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SEGA OF AMERICA, INC.
Consumer Products Division

Wave Editor
User's Manual

Doc. #ST-99-R1-042594

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Wave Editor
User's Manual

1.0 Overview

The Wave Editor is the software which acquires wave data, then displays and edits them in AIFF and SD2 format using SCSP connected to SCSI I/F of Macintosh.
The Wave Editor has following functions:

- File operation
  Input/Output files, manage(such as save) and compare files and edit (such as mix) a file.
- Editing
  Edit (such as redo, cut and paste) files.
- Effect process
  Perform effect process on the current editing wave.
- SCSP process
  Input/Output sound for SCSP.
- TMP process
  Play the wave sound which is in the temporarily area, or revert it.
- Preference display
  Display SCSID.
- SCSI setting
  Perform SCSI process for Macintosh when wave data are input/output to/from Macintosh via SCSI from SCSP.
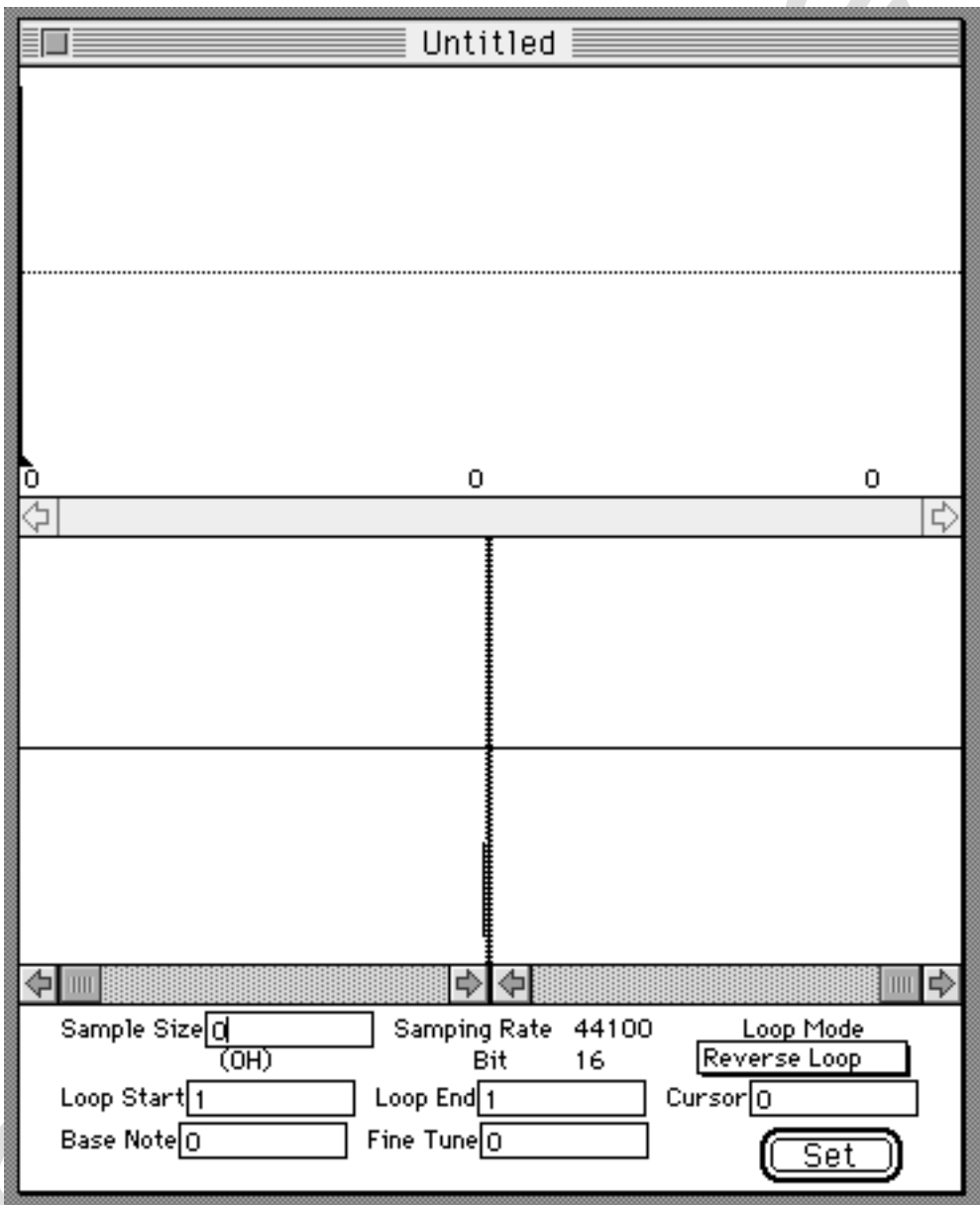
2.0 Description of Terminology

- AIFF file
  This Machintosh file includes loop information, Base Note and Fine tune information in addition to PCM data.
- Number of samples
  This is the number of words. For 8-bit, number of bytes; for 16-bit, half number of bytes is the number of samples.

3.0 Tutorial

A brief description on how to use this system is given here.

- Displaying the edit window
    1. Start the wave editor.
    Wave editor will first check which SCSP is loaded on, and if the board is installed on the Macintosh. It will exit if the board is not mounted.

    2. Select "New" in "File" menu.
    The edit window for wave editing is displayed.

```
┌─────────────────────────────────────────────┐
│ □   ════════ Untitled ════════               │
│                                              │
│                                              │
│                                              │
│ ············································· │
│                                              │
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│ ⇦ ░░░░░░░░░░░░░░░░░░░░░░░░░░░░░░░░░░░ ⇨      │
│                                              │
│                                              │
│ ⇦ ▒ ░░░░░░░░░░░░░ ⇨ ⇦ ░░░░░░░░░░░ ▒ ⇨       │
│                                              │
│ Sample Size 0         Samping Rate  44100    │
│         (OH)               Bit      16       │
│                                      Loop Mode │
│ Loop Start 1     Loop End 1    ┌──────────┐  │
│                                │Reverse Loop│ │
│ Base Note 0      Fine Tune 0   Cursor 0      │
│                                   ( Set )     │
└─────────────────────────────────────────────┘
```
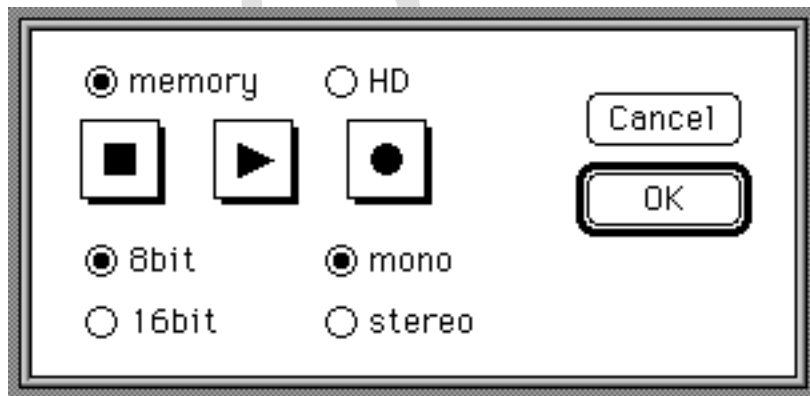
4

- Sound capture

There is not any wave to edit yet. Let's capture the sound from SCSP board.

1. Check that the source equipment is connected in front of digital-in of SCSP board.

2. Select **Option...** in SCSP menu.
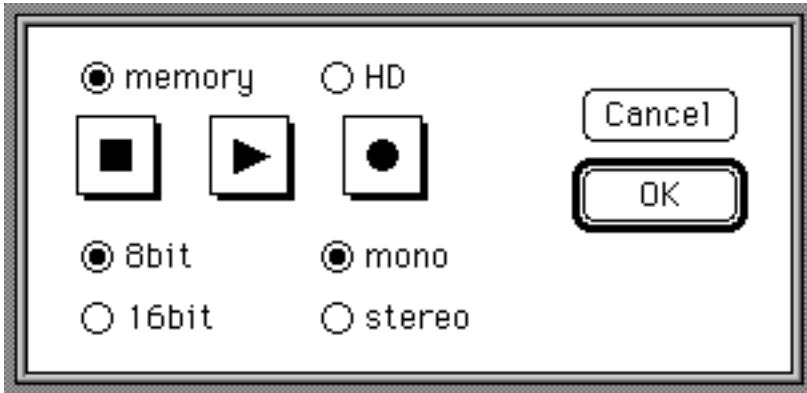   The screen for setting the input and output equipment is displayed.

