User's Manual

Model 810518801
64Mbit Program Pattern Option

YOKOGAWA
Yokogawa Electric Corporation

IM 810518801-61E
1st Edition

Introduction

Thank you for your purchasing of this 64Mbit Program Pattern Option.

This option consists of the pattern editor application software (CD-ROM), designed for easy creation of program patterns for the AQ2200-601 10Gbit/s BERT Module, a compact flash card (CF) and a PC card adapter for the CF.

This manual describes the functions, operating procedures, and handling precautions necessary to operate the pattern editor.

Before starting operation of this option, thoroughly read this manual to use the product properly.

After reading this manual, always store it in a safe place where all concerned personnel can refer to it immediately.

This manual is useful if the operator have forgotten proper operation steps during operation.

For the functions, operating procedures, and handling precautions of the BERT module and frame controller, refer to their respective manuals.

Contents of the Package

- CD-ROM (for installation of the software): 1
- Compact flash (CF) (for storing created data): 1
- PC card adapter for CF: 1
- User's manual (this manual): 1
- Model/specification code: 810518801/M

Notes

- The contents of this manual are subject to change without prior notice as a result of continuing improvements to the instrument's performance and functions.
  The figures given in this manual may differ from those that actually appear on your screen.
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Revisions

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Table of contents

1.1 Overview

This application software is designed for easy creation of program patterns for AQ2200-601 10Gbit/s BERT Module, and runs on Windows PC.

Major Features

- Pattern editor for AQ2200-601 10Gbit/s BERT Module
- Runs on Windows (98SE/ME/2000/XP SP1) and enables creation of pattern data.
- Created pattern data can be stored in the compact flash card supplied with this software.
- The pattern data stored in the compact flash card can be imported to the AQ2200 Series Frame Controller equipped with the AQ2200-601 10Gbit/s BERT Module, by inserting the compact flash card into the frame controller.
- Operation mode can be selected from SONET, SDH and Program.
  In addition to program patterns (256 to 67,108,864 bits), patterns suitable for SONET (OC-1/OC-3/OC-192) and SDH (STM0/STM1/STM64) frames can be created easily.
- Provides various edit and search functions.

1.2 Function Overview

(1) File Function

The file function is used to load/save a file or exit this application.

The file function setting items are shown below.

- Items available for SONET/SDH and Program modes
  - Creating a new file (New)
  - Opening a file (Open)
  - Overwriting a file (Save)
  - Specifying a file name and saving the data in that file (Save As)
  - Exiting the application (Exit)

The file functions can be set using the menu (File menu), toolbar (except for Exit) and shortcut keys.

For details, see Section 3.6.

(2) Edit Function

The edit function is used to create/edit pattern data.

The edit function setting items are shown below.

- Items available for SONET/SDH mode
  - Undoing an operation (Undo)
  - Redoing an operation (Redo)
  - Copy (Copy)
  - Paste (Paste)
  - Filling with PRBS pattern (PRBS Fill)
  - Filling with user pattern (User Fill)
  - Selecting TOH/SOH (Select TOH/SOH)
  - Selecting all TOH/SOH (Select All TOH/SOH)
  - Select PayLoad. (Select PayLoad)
  - Selecting all PayLoad (Select All PayLoad)
  - Select a frame (Select Frame)
  - Calculating B1 (B1 Cal)

- Items available for Program mode
  - Undoing an operation (Undo)
  - Redoing an operation (Redo)
  - Copy (Copy)
  - Paste (Paste)
  - Filling with PRBS pattern (PRBS Fill)
  - Filling with user pattern (User Fill)
  - Selecting all data (Select All)

The edit functions can be set using the menu (Edit menu), toolbar (except for Select xx) and shortcut keys (except for Select xx).

For details, see Section 3.7.

(3) Search Function

The search function is used to search data through an edit area.

The search function setting items are shown below.

- Items available for SONET/SDH and Program modes
  - Searching (Find)
  - Searching forward (Find Next)
  - Searching backward (Find Prev.)
  - Jumping to the desired data (Jump)
  - Returning to the jump source position (Return)
  - Marking a position (Mark Current)
  - Jumping to a mark position (Jump to Mark)

The search functions can be set using the menu (Search menu), toolbar and shortcut keys.

For details, see Section 3.8.

(4) Setup Function

The setup function is used to set the operating environment including operation mode of this application and toolbar setting.

The setup function setting items are shown below.

- Items available for SONET/SDH mode
  - Number of frames (Frame)
  - Scrambled (Scramble)
  - Edit mode (operation mode) (Edit Unit)
  - Operation mode (Mode)
  - Toolbar setting (User Configure)

- Items available for Program mode
  - Operation mode (Mode)
  - Toolbar setting (User Configure)

The setup functions can be set using the menu (Setup menu), toolbar (except for Frame and User Configure) and shortcut keys (except for Frame and User Configure).

For details, see Section 3.9.

2.1 System Environment

Hardware Requirements

This software runs under the following environment.

Item	Condition
Personal computer	
CPU	Pentium III 500MHz or higher
Hard disk capacity	500MB or more recommended
Memory capacity	256MB or higher
CD-ROM drive	
PC card slot	PC Card Type II (A PC card adapter for CF is used to insert the compact flash card into the slot.)
Monitor	Resolution 800 × 600 dots or higher, 256 colors or higher
Operating system	
	English/Japanese version *1 Windows 98SE, Windows ME, Windows 2000, Windows XP SP1

*1: If this application software is installed on Windows PC (Japanese version), texts will be displayed in Japanese.

Note

This manual explains the operating method when this application software is used with English Windows 2000.

2.2 Installation/Uninstallation

Operating Procedures

Installation

1. Start the PC.
2. Insert the attached CD-ROM containing this application software into the CD-ROM drive on the PC.
3. Double-click the **"PattEdit.msi"** icon in the PattEdit folder of the CD-ROM drive.

   The installer will start and setup will begin.
4. Follow the instructions displayed on the screen to perform installation.
5. When installation is complete, a shortcut to the following submenu will be created: Windows **[Start]** button - **[Programs] - [PattEdit] - [PattEdit]**.

Uninstallation

1. From the Windows **[Start]** button, select **[Settings] - [Control Panel] – [Add or Remove Programs]**.
2. Select **"PattEdit"** from the program list, and click [Remove].
3. Follow the instructions displayed on the screen.

Explanation

● **Installation folder**

This application software will be installed in the following folder.
C:\Program Files\YOKOGAWA\PattEdit

● **Changing the installation folder**

The installation folder can be changed while **"Select Installation Folder"** is displayed during installation.

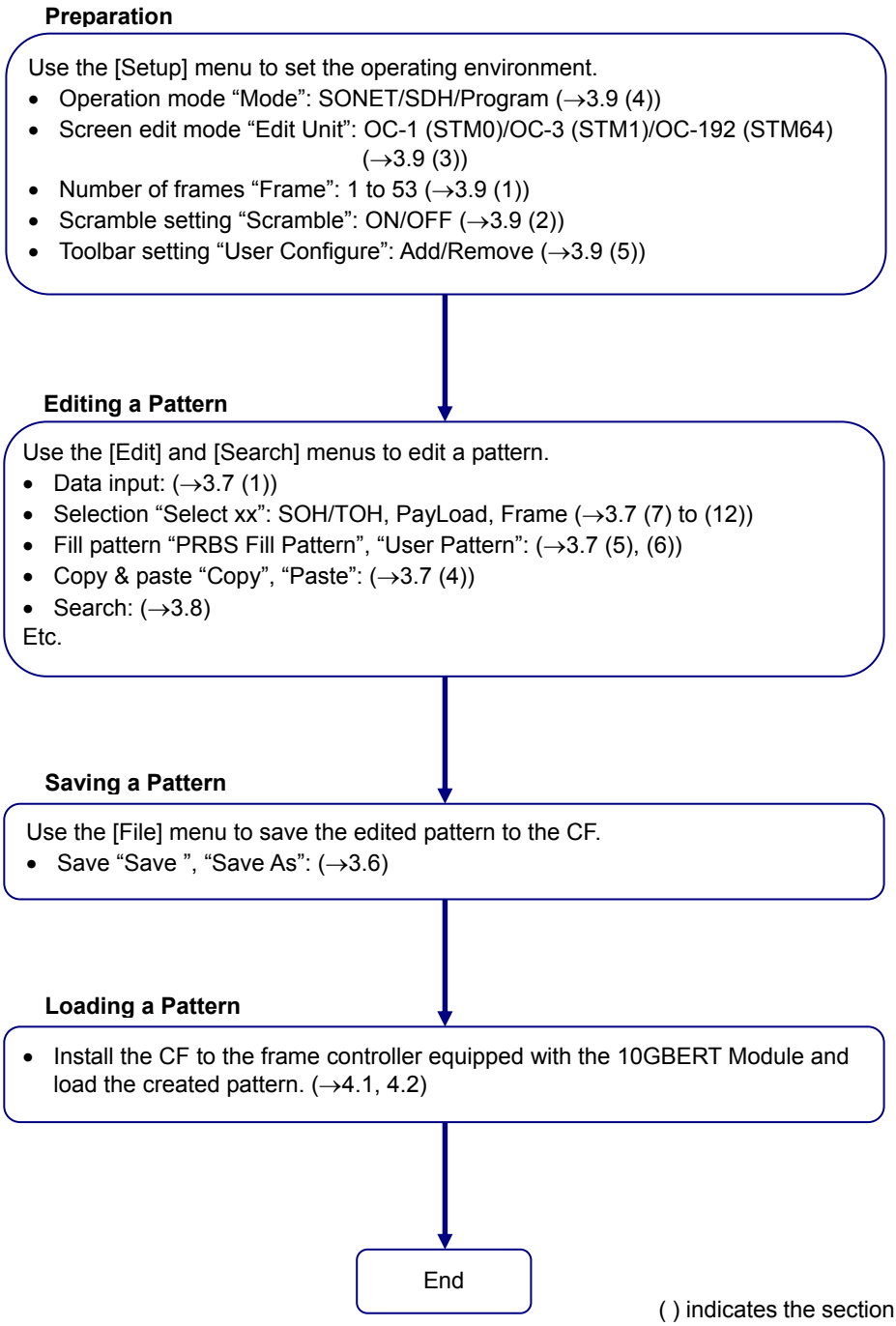
● **Installation files**

The following files will be installed.

- PattEdit.exe: Executable file
- sonet_init.dat: Initial data file for SONET
- sdh_init.dat: Initial data file for SDH

3.1 Flow of Operation

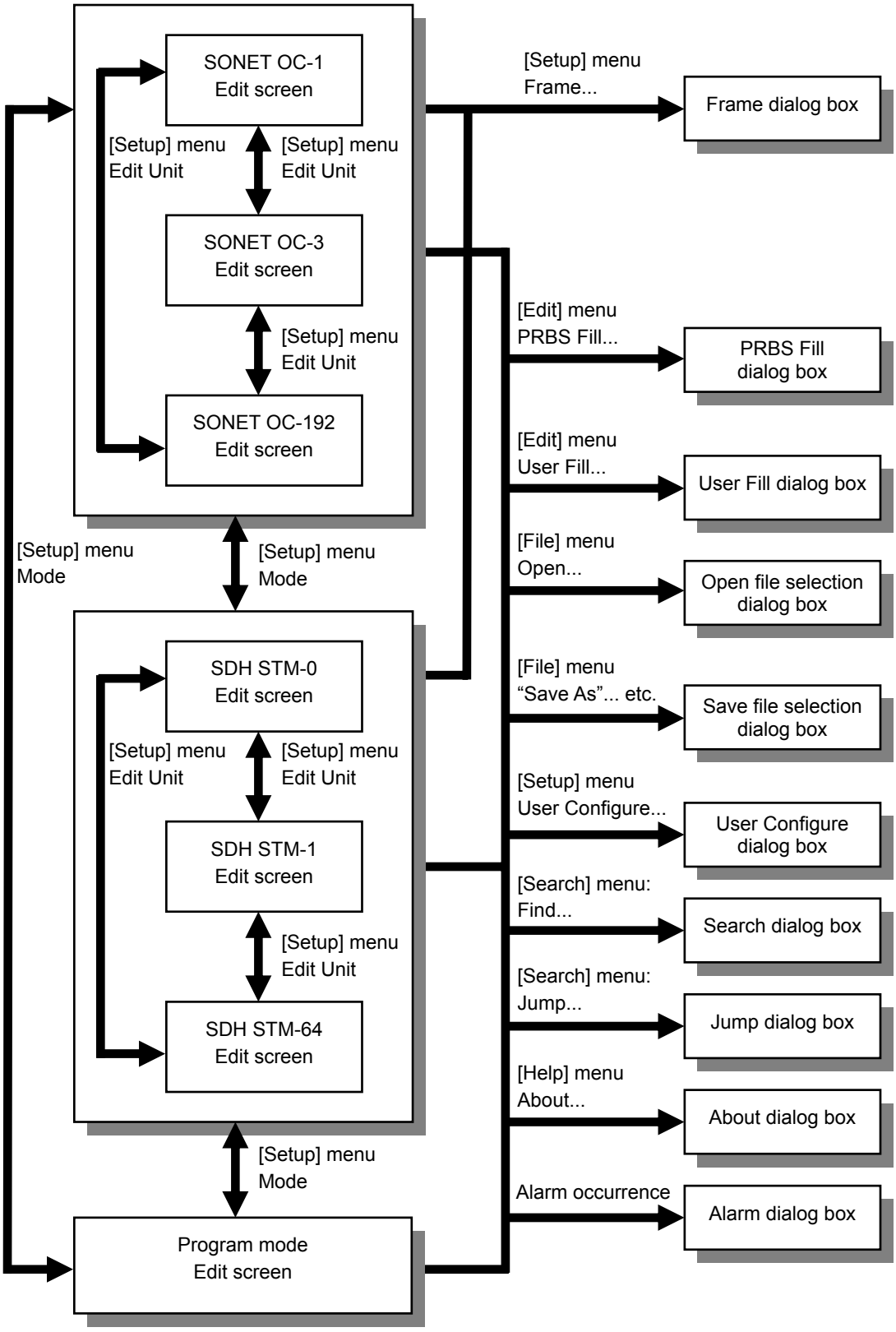
Operation Flow



( ) indicates the section to be referred to.

3.2 Screen Structure

The screen structure of this application software is shown below.

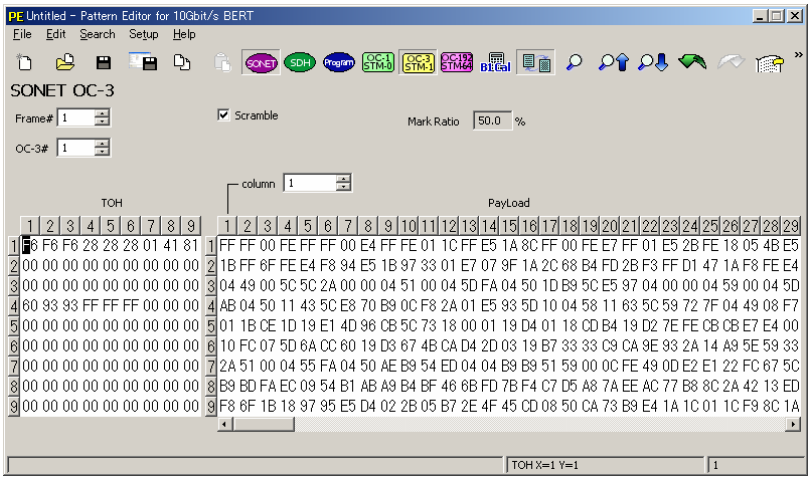


3.3 Starting the Application

Operating Procedures

1. From the Windows **[Start]** button, select **[Programs]** - **[PattEdit]** - **[PattEdit]**, and then click it.

The PatternEditor for 10Gbit/s BERT (hereafter called PattEdit) will start.



