YAMAHA Wave Editor TWE

Version 2.31 for Windows

Owner's manual

The TWE wave editor (hereafter referred to as TWE) is software for digitally recording sounds (instrumental sounds, sound effects, voice, etc.) to the hard disk of a personal computer, and for editing recorded sound data. If an external Yamaha sampler (*) is connected via a SCSI connection, the sound data recorded in the sampler can be loaded into TWE and edited, and then re-transmitted back to the sampler.*This software supports the Yamaha A3000 professional sampler and the EX7, EX5, and EX5R synthesizers. It also supports the Yamaha CBX-D5/D3 digital recording processors. Under Win9.x/ME only with suitable ASPI control.

TWE was created by Yamaha Corporation, and is distributed at no cost. Yamaha Corporation makes no guarantees, implicit or explicit, regarding the quality or performance of this software. Yamaha Corporation will accept no responsibility for any damages, direct or consequential (including extended damages), which may result from use of this software. You must make backups of data files you create.

In order to use this software, you will need to be familiar with the connected device (CBX-D5/D3,

A3000, EX7, EX5, EX5R), with PC-compatible computers, and with Windows95/98/ME (If used with Yamaha hardware for ASPI control) . Before using this software, please carefully read this manual and the manuals for your connected device, PC compatible computer, and Windows

***By using this software, it is possible to create sound data which could not be produced by normal recording. However, be aware that playing back high volume full-scale data, or data of extremely low frequencies below 20 Hertz, or data with a large direct current component may damage your ears and/or any speakers or headphones that are connected.**

Please use caution.

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- The screen displays as illustrated in this owner's manual are for instructional purposes, and may appear somewhat different from the screens which appear on your computer.

Contents

1. Operating environment

Computer	PC compatible
CPU	Pentium/75MHz or better (100MHz or better is recommended)
OS	Windows95
Memory	16MB or more
Hard disk	Average access time 30ms or less
SCSI board	Compatible with Windows95 ASPI Manager (only when using the CBX-D5/D3, A3000, EX7, EX5, or EX5R)

Record/playback system

CBX-D5/D3

Playback	Sample size : 8bit/16bit
	Sample rate : 11.025k-48k
	Mono/Stereo
Recording	Sample size : 16bit
	Sample rate : 22.05k/32k/44.1k/48k
	Mono/Stereo

*In order to use the CBX-D5/D3 with Windows95, the internal ROM of the CBX-D5/D3 must be updated to support Windows95. A CBX-D5/D3 with an earlier internal ROM will not be recognized by Windows95, and thus will be unable to use TWE. (In this case, nothing will be shown in the "4.2. Device information display" described below.) The following ROM versions support Windows95.

CBX-D5 209A or later
CBX-D3 002B or later (without firmware)

For updating your CBX-D5/D3 to a ROM version which supports Windows95, contact your nearest YAMAHA or the authorized distributor.

*Even if you do not have a CBX-D5/D3, you can still use TWE with just the sound card of your computer.

Windows Sound System	Performance such as sampling frequency etc. will depend on the sound card that is installed

Device for receiving/transmitting sound data

A3000, EX7, EX5, EX5R	Via SCSI (SCSI Interface Board option ASIB1 is required)

*TWE can also be used without the A3000, EX7, EX5, or EX5R .

*When Windows95 is started up for the first time with the CBX-D5/D3, A3000, EX7, EX5, or EX5R connected via SCSI, Windows 95 will detect these devices as "unknown devices." TWE does not require drivers for the CBX-D5/D3, A3000, EX7, EX5, and EX5R, so when the driver select dialog box appears, select "Do not install drivers."

2. Installing and starting TWE

TWE can be used without any particular installation procedure, simply by placing the following three files in the same folder, and double-clicking the Twe.exe file icon.

Twe.exe
aspiCtr.dll
CBXFirm.dll

When TWE is started up, the application window will open, and various menus and toolbar will appear. Next, a "Select Working Dir..." dialog box will appear. Here you can specify the directory in which TWE will create its temporary working files. (The working directory that you specify here can be changed using the [Option] menu command [Select Working Dir...]. Refer to "9.4. Select Working Dir...".)

After specifying the working directory, use the [File] menu command [Open] etc. to open a sound data file (sound file), and the Wave Window (TWE's main window which displays various settings of the sound file) will appear. The following chapters explain the various parts of TWE's windows.

3. Toolbar

3.1. Console

The Console is a toolbar where sound data can be played back and recorded, etc.

Rewind: Moves the playback start location (Play Location) to the beginning of the sound data. If a region has been selected in the waveform display area, and the selected region has not been locked, clicking this button will defeat the region selection.

Stop: Stops playback/recording.

Play: Begins playback from the playback start location. If a region has been selected in the waveform display, and that region has not been locked, clicking this button will defeat the region selection. Even if the playback start location has been specified for only one channel of stereo sound data, both channels will be played back.

Record: Begins recording from the playback start location. If a region has been selected in the waveform display, and that region has not been locked, clicking this button will defeat the region selection. Even if only one channel of stereo sound data has been selected, both channels will be recorded.

* Sound data can be converted between stereo/mono using the [File] menu commands [Add Channel] or [Delete Channel].

Region Play: If a region is selected in the waveform display area, only that region will play back.

*The TWE window contains two waveform displays. In this manual, the upper display (blue waveform) is referred to as the "waveform display." The lower display (red waveform) is referred to as the "overall waveform display." The waveform display can be made to show a magnified portion of the overall waveform display. For details on the waveform display, refer to "4.7. Waveform display," and on the overall waveform display refer to "4.8. Overall waveform display."

