ADVANTEST

ADVANTEST CORPORATION

D3371 Pattern Editor
Operation Manual

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Safety Summary

To ensure thorough understanding of all functions and to ensure efficient use of this instrument, please read the manual carefully before using. Note that Advantest bears absolutely no responsibility for the result of operations caused due to incorrect or inappropriate use of this instrument.

If the equipment is used in a manner not specified by Advantest, the protection provided by the equipment may be impaired.

- **Warning Labels**

  Warning labels are applied to Advantest products in locations where specific dangers exist. Pay careful attention to these labels during handling. Do not remove or tear these labels. If you have any questions regarding warning labels, please ask your nearest Advantest dealer. Our address and phone number are listed at the end of this manual.

  Symbols of those warning labels are shown below together with their meaning.

  DANGER: Indicates an imminently hazardous situation which will result in death or serious personal injury.

  WARNING: Indicates a potentially hazardous situation which will result in death or serious personal injury.

  CAUTION: Indicates a potentially hazardous situation which will result in personal injury or a damage to property including the product.

- **Basic Precautions**

  Please observe the following precautions to prevent fire, burn, electric shock, and personal injury.

  - Use a power cable rated for the voltage in question. Be sure however to use a power cable conforming to safety standards of your nation when using a product overseas.
  - When inserting the plug into the electrical outlet, first turn the power switch OFF and then insert the plug as far as it will go.
  - When removing the plug from the electrical outlet, first turn the power switch OFF and then pull it out by gripping the plug. Do not pull on the power cable itself. Make sure your hands are dry at this time.
  - Before turning on the power, be sure to check that the supply voltage matches the voltage requirements of the instrument.
  - Connect the power cable to a power outlet that is connected to a protected ground terminal. Grounding will be defeated if you use an extension cord which does not include a protected ground terminal.
  - Be sure to use fuses rated for the voltage in question.
  - Do not use this instrument with the case open.
  - Do not place anything on the product and do not apply excessive pressure to the product. Also, do not place flower pots or other containers containing liquid such as chemicals near this

product.

- When the product has ventilation outlets, do not stick or drop metal or easily flammable objects into the ventilation outlets.
- When using the product on a cart, fix it with belts to avoid its drop.
- When connecting the product to peripheral equipment, turn the power off.

- **Caution Symbols Used Within this Manual**

Symbols indicating items requiring caution which are used in this manual are shown below together with their meaning.

DANGER: Indicates an item where there is a danger of serious personal injury (death or serious injury).

WARNING: Indicates an item relating to personal safety or health.

CAUTION: Indicates an item relating to possible damage to the product or instrument or relating to a restriction on operation.

- **Safety Marks on the Product**

The following safety marks can be found on Advantest products.

 : ATTENTION - Refer to manual.

 : Protective ground (earth) terminal.

 : DANGER - High voltage.

 : CAUTION - Risk of electric shock.

- **Replacing Parts with Limited Life**

The following parts used in the instrument are main parts with limited life.
Replace the parts listed below before their expected lifespan has expired to maintain the performance and function of the instrument.
Note that the estimated lifespan for the parts listed below may be shortened by factors such as the environment where the instrument is stored or used, and how often the instrument is used.
The parts inside are not user-replaceable. For a part replacement, please contact the Advantest sales office for servicing.

Each product may use parts with limited life.
For more information, refer to the section in this document where the parts with limited life are described.

Main Parts with Limited Life

Part name	Life
Unit power supply	5 years
Fan motor	5 years
Electrolytic capacitor	5 years
LCD display	6 years
LCD backlight	2.5 years
Floppy disk drive	5 years
Memory backup battery	5 years

- **Hard Disk Mounted Products**

The operational warnings are listed below.

- Do not move, shock and vibrate the product while the power is turned on.
  Reading or writing data in the hard disk unit is performed with the memory disk turning at a high speed. It is a very delicate process.

- Store and operate the products under the following environmental conditions.
  An area with no sudden temperature changes.
  An area away from shock or vibrations.
  An area free from moisture, dirt, or dust.
  An area away from magnets or an instrument which generates a magnetic field.

- Make back-ups of important data.
  The data stored in the disk may become damaged if the product is mishandled. The hard disc has a limited life span which depends on the operational conditions. Note that there is no guarantee for any loss of data.

- **Precautions when Disposing of this Instrument**

When disposing of harmful substances, be sure dispose of them properly with abiding by the state-provided law.

Harmful substances: (1) PCB (polycarbon biphenyl)
(2) Mercury
(3) Ni-Cd (nickel cadmium)
(4) Other
Items possessing cyan, organic phosphorous and hexadic chromium and items which may leak cadmium or arsenic (excluding lead in solder).

Example: fluorescent tubes, batteries

Environmental Conditions

This instrument should be only be used in an area which satisfies the following conditions:

- An area free from corrosive gas
- An area away from direct sunlight
- A dust-free area
- An area free from vibrations
- Altitude of up to 2000 m

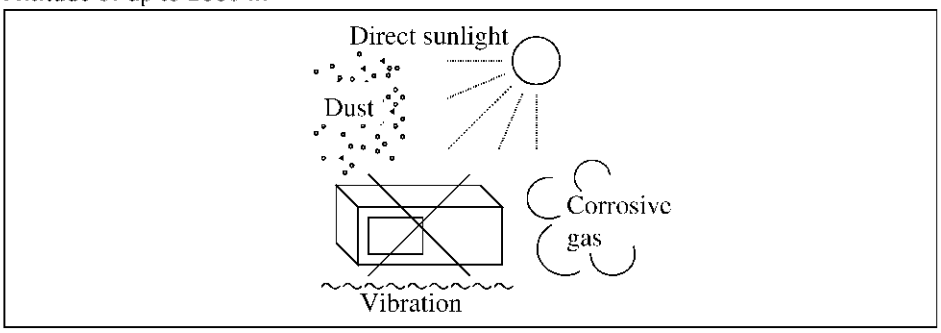


Figure-1 Environmental Conditions

- Operating position

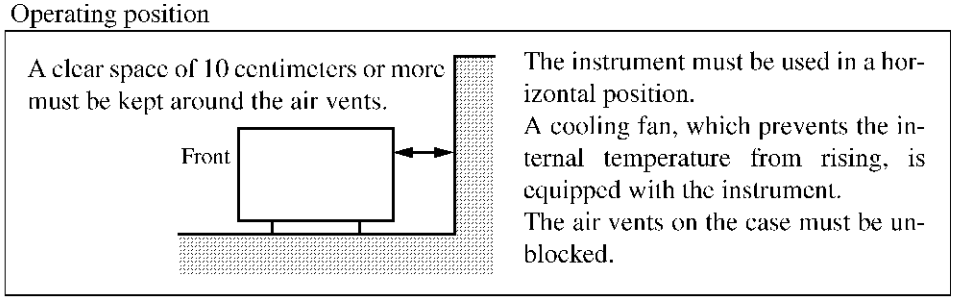


Figure-2 Operating Position

- Storage position

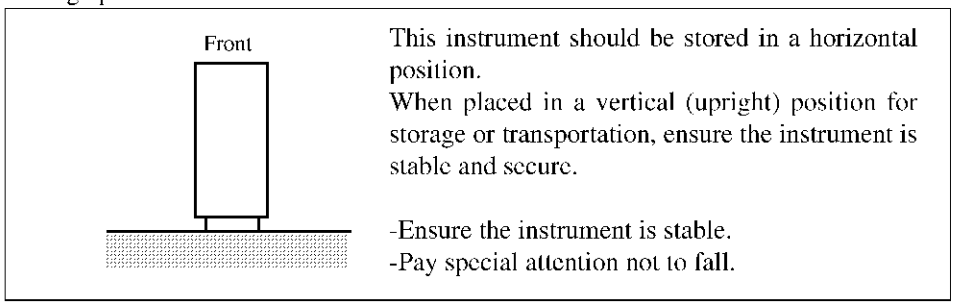


Figure-3 Storage Position

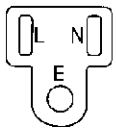
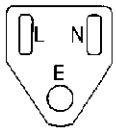
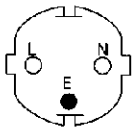
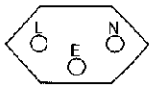
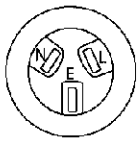
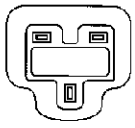
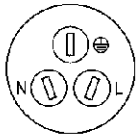
- The classification of the transient over-voltage, which exists typically in the main power supply, and the pollution degree is defined by IEC61010-1 and described below.

  Impulse withstand voltage (over-voltage) category II defined by IEC60364-4-443

  Pollution Degree 2

Types of Power Cable

Replace any references to the power cable type, according to the following table, with the appropriate power cable type for your country.

Plug configuration	Standards	Rating, color and length	Model number (Option number)
	PSE: Japan Electrical Appliance and Material Safety Law	125 V at 7 A Black 2 m (6 ft)	Straight: A01402 Angled: A01412
	UL: United States of America CSA: Canada	125 V at 7 A Black 2 m (6 ft)	Straight: A01403 (Option 95) Angled: A01413
	CEE: Europe DEMKO: Denmark NEMKO: Norway VDE: Germany KEMA: The Netherlands CEBEC: Belgium OVE: Austria FIMKO: Finland SEMKO: Sweden	250 V at 6 A Gray 2 m (6 ft)	Straight: A01404 (Option 96) Angled: A01414
	SEV: Switzerland	250 V at 6 A Gray 2 m (6 ft)	Straight: A01405 (Option 97) Angled: A01415
	SAA: Australia, New Zealand	250 V at 6 A Gray 2 m (6 ft)	Straight: A01406 (Option 98) Angled: ---------
	BS: United Kingdom	250 V at 6 A Black 2 m (6 ft)	Straight: A01407 (Option 99) Angled: A01417
	CCC:China	250 V at 10 A Black 2 m (6 ft)	Straight: A114009 (Option 94) Angled: A114109

PREFACE

This manual explains the usage and functions of the pattern generation tool program for the D3371. The documentation for the D3371 Transmission Analyzer consists of the two manuals listed below. Please use these manuals as required.

D3371 Transmission Analyzer Operating Manual

This manual explains the usage and functions of the D3371 Transmission Analyzer. To ensure safe operation, be sure to read this manual before using the transmission analyzer.

D3371 Transmission Analyzer Remote Programming Manual

This manual explains the remote programming of the D3371 Transmission Analyzer. The manual assumes that the interface is GPIB.

- Typeface conventions used in this manual

  Panel keys and buttons on the screen, menus, etc. are denoted in this manual as shown below.

  Panel keys:

  Boldface type Example: **TAB**

  Key combination:

  SHIFT-HOME means that **HOME** is pressed while holding **SHIFT** down.

  Example: **SHIFT-HOME**

  Buttons, lists or tabs which are displayed on the screen:

  Bold Example: **[OK], [Exit]**

  Menus:

  The notation **[File]-[Open]** means that the **[File]** menu is selected, and then the **[Open]** command is selected from the **[File]** menu.

  Example: **[File] - [Open]**

- Trademarks

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1. INTRODUCTION

1.1 Product Description

Pattern Editor is used to create and edit PROG (programmable) and STM patterns for the D3371.

The pattern option must first be installed in the D3371 first before you use STM patterns in it.

Pattern Editor has the following features:

[Features]

- Creates and edits PROG patterns.
- Creates and edits STM patterns.
- Compatible with D3371 files.
- Includes the following modules:
  - PROG Pattern
    Used to create and edit PROG patterns.
  - SOH Pattern
    Used to create and edit section overhead (SOH) patterns.
  - Payload Pattern
    Used to create and edit Payload patterns.
  - STM Pattern
    Used to create and edit STM patterns.
- The STM Pattern is not only used to create STM patterns, but it can also be used to create patterns by combining SOH and Payload patterns.

1.2 Accessories

Pattern Editor is supplied with the following items. If any of accessories are damaged or missing, contact the nearest Advantest office.

Name	Model name	Quantity
Setup disk	-	1
D3371 Pattern Editor Operation manual	EP-EDITOR	1

1.3 Operating Environment

System requirements for Pattern Editor are as follows.

Operating system: Microsoft® Windows™ 98

GPIB interface

Personal computer: Personal computer running Windows 98

NOTE: ***Connect the mouse and key board when using the D3371.***

Floppy disk drive: A floppy disk drive that can read 1.44 MB (2HD) MS-DOS-formatted floppy disks is required to install Pattern Editor.

If floppy disks are used to load Pattern Editor data into the D3371, 2DD (720 KB) or 2HD (1.44 MB) floppy disks are required.

Hard disk drive: At least 10 MB of free disk space is required to install and operate Pattern Editor.

Color display: Monochrome and color (LCD) displays are not available with the Pattern Editor at the moment.

1.4 Storing

Make a backup copy of the Pattern Editor setup disk and use the backup copy to install Pattern Editor.

NOTE: ***Do not leave floppy disks in a location exposed to magnetic fields, high temperatures, or high humidity.***

2. SETUP

2.1 Installing Pattern Editor

Selecting Run

1. Start up Microsoft Windows.
2. Insert the setup disk in the drive. Click Start and then select the **[Run]** command. The Run dialog box is then displayed.

