NT-series
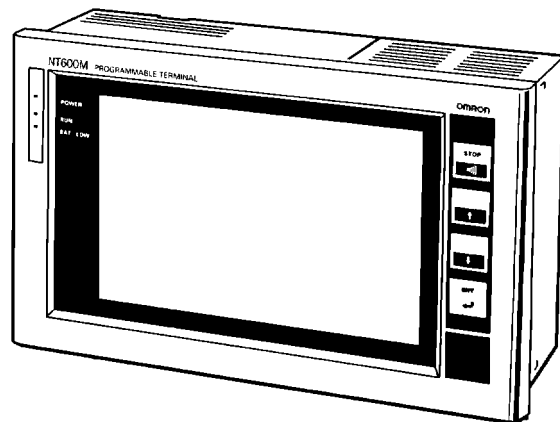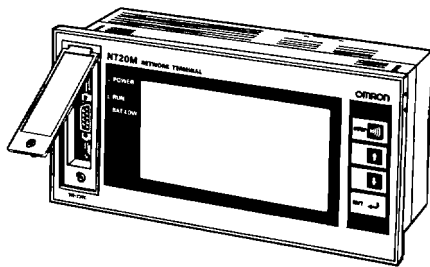# NT20M/NT600M Support Tool

Operation Manual

Revised August 1993

Notice:

OMRON products are manufactured for use according to proper procedures by a qualified operator and only for the purposes described in this manual.

The following conventions are used to indicate and classify precautions in this manual. Always heed the information provided with them. Failure to head precautions can result in injury to people or damage to the product.

DANGER! Indicates information that, if not heeded, is likely to result in loss of life or serious injury.

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

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

OMRON Product References

All OMRON products are capitalized in this manual. The word "Unit" is also capitalized when it refers to an OMRON product, regardless of whether or not it appears in the proper name of the product.

The abbreviation "Ch," which appears in some displays and on some OMRON products, often means "word" and is abbreviated "Wd" in documentation in this sense.

The abbreviation "PC" means Programmable Controller and is not used as an abbreviation for anything else.

Visual Aids

The following headings appear in the left column of the manual to help you locate different types of information.

Note Indicates information of particular interest for efficient and convenient operation of the product.

1, 2, 3... Indicates lists of one sort or another, such as procedures, precautions, etc.

TABLE OF CONTENTS

About this Manual:

This manual describes the installation and operation of the Support Tool and includes the sections described below. The Support Tool is a software package for creating and managing displays for the NT20M and NT600M Programmable Terminals (PTs).

Please read this manual completely and be sure you understand the information provided before attempting to install and operation the Support Tool.

Section 1 provides an overview of Support Tool operation and its operating environment. Basic operating and input methods common to most Support Tool features are covered. The last section, *Tool Settings*, describes how to set Support Tool operating parameters, which affect overall operation.

Section 2 describes the specific operations used to create displays for Programmable Terminals. Special features include numeral displays, character string displays, lamps, and bar graphs, all of which can be used to display on-screen data transferred to the PT from the PT's host, and numeral editing and touch switches, both of which can be used to input data on-screen for transfer to the host from the PT.

Section 3 describes how to manage screens as whole units.

Section 4 describes how to manage files.

Section 5 describes how to print screen images.

Section 6 describes the setup and methods for transferring data between the Support Tool and the PT. This section also includes remote operations for deleting screens from the PT.

Section 7 describes the setup and methods for transferring data between the Support Tool and a PROM writer.

The *Appendix* provides a table of English character codes.

WARNING	Failure to read and understand the information provided in this manual may result in personal injury or death, damage to the product, or product failure. Please read each section in its entirety and be sure you understand the information provided in the section and related sections before attempting any of the procedures or operations given.

ix

SECTION 1
Introduction

This section outlines the operations of the Support Tool. It includes general operating procedures and installation procedures, as well as miscellaneous information, such as the functional limitations when creating screens for older PT models. Refer to the other sections in this manual for details on specific operations. Reference pages are given in this section for many operations.

1-1   Terminology and NT-series Manuals

Names of items in this manual related to the NT Series of Programmable Terminals and SYSMAC C-series Programmable Controllers are defined next.

Abbreviations   The following abbreviations are used in the text.

Abbreviation	Term	Meaning
PT	Programmable Terminal	Refers to an OMRON NT-series Programmable Terminal.
PC	Programmable Controller	Refers to an OMRON SYSMAC C-series or CV-series Programmable Controller, or programmable controllers manufactured by other companies.
I/F	interface	A communications device that connects the Programmable Terminal with peripheral devices.
I/O	input/output	Refers to PT and PC inputs and outputs.

SYSMAC Terminology

Terminology	Explanation
SYSMAC	A generic name for OMRON's Programmable Controllers.
Host Link System (SYSMAC WAY)	A system employing SYSMAC C-series Host Link Units used to create a communications bus between PCs, between PCs and PTs, etc.
SYSMAC BUS	A remote I/O network created between SYSMAC C-series PCs and input/output devices.

Reference Manuals   The NT20M/NT2000M Series and NT600M Series are covered in the six manuals described below. Actual manual numbers also include suffixes indicating the version of the manual.

Name of Manual	Contents	Manual No.
NT20M/NT2000M Operation Manual	This manual provides specifications, functions, and operating instructions for the NT20M and NT2000M Programmable Terminals.	V001
NT600M Operation Manual	This manual provides specifications, functions, and operating instructions for NT600M Programmable Terminals.	V002
NT-series Host Interface Unit Operation Manual	This manual covers the commands, controls, and communications specifications for operating the NT20M and the NT600M. Refer to this manual when programming host computer communications.	V003
NT20M/NT600M Support Tool Operation Manual	This manual covers methods for creating screens, including screen data preparation, switches, lights, and alarms.	V004
NT-series Host Interface Unit Direct Operation Manual	This manual covers the Direct Connection feature which has been added to the Host Interface Unit.	V015
NT-series RS-232C/RS-422 Interface Unit Operation Manual	This manual covers the commands, controls, and communications specifications for operating the NT20M and the NT600M with the RS-232C/RS-422 Interface Unit. Refer to this manual when programming host computer communications.	V016

1-2   Using Older Models

The NT Series of Programmable Terminals is constantly being improved to better serve the needs of our customers. This manual describes features available for the newest PTs. Not all of these features are available with previous versions of the Host Interface Units and System ROM, as shown in the following table. Refer to your PT's operation manuals for details on limitations when using older models.

2

Host Interface Unit and/or System ROM	Unsupported features	
Host Interface Units NT20M-LK201-EV1 NT20M-LK202-EV1 NT20M-LK203-EV1 NT20M-RT121-EV1 **System ROM** NT600M-SMR01-E	Lamps and touch switches	Lamp flashing for bit input designations Round lamp displays 3D frame displays for touch switch Reverse video display for touch switch inputs Mark input for labels
	Bar graphs	Vertical displays Enlarged display widths (2 to 255 dots) +/− displays Enlarged percentage displays
	Numeral displays	Enlarged displays Increased display quantity (50)
	Numeral tables	Keypad layout designations Increased quantity (50)
	Stand-alone operation	
	Backlight red/white color changes and light/flash designations	

1-3 System Configuration

The NT20M/NT600M Support Tool is a software package for creating and maintaining display Screens, memory tables, and custom characters (called marks) for the NT20M and NT600M Programmable Terminals. The Support Tool uses a complete system of menus to facilitate operation.

1-3-1 NT20M and NT600M Support Tool Operations

The Support Tool can be used to create and modify screens, memory tables, and marks, and save resulting data as files. Data created on the Support Tool can be transmitted to the NT20M or NT600M Programmable Terminal. In addition, the Support Tool can receive data from a Programmable Terminal, or data created on the Support Tool can be transmitted to a PROM writer. Also, the Support Tool can receive data from PROM writers. The Support Tool can read history records stored in a Programmable Terminal, and save them in files.

1-3-2 Menu Configuration

Edit Screen	File Selection	Screen Selection	Editing

Main Menu
Tool Settings
Exit

File Selection:
Copy
Delete
Print
Title Change
ROM
History
Transmit
Receive
Initial Screen
Change Capacity
Change Title
Tool Settings

Tool Settings:
See page 15 for specific settings.

Screen Selection:
Copy
Delete
Print
Attributes
Reading from other Files
Table Edit
Transmit
Receive
Continuous/Overlapping Screens
Check
Marks
Change Comment
Direct Connection Settings

Editing:
Input String
Numeral Display
String Display
Lamps
Touch Switches
Bar Graphs
Table Editing
Numeral Editing
Graphics
Marks
Edit
Extended Functions
Environment Settings

3

1-3-3   Support Tool System

Model	NT20M-ZA5AT-EV4
System disk	3.5-inch (2DD) and 5-inch (2HD) disks
Applicable computers	IBM PC/AT or IBM PC/AT compatible (note 1)
Floppy disk drives necessary	One min. (note 2)
Graphic monitor	VGA
Printer	Epson dot matrix or HP laser printer
PROM writer	Commercially available PROM writer (note 3)
Mouse	Serial mouse (note 4)
MS-DOS	Version 3.3 or later

Note 1. The computer must have 640 KB of memory.
2. The Support Tool can also use built-in RAM or a hard disk.
3. The following communications settings must be supported. The Intel HEX file format can be used.
    Baud rate: 9,600 bps
    Stop bits: 1 bit
    Data length: 8 bits
    Parity: None
4. The mouse.com file must be installed before using the Support Tool with a mouse.

1-4   Creating a Work Disk

It is recommended that you backup the Support Tool either onto floppy disks or onto your hard disk, store the originals (the floppy disks, hereafter referred to as the "master disks") and use the backup disks (hereafter referred to as the "work disks") for routine work. The method for backing up onto a hard disk is explained below. If there are any points pertaining to MS-DOS which are unclear, please refer to your MS-DOS manual.

1, 2, 3... 1. Turn on the power to your computer, and start up MS-DOS.

C >

2. Insert the master disk into the floppy disk drive and switch to drive A. (Input the underlined part from the keyboard.)

C > A: ⏎

3. Type NTINSTAL*space*C:*return* to designate the drive onto which the Support Tool is to be installed, i.e., the work disk.

A >NTINSTAL␣C: ⏎

or From the A: drive, it is possible to designate the C: drive directory.

A >NTINSTAL␣C:\NT\ ⏎

4. If the installation program is successfully completed, then the Support Tool will be installed in the NT directory on the work disk. Switch from the A: drive to the C: drive. In the C: drive, switch to the NT directory.

A > C: ⏎
C >CD␣\NT ⏎

4

5. Input NTM*return* to start and use the Support Tool.

$$C > \underline{NTM\boxed{}}$$

This completes the backup. When starting up the next time, change directories to the NT directory and then input "NTM" to start the Support Tool.

$$C > \underline{CD\_\NT\ \boxed{}}$$
$$C > \underline{NTM\boxed{}}$$

1-5   Starting and Exiting

Startup Procedure

If working from a floppy, insert the start-up disk into disk drive A and a data disk into disk drive B, then turn on the power. When using a hard disk, first start up MS-DOS from the hard disk, then input NTM*return* from the NT directory. When the Support Tool has started, the following display will appear.

Main Menu

```
          NTM Support Tool Version. 4.1

                 Main Menu



              Edit Screen              ⬆⬇ = Select

              Tool Settings            ⏎ = Confirm

                 Exit



          (C) OMRON Corporation 1993
              All Rights Reserved
```
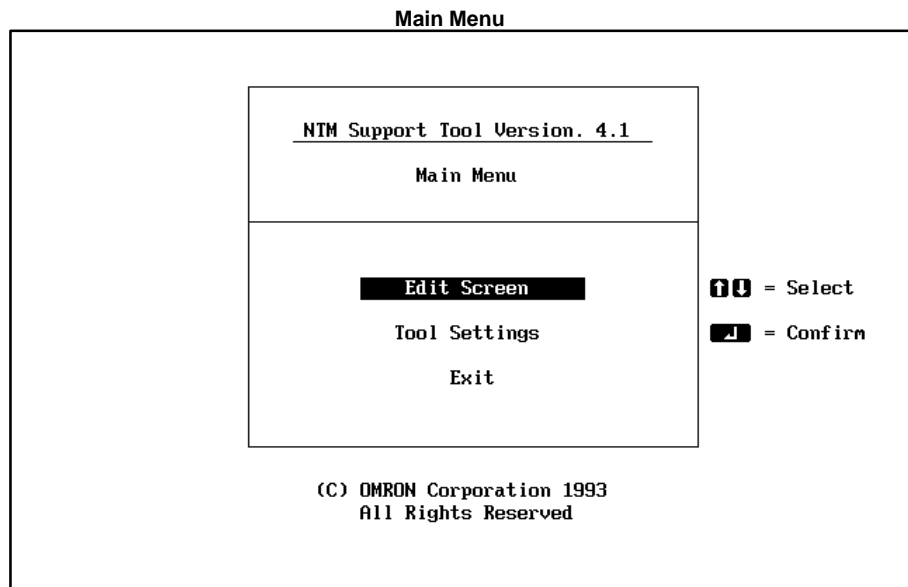
Note While the Support Tool is operating with the system disks, do not pull out the disks from the floppy disk drive or an operation error will result.

Exiting

While the Main Menu is displayed, use the Up Key or the Down Key to move the bar cursor to Exit, and then press the Enter Key. The MS-DOS prompt will be displayed. At this point, eject the floppy disks and turn off the power to the computer. Always be sure to follow this procedure when exiting the Support Tool.

1-6   Main Menu

When you start up the Support Tool, the Main Menu will displayed and the following items will be available.

Main Menu Items

Item	Function	Page
Edit Screen	When you select Edit Screen from the Main Menu, you can manage files and manipulate and edit screens.	15
Tool Settings	With this item you select the Programmable Terminal, set the memory capacity, specify the printer to be used, and make other settings. Perform this operation first. The values that you set here are saved, so there is no need to reset them unless you want to make a change.	11
Exit	Select *Exit* from the Main Menu when you want to exit the Support Tool. Be sure to exit in this way when Support Tool operations are finished.	5

5

1-7   File Selection

When you select *Edit Screen* from the Main Menu, the File Selection Display is displayed. Move the bar cursor to the desired file name and press the Enter Key, or click the desired file name once to move the bar cursor and then again to open the file.

Each file contains screen data, memory table data (for numeral and character string tables), and mark data for a maximum of 250 screens for the NT20M or 1,000 screens for the NT600M. When you want to create a new file, select *NEW_FILE*. The Screen Selection Display will then appear to select from and a file name and title are input when returning to the File Selection Display. Refer to page 10 for name and title input procedures. If you want to modify a file that has already been created, select the file that you want to modify.

The help message area will display the direct connection setting and file size for the file indicated by the bar cursor.

Caution Check the direct connection setting before reading files. If files created with the direct connection setting turned OFF are read when the Tool Settings is set to ON, the screens will be converted to direct connection data. It is not possible to convert from direct connection data to data without direct connection.

File Selection Menu

```
┌─────────────────────────────────────────────────────────────────┐
│  ┌──────────────────────────────────┐  ┌──────────────────────┐  │
│  │  File List      (NT600M)   64KB  │  │ ─────── Select File ─────── │ │
│  │                                  │  └──────────────────────┘  │
│  │  FileName          Title         │  ┌──────────────────────┐  │
│  │  ┌───────────────────────────┐   │  │ ─────── Help Message ─────── │ │
│  │  │NEW_FILE │Creation of New File│  │  │                      │  │
│  │  └───────────────────────────┘   │  │                      │  │
│  │                                  │  │  ▲▼  =  Select       │  │
│  │                                  │  │  ↵   =  Confirm      │  │
│  │                                  │  │  PgDn =  Next Page   │  │
│  │                                  │  │  PgUp =  Prev Page   │  │
│  │                                  │  │  Esc  =  Exit to Main Menu │ │
│  │                                  │  │                      │  │
│  │  Copy Delete Print ROM Hist.     │  │ Tmx. Rcv. In.Scr Title Prev │ │
│  └──────────────────────────────────┘  └──────────────────────┘  │
└─────────────────────────────────────────────────────────────────┘
```

Caution Data Compatibility with the Old Version of Software (EV1):
The EV4 version of the software can read and edit data created by the EV1. However, once the data is read by the EV4, it no longer can be read or edited by the EV1, even if the file name has not been changed. This occurs because the EV4 expands the data previously saved with the EV1.
Before using any EV1 data with the EV4, it is recommended that a backup copy of the EV1 be made.

6

File Operations
You can perform file operations by using the function keys while the File Selection Display is being displayed.

Function key	Name	Function	Page
F1	Copy	Copies the contents of one file to another file.	96
F2	Delete	Completely deletes the contents of a file.	97
F3	Print	Prints screen images or data, and cross references of character string and numeral table usage.	101
F4	ROM	Transmits data from the Support Tool to a PROM writer and receives data sent from a PROM writer to the Support Tool.	117
F5	History (HIST.)	Receives history records from a Programmable Terminal and saves them in a file.	98
F6	Transmit (TMX.)	Transmits screen data from the Support Tool to a Programmable Terminal. The data can be sent as file units.	106
F7	Receive (RCV.)	Receives screen data sent from a Programmable Terminal to the Support Tool. The data can be received as file units.	110
F8	Initial Screen (In. Scr)	Sets the screen number of the first screen to be displayed (the initial screen) when the Programmable Terminal is powered up or reset.	99
F9	Title Change (TITLE)	Changes a file title that has previously been set.	98
F10	Next Functions (NEXT)	Use to change the functions allocated to the function keys.	---
NEXT, F1	Tool Settings (TOOLS)	Accesses the Tool Settings menu.	15
NEXT, F10	Previous Functions (PREV)	Use to change the functions allocated to the function keys.	---

Note 1. The maximum number of files that can be managed by the Support Tool is 254. Any files beyond this number cannot be accessed. If this situation occurs, use another data directory.

2. The only items displayed on the File Selection Display are the models and memory capacity that have been set with Tool Settings. For example, if the NT20M is set as the model and 32 KB is set as the memory, then NT600M files and 64 KB or 128KB NT20M files will not be displayed. Use the Memory Capacity Function Key to alter the memory capacity data set in the file.

1-8 Screen Selection

When you select either *NEW_FILE* or an existing file from the File Selection Display, the Screen Selection Display is displayed. If you select an existing file, the Screen Listing for that file is displayed. Move the bar cursor to the desired screen and press the Enter Key, or click the desired screen once to move the bar cursor and then again to edit the screen.

Screen numbers may be from 1 to 250 for the NT20M and from 1 to 1,000 for the NT600M. Only screen numbers 1 to 16 are displayed on the first display. Press the Pg Dn Key to see the next display, and the Pg Up Key to see previous display. When creating a new screen, select a screen number for which nothing is displayed under Status in the Screen Listing.

Screen comments can be input for new screens or for changed screens when returning from the Edit Display to the Screen Selection Display. Refer to page 10 for input procedures.

Screen Selection Display

```
┌─────────────────────────────────────────┬──────────────────────────────────┐
│ [NEW_FILE]  Screen List (NT600M)   64KB  │  ------ Screen Selection ------   │
│                                           │                                  │
│  No.   Status        Comment              │  ┌────────────────────────────┐  │
│ ┌───┬─────────┬───────────────────────┐   │  │  ------  Help Message ------│  │
│ │ 1 │█████████│███████████████████████│   │  │                            │  │
│ │ 2 │         │                       │   │  │ 🔼🔽  =  Select            │  │
│ │ 3 │         │                       │   │  │  ↵   =  Confirm            │  │
│ │ 4 │         │                       │   │  │ PgDn =  Next Page          │  │
│ │ 5 │         │                       │   │  │ PgUp =  Prev Page          │  │
│ │ 6 │         │                       │   │  │ Space = Mark/Unmark        │  │
│ │ 7 │         │                       │   │  │ Home =  Unmark All         │  │
│ │ 8 │         │                       │   │  │ Shift+home = Mark/Unmark All│  │
│ │ 9 │         │                       │   │  │ Esc  =  File Selection Menu│  │
│ │10 │         │                       │   │  └────────────────────────────┘  │
│ │11 │         │                       │   │                                  │
│ │12 │         │                       │   │  ┌────────────────────────────┐  │
│ │13 │         │                       │   │  │ ------  Screen Status ------│  │
│ │14 │         │                       │   │  │                            │  │
│ │15 │         │                       │   │  │ Hist. [              ]     │  │
│ │16 │         │                       │   │  │                            │  │
│ └───┴─────────┴───────────────────────┘   │  │              (    0Byte)   │  │
│                                           │  └────────────────────────────┘  │
│ Copy Delete Print Attrib Read   Tnx. Rcv. Co/Ovl Mark Prev                   │
└─────────────────────────────────────────┴──────────────────────────────────┘
```

Screen Status

Symbols displayed in the status column (A to E, !) express screen attribute settings for the each screen. Symbols displayed in the status column are explained in more detail in the Screen Status box, which is in the lower right-hand corner of the screen.

Symbol	Screen status	Meaning
(Blank)	No data	Indicates a screen for which no data has been created.
!	Data exists	Indicates a screen for which data has been created.
A	A: Cont	Indicates a parent screen for continuous screens.
	A: Ovlp	Indicates a parent screen for overlapping screens.
B	B: Buzz	Continuous sound is set as the buzzer attribute.
	B: Beep	Intermittent sound is set as the buzzer attribute.
C	C: Err	History attribute is set.
D	D: Bit	Bit input attribute is set.
E	E: Alrm	Alarm attribute is set.
F	F:Keypad	Indicates a keypad has been set for numeral editing.
G	G:Extend	Indicates that the backlight has been set to red or that the backlight has been set to flash for the NT20-DT131/DN131.

8

Screen Selection Operations

You can perform screen operations by using the function keys while the File Selection Display is displayed.

Function key	Name	Function	Page
F1	Copy	Copies previously created screen data to another screen number.	90
F2	Delete	Deletes designated screen data. Can also be used to delete multiple screens, or to delete screens from the Programmable Terminal one screen at a time.	91, 114
F3	Print	Prints designated screen data. Can also be used to print multiple screens.	101
F4	Attribute Change (ATTRIB)	Sets buzzer attributes, bit inputs, history records, and alarms.	78
F5	Read	Loads screen data from other files. The data can include screens, marks, the numeral table, the character string table, I/O comments, and direct connection information.	93
F6	Transmit (TMX.)	Transmits data from the Support Tool to a Programmable Terminal. The data to be transmitted can be a single screen, multiple screens, or a memory table.	108
F7	Receive (RCV.)	Receives data sent from a Programmable Terminal to the Support Tool. The data to be received can be a single screen, multiple screens, or a memory table.	111
F8	Continuous or Overlapping Screen Creation (Co/Ovl)	Creates Continuous or Overlapping Screens.	75
F9	Marks (MARK)	Creates and modifies marks.	82
F10	Next Item (NEXT)	Use to change the functions allocated to the function keys.	---
NEXT, F1	Comment Change (CMNT)	Changes screen comments that have previously been set.	92
NEXT, F2	Table Edit (TABLE)	Edits memory tables	59
NEXT, F3	Check (CHECK)	Checks whether there are any errors in continuous or overlapping screens, and displays or prints the results.	80
NEXT, F4	Direct Connection (DIRECT)	Sets data area allocations, comments, and other information for use with direct connection operation. This function key appears only if direct connection has been turned ON in the Tool Settings.	17
NEXT, F10	Previous Item (PREV)	Use to change the functions allocated to the function keys.	---

Handling Multiple Screens

Tags can be used to handle multiple screens simultaneously. For example, several screens can be deleted at the same time by tagging them and then executing *Delete* from the Screen Selection Display.

Use the following keys to attach or remove tags.

Key(s)	Operation
Space	Reverses the tag of the screen with the bar cursor.
Home	Clears all tags.
Shift+Home	Reverses all tags.

Tags are indicated by asterisks. By using tags effectively, you can handle multiple screens as a single group.

1-9   Inputting Screen Comments, File Names, and Titles

Screen comments, file names, and file titles can be input whenever new screens are created or when existing screens are modified. The methods for inputting these are described in this section.

1-9-1   Screen Comments

Screen comments can be input or changed when shifting from the Edit Display to the Screen Selection Display. Use the following procedure.

1, 2, 3...   1.   Press the Escape Key from the Edit Display after creating a new screen or editing an existing one. A message will appear asking you to confirm returning to the Screen Selection Display.

2.   To confirm and to save the new screen data, press the Enter Key. To return to the Screen Selection Display without saving the new data, press the Space Key. To cancel returning to the Screen Selection display and continue editing screen data, press the Escape Key.

3.   If the Enter Key is pressed to return to the Screen Selection Display, an input area will appear for the screen comment. If you have modified an existing screen, any comment previously input for it will appear. Input or change the comment as desired (24 characters) and press the Enter Key. Press the Escape Key to return to step 2.

1-9-2   File Names and Titles

File names and titles can be input when shifting from the Screen Selection Display to the File Selection Display. Use the following procedure.

1, 2, 3...   1.   Press the Escape Key from the Screen Selection Display after creating new screens and/or editing existing ones. A message will appear asking if the new data should be saved.

2.   To confirm and to save the new screen data, press the Enter Key. To return to the File Selection Display without saving the new data, press the Space Key. To cancel returning to the File Selection Display and return to the Screen Selection Display, press the Escape Key.

3.   If the Enter Key is pressed to return to the File Selection Display, an input area will appear for the file name. Input the file name (8 characters) and press the Enter Key. Press the Escape Key to return to step 1.

4.   If you specify an existing file name, you will be asked to confirm overwriting the file. Press the Enter Key to confirm overwriting or press any other key to return to step 3.

5.   After the file name is input, and input area for the title will appear. Input the title as desired (28 characters) and press the Enter Key. Press the Escape Key to return to step 1.

Data will be saved to the specified file when the Enter Key is pressed for the title input step. The display, however, will not change until the operation is completed, at which time the File Selection Display will appear.

10

1-10   Editing Screens

If you select a screen number from the Screen Selection Display, the Initial Edit Display will be displayed. If the NT20M has been selected with Tool Settings, then the NT20M screen image display area will be shown in the rectangular box at the top of the display. If the NT600M has been selected, then the entire display becomes a display area and this box will not appear.

Initial Edit Display

```
STR IN     NUM DISP  STR DISP  LAMP      TOUCH SW    ⬆⬇⬅➡    = Select
BAR GRPH   TBL EDIT  NUM EDIT  GRAPHIC   MARK        ⏎       = Confirm
EDIT       EXTEND    SET ENV                         ESC     = Quit
GUIDE:     Define lamp                               [No.0003]Free: 45088Byte
```
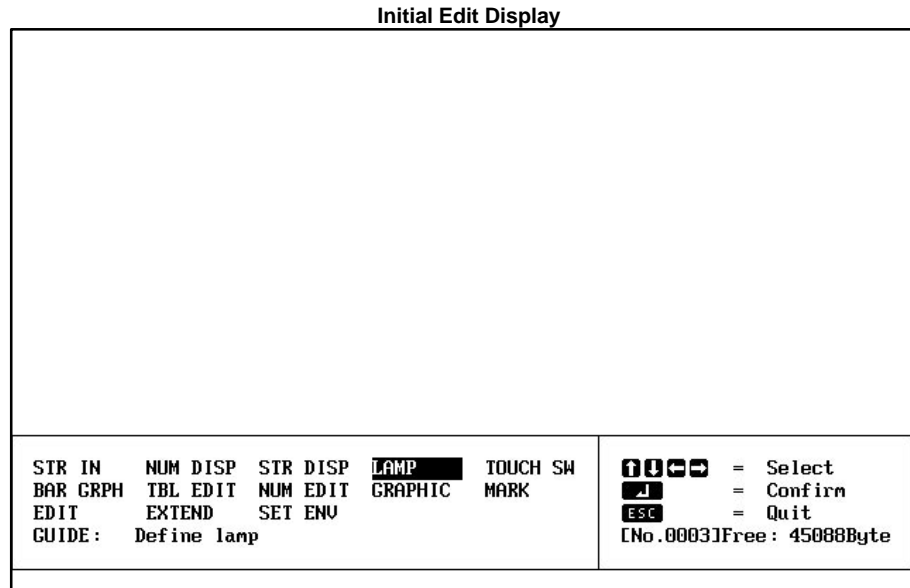
Screen Edit Operations   The following operations can be performed on the Edit Display.

Item	Function	Page
Input string (STR IN)	Inputs character strings to be displayed on the screen and sets their display positions and the manner in which they are to be displayed. Character strings input in this way are treated as fixed displays, and their displays cannot be changed while the Programmable Terminal is operating.	22
Numeral display (NUM DISP)	Sets numeric displays for the screen by designating the numeral table entry to be referenced at the time of display, the display position, and the method of display.	28
String display (STR DISP)	Sets character string displays for the screen by designating the string table entry to be referenced at the time of display, the display position, and the method of display.	34
Lamps (LAMP)	Sets lamps for the screen by designating the size/shape of lamp areas, numbers, and labels.	40
Touch switches (TOUCH SW)	Sets touch switches for the screen by designating the size of touch switch areas, numbers, and labels.	46
Bar graphs (BAR GRPH)	Sets bar graphs for the screen by designating the numeral table entry to use, the display positions/directions, and the method of display. The display of percentage calculations is also set.	51
Table editing (TBL EDIT)	Edits numeral table and character string table contents, and is the same as the table editing operation entered from the Screen Selection Display.	59
Numeral editing (NUM EDIT)	Creates screens for numeric input via function keys, touch switches, or Expansion I/O Units (32/16 Terminals or Function Key Units (12 keys)) and designates the numeral table to which the input will be written.	62
Graphic input (GRAPHIC)	Polylines (a broken line made up of one or more line segments) and circles can be created on screen.	71
Marks (MARK)	Creates and modifies marks.	82
Edit (EDIT)	Copies, moves, or deletes text or graphics on the screen.	87

11

Item	Function	Page
Extended Functions (EXTEND)	Enables usage of stand-alone operation. In stand-alone operation, screens can be changed from PT touch switches/function keys or from Expansion I/O Units.	85
	Sets data area allocations, comments, and other information for use with direct connection operation. This function key appears only if direct connection has been turned ON in the Tool Settings.	19
Set Environment (SET ENV)	Accesses a modified version of the Tool Settings to enable changing certain Support Tool operating parameters during operation.	16

Changing Menu Position and Grid Display

While creating data for the NT600M, there may be times when the screen data and the menu box overlap, making it difficult to see what you are doing. In such cases, you cam move or delete the menu box. The grid display can also be turned ON and OFF for either the NT600M or NT20M by pressing the Delete Key as long as grid display has been enabled in the tool settings (See page 15). The display position of the menu box and will change each time you press the Home Key as shown in the following tables.

NT600M with Grid Enabled

Delete Key inputs	Initial	1	2	3	4	5	6
Menu	Bottom	Top	None	Bottom	Top	None	Bottom
Grid	ON	ON	OFF	OFF	OFF	ON	ON

NT600M with Grid Disabled

Delete Key inputs	Initial	1	2	3
Menu	Bottom	Top	None	Bottom
Grid	OFF	OFF	OFF	OFF

NT20M

Delete Key inputs	Initial	1	2
Menu	Bottom	Bottom	Bottom
Grid	ON	OFF	ON

Note 1. The display position of the menu cannot be changed for the NT20M.

2. Screen data cannot be created and you cannot switch to the Screen Selection Display unless the menu is displayed.

1-11   Inputting Character Strings and Numbers

Inputting Character Strings   You can use the Left, Right, Backspace, Delete, Insert, and Escape Keys when inputting character strings. Their functions are described below.

⬅️   Moves the cursor to the left.

➡️   Moves the cursor to the right.

BS   Deletes one character to the left of the cursor.

DEL   Deletes one character at the cursor position.

INS   Switches between insert mode and overwrite mode.

ESC   Cancels character input string and returns to previous operation.

In insert mode, the cursor becomes a flashing rectangle and character strings are inserted at the cursor position. When text is inserted in this way, character strings to the right of the cursor position move to the right.

12

In overwrite mode, the cursor becomes a reversed rectangle and character strings delete previously input characters at the cursor position.

Inputting Numbers

Inputting numbers is basically the same as inputting character strings, except that you cannot change between insert mode and overwrite mode with the Insert Key. The overwrite mode is always used.

The Home Key can be used to change to 0 any numbers previously input, and the Minus (–) Key can be used to change between positive and negative numbers.

Control Key Combinations

The Control Key can be used in combination with other keys to move the cursor, delete characters, and achieve other operations. These combinations are shown in the following table.

Keys	Same as
CTRL + S	Left Cursor Key
CTRL + D	Right Cursor Key
CTRL + E	Up Cursor Key
CTRL + X	Down Cursor Key
CTRL + R	Page Up Key
CTRL + C	Page Down Key
CTRL + H	Backspace Key
CTRL + G	Delete Key
CTRL + I	Tab Key
CTRL + M	Enter Key
CTRL + [	Escape Key

1-12   Basic Operation

1-12-1   Cursors

Several different cursors will appear depending on Support Tool operation. Special cursors are described in the following table.

Cursor	Meaning
↖	The arrow cursor is used in combination with the cursor to specify menu items and icons. Refer to page 14 for details on the mouse.
∭	A cup will appear when the Support Tool is accessing data on the disk. When accessing has finished, the arrow cursor will return.
?	A question mark will appear when the Support Tool is waiting for a Yes/No response from the user. Press the Enter Key or the left mouse button to answer Yes (confirm) or press the Escape Key or right mouse button to answer No (cancel).
✋	A hand and keyboard will appear at the end of processing to request user acknowledgement. Press any key or either mouse button to continue operation.

13

1-12-2   Screen Buttons

There are many buttons in the shape of keys that can appear during Support Tool operation. These buttons can be clicked with the mouse to achieve the same operation as the equivalent keyboard keys. Included are the Enter Key (carriage return arrow), Escape Key, cursor keys, PgUp Key, PgDn Key, Space Bar, Shift+Home (clear) Key (one button combining two keys), the Home (clear) Key, and function keys.

1-12-3   Mouse

A mouse can be connected to the Support Tool and used to input coordinates to specify display positions for text strings or numerals and to create polylines, circles, and other graphics.

To use a mouse, connect a two-button mouse to the computer's mouse connector and prepare a level, smooth surface, such as a mouse pad, to operate it on. The mouse can then be used to move labels, the + cursor, and other objects on the screen (see below).

Procedures in this manual are generally written for operation from the keyboard. There are, however, often three means to execute an operation, i.e., from the keyboard, using on-screen buttons, and using the mouse and cursor directly. It is generally a matter of preference on which method is used; the results will be the same.

Left Button

The left mouse button can be used in place of the Enter Key to achieve the following.

- To specify items on menus. Click the mouse once to move the cursor and then again to execute.
- To click on-screen buttons to replace keyboard key inputs. See page 14 for details.
- Double-clicking to end polyline input (instead of Shift + Enter).
- Dragging to move objects on screen or draw lines.
- To designate display positions for text or numerals
- To designate display positions for touch switches, lamps, and bar graphs
- To designate center, start, and end points for graphics

Right Button

The right mouse button can be clicked in place of pressing the Escape Key to move backward through processing steps or to cancel an operation.

Caution Although either the mouse or the keyboard can be used for most operations, some operations have been restricted to only keyboard operation for safety. If the software does not respond when a mouse button is pressed, use the keyboard instead.

1-12-4   Positioning Operations

Grid display can be set via the Tool Settings, and grid display and snap-to-grid operation can be set via the Set Environment settings. The grid can be used either to visually align objects on the display or it can be combined with snap-to-grid operation to force objects to be positioned exactly on the grid. Refer to pages 15 and 16 for details.

1-13   Tool Settings

If you start up the Support Tool and select Tool Settings from the Main Menu, the Tool Settings Display will appear.

```
                          Tool Settings


      NT Model              NT20M          NT600M
      Memory Size          32 KB    64 KB    128 KB      256 KB
      Direct setting        No       Yes


      Printer              Epson Dot Matrix      HP Laser
      Sheet Feeder            Yes         No
      Auto Refresh            Yes         No
      Display Grid            No     8-dot    16-dot    32-dot    TouchSw
      Communication Port     COM1         COM2
      Temporary Directory     \
      Data Directory          \

  ┌─────────────┬──────────────────────┬─────────────────────────┐
  │ Help Message│ Set NT model         │ ▲▼ = Select Item        │
  │             │                      │ ◄► = Change Setting     │
  │             │                      │ ⏎  = Confirm            │
  │   Confirm NT model                 │ ESC = Abort             │
  └─────────────┴──────────────────────┴─────────────────────────┘
```

Contents of Tool Settings

Name	Content
NT Model	Sets the model of Programmable Terminal being used.
Memory Size	Sets the memory capacity of the Programmable Terminal.
Direct Setting	Turns ON and OFF the direct connection operation. Refer to page 17 for details.
Printer	Sets the printer model to be used.
Sheet Feeder	Sets a sheet feeder for the printer.
Auto Refresh	Sets whether or not the screen will be automatically refreshed when you make screen data additions, deletions, or modifications.
Display Grid	Controls the grid display. If "TouchSW" is specified, each grid unit will be the size of a touch switch.
Communication Port	Specify the port on the computer to be used to communicate with the PT. If possible, do not specify the same port as the one used for the mouse.
Temporary Directory	Sets the file name for the work file that is temporarily used by the Support Tool.
Data Directory	Sets directory names for saving screen data which is created.

Press the Enter Key when you want to save the contents of the Tool Settings. Then either press the Enter Key again to return to the Main Menu, or press the Escape Key to return to the Tool Settings Display to correct settings.

If you press the Space Key, the tool settings will be changed without being saved to a file, and you will be returned to the Main Menu.

Press the Escape Key to cancel changing tool settings.

Auto Refresh

When screen data is added, deleted, or modified with the Support Tool, the screen display may be temporarily disordered. If Auto Refresh is set to "Yes," then the screen display will be automatically rewritten when you return to the Initial Edit Screen. When creating large amounts of screen data, however, some time may be required for screen refreshing. Auto Refresh can be set to

15

"No" to save time. You can manually rewrite the screen by pressing the Tab Key during operation.

Temporary Directory

The Support Tool will create a temporary work file when creating screens or transferring data to or from ROM. Most write operations are performed on this temporary file. To increase overall operating speed, this file should be created on your hard disk or in RAM.

Tool Settings File

File settings are saved in the root directory for the Support Tool, i.e., the directory from which the Support Tool is started. The file name is NTMSET.ENV. If this file exists in the root directory when the Support Tool is started, the setting in the file will be read and the Support Tool will operate according to them. Tool settings files can be used to eliminate the need to reset tool setting each time the Support Tool is started.

Display Grid

A grid can be displayed to aid in positioning objects when creating screens. The Tool Settings can be used to disable the grid or to set its size to 8, 16, or 32 dots. The grid size can also be set to the same size as a touch switch by specifying "TouchSW." The grid, once enabled, can be turned ON or OFF as desired during operation. Refer to page 12 for details.

1-14   Environment Settings

A modified version of the Tool Settings can be accessed from the Initial Edit Display. The following display will appear when SET ENV is specified.

```
┌─────────────────────────────────────────────────────────────────┐
│              Tool Settings (For edit screen)                      │
├─────────────────────────────────────────────────────────────────┤
│                                                                   │
│     Display Grid           NO     8-dot   16-dot   32-dot  TouchSw │
│     Snap ON Fun.           Off        On                          │
│     Lamp/TouchSw # Disp.   NO     1/16        1/4                 │
│     Memory Table # Disp.   NO     1/16        1/4                 │
│                                                                   │
│                                                                   │
│                                                                   │
├──────────────────┬──────────────────────────┬────────────────────┤
│  Help Message    │  Grid display on screen   │ ⬆⬇ = Select Item  │
│                  │                           │ ⬅➡ = Change Setting│
│                  │                           │ ⏎ = Confirm        │
│     Set grid spacing                         │ ESC = Abort        │
└──────────────────┴──────────────────────────┴────────────────────┘
```

Set the PT operating environment as described in the following table.

16

Item	Settings	Setting
Display grid	No	Display grid is not displayed.
	8-dot 16-dot 32-dot	Display grid is displayed at the specified width. Screen objects can be snapped to the grid if one of these settings is made and the snap ON function is turned ON (see below).
	Touch switch	Display grid is displayed at the minimum width for touch switches. This setting is useful to draw lamps to the same size as touch switches. It functions the same way as the other grids.
Snap ON function	Off	Allows graphics to be drawn and screen objects to be positioned without interference from the grid, i.e., the grid, if displayed, is used only as a visual guide.
	On	Allows graphics to be drawn and screen object to be positioned only to the intersection points of the grid.
Lamp/touch switch number display	No	Lamp/touch switch numbers or bit addresses are not displayed.
	1/16 1/4	Indicates lamp/touch switch specifications and the allocated lamp/touch switch number or the allocated PC bit on the display at the specified character size.
		For example, "LH001015" would be displayed for a lamp display allocated to HR 1015 using direction connection, "TA001012"would be displayed for a touch switch display allocated to AR 1012 using direction connection, L000 would be displayed for lamp #0 when not using direction connection, and T010 would be displayed for touch switch #10.
Memory table entry number display	No	Memory table entry numbers are not displayed.
	1/16 1/4	Indicates the allocated memory table number on the display at the specified character size for numeral displays, character string displays, bar graphs, and numeral editing areas. "N" is also displayed for numeral table entry numbers and "S" is displayed for character string table entry numbers.

1-15   Direct Connection

The PT can be set for direct connection to an OMRON PC to allow numeral displays, character displays, numeral editing, lamps, touch switches, and bar graphs to be directly connected to specific bits and words in PC memory. Bits can also be set that will change the displayed screen. This is possible only when the NT600M-DT121/DT211 or NT20M-DT121-V1/DT131 PTs and only when a NT600M-LK201 SYSMAC WAY Host Interface Unit is used. Also, either an NT600M-SMR31 or NT20M-SMR31 System ROM must be used in the PT.

