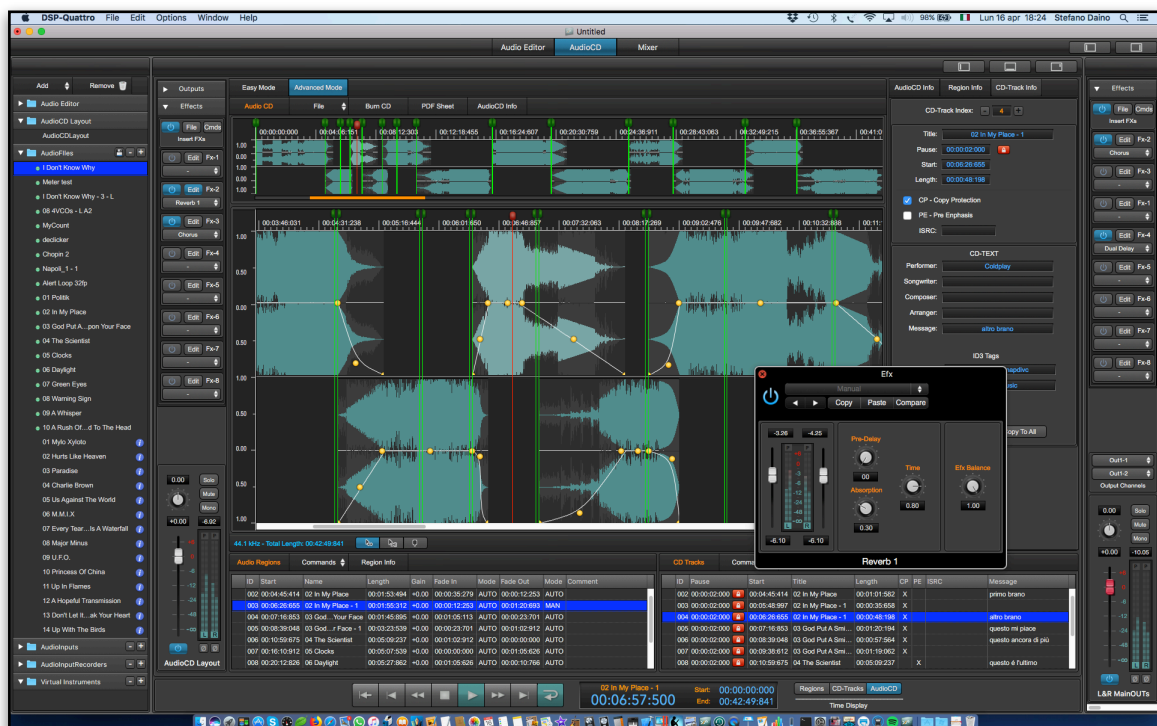# DSP-Quattro 5

User's Short Guide

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Written by Stefano Daino

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Introduction

Welcome to the DSP-Quattro User's Guide. DSP-Quattro is the direct result of a very long experience developing Digital Audio applications for the MacOS, starting with D-SoundPRO, the powerful audio editor developed since 1994 for Apple Macintosh™ computers, a highly innovative product which uses even the latest technology of the new millennium. DSP-Quattro inserts the new dimension of real-time into the world of audio editors, turning your computer into a real time workstation for music production, plug-in hosting and audio editing for writing files ready for mastering. All of the above through the smoothest interface you have ever seen. DSP-Quattro is designed for the most professional users, however, thanks to the simple and intuitive interface, DSP-Quattro turns out to be the ideal product for whoever has no experience in the field and would like to enter in the world of digital audio.

This User's Guide will show you all there is to know about DSP-Quattro.

What is DSP-Quattro?

DSP-Quattro is an extremely powerful Audio Editor / AudioCD Mastering Application with extended real-time and off-line support of AU Effect and Virtual Instrument plug-ins for the Apple MacOS.

- DSP-Quattro is a real time audio editor.