Loop Mode: Turn looping on/off. When this is on, and if a loop region has been specified following the playback start location, clicking the Play button  will play back the loop portion of the waveform. The on/off status is saved in the sound file, and will be transmitted together with the sound data to the A3000 or EX.

Saving the loop start and end points

When you are editing WAVE format (.WAV) sound data, the loop start and end points can be saved in the sound file only when the Loop Mode is turned on.
When you are editing AIFF format sound data, the specified loop start and end points will be saved in the sound file regardless of whether the Loop Mode is on/off. However if the original AIFF file has never before been saved with the Loop Mode on, the loop start and end points may not be saved.

Recording Monitor: Turn the recording monitor on/off. When this is on, the input to the CBX-D5/D3 will always be output from the CBX-D5/D3. When this is off, it will be output only during recording.

3.2. Standard

Standard is a tool bar which collects commands that are frequently used during editing, such as opening or saving a file.

New: Creates a new file (empty sound file). This is the same command as the [File] menu command [New].

Open: Opens an existing sound file (WAV or AIFF file). This is the same command as the [File] menu command [Open].

*Sound files from a floppy disk or removable disk must first be copied to the hard disk before they are opened.

Save: Saves sound data that was edited using TWE by overwriting it onto the original sound file. This is the same command as the [File] menu command [Save].

* It is not possible to save to a floppy disk or a removable disk.

Cut: If a region is selected in the waveform display, that region will be cut and copied to TWE's clipboard. This is the same command as the [Edit] menu command [Cut].

Copy: If a region is selected in the waveform display, that region will be copied to TWE's clipboard. This is the same command as the [Edit] menu command [Copy].

Paste: The waveform which had been copied to TWE's clipboard will be pasted starting at the specified location (the green line displayed when you click) of the waveform display. This is the same command as the [Edit] menu command [Paste].

About: This displays information about the software version of TWE.

3.3. View

The View toolbar lets you specify how the waveform will be displayed.

Overview: Specify whether or not the overall waveform will be displayed.

Waveform: Specify whether or not the waveform will be displayed in the waveform display area.

*This does not erase the waveform data.

Level Ruler: Specify whether or not the amplitude (vertical) axis will be displayed at the left of the waveform display.

4. Wave Window

The Wave Window is TWE's main window, in which various settings of the sound file are shown. A Wave Window will open when you execute one of the [File] menu commands [Open], [New], or [Import Sampler]. Up to twenty of these windows can be open at once.

4.1. File information display (File Info)

This display section is located at the left of the waveform display, and displays various information.
The following information is displayed for the sound file currently opened by TWE. If the device information display (Device) is open, click the File Info tab.

File type:	Displays the file type (WAV or AIFF).
Rate:	Displays the sampling frequency of the sound file in Hertz (Hz).
Size:	Displays the sample size of the sound file in bits.
Channels:	Displays the number of channels within the sound file. Stereo will be displayed as 2 channels, and monaural as 1 channel.
Samples:	Displays the total number of samples in the sound file.

Length: Displays the total playback time of the file (hours:minutes:seconds.milliseconds).
Data size: Displays the size (number of bytes) of the sound file.
Modified: Displays the last time the file was modified (year.month.day).
Max ch1: Displays the maximum data value of the channel 1 in decibels (dB).
Min ch1: Displays the minimum data value of the channel 1 in decibels (dB).
Ave ch1: Displays the average data value of the channel 1 in decibels (dB).

*The items listed above are for the case of a monaural sound file (consists of a single channel). In the case of a stereo file, Max ch2/Min ch2/Ave ch2 will be added.

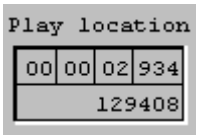
The "Editing:" field located above the file information display shows whether the currently edited sound file is an original or a copy. For details on original/copy, refer to "9.5. File Backup."

4.2. Device information display (Device)

This display section is located at the left of the waveform display.
The following information on the audio input/output device is displayed. If the file information is displayed (File Info), click the Device tab.

In:, Out: If a CBX-D5/D3 is connected, you can specify the CBX-D5/D3's recording channel and playback channel.
Vol: Specifies the volume for playback. In the case of stereo sound data, it is not possible to set the volume of the channels independently.
Working Volume: Indicates the disk where the currently selected working directory is located.
*The working directory can be changed using the [Option] menu command [Select Working Dir.].
Input Audio Device: Indicates the currently selected audio input device.
Output Audio Device: Indicates the currently selected audio output device.
*The audio input/output devices can be selected using the [Option] menu commands [Windows Sound Device Configuration].

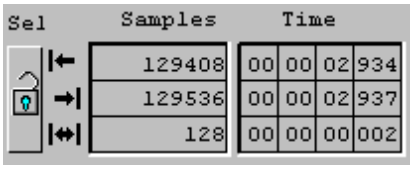
4.3. Playback start location display (Play Location)



This numerically indicates the location at which playback will begin. The upper line shows the time location (hours/minutes/seconds/milliseconds), and the lower line shows the number of samples up to that point.
You can click on one of these values and type in the numerical value from the keyboard of your computer. Numerical values can be input either for the upper (time) or lower (sample) fields. Changing one will cause the other to be calculated and set automatically.