3. Select SCSP.
   8-bit and 16-bit radio buttons are displayed.

4. Set output to either 8-bit or 16-bit.

5. Click on the **OK** button.
   System setting is done.

6. Select **Get Sound** in SCSP menu.
   The window to capture sound is displayed.

7. Select **Memory** since short sound will be used.
8. Press recording button (i.e. black round button) after selecting 8-bit/16-bit
   and mono/stereo. Sound begins to be recorded as soon as the button is
   pressed.   Recording will stop once the Stop button (Black square button) is
   pressed. If the **OK** button is clicked, it will return to wave edit window.
   At this time, the latest sound captured is displayed as a wave.

• Wave editing
   Next, add a loop to this wave. There are two bars displayed near the wave
   used for a loop. Move the bar by dragging it. While dragging, the points of
   loop, which are displayed as number at the bottom, should be changing.
   Furthermore, the wave, which is displayed near the central loop, should also
   be changing. Next, let's move the loop edit slider. While moving, the bar and
   numbers for wave edit loop should be changing.

   There are also other functions, such as cut and copy wave, filter, mix with
   other waves. Those functions will be described later.

4.0 Files to Use

The files used in Wave editor are as follows:

- Wave Edit data file
     This is the AIFF format created by the save process.
- Alchemy file
     This is the file created by Alchemy in AIFF format.
- Sound designer file
     This is the file created by sound designer in AIFF format.
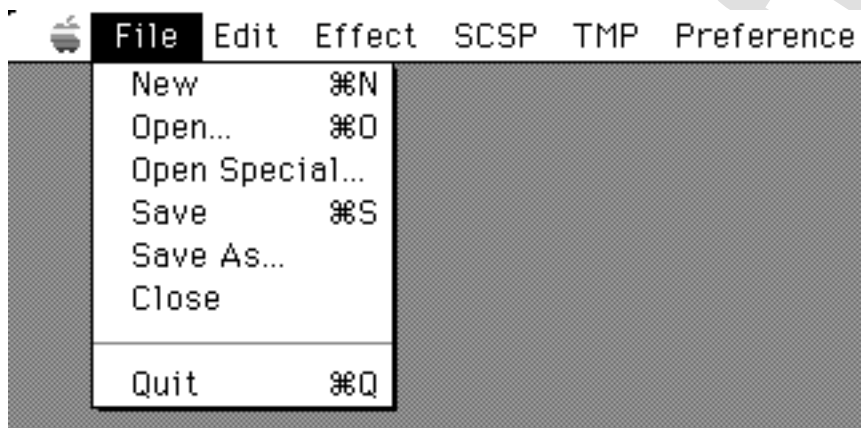
5.0 Overview of Function

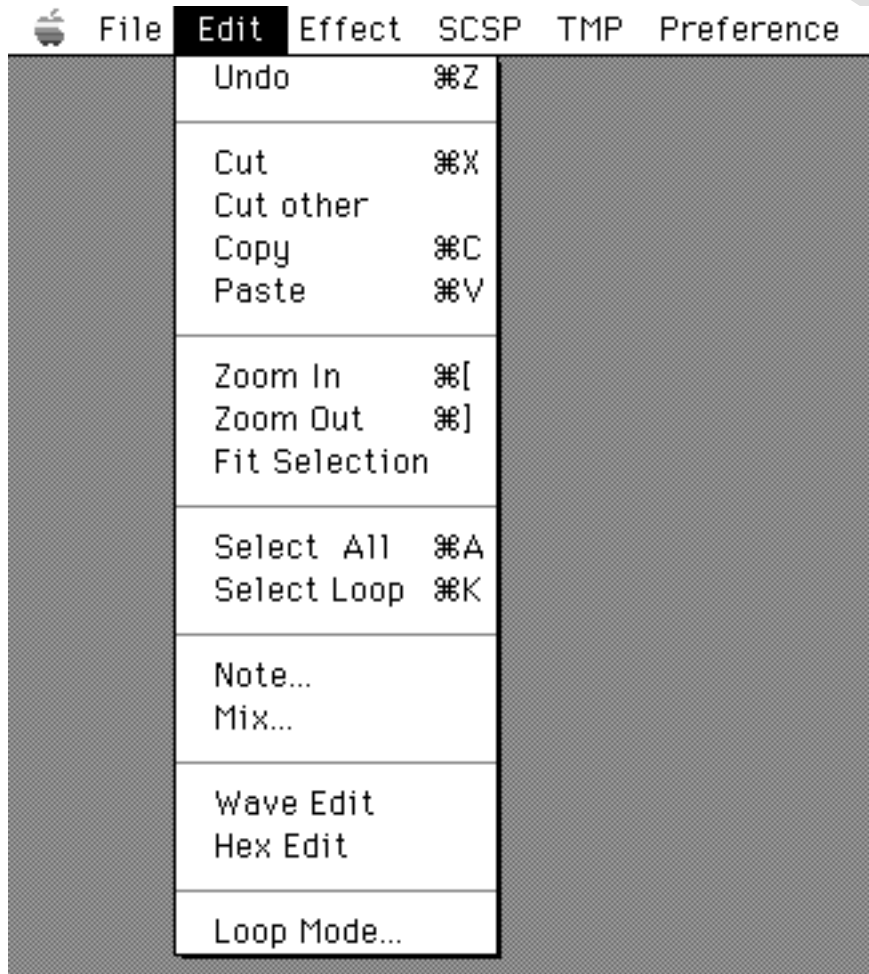Menu bar and pulldown menu in wave editor and control window are introduced here.

Menu Bar

```
   File  Edit  Effect  SCSP  TMP  Preference
```
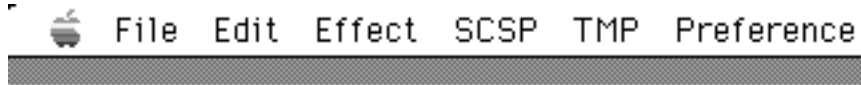
Pulldown Menu

- Apple menu
  This is the general Apple menu.

- File menu

```
   File  Edit  Effect  SCSP  TMP  Preference
   New            ⌘N
   Open...        ⌘O
   Open Special...
   Save           ⌘S
   Save As...
   Close

   Quit           ⌘Q
```

• Edit menu

• Effect menu

- SCSP menu

```
🍎  File   Edit   Effect   SCSP   TMP   Preference
                         ┌─────────────┐
                         │ Play Audio  │
                         │ Get Sound   │
                         │ Option...   │
                         └─────────────┘
```

- TMP menu

```
🍎   File   Edit   Effect   SCSP   TMP   Preference
                                 ┌──────────────┐
                                 │ Stock TMP1   │
                                 │ Stock TMP2   │
                                 │ Stock TMP3   │
                                 │ Stock TMP4   │
                                 ├──────────────┤
                                 │ Play TMP1    │
                                 │ Play TMP2    │
                                 │ Play TMP3    │
                                 │ Play TMP4    │
                                 ├──────────────┤
                                 │ RevertTMP1   │
                                 │ RevertTMP2   │
                                 │ RevertTMP3   │
                                 │ RevertTMP4   │
                                 └──────────────┘
```

