.3.2 Displaying MC20 Module Point Tables

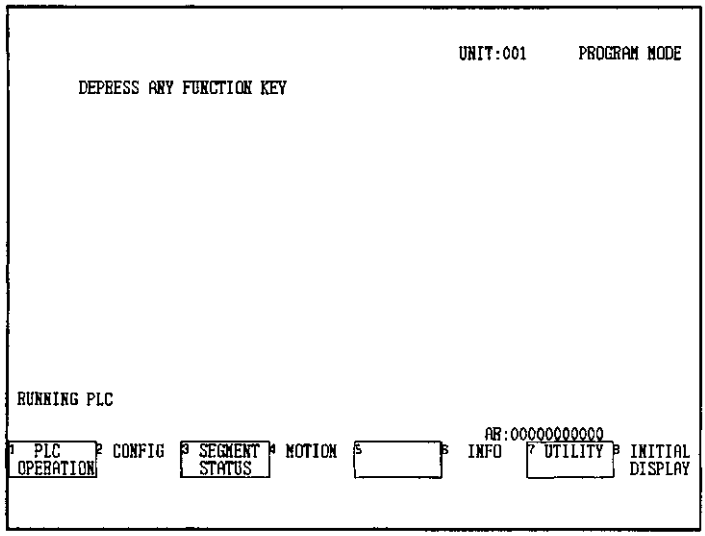
1) The operation used to display the point tables of MC20 Modules is described here.

INFO Refer to the following manual for information on point tables for MC20 Modules:

- *MEMOCON GL120, GL130 Motion Module MC20 Software User's Manual (SIEZ-C825-20.52)*

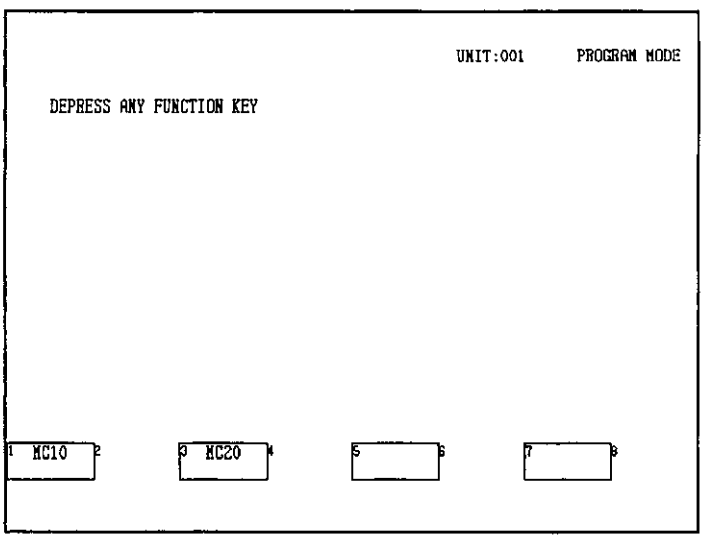
2) Use the following procedure to display point tables of MC20 Modules.

a) Press **F4 (MOTION)** from the Supervisory Screen.



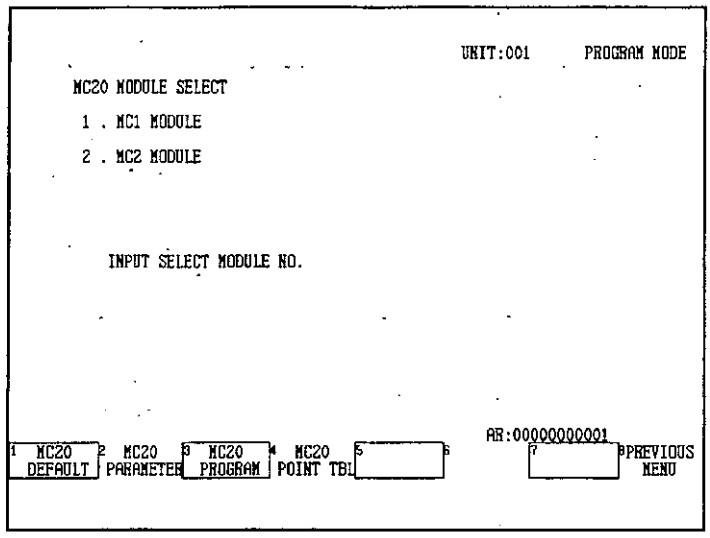
The MC Module Model Selection Screen will be displayed.

b) Press **F3 (MC20)**.

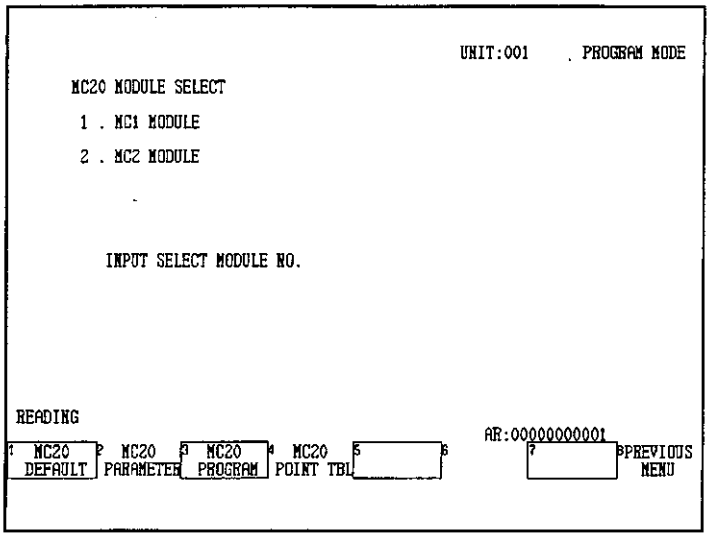


The MC20 Module Screen will be displayed.

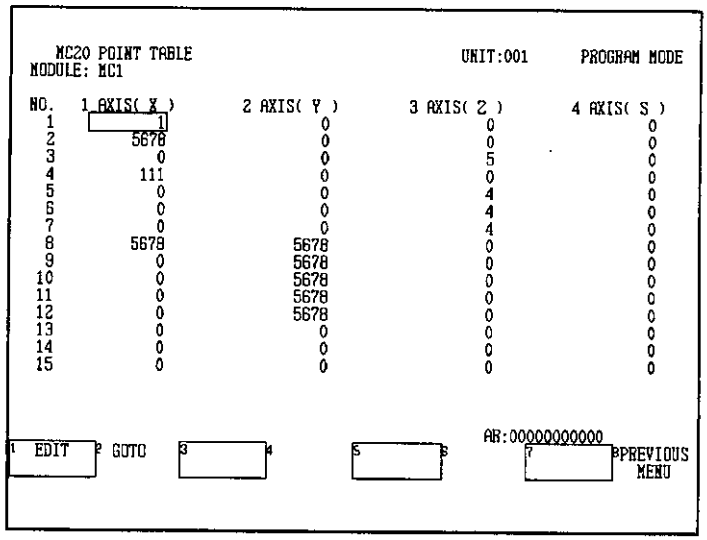
c) Enter the Module number in the AR and press **F4 (MC20 POINT TBL).**



The message "READING" will be displayed and the point table for the specified MC20 Module will be read.



The Point Table Data Edit Screen for the specified MC20 Module will be displayed.



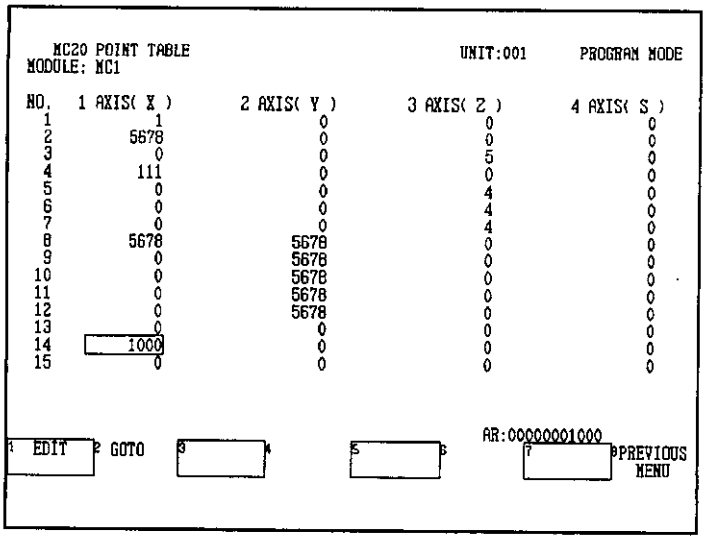
6.3.3 Basic Input Procedures

1) The operations for inputting data in point tables are given here. Data is input in point tables by moving the cursor to the position where the data is to be input and inputting the desired numeric values.

2) Use the following procedure to input data.

   a) Move the cursor to the position where the data is to be input.

   b) Enter the numeric value in the AR.



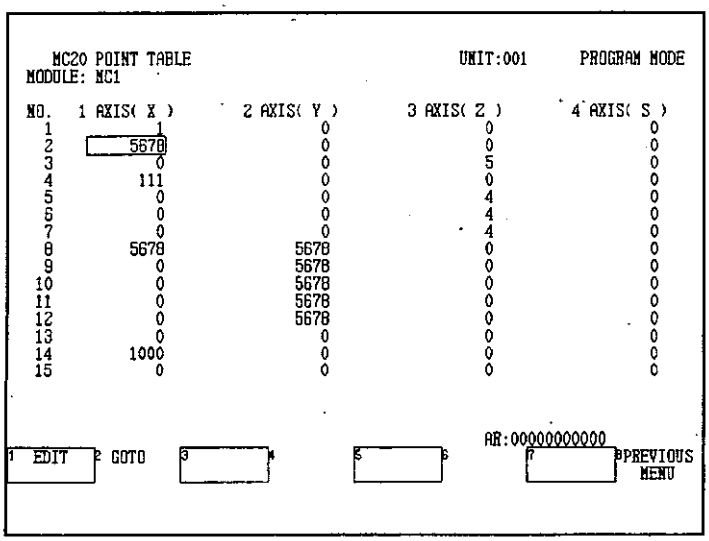
6.3.4 Editing

1. Copy

1) The Copy function is used to store blocks of point table data specified using the cursor. The data stored using the Copy function can be inserted in another position using the Paste function.

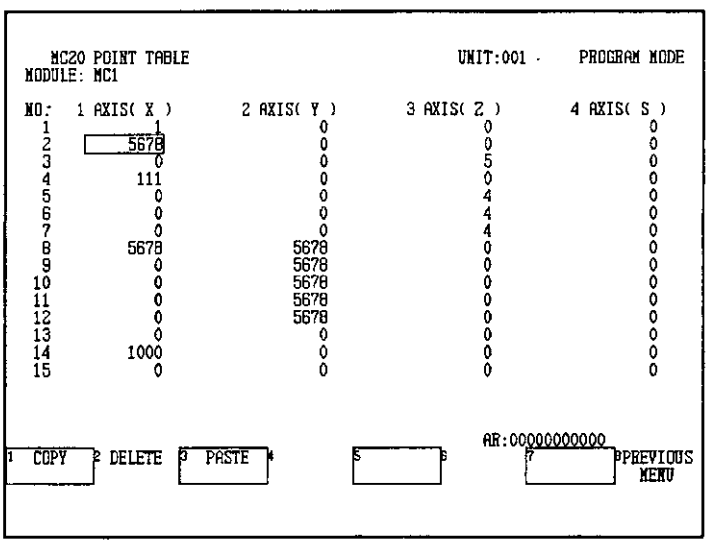
2) Use the following procedure to copy data.

a) Move the cursor to the first line of the range to be copied.

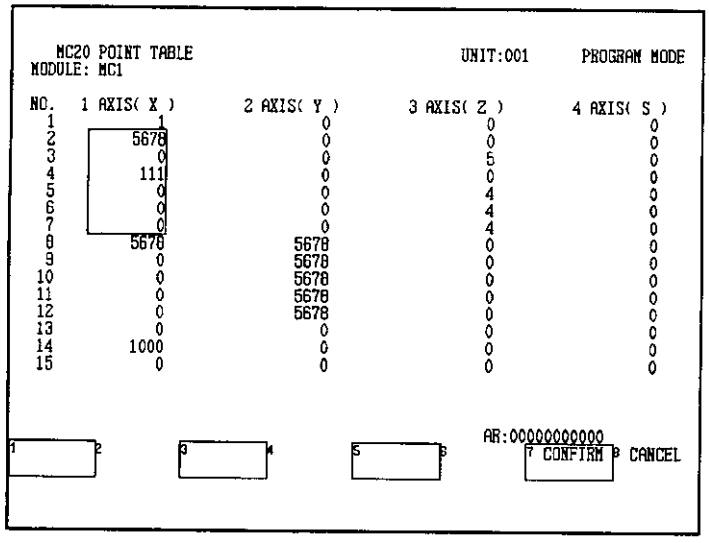


b) Press **F1 (EDIT)**.

c) Press **F1 (COPY)**.



d) By moving the cursor, select the range of data to be copied and press **F7 (CONFIRM)**.



The selected range of data will be stored and can be inserted at another position using the Paste function.

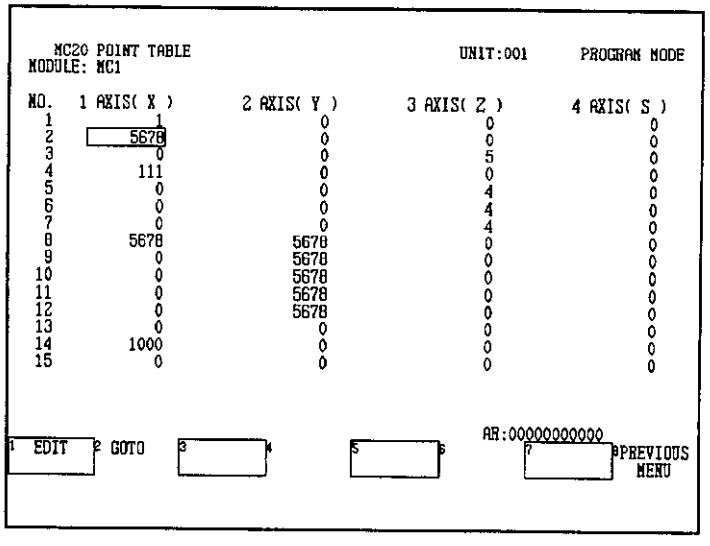
2. Delete

1) The Delete function is used to change blocks of point table data specified using the cursor to "0" and store the original data. The data stored using the Delete function can be inserted in another position using the Paste function.

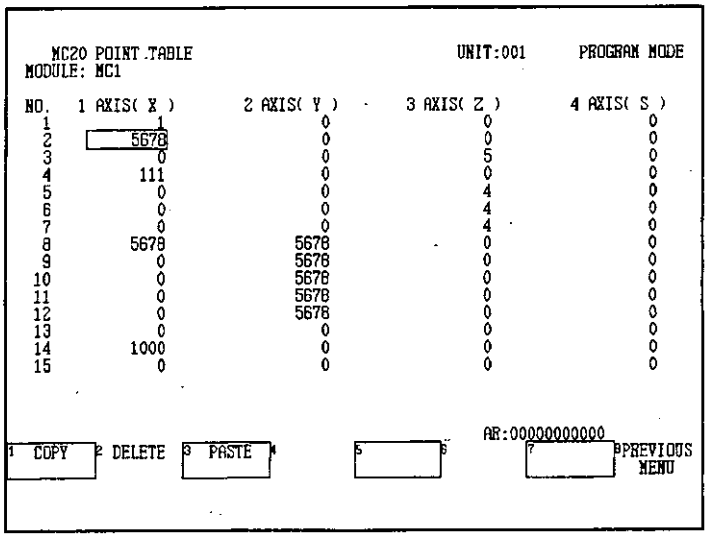
2) Use the following procedure for deleting data.

a) Move the cursor to the first line of the range to be deleted.

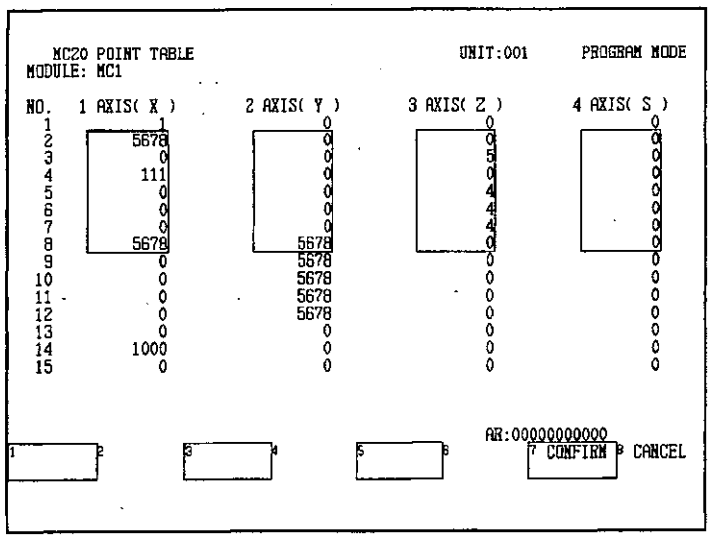
b) Press **F1 (EDIT)**.



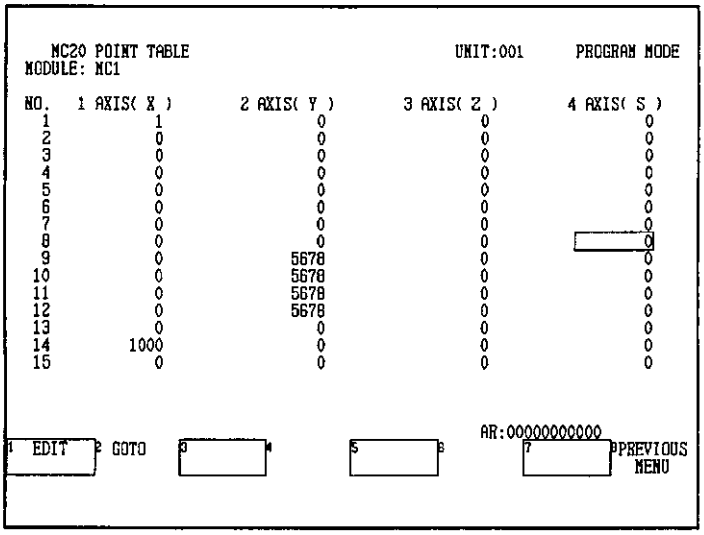
c) Press **F2 (DELETE)**.



d) By moving the cursor, select the range of data to be deleted and press **F7 (CONFIRM)**.



The selected range of data will be changed to "0."



The Paste function can be used to write the data stored using the Delete function in another position, in the same way as with the Copy function.

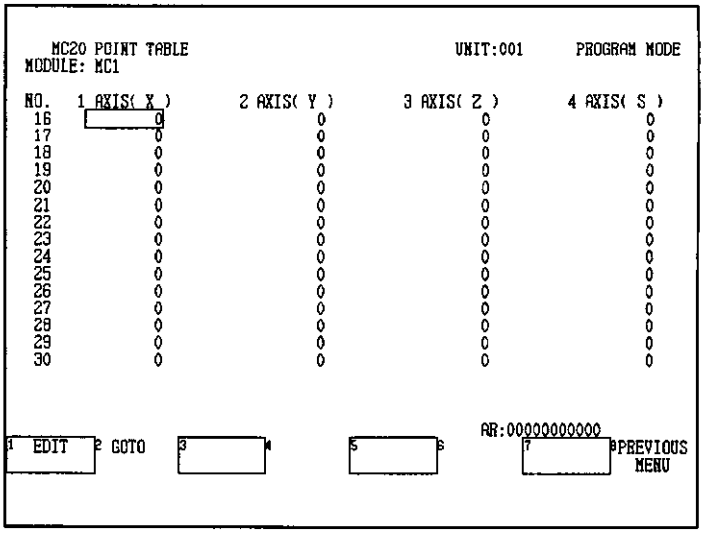
3. Paste

1) The Paste function is used to write data stored using the Copy function or Delete function in a position specified by the cursor. Here, as an example, the data stored in *2. Delete* is written in another position.

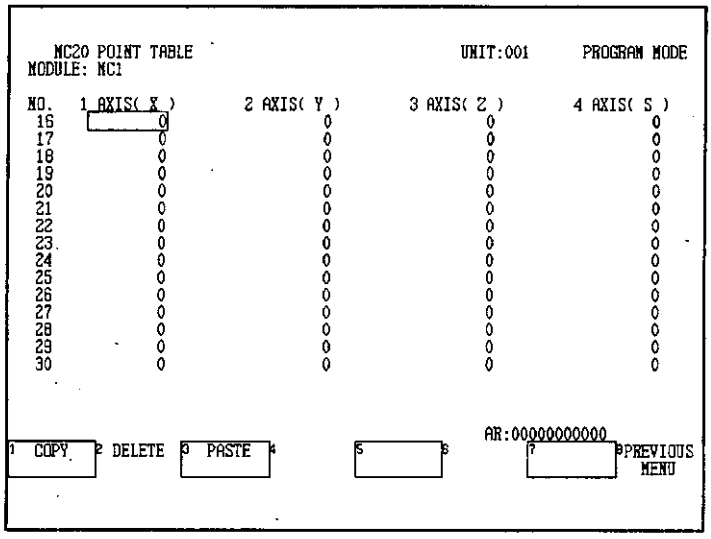
2) Use the following procedure for pasting data.

   a) Move the cursor to the beginning line of the block in which it is to be pasted.

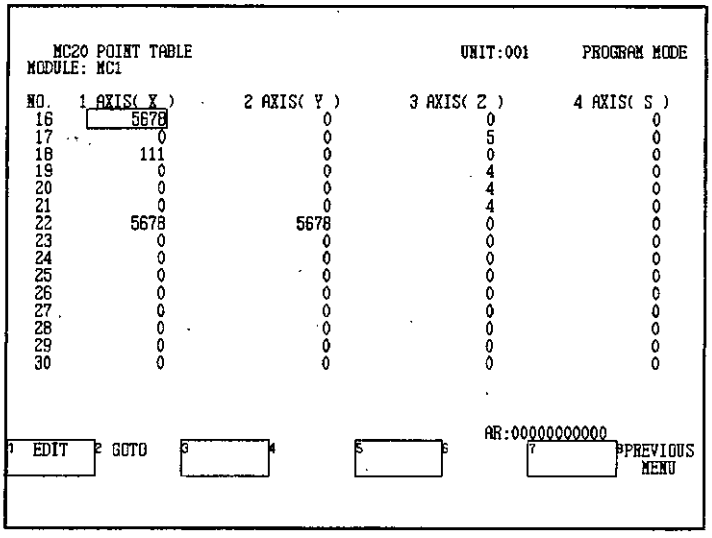
   b) Press **F1 (EDIT)**.



c) Press **F3 (PASTE)**.



The stored data will be inserted starting from the position of the cursor.



INFO

1) The data will be pasted into a block of which the top left corner is at the position of the cursor.

2) If there is not enough space on the right or below the cursor to write all of the stored data, an error will occur and pasting will not be performed. For example, it is not possible to paste point data for axes 1 to 4 if the cursor is in the column for axis 3.

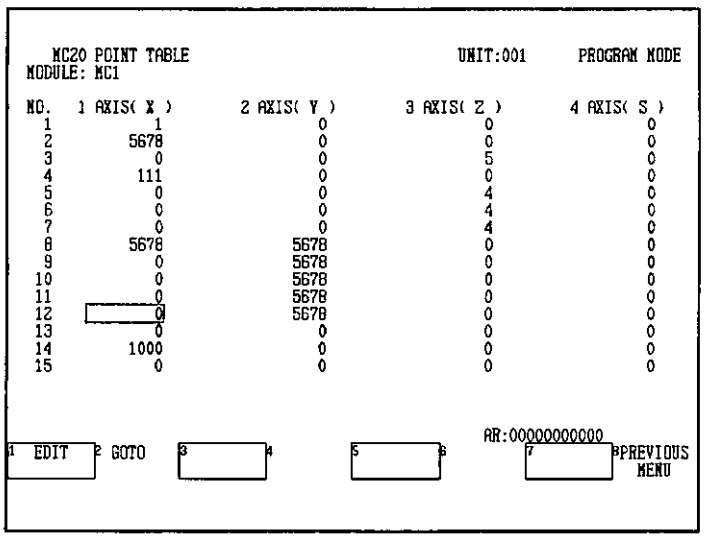
6.3.5 Moving the Cursor

1. Goto Top Line and Goto Bottom Line

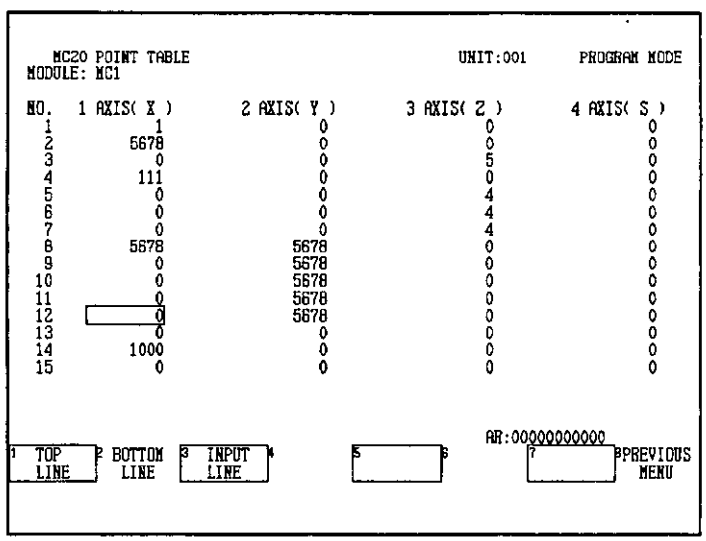
1) The cursor can be moved to the top line (line number 1), the bottom line (line number 500), or to a specified line. Moving to the top or last line can also be performed using the **Home** or **End** Keys respectively.

2) As an example, the following procedure shows how to move the cursor to the bottom line.

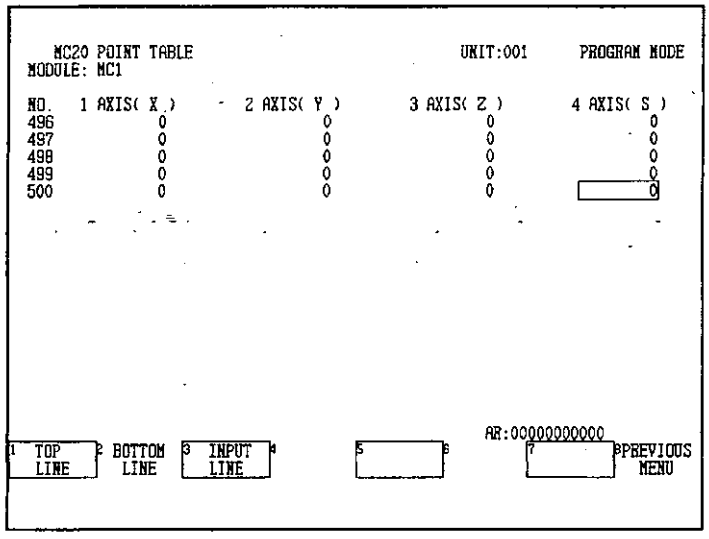
a) Press **F2 (GOTO)**.



b) Press **F2 (BOTTOM LINE)**.



The cursor will move to the bottom line. The cursor can be moved to the top line in a similar fashion.

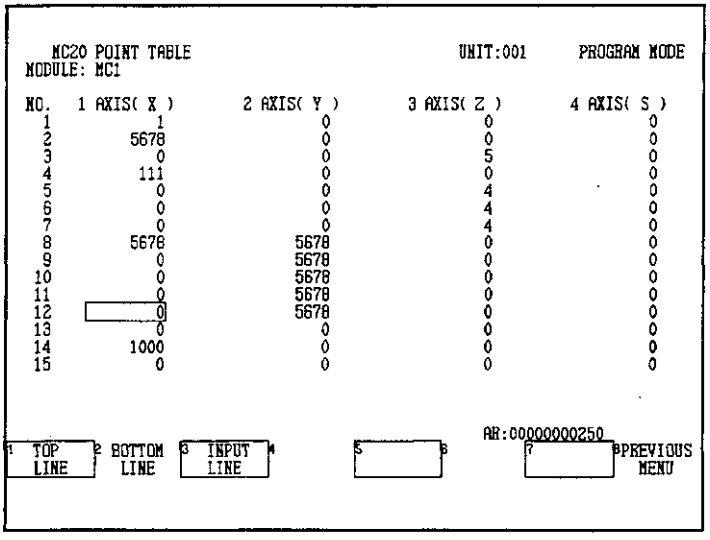


2. Goto Input Line

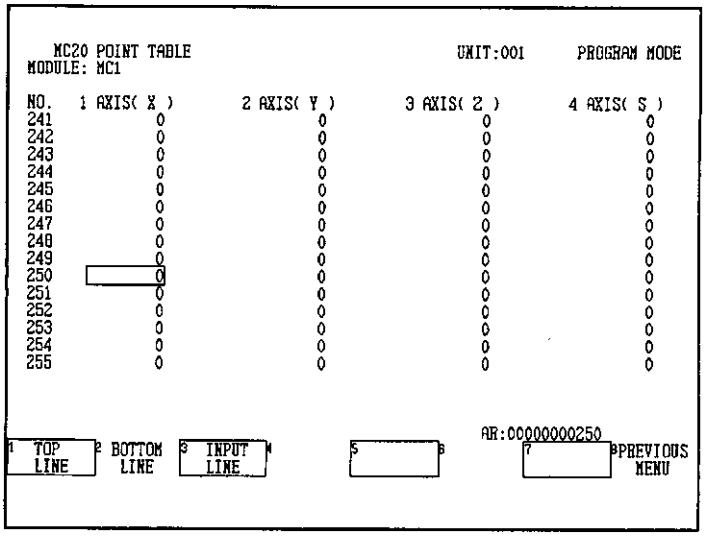
1) The cursor can be moved to any line desired.

2) As an example, the following procedure shows how to move to line number 250.

a) Enter the desired line number in the AR and press **F3 (INPUT LINE)**.

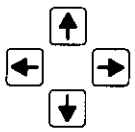


The cursor will move to line number 250.



3. Summary of Key Operations

The basic keys for editing point tables are summarized below.



If the Right Cursor Key (→) is pressed with the cursor in axis 4, the cursor will move to the next line of axis 1.
If the Left Cursor Key (←) is pressed with the cursor in axis 1, the cursor will move to the previous line of axis 4.

Inputs the value in the AR as point data.

ESC — Clears error messages.

PGUP — Scrolls up 15 lines of data.

PGDN — Scrolls down 15 lines of data.

HOME — Moves the cursor to the start (axis 1, line 1).

END — Moves the cursor to the end (axis 4, line 500).

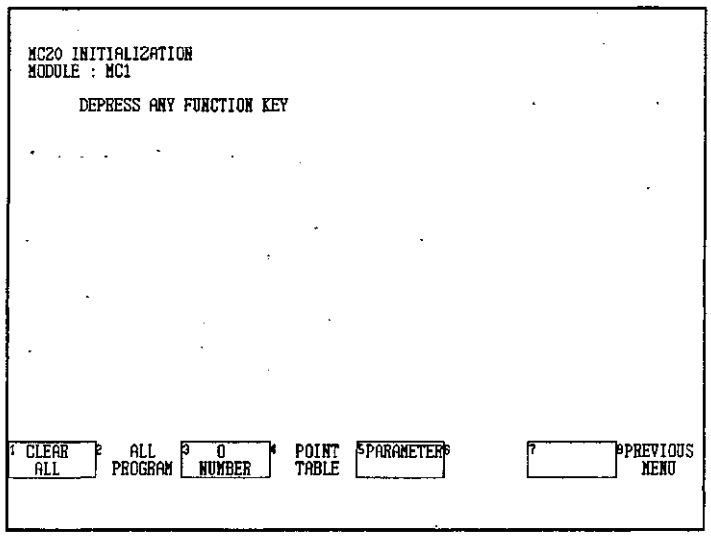
6

6.4 MC20 Module Initialization

This section provides details of the operations used to initialize parameters, programs, and point tables for MC20 Modules.

6.4.1 Initialization Screen

1) The Initialization function is used to return the data for a specified MC Module to the default settings. The Initialization Screen is shown below.



- **CLEAR ALL**: Returns all the point table data and parameters to their default settings and clears all programs for a specified MC Module. This function can be used only when the MC Module is in Edit Mode.

- **ALL PROGRAM**: Clears all programs for a specified MC Module. This function can be used only when the MC Module is in Edit Mode.

- **O NUMBER**: Clears all programs with a specified O number for a specified MC Module. This function can be used only when the MC Module is in Edit Mode.

- **POINT TABLE**: Returns all the point table data to the default setting "0."

- **PARAMETER**: Returns all the parameters for a specified MC Module to their default settings.

INFO

Some parameter data will not change until the MC20 Module is reset or the power is turned OFF and ON again. Even when the Initialization function is used, the default settings will not be immediately reflected in operation. Refer to the following manual for information on parameters for MC20 Modules:

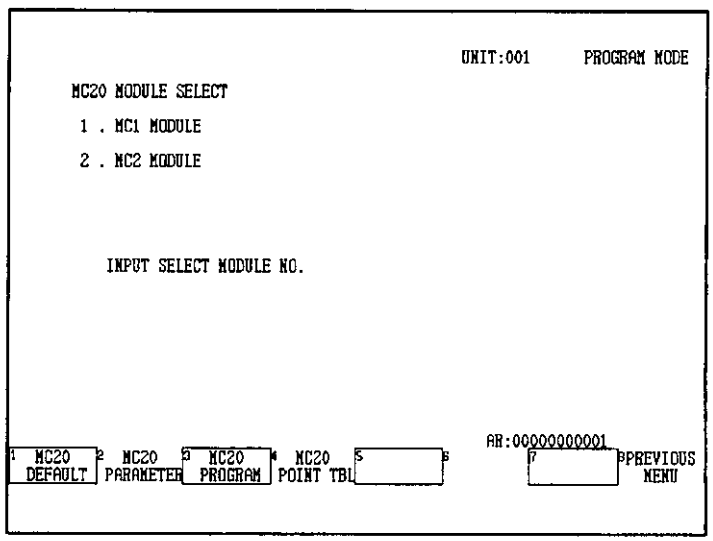
- *MEMOCON GL120, GL130 Motion Module MC20 Software User's Manual (SIEZ-C825-20.52)*

6.4.2 Initializing Selected Data

1) In addition to initializing all data, initialization can be performed for all programs, programs with a specified O number, point table data, or parameters. As an example, the procedure for initializing (clearing) programs with a specified O number is given below.

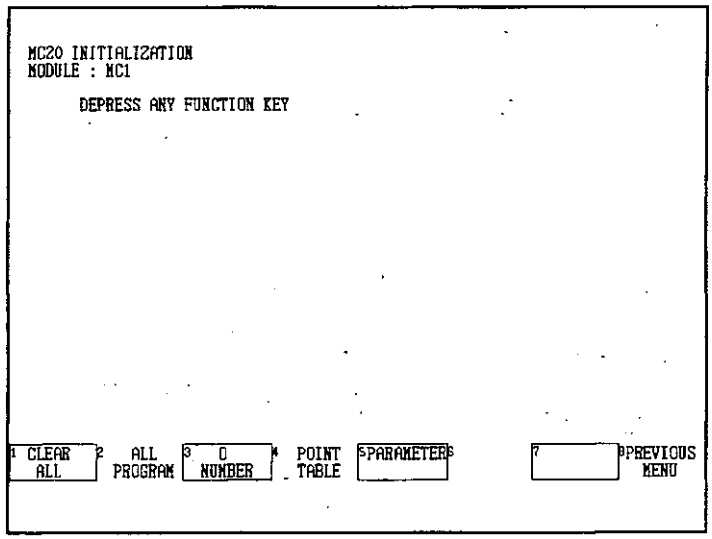
2) Use the following procedure to initialize all programs with a specified O number.

   a) From the MC20 Module Screen, enter the Module number in the AR and press **F1 (MC20 DEFAULT)**.



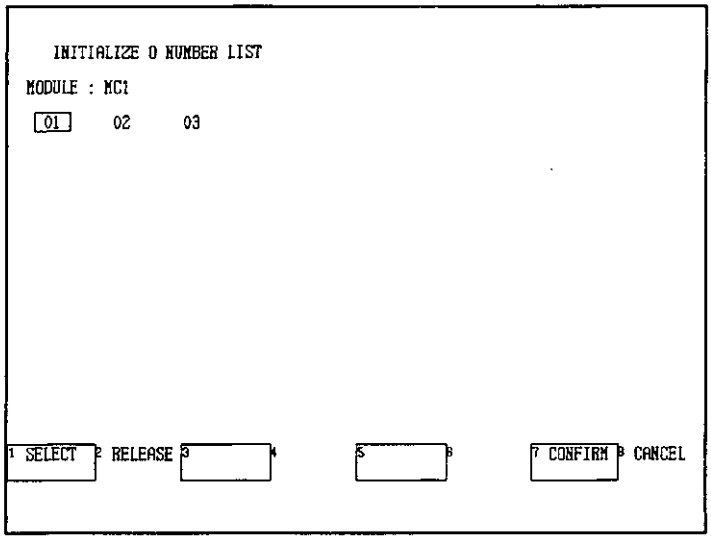
6

b) Press **F3 (O NUMBER)**.