The direct connection setting in the Tool Settings greatly affects the operation of the screen functions that read or write PC memory. Although using direction connection will greatly reduce programming burden for the PC, careful preparation is required to coordinate PC memory and programming with the PT settings for direct connection. The general procedure for this is as follows:

1, 2, 3...   1.   Design the required PT screens.
2.   Allocate PC memory to the function elements of the screens, i.e., those elements that will directly read or write PC memory. Be sure to list specific PC memory addresses, including areas, and to consider numeral table and character string table capacities.
3.   Turn ON direct connection operation in the Tool Settings.

17

4. Create the required screens, making all settings required for direct connection.
5. Save the screens.
6. Transfer the screens to the PT or write them to ROM.

Conversion

Screen files that were created with direct connection turned OFF can be loaded with direct connection turned ON to convert the screens for use with direct connection. Once files are created for or converted to direct connection, they cannot be loaded with direct connection turned OFF in the Tool Settings and cannot be converted back for use without direct connection.

Indication on Displays

Displays on the File Selection Display and the Screen Selection display will indicate whether or not direct connection has been set. If direct connection has been set, "-O" (for OMRON) will be added after the PT model name following the "File List" title on the File Selection Display. The help message area on the Screen Selection Display will also indicate whether or not direct connection has been used together with the file size.

1-15-1 Specifying PC Addresses for Direct Connection

The function keys are allocated as shown in the following table when specifying bit and word addresses in PC memory. The values in parentheses indicate the maximum word address possible for the largest PC memory. Actual memory sizes vary, however, with the model of PC. Refer to your PC's operation manual for specific limits.

Key	Area
F1	AR (511)
F2	HR (99)
F3	LR (63)
F4	DM (9999)
F5	CNT (1023)
F6	TIM (1023)
F7	CIO, IR, SR (2555) (displayed as I/S)
Home	None

The areas that can be designated for direct connection are as shown in the following table.

Item	Memory unit	Designation
Lamps	Bit	IR, SR (CIO), AR, or LR bit addresses.
		DM word address can also be designated with bit specifications.
Touch switches		Timers and counters cannot be designated. (See note.)
Numeral display	Word	IR, SR (CIO), AR, LR, or DM word addresses.
Bar graphs		Timer and counter numbers can also be specified to designate PVs.
Numeral editing		
Character string display		IR, SR (CIO), AR, LR, or DM word addresses.
		Timer and counter numbers cannot be specified.

Note If touch switches are set to write to bits in the DM area (notify bits), the touch switch will control the status of the specified bit and all other bits in the specified word will be turned OFF (0).

1-15-2   Direct Connection Information

Settings for the direct connection information are made from the extended functions display. Direct connection information settings will not appear on the extended function display unless direct connection is turned ON in the Tool Settings.

Use the following procedure to set the direct connection information settings.

1, 2, 3...   1.   Specify EXTEND from the Initial Edit Display. The following display will appear at the bottom of the screen

```
EXTEND    Select Extend function          ◁▷      = Select
                                          ↵       = Confirm
   F-key    Direct Connect                 ESC     = Abort
                                          [No.0001]Free: 45390Byte
```

2.   Specify direct connection. (F-key is not supported by PTs with touch panels and cannot be specified.) The following display will appear.

```
                    Direct Conn. Setting

PT Control Area     [-----] [                    ]
PT Notify Area      [-----] [                    ]
Numeral Mem. Table
String Mem. Table
F-key Input Notify
F-key Output Notify




DIRECT CONNECT   Select direct connection     ↑↓      = Select
                 information                    ↵       = Confirm
                                               ESC     = Abort
                                              [No.0001]Free: 45390Byte
```

3.   Set the direct connection information as described in the following table.

Item	Setting
PT control area	Set the address of the first word in the PC to be used to control PT status. This setting must be made. A user comment may also be input if desired.
PT notify area	Set the address of the first word in the PC to be used to store PT status. This setting must be made. A user comment may also be input if desired.
Numeral mem. table	The contents of the numeral table used in the file can be seen in list form. Data can be input or changed.
String mem. table	The contents of the character string table used in the file can be seen in list form. Data can be input or changed.
F-key input/output notify	Function keys cannot be set for PTs with touch panels. These settings are not required and will be ignored if input.

4.   When the settings have been completed, press the Escape Key once to return to the beginning of the operation and twice to end.

19

SECTION 2
Creating Screens

This section describes the procedures used to create and check screens and to input screen attributes. The procedures for creating special display characters, called marks, and for controlling screens during stand-alone operation are also provided here.

2-1 Inputting Character Strings

With the Character Input Display, you set characters to be displayed on the PT. You set character sizes, character scaling factors, manner of display, and display positions.

If you select STR IN from the Initial Edit Display, the Initial Character Input Display will appear.

Initial Character Input Display
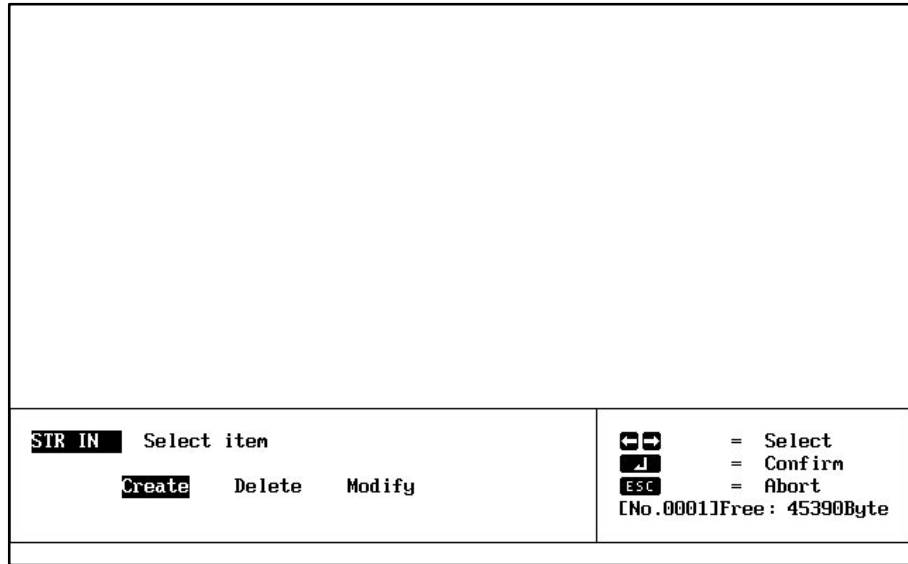
The following pages explain how to use this display, taking the creation of NT20M screen data as an example.

2-1-1 New Character Strings

Inputting Strings

This example shows how to input the roman letters "abcde."

You can display up to 32 characters per line on a NT20M screen, and up to 80 per line on a NT600M screen.

1, 2, 3... 1. Specify CREATE.
2. Input the characters, e.g., "abcde." The following display will appear.
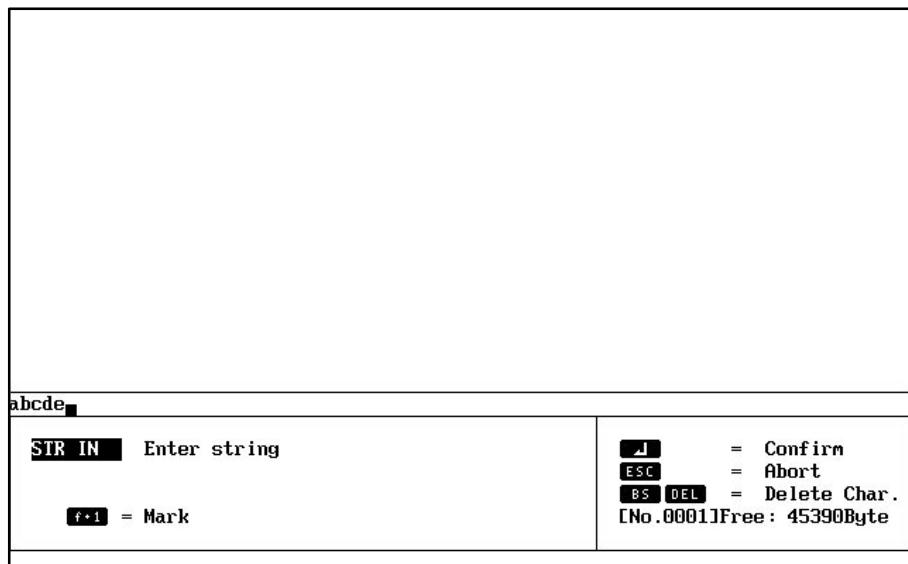
3. If the input is correct, press the Enter Key to enter the characters and go to the *String Attributes* section on page 24. Special characters or Marks can also be input as display characters as described below.

Special Characters Characters not on the keyboard can be input via character codes. A list of character codes is provided at the end of the manual. To input a character code, press the ALT Key followed by the decimal code.

Marks You can input marks while inputting characters.

1, 2, 3... 1. Press F1 (Mark) while inputting a string. The Mark List will appear.

```
┌──────────────────────────────────────────────────────┐
│                                                        │
│            ┌──────────────────────────────────┐        │
│            │             Mark List            │        │
│            ├──────────────────────┬───────────┤        │
│            │ ▰ ← ↑ ↓ ↵            │ 🔼🔽◀▶ = Select │
│            │                      │  ↵  = Confirm │
│            │                      │ ESC = Abort   │
│            └──────────────────────┴───────────┘        │
├────────────────────────────────────────────────────────┤
│ abcde                                                   │
├────────────────────────┬───────────────────────────────┤
│ STR IN   Enter string  │  ↵     = Confirm              │
│                        │ ESC    = Abort                │
│                        │ BS DEL = Delete Char.         │
│           f•1 = Mark   │ [No.0001]Free: 45390Byte      │
└────────────────────────┴───────────────────────────────┘
```
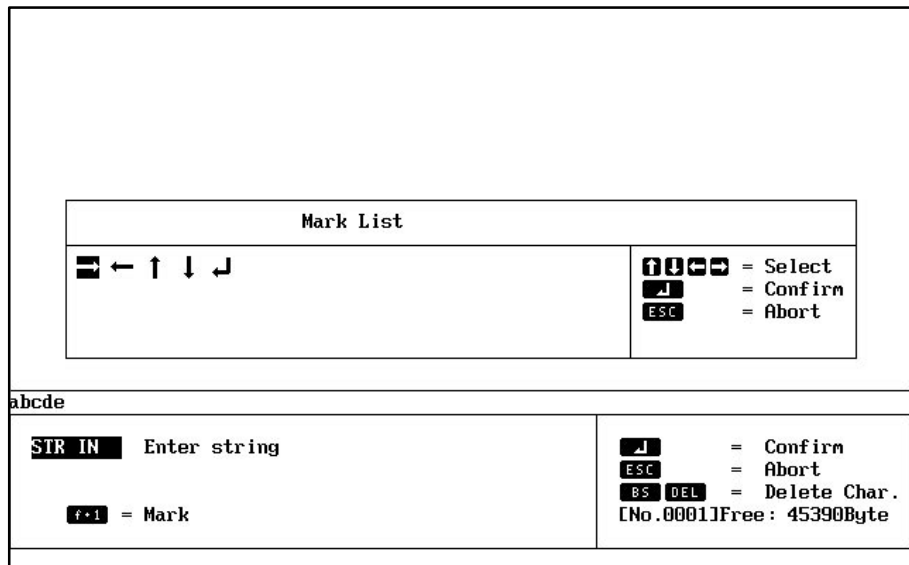
2. Use the direction keys to select the mark you want to input, and then press the Enter Key to enter them, or press the Escape Key to cancel mark input and return to character input.

```
┌──────────────────────────────────────────────────────┐
│                                                        │
│                                                        │
│                                                        │
│                                                        │
│                                                        │
├────────────────────────────────────────────────────────┤
│ abcde↵▪                                                 │
├────────────────────────┬───────────────────────────────┤
│ STR IN   Enter string  │  ↵     = Confirm              │
│                        │ ESC    = Abort                │
│                        │ BS DEL = Delete Char.         │
│           f•1 = Mark   │ [No.0001]Free: 45390Byte      │
└────────────────────────┴───────────────────────────────┘
```

23
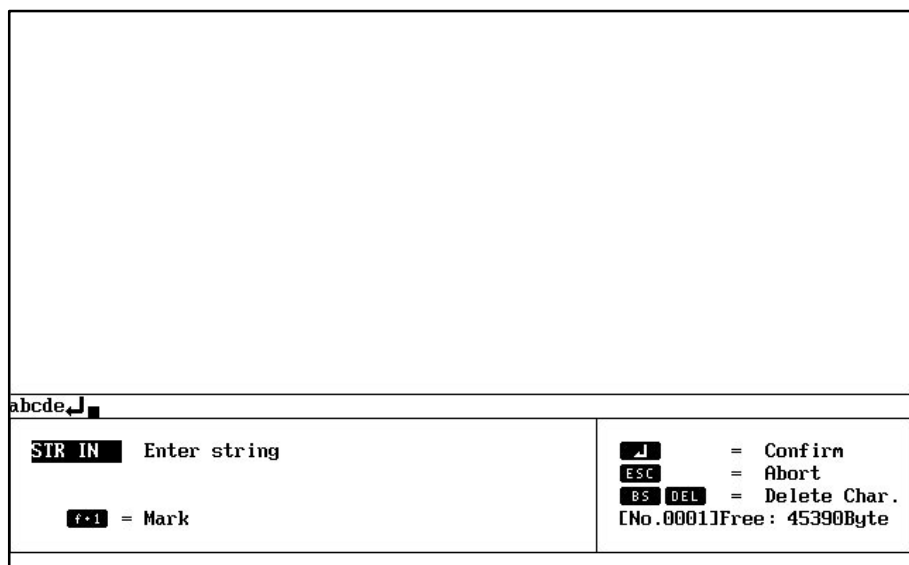
String Attributes

Here you set the size, scale, and attributes for character strings that have been input.

```
abcde ↵
┌─────────────────────────────┬──────────────────────────┐
│ STR IN   Display setting    │ 🔼🔽◀▶  =  Select          │
│ Size       Half    Norm     │ ↵       =  Confirm        │
│ Scale    Equ  Wide  High  4x  9x  16x  64x │ ESC  =  Abort │
│ Attr.    Norm  Inv.  Flsh  Spot │ [No.0001]Free: 45390Byte │
└─────────────────────────────┴──────────────────────────┘
```
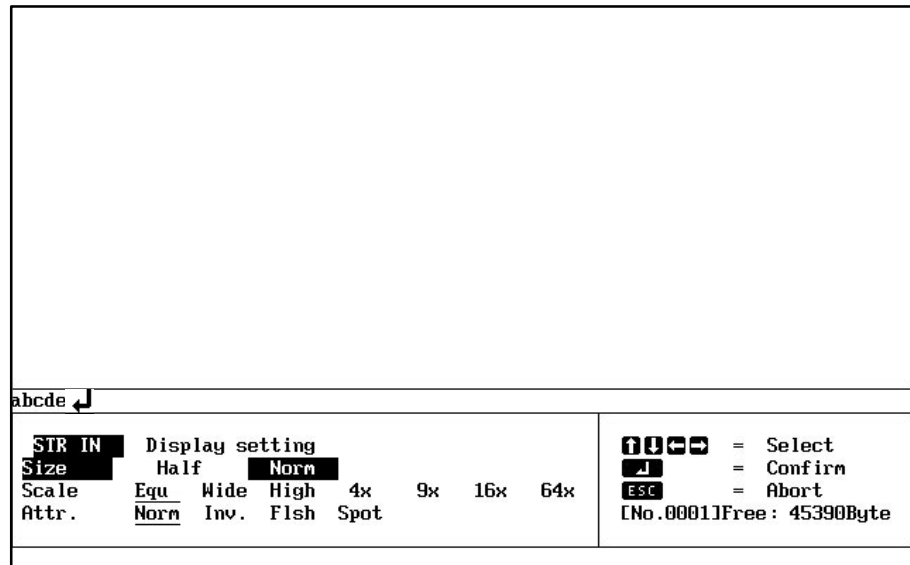
1, 2, 3...   1.   Set the size to be used for each 1-byte character.

2.   Set the scale factor for the characters. NT600M strings can be set to 64X in addition to the ones shown in the above display.

3.   Set display attributes. "Spot" is for flashing characters in reverse video. Display attributes will be displayed on the computer screen as shown below. (Although the contrast of most displays in this manual is reversed, the contrast of these examples is the same of that on the screen.

Normal   **Flashing**

abcde↵   abcde↵

Inverse   **Spot (Inverse Blinking)**

abcde↵   abcde↵

4.   Press the Enter Key after checking the settings.

A display for designating string position will appear next.

Designating Display Position

Designate the display position for the string.

1, 2, 3...   1.   A rectangular guide box showing the size of the input character string will be displayed. The guide box is displayed according to the number of characters input to that point, and the scale which has been set. Set the display position on the screen with the direction keys. By operating the direction keys while pressing the Shift Key, you can move the guide box 16 dots at a time. The X and Y coordinates of the display position (the X and Y coordinates of the lower left-hand corner of the guide box) are

24

displayed. You cannot set a display position that allows the guide box to extend off the screen.

```
abcde↵
┌──────────┐
│ STR IN   │  Set display position        ⬆⬇⬅➡   =  Position
└──────────┘                               ↵       =  Confirm
                                           ESC     =  Abort
                            (X=236,Y=199)   [No.0001]Free: 45390Byte
```
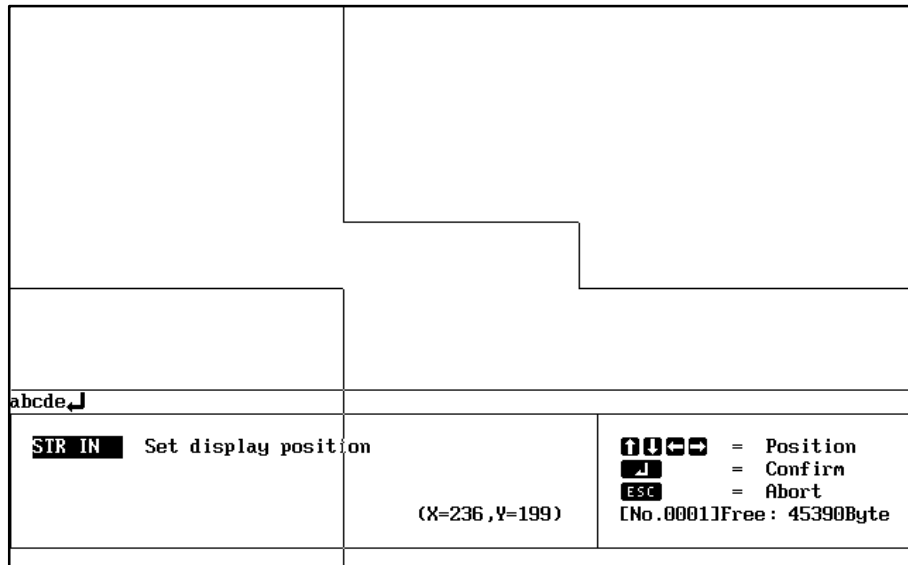
2. When you have set the display position, press the Enter Key.

$$abcde↵$$

```
■
┌──────────┐
│ STR IN   │   Enter string              ↵       =  Confirm
└──────────┘                             ESC     =  Abort
                                         BS DEL   =  Delete Char.
              ┌────┐                     [No.0001]Free: 45298Byte
              │ f·1│ = Mark
              └────┘
```
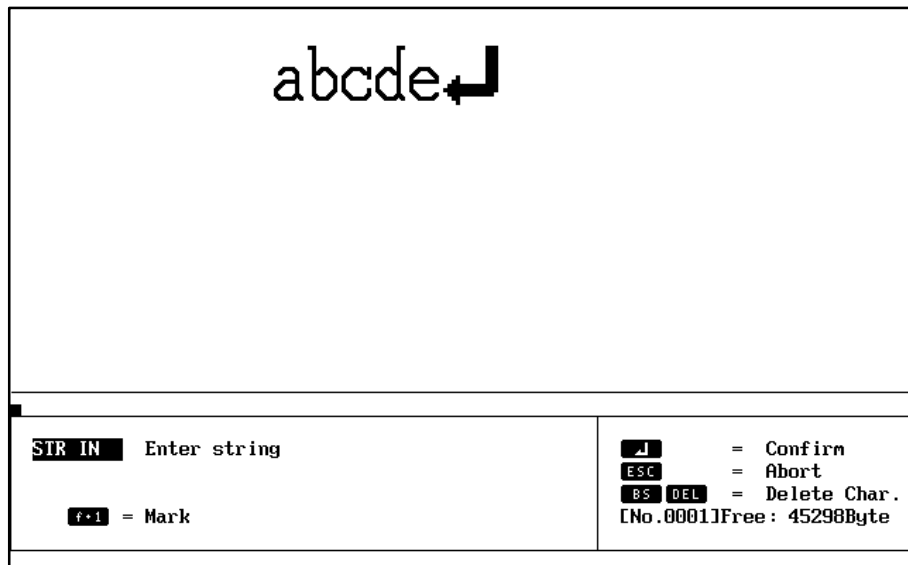
3. You will be returned to the Initial Text Input Display, and the contents set up to this point are displayed. At this time, a message again appears in the command box instructing you to enter text. If you are inputting text to different places on the same screen, repeat the operations described above. When you have finished inputting text, press the Escape Key. You will be returned to the Initial Edit Display.

2-1-2   Deleting Character Strings

You can delete strings that have already been set by using the procedure given below. When you delete a string, a portion of the display may be left empty. If this happens, press the TAB Key to rewrite the display.

25

1, 2, 3...   1.   Specify DELETE. The cross-shaped cursor will be displayed.

```
                    abcde↵


    STR IN    Select string to be deleted        ⬆⬇⬅➡  =  Select
                                                  ↵     =  Confirm
                                                  ESC   =  Abort
                            (X=246,Y= 50)        [No.0001]Free: 45298Byte
```
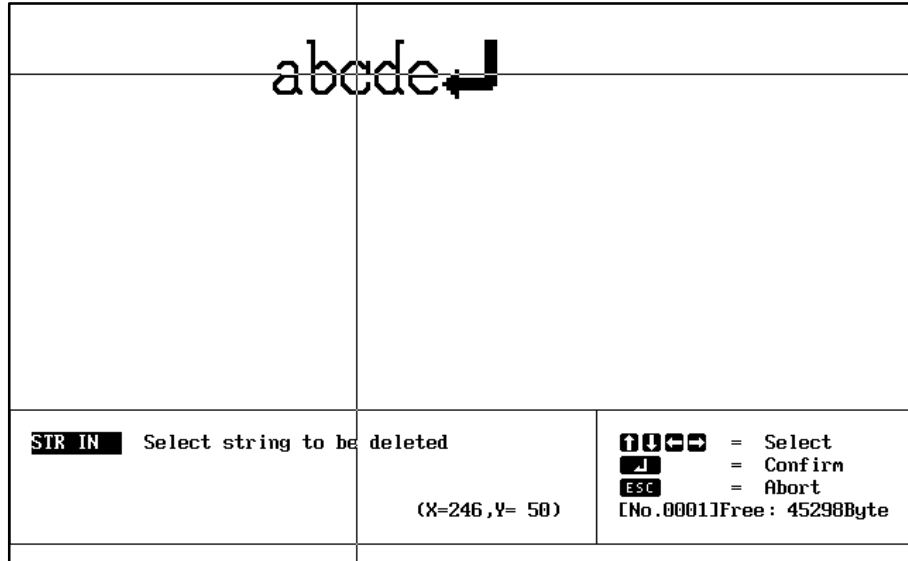
2.   Line up the center of the cross-shaped cursor with the string you want to delete, and press the Enter Key. The string which you have selected will be outlined by a guide box. A message will appear in a comment box to verify whether you actually want to delete that string. If a number of characters have been input at one time, then it makes no difference which character you place the cross-shaped cursor on.

```
                    abcde↵




    STR IN    Select string to be deleted        ⬆⬇⬅➡  =  Select
                                                  ↵     =  Confirm
                                                  ESC   =  Abort
                            (X=256,Y= 68)        [No.0001]Free: 45298Byte
```
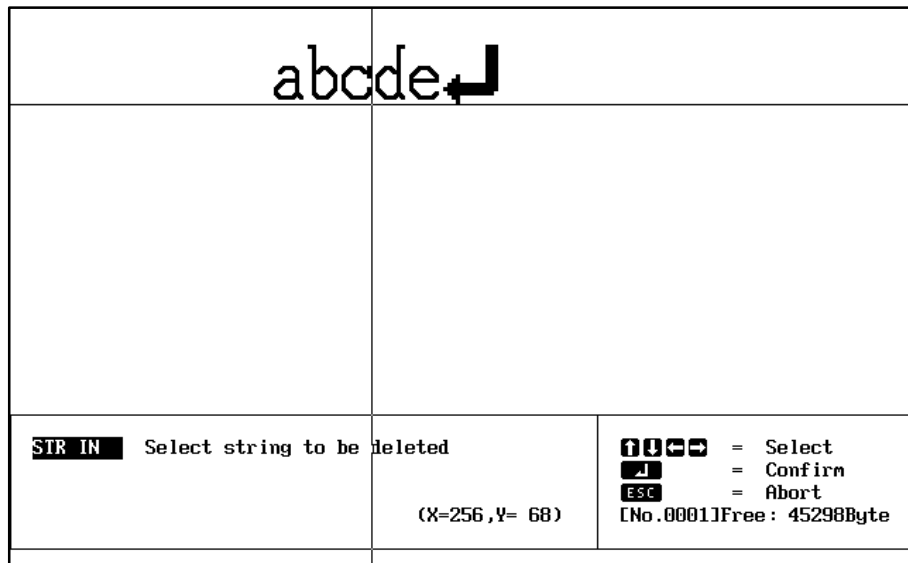
3.   To delete the string, press the Enter Key, or to cancel, press any key other than the Enter Key.

The basic delete operation for other data on the Edit Display, e.g., numeral displays, is the same.

Note   If the screen is not properly displayed after deleting, press the Tab Key to rescan the display.

2-1-3   Modifying Character Strings

You can modify strings that have already been set.

1, 2, 3... 1. Press MODIFY. The cross-shaped cursor will be displayed.

```
                    abcde↵



┌────────────────────────────┬──────────────────────┐
│ STR IN   Select string to modify │ ⬆️⬇️⬅️➡️  =  Select   │
│                                    │ ↵     =  Confirm     │
│                                    │ ESC   =  Abort       │
│                   (X=258,Y=160)    │ [No.0001]Free: 45298Byte │
```
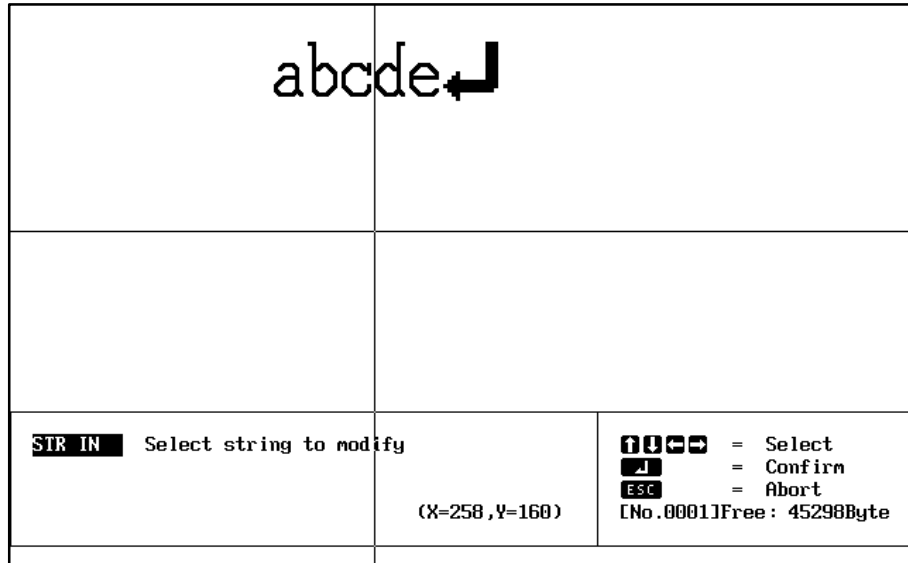
2. Line up the center of the cross-shaped cursor with the string you want to change, and press the Enter Key. The character which you have selected will be outlined by a guide box, and at the right of the screen a box will be displayed for you to select the items to be modified.

```
              abcde↵              ┌─────────────────┐
                                  │ Modify String   │
                                  │                 │
                                  │ Set Display     │
                                  │   Char Size Norm│
                                  │   Scale      9x │
                                  │   Attribute Norm│
                                  │                 │
                                  │ Display Position│
                                  │   X = 187       │
                                  │   Y =  70       │
                                  └─────────────────┘


┌──────────────────────────────┬──────────────────────┐
│ STR IN   Select item to modify │ ⬆️⬇️ = Slct  ↵ = Conf │
│                                 │ CLR = Shift Menu     │
│                                 │ ESC = Abort          │
│                                 │ [No.0001]Free: 45298Byte │
```
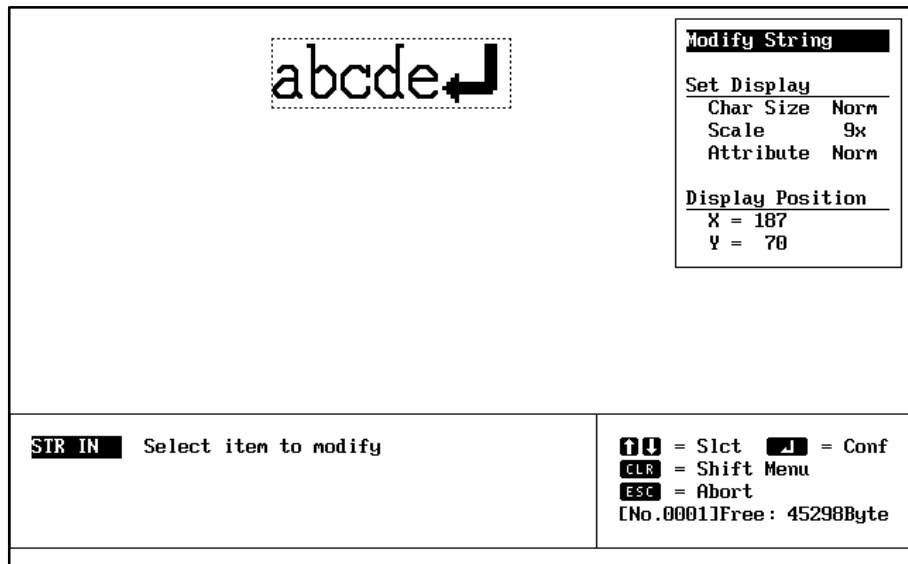
3. Use the Up and Down Keys to select the item to modified, and then press the Enter Key. You can return to step 2 by pressing the Escape Key. For items selected for change, data input methods are the same as when the string was created.

4. To end the modification, press the Escape Key. A message will appear asking whether you want to save the modified contents.

5. Press the Enter Key to save any changes made, or if you do not wish to save the modified contents, press the Space Key to cancel all modifications and restore the previous data.

6. To return to step 3, press the Escape Key.

The procedure for modifying data with the Edit Display is the same as that for other functions such as numeral and character displays.

27

2-2 Numeral Displays

Values from numeral tables can be displayed on a screen. The numeral table entry to be referenced, the display position, and the manner of display are set. You can set a maximum of 50 numeral displays per screen.

For the NT20M, numeral table entries are numbered from 0 to 127, for a total of 128. For the NT600M, numeral table entries are numbered from 0 to 255, for a total of 256.

The procedure for setting number displays depends on whether or not direct connection is ON or OFF in the Tool Settings. Both procedures are given below.

2-2-1 Normal Numeral Displays

Select NUM DISP from the Initial Edit Display, the Initial Display for Numeral Display will appear.

Initial Display for Numeral Display

No.	M Tbl	
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		

⬆⬇=Slct ESC=Abort
↵=Conf f•1=Del

Designating Numeral Table References

Only table number entries 0 to 13 are displayed first. To display the next entries, press the Pg Dn Key; to return to previous entires, press the Pg Up Key.

Select the numeral table entry that you want to reference and then press the Enter Key.

Inputting Initial Values

The initial value for the selected memory table reference is input next. Refer to page 12 for details on input methods. You can input numbers from –99999999 to 99999999. Numeral displays can display decimal numbers, but you enter them here without the decimal point. For example, if you want to

input –123.456, then just input –123456. The distinction between the integer portion and the decimal portion is specified in the next step.

```
                        ┌─────┬──────────┐
                        │ No. │ Contents │
                        │     │          │
                        │▐000▌│        0 │
                        │ 001 │        0 │
                        │ 002 │        0 │
                        │ 003 │        0 │
                        │ 004 │        0 │
                        │ 005 │        0 │
                        │ 006 │        0 │
                        │ 007 │        0 │
                        │ 008 │        0 │
                        │ 009 │        0 │
                        │ 010 │        0 │
                        │ 011 │        0 │
                        │ 012 │        0 │
                        │ 013 │        0 │
                        └─────┴──────────┘

 NUM DISP   Select reference table number          ⬆⬇=Select  ESC=Abort
                                                    ↵=Conf  ROLL UP=Prev Pg
                                                    ROLL DOWN=Next Pg
                                                    [No.0001]Free: 52056Byte
```

Input the number, and then press the Enter Key.

Numeral Display Settings

```
                    ┌──────────────┐
                    │  Set Numeral │
                    ├──────────────┴────────────┐
          Ref Table   [No.000]
         ▐Integer  ▌  [8]Dig.(1-8)
          Decimal     [0]Dig.(0-7)
          Zero Sup       Yes       No
          Disp Sing      Yes       No
          Char Size      Half    Norm    Wide
          Scale          Equ     Wide    High
                          4x       9x     16x      64x
          Attribute      Norm    Inv.    Flsh     Spot
                    └───────────────────────────┘

 NUM DISP   Display setting                       ⬆⬇⬅➡   =  Select
            Ref Table = [No.000]                   ↵     =  Confirm
                                                   ESC   =  Abort
                                                   [No.0001]Free: 52056Byte
```

Set the way in which the display will appear on the screen. Refer to the examples on page 30.

Reference table entry (Reference Table)	Set the number of the item to be referenced in the numeral table.
Number of integer digits (Integer)	Set the number of digits for the integer portion of the number.
Number of decimal digits (Decimal)	Set the number of digits for the decimal portion of the number.
Zero suppress (Zero Sup)	Set whether or not leading zeros are to be displayed on the screen.
Display sign (Disp Sign)	Set whether or not negative signs are to be displayed on the screen. The positive sign is not displayed.
Character size (Char Size)	Set the size of characters to be displayed on the screen.
Scale	Set the scale factor for the display. The NT600M can be set to 64X in addition to those shown above.
Attributes	Sets display attributes for the screen. Refer to page 24 for examples of how attributes are displayed on screen.

Press the Enter Key after checking all of these settings.

Numeral Display Examples

Number of integer digits	Number of decimal digits	Zero suppress	Code display	Contents of numeral table	Display
3	0	No	No	12	012
3	0	No	No	1234	***
3	0	No	No	−12	012
3	0	No	No	−1234	***
3	0	No	Yes	12	□012
3	0	No	Yes	1234	****
3	0	No	Yes	−12	−012
3	0	No	Yes	−1234	****
3	0	Yes	No	12	□12
3	0	Yes	No	1234	***
3	0	Yes	No	−12	□12
3	0	Yes	No	−1234	***
3	0	Yes	Yes	12	□□12
3	0	Yes	Yes	1234	****
3	0	Yes	Yes	−12	□−12
3	0	Yes	Yes	−1234	****
2	1	No	No	1	00.1
2	1	No	No	12	01.2
2	1	No	No	1234	****
2	1	No	No	−12	01.2
2	1	No	No	−1234	****
2	1	No	Yes	1	□00.1
2	1	No	Yes	12	□01.2
2	1	No	Yes	1234	*****
2	1	No	Yes	−12	−01.2
2	1	No	Yes	−1234	*****
2	1	Yes	No	1	□0.1
2	1	Yes	No	12	□1.2
2	1	Yes	No	1234	****
2	1	Yes	No	−12	□1.2
2	1	Yes	No	−1234	****
2	1	Yes	Yes	1	□□0.1
2	1	Yes	Yes	12	□□1.2
2	1	Yes	Yes	1234	*****
2	1	Yes	Yes	−12	□−1.2
2	1	Yes	Yes	−1234	*****

Note □ indicates a blank space.

30

Designating Display Positions

A guide box corresponding to the size of the numeral display will appear. Designate the display position on the screen with the cross-shaped cursor and press the Enter Key. You cannot make a setting that will cause the guide box to extend from the screen.

```
NUM DISP   Set numeral display position        ⬆⬇⬅➡  =  Position
                                                ↵     =  Confirm
                                                ESC   =  Abort
                        (X=288,Y=200)           [No.0001]Free: 52056Byte
```
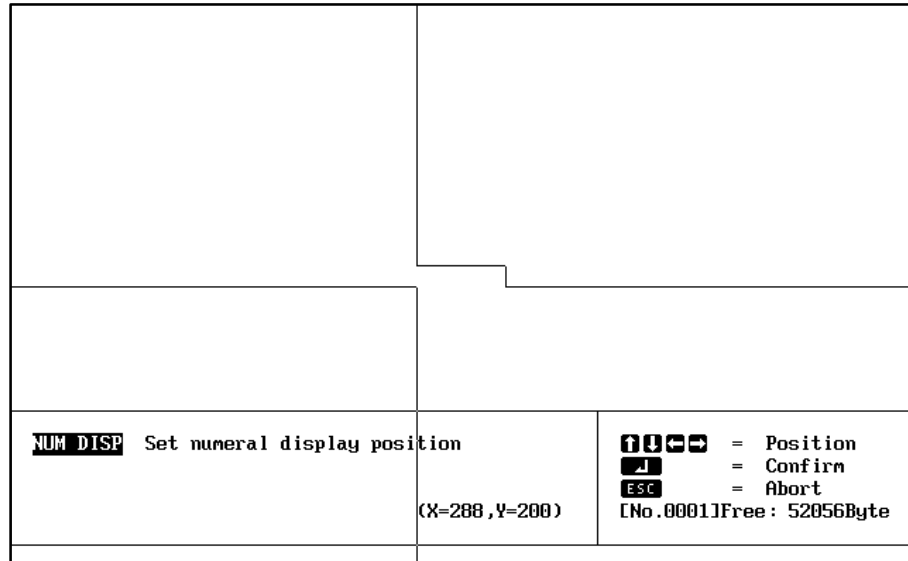
Deleting and Modifying

You can delete or modify previously input numeral displays. The procedures for these operations are the same as those for deleting and modifying character strings. Refer to appropriate subsections of *2-1 Inputting Character Strings* for details.

2-2-2   Direct Connection Numeral Displays

Creating

Use the following procedure to create a direct connection numeral display.

1, 2, 3...   1.   Select NUM DISP from the Initial Edit Display, a list of the numeral displays already existing in the current screen will be displayed.

```
                                        No. M Tbl  Rf
                                         1
                                         2
                                         3
                                         4
                                         5
                                         6
                                         7
                                         8
                                         9
                                        10
                                        11
                                        12
                                        13
                                        14
                                        15
                                        16

                                        ⬆⬇=Slct  ESC=Abort
                                        ↵ =Conf  f•1=Del
```

2.   Specify the number to be used in the table. This is not the numeral table and the numbers do not correspond to item numbers in the numeral table. When a number is specified, a display to set direct or indirect referencing will appear.

31

3. Specify "Direct." Indirect referencing is not currently supported. The numeral table will be displayed.

```
┌─────────────────────────────────────────────────────────────┐
│                                                             │
│    No. │ Contents   │ In│ # │ Word  │    Comment            │
│   ┌────┼────────────┼───┼───┼───────┼───────────────────────┤
│   │000 │          0 │No │ 0 │ ───── │                       │
│    001 │          0 │No │ 0 │ ───── │                       │
│    002 │          0 │No │ 0 │ ───── │                       │
│    003 │          0 │No │ 0 │ ───── │                       │
│    004 │          0 │No │ 0 │ ───── │                       │
│    005 │          0 │No │ 0 │ ───── │                       │
│    006 │          0 │No │ 0 │ ───── │                       │
│    007 │          0 │No │ 0 │ ───── │                       │
│    008 │          0 │No │ 0 │ ───── │                       │
│    009 │          0 │No │ 0 │ ───── │                       │
│    010 │          0 │No │ 0 │ ───── │                       │
│    011 │          0 │No │ 0 │ ───── │                       │
│    012 │          0 │No │ 0 │ ───── │                       │
│    013 │          0 │No │ 0 │ ───── │                       │
│    014 │          0 │No │ 0 │ ───── │                       │
│    015 │          0 │No │ 0 │ ───── │                       │
│                                                             │
│   NUM TABLE  Select a numeral table                         │
│    ↑↓ = Select   Esc = Abort     PgDn = Next Page           │
│    F1 = Ref        ↵ = Confirm   PgUp = Prev Page           │
└─────────────────────────────────────────────────────────────┘
```

4. Specify the desired table entry number. The initial value input field (contents) will be entered. The headings in the table are described in the following table.

Heading	Meaning
No.	Numeral table entry number
Contents	Initial value
IN initialize at startup)	Indicates whether or not the table value is to be initialized when the PT is turned ON.
# (quantity)	Number of PC words used
Word	Address of the first PC word
Comment	User comment area

5. Input the desired initial value. This value can be omitted here if desired and input later using the table edit operation. The initial value can be up to 8 digits long. When the initial value field is left, the following display will appear to input the remaining settings.

