AudioFusion TWS
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Short documentation for the version 1.0.1 of AudioFusion TWS.

Last updated in October 1998

Introduction:

 The AudioFusion TWS music software is designed to turn your PowerMac into a full function Techno Workstation. It includes a stereo sampler (from 8 to 30 tracks) with a Direct To Disk play option, and a stereo synthesizer and stereo rhythms box with up to 10 separate channels each. Automated postproduction features permit completed recordings to be reproduced exactly and easily re-edited. Getting started as well as mastering the full range of AudioFusion TWS's functions is made easy with the complete on-screen Help feature accessible fron the menubar.

AudioFusion TWS is an audio-mixing software especially adapted for creating dance music, techno, trance... and "LIVE" remixes. Thanks to the Direct To Disk feature, it can be used as well by "rock" musicians for composing multitrack numeric audio recordings.

AudioFusion TWS is divided into five parts, each using its own window:
• a **sampler**, which allows you to build loops, read files using Direct To Disk and modify sound loops in real-time: adjusting speed (pitch), volume and panoramic on the run, or adding real time reverb.
• a **synthesizer** which permits to use twenty different sounds, making it possible to make each a separate instrument - all directed from the keyboard.
• a **rhythms box** which can feed in up to twenty rhythms using ten instruments...
• a **recorder** which saves as a reproducable program all your settings and actions during the mix permitting playback with a precision of 1/100 of second. The program also reproduces visually the consol's lever and button movements, and lights up the sound graphing indicators as during the original pass.
• an **editor** which permits a wide range of post-production manipulations and fine-tuning of mixes.

Hardware and system requirements:

Material:
AudioFusion TWS requires a PowerMacintosh, or compatible, running System 7.1 or greater, with Sound Manager 3.2 installed (included with QuickTime 2.5). Requires a 14 inch monitor, minimum.

Memory:
This basic program needs 1200K of memory. Additional memory requirements depend upon the size of the audio sounds to be used in the mix. To change size of the program's memory allocation, select the application with a single click, choose "Read information" in the Finder "File" menu and increase the number in the "Prefered Size" box.

Reverb:
If you wish to add reverb with sampler's tracks, the extension "SoundSprocket Filter" must also be installed. Note: using reverb boosts AudioFusion TWS's miminum memory size to 1600K, or more depending upon the number of the sampler's tracks.

MIDI:
In a MIDI environment, the Apple Midi Manager or Opcode OMS must also be installed on your hard drive.

Files:

AudioFusion TWS supports natively System 7 type, AIFF or AIFF-C sound files. Thanks to QuickTime, AudioFusion TWS may also play Wave files or other kinds of audio files... They can be 8 or 16 bit, mono or stereo and may be any frequency: 11Khz, 22Khz, 44Khz...

Hit Factory to AudioFusion TWS modifications:

Version   1.0.1:
• Navigation Services compatibility.
• Correction of a bug in the AIFF export process.

Version   1.0:
• QuickTime™ standard dialogs to load the sounds .
• Import Plug-Ins now correctly handle compressed sounds.
• AIFF export takes place in CD quality.
• MIDI synchronization is now allowed.
• Synthetizer: smoother end of the sounds.

The sampler:

 The Sampler, in the "Sampler Window", is the main control console. It can contain between 8 and 30 independant tracks (see "Preferences"). Each track is represented on the screen by a separate control bar.

To access a track's functions, click on the green triangle in the track title box and a submenu will appear.

Loading and deleting sounds:

• In order to load a sound on a track and use it as a sample, select "Load sample or bank...". In the open dialog, select the sound you wish to use, then click on "Open". Files must be in System 7, AIFF or AIFF-C sound format. Note: "Load Direct To Disk..." is explained at the end of the chapter "The Direct To Disk".
• Use the same steps to load a Bank file.

Note: You can avoid the open dialog and go really fast if you use the "Fast load" item. It lists all the subfolders and their sound files contained in the folder defined as the master sounds folder (see "The preferences" chapter). If you choose that way to load a sound and if a sound is already playing on a track, it will be closed whereas the one you have selected is loaded and automaticaly starts playing.