- Preference menu

```
🍎   File   Edit   Effect   SCSP   TMP   Preference
                                       ┌─────────────┐
                                       │ SCSI info... │
                                       └─────────────┘
```
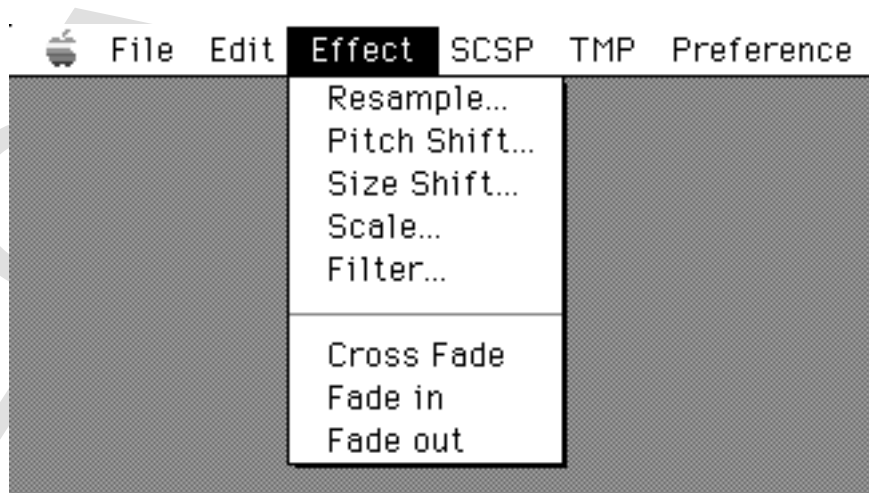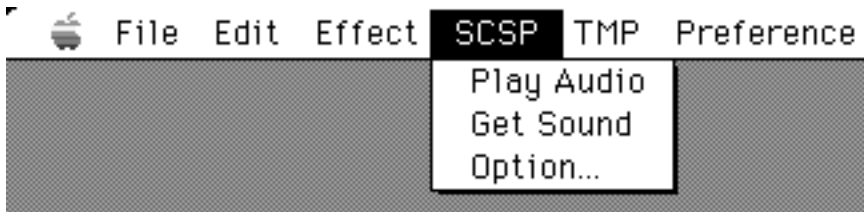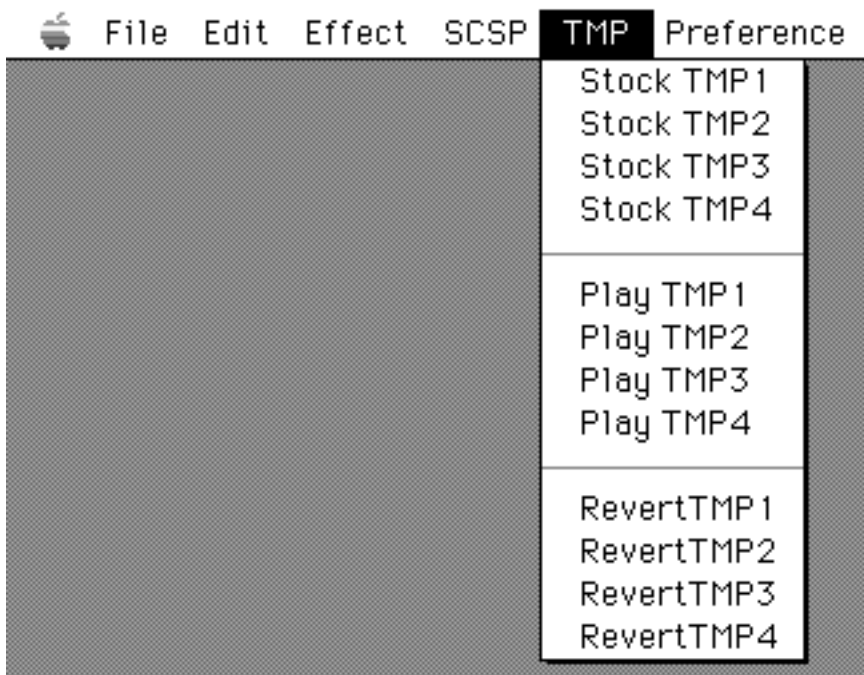
Control Window

The Control Window is displayed on screen at all times.
Clicking its icon is the same as selecting a menu. See page 39 for the functions of
each icons.

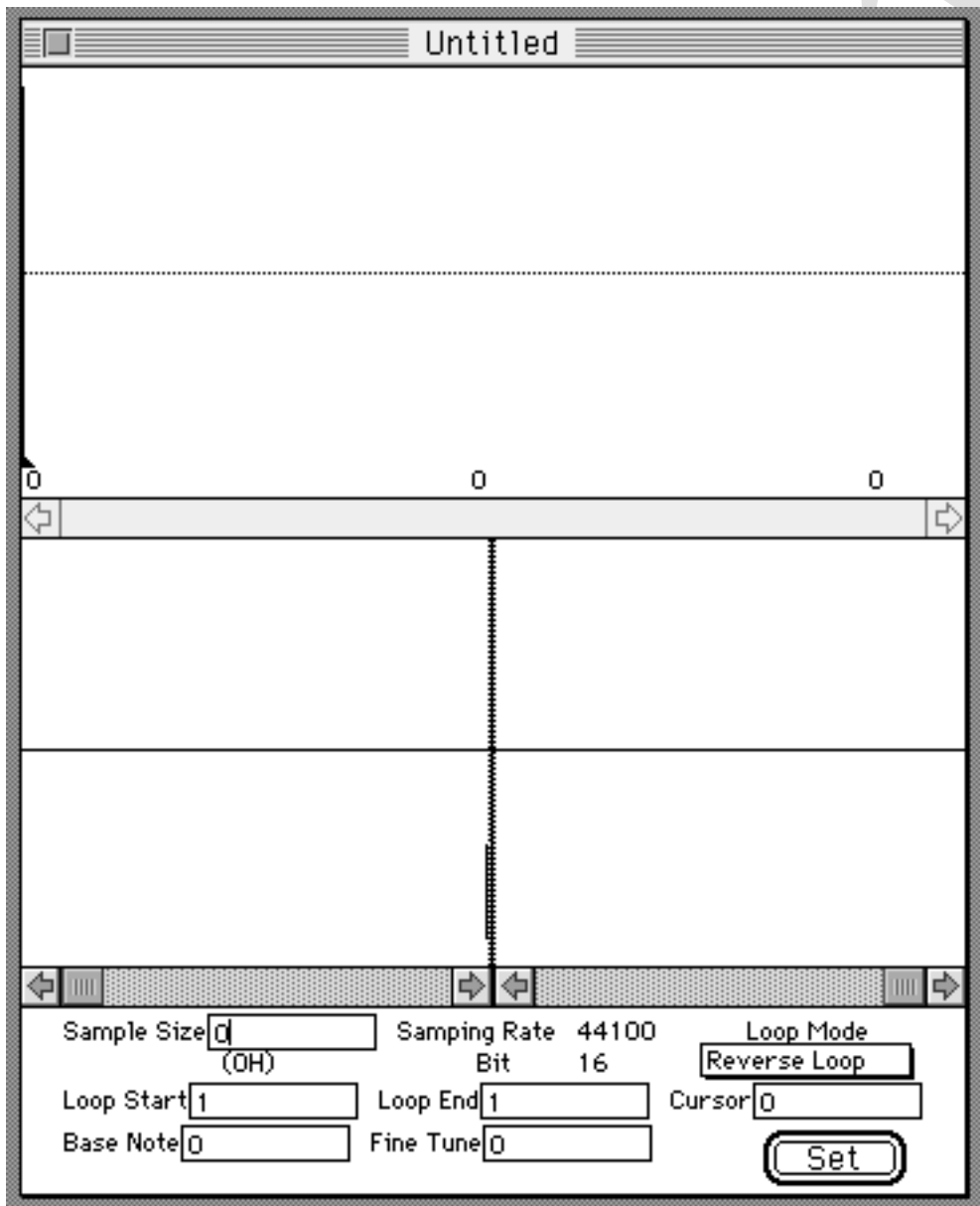| Zoom Out	Zoom In
Loop Z.Out	Loop Z.In
Fade in	Fade out
Cross Fade	Scale
Fit Sel	Play Audio
TMP1 Play	TMP2 Play
TMP3 Play	TMP4 Play

6.0 Details of Functions

Each menu item, and the function of each icon in the control window, is described here.