DSP-Quattro is the right software for all people who want to record, create or edit their audio work with the computer. With DSP-Quattro you can record audio sources, edit existing audio files, and even create new files ready for mastering. All these using various existing formats, thanks to the import function, such as WAVE, AIFF, SDII, mp3, m4a, DDP, etc. You will then be able to edit the new file starting with the basic Cut, Copy&Paste commands, to the most advanced algorithms, as the Time Stretching, Frequency and Pitch Shifting, Linear Phase Sample Rate Converter (SRC), and Digital Real Time Effects, like reverbs, stereo enhancers, graphic and parametric EQs, Analog Filter Simulators, and so on. And it is all built-in!

But not only that: DSP-Quattro is open to the standard third parties plug-ins as well. DSP-Quattro Editor allows you to use any plug-in exactly as any other internal edit function, offering also a real time preview of the result before to apply it. And, if you will not like the result, you have not to worry: DSP-Quattro internal engine keeps track of all edits and you can Undo/Redo your operations without any limitation.

- DSP-Quattro is the perfect tool for Audio CDROM mastering.

DSP-Quattro integrates CD burning that conforms to the Redbook standards for playback in any CD player. DSP-Quattro comes also with a fully programmable AudioCD Layout, offering all the features needed to build your audio CDROM by using your favourites songs or even selections of audio files. Several non-destructive cross-fade types can be programmed to make the transitions between your audio tracks even smoother, without audio clicks or abrupt changes. And, as very unique feature, DSP-Quattro allows you to setup a serial chain of effects (to choose from the internal list or from the effect plug-ins installed on your system), to play and master you AudioCD giving a tremendous additional power to your master. Even more, each track of the AudioCD may have its own chain of real time non-destructive effects, different from track to track to best suite all your needs!

CD-Texts, EAN/UPC, ISRC, PQ sub-codes are supported as well. You can even import/export the AudioCD layout according the DDP 2 standard.

- DSP-Quattro is an Instrument and Effect plug-in Host:

DSP-Quattro is also a great real time synthesizer and multi-effects that can be used by an experienced musician or by someone who simply wants to learn how to play an instrument. Thanks to its specific connection with audio plug-ins and MIDI, DSP-Quattro is able to play a real time standard Instrument plug-in by using a MIDI controller and/or a external sequencer, while listening to an audio file and recording everything on a new file! Even more, you can add in real time the effect plug-ins that better suites your needs. DSP-Quattro can even be used to better the sound quality of your voice or of your instruments as with a professional multi-effect, thanks to its real time management of the input/output connections of both internal standard and/or external analog/digital interfaces. All of the above without any additional hardware or using all the features of those eventually connected to your computer.

- DSP-Quattro is a tool for software and hardware samplers:

For all those among you that have already experienced music and both hardware and software samplers, DSP-Quattro is the perfect editing tool. In fact, DSP-Quattro offers not only a way of processing in floating point precision to satisfy even the more professional user, it offers also all the graphical tools for the sample-based editing of your audio files. You will be able to set loop points through a special loop editor window, and apply any internal or plug-in effect directly to your samples! DSP-Quattro guarantees the direct compatibility of audio files such as AIFF and WAVE, including the loop points information.

About Third Parties AudioUnit Plug-Ins formats

DSP-Quattro is capable to support Instruments and Effects plug-ins. Instruments can be used to play music in real time and to generate new audio files. Effects can be used as real time modifiers or as offline edit function with real time previewing. More about this will come later on this manual.

DSP-Quattro supports Instruments and Effects Audio Unit (AU) 64 bits plug-ins.

What do I need to use DSP-Quattro?

DSP-Quattro works on any Apple Macintosh with an Intel microprocessors running MacOS 10.11 (El Capitan) or higher.

The minimum requirements are: a CPU Intel Core 2 Duo, 1GBytes of free RAM, and around 50 MBytes of free space on your HD.

The audio and graphic engines of DSP-Quattro run at 64 bits and are multithread. If present, DSP-Quattro will use the CPU multicores.

Please consider also that the performances of DSP-Quattro are heavily dependent by the number of plug-ins and effects that are used at the same time.