The O Number Initialization Menu will be displayed.

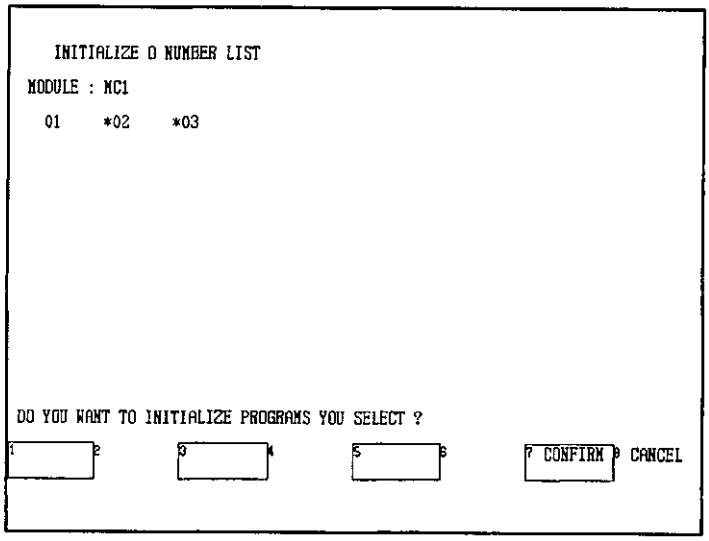
c) Move the cursor to the desired O number and press **F1 (SELECT)**. An asterisk will be displayed next to the selected O number. In this example, O numbers "2" and "3" have been selected.



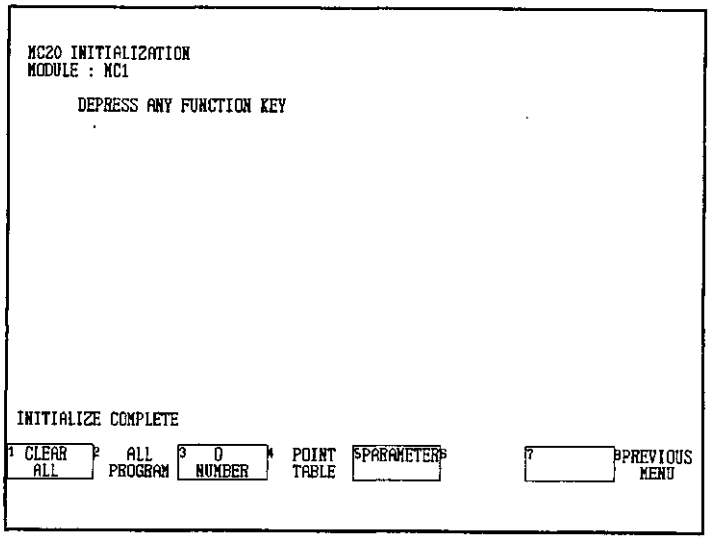
To deselect O numbers that have been selected, move the cursor to the O number and press **F2 (RELEASE)**.

d) Press **F7 (CONFIRM)**.

e) The following confirmation message will be displayed. Press **F7 (CONFIRM)** again.



A message confirming that initialization has been performed for programs with the selected O number will be displayed.



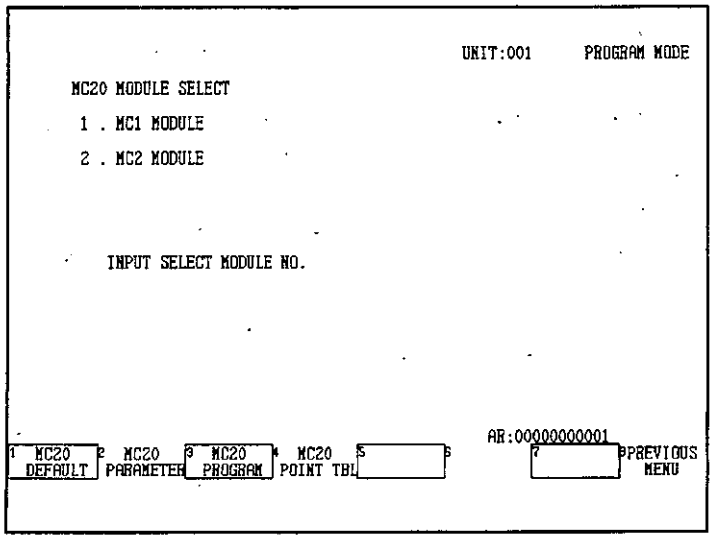
6

6.4.3 Initializing All Data

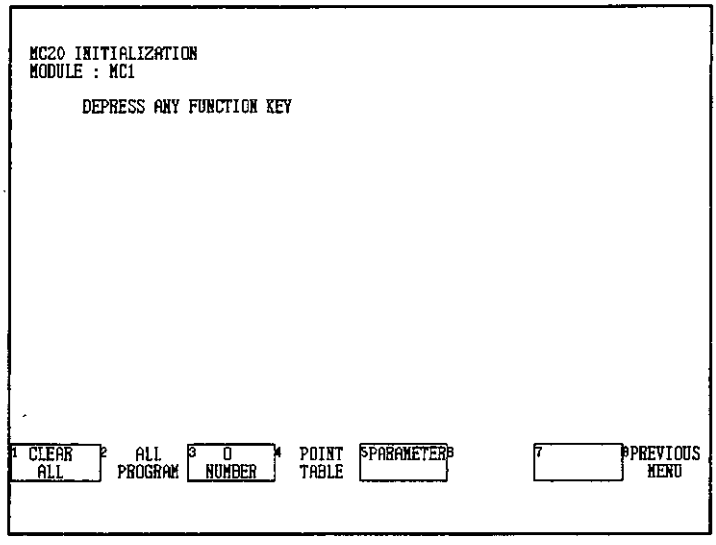
1) All of the stored data for an MC20 Module can be initialized in one operation.

2) Use the following procedure to initialize all of the data for an MC20 Module.

a) From the MC20 Module Screen, enter the Module number in the AR and press **F1 (MC20 DEFAULT)**.

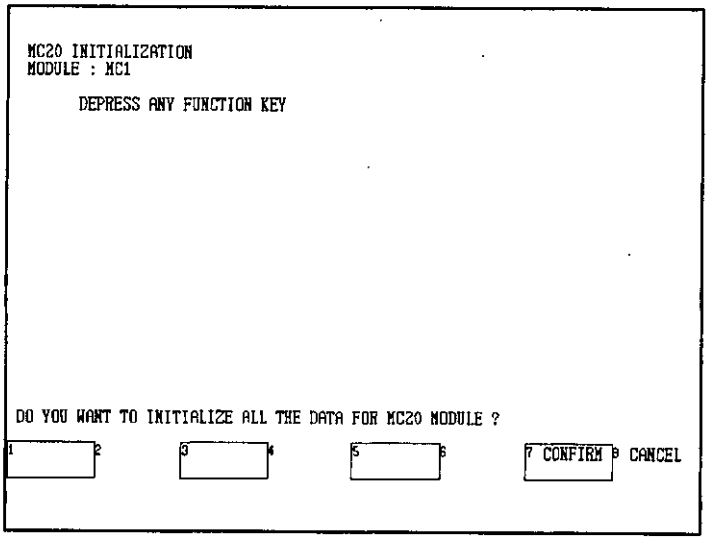


b) Press **F1 (CLEAR ALL)**.

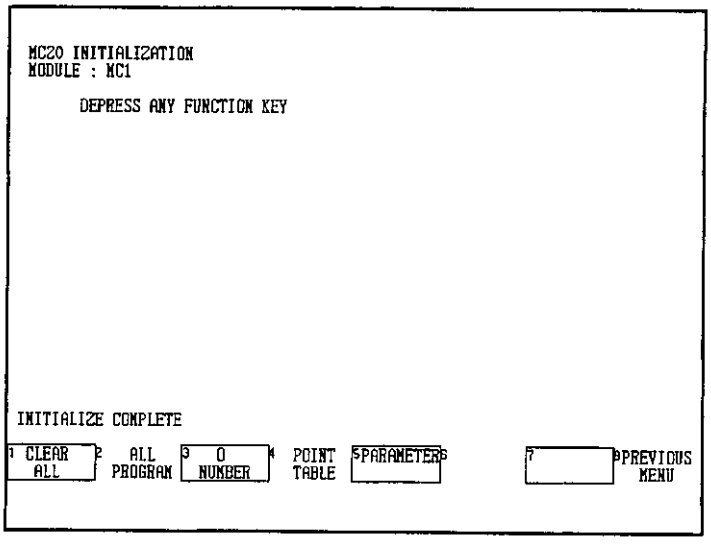


The confirmation message "DO YOU WANT TO INITIALIZE ALL THE DATA FOR MC20 MODULE?" will be displayed.

c) Press **F7 (CONFIRM).**



A message confirming that initialization has been performed will be displayed.



6.5 Editing MC10 Module Parameters

This section provides details of the operations used to edit the parameters of MC10 Modules.

6.5.1 Displaying MC10 Module Parameters

1) The operation used to display the parameters of MC10 Modules is described here.

Note Module Version Numbers

Before editing parameters of an MC10 Module, confirm the versions of the Modules.

a) If the Modules used are listed in the following table, or are more recent versions, editing of MC10 Module parameters is possible while the CPU Module is running. If versions of some of the Modules used are earlier than those listed in the following table, and editing of parameters is attempted while the CPU Module is running, a message will be displayed asking the user to stop the CPU Module. In this case, stop the CPU Module before editing the MC10 Module parameters.

- If parameter editing is to be performed for an MC10 Module that is mounted in a local channel, confirm the version numbers for the CPU Module and the MC10 Module.

- If parameter editing is to be performed for an MC10 Module that is mounted in a remote channel, confirm the version numbers for the CPU Module, MC10 Module, Remote I/O Driver Module, and Remote I/O Receiver Module.

The following table shows the Module versions that support editing of MC10 parameters while the CPU Module is running.

Module	Name	Model number	Version number	Version number location
CPU Module (8 kW)	CPU10	DDSCR-120CPU14200	□□B02 onwards	Nameplate
CPU Module (16 kW)	CPU20	DDSCR-120CPU34100	□□B09 onwards	Nameplate
CPU Module (16 kW)	CPU21	DDSCR-120CPU34110	□□A06 onwards	Nameplate
CPU Module (32 kW)	CPU30	DDSCR-130CPU54100	□□C04 onwards	Nameplate
CPU Module (40 kW)	CPU35	DDSCR-130CPU54110	□□A05 onwards	Nameplate
Single-axis Motion Module	MC10	JAMSC-120MMB10100	□□A09 onwards	Nameplate
Remote I/O Driver Module	RIOD-COAX	JAMSC-120CRD13100	□□A10 onwards	Nameplate
Remote I/O Receiver Module	RIOR-COAX	JAMSC-120CRR13100	□□A13 onwards	Nameplate

Note The nameplate is located on the right side of the Module.

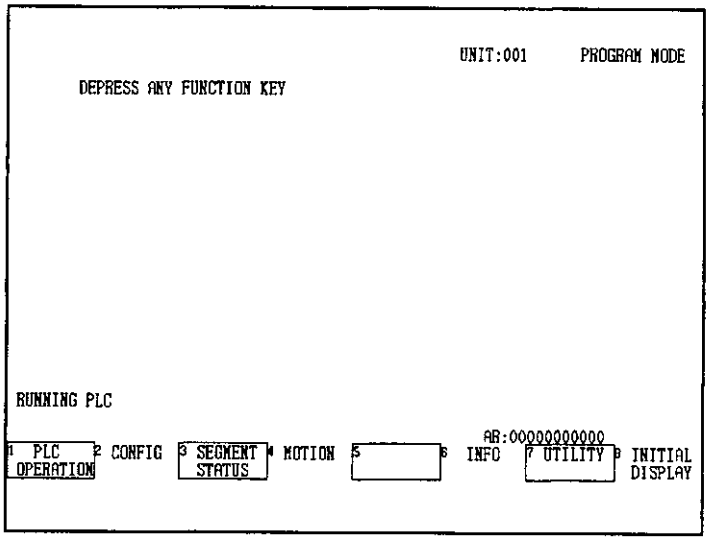
b) If the CPU Module is stopped, the parameters of MC10 Modules can be edited regardless of the Module versions being used.

INFO Refer to the following manual for information on parameters for MC10 Modules:

- *MEMOCON GL120, GL130 Motion Module MC10 User's Manual (SIEZ-C825-20.41)*

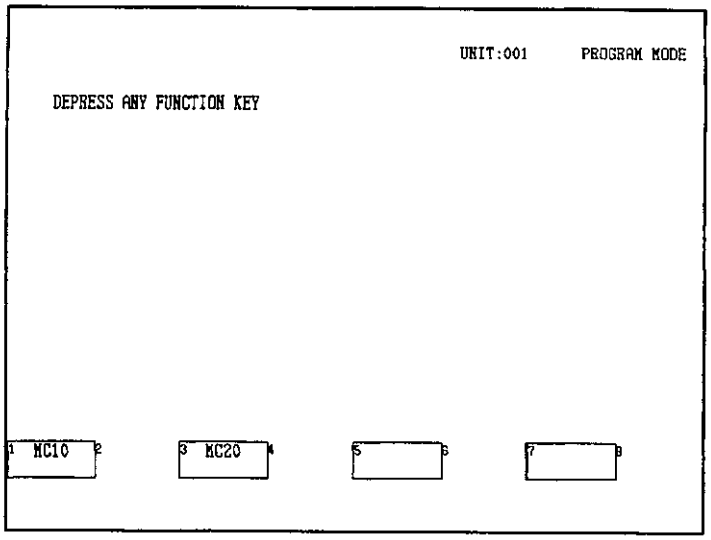
2) Use the following procedure to display the parameters of MC10 Modules. As an example, the procedure used when the CPU Module is running is given here.

a) Press **F4 (MOTION)** from the Supervisory Screen.

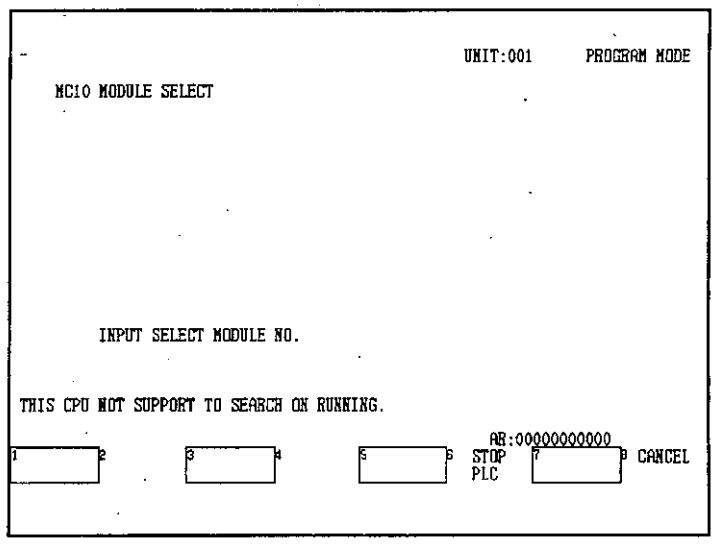


The MC Module Model Selection Screen will be displayed.

b) Press **F1 (MC10)**.

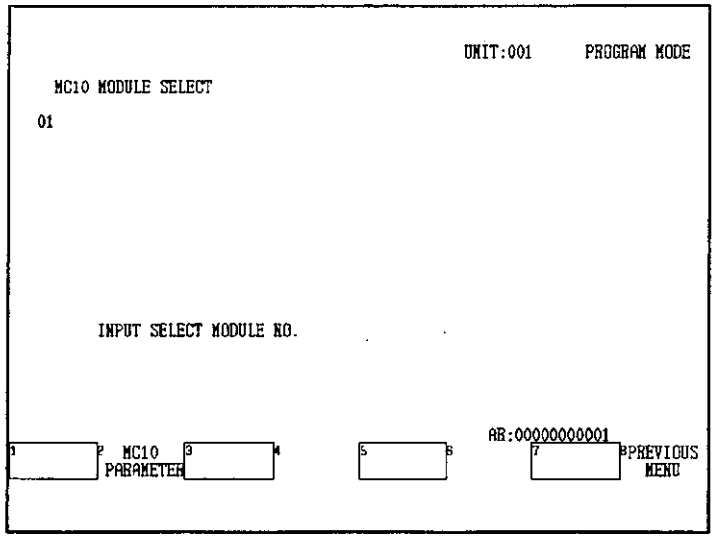


Note If the CPU Module version used does not support editing of MC10 parameters while the CPU Module is running, the message shown below will be displayed. (Refer to page 6-56.) In this case, press **F6 (STOP PLC)** and then **F7 (CONFIRM)** to stop the CPU Module before editing the MC10 Module parameters.



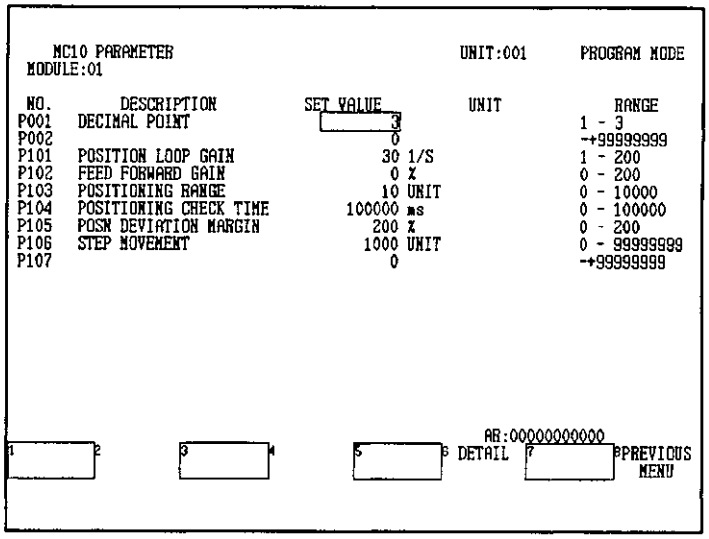
The MC10 Module Screen will be displayed.

c) Enter the Module number in the AR and press **F2 (MC10 PARAMETER)**.



The parameters of the specified MC10 Module will be displayed.

d) Move the cursor using the **Up** or **Down Cursor** Keys.



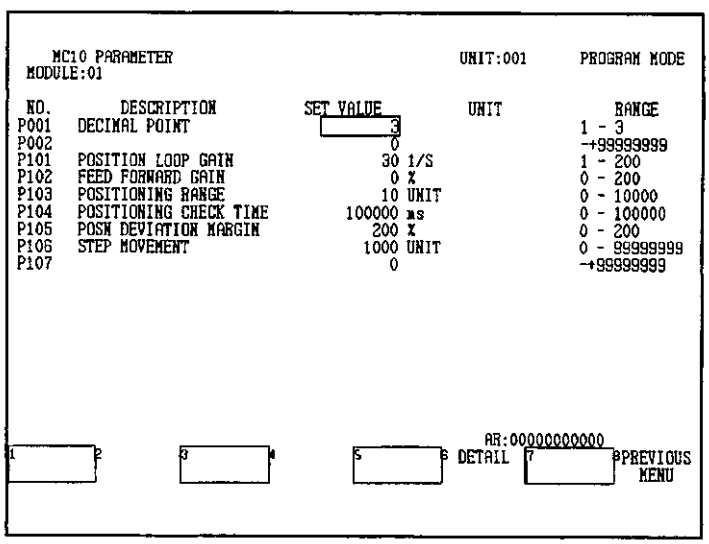
6.5.2 Editing MC10 Module Parameters

1) Parameters that require changes can be basically edited by moving the cursor to the parameter data to be edited and entering the numeric value.

2) Use the following procedure to edit the MC10 Module parameters.

a) Move the cursor to the position of the parameter to be edited and enter the new numeric value.

The numeric value that was entered will be displayed in the AR.



b) After checking the changed numeric value, press the **Enter** Key. The new parameter data will be refreshed.

3) The parameters for bit settings can be easily set using **F6 (DETAIL)** as follows:

INFO

1) An asterisk is displayed next to the parameters for bit settings. For example, "***P506 MODE SET.**"

2) Bit settings can also be made by directly inputting numeric values, without using **F6 (DETAIL)**.

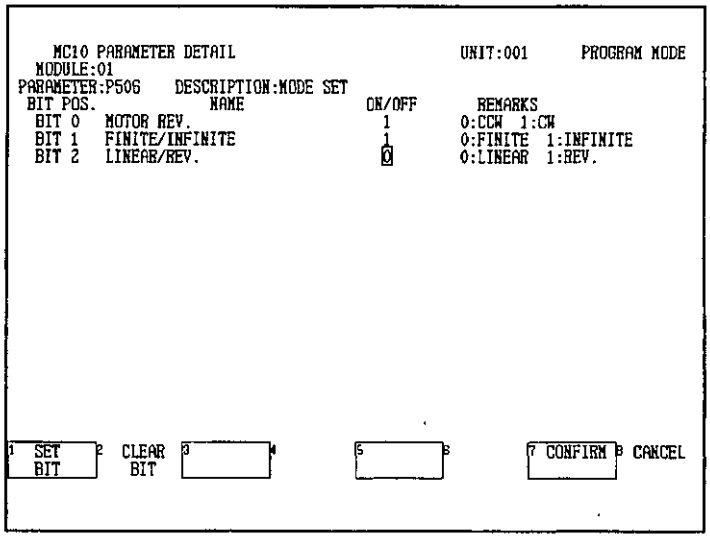
a) Move the cursor to the position of the parameter data for setting bits.

```
   MC10 PARAMETER                                  UNIT:001      PROGRAM MODE
 MODULE:01

 NO.       DESCRIPTION          SET VALUE          UNIT              RANGE
 P501   ENCODER PULSE                2048 PULSE                    1 - 32769
 P502   ENCODER PLS SIG SELECT          4                          1 2 4 MLTPLY
 P503   MACHINE ROT PER UNIT       10000 UNIT                     1 - 1500000
 P504   GEAR RATIO SET(MOTOR)          1                          1 - 10000000
 P505   GEAR RATIO SET(MACHINE         1                          1 - 10000000
*P506   MODE SET                       0 FW/RV FNT/INF LN/RO      0-7(b0.1.2)
 P507   BACKLASH COMPENSATION          0 PULSE                    0 - 32767
 P508   STORED STROKE LIMIT(+)  99999999 UNIT                     -+99999999
 P509   STORED STROKE LIMIT(-) -99999999 UNIT                     -+99999999
*P510   FUNCTION SELECT 2              0 0:NOT USED 1:USED        b0:LS b1:BK
 P511   MAX ROTATION SPEED          3000 r/min                    100 - 4500
 P512   MAX D/A OUTPUT                 6 v                        1 - 10
 P513   MOTOR SPEED LIMIT           4000 r/min                    0 - 10000
 P514                                  0                          -+99999999

                                                  AR:00000000000
1          2          3          4          5          6 DETAIL  7          8PREVIOUS
                                                                              MENU
```

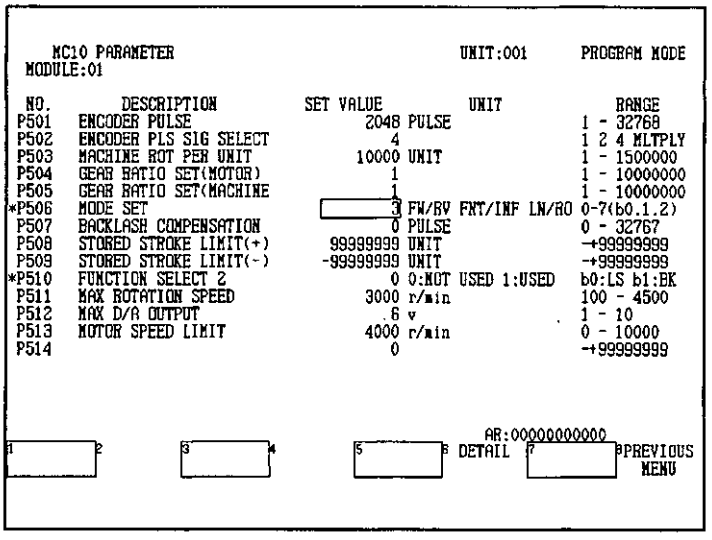
b) Press **F6 (DETAIL)**. The screen for setting bits will be displayed.

```
   MC10 PARAMETER DETAIL                           UNIT:001      PROGRAM MODE
  MODULE:01
PARAMETER:P506    DESCRIPTION:MODE SET
 BIT POS.          NAME              ON/OFF      REMARKS
  BIT 0   MOTOR REV.                   0        0:CCW  1:CW
  BIT 1   FINITE/INFINITE              0        0:FINITE  1:INFINITE
  BIT 2   LINEAR/REV.                  0        0:LINEAR  1:REV.

1 SET BIT  2 CLEAR BIT  3          4          5          6  7 CONFIRM  8 CANCEL
```

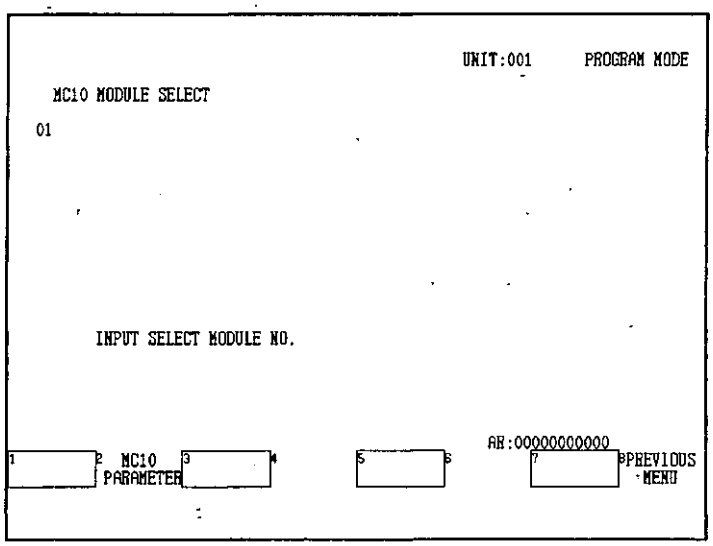
c) Move the cursor to the position of the parameter to be changed and press **F1 (SET BIT)** or **F2 (CLEAR BIT)** to change the setting.



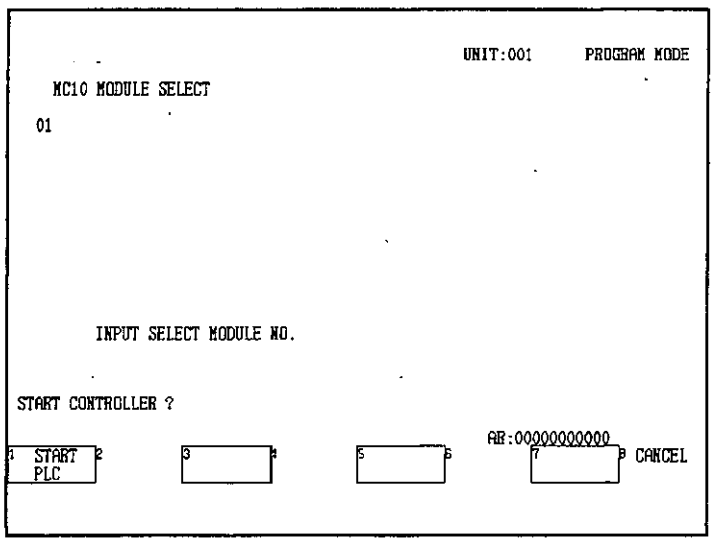
d) After changes are complete, press **F7 (CONFIRM)**. If **F7 (CONFIRM)** is not pressed, the changes to the parameter data will not be validated.



e) Press **F8 (PREVIOUS MENU)** to return to the MC10 Module Screen.



f) If the CPU Module was stopped, and **F8 (PREVIOUS MENU)** is pressed again, the confirmation message "START CONTROLLER?" will be displayed. Press **F1 (START PLC)**.



A confirmation message will be displayed.

g) Press **F7 (CONFIRM).**

The CPU Module will start.

IMPORTANT

Enabling MC10 Module Parameters

1) The timing with which parameter settings for MC10 Modules are enabled falls into two categories depending on the parameter: Immediately or at power-up. For details on the timing, refer to the following manual:

- *MEMOCON GL120, GL130 Motion Module MC10 User's Manual (SIEZ-C825-20.41)*

2) When parameters are edited, the operation required to enable the parameters will differ according to whether the CPU Module is running or not.

a) Parameters Edited with CPU Module Running

If parameters are edited while the CPU Module is running, the MC10 Module must be reset to enable the parameter settings.

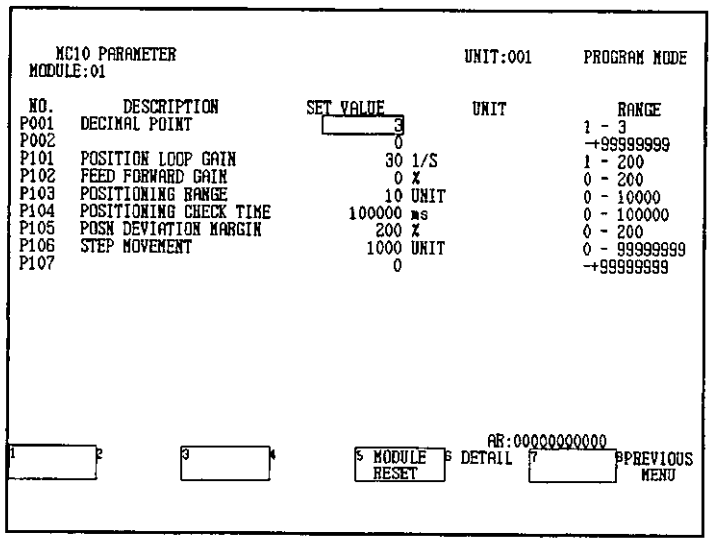
- Settings for immediately enabled parameters will be validate as soon as the MC10 Module Parameter Edit Screen is quit. If, however, the Module is not reset at this stage, the next time power is turned ON, the new settings will be lost.

- Settings for parameters that are enabled at power ON will be validate after the Module is reset.

Use either of the following procedures to reset the MC10 Module.

(1) From the MC10 Module Parameter Edit Screen

Edited parameters can be enabled directly from the MC10 Module Parameter Edit Screen by pressing **F5 (Module RESET)**.



(2) From the Ladder Program

Edited parameters can be enabled from the ladder program by turning ON the Module Reset Output Coil (MRS).

b) Parameters Edited with CPU Module Stopped
If MC10 Module parameters are edited while the CPU Module is stopped, enable the new settings in either of the following ways:

(1) Resetting the MC10 Module from the Ladder Program

Edited parameters can be enabled by resetting the MC10 Module. Turn ON the Module Reset Output Coil (MRS) from the ladder program.

(2) Turning Power OFF and ON

Edited parameters can be enabled by turning the power of the Power Supply Module in the same rack as the MC10 Module OFF and ON.

Monitoring Operations

7

This chapter provides details of operations used for monitoring PLC status and MC status.

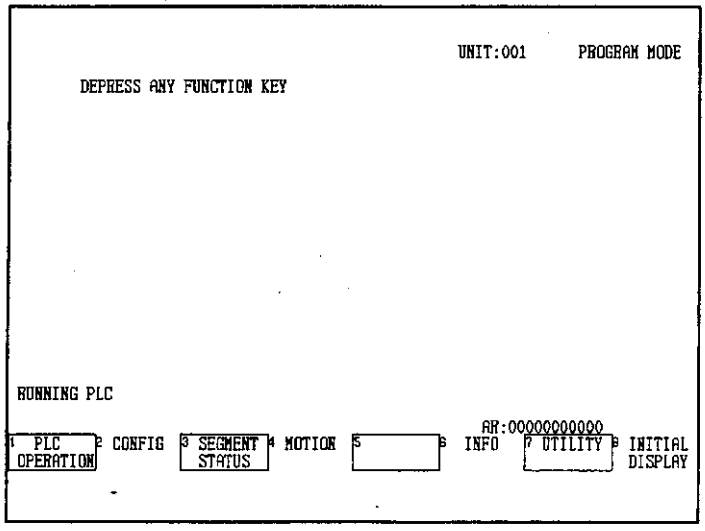
7.1 PLC Status

This section describes the procedure used to display the PLC status.

7.1.1 PLC Status Screen

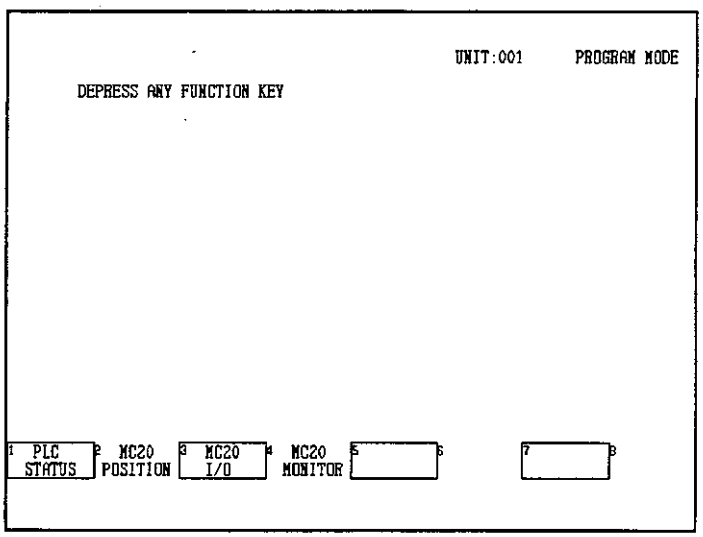
1) Use the following procedure to display the PLC Status Screen.

a) Press **F6 (INFO)** from the Supervisory Screen.

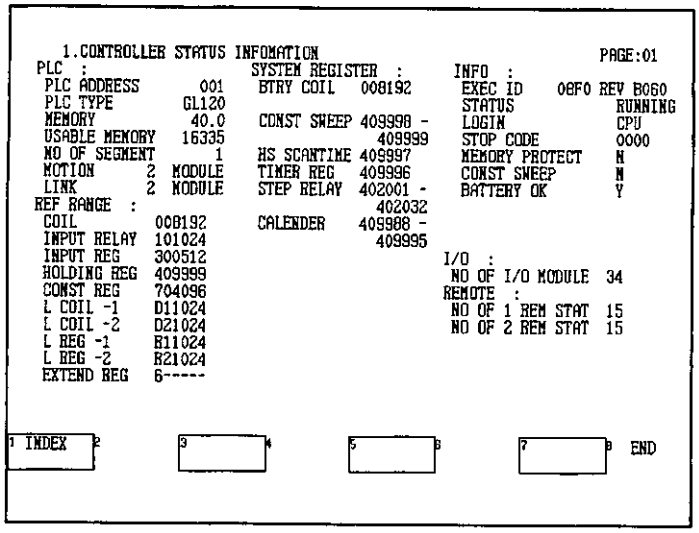


The display will switch to the ***Information*** Submenu.

b) Press **F1 (PLC STATUS)**.



c) The first screen of the PLC Status Screen (1. CONTROLLER STATUS INFORMATION) will be displayed.



7.1.2 Switching Displays

1) The following PLC status information is available from the PLC Status Screens.

- **Controller Status Information**

  This screen is the first screen displayed when the PLC Status Screen is displayed. Information, such as the version of CPU Module being used and the port to which it is connected, is provided.

- **Machine Status**

  PLC status information, such as the Sweep Mode settings and memory protect status, is displayed.

- **Error Code**

  Up to 3 error codes are displayed.

- **CPU Failure History**

  Up to 20 previous errors in the CPU Module are displayed, including details of the stop status, the error code, and the date and time the error occurred.

- **Power Down History**

  Up to 5 previous occurrences of power interrupts are displayed, including the date and time the power interruption occurred.

- **I/O Module Status Table**

  The status of each I/O Module is displayed by rack.

- **I/O Error Counter Table**

  The number of errors in each I/O Module are displayed by station.

- **Local I/O Module Status History**

  Up to 20 previous errors are displayed for the Modules connected to a local channel.

- **Remote Station Status**

  The status of remote stations is displayed by station.

- **Option Install Information**

  Installation details of Optional Modules, such as MEMOBUS Modules and PC Link Modules, is displayed.

- **Optional Module Status**

  Displays the status of optional Modules, such as MEMOBUS and PC Link Modules.

- **Optional Module Revision**

  The revision of the ROM stored in Optional Modules, such as MEMOBUS Modules and PC Link Modules, is displayed.

- **MC20 Failure History**

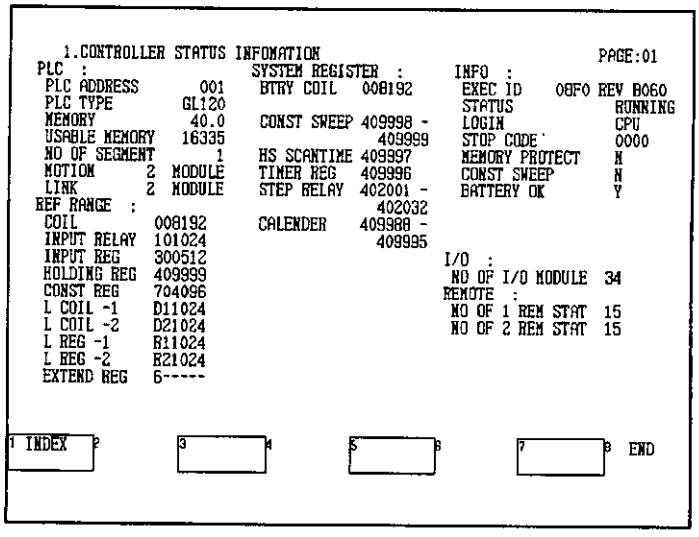
  Up to 20 previous errors of the MC20 Modules are displayed.