If you click the mouse on the waveform display area, the location at which you clicked (or if you dragged the mouse, the starting location) will be specified as the playback start location.
While sound data is being played back or recorded, the current location is displayed in realtime.

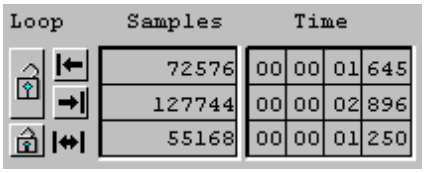
4.4. Selected region display (Sel)



This numerically indicates the region that has been selected in the waveform display. (The selected region is displayed on a black background with a highlighted waveform.) The start, end, and length of the region are displayed as a number of samples (Samples) and as hours/minutes/seconds/milliseconds (Time).
You can click on one of these values and type in the numerical value from the keyboard of your computer. Numerical values can be input either for Samples or Time fields. Changing one will cause the other to be calculated and set automatically.
You can also specify the selected region by dragging to left or right in the waveform display area.

If the region lock button  is pressed, these values cannot be changed. In this case, you can change the playback start location (Play Location) without affecting the selected region.

4.5. Loop region display (Loop)

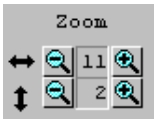


This numerically indicates the loop region. The start, end, and length of the loop region are displayed as a number of samples (Samples) and as hours/minutes/seconds/milliseconds (Time).
You can click on one of these values and type in the numerical value from the keyboard of your computer. Numerical values can be input either for Samples or Time fields. Changing one will cause the other to be calculated and set automatically.
By using the left mouse button to click or drag over the time axis located above the waveform display, you can modify the loop start point. By using the right mouse button to click or drag, you can modify the loop end point.

During playback, you can use the loop start setting and loop end setting buttons  to set the loop start or end point at the current playback location.

If the loop region lock button  has been pressed, it will not be possible to modify the various loop region values.
If the loop length lock button  has been pressed, changing either the loop start point or loop end point will automatically modify the other point so as to preserve the length of the loop region.

4.6. Display resolution (Zoom)



This numerically indicates the resolution of the time axis (horizontal) and amplitude axis (vertical) at which the waveform is displayed in the waveform display area.
When you click one of the zoom values, a popup menu will appear, allowing you to select a value. Alternatively, you can click the magnifying glass buttons to modify the values.

*When the resolution of the time axis (horizontal) is 11 or higher, the waveform in the waveform display will be shown in dark blue, and the waveform display will not scroll even if Scroll During Playback mode is selected. Also, when the resolution of the time axis is 10 or lower, the waveform in the waveform display will be shown in light blue, and if Scroll During Playback is selected, the waveform display will scroll during playback.

* For details on Scroll During Playback mode, refer to "8.10. Scroll During Playback."

4.7. Waveform display (Waveform)

This area shows a magnified portion of the currently opened sound file.
You can use the horizontal and vertical scroll bars to move the displayed portion.
If you click on any desired location of the waveform display, a green line will appear, and that location will be specified as the playback start location (Play Location).
If you drag to left or right on the waveform display, the background will turn black and the waveform will be highlighted, and this region will be selected.

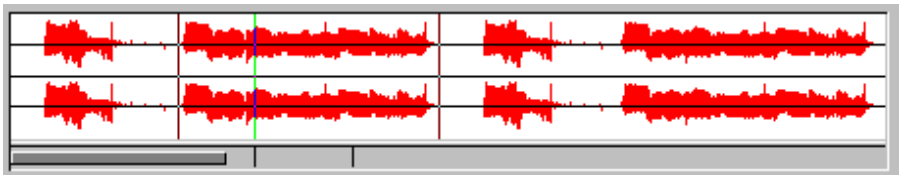
*The precision of the region that can be selected by dragging over the waveform display is limited by the resolution that is selected in the display resolution (Zoom). If you want to select a region even more precisely, you can type directly into the numerical fields of the selected region display (Sel).

* If the selected region is not locked, clicking on the waveform display area will defeat the previously selected region.

* To simultaneously select both channels of stereo sound data, drag across the line between the two channels. Some operations which modify the length of the waveform, such as the [Edit] menu command [Cut], cannot be executed unless both channels are selected simultaneously.

By using the left mouse button to drag over the the time axis located above the waveform display, you can set the loop start point. By using the right mouse button to drag, you can set the loop end point. The loop start and end points are shown by a brown line.

4.8. Overall waveform display (Overview)

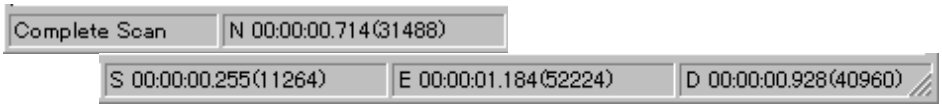


The overall waveform display shows a graphic image of the entire sound file that is currently opened by TWE. The gray bar shown below indicates the portion of the entire waveform that is currently displayed in the waveform display.
The brown vertical lines in the waveform graphic indicate the start/end points of the loop region. The black vertical lines below the waveform graphic (in the gray area) indicate the start/end points of the selected region.

By clicking or dragging in the overall waveform display, you can specify the portion of the waveform which will be displayed in the waveform display.

4.9. Status bar

The status bar located at the bottom of the Wave Window shows the following information, from left to right.



Overall waveform display ratio: While a sound file is being loaded, this indicates the percentage of the waveform that is shown in the overall waveform display area. When the sound file has been completely loaded, this will indicate "Complete Scan."