If you have older systems, previous versions of DSP-Quattro which runs on previous versions of MacOS 10.11 - even on MacOS 9.2 - are still available upon request (but not supported anymore). Please contact the support@dsp-quattro.com to know the requirements to run it.

Mac standard audio interface can be used with DSP-Quattro by CoreAudio, which is built-in in the MacOS.

DSP-Quattro fully supports CoreMIDI, which is built-in into MacOS.

DSP-Quattro supports also all the external hardware audio interfaces if compatible with MacOS.

What do I need to know to use DSP-Quattro?

This User's Guide assumes that you know how to operate the Macintosh and are familiar with the basic Macintosh terminology such as point, click, drag & the MacOS file system and desktop. If you aren't familiar with these terms, you should refer to the Macintosh User's Guide to learn the basic operations of using the Macintosh. Optionally, this User's Guide assumes that you know what technologies like AudioUnit, CoreAudio, and, if you are interested to play software AU Instruments, what CoreMIDI and MIDI are.

Support:

DSP-Quattro official home page is:

www.dsp-quattro.com

Here you can find additional information on our product, you will be able to register your copy and, by being a registered user, you will be able to use a list of additional services in the user area.

At any time write us by e-mail at support@dsp-quattro.com to have the answer to your technical questions or for more information regarding the use of DSP-Quattro.

Installing DSP-Quattro

After downloading the DSP-Quattro archive from the web, your browser should decompress the zip archive and MacOS should automatically mount a disc titled DSP-Quattro.

If it does not happen, look into the Download folder on your HD for the DSP-Quattro zip archive, double-click on it to decompress it. Then, double click on the decompressed dmg file. Mac OS mounts a DSP-Quattro Hard Disk. Open it.

To complete the operation, drag the DSP-Quattro application icon into the Application folder.

Please read very carefully any additional documentation which is on the mounted DSP-Quattro disc, like About&FAQ and DSP-Quattro License.

Then, navigate to the Application folder on your HD, look for the DSP-Quattro application icon.

Running and Registering DSP-Quattro

Double click on DSP-Quattro application icon to run it. Then, please refer to the DSP-Quattro Installation GUIDE which is in the DSP-Quattro disk image to know how to register your full version of DSP-Quattro.

That's it. Enjoy DSP-Quattro!