File Menu

• New

  When PCM data needs to be captured from SCSP, open an edit window where wave is not captured.

```
┌──────────────────────────────────────────────┐
│ ▣          ═════ Untitled ═════                │
├──────────────────────────────────────────────┤
│                                                │
│                                                │
│  ........................................      │
│                                                │
│  0              0              0               │
│ ◁ │████████████████████████████████│ ▷        │
│                                                │
│                                                │
│                                                │
│ ◁ ▌▐ ░░░░░░░░░░░ ▷ ◁ ░░░░░░░░░░ ▐▌ ▷           │
│                                                │
│  Sample Size 0        Samping Rate  44100      │
│        (0H)                 Bit      16        │
│                                    Loop Mode   │
│                                  │Reverse Loop│ │
│  Loop Start 1   Loop End 1    Cursor 0         │
│  Base Note 0    Fine Tune 0       ( Set )      │
└──────────────────────────────────────────────┘
```

Select **Get Sound** in SCSP menu to display the wave on screen. Data will be captured from SCSP if **Start** is clicked, and will be completed if **Stop** button is clicked. The wave will then be displayed on screen.
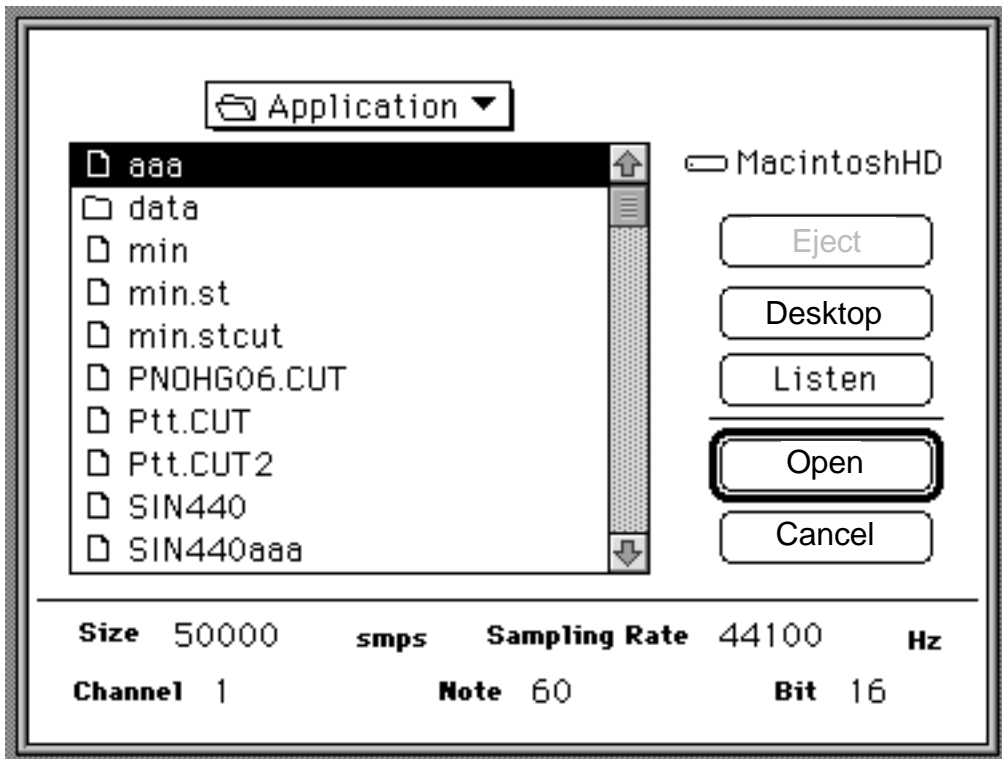
- Open

  Open the saved file. By selecting this item, the window that displays the saved files (AIFF files only) will be displayed. Select the target file. The edit window capturing this wave will be opened by selecting the file.
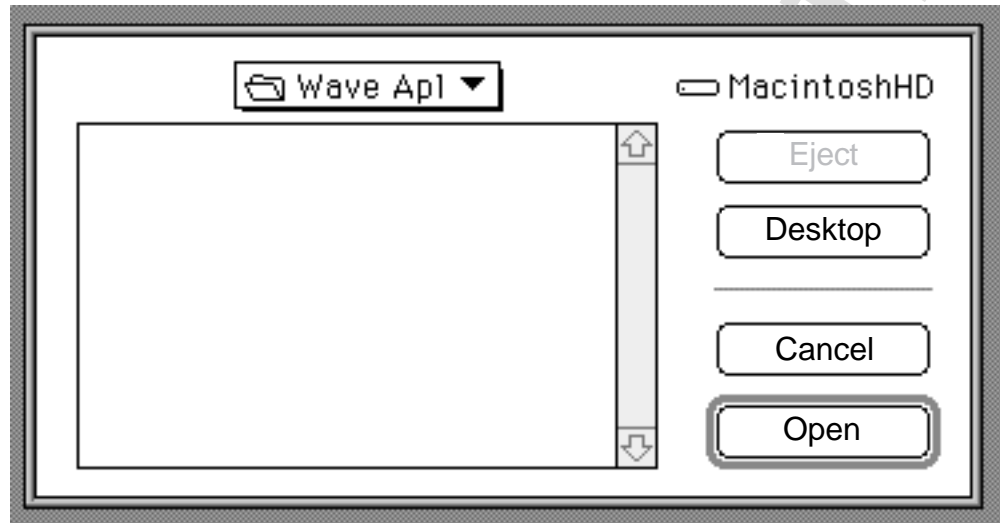
For stereo, L, R window is displayed.

• Open Special...
    Select the file to open from the current window. A sound is heard just before
    opening the saved file. Information about the file is also displayed.

```
┌─────────────────────────────────────────────┐
│    ┌─────────────────────┐                   │
│    │ 🗁 Application ▼    │                   │
│    ├──────────────────────┬─┐  ⊂⊃MacintoshHD │
│    │ 🗋 aaa            ⭡│ │                  │
│    │ 🗀 data           ▤│ │   ┌──────────┐   │
│    │ 🗋 min             │ │   │  Eject   │   │
│    │ 🗋 min.st          │ │   └──────────┘   │
│    │ 🗋 min.stcut       │ │   ┌──────────┐   │
│    │ 🗋 PNOHG06.CUT     │ │   │ Desktop  │   │
│    │ 🗋 Ptt.CUT         │ │   └──────────┘   │
│    │ 🗋 Ptt.CUT2        │ │   ┌──────────┐   │
│    │ 🗋 SIN440          │ │   │  Listen  │   │
│    │ 🗋 SIN440aaa     ⭣│ │   └──────────┘   │
│    └──────────────────────┴─┘   ┌──────────┐ │
│                                 │   Open   │ │
│                                 └──────────┘ │
│                                 ┌──────────┐ │
│                                 │  Cancel  │ │
│                                 └──────────┘ │
│  Size  50000    smps   Sampling Rate 44100 Hz│
│  Channel 1           Note 60          Bit 16 │
└─────────────────────────────────────────────┘
```

The parameters used in the "Open Special" window are as follows:

Listen
Listen to highlighted sound.

OK
Open selected file.

Size
Displays the sampling number of data.

Sampling rate
Displays sampling frequency.

Channel
Display snumber of channels.

Note
Displays the frequency with MIDI note number.

Bit
Displays the number of wave data bits.