- **PC Link Status**

  The status of the PC Link Module is displayed.

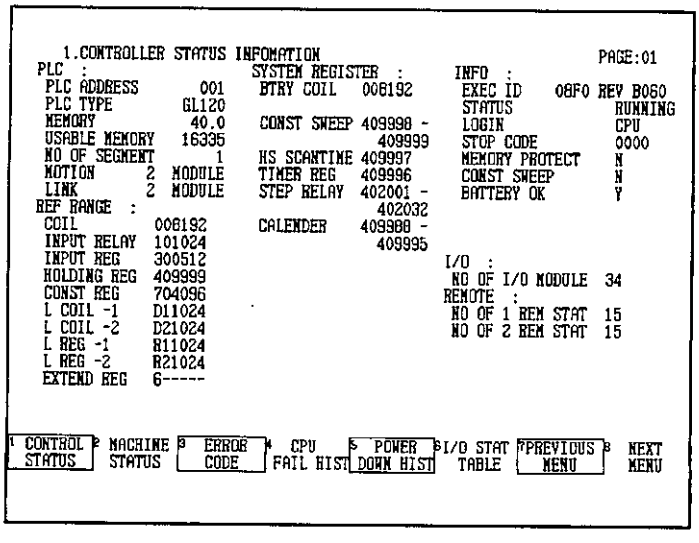
2) The display can be switched by using the Page Up or Page Down Key. In this example, however, F1 (INDEX) is used to switch screens.

a) Display the PLC Status Screen, and press **F1 (INDEX)**.

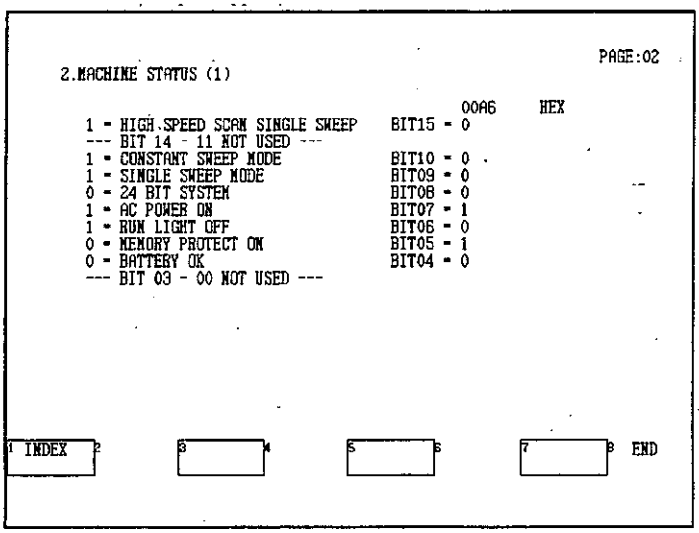


The menu keys will change to those for PLC status.

b) Press **F2 (MACHINE STATUS)**.



The Machine Status Screen will be displayed.



7.2 MC20 Current Position Monitor Screen

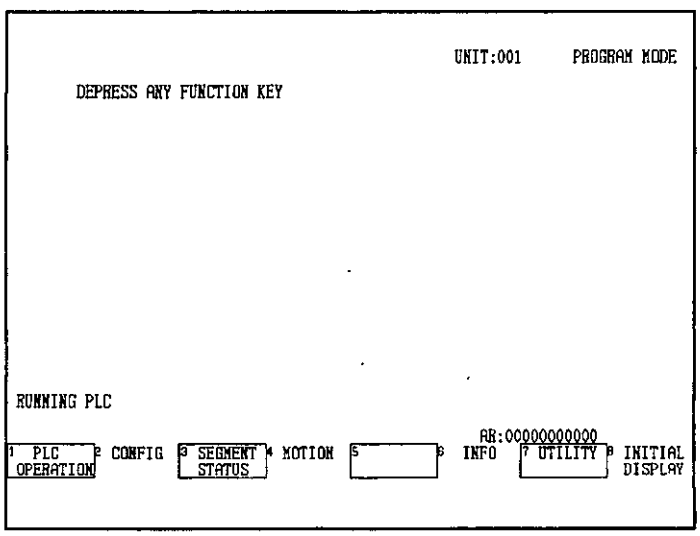
This section describes the procedure used to monitor the current position or the error pulses of an MC20 Module mounted to the GL120 or GL130.

7.2.1 Monitoring the MC20 Module Current Position

1) When an MC20 Module is mounted and I/O has been allocated, the current position of each axis connected to the MC20 Module can be displayed.

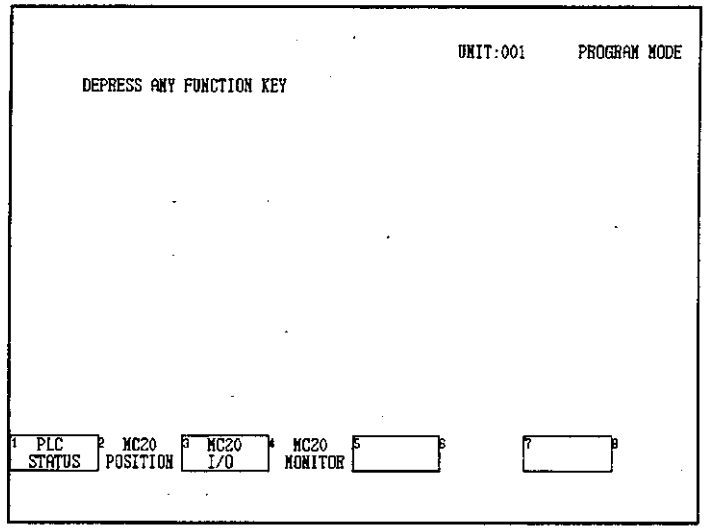
2) Use the following procedure to display the MC20 Current Position Monitor Screen.

a) Press **F6 (INFO)** from the Supervisory Screen.



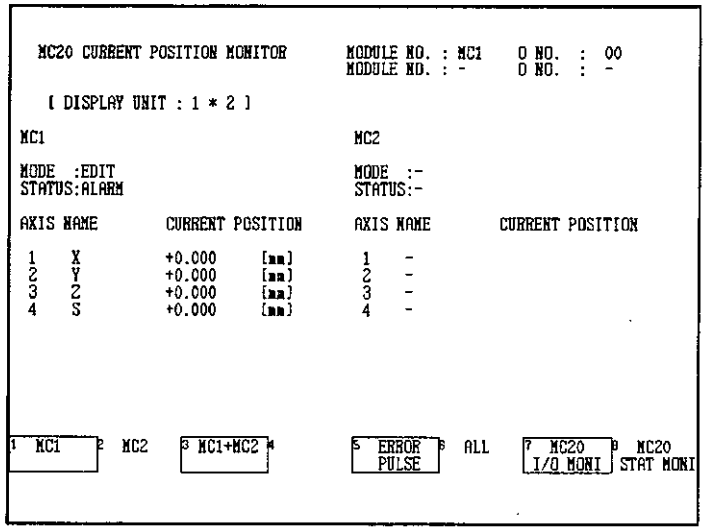
The display will switch to the ***Information*** Submenu.

b) Press **F2 (MC20 POSITION)**.



The MC20 Current Position Monitor Screen will be displayed.

c) To display the current position of MC1 only, press **F1 (MC1)**. To display the current position of MC2 only, press **F2 (MC2)**. To display the current position of both MC1 and MC2, press **F3 (MC1 + MC2)**.

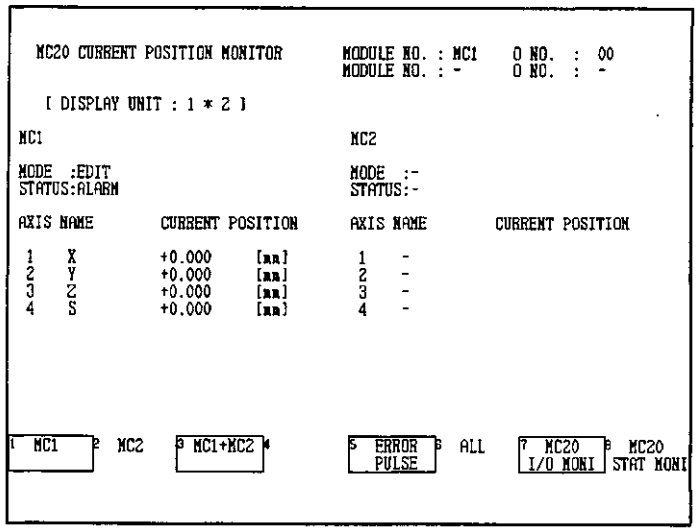


7.2.2 Switching to Error Pulse Display

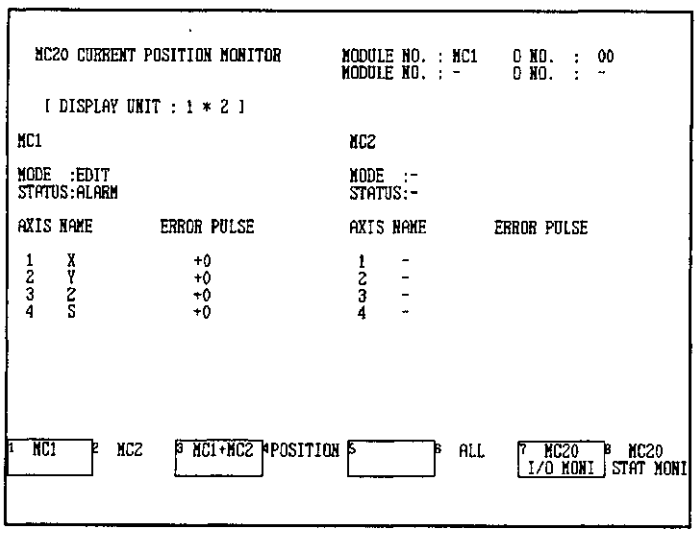
1) The MC20 Current Position Monitor Screen provides a mode that displays the current position and a mode that displays the error pulses for the current positioning reference. When the MC20 Current Position Monitor Screen is first displayed, the current position is displayed.

2) Use the following procedure to switch to error pulse display mode.

a) Display the MC20 Current Position Monitor Screen and press **F5 (ERROR PULSE)**.



The screen will switch from displaying current positions to error pulses.

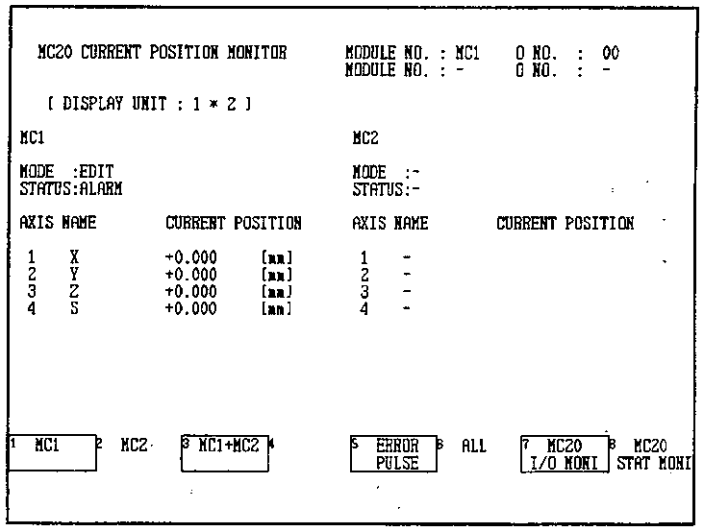


7.2.3 Switching to Display All Values

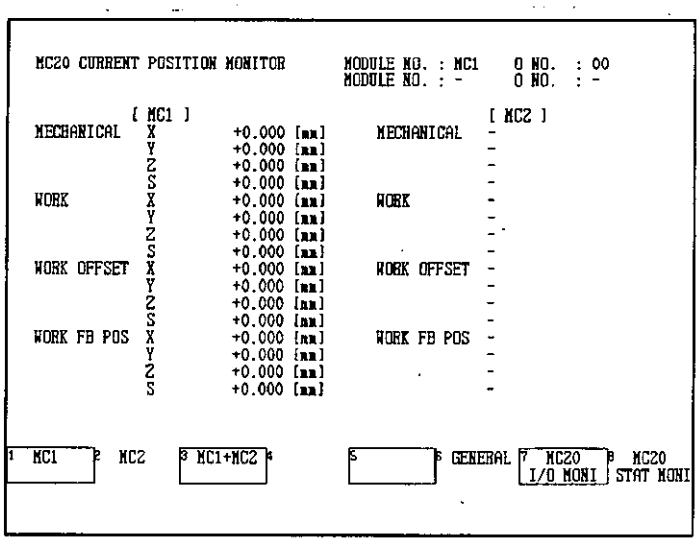
1) The MC20 Current Position Monitor Screen provides a mode for displaying the workpiece coordinate system values and a mode to display all the coordinate system values. When the MC20 Current Position Monitor Screen is first displayed, the workpiece coordinate system values are displayed.

2) Use the following procedure to switch to displaying all coordinate systems.

a) Display the MC20 Current Position Monitor Screen and press **F6 (ALL)**.



b) The display will switch to show the current machine coordinates, the workpiece coordinates, the workpiece offset, and the workpiece offset plus feedback (FB).



INFO For details on the coordinates displayed in the display mode for all coordinate systems, refer to the following manual.

- *MEMOCON GL120, GL130 Motion Module MC20 Software User's Manual (SIEZ-C825-20.52)*

7.3 MC20 I/O Status Monitor Screen

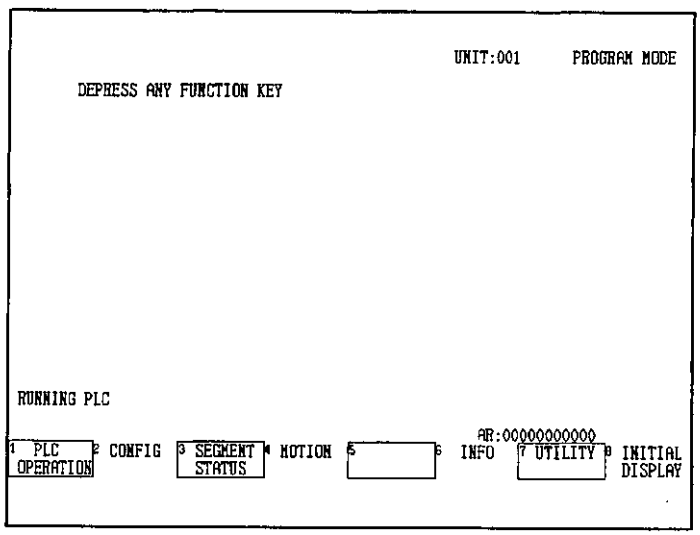
This section describes the procedure used to monitor the I/O status of a MC20 Module mounted to the GL120 or GL130.

7.3.1 I/O Status Monitor Screen

1) When an MC20 Module is mounted and I/O has been allocated, the I/O data of each axis connected to the MC20 Module can be displayed.

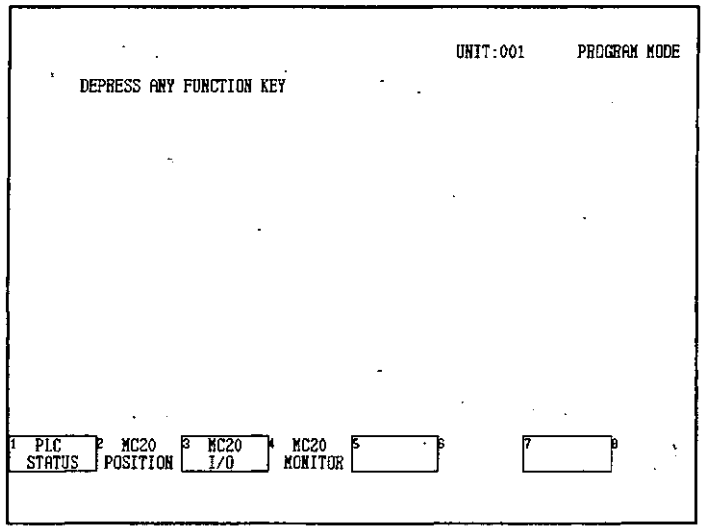
2) Use the following procedure to display the I/O Status Monitor Screen.

   a) Press **F6 (INFO)** from the Supervisory Screen.

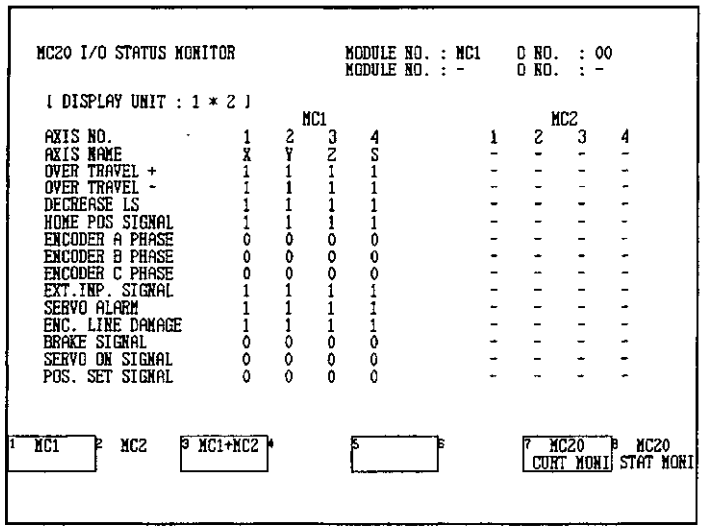


The display will switch to the ***Information*** Submenu.

b) Press **F3 (MC20 I/O).**



The MC20 I/O Status Monitor Screen will be displayed.



7.3.2 Switching Modules

1) To increase the refresh speed of display data, the display can be set to display only data for a single Motion Control Module. To switch between the Motion Control Modules, use F1 (MC1), F2 (MC2), and F3 (MC1 and MC2).

7.4 MC20 Status Information Monitor Screen

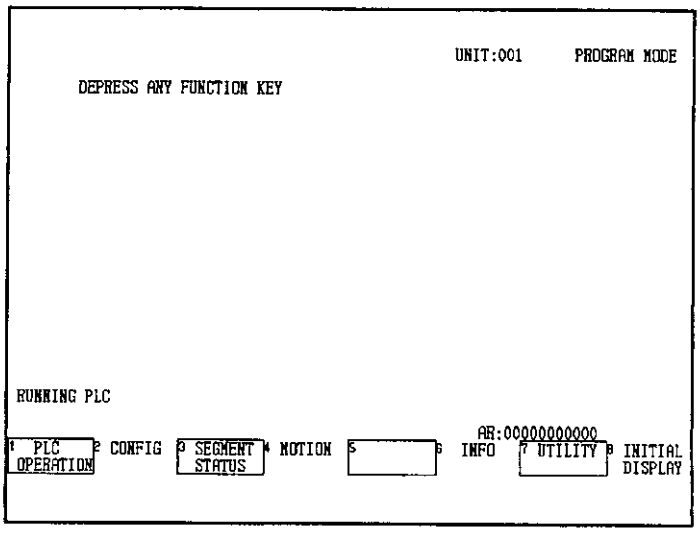
This section describes the procedures used to monitor the status information of a MC20 Module mounted to the GL120 or GL130.

7.4.1 MC20 Status Information Monitor Screen

1) When an MC20 Module is mounted and I/O has been allocated, the status information of the MC20 Module can be displayed.

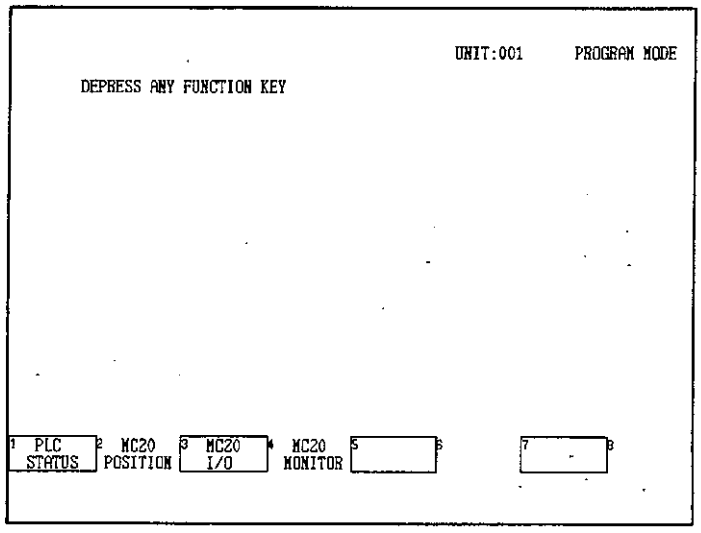
2) Use the following procedure to display the Status Information Monitor Screen.

   a) Press **F6 (INFO)** from the Supervisory Screen.

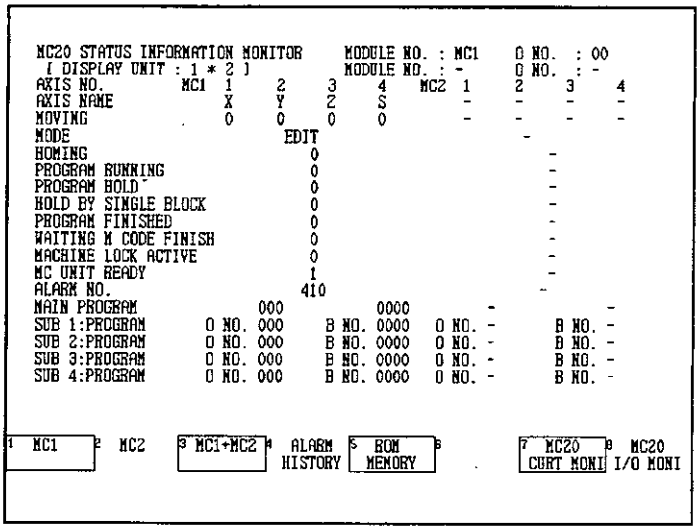


The display will switch to the ***Information*** Submenu.

b) Press **F4 (MC20 MONITOR)**.



The MC20 Status Information Monitor Screen will be displayed.

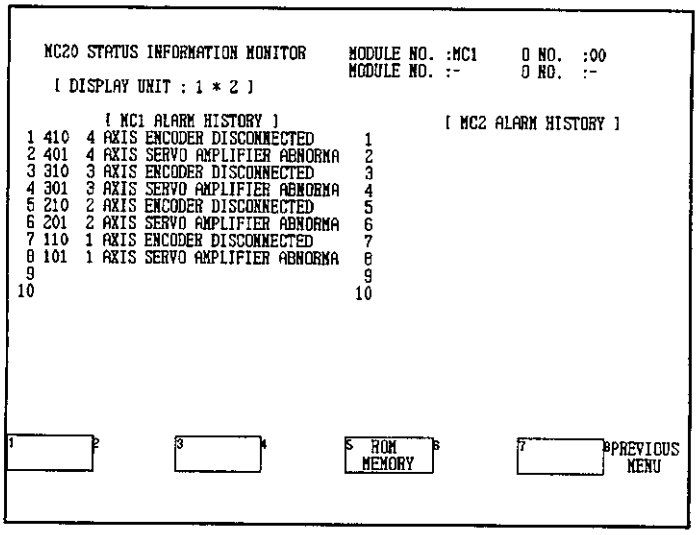


3) To display the current position of MC1 only, press **F1 (MC1)**. To display the current position of MC2 only, press **F2 (MC2)**. To display the current position of both MC1 and MC2, press **F3 (MC1 + MC2)**.

7.4.2 MC20 Module Alarm History

1) Press **F4 (ALARM HISTORY)** to display the MC20 Module's alarm history.

The following MC20 Alarm History Screen will be displayed.

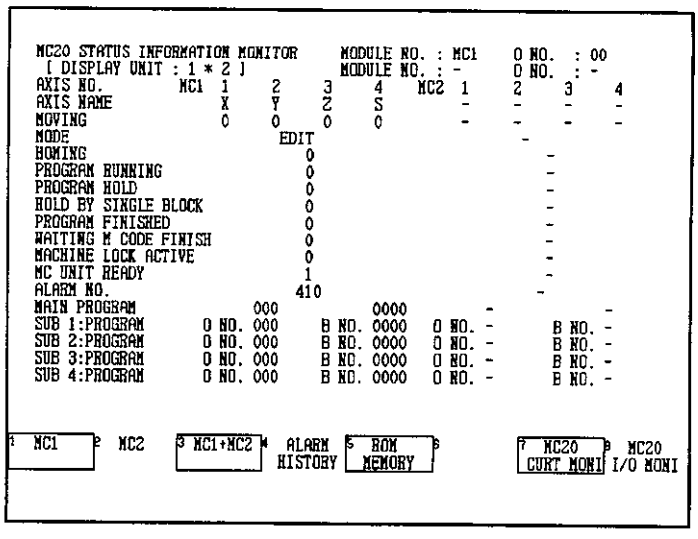


2) Press **F8 (PREVIOUS MENU)** to switch from the MC20 Alarm History Screen to the MC20 Status Information Monitor Screen.

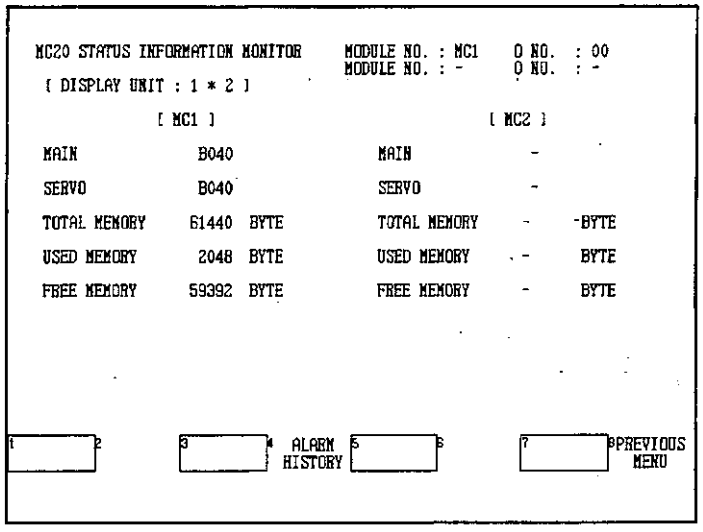
7.4.3 MC20 Module Version and Memory Capacity

1) The MC20 Modules version and memory capacity can be displayed by using F5 (ROM MEMORY) as follows:

a) Display the MC20 Status Information Monitor Screen.



b) Press **F5 (ROM MEMORY)**.



2) To switch from the Version and Memory Capacity Screen to the MC20 Status Information Monitor Screen, press **F8 (PREVIOUS MENU)**.

Loader Operations

8

This chapter describes the procedures used to load programs that have been created using MEMOSOFT to the PLC or an MC20 Module, and the procedures for saving programs from the PLC or an MC20 Module to the P120.

8.1 Loading and Saving PLC Data

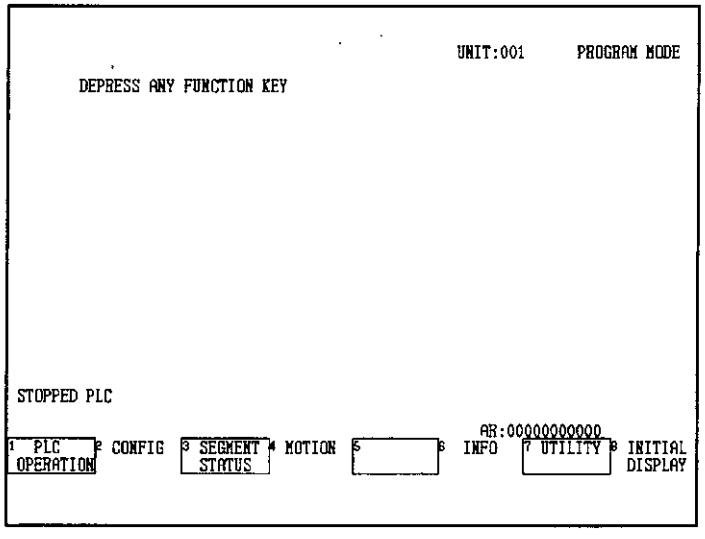
This section describes the procedures for loading data onto the PLC from the P120, saving data to the P120 from the PLC, and comparing and verifying PLC data with file data in the P120. All the examples of loading procedures provided here are for operations using a P120 hard disk and the PLC. Operations using a floppy disk and the PLC, however, can be performed by following the same procedures as for the hard disk.

8.1.1 Displaying PLC Loader Screen

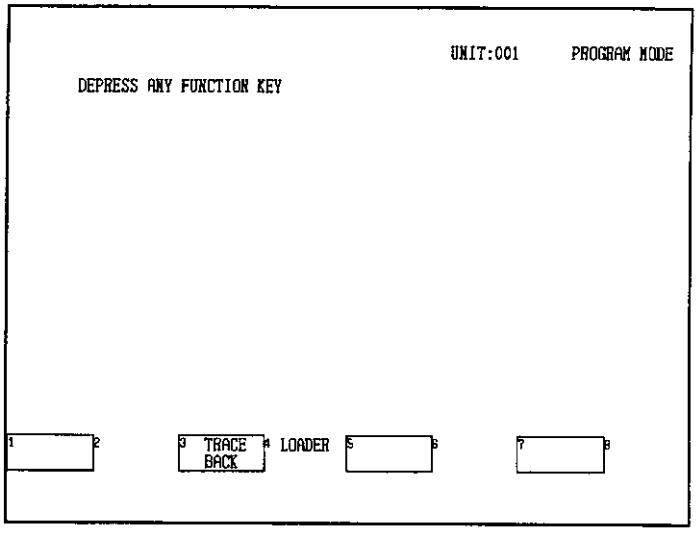
1) The procedures for loading and saving programs, and verifying data between the PLC and P120 are provided here. The operations for loading programs on the P120 onto the PLC cannot be performed if the PLC is in RUN state. If the PLC is in RUN state, a message asking to check the status will appear. Stop the PLC operating according to the message that is displayed.

2) Use the following procedure to display the PLC Loader Screen.

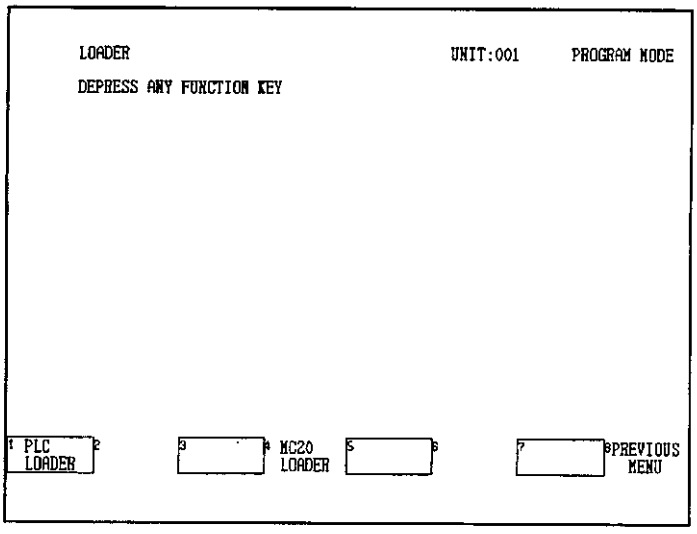
   a) Press **F7 (UTILITY)** from the Supervisory Screen.



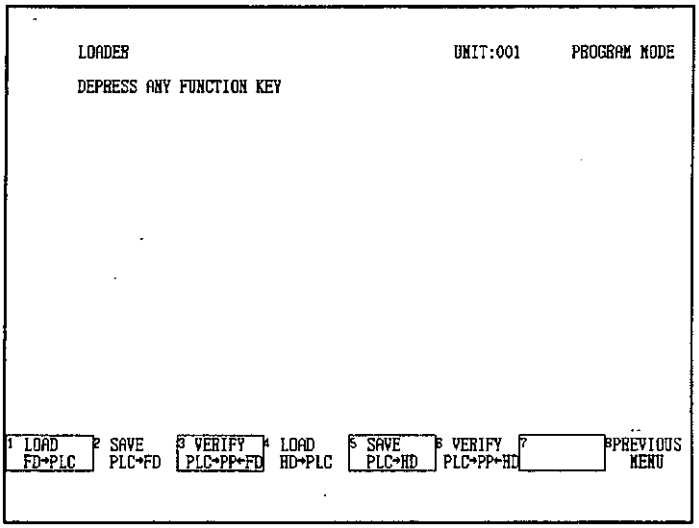
b) Press **F4 (LOADER)**.



c) Press **F1 (PLC LOADER)**.



The Loader Screen will be displayed.



3) The following functions are available from the PLC Loader Menu.

- **LOAD FD→PLC**

  Loads programs on the floppy disk onto the PLC.

- **SAVE PLC→FD**

  Saves programs in the PLC onto the floppy disk.

- **VERIFY PLC→PP←FD**

  Compares programs in the PLC with programs saved to the floppy disk and checks that they are the same.

- **LOAD HD→PLC**

  Loads programs on the P120 hard disk onto the PLC.

- **SAVE PLC→HD**

  Saves programs in the PLC onto the P120 hard disk.

- **VERIFY PLC→PP← FD**

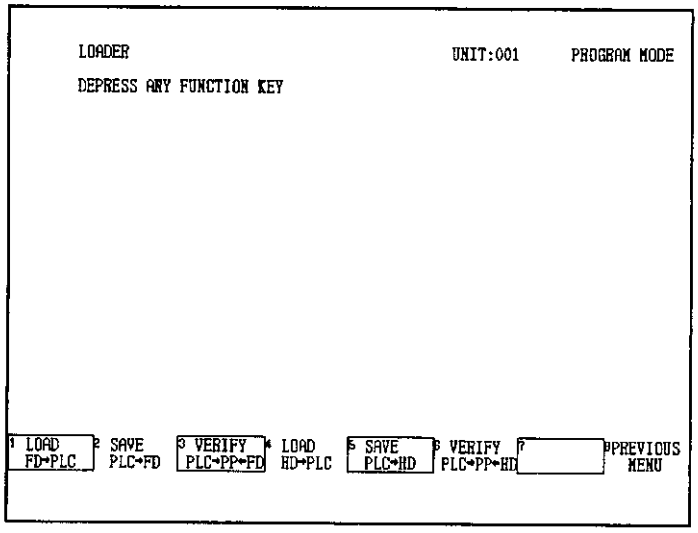
  Compares programs in the PLC with programs saved to the P120 hard disk and checks that they are the same.

8.1.2 Loading from P120 onto PLC

1) This operation loads programs created using MEMOSOFT onto the PLC. This operation cannot be performed if the PLC is in RUN state. If the PLC is in RUN state, a message asking to check the status will appear. Stop the PLC operating according to the message that is displayed.

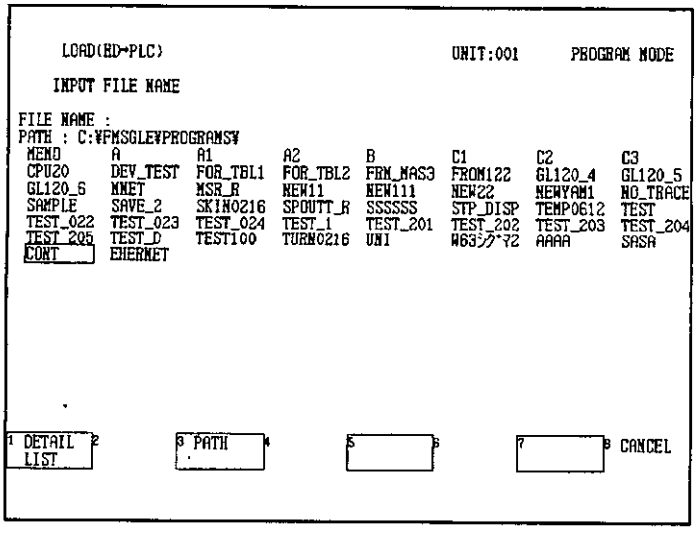
2) Use the following procedure to load a program from the P120 onto the PLC.

a) Press **F4 (LOAD HD→PLC)**.



The screen for selecting the file to load onto the PLC will be displayed.

b) Press **F1 (DETAIL LIST)**.