32

Note Negative values and initial values are set differently for direct connection. Refer to page 61 for details.

```
┌──────┬──────────┬────┬────┬───────┬──────────────┐
│ No.  │ Contents │ In │ #  │ Word  │   Comment    │
├──────┼──────────┴────┴────┴───────┴──────────────┤
│ 00   │                                           │
│ 00   │         ┌──────────────────┐              │
│ 00   │         │   Specify Word   │              │
│ 00   │   ┌──────┐                                │
│ 00   │   │ Init │    Yes        ┌────┐           │
│ 00   │   └──────┘               │ No │           │
│ 00   │   St. Word  [2](1-2)     └────┘           │
│ 00   │   Word      [-------]                      │
│ 00   │   Comment   [                    ]         │
│ 00   │                                            │
│ 00   │   ┌────┐       ┌────┐    ┌────┐   ┌────┐   │
│ 01   │   │F 1 │=AR    │F 2 │=HR │F 3 │=LR│F 4 │=DM│
│ 01   │   │F 5 │=CNT   │F 6 │=TIM│F 7 │=CH│F 8 │=***│
│ 012  │   │F 9 │=***   │F10 │=***│Home│=NO         │
│ 013  │      0   No   0    -----                   │
│ 014  │      0   No   0    -----                   │
│ 015  │      0   No   0    -----                   │
│      │      0   No   0    -----                   │
├──────┴───────────────────────────────────────────┤
│ NUM TABLE  Input a word                           │
│ ⬆⬇⬅➡ = Select  ⏎ = Confirm  Esc = Abort           │
└───────────────────────────────────────────────────┘
```

6. Make the four settings as described in the following table. The comment is optional and all four settings can be omitted here if desired and input later using the table edit operation.

Heading	Meaning
Initialize (Init)	Set YES to initialize the contents in the numeral table when PT power is turned ON. Set to NO to maintain the previous value when PT power is turned ON.
Set words (St Word)	Set the number of PC words to be used.
Word	Set the address of the first PC word to be used.
Comment	Input any desired user comment area

The numeral display settings will appear when the above display is left.

```
┌───────────────────────────────────────────────────┐
│              ┌──────────────┐                      │
│              │  Set Numeral │                      │
│   ┌─────────┐└──────────────┘                      │
│   │ Integer │    [8]Dig.(1-8)                      │
│   └─────────┘                                      │
│    Decimal       [0]Dig.(0-7)                      │
│    Zero Sup      Yes      No                        │
│    Disp Sign     Yes      No                        │
│    Char Size     Half   Norm   Wide                 │
│    Scale         Equ    Wide   High                 │
│                  4x     9x     16x    64x           │
│    Attribute     Norm   Inv.   Flsh   Spot          │
│    Disp Type     Dec    Hex                         │
│                                                     │
├───────────────────────────┬───────────────────────┤
│ NUM DISP  Display setting  │ ⬆⬇⬅➡ = Select         │
│   Ref Table = [Di:000]     │ ⏎    = Confirm        │
│                            │ ESC  = Abort          │
│                            │ [No.0002]Free: 45298Byte│
└───────────────────────────┴───────────────────────┘
```

7. Set the way in which the display will appear on the screen. Refer to the examples on page 30.

33

Number of integer digits (Integer)	Set the number of digits for the integer portion of the number.
Number of decimal digits (Decimal)	Set the number of digits for the decimal portion of the number.
Zero suppress (Zero Sup)	Set whether or not leading zeros are to be displayed on the screen.
Display sign (Disp Sign)	Set whether or not negative signs are to be displayed on the screen. The positive sign is not displayed.
Character size (Char Size)	Set the size of characters to be displayed on the screen.
Scale	Set the scale factor for the display. The NT600M can be set to 64X in addition to those shown above.
Attributes	Sets display attributes for the screen. Refer to page 24 for examples of how attributes are displayed on screen.
Display type (Disp Type)	Specify either decimal or hexadecimal display.

Press the Enter Key after completing all of these settings.

8. Set the display position. When the display position has been set, you can return to set another numeral display or you can continue pressing the Escape Key to return to the Initial Edit Display.

Deleting and Modifying Direct connection numeral displays are deleted or modified from the display shown in step 1. above. Select the number of the numeral table and then specify DELETE or MODIFY. The modification procedure is basically the same as the creation procedure given above.

2-3   Character String Displays

The contents of character string tables can be displayed on the screen. The string table entry to be referenced, the display position, and manner of display must be set.

You can set a maximum of 8 string displays per screen for the NT20M and 50 for the NT600M.For the NT20M, string table entries are numbered from 0 to 31, for a total of 32. For the NT600M, string table entries are numbered from 0 to 255, for a total of 256.

The procedure for setting number displays depends on whether or not direct connection is ON or OFF in the Tool Settings. Both procedures are given below.

2-3-1 Normal Character String Displays

If you select STR DISP from the Initial Edit Display, the Initial Screen for Character String Display will appear.

Initial Display for Character String Display

```
                                    No. M Tbl
                                     1 ██████████████████
                                     2
                                     3
                                     4
                                     5
                                     6
                                     7
                                     8
                                     9
                                    10
                                    11
                                    12
                                    13
                                    14
                                    15
                                    16

                                    ▲▼=Slct  ESC=Abort
                                    ⏎=Conf   ↑←1=Del
```

Designating String Tables to be Referenced

Table entires 0 to 13 are displayed first on the screen. To display the next entires, press the Pg Dn Key; to return to previously entries, press the Pg Up Key.

Select the string table entry that you want to reference and then press the Enter Key.

Inputting Initial Value

Set the initial value for the selected table entry.

Input the initial value according to the instructions for inputting the initial values for numeral tables. For the NT20M, the maximum number of characters that can be registered is 32 characters. For the NT600M, the maximum number of characters that can be registered is 40 characters.

```
            No.            Contents
           ┌───┬─────────────────────────┐
           │000│█████████████████████████│
           │001│                         │
           │002│                         │
           │003│                         │
           │004│                         │
           │005│                         │
           │006│                         │
           │007│                         │
           │008│                         │
           │009│                         │
           │010│                         │
           │011│                         │
           │012│                         │
           │013│                         │

   STR DISP   Select reference table number    ▲▼=Select  ESC=Abort
                                               ⏎=Conf   PgUp=Prev Pg
                                               PgDn=Next Pg
                                               [No.0001]Free: 52056Byte
```

Input the characters, and then press the Enter Key.

35

Setting Display Attributes

```
                    ┌─────────────┐
                    │ Set String  │
         ┌──────────┘             └──────────────┐
         Ref Table     [No.000]
         Length        [40]Char (1-40)
         Char Size       Half      Norm
         Scale          Equ    Wide   High
                         4x      9x    16x    64x
         Attribute      Norm   Inv.   Flsh   Spot
         └─────────────────────────────────────┘

  STR DISP    Display setting              ⬆⬇⬅➡  = Select
              Ref Table = [No.000]          ⏎    = Confirm
                                           ESC   = Abort
                                           [No.0002]Free: 52030Byte
```

Set the way in which the display will appear on the screen.

Number of character digits (Char; See Note)	Set the number of character digits to be displayed on the screen.
Character size (Size)	Set the character size to be used for each 1-byte characters.
Scale	Set the scale for characters to be displayed on the screen. The NT600M can be set to 64X in addition to those shown above.
Display attributes (Attr.)	Set display attributes for the screen. Refer to page 24 for examples of how attributes are displayed on screen.

Note For contents registered in the memory table, only the number of digits that have been set will be displayed. Each normal character requires one digit and each mark requires 2 digits.

Press the Enter Key after checking all of the settings.

Designating Display Position

A guide box corresponding to the size of the set contents will be displayed. Designate the display position on the screen with the cross-shaped cursor

36

and press the Enter Key. You cannot make a setting that will cause the guide box to extend from the screen.

```
┌──────────────────────────────────────────┬────────────────────────┐
│                                          │                        │
│                                          │                        │
│                                          │                        │
│                                          │                        │
│                                          │                        │
│                                          │                        │
│                         ┌────────────────┴────────────┐           │
│                         │                             │           │
├─────────────────────────┘                             │           │
│                                                        │           │
│                                                        │           │
├──────────────────────────────────┬─────────────────────────────────┤
│ STR DISP   Set display position  │  ⬆⬇⬅➡   =  Position             │
│                                  │  ⏎      =  Confirm              │
│                                  │  ESC    =  Abort                │
│                     (X=160,Y=200)│  [No.0002]Free: 52030Byte       │
├──────────────────────────────────┴─────────────────────────────────┤
│                                                                    │
└────────────────────────────────────────────────────────────────────┘
```
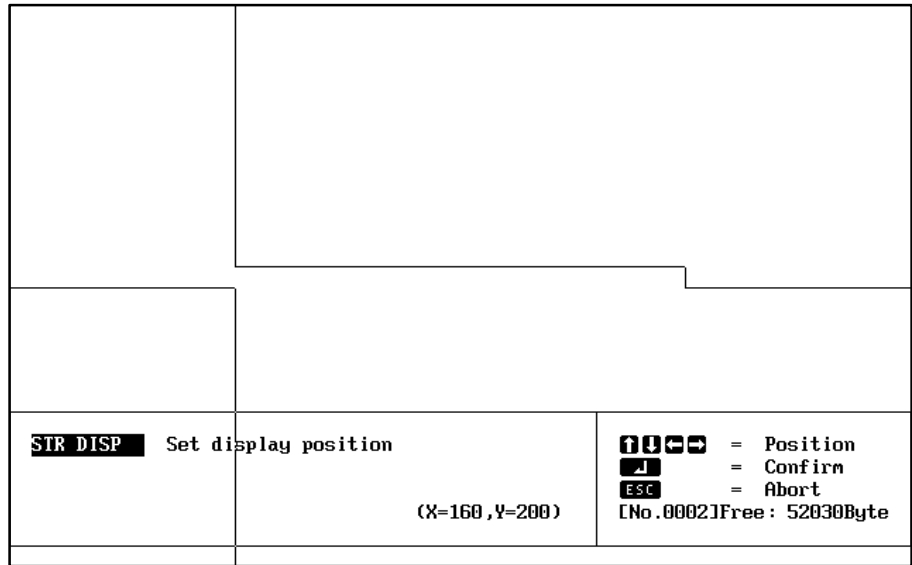
Deleting and Modifying   You can delete or modify previously input character string displays. The procedures for these operations are the same as those for deleting and modifying character strings. Refer to appropriate subsections of *2-1 Inputting Character Strings* for details.

2-3-2   Direct Connection Character String Displays

Creating   Use the following procedure to create a direct connection character string display.

1, 2, 3...   1.   Select STR DISP from the Initial Edit Display, a list of the character string displays already existing in the current screen will be displayed.

```
┌──────────────────────────────┬──────┬──────┬──────┐
│                              │ No.  │ M Tbl│ Rf   │
│                              ├──────┼──────┼──────┤
│                              │  1   │██████│██████│
│                              │  2   │      │      │
│                              │  3   │      │      │
│                              │  4   │      │      │
│                              │  5   │      │      │
│                              │  6   │      │      │
│                              │  7   │      │      │
│                              │  8   │      │      │
│                              │  9   │      │      │
│                              │ 10   │      │      │
│                              │ 11   │      │      │
│                              │ 12   │      │      │
│                              │ 13   │      │      │
│                              │ 14   │      │      │
│                              │ 15   │      │      │
│                              │ 16   │      │      │
│                              ├──────┴──────┴──────┤
│                              │ ⬆⬇=Slct  ESC=Abort │
│                              │ ⏎=Conf   f↑1=Del   │
└──────────────────────────────┴────────────────────┘
```
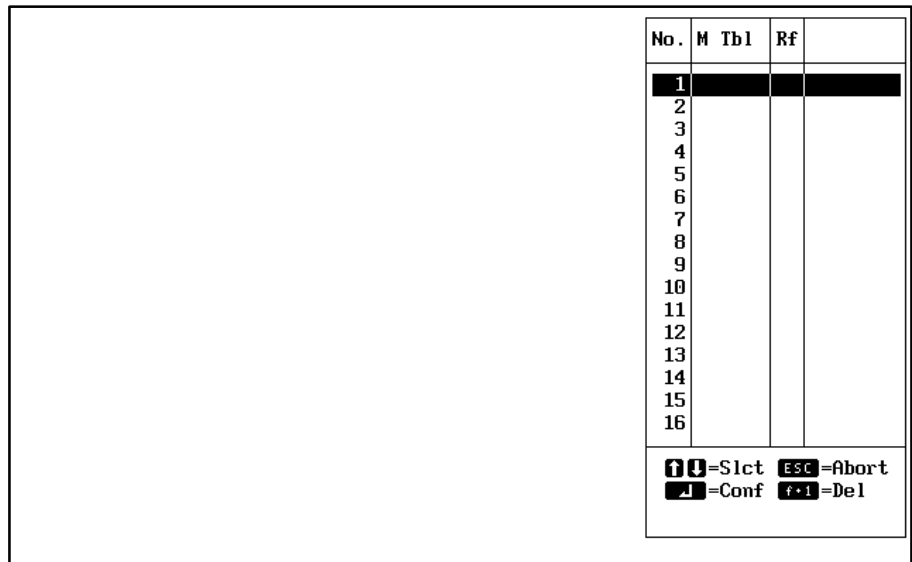
2.   Specify the number to be used in the table. This is not the character string table and the numbers do not correspond to item numbers in the character string table. When a number is specified, a display to set direct or indirect referencing will appear.

37

3. Specify "Direct." Indirect referencing is not currently supported. The character string table will be displayed.

```
┌─────────────────────────────────────────────────────────────────────────┐
│ No.  │          Contents          │ In │ # │ Word  │    Comment          │
├──────┼────────────────────────────┼────┼───┼───────┼─────────────────────┤
│ 000  │                            │ No │ 0 │ ----- │                     │
│ 001  │                            │ No │ 0 │ ----- │                     │
│ 002  │                            │ No │ 0 │ ----- │                     │
│ 003  │                            │ No │ 0 │ ----- │                     │
│ 004  │                            │ No │ 0 │ ----- │                     │
│ 005  │                            │ No │ 0 │ ----- │                     │
│ 006  │                            │ No │ 0 │ ----- │                     │
│ 007  │                            │ No │ 0 │ ----- │                     │
│ 008  │                            │ No │ 0 │ ----- │                     │
│ 009  │                            │ No │ 0 │ ----- │                     │
│ 010  │                            │ No │ 0 │ ----- │                     │
│ 011  │                            │ No │ 0 │ ----- │                     │
│ 012  │                            │ No │ 0 │ ----- │                     │
│ 013  │                            │ No │ 0 │ ----- │                     │
│ 014  │                            │ No │ 0 │ ----- │                     │
│ 015  │                            │ No │ 0 │ ----- │                     │
├──────┴────────────────────────────┴────┴───┴───────┴─────────────────────┤
│ STR TABLE   Select a character string table                              │
│    ↑↓ = Select    Esc = Abort    PgDn = Next Page    PgUp = Prev Page     │
│    F1 = Ref       ↵ = Confirm                                            │
└─────────────────────────────────────────────────────────────────────────┘
```

4. Specify the desired table entry number. The initial value input field (contents) will be entered. The headings in the table are described in the following table.

Heading	Meaning
No.	Character string table entry number
Contents	Initial value
IN (initialize at startup)	Indicates whether or not the table value is to be initialized when the PT is turned ON.
# (quantity)	Number of PC words used
Word	Address of the first PC word
Comment	User comment area

5. Input the desired initial string. The initial string can be omitted here if desired and input later using the table edit operation. When the initial

value field is left, the following display will appear to input the remaining settings.

```
┌─────────────────────────────────────────────────────────────────┐
│ No.  │        Contents          │ In│ # │  Word  │   Comment     │
├──────┼──────────────────────────┼───┴───┴────────┴───────────────┤
│ 000  │                                                           │
│ 001  │           ┌─────────────────────────────┐                 │
│ 002  │           │       Specify Word          │                 │
│ 003  │           │                             │                 │
│ 004  │           │  Init     Yes        No     │                 │
│ 005  │           │  St. Word [20](1ü'20)       │                 │
│ 006  │           │  Word     [-------]         │                 │
│ 007  │           │  Comment  [            ]    │                 │
│ 008  │           │                             │                 │
│ 009  │           │  F1=AR  F2=HR  F3=LR  F4=DM  │                 │
│ 010  │           │  F5=CNT F6=TIM F7=CH  F8=*** │                 │
│ 011  │           │  F9=*** F10=*** Home=NO      │                 │
│ 012  │           └─────────────────────────────┘    No│ 0 │ ───── │
│ 013  │                                              No│ 0 │ ───── │
│ 014  │                                              No│ 0 │ ───── │
│ 015  │                                              No│ 0 │ ───── │
├──────┴───────────────────────────────────────────────────────────┤
│ STR TABLE   Input a word                                          │
│     ⬆⬇⬅➡ = Select     ⏎ = Confirm     Esc = Abort                 │
└───────────────────────────────────────────────────────────────────┘
```

6. Make the four settings as described in the following table. The comment is optional and all four settings can be omitted here if desired and input later using the table edit operation.

Heading	Meaning
Initialize (Init)	Set YES to initialize the contents in the character string table when PT power is turned ON. Set to NO to maintain the previous value when PT power is turned ON.
Set words (St Word)	Set the number of PC words to be used.
Word	Set the address of the first PC word to be used.
Comment	Input any desired user comment area

The character string display settings will appear when the above display is left.

```
┌───────────────────────────────────────────────────────────────────┐
│                                                                   │
│                                                                   │
│              ┌─────────────────────────────┐                      │
│              │         Set String          │                      │
│              │                             │                      │
│              │  Ref Table   [No.000]       │                      │
│              │  Length      [40]Char (1-40)│                      │
│              │  Char Size    Half    Norm  │                      │
│              │  Scale       Equ  Wide  High│                      │
│              │               4x   9x   16x   64x                  │
│              │  Attribute   Norm  Inv. Flsh Spot                  │
│              └─────────────────────────────┘                      │
│                                                                   │
│                                                                   │
├───────────────────────────────────────────────────────────────────┤
│ STR DISP    Display setting              ⬆⬇⬅➡  = Select           │
│             Ref Table = [Di:000]         ⏎     = Confirm          │
│                                          Esc   = Abort            │
│                                          [No.0002]Free: 45298Byte │
└───────────────────────────────────────────────────────────────────┘
```

7. Set the way in which the display will appear on the screen.
   Press the Enter Key after completing all of these settings.

39

Number of character digits (Char; See Note)	Set the number of character digits to be displayed on the screen.
Character size (Size)	Set the character size to be used for each 1-byte characters.
Scale	Set the scale for characters to be displayed on the screen.
Display attributes (Attr.)	Set display attributes for the screen. Refer to page 24 for examples of how attributes are displayed on screen.

Note For contents registered in the memory table, only the number of digits that have been set will be displayed. Each normal character requires one digit and each mark requires 2 digits.

8. Set the display position. When the display position has been set, you can return to set another character string display or you can continue pressing the Escape Key to return to the Initial Edit Display.

Deleting and Modifying Direct connection character string displays are deleted or modified from the display shown in step 1. above. Select the number of the character string table and then specify DELETE or MODIFY. The modification procedure is basically the same as the creation procedure given above.

2-4 Lamps

An indicator lamp can be created by setting the lamp size, display position, and a label. You can set a maximum of 64 lamps per screen for the NT20M and 128 for the NT600M.

The procedure for creating lamps depends on whether or not direct connection is ON or OFF in the Tool Settings. Both procedures are given below.

2-4-1 Normal Lamps

If you select LAMP from the Initial Edit Display, the Initial Lamp Display will appear.

Initial Lamp Display

Lamp Shape Either square or circular must be specified for the lamp shape.

Designating Area   The size and display position of the lamp must be specified. The lamp area is
                              set by designating diagonal corners (the starting and ending points) of a rect-
                              angle for square lamps and the center and radius of circular lamps.

Starting point

Ending point
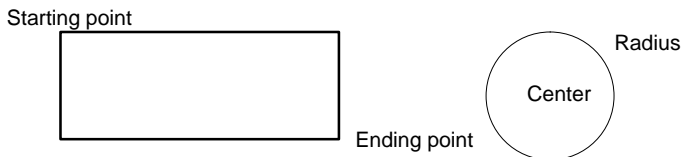
Radius

Center

1, 2, 3...   1.   Designate the starting point or center.
                2.   Designate the ending point or radius

                The lamp settings are input after the lamp area has been designated.

        Note Although you can set lamp areas that overlap touch switches or other lamps,
                  overlapping sections may not be inverse properly. Frames on lamps and
                  touch switches and labels may also prevent proper display for overlapping
                  lamps/touch switches.

Lamp Settings

```
                        ┌──────────────────────────────┐
                        │        Lamp Setting          │
                        │                              │
                        │  Lamp No.    [0 ] (0-255)    │
                        │  Frame       Yes    No       │
                        │  Attribute   Lit    Flsh     │
                        │  Label       Yes    No       │
                        └──────────────────────────────┘




    LAMP      Lamp display setting              ⬆⬇⬅➡  =  Select
                                                 ↵    =  Confirm
                                                ESC   =  Abort
                                                [No.0003]Free: 52006Byte
```

Lamp number	The number of the lamp being set. (The numbers, 0 to 255, are used in common with touch switches. The same number cannot be used more than once.)
Frame	Whether or not lamp frames are to be displayed when lamps are displayed. If "No" is designated, lamps will be indicated by dotted lines on the Support Tool display.
Attributes	Set whether the lamp will light or flash when controlled by bit signals from the host. This attribute is effective only when controlling the lamp via bit signals from the Host Interface Units that support bit designation. This setting is ignored when controlling lamps via commands, which can be used to control the same attribute.
Label	Whether or not a label is to be attached to the lamp.

                Press the Enter Key after checking all of these settings. The label is input
                next if label input has been designated.

41

Inputting the Label   If you set label to "Yes," the following screen will be displayed. If you set label to "No," you will be returned to the Initial Lamp Display.

```
┌─────────────────────────────────────────────────────────┐
│                                                         │
│                    ┌──────────┐                         │
│                    │          │                         │
│                    └──────────┘                         │
│                                                         │
│ ■                                                       │
├──────────────────────────────────┬──────────────────────┤
│ LAMP                             │  ⏎    = Confirm       │
│     Lamp [ No.000]. enter label  │ ESC   = Abort         │
│                                  │ BS DEL = Delete Char.  │
│     f・1 = Mark                   │ [No.0003]Free: 52006Byte│
└──────────────────────────────────┴──────────────────────┘
```

Input the label and press the Enter Key. You can also press the F3 Function Key to input from a list of marks that have been created. Refer to page 22 for details on the mark input procedure.

Note 1. Labels can be only one line long. Input character strings if longer labels are required.

2. "@" will be input as the default label if the label setting is changed from NO to YES.

Set the size and scale of the label display.

```
┌─────────────────────────────────────────────────────────┐
│                                                         │
│                    ┌──────────┐                         │
│                    │          │                         │
│                    └──────────┘                         │
│                                                         │
│ Water Flow                                              │
├──────────────────────────────────┬──────────────────────┤
│ LAMP      Label display setting  │ ↑↓←→  = Select        │
│ Size      Half    Norm           │  ⏎    = Confirm       │
│ Scale    Equ  Wide  High  4x  9x  16x  64x │ ESC = Abort │
│                                  │ [No.0003]Free: 52006Byte│
└──────────────────────────────────┴──────────────────────┘
```

Position the label on the screen.

Deleting and Modifying   You can delete or modify previously input lamp data on the screen. The procedures for these operations are the same as those for deleting and modifying character strings. Refer to appropriate subsections of *2-1 Inputting Character Strings* for details.

42

2-4-2 Direct Connection Lamps

Creating   Use the following procedure to create a direct connection lamp.

1, 2, 3...   1.   Select LAMP from the Initial Edit Display, a list of the lamps already existing in the current screen will be displayed.

No.	Bit	Comment
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		

↑↓=Slct ESC=Abort
↵=Conf ↑+↓=Del

2.   Specify the number to be used in the table. The numbers in this table are not the lamp numbers. When a number is specified, a display to specify either a rectangular or round lamp will appear.

LAMP   Select lamp to be set-up

        Square   Circle

←→   = Select
↵   = Confirm
ESC   = Abort
[No.0002]Free: 45298Byte

3.   Specify the lamp shape. A display will appear to draw the lamp.

4.   If a rectangle was specified, specify the starting and ending points (diagonally opposed corners) of the rectangle. If a circle was specify, desig-

nate the center and one point on the circumference of the circle. A display will appear to specify the bit that is to control the lamp.

```
┌─────────────────────────────────────────────────────────────────────┐
│                                                                       │
│                        ┌──────────────────────┐                       │
│                        │     Lamp Setting     │                       │
│                   Bit  [ 000000] [           ]│                       │
│                     ┌──────────────────────────┐                      │
│                     │        Bit Setting        │                      │
│                     │                           │                      │
│                     │  Bit      [    000000]    │                      │
│                     │  Comment  [           ]   │                      │
│                     │                           │                      │
│                     │  F 1 =AR  F 2 =HR  F 3 =LR  F 4 =DM │             │
│                     │  F 5 =CNT F 6 =TIM F 7 =CH  F 8 =*** │            │
│                     │  F 9 =*** F 10 =*** Home=NO │                     │
│                     └──────────────────────────┘                      │
│                                                                       │
├────────────────────────────────────┬──────────────────────────────┤
│ LAMP     Input the lamp bits        │ ⬆⬇      = Select             │
│                                     │ ↵       = Confirm            │
│                                     │ Esc     = Abort              │
│                                     │ [No.0001]Free: 45390Byte     │
└────────────────────────────────────┴──────────────────────────────┘
```

5. Input the address of the PC bit that is to control the lamp. Timer/counter numbers cannot be specified. DM word address can also be specified, followed by the bit number within the word.

6. Input a comment if desired. The comment is for user use only. The lamp settings will appear when the above display is left.

```
┌─────────────────────────────────────────────────────────────────────┐
│                                                                       │
│                       ┌──────────────────────┐                        │
│                       │     Lamp Setting     │                        │
│                  Bit  [ 000000] [          ] │                        │
│                  Frame       Yes     No                               │
│                  Attribute   Lit     Flsh                             │
│                  Label       Yes     No                               │
│                       └──────────────────────┘                        │
│                                                                       │
│                            ╲_____╱                                  │
│                                                                       │
├────────────────────────────────────┬──────────────────────────────┤
│ LAMP     Lamp display setting       │ ⬆⬇◄►    = Select             │
│                                     │ ↵       = Confirm            │
│                                     │ ESC     = Abort              │
│                                     │ [No.0002]Free: 45298Byte     │
└────────────────────────────────────┴──────────────────────────────┘
```

7. Set the way in which the display will appear on the screen.

Frame	Whether or not lamp frames are to be displayed when lamps are displayed. If "No" is designated, lamps will be indicated by dotted lines on the Support Tool display.
Attributes	Set whether the lamp will light or flash when controlled by bit signals from the host.
	This attribute is effective only when controlling the lamp via bit signals from the Host Interface Units that support bit designation. This setting is ignored when controlling lamps via commands, which can be used to control the same attribute.
Label	Whether or not a label is to be attached to the lamp.

44

Press the Enter Key after completing all of these settings.

8. If you set label to "Yes," the following screen will be displayed. If you set label to "No," you will be returned to the Initial Lamp Display.

```
┌─────────────────────────────────────────────────────────┐
│                                                          │
│                                                          │
│                          ╭──────╮                        │
│                         ╱        ╲                       │
│                        │          │                      │
│                        │          │                      │
│                         ╲        ╱                       │
│                          ╰──────╯                        │
│                                                          │
│                                                          │
│ ■                                                        │
├─────────────────────────────┬────────────────────────────┤
│ LAMP                        │  ⏎       =  Confirm        │
│    Lamp [ 000000]. enter label │  ESC     =  Abort          │
│                             │  BS DEL  =  Delete Char.   │
│    f·1 = Mark               │  [No.0002]Free: 45298Byte  │
└─────────────────────────────┴────────────────────────────┘
```

Input the label and press the Enter Key. You can also press the F3 Function Key to input from a list of marks that have been created. Refer to page 22 for details on the mark input procedure.

Note 1. Labels can be only one line long. Input character strings if longer labels are required.

2. "@" will be input as the default label if the label setting is changed from NO to YES.

Set the size and scale of the label display.

```
┌─────────────────────────────────────────────────────────┐
│                                                          │
│              Clear Area                                  │
│                                                          │
│                      ╭──────╮                            │
│                     ╱        ╲                           │
│                    │          │                          │
│                     ╲        ╱                           │
│                      ╰──────╯                            │
│                                                          │
├─────────────────────────────┬────────────────────────────┤
│ LAMP      Modify label display setting │ ↑↓←→  =  Select  │
│ Size         Half    Norm   │  ⏎      =  Confirm         │
│ Scale    Equ   Wide  High  4x  9x  16x  64x │ ESC = Abort│
│                             │  [No.0002]Free: 45174Byte  │
└─────────────────────────────┴────────────────────────────┘
```
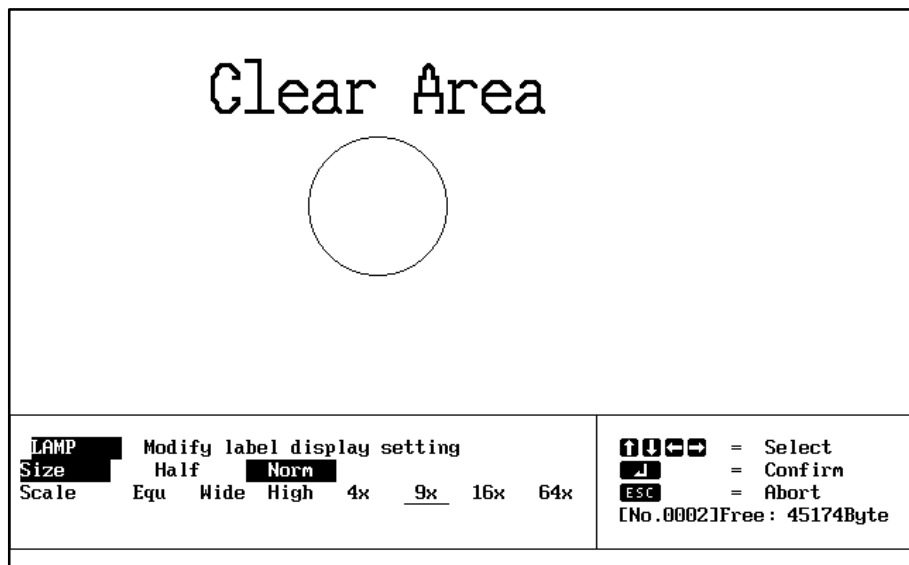
Position the label on the screen.

When lamp settings have been completed, you can return to set another lamp or you can continue pressing the Escape Key to return to the Initial Edit Display.

Deleting and Modifying

Direct connection lamps are deleted or modified from the display shown in step 1. above. Select the number of the numeral table and then specify DE-

45

LETE or MODIFY. The modification procedure is basically the same as the creation procedure given above.

2-5 Touch Switches

A touch switch can be set by designating the size, display position, and a label. You can set a maximum of 64 touch switches per screen for the NT20M and 128 for the NT600M.

The procedure for creating touch switches depends on whether or not direct connection is ON or OFF in the Tool Settings. Both procedures are given below.

2-5-1 Normal Touch Switches

If you select TOUCH SW from the Initial Edit Display, the Initial Touch Switch Display will appear.

Initial Touch Switch Display

No.	#	Hi	G	
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				

⬆⬇=Slct ESC=Abort
⏎=Conf ⬆1=Del
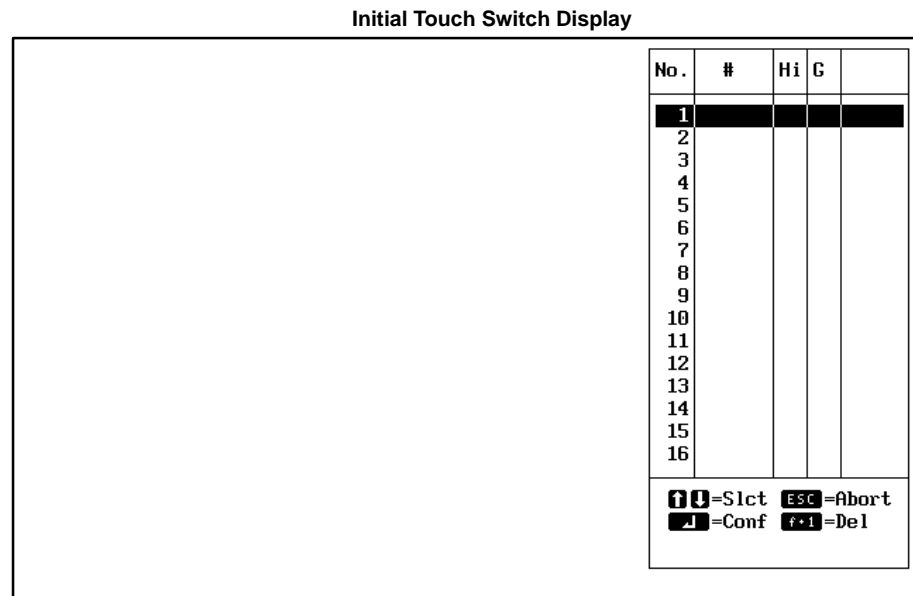
Designating Area

The size and display position of the touch switch must be specified. The touch switch area is set by designating diagonal corners (the starting and ending points) of a rectangle on a grid.

Starting point
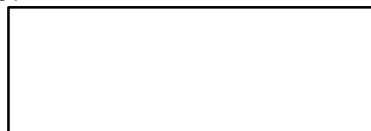
Ending point

1, 2, 3... 1. Designate the starting point.
2. Designate the ending point.

The touch switch settings are input after the area has been designated.

Note Although you can set touch switches that overlap lamps or other touch switches inverse displays may not be displayed properly.

46

Touch Switch Settings

```
                    ┌─────────────────┐
                    │ Set Touch Switch│
                    └─────────────────┘
              Switch No.  [0  ](0-255)
              Frame        Normal   Solid      None
              Inverse       Yes      No
              Label         Yes      No

                       └──────────┘


   ──────────────────────────────────────────┬──────────────────────────
   TOUCH SW   Display setting                 │ ⬆⬇⬅➡  =  Select
                                              │  ⏎    =  Confirm
                                              │ ESC   =  Abort
                                              │ [No.0001]Free: 52056Byte
```

Switch number	The number of the switch being set. (The numbers, 0 to 255, are used in common with lamps. The same number cannot be used more than once.)
Frame	Whether or not switch frames are to be displayed when switch are displayed. If "No" is designated, the switches will be indicated by dotted lines on the Support Tool display. Either or normal or solid frame can also be designated.
Inverse	Whether an inverse display will appear when the touch switch is input.
Label	Whether or not a label is to be attached to the switch.

Press the Enter Key after checking all of these settings. The label is input next if label input has been designated.

Inputting the Label

If you set label to "Yes," the following display will appear. If you set label to "No," you will be returned to the Initial Touch Switch Display.

```
                    ┌─────────┐
                    │         │
                    │         │
                    │         │
                    └─────────┘




   ■───────────────────────────────────────────────────────────────────
   TOUCH SW                                    │  ⏎      =  Confirm
     Touch sw [ No.000]. enter label           │ ESC     =  Abort
                                               │ BS DEL  =  Delete Char.
        F·1 = Mark                             │ [No.0001]Free: 52056Byte
```

Input the label and press the Enter Key. You can also press the F3 Function Key to input from a list of marks that have been created. Refer to page 22 for details on the mark input procedure.

Note 1. Labels can be only one line long. Input character strings if longer labels are required.

2. "@" will be input as the default label if the label setting is changed from NO to YES.

Set the size and scale of the label display.

```
                        ┌──────────────┐
                        │              │
                        │              │
                        │              │
                        └──────────────┘


 START
 ┌────────────────────────────────────┬─────────────────────────┐
 │ TOUCH SW  Label display setting     │ ⬆⬇⬅➡   =  Select        │
 │ Size        Half    Norm            │ ⏎       =  Confirm       │
 │ Scale       Equ   Wide  High  4x  9x  16x  64x │ ESC  =  Abort │
 │                                     │ [No.0001]Free: 52056Byte │
 └────────────────────────────────────┴─────────────────────────┘
```

Position the label on the screen.

Deleting and Modifying You can delete or modify previously input touch switch data on the screen. The procedures for these operations are the same as those for deleting and modifying character strings. Refer to appropriate subsections of *2-1 Inputting Character Strings* for details.

Note If you change the label designation from "No" to "Yes," @ will be set as the default.

2-5-2 Direct Connection Touch Switches

Creating Use the following procedure to create a direct connection touch switch.

1, 2, 3... 1. Select TOUCH SW from the Initial Edit Display, a list of the touch switches already existing in the current screen will be displayed.

```
                              ┌─────┬─────┬────┬────────┐
                              │ No. │ Bit │ Fn │ Comment│
                              ├─────┼─────┼────┼────────┤
                              │  1  │     │    │        │
                              │  2  │     │    │        │
                              │  3  │     │    │        │
                              │  4  │     │    │        │
                              │  5  │     │    │        │
                              │  6  │     │    │        │
                              │  7  │     │    │        │
                              │  8  │     │    │        │
                              │  9  │     │    │        │
                              │ 10  │     │    │        │
                              │ 11  │     │    │        │
                              │ 12  │     │    │        │
                              │ 13  │     │    │        │
                              │ 14  │     │    │        │
                              │ 15  │     │    │        │
                              │ 16  │     │    │        │
                              ├─────┴─────┴────┴────────┤
                              │ ⬆⬇=Slct  ESC=Abort      │
                              │ ⏎=Conf   f+1=Del        │
                              └─────────────────────────┘
```

48
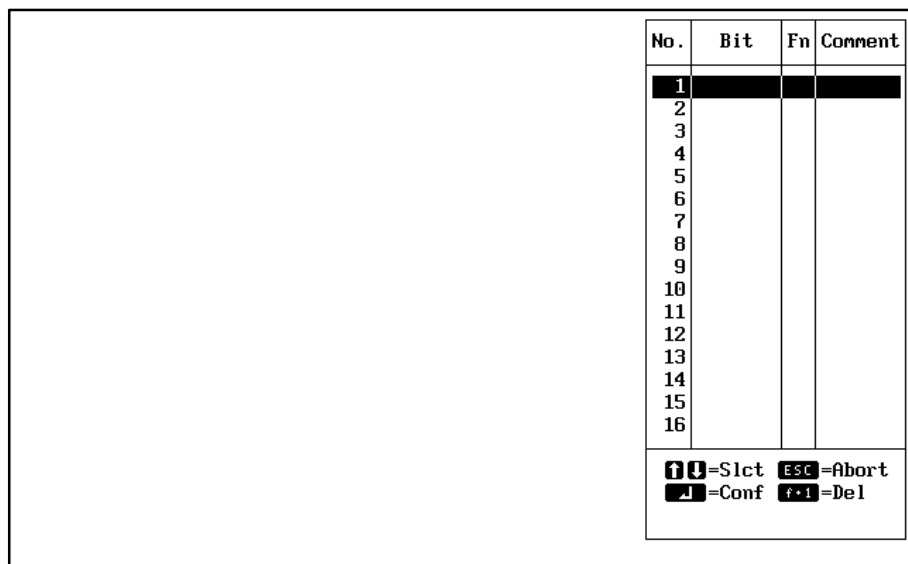
2. Specify the number to be used in the table. The numbers in this table are not the touch switch numbers. A display will appear to draw the touch switch.

3. Specify the starting and ending points (diagonally opposed corners) of the rectangle. A display will appear to specify the bit that is to control the touch switch.

```
                        Set Touch Switch

          Bit           [ 000000] [                    ]
                        ┌─────────────────────────┐
                        │       Bit Setting        │
                        └─────────────────────────┘
                   ████   [      000000]
                   Comment    [                 ]
                   Fun    Notify    SwScreen    Keypad

                   F 1 =AR   F 2 =HR   F 3 =LR   F 4 =DM
                   F 5 =CNT  F 6 =TIM  F 7 =CH   F 8 =***
                   F 9 =***  F 10 =*** Home =NO

    TOUCH SW   Input touch switch bits        ⬆⬇⬅➡  = Select
                                              ↵     = Confirm
                                              Esc   = Abort
                                              [No.0001]Free: 45390Byte
```

4. Input the address of the PC bit that is to control the touch switch. Timer/counter numbers cannot be specified. DM word address can also be specified, followed by the bit number within the word.

5. Input a comment if desired. The comment is for user use only.

6. Specify the function of the touch switch. The display that appears next will depend on the setting made here. The three possible settings are as follows:
   Notify : Sends a signal to the PC when the switch is pressed, i.e., turns the specified bit ON while the switch is pressed.
   SwScreen: Switches to a specified screen when the switch is pressed. This setting is used for stand-alone operation.
   Keypad: Creates a key for numeral editing.

7. **Notify:** Specify the address of the PC bit to be controlled by the touch switch. Timer/counter numbers cannot be specified. A DM word address can be specified followed by the bit number. A user comment can also be input if desired.
   SwScreen: Specify the number of the screen to be switched to when the touch switch is pressed. The screen number set here will be set in the PT status notify area in the direct connection information.
   Keypad: Specify the touch switch number to be used for numeral editing.

Caution If a DM area word address and bit number are specified for notification of touch switch status, the status of the specified bit will vary with the status of the touch switch, but all other bits in the specified word will be turned OFF. Timing must be precisely controlled if more than one bit in the same DM word is used for notification to ensure accuracy in reading the status.

49

The touch switch settings will appear when the above setting has been made.

```
                    ┌─────────────────┐
                    │ Set Touch Switch │
                    └─────────────────┘
        Bit       [ 000000] [                ]
        Function  [ 000000] [                ]
        Frame      Normal    Solid    None
        Inverse    Yes       No
        Attribute  Lit       Flash
        Label      Yes       No

                    ┌───────────┐
                    │           │
                    │           │
                    └───────────┘

 TOUCH SW  Display setting         ⬆⬇⬅➡  = Select
                                     ◢    = Confirm
                                    ESC   = Abort
                                    [No.0003]Free: 45174Byte
```
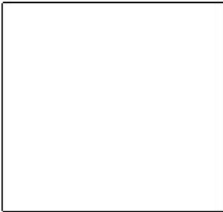
8. Set the way in which the display will appear on the screen.