• To delete the sound on a track, choose "Close file" in the submenu. This frees the memory for further use.

Using sounds:

• To start playing the sound or the Direct To Disk file associated with a track, click on the "Play" button (the one with an arrow) at the bottom of the track control.
• To stop the sound, click on the "Stop" button (the one with a square).
• To set the volume of a track, hold the mouse button down while moving the purple paddle vertically up or down, or click on the volume grid marks at the level desired.
• To set the pitch, move the paddle on the blue background. You can change pitch within a 20% range. The central position of the paddle is the normal pitch.
• To set track panoramic in mono, or balance in stereo, move the paddle on the white and red background.

Modifying the options of a track:

• To choose the initialisation mode (stereo, mono, left only or right only), select the appropriated option in the submenu.
• To do sound looping between the left and rigth speakers, click on the "Loop" button, and click it again to stop. You can set the speed of the loop in the "Utilities" menu: "Set loop speed".

Note: The panoramic setting and the "Loop" option are available only if the track is in "Stereo" or "Mono" mode.

• To set the track mode "Turbo", or return to normal again, click on the "Turbo" button.
• To add or suppress reverb to a track, click the buttons "R1" or "R2".
• To select the active sound in a Bank file, use the arrows (they are visible only if a Bank file is loaded on the track).

Note: In order that reverb works, the "Enabled " item in the reverb preferences dialog must be checked. For more informations, please report to chapter"The preferences".


Moving into the sampler's tracks:

The Sampler window shows only some of the tracks (8 out of 16 for example). To shift all the tracks press the right or left arrow keys on your keyboard, or use the scroll bar at the bottom of the window.

Note: The size of the sampler's window (i.e. the number of visible tracks) is automatically set up according to the screen resolution when AudioFusion TWS starts up.

The synthetizer:

 The synthesizer, located in the "Synthesizer" window, allows you to use every kind of sound as an instrument, simulating different notes by pitch variation.
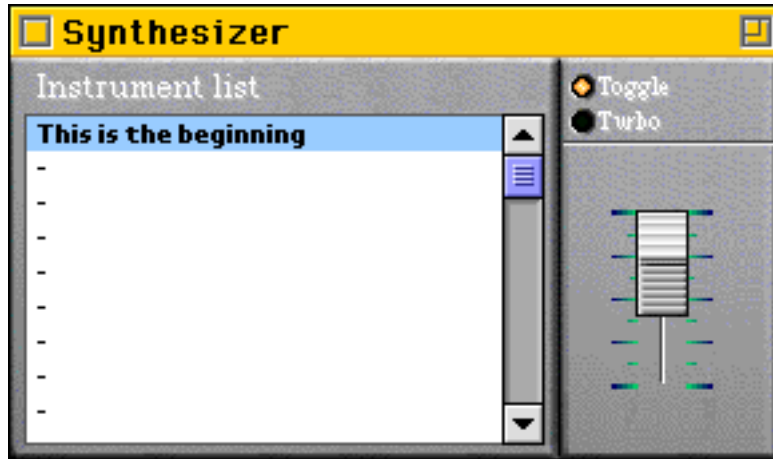
Loading and deleting sounds:

• To load a sound and to use it as an instrument, double-click on one of the items of the list. In the open dialog, select a System 7, AIFF or AIFF-C format sound file, then click on "Open".
• To choose the active instrument (the one you hear when pushing the keys of the keyboard - "This is the beginning" in the above picture), click on the name of the instrument or use the vertical arrow keys of your keyboard.
• To delete a sound from the synthesizer, select it as the active instrument, then choose "Close active instrument" in the "Utilities" menu.

Modifying the options of the synthesizer:

• To set the volume of the synthesizer, move the paddle on the top right of the window.
• In order for the synthesizer to alternatively play sounds on the left and right speakers, click the "Toggle" button, and to cancel the effect simply click it again (sounds are now played at the center).
• To set the "Turbo" mode of the track, or return to the normal mode, click the "Turbo" button.