Explanation

- When starting the application for the first time after installation, the initial settings are read. For the initial settings, see Appendix 1.

- When starting the application for the second and subsequent times, the operation mode and settings that were effective when the application was exited last time will be read. (For details, see Section 3.6 (5).)
  However, the initial data will be imported to the edit area.
  The initial data for each mode is shown below.
  - SONET mode: Contents of “sonet_init.dat”
  - SDH mode: Contents of “sdh_init.dat”
  - Program mode: ALL00

- If operation mode is changed after the application is started, the data in effect before the change will be applied.
  However, if the operation mode is changed from “SONET/SDH” to “Program” or vice versa, the following will be performed since the data size differs between those modes.
  - Changing from “SONET/SDH” to “Program”: Empty data parts are filled with “0”.
  - Changing from “Program” to “SONET/SDH”: Extra data parts are discarded.

  For details, see Section 3.9 (4).

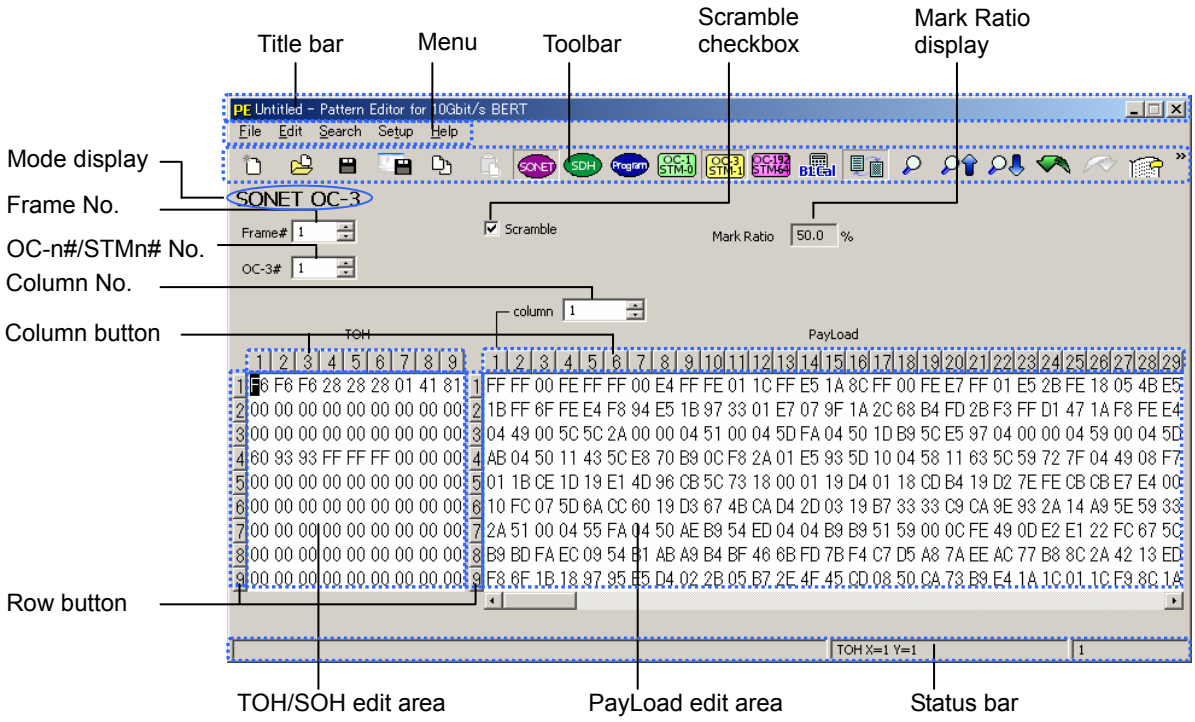
- For details regarding exiting the application, see Section 3.6 (5) “Exiting the Application (Exit)”.

Note

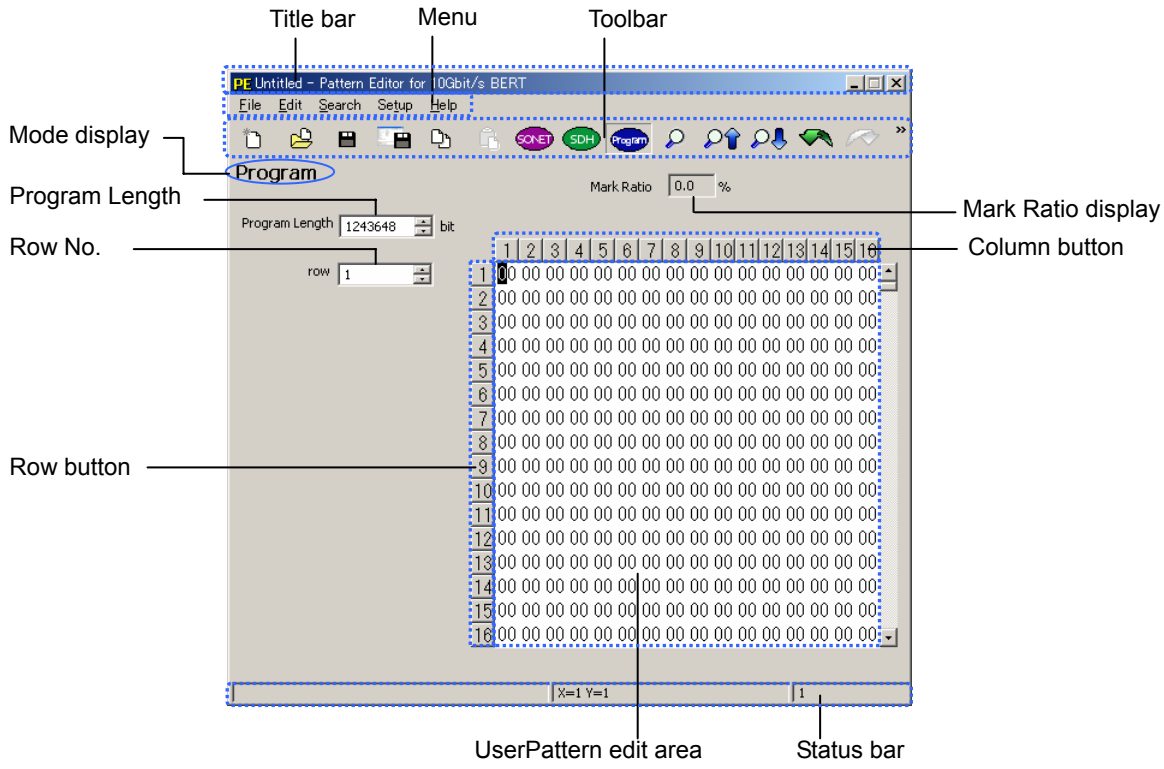
To load or save a file, insert the PC card adapter for CF (with the compact flash card installed) into the PC card slot on the PC.

3.4 Explanation of Each Screen

SONET/SDH Mode



Program Mode



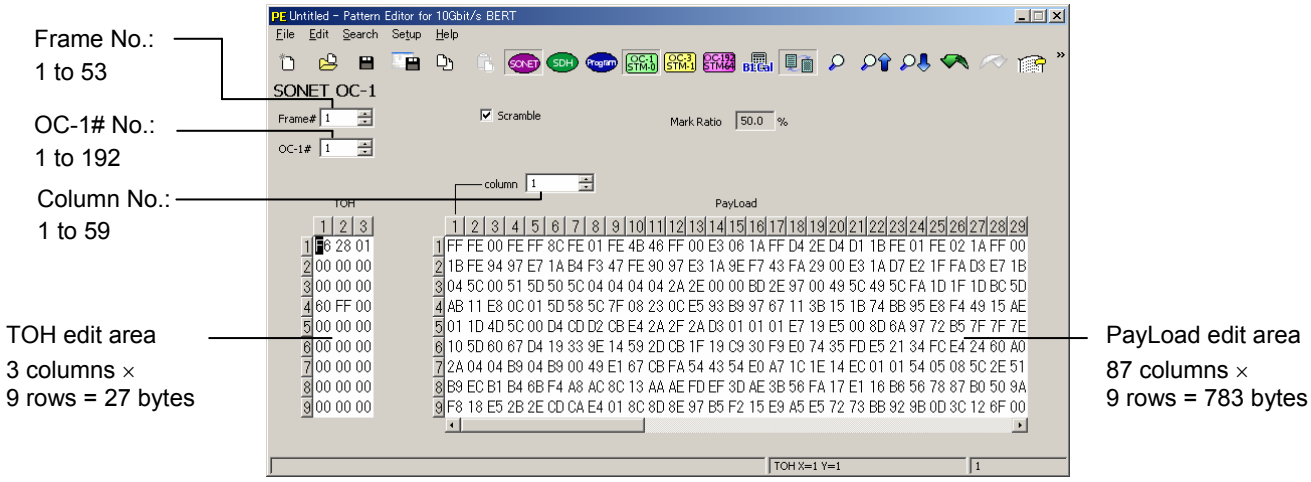
Name	Supporting Mode *1	Function
Title bar	S/P	Displays the file name and the title name of this application. If no file name is set, “Untitled” will be displayed. An asterisk (*) is displayed at the end of the file during edit. For details, see Section 3.10 (1).
Menu	S/P	Displays each operation item as a command. For details, see Section 3.6.
Toolbar	S/P	Displays each operation item as an icon. For details, see Sections 3.6 and 3.10 (2).
Status bar	S/P	Displays the coordinates of the cursor position and the byte position of the data. For details, see Section 3.10 (3).
Mode display	S/P	Displays the current operation mode. SONET OC-1/OC-3/OC-192/SDH STM0/STM1/STM64/Program For details, see Sections 3.5 and 3.9 (3), (4).
Frame No.	S	The frame No. can be displayed/changed when SONET or SDH has been selected as the operation mode. For details, see Sections 3.5 and 3.9 (1).
OC-n#/STMn# No.	S	The OC-n# No. (screen No.) can be displayed/changed when SONET OC-1 or OC-3 has been selected as the operation mode, and the STMn# No. (screen No.) can be displayed/changed when SDH STM0 or STM1 has been selected. They will not be displayed if SONET OC-192, SDH STM64 or Program has been selected as the operation mode. For details, see Section 3.5.
Column No.	S	Displays the column No. of the edit area when SONET or SDH has been selected as the operation mode. In the case of SONET OC-1/OC-3 and SDH STM0/STM1 modes, the column No. of the PayLoad edit area is displayed. In the case of SONET OC-192 and SDH STM64 modes, the column No. of the TOH/SOH edit area is displayed. For details, see Section 3.5.
TOH/SOH edit area	S	TOH data can be displayed/changed when SONET has been selected as the operation mode, and the SOH data can be displayed/changed when SDH has been selected. For details, see Section 3.5.
PayLoad edit area	S	PayLoad data can be displayed/edited when SONET or SDH has been selected as the operation mode. For details, see Section 3.5.
Column button	S/P	Used to select a column or consecutive columns. For details, see Section 3.7 (4).
Row button	S/P	Used to select a row or consecutive rows. For details, see Section 3.7 (4).
Scramble checkbox	S	Scramble ON/OFF state can be displayed/changed when SONET or SDH has been selected as the operation mode. • Scramble ON: The checkbox is checked (a check mark is displayed). • Scramble OFF: The checkbox is not checked (no check mark is displayed) Scramble is interlocked with menu and toolbar settings. For details, see Section 3.9 (2).
Mark Ratio	S/P	Displays the mark ratio of User Pattern. If Scramble is ON, the mark ratio after scramble will be displayed. For details, see Section 3.5.
Program Length	P	The program length can be displayed/changed when Program has been selected as the operation mode. For details, see Section 3.5.
Row No.	P	The row No. is displayed when Program has been selected as the operation mode. For details, see Section 3.5.
UserPattern edit area	P	The User Pattern data can be displayed/edited when Program has been selected as the operation mode. For details, see Section 3.5.

*1: “S” indicates that the item is supported by SONET and SDH modes, and “P” indicates that the item is supported by Program mode.

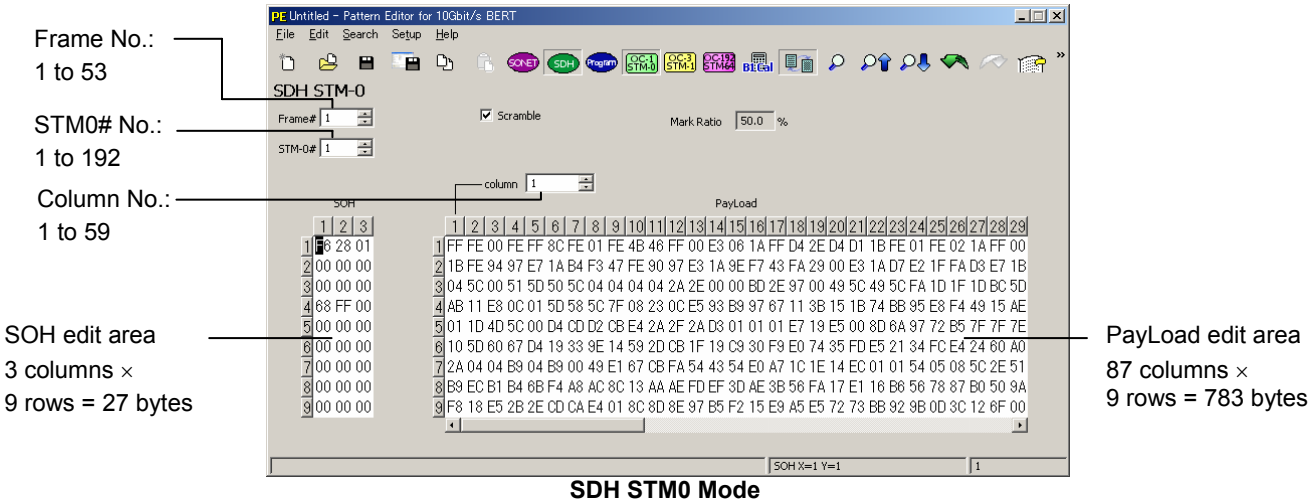
3.5 Explanation of Each Operation Mode

(1) SONET OC-1 Mode / SDH STM0 Mode

In SONET OC-1 and SDH STM0 modes, a 10-Gbps frame can be edited in 192 blocks in OC-1 unit / STM0 unit.