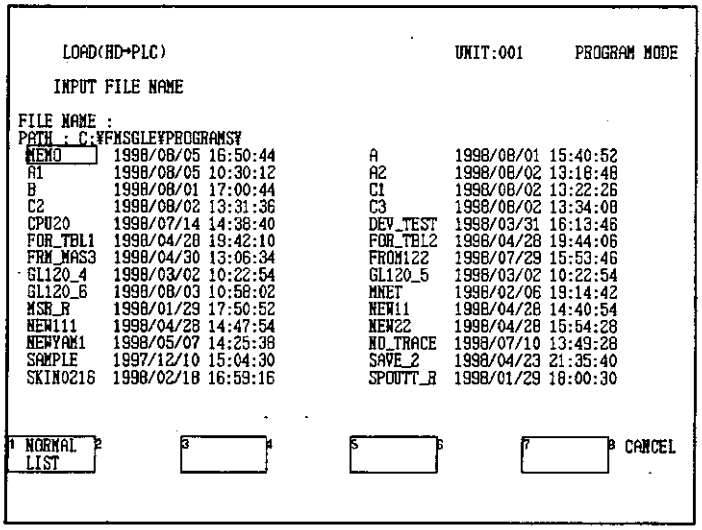
INFO **Path Setting**

(1) If F3 (PATH) is pressed, the pathname of the file to which the program will be loaded can be set. If the drive or directory is not specified, data will be read or written to the default directory C:¥FMSGL¥PROGRAMS¥.

(2) If 1.44-MB or 720-KB formatted floppy disks are used, set the drive to A. If 1.2-MB formatted floppy disks are used, set the drive to E.

The screen showing the date and time that program files were created will be displayed.

c) Press **F1 (NORMAL LIST)** to return to the previous screen.



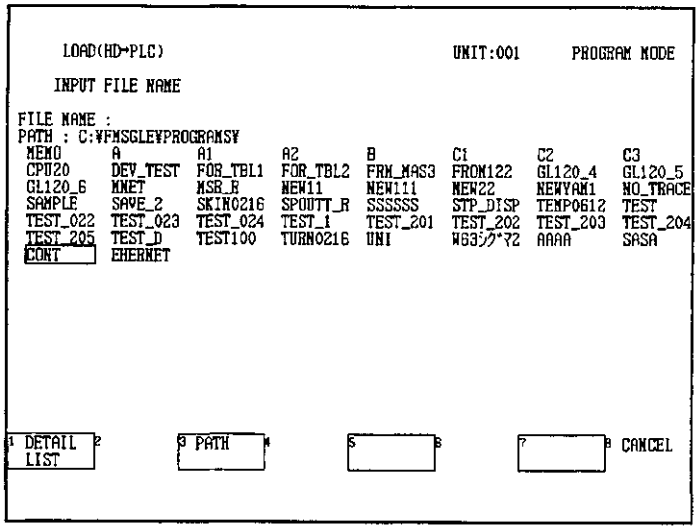
File List

(1) In the details screen, 28 files are displayed per screen. In the normal screen, 112 files are displayed per screen. The next file list can be displayed by pressing the Page Down Key. The previous file list can be returned to by pressing the Page Up Key.

(2) A maximum of 512 files can be displayed in the file list. If there are more than 512 files, some files will not be displayed in the file list.

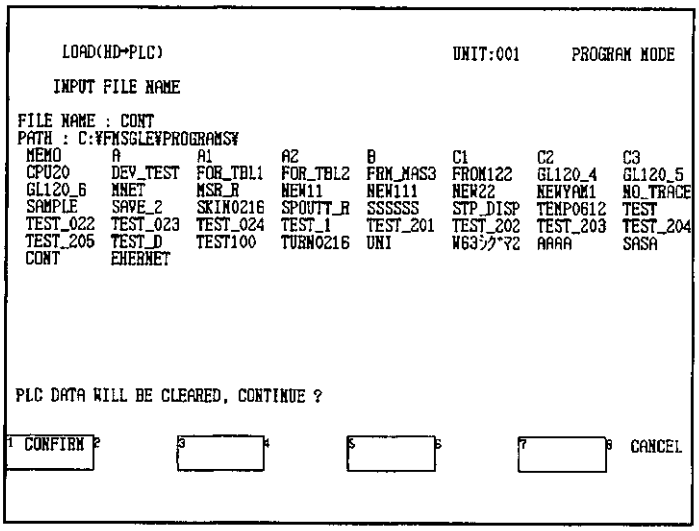
(3) The time and date that the programs were created that is shown in the details screen are the date and time for the environment setting file (*.ENV) or system configuration file (*.CFG), whichever is the most recent. The date of the ladder logic program is not displayed.

d) Select the file to be loaded using the Cursor Keys and press the **Enter** Key.

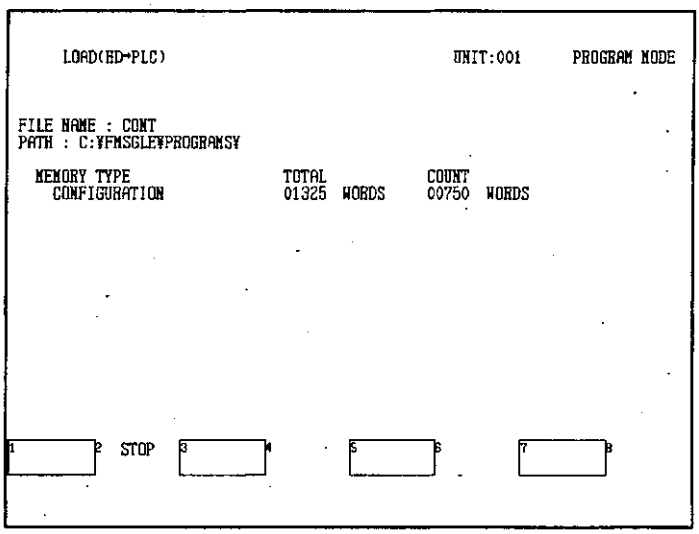


A message asking whether to clear the data in the PLC will be displayed.

e) Press **F1 (CONFIRM)**.



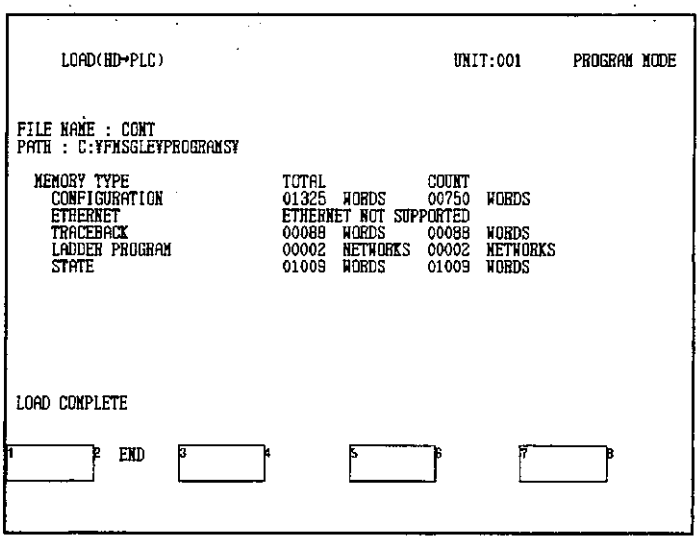
The program will be loaded onto the PLC.



INFO Loading will be temporarily stopped if **F2 (STOP)** is pressed. Loading will be cancelled if **F8 (ABORT)** is then pressed. If **F2 (PROCEED)** is pressed, loading will restart from where it was temporarily stopped.

After loading has been completed, a buzzer will ring and a message saying that loading has been completed will be displayed. The display will also show the transmission result of data that has been loaded onto the PLC.

f) Press **F2 (END)**.



IMPORTANT The communications parameters used when loading are the same as those set when the Attach Operation was performed after starting the Online Programmer. Use the following procedure to load a program onto a PLC that is not currently attached to the Online Programmer.

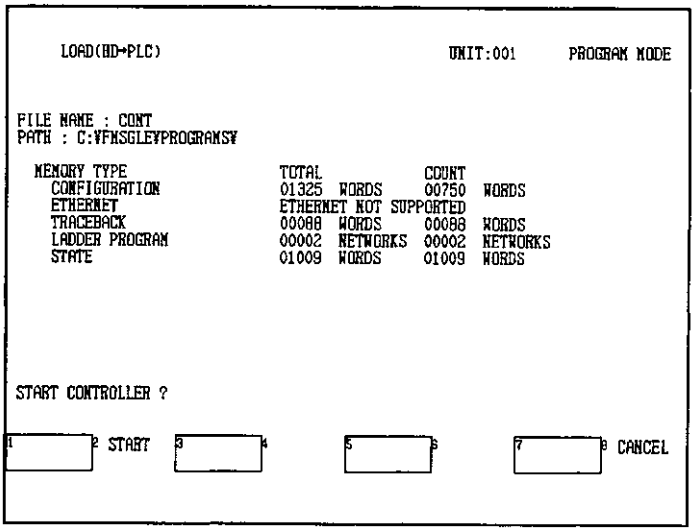
(1) Press the **Shift** + **SUPERVISORY** Keys to display the Initial Display.

(2) Reset the communications parameters and perform the Attach Operation.

(3) Load the program onto the PLC.

A confirmation message asking whether to start the PLC will be displayed.

g) To start the PLC, press **F1 (START)**. To cancel the operation and not start the PLC, press **F8 (CANCEL)**.



INFO If the same coil is used more than once, an error will occur while loading. Rewrite the program and then reload.

8.1.3 Saving from PLC to P120

1) This operation is used to save programs that are stored in the PLC to the P120. The operation cannot be performed if the PLC is in RUN state.

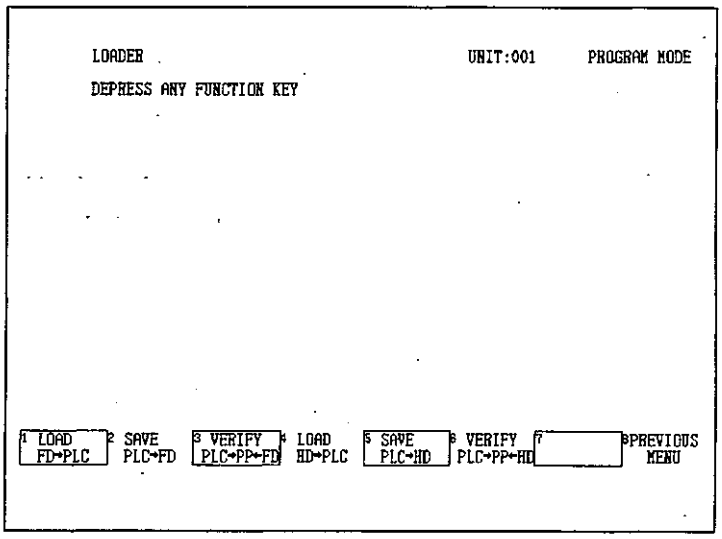
2) The P120 provides both a floppy disk drive and a hard disk drive. The floppy disk drive supports 3 floppy disk formats. The drive configuration is shown in the following table.

Drive	Specifications
A	1.44-MB/720-KB floppy disks
B	1.44-MB/720-KB floppy disks
C	Hard disk
D	Hard disk
E	1.2-MB floppy disks

INFO The floppy disk drive supports 3 floppy disk formats. Floppy disks can be accessed by using drives A, B, or E according to the floppy disk format. For example, if a floppy disk formatted for 1.2 MB is used, set drive E. Check the floppy disk format before setting the drive.

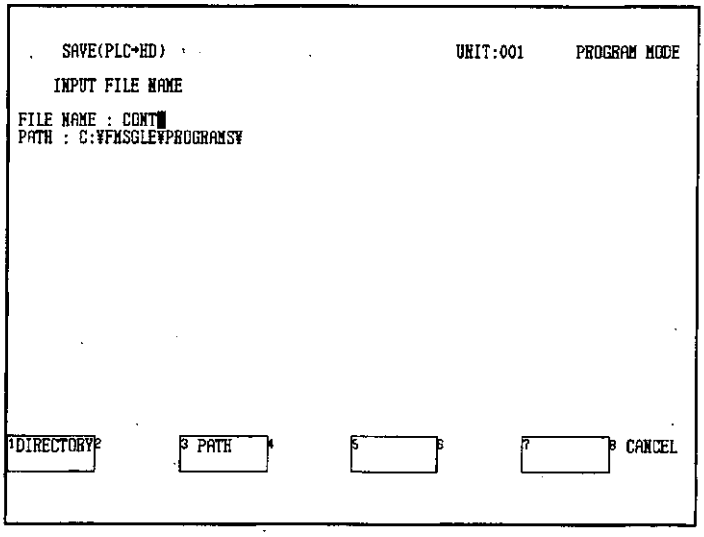
3) Use the following procedure to save from the PLC to the P120.

a) Press **F5 (SAVE PLC→HD)**.



The screen for entering the file to be saved will be displayed.

b) Enter the name of the file to be saved to the P120 and press the **Enter** Key.



INFO **Path Setting**

(1) If F3 (PATH) is pressed, the path name of the destination file to which the program will be saved can be set. If the drive or directory is not specified, data will be read or written to the default directory C:¥FMSGL¥PROGRAMS¥.

(2) If 1.44-MB or 720-KB formatted floppy disks are used, set the drive to A. If 1.2-MB formatted floppy disks are used, set the drive to E.

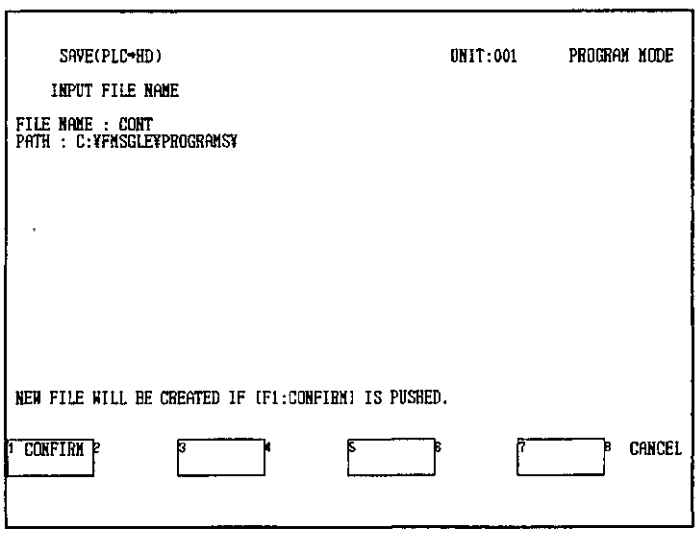
INFO **Entering File Names**

(1) To enter the file name, use only alphanumeric characters and the underscore (_). Other characters or symbols cannot be used.

(2) Do not use the file names MEMOSOFT.*** or ONLINEPP.***. These names are reserved for system use by the Online Programmer.

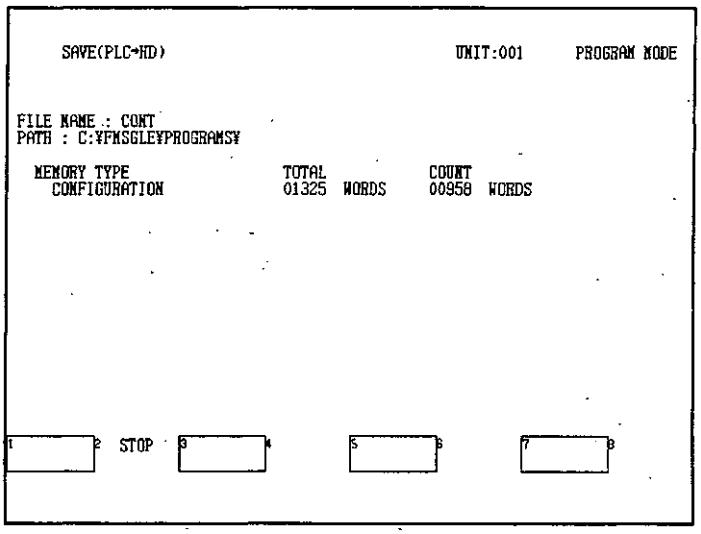
A confirmation message will be displayed saying that a new file can be created by selecting CONFIRM.

c) Press **F1 (CONFIRM)**.



INFO When overwriting a file that has already been saved, a confirmation message will be displayed saying that a file already exists. If **F1 (CONFIRM)** is selected, the file will be overwritten. Press **F1 (CONFIRM)** to execute saving.

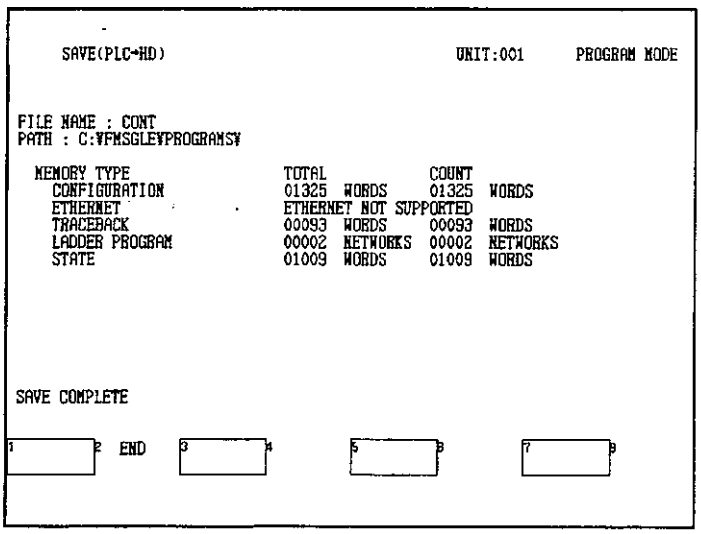
The program will be saved to the P120.



INFO Saving will be temporarily stopped if **F2 (STOP)** is pressed. Saving will be cancelled if **F8 (ABORT)** is then pressed. If **F2 (PROCEED)** is pressed, saving will restart from where it was temporarily stopped.

After saving has been completed, a buzzer will ring and a message saying that saving has been completed will be displayed. The display will also show the transmission result of data that has been saved to the P120.

d) Press **F2 (END)**.

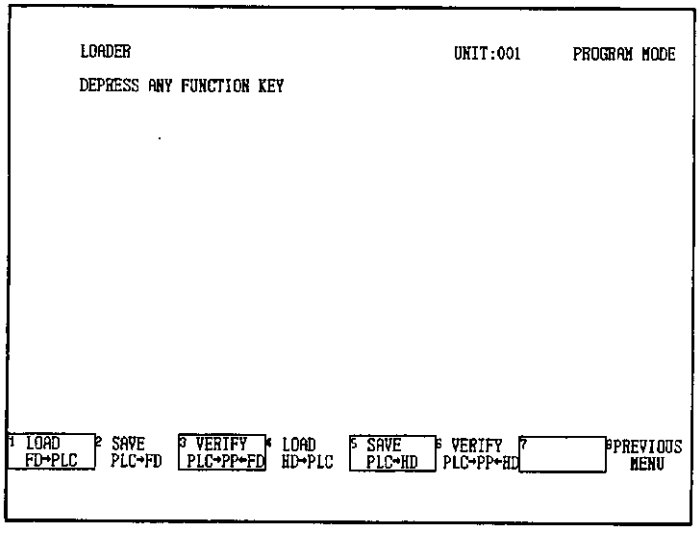


8.1.4 Verifying PLC Data and Files

1) After loading data onto the PLC from the P120, or saving data from the PLC to the P120, use the verify operation to confirm that the files in the PLC and P120 match before operating the CPU Module.

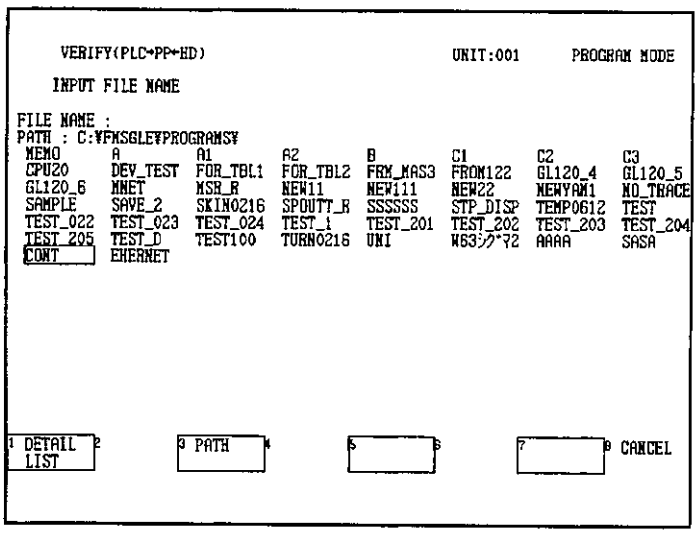
2) Use the following procedure to verify PLC data and files.

a) Press **F6 (VERIFY PLC→PP←FD)**.

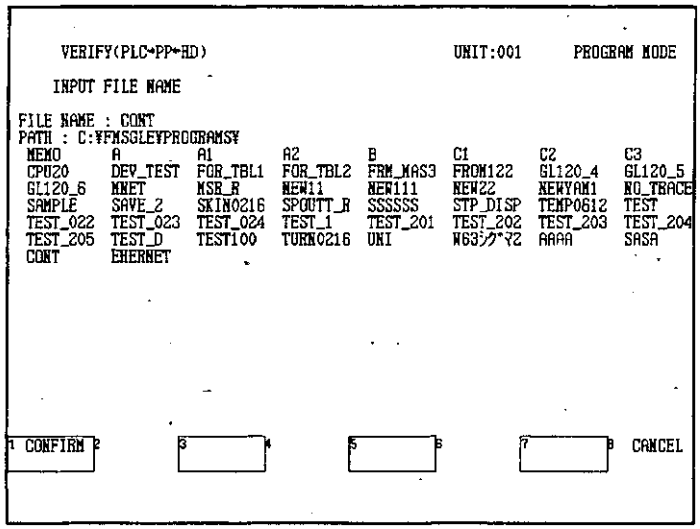


The screen for selecting the files to be verified will be displayed.

b) Select the file to be verified using the Cursor Keys and press the **Enter** Key.



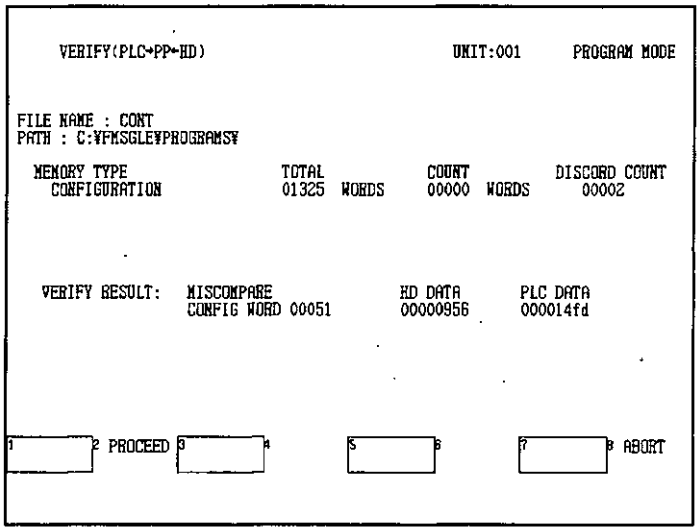
c) Press **F1 (CONFIRM)**.



INFO Verifying will be temporarily stopped if **F2 (STOP)** is pressed. Verifying will be cancelled if **F8 (ABORT)** is then pressed. If **F2 (PROCEED)** is pressed, verifying will restart from where it was temporarily stopped.

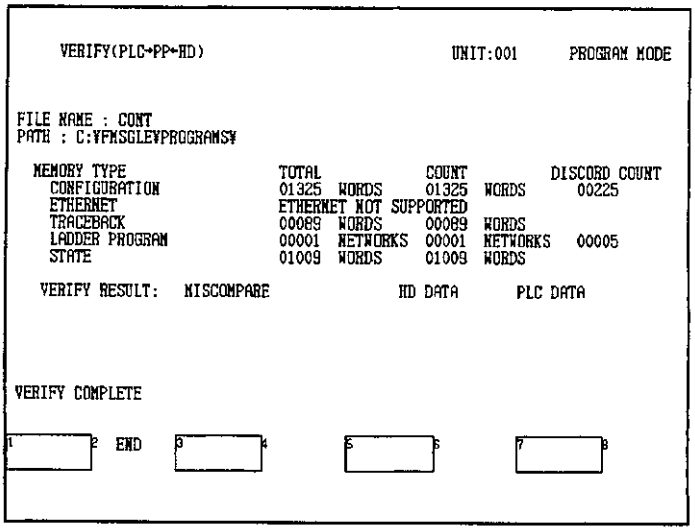
If the PLC data does not match the contents of files in the P120, the following display will appear showing the unmatched data in sequence.

d) Check the unmatched data and press **F2 (PROCEED)**. Verifying will restart.



After verifying has been completed, a buzzer will ring and a message saying that verifying has been completed will be displayed. The display will also show all the verification results.

e) Press **F2 (END)**.



8.2 Loading and Saving MC20 Module Data

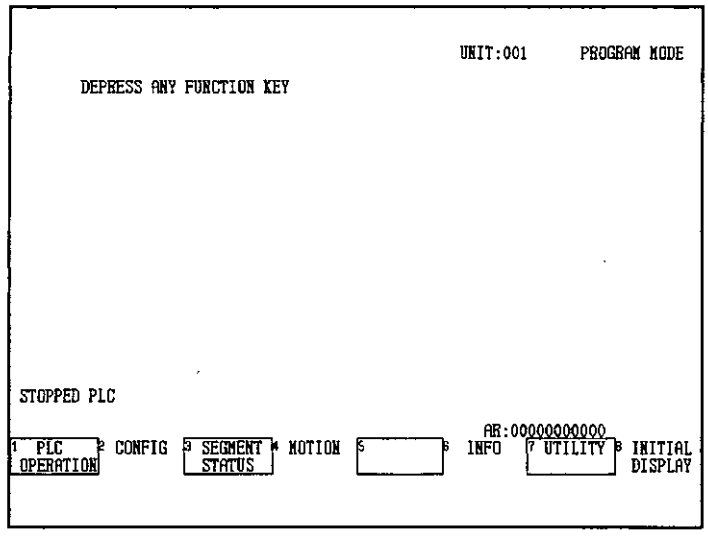
This section describes the procedures for loading data onto the MC20 Module from the P120, saving data to the P120 from the MC20 Module, and comparing and verifying the MC20 Module data with the file data in the P120. All the examples of loading procedures provided here are for operations using a P120 hard disk with the MC20 Module. Operations using a floppy disk with the MC20 Module, however, can be performed by following the same procedures as for the hard disk.

8.2.1 Displaying MC Loader Screen

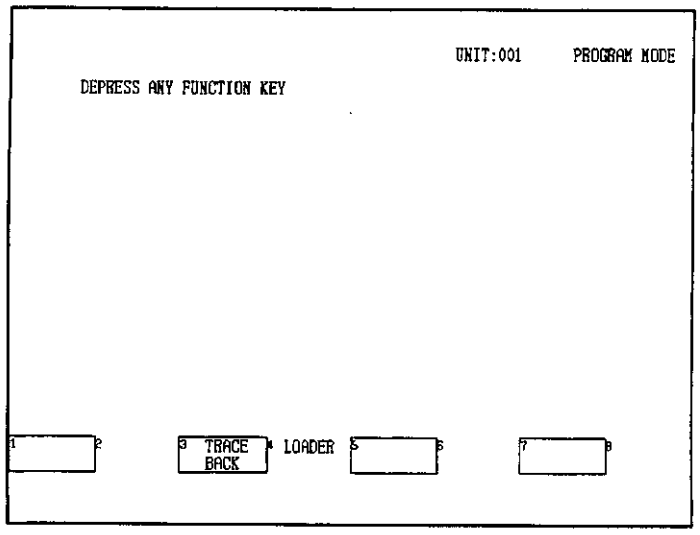
1) The procedures for loading, saving and verifying motion programs, parameters, and point tables between the MC20 Module and the P120 are provided here. The operations for loading programs from the P120 onto the MC20 Module must be performed with the MC20 Module in Edit Mode. If the MC20 Module is in another mode, such as Manual Mode, switch the MC20 Module to Edit Mode before loading. This operation can be performed even if the PLC is in RUN state.

2) Use the following procedure to display the MC Loader Screen.

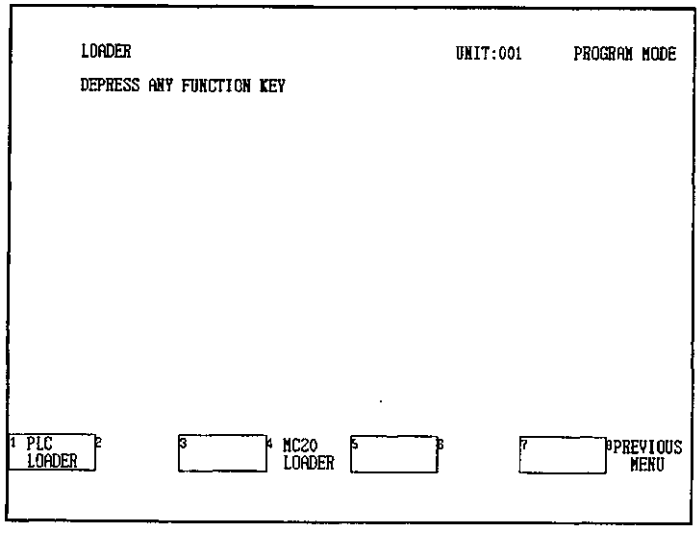
   a) Press **F7 (UTILITY)** from the Supervisory Screen.



b) Press **F4 (LOADER).**

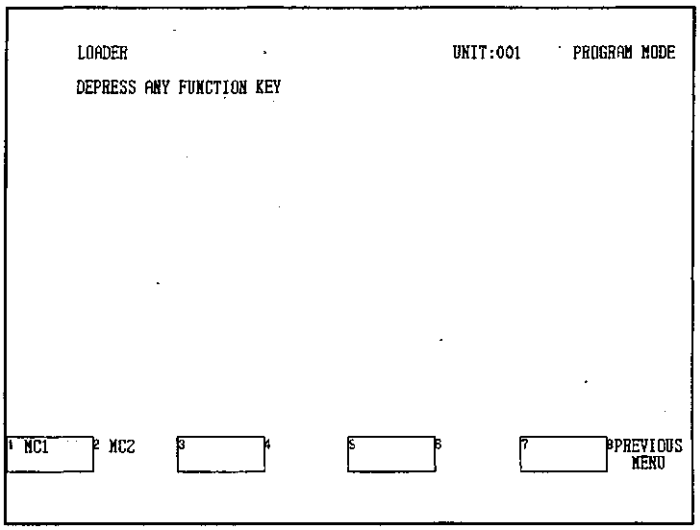


c) Press **F4 (MC20 LOADER).**

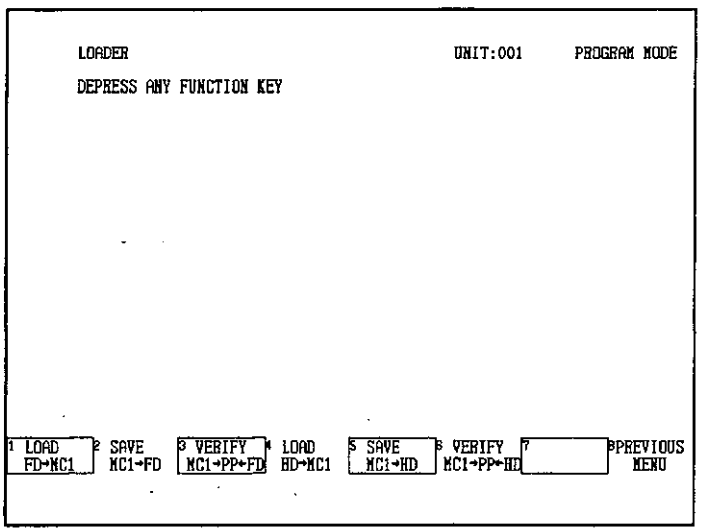


The screen for selecting the MC will be displayed.

d) Select the MC20 Module to which the program is to be loaded from the P120. In this example, MC1 is selected.



The Loader Screen will be displayed.



3) The MC Loader Menu consists of the following items.

- **LOAD FD→MC1**

  Loads programs on the floppy disk onto the MC20 Module.

- **SAVE MC1→FD**

  Saves programs in the MC20 Module onto the floppy disk.

• **VERIFY MC1→PP←FD**

Compares programs in the MC20 Module with programs saved to the floppy disk to verify that they are the same.

• **LOAD HD→MC1**

Loads programs on the P120 hard disk onto the MC20 Module.

• **SAVE MC1→HD**

Saves programs in the MC20 Module onto the P120 hard disk.

• **VERIFY MC1→PP←FD**

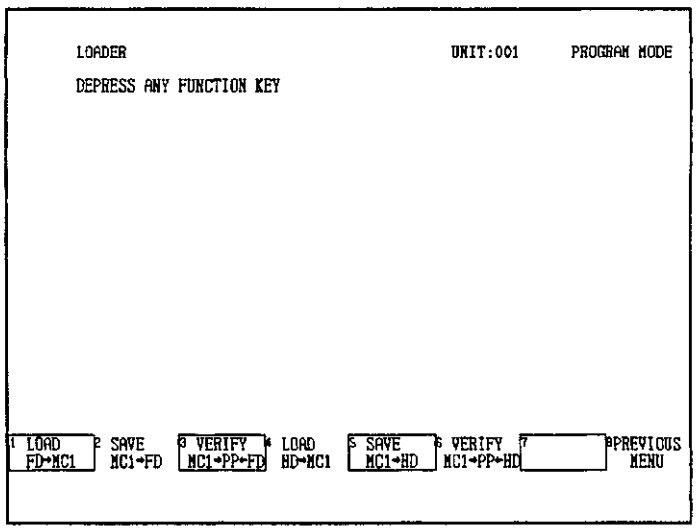
Compares programs in the MC20 Module with programs saved to the P120 hard disk to verify that they are the same.

8.2.2 Loading from P120 onto MC20

1) This operation loads motion programs, parameters, and point tables created using MEMOSOFT onto the MC20 Module. This operation can be performed only if the MC20 Module is in Edit Mode. If the MC20 Module is in another mode, such as Manual Mode, switch to Edit Mode and execute loading. This operation can be performed with the PLC in RUN state.

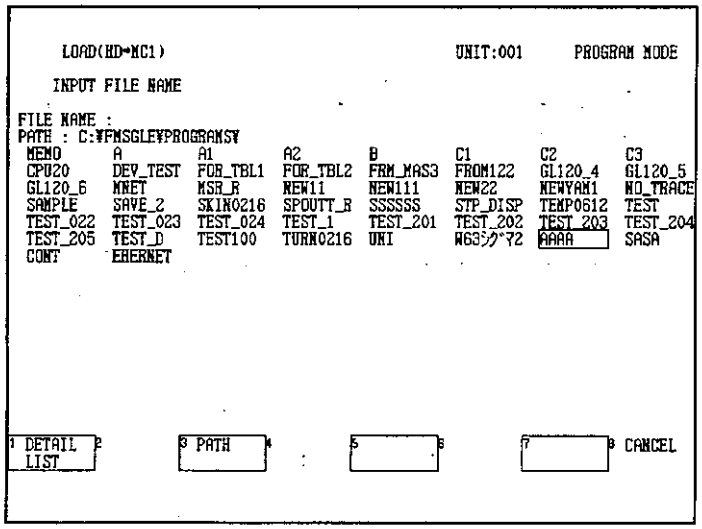
2) Use the following procedure to load a program from the P120 onto the MC20 Module.

a) Press **F4 (LOAD HD→MC1)**.



The screen for selecting the file to load onto the MC20 Module will be displayed.

b) Select the file to be loaded using the cursor and press the **Enter** Key.



INFO **Path Setting**

(1) If F3 (PATH) is pressed, the pathname of the file to which the program will be loaded can be set. If the drive or directory is not specified, data will be read or written to the default directory C:¥FMSGL¥PROGRAMS¥.

(2) If 1.44-MB or 720-KB formatted floppy disks are used, set the drive to A. If 1.2-MB formatted floppy disks are used, set the drive to E.

File List

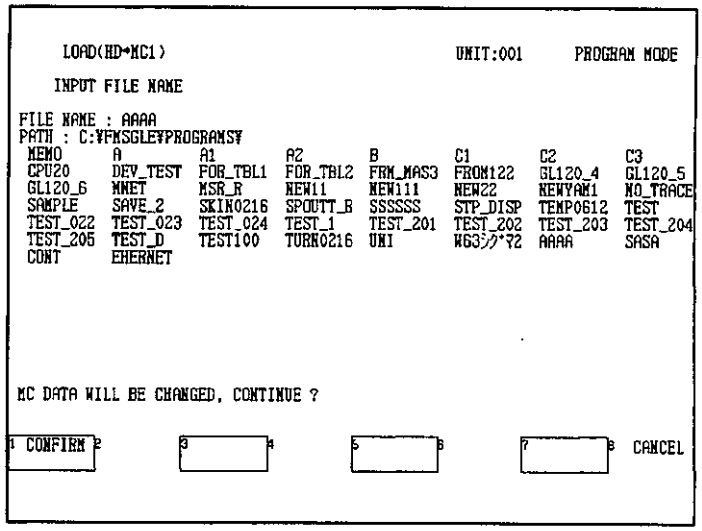
(1) In the details screen, 28 files are displayed per screen. In the normal screen, 112 files are displayed per screen. The next file list can be displayed by pressing the Page Down Key. The previous file list can be returned to by pressing the Page Up Key.

(2) A maximum of 512 files can be displayed in the file list. If there are more than 512 files, some files will not be displayed in the file list.