Note: You can reduce the size of the window by clicking on the Zoom box in the title bar of the window.
If you want to use stereo sounds with the synthesizer, the "Toggle" button must be unchecked.

🔊   *The rhythms box:*

 The rhythms box, located in the "Rhythms Box" window, allows you to create rhythms using pattern settings. You can use either sounds from instrument files or from the drum kits of your MIDI synthetizer (channel 10). It contains 10 parts and you can program 20 different patterns.
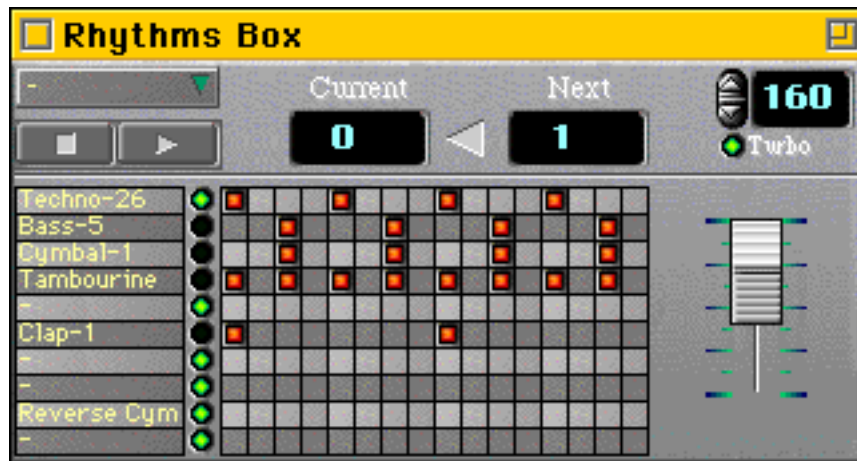

Description of the rhythms box:

 Rhythms are described as patterns of 16 X 10: 16 times and 10 partitions four up to 10 instruments. When you click on the Play button, the rhythms box plays the pattern whose number is indicated under "Current" (0 in the above picture). As soon as this pattern is finished, it plays the pattern whoose number is indicated under "Next" (1 in this example). The value under "Current" is replaced by the one under "Next" (1 remplaces 0), and so on...

Loading and deleting instruments:

Note: The rhythms box and recorder must be stopped during this opperation. In order to access tMIDI features, check the "Enabled" item in the MIDI preferences dialog.

• To set the options for a selected instrument, click on its name and a dialog box will appear:
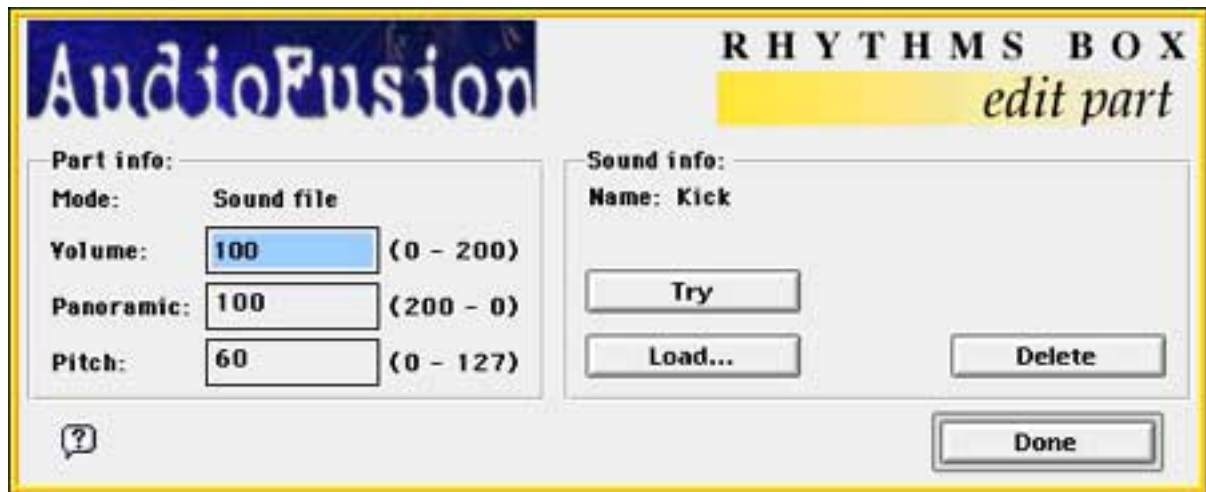
"Mode": current mode of the track:
　_"None": muted.
　_"Sound file": uses a sound file as an instrument.
　_"MIDI": uses a MIDI note from channel 10.
"Volume": volume level from 0 to 200, with 100 as normal. Note: entering a value greater than 100 may result in lower quality sound (only in "Sound file" mode).
"Panoramic": the position of the sound, between the left and right speakers, is indicated using a value between 0 and 200: 200 meaning maximum left, 100 meaning middle and 0 maximum right (this value has no effect in "MIDI" mode).
"Pitch": in the "Sound file" mode pitch can be varied between values of 0 and 127 (MIDI values): 60 being normal pitch. In "MIDI" mode, it indicates the note related to the instrument to use in the drum kit.
"Name": is the name of the instrument chosen for the track, but only in "Sound file" mode.
button "Try": plays the sound with the current settings.
button "Load...": shows the open dialog in order to load another sound file. Select a sound file, then click on "Load". Theses files must be in System 7, AIFF or AIFF-C format. The mode of the part is set to "Sound file".
button "Delete": closes a sound file and frees up the memory. If the option "MIDI aware" is checked in the preferences, the mode of the part is set to "MIDI".
button "Done": confirms settings and closes the dialog box.