Figure 2-1 Selecting **[Run]** from the Taskbar

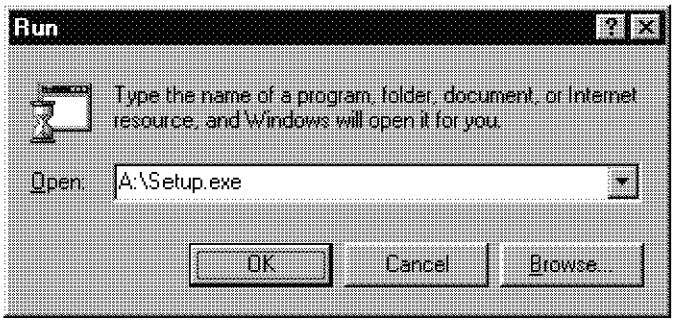

Figure 2-2 Run Dialog Box

3. Enter "A: \Setup.exe" in the Open text box.
4. Click the **[OK]** button.
   The setup program then starts.
5. Install Pattern Editor in accordance with the directions on the screen.

3. OPERATION

3.1 Pattern Creation Procedure

D3371 handles the following two types of pattern files:

- PROG pattern file (.prp)
- STM pattern file (.stp)

NOTE: The pattern option must first be installed in the D3371 first before you use STM patterns in it.

This section explains how to create these two types of pattern files.

3.1.1 Creation Procedure for PROG Pattern Files

Creating a PROG pattern file

1. Start Pattern Editor.
2. Create a new PROG pattern file, or open an existing pattern file. (Refer to Sections 3.3, "Starting and Quitting Pattern Editor," and 3.6.1, "Opening a Pattern File," respectively.)
3. Edit the PROG pattern. (Refer to Section 3.4, "Editing Patterns.")
4. Save the edited PROG pattern. (Refer to Section 3.5, "Saving Pattern Files.")

3.1.2 Creation Procedure for STM Pattern Files

There are two methods for creating an STM pattern file.

One method is to create an STM pattern file from the SOH and Payload pattern files. For this method, use the Create a STM Pattern dialog box. The other method is to create the file using STM patterns. Both methods are described below.

Creation using SOH and Payload pattern files

1. Start Pattern Editor.
2. Create a new SOH pattern file, or open an existing pattern file. (Refer to Sections 3.3, "Starting and Quitting Pattern Editor," and 3.6.1, "Opening a Pattern File," respectively.)
3. Edit the SOH pattern. (Refer to Section 3.4, "Editing Patterns.")
4. Save the edited SOH pattern with the extension ".sop". (Refer to Section 3.5, "Saving Pattern Files.")

5. Create a new Payload pattern file, or open an existing pattern file. (Refer to Sections 3.3, "Starting and Quitting Pattern Editor," and 3.6.1, "Opening a Pattern File.")
6. Edit the Payload pattern. (Refer to Section 3.4, "Editing Patterns.")
7. Save the edited Payload pattern with the extension ".plp". (Refer to Section 3.5, "Saving Pattern Files.")
8. Create an STM pattern file using the Create a STM Pattern dialog box.

NOTE:

1. ***When you create an STM pattern file using the Create a STM Pattern dialog box, the SOH and Payload pattern files must have the same STM format (with respect to N of STM-N and the number of frames). If the two files have different STM formats, an STM pattern file cannot be created.***
   Add the extension ".stp" to the STM pattern file name.
2. ***For information on how to use the Create a STM Pattern dialog box, refer to Section 3.8, "Creating a STM Pattern from SOH and Payload Pattern Files."***

Creation using an STM pattern

1. Start Pattern Editor.
2. Create a new STM pattern file, or open an existing pattern file. (Refer to Sections 3.3, "Starting and Quitting Pattern Editor," and 3.6.1, "Opening a Pattern File.")
3. Edit the STM pattern. (Refer to Section 3.4, "Editing Patterns," respectively.)
4. Save the edited STM pattern. (Refer to Section 3.5, "Saving Pattern Files.")

3.2 Pattern Editor Windows

3.2.1 Pattern Editor Initial Screen

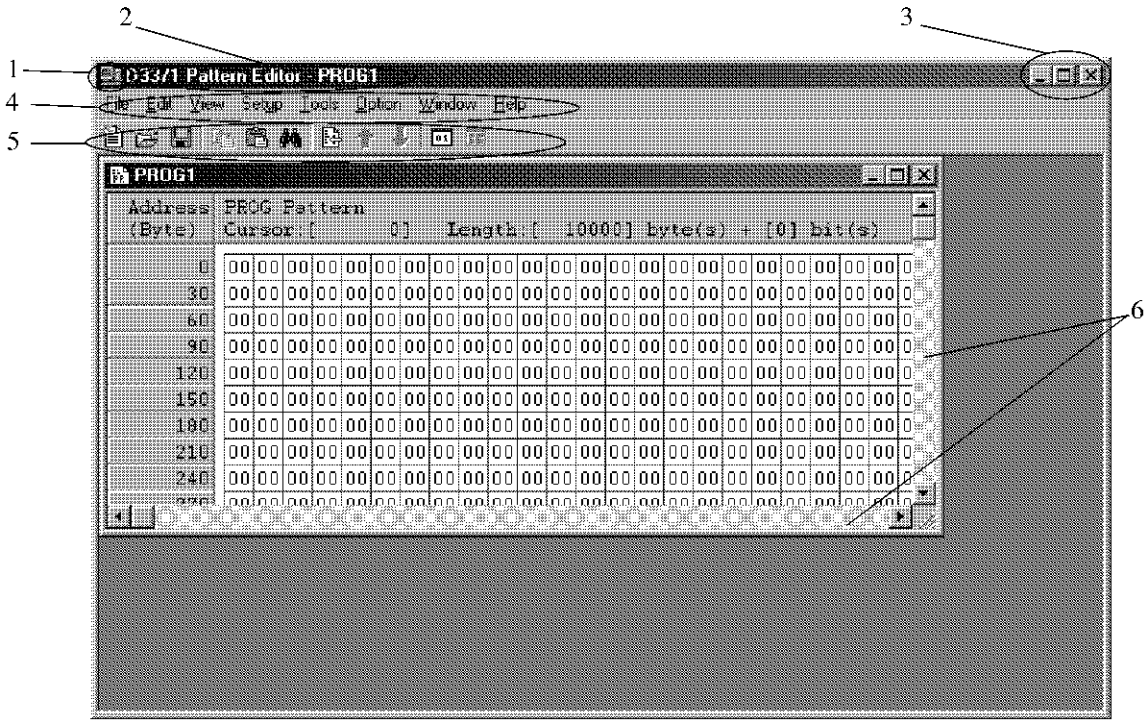

Figure 3-1 Initial Screen of Pattern Editor

1. Application icon — Used to control the way the window is displayed.

2. Title bar — Displays "D3371 Pattern Editor - pattern-file-name"

   If a pattern file has been saved without a name specified, Pattern Editor displays the default name as follows:

   - PROG Pattern: PROG + "number"
   - SOH Pattern: SOH + "number"
   - Payload Pattern: Payload + "number"
   - STM Pattern: STM + "number"

   "number" is an arbitrary number.

3. Minimize — Minimizes the window.

   Maximize — Maximizes the window.

   Close button — Quits Pattern Editor.

4. Menu bar — Provides menu items, each of which, when clicked, displays the corresponding pull-down menu. Almost all Pattern Editor functions can be activated from this pull-down menu.

5. Toolbar — Provides frequently used functions as buttons for quick and easy selection.

6. Scroll bar — Moves the window up and down or to the left and right to show data that is out of view.

3.2.2 PROG Pattern Window

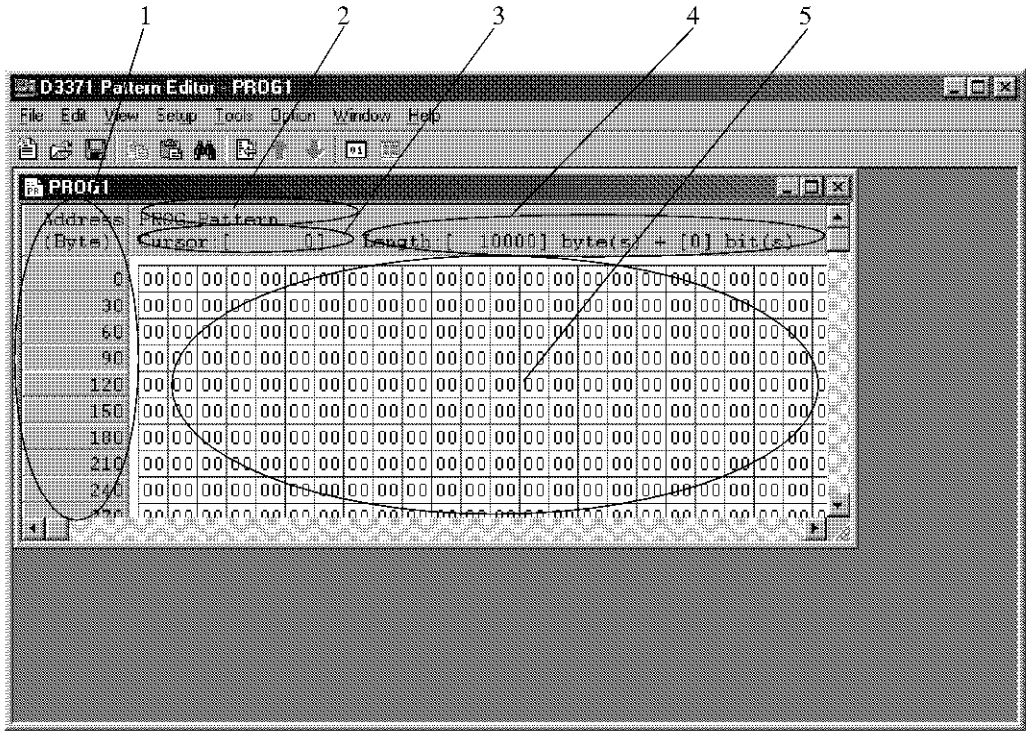

Figure 3-2 PROG Pattern Window

1. Address display area — Displays address in bytes. The first address of each line is displayed.

2. Title — Displays "PROG Pattern," indicating that a PROG pattern is currently displayed.

3. Cursor — Shows the cursor position.

4. Length — Shows the pattern length with the number of bytes and the number of bits.

5. Pattern input area — Area for input of PROG pattern data.

3.2.3 SOH Pattern Window

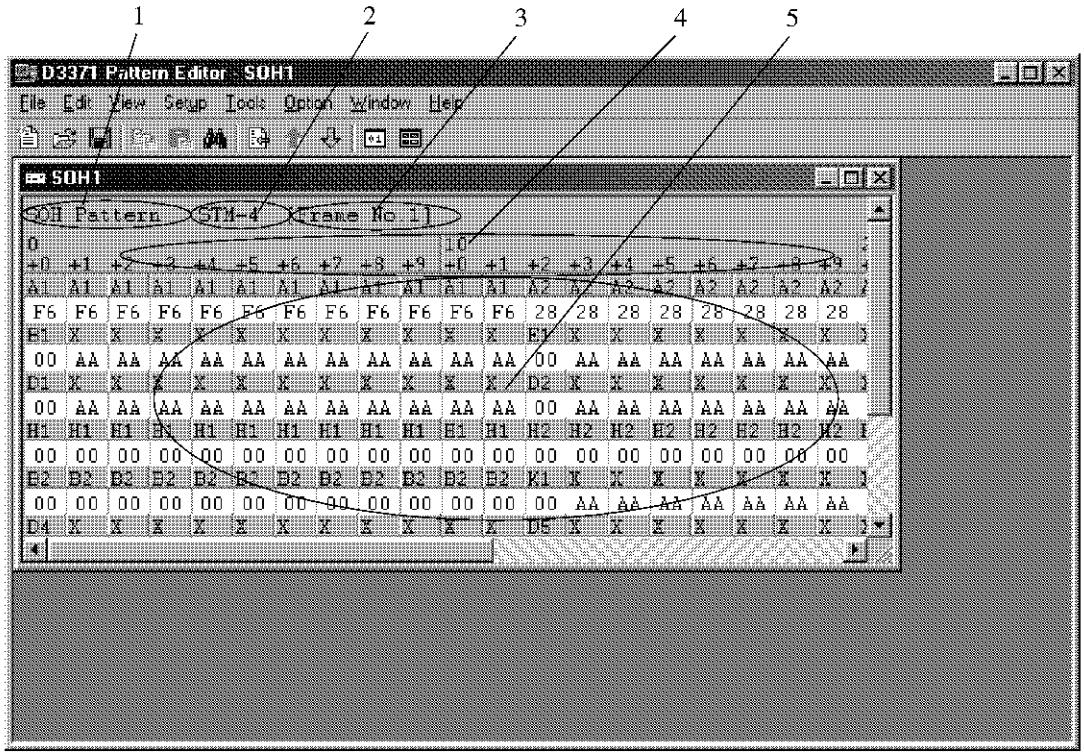

Figure 3-3 SOH Pattern Window

1.	Title	Displays "SOH Pattern," indicating that an SOH pattern is currently displayed.
2.	STM-N	Shows the synchronous digital hierarchy level (STM-N) of the pattern being edited.
3.	Frame No.	Shows the number of the frame being edited.
4.	Column scale	Shows the column number or multiplexing number.
5.	Byte pattern input area	Area for inputting hexadecimal data.