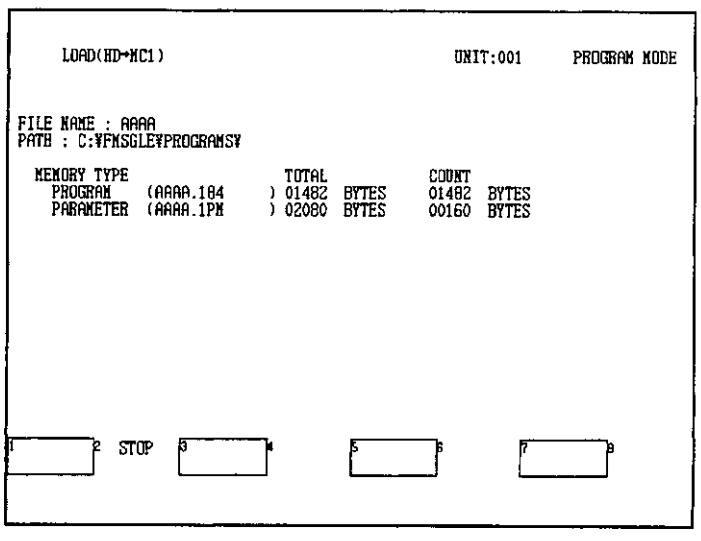
(3) The time and date that the programs were created that is shown in the details screen are the date and time for the environment setting file (*.ENV) or system configuration file (*.CFG), whichever is the most recent. The date of the ladder logic program is not displayed.

A confirmation message will be displayed asking whether to write the data to the MC.

c) Press **F1 (CONFIRM)**.



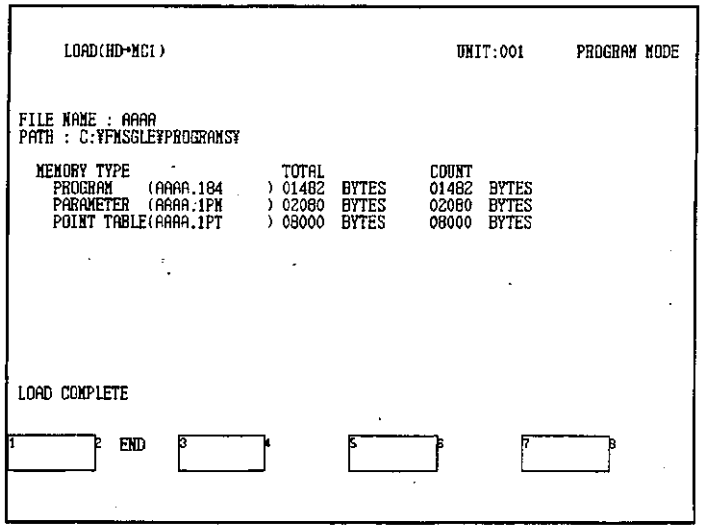
The program will be loaded onto the MC20 Module. MC1 data in the selected file will be loaded onto Motion Control Module 1.



INFO Loading will be temporarily stopped if **F2 (STOP)** is pressed. Loading will be cancelled if **F8 (ABORT)** is pressed. If **F2 (PROCEED)** is pressed, loading will restart from where it was temporarily stopped.

After loading has been completed, a buzzer will ring and a message saying that loading has been completed will be displayed. The display will also show the transmission result of data that has been loaded onto the MC20 Module.

d) Press **F2 (END)**.



IMPORTANT The communications parameters used when loading are the same as those set when the Attach Operation was performed after starting the Online Programmer. Use the following procedure to load a program onto a PLC that is not currently attached to the Online Programmer.

(1) Press the **Shift** + **SUPERVISORY** Keys to display the Initial Display.

(2) Reset the communications parameters and perform the Attach Operation.

(3) Load the program onto the PLC.

INFO If the MC20 Module is not in Edit Mode, the motion program cannot be loaded, and an error message saying that the mode is incorrect will be displayed. Set the MC20 Module to Edit Mode and reload.

8.2.3 Saving from MC20 Module to P120

1) This operation is used to save motion programs, parameters, and point table data that are stored in the MC20 Module to the P120.
The operation can be performed regardless of the MC20 mode.

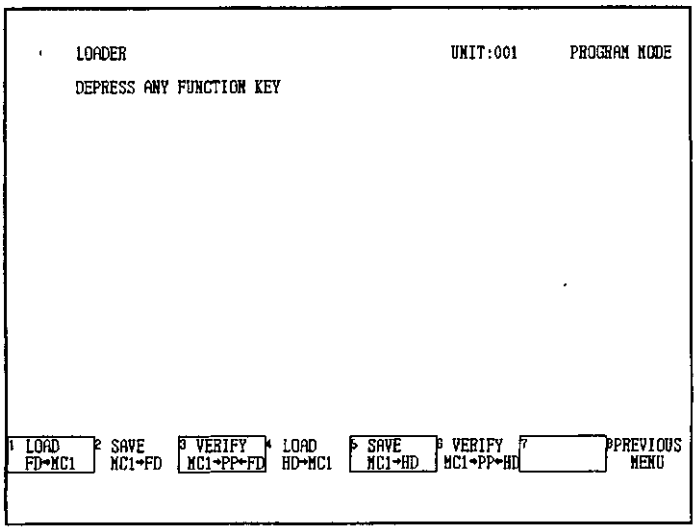
2) The P120 provides both a floppy disk drive and a hard disk drive. The floppy disk drive supports 3 floppy disk formats. The drive configuration is as follows:

Drive	Specifications
A	1.44-MB/720-KB floppy disks
B	1.44-MB/720-KB floppy disks
C	Hard disk
D	Hard disk
E	1.2-MB floppy disks

INFO The floppy disk drive supports 3 floppy disk formats. Floppy disks can be accessed by using drives A, B, or E according to the floppy disk format. For example, if a floppy disk formatted for 1.2 MB is used, set drive E. Check the floppy disk format before setting the drive.

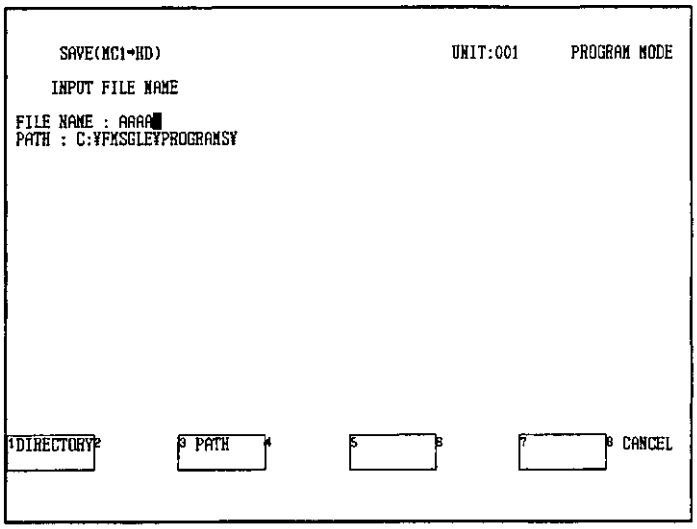
3) Use the following procedure to save from the MC20 Module to the P120.

a) Press **F5 (SAVE MC1→HD)**.



The screen for entering the file to be saved will be displayed.

b) Enter the name of the file to be saved to the P120 and press the **Enter** Key.



INFO **Path Setting**

(1) If F3 (PATH) is pressed, the path name of the destination file to which the program will be saved can be set. If the drive or directory is not specified, data will be read or written to the default directory C:\FMSGL\PROGRAMS\.

(2) If 1.44-MB or 720-KB formatted floppy disks are used, set the drive to A. If 1.2-MB formatted floppy disks are used, set the drive to E.

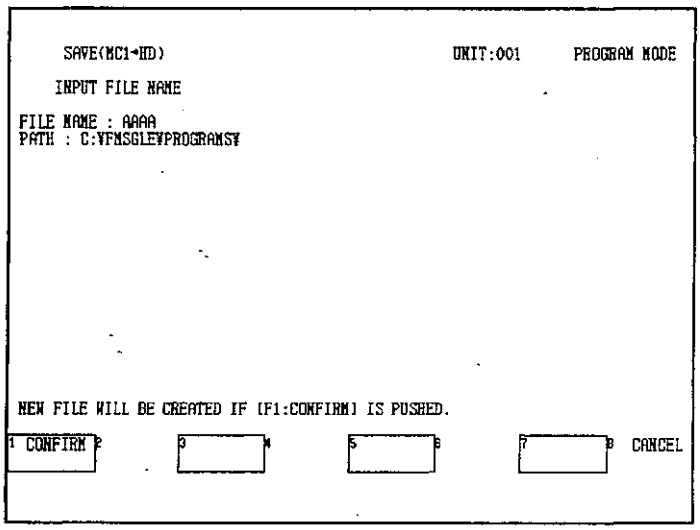
Entering File Names

(1) To enter the file name, use only alphanumeric characters and the underscore (_). Other characters or symbols cannot be used.

(2) Do not use the file names MEMOSOFT.*** or ONLINEPP.***. These names are reserved for system use by the Online Programmer.

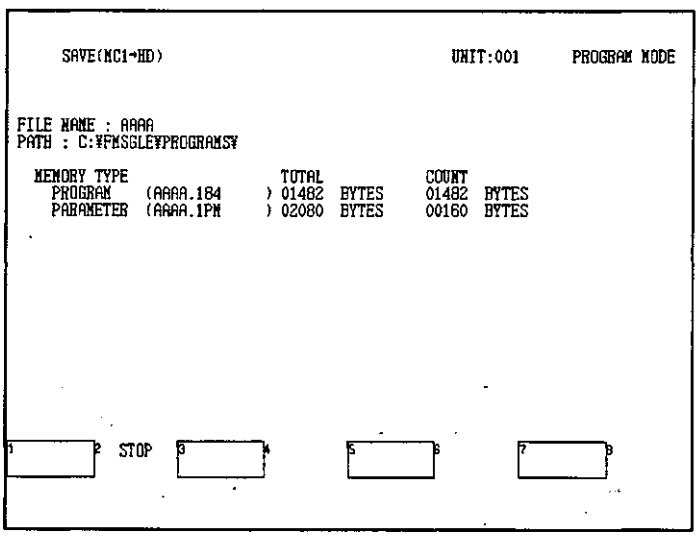
A confirmation message will be displayed saying that a new file can be created by selecting **F1 (CONFIRM)**.

c) Press **F1 (CONFIRM)**.



When overwriting a file that has already been saved, a confirmation message will be displayed saying that a file already exists. If **F1 (CONFIRM)** is selected, the file will be overwritten. Press **F1 (CONFIRM)** to execute saving.

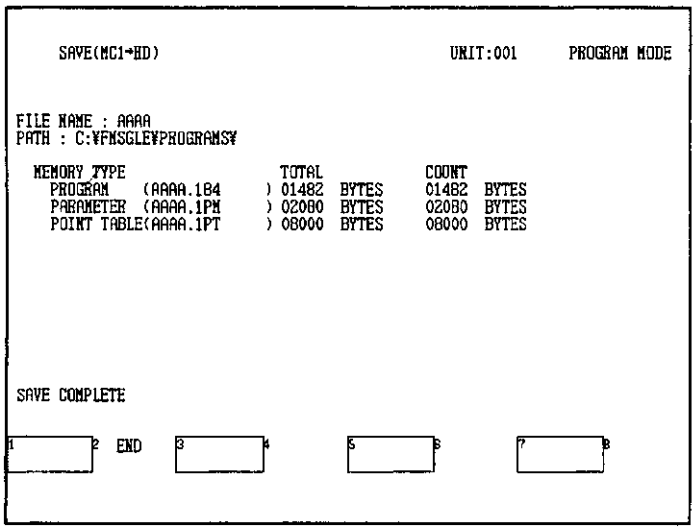
The program will be saved to the P120.



INFO Saving will be temporarily stopped if **F2 (STOP)** is pressed. Saving will be cancelled if **F8 (ABORT)** is pressed. If **F2 (PROCEED)** is pressed, saving will restart from where it was temporarily stopped.

After saving to the P120 has been completed, a buzzer will ring and a message saying that saving has been completed will be displayed. The display will also show the transmission result of data that has been saved to the P120.

d) Press **F2 (END)**.

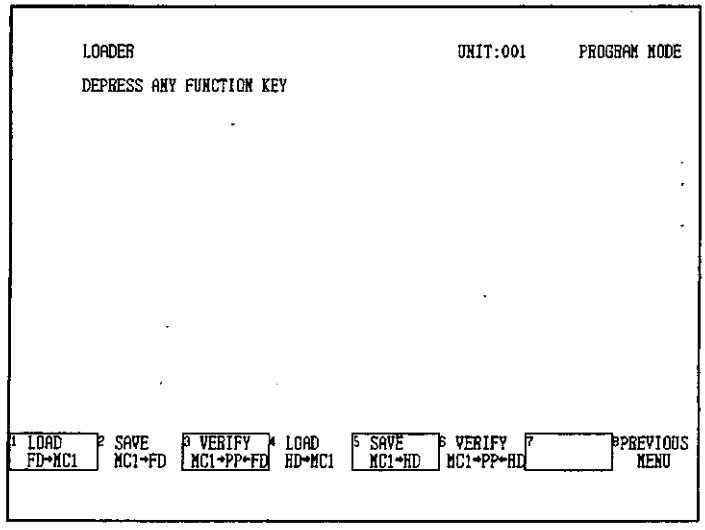


8.2.4 Verifying MC20 Module Data and Files

1) After loading data onto the MC20 Module from the P120, or saving data from the MC20 Module to the P120, use the verify operation to confirm that the files in the MC20 Module and P120 match.

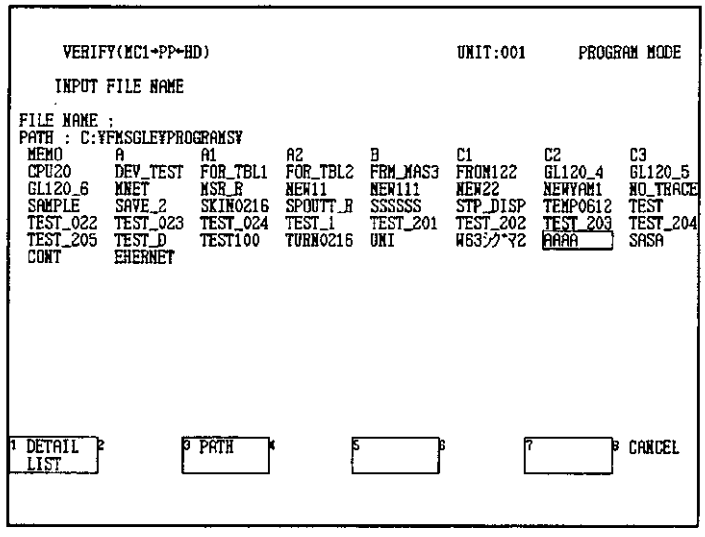
2) Use the following procedure to verify MC20 Module data and files.

a) Press **F6 (VERIFY MC→PP←FD).**

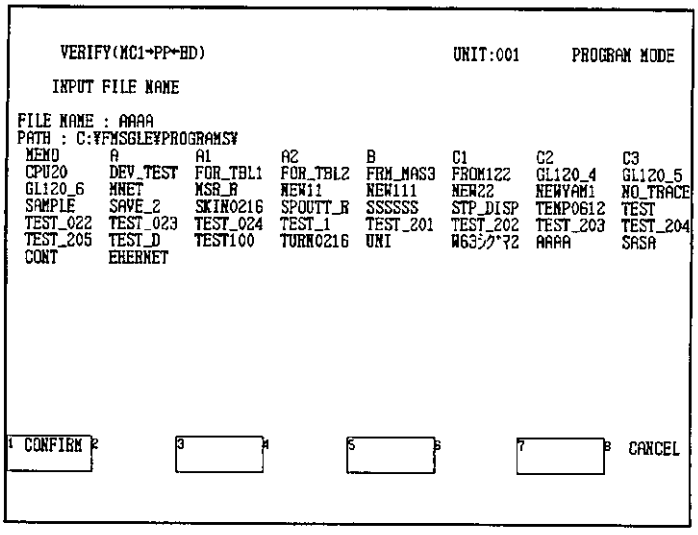


The screen for selecting the files to be verified will be displayed.

b) Select the file to be verified using the Cursor Keys and press the **Enter** Key.



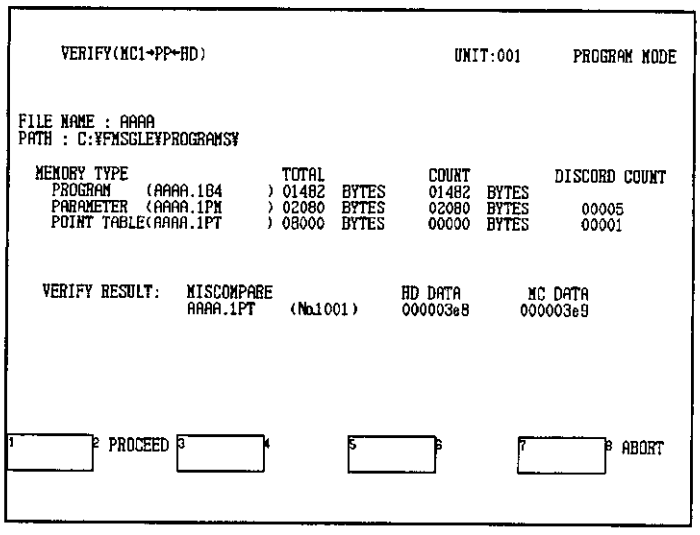
c) Press **F1 (CONFIRM)**.



INFO Verifying will be temporarily stopped if **F2 (STOP)** is pressed. Verifying will be cancelled if **F8 (ABORT)** is pressed. If **F2 (PROCEED)** is pressed, verifying will restart from where it was temporarily stopped.

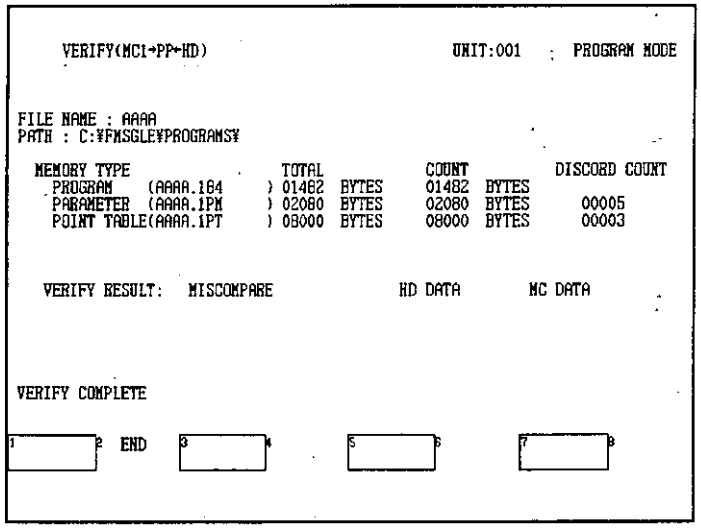
If the MC20 Module data does not match the contents of files in the P120, the following display will appear showing the unmatched data in sequence.

d) Check the unmatched data and press **F2 (PROCEED)**. Verifying will restart.



After verifying has been completed, a buzzer will ring and a message saying that verifying has been completed will be displayed. The display will also show all the verification results.

e) Press **F2 (END)**.



Traceback Operations

9

This chapter describes operating procedures for the traceback functions, including traceback settings and the display of trace data in graph format.

9.1 Overview

This section outlines the traceback functions and explains how to display the Traceback Setting Screen.

9.1.1 Traceback Functions

1) The traceback function traces changes in ON/OFF status of digital signals (coils and relays) and changes in the register values in a specified number of scans, allowing easy troubleshooting and system tuning.

2) A trace can be executed from the Online Programmer, the MEMOSOFT, or a ladder instruction.

3) The traceback function use two kinds of screens: Traceback settings and graph displays. An outline of each screen follows.

   a) **Traceback Setting Screen**

   The Traceback Setting Screen is used to make settings to trace data, such as setting the trace data sampling method, trigger conditions, trace execution for the PLC, canceling, and so on. Graph displays are based on the trace data set in this manner.

   b) **Graph Displays**

   A Graph Display Screen shows the reference trace data as a line graph.

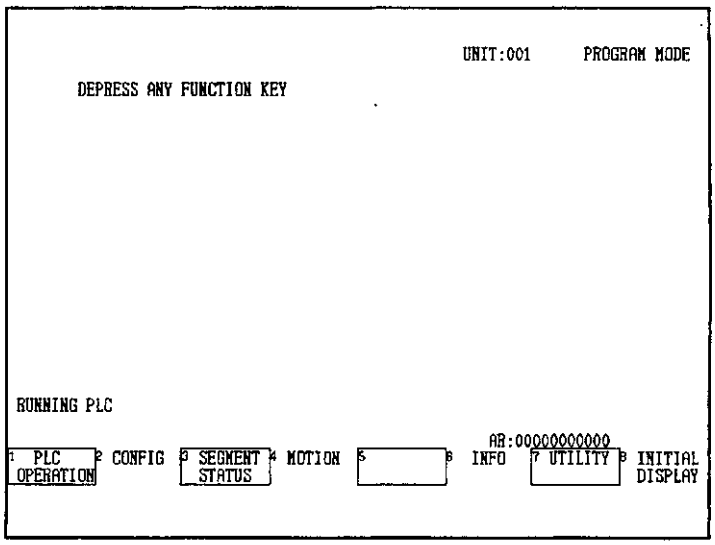
Note To display a graph, it is necessary to generate trace data by executing a trace from the Traceback Setting Screen or by executing ladder logic instructions.

9.1.2 Displaying the Traceback Setting Screen

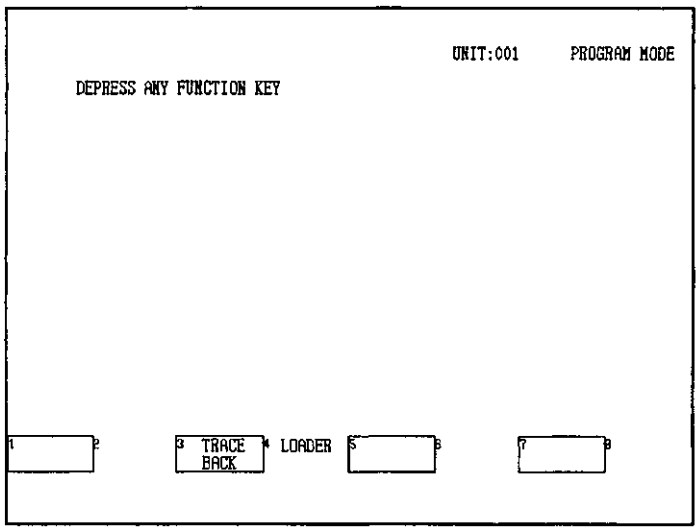
1) The Traceback Setting Screen is used to set traceback conditions, execute traces for the PLC, generate trace data, and display trace data.

2) Use the following procedure to display the Traceback Setting Screen.

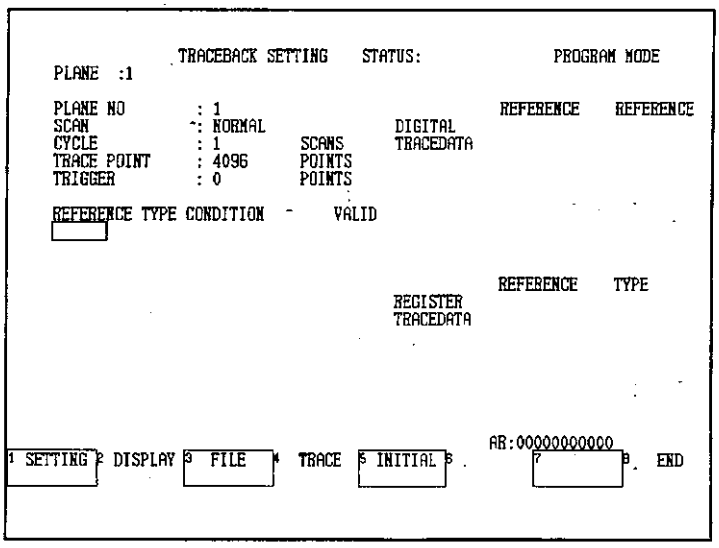
a) Press **F7 (UTILITY)** from the Supervisory Screen.



b) Press **F3 (TRACEBACK)**.



The Traceback Setting Screen will be displayed.

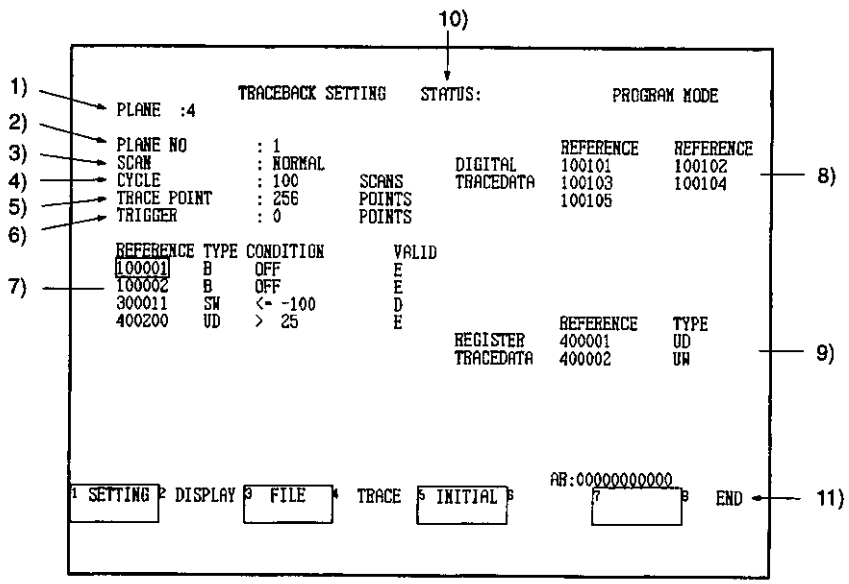


9.2 Traceback Setting Operations

This section describes the basic methods for setting traceback conditions.

9.2.1 Traceback Setting Screen

The Traceback Setting Screen is shown below.



1) Plane (Number of Planes)

Set the number of planes to use. Possible settings: 1, 2 or 4.

2) Plane NO (Plane Number)

Displays the number of the plane currently set.

3) Scan (Scan Type)

Set whether the normal scan or high-speed scan is used for the trace timing.

4) Cycle (Number of Scans)

Set the interval at which trace data is sampled. Set the number of PLC scans that are to take place between each collection of data. Range: 1 to 10,000.

5) Trace Point (Number of Trace Points)

Displays the maximum number of trace points that can be traced. The maximum number of trace points is determined by the number of planes and the number of words of data to be traced.

6) Trigger (Number of Trace Points after Trigger)

Set the number of points of trace data to be collected between trigger activation and the end of the trace.

7) Condition

Set the condition required to activate the trigger.

8) Digital Trace Data

Set the digital reference numbers of the trace data to be collected.

9) Register Trace Data

Set the register reference numbers of the trace data to be collected.

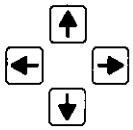
10) Status

Displays RUNNING if a trace is being executed.

11) Functions

Displays the functions of the function keys.

9.2.2 Basic Key Operations



Cursor Keys
Move the cursor within a field.

TAB

Tab Key
Moves the cursor between number of planes, basic condition settings, trigger settings, and trace data settings.

Enter Key
Selects and confirms inputs.

ESC

Escape Key
Deletes error messages.

Page Up

Page Up Key
Switches the plane number being set to the current plane – 1.

Page Down

Page Down Key
Switches the plane number being set to the current plane + 1.

Delete

Delete Key
Deletes trigger conditions and references.

9

9.2.3 Setting the Number of Planes

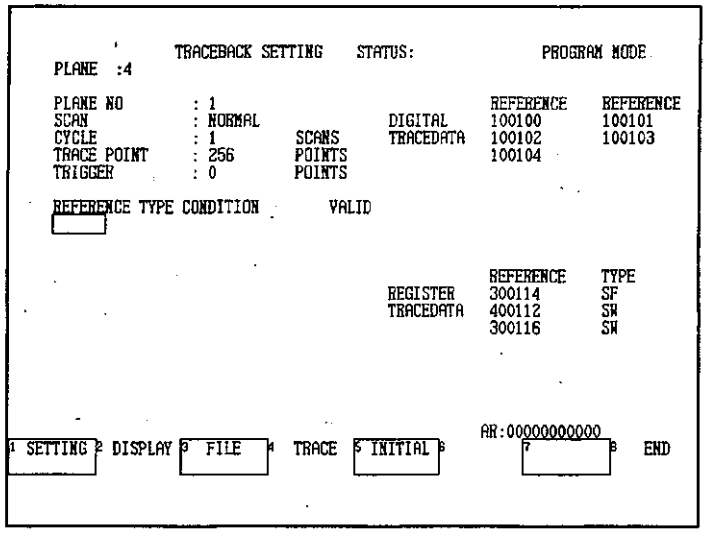
1) Trigger conditions and trace data are treated as a group which is defined as a plane. Up to 4 planes can be set. For each plane, trace conditions can be set and data can be collected. Each plane is independent, so execution timing, trigger conditions, trace data, and other data collection can be varied according to individual requirements.

2) Only a fixed amount of memory is allocated for all the planes that are in use. If the number of planes in use is increased, the amount of memory available to each plane will decrease and the number of trace points which can be traced will also decrease.

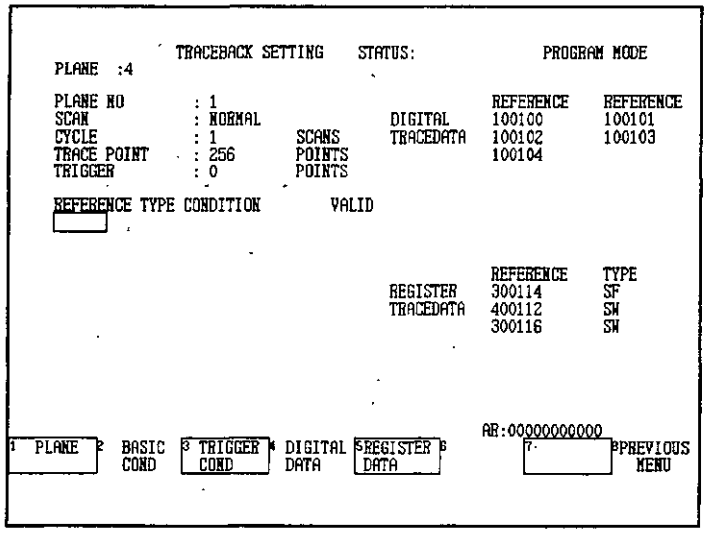
Note When the number of planes is changed, the trace data originally generated will be overwritten. The same applies when other settings are changed.

3) Use the following procedure to set the number of planes.

a) Press **F1 (SETTING).**

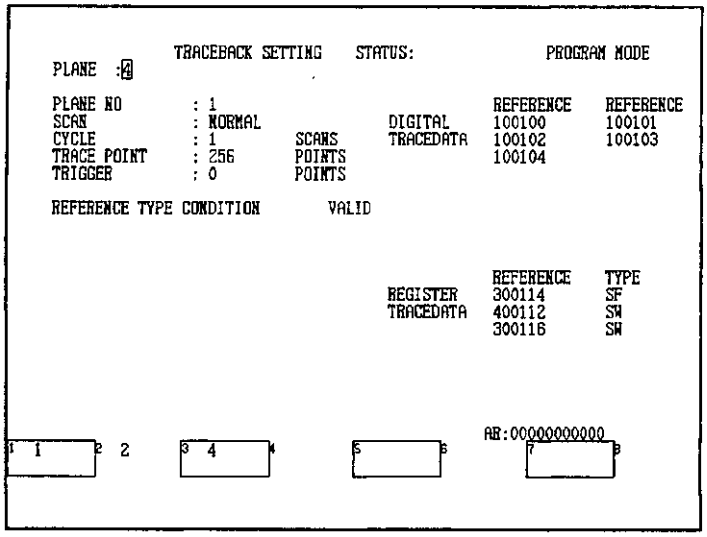


b) Press **F1 (PLANE).**



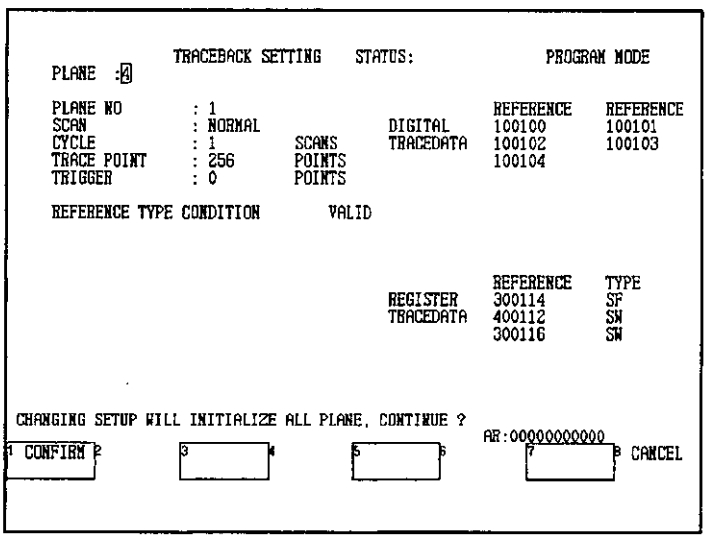
The cursor will move to the plane setting position.

c) Select the desired number of planes. In this example, press **F2** to set to 2.

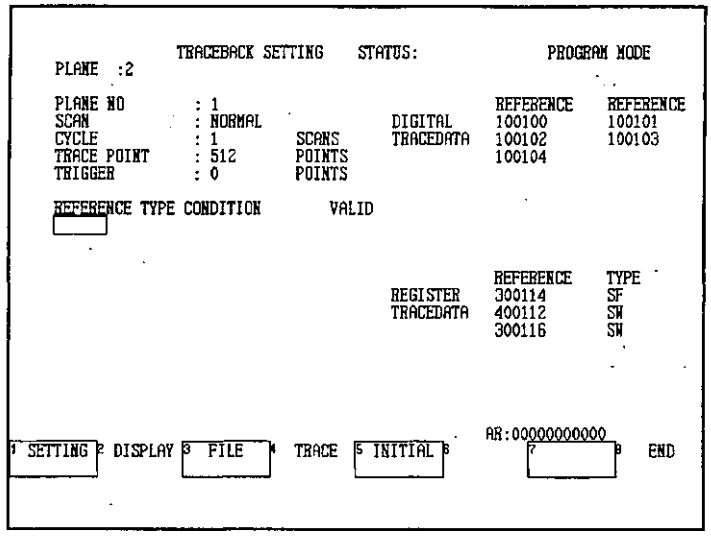


A confirmation message will be displayed.

d) Press **F1 (CONFIRM)**.



The number of planes will change. The number of trace points for the specified number of planes will be displayed.



9.2.4 Basic Setup

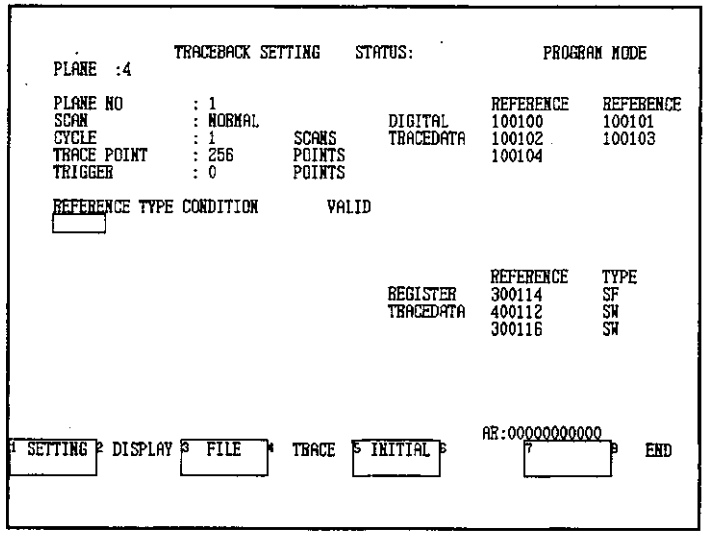
1) This section describes how to set the plane number, trace scan, cycle, and trigger (number of trace points after trigger).

2) Use the following procedure to make each of the basic settings for the traceback function.

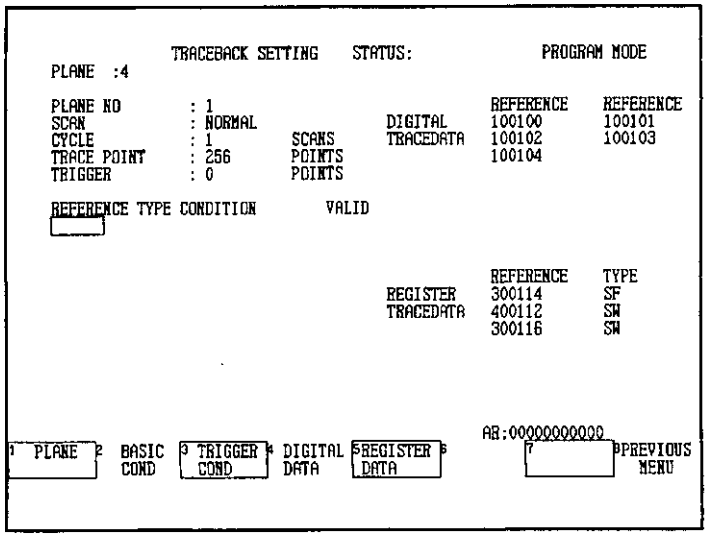
a) Changing the Plane Number

The following procedure changes the plane number for traceback settings. The plane number cannot be changed if the number of planes is set to 1.