SONET OC-1 Mode

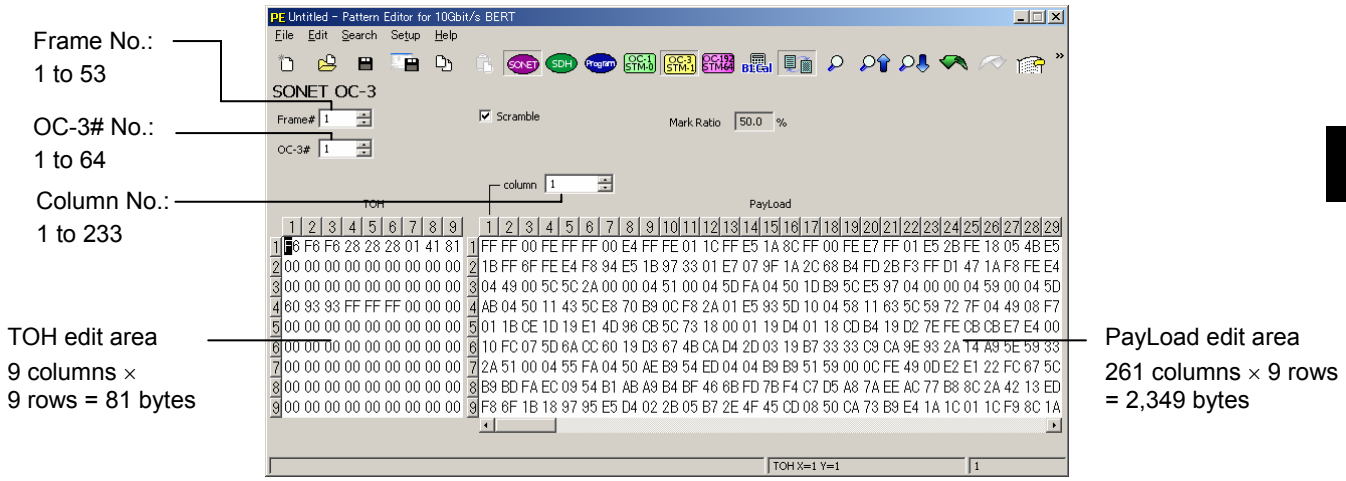


SDH STM0 Mode

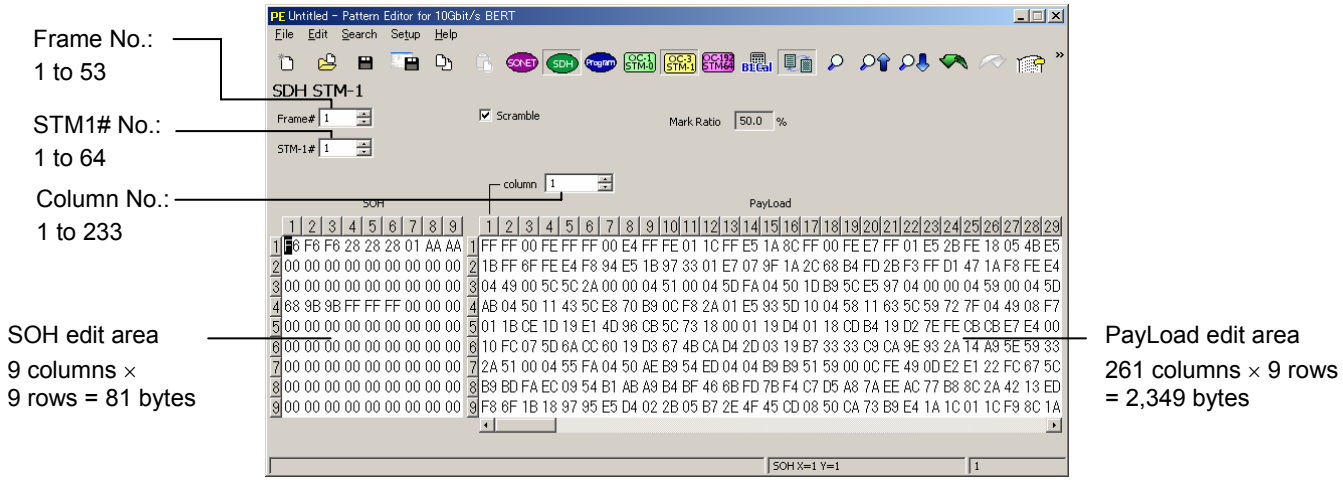
- Frame No. (Frame#) — Displays the frame No. of the currently displayed data. The frame No. can be changed between 1 and 53. To change it, enter the desired frame No. in the “Frame#” field and press the [Enter] key or select it by pressing the [▲] and [▼] buttons.
- OC-1# No./STM0# No. (OC-1#/STM0#) — Displays the screen No. of the currently displayed data. The screen No. can be changed between 1 and 192. To change it, enter the desired screen No. in the “OC-1#/STM0#” field and press the [Enter] key or select it by pressing the [▲] and [▼] buttons.
- Column No. (column) — Displays the horizontal axis offset for column 1 in the PayLoad edit area. The column No. can be changed between 1 and 59. To change it, enter the desired column No. in the “column” field and press the [Enter] key or select it by pressing the [▲] and [▼] buttons. The column No. changes with movement of the scroll bar.
- TOH/SOH edit area — Used to edit TOH/SOH data. Data of 3 columns × 9 rows (= 27 bytes) can be edited. Enter data (HEX format) in the TOH/SOH edit area directly or specify the desired edit area and fill data using PRBS Fill or User Fill.
- PayLoad edit area — Used to edit PayLoad data. Data of 87 columns × 9 rows (= 783 bytes) can be edited. Enter data (HEX format) in the PayLoad edit area directly or specify the desired edit area and fill data using PRBS Fill or User Fill.

(2) SONET OC-3 mode / SDH STM1 mode

In SONET OC-3 and SDH STM1 modes, a 10-Gbps frame can be edited in 64 blocks in OC-3 unit / STM1 unit.



SONET OC-3 Mode

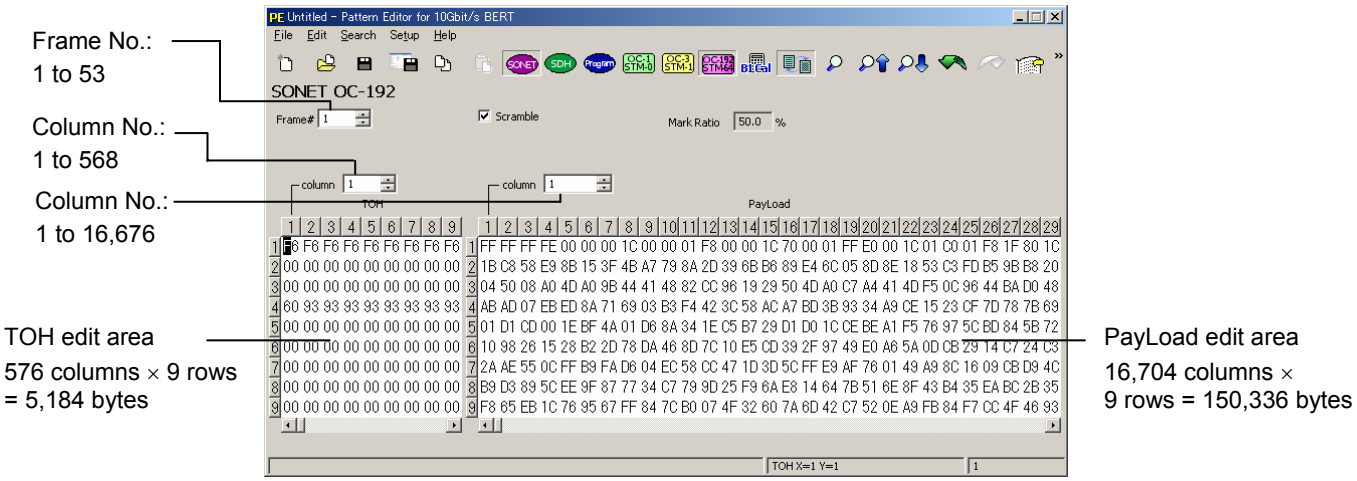


SDH STM1 Mode

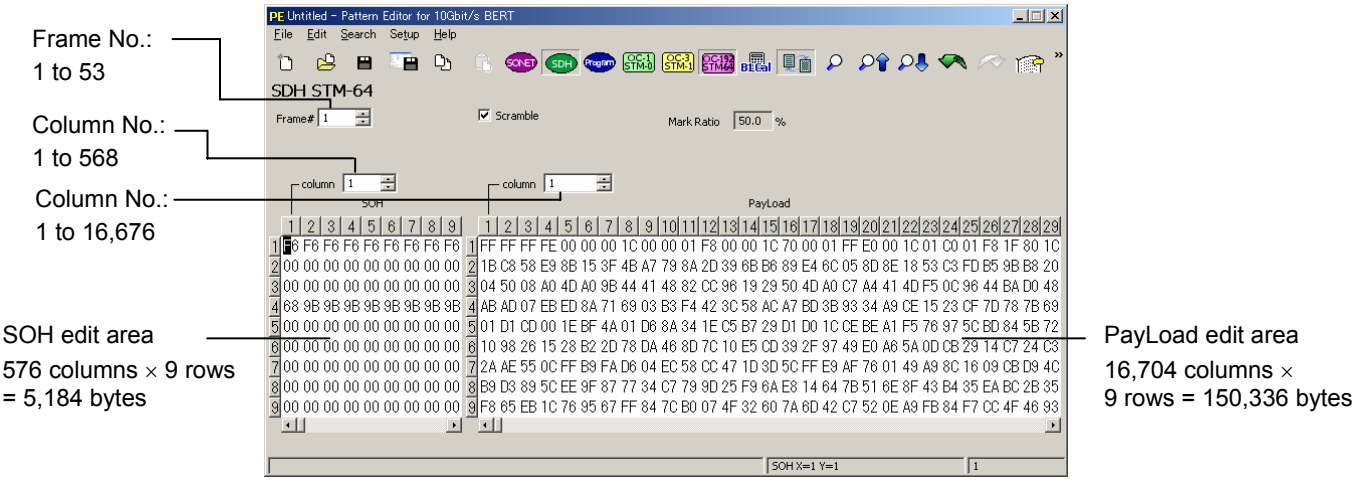
- Frame No. (Frame#) — Displays the frame No. of the currently displayed data. The frame No. can be changed between 1 and 53. To change it, enter the desired frame No. in the "Frame#" field and press the [Enter] key or select it by pressing the [▲] and [▼] buttons.
- OC-3# No./STM1# No. (OC-3#/STM1#) — Displays the screen No. of the currently displayed data. The screen No. can be changed between 1 and 64. To change it, enter the desired screen No. in the "OC-3#/STM1#" field and press the [Enter] key or select it by pressing the [▲] and [▼] buttons.
- Column No. (column) — Displays the horizontal axis offset for column 1 in the PayLoad edit area. The column No. can be changed between 1 and 233. To change it, enter the desired column No. in the "column" field and press the [Enter] key or select it by pressing the [▲] and [▼] buttons. The column No. changes with movement of the scroll bar.
- TOH/SOH edit area — Used to edit TOH/SOH data. Data of 9 columns × 9 rows (= 81 bytes) can be edited. Enter data (HEX format) in the TOH/SOH edit area directly or specify the desired edit area and fill data using PRBS Fill or User Fill.
- PayLoad edit area — Used to edit PayLoad data. Data of 261 columns × 9 rows (= 2,349 bytes) can be edited. Enter data (HEX format) in the PayLoad edit area directly or specify the desired edit area and fill data using PRBS Fill or User Fill.

(3) SONET OC-192 Mode / SDH STM64 Mode

In SONET OC-192/SDH STM64 modes, one 10-Gbps frame can be edited as it is in OC-192/STM1 unit.



SONET OC-192 Mode

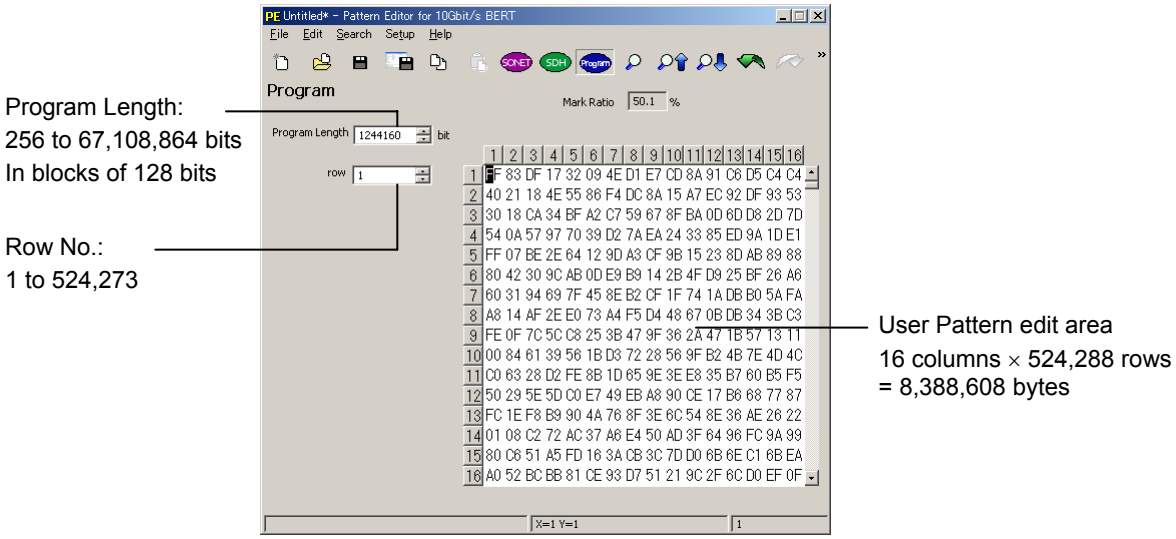


SDH STM64 Mode

- Frame No. (Frame#) — Displays the frame No. of the currently displayed data. The frame No. can be changed between 1 and 53. To change it, enter the desired frame No. in the “Frame#” field and press the [Enter] key or select it by pressing the [▲] and [▼] buttons.
- Column No. (column) — Displays the horizontal axis offset for column 1 in the TOH/SOH and PayLoad edit areas. The column No. can be changed between 1 and 568 in the case of TOH/SOH, and 1 and 16,676 in the case of Payload. To change it, enter the desired column No. in the “column” field and press the [Enter] key or select it by pressing the [▲] and [▼] buttons. The column No. changes with movement of the scroll bar.
- TOH/SOH edit area — Used to edit TOH/SOH data. Data of 576 columns × 9 rows (= 5,184 bytes) can be edited. Enter data (HEX format) in the TOH/SOH edit area directly or specify the desired edit area and fill data using PRBS Fill or User Fill.
- PayLoad edit area — Used to edit PayLoad data. Data of 16,704 columns × 9 rows (= 150,336 bytes) can be edited. Enter data (HEX format) in the PayLoad edit area directly or specify the desired edit area and fill data using PRBS Fill or User Fill.

(4) Program Mode

In Program mode, the data to be put on 10-Gbps bit stream can be edited in units of the program data length.



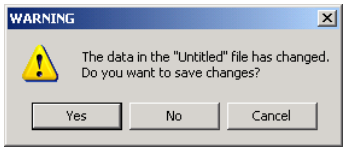
- Program Length — Displays the program data length. It can also be set.
  256 to 67,108,864 bits In blocks of 128 bits
  To change it, enter the desired program data length in the “Program Length” field and press the [Enter] key or select it by pressing the [▲] and [▼] buttons.
- Row No. (row) — Displays the vertical axis offset for row 1 in the UserPattern edit area. The column No. can be changed between 1 and 524,273. To change it, enter the desired row No. in the “row” field and press the [Enter] key or select it by pressing the [▲] and [▼] buttons. The row No. changes with movement of the scroll bar.
- User Pattern edit area — Used to edit User Pattern data. Data of 16 columns × 9 rows = 524,288 rows (= 8,388,608 bytes or 67,108,864 bits) can be edited. Enter data (HEX format) in the User Pattern edit area directly or specify the desired edit area and fill data using PRBS Fill or User Fill.