3.2.4 Payload Pattern Window

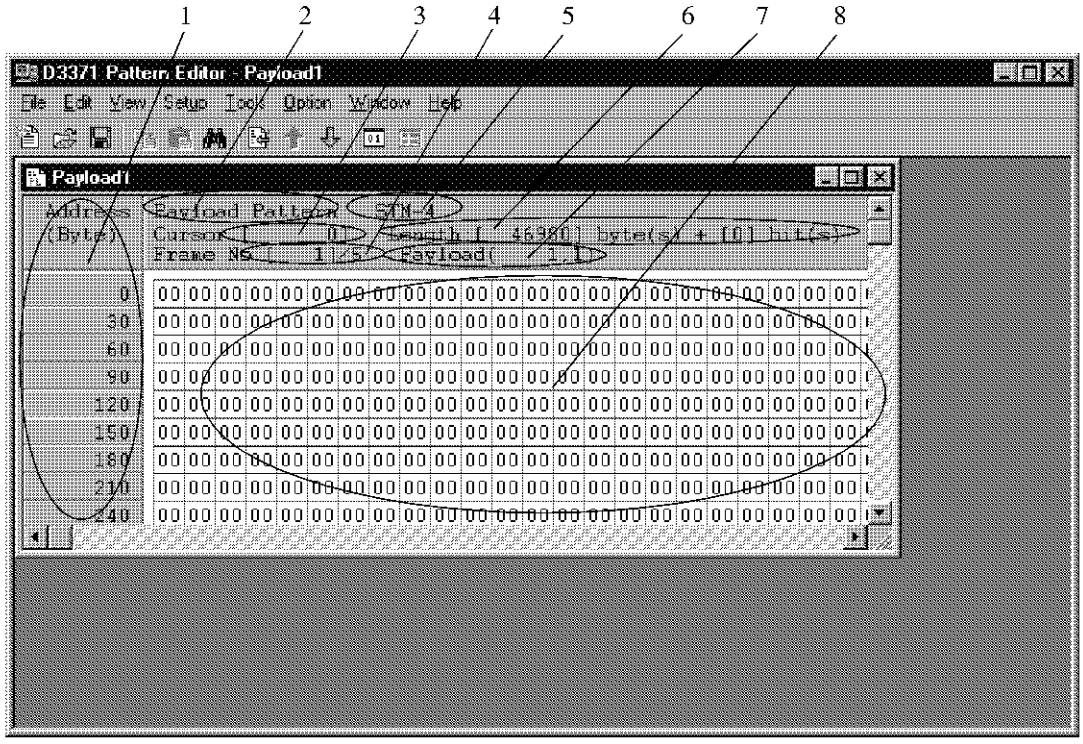

Figure 3-4 Payload Pattern Window

1. Address display area — Displays an address in bytes. The first address of each line is displayed.
2. Title — Displays "Payload Pattern," indicating that a Payload pattern is currently displayed.
3. Cursor — Shows the cursor position.
4. Frame No. — Shows the frame number of the cursor position.
5. STM-N — Shows the synchronous digital hierarchy level (STM-N) of the pattern being edited.
6. Length — Shows the pattern length with the number of bytes and the number of bits.
7. Payload — Shows the cursor position in the frame using the "column-number, row-number" format.
8. Pattern input area — Area for inputting the Payload pattern data.

3.2.5 STM Pattern Window

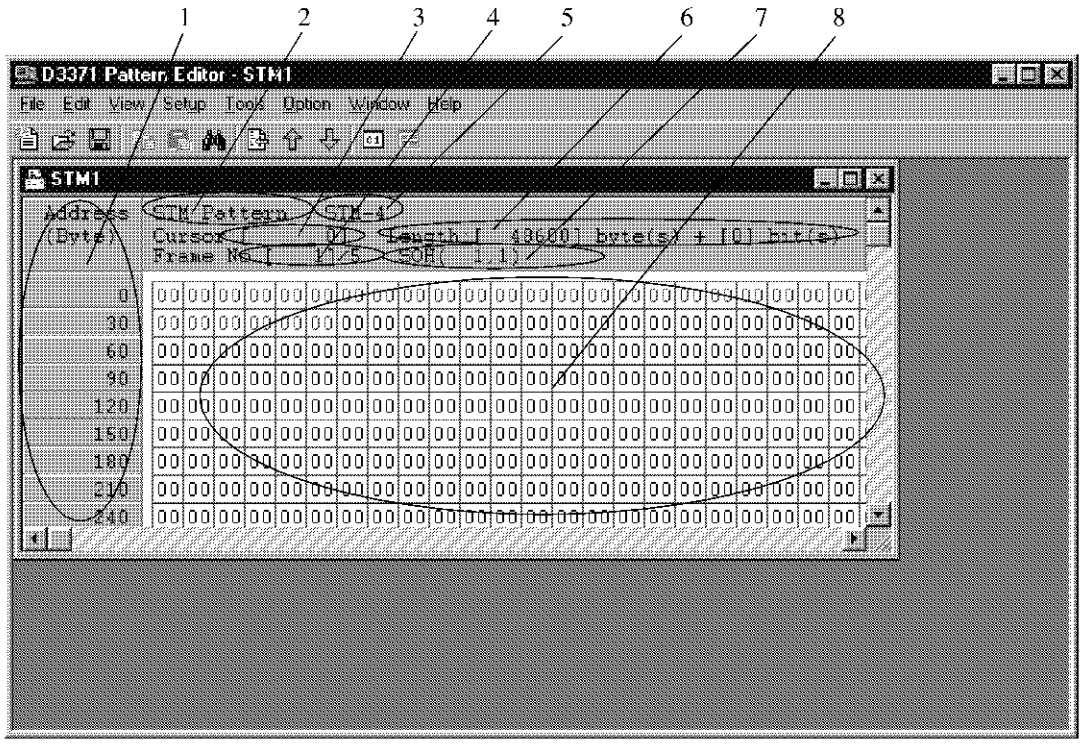

Figure 3-5 STM Pattern Window

1.	Address display area	Displays an address in bytes. The first address for each line is displayed.
2.	Title	Displays "STM Pattern," indicating that an STM pattern is currently displayed.
3.	Cursor	Shows the cursor position.
4.	Frame No.	Shows the frame number of the cursor position.
5.	STM-N	Shows the synchronous digital hierarchy level (STM-N) of the pattern being edited.
6.	Length	Shows the pattern length with the number of bytes and the number of bits.
7.	SOH/Payload	Shows whether the current cursor position is in the SOH or Payload area, and also displays the cursor position in the frame using the "column-number, row-number" format.
8.	Pattern input area	Area for inputting the STM pattern data.

3.2.6 Toolbar

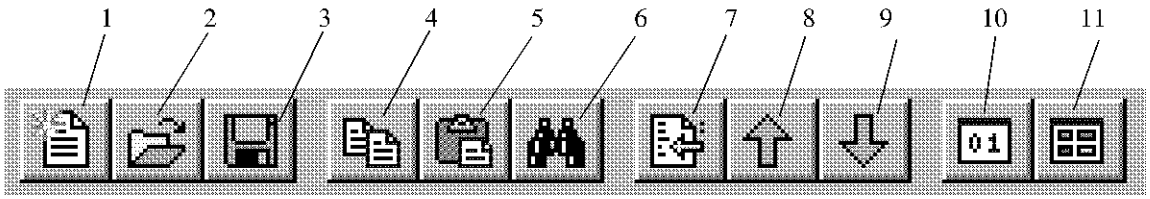

Figure 3-6 STM Pattern Window

1.	New	Create a new pattern file.
2.	Open	Opens a saved pattern file.
3.	Save	Saves the current edited pattern file.
4.	Copy	Copies the data in the selected range to the clipboard.
5.	Paste	Pastes the contents of the clipboard to the current cursor position.
6.	Find	Search for a specified pattern column.
7.	Jump	Used to move the cursor to a specified address.
8.	Jump to previous frame	Moves the cursor to the beginning of the previous frame.
9.	Jump to next frame	Moves the cursor to the beginning of the next frame.
10.	Bit editor	Starts the bit editor.
11.	Easy Menu	Opens the SOH Easy Menu.

3.3 Starting and Quitting Pattern Editor

This section explains how to start and quit each Pattern Editor module.

3.3.1 Starting Pattern Editor

1. From the Start menu, select **[Programs] - [Advantest] - [D3371] - [D3371 Pattern Editor]** to start Pattern Editor.
   Select **[File] - [New]** if Pattern Editor has already been started.
   The New dialog box is then displayed.

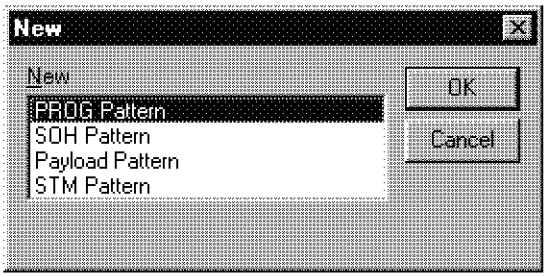

Figure 3-7 New Dialog Box

3.3.2 Starting PROG Pattern

1. From the New dialog box, select **[PROG Pattern]** and click **[OK]** button.

NOTE: Double-clicking [PROG Pattern] has the same effect.

A dialog box for specifying a pattern length and format is displayed.

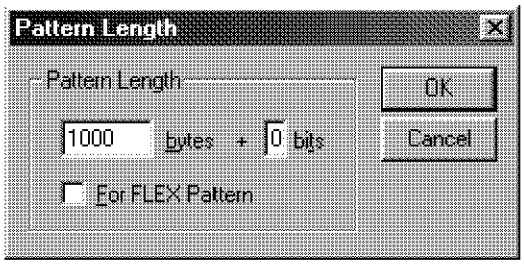

Figure 3-8 Pattern Length Dialog Box

Settings in the Pattern Length dialog box

Specify a pattern length and make the "For FLEX Pattern" setting.

2. Specify the pattern length by entering the number of bytes and the number of bits.

Example:

- To create a 1,000-byte pattern
  [1000] bytes + [0] bits
- To create an 8,003-bit pattern
  [1000] bytes + [3] bits

3. Specify whether to create a normal PROG pattern or a PROG pattern used as a FLEX (flexible) pattern.
   To create a PROG pattern used as a FLEX (flexible) pattern, check the [For FLEX Pattern] check box.

NOTE: ***The pattern length that can be specified differs for a normal PROG pattern and a PROG pattern used as a FLEX pattern. See Table 3-7.***

---

4. Click the **[OK]** button.

3.3.3 Starting Modules Other Than PROG Pattern

This section explains how to start SOH Pattern, Payload Pattern, and STM Pattern using an example of starting SOH Pattern.

Starting SOH Pattern

1. From the New dialog box, select **[SOH Pattern]** and click **[OK]** button.

NOTE: ***Double-clicking [SOH Pattern] has the same effect.***

A dialog box for specifying the STM format is displayed.

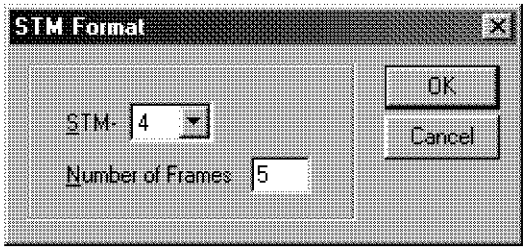

Figure 3-9 STM Format Dialog Box

Settings in the STM Format dialog box

Enter the values for STM and Number of Frames.

2. STM
   Specify the synchronous digital hierarchy level (STM-N [N = 4, 8, 12, 16]).

3. Number of Frames
   Specify the number of frames.
4. Click the **[OK]** button.

3.3.4 Quitting Pattern Editor

From the menu bar, select **[File] - [Exit]**.

3.4 Editing Patterns

3.4.1 Entering Pattern Data

Patterns are edited in byte units. Enter hexadecimal values in the pattern input area. Specify a pattern length when starting Pattern Editor. (Refer to Section 3.3, "Starting and Quitting Pattern Editor.")

For a PROG pattern, a pattern whose length is not a byte multiple can be specified. If a byte multiple is not used, the pattern is edited using the rounded-up length (for example, if "1000 bytes + 3 bits" is specified, the pattern is edited as 1,001 bytes). The D3371 ignores any bits beyond the pattern length.

Because pattern input is done in overwrite mode, the pattern length is not changed by editing. For information on how to change the pattern length, refer to Section 3.14.5, "Changing Pattern Length." For information on how to change the STM format, refer to Section 3.14.6, "Changing the STM Format."

Pattern Editor provides the following tools to make data input easier:

- Fill PRBS — Fills a pattern with the specified PRBS pattern data.
- Fill Pattern — Fills a pattern with the specified pattern data.
- Fill All 0 — Fills a pattern with all 0s.
- Fill All 1 — Fills a pattern with all 1s.
- Bit Editor — Opens the supplementary input editor for bit editing.
- SOH Easy Menu — Simplifies input of SOH pattern data. Identical items, such as A1 and A2, can be filled with the specified values at one time.

For more information on how to fill patterns, refer to Section 3.10, "Fill Functions."