Frame	Whether or not a switch frame is to be displayed when the switch is displayed. If "No" is designated, the switch will be indicated by dotted lines on the Support Tool display. Either or normal or solid frame can also be designated.
Inverse	Whether an inverse display will appear when the touch switch is input.
Attributes	Specify whether the switch is to light of flash while pressed.
Label	Whether or not a label is to be attached to the switch.

Press the Enter Key after completing all of these settings.

9. If you set label to "Yes," the following screen will be displayed. If you set label to "No," you will be returned to the Initial Touch Switch Display.

```
                    ┌───────────┐
                    │           │
                    │           │
                    │           │
                    └───────────┘

 ■
 TOUCH SW                            ◢     = Confirm
   Touch sw [ 000000]. enter label  ESC   = Abort
                                    BS DEL = Delete Char.
   f·1 = Mark                       [No.0003]Free: 45174Byte
```

Input the label and press the Enter Key. You can also press the F3 Function Key to input from a list of marks that have been created. Refer to page 22 for details on the mark input procedure.

50

Labels can be only one line long. Input character strings if longer labels are required.

2. "@" will be input as the default label if the label setting is changed from NO to YES.

Set the size and scale of the label display.


```
STOP

 TOUCH SW  Label display setting        ⬆⬇⬅➡  =  Select
 Size        Half     Norm              ⏎     =  Confirm
 Scale     Equ  Wide  High   4x   9x   16x   64x   ESC   =  Abort
                                            [No.0003]Free: 45174Byte
```
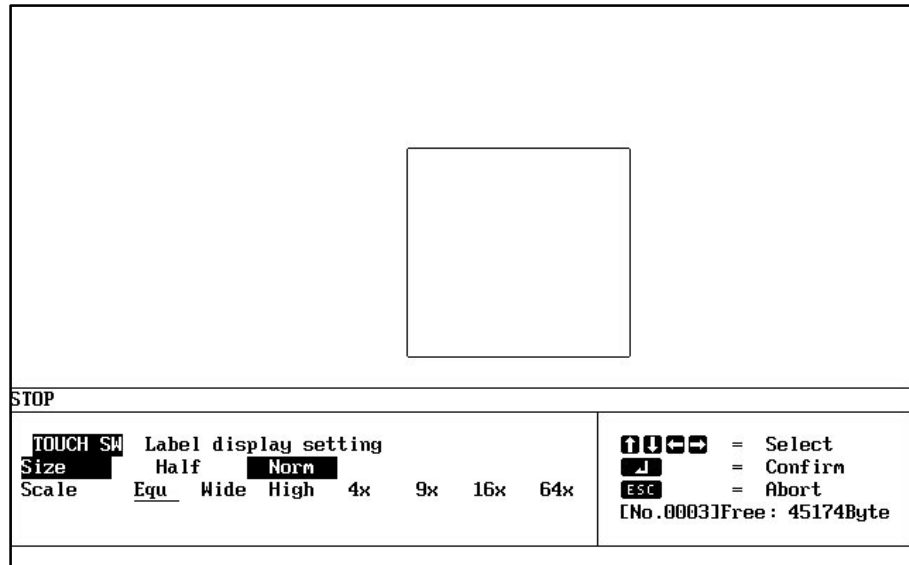
Position the label on the screen.

When touch switch settings have been completed, you can return to set another touch switch or you can continue pressing the Escape Key to return to the Initial Edit Display.

Deleting and Modifying   Direct connection touch switches are deleted or modified from the display shown in step 1. above. Select the number of the numeral table and then specify DELETE or MODIFY. The modification procedure is basically the same as the creation procedure given above.

2-6   Bar Graphs

Values from numeral tables can be used to create bar graphs by setting the numeral table entries to be referenced, the display positions, the display style, and the display direction. Bars can also be displayed in the negative direction and the display direction can be reversed.

You can set a maximum of 8 bars per screen for the NT20M and 50 for the NT600M.

The procedure for setting bar graphs depends on whether or not direct connection is ON or OFF in the Tool Settings. Both procedures are given below.

2-6-1 Creating Normal Bar Graphs

If you select BAR GRPH from the Initial Edit Display, the Initial Bar Graph Display will appear.

Initial Bar Graph Display

No.	M Tbl	Dr	%	
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				

↑↓=Slct ESC=Abort
↵=Conf f+1=Del

Designating Display Position

A bar graph is set by designating both ends (the starting and ending points) of a diagonal line across the bar graph. It makes no difference whether the display position of a bar graph is designated from the right or left, or from the top or bottom. The ending point designates only the length (along the X axis) of the bar graph. Whether the bar is vertical or horizontal is designated next in the display settings.
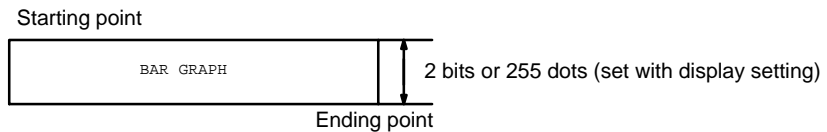
Starting point

| BAR GRAPH | 2 bits or 255 dots (set with display setting) |

Ending point

1, 2, 3... 1. Designate the starting point.
2. Designate the ending point.

52

Setting the Numeral Table Reference

Specify the entry number of the numeral table to be referenced for the bar graph.

```
                           ┌──────┬──────────┐
                           │ No.  │ Contents │
                           ├──────┼──────────┤
                           │ 000  │        0 │
                    ┌──┐   │ 001  │        0 │
                    │  │   │ 002  │        0 │
                    └──┘   │ 003  │        0 │
                           │ 004  │        0 │
                           │ 005  │        0 │
                           │ 006  │        0 │
                           │ 007  │        0 │
                           │ 008  │        0 │
                           │ 009  │        0 │
                           │ 010  │        0 │
                           │ 011  │        0 │
                           │ 012  │        0 │
                           │ 013  │        0 │
                           └──────┴──────────┘

 BAR GRPH   Select reference table number      ↑↓=Select  Esc=Abort
                                                ↵=Conf    PgUp=Prev Pg
                                                PgDn=Next Pg
                                                [No.0001]Free: 52056Byte
```

Inputting Initial Value

Set the initial value and then press the Enter Key.

```
                           ┌──────┬──────────┐
                           │ No.  │ Contents │
                           ├──────┼──────────┤
                           │ 000  │ 0        │
                    ┌──┐   │ 001  │        0 │
                    │  │   │ 002  │        0 │
                    └──┘   │ 003  │        0 │
                           │ 004  │        0 │
                           │ 005  │        0 │
                           │ 006  │        0 │
                           │ 007  │        0 │
                           │ 008  │        0 │
                           │ 009  │        0 │
                           │ 010  │        0 │
                           │ 011  │        0 │
                           │ 012  │        0 │
                           │ 013  │        0 │
                           └──────┴──────────┘

 BAR GRPH   Enter initial value of table       ↵     =  Confirm
            Ref Table = [No.000]               ESC   =  Abort
                                               CLR   =  Clear
                                               [No.0001]Free: 52056Byte
```

53

Display Settings

Set all the bar graph display attributes and press the Enter Key.

```
                    ┌─────────────────────┐
                    │  Bar Graph Setting  │
           ┌────────┴─────────────────────┴──────────┐
           │ Ref Table      [No.000]                  │
           │ Direction      Rt  Up  Lf  Dn            │
           │ Width          [ 31]                     │
           │ Gph Frame        Yes         No          │
           │ Disp Sign        Yes         No          │
           │ 100% Val       [      100]               │
           │ Display %        Yes         No          │
           │ Size of %      Half    Norm    Wide      │
           │ Scale          Equ     Wide    High      │
           │                 4x      9x     16x   64x │
           └──────────────────────────────────────────┘

 ┌─────────┐
 │BAR GRPH │  Display setting          ↑↓←→  = Select
 └─────────┘  Ref Table = [No.000]      ↵    = Confirm
                                        ESC  = Abort
                                        [No.0001]Free: 52056Byte
```

Direction	Whether the bar is to be displayed in the normal direction or the reverse direction. (See note 1.)
Width	The width of the bar graph. The width must be 3 dots or greater to set a frame. The width must be 8 dots or greater when displaying horizontal bars from the top of the screen or when displaying vertical bars from the right of the screen.
Graph Frame	Whether or not a graph frame showing 100% is to be displayed.
Disp sign	Whether or not a negative (–) sign is to be displayed. If a negative sign is used, the bar graph can be displayed in the reverse direction for negative values. (See note 2.)
100% value	The value of the denominator for percentage calculations. You cannot set numerals of 0 or less as the 100% value.
Display %	Whether or not the result of percentage calculations is to be displayed as numerals.
Size of %	Set the character size of numerals for when percentages are displayed.
Scale	Set the scale factor for the percentage display. The NT600M can be set to 64X in addition to those shown above.

Note 1. Horizontal bar graphs can be displayed left to right or right to left. Vertical bar graphs can be displayed top to bottom or bottom to top.

2. If a display sign (negative value) is specified, the center of the bar will be set as 0% and the right or top of the bar will be set as 100% (for normal displays). (The center will be one dot up or to the left of center for odd-sized bars.) Examples are shown below.

   Displaying 60%

Without sign   60%

With sign   60%

Displaying –60%

Without sign [   ] 0%

With sign [████████████   ] –60%

3. The following relationship exists between the number of display dots on the screen, the content of the numeral table reference, and the 100% value.

$$(\text{Number of display dots}) = (\text{Maximum length of graph}) \times \frac{(\text{Referenced numeral table})}{(100\% \text{ data value})}$$

If the results for a bar graph display is over 100%, a 1-dot blank will be displayed past the size set with the Support Tool and an 8-dot bar will be display beyond the blank to indicate a value over 100% (see below).

1 dot
8 dots

Setting % Display Position   If the % Display is set to "Yes," then the display position is designated. If it is set to "No," then this screen is not displayed.

Designate the display position of the percentage value.

Deleting and Modifying   You can delete or modify previously input bar graph data on the screen. The procedures for these operations are the same as those for deleting and modifying character strings. Refer to appropriate subsections of *2-1 Inputting Character Strings* for details.

2-6-2   Direct Connection Bar Graphs

Creating   Use the following procedure to create a direct connection bar graph.

1, 2, 3...   1.   Select BAR GRPH from the Initial Edit Display, a list of the bar graphs already existing in the current screen will be displayed.

No.	M Tbl	Rf	Dr	%	
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					

⬆⬇=Slct ESC=Abort
↵=Conf ↑+↓=Del

The headings in this list are as follows:
No.:   The number of the bar graph in the current display.

55

This is not the numeral table entry number.

M Tbl: The numeral table entry number being used.

Rf: The access method for the numeral table (direct or indirect)

Dr: The direction of the bar.

%: Whether or not the percentage display is being used.

2. Specify the number to be used in the table. This is not the numeral table and the numbers do not correspond to item numbers in the numeral table. When the number is specified, a cursor will appear to designate the starting and ending points of the bar.

3. Designate the starting and ending points of a diagonal line across the bar graph. It makes no difference whether the display position of a bar graph is designated from the right or left, or from the top or bottom. The ending point designates only the length (along the X axis) of the bar graph. Whether the bar is vertical or horizontal is designated later in the display settings. When the length is designated, a display to set direct or indirect referencing will appear.

4. Specify "Direct." Indirect referencing is not currently supported. The numeral table will be displayed.

```
No.    Contents     In #   Word       Comment

000            0    No  0  -----
001            0    No  0  -----
002            0    No  0  -----
003            0    No  0  -----
004            0    No  0  -----
005            0    No  0  -----
006            0    No  0  -----
007            0    No  0  -----
008            0    No  0  -----
009            0    No  0  -----
010            0    No  0  -----
011            0    No  0  -----
012            0    No  0  -----
013            0    No  0  -----
014            0    No  0  -----
015            0    No  0  -----

NUM TABLE   Select a numeral table
  ↑ ↓ = Select   Esc = Abort    PgDn = Next Page
  F 1 = Ref      ↵  = Confirm   PgUp = Prev Page
```

5. Specify the desired table entry number. The initial value input field (contents) will be entered. The headings in the table are described in the following table.

Heading	Meaning
No.	Numeral table entry number
Contents	Initial value
IN (initialize at startup)	Indicates whether or not the table value is to be initialized when the PT is turned ON.
# (quantity)	Number of PC words used
Word	Address of the first PC word
Comment	User comment area

6. Input the desired initial value. This value can be omitted here if desired and input later using the table edit operation. The initial value can be up to 8 digits long. When the initial value field is left, the following display will appear to input the remaining settings.

Note Negative values and initial values are set differently for direct connection. Refer to page 61 for details.

```
┌─────┬──────────┬────┬───┬──────┬───────────────┐
│ No. │ Contents │In │ # │ Word │   Comment     │
├─────┼──────────┴────┴───┴──────┴───────────────┤
│ 00  │                                          │
│ 00  │    ┌───────────────────────────────┐     │
│ 00  │    │         Specify Word          │     │
│ 00  │    │                               │     │
│ 00  │    │  ▐Init▌     Yes       ▐  No ▌ │     │
│ 00  │    │  St. Word  [2](1-2)           │     │
│ 00  │    │  Word      [───────]          │     │
│ 00  │    │  Comment   [              ]   │     │
│ 00  │    │                               │     │
│ 00  │    │  ▐F 1▌=AR ▐F 2▌=HR ▐F 3▌=LR ▐F 4▌=DM│
│ 00  │    │  ▐F 5▌=CNT▐F 6▌=TIM▐F 7▌=CH ▐F 8▌=***│
│ 01  │    │  ▐F 9▌=***▐F 10▌=***▐Home▌=NO │     │
│ 01  │    └───────────────────────────────┘     │
│ 012 │        0 │No│ 0 │ ─────                   │
│ 013 │        0 │No│ 0 │ ─────                   │
│ 014 │        0 │No│ 0 │ ─────                   │
│ 015 │        0 │No│ 0 │ ─────                   │
├─────┴──────────────────────────────────────────┤
│ ▐NUM TABLE▌  Input a word                       │
│ ▐↑↓⟵⟶▌ = Select ▐↵▌ = Confirm ▐Esc▌ = Abort    │
└─────────────────────────────────────────────────┘
```

7. Make the four settings as described in the following table. The comment is optional and all four settings can be omitted here if desired and input later using the table edit operation.

Heading	Meaning
Initialize (Init)	Set YES to initialize the contents in the numeral table when PT power is turned ON. Set to NO to maintain the previous value when PT power is turned ON.
Set words (St Word)	Set the number of PC words to be used.
Word	Set the address of the first PC word to be used.
Comment	Input any desired user comment area

The bar graph display settings will appear when the above display is left.

```
        ┌───────────────────────────────┐
        │      Bar Graph Setting        │
        │                               │
        │  Ref Table     [No.001]       │
        │  ▐Direction▌   ▐Rt▌ Up  Lf  Dn│
        │  Width         [ 66]          │
        │  Gph Frame      Yes       No  │
        │  Disp Sign      Yes       No  │
        │  100% Val     [      100]     │
        │  Display %      Yes       No  │
        │  Size of %     Half  Norm  Wide│
        │  Scale         Equ   Wide  High│
        │                4x    9x   16x    64x│
        └───────────────────────────────┘

┌─────────────────────────────┬────────────────────┐
│ ▐BAR GRPH▌  Display setting  │ ▐↑↓⟵⟶▌ = Select    │
│      Ref Table = [Di:001]    │ ▐↵▌    = Confirm   │
│                              │ ▐ESC▌  = Abort     │
│                              │ [No.0003]Free: 45174Byte│
└─────────────────────────────┴────────────────────┘
```

8. Set the way in which the display will appear on the screen.

Direction	Whether the bar is to be displayed in the normal direction or the reverse direction. (See note 1.)
Width	The width of the bar graph. The width must be 3 dots or greater to set a frame. The width must be 8 dots or greater when displaying horizontal bars from the top of the screen or when displaying vertical bars from the right of the screen.
Graph Frame	Whether or not a graph frame showing 100% is to be displayed.
Disp sign	Whether or not a negative (–) sign is to be displayed. If a negative sign is used, the bar graph can be displayed in the reverse direction for negative values. (See note 2.)
100% value	The value of the denominator for percentage calculations. You cannot set numerals of 0 or less as the 100% value.
Display %	Whether or not the result of percentage calculations is to be displayed as numerals.
Size of %	Set the character size of numerals for when percentages are displayed.
Scale	Set the scale factor for the percentage display. The NT600M can be set to 64X in addition to those shown above.

Note 1. Horizontal bar graphs can be displayed left to right or right to left. Vertical bar graphs can be displayed top to bottom or bottom to top.

2. If a display sign (negative value) is specified, the center of the bar will be set as 0% and the right or top of the bar will be set as 100% (for normal displays). (The center will be one dot up or to the left of center for odd-sized bars.) Examples are shown below.

Displaying 60%

Displaying –60%
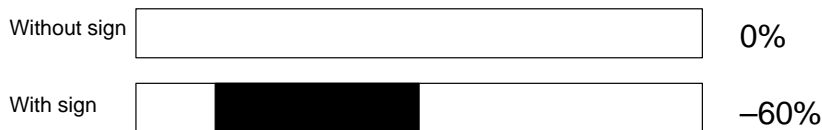
3. The following relationship exists between the number of display dots on the screen, the content of the numeral table reference, and the 100% value.

$$\text{(Number of display dots)} = \text{(Maximum length of graph)} \times \frac{\text{(Referenced numeral table)}}{\text{(100\% data value)}}$$

If the results for a bar graph display is over 100%, a 1-dot blank will be displayed past the size set with the Support Tool and an 8-dot bar will be display beyond the blank to indicate a value over 100% (see below).

Press the Enter Key after completing all of these settings.

When the display position has been set, you can return to set another bar graph or you can continue pressing the Escape Key to return to the Initial Edit Display.

Deleting and Modifying   Direct connection bar graphs are deleted or modified from the display shown
                                 in step 1. above. Select the number of the numeral table and then specify
                                 DELETE or MODIFY. The modification procedure is basically the same as
                                 the creation procedure given above.

2-7   Editing Memory Tables

Memory tables can be displayed for editing or to create lists of screen num-
bers referencing a specified table entry. This function is the same when
NEXT, F2 (TBL EDIT) is executed from the Screen Selection Display.

The procedure for editing memory tables depends on whether or not direct
connection is ON or OFF in the Tool Settings. Both procedures are given be-
low.

2-7-1   Normal Operation

If you select TBL EDIT on the Initial Edit Display, the Initial Table Editing Dis-
play will appear.

Initial Table Edit Display

```
┌─────────────────────────────────────────────────────────────┐
│                                                               │
│                                                               │
│                                                               │
│                                                               │
│                                                               │
│                                                               │
│                                                               │
│                                                               │
│                                                               │
│                                                               │
│                                                               │
│                                                               │
│ ┌─────────────────────────────────┬───────────────────────┐ │
│ │ TBL EDIT  Select memory tables to edit │ ◄► ► =  Select  │ │
│ │                                        │ ↵    =  Confirm  │ │
│ │          Numeral    String             │ ESC  =  Abort    │ │
│ │                                        │ [No.0002]Free: 52018Byte │ │
│ └─────────────────────────────────┴───────────────────────┘ │
└─────────────────────────────────────────────────────────────┘
```
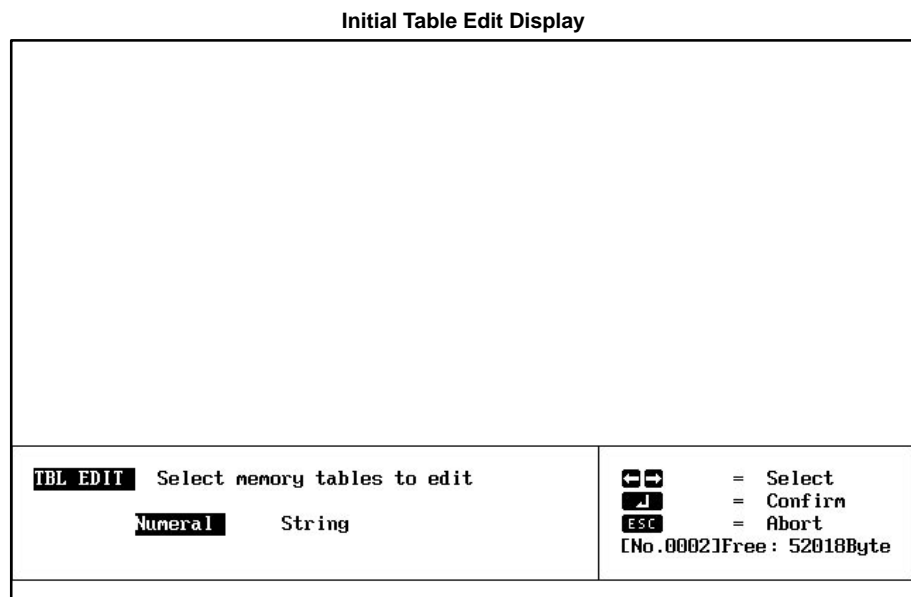
Selecting the Memory Table   Select either numeral table or string table for editing.

Editing the numeral table and string table is explained separately below.

Editing Numeral Tables   If you select the numeral table to edit, the following display will appear. For
                                 the NT20M, numeral table entries are numbered from 0 to 127, for a total of
                                 128. For the NT600M, numeral table entries are numbered from 0 to 255, for
                                 a total of 256. At first, only the contents of table entries 0 to 63 are displayed

59

on the screen. To display entries 64 and up, press the Pg Dn Key; and to return to previously displayed entries, press the Pg Up Key.

No.	Contents	No.	Contents	No.	Contents	No.	Contents
000	0	016	0	032	0	048	0
001	0	017	0	033	0	049	0
002	0	018	0	034	0	050	0
003	0	019	0	035	0	051	0
004	0	020	0	036	0	052	0
005	0	021	0	037	0	053	0
006	0	022	0	038	0	054	0
007	0	023	0	039	0	055	0
008	0	024	0	040	0	056	0
009	0	025	0	041	0	057	0
010	0	026	0	042	0	058	0
011	0	027	0	043	0	059	0
012	0	028	0	044	0	060	0
013	0	029	0	045	0	061	0
014	0	030	0	046	0	062	0
015	0	031	0	047	0	063	0

```
EDIT    ↑↓←→ = Select   Esc = Abort    PgDn = Prev Page
        F1   = Ref      ↵   = Confirm  PgUp = Next Page        ( P-1 )
```

Note If you press F1 (Reference) at this time, a list of the screens referencing the table entry indicated by the cursor will appear.

1, 2, 3... 1. With the cursor, select the numeral table entry that you want to edit, and press the Enter Key.
2. Input the new value and press the Enter Key.
3. When you are finished editing, press the Escape Key.

When the Escape Key is pressed, you will be returned to the Memory Table Selection Display.

Editing String Tables   If you select character strings to edit, the following display will appear. For the NT20M, string table entries are numbered from 0 to 31, for a total of 32. For the NT600M, string table entries are numbered from 0 to 255, for a total of 256. Only 32 entries are displayed on each page. Use the Pg Up and Pd Dn Keys to scroll to other pages.

NO.	Contents
000	
001	
002	
003	
004	
005	
006	
007	
008	
009	
010	
011	
012	
013	
014	
015	

```
EDIT          ↑↓ = Select      ↵  = Confirm
              PgUp = Prev Page  Esc = Abort
        F1 = Ref   PgDn = Next Page
```

Note If you press F1 (Reference) at this time, a list of the screens referencing the table entry indicated by the cursor will appear.

1, 2, 3... 1. With the cursor, select the string table entry that you want to edit, and press the Enter Key.
2. Input the character string and press the Enter Key.
3. When you are finished editing, press the Escape Key.

List of Referencing Screens You can display a list of screens referencing designated number or string table entries by pressing F1 when the numeral or string table is displayed.

With the cursor, select the memory table entry that you want to list references for, and press F1 (Reference). The table below is an example of a memory table reference display. The displayed numbers indicate the screens that reference the designated table entry.

```
┌────────────────────────────────────────────────────────────┐
│              Memory Table Usage Reference                    │
├────────────────────────────────────────────────────────────┤
│ Numeral Table Number [ 000] Reference                        │
│                                                              │
│         1      2                                             │
│                                                              │
│                                                              │
│                                                              │
│                                                              │
│                                                              │
│                                                              │
│                                                              │
│                                                              │
├────────────────────────────────────────────────────────────┤
│ Reference                                                    │
│                         ▉ESC▉ = Abort                        │
│                                                              │
└────────────────────────────────────────────────────────────┘
```

2-7-2   Direct Connection Operation

If you select TBL EDIT on the Initial Edit Display, the Initial Table Editing Display will appear.

Selecting the Memory Table Select either numeral table or string table for editing.

Editing the numeral table and string table is explained separately below.

Editing Numeral Tables If the numeral table is specified, the numeral table will appear in the same form as used for numeral editing or bar graphs.

1, 2, 3... 1. Specify the numeral table entry that you want to edit.
2. Input the initial value as desired and continue making or changing settings in the same fashion as originally done when creating numeral editing areas or bar graphs.
3. You can continue inputting or changing setting for other numeral table entires when finished with the first one.
4. When you are finished editing, press the Escape Key.

When the Escape Key is pressed, you will be returned to the Memory Table Selection Display.

Editing String Tables If the string table is specified, the string table will appear in the same form as used for character string display.

1, 2, 3... 1. Specify the string table entry that you want to edit.
2. Input the initial value as desired and continue making or changing settings in the same fashion as originally done when creating string displays.

61

3. You can continue inputting or changing setting for other string table entires when finished with the first one.

4. When you are finished editing, press the Escape Key.

Words and Numeric Data

When setting word addresses for numeral or string tables, the number of PC words to be used and the address of the first word are input. For example, for numeral table entires, one word can be specified to use from 1 to 4 digits and two words can be specified to used from 5 to 8 digits. If two words are specified and DM 0100 is specified as the first word, the following PC data will be used.

DM 0101				DM 0100			
0	0	1	2	3	4	5	6

Next higher word   Specified word

Registered words

Set the leftmost digit to F to specify negative values. The example on the left in the following diagram shows the setting for −12345; the example on the right, for −123.

DM 0101				DM 0100			
F	0	0	1	2	3	4	5

Next higher word   Specified word

Registered words

DM 0100			
F	1	2	3

Specified word

Registered word
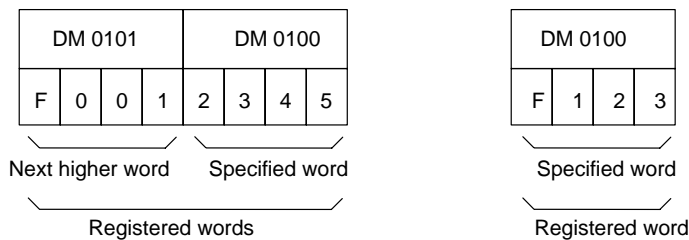
Caution The input format for initial values for numeral tables is the same as the data storage format for PC memory when direct connection is being used. This format, however, differs form that used when direct connection is not being used.

2-8 Numeral Editing

Screens can be create that allow numeric inputs from the PT to the host. These screens are called numeral editing screens. Input values are designated on-screen via function keys or touch switches or from Expansion I/O Units (32/64 Terminals or 12-key Function Key Units). The number of digits that can be input and the number of digits transmitted to the host can be set. Also, the Keypad setting in the screen attributes can be set to "user" to enable flexible layout of input keys

A maximum of 50 numeral edit settings can be made per screen.

The procedure for creating numeral editing areas depends on whether or not direct connection is ON or OFF in the Tool Settings. Both procedures are given below.

Note 1. Numeral editing screens cannot be used as child screens for continuous screens.

2. Numeral editing cannot be used if bit input is enabled in the display attributes for PT with function keys or without touch switches.

3. The Numeral Editing function uses the lower portion of the display. When numeral editing is set on a screen where characters and numerals are displayed, the characters and/or numerals may be hidden.

2-8-1   Normal Numeral Editing

If you select NUM EDIT from the Initial Edit Display, the following display will appear.

Initial Numeral Editing Display

The headings have the following meanings:

No.: The order that has been set for numeral editing.
M Tbl: The number of the numeral table entry which is used.
Snd: Number of transmission digits.
Inp: Number of input digits.
Dsp: Numeral display (Yes/No)

The blank right-hand column is used when reordering number editing areas.

Numeral Table Entry   Select the numeral table entry that will be input on-screen.

Inputting Initial Value   Input the initial value (contents) for the selected numeral table entry.

When the initial value is designated, the number of digits input and the number of digits transmitted to the host are set.

Input and Transmission Digits

```
┌─────────────────────────────────────────────────────────────────────┐
│                                                                       │
│                                                                       │
│                                                                       │
│                                                                       │
│                                                                       │
│                                                                       │
│                                                                       │
│                                                                       │
│                                                                       │
│                                                                       │
│                                                                       │
├──────────────────────────────────┬────────────────────────────────────┤
│ NUM EDIT  Set numeral attributes │ ⬆⬇⬅➡   = Select                     │
│           Input Col  [8] Digits (1-8) │ ⏎      = Confirm                 │
│           Sending    4 Char   8 Char  │ ESC    = Abort                   │
│           Num Disp    Yes     No      │ [No.0003]Free: 51934Byte         │
└──────────────────────────────────┴────────────────────────────────────┘
```

Input digits (Input Col)	Set the number of digits that can be input via touch switches or function keys. You can set from 1 to 8 digits.
Transmission Digits (Sending)	Set the number of digits that are transmitted to the host. You can select either 4 or 8 digits.
Numeral Display (Num Disp)	Select whether or not numeral display is to be set at the same time as numeral editing.

Press the Enter Key after making all the settings.

If Numeral Display is set to "Yes," the Numeral Display Settings Display will be displayed automatically. Set the numeral display as required.

```
┌─────────────────────────────────────────────────────────────────────┐
│                                                                       │
│              ┌──────────────┐                                         │
│              │ Set Numeral  │                                         │
│              └──────────────┘                                         │
│                                                                       │
│        Ref Table   [No.002]                                           │
│        Integer     [8]Dig.(1-8)                                       │
│        Decimal     [0]Dig.(0-7)                                       │
│        Zero Sup      Yes      No                                      │
│        Disp Sing     Yes      No                                      │
│        Char Size    Half    Norm    Wide                              │
│        Scale        Equ     Wide    High                              │
│                     4x      9x      16x      64x                      │
│        Attribute    Norm    Inv.    Flsh    Spot                      │
│                                                                       │
├──────────────────────────────────┬────────────────────────────────────┤
│ NUM EDIT  Display setting         │ ⬆⬇⬅➡   = Select                    │
│           Ref Table = [No.002]    │ ⏎      = Confirm                  │
│                                   │ ESC    = Abort                    │
│                                   │ [No.0003]Free: 51934Byte          │
└──────────────────────────────────┴────────────────────────────────────┘
```

If Numeral Display is set to "No," you will be returned to the selection of the memory table for writing.

64

Deleting Numeral Editing You can delete numeral edit settings that have already been made.

1, 2, 3... 1. To delete a numeral editing setting, move the bar cursor to the setting you want to delete on the Initial Display for Numeral Editing and then press the Enter Key.

```
                                        ┌──────────────────────┐
                                        │ Reference Table      │
                                        │           [No.003]   │
            0000000                     │ Num Edit Setting     │
                                        │   Dig Input 8 Dig    │
                                        │   Dig Send  8 Dig    │
                                        │   Num Disp    NO     │
                                        │ Num Disp Setting     │
                                        │   Integer       Dig  │
                                        │   Decimal       Dig  │
                                        │   Zero Sup           │
                                        │   Disp Sign          │
                                        │   Char Size          │
                                        │   Scale              │
                                        │   Attribute          │
                                        │ Display Position     │
                                        │   X =      Y =       │
                                        └──────────────────────┘

 NUM EDIT  Select item to modify          ▲▼ = Slct   ◢ = Conf
                                          CLR = Shift Menu
                                          ESC = Abort
                                          [No.0003]Free: 51896Byte
```
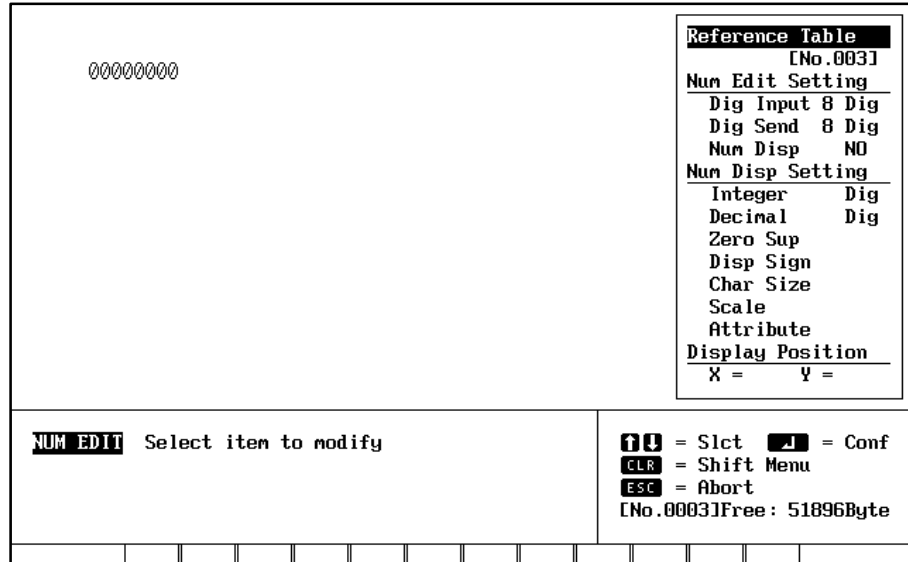
  2. Press F1 (Delete). A confirmation prompt will be displayed on the screen.

 Note 1. If a numeral display is set for the selected numeral edit settings, then those settings will be shown in a guide box.

    2. The switch display at the bottom of the screen will disappear if all numeral editing settings are deleted.

Modifying Numeral Editing You can modify a numeral edit settings that has already been made.

1, 2, 3... 1. Move the bar cursor to the numeral edit setting you want to modify, and press the Enter Key. The contents of the numeral editing setting that you select will be displayed on the screen.

```
                                        ┌──────────────────────┐
                                        │ Reference Table      │
                                        │           [No.003]   │
            0000000                     │ Num Edit Setting     │
                                        │   Dig Input 8 Dig    │
                                        │   Dig Send  8 Dig    │
                                        │   Num Disp    NO     │
                                        │ Num Disp Setting     │
                                        │   Integer       Dig  │
                                        │   Decimal       Dig  │
                                        │   Zero Sup           │
                                        │   Disp Sign          │
                                        │   Char Size          │
                                        │   Scale              │
                                        │   Attribute          │
                                        │ Display Position     │
                                        │   X =      Y =       │
                                        └──────────────────────┘

 NUM EDIT  Select item to modify          ▲▼ = Slct   ◢ = Conf
                                          CLR = Shift Menu
                                          ESC = Abort
                                          [No.0003]Free: 51896Byte
```
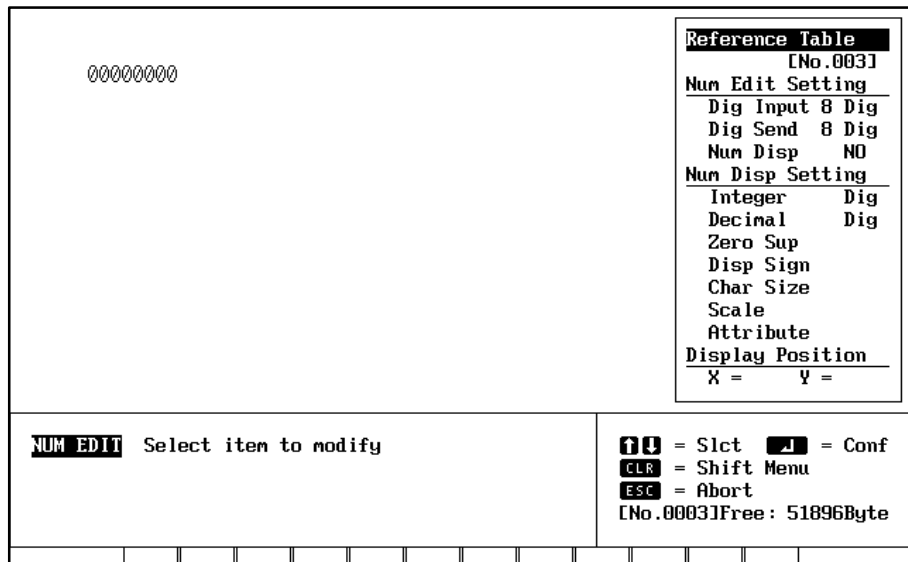
  2. Modify the numeral edit settings as desired and press the Enter Key.

 Note If a numeral display is set for the selected numeral edit settings, then those settings will be shown in a guide box.

65

Changing the Order of Numeral Editing

You can change the order of numeral edit settings that have already been made.

1, 2, 3... 1. Press F2 (Change Order). A list of numeral edit settings will be displayed on the screen.

No.	M Tbl	In	Tr	Tb	Or
1	003	8	8	No	2
2	002	8	4	Ys	1
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					

0000000

⬆⬇=Slct ESC=Abort
⏎=Confirm
SPACE=Set Order

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
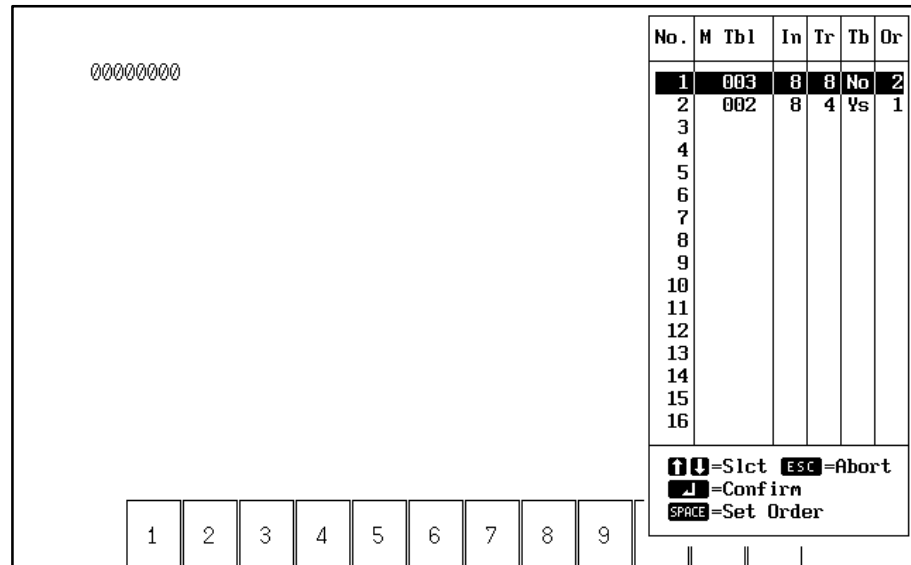
2. Move the bar cursor to the numeral edit setting for which you want to change the order, and press the Space Key. The new order will be displayed in the order column.

3. To change the set order, press the Enter Key, or to cancel the operation without changing the order, press the Escape Key.

Note If a numeral display is set for the selected numeral edit settings, then those settings will be shown in a guide box.

Input Key Layout

Numeral input keys can be placed as desired on the PT screen if the Keypad setting in the screen attributes is set to "user." The layout operation is performed starting from the Screen Selection Display.

Note Screen attributes for child screens for overlapping screen settings are overridden by those of the parent screen, i.e., parent screen attributes take priority.

Use the following procedure to create and layout keys for numeral input.

1, 2, 3... 1. Set the "Keypad" screen attribute to "User." Refer to page 78 for the setting procedure. The default attribute is "System," and will have to be changed. If this attribute is set to "System" the input keys for numeral editing will appear in their normal fixed positions when the F4 Key is pressed in the next step.

2. Create and place the input keys as desired using either the touch switch function described on page 46 or press the F4 Key from the Numeral Editing Display and use the edit function described on page 87.

Key allocations depend on the model of PT being used. Included are the allocations for function keys.

66

Touch Panel PTs (DT☐☐☐)

Key	Touch switch	Key	Touch switch	Key	Touch switch
0	231	9	240	.	249
1	232	A	241	HOME	250
2	233	B	242	↑	251
3	234	C	243	↓	252
4	235	D	244	←	253
5	236	E	245	→	254
6	237	F	246	ENTER	255
7	238	CLR	247	---	---
8	238	+/–	248	——	---

Note Touch switches 0 through 230 are used for numeral editing screens. Keys A through F cannot be used for the keypad even if they are set.

Function Key PTs (DF☐☐☐)

Key	Function key No.	Key	Function key No.	Key	Function key No.
F1 (1)	0	F5 (5)	4	F9 (9)	8
F2 (2)	1	F6 (6)	5	F10 (0)	9
F3 (3)	2	F7 (7)	6	F11 (CLR)	10
F4 (4)	3	F8 (8)	7	F12 (+/–)	11

Note The characters in parentheses indicate the labels displayed on the screen.

<u>PTs without Touch Panels (DN☐☐☐)</u>

32/16 Terminals

Key	Function key No.	Key	Function key No.	Key	Function key No.
F1 (1)	0	F10 (5)	9	F23 (.)	22
F2 (2)	1	F11 (5)	10	F24 (HOME)	23
F3 (3)	2	F12 (6)	11	F25 (↑)	24
F4 (4)	3	F17 (7)	16	F26 (↓)	25
F5 (5)	4	F18 (7)	17	F27 (←)	26
F6 (6)	5	F19 (8)	18	F28 (→)	27
F7 (7)	6	F20 (6)	19	F29 (ENTER)	28
F8 (8)	7	F21 (7)	20	---	---
F9 (9)	8	F22 (8)	21	---	---

Note The characters in parentheses indicate the labels displayed on the screen.