3.6 File Operation

(1) Creating a New File (New)

Operating Procedures

1. Select **[File] - [New]** from the **menu bar** or click  on the **toolbar**.
   The following **alarm dialog box** asking you whether to save the currently edited data will appear.



2. To save the data and create a new file, click <Yes>.
   To create a new file without saving the data, click <No>.
   The initial data will appear in the data edit area.

   To return to the edit screen without saving the data, click <Cancel>.

Explanation

- Alarm dialog box
  - If a file name has been set, it will be displayed.
  - If no file name has been set, “Untitled” will be displayed.

- When <Yes> is clicked
  - If a file name has been set, the data will be overwritten and saved.
  - If no file name has been set, the **Save file selection dialog box** will appear. Enter a file name and click <Save>. The data will be saved.

Note

When a new file is created, the initial data will be displayed in the data edit area.
For the initial data for each mode, refer to Section 3.3.

(2) Opening a File (Open)

Operating Procedures

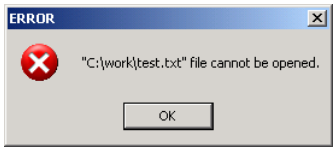
1. Select **[File] - [Open...]** from the **menu bar** or click  on the toolbar.
   The **Open file selection dialog box** will appear.
2. Select the data file to be imported, and click <Open>.
   The imported data will be displayed in the data edit area.

   If you are not going to import the data, click <Cancel>.
   The current edit screen will reappear.

Explanation

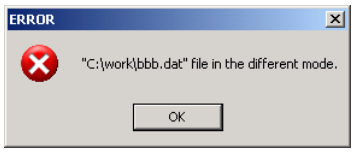
- File format that can be imported
  Data in dat format can be imported.
  “file name”.dat

- When a file in unknown format is selected
  The following **alarm dialog box** will appear, informing you that the data file cannot be imported.
  Click <OK> to return to the current edit screen.



  “drive name\folder name\file name” file cannot be opened.

- When a file whose data size is not a multiple of the frame size is selected in SONET/SDH mode
  The following **alarm dialog box** will appear, informing you that the data file cannot be imported because you are attempting to open the file in inappropriate mode.
  Click <OK> to return to the current edit screen.



  “drive name\folder name\file name” file in the different mode.

Note

The content of the file to be imported is the data in the data edit area.
The setting information is loaded from “SetupParam.ini” when the application is started. For details, see Section 3.6 (5).

(3) Overwriting a File (Save)

Operating Procedures

<When a file name has been set for the currently edited data>

1. Select **[File] - [Save]** from the **menu bar** or click  on the **toolbar**.
   The data will be overwritten and the current edit screen will reappear.

<When no file name has been set for the currently edited data>

1. Select **[File] - [Save]** from the **menu bar** or click  on the **toolbar**.
   The **Save file selection dialog box** will appear.
2. Enter a file name and click <Save>.
   The data will be saved to the specified file and the current edit screen will reappear.

   If you are not going to save the data, click <Cancel>.
   The current edit screen will reappear.

Explanation

- File save format
  The data is saved in dat format.
  “file name”.dat

(4) Specifying a File Name and Saving the Data in That File (Save As)

Operating Procedures

1. Select **[File] - [SaveAs…]** from the **menu bar** or click  on the **toolbar.**
   The **Save file selection dialog box** will appear.
2. Enter a file name and click <Save>.
   The data will be saved to the specified file and the current edit screen will reappear.

   If you are not going to save the data, click <Cancel>.
   The current edit screen will reappear.

Explanation

- File save format
  The data is saved in dat format.
  “file name”.dat

(5) Exiting the Application (Exit)

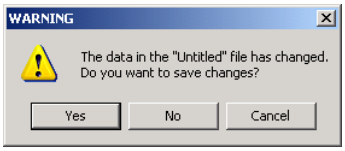
Operating Procedures

<When the data has been saved>

1. Select **[File] - [Exit]** from the **menu bar**.
   The application will be exited.

<When the data has not been saved>

1. Select **[File] - [Exit]** from the **menu bar**.
   The following **alarm dialog box** asking you whether to save the currently edited data will appear.



2. To save the data and exit the application, click <Yes>.
   To exit the application without saving the data, click <No>.
   To return to the edit screen without saving the data, click <Cancel>.

Explanation

- Alarm dialog box
  - If a file name has been set, it will be displayed.
  - If no file name has been set, “Untitled” will be displayed.

- When <Yes> is clicked
  - If a file name has been set, the data will be overwritten and saved.
  - If no file name has been set, the **Save file selection dialog box** will appear. Enter a file name and click <Save>. The data will be saved.

- When the application is exited, the currently selected operation mode and current settings will be recorded in the following setting file. The setting file is created in the same folder as the executable file.
  SetupParam.ini: Setting file

  When starting the application next time, the setting file will be imported and the previous setting items will be restored.
  The following items are recorded in the setting file.
  - Operation mode
  - Number of frames
  - PRBS fill pattern
  - User fill data quantity
  - User fill pattern
  - Scramble setting
  - Screen edit mode
  - Program quantity
  - Fill option
  - Fill option Negative
  - Search data length
  - Search data

  For the other items, the initial setting will be loaded. For the initial settings, see Appendix 1.
  The initial data will be imported to the edit area. For details, see Section 3.3.

3.7 Edit Operation

(1) Entering data

Operating Procedures

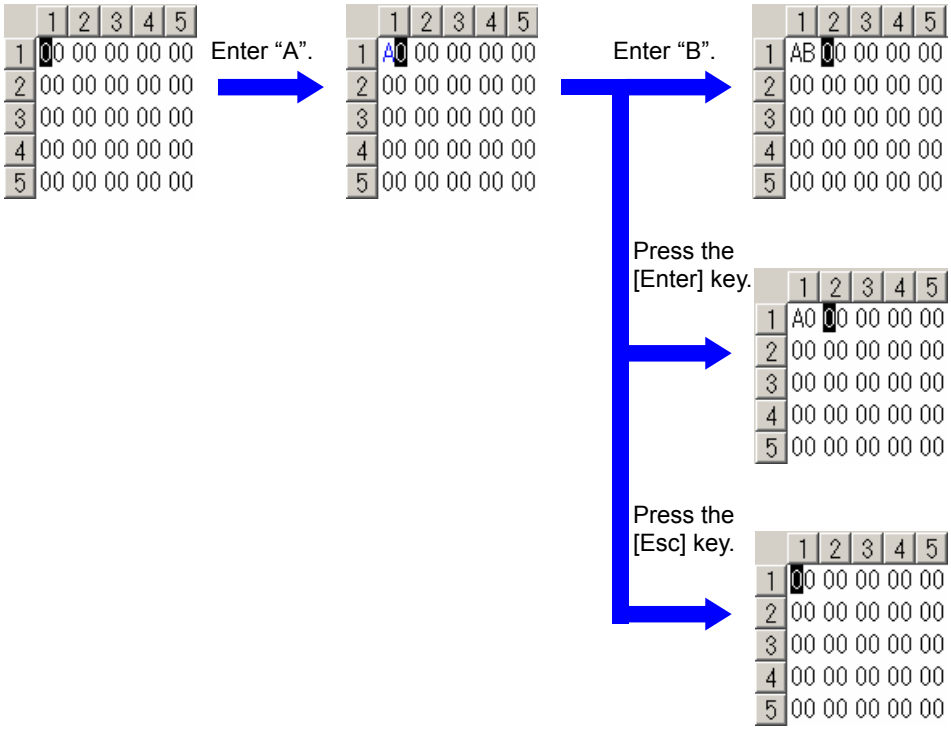
1. In the edit area, locate the cursor at the position where you want to enter data.
2. Enter the desired character (“0” to “F”).
   When entry of the upper byte is complete, the entered character will be displayed in blue.
3. Next, enter the desired character (“0” to “F”) for the lower byte.
   When entry of the lower byte is complete, the data will be confirmed and the cursor will move to the next data position.
4. To continue to enter more data, repeat steps 2 to 3.

Explanation

- Data can be entered one byte at a time.
  - If the lower byte data has not been entered even though the upper byte data has, the characters will be displayed in blue indicating that the data cannot be confirmed.
  - If you press the [Enter] key with the upper byte entered, the data consisting of the upper byte and the currently displayed lower byte data will be confirmed.
  - If you press the [Esc] key with the upper byte entered, the upper byte data will be canceled.

- Characters “0” to “F” (HEX) can be entered.
  If any other characters are entered, they will be ignored and the contents of the screen will not be changed.

- Graphical explanation of data entry procedure



(2) Undoing an Operation (Undo)

Operating Procedures

1. Select **[Edit] - [Undo]** from the **menu bar** or click  on the **toolbar**.
   The previous contents of the currently edited data will be restored.

Explanation

- Conditions for Undo operation
  Undo is effective just after data input, paste and fill edit operations.
  Undo will be invalid (i.e. displayed in gray) before edit and just after undo, indicating that Undo cannot be selected.

- Recorded number of Undo operations
  Only one undo operation is recorded.

(3) Redoing an Operation (Redo)

Operating Procedures

1. Select **[Edit] - [Redo]** from the **menu bar** or click  on the **toolbar**.
   The contents of the currently edited data effective just before the last undo will be restored.

Explanation

- Conditions for Redo operation
  Redo can only be selected just after undo is performed.
  Redo will be invalid (i.e. displayed in gray) if edit operation is performed after undo, indicating that Undo cannot be selected.

- Recorded number of Redo operations
  Only one redo operation is recorded.

(4) Copy & Paste

Operating Procedures

1. In the edit area, select the area of the data (1 byte or more) to be copied.
2. Select **[Edit] - [Copy]** from the **menu bar** or click  on the **toolbar**.
3. Select the area (1 byte or more) to which the selected data is to be pasted.
4. Select **[Edit] - [Paste]** from the **menu bar** or click  on the **toolbar**.
   The copied data will be pasted into the selected area.

Explanation

- Selecting an area
  Area selection items include column, row, A to B, TOH/SOH, All TOH/SOH, PayLoad, All PayLoad, Frame, and All.
  The selected area will be highlighted.

  - Column
    The specified column is selected.
    If you click the mouse with the focus located on a column button (in the edit area), all the data present in that column will be selected.
    If you select a column and drag the mouse or press a cursor key + [Shift] key, all the data present in the selected column area will be selected.
  - Row
    The specified row is selected.
    If you click the mouse with the focus located on a row button (at the left of the edit area), all the data present in that row will be selected.
    If you select a row and drag the mouse or press a cursor key + [Shift] key, all the data present in the selected row area will be selected.
  - A to B
    The specified range is selected.
    If you drag the mouse or press a cursor key + [Shift] key with the focus located on data inside the edit area, the specified area will be selected.
    If the selected area contains two or more columns, block selection will not be made. The area starting from the left end of the displayed data through the beginning of the next row up to the specified position will be selected.
  - TOH/SOH (SONET/SDH mode)
    The specified one TOH/SOH is selected.
    For details, see Section 3.7 (7).
  - All TOH/SOH (SONET/SDH mode)
    The TOH/SOH of the specified frame is selected.
    For details, see Section 3.7 (8).
  - PayLoad (SONET/SDH mode)
    The specified one PayLoad is selected.
    For details, see Section 3.7 (9).
  - All PayLoad (SONET/SDH mode)
    The PayLoad of the specified frame is selected.
    For details, see Section 3.7 (10).
  - Frame (SONET/SDH mode)
    The TOH/SOH and PayLoad of the specified frame are selected.
    For details, see Section 3.7 (11).
  - All (Program mode)
    UserPattern is selected.
    For details, see Section 3.7 (12).

- Canceling the selected area

  If you press the [Esc] key while an area is currently selected, the selected area will be cancelled and only the data at the selected position will be selected.

  If you click the mouse while an area is currently selected, the selected area will be cancelled and only the data at the clicked position will be selected.

  The selected area will also be cancelled if the focus moves into another edit area.

- Copy operation

  If you execute a new copy after executing a copy, the old copied data will be deleted.

  The data inside the copy area will be kept irrespective of the selected area's shape (e.g. column, row, A to B).

- Paste operation
  - When no data area has been selected
    If only one data is specified without selecting an area, the content of the copied data will be pasted starting from the specified position up to the copy size.
  - When a data area has been selected
    If a data area has been selected, the copied data will be pasted into that area.
  - If the selected area's shape (e.g. column, row, A to B) of the copy source differs from that of the paste destination, the data will be pasted serially.
  - When the selected area of the copy source differs from that of the paste destination
    Copy source > Paste destination

    If the copy data is larger than the selected paste area, the copied data will be pasted, starting form the beginning of the data up to the selected area size.

    Copy destination > Paste source

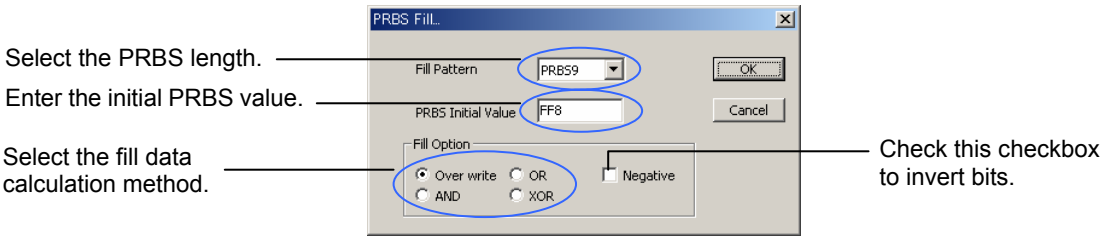
    If the selected paste area is larger than the copied data, the copied data will be pasted repeatedly until the entire selected area is filled with the data.

(5) Filling with PRBS Pattern (PRBS Fill)

Operating Procedures

1. In the edit area, select the area to be filled with PRBS pattern data (1 byte or more).
2. Select **[Edit] - [PRBS Fill...]** from the **menu bar** or click 

on the **toolbar**.
   The **PRBS Fill dialog box** will appear.



3. From the [Fill Pattern] pull-down menu, select the PRBS length to be used (can be selected from PRBS9, PRBS15, PRBS23 and PRBS31).
4. In the “PRBS Initial Value” input field, enter the initial PRBS value to be used.
5. In the “Fill Option” field, select the fill data calculation method by turning ON the corresponding radio button (can be selected from Over write, AND, OR and XOR). To invert the fill data bits, check the [Negative] check box (a check mark will appear).
6. When all the entries are made and you want to perform PRBS Fill, click <OK>.
   The specified area will be filled with the PRBS pattern data.

   To abort PRBS Fill, click <Cancel>.
   The current edit screen will reappear.

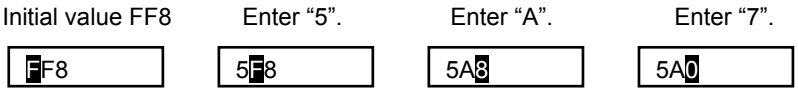
Explanation

● PRBS Initial Value
The number of bits required for each PRBS length is displayed.