(1) Press **F1 (SETTING)**.

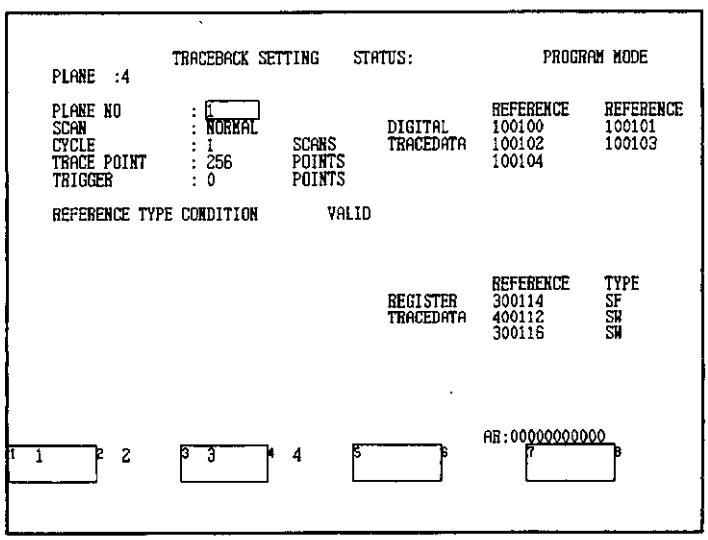


(2) Press **F2 (BASIC COND).**



The cursor will move to the plane number setting position.

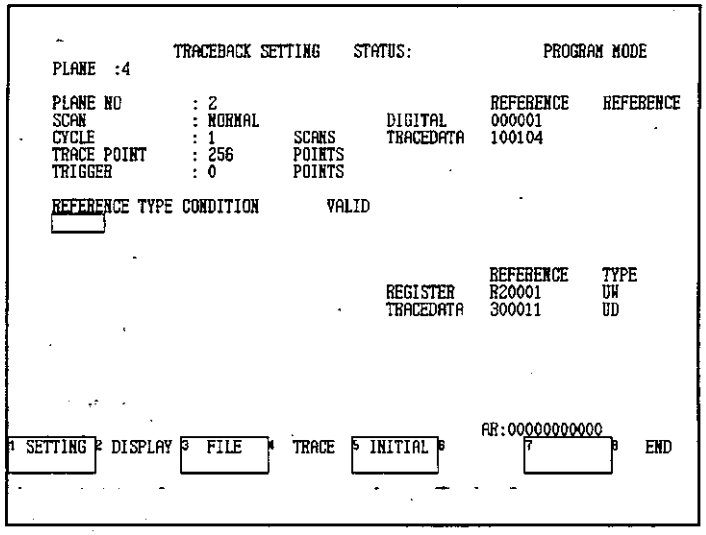
(3) Select the desired plane number. In this example, press **F2** to set to 2.



INFO The plane numbers that can be selected depend on the number of planes that has been set.

Example: If the number of planes has been set to 2, then the possible selections for plane numbers are 1 and 2; 4 cannot be selected.

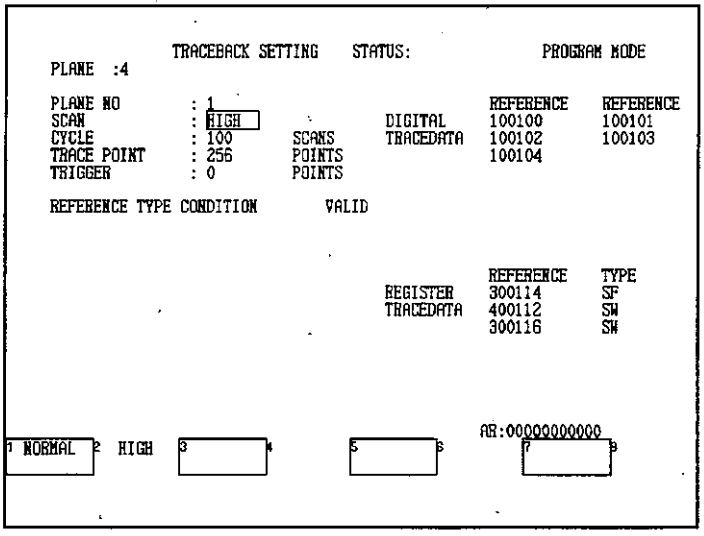
The plane number will change and the settings for the selected plane will be displayed.



b) Setting the Trace Scan

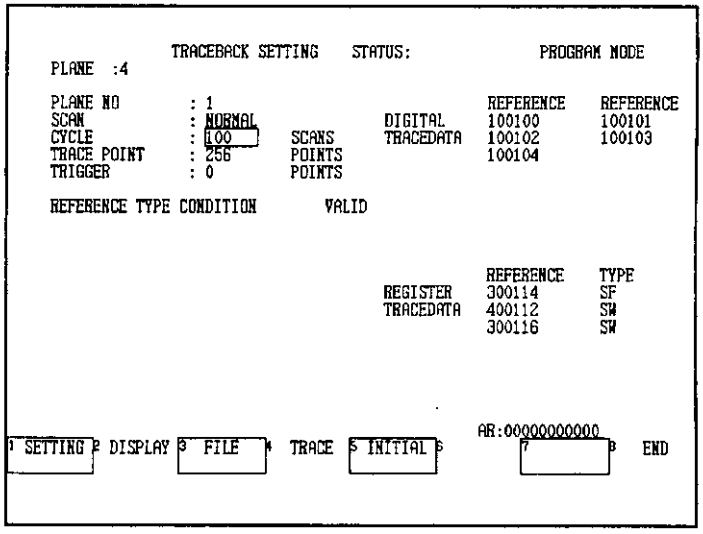
The following procedure is used to change the type of scan used in the current plane.

(1) Select **SCAN** with the cursor.



(2) Select the desired scan. In this example, press **F1** to select NORMAL.

The scan setting will change.

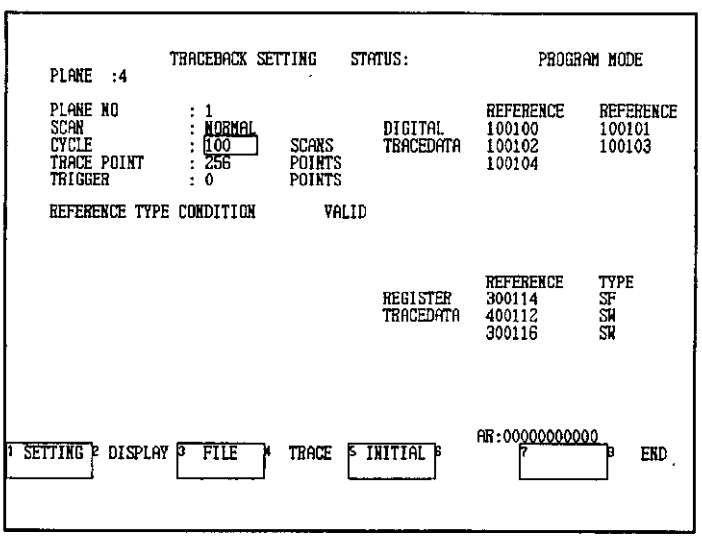


Note If the high-speed scan is specified, the trace will not start unless the high-speed scan is being executed.

c) Cycle Setting

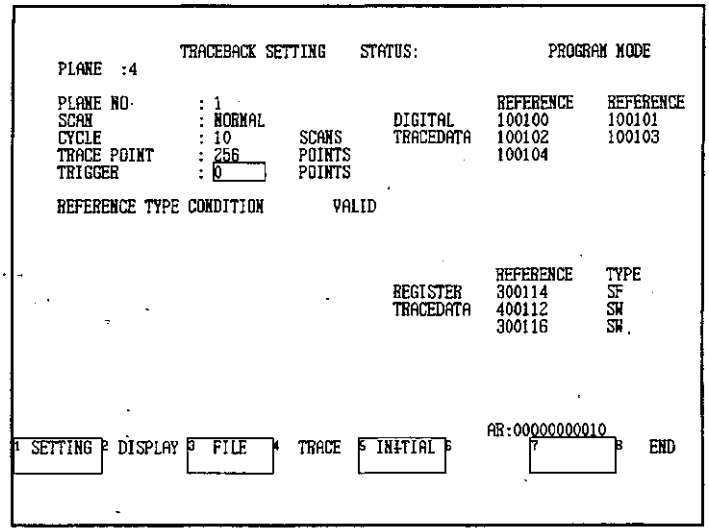
The following procedure is used to change the cycle setting.

(1) Select **CYCLE** with the cursor.



(2) Enter the number of scans for the cycle. In this example, enter **10** in the AR and press the **Enter** Key.

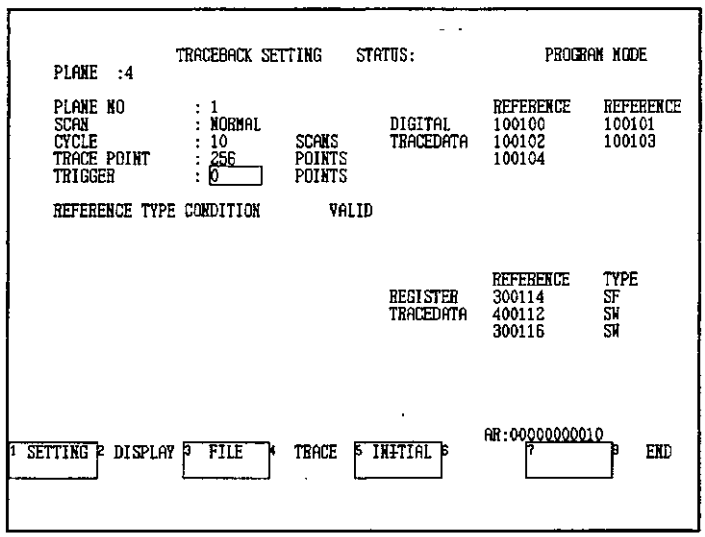
The cycle setting will change.



d) Trigger Setting

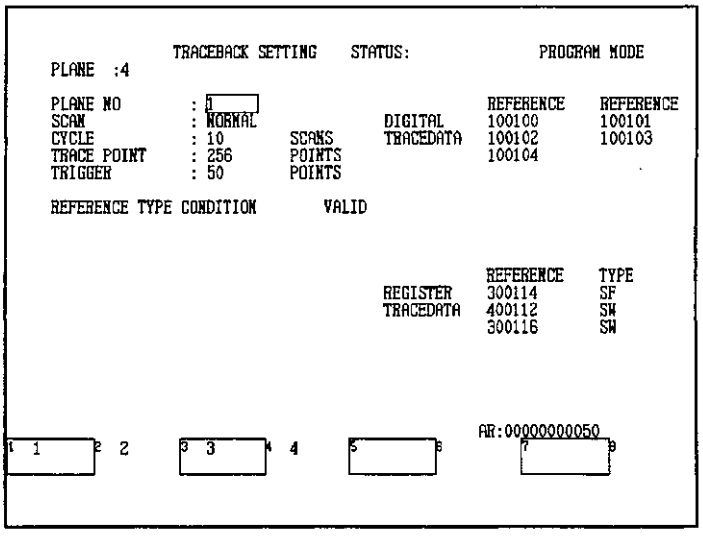
The following procedure is used to change the setting for the number of points of trace data collected between trigger activation and the end of the trace.

(1) Select **TRIGGER** with the cursor.



(2) Enter the desired value. In this example, enter **50** in the AR and press the **Enter** Key.

The TRIGGER value will change



9.2.5 Setting Trigger Conditions

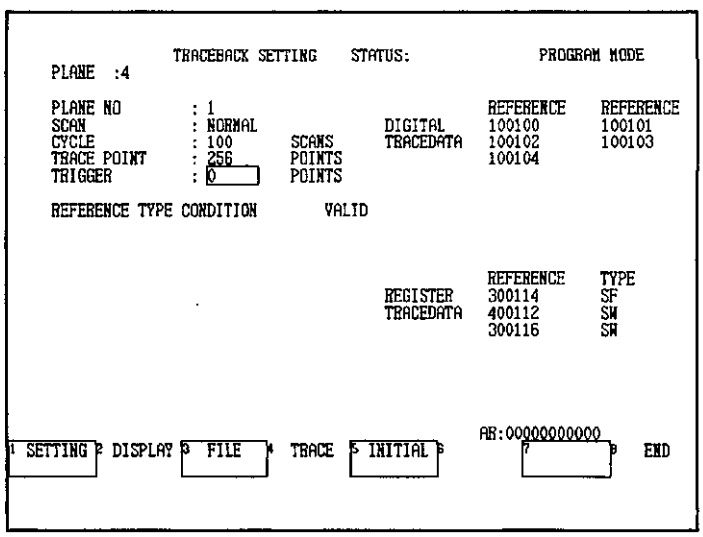
1) The following procedure is used to set the trigger conditions for the currently displayed plane. Up to 10 trigger conditions can be set, and when all conditions are satisfied at the same time, the trigger is activated. The displayed references and the trigger condition references do not need to be the same. The procedure for setting digital references is slightly different to that for setting register references.

2) Up to 10 trigger conditions can be set with digital references and register references.

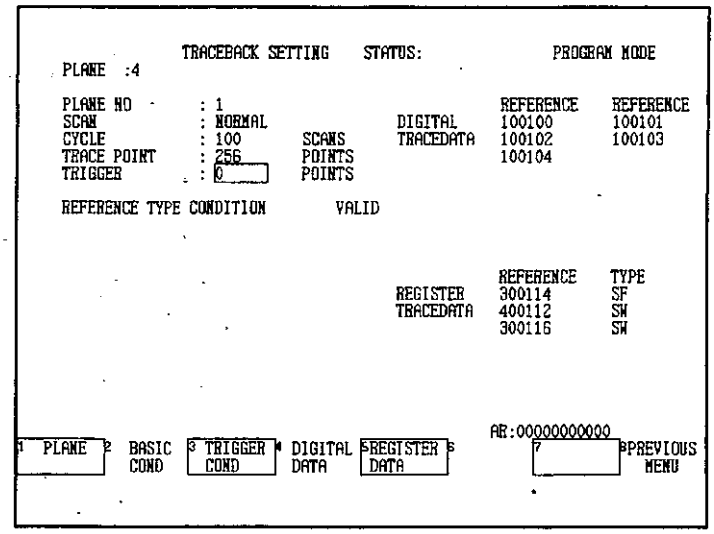
3) Use the following procedure to set the trigger conditions.

a) Register References

(1) Press **F1 (SETTING)**.

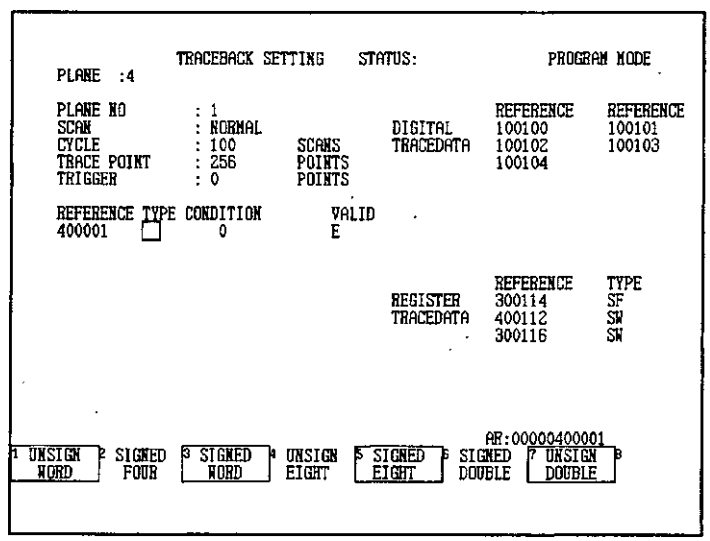


(2) Press **F3 (TRIGGER COND).**



The cursor will move to the trigger condition setting position.

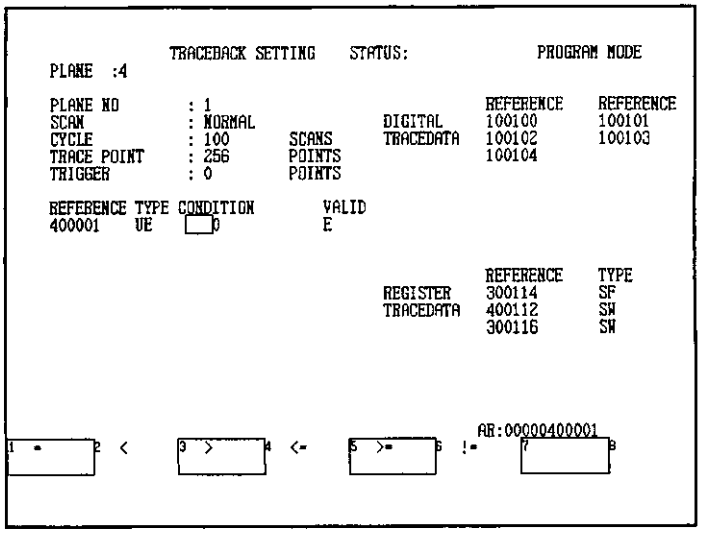
(3) Move the cursor to the desired reference input position. Enter the register reference number (**400001** in this example) and press the **Enter** Key.



(4) Set the reference data type. In this example, press **F4 (UNSIGN EIGHT)** to select unsigned 8-digit decimal.

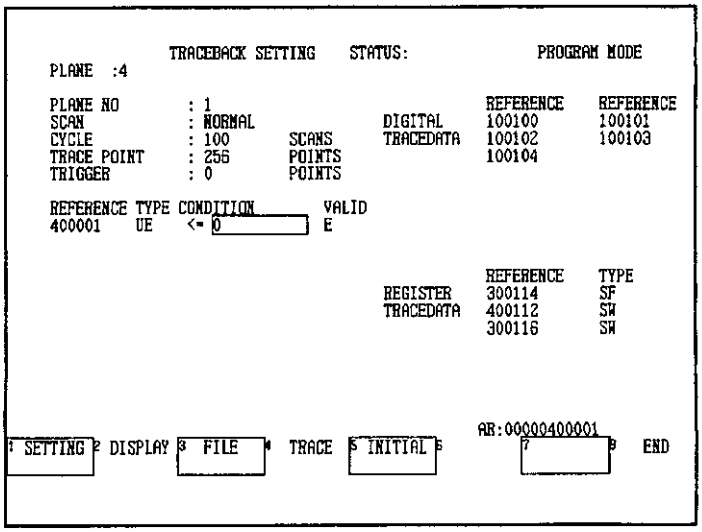
The reference data type will be set.

(5) Set the trigger condition by selecting the desired operator using the F1 to F6 Keys. In this example, press **F4** to select <=.

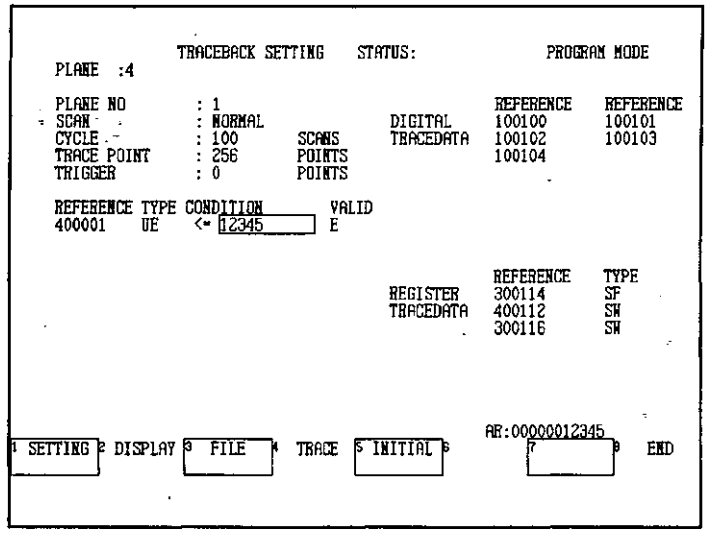


The trigger condition operator != means not equal.

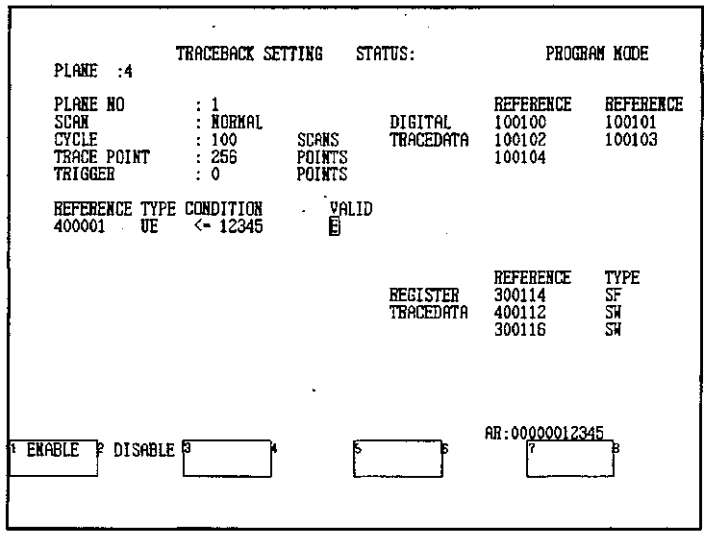
The trigger condition will be set.



(6) Set the value in the trigger condition. In this example, enter **12345** in the AR and press the **Enter** Key.

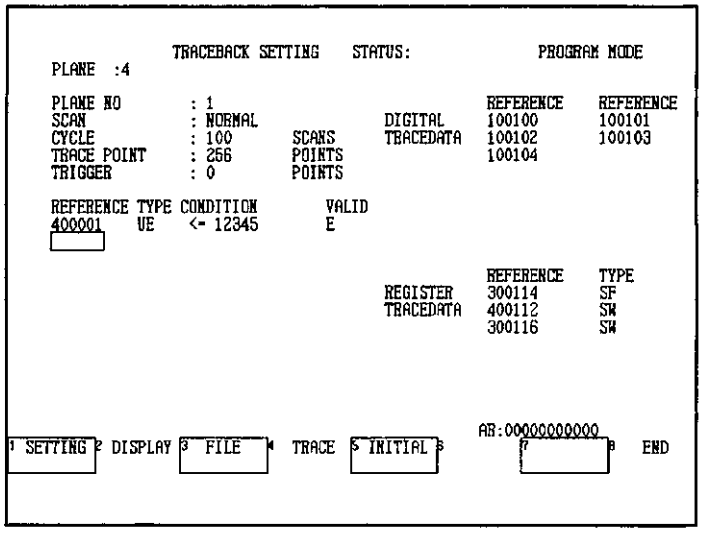


(7) Set the trigger condition setting to be enabled or disabled as desired. The default setting is for the trigger condition setting to be enabled. In this example, leave the setting on VALID and continue to the next step.

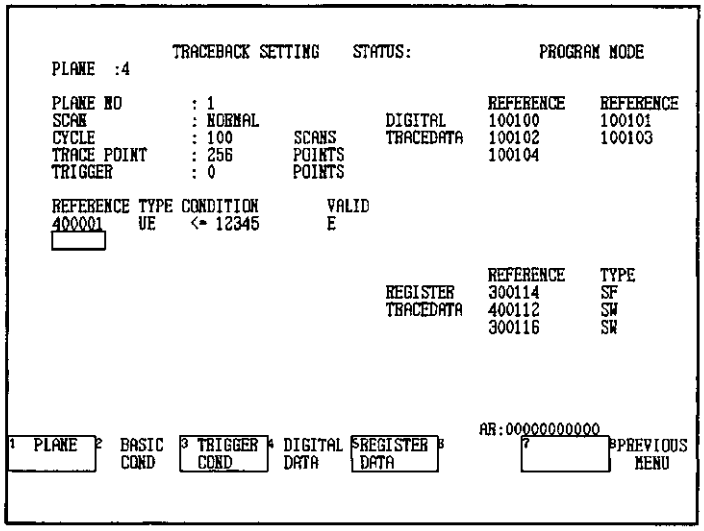


b) Using Digital References

(1) Press **F1 (SETTING)**.

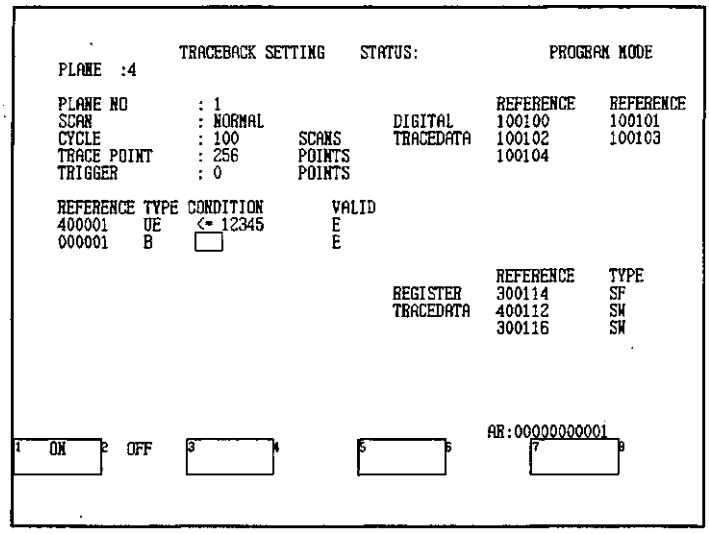


(2) Press **F3 (TRIGGER COND)**.

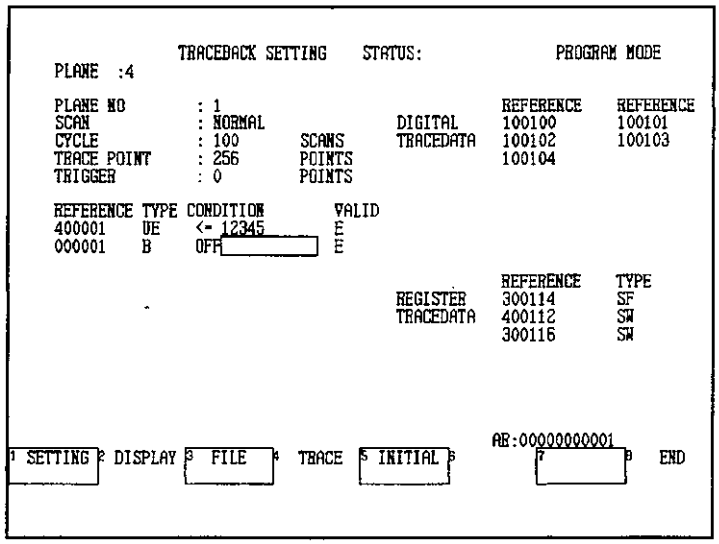


The cursor will move to the trigger condition setting position.

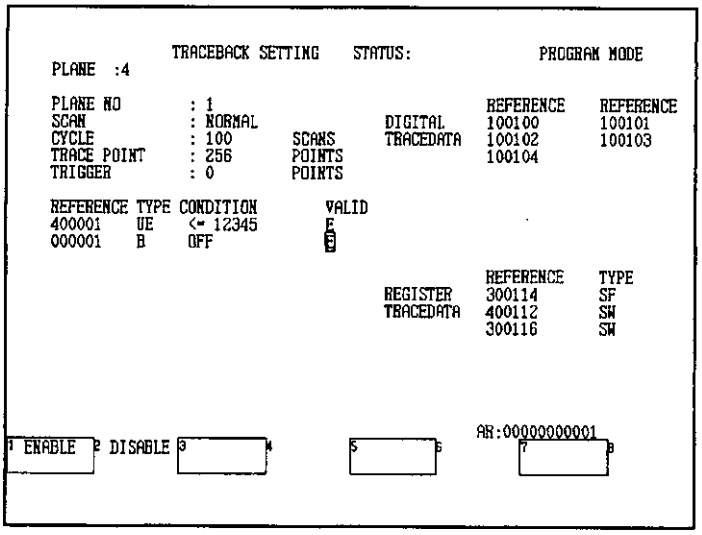
(3) Move the cursor to the desired reference input position. Enter the digital reference number (**000001** in this example) by entering **1** in the AR and pressing the **Enter** Key.



(4) Set the trigger condition. In this example, press **F2 (OFF)** to select OFF.



(5) Set the trigger condition setting to be enabled or disabled as desired. The default setting is for the trigger condition setting to be enabled. In this example, leave the setting on VALID and continue to the next step.



1) If the reference numbers of set trigger conditions are changed, all the settings up to that point will be deleted. After changing reference numbers, the trigger condition must be reset.

2) When the trigger condition type is changed, the trigger condition value will revert to the default value.

3) To delete the trigger condition, delete all the references and all the conditions using the Delete Key. By changing the validity setting from ENABLE to DISABLE, the trigger condition can be disabled without being deleted. To reset the original condition, simply change the validity setting back to ENABLE.

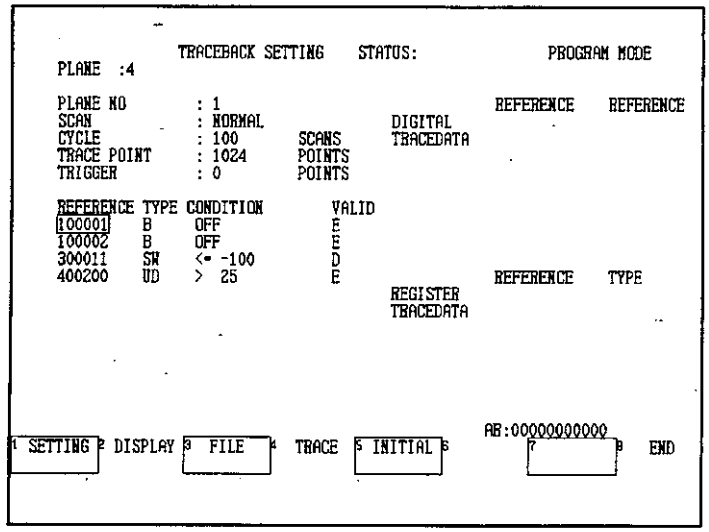
9.2.6 Setting Digital Trace Data

1) The following procedure is used to set digital references as trace data for graph displays. Up to 16 references can be set.

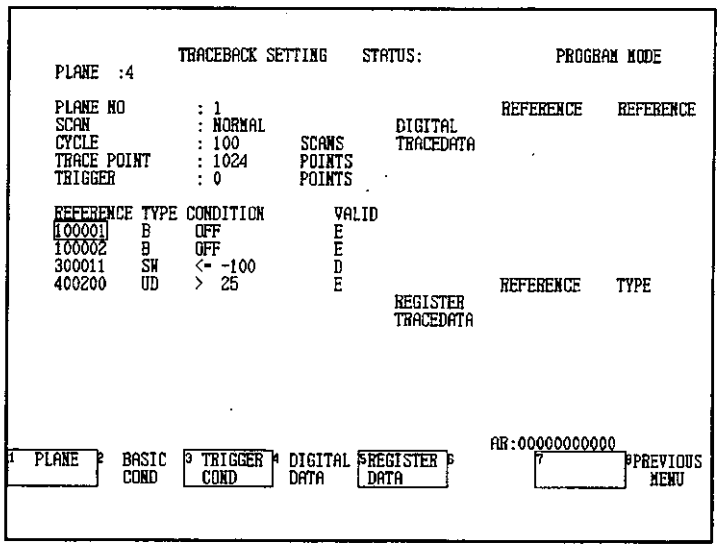
INFO If digital trace data is set, a maximum of three references can be set for register trace data.

2) Use the following procedure to set digital trace data.

a) Press **F1 (SETTING)**.

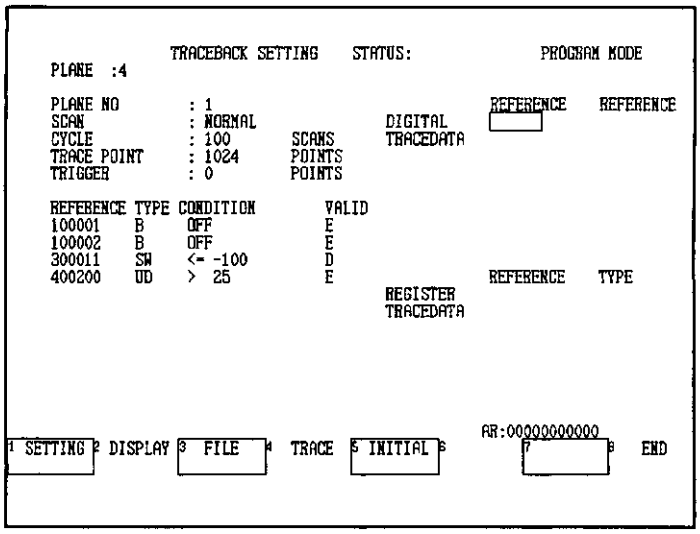


b) Press **F4 (DIGITAL DATA)**.

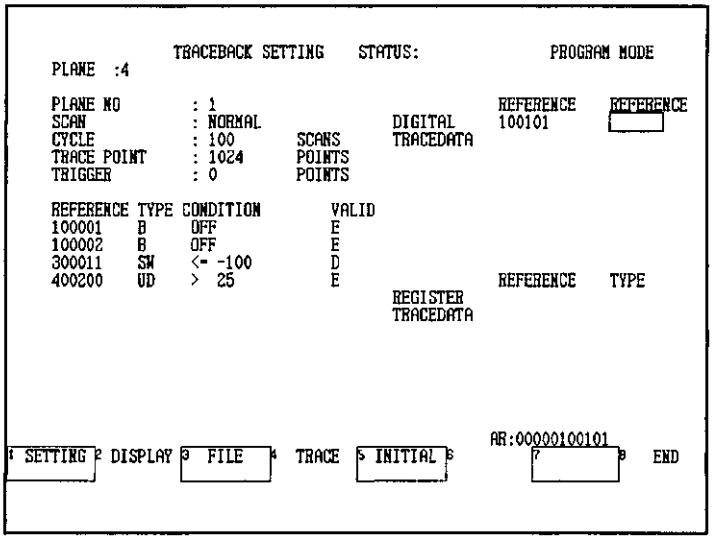


The cursor will move to the digital trace data position.

c) Enter the digital reference number to be traced. In this example, enter **100101** in the AR and press the **Enter** Key.



The digital trace data will be set, and the cursor will move to the next reference.



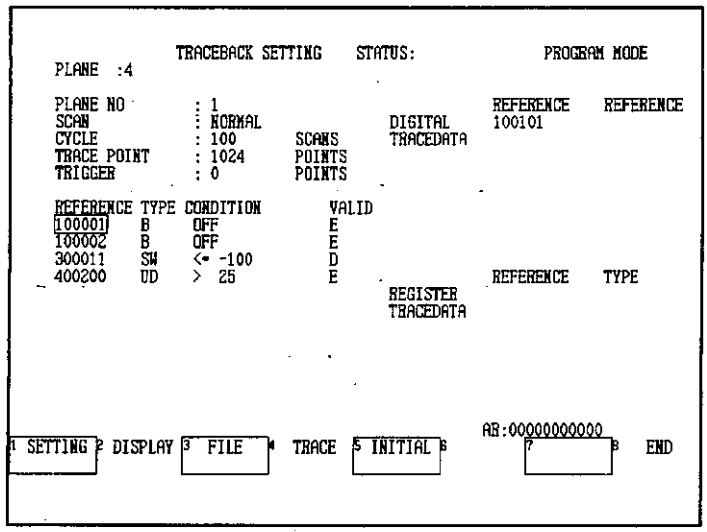
9.2.7 Setting Register Trace Data

1) The following procedure is used to set register references as trace data for graph displays. Up to 4 references can be set.

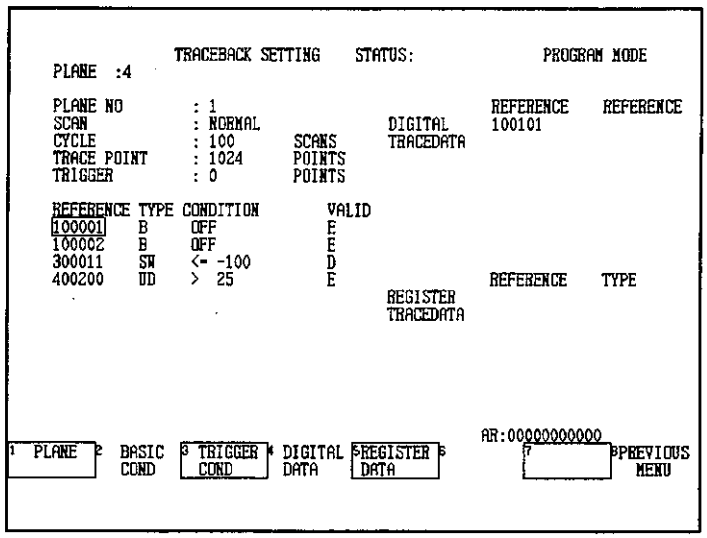
INFO If digital trace data is set, a maximum of three references can be set for register trace data.

2) Use the following procedure to set register trace data.

a) Press **F1 (SETTING)**.