Mouse location indicator (N): Indicates the location of the mouse pointer in the waveform display, as "hours:minutes:seconds.milliseconds (number of samples)."

Selected region indicator: Indicates the start (S), end (E), and length (D) of the selected region in the waveform display as "hours:minutes:seconds.milliseconds (number of samples)."

5. About the play modes

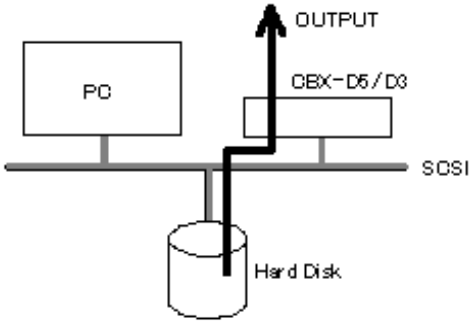
When recording/playing back using the CBX-D5/D3, two play modes are available: HD Play/Rec mode and RAM Play/Rec mode. You can maximize the performance of your system by using the mode appropriate for your situation. These two modes are explained below.

5.1. HD Play/Rec mode

Record/playback data will be accessed by the CBX-D5/D3 directly from the HD without passing through the personal computer. This means that when this mode is used, the load on the computer will be less, and screen redrawing etc. will be faster.

However in the following cases, this mode may not be able to perform recording/playback correctly.

- While certain types of hard disk utility software is running.
- If AIFF files created by certain application software are used.
- If the computer has two or more SCSI buses, and the bus connected to the CBX-D5/D3 is different than the bus which is connected to the hard disk that contains the file being recorded or played.
- If the computer has an IDE bus, and the file being recorded/played back exists on a hard disk on that bus.
- If the format of the hard disk is FAT32.

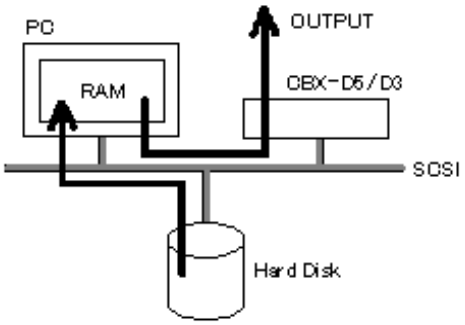


5.2. RAM Play/Rec mode

Playback will be output from the CBX-D5/D3 after the data from the hard disk has been accumulated in the RAM of the computer. When recording, the input from the CBX-D5/D3 will be accumulated in the RAM of the computer, and then stored to the hard disk.

When this mode is used, the data passes through computer RAM, avoiding the limitations that were mentioned in the explanation for HD Play/Rec mode.

However in this mode, a greater volume of data will be flowing through the SCSI bus. This means that this method is not suitable if you are using a slow hard disk to process large amounts of data. Also, since the audio file will always pass through the personal computer, processing such as display may be slowed down.



6. FILE menu

6.1. New...

This command creates a new file (empty sound file).
When you select the [New] command, a dialog box will appear, allowing you to set the following parameters.

File type: Select whether the new file will be a WAVE (.WAV) file or an AIFF file.
Channels: Select whether the new file will be monaural or stereo.
Size: Select the sample size (bit) of the new file.
Rate: Select the sampling frequency (Hz) of the new file.
Fill Zero: The [New] command will newly allocate disk space and will create a temporary sound file. Normally, empty disk space contains meaningless random data, so that simply allocating disk space will create a file which contains meaningless data. The "Fill Zero" function will write zeros into the newly created file to create a file of silence.
If Fill Zero ON is checked (default), the newly created file will contain silence. However, some time will be required to create the file.
If Fill Zero OFF is checked, the newly created sound file will still contain meaningless data. However, no time will be required to create the file. (This is convenient when you will be overwriting the data, such as when you will be recording immediately.)
Length: Specify the length (playback time) of the new file in minutes (min):seconds (sec).

6.2. Open...

This command opens an existing sound file. TWE can open AIFF or normal (PCM type) WAVE format (.WAV) files.

* A maximum of twenty sound files (Wave Windows) can be open simultaneously.

* Sound files on a floppy disk or removable disk must first be copied to the hard disk before they are opened.

TWE can operate in one of two modes: Original mode in which the original sound file will be edited directly, or Backup mode in which the original sound file will be copied for editing. The "Editing:" indicator located at the top of the file information area (File Info) will show whether you are editing the original or a copy.
To switch modes, click the [Option] menu item [File Backup] before you execute the [Open] command. If [File Backup] is checked, backup mode (copy editing mode) will be used. If it is unchecked, original mode will be used. The default setting is Original mode.

6.3. Close

This command closes the sound file (Wave Window).
In backup mode, if the edited content has not been saved, you will be asked whether or not you wish to save. Select one of the following choices.

[Yes]: Save the edited content and close the sound file.
[No]: Close the sound file without saving the edited content. Your edits will be lost.
[Cancel]: The sound file will not be closed, nor will the edited content be saved.

* In Original mode, editing operations in TWE will automatically be reflected in the original sound file, so an additional save confirmation message will not be displayed.

6.4. Save

In Backup mode, this command overwrites the edited sound data onto the original sound file.

* In Original mode, editing operations in TWE will automatically be reflected in the original sound file, so it is not necessary to select the [Save] command.

6.5. Save As...

This command saves the edited sound data as a new file with a different name than the original file. In this dialog box you can also specify a different format for saving.

* It is not possible to save to a floppy disk or a removable disk.