Note: The part can be in "None" mode only if no sound file is loaded and if the "Enabled" item in the MIDI preferences dialog is checked.
In "MIDI" mode, the name of the partition in the rhythms box becomes "MIDI" followed by the number of the instrument.

Using the rhythms box:

• To select the current pattern, i.e. the one that will be played first (the rhythms box must be turned off), click on the number under "Current" and select a pattern number in the submenu.
• To start the rhythms box, click the "Play" button (the one with an arrow).
• To stop, click the "Stop" button (the one with a square). When you start again, it will continue from where it previously stopped, unless you change the number of the current pattern, in which case, it will start at the beginning.
• To set the volume of the rhythms box, move the paddle at the top right of the window.
• To set the "Turbo" mode, or return to normal mode, click the "Turbo" button.
• To set the speed (indicated in BPM), use the arrow buttons at the top right hand corner.
• To set the number of the next pattern to play (as soon as the current one is finished), click on the number under "Next" and select a new one in the submenu.
• To mute a partition, click on the green light to the right of its name. Click it again to unmute it.

Creating patterns:

Note: *The recorder must be stopped.*

To display the pattern you wish to work on, click on the number under "Current" and select a pattern number in the submenu. There are two ways to create a pattern:

"Step by step": The rhythms box must be turned off (Stop). Fill in the partition grids in order to represent graphically the different rhythms: for an instrument to be played at a defined time, click on the cell located at the point where the the instrument and the time intersect. The cell will turn red. To undo the setting, click the cell again.

"Real time": This method allows writing rhythm in real time: first start the rhythms box, then, to play an instrument, just click on its name. The pattern will be automaticaly updated.

Special functions:

To show the menu for Special Functions, click the button with a green triangle:

"Open pattern set...": opens a file describing a configuration for the rhythms box. In the open dialog, select a pattern file, then click"Open".
"Save pattern set...": saves the configuration of the rhythms box (sounds files, patterns and settings). Indicate a location on the hard drive, then click "Save".
"Copy pattern to next one": copies the current pattern into the next one.
"Clear pattern": clears the current pattern.

Note: *You can reduce the size of the rhythms box window by clicking on the zoom box in the title bar.*

The recorder:

 The recorder of AudioFusion TWS, located in the "Recorder" window, allows the recording of your mix with a precision of 1/100 of second. It then reproduce it in an animated way: buttons light on, paddles move...