12-key Function Key Units

Key	Function key No.	Key	Function key No.	Key	Function key No.
F1 (1)	0	F5 (5)	4	F9 (9)	8
F2 (2)	1	F6 (6)	5	F10 (0)	9
F3 (3)	2	F7 (7)	6	F11 (CLR)	10
F4 (4)	3	F8 (8)	7	F12 (+/–)	11

Note The characters in parentheses indicate the labels displayed on the screen.

67

Numeral editing is not possible for PTs without Touch Panels is Expansion I/O Units with 10/02 Terminals are used.

2-8-2 Direct Connection Numeral Editing

Creating   Use the following procedure to create a direct connection numeral editing area.

1, 2, 3...   1.   Select NUM EDIT from the Initial Edit Display, a list of the numeral editing already existing in the current screen will be displayed.

No.	M Tbl	Rf	
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

```
⬆⬇=Slct   ESC =Abort
  ⏎ =Conf  f+1 =Del
f+2 =Set Order
```

2.   Specify the number to be used in the table. This is not the numeral table and the numbers do not correspond to item numbers in the numeral table. When a number is specified, the numeral table will be displayed.

No.	Contents	In	#	Word	Comment
000	**0**	**No**	**0**	-----	
001	0	No	0	-----	
002	0	No	0	-----	
003	0	No	0	-----	
004	0	No	0	-----	
005	0	No	0	-----	
006	0	No	0	-----	
007	0	No	0	-----	
008	0	No	0	-----	
009	0	No	0	-----	
010	0	No	0	-----	
011	0	No	0	-----	
012	0	No	0	-----	
013	0	No	0	-----	
014	0	No	0	-----	
015	0	No	0	-----	

```
NUM TABLE  Select a numeral table
⬆⬇ = Select  ESC = Abort    PgDn = Next Page
F 1 = Ref     ⏎  = Confirm  PgUp = Prev Page
```

3.   Specify the desired table entry number. The initial value input field (contents) will be entered. The headings in the table are described in the following table.

Heading	Meaning
No.	Numeral table entry number
Contents	Initial value
IN (initialize at startup)	Indicates whether or not the table value is to be initialized when the PT is turned ON.
# (quantity)	Number of PC words used
Word	Address of the first PC word
Comment	User comment area

4.   Input the desired initial value. This value can be omitted here if desired and input later using the table edit operation. The initial value can be up to 8 digits long. When the initial value field is left, the following display will appear to input the remaining settings.

Note   Negative values and initial values are set differently for direct connection. Refer to page 61 for details.

```
┌──────┬──────────┬────┬─┬────────┬────────────┐
│ No.  │ Contents │ In │#│  Word  │   Comment  │
├──────┼──────────┴────┴─┴────────┴────────────┤
│ 00   │                                       │
│ 00   │ ┌───────────────────────────────────┐ │
│ 00   │ │            Specify Word           │ │
│ 00   │ │                                   │ │
│ 00   │ │   Init        Yes        No       │ │
│ 00   │ │   St. Word  [2](1-2)              │ │
│ 00   │ │   Word      [-------]             │ │
│ 00   │ │   Comment   [           ]         │ │
│ 00   │ │                                   │ │
│ 00   │ │   F 1 =AR   F 2 =HR  F 3 =LR  F 4 =DM │
│ 00   │ │   F 5 =CNT  F 6 =TIM F 7 =CH  F 8 =*** │
│ 01   │ │   F 9 =***  F 10 =*** Home =NO    │ │
│ 01   │ └───────────────────────────────────┘ │
│ 012  │          0  │No│ 0│ -----              │
│ 013  │          0  │No│ 0│ -----              │
│ 014  │          0  │No│ 0│ -----              │
│ 015  │          0  │No│ 0│ -----              │
├───────────────────────────────────────────────┤
│ NUM TABLE   Input a word                       │
│ ↑↓←→ = Select  ↵ = Confirm  Esc = Abort        │
└───────────────────────────────────────────────┘
```

5.   Make the four settings as described in the following table. The comment is optional and all four settings can be omitted here if desired and input later using the table edit operation.

Heading	Meaning
Initialize (Init)	Set YES to initialize the contents in the numeral table when PT power is turned ON. Set to NO to maintain the previous value when PT power is turned ON.
Set words (St Word)	Set the number of PC words to be used.
Word	Set the address of the first PC word to be used.
Comment	Input any desired user comment area

69

The numeral editing settings will appear when the above display is left.

```
                        ┌─────────────┐
                        │ Set Numeral │
                        └─────────────┘
          Ref Table      [No.002]
          ▐Integer▌      [8]Dig.(1-8)
          Decimal        [0]Dig.(0-7)
          Zero Sup        Yes      No
          Disp Sing       Yes      No
          Char Size      Half   Norm   Wide
          Scale          Equ    Wide   High
                          4x     9x     16x     64x
          Attribute      Norm   Inv.   Flsh    Spot

   ┌────────┐
   │NUM EDIT│ Display setting            ⬆⬇⬅➡   = Select
   └────────┘ Ref Table = [Di:002]       ↵      = Confirm
                                         ESC    = Abort
                                         [No.0003]Free: 45174Byte
```

6. Set the way in which the display will appear on the screen. Refer to the examples on page 30.

Number of integer digits (Integer)	Set the number of digits for the integer portion of the number.
Number of decimal digits (Decimal)	Set the number of digits for the decimal portion of the number.
Zero suppress (Zero Sup)	Set whether or not leading zeros are to be displayed on the screen.
Display sign (Disp Sign)	Set whether or not negative signs are to be displayed on the screen. The positive sign is not displayed.
Character size (Char Size)	Set the size of characters to be displayed on the screen.
Scale	Set the scale factor for the display. The NT600M can be set to 64X in addition to those shown above.
Attributes	Sets display attributes for the screen. Refer to page 24 for examples of how attributes are displayed on screen.

Press the Enter Key after completing all of these settings.

7. Set the display position. When the display position has been set, you can return to set another numeral editing area or you can continue pressing the Escape Key to return to the Initial Edit Display.

Deleting and Modifying   Direct connection numeral editing is deleted or modified from the display shown in step 1. above. Select the number of the numeral table and then specify DELETE or MODIFY. The modification procedure is basically the same as the creation procedure given above.

Input Key Layout   If the Keypad setting in the screen attributes is set to "user," input keys can be created and positioned the same as they can for normal numeral editing. Refer to page 66 for details.

2-8-3   Precautions for Numeral Editing

The following limitation exist when creating numeral editing screens depending on the model of the PT.

PT	Bit input disabled	Bit input enabled
DF☐☐☐ or DN☐☐☐ with 12-key Function Key Unit	F1 through F12 can be used.	Numeral editing is not possible.
DN☐☐☐ with 32/16 Terminal	F1 through F12 and F17 through F29 can be used. F13 through F16 are used as system keys.	Numeral editing is not possible. F13 through F16 are used as system keys.
DT☐☐☐	Touch switches 231 through 255 can be used for numeral editing input keys.	Touch switches 231 through 255 can be used for numeral editing input keys or for normal touch switches.

2-9   Polylines

Polylines (a broken line made up of one or more line segments) can be created on the screen. You can make a polyline by connecting a maximum of 255 line segments. The amount of polyline data for a screen depends only on the amount of memory remaining. Select GRAPHIC from the Initial Edit Display to access the Graphic Input Display and then select POLYLINE. The Initial Polyline Display will appear.

Initial Polyline Display


```
POLYLINE  Select item                    ⬅➡    =  Select
                                          ↵     =  Confirm
          Create    Delete    Modify      ESC   =  Abort
                                          [No.0003]Free: 45174Byte
```

2-9-1   Creating New Polylines
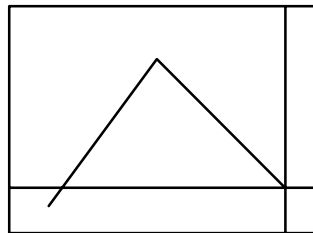
1, 2, 3... 1.   Specify CREATE.
          2.   Designate the starting point of the polyline by positioning the cursor and pressing the Enter Key.
          3.   Designate the mid-points (the points between the starting point and the ending point) for the polyline in the same fashion.
               To return to the previously designated point, press the Escape Key.
               To stop the process and return to the Initial Edit Display, press the Escape Key.

71

4. Designate the ending point for the polyline.
5. Press the Shift and Enter Keys or double-click the left mouse button to indicate that the ending point has been entered.

2-9-2 Deleting Polylines

You can delete polylines set on the screen.

1, 2, 3... 1. Specify DELETE. The starting points for all of the polylines on the screen will be indicated by small squares.
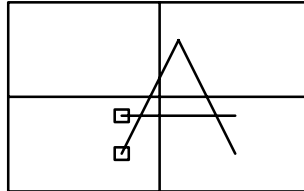
2. To delete a polyline, specify the starting point for that line. The starting point, ending point, and all of the mid-points for the designated polyline will be indicated by small squares, and a message will be displayed asking whether you actually want to delete the line. If points overlap, some squares may not be displayed.
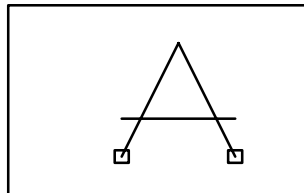
3. If you do want to delete the polyline, then press the Enter Key, or to cancel and return to step 1, press the Escape Key.

2-9-3 Modifying Polylines

You can modify polylines set on the screen.
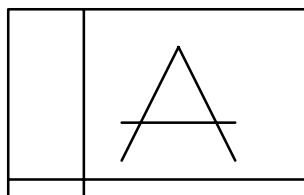
1, 2, 3... 1. Select MODIFY. The starting points for all of the polylines on the screen will be indicated by small squares.
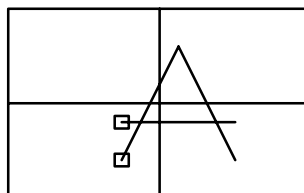
2. To modify a polyline, specify the starting point for that line.

3. You can move the cross-shaped cursor to the starting point of the designated polyline and then make additions or modifications in the same way as when creating new polylines.
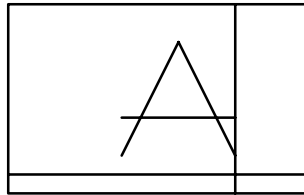
2-10   Circles

Circles can be created on the screen. The amount of circle data for a screen depends only on the amount of memory remaining. Select GRAPHIC from the Initial Edit Display to access the Graphic Input Display and then select CIRCLE. The Initial Circle Display will appear.

Initial Circle Display

```
CIRCLE   Select item                        ◼▶◼    = Select
                                            ◼      = Confirm
         Create   Delete   Modify           ESC    = Abort
                                            [No.0003]Free: 45174Byte
```
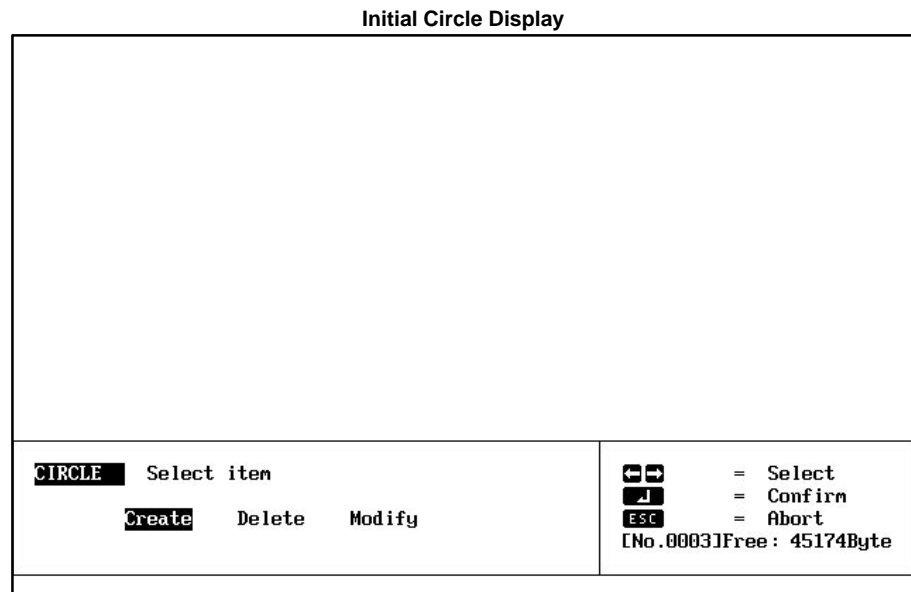
2-10-1   Creating New Circles

1, 2, 3...   1.   Specify CREATE.
2.   Designate the center of the circle. The center of the circle will be indicated by an x.
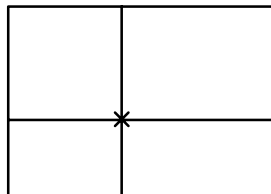
3.   Designate the radius and press the Enter Key. The entire circle must be contained within the display area both when creating it and when displaying it on the PT screen.
To return to step 1, press the Escape Key.

73

2-10-2 Deleting Circles

You can delete circles set on the screen.
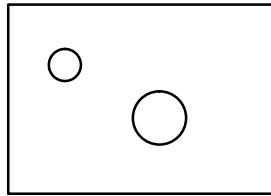
1, 2, 3... 1. Specify DELETE. The center points for all of the circles on the screen will be indicated by small squares.
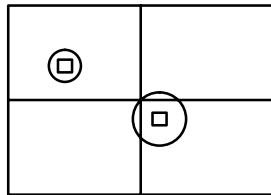
2. Specify the circle you want to delete. The designated circle will be enclosed by a square frame and a message will be displayed asking whether you actually want to delete the circle.
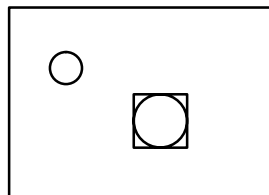
3. To delete the circle, press the Enter Key, or to cancel the deletion and return to step 1, press the Escape Key.

2-10-3 Modifying Circles
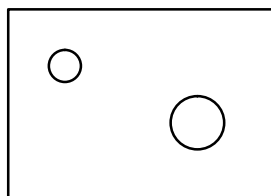
1, 2, 3... 1. Specify MODIFY. The center points for all of the circles on the screen are indicated by small squares.
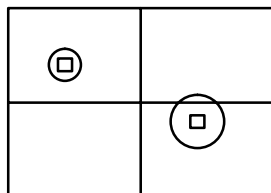
2. Specify the center of the circle you want to modify.

3. You can move the cross-shaped cursor to the perimeter of the designated circle and then modify the radius and center point in the same way as when creating new circles.

2-11   Continuous and Overlapping Screens

You can combine previously created multiple screens into a continuous screens by linking them or into one screen by stacking them into overlapping screens. To make continuous screens, first one screen is designated as the parent screen, and then child screens and the screen scrolling unit are set for the parent screen. To make overlapping screens, first one screen is designated as the parent screen, and then child screens are designated for the parent screen.

Setting the Parent Screen

On the Screen Selection Display, move the bar cursor to a screen number for which no data is entered, and press F8 (continuous/overlapping screens).

If you designate a screen for which data is already registered, a message will appear asking whether you want to delete that data. If you do want to delete it, then press the Enter Key.

To return to the Screen Selection Display, press the Escape Key.

If the designated screen is already a parent screen, its contents (the child screens) can be edited.

Selecting Continuous or Overlapping

Specify whether the designated parent screen is to be used for continuous or overlapping screens.

Continuous and overlapping screens are explained separately below.

Note   In cases such as the following, a message will be displayed indicating that screen data could not be created. If that happens, press any key and then again select the child screens again.

75

• The child screen has been designated for another parent screen.

• No more than one child screen has been designated.
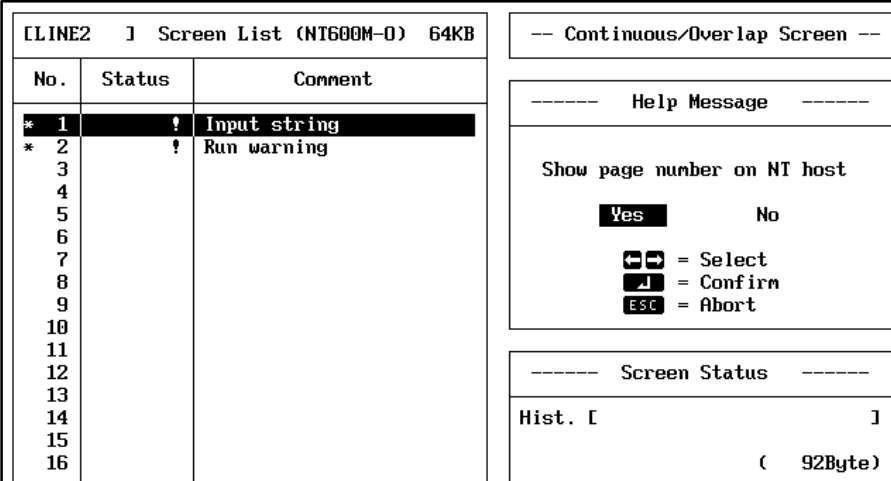
Continuous Screens   The screen numbers of the child screens you want to display continuously are registered next. Register the child screen numbers in the order that you want them displayed. You can register a maximum of 8 child screens.

```
┌─────────────────────────────────────┬──────────────────────────────┐
│ [NEW_FILE]  Screen List (NT600M)  64KB │ ── Continuous/Overlap Screen ── │
│ ┌────┬────────┬─────────────────┐   │                              │
│ │No. │ Status │    Comment      │   │ ┌──── Help Message  ──────┐ │
│ │  1 │     !  │ Input string    │   │ │                          │ │
│ │  2 │     !  │ Run warning     │   │ │ Select continuous screen(s) │ │
│ │  3 │████████│█████████████████│   │ │                          │ │
│ │  4 │        │                 │   │ │ Space = Mark/Unmark      │ │
│ │  5 │        │                 │   │ │ Home = Unmark All        │ │
│ │  6 │        │                 │   │ │ ↑↓ = Select  Esc = Abort │ │
│ │  7 │        │                 │   │ │ ↵ = Save and Quit        │ │
│ │  8 │        │                 │   │ │ Ord. 1:   2:   3:   4:   │ │
│ │  9 │        │                 │   │ │      5:   6:   7:   8:   │ │
│ │ 10 │        │                 │   │ └──────────────────────────┘ │
│ │ 11 │        │                 │   │                              │
│ │ 12 │        │                 │   │ ┌──── Screen Status ──────┐ │
│ │ 13 │        │                 │   │ │                          │ │
│ │ 14 │        │                 │   │ │ Hist. [              ]   │ │
│ │ 15 │        │                 │   │ │                          │ │
│ │ 16 │        │                 │   │ │              (   0Byte)  │ │
│ └────┴────────┴─────────────────┘   │ └──────────────────────────┘ │
└─────────────────────────────────────┴──────────────────────────────┘
```

1, 2, 3...   1.   Select all the screen numbers of the child screens you want with the cursor and Space Bar. The screen numbers that you select will be marked with asterisks.

2.   When all of the child screens you want have been marked, press the Enter Key.

3.   Select scrolling by screen or by line, and then press the Enter Key to select a screen. Asterisks will appear by selected as child screens. For line scrolling, scrolling is done in increments of 8 dots. The NT600M does not have the line scrolling function, so the screen shown below will not be displayed. Also, line scrolling cannot be used with the direct connection function.

```
┌─────────────────────────────────────┬──────────────────────────────┐
│ [NEW_FILE]  Screen List (NT20M)   64KB │ ── Continuous/Overlap Screen ── │
│ ┌────┬────────┬─────────────────┐   │                              │
│ │No. │ Status │    Comment      │   │ ┌──── Help Message  ──────┐ │
│ │* 1 │     !  │ Display 1       │   │ │                          │ │
│ │* 2 │     !  │ Display 2       │   │ │                          │ │
│ │  3 │████████│█████████████████│   │ │   Select scroll unit     │ │
│ │  4 │        │                 │   │ │                          │ │
│ │  5 │        │                 │   │ │  Screen        Line      │ │
│ │  6 │        │                 │   │ │                          │ │
│ │  7 │        │                 │   │ │  ←→ = Select             │ │
│ │  8 │        │                 │   │ │  ↵ = Confirm            │ │
│ │  9 │        │                 │   │ │  ESC = Abort            │ │
│ │ 10 │        │                 │   │ └──────────────────────────┘ │
│ │ 11 │        │                 │   │                              │
│ │ 12 │        │                 │   │ ┌──── Screen Status ──────┐ │
│ │ 13 │        │                 │   │ │                          │ │
│ │ 14 │        │                 │   │ │ Hist. [              ]   │ │
│ │ 15 │        │                 │   │ │                          │ │
│ │ 16 │        │                 │   │ │              (   0Byte)  │ │
│ └────┴────────┴─────────────────┘   │ └──────────────────────────┘ │
└─────────────────────────────────────┴──────────────────────────────┘
```

76

4. Set whether or not you want page numbers displayed at the host and then press the Enter Key.

```
┌─────────────────────────────────────┐  ┌──────────────────────────────┐
│ [LINE2  ]  Screen List (NT600M-O)  64KB │  │ -- Continuous/Overlap Screen -- │
│ ┌────┬────────┬─────────────────┐   │  │ ┌──────────────────────────┐ │
│ │No. │ Status │    Comment      │   │  │ │ ------  Help Message ------ │ │
│ ├────┼────────┼─────────────────┤   │  │ │                            │ │
│ │* 1 │   !    │ Input string    │   │  │ │ Show page number on NT host│ │
│ │* 2 │   !    │ Run warning     │   │  │ │                            │ │
│ │  3 │        │                 │   │  │ │   [Yes]        No          │ │
│ │  4 │        │                 │   │  │ │                            │ │
│ │  5 │        │                 │   │  │ │   [◄►] = Select            │ │
│ │  6 │        │                 │   │  │ │   [↵]  = Confirm           │ │
│ │  7 │        │                 │   │  │ │   [ESC] = Abort            │ │
│ │  8 │        │                 │   │  │ └──────────────────────────┘ │
│ │  9 │        │                 │   │  │                              │
│ │ 10 │        │                 │   │  │ ┌──────────────────────────┐ │
│ │ 11 │        │                 │   │  │ │ ------ Screen Status ------ │ │
│ │ 12 │        │                 │   │  │ │                            │ │
│ │ 13 │        │                 │   │  │ │ Hist. [              ]     │ │
│ │ 14 │        │                 │   │  │ │                            │ │
│ │ 15 │        │                 │   │  │ │            (   92Byte)     │ │
│ │ 16 │        │                 │   │  │ └──────────────────────────┘ │
│ └────┴────────┴─────────────────┘   │  │                              │
└─────────────────────────────────────┘  └──────────────────────────────┘
```
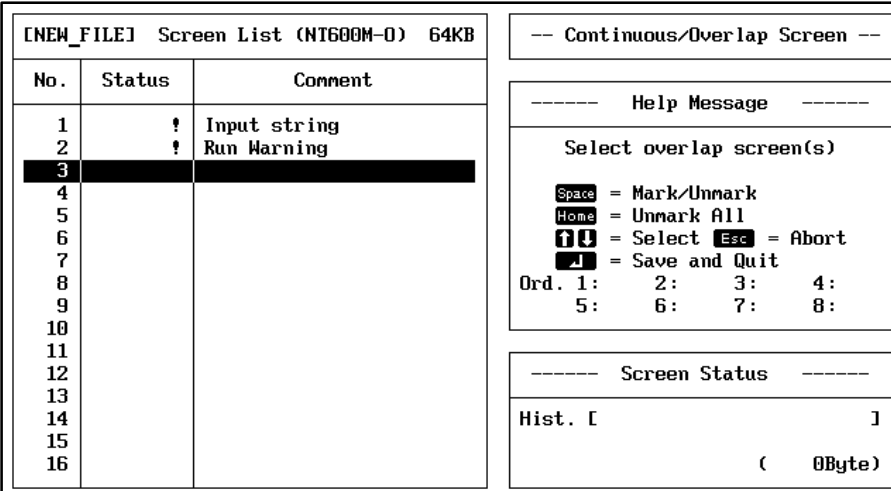
5. Input the screen comment and press the Enter Key or press the Escape Key to return to step 4. Comments can be up to 24 characters.

Note 1. A screen with a numeral edit settings cannot be set as a child screen.

2. When designating screens with numeral displays, character string displays, lamps, touch switches, or bar graphs as child screens, do not set line scrolls.

3. The NT600M has no line scroll function.

Overlapping Screens

Register the screen numbers of the child screens you want to display overlapped. There is no particular order of registration. You can register a maximum of 8 child screens.

```
┌─────────────────────────────────────┐  ┌──────────────────────────────┐
│ [NEW_FILE]  Screen List (NT600M-O)  64KB │  │ -- Continuous/Overlap Screen -- │
│ ┌────┬────────┬─────────────────┐   │  │ ┌──────────────────────────┐ │
│ │No. │ Status │    Comment      │   │  │ │ ------  Help Message ------ │ │
│ ├────┼────────┼─────────────────┤   │  │ │                            │ │
│ │  1 │   !    │ Input string    │   │  │ │ Select overlap screen(s)   │ │
│ │  2 │   !    │ Run Warning     │   │  │ │                            │ │
│ │  3 │        │                 │   │  │ │ [Space] = Mark/Unmark      │ │
│ │  4 │        │                 │   │  │ │ [Home] = Unmark All        │ │
│ │  5 │        │                 │   │  │ │ [↑↓] = Select [Esc] = Abort│ │
│ │  6 │        │                 │   │  │ │ [↵] = Save and Quit        │ │
│ │  7 │        │                 │   │  │ │ Ord. 1:   2:   3:   4:     │ │
│ │  8 │        │                 │   │  │ │      5:   6:   7:   8:     │ │
│ │  9 │        │                 │   │  │ └──────────────────────────┘ │
│ │ 10 │        │                 │   │  │                              │
│ │ 11 │        │                 │   │  │ ┌──────────────────────────┐ │
│ │ 12 │        │                 │   │  │ │ ------ Screen Status ------ │ │
│ │ 13 │        │                 │   │  │ │                            │ │
│ │ 14 │        │                 │   │  │ │ Hist. [              ]     │ │
│ │ 15 │        │                 │   │  │ │                            │ │
│ │ 16 │        │                 │   │  │ │            (    0Byte)     │ │
│ └────┴────────┴─────────────────┘   │  │ └──────────────────────────┘ │
└─────────────────────────────────────┘  └──────────────────────────────┘
```

1, 2, 3... 1. Select all the screen numbers of the child screens you want with the cursor and Space Bar. Selected screens will be indicated with asterisks.

2. After all of the child screens have been designated, press the Enter Key.

3. Input the screen comment, and press the Enter Key or press the Escape Key to return to step 2. Comments can be up to 24 characters.

77

Note 1. When overlapping child screens with numeral displays, character string displays, lamps, touch switches, or bar graphs, be sure that these various display elements do not overlap.

2. Only screen attributes set for the parent screen will be used. Parent screen attributes will not change unless they are changed directly (i.e., changing child screen attributes will not affect parent screen attributes).

2-12 Screen Attributes

You can set attributes for one screen at a time, or for multiple screens together. The following attributes can be set: buzzer, history record, bit input, and alarm output.

Screen Designation

1, 2, 3... 1. Go to the Screen Selection Display.

2. If you are setting only one screen move the bar cursor to the number of the screen you want to set, and press F4 (Attributes). If you are setting multiple screens at one time, tag the desired screens with the Space Key and then press F4 (Attributes).

Note If you set a large number of screens (i.e., over 100) at one time, the execution time will be lengthened. In such cases, returning to the File Selection Display and then enter the Screen Selection Display before performing the operation.

Setting Attributes

```
┌─────────────────────────────────────┐  ┌──────────────────────────────┐
│ [NEW_FILE]  Screen List (NT20M)  64KB│  │  --  Set Screen Attributes  --│
│ ┌────┬────────┬────────────────────┐ │  │                              │
│ │No. │ Status │      Comment       │ │  │ ┌──── Help Message ────┐     │
│ ├────┼────────┼────────────────────┤ │  │                              │
│ │ 1  │        │                    │ │  │                              │
│ │ 2  │        │                    │ │  │ [No.  1] set screen attributes│
│ │ 3  │        │                    │ │  │                              │
│ │ 4  │        │                    │ │  │ Buzzer    No    Buzz    Beep │
│ │ 5  │        │                    │ │  │ History   No    Yes          │
│ │ 6  │        │                    │ │  │ Bit In    Off   Touch   Fn Key│
│ │ 7  │        │                    │ │  │ Alarm     No    Yes          │
│ │ 8  │        │                    │ │  │ Keypad    System User        │
│ │ 9  │        │                    │ │  │ Back Col. White Red          │
│ │10  │        │                    │ │  │ Backlight Lit   Flash        │
│ │11  │        │                    │ │  │                              │
│ │12  │        │                    │ │  │  ◄► = Attr.    ▲▼ = Set      │
│ │13  │        │                    │ │  │  ↵  = Confirm  ESC = Abort   │
│ │14  │        │                    │ │  └──────────────────────────────┘
│ │15  │        │                    │ │
│ │16  │        │                    │ │
│ └────┴────────┴────────────────────┘ │
└─────────────────────────────────────┘
```

Screen attributes are described in the following table. Set each attribute and then press the Enter Key. The history title is input next.

Attributes	Function
Buzzer	Whether or not the buzzer is to sound when the screen is displayed. If the buzzer is set to sound, you can select either continuous or intermittent operation.
History	Whether or not the history of the screen is to be recorded. If you set "Yes," then, when the Programmable Terminal (PT) is operating, all screens have been displayed will be recorded in the PT. You can check the contents of these records by selecting History Records from the Maintenance Menu of the PT. You can also transmit the contents to the Support Tool.
Bit Input (Bit In)	Whether or not the host is to be notified, in the form of a bit input, of the push-down status of touch switches or function keys while the screen is displayed. This setting is not used for RS-232C and RS-422 communications. To enable notification, set either touch switches or function keys to specify the input device of the PT to be used.
Alarm	Whether or not the PT alarm output will turn ON when the screen is displayed.
Keypad	Set "System" to use the default key layout or "User" to specify a custom key layout.
Backlight Color (Back Col)	Specify white or red as the backlight color if the NT20M-DT131/DN131 is to be used.
Backlight operation (Backlight)	Specify "Light" or "Flash" for the screen backlight if the NT20M-DT131/DN131 is to be used.

Note The two backlight settings do not appear for the NT600M.

History Title

If the screen history is enabled, the following display will appear requesting a title for the history. If screen attributes are being simultaneously input for more than one screen, the same title will be used for all of the screens. The following display is for multiple screens.

Input the history title, and press the Enter Key to return to the Screen Selection Display. The title can be up to 24 characters.

Screen Attribute Displays   After the settings have been made, their contents will be displayed in the status column on the screen listing as letters of the alphabet.

```
┌─────────────────────────────────┐  ┌────────────────────────────────┐
│[NEW_FILE]  Screen List (NT20M-0)  64KB │  │ ------ Screen Selection ------ │
│                                 │  └────────────────────────────────┘
│ No. │ Status │    Comment     │  ┌────────────────────────────────┐
│─────┼────────┼────────────────│  │ ------  Help Message   ------  │
│   1 │ BC E G!│ Display 1      │  │                                │
│   2 │ B DEFG!│ Display 2      │  │ ⬆⬇     =    Select             │
│   3 │        │                │  │ ↵      =    Confirm            │
│   4 │        │                │  │ PgDn   =    Next Page          │
│   5 │        │                │  │ PgUp   =    Prev Page          │
│   6 │        │                │  │ Space  =    Mark/Unmark        │
│   7 │        │                │  │ Home   =    Unmark All         │
│   8 │        │                │  │ Shift  =    Mark/Unmark All    │
│   9 │        │                │  │ +home                          │
│  10 │        │                │  │ Esc    =    File Selection Menu│
│  11 │        │                │  └────────────────────────────────┘
│  12 │        │                │  ┌────────────────────────────────┐
│  13 │        │                │  │ ------   Screen Status   ------ │
│  14 │        │                │  │                                │
│  15 │        │                │  │ Hist. [                     ]  │
│  16 │        │                │  │       B:Beep C:Hist            │
│                                 │  │ E:Alrm       G:Ext (  76Byte) │
│ Copy Delete Print Attrib Read   Tmx. Rcv. Co/Ovl Mark Prev          │
└─────────────────────────────────┘
```

B	Buzzer: Buzz or Beep
C	History: Yes
D	Bit Input: On
E	Alarm: On
F	Keypad: User
G	Extended functions (Backlight color or backlight operation): Displayed for the NT20M-DT131/DN131

2-13 Screen Check

When continuous or overlapping screens are received from the PT as a single screen, there is a chance that screen errors may occur in these files. Check to see whether such errors have occurred. You can print out the contents of this check.

Screen Errors   If a screen that has been designated as a child screen for continuous or overlapping screens is subsequently designated as a parent screen for

another continuous or overlapping screen, it results in a screen error. A
check can be performed as shown below from the Screen Selection Display

```
[NEW_FILE]  Screen List (NT20M)      64KB      ------ Screen Selection -------

No. │ Status │      Comment                  ┌─────────────────────────────┐
────┼────────┼──────────────────────         │ ------  Help Message  ------ │
  1 │ BC E G!│ Display 1                      │                              │
  2 │ B DEFG!│ Display 2                      │ ⬆⬇     =   Select            │
  3 │ A    F !│ Continuous assembly           │ ↵      =   Confirm           │
  4 │        │                                │ PgDn   =   Next Page         │
  5 │        │                                │ PgUp   =   Prev Page         │
  6 │        │                                │ Space  =   Mark/Unmark       │
  7 │        │                                │ Home   =   Unmark All        │
  8 │        │                                │ Shift  =   Mark/Unmark All   │
  9 │        │                                │ +home                        │
 10 │        │                                │ Esc    =   File Selection Menu│
 11 │        │                                └─────────────────────────────┘
 12 │        │                                ┌─────────────────────────────┐
 13 │        │                                │ ------  Screen Status  ------│
 14 │        │                                │ Hist. [                    ] │
 15 │        │                                │ A:Cont                       │
 16 │        │                                │        F:Keys      (  18Byte)│
────┴────────┴──────────────────────         └─────────────────────────────┘
 Commnt Table  Check                          ▮▮▮▮ ▮▮▮▮ ▮▮▮▮ ▮▮▮▮  Prev
```

1, 2, 3...   1.   Press NEXT, F3 (Check). A message will appear asking whether or not
                    you want the results of the screen check to be printed out.

             2.   Select "Yes" or "No" and then press the Enter Key. Regardless of wheth-
                  er you select Yes or No, the results will be displayed on the screen. The
                  contents will be displayed as shown below. The results of the check are
                  printed out in the same form.

```
┌─────┬─────┬────────────────────────────────────────┐
│ No. │ Err │              Contents                  │
├─────┼─────┼────────────────────────────────────────┤
│   3 │ NO  │    2    1                               │
│     │     │                                        │
│     │     │                                        │
│     │     │                                        │
│     │     │                                        │
│     │     │                                        │
│     │     │                                        │
│     │     │                                        │
│     │     │                                        │
│     │     │                                        │
│     │     │                                        │
│     │     │                              SPACE = Stop│
│     │     │                              ESC   = Abort│
└─────┴─────┴────────────────────────────────────────┘
```

Item	Contents
No.	Shows the numbers of all screens designated as parent screens for continuous or overlapping screens.
Error	Indicates whether or not there is an error for the child settings.
Contents	Shows the numbers of all screens designated as child screens. If any of these child screens has an error, its number will be underlined.

             3.   For any child screen with an error, redo the continuous or overlapping
                  screens.

2-14 Marks

Marks can be created for display on the PT. If you press F9 on the Screen Selection Display or specify MARK from the Initial Edit Display, the Mark Creation Display will appear. This display is split in half, with a creation display on the right and a reference display on the left. The reference display can be used to display previously created marks for copying all or part of them to the creation display.

Mark Creation Display
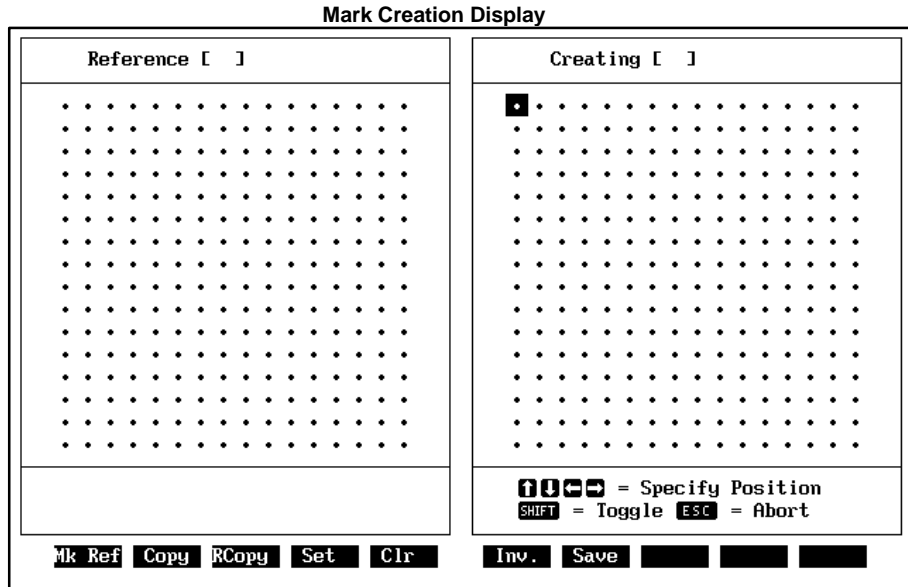
Keys Usable on Mark Creation Display

The dots used to create marks can be manipulated using the mouse and/or the keyboard.

The left mouse button can be clicked to turn ON specific dots or the right mouse button can be clicked to turn OFF specific dots. Either button can be held down to continuously manipulate dots by moving the mouse.

The Up, Down, Left, and Right Keys are used to position the cursor, and the Shift Key is used to set or clear dots one at a time. A continuous series of dots can be cleared or set by using the Shift Key together with the direction keys. The direction keys can also be combined with the Alt Key to move the Creation Display.

Note The Alt Key has replaced the Caps Key in earlier version of the Support Tool to prevent problems with the Caps Key locking.

The Alt Key is used simultaneously with any of the direction keys to move the Creation Display in the designated direction. In addition, you can rotate the Creation Display 90% by simultaneously pressing the Alt Key, the Shift Key, and the Left Key for counterclockwise rotation or Right Key for clockwise rotation.

The Escape Key is used to end mark creation and return to the Screen Selection Display. When the Support Tool asks for confirmation, press the Return Key to end mark creation or the Escape Key to continue. Be sure to saved required mark data before ending mark creation.

The function keys are used as described in the following table.

Function Keys

Key	Key	Function
F1	**Mark Reference (Mk Ref)**	Displays designated marks on the reference display.
F2	**Copy (Copy)**	Copies a designated rectangular area on the creation display to another position.
F3	**Reference Copy (RCopy)**	Copies a designated rectangular area on the reference display to a designated position on the creation display.
F4	**Area Set (Set)**	Sets all of the dots for a designated rectangular area on the Creation Display.
F5	**Area Clear (Clr)**	Clears all of the dots for a designated rectangular area on the creation display.
F6	**Inverse (Inv)**	Reverses the status of all of the dots on the creation display.
F7	**Save (Save)**	Registers, as a mark, data which is displayed on the creation display.

Setting and Clearing Dots   To set or clear dots, move the cursor with the direction keys, and then press the Shift Key. Pressing the Shift Key will clear dots at the cursor position which are set, and set dots at the cursor position which are cleared. By operating the direction keys while continuing to hold down the Shift Key, you can set or clear a continuous series of dots. The results of setting or clearing dots are always displayed inside of brackets at the top of the creation display.

Dots can also be set and clear using the mouse. Use the left mouse button to set dots and the right mouse button to clear them. Dots will be continuously set or cleared if the mouse button is held down while moving the mouse.

Mark Reference   F1 is used to display designated marks on the Reference Display. You can copy the contents of the reference display to the creation display with F3 (Reference Copy). (See page 84.)

1, 2, 3...   1.   Press F1 (Mark Reference), to display the Mark List Display.
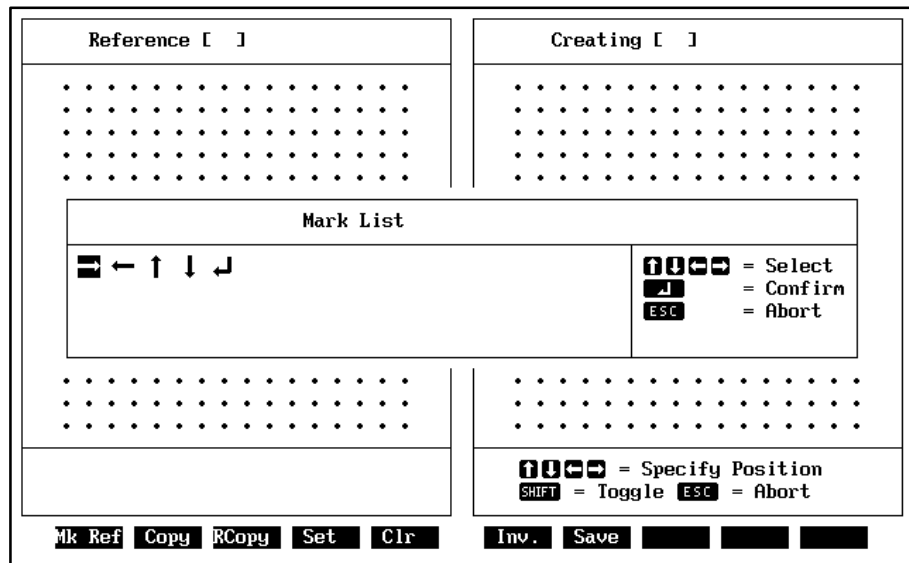
2.   The mark you have input will be displayed on the Reference Display.