6.6. Revert

In Backup mode, this command returns the edited content to the state which was last saved.

* In Original mode, TWE editing operations are reflected directly in the original sound file, so the [Revert] command cannot be selected.

6.7. Resample...

This command converts the sampling frequency of the sound data.
A FIR filter is used for the conversion. The characteristics of this FIR filter can be set by three parameters: FIR Order, Rejection, and Sampling Rate.

FIR Order: Specify the coefficient of the FIR filter which will be used for the conversion. The higher this value, the better the quality will be, but a longer time will be required for processing.

Rejection(dB): Specify the ratio at which aliasing noise will be canceled. As this value is raised, the noise produced during conversion will decrease, but the high frequency range will be cut.

Sampling Rate: Specify the sampling frequency after conversion. The available range is 11,025-48,000Hz.

6.8. Size...

This command converts the sample size (number of bits) of the sound data.

6.9. Add Channel

This command adds a silent channel to monaural data to convert it to stereo data.

6.10. Delete Channel...

This command deletes the specified channel from stereo sound data, converting it to monaural data.

6.11. Swap Channels

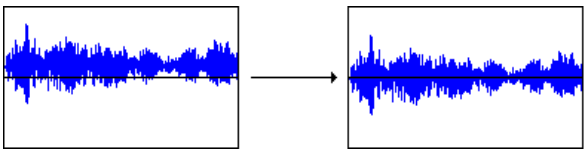
This command exchanges channels 1 and 2 of stereo sound data.

6.12. Format Conversion...

This command converts the file format of the sound data between AIFF <-> WAVE (.WAV).

6.13. Eliminate DC Offset

This command eliminates any DC (direct current) portion of the sound data. However, this command cannot be used unless the overall waveform display has been completed.



6.14. Import Sampler...

When an external Yamaha sampler (A3000, EX7, EX5, EX5R) is connected via SCSI, this command loads sound data from the sampler into TWE. The desired sound data must first be loaded into the wave memory of the A3000 or the DRAM of the EX.

* If you are using an A3000, you must first select MIDI-Bulk in Utility mode, and turn off the Bulk Dump Protect setting.

* If you are using an EX7, EX5, or EX5R, only those samples which are stored in DRAM can be transmitted to TWE. Samples stored in FLASH cannot be transmitted. If you wish to transmit samples stored in FLASH to TWE, you must execute the Copy Sample function on the EX to copy the desired sample from FLASH to DRAM, and then execute TWE's [Import Sampler…] command.

6.15. Export Sampler...

When an external Yamaha sampler (A3000, EX7, EX5, EX5R) is connected via SCSI, this command transmits a sound file to the sampler. The transmitted sound file will be placed in the wave memory of the A3000 or the DRAM of the EX as a new sample.

* The sound file can be transmitted to the EX as any specified sample number from 1 to 1024, and if a sample already exists at that number in the EX, it will be overwritten by the newly transmitted sample.

* If you are using an A3000, you must first select MIDI-Bulk in Utility mode, and turn off the Bulk Dump Protect setting.

* Many of the sound parameters associated with A3000 samples will be lost when the sample is imported into TWE. This means that after a sound data file which was imported from the A3000 to TWE is once again exported back to the A3000, the sound parameters and various other settings may have changed.

* TWE will always export the data to the A3000 as 16 bit waveform data, regardless of the sample size of the TWE sound file.

* When the name conflict occurs in the A3000, the A3000 will add a serial number at the end of the sample name.

6.16. Quit

This command closes all currently open sound files (Wave Windows), and exits TWE.

7. Edit menu

7.1. Undo (or Redo)

The [Undo] command restores the data to the state in which it was before the previous editing operation. After Undo has been executed, the [Undo] item in the [Edit] menu will change to [Redo]. The [Redo] will bring back the edited data which had been canceled by Undo.

7.2. Cut

This command cuts the region that is currently selected in the waveform display, and copies it to the TWE clipboard. The data following the region which was cut will slide forward.
In the case of stereo sound data, this [Cut] command can be executed only if the selected region includes both channels.

7.3. Copy

This command copies the region currently selected in the waveform display to the TWE clipboard.

7.4. Paste

This command pastes the waveform which was copied to the TWE clipboard, starting at the specified point in the waveform display (the green line that is displayed when you click).

If a region is selected in the waveform display, the data will be pasted starting at the beginning of the selected region.
If waveform data already exists at the paste destination, the original data will be overwritten and replaced by the newly pasted data. If the overwritten area extends beyond the end of the sound data, the sound data will be extended by that amount. Executing the [Paste] command will not affect the contents of the clipboard.

7.5. Insert

This command inserts the waveform which was copied to the TWE clipboard at the specified point in the waveform display (the green line that is displayed when you click). The portion of the waveform following the green line will slide backward to make room for the inserted data.
If a region is selected in the waveform display, the contents of the selected region will be erased, and the contents of the TWE clipboard will be inserted in its place. The portion following the selected region will slide backward to make room for the inserted data.
Executing the [Insert] command will not affect the contents of the clipboard.
In the case of stereo sound data, this [Insert] command can be executed only if the selected region includes both channels.

7.6. Clear

This command deletes the waveform in the region selected in the waveform display. The portion following the cleared area will slide forward.
Unlike the [Cut] command, the deleted waveform will not be copied to the TWE clipboard.
In the case of stereo sound data, this [Clear] command can be executed only if the selected region includes both channels.