- PRBS9: 3 digits, FF8 (Three lower bits of the 3rd digit are invalid)
- PRBS15: 4 digits, FFFE (The lowest bit of the 4th digit is invalid)
- PRBS23: 6 digits, FFFFFE (The lowest bit of the 6th digit is invalid)
- PRBS31: 8 digits, FFFFFFFE (The lowest bit of the 8th digit is invalid)

To change the initial PRBS value, enter the desired value (0 to F) directly in the “PRBS Initial Value” field.

(Example) When entering “5A7” in the case of PRBS9 (initial value: FF8)



In the case of PRBS9, 3-digit value can be entered. However, only the MSB of the 3rd digit is valid and the lower three bits will be replaced by “0”.

- When a value between 0 and 7 is entered: “0”
- When a value between 8 and F is entered: “8”

In the case of PRBS15, PRBS23 and PRBS31, the upper three bits of the last digit is valid and the lowest bit will be replaced by “0”.

- Fill Option

  Fill data calculation method

  - Over write: The current data is overwritten with fill data.
  - AND: “AND” result of the current data and fill data is written.
  - OR: “OR” result of the current data and fill data is written.
  - XOR: “XOR” result of the current data and fill data is written.
  - Negative: Bits of the fill data are inverted before calculation.

- Fill processing

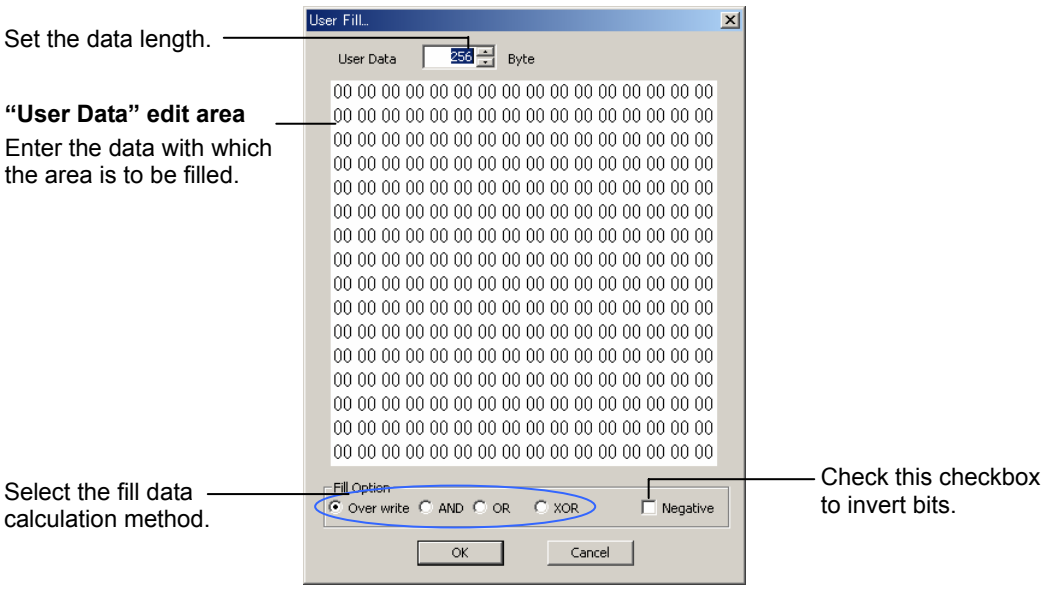
  If only one data is specified without selecting an area, the area starting from the specified position to the end of currently displayed edit data will be filled with data.

  If an area has been selected, the entire selected area will be filled with data.

(6) Filling with PRBS Pattern (User Fill)

Operating Procedures

1. In the edit area, select the area to be filled with user pattern data (1 byte or more).
2. Select **[Edit] - [User Fill...]** from the **menu bar** or click  on the **toolbar**.
   The **User Fill dialog box** will appear.



3. Enter the desired data length directly in the "User Data" field or set it by pressing the [▲] and [▼] buttons.
4. Enter the desired fill data in the "User Data" edit area.
5. In the "Fill Option" field, select the fill data calculation method by turning ON the corresponding radio button (can be selected from Over write, AND, OR and XOR). To invert the fill data bits, check the [Negative] check box (a check mark will appear).
6. When all the entries are made and you want to perform User Fill, click <OK>.
   The specified area will be filled with the User pattern data.

   To abort User Fill, click <Cancel>.
   The current edit screen will reappear.

Explanation

● Fill Option
Fill data calculation method

- Over write: The current data is overwritten with fill data.
- AND: "AND" result of the current data and fill data is written.
- OR: "OR" result of the current data and fill data is written.
- XOR: "XOR" result of the current data and fill data is written.
- Negative: Bits of the fill data are inverted before calculation.

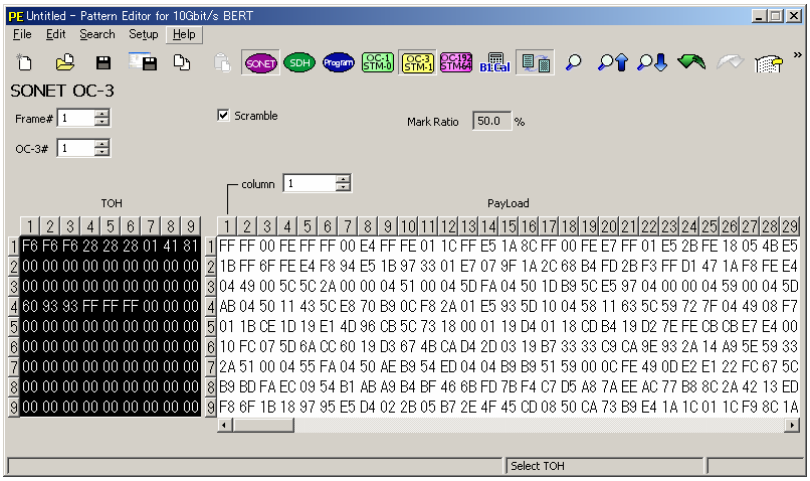
● Fill processing
If only one data is specified without selecting an area, the area starting from the specified position to the end of currently displayed edit data will be filled with data.

If an area has been selected, the entire selected area will be filled with data.

(7) Selecting TOH/SOH (Select TOH/SOH) Effective for SONET/SDH Mode

Operating Procedures

1. Select the **Frame#** or **OC-n#/STMn#** whose data is to be edited.
2. **For SONET mode**
   Select **[Edit] - [Select TOH]** from the **menu bar**.
   For SDH mode
   Select **[Select SOH]** from the **[Edit] menu**.
   The TOH/SOH data will be highlighted indicating that it is currently selected.



3. Select “PRBS Fill” or “USER Fill”.
   The selected TOH/SOH will be filled with pattern data.
   For details, see Section 3.7 (5), (6).

Explanation

- With “Select TOH/SOH” operation, TOH/SOH corresponding to the currently displayed OC-n#/STMn# is selected.
- The selected area contains parts that are displayed when scrolled.

(8) Selecting All TOH/SOH (Select All TOH/SOH) Effective for SONET/SDH Mode

Operating Procedures

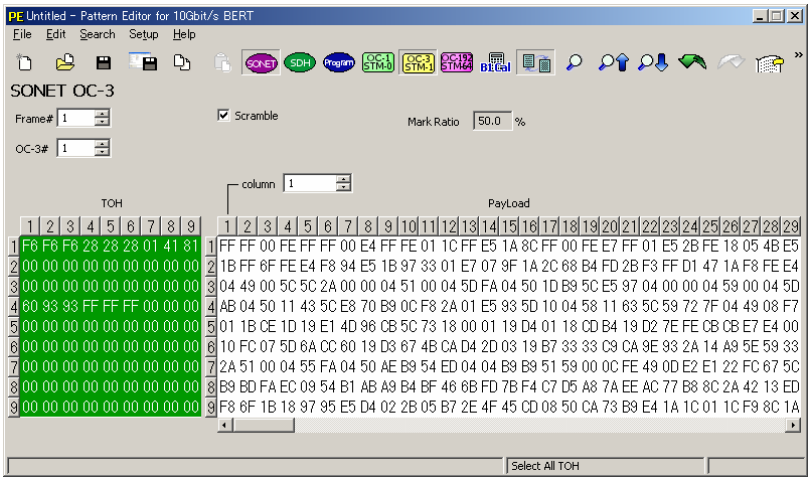
1. Select the **Frame#** whose data is to be edited.
2. **For SONET mode**

   Select **[Edit] - [Select ALL TOH]** from the **menu bar**.

   For SDH mode

   Select **[Edit] - [Select ALL SOH]** from the **menu bar**.

   The background of TOH/SOH will be displayed in green and its characters in white, indicating that it is currently selected.



3. Select “PRBS Fill” or “USER Fill”.

   The selected TOH/SOH will be filled with pattern data.

   For details, see Section 3.7 (5), (6).

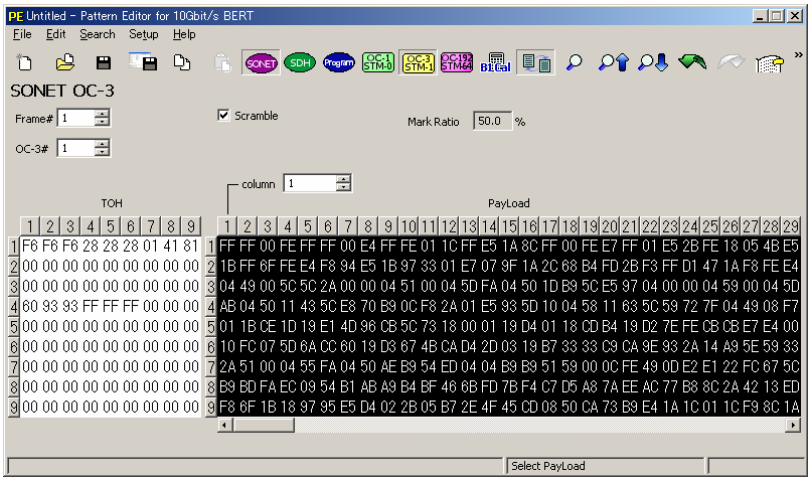
Explanation

- With “Select All TOH/SOH” operation, TOH/SOH corresponding to the currently displayed and hidden OC-n#/STMn# (one frame) is selected.
- The selected area contains parts that are displayed when scrolled.

(9) Selecting PayLoad (Select PayLoad) Effective for SONET/SDH Mode

Operating Procedures

1. Select the **Frame#** or **OC-n#/STMn#** whose data is to be edited.
2. Select **[Edit] - [Select PayLoad]** from the **menu bar**.
   The PayLoad data will be highlighted indicating that it is currently selected.



3. Select “PRBS Fill” or “USER Fill”.
   The selected TOH/SOH will be filled with pattern data.
   For details, see Section 3.7 (5), (6).

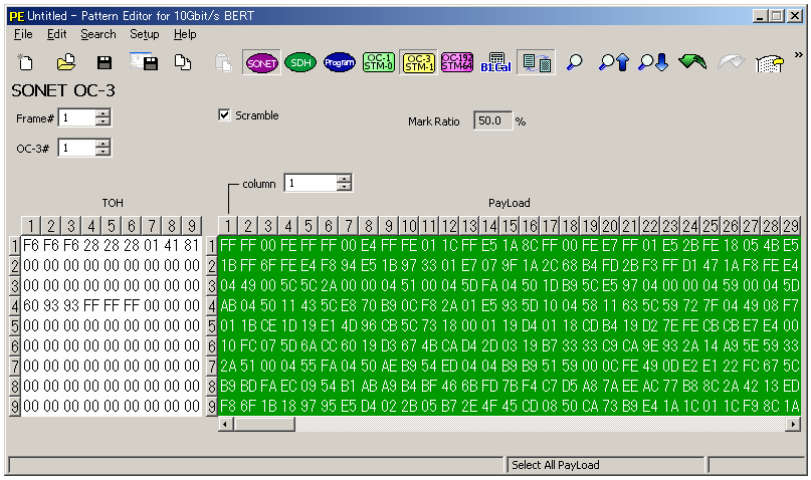
Explanation

- With “Select PayLoad” operation, PayLoad corresponding to the currently displayed OC-n#/STMn# is selected.
- The selected area contains parts that are displayed when scrolled.

(10) Selecting All PayLoad (Select All PayLoad) Effective for SONET/SDH Mode

Operating Procedures

1. Select the **Frame#** whose data is to be edited.
2. Select **[Edit] - [Select ALL PayLoad]** from the **menu bar**.
   The background of PayLoad will be displayed in green and its characters in white, indicating that it is currently selected.



3. Select “PRBS Fill” or “USER Fill”.
   The selected TOH/SOH will be filled with pattern data.
   For details, see Section 3.7 (5), (6).

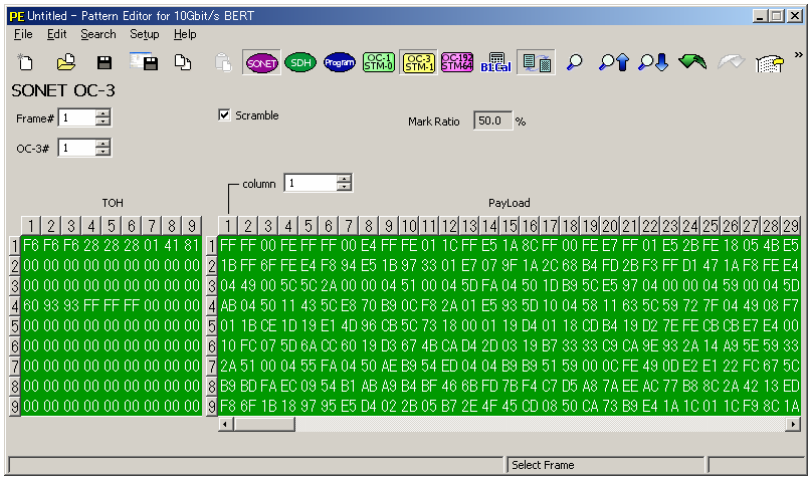
Explanation

- With “Select All PayLoad” operation, PayLoad corresponding to the currently displayed and hidden OC-n#/STMn# (one frame) is selected.
- The selected area contains parts that are displayed when scrolled.

(11) Selecting Frame (Select Frame) Effective for SONET/SDH Mode

Operating Procedures

1. Select the **Frame#** whose data is to be edited.
2. Select **[Edit] - [Select Frame]** from the **menu bar**.
   The backgrounds of TOH/SOH and PayLoad will be displayed in green and their characters in white, indicating that it is currently selected.



3. Select “PRBS Fill” or “USER Fill”.
   The selected TOH/SOH will be filled with pattern data.
   For details, see Section 3.7 (5), (6).