83

3.   Press the Escape Key to return to the Creation Display.

Copy   F2 is used to copy a designated rectangular area on the creation display to another position. This operation can be canceled at any point by pressing the Escape Key.

Note   The cursor may not be displayed on the screen when it overlaps with the starting point, ending point, etc. If you are not sure of the position of the cursor, move it with direction keys.

1, 2, 3...   1.   If you press F2 (Copy), the following screen will be displayed.
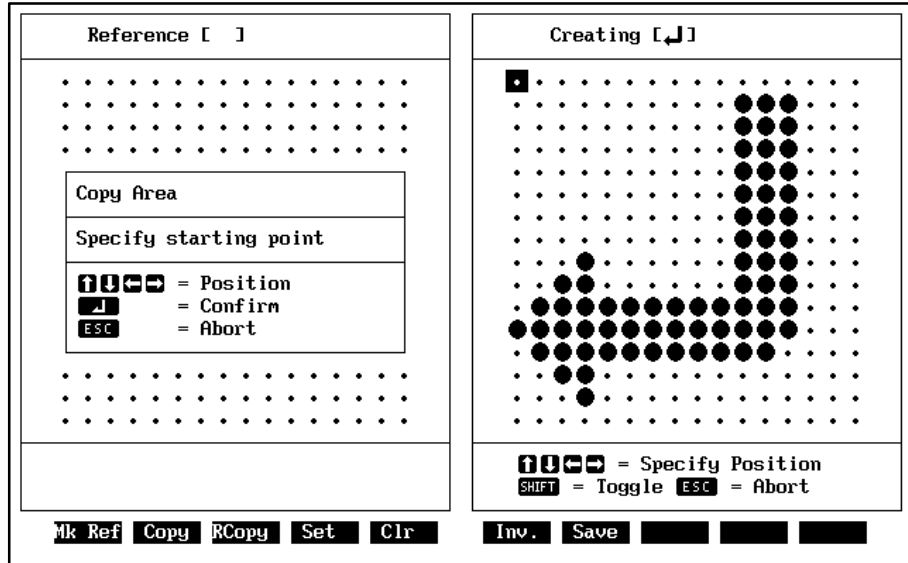
2.   Move the cursor with the direction keys, and then enter the starting point with the Enter Key. The starting point you have entered will be displayed in reverse video.

3.   Designate the ending point for the area to be copied. The ending point you have entered will be displayed in reverse video.
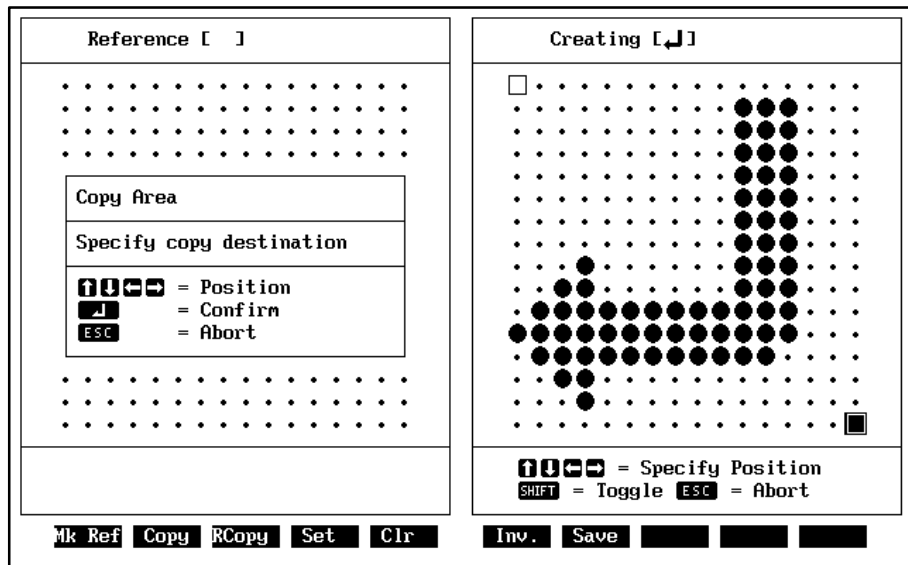
4.   Use the direction keys to move the cursor, and then press the Enter Key to copy the designated data to the cursor position.

Reference Copy   F3 is used to copy a designated rectangular area on the reference display to a designated position on the creation display.

Operation is basically the same as for copying with F1 except that the copy is designated on the reference display and created on the creation display.

Area Set   F4 is used to fill in a designated area on the creation display.

Area designation is basically the same as for copying with F1.

Area Clear   F5 is used to clear all of the dots for a designated rectangular area on the creation display. After being cleared, they are represented by small dots.

Area designation is basically the same as for copying with F1.

Inverse   F6 is used to reverse all of the dots on the creation display.

Area designation is basically the same as for copying with F1.

Save   F7 is used to register data in the creation display as a mark.

1, 2, 3... 1.   Enter F7 (Save), the mark list will be displayed.
        2.   Specify the position in which to save the mark. If you specify a position that already contains a mark, the existing mark will be overwritten by the new one.
        3.   Press the Enter Key. Saving can be canceled by pressing the Escape Key.

You can confirm that the mark has been saved by pressing F1.

Ending Mark Creation   Press the Escape Key when finished creating mark to end mark creation and return to the Screen Selection display. A confirmation display will appear. Press the Enter Key to confirm or press the Escape Key to continue mark creation.

Note Any data not saved when mark creating is ended will be lost. If ending mark creation is canceled at the confirmation display, however, any unsaved data will be maintained.

2-15   Stand-alone Operation

Stand-alone operation allows the PT touch switches, function keys, and Expansion I/O Units to be used to switch screens without receiving instructions from a host. The Support Tool must be used to set up stand-alone operation.

Precautions   When screens are changed during stand-alone operation, a screen number request response is sent from the PT to the host.

If the same key number is allocated in multiple child screens, the key will be effective only in the child screen with the smallest screen number.

The following screen numbers can be set.
        NT20M: 1 to 250
        NT600M: 1 to 1,000

The following touch switches and function keys can be allocated.
        Touch switches: 000 to 031
        Function keys   DF☐☐: F1 to F12
                         Other: 01 to 31

Numeral editing will take priority if both numeral editing and stand-alone operation are specified for the same screen. Although both numeral editing and stand-alone operation use function keys and touch switch, the following limitation apply to stand-alone operation if numeral editing is also being used.

PT	Limitations
PT with Touch Panels (DT□□□)	Touch switches 231 to 255 cannot be used.
PT with Function Keys (DF□□□)	Stand-alone operation is not supported.

PT without Function Keys (DN□□□)	12-key Function Key Units
	    Stand-alone operation is not supported.
	32/16 Terminals
	    F1 to F12 and F17 to F29
	10/02 Terminals
	    Numeral editing not supported. F1 to F10 can be used for stand-alone operation.

Operation

Select EXTEND from the Initial Edit Display to access the Extended Features Display shown below. This display will appear only if direct connection is set to No in the Tool Settings.

Extended Features Display

```
EXTEND    Select Extend function              ◄►   = Select
                                              ◄┘   = Confirm
     Stand Alone                              ESC  = Abort
                                              [No.0005]Free: 51858Byte
```

Use the following procedure to allocate screens to switches/function keys.

1, 2, 3... 1.   Press the Enter Key to access the Stand-alone Setting Display.

SW/F	Screen #	SW/F	Screen #	SW/F	Screen #	SW/F	Screen #
000	0	016	0	032	0	048	0
001	0	017	0	033	0	049	0
002	0	018	0	034	0	050	0
003	0	019	0	035	0	051	0
004	0	020	0	036	0	052	0
005	0	021	0	037	0	053	0
006	0	022	0	038	0	054	0
007	0	023	0	039	0	055	0
008	0	024	0	040	0	056	0
009	0	025	0	041	0	057	0
010	0	026	0	042	0	058	0
011	0	027	0	043	0	059	0
012	0	028	0	044	0	060	0
013	0	029	0	045	0	061	0
014	0	030	0	046	0	062	0
015	0	031	0	047	0	063	0

```
STAND ALONE  Select touch switch/F-key
   ↑↓◄►=Select ESC=Abort ◄┘=Confirm PgDn=Next Pg PgUp=Prev Pg( P-1 )
```

2. Move the cursor to the touch switch/function key to which a screen is to be allocated. F1 will correspond to 000; F2, to 001; etc.
3. Input the screen number to be allocated to the touch switch/function key and press the Enter Key.
4. Repeat steps 2. and 3. until all desired screen have been set.
5. Press the Escape Key to return to the Extended Features Display.

Restrictions

The following touch switches/function keys can be used depending on the model of the PT. Refer to the *Precautions* section, above, for restrictions when using numeral editing with stand-alone operation.

PT	Applicable touch switches/function keys
PT with Touch Panels (DT□□□)	0 to 255
PT with Function Keys (DF□□□)	F1 through F12

PT without Function Keys (DN□□□)	12-key Function Key Units
	  Stand-alone operation is not supported.
	32/16 Terminals
	  F1 to F32
	10/02 Terminals
	  F1 to F10

2-16   Edit

The cut and paste operations under EDIT on the Initial Edit Display can be used to copy, move, or delete previously created elements such as character strings and graphics. The Edit Display will appear.

Edit Display

```
    0000000




                                     EDIT     Select item to edit        ◄► = Select
                                                                        ↵  = Confirm
                                              Copy    Move    Delete     ESC = Abort
                                                                        [No.0003]Free: 51858Byte
```
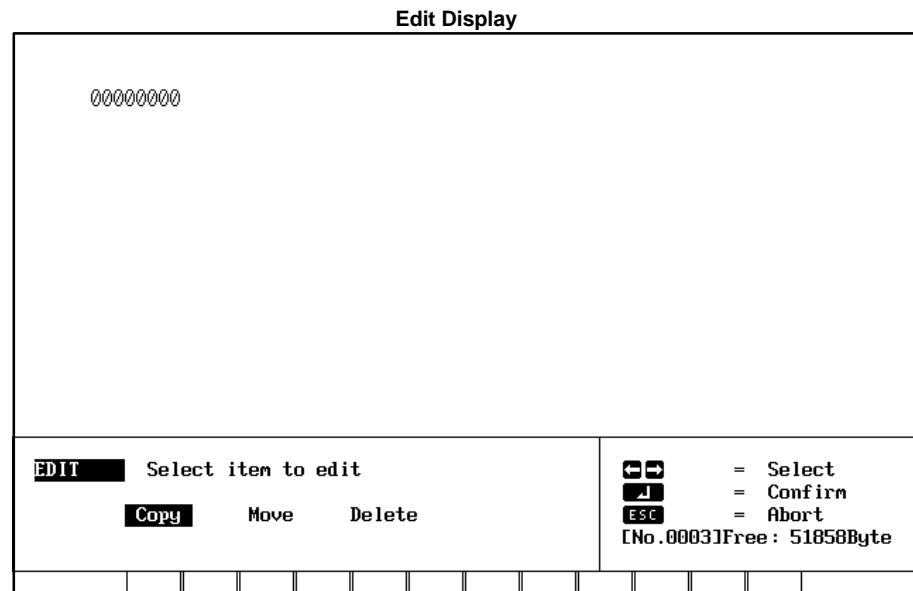
Note To cancel all results obtained during editing operations, press the Escape Key followed by the Space Bar from the Edit Display.

Copy

Use the following procedure to copy existing elements on the screen.

1, 2, 3... 1. Specify COPY from the Cut and Paste Display
2. Move the cursor to designate the starting point of the copy area and press the Enter Key.
3. Move the cursor to designate the end point of the copy area and press the Enter Key. The specified copy area will be indicated by a dotted box.

87

4. Move the cursor to designate the area in which to paste the copy and press the Enter Key. The area to which the copy will be made will be designated by a dotted box when the cursor is moved.

5. Press the Enter Key again when the confirmation message appears to paste the copy or press the Escape Key to cancel the paste and return to step

6. Return to step 2. to make further copies or press the Escape Key to end the copy operation.

Move   Use the following procedure to move existing elements on the screen.

1, 2, 3... 1. Specify MOVE from the Cut and Paste Display

2. Move the cursor to designate the starting point of the move area and press the Enter Key.

3. Move the cursor to designate the end point of the move area and press the Enter Key. The specified move area will be indicated by a dotted box.

4. Move the cursor to designate the area to move to and press the Enter Key. The area to which the move will be made will be designated by a dotted box when the cursor is moved.

5. Press the Enter Key again when the confirmation message appears to execute the move or press the Escape Key to cancel the move and return to step 4.

6. Return to step 2. to move other elements or press the Escape Key to end the move operation.

Delete   Use the following procedure to delete existing elements on the screen.

1, 2, 3... 1. Specify DELETE from the Cut and Paste Display

2. Move the cursor to designate the starting point of the delete area and press the Enter Key.

3. Move the cursor to designate the end point of the delete area and press the Enter Key. The specified delete area will be indicated by a dotted box.

4. Press the Enter Key again when the confirmation message appears to execute the move or press the Escape Key to cancel the move and return to step 1.

5. Return to step 2. to delete other elements or press the Escape Key to end the delete operation.

SECTION 3
Managing Screen Data

This section describes how to copy and delete previously created screens, to change screen comments, and to read screen in from other files.

3-1 Copying Screens

You can copy designated screens to different screens. To copy a screen, first designate the source screen number and then designate the target screen number as described below.

1, 2, 3... 1. Go to the Screen Selection Display.

```
[NOTDIR ] Screen List (NT600M)  64KB        -------- Copy Screen --------

 No.  Status        Comment              ------   Help Message   ------

  1       !   Bar graph                  Copy [No.   3] screen data
  2       !   Access terminal 1
  3       !   Numeral edit               to
  4
  5                                       [No.1█  ]
  6                                       [                      ]
  7
  8                                       ( █↵█=Confirm / ESC=Abort )
  9
 10
 11
 12                                       ------   Screen Status   ------
 13
 14                                       Hist. [                   ]
 15
 16                                                       (   38Byte)
```

2. Move the bar cursor to the number of the screen from which data is to be copied, and then press F1 (Copy).

```
[NOTDIR ] Screen List (NT600M)  64KB        -------- Copy Screen --------

 No.  Status        Comment              ------   Help Message   ------

  1       !   Bar graph                  Copy [No.   3] screen data
  2       !   Access terminal 1
  3       !   Numeral edit               to
  4
  5                                       [No.1█  ]
  6                                       [                      ]
  7
  8                                       ( █↵█=Confirm / ESC=Abort )
  9
 10
 11
 12                                       ------   Screen Status   ------
 13
 14                                       Hist. [                   ]
 15
 16                                                       (   38Byte)
```

3. Input the number of the screen to which the data is to be copied, and then press the Enter Key. (For the NT20M, you can input a screen number from 1 to 250; for the NT600M, from 1 to 1,000.)

4. Input a comment of up to 24 characters, and press the Enter Key.

5. When copying is complete, a message will be displayed. Press any key to return to the Screen Selection Display.

Note If screen data already exists at the designated target screen, a verification message will appear indicating that data already exists and asking you if you wish to overwrite it. If it is overwritten, any data stored up to that point will be cleared. If you choose to overwrite the existing data, press the Enter Key. If

90

you wish to cancel, return to the Screen Selection Display by pressing a key other than the Enter Key.

3-2 Deleting Screens

You can delete one or more screens that has previously been set. Screen data can also be deleted from the PT.

1, 2, 3... 1. Go to the Screen Selection Display.

```
┌────────────────────────────────────────┐ ┌─────────────────────────────┐
│ [NOTDIR ] Screen List (NT600M)   64KB  │ │ ──────── Copy Screen ────── │
│ ┌────┬────────┬───────────────────────┐ │ │                             │
│ │No. │ Status │      Comment          │ │ │ ┌──── Help Message ──────┐ │
│ ├────┼────────┼───────────────────────┤ │ │ │                         │ │
│ │  1 │    !   │ Bar graph             │ │ │ │ Copy [No.  3] screen data│ │
│ │  2 │    !   │ Access terminal 1     │ │ │ │                         │ │
│ │██3█│    !   │ Numeral edit          │ │ │ │ to                      │ │
│ │  4 │        │                       │ │ │ │                         │ │
│ │  5 │        │                       │ │ │ │ [No.1█ ]                │ │
│ │  6 │        │                       │ │ │ │ [              ]        │ │
│ │  7 │        │                       │ │ │ │                         │ │
│ │  8 │        │                       │ │ │ │ ( ◢ =Confirm / ESC =Abort )│ │
│ │  9 │        │                       │ │ │ └─────────────────────────┘ │
│ │ 10 │        │                       │ │ │                             │
│ │ 11 │        │                       │ │ │ ┌──── Screen Status ─────┐ │
│ │ 12 │        │                       │ │ │ │                         │ │
│ │ 13 │        │                       │ │ │ │ Hist. [            ]    │ │
│ │ 14 │        │                       │ │ │ │                         │ │
│ │ 15 │        │                       │ │ │ │        (   38Byte)      │ │
│ │ 16 │        │                       │ │ │ └─────────────────────────┘ │
│ └────┴────────┴───────────────────────┘ │ │                             │
└────────────────────────────────────────┘ └─────────────────────────────┘
```

2. If you are only deleting one screen move the bar cursor to the number of the screen you want to delete, and then press F2 (Delete).

3. If you are deleting multiple screens, tag the screen numbers that you want to delete, and then press F2 (Delete).

```
┌────────────────────────────────────────┐ ┌─────────────────────────────┐
│ [NOTDIR ] Screen List (NT600M)   64KB  │ │ ────── Delete Screen ────── │
│ ┌────┬────────┬───────────────────────┐ │ │                             │
│ │No. │ Status │      Comment          │ │ │ ┌──── Help Message ──────┐ │
│ ├────┼────────┼───────────────────────┤ │ │ │                         │ │
│ │  1 │    !   │ Bar graph             │ │ │ │                         │ │
│ │* 2 │    !   │ Access terminal 1     │ │ │ │ Select item to be deleted│ │
│ │* 3 │    !   │ Numeral edit          │ │ │ │                         │ │
│ │  4 │        │                       │ │ │ │ ██Tool██    NT Host     │ │
│ │  5 │        │                       │ │ │ │                         │ │
│ │  6 │        │                       │ │ │ │ ◁▷ = Select             │ │
│ │  7 │        │                       │ │ │ │ ◢  = Confirm            │ │
│ │  8 │        │                       │ │ │ │ ESC = Abort             │ │
│ │  9 │        │                       │ │ │ └─────────────────────────┘ │
│ │ 10 │        │                       │ │ │                             │
│ │ 11 │        │                       │ │ │ ┌──── Screen Status ─────┐ │
│ │ 12 │        │                       │ │ │ │                         │ │
│ │ 13 │        │                       │ │ │ │ Hist. [            ]    │ │
│ │ 14 │        │                       │ │ │ │                         │ │
│ │ 15 │        │                       │ │ │ │        (   84Byte)      │ │
│ │ 16 │        │                       │ │ │ └─────────────────────────┘ │
│ └────┴────────┴───────────────────────┘ │ │                             │
└────────────────────────────────────────┘ └─────────────────────────────┘
```

4. As the default, "Tool" will be displayed in reverse video. To delete a screen from the Support Tool, just press the Enter Key. To delete a screen from the PC, select "NT Host." A message will appear, asking whether you actually want to delete the data. The following display shows a case where the tag function is used to designate multiple screens for deletion.

91

```
┌─────────────────────────────────────┐  ┌─────────────────────────────────┐
│ [NOTDIR  ]  Screen List (NT600M)  64KB│  │  ------  Delete Screen  ------  │
│                                       │  └─────────────────────────────────┘
│  No. │ Status │    Comment           │  ┌─────────────────────────────────┐
│      │        │                      │  │  ------  Help Message  ------   │
│   1  │    !   │ Bar graph            │  │                                 │
│ * 2  │    !   │ Access terminal 1    │  │   Delete marked screen data     │
│ * 3  │    !   │ Numeral edit         │  │                                 │
│   4  │        │                      │  │                                 │
│   5  │        │                      │  │   Confirm ?                     │
│   6  │        │                      │  │                                 │
│   7  │        │                      │  │                                 │
│   8  │        │                      │  │ ( ◄┘ = Yes / ESC = Abort )      │
│   9  │        │                      │  └─────────────────────────────────┘
│  10  │        │                      │  ┌─────────────────────────────────┐
│  11  │        │                      │  │  ------  Screen Status  ------  │
│  12  │        │                      │  │                                 │
│  13  │        │                      │  │ Hist. [                     ]   │
│  14  │        │                      │  │                                 │
│  15  │        │                      │  │              (    84Byte)       │
│  16  │        │                      │  └─────────────────────────────────┘
│                                       │
└─────────────────────────────────────┘
```

5. To confirm deletion, press the Enter Key, or to return to step 1, press any key other than the Enter Key.

6. When the deletion is complete, a message will be displayed. Press any key to return to the Screen Selection Display.

3-3   Changing Screen Comments

You can change designated screen comments.

1, 2, 3...   1.   Go to the Screen Selection Display.

```
┌─────────────────────────────────────┐  ┌─────────────────────────────────┐
│ [NOTDIR  ]  Screen List (NT600M)  64KB│  │  --------  Copy Screen  -------- │
│                                       │  └─────────────────────────────────┘
│  No. │ Status │    Comment           │  ┌─────────────────────────────────┐
│      │        │                      │  │  ------  Help Message  ------   │
│   1  │    !   │ Bar graph            │  │                                 │
│   2  │    !   │ Access terminal 1    │  │  Copy [No.   3] screen data     │
│   3  │    !   │ Numeral edit         │  │                                 │
│   4  │        │                      │  │  to                             │
│   5  │        │                      │  │                                 │
│   6  │        │                      │  │  [No.1█  ]                      │
│   7  │        │                      │  │  [                        ]     │
│   8  │        │                      │  │                                 │
│   9  │        │                      │  │ ( ◄┘ =Confirm / ESC =Abort )    │
│  10  │        │                      │  └─────────────────────────────────┘
│  11  │        │                      │  ┌─────────────────────────────────┐
│  12  │        │                      │  │  ------  Screen Status  ------  │
│  13  │        │                      │  │                                 │
│  14  │        │                      │  │ Hist. [                     ]   │
│  15  │        │                      │  │                                 │
│  16  │        │                      │  │              (    38Byte)       │
│                                       │  └─────────────────────────────────┘
└─────────────────────────────────────┘
```

2. Move the bar cursor the number of the screen for which you want to change the comment, and press the NEXT, F1 (Change Comments).

3. The comments for the screen you have selected will be displayed in the guide box.

```
┌─────────────────────────────────────────────────────────────────────────────┐
│  ┌───────────────────────────────────┐  ┌──────────────────────────────────┐ │
│  │ [NOTDIR ] Screen List (NT600M)    │  │ ────── Change Comment ──────     │ │
│  │                          64KB     │  └──────────────────────────────────┘ │
│  │ ┌────┬────────┬─────────────────┐ │  ┌──────────────────────────────────┐ │
│  │ │No. │ Status │    Comment      │ │  │ ────── Help Message  ──────      │ │
│  │ ├────┼────────┼─────────────────┤ │  │                                  │ │
│  │ │  1 │   !    │ Bar graph       │ │  │      Input new comment           │ │
│  │ │  2 │   !    │ Access terminal 1│ │  │                                  │ │
│  │ │  3 │   !    │ Numeral edit    │ │  │  [Access terminal 1▮     ]       │ │
│  │ │  4 │        │                 │ │  │   ◄─►      = Select               │ │
│  │ │  5 │        │                 │ │  │   BS DEL  = Delete Char.          │ │
│  │ │  6 │        │                 │ │  │    ↵      = Confirm               │ │
│  │ │  7 │        │                 │ │  │   ESC     = Abort                 │ │
│  │ │  8 │        │                 │ │  └──────────────────────────────────┘ │
│  │ │  9 │        │                 │ │                                        │
│  │ │ 10 │        │                 │ │  ┌──────────────────────────────────┐ │
│  │ │ 11 │        │                 │ │  │ ────── Screen Status  ──────     │ │
│  │ │ 12 │        │                 │ │  │                                  │ │
│  │ │ 13 │        │                 │ │  │ Hist. [                  ]        │ │
│  │ │ 14 │        │                 │ │  │                                  │ │
│  │ │ 15 │        │                 │ │  │                  (  84Byte)      │ │
│  │ │ 16 │        │                 │ │  └──────────────────────────────────┘ │
│  │ └────┴────────┴─────────────────┘ │                                        │
│  └───────────────────────────────────┘                                        │
└─────────────────────────────────────────────────────────────────────────────┘
```
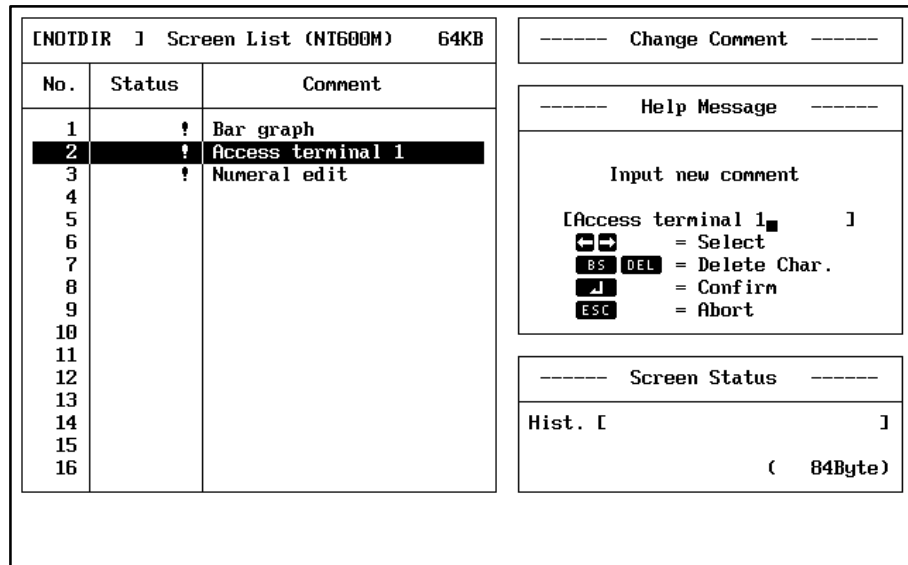
4. Input the new comment, and then press the Enter Key.

3-4   Reading Data from Other Files

Screens contained in other files can be read into the current file from the Screen Selection Display. Although entire files can be copied from the File Selection Display, copying from the Screen Selection display enables copying one screen at a time into the current file. The files being copied from can be either in the current data directory set in the Tool Settings or in a different drive/directory.

Use the following procedure to read a screen from any accessible file.

1, 2, 3...   1.   Change to the Screen Selection Display.

Screen Selection Display

```
┌─────────────────────────────────────────────────────────────────────────────┐
│  ┌───────────────────────────────────┐  ┌──────────────────────────────────┐ │
│  │ [NOTDIR ] Screen List (NT600M)    │  │ ──────── Copy Screen ────────    │ │
│  │                          64KB     │  └──────────────────────────────────┘ │
│  │ ┌────┬────────┬─────────────────┐ │  ┌──────────────────────────────────┐ │
│  │ │No. │ Status │    Comment      │ │  │ ────── Help Message  ──────      │ │
│  │ ├────┼────────┼─────────────────┤ │  │                                  │ │
│  │ │  1 │   !    │ Bar graph       │ │  │  Copy [No.  3] screen data       │ │
│  │ │  2 │   !    │ Access terminal 1│ │  │                                  │ │
│  │ │  3 │   !    │ Numeral edit    │ │  │  to                              │ │
│  │ │  4 │        │                 │ │  │                                  │ │
│  │ │  5 │        │                 │ │  │  [No.1▮  ]                       │ │
│  │ │  6 │        │                 │ │  │  [                   ]           │ │
│  │ │  7 │        │                 │ │  │                                  │ │
│  │ │  8 │        │                 │ │  │  ( ↵ =Confirm / ESC =Abort )     │ │
│  │ │  9 │        │                 │ │  └──────────────────────────────────┘ │
│  │ │ 10 │        │                 │ │                                        │
│  │ │ 11 │        │                 │ │  ┌──────────────────────────────────┐ │
│  │ │ 12 │        │                 │ │  │ ────── Screen Status  ──────     │ │
│  │ │ 13 │        │                 │ │  │                                  │ │
│  │ │ 14 │        │                 │ │  │ Hist. [                  ]        │ │
│  │ │ 15 │        │                 │ │  │                                  │ │
│  │ │ 16 │        │                 │ │  │                  (  38Byte)      │ │
│  │ └────┴────────┴─────────────────┘ │  └──────────────────────────────────┘ │
│  └───────────────────────────────────┘                                        │
└─────────────────────────────────────────────────────────────────────────────┘
```
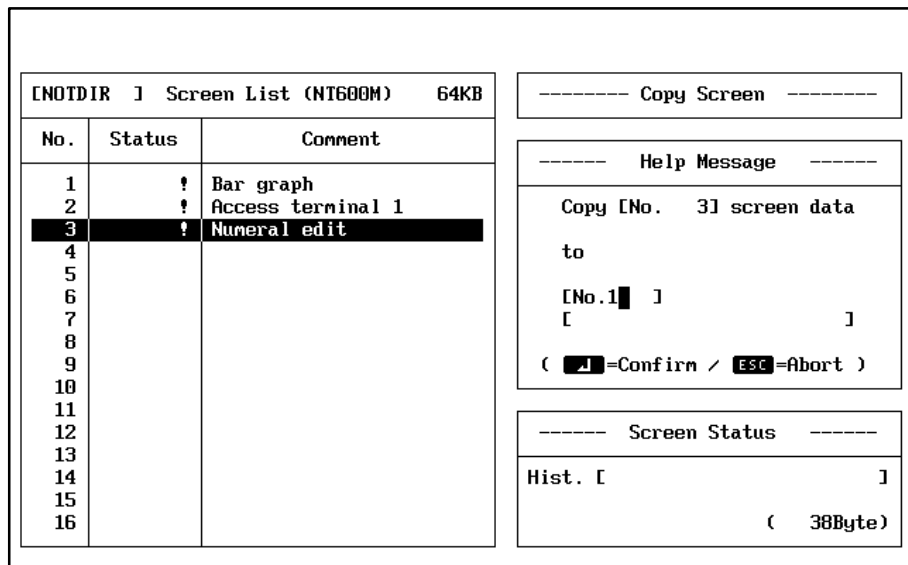
2.   Specify the screen to which data is to be read.
3.   Press F5 (Read). The following screen will appear.

93

```
[NOTDIR ]  Screen List (NT600M)    64KB         --------   Reading   --------

 No. │ Status │       Comment                  ------   Help Message   ------
─────┼────────┼──────────────────
  1  │   !    │ Bar graph                         Select format to read
  2  │   !    │ Access terminal 1
  3  │   !    │ Numeral edit                  Screen Data N/Over Overwr Insert
  4  │        │                               Mark Data   N/Over Overwr
  5  │        │                               Numeral Tbl N/Over Overwr
  6  │        │                               String Tbl  N/Over Overwr
  7  │        │
  8  │        │
  9  │        │
 10  │        │
 11  │        │
 12  │        │
 13  │        │                                  ⬆⬇⬅➡  = Select
 14  │        │                                   ↵    = Confirm
 15  │        │                                  ESC   = Abort
 16  │        │
```
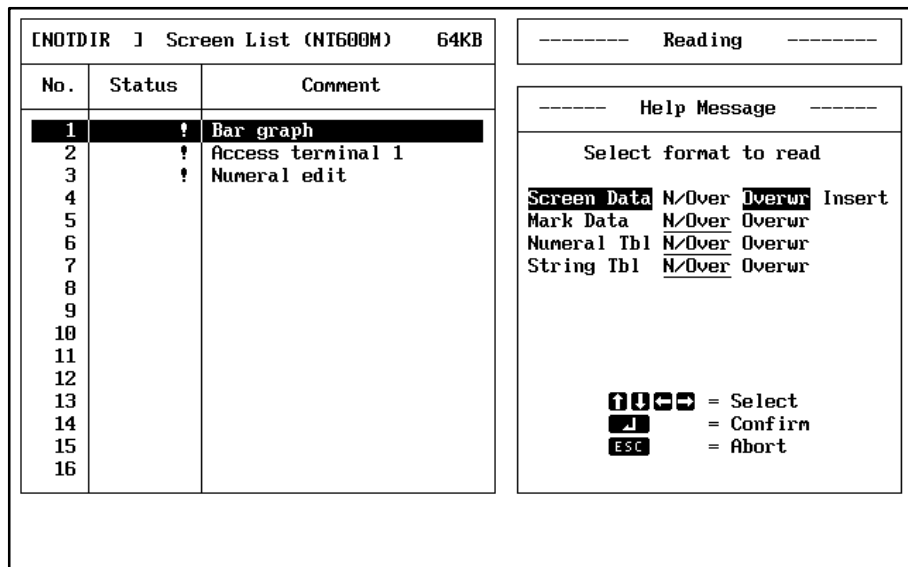
4. Specify insertion or overwriting and press the Enter Key.

Note All previous data in the selected screen will be lost if overwriting is specified.

5. Specify the data to be copied. You can select from screen data, mark data, number table data, character table data, direct connection information, and I/O comments. A list of the files in the data directory specified in the Tool Settings will be displayed when these settings are confirmed.

```
          Screen List (NT600M)    64KB         --------   Reading   --------

 FileName │           Title                     ------   Help Message   ------
──────────┼──────────────────────
 LINE1    │ Wraning                               Select the file to read
          │
          │                                       ⬆⬇    =    Select
          │                                        ↵    =    Confirm
          │                                       PgDn  =    Next Page
          │                                       PgUp  =    Prev Page
          │                                       Esc   =    Abort
          │
          │
          │
          │                                          Direct None
          │                                           13.24 KB
 Drive ▮▮▮ ▮▮▮ ▮▮▮ ▮▮▮     ▮▮▮ ▮▮▮ ▮▮▮ ▮▮▮
```
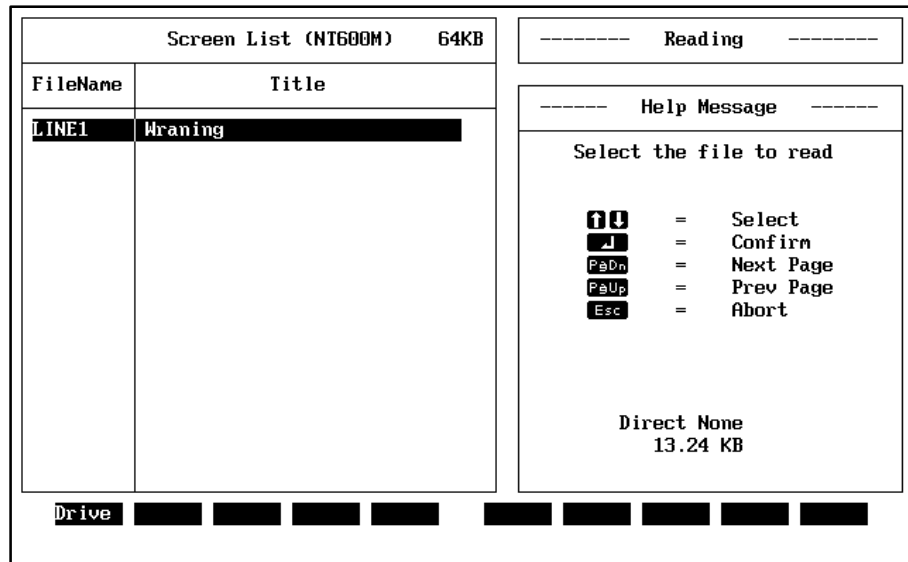
6. To read data from the displayed data directory, continue to step 8. To change the directory, press F1.

7. Specify the drive and directory of the file to be read from. A list of files in the specified directory will be displayed.

8. Specify the file from which a screen is to be read. A list of the screens in the specified file will appear.

9. Specify the screen to read. A confirmation message will appear.

10. Confirm the read or cancel the operation by pressing any key but the Enter Key. If the read is confirmed, the screen data will be inserted into the specified screen or the screen that is read will overwrite the specified screen, as specified in step 4.

94

SECTION 4
Managing File Data

This section describes how to manage file data, including copying and deleting files, as well as settings such as PT histories and initial screens that are set for the entire file.

Note Although previous versions of the Support Tool provided a feature to change file memory capacities, this feature is no longer required. Memory capacities are now automatically changed when files are updated and all files are displayed on file lists regardless of capacity.

95

4-1   Copying Files

You can copy all the contents of a designated file (i.e., screen data, memory table data, and mark data) to another file. The file can be in any accessible directory.

1, 2, 3...   1.   Go to the File Selection Display.

```
 File List      (NT600M)    64KB        --------  Select File   --------

FileName          Title                 --------  Help Message  --------

NEW FILE  Creation of New File
LINE2     Copywrite



                                            ↑↓   =   Select
                                            ↵    =   Confirm
                                           PgDn  =   Next Page
                                           PgUp  =   Prev Page
                                           Esc   =   Exit to Main Menu




    Copy Delete Print  ROM   Hist.       Tmx.  Rcv.  In.Scr Title  Prev
```
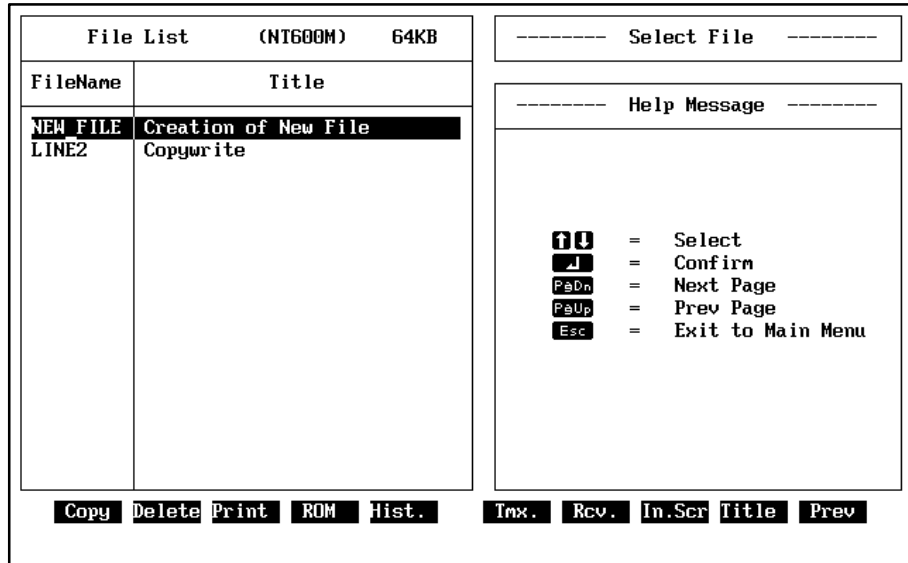
2.   Press F1 (Copy). A list of files in the data directory specified in the Tool Settings will be displayed.

```
 File List      (NT600M)    64KB        --------  Copy File   --------

FileName          Title                 --------  Help Message  --------

LINE1     Wraning



                                         Select the file to copy


                                            ↑↓   =   Select
                                            ↵    =   Confirm
                                           PgDn  =   Next Page
                                           PgUp  =   Prev Page
                                           Esc   =   Abort

                                           Direct None
                                            13.24 KB

    Drive
```
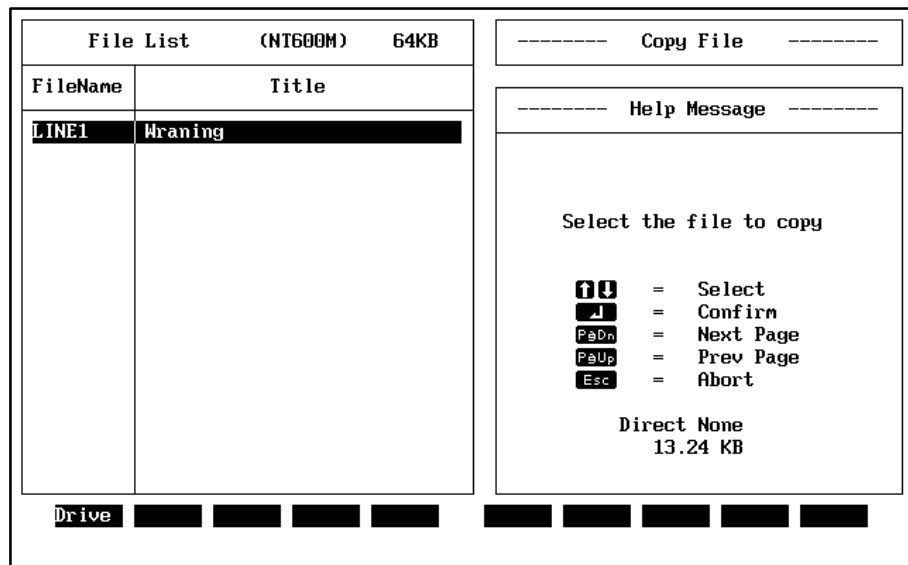
3.   To copy a file from the displayed list, go to step 5. To copy a file in a different directory, press F1. An input field for the drive and directory names will appear.

4.   Specify the drive and directory from which a file is to be copied. A list of files in the specified directory will be displayed.

5.   Specify the file to be copied or press the Escape Key to cancel.

6.   Input a name of up to 8 normal characters for the file to which the data is to be copied, and then press the Enter Key.

7.   Input a title of up to 28 characters, and then press the Enter Key or press the Escape Key to cancel.

96

8.   When copying is complete, a message will be displayed. Press any key to return to the File Selection Display.

Note   If you give the new file the same name as an existing file, a message will appear indicating that the file name already exists, and asking you if you wish to overwrite the existing file. If it is overwritten, any data stored up to that point will be cleared. If you wish to overwrite the existing file, press the Enter Key. If you wish to cancel, return to step 6. by pressing a key other than the Enter Key. Then input another name for the new file.