7.7. Select All

This command selects the entire length (from the beginning to the end) of the channel(s) in which a region is currently selected in the waveform display.

7.8. Trim

This command leaves only the waveform in the selected region, and deletes the portions of the waveform which lie before and after the selected region.
In the case of stereo sound data, this [Trim] command can be executed only if the selected region includes both channels.

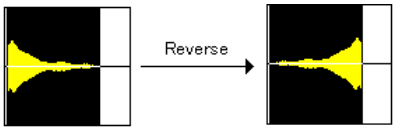
* The deleted portion of the waveform will not be copied to the TWE clipboard.

7.9. Mix

This command pastes the waveform which was copied to the TWE clipboard, starting at the specified location in the waveform display (the green line that is displayed when you click).
If a region of the waveform is selected, the data will be pasted starting at the beginning of the selected region.
Unlike the [Paste] command, the original data will be mixed with the pasted data if the destination already contains waveform data.
Executing the [Mix] command will not affect the contents of the clipboard.

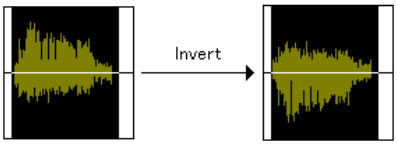
7.10. Reverse

This command flips the selected region of the waveform from left to right.



7.11. Invert

This command inverts (up/down) the selected region of the waveform.



7.12. Fade In

This command fades-in the selected region of the waveform (i.e., gradually raises the volume from zero).

7.13. Fade Out

This command fades-out the selected region of the waveform (i.e., gradually lowers the volume to zero).

7.14. Loop cross fade...

If unwanted noise (click noise) occurs during loop playback at the boundary between the loop end and beginning, this command can be used to rewrite the waveform in the area near the end of the loop, to smooth the transition.

Normally you will select Sustain type. In this case, the waveform immediately before the end of the loop region will be crossfaded and rewritten. If you select Sustain + Release type, the waveform immediately before and after the end of the loop region will be crossfaded and rewritten.

* If you have imported sound data which had an A3000 Loop Mode setting of "Forward loop, Exit at Note-off", select the Sustain + Release type.

Higher values for Sustain: and Release: will lengthen the area which will be crossfaded and rewritten, causing the loop playback to be smoother.

Curve lets you select the type of curve for the fade-in/out used for crossfading.

Linear:	The data will be faded in/out linearly.
+Exp:	The data will be faded in/out more gently than Linear. The volume of the crossfaded portion can be increased somewhat.
-Exp:	The data will be faded in/out more abruptly than Linear. The volume of the crossfaded portion can be decreased somewhat.

7.15. EQ...

This command applies equalization to the selected region of the waveform.
This is a parametric equalizer which allows you to specify gain (Gain), frequency (Freq), and Q for each of three bands: low (Low), middle (Mid), and high (High).

By default, the three bands (High, Mid, Low) are all set as presence filters. But Low and High can also be used as shelving filters.

* A presence filter is a type of filter which boosts or cuts the signal level at a specified frequency, producing a hill-shaped or valley-shaped curve when viewed on the graph.

* A shelving filter is a type of filter which boosts or cuts the entire portion of the frequency range which lies above (or below) a specified frequency, producing a shelf-shaped curve when viewed on the graph.

The parameters (Gain, Freq, Q) provided for each band have the following functions.

Gain:	Specify the amount of boost or cut in decibel (dB) units which will be applied at the frequency specified by Freq.
Freq:	In the case of a presence filter, specify the frequency at which the signal will be boosted or cut. In the case of a shelving filter, specify the boundary separating the region which will be boosted or cut from the region which will be unaffected.
Q:	In the case of a presence filter, specify the steepness of the hill-shaped or valley-shaped curve that will be created by boosting or cutting at the specified frequency. As this value is increased, the curve on the graph will become steeper. If you input 0 as the Q for Low or High, it will function as a shelving filter (LSF or HSF).

You can click on one of these values and type in the numerical value from the keyboard of your computer. Alternatively, you can click one of the Low, Mid or High buttons, and then drag the curve in the graph to modify the Gain and Freq for each band.
Equalizer settings will be applied when you click [EQ]. To cancel the equalizer settings, click [Cancel]. Clicking [Reset] will return all values to their defaults.

7.16. Time Comp / Exp...

This command modifies only the length of the selected region of the waveform, without affecting the pitch.
To change the length, drag the slider to left or right to specify the percentage, or type a number of samples into the Modified box.
In the case of stereo sound data, this [Time Comp/Exp...] command can be executed only if the selected region includes both channels.

7.17. Pitch Shift...

This command modifies only the pitch of the selected region of the waveform, without affecting the length.
To change the pitch, drag the slider to left or right, or type a numeric value into the Rate (%) or Cent boxes.

7.18. Gain...

This command modifies the overall amplitude (volume) of the selected region of the waveform.
To change the amplitude (volume), drag the slider to left or right, or type a numeric value into the Rate (%) or dB (decibel) boxes.

7.19. Normalize...

This command expands/reduces the amplitude so that the peak values within the selected region of the waveform will be the specified ratio of the upper limit.

7.20. Silence

This command converts the selected region of the waveform to silence.

8. View menu

8.1. Go to

Specifies the portion of the sound data that will be displayed in the waveform display.

Top:	Display the beginning of the sound data.
End:	Display the end of the sound data.
Selection Start:	Display from the beginning of the selected region.
Selection End:	Display the end of the selected region at the right edge.
Loop Start:	Display from the beginning of the loop region.
Loop End:	Display the end of the loop region at the right edge.
Play Location:	Display from the beginning of the playback start location.