3.4.2 Operation of Edit Keys

3.4.2.1 Moving the Cursor

Table 3-1 Cursor Movement Keys

Cursor destination	Key or key combination
One character to the left	←
One character to the right	→
One line up	↑
One line down	↓
Left end of line	**HOME**
Right end of line	**END**
Beginning of pattern	**Ctrl-HOME**
End of pattern	**Ctrl-END**

3.4.2.2 Selecting a Pattern Range

Table 3-2 Range Selection Keys

Desired range	Key or key combination
One character to the left	**Shift-←**
One character to the right	**Shift-→**
One line up	**Shift-↑**
One line down	**Shift-↓**
To beginning of line	**Shift-HOME**
To end of line	**Shift-END**
To beginning of pattern	**Shift-Ctrl-HOME**
To end of pattern	**Shift-Ctrl-END**

3.4.2.3 Copy and Paste

Table 3-3 Copy and Paste Keys

Edit operation	Key combination
Copy the pattern in the selected range to the clipboard.	**Ctrl-C**
Paste the contents of the clipboard to the cursor position.	**Ctrl-V**

3.4.2.4 Mark Operation

Table 3-4 Mark Operation Keys

Mark operation	Key or key combination
Set a mark.	**Ctrl-F2**
Clear a mark.	**Ctrl-F2**
Move to the first mark set after the cursor.	**F2**
Move to the first mark set before the cursor.	**Shift-F2**

3.4.2.5 Key Operations Corresponding to the Toolbar Buttons

Table 3-5 Keys Corresponding to Toolbar Buttons

Toolbar button	Key combination
New	**Ctrl-N**
Open	**Ctrl-O**
Save	**Ctrl-S**
Find	**Ctrl-F**
Jump	**Ctrl-J**

3.4.3 Copy and Paste

A selected area can be copied to another location. Use one of the following methods to copy and paste:

- Pull-down menu
- Toolbar
- Shortcut keys

Copy and paste using the pull-down menu

1. Select the area you want to copy by dragging the mouse or moving the cursor while pressing the **Shift** key.
2. Click **[Edit]** on the menu bar.
   The Edit pull-down menu is displayed.

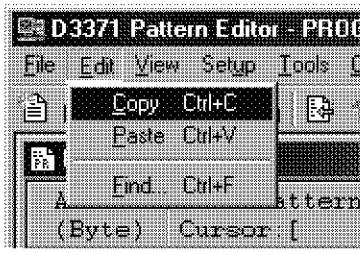

Figure 3-10 Edit Pull-down Menu

3. Select **[Copy]**.
4. Move the cursor to where you want the selected pattern to be pasted.
5. Click **[Edit]** and select **[Paste]**.
   The selected pattern is pasted at the cursor position.

Copy and paste using the toolbar

1. Select the area you want to copy by dragging the mouse or moving the cursor while pressing the **Shift** key.
2. Click the Copy button ( ) on the toolbar.
3. Move the cursor to where you want the selected pattern to be pasted.
4. Click the Paste button ( ) on the toolbar.
   The selected pattern is pasted at the cursor position.

Copy and paste using shortcut keys

1. Select the area you want to copy by dragging the mouse or moving the cursor while pressing the **Shift** key.
2. Press **Ctrl-C**.
3. Move the cursor to where you want the selected pattern to be pasted.
4. Press **Ctrl-V**.
   The selected pattern is pasted at the cursor position.

3.4.4 Copying a Frame

SOH Pattern has a function for copying pattern data in frame units.

SOH Pattern creates frames one by one. When all frames are identical or similar, this function can be used to easily make copies of frames. The copy source and destination frame numbers can be specified to copy pattern data between frames.

The procedure is shown below.

Copying a Frame

1. In the SOH Pattern window, select **[Edit] - [Frame Copy]**.
   The Frame Copy dialog box is then displayed.

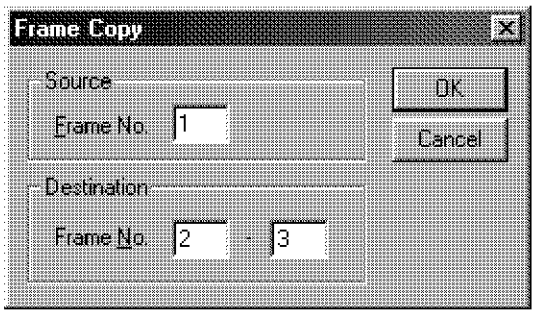

Figure 3-11 Frame Copy Dialog Box

2. Enter the copy source frame number in the **[Frame No.]** text box of the **[Source]**.
3. Type frame numbers to specify the range of copy destination frames in the **[Frame No.]** text box of the **[Destination]**.

Example 1: To copy frame No. 1 to frame No. 2.

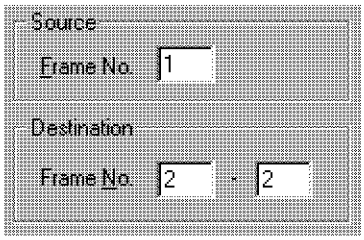

Figure 3-12 Specifying Frame Numbers (1)

Example 2: To copy frame No. 1 to the frames No. 2 to No. 4

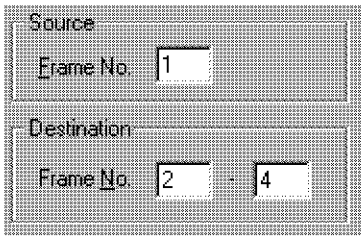

Figure 3-13 Specifying Frame Numbers (2)

4. Click the **[OK]** button.

3.5 Saving Pattern Files

Created pattern files are saved to disk.

This section explains the procedure for saving a pattern file.

Saving a pattern file

1. Select **[File] - [Save]**.

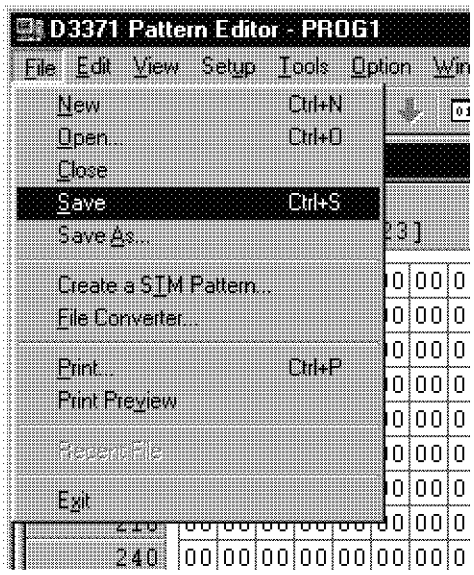

Figure 3-14 File Pull-down Menu

NOTE: ***You can also save a pattern file by pressing Ctrl-S or clicking the Save button ( ) on the toolbar.***

Saving a new pattern

Follow the procedure below to save a newly created file.

1. Select **[File] - [Save]**.
   The Save As dialog box is then displayed.
2. Specify the save location (Save in) and file name (File name) and then click the **[Save]** button.

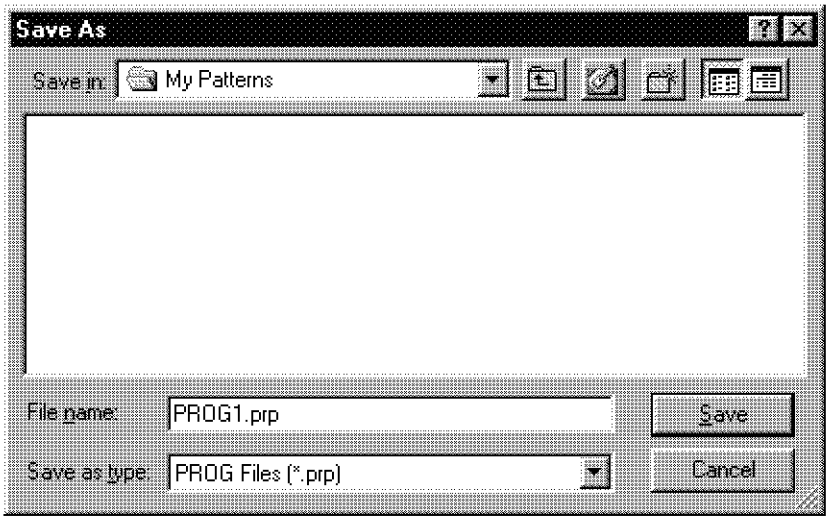

Figure 3-15 Save As Dialog Box

NOTE: If [File] - [Save] is selected again after saving a new pattern, the existing file is overwritten without the Save As dialog box being displayed.

Saving a pattern with another name

1. Display the editor window you want to use to save patterns.
2. Select **[File] - [Save As]**.
   The File Save As dialog box is then displayed.
3. Specify the save location (Save in) and file name (File name), then click the **[Save]** button.

3.6 Opening and Closing a Pattern File

3.6.1 Opening a Pattern File

Opens a pattern file that has been saved on disk.

Files with the following extensions can be opened.

Extension	File type
.prp	PROG pattern
.sop	SOH pattern
.plp	Payload pattern
.stp	STM pattern

Opening a pattern file

1. Select **[File] - [Open]**.

NOTE: ***Clicking the Open button ( ) on the toolbar also opens a pattern file.***

---

2. Select the location of the file you want to open (Look in).
3. Select the type of the target file (Type of files).
4. Select the target file from the list or type the file name (File name).
5. Click the **[OK]** button.

3.6.2 Closing a Pattern File

When you quit Pattern Editor, all files are automatically closed.

Closing a Pattern File

1. Display the pattern window you want to close.
2. Select **[File] - [Close]**.

3.7 Printing a Pattern File

3.7.1 Printing

Prints Pattern files.

NOTE: ***A printer driver must have been installed before you print pattern files. For information on how to install a printer driver, refer to the Windows or printer instruction manuals.***

Printing a pattern file

1. Select **[File] - [Print]**.
   The Print dialog box is displayed.

   NOTE: ***The Print dialog box is also displayed by pressing Ctrl-P.***

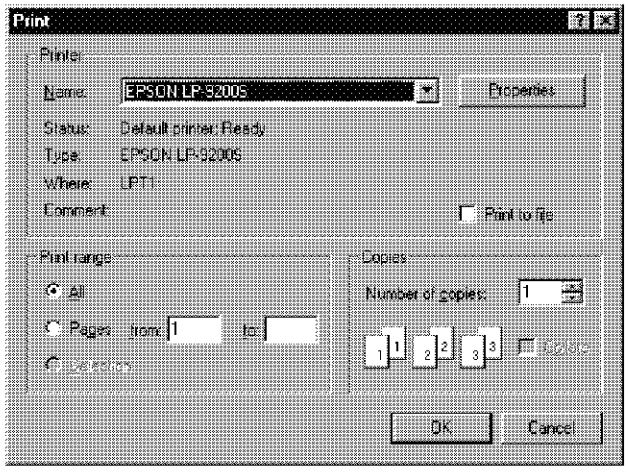

Figure 3-16 Print Dialog Box

2. Specify the printer name (Name), print range (Print range), and number of copies (Number of copies), and click the **[OK]** button.

3.7.2 Print Previewing

Before you print a pattern file, you can view on screen how it will appear when printed.

The preview procedure is described below:

Viewing print preview

1. Select **[File] - [Print Preview]**.
   The print preview window is displayed.
2. The following functions can be executed using the buttons in the print preview screen.

Button	Function
Print	Prints pattern files.
Next page	Displays the next page.
Prev page	Displays the previous page.
Two page/One Page	Displays either one page or two pages in the print preview window.
Zoom In	Enlarges the page display.
Zoom Out	Reduces the page display.
Close	Closes the print preview screen.

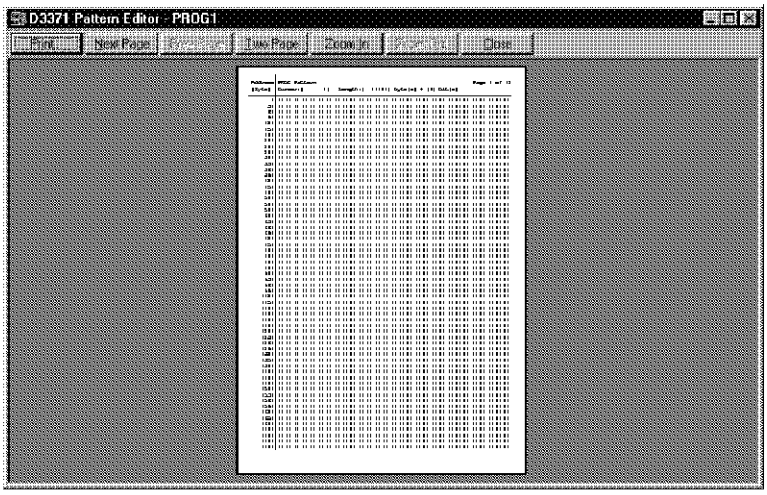

Figure 3-17 Print Preview Screen

3.8 Creating a STM Pattern from SOH and Payload Pattern Files

This section explains how to create a STM pattern file from SOH and Payload pattern files.