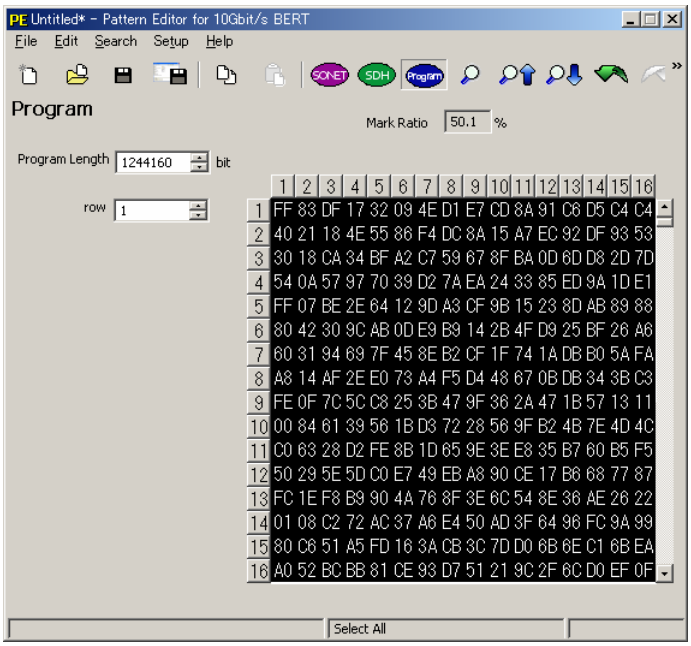
Explanation

- With “Select Frame” operation, TOH/SOH and PayLoad corresponding to the currently displayed and hidden OC-n#/STMn# (one frame) is selected.
- The selected area contains parts that are displayed when scrolled.

(12) Selecting All Data (Select All) Effective for Program Mode

Operating Procedures

1. Select **[Edit] - [Select All]** from the **menu bar**.
2. The User Pattern will be highlighted indicating that it is currently selected.



3. Select “PRBS Fill” or “USER Fill”.
   The selected TOH/SOH will be filled with pattern data.
   For details, see Section 3.7 (5), (6).

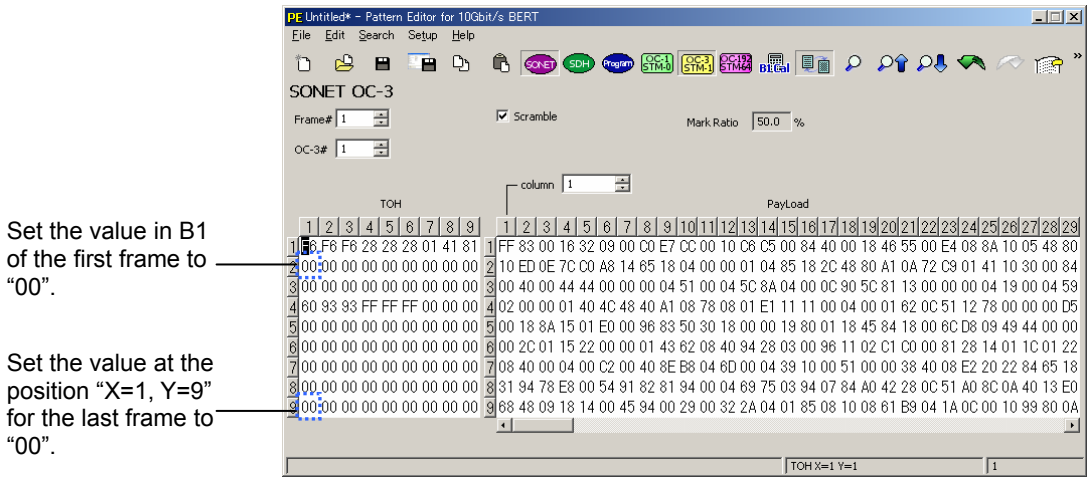
Explanation

- The selected area contains parts that are displayed when scrolled.

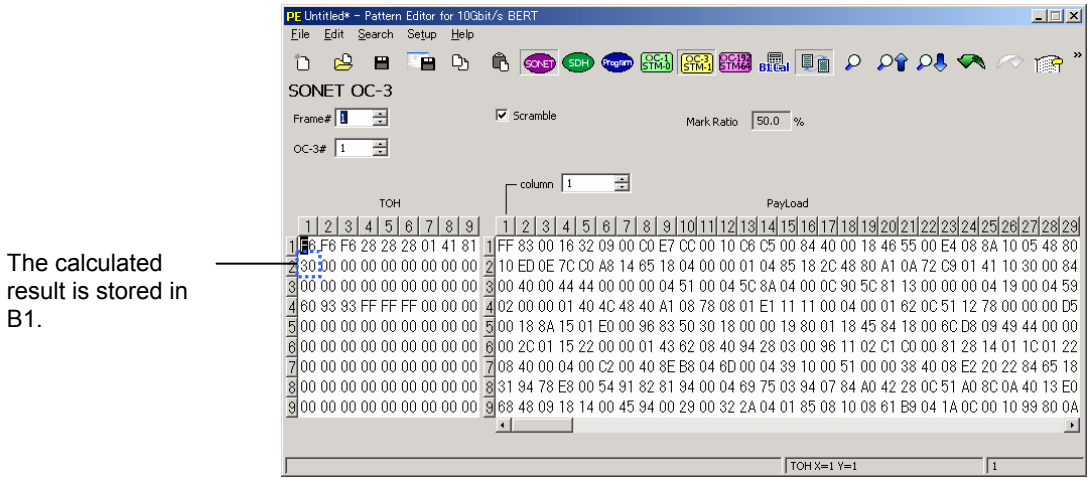
(13) Calculating B1 (B1 Cal) Effective for SONET/SDH Mode

Operating Procedures

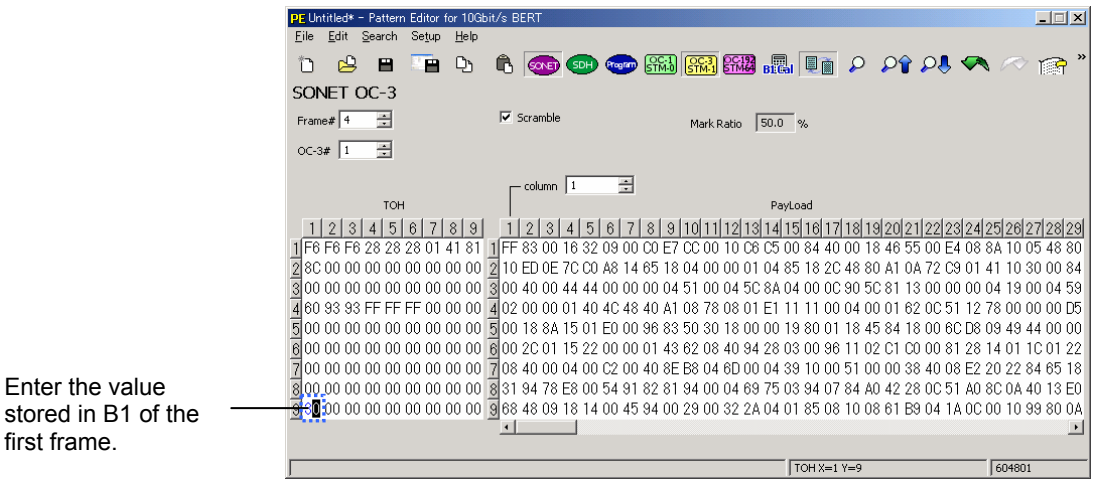
1. Set the B1 value of the first frame and the TOH/SOH (X=1, Y=9) value of the last frame to "00".



2. Select **[Edit] - [B1 Cal]** from the **menu bar** or click  on the **toolbar**. The calculated result will be stored in B1 of each frame.

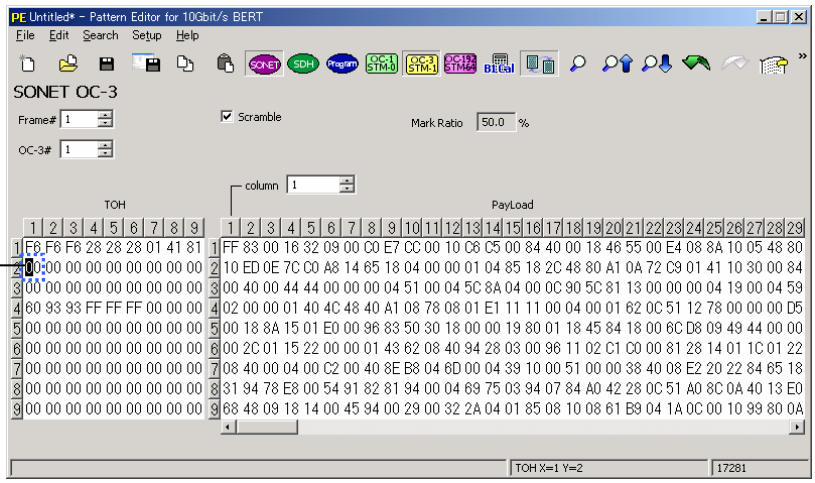


3. Input the value stored in B1 of the first frame to TOH/SOH (X=1, Y=9) of the last frame.



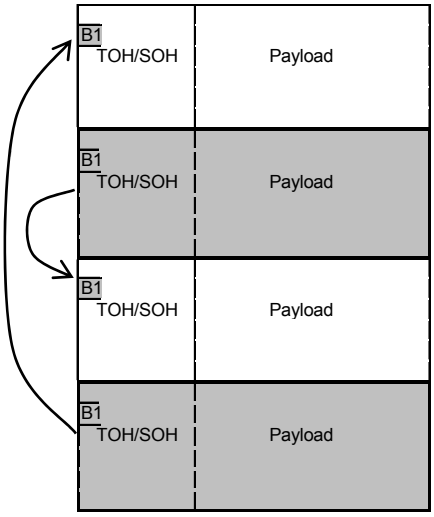
4. Return the value in B1 of the first frame to “00”.

Return the data in B1 of the first frame to “00”.



Explanation

- B1 exists at the first byte of the 2nd row of each frame. (Common to every operation mode)
  TOH/SOH (X=1 Y=2), 17,281st data position
- The parity (Bit Interleaved Parity) for the previous frame is entered in B1.
- The parity for the last frame is entered in B1 of the first frame.



- In “Operating Procedures”, the value for TOH/SOH (X=1, Y=9) for the first frame is set to “00”. However, it does not matter in which position (TOH, SOH, PayLoad) the data to be changed is present.

- In “Operating Procedures”, the value in B1 of the first frame and the value for TOH/SOH (X=1, Y=9) of the last frame are set to “00”. However, they can also be set to a value other than “00”.
  In this case, the following logical operations are required.
  A = Value in B1 of the first frame before B1Cal
  B = Value in B1 of the first frame after B1Cal
  C = Value at TOH/SOH (X=1, Y9) of the last frame
  D = A xor B
  B = A (the value before B1Cal will be restored)
  C = C xor D (The value at TOH/SOH (X=1, Y=9) is changed.)

3.8 Search Operation

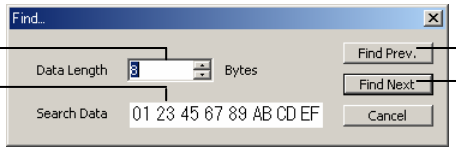
(1) Searching (Find)

Operating Procedures

1. Place the focus inside the desired edit area.
2. Select **[Search] - [Find...]** from the **menu bar** or click  on the **toolbar**.
   The following **Find dialog box** will appear.

Set the search data length.

Enter the data to be found.



Backward search

Forward search

3. Enter the desired data length directly in the “Data Length” field or set it by pressing the [▲] and [▼] buttons.
4. In the “Search Data” field, enter the desired data (HEX) of the bytes specified in the “Data Length” field.
5. To search backward, click <Find Prev.>.
   To search forward, click <Find Next>.
   To exit search without searching, click <Cancel>.
6. When the data is found, it will be highlighted. If the data is not found, an **alarm dialog box** will appear. For details, see Section 3.8 (2).
7. If you want to continue to search, see Section 3.8 (2).

Explanation

- Forward search: Searches forward starting from the current cursor position.
  Backward search: Searches backward starting from the current cursor position.

- Once the data is entered, it will remain effective until it is changed.

(2) Searching Forward (Find Next.) / Searching Backward (Find Prev.)

Operating Procedures

1. **Forward search**

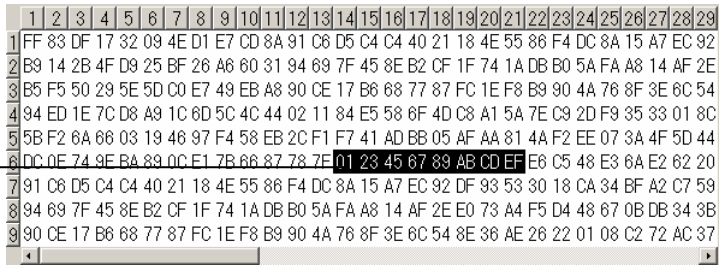
   Select **[Search] - [Find Next]** from the **menu bar** or click  on the **toolbar**.

   Backward search

   Select **[Search] - [Find Prev.]** from the **menu bar** or click  on the **toolbar**.

2. When the data is found, it will be highlighted.

Found data



If the data is not found, an **alarm dialog box** will appear.

Explanation

- Forward search: Searches forward starting from the current cursor position.
  Backward search: Searches backward starting from the current cursor position.

- Since the search target data remains effective until it is changed, it is possible to continue search repeatedly.

(3) Jumping to the Desired Data (Jump)

Operating Procedures

1. Select **[Search] - [Jump...]** from the **menu bar** or click  on the **toolbar**.
   The following **Jump dialog box** will appear

2. Enter the desired data to which you want to jump in the “data No.” field directly or set it by pressing the [▲] and [▼] buttons.
3. Click <Jump>.
   The cursor will jump to the specified data inside the edit area.

   To exit the dialog box without jumping, click <Cancel>.

(4) Returning to the Jump Source Position

Operating Procedures

1. Select **[Search] - [Return]** from the **menu bar** or click  on the **toolbar**.
   The cursor will return to the data position at which the cursor was located before the jump was made.

(5) Marking a Position (Mark Current)

Operating Procedures

1. Locate the cursor to the position to which a mark is to be set.
2. Select **[Search] - [Mark Current]** from the **menu bar** or click  on the **toolbar**.
   A mark will be set at the cursor position.

(6) Jumping to a Mark Position (Jump to Mark)

Operating Procedures

1. Select **[Search] - [Jump to Mark]** from the **menu bar** or click  on the **toolbar**.
   The cursor will jump to the position where a mark is set.

Explanation

- If no mark has been set, the cursor will not jump anywhere.

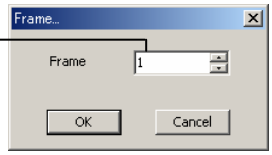
3.9 Setup Operation

(1) Changing the Number of Frames (Frame) Effective for SONET/SDH Mode

Operating Procedures

1. Select **[Setup] - [Frame…]** from the **menu bar**.
   The **Frame dialog box** will appear.

Set the number of frames.



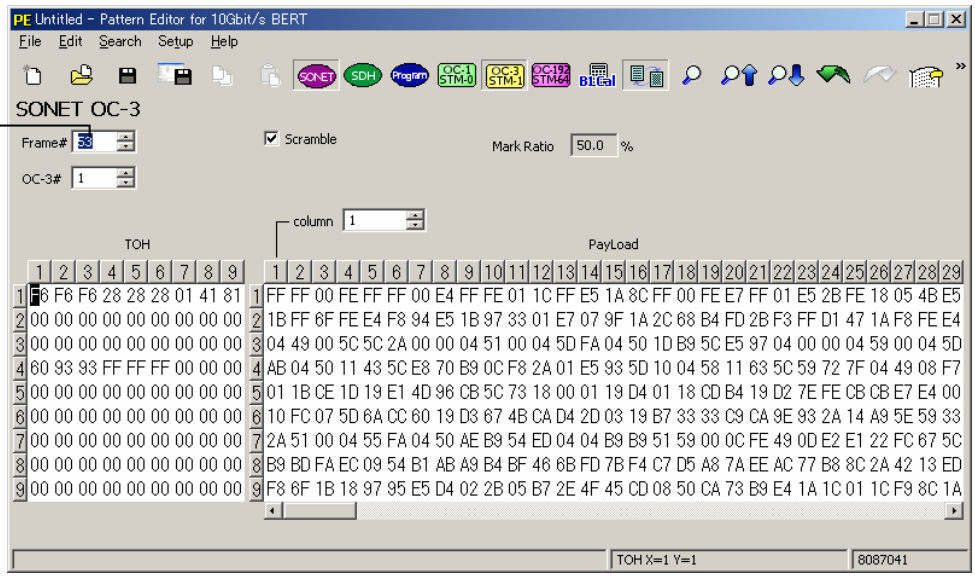
2. Enter the desired number of frames in the “Frame” field directly or set it by pressing the [▲] and [▼] buttons.
3. Click <OK>.
   The frame No. can be changed within the specified range and the selected frame can be edited.