8.2. Zoom

Modifies the resolution of the waveform display.

Vertical Full Zoom In:	Maximize the vertical display resolution.
Vertical Full Zoom Out:	Minimize the vertical display resolution.
Horizontal Full Zoom In:	Maximize the horizontal display resolution.
Horizontal Full Zoom Out:	Minimize the horizontal display resolution.
Fit Selection:	Change the resolution so that the selected region fits within the waveform display.
Fit Loop:	Change the resolution so that the loop region fits within the waveform display.

8.3. Selection

Select Loop:	Select the currently specified loop region as the selected region (highlighted).
Selection to Loop:	Specify the currently selected region (highlighted) as the loop region.

8.4. Auto Zero Cross

When you newly set the start/end points of the selected region or the loop region, or modify the playback start location, this function will automatically move that point or location to a zero cross point (a location where the amplitude intersects the center line of the waveform display) if the specified point or location is near a zero cross point.

8.5. Auto Snap

When you modify either the start point or end point of the selected region or the loop region in the waveform display, this function will automatically adjust the modified point to a location which has the same amplitude as the other point (end or start), if such a location of identical amplitude exists nearby.

8.6. Hide (or Show) Waveform

This toggles the waveform in the waveform display between visible and hidden.

* This does not delete waveform data.

8.7. Overview

This specifies whether or not the overall waveform display will be shown, or selects its location.

Hide (or Show):	Toggles the overall waveform display between visible and hidden.
Top:	The overall waveform display will appear at the top of the Wave Window.
Bottom:	The overall waveform display will appear at the bottom of the Wave Window.

8.8. Time Ruler

This selects the units of the time axis (horizontal axis) located above the waveform display.

Time:	The time axis will be in units of hours:minutes:seconds.milliseconds.
Sample:	The time axis will be in units of samples.

8.9. Level Ruler

This selects the units of the amplitude axis (vertical axis) located at the left of the waveform display, or specifies whether or not it will be shown.

Hide (or Show):	This toggles the amplitude axis between visible and hidden.
%:	The amplitude axis will be in percentage units.
dB:	The amplitude axis will be in decibel units.

8.10. Scroll During Playback

This specifies whether or not the waveform display will scroll during playback of sound data. If you want the waveform display to scroll, select and check [Scroll During Playback].

* If the display resolution (Zoom) of the time axis (horizontal) is 11 or higher, the waveform in the display will be shown in dark blue, and the waveform display will not scroll even if Scroll During Playback mode is selected.

9. Option menu

9.1. SCSI Rescan

This command causes TWE to re-detect the devices connected to the SCSI bus.

9.2. Windows Sound Device Configuration...

Here you can make input/output settings for the sound card installed in your personal computer. In the Input and Output boxes, respectively select the devices which will be used for audio input and output.

9.3. CBX-Dn Configuration...

Make input/output settings for the CBX-D5/D3.

* For details on HD Play/Rec and RAM Play/Rec, refer to "5. About the play modes."

9.4. Select Working Dir...

TWE temporarily creates working files in a directory, and you can use this command to change the directory.

* The drive name of the newly specified directory will be shown in the "Working Volume:" field of the device information display (Device) located at the left of the waveform display.

* When specifying the directory in which working files will be created, please select a hard disk which contains sufficient free area and has a fast access time. (For example, in order to create an Undo sound file when the entire waveform has been edited, the sound file will occupy the same amount of space as the original sound file, meaning that you would need at least twice the size of the original sound file.)

* Be aware that a removable disk cannot be selected.

* If any temporary working files remain after exiting TWE, use the Explorer to delete them.

9.5. File Backup

Select whether you will be directly editing the original sound file (Original mode), or editing a copy of the original file (Backup mode).
If [File Backup] is checked, Backup mode (copy editing mode) will be selected. If it is unchecked, Original mode will be selected. The default setting is Original mode.

* It is not possible to change the mode for an already-opened sound file. After checking or unchecking [File Backup] to select one of the two modes, sound files opened by the [File] menu command [Open] will be the selected mode.

* The editing mode (either Original or Copy) of the sound file currently being edited in TWE is shown in the "Editing:" field of the file information display (File Info).

9.6. CBX-Dn Recording Monitor

Switch input monitoring on/off.
If this is ON, the input to the CBX-D5/D3 will always be output from the CBX-D5/D3. If this is OFF, it will be output only during recording.

9.7. Windows Sound System

Specify the sound card installed in the computer as the recording/playback (input/output) hardware.

9.8. CBX-Dn Processor

Specify the CBX-D5/D3 as the recording/playback (input/output) hardware.

9.9. Preference

A dialog box will open, allowing you to make shortcut key settings. The procedure is as follows.

First, use the Menu and Action (commands provided in each menu) list to select the command for which you wish to specify a shortcut key. Current Shortcut displays the current shortcut key setting.

* If you wish to change the shortcut key for a command to which a key has already been assigned, you can also select the desired command by using the keyboard of your computer to type the currently specified shortcut key.

To cancel an existing shortcut key setting, click the [Clear] button.

To modify the setting, use your computer keyboard to type the desired new key into the New Shortcut box, and click the [Assign] button. You can also press keys while holding down [Alt], [Ctrl] or [Shift].