Creating an STM pattern file

1. Select **[File] - [Create a STM Pattern]**.
   The Create a STM Pattern dialog box is then displayed.

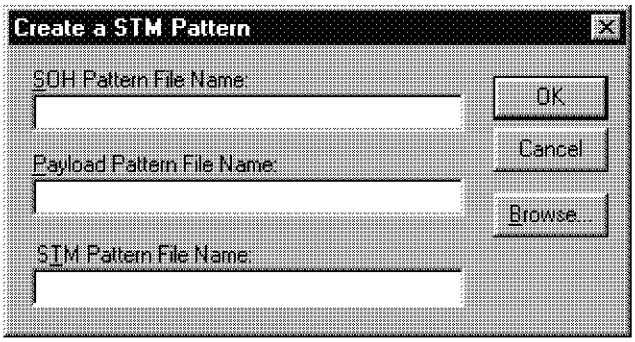

Figure 3-18 Create a STM Pattern Dialog Box

2. Enter the full pathname of the SOH pattern file in the **[SOH Pattern File Name]** text box.

NOTE: ***You can also specify a file name using the Browse dialog box. To open the Browse dialog box, click the [SOH Pattern File Name] text box and then click the [Browse] button.***

---

3. Enter the full pathname of the Payload pattern file in the **[Payload Pattern File Name]** text box.

NOTE: ***You can also specify a file name using the Browse dialog box. To open the Browse dialog box, click the [Payload Pattern File Name] text box and then click the [Browse] button.***

---

4. Enter the full pathname of the STM pattern file in the **[STM Pattern File Name]** text box.

NOTE: ***You can also specify a file name using the Browse dialog box. To open the Browse dialog box, click the [STM Pattern File Name] text box and then click the [Browse] button.***

---

5. Click the **[OK]** button.

   An STM pattern file is created with the name specified in the **[STM Pattern File Name]** text box.

NOTE: ***When you create a STM pattern file using the Create a STM Pattern dialog box, an SOH pattern file (with the extension ".sop") that has been created in the same STM format (with the same STM-N and the number of frames) and a payload pattern file (with the extension ".plp") must have saved on the disk. Use SOH Pattern to create an SOH pattern file and Payload Pattern to create a Payload pattern file.***

3.9 File Converter

The file converter is a tool used to convert between the different types of files listed below.

Source file type	Description
Text	Text file
Binary	Binary file
Pattern	Pattern files (PROG, SOH, Payload, and STM)

Target file type	Description
PROG	PROG pattern file
SOH	SOH pattern file
Payload	Payload pattern file
STM	STM pattern file
Text	Text file (*1)

*1 Text files cannot be edited with Pattern Editor. Use Notepad or another text editor to edit them.

NOTE: ***When a source file is converted to a text file, the pattern data in the source file must consist only of ASCII characters 0 to 9, a to f, and A to F. Any other characters are ignored during the conversion process.***

3.9.1 Pattern Length

When a file is converted to a PROG, SOH, Payload, or STM pattern file, note that there are limitations on the pattern length that Pattern Editor can handle for each type of file.

Any pattern length that does not satisfy the corresponding length limit must be changed accordingly. If the pattern of the converted file is longer than that of the source file, the remaining portion is filled with zeros. Conversely, if it is shorter, the extra part of the pattern is discarded.

3.9.2 Extensions

When a file is converted to a PROG, SOH, Payload, or STM file, use the appropriate extension, as shown below.

File type	Extension
PROG	.prp
SOH	.sop
Payload	.plp
STM	.stp

3.9.3 Converting a Source File

File converter

1. Select **[File] - [File Converter]**.
   The File Converter dialog box is displayed.

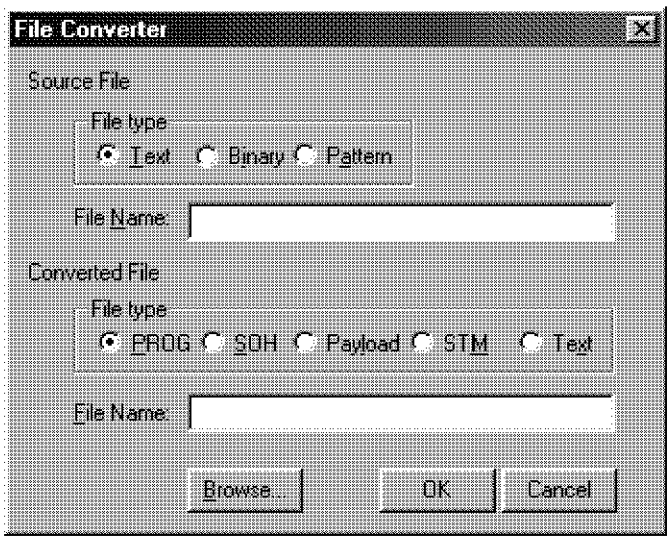

Figure 3-19 File Converter Dialog Box

2. Select the type of the source file using the **[File type]** group box in the **[Source File]**.
   - Select the **[Text]** button for a text file.
   - Select the **[Binary]** button for a binary file.
   - Select the **[Pattern]** button for a pattern file (PROG, SOH, Payload, or STM) edited with Pattern Editor.

3. Enter the source file name in the **[File Name]** text box in the Source File area.

NOTE: ***You can also select a source file from the Browse dialog box. To open the Browse dialog box, click the [File Name] text box in the Source File area and then click the [Browse] button.***

---

4. Specify the type of the conversion target file in the **[File Type]** group box for Converted File.

5. Specify the name of the conversion target file in the **[File Name]** text box for [Converted File].

6. Click the **[OK]** button.

   When the file other than text file is specified as a type of the conversion target file, the Pattern Length or STM Format dialog box is then displayed.

   - The Pattern Length dialog box (see Figure 3-8) is displayed when the target file type is PROG.
   - The STM Format dialog box (see Figure 3-9) is displayed when the target file type is SOH, Payload, or STM.

7. Specify the necessary values in the dialog box and click the **[OK]** button. (Refer to Section 3.3, "Starting and Quitting Pattern Editor.")

   Conversion is complete when the mouse pointer changes from an hourglass pointer to an I-beam pointer.

Confirmation after conversion

8. To check converted patterns, open the converted pattern file. (Refer to Section 3.6.1, "Opening a Pattern File.")

3.10 Fill Functions

Pattern Editor provides the following fill functions to simplify pattern creation:

- Fill PRBS
  Adds PRBS pattern data at the cursor position.
- Fill Pattern
  Adds the specified pattern data at the cursor position.
- Fill All 0
  Fills the entire pattern with all 0s.
- Fill All 1
  Fills the entire pattern with all 1s.
- Fill Increment
  Adds at the cursor position, in byte units, hexadecimal values starting at 0, each incremented by 1.

3.10.1 Adding PRBS Pattern Data

Fill PRBS adds PRBS pattern data at the cursor position for the number of bytes specified.

This fill function ends when all of the specified PRBS pattern data has been added.

Table 3-6 summarizes the relationships between the number of PRBS pattern stages, generating functions, mark ratios, and applied standards.

Table 3-6 PRBS Pattern Generating Function and Applied Standard

Number of stages	Generating function	Mark ratio	Applied standard	ITU-T
7	X^7+X^6+1	1/2	ITU-T V.29	Compliant
		Other than 1/2		
9	X^9+X^5+1	1/2	ITU-T V.52	Compliant
		Other than 1/2		
10	$X^{10}+X^7+1$	All		
11	$X^{11}+X^9+1$	1/2	ITU-T O.152	Compliant
		Other than 1/2		
15	$X^{15}+X^{14}+1$	1/2B	ITU-T O.151	Compliant
		Other than 1/2		
23	$X^{23}+X^{18}+1$	1/2B	ITU-T O.151	Compliant
		Other than 1/2B		
31	$X^{31}+X^{28}+1$	All		

Adding PRBS pattern data

1. Move the cursor to where you want pattern addition to begin.
2. Select **[Tools] - [Fill PRBS]**.
   The Fill PRBS dialog box is then displayed.

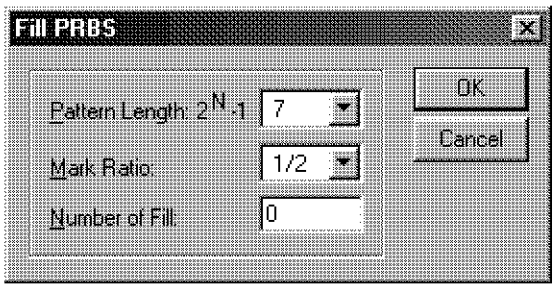

Figure 3-20 Fill PRBS Dialog Box

3. Select the number of PRBS stages in the **[Pattern Length: 2^N -1]** combo box.
   Choices: 7, 9, 10, 11, 15, 23 or 31
4. Select the mark ratio in the **[Mark Ratio]** combo box.
   Choices: 0/8, 1/8, 1/4, 1/2, 8/8, 7/8, 3/4 or 1/2B
5. Enter the number of bytes of the PRBS pattern to be added in the **[Number of Fill]** text box.
6. Click the **[OK]** button.

3.10.2 Adding Specified Pattern Data

Fill Pattern adds the specified pattern data at the cursor position for the number of bytes specified.

Adding specified pattern data

1. Move the cursor to where you want pattern addition to begin.
2. Select **[Tools] - [Fill Pattern]**.
   The Fill Pattern dialog box is then displayed.

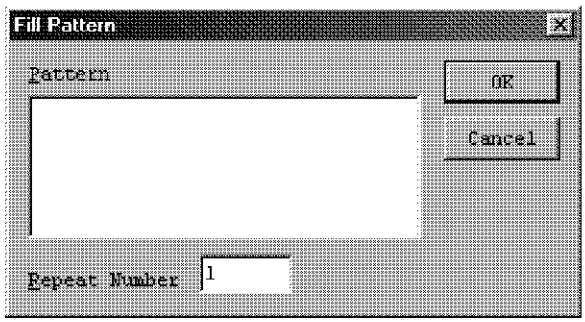

Figure 3-21 Fill Pattern Dialog Box

3. Enter, in hexadecimal notation, a pattern to be added in the Pattern text box.
   Available characters: 0 to 9 and A to F

NOTE: ***If a character other than 0 to 9 and A to F is included, Fill Pattern will not work.***

Pattern addition begins at the cursor position. If the fill pattern length exceeds the range of the patterns, the fill operation ends and the extra pattern data is discarded.

4. Specify the number of times the specified pattern is to be repeated in the **[Repeat Number]** text box.
5. Click the **[OK]** button.

3.10.3 Filling the Pattern with All 0s

Fill All 0 fills the entire pattern with 0s.

Select **[Tools] - [Fill All 0]** to start Fill All 0.

3.10.4 Filling the Pattern with All 1s

Fill All 1 fills the entire pattern with 1s.

Select **[Tools] - [Fill All 1]** to start Fill All 1.

3.10.5 Adding an Incremental Pattern

Fill Increment adds, in byte units, an incremental pattern at the cursor position for the number of times specified.

The incremental pattern consists of values that are incremented by 1 each time until they reach FF, after which they return to 0. The first incremental pattern value and the number of times the incremental operation is repeated can be specified in the dialog box.

Adding an incremental pattern

1. Select **[Tools] - [Fill Increment]**.
   The Fill Increment dialog box is then displayed.

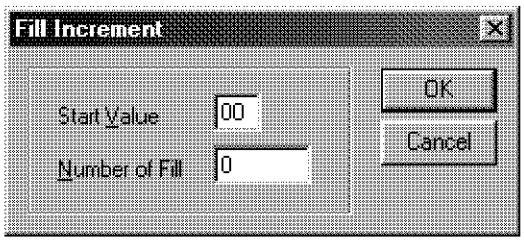

Figure 3-22 Fill Increment Dialog Box

2. Specify the initial value with which incrementing is to begin in the **[Start Value]** text box.
3. Specify the number of bytes to be added in the **[Number of Fill]** text box.
4. Click the **[OK]** button.

3.11 Searching for Pattern Sequence

Pattern Editor provides a function used to search for a pattern sequence. The search begins at the cursor position.

Searching for a pattern sequence

1. Move the cursor to where you want the search to begin.
2. Select **[Edit] - [Find]**.
   The Find dialog box is then displayed.

NOTE: Pressing Ctrl-F or clicking the Find button ( ) on the toolbar also opens the Find dialog box.

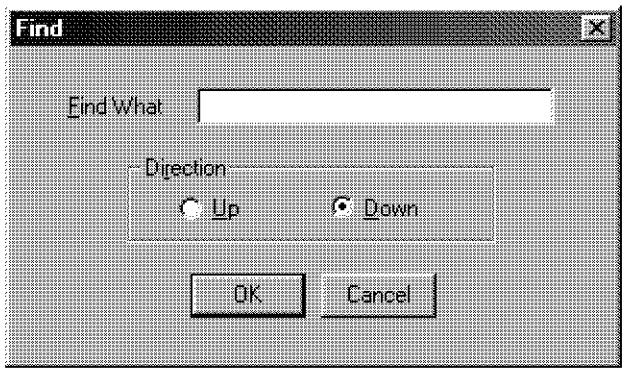

Figure 3-23 Find Dialog Box

3. Enter the pattern sequence to be searched for in the **[Find What]** text box.
4. Specify the search direction in the **[Direction]** group box.
   Select the **[Up]** button to search upward from the cursor position.
   Select the **[Down]** button to search downward from the cursor position.
5. Click the **[OK]** button.

3.12 Jump Function

3.12.1 Address Jump

The jump function is used to move the cursor to a specified address. Specify the destination address in the Jump dialog box. Pattern Editor uses a different method of specifying the destination address for each pattern.