   If you are not going to change the number of frames, click <Cancel>.

Explanation

- Settable number of frames: 1 to 53
- A frame edit area is provided for each frame.

Up to 53 frames can be edited.



(2) Setting Scramble (Scramble) Effective for SONET/SDH Mode

Operating Procedures

1. Select **[Setup] - [Scramble]** from the **menu bar** or click  on the **toolbar**.
   Turn ON/OFF the scramble toggle switch.

Explanation

- When scramble is turned ON
  - The [Scramble] checkbox is checked (a check mark is displayed).
  - The [Scramble] toolbar button is dented.
  - A check mark is displayed on the left of the [Scramble] menu.

- Scramble processing

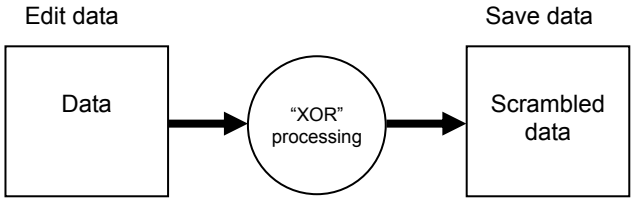
  Scramble is enabled when the [Scramble] checkbox is ON.

  The scramble function is designed to scramble the data when saving a file and descramble it when opening a file.

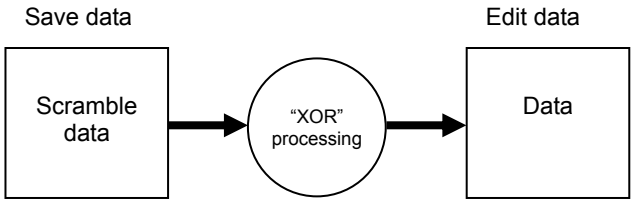
  With the file save function, the bytes starting from the first byte of the first row in PayLoad up to the last byte of the frame (i.e. all the bytes except for the first row of TOH/SOH) are "XORed" with PRBS7 (initial value: 1111111) to perform data scramble.

  With the file open function, the bytes of the imported file data, starting from the first byte of the first row in PayLoad up to the last byte of the frame (i.e. all the bytes except for the first row of TOH/SOH), are "XORed" with PRBS7 (initial value: 1111111) to cancel data scramble.

File save processing



File open processing



Note

When installing the compact flash card containing scrambled pattern data to the AQ2200 Series Frame Controller equipped with the AQ2200-601 10Gbit/s BERT Module and loading that pattern data, the scrambled pattern data will be output from the data output terminal of the 10G BERT Module.

(3) Selecting Edit Operation Mode (Edit Unit) Effective for SONET/SDH Mode

Operating Procedures

1. **For SONET mode**

   Select **[Setup] - [Edit Unit]** from the **menu bar**, and select the desired edit mode from **OC-1, OC-3** and **OC-192**, or click one of 

on the **toolbar**.

   For SDH mode

   Select [Setup] - [Edit Unit] from the menu bar, and select the desired edit mode from STM0, STM1 and STM64, or click one of 

on the toolbar.

2. A screen for the selected operation mode will appear.

Explanation

- Selection status of each mode
  - The toolbar button corresponding to the selected mode remains depressed.
  - A check mark is displayed on the left of the selected item.

(4) Selecting an Operation Mode (Mode)

Operating Procedures

1. Select **[Setup] - [Edit Unit]** from the **menu bar**, and select the desired edit mode from **SONET, SDH** and **Program**, or click one of  on the **toolbar**.
2. A screen for the selected operation mode will appear.

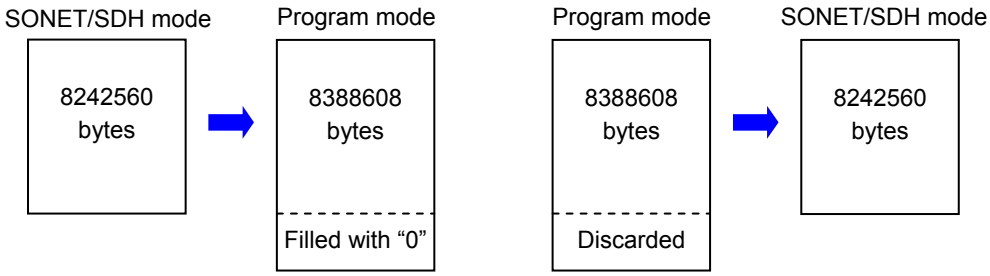
Explanation

- Selection status of each mode
  - The toolbar button corresponding to the selected mode remains depressed.
  - A check mark is displayed on the left of the selected item.

- Edit data when the operation mode is switched
  Data for SONET/SDH: 8,242,560 bytes
  Data for Program : 8,388,608 bytes

  - When switching from SONET to SDH or vice versa
    The same data will remain since the data size is the same.
  - When changing from SONET/SDH to Program
    Empty data parts are filled with “0” since the data size is different (SONET/SDH < Program).
  - When changing from Program to SONET/SDH
    Extra data parts are discarded since the data size is different (Program > SONET/SDH).

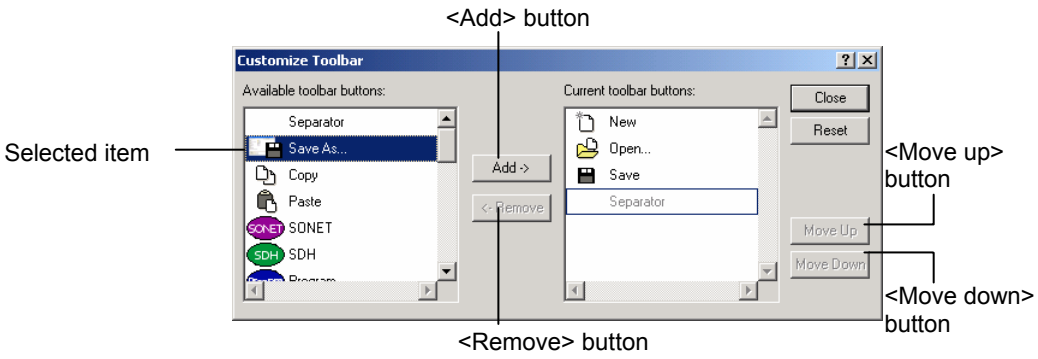
- Number of frames and data length when the operation mode is switched
  - When changing from SONET/SDH to Program
    The data length equals the “number of frames × frame size”.
  - When changing from Program to SONET/SDH
    The number of frames is “data length / frame size”. “1” will be added if “data length / frame size” has a remainder.



(5) Changing the Toolbar (User Configure)

Operating Procedures

1. Select **[Setup] - [User Configure…]** from the **menu bar**.
   The **User Configure dialog box** will appear.



2. **To add an item**

   From the “Available toolbar buttons” filed, select the one to be added to the toolbar and click <Add>.

   To remove an item

   From the “Current toolbar buttons” filed, select the one to be removed from the toolbar and click <Remove>.

3. **Moving an item upward in the list**

   From the “Current toolbar buttons” filed, select the one whose display position is to be changed and click <Move up>. Repeat this step until the item is displayed in the desired position in the list.

   Moving an item downward in the list

   From the “Current toolbar buttons” filed, select the one whose display position is to be changed and click <Move down>. Repeat this step until the item is displayed in the desired position in the list.

4. Click <Close> to close the dialog box.
   To restore the initial settings, click <Reset>.

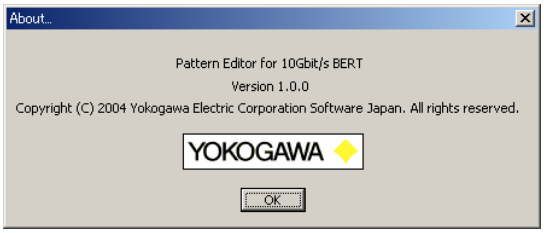
Explanation

- When an item is selected and <Add> or <Remove> is clicked, the change you have made will be reflected on the toolbar.
- By default, all the toolbar buttons are selected.
- If a separator is added to the current toolbar buttons, a separator will appear at the position where a new toolbar button or pull-down menu has been added.

(6) Help Menu (Help)

Operating Procedures

1. Select **[Setup] - [Help] - [About…]** from the **menu bar**.
   The **About dialog box** will appear.



2. Click <OK> to return to the previous screen.

Explanation

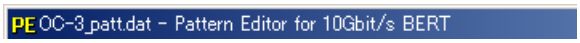
- The About dialog box shows the version information of this application.

3.10 Explanation of Other Functions

(1) Title Bar

Displays the file name and the title name of this application.
If a file name has been set, “file name.dat” will be displayed.
If no file name is set, “Untitled” will be displayed.
An asterisk (*) is displayed at the end of the file during edit.

- When the file name is “OC-3_patt.dat” and the file is not currently edited



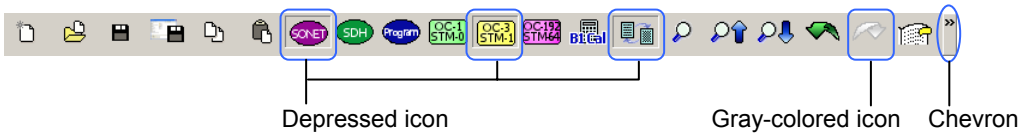
- When the file name is “OC-3_patt.dat” and the file is currently edited

- When no file name is set and the file is not currently edited

- When no file name is set and the file is currently edited

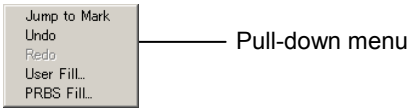
(2) Toolbar

Displays each operation item as an icon.



Depressed icons mean that they are currently selected.
Gray-colored icons mean that they cannot be used at this time.

Items that are not displayed as icons can be displayed in a pull-down menu by clicking the chevron mark (>>) located at the right end of the toolbar. Selecting the desired item from the pull-down menu enables you to perform it in the same way as when using icons.

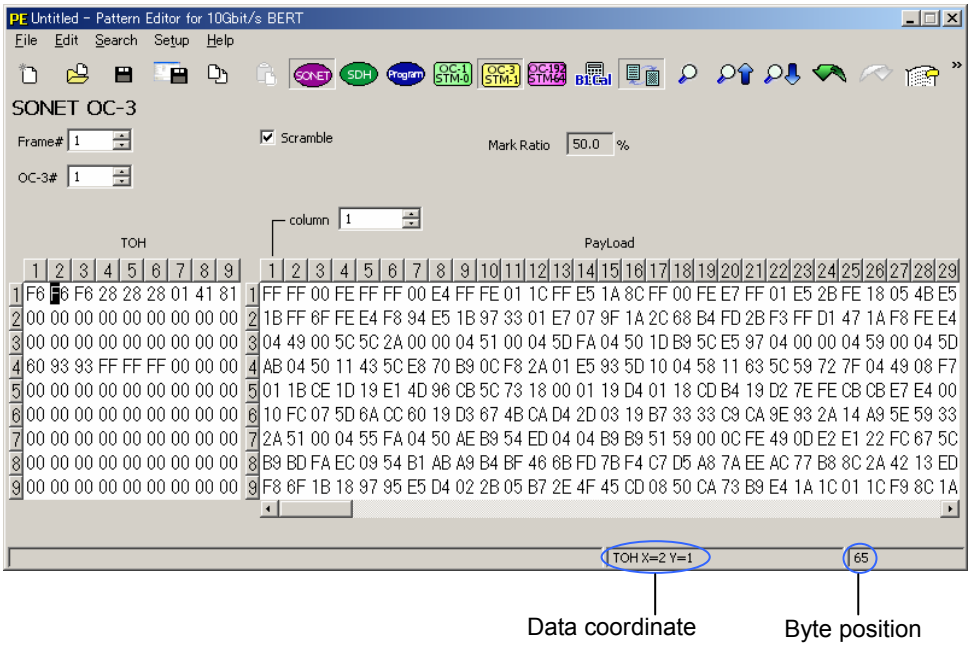


For details of how to change the toolbar, see Section 3.9 (5).

(3) Status Bar

Displays the coordinates of the data located at the cursor position and the byte position of that data (relative position from the beginning of the data).

- **SONET/SDH mode**



Display content of the status bar in the case of SONET/SDH mode

Area Selection	Data Coordinates	Byte Position
Only one data is selected in TOH/SOH	"TOH X=x Y=x" / "SOH X=x Y=x" Displays the coordinate (x, y) of the cursor position in TOH/SOH area.	Displays the byte position of the selected data (from the beginning of the frame).
A to B is selected in TOH/SOH	"TOH (x1, y1) - (x2, y2)" / "SOH (x1, y1) - (x2, y2)" Displays the coordinate (x, y) of the cursor position in TOH/SOH area.	Displays the byte position of the selected data (from the beginning of the frame).
One column is selected in TOH/SOH	"TOH column x" / "SOH column x" Displays the coordinate x of the selected column in TOH/SOH area.	None
Column selection is made in TOH/SOH	"TOH column (x1) - (x2)" / "SOH column (x1) - (x2)" Displays the coordinate x1, x2 of the selected column area in TOH/SOH area.	None
One row is selected in TOH/SOH	"TOH row y" / "SOH row y" Displays the coordinate y of the selected row in TOH/SOH area.	None
Row selection is made in TOH/SOH	"TOH row (y1) - (y2)" / "SOH row (y1) - (y2)" Displays the coordinate y1, y2 of the selected row area in TOH/SOH area.	None
TOH/SOH is selected	“Select TOH” / “Select SOH”	None
All TOH/SOH is selected	“Select All TOH” / “Select All SOH”	None
Only one data is selected in PayLoad	"PayLoad X=x Y=x" Displays the coordinate (x, y) of the cursor position in PayLoad area.	Displays the byte position of the selected data (from the beginning of the frame).
A to B is selected in PayLoad	"PayLoad (x1, y1) - (x2, y2)" Displays the coordinate (x, y) of the cursor position in PayLoad area.	Displays the byte position of the selected data (from the beginning of the frame).
One column is selected in PayLoad	"PayLoad column x" Displays the coordinate x of the selected column in PayLoad area.	None

Area Selection	Data Coordinates	Byte Position
Column selection is made in PayLoad	"PayLoad column (x1) - (x2)" Displays the coordinate x1, x2 of the selected area in PayLoad area.	None
One row is selected in PayLoad	" PayLoad row y" Displays the coordinate y of the selected row in PayLoad area.	None
Row selection is made in PayLoad	"PayLoad row (y1) - (y2)" Displays the coordinate y1, y2 of the selected row area in PayLoad area.	None
PayLoad is selected	“Select PayLoad”	None
All PayLoad is selected	“Select All PayLoad”	None
Frame is selected	“Select Frame”	None

1) In the case of “A to B”, the contents in the “Data coordinates” and “Byte position” fields differ depending on the selection method.