14

• Save
  Saves current working file as SCSP data file. The following "Save" screen is
  displayed.
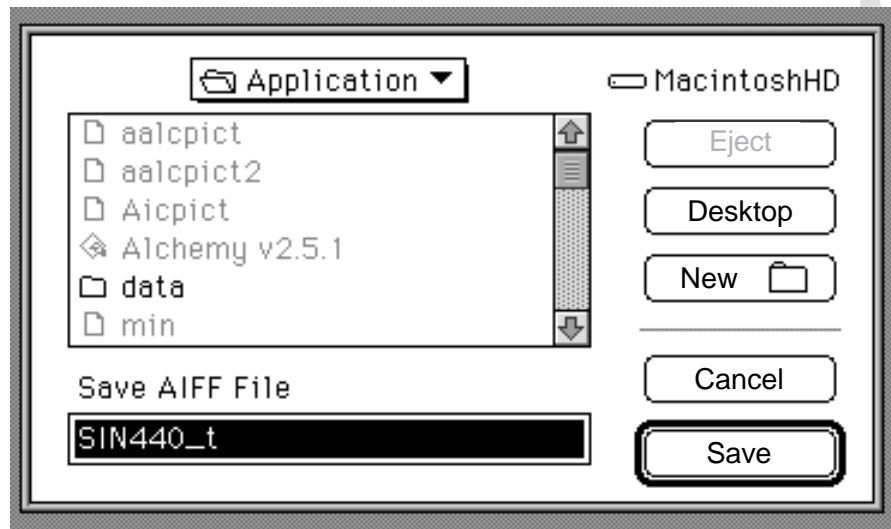
• Save As
  Saves current working file as SCSP data file with different file name.
  The following screen is displayed.
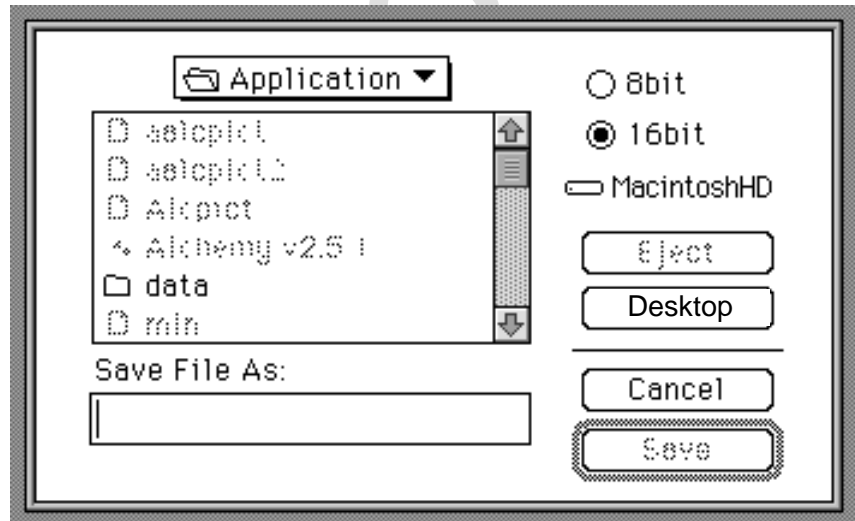
The parameters set in this window are as follows:

16-bit
Save in 16-bit Audio IFF format.

8-bit
Save in 8-bit Audio IFF format.
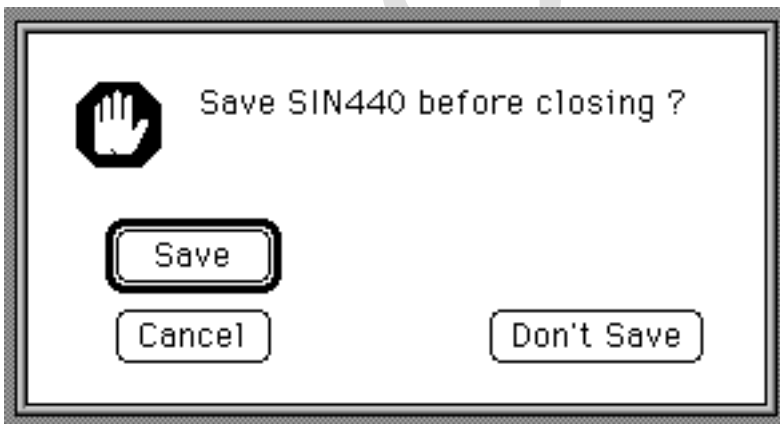
• Close
  Closes current working file.
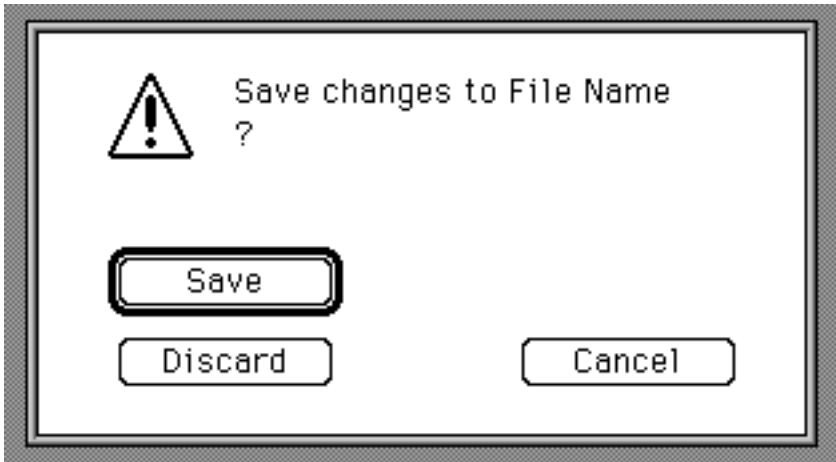
The buttons used in this window are as follows:

O K
Closes the window in its current state.

Save
Saves the file.

Cancel
Returns to Edit window. An alert window will appear if closing is attempted without saving changes.

The buttons used in Warning window are as follows:

Cancel
Cancels closing the window.

Don't Save
Closes the window without saving it.

Save

Close the window after saving.

• Quit

Quits wave editor and return to Finder.

Edit Menu

• Undo

Cancels the execution of the latest operation.

• Cut

The selection is cut and saved in the Clipboard. The following screen is displayed.

The parameters set in this window are as follows:

stuff

The space after cutting will be stuffed.

empty

The space after cutting will not be stuffed.

- Cut other
    The selected section is cut, but not saved in Clipboard.
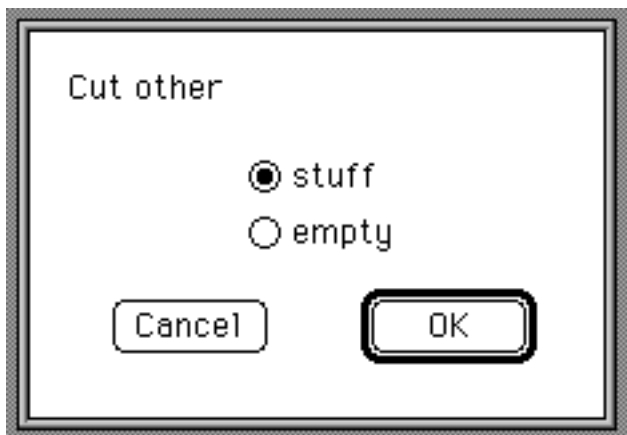
```
Cut other

        ◉ stuff
        ○ empty

   [ Cancel ]      [  OK  ]
```

The parameters set in this window are as follows:

stuff
The space after cutting will be stuffed.

empty
The space after cutting will not be stuffed.

- Copy
    The selected section is copied, and saved in the Clipboard.

- Paste
  The image on Clipboard is pasted on current image.
  The following window will be displayed:

```
Paste...

        ○ insert
        ◉ overwrite

  [ Cancel ]      [   OK   ]
```

The parameters set in this window are as follows:

insert
Data is inserted on cursor.

overwrite
Data is overwritten on cursor.

- Zoom In
  Increases the displaying ratio of wave.
  It can be expanded to maximum 32768 multiples.

- Zoom Out
  Decreases the displaying ratio of wave.
  The minimum size is the one displayed when it is opened.

- Fit Selection
  Zooms in the selected section.

- Select All
  Selects the entire wave currently in the Edit window.

- Select Loop
  Only the loop portion of the wave in Edit window is selected.