In decimal address display mode, decimal numbers can be specified for all items. In hexadecimal address display mode, hexadecimal numbers must be specified for the **[Address]** and **[Column]** items.

Address jump

1. Select **[View] - [Jump]**.
   The Jump dialog box is then displayed.

   NOTE: ***Pressing Ctrl-J or clicking the Jump button ( ) on the toolbar also displays the Jump dialog box.***

2. Specify the jump destination address in the Jump dialog box.

   NOTE: ***For more information on how to specify the Jump dialog box, refer to the description of the Jump dialog box in each editor.***

3. Click the **[OK]** button.
   The cursor moves to the specified address.

3.12.2 Jump Dialog Box of Each Editor

1. Jump dialog box of PROG Pattern
   Figure 3-24 shows the Jump dialog box for decimal address display mode.
   Figure 3-25 shows the Jump dialog box for hexadecimal address display mode.

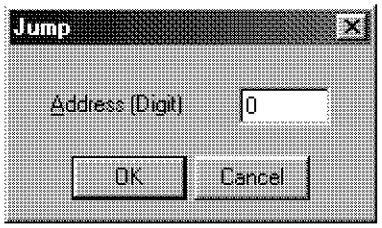

Figure 3-24 Jump Dialog Box of PROG Pattern in Decimal Address Display Mode

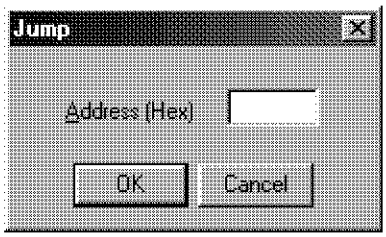

Figure 3-25 Jump Dialog Box of PROG Pattern in Hexadecimal Address Display Mode

[Address] Specify the destination address in bytes.
Specify a number from 0 to a value of pattern length minus 1.
In hexadecimal address display mode, specify a hexadecimal number.

2. Jump dialog box of SOH Pattern
Figure 3-26 shows the Jump Dialog Box of SOH Pattern.

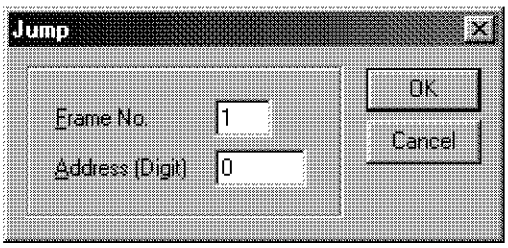

Figure 3-26 Jump Dialog Box of SOH Pattern in Decimal Address Display Mode

[Frame No.] Specify the number of the jump destination frame.
[Address] Specify the destination address in the destination frame in bytes.
Specify a number from 0 to a value of pattern length minus1.

3. Jump dialog box of Payload Pattern
Figure 3-27 shows the Jump dialog box for decimal address display mode.
Figure 3-28 shows the Jump dialog box for hexadecimal address display mode.

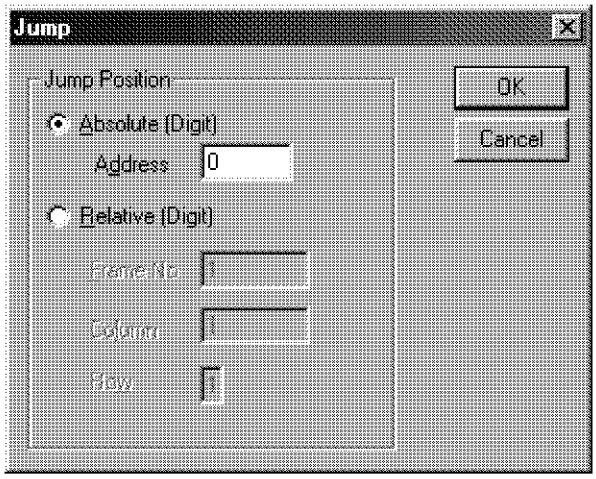

Figure 3-27 Jump Dialog Box of Payload Pattern in Decimal Address Display Mode

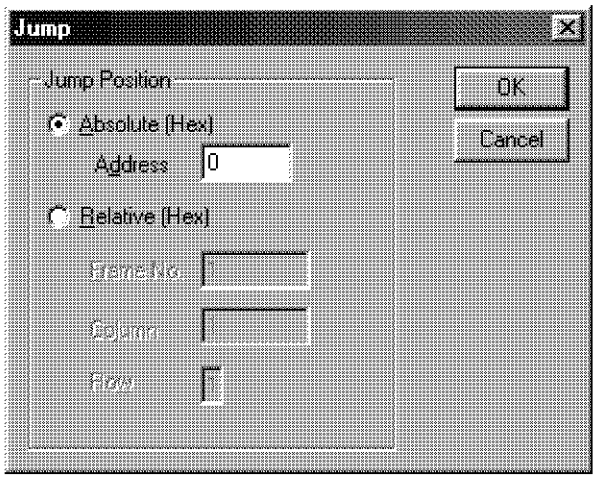

Figure 3-28 Jump Dialog Box of Payload Pattern in Hexadecimal Address Display Mode

[Absolute] Select this item to specify an address under the assumption that the Payload pattern is a single PROG pattern. Specify the jump destination address in the **[Address]** text box.

[Relative] Select this item to specify the destination address with the row and column numbers in a frame.

[Address] Specify an absolute address in the pattern in bytes.

Specify a number from 0 to a value of pattern length minus1.

[Frame No.] Specify the number of the jump destination frame.

Specify a number from 1 to the number of frames.

[Column] Specify a column number in the frame.

However, since the SOH area is ignored and the first column of the Payload pattern is assumed to be 1, the value that can be specified ranges from 1 to Payload column length.

[Row] Specify a row number in the frame.
Specify a number from 1 to 9.

4. Jump dialog box of STM Pattern

STM Pattern supports the following two ways of specifying an address for address jump:

- Specifying an absolute address under the assumption that the STM pattern is a PROG pattern.
- Specifying the SOH area or Payload area as the jump destination and, and then specifying the frame number, column number, and row number.

Figure 3-29 shows the Jump dialog box for decimal address display mode.

Figure 3-30 shows the Jump dialog box for hexadecimal address display mode.

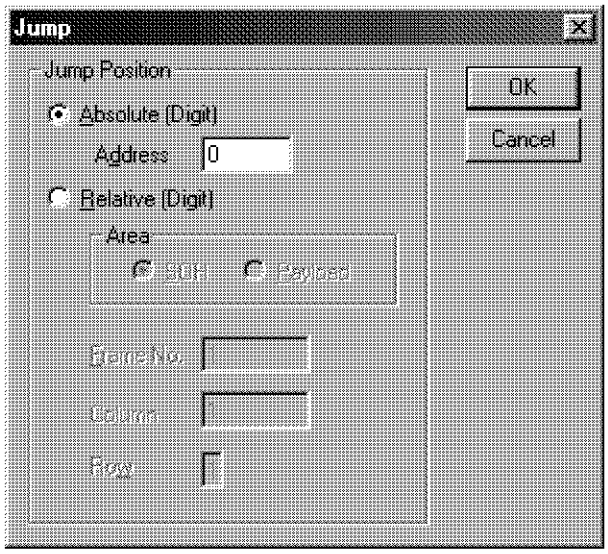

Figure 3-29 Jump Dialog Box of STM Pattern in Decimal Address Display Mode

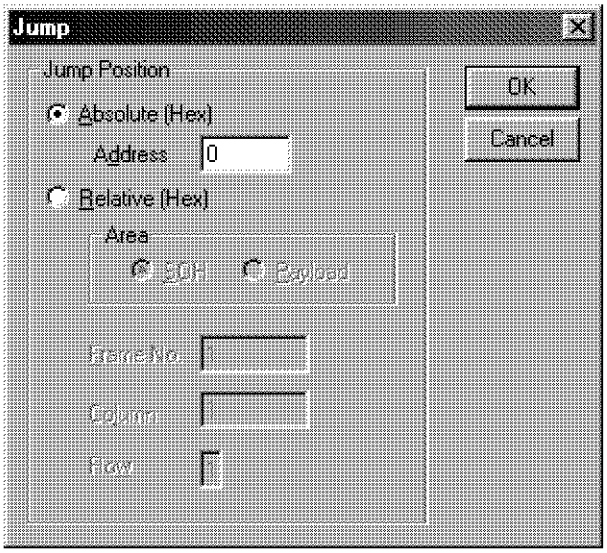

Figure 3-30 Jump Dialog Box of STM Pattern in Hexadecimal Address Display Mode

[Absolute]	Select this item to specify an address under the assumption that the STM pattern is a single PROG pattern. Specify the jump destination address in the **[Address]** text box.
[Relative]	Select this item to specify the jump destination address in the SOH or Payload area using the frame, row, and column numbers.
[Address]	Specify an absolute address in the pattern in bytes. Specify a number from 0 to a value of pattern length minus1.
[SOH]	Check this item to jump to an address in the SOH area.
[Payload]	Check this item to jump to an address in the Payload area.
[Frame No.]	Specify the number of the jump destination frame. Specify a number from 1 to the number of frames.
[Column]	Specify a column number. When the **[SOH]** button is selected, the specified number is handled as a column number in the SOH area. Specify a number from 1 to SOH column length. When the **[Payload]** button is selected, the specified number is handled as a column number in the Payload area. The first column of the payload area is assumed to be 1. Specify a number from 1 to Payload column length.
[Row]	Specify a row number in the frame. Specify a number from 1 to 9.

3.12.3 Frame Jump

SOH Pattern, Payload Pattern, and STM Pattern each handle multiple frames as one pattern. They have the following jump functions to simplify cursor movement to other frames:

- Jump to the previous frame
- Jump to the next frame

Each frame jump moves the cursor to the beginning of the specified frame. The address jump function described in Section 3.12.1 can also be used to jump to other frames. In this case, you can specify a jump destination cursor position in the target frame.

NOTE: You can use the cursor movement key to move the cursor to another frame for Payload Pattern and STM Pattern, but not for SOH Pattern.

The frame jump procedure is described below.

Jump to the previous frame

1. Start SOH, Payload, or STM Pattern.
2. Select **[View] - [Previous Frame]**.

NOTE: Clicking the Jump to Previous Frame button ( ) on the toolbar also jumps to the previous frame.

Jump to the next frame

1. Start SOH, Payload, or STM Pattern.
2. Select **[View] - [Next Frame]**.

NOTE: Clicking the Jump to Next Frame button ( ) on the toolbar also jumps to the next frame.

3.13 Mark

Setting a mark allows the cursor to move to the marked position.

If the **[Visible Mark]** command is checked, the marked position is displayed in a different color than the other positions.

If the **[Visible Mark]** command is unchecked, the marked position is displayed in the same color as the other positions, and therefore cannot be distinguished. Nevertheless, the cursor can still be moved to the mark.

The Mark operations are described below:

Setting and clearing a mark

1. Move the cursor to where to set or clear a mark.
2. Select **[View] - [Set/Clear Mark(s)]**.

NOTE:

1. *This command acts as a toggle switch. Executing the command where no mark has been set sets a mark. Conversely, executing it where a mark has been set clears the mark.*
2. *Pressing Ctrl-F2 also sets or clears a mark.*

Jumping to the first mark set after the cursor

3. Select **[View] - [Next Mark]**.

NOTE: Pressing the F2 key also moves the cursor to the next mark.

Jumping to the first mark set before the cursor

4. Select **[View] - [Previous Mark]**.

NOTE: Pressing Shift- F2 also jumps to the previous mark.

Clearing all marks

5. Select **[View] - [Clear All Mark(s)]**.

Showing or hiding a mark

6. Select **[View] - [Visible Mark]**.

NOTE: This command acts as a toggle switch that alternates between showing and hiding marks.

3.14 Changing Formats

Pattern Editor has two types of formats: display format and pattern format.

The following changes can be made to the display format:

- Changing the address display mode
- Changing the SOH Pattern column scale mode
- Changing the frame image display mode

The following changes can be made to the pattern format:

- Changing the pattern length
- Changing the STM format (STM-N and number of frames).

3.14.1 Changing the Address Display Modes

This section explains how to change the address display mode. Addresses can be displayed in decimal or hexadecimal notation.

NOTE: ***SOH Pattern does not support the function to change the address display modes.***

---

1. Select **[View] - [Address Display Mode]**.
   The Address Display Mode dialog box is then displayed.

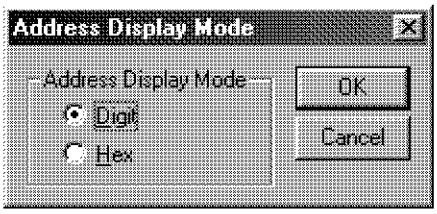

Figure 3-31 Address Display Mode Dialog Box

2. Select the address display mode.
   Decimal address display mode: Select the **[Digit]** button.
   Hexadecimal address display mode: Select the **[Hex]** button.
3. Click the **[OK]** button.

3.14.2 Changing the Column Scale (SOH Pattern)

For the SOH Pattern menu, a scale is provided for column so that the cursor position in the frame can be easily determined. One of two scale modes (one uses sequence numbers, the other uses multiplexing numbers) can be selected.