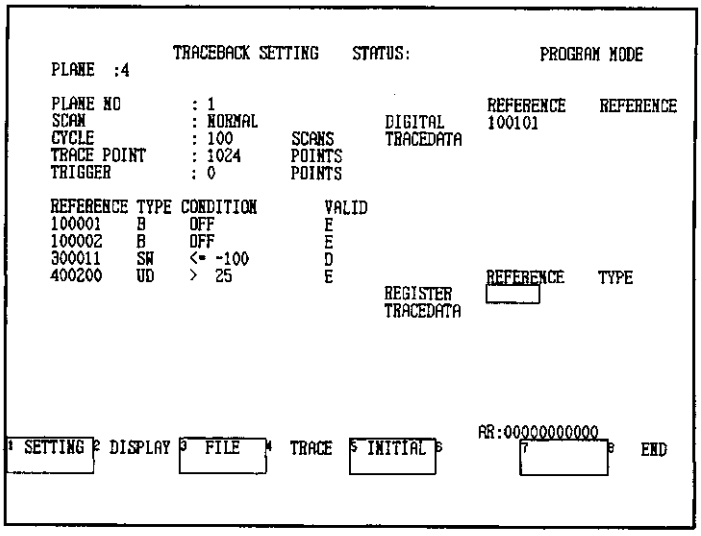


b) Press **F5 (REGISTER DATA)**.



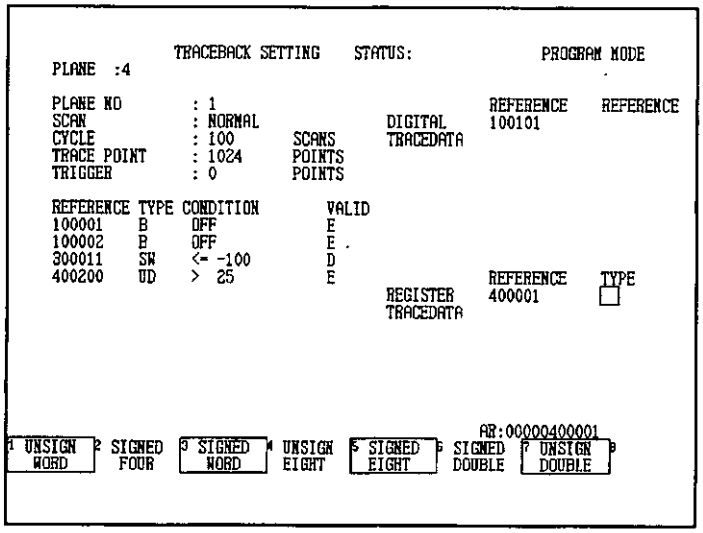
The cursor will move to the register trace data position.

c) Enter the register reference number to be traced. In this example, enter **400001** in the AR and press the **Enter** Key.

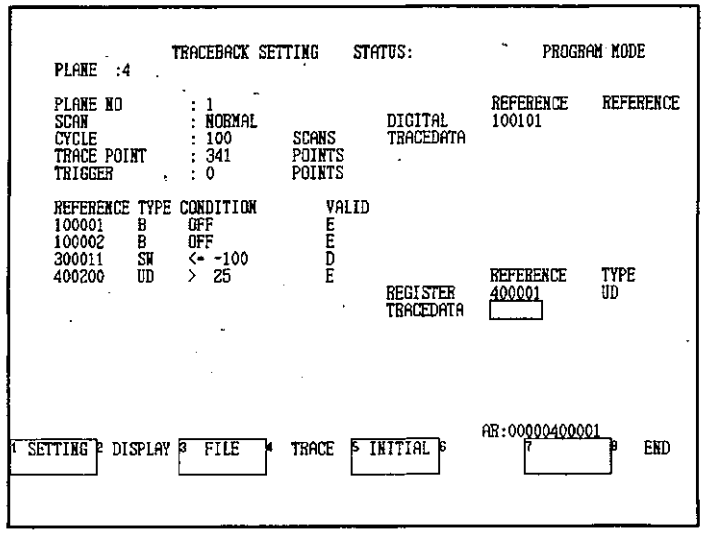


The cursor will move to the type position, and the type selections will be displayed.

d) Select the register trace data type. In this example, press **F7 (UNSIGN DOUBLE)** to select unsigned 32-bit data.



The register trace data will be set, and the cursor will move to the next reference.



INFO If the highest register reference number is input, the only data types that can be selected will be UW: unsigned decimal word, SF: signed four-digit decimal, and SW: signed word (2's complement, 16-bit).

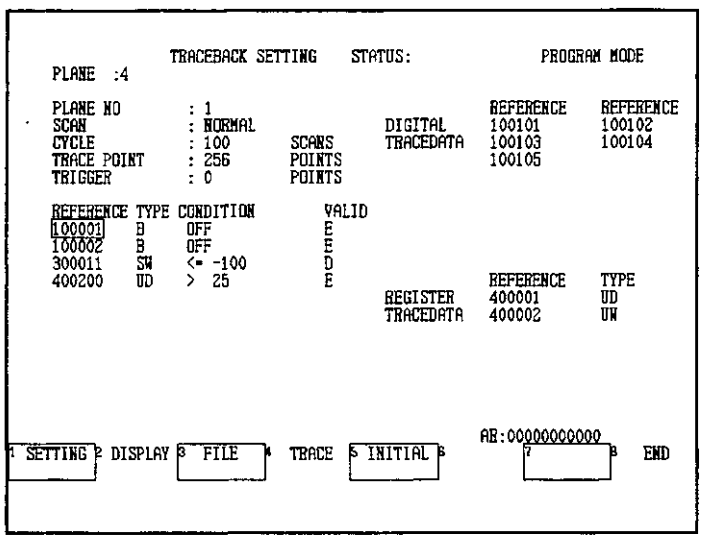
9.2.8 Initializing

1) The following procedure is used to initialize traceback settings for a specified plane.

2) Use the following procedure to initialize traceback settings.

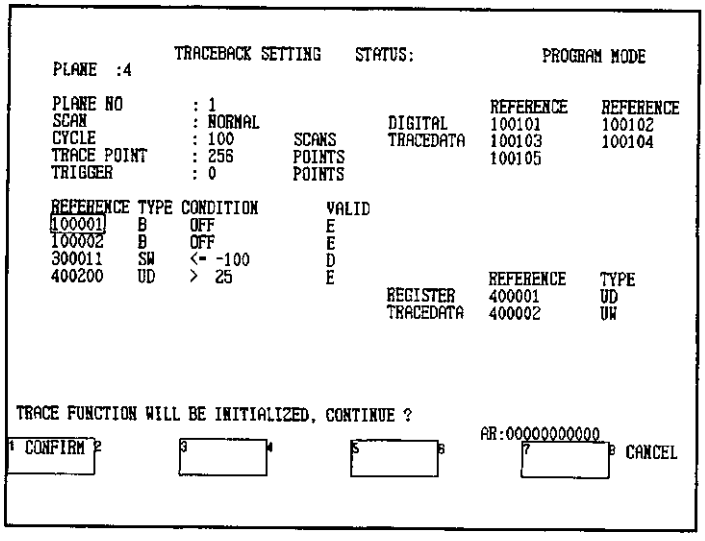
   a) Display the plane for which the settings are to be initialized.

   b) Press **F5 (INITIAL)**.

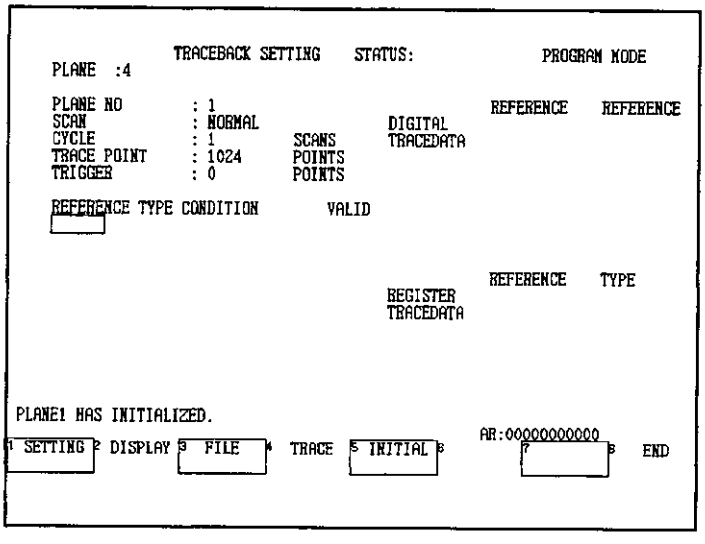


A confirmation message will be displayed.

c) Press **F1 (CONFIRM).**



The data for the plane will be initialized.



9.2.9 Trace Operations

1) This section explains the trace operations that can be used to collect trace data. The operations to start a trace, end a trace, and turn ON a trigger can be executed only if the PLC is in RUN state.

2) The following trace operations are possible.

a) Starting a Trace

Starts a trace for the current plane.

b) Ending a Trace

Ends the trace currently being executed.

c) Trigger ON (Manual Trigger)

Manually turns ON the trigger to create a trigger point without using the set trigger condition. The trigger is turned ON using commands from the Online Programmer or MEMOSOFT. The trace will end after collecting the specified number of points of trace data (set under TRIGGER).

d) Writing Settings

Writes the current traceback settings to the PLC.

This operation is used to write settings made on the Traceback Setting Screen to the PLC when traces are executed using the TRON ladder logic instruction. This operation is not required when executing traces from the Traceback Setting Screen.

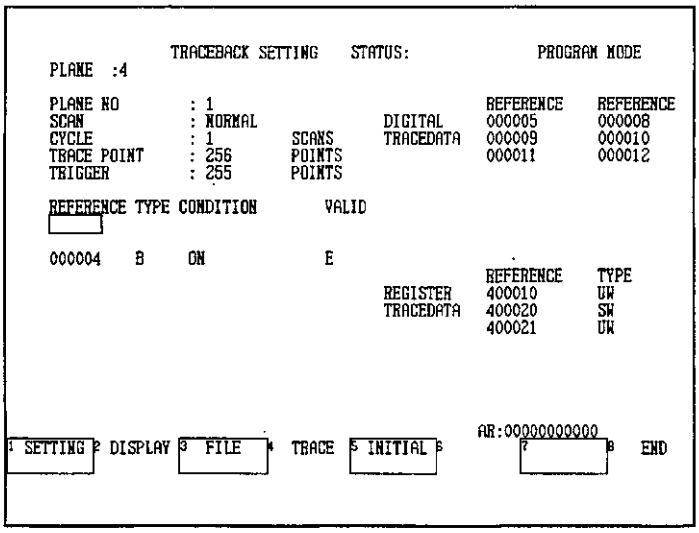
Difference between Ending a Trace and Using a Manual Trigger

- Ending a trace: The trace is stopped immediately when the command is given.
- Manual trigger: The trace is stopped after collecting the specified number of points of trace points after the command is given.

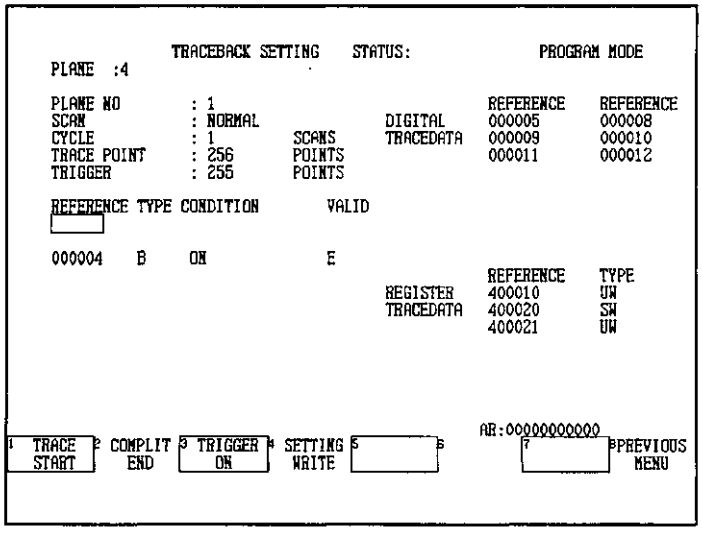
3) Use the following procedures to execute the trace operations.

a) Starting a Trace

(1) Press **F4 (TRACE).**

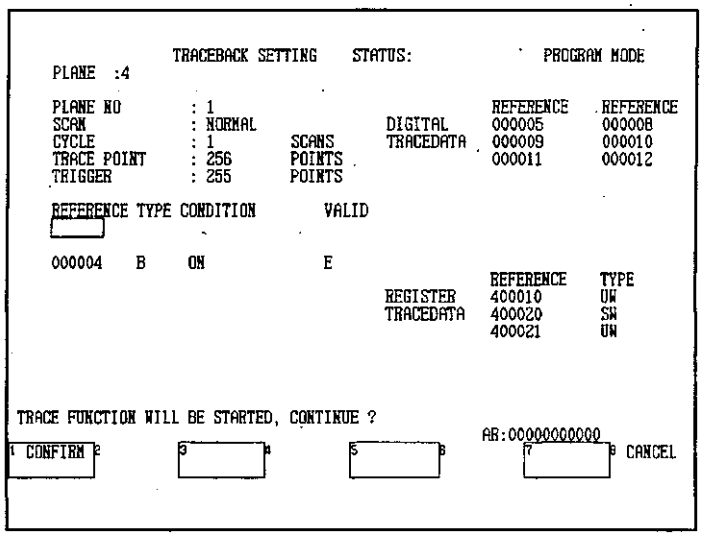


(2) Press **F1 (TRACE START).**

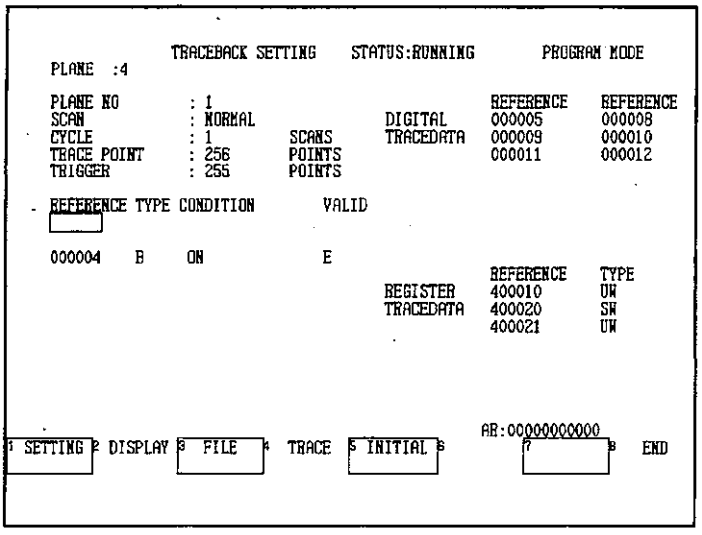


A confirmation message will be displayed.

(3) Press **F1 (CONFIRM).**



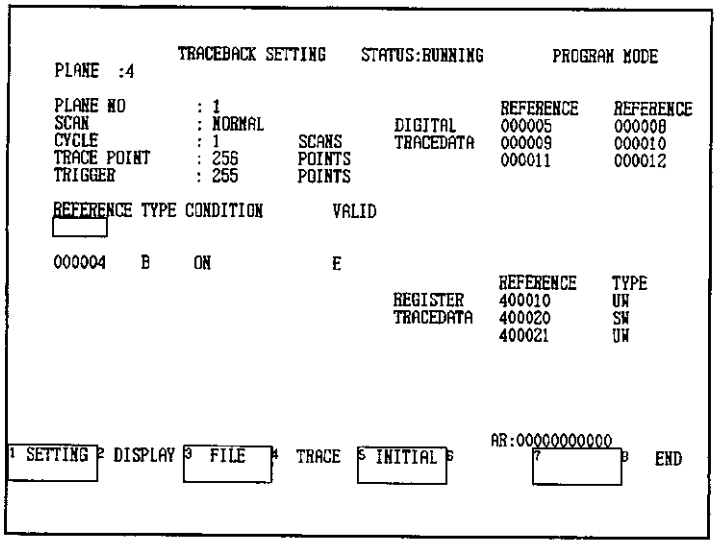
STATUS: RUNNING will be displayed and the trace will start.



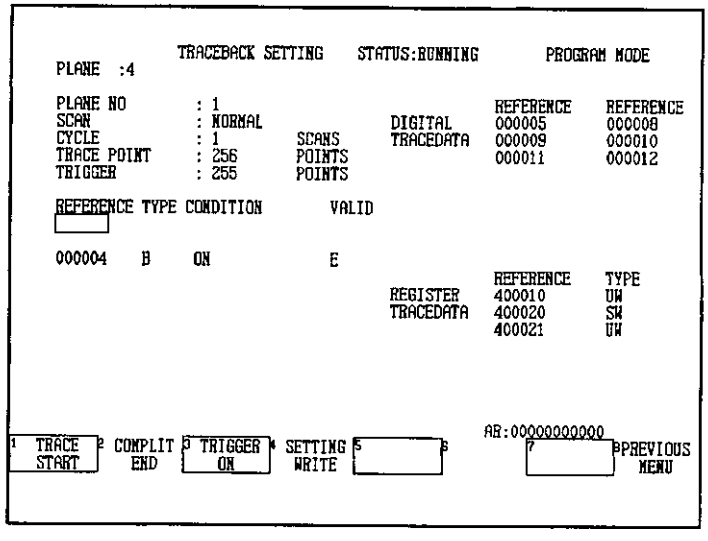
When the trace finishes, STATUS: RUNNING will disappear.

b) Ending a Trace

(1) Press **F4 (TRACE)**.

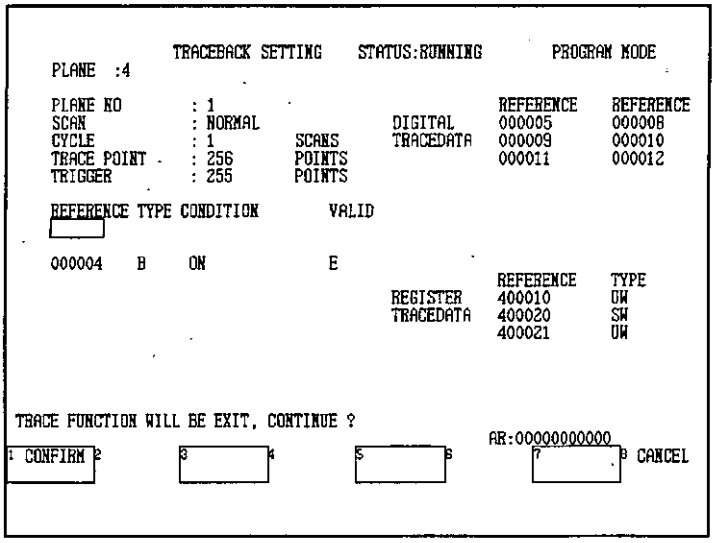


(2) Press **F2 (COMPLIT END)**.

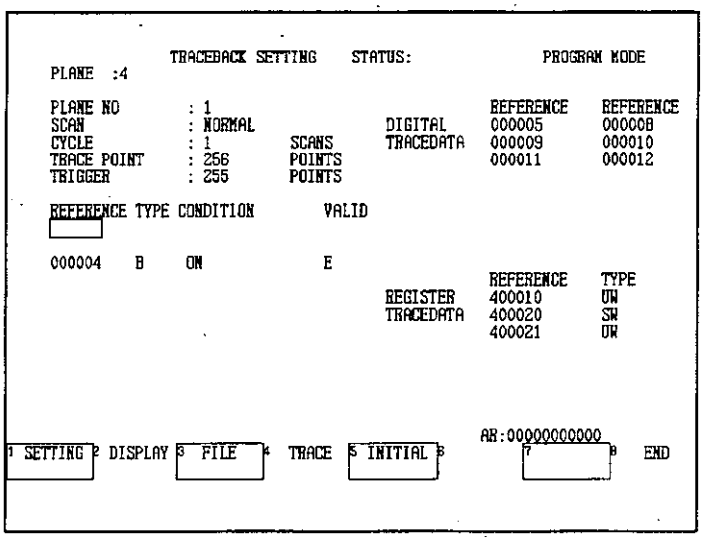


A confirmation message will be displayed.

(3) Press **F1 (CONFIRM).**

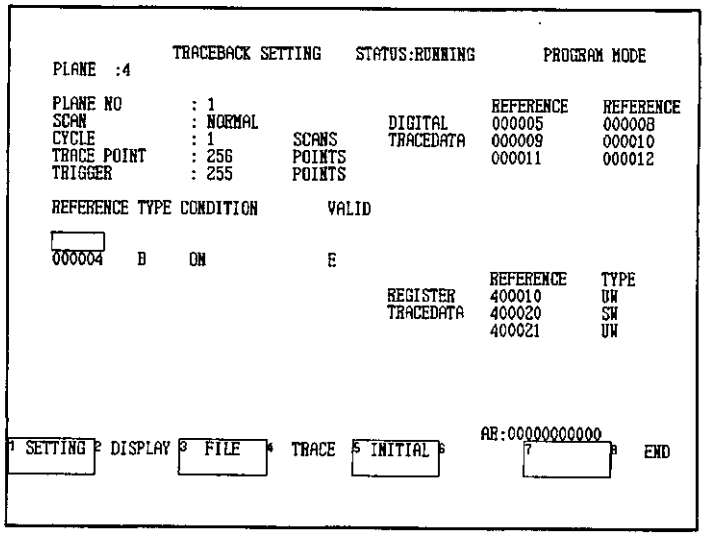


The trace will stop and STATUS: RUNNING will disappear.

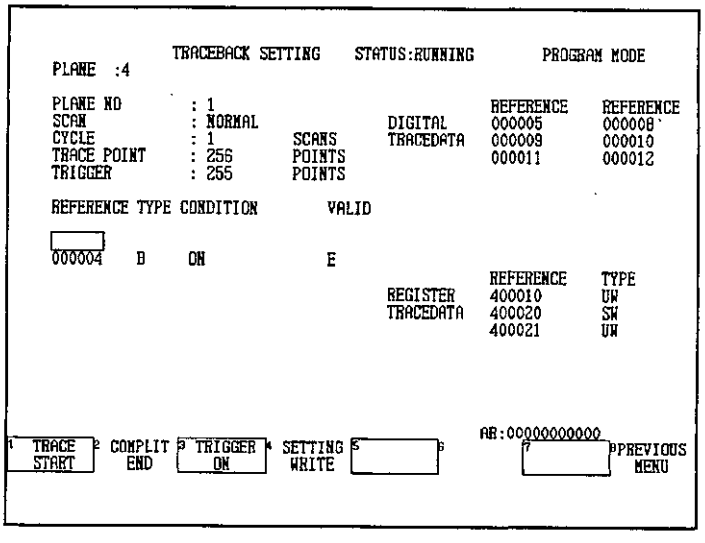


c) Turning ON the Trigger

(1) Press **F4 (TRACE).**

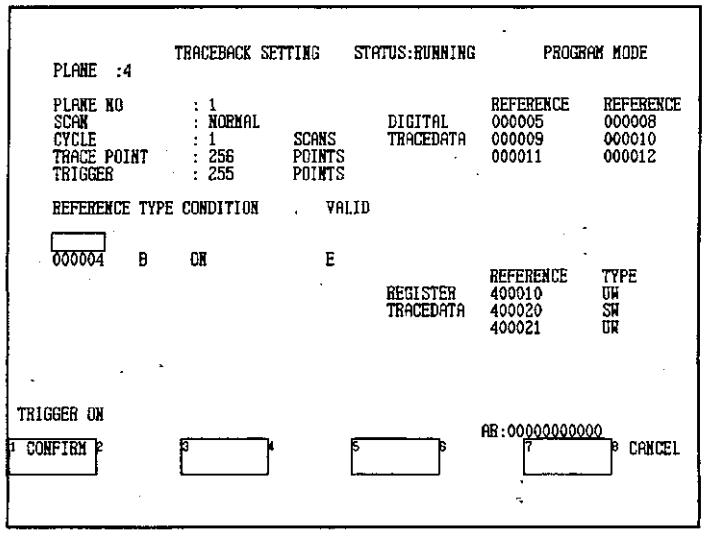


(2) Press **F3 (TRIGGER ON).**



TRIGGER ON will be displayed at the bottom of the screen.

(3) Press **F1 (CONFIRM)**.



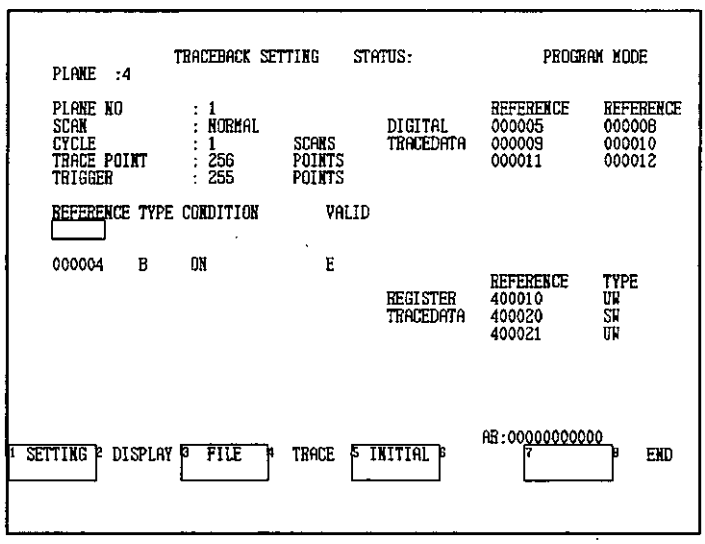
A trigger point will be created.

d) Writing Settings to the PLC

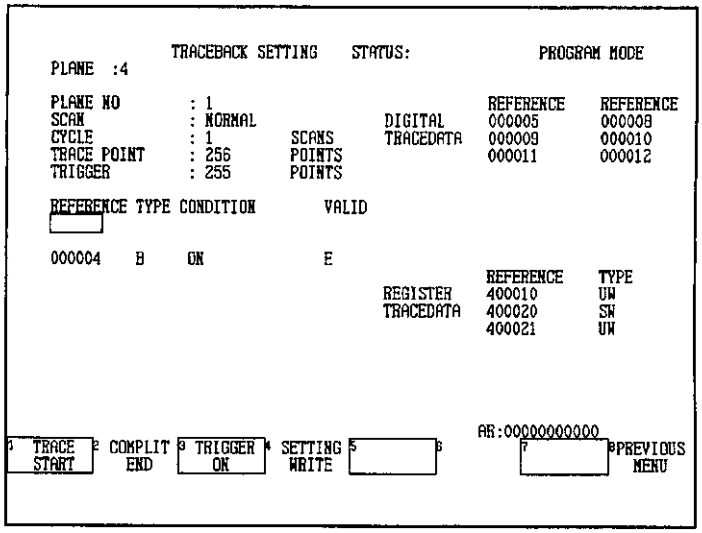
INFO

This operation is used to write settings made on the Traceback Setting Screen to the PLC when traces are executed using the TRON ladder logic instruction. This operation is not required when executing traces from the Traceback Setting Screen.
This operation is also not necessary if the Traceback Setting Screen is ended or the plane number is changed because the trace data is automatically written at this times.

(1) Press **F4 (TRACE)**.

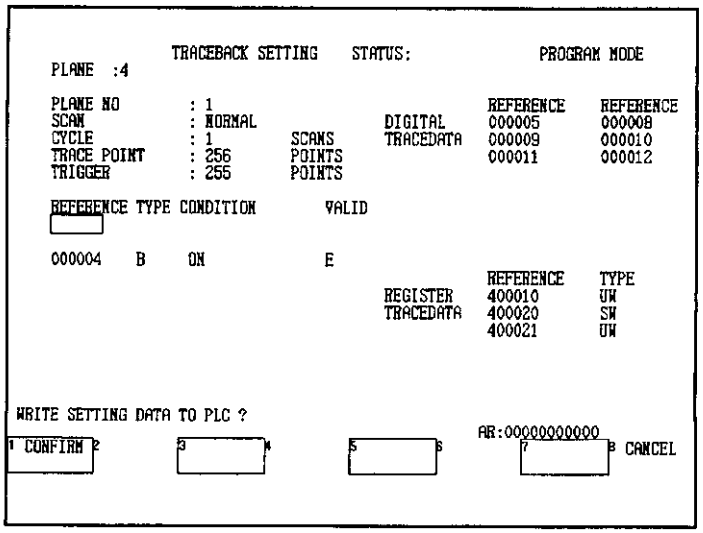


(2) Press **F4 (SETTING WRITE).**



A confirmation message will be displayed.

(3) Press **F1 (CONFIRM).**



The settings will be written to the PLC.

9.2.10 File Operations

1) The following two file operations are provided.

a) Writing PLC Data to a File

Writes trace data created at the PLC and the settings in the PLC to a file. The file created can be accessed using the offline traceback functions.

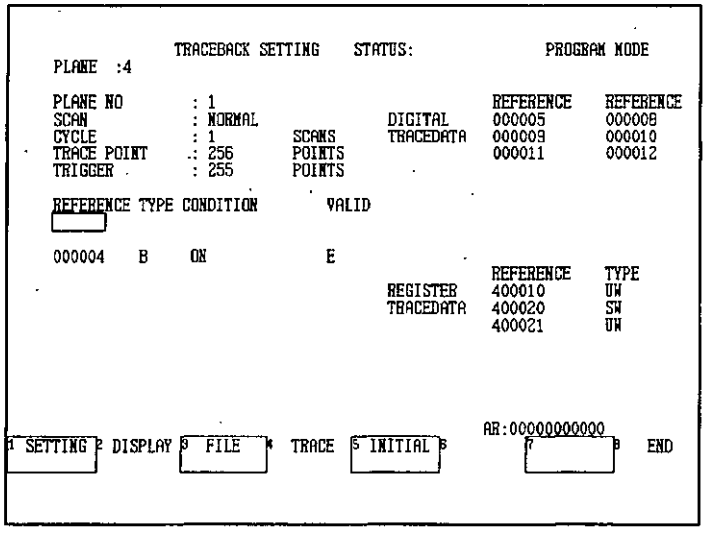
b) Writing File Data to a PLC

Writes settings from a file to the PLC. The file to write to the PLC can be selected from all the settings files that have been created.

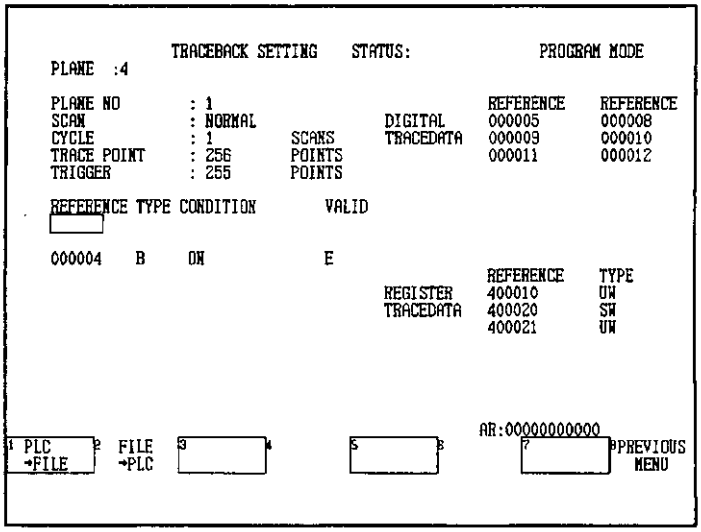
2) Use the following procedures to execute file operations.

a) Writng PLC Data to a File

(1) Press **F3 (FILE).**

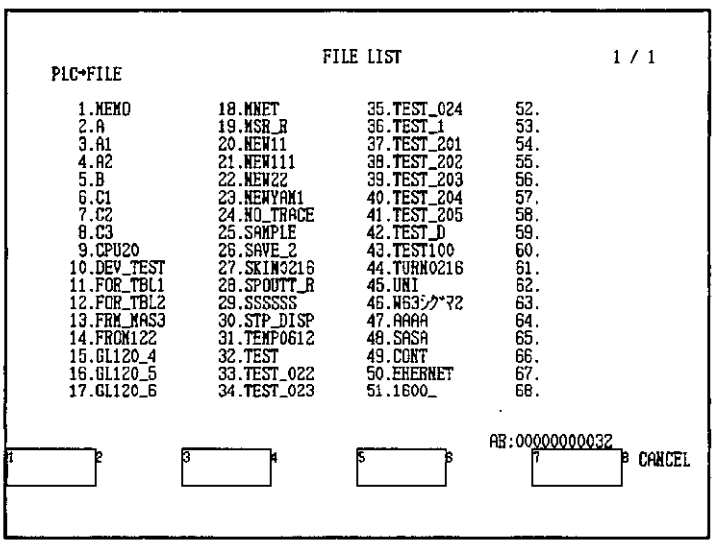


(2) Press **F1 (PLC → FILE)**.



A list of file names will be displayed.

(3) Enter the number of the file to be read in the AR and press the Enter Key. In this example, enter **32** in the AR and press the **Enter** Key.



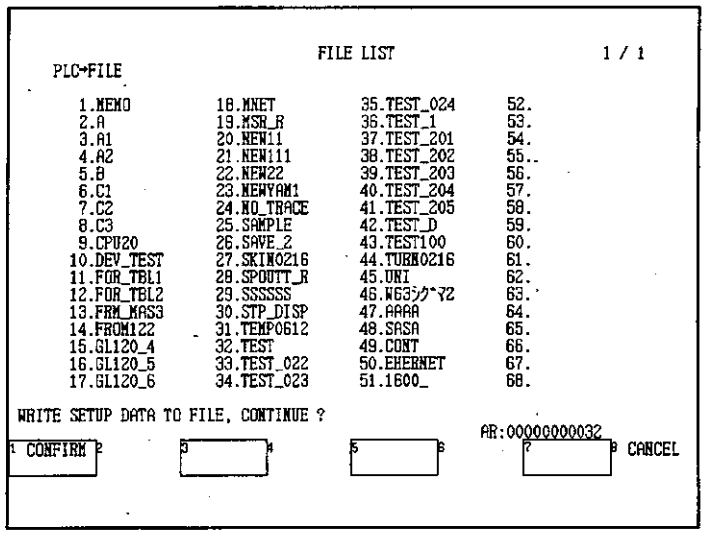
INFO

1) The system configurations of the source and destination files must be the same when writing trace data and settings data created on the PLC from the PLC to the P120.

2) Up to 68 files can be displayed on one screen. If there are more than 68 files, change pages by pressing the PageUp or PageDown Key.

A confirmation message will be displayed.

a) Press **F1 (CONFIRM)**.

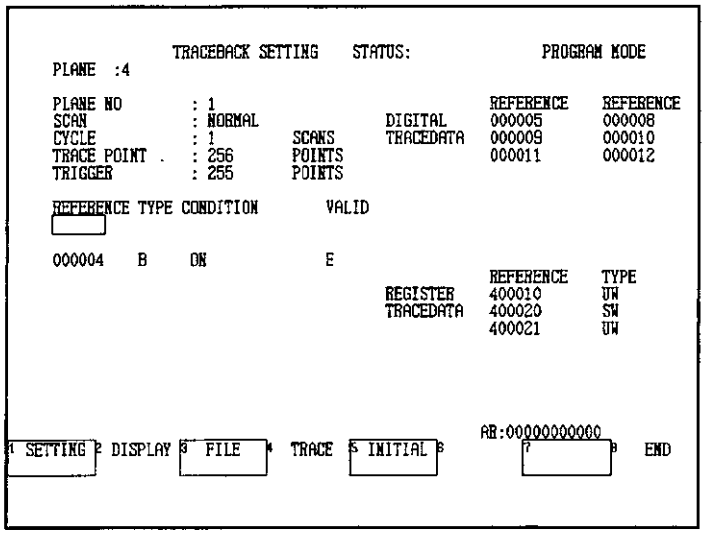


The trace data and traceback settings will be written to the specified file.

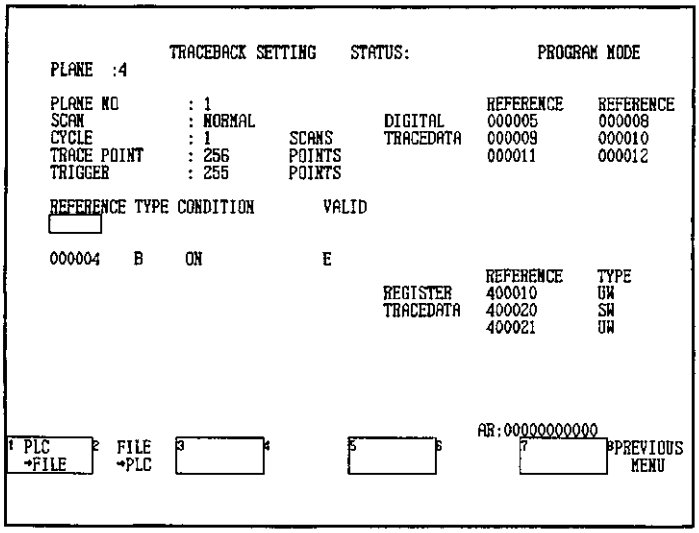
INFO If trace data already exists in the selected file, the new data will overwrite the previous data.

b) Writing File Data to the PLC

(1) Press **F3 (FILE)**.