• Note

Set Note and Fine Tune. The following window is displayed.
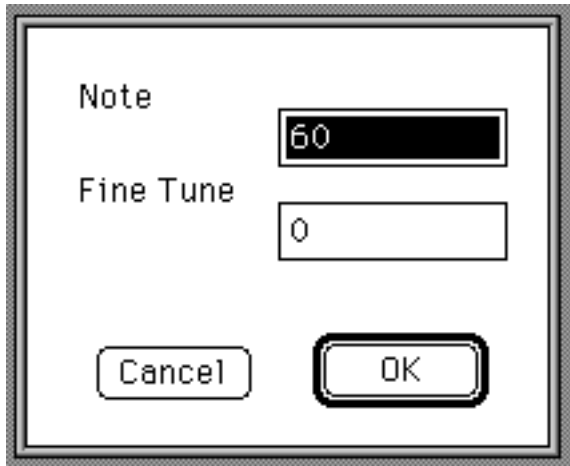
The parameters set in this window are as follows:

Note

Sets Note. Values of 0~127 can be set.

Fine Tune

Sets Fine Tune. Values of 0~127 can be set.

- Mix

  Mixes the wave in Clipboard with selected part of current editing wave data. The following screen is displayed when "Mix" is selected.

```
Mix...

  [ 100 ] %

  (Cancel)    [  OK  ]
```
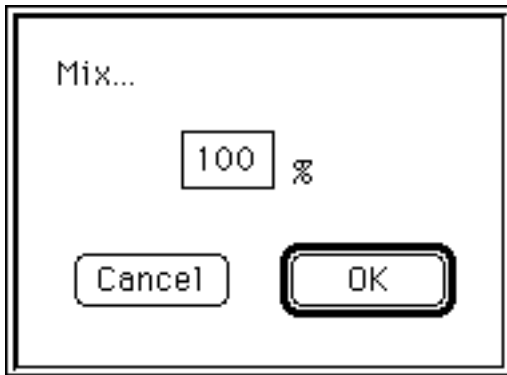
The parameters set in this window are as follows:

Mix

For the currently active wave, input the percentage of the mixed file which is currently selected. Values of 1~100 can be set.

O K

Converts the temporary data to mixed data.

- Wave Edit
   Turns the Edit window into the wave display screen.
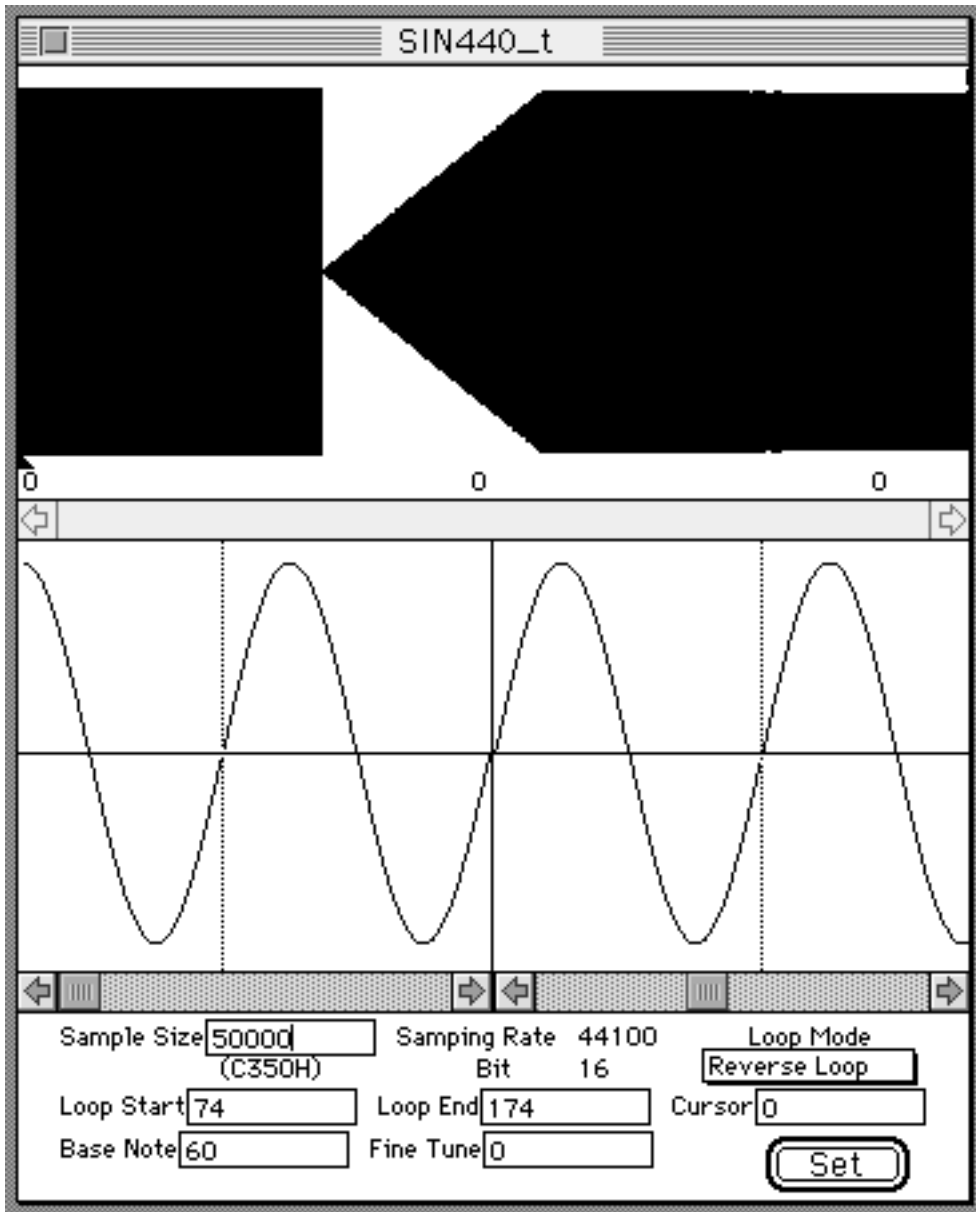
There are three sections in wave display screen. The top is Wave Edit screen, the middle is Loop Edit screen, and the bottom is header display screen. These screens are described on the next page.

Wave Edit Screen

If there is still enough memory, this window can be opened repeatedly once **Open** is selected. Wave data opened will be displayed in this window when wave data from SCSP is displayed in "New" screen.

- The start and end point of a Loop is set in the screen by moving mouse cursor.
- The selected range can be displayed as highlighted by dragging the wave. When moving out of selected range, the displayed section will scroll itself.
- Clicking in the zoom box will expand the display of a window (and its contents).
- If you drag size box to expand, display of window and wave, they will be expanded in mouse moving direction. If you drag size box to reduce, only window will reduces its size while the display size of wave will not change in horizontal direction, and both display size of wave and window will reduce in vertical direction.
- When moving a loop point, the Loop Edit and header display screens will change.

Loop Edit Screen

- Left point is endpoint of loop while right point is start point of loop.
- If you move loop point, Loop Edit screen and header display screen will change.

Header Display Screen

Each item in Header display screen is described below.

Sample Size
Sets the sampling number of data.

Sampling rate
Displays sampling frequency.

Loop Mode
Determines loop mode when sound is played on SCSP or Macintosh.

Forward Loop
Plays in normal direction.

Reverse Loop
Reads the wave data from reverse direction to play.

Alternate Loop
Reads the loop in normal or reverse directions alternatively.
This is effective only when SCSP is selected in "Option". When Macintosh is selected, play is always Forward Loop even when Alternate Loop is selected.

Loop off
Loop is not run.

Bit
Displays the bit number of wave data.

Loop Start
Displays and sets the start point of loop.

Loop End
Displays and sets the endpoint of loop.

Cursor
Displays and sets cursor location.

Base Note
Sets Note. Values of 0~127 can be set.

Fine Tune
Sets Fine Tune. Values of 0~127 can be set.

Set
Reflects the header to wave display.