4-2   Deleting Files

You can delete all the contents of a designated file (i.e., screen data, memory table data, and mark data).

1, 2, 3...   1.   Go to the File Selection Display.

```
┌─────────────────────────────────┐  ┌──────────────────────────────┐
│  File List    (NT600M)    64KB  │  │ ────────  Select File  ──────── │
│ ┌──────────┬──────────────────┐ │  │                              │
│ │ FileName │      Title       │ │  │ ────────  Help Message  ──────  │
│ ├──────────┼──────────────────┤ │  │                              │
│ │ NEW_FILE │Creation of New File│ │  │                              │
│ │ LINE2    │Copywrite          │ │  │                              │
│ │          │                   │ │  │  ▲▼  =  Select                │
│ │          │                   │ │  │  ↵   =  Confirm               │
│ │          │                   │ │  │ PgDn =  Next Page             │
│ │          │                   │ │  │ PgUp =  Prev Page             │
│ │          │                   │ │  │ Esc  =  Exit to Main Menu     │
│ └──────────┴──────────────────┘ │  │                              │
│ [Copy][Delete][Print][ROM][Hist.]│ │[Tmx.][Rcv.][In.Scr][Title][Prev]│
└─────────────────────────────────┘  └──────────────────────────────┘
```
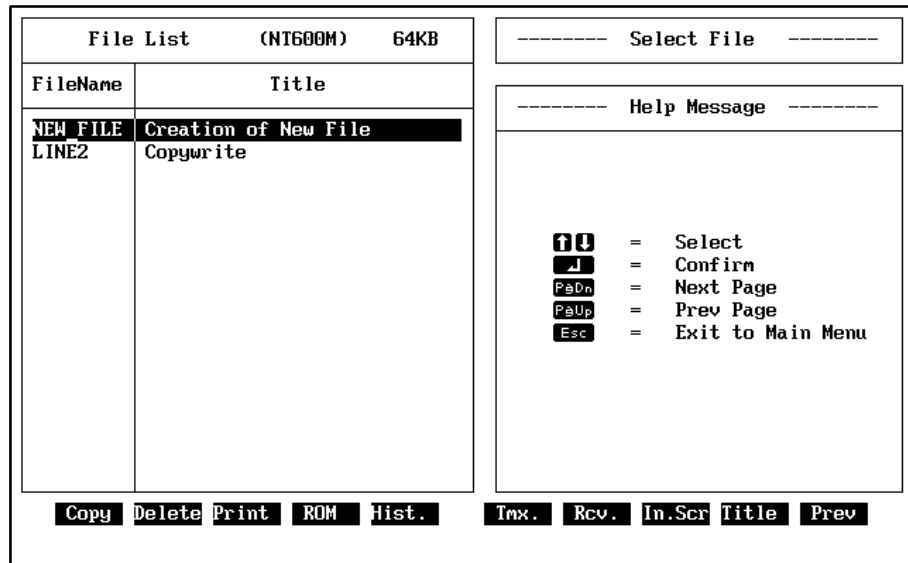
2.   Move the bar cursor to the file which is to be deleted, and press F2 (Delete). A message will appear asking whether you actually want to delete the file.

3.   To confirm, press the Enter Key. Press any other key to return to the File Selection Display.

4.   When the deletion is complete, a message will be displayed. Press any key to return to the File Selection Display.

4-3   Changing File Titles

You can change file titles that are already set.

1, 2, 3...   1.   Go to the File Selection Display.

```
┌─────────────────────────────────────────────────────────────────┐
│  ┌──────────────────────────────┐  ┌──────────────────────────┐  │
│  │   File List    (NT600M)  64KB│  │ ──────── Select File ────│  │
│  ├──────────────┬───────────────┤  │                          │  │
│  │ FileName     │     Title     │  ├──────────────────────────┤  │
│  ├──────────────┴───────────────┤  │ ──────── Help Message ───│  │
│  │▐NEW FILE▌ Creation of New File│  │                          │  │
│  │ LINE2     Copywrite           │  │                          │  │
│  │                               │  │                          │  │
│  │                               │  │ ⬆⬇  =  Select            │  │
│  │                               │  │ ↵   =  Confirm           │  │
│  │                               │  │ PgDn =  Next Page         │  │
│  │                               │  │ PgUp =  Prev Page         │  │
│  │                               │  │ Esc  =  Exit to Main Menu │  │
│  │                               │  │                          │  │
│  │ Copy Delete Print ROM Hist.   │  │ Tmx. Rcv. In.Scr Title Prev│
│  └──────────────────────────────┘  └──────────────────────────┘  │
└─────────────────────────────────────────────────────────────────┘
```
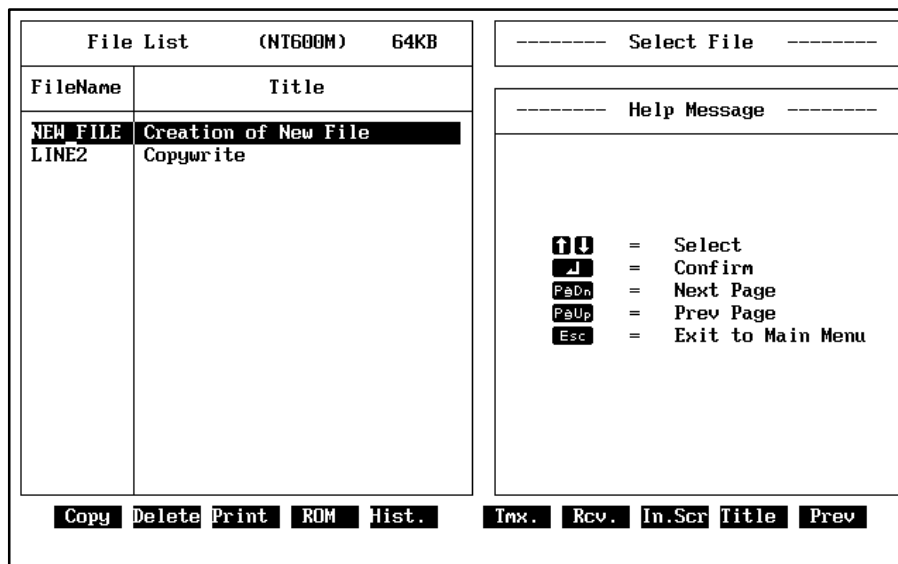
2.   Move the bar cursor to the file for which the title is to be changed, and press F9 (Change Title). An input field will appear for the new title.

3.   Input the new title, and then press the Enter Key.

4-4   Saving PT Histories in Files

History information recorded in the PT can be received through the tool interface and saved in a file. The file that you save is a text file, so you can check its contents with the MS–DOS "TYPE" command. History files can also be printed. Refer to *Section 5 Printing* for details.

1, 2, 3...   1.   Go to the File Selection Display.

```
┌─────────────────────────────────────────────────────────────────┐
│  ┌──────────────────────────────┐  ┌──────────────────────────┐  │
│  │   File List    (NT600M)  64KB│  │ ──────── Select File ────│  │
│  ├──────────────┬───────────────┤  │                          │  │
│  │ FileName     │     Title     │  ├──────────────────────────┤  │
│  ├──────────────┴───────────────┤  │ ──────── Help Message ───│  │
│  │▐NEW FILE▌ Creation of New File│  │                          │  │
│  │ LINE2     Copywrite           │  │                          │  │
│  │                               │  │                          │  │
│  │                               │  │ ⬆⬇  =  Select            │  │
│  │                               │  │ ↵   =  Confirm           │  │
│  │                               │  │ PgDn =  Next Page         │  │
│  │                               │  │ PgUp =  Prev Page         │  │
│  │                               │  │ Esc  =  Exit to Main Menu │  │
│  │                               │  │                          │  │
│  │ Copy Delete Print ROM Hist.   │  │ Tmx. Rcv. In.Scr Title Prev│
│  └──────────────────────────────┘  └──────────────────────────┘  │
└─────────────────────────────────────────────────────────────────┘
```
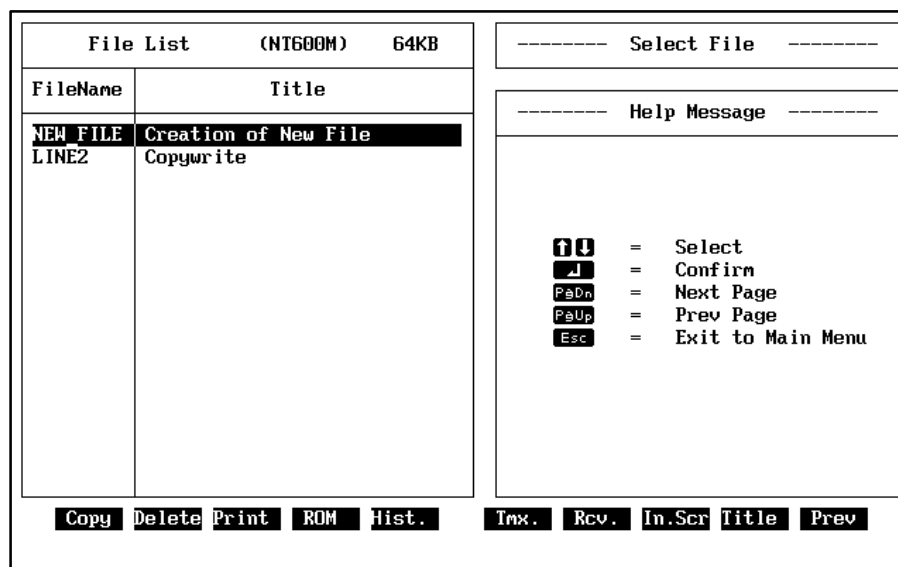
2.   Press F5 (History). It does not matter where the cursor is. An input field will appear for the history file name.

```
┌──────────────────────────────────────────┬──────────────────────────────────┐
│   File List    (NT600M)     64KB          │  ------ History Receiving ------ │
│ ┌────────────┬───────────────────────────┐│ ┌──────────────────────────────┐ │
│ │ FileName   │         Title             ││ │ -------- Help Message ------- │ │
│ ├────────────┼───────────────────────────┤│ │                              │ │
│ │ NEW_FILE   │ Creation of New File      ││ │                              │ │
│ │ LINE2      │ Copywrite                 ││ │    Receive screen history    │ │
│ │            │                           ││ │                              │ │
│ │            │                           ││ │    Name of history file      │ │
│ │            │                           ││ │                              │ │
│ │            │                           ││ │                              │ │
│ │            │                           ││ │  Filename :                  │ │
│ │            │                           ││ │  [■       ]                  │ │
│ │            │                           ││ │                              │ │
│ │            │                           ││ │                              │ │
│ │            │                           ││ │                              │ │
│ │            │                           ││ │               ↵ = Confirm    │ │
│ │            │                           ││ │             ESC = Abort      │ │
│ │            │                           ││ │                              │ │
│ └────────────┴───────────────────────────┘└──────────────────────────────┘ │
│                                                                             │
└─────────────────────────────────────────────────────────────────────────────┘
```
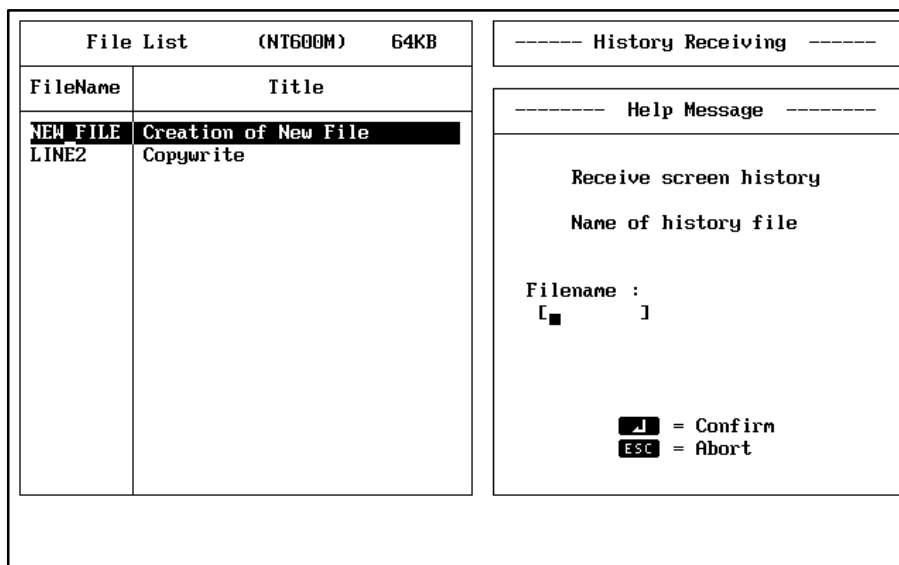
3. Input a file name of up to 8 characters, and then press the Enter Key. While the data is being received from the PT, a message will be displayed indicating that history data is being received.

4. When the data has all been received, a message will be displayed. Press any key to return to the File Selection Display.

Note If you give the file the same name as an existing file, a message will appear indicating that the file name already exists, and asking you if you wish to overwrite the existing file. If it is overwritten, any data stored up to that point will be cleared. If you wish to overwrite the existing file, press the Enter Key. If you wish to cancel, press a key other than the Enter Key and then input another name for the file.

Saving Files
A file name extension is attached to the file name that is input, and the file name is stored in the Tool Settings data directory. For example, if the data directory is set as B: \DATA, and LOGFILE is input as the file name, then the data received will be saved to B: \DATA\LOGFILE.LOG.

The history records are stored in the file first by order of occurrence and then by order of frequency.

4-5   Setting Initial Screens

The Programmable Terminal will display a previously designated initial screen when the PT is turned on or reset.

1, 2, 3...   1.   Go to the File Selection Display.

```
┌─────────────────────────────────┐  ┌─────────────────────────────────┐
│  File List    (NT600M)   64KB   │  │ ──────── Select File ────────   │
│ ┌─────────┬─────────────────────┤  ├─────────────────────────────────┤
│ │FileName │        Title        │  │ ──────── Help Message ────────  │
│ ├─────────┼─────────────────────┤  │                                 │
│ │▋NEW_FILE│ Creation of New File│  │                                 │
│ │ LINE2   │ Copywrite           │  │                                 │
│ │         │                     │  │   ◼◼  =   Select                │
│ │         │                     │  │   ◼   =   Confirm               │
│ │         │                     │  │   PgDn =  Next Page             │
│ │         │                     │  │   PgUp =  Prev Page             │
│ │         │                     │  │   Esc  =  Exit to Main Menu     │
│ │         │                     │  │                                 │
│ └─────────┴─────────────────────┤  │                                 │
│  Copy Delete Print ROM Hist.    │  │  Tmx. Rcv. In.Scr Title Prev    │
└─────────────────────────────────┘  └─────────────────────────────────┘
```
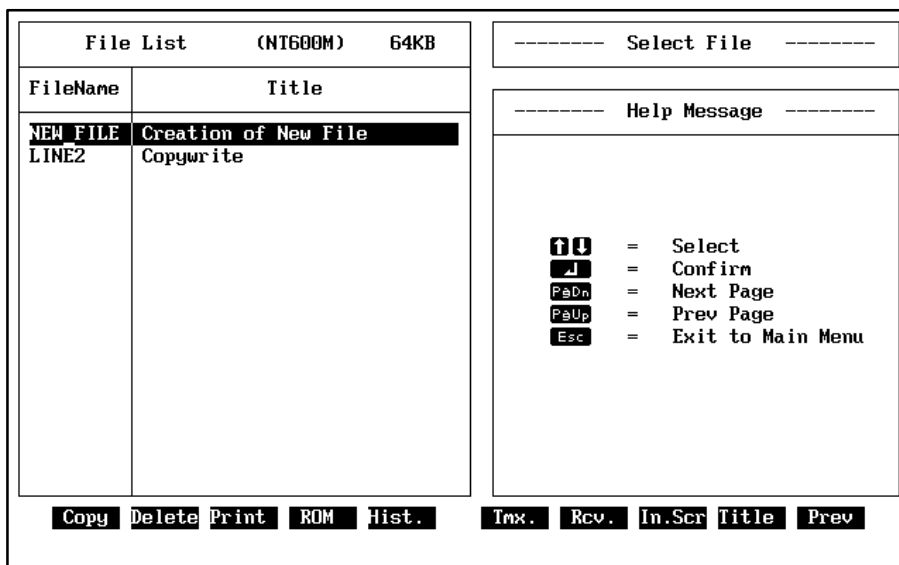
2.   Move the bar cursor to the file for which you want to set the initial
     screen, and then press F8 (Initial Screen).

```
┌─────────────────────────────────┐  ┌─────────────────────────────────┐
│  File List    (NT600M)   64KB   │  │ ────── Set Initial Screen ────── │
│ ┌─────────┬─────────────────────┤  ├─────────────────────────────────┤
│ │FileName │        Title        │  │ ──────── Help Message ────────  │
│ ├─────────┼─────────────────────┤  │                                 │
│ │ NEW_FILE│ Creation of New File│  │                                 │
│ │▋LINE2   │ Copywrite           │  │  Setting initial screen         │
│ │         │                     │  │                                 │
│ │         │                     │  │  Enter initial screen number    │
│ │         │                     │  │                                 │
│ │         │                     │  │                                 │
│ │         │                     │  │  Initial screen [No.1▋ ]        │
│ │         │                     │  │                                 │
│ │         │                     │  │       ◼  = Confirm              │
│ └─────────┴─────────────────────┤  │       Esc = Abort              │
│                                 │  │                                 │
└─────────────────────────────────┘  └─────────────────────────────────┘
```
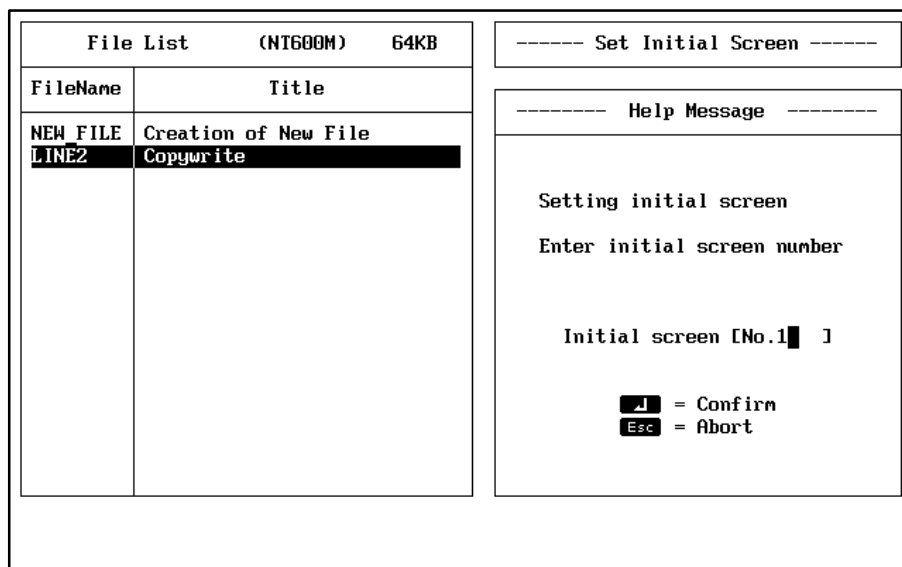
3.   Input the screen number of the initial screen, and then press the Enter
     Key. (For the NT20M, you can input a screen number from 1 to 250; for
     the NT600M, from 1 to 1,000.)

4.   When the setting has been completed, a message will be displayed.
     Press any key to return to the File Selection Display.

Note The initial screen number setting is made for screen files, so the setting will
     not be effective unless a file is sent to the PT after the setting has been
     made. To send the file, press F6 (Transmit) from the File Selection Display. If
     you do not set a initial screen number, the default setting will be 1 unless the
     screen is initialized at the PT, in which case the default setting will be 0.

100

SECTION 5
Printing

This sections describes the procedures for printing screen images and other information from the Screen Selection and File Selection Displays.

5-1 Printing Features

The F3 Function Key can be used from the File Selection Display or the Screen Selection Display to print out actual screens or to print out data related to screens.

File Selection Display

The following can be printed from the File Selection Display.

- **File lists:** Include file names, memory settings, memory usage, etc.
- **Screen lists:** Includes the screen numbers, comments, and attributes for all screens in a specified file.
- **Screen images:** Includes all screens in a specified file. When printing screen images, the items selectable for printing from the Screen Selection Display can also be designated here (see below).
- **Cross references:** Includes cross references of the usage of character tables and numeral tables.
- **Screen histories**
- **Mark lists**
- **Direct connection information**

Screen Selection Display

The following can be printed from the Screen Selection Display.

- **One or more screen images**
- **Screen information**
- **Lamp numbers**
- **Touch switch numbers**
- **Memory table numbers**

Note 1. NT20M screens are printed up to four screens per page. NT600M screens and other information are printed on one or more page each.
2. Set the printer up before attempting to print.
3. A printing error may occur f the printer's SEL switch is ON when printing is started. If this happen, press any key, return to the Screen Selection Display and repeat the printing process from the beginning.
4. The paper size for printing is A4 (portrait). Other settings can result in printing errors.
5. Nothing will be printed if no data exists for a specified item.
6. Detailed information will not be printed for polylines and circles.
7. Only 62 lines will be printed per page before pagination.
8. The maximum length printed for character data is 32 characters.
9. Only child screens will be printed for continuous or overlapping screen unless a screen image is specified. If a screen image is specified for continuous screens, only the first child screen and the screen numbers of the child screens will be printed. If a screen image is specified for overlapping screens, the overlapping screen and the screen numbers of the child screens will be printed.

5-2 Printing from the File Selection Display

1, 2, 3... 1. Go to the File Selection Display
2. Specify the file from which to print.
3. Specify F3. The following display will appear.

102

```
┌─────────────────────────────────┐  ┌─────────────────────────────┐
│  File List      (NT600M)   64KB │  │ ────────   Print File   ──── │
├──────────┬──────────────────────┤  ├─────────────────────────────┤
│ FileName │       Title          │  │ ────────  Help Message  ──── │
├──────────┼──────────────────────┤  │                             │
│ NEW_FILE │ Creation of New File │  │    Printing selected file   │
│ LINE1    │ ProLine1 Warnings    │  │    Select type of printing  │
│ LINE2    │ Input messages       │  │                             │
│ NOTDIR   │                      │  │  Print File List            │
│          │                      │  │  Print Screen List          │
│          │                      │  │  Print Screen               │
│          │                      │  │  Print Cross-references     │
│          │                      │  │  Print Display History File │
│          │                      │  │  Print Mark List            │
│          │                      │  │  Print Direct Conn Info     │
│          │                      │  │                             │
│          │                      │  │   ⬆⬇ = Select              │
│          │                      │  │   ↵  = Confirm             │
│          │                      │  │   ESC = Abort              │
└──────────┴──────────────────────┘  └─────────────────────────────┘
```

4.　Specify the item to be printed or press the Escape Key to cancel. Printing will start after user confirmation for all items except for screens, in which case the following display will appear.

```
┌─────────────────────────────────┐  ┌─────────────────────────────┐
│  File List      (NT600M)   64KB │  │ ────────   Print File   ──── │
├──────────┬──────────────────────┤  ├─────────────────────────────┤
│ FileName │       Title          │  │ ────────  Help Message  ──── │
├──────────┼──────────────────────┤  │                             │
│ NEW_FILE │ Creation of New File │  │   Select the print format   │
│ LINE1    │ ProLine1 Warnings    │  │                             │
│ LINE2    │ Input messages       │  │ Screen Image  YES   NO      │
│ NOTDIR   │                      │  │ Detail Info   YES   NO      │
│          │                      │  │ Lamp/Touch Sw # YES NO      │
│          │                      │  │ Memory Table # YES  NO      │
│          │                      │  │                             │
│          │                      │  │  ⬆⬇⬅➡ = Select          │
│          │                      │  │   ↵    = Confirm          │
│          │                      │  │   ESC  = Abort            │
└──────────┴──────────────────────┘  └─────────────────────────────┘
```

5.　Specify the items to be printed. Printing will start after user confirmation. A message will be displayed during printing and another will appear when printing finishes. The actual image being printed will be displayed when detailed information and screen image are specified.

Note　Marks may not be printed exactly as the appear on screen when they appear in character strings printed in detailed information.

5-3　Printing from the Screen Selection Display

1, 2, 3...　1.　Go the the Screen Selection Display.

2.　If you are printing only one screen, move the bar cursor to the number of the screen you want to print, and press F3 (Print).

If you are printing multiple screens at one time, tag the screen numbers that you want to print and then press F3 (Print).

The following display will appear.

103

```
[NOTDIR  ] Screen List (NT600M)   64KB      -------- Print Screen --------

No. │ Status │     Comment
                                            +------------------------------+
 1  │   !    │ Bar graph                    │ ------ Help Message  ------   │
 2  │   !    │ Access terminal 1            │                              │
 3  │   !    │ Numeral edit                 │    Select the print format   │
 4  │        │                              │ Screen Image   [YES]   NO    │
 5  │        │                              │ Detail Info     YES    NO    │
 6  │        │                              │ Lamp/Touch Sw # YES    NO    │
 7  │        │                              │ Memory Table #  YES    NO    │
 8  │        │                              │   ↑↓←→ = Select              │
 9  │        │                              │   ↵    = Confirm             │
10  │        │                              │   ESC  = Abort               │
11  │        │                              +------------------------------+
12  │        │
13  │        │                              +------------------------------+
14  │        │                              │ ------  Screen Status  ------│
15  │        │                              │                              │
16  │        │                              │ Hist. [              ]       │
                                            │                              │
                                            │               (   38Byte)    │
                                            +------------------------------+
```

3. Specify the items to be printed. Printing will start after user confirmation. The confirmation screen will show the settings. A message will be displayed during printing and another will appear when printing finishes. The actual image being printed will be displayed when detailed information and screen image are specified.

This section describes the procedures to transfer screen and memory table data between the PT and the Support Software. The procedure to delete screens directly from the PT is also provided.

6-1 Connecting to the PT

Before beginning transfer operations, connect the computer to the Programmable Terminal according to the system configuration shown below.
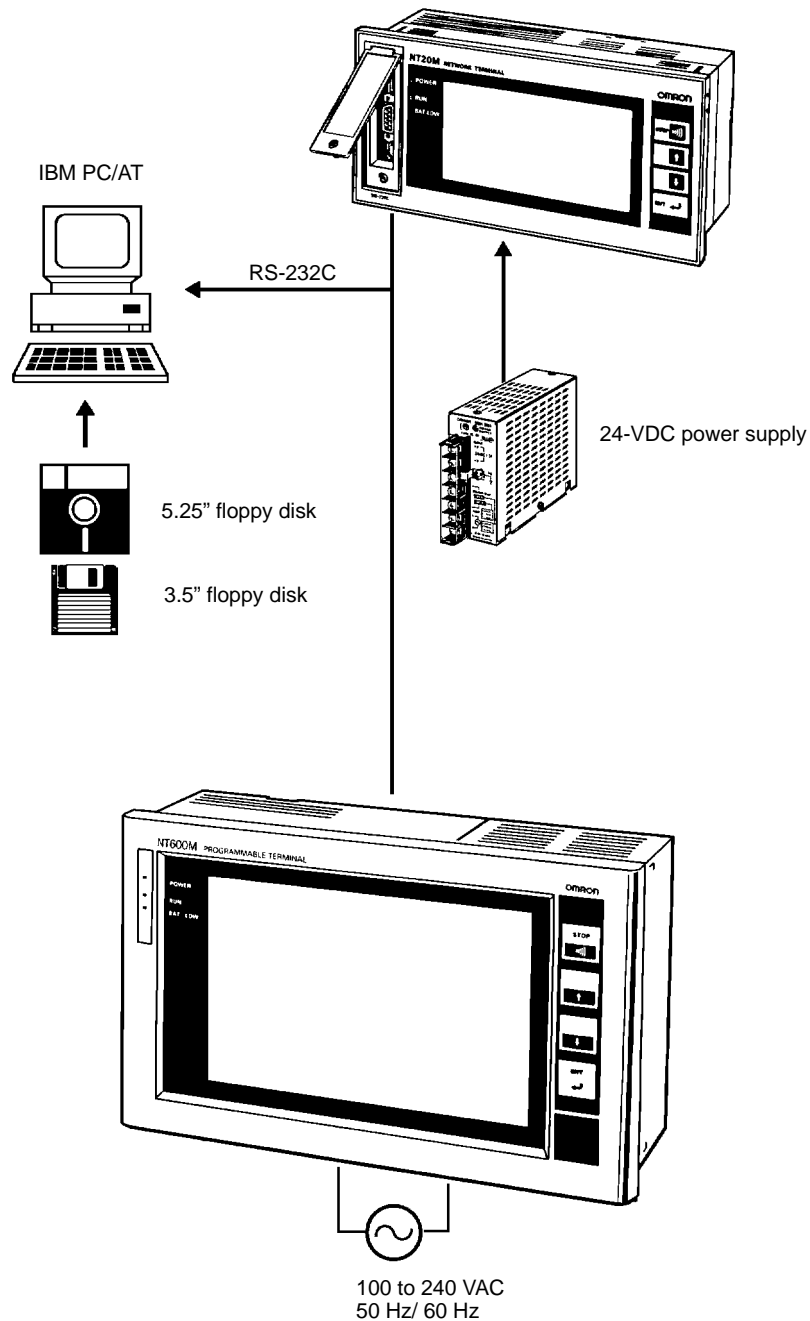
Note For instructions on the proper connecting cable, refer to the appropriate Programmable Terminal operation manual.

6-2 Transmitting Data

Data created with the Support Tool (i.e., screen data, memory table data, and mark data) can be transmitted either by file or by screen (i.e., single screens, multiple screens, or memory tables).

Transmitting Files   When you transmit a file, screen data, memory table data, and mark data registered in the PT is completely overwritten unless the resume operation is set to ON. If the resume operation is ON, memory table data will not be changed.

Note   When using EEPROM, the PT memory must be initialized (i.e., cleared) in advance from the maintenance menu to transfer data to the PT's image data memory.

1, 2, 3...   1.   Go to the File Selection Display.
2.   Move the bar cursor to the file you want to transmit, and then press F6 (Transmit). A message will appear asking whether you actually want to transmit the file.
3.   If you do want to transmit it, press the Enter Key.
     To return to the File Selection Display, press any key other than the Enter Key.

```
     File List      (NT600M)   64KB       --------  Sending File  --------

   FileName           Title                --------  Help Message  --------

   NEW_FILE  Creation of New File
   LINE1     ProLine1 Warnings
   LINE2     Input messages                    [LINE1   ] data sending
   NOTDIR
                                                 ( Tool -> NTM )


                                               Confirm ?



                                             ( [↵] = Yes / [ESC] = Abort )
```
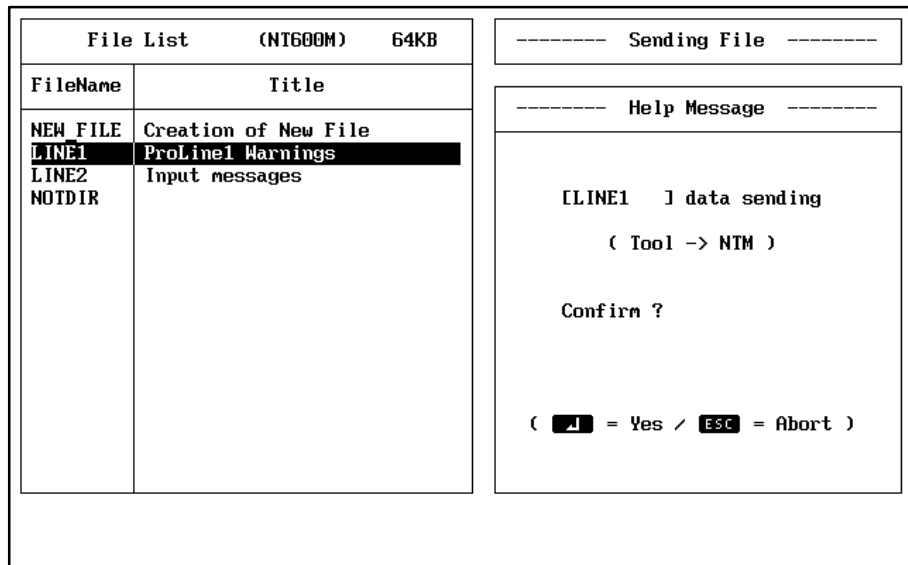
4.   Select whether or not you want to confirm transmission. Select "Yes" or "No," and then press the Enter Key. Transfer will begin.

```
     File List      (NT600M)   64KB       --------  Sending File  --------

   FileName           Title                --------  Help Message  --------

   NEW_FILE  Creation of New File
   LINE1     ProLine1 Warnings
   LINE2     Input messages
   NOTDIR
                                               Verify all data sent ?


                                               Yes          No


                                            [◄►] = Select
                                            [↵]  = Confirm
                                            [ESC] = Abort
```
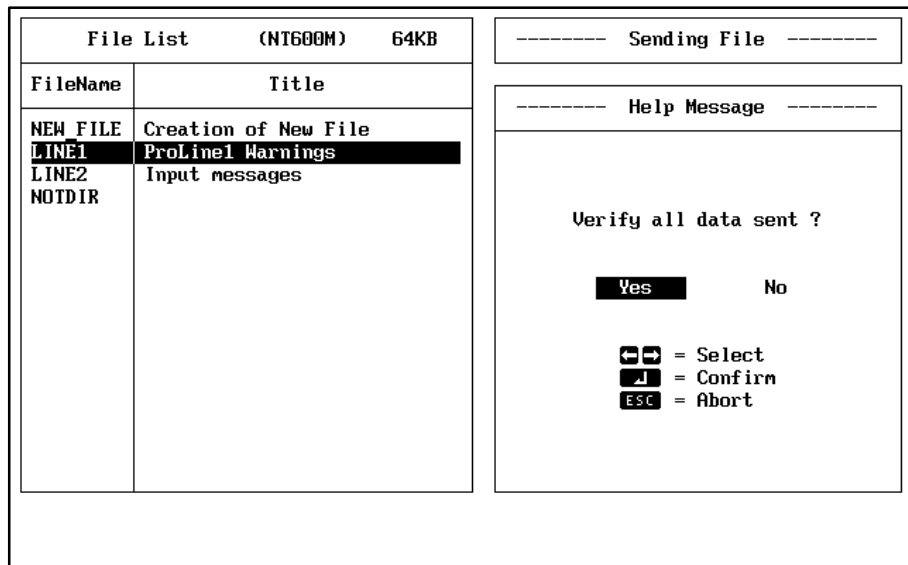
5.   To return to the File Selection Display, press the Escape Key.

107

6. When the transmission is complete, a message will be displayed. Press any key to return to the File Selection Display.

Transmitting Screens   You can transmit single or multiple screens.

Note 1. Errors can occur when continuous or overlapping screens are transmitted, so check these screens carefully before sending them.

2. This operation is not possible if EEPROM is used in the PT. Transfer files only.

1, 2, 3... 1. Go the the Screen Selection Display.

2. If you are transmitting only one screen, move the bar cursor to the number of the screen you want to transmit, and press F6 (Transmit).

If you are transmitting multiple screens at one time, tag the screen numbers that you want to transmit and then press F6 (Transmit).

```
[NOTDIR ] Screen List (NT600M)    64KB       ------  Sending Screen  ------

 No. │ Status │    Comment              ------   Help Message   ------
─────┼────────┼──────────────
 * 1 │      ! │ Bar graph                      Select items to send
 * 2 │      ! │ Access terminal 1                  ( Tool -> NTM )
   3 │      ! │ Numeral edit
   4 │        │                             Scr Data    Mem Tbl
   5 │        │
   6 │        │                              ◄►  = Select
   7 │        │                              ↵   = Confirm
   8 │        │                             ESC  = Abort
   9 │        │
  10 │        │
  11 │        │                           ------   Screen Status   ------
  12 │        │
  13 │        │                           Hist. [                 ]
  14 │        │
  15 │        │                                        (   84Byte)
  16 │        │
```

3. Select screen data. As the default, "Screen Data" will be displayed in reverse video. To select screen data, just press the Enter Key.

4. Select whether or not you want to confirm the transmission, and then press the Enter Key.

```
[NOTDIR ] Screen List (NT600M)    64KB       ------  Sending Screen  ------

 No. │ Status │    Comment              ------   Help Message   ------
─────┼────────┼──────────────
 * 1 │      ! │ Bar graph
 * 2 │      ! │ Access terminal 1              Verify all data sent ?
   3 │      ! │ Numeral edit
   4 │        │                                Yes        No
   5 │        │
   6 │        │                              ◄►  = Select
   7 │        │                              ↵   = Confirm
   8 │        │                             ESC  = Abort
   9 │        │
  10 │        │
  11 │        │                           ------   Screen Status   ------
  12 │        │
  13 │        │                           Hist. [                 ]
  14 │        │
  15 │        │                                        (   84Byte)
  16 │        │
```

108

A message will be displayed asking whether you actually want to transmit the data. The following example shows a case where the tag function is used to designate multiple screens for transmission.

```
┌─────────────────────────────────────────┐  ┌─────────────────────────────┐
│ [NOTDIR ]  Screen List (NT600M)    64KB  │  │ ------ Sending Screen ------ │
│                                          │  └─────────────────────────────┘
│  No. │ Status │        Comment           │  ┌─────────────────────────────┐
│ ─────┼────────┼──────────────────────────│  │ ------  Help Message ------  │
│  * 1 │      ! │ Bar graph                │  │                             │
│  * 2 │      ! │ Access terminal 1        │  │                             │
│    3 │      ! │ Numeral edit             │  │   Send marked screen data   │
│    4 │        │                          │  │                             │
│    5 │        │                          │  │   Confirm ?                 │
│    6 │        │                          │  │                             │
│    7 │        │                          │  │                             │
│    8 │        │                          │  │                             │
│    9 │        │                          │  │ ( ◄┘ = Yes / ESC = Abort )  │
│   10 │        │                          │  └─────────────────────────────┘
│   11 │        │                          │  ┌─────────────────────────────┐
│   12 │        │                          │  │ ------ Screen Status ------  │
│   13 │        │                          │  │                             │
│   14 │        │                          │  │ Hist. [                  ]   │
│   15 │        │                          │  │                             │
│   16 │        │                          │  │              (   84Byte)    │
│                                          │  └─────────────────────────────┘
└─────────────────────────────────────────┘
```

5. To confirm, press the Enter Key. To return to step 1, press any key other than the Enter Key.

6. When the transmission is complete, a message will be displayed. Press any key to return to the Screen Selection Display.

7. If you choose to have the data confirmed, then after the data has been transmitted the PT will read the data and check it. This makes possible a more reliable transmission, but it takes more time than if the data is not confirmed.

Transmitting Memory Tables

Note If the resume operation is ON, memory table data will not be changed. Set the resume operation to OFF before transferring memory tables.

1, 2, 3... 1. Go to the Screen Selection Display.

2. Press F6 (Transmit). The position of the bar cursor is irrelevant.

```
┌─────────────────────────────────────────┐  ┌─────────────────────────────┐
│ [NOTDIR ]  Screen List (NT600M)    64KB  │  │ ------ Sending Screen ------ │
│                                          │  └─────────────────────────────┘
│  No. │ Status │        Comment           │  ┌─────────────────────────────┐
│ ─────┼────────┼──────────────────────────│  │ ------  Help Message ------  │
│  * 1 │      ! │ Bar graph                │  │                             │
│  * 2 │      ! │ Access terminal 1        │  │   Select items to send      │
│    3 │      ! │ Numeral edit             │  │     ( Tool -> NTM )          │
│    4 │        │                          │  │                             │
│    5 │        │                          │  │   Scr Data    Mem Tbl       │
│    6 │        │                          │  │                             │
│    7 │        │                          │  │      ◄ ► = Select           │
│    8 │        │                          │  │      ◄┘  = Confirm          │
│    9 │        │                          │  │      ESC = Abort            │
│   10 │        │                          │  └─────────────────────────────┘
│   11 │        │                          │  ┌─────────────────────────────┐
│   12 │        │                          │  │ ------ Screen Status ------  │
│   13 │        │                          │  │                             │
│   14 │        │                          │  │ Hist. [                  ]   │
│   15 │        │                          │  │                             │
│   16 │        │                          │  │              (   84Byte)    │
│                                          │  └─────────────────────────────┘
└─────────────────────────────────────────┘
```

3. Select memory tables and then press the Enter Key.

4. Select whether or not you want to confirm the transmission, and then press the Enter Key.

109

```
┌─────────────────────────────────────────────┐   ┌──────────────────────────────┐
│ [NOTDIR  ]  Screen List (NT600M)      64KB   │   │ ------  Sending Screen  ----- │
│ ┌───────┬────────┬──────────────────────┐    │   └──────────────────────────────┘
│ │ No.   │ Status │       Comment        │    │   ┌──────────────────────────────┐
│ ├───────┼────────┼──────────────────────┤    │   │ ------  Help Message  ------- │
│ │ * 1   │   !    │ Bar graph            │    │   │                              │
│ │ * 2   │   !    │ Access terminal 1    │    │   │  Verify all data sent ?      │
│ │   3   │   !    │ Numeral edit         │    │   │                              │
│ │   4   │        │                      │    │   │   Yes        No              │
│ │   5   │        │                      │    │   │                              │
│ │   6   │        │                      │    │   │  ◄──►─ = Select              │
│ │   7   │        │                      │    │   │   ↵  = Confirm               │
│ │   8   │        │                      │    │   │  ESC = Abort                 │
│ │   9   │        │                      │    │   └──────────────────────────────┘
│ │  10   │        │                      │    │
│ │  11   │        │                      │    │   ┌──────────────────────────────┐
│ │  12   │        │                      │    │   │ ------  Screen Status  ------ │
│ │  13   │        │                      │    │   │ Hist. [                    ] │
│ │  14   │        │                      │    │   │                              │
│ │  15   │        │                      │    │   │            (    84Byte)      │
│ │  16   │        │                      │    │   └──────────────────────────────┘
│ └───────┴────────┴──────────────────────┘    │
└─────────────────────────────────────────────┘
```

A message will be displayed asking whether you actually want to transmit the data.

```
┌─────────────────────────────────────────────┐   ┌──────────────────────────────┐
│ [NOTDIR  ]  Screen List (NT600M)      64KB   │   │ ------  Sending Screen  ----- │
│ ┌───────┬────────┬──────────────────────┐    │   └──────────────────────────────┘
│ │ No.   │ Status │       Comment        │    │   ┌──────────────────────────────┐
│ ├───────┼────────┼──────────────────────┤    │   │ ------  Help Message  ------- │
│ │   1   │   !    │ Bar graph            │    │   │                              │
│ │   2   │   !    │ Access terminal 1    │    │   │  Send memory tables data     │
│ │   3   │   !    │ Numeral edit         │    │   │      (Numeral/String)        │
│ │   4   │        │                      │    │   │                              │
│ │   5   │        │                      │    │   │  Confirm ?                   │
│ │   6   │        │                      │    │   │                              │
│ │   7   │        │                      │    │   │                              │
│ │   8   │        │                      │    │   │ (  ↵  = Yes / ESC = Abort )  │
│ │   9   │        │                      │    │   └──────────────────────────────┘
│ │  10   │        │                      │    │
│ │  11   │        │                      │    │   ┌──────────────────────────────┐
│ │  12   │        │                      │    │   │ ------  Screen Status  ------ │
│ │  13   │        │                      │    │   │ Hist. [                    ] │
│ │  14   │        │                      │    │   │                              │
│ │  15   │        │                      │    │   │            (    38Byte)      │
│ │  16   │        │                      │    │   └──────────────────────────────┘
│ └───────┴────────┴──────────────────────┘    │
└─────────────────────────────────────────────┘
```

5. To confirm, press the Enter Key. To return to step 1, press any key other than the Enter Key.
6. When the transmission is complete, a message will be displayed. Press any key to return to the Screen Selection Display.