Recording and reproducing:

• To start recording, click the "Record" button (the one with a circle). The recorder makes a "copy of the settings" of the sampler, synthesizer and rhythms box (positions of all the paddles, volumes...). Then the time-code (indicated in hundreds of seconds) shown at the top of the window, starts and **all** the actions you do are recorded.
• To stop recording, click the "Stop" button (the one with a square).
• To start playing the recorded music (i.e. the mixing), click the "Play" button (the one with an arrow).

Note: The recorder set the volumes, pitchs... as they were when the recording was done, thanks to the "copy of settings" it had done before.

• To edit the music, click on the "Edit" button (the one at the bottom left hand corner). The use of the editor is explained in the next chapter.

Loading and saving a music selection:

• To save your music, choose "Save music as..." in the "File" menu; indicate a name, then click on "Save". A copy of the settings is also saved.

Note: You must not give to your music the name of one of the sound files it uses; otherwise, you will get a "Missing Import Plug-In" error, when you will try to open it.

• To load a music selection, choose "Open music..." in the same menu; choose a music file, then click on "Open".
• To create an empty music, choose "New music". AudioFusion TWS closes all the sound files and clears the recorder.

While it's playing a music track, it's possible to continue using AudioFusion TWS, egs., for changing panoramics, volumes, etc...

Note: When the recorder is playing or recording, it is not allowed to load or delete sounds with the sampler, the synthesizer or the rhythms box.

How does AudioFusion TWS find the sound files used in a music track:

AudioFusion TWS saves in the music file only the names and locations of the sound files used in the music, not the sounds themselves.
When you load a music track, the software looks for the related sound files. It first looks in the parent folder of the music file, then in the whole hard drive. If it can't find a sound file, it will ask you for its location. In such a case, AudioFusion TWS doesn't immediately save the new location. That's why you have to save the music track again (using "Save as...").
AudioFusion TWS will find the sound files even if you change their names or move them, but they have to stay on the same drive or storage volume (don't move them from a hard drive to a disk for example).

Modifying "copy of the settings" of a music track:

Select "Restore settings" in the "Utilities" menu to set the sampler, the synthesizer and the rhythms box as they were when the recording was done.
Make the desired changes: modify panoramics, start samples, etc...
Finally, select "Freeze settings" in the "Utilities" menu. This command makes a new "copy of the settings" replacing the prior one. Don't forget to save the music again!

Exporting a music:

When your music track is ready, you can "compile" it, i.e. place in a common file both the music and its related sound files, in order to distribute it. You can also turn it into an AIFF CD quality sound file in order to use it in a multimedia project or to write it to an audio CD.

• Export as a compiled file:

First load a music track, then choose "Compiled music..." in the submenu "Export" of the "File" menu (please note that you can not export music tracks that use Direct To Disk or Bank files.). A setting dialog box appears:

Part "Convert sounds": you may change the format of the sounds before they are stored in the compiled file. To change their format, check "Convert sounds" and define the destination format. In order to leave the sounds untouched, leave "Convert sounds" unchecked.

Note: This function is available only if Sound Manager 3.2.1 is present.

When you are done with the settings, click on "OK", indicate where to save the file in the dialog box, then click on "Save".

Note: A compiled music track may be opened with AudioFusion TWS. You are not allowed to save it, but you can export it again as a compiled music.

• Export as an AIFF sound file:

First load a music track, then choose "AIFF sound file..." in the submenu "Export" of the "File" menu. A setting dialog will appear:
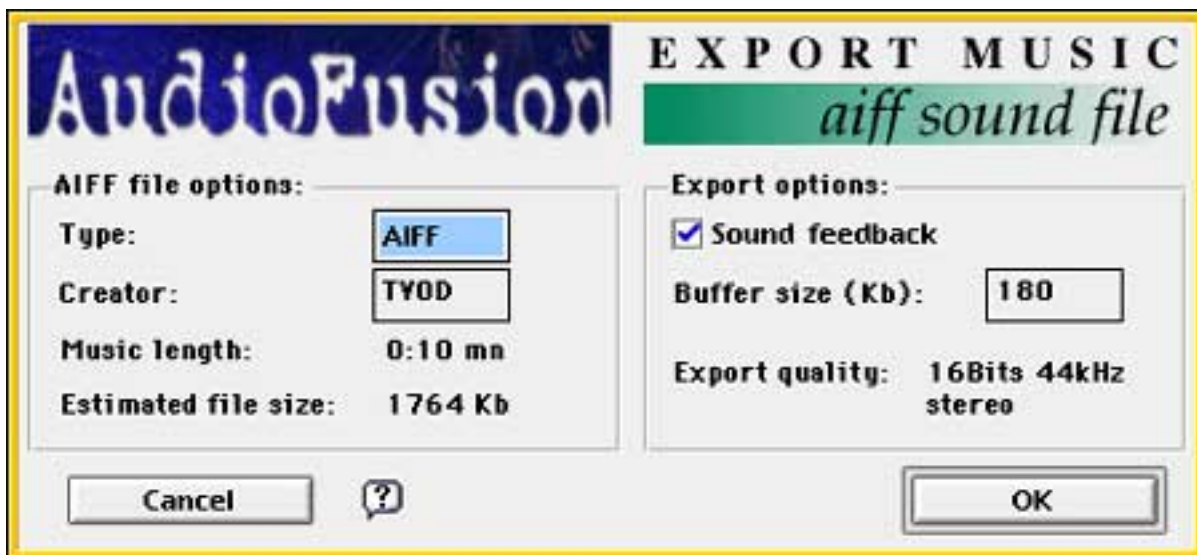
Part "AIFF file options": you can enter here the type and the creator of the generated sound file (e.g. 'AIFF' / 'TVOD' stands for MoviePlayer).

Part "Export options": check the "Sound feedback" item if you wish to listen to the music while it is beeing exported.
You may choose to increase the size of the buffers used by AudioFusion TWS while exporting if your hard drive seems too slow. AudioFusion TWS uses two buffers that it fills alternatively; as soon as one is full, it's written to the disk. The bigger the buffers, the less often AudioFusion TWS will have to write on the hard drive.

Note: The exported sound file is in CD quality (stereo 16Bits 44Khz) .

• Export as a folder:

If you want to give to another user of AudioFusion TWS a music track without having to compile it, you can use this method:
• In the Finder, create an empty folder and give it a name.
• Copy the music file into it.
• Then copy into the same folder **all** the sound files or Bank files used with the music track.
• You can now give your creation to whomever you want (give the whole folder).

The preferences:

Setting the preferences (see "Preferences" in the "File" menu).

Setting the general preferences:

Select "General..." in the submenu:

Button accept": confirms all the settings.
Button "Cancel": cancels all the modifications.

Part "General":
"Maximum volume": maximum volume of the software (between 0 and 256). You can overdrive this value, but in such a case, the quality of the sound may be reduced.
"Sounds folder": click here to locate master sounds folder, used for the Fast Load system. In the open dialog, place yourself in the folder you wish to select, then click on "Select current folder".

Part "Sampler":
"Tracks": number of tracks of the sampler (between 8 and 30; 16 is the recommended value).
"Turbo volume": maximum volume of the sampler's tracks when they are in "Turbo" mode. This value must be greater than 256 (a multiple of 256 is better).
"Loop Direct To Disk": check this item if you want AudioFusion TWS to loop endlessly, as samples, sound files read with the Direct To Disk technique.

Note: you should limit the number of the sampler's track to 16 or more: if you set it to 12 for example, you will not be able to open music files using more than 12 tracks; but the contrary is possible.

Part "Synthesizer":
"Polyphony": polyphony of the synthesizer (between 0 and 10; 4 is the best value).
"Turbo volume": maximum volume of the synthesizer when it is in "Turbo" mode. This value must be greater than 256 (a multiple of 256 is better).

Part "Rhythms Box":
"Polyphony": polyphony of the rhythms box (between 0 and 10; 6 is the best value).
"Turbo volume": maximum volume of the rhythms box when it is in "Turbo" mode. This value must be greater than 256 (a multiple of 256 is better).