- Hex Edit
  Sets Edit window to Hex decimal display screen.

```
┌─────────────────────────────────────────────────────────┐
│ ▢▤▤▤▤▤▤▤▤▤▤▤▤▤    SIN440_t    ▤▤▤▤▤▤▤▤▤▤▤▤▤ ▣ │
├───────┬─────────────────────────────────────────────────┤
│Address│+0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +A +B +C +D +E +F  │
├───────┼─────────────────────────────────────────────────┤
│000000 │46 4F 52 4D 00 01 88 2A 41 49 46 46 43 4F 4D 4D │⬆
│000010 │00 00 00 12 00 01 00 00 C3 50 00 10 40 0E AC 44 │
│000020 │00 00 00 00 00 00 4D 41 52 4B 00 00 00 22 00 02 │
│000030 │00 01 00 00 00 4A 08 62 65 67 20 6C 6F 6F 70 00 │
│000040 │00 02 00 00 00 AE 08 65 6E 64 20 6C 6F 6F 70 00 │
│000050 │49 4E 53 54 00 00 00 14 3C 00 24 60 01 7F 00 00 │
│000060 │00 01 00 01 00 02 00 00 00 00 00 00 41 50 50 4C │
│000070 │00 00 01 0E 41 4C 43 48 45 4E 56 53 00 01 00 00 │
│000080 │00 00 00 00 00 00 00 00 00 01 01 00 00 00 00 00 │
│000090 │00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 │
│0000A0 │00 00 00 00 00 00 00 00 00 80 00 00 00 00 00 00 │
│0000B0 │00 00 00 16 00 00 87 05 00 00 87 05 00 00 00 00 │
│0000C0 │00 9B 01 8A 00 00 C4 2C 00 00 00 00 00 00 00 00 │
│0000D0 │00 00 00 00 00 00 00 00 00 01 00 00 01 44 00 00 │
│0000E0 │00 00 00 00 00 00 00 00 00 00 00 00 00 01 00 00 │
│0000F0 │01 44 00 00 00 00 00 00 00 00 00 00 00 00 00 00 │⬇
├───────┴─────────────────────────────┬────────────┬──────┤
│ Hex Edit                            │  0x18832   │  ▣  │
└─────────────────────────────────────┴────────────┴──────┘
```

The functions used in this window are as follows.

Cursor
- The data in currently selected cursor is displayed in reverse.
- Scrolls automatically when mouse is dragged towards outside of list display area.

Keyboard
For data in the cursor, values of 0~9 and A~F can be input.

Display
Data of Loop Start address and Loop End address are displayed in bold.

Scroll bar
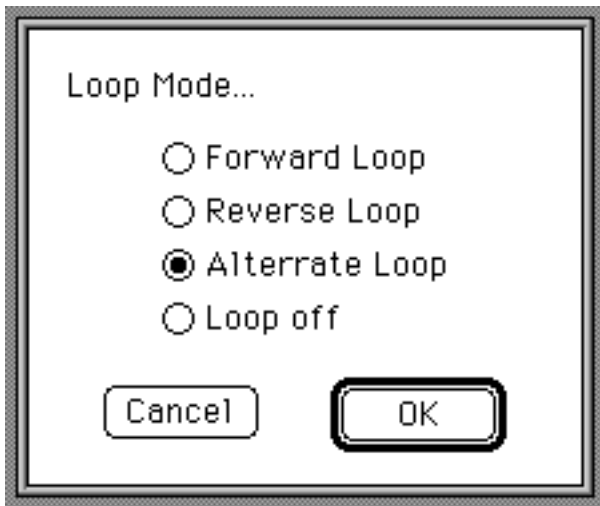Works the same way as the regular scroll bar.

Used RAM
Displays wave size in hex decimal number.

Window
- File name is displayed in Title bar.
- Size box and scroll bar are the same as described in standard specification.

- Loop Mode

    Determines loop mode when sound is played on SCSP or Macintosh. The
    following screen is displayed.

The parameters set in this window are as follows:

Forward Loop
Plays normally.

Reverse Loop
Reads the wave data from reverse direction to play.

Alternate Loop
Reads the loop in normally or reversed alternatively.
This is effective only when SCSP is selected by "Option". When Macintosh is se-
lected, play is always Forward Loop even if Alternate Loop is selected.

Loop off
Loop is not run.

OK
Changes the loop mode of SCSP or temporary memory to specified mode.

Effect Menu

Each item in Effect menu is described here.

- Resample
  Resampling the current editing wave. The following window is diplayed:

```
Resample...

  Now
          44100     Hz

  New
       |0          Hz

  ( Cancel )      [ OK ]
```
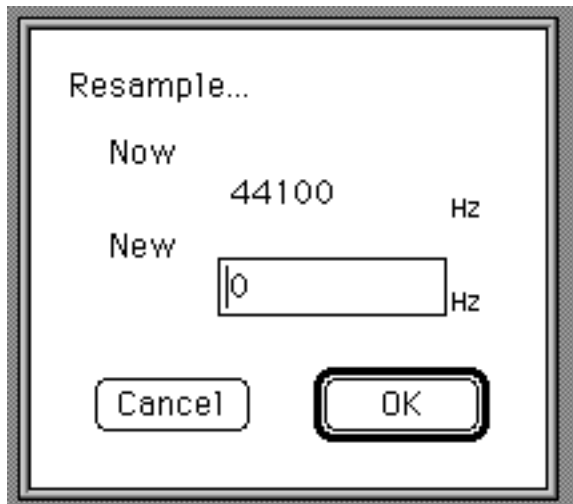
The parameters set in this window are as follows.

Now
Displays the current sampling frequency.

New
Sets new sampling frequency. Values of 1~65535 can be set.

OK
Re-writes data of temporary memory in AIFF file.

• Pitch Shift
  Run "Pitch Shift" on current editing wave. The following window is displayed.

```
Pitch Shift...

  Now
        60

  New
      [60        ]


  (Cancel)    [  OK  ]
```

The parameters set in this window are as follows.

Now
Displays current frequency (MIDI code).

New
Sets new frequency (MIDI code). Values of 0~127 can be set.

OK
Re-writes data of temporary memory in AIFF file.

• Size Shift
    Re-sizes the sample of current editing wave. The following window is displayed.

The parameters set in this window are as follows.

Now
Displays the current sample size.

New
Sets new sample size. Values of 0~4294967295 can be set.

OK
Re-writes data of temporary memory in AIFF file.

- Scale

    Re-scales the amplitude of currently editing wave. The following window is displayed.

```
Scale...

    [100] %

( Cancel )   [  OK  ]
```
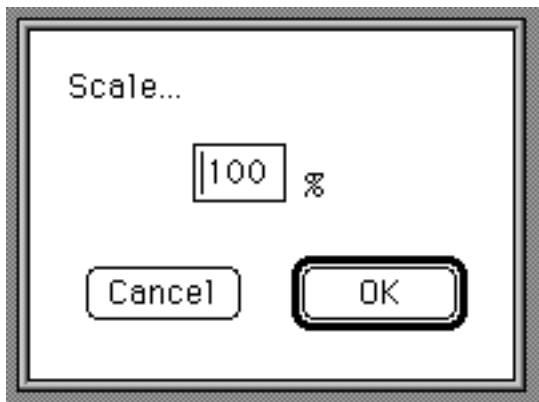
The parameters set in this window are as follows:

Rate
Inputs the percentage for scaling. Values of 1~200 can be set.

O K
Re-writes data of temporary memory in AIFF file.

30

- Filter

    Runs filter on current editing wave. The following window is displayed.
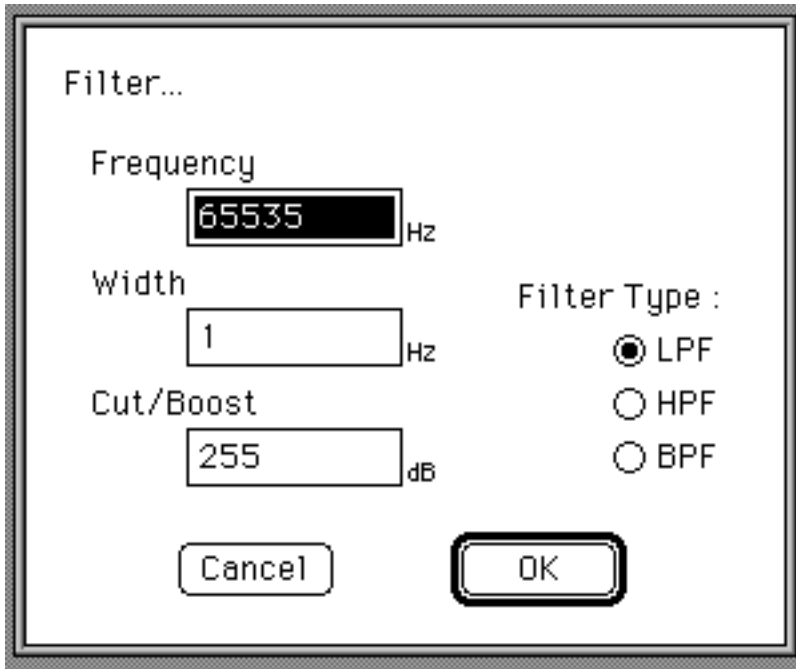
The parameters set in this window are as follows.