* While you are setting the New Shortcut, the [Enter] key will not function as [OK]. Be aware that doing so will cause the [Enter] key to be selected as the shortcut key for the currently chosen command.

If the shortcut key that is newly input to the New Shortcut box is already used for another command, the name of that command will appear in the Used Action field. If you now click the [Assign] button, the shortcut key setting that is assigned to the Used Action will be canceled, and the shortcut key will be newly assigned to the command that is selected in the Action field.

If you click the [Revert Panel] button, the changes that were made since you opened this dialog box will be canceled.
If you click the [Initial Setting] button, all shortcut key settings will return to their default values.

10. Window menu

10.1. Toolbar

Here you can select whether each toolbar will be displayed or hidden.
A sub-menu will appear, and you can check the names of the tool bar that you wish to have displayed.

Console:	Toolbar for recording/playing back sound data
Standard:	Toolbar with frequently used editing commands
View:	Toolbar with settings related to waveform display

10.2. Cascade

All the Wave Windows will be arranged in stairstep fashion.

10.3. Tile Horizontally

All the Wave Windows will be arranged horizontally.

10.4. Tile Vertically

All the Wave Windows will be arranged vertically.

10.5. Arrange Icons

Arrange all the Wave Windows that are minimized.

10.6. Minimize All

All the Wave Windows will be minimized.

10.7. Maximize All

All the Wave Windows will be maximized.

10.8. Close All

All the Wave Windows will be closed.

11. Help menu

11.1. About TWE

This displays the software version of TWE.

12. List of shortcut key default settings

By using shortcut keys, you can use the keys of your computer keyboard to rapidly execute the commands of the menus or the toolbar. A list of the default settings of the shortcut keys is given below.
(Shortcut key settings can be changed by the [Option] menu command [Preference].)

Menu	Command	Key	Function
File	New	Ctrl + N	Create a new file (blank sound file).
	Open	Ctrl + O	Open an existing sound file.
	Close	Ctrl + F4	Close the sound file.
	Save	Ctrl + S	In Backup mode, save the edited sound data by overwriting it onto the original sound file.
	Revert	Ctrl + R	In Backup mode, revert the edited content to the last saved state.
	Quit	Alt + F4	Close the currently open sound files, and exit TWE.
Edit	Undo(Redo)	Ctrl + Z	Cancel (or Redo) the result of the previous editing operation.
	Cut	Ctrl + X	Cut the selected region, and copy it to the TWE clipboard.
	Copy	Ctrl + C	Copy the selected region to the TWE clipboard.
	Paste	Ctrl + V	Paste the waveform that was copied to the TWE clipboard, beginning at the location specified in the waveform display.
	Insert	Ctrl + I	Insert the waveform that was copied to the TWE clipboard into the location specified in the waveform display.
	Clear	Ctrl + Del	Delete the selected region.
	Select All	Ctrl + A	Simultaneously select the entire length of the channel(s) selected in the waveform display, from the beginning to the end of the sound file.
	Trim	Ctrl + T	Delete the first and last portions of the waveform, leaving only the selected region.
	Mix	Ctrl + M	Mix the waveform that was copied to the TWE clipboard into the specified location of the waveform display.

View	Top	[<-]	Display the beginning of the sound data.
	End	[->]	Display the end of the sound data.
	Selection Start	Ctrl +[<-]	Display from the beginning of the selected region.
	Selection End	Ctrl +[->]	Display the end of the selected region at the right edge.
	Loop Start	Alt + Ctrl +[<-]	Display from the beginning of the loop region.
	Loop End	Alt + Ctrl +[->]	Display the end of the loop region at the right edge.
	Vertical Full Zoom In	Ctrl + Y	Maximize the vertical display resolution.
	Vertical Full Zoom Out	Ctrl + J	Minimize the vertical display resolution.
	Horizontal Full Zoom In	Ctrl + H	Maximize the horizontal display resolution.
	Horizontal Full Zoom Out	Ctrl + G	Minimize the horizontal display resolution.
	Fit Selection	Ctrl + F	Modify the display resolution so that the selected region fits in the waveform display area.
	Fit Loop	Ctrl + L	Modify the display resolution so that the loop region fits in the waveform display area.
Console	Rewind	1 (keypad)	Move the playback start location to the beginning of the sound data.
	Stop	0 (keypad)	Stop playback/recording.
	Play	Enter	Begin playback from the playback start location.
	Record	* (keypad)	Begin recording from the playback start location.
	Region Play	Space	Play back only the selected region.
	Loop Mode	/(keypad)	Switch loop playback on/off.
Zoom	Horizontal Zoom In	H	Increase the horizontal display resolution by one.
	Horizontal Zoom Out	G	Decrease the horizontal display resolution by one.
	Vertical Zoom In	Shift + H	Increase the vertical display resolution by one.
	Vertical Zoom Out	Shift + G	Decrease the vertical display resolution by one.

13. What's new?

Major new function in version 2.1.5

- FAT32 format hard disk can be selected as the working directory.

Major new functions in version 2.1.0

- The EX7, EX5, and EX5R synthesizers are supported.
- In the [Edit] menu command [Loop cross fade...], the fade in/out curve can be selected.
- The [View] menu item [Auto Zero Cross] allows a zero cross point to be selected automatically when you specify the playback start location / selected region / loop region.
- The [View] menu item [Auto Snap] allows the amplitude at the start and end points to be matched automatically when you specify a selected region or a loop region.
- The [Option] menu item [Preference] allows you to add/modify shortcut keys.

–End–