Selecting the scale mode

1. Select **[View] - [Scale Mode]**.
   The Scale Mode dialog box is then displayed.

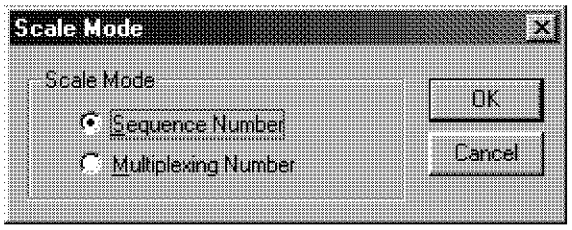

Figure 3-32 Scale Mode Dialog Box

2. Select the scale mode.
   To select the scale mode in which sequence numbers are used, select the **[Sequence Number]** button.
   To select the scale mode in which multiplexing numbers are used, select the **[Multiplexing Number]** button.
3. Click the **[OK]** button.

3.14.3 Changing the Number of Displayed Columns

You can change the number of columns to be displayed.

Specifying the number of columns according to the screen size allows you to edit patterns easily.

NOTE:

1. ***It may be impossible to set certain column numbers if the pattern length is too long.***
2. ***SOH Pattern does not support changing of the number of displayed columns.***

Changing the number of displayed columns

1. Cancel the frame image display mode (refer to Section 3.14.4, "Frame Image Display Mode").
2. Select **[View] - [Display Width]**.
   The Display Width dialog box is then displayed.

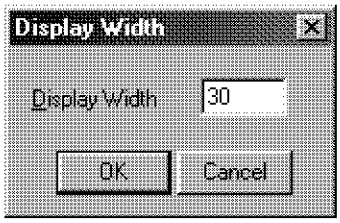

Figure 3-33 Display Width Dialog Box

3. Enter the number of columns to be displayed in bytes in the **[Display Width]** text box.
4. Click the **[OK]** button.

3.14.4 Frame Image Display Mode

Payload Pattern and STM Pattern support a display mode in which a pattern is displayed with the same numbers of columns and rows as according to the frame format. This mode is used when you want to view a pattern in a frame image or edit it in the frame format.

Using this mode, however, it may be difficult to edit patterns because you have to input patterns while scrolling the screen horizontally.

NOTE: ***In frame image display mode, boundary lines are drawn to distinguish frames and to distinguish between SOH and Payload Patterns.***

Setting frame image display mode

1. Select **[View] - [Frame Image]**.

NOTE: ***This command acts as a toggle switch that alternates between setting and canceling the frame image display mode each time it is executed.***

3.14.5 Changing Pattern Length

When you create a new PROG pattern using the PROG Pattern module, you specify the pattern length first and then start to edit patterns.

To change the pattern length after PROG Pattern has been started, use the Pattern Length dialog box. If the new pattern is longer than the previous pattern, the extra portion of the new pattern is filled with 0s. If the new pattern is shorter than the previous pattern, the extra portion of the previous pattern is truncated.

NOTE: ***In frame image display mode, boundary lines are drawn to distinguish frames and to distinguish between SOH and Payload Patterns.***

Changing the pattern length

1. Select **[Setup] - [Pattern Length]**.
   The Pattern Length dialog box is then displayed.

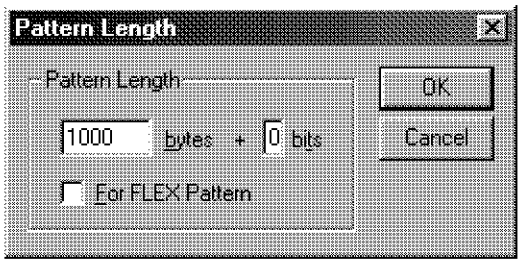

Figure 3-34 Pattern Length Dialog Box

2. Specify the pattern length by entering the number of bytes and the number of bits.
   Example:
   - To create a 1,000-byte pattern
     [1000] bytes + [0] bits
   - To create a 8,003-bit pattern
     [1000] bytes + [3] bits

3. Select the **[For FLEX Pattern]** button when you want to use the PROG pattern as a FLEX pattern.
   Check the **[For FLEX Pattern]** check box when you want to use the PROG pattern as a FLEX pattern.

4. Click the **[OK]** button.

3.14.6 Changing the STM Format

When you create a new pattern using SOH Pattern, Payload Pattern or STM Pattern module, you specify the STM format (STM-N and the number of frames) first and then start to edit patterns. To change the STM format after one of pattern editors has been started, use the STM Format dialog box.

If the synchronous digital hierarchy (STM-N) is changed in the STM Format dialog box while SOH Pattern is being used, the entire pattern previously created is initialized. If only the number of frames is changed to a larger number without changing the STM-N value, a corresponding number of initialized frames are added. If the number of frames is changed to a smaller number, the frames after the newly specified number of frames are discarded.

If STM-N or the number of frames is changed in the STM Format dialog box while Payload Pattern or STM Pattern is being used, the pattern length is also changed. If the new pattern is longer than the previous pattern, the extra portion of the new pattern is filled with 0s. If the new pattern is shorter than the previous pattern, the extra portion of the previous pattern is truncated.

Changing the STM format

1. Select **[Setup] - [Format]**.
   The STM Format dialog box is then displayed.

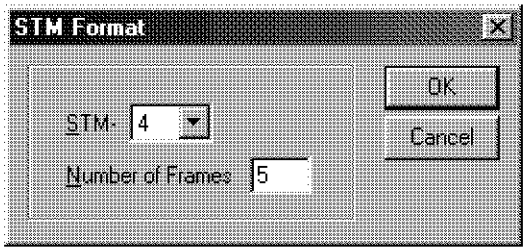

Figure 3-35 STM Format Dialog Box

2. Specify the synchronous digital hierarchy level (STM-N).
   STM-N (N = 4, 8, 12 or 16)
3. Specify the number of frames to be edited in the **[Number of Frames]** text box.

3.15 Bit Editor

The bit editor is used to input hexadecimal data as a bit image.

The bit editor can be started in one of the following three ways:

- Move the cursor to where you want to perform bit editing and select **[Tools] - [Bit Editor]**.
- Move the cursor to where you want to perform bit editing and click the bit editor button (01).
- Double-click at the location where you want to perform bit editing.

How to use the bit editor is described below.

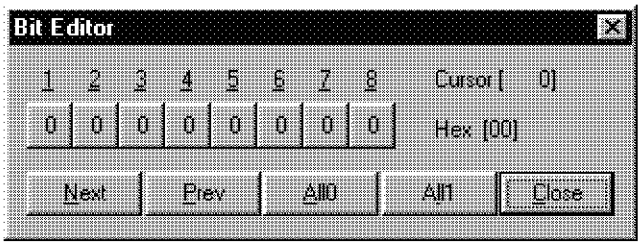

Figure 3-36 Bit Editor Dialog Box

[0]/[1] bit button The rows of [0]/[1] buttons at the upper left show the hexadecimal data at the cursor position in binary notation. Each bit button is a toggle switch that alternates between 0 and 1. The button indicated by 1 shows the MSB, and the button indicated by 8 shows the LSB.

[Cursor] Shows the editor cursor position.

[Hex] Shows the hexadecimal value at the cursor position.

[Next] Moves the cursor to the next address.

[Prev] Moves the cursor the previous address.

[All 0] Resets the value at the cursor position to all 0s (in hexadecimal notation: 0x00).

[All 1] Sets the value at the cursor position to all 1s (in hexadecimal notation: 0xFF).

[Close] Closes the bit editor.

3.16 SOH Easy Menu

The SOH Easy Menu is a tool that allows you to edit SOH patterns easily.

Because an SOH pattern is a multiplexed pattern, many items such as A1 and A2 have fixed values. Entering the fixed values for these items at one time can reduce the time it takes to create an SOH pattern.

For an SOH pattern, you can use the following two methods to fill the pattern with the specified values for all corresponding items.

- When an SOH Pattern is started, individual items are initialized with the values specified in the initialization file (.ini). The values specified in the initialization file can be changed using the SOH Easy Menu.
- Enter values for the corresponding items using the SOH Easy Menu.

While the first method fills patterns in all frames with the values specified in the initialization file, the second method fills patterns for the open frame only. The SOH Easy Menu also has a function for jumping to the specified item.

Figure 3-37 shows the SOH Easy Menu dialog box.

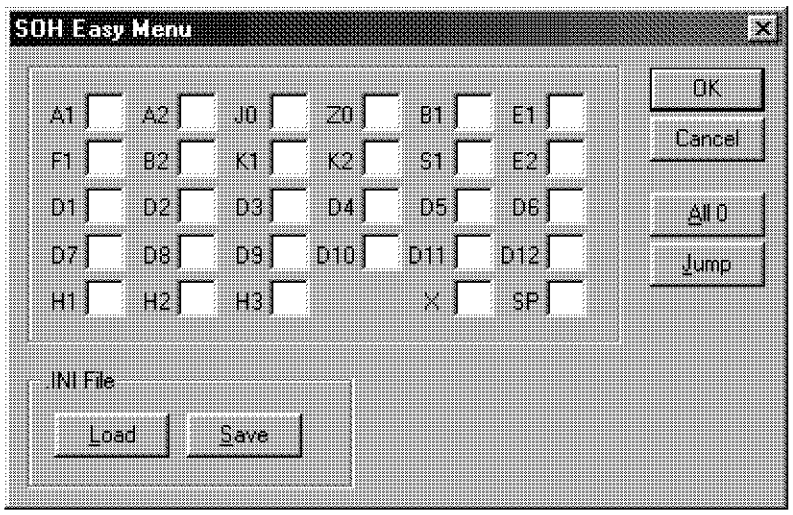

Figure 3-37 SOH Easy Menu Dialog Box

[A1], [A2], [J0], [Z0], [B1], [E1], [F1], [B2], [K1], [K2], [S1], [E2], [D1], [D2], [D3], [D4], [D5], [D6], [D7], [D8], [D9], [D10], [D11], [D12], [H1], [H2], [H3], [X], [SP]

These are SOH byte items.

Enter values for the items to be filled, then click the **[OK]** button to apply the fill operation. Do not enter any values for items that are not to be filled.

[Save] Saves the values edited using the SOH Easy Menu to the initialization file (.ini). Only items for which values have been filled are saved; items for which no values have been filled retain their original values.

[Load] Loads the values specified in the initialization file (.ini) into Easy Menu. This operation has no effect on the SOH pattern values.

[All 0] Resets all items in Easy Menu to 0. This operation has no effect on the SOH pattern values.

[Jump] Searches the SOH pattern for an item corresponding to the item on which the cursor is positioned in the SOH Easy Menu and jumps to it. If there are two or more corresponding items, the cursor jumps to the first one detected.

Filling patterns in the open frame by specifying item values

1. Select **[Tools] - [SOH Easy Menu]**.

   Alternatively, click the Easy Menu button () on the toolbar.

2. Enter hexadecimal values for only those items to be input.

3. Click the **[OK]** button.

Saving to the initialization file (.ini)

1. Select **[Tools] - [SOH Easy Menu]**.

   Alternatively, click the Easy Menu button () on the toolbar.

2. Enter hexadecimal values for only those items for which initial values are to be changed.

   NOTE: ***If you want to check the initial values, click the [Load] button to load the initial values into Easy Menu.***

3. Click the **[Save]** button.

4. A save confirmation message appears. Click the **[OK]** button in the message box.

5. To fill patterns for the open frame with the values edited using the SOH Easy Menu, click the **[OK]** button. To cancel filling, click the **[Cancel]** button.

   The SOH Easy Menu dialog box is then closed.

Loading the values in the initialization file (.ini) into the SOH Easy Menu

1. Select **[Tools] - [SOH Easy Menu]**.

   Alternatively, click the Easy Menu button () on the toolbar.

   The SOH Easy Menu dialog box is then displayed.

2. Click the **[Load]** button.

   NOTE: ***Clicking the [Load] button has no effect on the SOH Menu pattern. If you then want to fill patterns for open frame with the loaded initial values, click the [OK] button.***

3. To fill the open frame with the values loaded into the SOH Easy Menu, click the **[OK]** button; otherwise, click the **[Cancel]** button.

   The SOH Easy Menu dialog box is then closed.

Jumping to the specified item

1. Select **[Tools] - [SOH Easy Menu]**.

   Alternatively, click the Easy Menu button () on the toolbar.

   The SOH Easy Menu dialog box is then displayed.

2. Click the text box for the jump destination item.

3. Click the **[Jump]** or **[OK]** button.

NOTE: ***Clicking the [Jump] button just jumps, but clicking the [OK] button fills the SOH pattern with the values edited in Easy Menu and then jumps.***

3.17 Comment Editor

Pattern Editor allows you to write a comment of up to 32 characters into the file when saving pattern data.
How to edit comments is described below.

Editing a comment

1. Select **[Option] - [Comment]**.
   The comment editor (Comment dialog box) is then displayed.

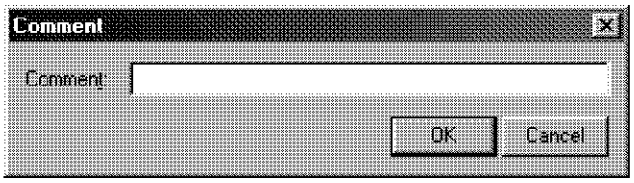

Figure 3-38 Comment Editor (Comment Dialog Box)

2. Enter in the **[Comment]** text box a character string that is to be written to the file.
3. Click the **[OK]** button.