Part "Expert settings":
"ByPass sound headers": when AudioFusion TWS loads a sound into memory, it automatically sets up the parameters included in the sound header for the optimum result. Sometimes (for example, if you have modified the headers with special sound software), you may want AudioFusion TWS to leave them unchanged; in such a case, uncheck this item.
"No sound loading at interrupt time": if you create music tracks using Bank files, and during the mixing you change the current sound in the Banks, AudioFusion TWS may crash while reproducing the music with the recorder (this was observed on a Performa 5400/160 with System 7.5.3). Check this item to prevent AudioFusion TWS from executing theses sound loadings at interrupt time, and determine what is the reason for thoses crashes. Unfortunately, it means that AudioFusion TWS has to make theses loadings at "normal" time and this is possible only if AudioFusion TWS is running. For example, if a dialog in in the foreground (many dialog don't let other applications running in background), AudioFusion TWS will have to wait until it get back the control (when you close the dialog) before executing sound loadings in the Banks.

But, it is highly recommended to leave this item checked.
"Size of the Direct To Disk buffer": size in kilobytes of the memory buffer allocated to a sampler's track when it is in Direct To Disk mode.

Note: with the Sound Manager 3.1, the total polyphony of AudioFusion TWS (sampler + synthesizer + rhythms box) can't be greater than 20, whereas with the Sound Manager 3.2, the maximum is 64, assuming that no other application is using the Sound Manager.

Setting the piano:

Select "Piano..." in the submenu. This subpart allows you to associate keyboard keys to synthesizer notes, sampler tracks, rhythme box parts...

Button "Accept": confirms all the settings.
Button "Cancel": cancels all the modifications.
Button "Reset all": resets the piano to its previous settings.
Button "Clear all": clears the piano.

"Stop when key up": check this item if you want the synthesizer to stop playing the sound when you release the piano key.

Select a part between:
• "Synthesizer": to attach keys to synthesizer's notes.
• "Sampler": to attach keys to sampler's tracks, in order to be able to start or stop them from the keyboard.
• "Rhythms Box": to attach keys to rhythms box's parts, in order to mute / unmute them from the keyboard.
• "Miscelleaneous": to attach keys to other kind of actions. You can attach a key to start / stop the rythms box, in front of "RBox", and another key to pause / resume the sampler, in front of "Pause".

To associate a key to an item in the list, click on the desired item, then press the key you wish. You can use the vertical arrow keys of your keyboard to move into the piano.

Note: it is possible to associate the keys "Spacebar" and "Enter" (from the numeric keyboard) to some items. By default, "Spacebar" is associated to "Pause sampler" and "Enter" to start / stop rhythms box.

Settings the colors:

To choose the colors of the displayed texts.

Button "Accept": confirms all the settings.
Button "Cancel": cancels all the modifications.

To choose a new color related to a type of text, just click on the color, then select a new one in the color picker.

Setting the MIDI:

 Select "MIDI..." in the submenu. This subpart allows you to define how does AudioFusion TWS understand MIDI messages.

Button "Accept": confirms all the settings.
Button "Cancel": cancels all the modifications.

You must select one of the following options:

Part "MIDI compatibility":
 "Enabled": check this item in you want AudioFusion TWS to be able to get or send MIDI messages.
 "use Apple Midi Manager": check this item in you want AudioFusion TWS to the Apple Midi Manager MIDI system (this item is available only if the Apple Midi Manager is present).
 "use Opcode OMS": check this item in you want AudioFusion TWS to the Opcode OMS MIDI system (this item is available only if the Opcode OMS is present).

Part "Options":
 "Foreground only": check this item if you want AudioFusion TWS to receive MIDI messages only when it is the foreground application.
 "Autoconnect": if you check this item, AudioFusion TWS will try to connect itself to the MIDI interface when launched (it must be connected to the Modem port of the Mac). Otherwise, you will have to do the connection manually (see "The MIDI" chapter). This works only with the Apple Midi Manager.
 "Use external clock": check this item to put AudioFusion TWS into "slave" mode. The rhythms box now uses the MIDI clock instead of its internal clock and the BPM setting is disabled.
If the "Auto align pitchs" item is checked in the quantize preferences, AudioFusion TWS will correct automatically the samples pitchs so they will be in time, but manual corrections are disabled (pitchs paddles and the "Align samples pitchs" command are hidden).