6-3   Receiving Data

Data registered in the PT (i.e., screen data, memory table data, and mark data) can be received either by file or by screen (i.e., single screens or memory tables). Screen comments, however, are not transferred to PT memory and can thus not be received.

Receiving Files

All screen data, memory table data, and mark data together can be received in one file.

1, 2, 3... 1. Go to the File Selection Display.
2. Press F7 (Receive). The position of the bar cursor is irrelevant.

```
   File List      (NT600M)    64KB        -------- Receive Data --------

  FileName           Title               -------- Help Message --------

  NEW_FILE  Creation of New File
  LINE1     ProLine1 Warnings
  LINE2     Input messages                  Receiving data from NT host
  NOTDIR
                                                  ( NTM -> Tool )


                                               Confirm ?




                                            ( [↵] = Yes / [ESC] = Abort )
```

3. To confirm, press the Enter Key. Press any other key to return to the File Selection Display.

```
   File List      (NT600M)    64KB        -------- Receive Data --------

  FileName           Title               -------- Help Message --------

  NEW_FILE  Creation of New File
  LINE1     ProLine1 Warnings
  LINE2     Input messages                   Enter filename and title
  NOTDIR                                      of screen data receiving

                                            Filename :
                                            [■        ]
                                            Title :
                                            [                          ]


                                                  [↵] = Confirm
                                                  [ESC] = Abort
```
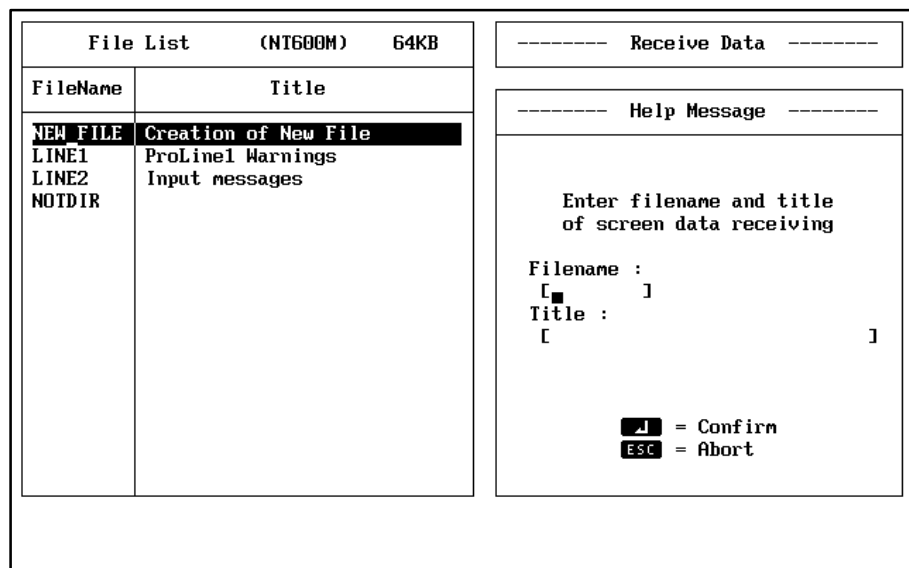
4. Input the name, using up to 8 characters, of the file in which the transmitted data is to be stored, and then press the Enter Key.
5. Input a title of up to 28 characters, and press the Enter Key.
6. When transmission is complete, a message will be displayed. Press any key to return to the File Selection Display.

Note If you give the file the same name as an existing file, a message will appear indicating that the file name already exists, and asking you if you wish to overwrite the existing file. If it is overwritten, any data stored up to that point will be cleared. If you wish to overwrite the existing file, press the Enter Key. If you wish to cancel, return to step 1 by pressing a key other than the Enter Key and then input another name for the file.

Receiving Screens

1, 2, 3... 1. Go to the Screen Selection Display.
        2. Press F7 (Receive). The position of the bar cursor is irrelevant.

111

```
┌─────────────────────────────────────────┐  ┌─────────────────────────────────┐
│ [NOTDIR  ]  Screen List (NT600M)   64KB  │  │ ────── Receiving Screen ──────  │
│ ┌────┬────────┬─────────────────────┐    │  │                                 │
│ │No. │ Status │      Comment        │    │  │ ┌─────────────────────────────┐ │
│ ├────┼────────┼─────────────────────┤    │  │ │ ──────  Help Message ────── │ │
│ │  1 │   !    │ Bar graph           │    │  │ │                             │ │
│ │  2 │   !    │ Access terminal 1   │    │  │ │   Select items to receive   │ │
│ │  3 │   !    │ Numeral edit        │    │  │ │      ( NTM -> Tool )        │ │
│ │  4 │        │                     │    │  │ │                             │ │
│ │  5 │        │                     │    │  │ │    [Scr Data]   Mem Tbl     │ │
│ │  6 │        │                     │    │  │ │                             │ │
│ │  7 │        │                     │    │  │ │        ◄► = Select          │ │
│ │  8 │        │                     │    │  │ │        ↵  = Confirm         │ │
│ │  9 │        │                     │    │  │ │       ESC = Abort           │ │
│ │ 10 │        │                     │    │  │ └─────────────────────────────┘ │
│ │ 11 │        │                     │    │  │                                 │
│ │ 12 │        │                     │    │  │ ┌─────────────────────────────┐ │
│ │ 13 │        │                     │    │  │ │ ──────  Screen Status ───── │ │
│ │ 14 │        │                     │    │  │ │ Hist. [                  ]  │ │
│ │ 15 │        │                     │    │  │ │                             │ │
│ │ 16 │        │                     │    │  │ │              (   38Byte)    │ │
│ └────┴────────┴─────────────────────┘    │  │ └─────────────────────────────┘ │
│                                          │  │                                 │
└─────────────────────────────────────────┘  └─────────────────────────────────┘
```

3. Select screen data. As the default, "Screen Data" will be displayed in reverse video. To select screen data, just press the Enter Key.

```
┌─────────────────────────────────────────┐  ┌─────────────────────────────────┐
│ [NOTDIR  ]  Screen List (NT600M)   64KB  │  │ ────── Receiving Screen ──────  │
│ ┌────┬────────┬─────────────────────┐    │  │                                 │
│ │No. │ Status │      Comment        │    │  │ ┌─────────────────────────────┐ │
│ ├────┼────────┼─────────────────────┤    │  │ │ ──────  Help Message ────── │ │
│ │  1 │   !    │ Bar graph           │    │  │ │                             │ │
│ │  2 │   !    │ Access terminal 1   │    │  │ │                             │ │
│ │  3 │   !    │ Numeral edit        │    │  │ │ Enter screen number of NT host│ │
│ │  4 │        │                     │    │  │ │        [No.1 ]              │ │
│ │  5 │        │                     │    │  │ │ ( ↵ =Confirm / ESC =Abort ) │ │
│ │  6 │        │                     │    │  │ │                             │ │
│ │  7 │        │                     │    │  │ │                             │ │
│ │  8 │        │                     │    │  │ │                             │ │
│ │  9 │        │                     │    │  │ │                             │ │
│ │ 10 │        │                     │    │  │ └─────────────────────────────┘ │
│ │ 11 │        │                     │    │  │                                 │
│ │ 12 │        │                     │    │  │ ┌─────────────────────────────┐ │
│ │ 13 │        │                     │    │  │ │ ──────  Screen Status ───── │ │
│ │ 14 │        │                     │    │  │ │ Hist. [                  ]  │ │
│ │ 15 │        │                     │    │  │ │                             │ │
│ │ 16 │        │                     │    │  │ │              (   38Byte)    │ │
│ └────┴────────┴─────────────────────┘    │  │ └─────────────────────────────┘ │
│                                          │  │                                 │
└─────────────────────────────────────────┘  └─────────────────────────────────┘
```

4. Input the number of the screen in the PT that you want the Support Tool to receive, and then press the Enter Key.

```
[NOTDIR ]  Screen List (NT600M)    64KB        ------ Receiving Screen ------

 No. │ Status │      Comment             ------     Help Message    ------
─────┼────────┼──────────────────
   1 │    !   │ Bar graph
   2 │    !   │ Access terminal 1        Enter screen number of NT host
   3 │    !   │ Numeral edit                      [No.1   ]
   4 │        │                          ( ┘=Confirm / ESC=Abort )
   5 │        │
   6 │        │
   7 │        │                          Enter screen number of tool
   8 │        │                                  [No.1█  ]
   9 │        │                          ( ┘=Confirm / ESC=Abort )
  10 │        │
  11 │        │
  12 │        │                          ------   Screen Status   ------
  13 │        │
  14 │        │                          Hist. [                   ]
  15 │        │
  16 │        │                                         (  38Byte)
```

5. Input the number of the screen where you want the received data to be stored, and then press the Enter Key. A message will be displayed asking whether you actually want to receive the data.

```
[NOTDIR ]  Screen List (NT600M)    64KB        ------ Receiving Screen ------

 No. │ Status │      Comment             ------     Help Message    ------
─────┼────────┼──────────────────
   1 │    !   │ Bar graph                 Receiving continuous screen
   2 │    !   │ Access terminal 1         Be cautious when receive
   3 │    !   │ Numeral edit              such screen data
   4 │        │                           Data number already exists
   5 │        │
   6 │        │                           Overwrite ?
   7 │        │
   8 │        │                          ( ┘ = Yes / ESC = Abort )
   9 │        │
  10 │        │
  11 │        │
  12 │        │                          ------   Screen Status   ------
  13 │        │
  14 │        │                          Hist. [                   ]
  15 │        │
  16 │        │                                         (  38Byte)
```

6. To confirm, press the Enter Key. To return to step 1, press any key other than the Enter Key.

7. When the reception is complete, a message will be displayed. Press any key to return to the Screen Selection Display.

Note 1. If screen data already exists at the screen designated for storage, a message will appear indicating that data already exists at the designated number and asking you if you wish to overwrite that data. If it is overwritten, any data stored up to that point will be cleared. If you wish to overwrite the existing file, press the Enter Key. If you wish to cancel, return to step 1 by pressing a key other than the Enter Key.

2. Before receiving continuous or overlapping screens, check carefully to ensure that the Support Tool has no errors in screen data.

Receiving Memory Tables

Note The content of memory tables received from the PT will always be the initial data set via the Support Tool.

1, 2, 3...   1.   Go to the Screen Selection Display.

2.   Press F7 (Receive). The position of the bar cursor is irrelevant.

```
┌──────────────────────────────────────────────────────────────────┐
│  [NOTDIR ]  Screen List (NT600M)    64KB      ------ Receiving Screen ------  │
│  ┌────┬────────┬──────────────────┐    ┌──────────────────────────┐  │
│  │No. │ Status │    Comment       │    │ ------   Help Message   ------ │  │
│  ├────┼────────┼──────────────────┤    │                          │  │
│  │  1 │    !   │ Bar graph        │    │   Select items to receive  │  │
│  │  2 │    !   │ Access terminal 1│    │      ( NTM -> Tool )       │  │
│  │  3 │    !   │ Numeral edit     │    │                          │  │
│  │  4 │        │                  │    │   Scr Data    Mem Tbl      │  │
│  │  5 │        │                  │    │                          │  │
│  │  6 │        │                  │    │     ◄► = Select           │  │
│  │  7 │        │                  │    │     ↵  = Confirm          │  │
│  │  8 │        │                  │    │    ESC = Abort            │  │
│  │  9 │        │                  │    │                          │  │
│  │ 10 │        │                  │    └──────────────────────────┘  │
│  │ 11 │        │                  │    ┌──────────────────────────┐  │
│  │ 12 │        │                  │    │ ------ Screen Status ------  │  │
│  │ 13 │        │                  │    │                          │  │
│  │ 14 │        │                  │    │  Hist. [              ]    │  │
│  │ 15 │        │                  │    │                          │  │
│  │ 16 │        │                  │    │           (   38Byte)      │  │
│  └────┴────────┴──────────────────┘    └──────────────────────────┘  │
└──────────────────────────────────────────────────────────────────┘
```

3.   Select memory tables and press the Enter Key. A message will be displayed asking whether you actually want to receive the data.

```
┌──────────────────────────────────────────────────────────────────┐
│  [NOTDIR ]  Screen List (NT600M)    64KB      ------ Receiving Screen ------  │
│  ┌────┬────────┬──────────────────┐    ┌──────────────────────────┐  │
│  │No. │ Status │    Comment       │    │ ------   Help Message   ------ │  │
│  ├────┼────────┼──────────────────┤    │                          │  │
│  │  1 │    !   │ Bar graph        │    │                          │  │
│  │  2 │    !   │ Access terminal 1│    │  Receive memory tables data │  │
│  │  3 │    !   │ Numeral edit     │    │      (Numeral/String)      │  │
│  │  4 │        │                  │    │                          │  │
│  │  5 │        │                  │    │   Confirm ?               │  │
│  │  6 │        │                  │    │                          │  │
│  │  7 │        │                  │    │                          │  │
│  │  8 │        │                  │    │                          │  │
│  │  9 │        │                  │    │  ( ↵ = Yes / ESC = Abort )  │  │
│  │ 10 │        │                  │    │                          │  │
│  │ 11 │        │                  │    └──────────────────────────┘  │
│  │ 12 │        │                  │    ┌──────────────────────────┐  │
│  │ 13 │        │                  │    │ ------ Screen Status ------  │  │
│  │ 14 │        │                  │    │                          │  │
│  │ 15 │        │                  │    │  Hist. [              ]    │  │
│  │ 16 │        │                  │    │           (   38Byte)      │  │
│  └────┴────────┴──────────────────┘    └──────────────────────────┘  │
└──────────────────────────────────────────────────────────────────┘
```

4.   To confirm, press the Enter Key. To return to step 1, press any key other than the Enter Key.

5.   When the reception is complete, a message will be displayed. Press any key to return to the Screen Selection Display.
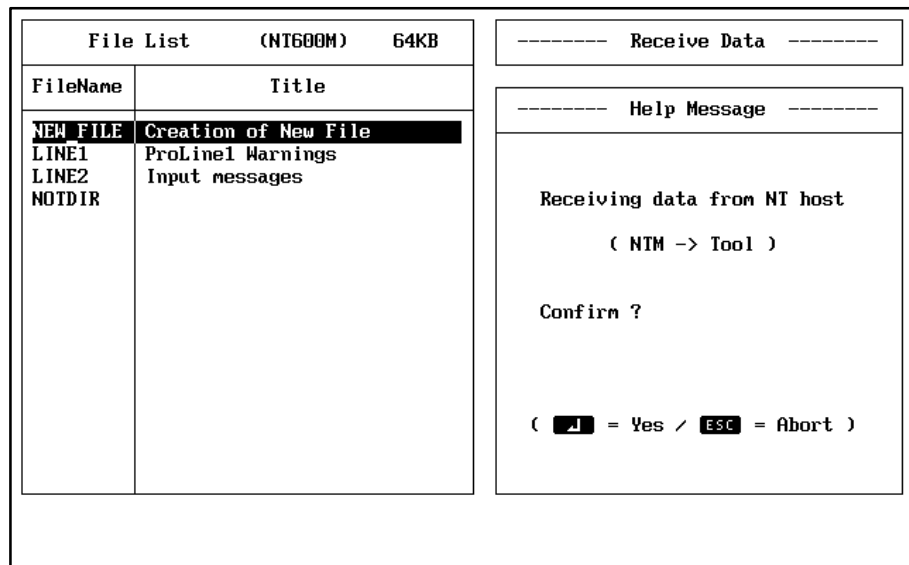
6-4   Deleting PT Screens

You can delete designated screens from the PT.

1, 2, 3...   1.   Go to the Screen Selection Display.

2.   Press F2 (Delete). The position of the bar cursor is irrelevant.

114

```
┌─────────────────────────────────────────┐  ┌──────────────────────────────┐
│ [NOTDIR  ]  Screen List (NT600M)   64KB  │  │ ──────  Delete Screen  ───── │
│ ┌────┬────────┬───────────────────────┐  │  ├──────────────────────────────┤
│ │No. │ Status │       Comment         │  │  │ ──────  Help Message  ────── │
│ ├────┼────────┼───────────────────────┤  │  │                              │
│ │ 1  │   !    │ Bar graph             │  │  │   Select item to be deleted  │
│ │ 2  │   !    │ Access terminal 1     │  │  │                              │
│ │ 3  │   !    │ Numeral edit          │  │  │    ▮Tool▮       NT Host      │
│ │ 4  │        │                       │  │  │                              │
│ │ 5  │        │                       │  │  │        ◀▶  = Select          │
│ │ 6  │        │                       │  │  │         ↵  = Confirm         │
│ │ 7  │        │                       │  │  │       ESC  = Abort           │
│ │ 8  │        │                       │  │  │                              │
│ │ 9  │        │                       │  │  └──────────────────────────────┘
│ │10  │        │                       │  │                                 
│ │11  │        │                       │  │  ┌──────────────────────────────┐
│ │12  │        │                       │  │  │ ──────  Screen Status  ───── │
│ │13  │        │                       │  │  ├──────────────────────────────┤
│ │14  │        │                       │  │  │ Hist. [                   ]  │
│ │15  │        │                       │  │  │                              │
│ │16  │        │                       │  │  │              (   38Byte)     │
│ └────┴────────┴───────────────────────┘  │  └──────────────────────────────┘
└─────────────────────────────────────────┘
```

3. Select NT host and, and then press the Enter Key.

```
┌─────────────────────────────────────────┐  ┌──────────────────────────────┐
│ [NOTDIR  ]  Screen List (NT600M)   64KB  │  │ ──────  Delete Screen  ───── │
│ ┌────┬────────┬───────────────────────┐  │  ├──────────────────────────────┤
│ │No. │ Status │       Comment         │  │  │ ──────  Help Message  ────── │
│ ├────┼────────┼───────────────────────┤  │  │                              │
│ │ 1  │   !    │ Bar graph             │  │  │ Specify NT host screen to delete │
│ │ 2  │   !    │ Access terminal 1     │  │  │                              │
│ │ 3  │   !    │ Numeral edit          │  │  │      [No.▮  ]                 │
│ │ 4  │        │                       │  │  │                              │
│ │ 5  │        │                       │  │  │         ↵  = Confirm         │
│ │ 6  │        │                       │  │  │       ESC  = Abort           │
│ │ 7  │        │                       │  │  │                              │
│ │ 8  │        │                       │  │  └──────────────────────────────┘
│ │ 9  │        │                       │  │                                 
│ │10  │        │                       │  │  ┌──────────────────────────────┐
│ │11  │        │                       │  │  │ ──────  Screen Status  ───── │
│ │12  │        │                       │  │  ├──────────────────────────────┤
│ │13  │        │                       │  │  │ Hist. [                   ]  │
│ │14  │        │                       │  │  │                              │
│ │15  │        │                       │  │  │              (   38Byte)     │
│ │16  │        │                       │  │  └──────────────────────────────┘
│ └────┴────────┴───────────────────────┘  │                                 
└─────────────────────────────────────────┘
```

4. Input the number of the PT screen to be deleted, and then press the Enter Key. A message will be displayed asking whether you actually want to delete the screen.

115

```
┌─────────────────────────────────────────────────────────────────────┐
│  ┌──────────────────────────────────┐  ┌─────────────────────────┐   │
│  │ [NOTDIR ]  Screen List (NT600M)   64KB│ ────── Delete Screen  ──────│   │
│  ├──────┬────────┬──────────────────┤  └─────────────────────────┘   │
│  │ No.  │ Status │    Comment       │  ┌─────────────────────────┐   │
│  ├──────┼────────┼──────────────────┤  │ ────── Help Message  ──────│   │
│  │   1  │   !    │ Bar graph        │  └─────────────────────────┘   │
│  │   2  │   !    │ Access terminal 1│                                 │
│  │ ▓3▓  │   !    │ Numeral edit     │  Delete NTM [No.   1] screen data│
│  │   4  │        │                  │                                 │
│  │   5  │        │                  │                                 │
│  │   6  │        │                  │  Confirm ?                      │
│  │   7  │        │                  │                                 │
│  │   8  │        │                  │                                 │
│  │   9  │        │                  │  ( ▐◢▌ = Yes / ▐ESC▌ = Abort )   │
│  │  10  │        │                  │                                 │
│  │  11  │        │                  │  ┌─────────────────────────┐   │
│  │  12  │        │                  │  │ ────── Screen Status ──────│   │
│  │  13  │        │                  │  ├─────────────────────────┤   │
│  │  14  │        │                  │  │ Hist. [               ] │   │
│  │  15  │        │                  │  │                         │   │
│  │  16  │        │                  │  │            (  38Byte)   │   │
│  └──────┴────────┴──────────────────┘  └─────────────────────────┘   │
│                                                                       │
└─────────────────────────────────────────────────────────────────────┘
```

5. To confirm, press the Enter Key. To abort and return to step 4, press a key other than the Enter Key.

6. When the deletion is complete, a message will be displayed. Press any key to return to the Screen Selection Display.

This section describes the procedure for transferring screen file data between a PROM writer and the Support Tool.

7-1   Connecting to a PROM Writer

Before performing operations, connect an IBM PC/AT and a PROM writer.
Use RS-232C interface for data communications with the PROM writer. Set
the transmission conditions as shown in the following table.

Baud rate	9,600 bps
Data length	8 bits
Parity	None
Stop bits	1
Transfer format	Intel HEX format

IBM PC/AT   PROM writer
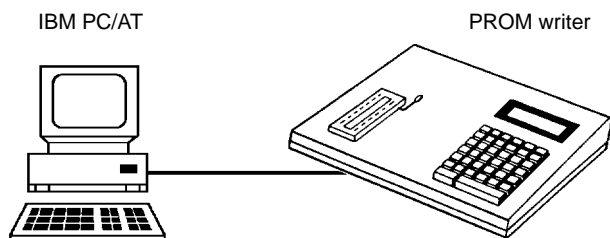
Note 1. Test the PROM Writer in advance to be sure that the PTs' ROM chip can
be written.
2. Data will not be transferred correctly if the capacity of the RAM buffer in
the PROM Writer is less than that of the PT's ROM.

7-2   Transmitting Data to a PROM Writer

Data created by the Support Tool can be transmitted to a PROM writer by
file.

1, 2, 3... 1. Go to the File Selection Display.
2. Move the bar cursor to the file you want to transmit, and press F4
(ROM).

```
  File List      (NT600M)   64KB        TOOL - ROM Writer Communication

 FileName           Title                -------- Help Message --------

 NEW_FILE  Creation of New File              Select work attributes
 LINE1     ProLine1 Warnings
 LINE2     Input messages            TOOL -> ROM Writer Data Sending
 NOTDIR
                                     TOOL <- ROM Writer Receive Data

                                     TOOL -> ROM Writer Verify


                                        ESC  =  Abort
                                        ↑↓   =  Select
                                        ↵    =  Confirm
```

3. Select Data Sending, and then press the Enter Key. A message will be
displayed to verify that the designated file is correct.
4. After verifying the file name, press the Enter Key. A message will be dis-
played asking whether you actually want to transmit the data.

118

5.   The settings for transfer to the PROM writer will be displayed. Check these settings before transferring the data.

```
┌─────────────────────────────────────┬───────────────────────────────────────┐
│    File List      (NT600M)    64KB   │  TOOL -> ROM Writer Sending Data        │
│  ┌──────────┬────────────────────┐   │                                         │
│  │ FileName │       Title        │   │  ┌─────────────────────────────────┐    │
│  ├──────────┼────────────────────┤   │  │ -------- Help Message --------  │    │
│  │ NEW_FILE │ Creation of New File│  │  │                                 │    │
│  │ LINE1    │ ProLine1 Warnings  │   │  │    Send data from TOOL          │    │
│  │ LINE2    │ Input messages     │   │  │    Set ROM writer               │    │
│  │ NOTDIR   │                    │   │  │    Communications parameters:   │    │
│  │          │                    │   │  │                                 │    │
│  │          │                    │   │  │  Baud Rate (bps)   9600         │    │
│  │          │                    │   │  │  Character Length  8 Bits       │    │
│  │          │                    │   │  │  Parity            No Parity    │    │
│  │          │                    │   │  │  Stop Bit(s)       1 Bit        │    │
│  │          │                    │   │  │  X parameter       Yes          │    │
│  │          │                    │   │  │                                 │    │
│  │          │                    │   │  │             [⏎] = Send          │    │
│  │          │                    │   │  │           [ESC] = Abort         │    │
│  └──────────┴────────────────────┘   │  └─────────────────────────────────┘    │
└─────────────────────────────────────┴───────────────────────────────────────┘
```

6.   After verifying that the PROM writer can receive the data, press the Enter Key. To cancel and return to step 1, press the Escape Key.

7.   When the transmission is complete, a message will be displayed. Press any key to return to the Screen Selection Display.

7-3   Transmitting Data with Verification to a PROM Writer

In this case, data created by the Support Tool is sent to a PROM writer by file. After transmission is complete, the data is received back from the PROM writer and checked to see whether it was transmitted correctly.

1, 2, 3...   1.   Go to the File Selection Display.

2.   Move the bar cursor to the file you want to transmit with verification, and then press F4 (ROM).

```
┌─────────────────────────────────────┬───────────────────────────────────────┐
│    File List      (NT600M)    64KB   │  TOOL - ROM Writer Communication        │
│  ┌──────────┬────────────────────┐   │                                         │
│  │ FileName │       Title        │   │  ┌─────────────────────────────────┐    │
│  ├──────────┼────────────────────┤   │  │ -------- Help Message --------  │    │
│  │ NEW_FILE │ Creation of New File│  │  │                                 │    │
│  │ LINE1    │ ProLine1 Warnings  │   │  │    Select work attributes       │    │
│  │ LINE2    │ Input messages     │   │  │                                 │    │
│  │ NOTDIR   │                    │   │  │  TOOL -> ROM Writer Data Sending│    │
│  │          │                    │   │  │                                 │    │
│  │          │                    │   │  │  TOOL <- ROM Writer Receive Data│    │
│  │          │                    │   │  │                                 │    │
│  │          │                    │   │  │  TOOL -> ROM Writer Verify      │    │
│  │          │                    │   │  │                                 │    │
│  │          │                    │   │  │          [ESC] = Abort          │    │
│  │          │                    │   │  │          [↑↓] = Select          │    │
│  │          │                    │   │  │           [⏎] = Confirm         │    │
│  └──────────┴────────────────────┘   │  └─────────────────────────────────┘    │
└─────────────────────────────────────┴───────────────────────────────────────┘
```

3.   Select "Verify," and then press the Enter Key. A message will be displayed to verify that the designated file is correct.

4.   After verifying the file name, press the Enter Key. A message will be displayed asking whether you actually want to transmit the data.

119

5. The settings for transfer to the PROM writer will be displayed. Check these settings before transferring the data.

```
┌─────────────────────────────────┐  ┌─────────────────────────────────┐
│   File List    (NT600M)   64KB  │  │ TOOL -> ROM Writer Data Verify  │
│ ┌──────────┬──────────────────┐ │  │                                 │
│ │ FileName │      Title        │ │  │ ┌─────────────────────────────┐ │
│ ├──────────┼──────────────────┤ │  │ │ ──────── Help Message ────── │ │
│ │ NEW_FILE │ Creation of New File │  │ │                             │ │
│ │ LINE1    │ ProLine1 Warnings │ │  │ │   Send data from TOOL       │ │
│ │ LINE2    │ Input messages    │ │  │ │   Set ROM writer            │ │
│ │ NOTDIR   │                   │ │  │ │   Communications parameters: │ │
│ │          │                   │ │  │ │                             │ │
│ │          │                   │ │  │ │   Baud Rate (bps)   9600    │ │
│ │          │                   │ │  │ │   Character Length  8 Bits  │ │
│ │          │                   │ │  │ │   Parity            No Parity │ │
│ │          │                   │ │  │ │   Stop Bit(s)       1 Bit   │ │
│ │          │                   │ │  │ │   X parameter       Yes     │ │
│ │          │                   │ │  │ │                             │ │
│ │          │                   │ │  │ │   Verify after downloading  │ │
│ │          │                   │ │  │ │                             │ │
│ │          │                   │ │  │ │        ⏎  =  Send           │ │
│ │          │                   │ │  │ │       ESC =  Abort          │ │
│ └──────────┴──────────────────┘ │  │ └─────────────────────────────┘ │
└─────────────────────────────────┘  └─────────────────────────────────┘
```

6. After verifying that that PROM writer can receive the data, press the Enter Key. To cancel and return to step 3, press the Escape Key.

7. When the transmission is complete, the following message will be displayed and the Support Tool will wait for the data to be sent back from the PROM writer. Transmit the data from the PROM writer.

8. If all of the data received matches the data that was transmitted, a message will be displayed. To return to step 1, press any key.

7-4 Receiving Data from a PROM Writer

Data can be received from the PROM writer by file.

1, 2, 3... 1. Go to the File Selection Display.

2. Press F4 (ROM). The position of the bar cursor is irrelevant.

```
┌─────────────────────────────────┐  ┌─────────────────────────────────┐
│   File List    (NT600M)   64KB  │  │ TOOL - ROM Writer Communication │
│ ┌──────────┬──────────────────┐ │  │                                 │
│ │ FileName │      Title        │ │  │ ┌─────────────────────────────┐ │
│ ├──────────┼──────────────────┤ │  │ │ ──────── Help Message ────── │ │
│ │ NEW_FILE │ Creation of New File │  │ │   Select work attributes    │ │
│ │ LINE1    │ ProLine1 Warnings │ │  │ │                             │ │
│ │ LINE2    │ Input messages    │ │  │ │ TOOL -> ROM Writer Data Sending │
│ │ NOTDIR   │                   │ │  │ │                             │ │
│ │          │                   │ │  │ │ TOOL <- ROM Writer Receive Data │
│ │          │                   │ │  │ │                             │ │
│ │          │                   │ │  │ │ TOOL -> ROM Writer Verify   │ │
│ │          │                   │ │  │ │                             │ │
│ │          │                   │ │  │ │      ESC =  Abort           │ │
│ │          │                   │ │  │ │      ⬆⬇ =  Select           │ │
│ │          │                   │ │  │ │       ⏎  =  Confirm         │ │
│ └──────────┴──────────────────┘ │  │ └─────────────────────────────┘ │
└─────────────────────────────────┘  └─────────────────────────────────┘
```

3. Select "Receive Data" and then press the Enter Key.

```
┌─────────────────────────────────────────┬─────────────────────────────────────────┐
│    File List      (NT600M)    64KB       │  ROM writer -> TOOL Sending Data         │
│  ┌──────────┬──────────────────────┐     │                                          │
│  │ FileName │        Title         │     │  ┌────────────────────────────────────┐  │
│  ├──────────┼──────────────────────┤     │  │ -------- Help Message --------     │  │
│  │ NEW_FILE │ Creation of New File │     │  │                                    │  │
│  │ LINE1    │ ProLine1 Warnings    │     │  │                                    │  │
│  │ LINE2    │ Input messages       │     │  │    Enter filename and title        │  │
│  │ ▓NOTDIR▓▓▓│▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓│     │  │    of screen data receiving        │  │
│  │          │                      │     │  │                                    │  │
│  │          │                      │     │  │  Filename :                        │  │
│  │          │                      │     │  │  [▪      ]                         │  │
│  │          │                      │     │  │  Title :                           │  │
│  │          │                      │     │  │  [                         ]       │  │
│  │          │                      │     │  │                                    │  │
│  │          │                      │     │  │                                    │  │
│  │          │                      │     │  │          ◢◤ = Confirm              │  │
│  │          │                      │     │  │          ESC = Abort               │  │
│  └──────────┴──────────────────────┘     │  └────────────────────────────────────┘  │
│                                          │                                          │
└─────────────────────────────────────────┴─────────────────────────────────────────┘
```

4. Input the name, using up to 8 normal characters, of the file in which the data received is to be stored, and then press the Enter Key.

5. Input a title of up to 28 characters, and press the Enter Key. The following message will be displayed and the Support Tool will wait for the data to be sent from the PROM writer.

```
┌─────────────────────────────────────────┬─────────────────────────────────────────┐
│    File List      (NT600M)    64KB       │  ROM writer -> TOOL Sending Data         │
│  ┌──────────┬──────────────────────┐     │                                          │
│  │ FileName │        Title         │     │  ┌────────────────────────────────────┐  │
│  ├──────────┼──────────────────────┤     │  │ -------- Help Message --------     │  │
│  │ NEW_FILE │ Creation of New File │     │  │ Receiving data from EPROM writer   │  │
│  │ LINE1    │ ProLine1 Warnings    │     │  │                                    │  │
│  │ LINE2    │ Input messages       │     │  │ List of communication parameters   │  │
│  │ ▓NOTDIR▓▓▓│▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓│     │  │                                    │  │
│  │          │                      │     │  │   Baud Rate (bps)    9600          │  │
│  │          │                      │     │  │   Character Length   8 Bits        │  │
│  │          │                      │     │  │   Parity             No Parity     │  │
│  │          │                      │     │  │   Stop Bit(s)        1 Bit         │  │
│  │          │                      │     │  │   X parameter        Yes           │  │
│  │          │                      │     │  │                                    │  │
│  │          │                      │     │  │   TOOL is ready to receive data    │  │
│  │          │                      │     │  │                                    │  │
│  │          │                      │     │  │      ( ESC = Abort )               │  │
│  └──────────┴──────────────────────┘     │  └────────────────────────────────────┘  │
│                                          │                                          │
└─────────────────────────────────────────┴─────────────────────────────────────────┘
```

6. Transmit the data from the PROM writer.

7. When the data has been received, a message will be displayed. To return to step 1, press any key.

Note 1. When receiving data from a PROM writer, you need enough disk space to be able to save a work file used for receiving the data and a storage file for saving the data received. Be sure, therefore, to reserve at least 256 K for the NT20M and 512 K for the NT600M.

2. If the memory capacity setting for the file in which the data received is stored differs from memory capacity setting in Tool Settings, then the file will not be displayed even if you return to the File Selection Display. If that happens, change the setting in Tool Settings.

3. If you designate a new file with the same name as an existing file, a message will appear indicating that the file name already exists, and asking you if you wish to overwrite the existing file. If it is overwritten, any data

121

stored up to that point will be cleared.If you wish to overwrite the existing file, press the Enter Key. If you wish to cancel, return to step 1 by pressing a key other than the Enter Key. Then input another name for the new file.

Appendix
Special Characters

English Character Codes

Pin 3 of SW1 must be ON to enable English language messages to use the following codes.

Example: Hex code is represented by 30, decimal code by 48, and character by 0.

30	0
48	

Code 20 and 32 in the table represents a space, as indicated by "SP".

Hex Digits 1st → 2nd ↓	2-		3-		4-		5-		6-		7-		8-		9-	
-0	20	SP	30	0	40	@	50	P	60	'	70	p	80	Ç	90	É
	32		48		64		80		96		112		128		144	
-1	21	!	31	1	41	A	51	Q	61	a	71	q	81	ü	91	æ
	33		49		65		81		97		113		129		145	
-2	22	"	32	2	42	B	52	R	62	b	72	r	82	é	92	Æ
	34		50		66		82		98		114		130		146	
-3	23	#	33	3	43	C	53	S	63	c	73	s	83	â	93	ô
	35		51		67		83		99		115		131		147	
-4	24	$	34	4	44	D	54	T	64	d	74	t	84	ä	94	ö
	36		52		68		84		100		116		132		148	
-5	25	%	35	5	45	E	55	U	65	e	75	u	85	à	95	ò
	37		53		69		85		101		117		133		149	
-6	26	&	36	6	46	F	56	V	66	f	76	v	86	å	96	û
	38		54		70		86		102		118		134		150	
-7	27	'	37	7	47	G	57	W	67	g	77	w	87	ç	97	ù
	39		55		71		87		103		119		135		151	
-8	28	(	38	8	48	H	58	X	68	h	78	x	88	ê	98	ÿ
	40		56		72		88		104		120		136		152	
-9	29	)	39	9	49	I	59	Y	69	i	79	y	89	ë	99	Ö
	41		57		73		89		105		121		137		153	
-A	2A	*	3A	:	4A	J	5A	Z	6A	j	7A	z	8A	è	9A	Ü
	42		58		74		90		106		122		138		154	
-B	2B	+	3B	;	4B	K	5B	[	6B	k	7B	{	8B	ï	9B	¢
	43		59		75		91		107		123		139		155	
-C	2C	,	3C	<	4C	L	5C	\	6C	l	7C	|	8C	î	9C	£
	44		60		76		92		108		124		140		156	
-D	2D	-	3D	=	4D	M	5D	]	6D	m	7D	}	8D	ì	9D	¥
	45		61		77		93		109		125		141		157	
-E	2E	.	3E	>	4E	N	5E	^	6E	n	7E	~	8E	Ä	9E	Pt
	46		62		78		94		110		126		142		158	
-F	2F	/	3F	?	4F	O	5F	_	6F	o	7F	⌂	8F	Å	9F	*f*
	47		63		79		95		111		127		143		159	

123

Hex Digits 1st → 2nd ↓	A-		B-		C-		D-		E-		F-	
-0	A0 / 160	á	B0 / 176	⁞⁞	C0 / 192	└	D0 / 208	⊥⊥	E0 / 224	α	F0 / 240	≡
-1	A1 / 161	í	B1 / 177	▓	C1 / 193	⊥	D1 / 209	⊤	E1 / 225	β	F1 / 241	+
-2	A2 / 162	ó	B2 / 178	▒	C2 / 194	⊤	D2 / 210	⊤⊤	E2 / 226	Γ	F2 / 242	≥
-3	A3 / 163	ú	B3 / 179	│	C3 / 195	├	D3 / 211	⊥⊥	E3 / 227	π	F3 / 243	≤
-4	A4 / 164	ñ	B4 / 180	┤	C4 / 196	─	D4 / 212	└	E4 / 228	Σ	F4 / 244	⌠
-5	A5 / 165	Ñ	B5 / 181	╡	C5 / 197	+	D5 / 213	╞	E5 / 229	σ	F5 / 245	⌡
-6	A6 / 166	a	B6 / 182	╢	C6 / 198	╞	D6 / 214	╓	E6 / 230	m	F6 / 246	÷
-7	A7 / 167	o	B7 / 183	┐	C7 / 199	╟	D7 / 215	╫	E7 / 231	τ	F7 / 247	≈
-8	A8 / 168	¿	B8 / 184	╕	C8 / 200	╚	D8 / 216	╪	E8 / 232	Φ	F8 / 248	%
-9	A9 / 169	⌐	B9 / 185	╣	C9 / 201	╔	D9 / 217	┘	E9 / 233	Θ	F9 / 249	·
-A	AA / 170	¬	BA / 186	║	CA / 202	╩	DA / 218	┌	EA / 234	W	FA / 250	●
-B	AB / 171	$\frac{1}{2}$	BB / 187	╗	CB / 203	╦	DB / 219	█	EB / 235	δ	FB / 251	√
-C	AC / 172	$\frac{1}{4}$	BC / 188	╝	CC / 204	╠	DC / 220	▄	EC / 236	∞	FC / 252	n
-D	AD / 173	¡	BD / 189	╜	CD / 205	═	DD / 221	▌	ED / 237	φ	FD / 253	^{2}
-E	AE / 174	«	BE / 190	╛	CE / 206	╬	DE / 222	▐	EE / 238	ε	FE / 254	■
-F	AF / 175	»	BF / 191	┐	CF / 207	⊥	DF / 223	▄	EF / 239	∩	FF / 255	

124

Index

125

O–R

S–W

Revision History

A manual revision code appears as a suffix to the catalog number on the front cover of the manual.

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Revision code

The following table outlines the changes made to the manual during each revision. Page numbers refer to the previous version.

Revision code	Date	Revised content
1	September 1991	Original production
2	August 1993	Major revisions for new version of software.

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