3.18 Changing Button Sizes

You can change the toolbar button and the bit editor button sizes to large.
How to change the button size is described below.

Changing button sizes

1. Select **[View] - [Large Icons]**.

NOTE: This command acts as a toggle switch that alternates between the original size and large size for the buttons to be displayed.

3.19 Pull-down Menus

This section lists the pull-down menu items and descriptions about their functions.

3.19.1 Pull-down Menu of PROG Pattern

Command	Function	Refer to
(1) File		
New	Creates a new pattern file.	3.3
Open	Opens a pattern file.	3.6.1
Close	Closes a pattern file.	3.6.2
Save	Saves a pattern file.	3.5
Save as	Saves a pattern file with a new name.	3.5
Create a STM Pattern	Creates an STM pattern file from SOH and Payload pattern files.	3.8
File Converter	Creates a pattern file from a text or binary file.	3.9
Print	Prints a pattern.	3.7.1
Print Preview	Displays a pattern print image.	3.7.2
Exit	Quits Pattern Editor.	
(2) Edit		
Copy	Copies data in the selected range to the clipboard.	3.4.3
Paste	Overwrites data at the cursor position with the content of the clipboard.	3.4.3
Find	Searches for a pattern string.	3.11
(3) View		
Jump	Jumps to the specified address.	3.12
Display Width	Changes the number of columns to be displayed.	3.14.3
Address Display Mode	Switches between the decimal and hexadecimal address display modes.	3.14.1
Set/Clear Mark(s)	Sets or clears a mark or marks.	3.13
Next Mark	Jumps to the next mark.	3.13
Previous Mark	Jumps to the previous mark.	3.13
Clear All Mark(s)	Clears all marks.	3.13
Visible Mark	Makes marks visible or hides marks.	3.13
Large Icons	Changes the toolbar button and bit editor button sizes to large.	3.18
Toolbar	Shows or hides the toolbar.	
(4) Setup		
Pattern Length	Changes pattern length.	3.14.5

Command	Function	Refer to
(5) Tools		
Fill PRBS	Fills a pattern with PRBS pattern data.	3.10.1
Fill Pattern	Fills a pattern with specified pattern data.	3.10.2
Fill All 0	Fills a pattern with 0s.	3.10.3
Fill All 1	Fills a pattern with 1s.	3.10.4
Fill Increment	Fills a pattern with values that are incremented by 1 each time.	3.10.5
Bit Editor	Starts the bit editor.	3.15
(6) Option		
Comment	Starts the comment editor.	3.17
(7) Window		
Cascade	Cascades windows.	
Tile	Tiles windows.	
Arrange Icons	Arranges icons.	
(8) Help		
About D3371 Pattern Editor	Displays the version of Pattern Editor.	

3.19.2 Pull-down Menu of SOH Pattern

Command	Function	Refer to
(1) File		
New	Creates a new pattern file.	3.3
Open	Opens a pattern file.	3.6.1
Close	Closes a pattern file.	3.6.2
Save	Saves a pattern file.	3.5
Save as	Saves a pattern file with a new name.	3.5
Create a STM Pattern	Creates an STM pattern file from SOH and Payload pattern files.	3.8
File Converter	Creates a pattern file from a text or binary file.	3.9
Print	Prints a pattern.	3.7.1
Print Preview	Displays a pattern print image.	3.7.2
Exit	Quits Pattern Editor.	
(2) Edit		
Frame Copy	Copies per frame.	3.4.4
Find	Searches for a pattern string.	3.11
(3) View		
Next Frame	Jumps to the next frame.	3.12.3
Previous Frame	Jumps to the previous frame.	3.12.3
Jump	Jumps to the specified address.	3.12.1
Scale Mode	Changes the display mode of columns.	3.14.2
Set/Clear Mark(s)	Sets or clears a mark or marks.	3.13
Next Mark	Jumps to the next mark.	3.13
Previous Mark	Jumps to the previous mark.	3.13
Clear All Mark(s)	Clears all marks.	3.13
Visible Mark	Makes marks visible or hides marks.	3.13
Large Icons	Changes the toolbar button and bit editor button sizes to large.	3.18
Toolbar	Shows or hides the toolbar.	
(4) Setup		
STM Format	Changes the STM format (STM-N and the number of frames).	3.14.6
(5) Tools		
Fill PRBS	Fills a pattern with PRBS pattern data.	3.10.1
Fill Pattern	Fills a pattern with specified pattern data.	3.10.2
Fill All 0	Fills a pattern with 0s.	3.10.3

Command	Function	Refer to
Fill All 1	Fills a pattern with 1s.	3.10.4
Fill Increment	Fills a pattern with values that are incremented by 1 each time.	3.10.5
SOH Easy Menu	Starts the SOH Easy Menu.	3.16
Bit Editor	Starts the bit editor.	3.15
(6) Option		
Comment	Starts the comment editor.	3.17
(7) Window		
Cascade	Cascades windows.	
Tile	Tiles windows.	
Arrange Icons	Arranges icons.	
(8) Help		
About D3371 Pattern Editor	Displays the version of Pattern Editor.	

3.19.3 Pull-down Menu of Payload Pattern

Command	Function	Refer to
(1) File		
New	Creates a new pattern file.	3.3
Open	Opens a pattern file.	3.6.1
Close	Closes a pattern file.	3.6.2
Save	Saves a pattern file.	3.5
Save as	Saves a pattern file with a new name.	3.5
Create a STM Pattern	Creates an STM pattern file from SOH and Payload pattern files.	3.8
File Converter	Creates a pattern file from a text or binary file.	3.9
Print	Prints a pattern.	3.7.1
Print Preview	Displays a pattern print image.	3.7.2
Exit	Quits Pattern Editor.	
(2) Edit		
Copy	Copies data in the selected range to the clipboard.	3.4.3
Paste	Overwrites data at the cursor position with the content of the clipboard.	3.4.3
Find	Searches for a pattern string.	3.11
(3) View		
Next Frame	Jumps to the next frame.	3.12.3
Previous Frame	Jumps to the previous frame.	3.12.3
Jump	Jumps to the specified address.	3.12.1
Frame Image	Changes the frame image display mode.	3.14.4
Display Width	Changes the number of columns to be displayed.	3.14.3
Address Display Mode	Switches between the decimal and hexadecimal address display modes.	3.14.1
Set/Clear Mark(s)	Sets or clears a mark or marks.	3.13
Next Mark	Jumps to the next mark.	3.13
Previous Mark	Jumps to the previous mark.	3.13
Clear All Mark(s)	Clears all marks.	3.13
Visible Mark	Makes marks visible or hides marks.	3.13
Large Icons	Changes the toolbar button and bit editor button sizes to large.	3.18
Toolbar	Shows or hides the toolbar.	
(4) Setup		
STM Format	Changes the STM format (STM-N and the number of frames).	3.14.6
(5) Tools		

Command	Function	Refer to
Fill PRBS	Fills a pattern with PRBS pattern data.	3.10.1
Fill Pattern	Fills a pattern with specified pattern data.	3.10.2
Fill All 0	Fills a pattern with 0s.	3.10.3
Fill All 1	Fills a pattern with 1s.	3.10.4
Fill Increment	Fills a pattern with values that are incremented by 1 each time.	3.10.5
Bit Editor	Starts the bit editor.	3.15
(6) Option		
Comment	Starts the comment editor.	3.17
(7) Window		
Cascade	Cascades windows.	
Tile	Tiles windows.	
Arrange Icons	Arranges icons.	
(8) Help		
About D3371 Pattern Editor	Displays the version of Pattern Editor.	

3.19.4 Pull-down Menu of STM Pattern

Command	Function	Refer to
(1) File		
New	Creates a new pattern file.	3.3
Open	Opens a pattern file.	3.6.1
Close	Closes a pattern file.	3.6.2
Save	Saves a pattern file.	3.5
Save as	Saves a pattern file with a new name.	3.5
Create a STM Pattern	Creates an STM pattern file from SOH and Payload pattern files.	3.8
File Converter	Creates a pattern file from a text or binary file.	3.9
Print	Prints a pattern.	3.7.1
Print Preview	Displays a pattern print image.	3.7.2
Exit	Quits Pattern Editor.	
(2) Edit		
Copy	Copies data in the selected range to the Paste buffer.	3.4.3
Paste	Overwrites the contents of the Paste buffer at the cursor position.	3.4.3
Find	Searches for a pattern string.	3.11
(3) View		
Next Frame	Jumps to the next frame.	3.12.3
Previous Frame	Jumps to the previous frame.	3.12.3
Jump	Jumps to the specified address.	3.12.1
Frame Image	Changes the frame image display mode.	3.14.4
Display Width	Changes the number of columns to be displayed.	3.14.3
Address Display Mode	Switches between the decimal and hexadecimal address display modes.	3.14.1
Set/Clear Mark(s)	Sets or clears a mark or marks.	3.13
Next Mark	Jumps to the next mark.	3.13
Previous Mark	Jumps to the previous mark.	3.13
Clear All Mark(s)	Clears all marks.	3.13
Visible Mark	Makes marks visible or hides marks.	3.13
Large Icons	Changes the toolbar button and bit editor button sizes to large.	3.18
Toolbar	Shows or hides the toolbar.	
(4) Setup		
STM Format	Changes the STM format (STM-N and the number of frames).	3.14.6
(5) Tools		

Command	Function	Refer to
Fill PRBS	Fills a pattern with PRBS pattern data.	3.10.1
Fill Pattern	Fills a pattern with specified pattern data.	3.10.2
Fill All 0	Fills a pattern with 0s.	3.10.3
Fill All 1	Fills a pattern with 1s.	3.10.4
Fill Increment	Fills a pattern with values that are incremented by 1 each time.	3.10.5
Bit Editor	Starts the bit editor.	3.15
(6) Option		
Comment	Starts the comment editor.	3.17
(7) Window		
Cascade	Cascades windows.	
Tile	Tiles windows.	
Arrange Icons	Arranges icons.	
(8) Help		
About D3371 Pattern Editor	Displays the version of Pattern Editor.	

3.19.5 Pull-down Menu of the Initialization Window

Command	Function	Refer to
(1) File		
New	Creates a new pattern file.	3.3
Open	Opens a pattern file.	3.6.1
Create a STM Pattern	Creates an STM pattern file from SOH and Payload pattern files.	3.8
File Converter	Creates a pattern file from a text or binary file.	3.9
Exit	Quits Pattern Editor.	
(2) View		
Large Icons	Changes the toolbar button and bit editor button sizes to large.	3.18
Toolbar	Shows or hides the toolbar.	
(8) Help		
About D3371 Pattern Editor	Displays the version of Pattern Editor.	

3.20 Restrictions on Pattern Editor

1. Steps in which PROG pattern bit size can be set
   Table 3-7 shows the relationship between the step and the ranges for the PROG pattern bit size.

Table 3-7 Ranges for PROG Pattern Bit Size

For FLEX Pattern	Range of bit size (bits)	Steps (bits)
OFF	1 to 262,144	1
	262,146 to 524,288	2
	524,292 to 1,048,576	4
	1,048,584 to 2,097,152	8
	2,097,168 to 4,194,304	16
	4,194,336 to 8,388,608	32
ON	64 to 65,536	64

2. Maximum numbers of SOH, Payload, and STM pattern frames

Table 3-8 Maximum Number of Frames Available for SOH, Payload, and STM Patterns

STM-N	Maximum number of frames
4	107
8	53
12	35
16	26

4. ERROR MESSAGES

Table 4-1 Error Messages

Error message	Description
Address is illegal.	The specified address is invalid.
Are you sure you want to change the data in the .ini file.	This command will rewrite the data in the .ini file.
Bit Length must be 0 to 7.	The only values that can be specified for bit length are 0 to 7.
Couldn't find the pattern.	The specified pattern cannot be found by the search function.
Display Width is illegal.	The specified number of displayed columns is invalid.
File length is illegal.	The file length is invalid.
File length is illegal. Are you sure you want to continue?	The file length is invalid. Specify whether to continue processing with an invalid length.
File name is illegal.	No file has the specified name.
File revision is different. Are you sure you want to continue?	The file revision is invalid. Specify whether to continue the processing.
File type is illegal.	The file type is invalid.
STM pattern file is illegal format.	The STM pattern file format is invalid.
Frame No. is illegal.	The specified frame number is invalid.
Create a STM pattern failed because STM-format is mismatch.	No frame can be created because the synchronous hierarchy level STM-N, or the number of frames for the SOH and payload pattern files is inconsistent.
If execute this, the pattern you made will be lost.	This command will overwrite the pattern previously created with a new pattern.
Number of Frames is illegal.	The number of frames is invalid.
Pattern Length is illegal.	The pattern length is invalid.
Payload pattern file is illegal format.	The payload pattern file format is invalid.
Please enter an integer.	No number was entered. Enter a number.
Please input Digit.	Enter a decimal number.
Please input Hex.	Enter a hexadecimal number.
SOH pattern file is illegal format.	The SOH pattern file format is invalid.
Some error was detected. Are you sure you want to continue?	An error was detected in the file to be read. Specify whether to continue processing.
STM-N is illegal.	The specified STM-N is invalid.

ALPHABETICAL INDEX

[T]

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