   Data coordinates: (Start position x1, y1) – (End position x2, y2)

   Byte position: Displays the byte position of the end position.

   Example 1) When selecting (1,1) to (5,1) in Payload for SONET OC-3 using the “A to B” selection method

   Data coordinates: PayLoad (1,1) to (5,1)

   Byte position: 833

   Example 2) When selecting (5,1) to (1,1) in Payload for SONET OC-3 using the “A to B” selection method

   Data coordinates: PayLoad (5,1) to (1,1)

   Byte position: 577

2) In the case of column/row selection, the content in the “Data coordinates” field differs depending on the selection method.

   Data coordinates: For column (Start position x1) – (End position x2)
   For row (Start position y1) – (End position y2)

   Example 1) When selecting columns (10) to (16) in Payload for SONET OC-3

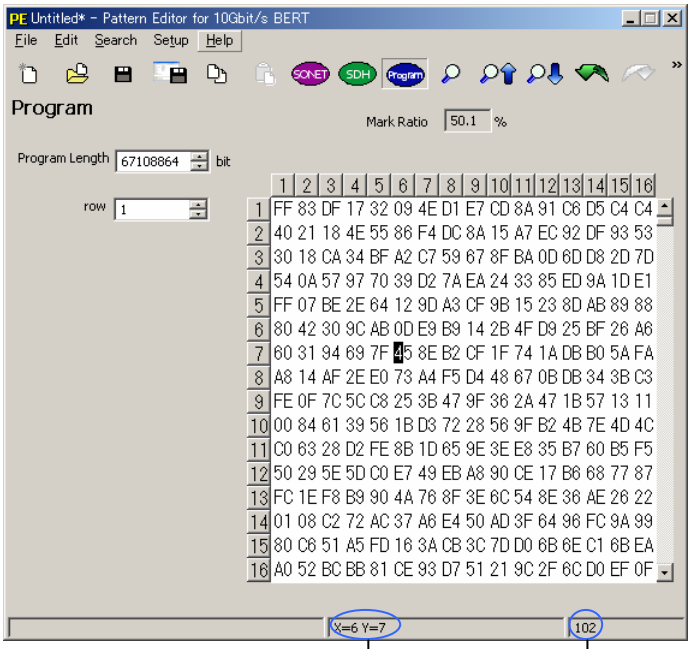
   Data coordinates: PayLoad columns (10) to (16)

   Example 2) When selecting columns (16) to (10) in Payload for SONET OC-3

   Data coordinates: PayLoad columns (16) to (10)

* In the above examples, the selected area is the same, though the display contents differ. Therefore, file operation and copy & paste operation have the same results.

● Program mode



Display content of the status bar in the case of Program mode

Area Selection	Data Coordinates	Byte Position
Only one data	"X=x Y=x" Displays the coordinate (x, y) of the cursor position.	Displays the byte position of the selected data (from the beginning of the frame).
A to B selection	"(x1,y1) - (x2,y2)" Displays the coordinate (x, y) of the cursor position.	Displays the byte position of the selected data (from the beginning of the frame).
1-column selection	"column x" Displays the column coordinate x.	None
Column range selection	"column (x1) - (x2)" Displays the selected column area coordinate x1, x2.	None
1-row selection	"row y" Displays the row coordinate y.	None
Row range selection	"row (y1) - (y2)" Displays the selected row area coordinate y1, y2.	None
All selection	"Select All"	None

1) In the case of “A to B”, the contents in the “Data coordinates” and “Byte position” fields differ depending on the selection method.
   Data coordinates: (Start position x1, y1) – (End position x2, y2)
   Byte position: Displays the byte position of the end position.

2) In the case of column/row selection, the content in the “Data coordinates” field differs depending on the selection method.
   Data coordinates: For column (Start position x1) – (End position x2)
   For row (Start position y1) – (End position y2)

* In the above examples, the selected area is the same, though the display contents differ. Therefore, file operation and copy & paste operation have the same results.

(4) Shortcut Key

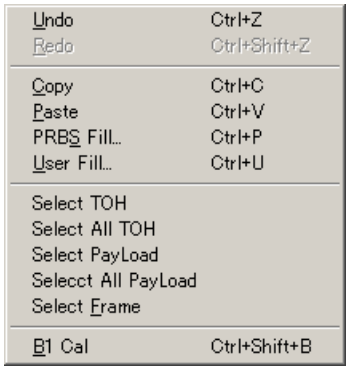
Use of shortcut keys allows you to perform the same operations as menus and toolbar buttons.

Function	Shortcut	Toolbar Name	Action
New creation	Ctrl+N	New	Same as “New” of the [File] menu
File open	Ctrl+O	Open…	Same as “Open...” of the [File] menu
File save	Ctrl+S	Save	Same as “Save” of the [File] menu
Save as	Shift+Ctrl+A	Save As…	Same as “Save As...” of the [File] menu
Copy	Ctrl+C	Copy	Same as “Copy” of the [File] menu
Paste	Ctrl+V	Paste	Same as “Paste” of the [File] menu
Left scroll	Ctrl+←	-	Scrolls the focused edit area to the left one column at a time.
Right scroll	Ctrl+→	-	Scrolls the focused edit area to the right one row at a time.
Upward scroll	Ctrl+↑	-	Scrolls the focused edit area upward one row at a time.
Downward scroll	Ctrl+↓	-	Scrolls the focused edit area downward one row at a time.
Previous page	PageUp	-	Displays the previous page. (Effective for SONET/SDH mode only)
Next page	PageDown	-	Displays the next page. (Effective for SONET/SDH mode only)
Previous frame	Ctrl+PageUp	-	Displays the previous frame. (Effective for SONET/SDH mode only)
Next frame	Ctrl+PageDown	-	Displays the next frame. (Effective for SONET/SDH mode only)
Page range selection	Ctrl+A	-	Same as “Select TOH(SOH)”, “Select PayLoad” and “Select All” of the [Edit] menu when the focus is located in an edit area
User fill	Ctrl+U	User Fill…	Same as “User Fill...” of the [Edit] menu
PRBS fill	Ctrl+P	PRBS Fill…	Same as “PEBS Fill...” of the [Edit] menu
SONET mode	Ctrl+F1	SONET	Switches to the SONET mode.
SDH mode	Ctrl+F2	SDH	Switches to the SDH mode.
Program mode	Ctrl+F3	Program	Switches to the Program mode.
OC-1 (STM-0) screen mode	Ctrl+1	OC-1 (STM-0)	Switches to the OC-1 (STM-0) screen mode. (Effective for SONET/SDH mode only)
OC-3 (STM-1) screen mode	Ctrl+2	OC-3 (STM-1)	Switches to the OC-3 (STM-1) screen mode. (Effective for SONET/SDH mode only)
OC-192 (STM-64) screen mode	Ctrl+3	OC-192 (STM-64)	Switches to the OC-192 (STM-64) screen mode. (Effective for SONET/SDH mode only)
B1 Cal	Shift+Ctrl+B	B1Cal	Same as “B1Cal” of the [Edit] menu
Scramble setting	Ctrl+L	Scramble	Same as “Scramble” of the [Edit] menu
Search	Ctrl+F	Find…	Opens the Find dialog box.
Forward search	F3	Find Next	Searches forward through the edit area.
Backward search	Shift+F3	Find Prev.	Searches backward through the edit area.
Jump	Ctrl+J	Jump to…	Opens the [Jump to...] dialog box.
Return	Ctrl+R	Return	Returns to the position where the cursor was located before the jump was made.
Mark	Shift+Ctrl+M	Mark Current	Marks the current position (byte position from the beginning of the data).
Mark jump	Ctrl+M	Jump to Mark	Jumps to the marked position.
Undo	Ctrl+Z	Undo	Undo. The previous data input, paste and fill operation is cancelled.
Redo	Shift+Ctrl+Z	Redo	Redo. The previous undo is cancelled.

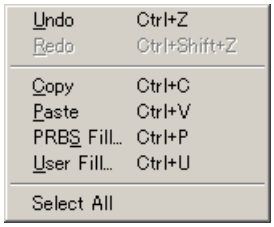
(5) Context Menu

If you right-click with the cursor located in an edit area, a context menu will appear.
It contains the same items as the [Edit] menu.

SONET/SDH mode



Program mode



4.1 Preparation

(1) Installing the Compact Flash Card

Install the compact flash card containing the created pattern data into the AQ2201/AQ2202 Frame Controller equipped with the AQ2200-601 10Gbit/s BERT Module.

Note

The compact flash card can be inserted/removed even if the power to the frame controller is currently ON.

However, do not remove it while the BERT application is in progress.

(2) Starting the BERT Application

Press the [APPLI] key on the front panel of the frame controller to start the BERT application.

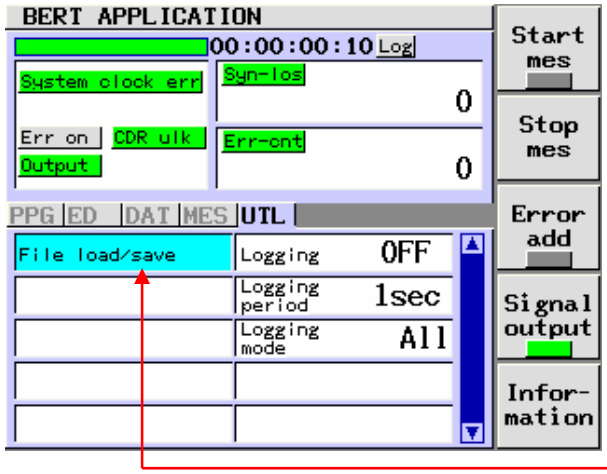
Note

For details, see Section 5.4 in the AQ2200-601 10Gbit/s BERT Module's Users Manual (IM810518801-01E).

4.2 Loading a File

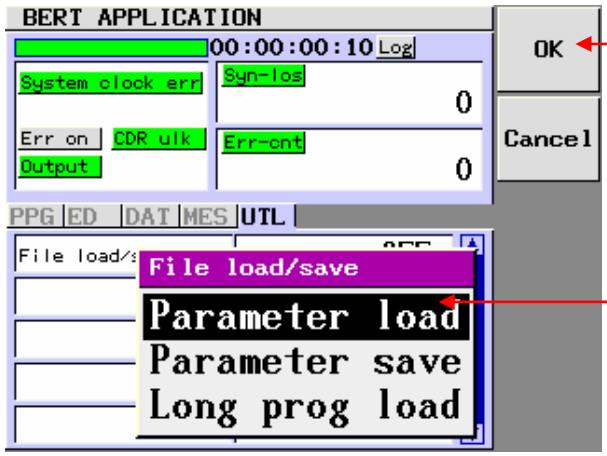
Load a pattern data file stored in the compact flash card to the BERT Module.

Operating Procedures



1. With the **[CHAN]** or **[FRAME] key**, select **UTL** for the current module.
2. With the [▲], [▼], [◀], or [▶] **key**, move the cursor so that **"File load/save"** becomes the current parameter and press the **[ENTER] key**.
3. The File load/save popup screen will appear.
   With the [▲] or [▼] **key**, move the cursor to any of **Parameter load**, Parameter save, and Long prog load, and press the **<OK>** or **[ENTER] key**, and the **File select screen** will appear.

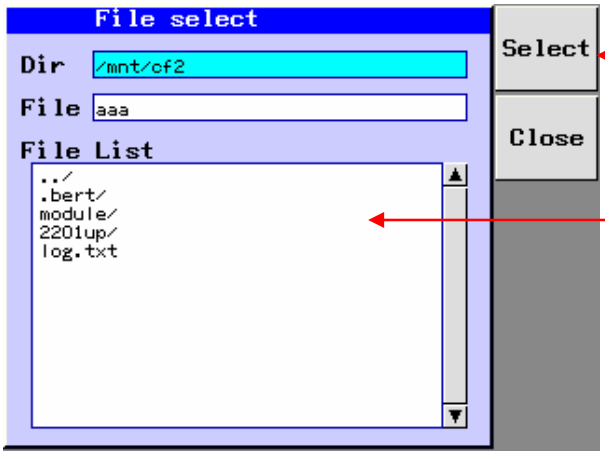
(1) Move the cursor to **"File load/save"** and press the **[ENTER] key**.



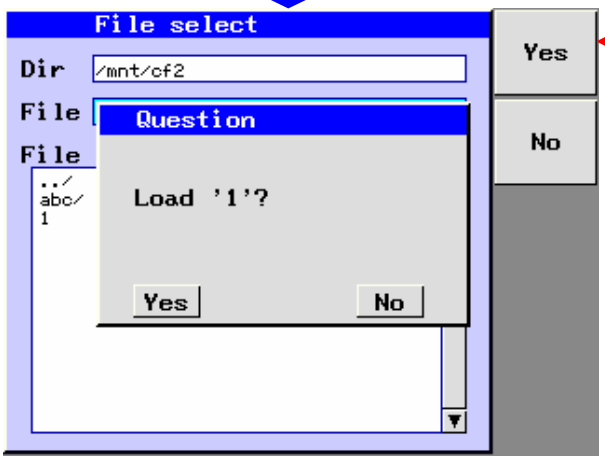
(3) Press the **<OK>** or **[ENTER] key**, and the File select screen will appear.

(2) With the [▲] or [▼] **key**, select any of Parameter load, Parameter save, and **Long prog load**.

Popup Screen



File Select Screen



Question Popup Screen

4. On the **File select screen**, move the cursor to the corresponding file in the **File List** using the [▲] or [▼] **key**, and press the **<Select>** or **[ENTER] key**.
5. The **Load Question** popup screen will appear. Press the **<Yes>** or **[ENTER] key**, and the selected file will be loaded.

(5) Press the **<Select>** or **[ENTER] key**, and the Load Question popup screen will appear.

(4) With the [▲] or [▼] **key**, move the cursor to the corresponding file in the **File List**.

(6) Press the **<Yes>** or **[ENTER] key**, and the selected file will be loaded.

Note

For details, see Section 5.5 in the AQ2200-601 10Gbit/s BERT Module's Users Manual (IM810518801-01E).

Appendix

Appendix 1 Initial Setting Values

Setting Item	Initial Value	Remarks
Operation mode (“Mode”)	SONET	
Number of frames (“Frame”)	1	
PRBS fill pattern (“PRBS Fill Pattern”)	PRBS9	
Fill option (“Fill Option”)	Over Write	
Fill option Negative (“Fill Option Negative”)	OFF	
User fill quantity (“User Data Length”)	1	
User fill pattern (“User Pattern”)	0	
Scramble setting (“Scramble”)	ON	
Screen edit mode (“Edit Unit”)	OC-3 (STM-1)	
Frame No. (“Frame#”)	1	
Screen No. ("OC-n# / STMn#")	1	
TOH/SOH column (“column”)	1	
PayLoad column (“column”)	1	
Program data quantity (“Program Length”)	256	
Program data row (“row”)	1	
Search data length (“Data Length”)	1	
Search data (“Search Data”)	00	
Jump data No. (“Data No.”)	1	
Toolbar setting (“User Configure”)	Displays all the items.	