Part "MIDI settings":
 "Every channel -> sampler": all MIDI signals are sent to the sampler from whatever MIDI channel they come from. Each key of your piano keyboard has a dedicated track in the sampler. Therefore, pressing a key starts or stops the related sample.
 If you want the 16 first tracks of the sampler to be associated with the 16 MIDI channels, check "Channel ID -> tracks" (channel 1 = track 0, channel 2 = track 1, and so on...). In that case, the keys of your MIDI keyboard allows you to start or stop the sample and to set its pitch (C5 is the normal pitch).
 "Every channel -> synthesizer": all MIDI signals are sent to the synthesizer from whatever MIDI channel they come from, but only the active instrument receive the messages. If you want to associate the 16 first instruments to the 16 MIDI channels, check "Channel ID -> instruments" (channel 1 = instrument 1, channel 2 = instrument 2...).
 "Every channel -> rhythms box": all MIDI signals are sent to the rhythms box; where each key relates to an instrument.
 "Channel #? -> sampler": the MIDI signal whose channel ID is the one indicated at the left of "-> sampler" are sent to sampler. Same thing for the synthesizer (but only the active instrument receive the messages) and the rhythms box.

Setting the reverb:

Reverb parameters you can apply on sampler's tracks.

Button "Accept": confirms all the settings.
Button "Cancel": cancels all the modifications.

Part "Real-time reverb":
 "Enable reverb": check to allow reverb effect. The minimal memory size for AudioFusion TWS can grow to 1600K or more depending of the number of samplers' tracks. If you modify the state of this item, you must quit and restart the program **immediately** in order for the change to take effect.

Part "Room description":
 "Distance to walls": distance in meters between you and the walls of the room.
 "Walls attenuation": attenuation of the walls expressed in decibels. This value must be smaller than zero.
 "Reverb": volume of the reverb, indicated in decibels.

Part "Distance to sound":
 "Reference": distance in meters to where a sound was recorded.
 "Current": distance in meters to where the sound is played.

Setting the quantize:

The mixing aid system of AudioFusion TWS.

Button "Accept": confirms all the settings.
Button "Cancel": cancels all the modifications.

Part "Sampler":
 "Quantize sample starting": if this item is checked, AudioFusion TWS will delay samples starts, in order them to be in time with the rhythms box.
 "Quantize sample stopping": if this item is checked, AudioFusion TWS will delay samples stops, in order them to be in time with the rhythms box.
 "Auto align pitchs": if this item is checked, AudioFusion TWS will automatically correct the pitch of the sample when you load it, in order it to be in time with the rhythms box.

Part "Rhythms Box":
 "Quantize part muting": if this item is checked, AudioFusion TWS will delay the mute / unmute of a rhythms box part in oder it to be in time with the rhythms box.

Please report to chapter "The quantize" for more information.

Credits:

• Concept, programming, graphical interface and users manuals:
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AudioFusion TWS represents two years of work, which I began when I was 16. Please let me know what you think of the program, as well as what inprovements I might make in a future version, and please inform me of any bugs (with details about how they were produced please).
But above all else, do have tons of fun using the software.
(Please note that the WDEF for the windows was especially designed for AudioFusion TWS. It can not be used otherwise without the express agreement of its author.)

• AudioFusion TWS splash-screen:
André Durocher
© Syclone Multimedia
Montréal
CANADA

• Thanks to:
_ Pierre-Yves Renaud (FRANCE): 68K testing.
_ Kip Olson (USA): programming help for AIFF export.
_ Michael Cassady (FRANCE): spell checking for the english version of the users manual.
_ AudioFusion TWS description: Mikail Graham (USA)
_ Awesome technical support: Apple DTS (USA)

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