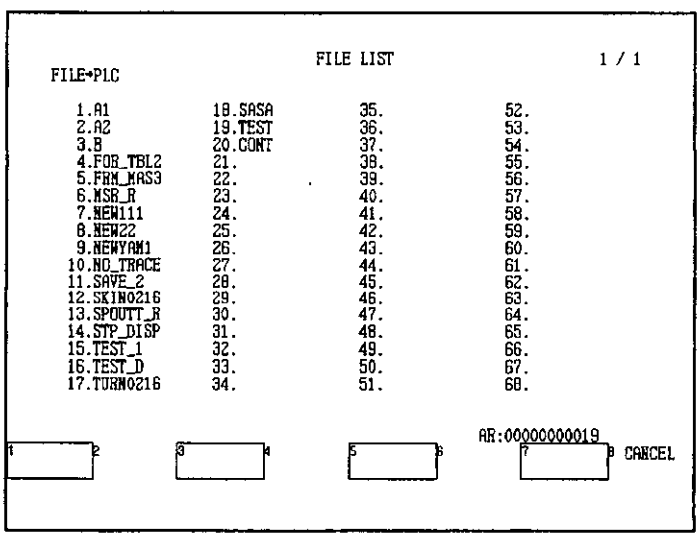


(2) Press **F2 (FILE → PLC)**.



A list of file names will be displayed.

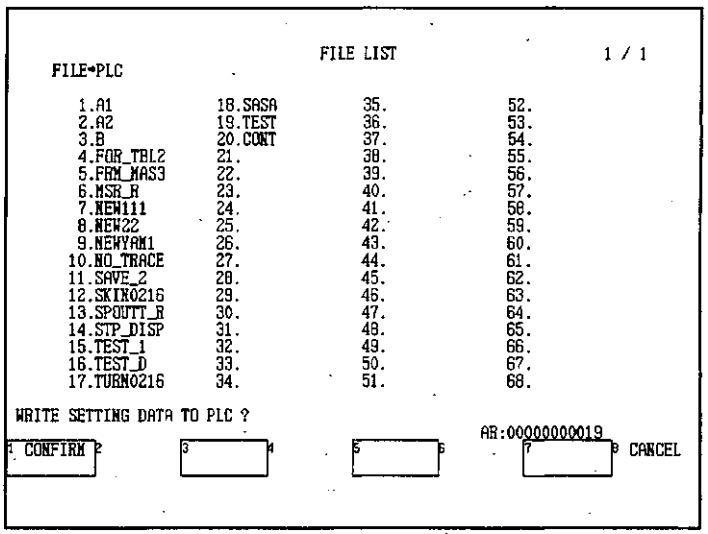
(3) Enter the number of the file to be written to the PLC in the AR and press the Enter Key. In this example, enter **19** in the AR and press the **Enter** Key to select file 19.TEST.



INFO Up to 68 files can be displayed on one screen. If there are more than 68 files, change pages by pressing the PageUp or PageDown Key.

A confirmation message will be displayed.

(4) Press **F1 (CONFIRM).**



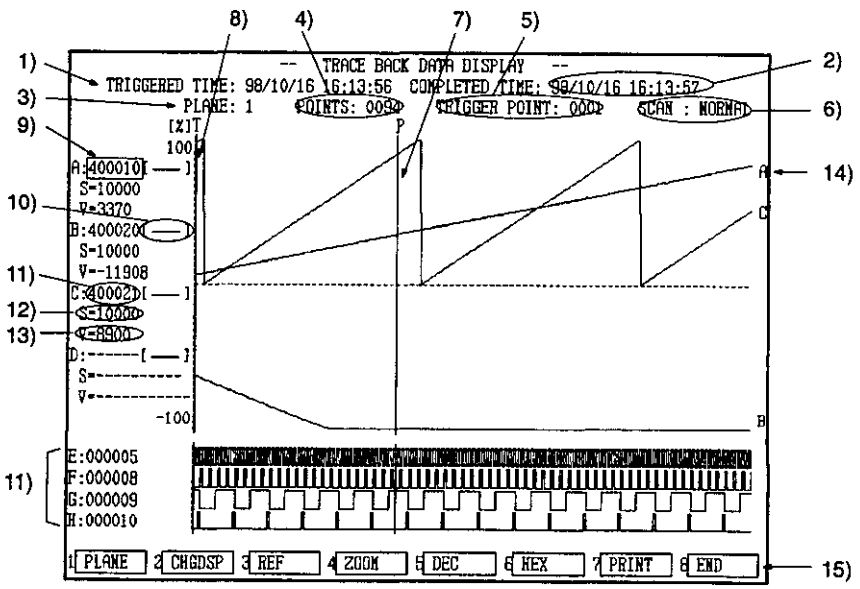
Traceback settings from the selected file will be written to the PLC.

9.3 Graph Display Operations

This section explains the graph display operations that can be used for the data collected with the trace operations. It also explains the operations used when outputting graphically displayed data to a printer.

9.3.1 Graph Display Screen

The Graph Display Screen is shown below.



1) Triggered Time

Displays the time at which the trigger was activated.

2) Completed Time

Displays the time at which the trace was completed.

3) Plane

Displays the number of the current plane.

4) Points

Displays the number of points on the P line.

5) Trigger Point

Displays the number of points at which the trigger was activated.

6) Scan

Tells whether the trace was executed in a normal scan or a high-speed scan.

7) P Line

Used to set the display position of the trace data for reference numbers, and to scroll the screen.

8) T Line

Displays the point at which the trigger was activated.

9) Cursor

Used to execute processes, such as changing the reference number at the cursor position.

10) Line Types

Display the graph line color corresponding to each reference.

11) Reference Numbers

Display the reference numbers in the graph currently displayed.

12) Scales

Indicate the scales used to draw a graph of the trace data based on a scale value of 100. The scale is displayed under each reference number as S = □□□□□.

13) Trace Data Values

Displays the trace data values at points on the P line. The trace data value is displayed under each reference number as v = □□□□□

14) Trend Graph Guides

Display the register reference codes (A to D) corresponding to each graph line.

15) Functions

Display the functions of the Function Keys.

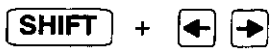
9.3.2 Basic Key Operations

Up and Down Cursor Keys

Move the cursor.

Left and Right Cursor Keys

Move the P line 1 point.



Shift + Left and Right Cursor Keys

Move the P line 10 points.

Page Up Key

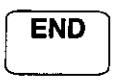
Displays the next screen (next screen of trace data graph).

Page Down Key

Displays the previous screen (previous screen of trace data graph).

Home Key

Displays trace data graphs from the first point, and shows the P line at the first point.



End Key

Displays 1 screen of trace data graphs from the last point and shows the P line at the last point.

Delete Key

Deletes the corresponding reference graph display when the cursor is at a reference number.

Escape Key

Cancels inputs, cancels operations, and exits the graph display screen.

Enter Key

Confirms inputs.

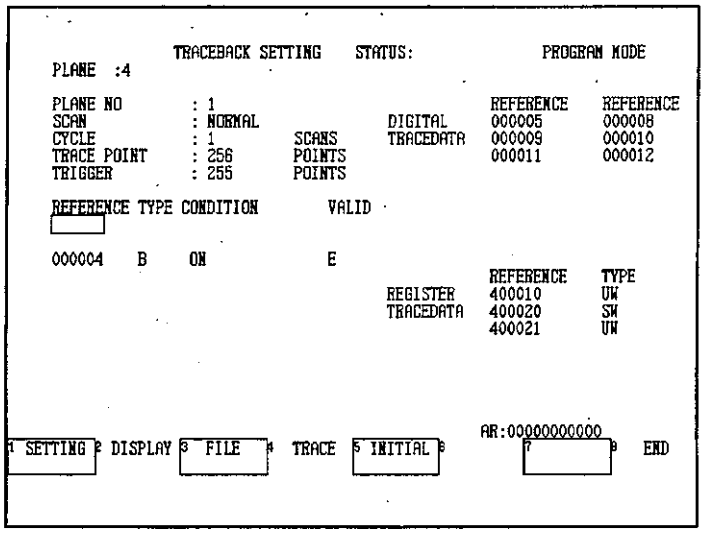
9.3.3 Displaying the Graph Display Screen

1) This section explains how to display the Graph Display Screen.

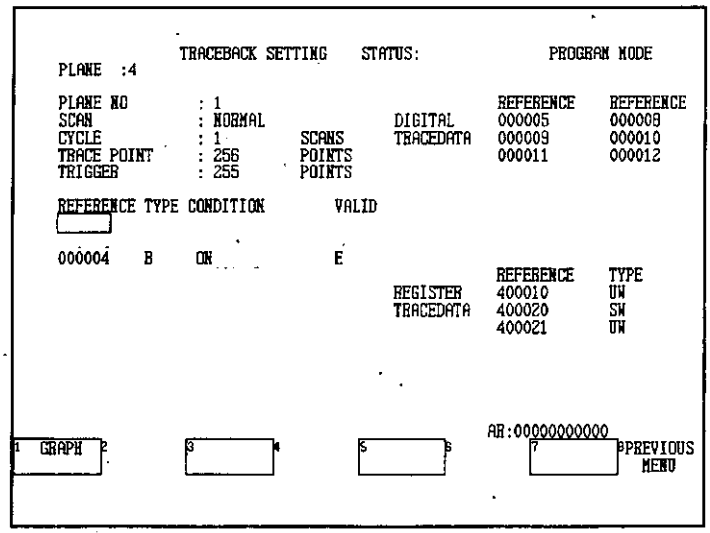
Note To display a graph, it is necessary to generate trace data by executing a trace from the Trace-back Setting Screen or by executing ladder logic instructions.

2) Use the following procedure to display the Graph Display Screen.

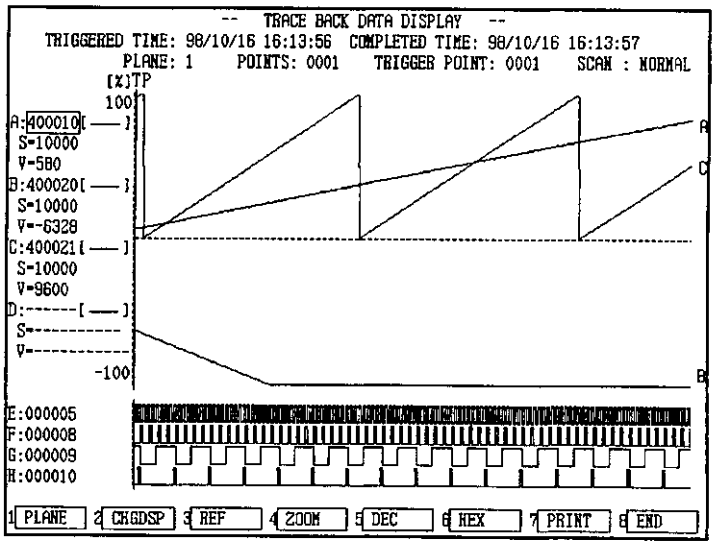
a) Press **F2 (DISPLAY).**



b) Press **F1 (GRAPH).**



The Traceback Data Display Screen will be displayed.

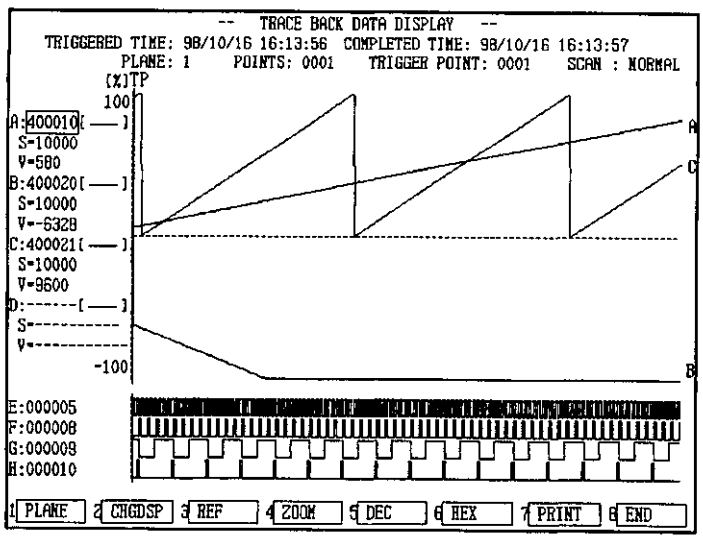


9.3.4 Changing Planes

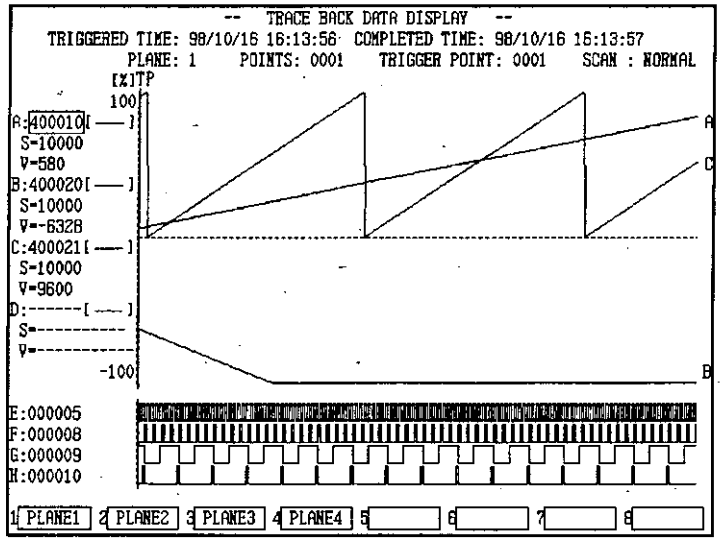
1) The following procedure is used to change the plane for which the graph display is being executed. The plane cannot be changed while a trace is being performed for it.

2) Use the following procedure to change the plane.

   a) Press **F1 (PLANE)**.



b) Press the Function Key corresponding to the desired plane number.



The displayed plane will change.

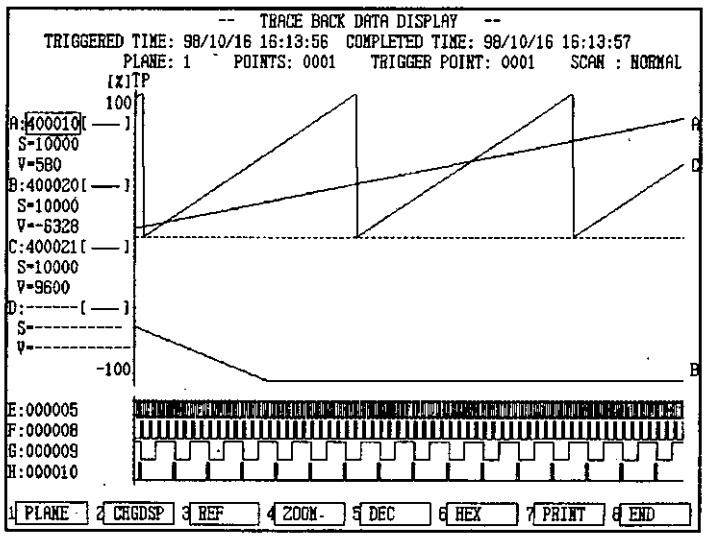
9.3.5 Changing Displays

1) This section explains how to change the display. The display can be changed between the following.

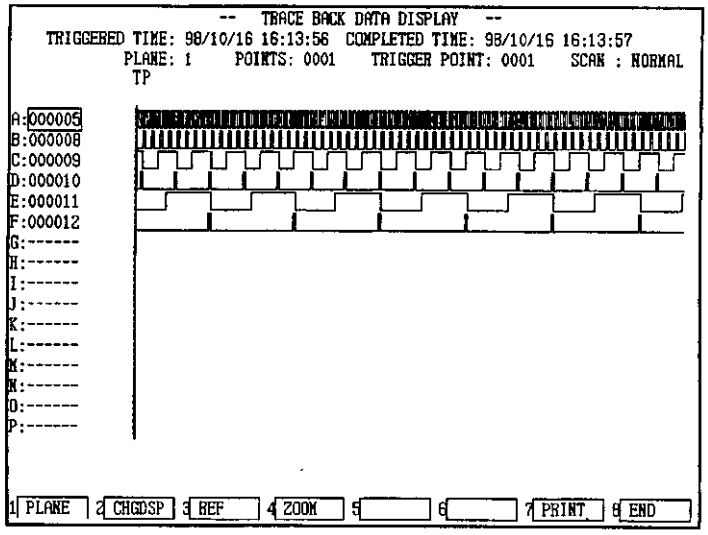
- Display of 4 register references and 4 digital references
- Display of 16 digital references

2) Use the following procedure to change the display for trace data.

a) If 4 register references and 4 digital references are being displayed, press **F2 (CHGDSP)**.



The display will change to 16 digital references.



b) To change the display from 16 digital display to 4 register references and 4 digital references, press **F2 (CHGDSP)**.

9.3.6 Changing Display References

1) The following two methods can be used to change the reference numbers being displayed on the graph. You can change to any reference numbers that was set on the Traceback Setting Screen.

a) Using Function Keys

Move the cursor to the position of the reference number to be changed. Use the Function Keys to display the references that can be selected and then select the desired reference.

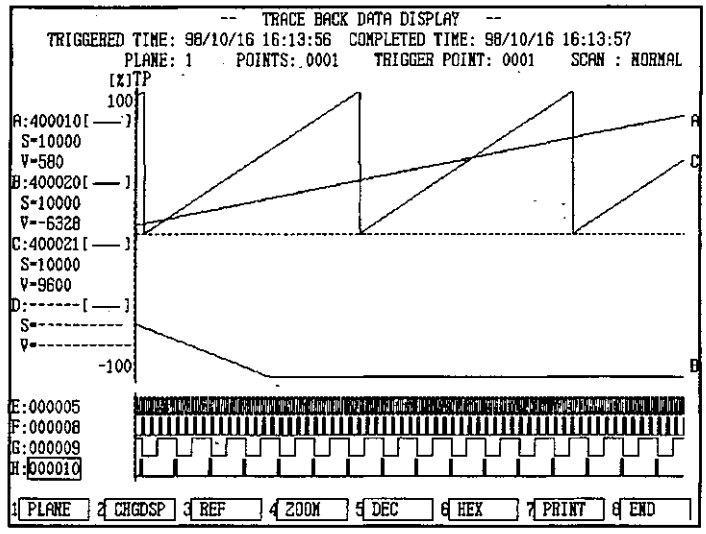
b) Direct Input

Move the cursor to the display position of the reference number to be changed, and change it by directly entering the reference from the keyboard.

2) As an example, the following procedures show how to change the digital reference number 000010 to 000011.

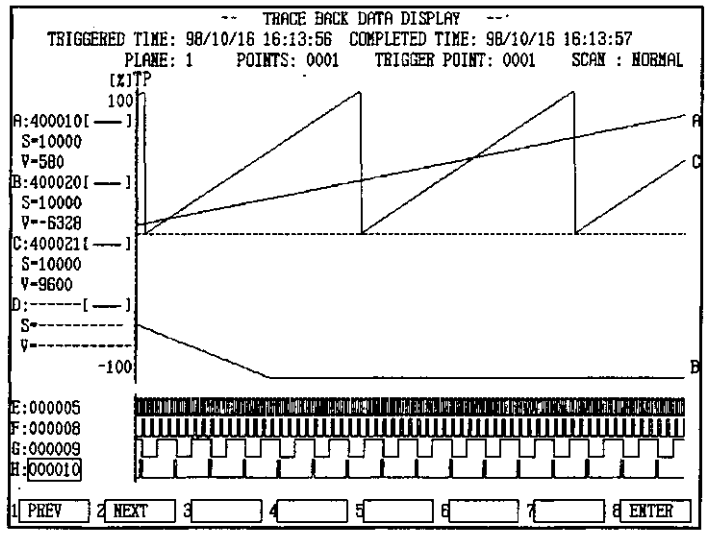
a) Using Function Keys

(1) Move the cursor to the reference number to be changed using the **Cursor** Keys.



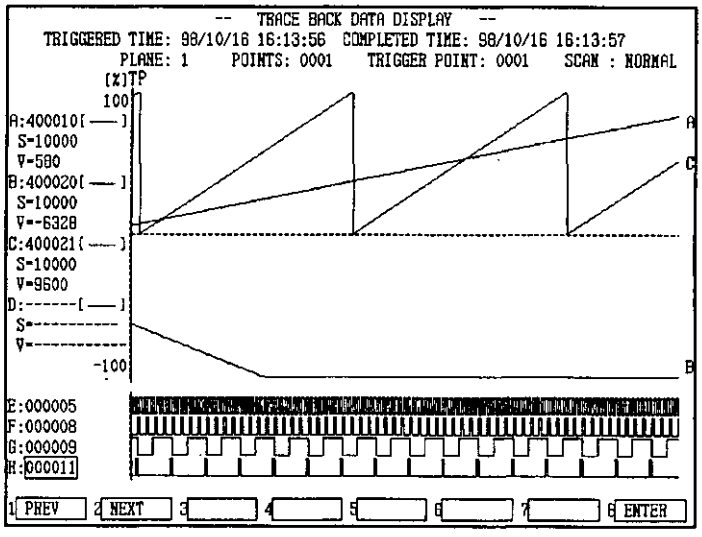
(2) Press **F3 (REF)**.

The Functions Menu will change.

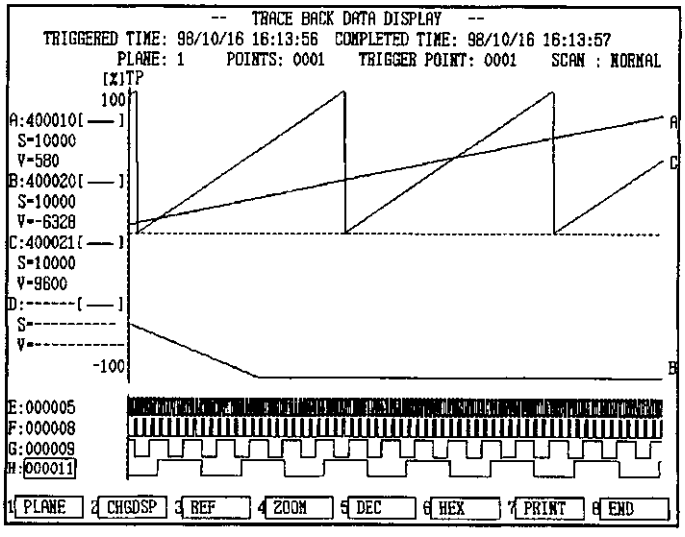


(3) Press **F1 (PREV)** or **F2 (NEXT)** until the desired number is displayed.

(4) When the desired number is displayed, press either the **Enter** Key or **F8 (ENTER)**. In this example, the reference number is changed to 000011.



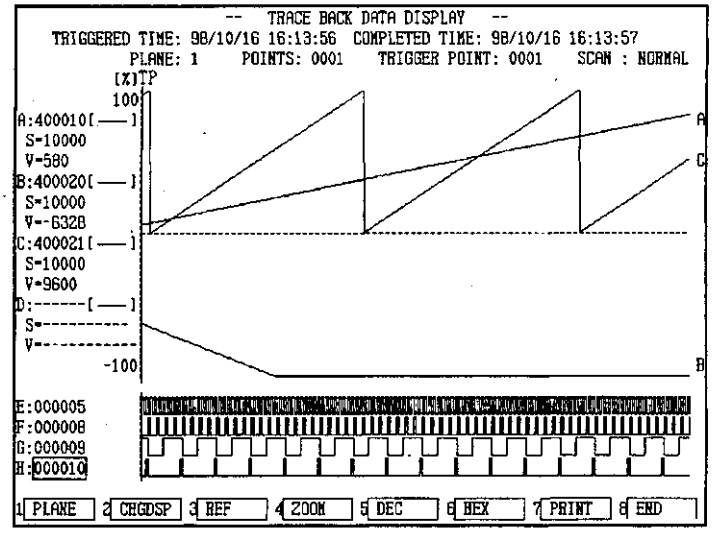
The trace data graph will also change.



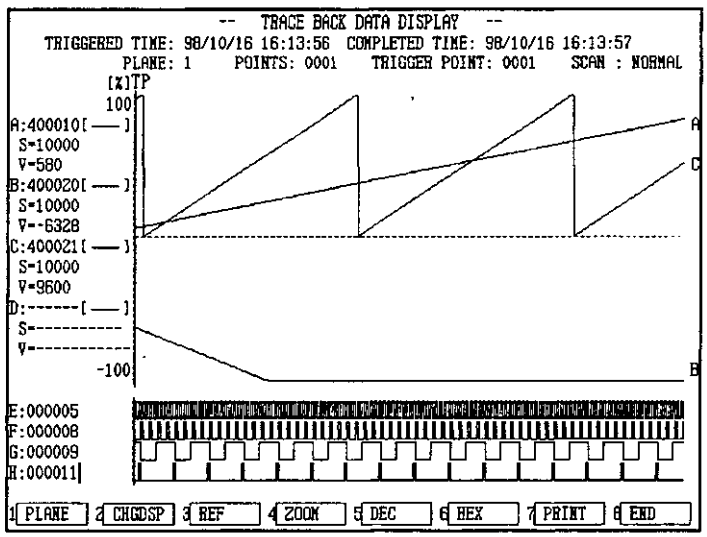
INFO The reference numbers displayed depends on the position of the cursor. When the cursor is in the register reference display position, only register reference numbers will be displayed. When the cursor is in the digital reference display position, only digital reference numbers will be displayed.

b) Direct Input

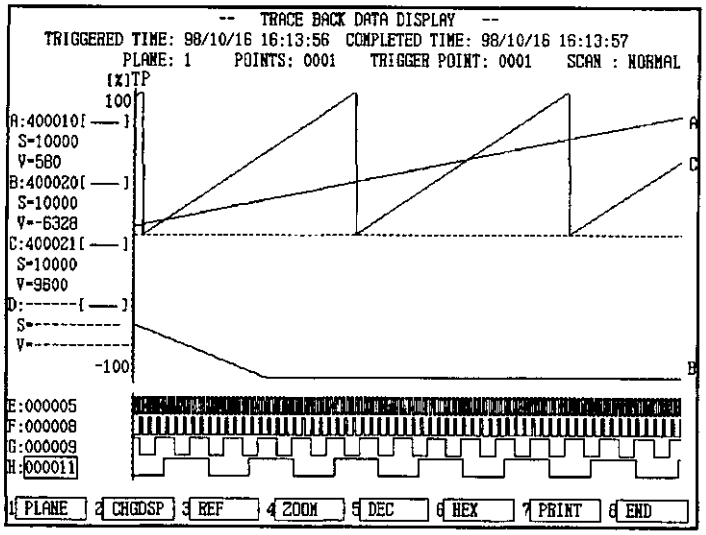
(1) Move the cursor to the reference number to be changed using the **Cursor** Keys.



(2) Enter the desired reference number. In this example, enter **000011** and press the **Enter** Key to change to 000011.



The reference number and the trace data graph will change.



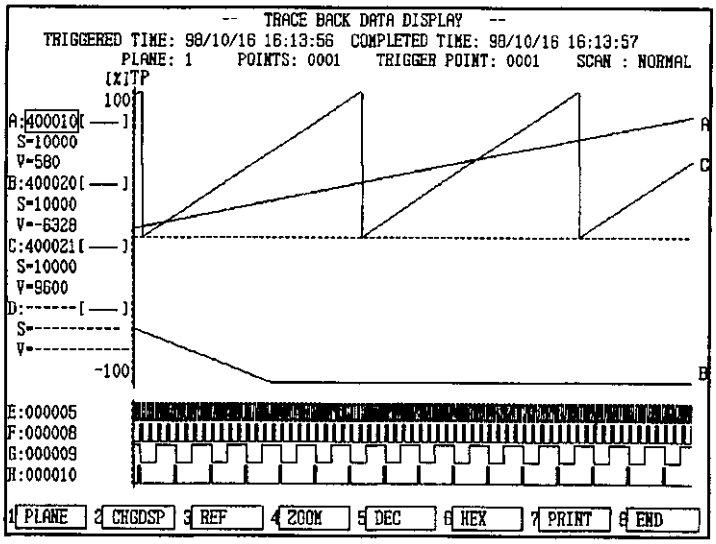
INFO If a reference number that has not been set in the Traceback Setting Screen is entered, it will be invalid and the reference number will not change.

9.3.7 Changing the Zoom

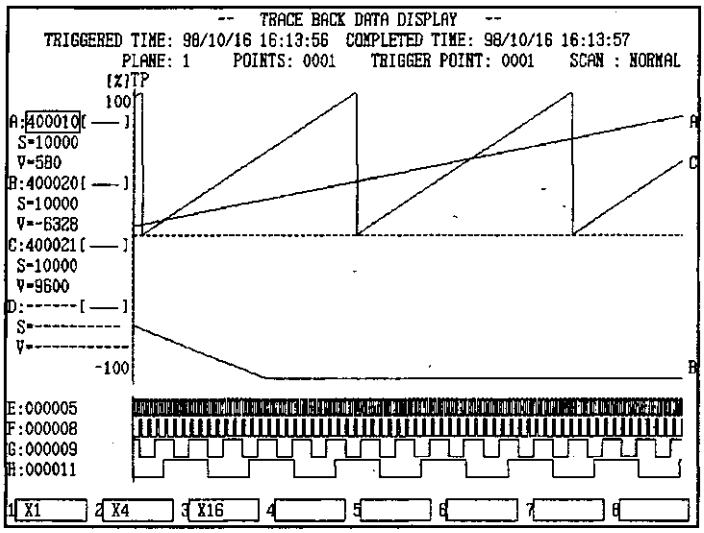
1) The following procedure is used to change the number of horizontal graph display points. The display options are 256 points (x 1), 64 points (x 4), and 16 points (x 16).

2) Use the following procedure to change the zoom. As an example, the procedure for changing from x 1 to x 4 is shown.

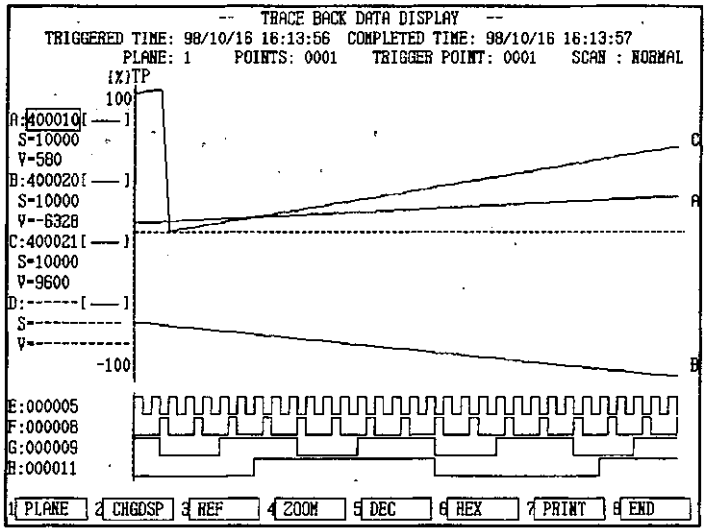
   a) Press **F4 (ZOOM)**.



b) Change the zoom using the Function Keys. In this example, press **F2 (x 4)** to change to x 4.



The zoom will change.



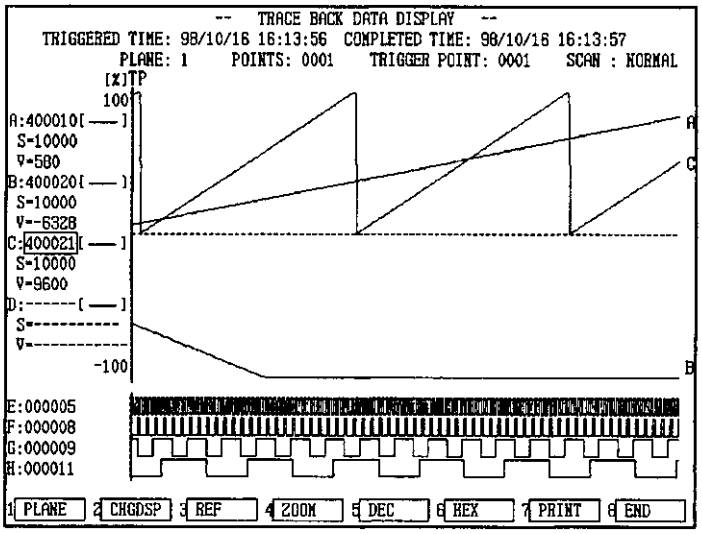
9.3.8 Changing Base Numbers

1) The scale value of the register reference or the P line position trace data value display can be displayed in either decimal or hexadecimal format.

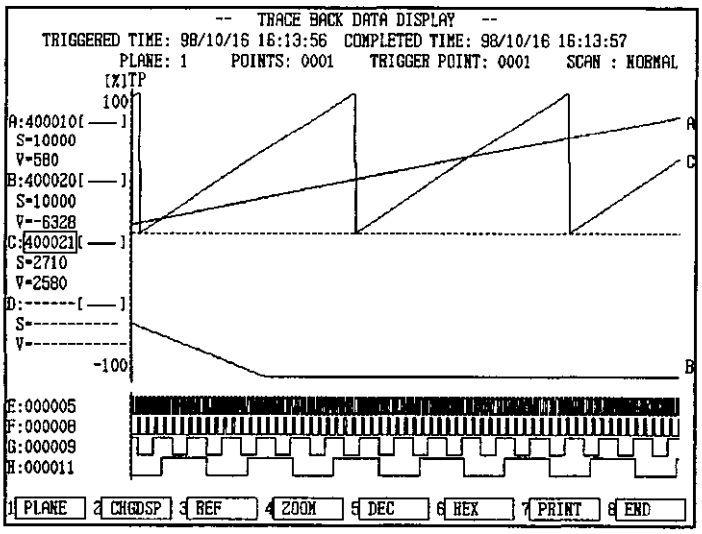
2) Use the following procedure to change the base numbers. As an example, the procedure for changing from decimal display to hexadecimal display is shown.

   a) Move the cursor to the display position of the reference number or scale value to be changed.

   b) Press **F6 (HEX)**.



The display will change to hexadecimal format.



The same procedure is used to change hexadecimal to decimal.

9.3.9 Printing

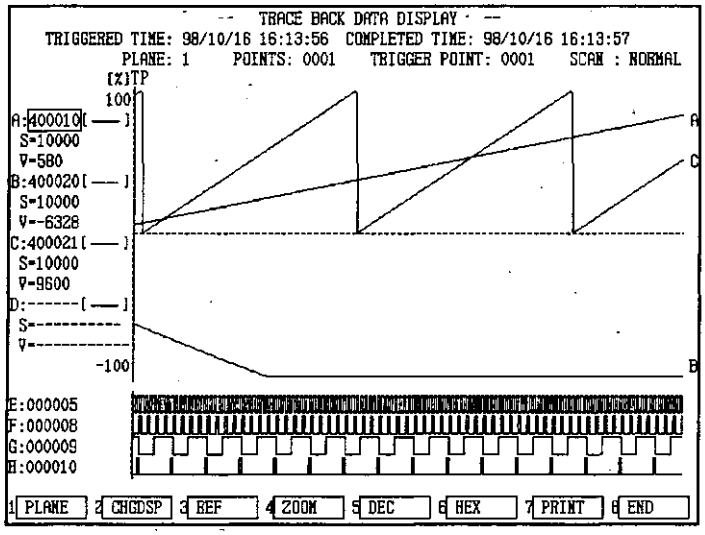
1) This operation is used to print the current screen. Printer output is available in ESC/P mode and PR-201 mode.

INFO **Printing Paper Direction**

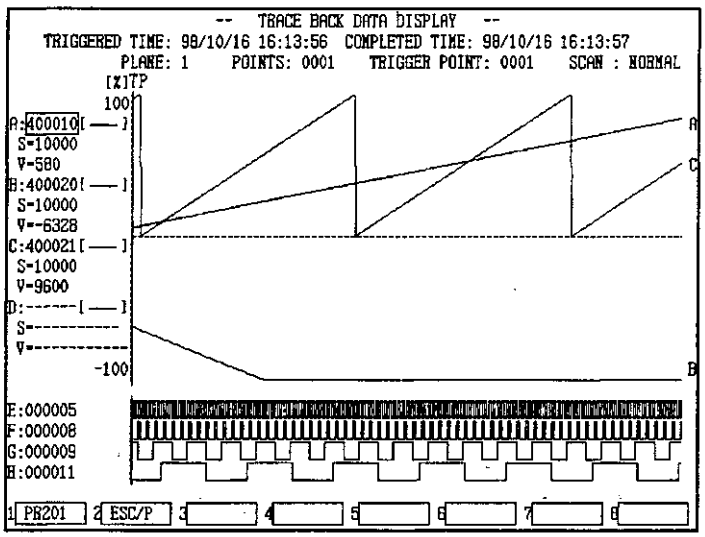
Set the paper direction to landscape on the printer.

2) Use the following procedure to print. As an example, execution for ESC/P mode printer output is shown.

a) Press **F7 (PRINT)**.



b) Select the mode to match the output printer. In this example, press **F2 (ESC/P)** to select ESC/P.



A hard copy of the current screen will be output from the printer.

INDEX

A-B

C

D-E

F

G-I

K

L

M

N-O

P

R

S

T

V-Z

MEMOCON GL120, GL130
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