Frequency
Input Hz number to determine lowest frequency to be cut.
Values of 1~65535 can be set.

Width
Input in Hz the frequency below which other frequencies must be cut.
Values of 1~65535 can be set. This is effective only when the Filter Type is BPF.
Others will be displayed in gray.

Cut/Boost
Input dB number to determine which frequency band to cut. Values of 1~255 can be set.

Filter Type
Select filter to set in the LPF, HPF or BPF radio button.

- Comp
  Runs compressor on current editing wave.

- Noise Gate
  Runs Noise Gate on current editing wave.

- Cross Fade
  Runs Cross-fade on selected wave with the wave in Clipboard.
  At the same time, re-writes the data of temporary memory in AIFF file.

- Fade in
  Runs Fade in on current selected section of wave. At the same time, re-write
  the data of temporary memory in AIFF file.

- Fade out
  Runs Fade out on current selected section of wave. At the same time, re-write
  the data of temporary memory in AIFF file.

SCSP Menu

• Play Audio

When the wave range is specified for output destination selected in "Option", sound is played for specified portion of the wave. When the wave range is not specified, sound is played for the whole wave.   The following window is displayed when this item is selected.
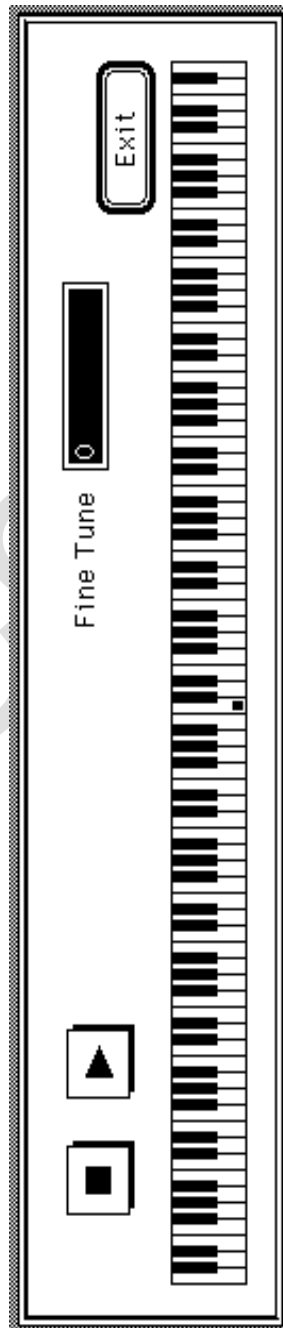
The icons used and the parameters set in this windows are as follows:

Stop
Stops playing.

Play
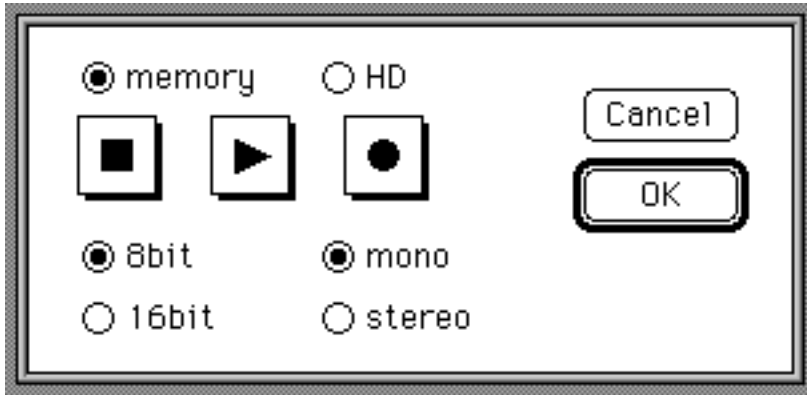Starts playing.

Fine Tune
Sets Fine Tune. Values of 0~127 can be set.

Keyboard
The sample note can be played by clicking the keyboard.

- Get Sound
  Captures sound from the SCSP, and displays a wave on the currently active Edit window.

The parameters set in this window are as follows.

Stop
Stops playing and recording.

Play
Sounds SCSP.

Rec
Starts recording.

Memory
Sets to memory recording mode.

HD
Sets to hard disk recording mode.

8-bit
Captures via 8-bit PCM data.

16-bit
Captures via 16-bit PCM data.

Mono
Input/Outputs in mono mode.

Stereo
Input/Outputs in stereo mode.

• Option
  Sets output destination of Play Audio and bit numbers of output. Menu can be
  selected even if file is not yet opened. The following window is displayed.

```
Option...

   ○ SCSP
   ◉ Macintosh      ○ 8bit
                    ◉ 16bit

   [ Cancel ]      [  OK  ]
```

The parameters set in this window are as follows.

Audio Output
Selects output destination of Play Audio, and Macintosh or SCSP by radio button.

Output Bit
Selects bit numbers of output. This is effective only when SCSP is selected by Audio
Output. Select 8-bit or 16-bit by radio button.
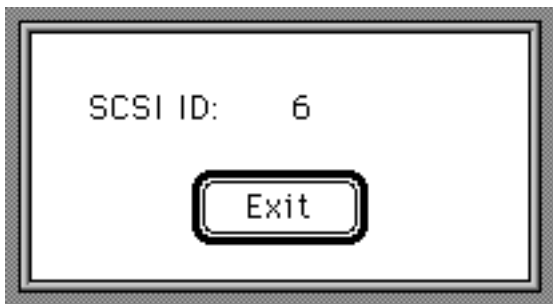
TMP Menu

- Stock TMP
  Creates a temporary file for the wave which is currently active.

- Play TMP
  Plays sound for temporary file. Becomes Enable status only when temporary file is created.

- Revert TMP
  Reverts data saved in TMP in current active window.

Preference Menu

- SCSI info
  Displays current SCSI ID.

```
SCSI ID:    6

       [ Exit ]
```

Control Window

Each icon in the Control window is described here.

- Loop Zoom Out
  Reduces Loop Edit screen.

- Loop Zoom In
  Expands Loop Edit screen.

- Fit Selection
  Zooms in on selection.

- Other icons
  Other icons works the same way as when menu bar is selected.

7.0   Error Process

If there are any errors, the operation will be stopped and error dialog box displayed.
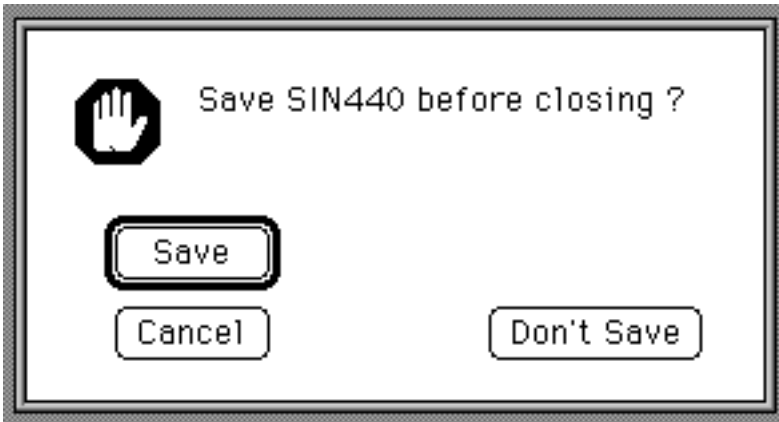
Description of communication errors with SCSP and other application errors will be displayed in this dialog box.