The Basics of DSP-Quattro

The Basics of DSP-Quattro

To make the most of DSP-Quattro, it is important to understand how it works.
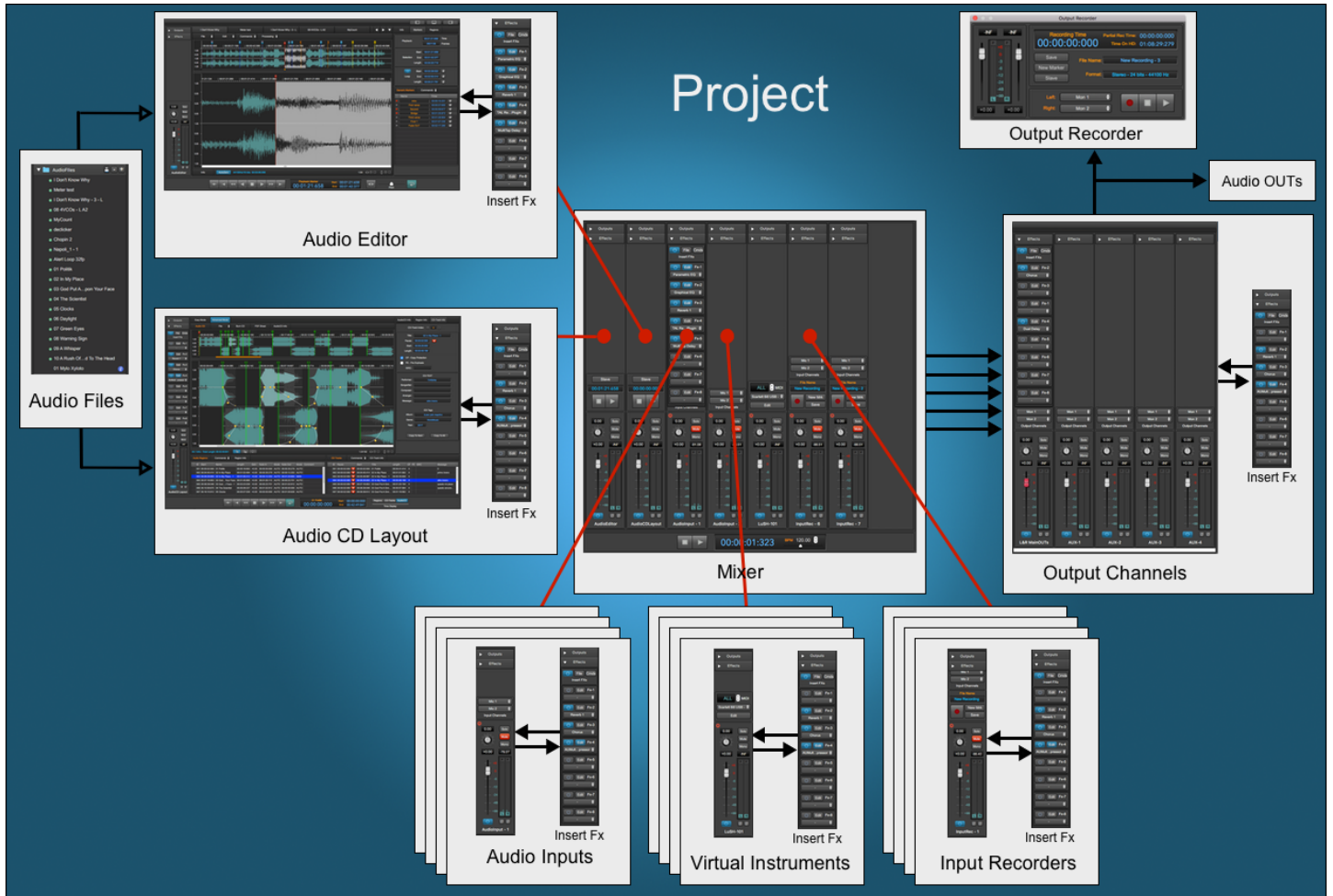
The Project: a project is the document used by DSP-Quattro. The project is a container including all the objects you need to accomplish your work. You start using DSP-Quattro creating a new project or opening an existing project, and you must decide if you want to save or discard the edits you did on your project when you quit DSP-Quattro.

When you wish to edit your audio files, or you wish to build an AudioCD, you import the audio files into the project. DSP-Quattro will make a copy of each of them into the project bundle. Then, DSP-Quattro will not touch anymore your source audio files, it will work on its internal copies: when you save the edits on your audio files using the Audio Editor, DSP-Quattro updates the internal audio files, not the source audio files. So, to re-use the edited audio files outside DSP-Quattro, you must export them back to MacOS file system, eventually replacing your source files if this this is what you want to do.

If you need, you can add to the Project also Audio Inputs and Input Recorders modules, you can also load and configure your Audio Unit Virtual Instruments, load your plug-ins on insert to your audio sources or on output

channels. When you quit, you can save the Project if you wish to keep what you have done.

The Audio Generators: DSP-Quattro is based on Audio Generators. By Audio Generator we mean any source of sound. Examples of Audio Generators are any kind of audio file player, audio input, and virtual instrument plug-ins. In the real world, in a recording studio, a recorder, a synthesizer, a piano, a microphone, a musician playing his instrument would all be considered Audio Generators.

In DSP-Quattro it is possible to open or create as many Audio Generators as you want. These Audio Generators can than be played one at a time, all together or not even be played at all! A generator can be loaded or released dynamically, regardless of the other generators.

Effects and MasterOut Recorder: the sounds created by Audio Generators go into a mixer that has one Master Out + four Aux channel strips, each one playing in stereo. It is possible to load on insert to each channel strip a series of real time effects that can be chosen among the internal effects of DSP-Quattro or among the third-party AU effect plug-ins installed on MacOS. What you listen on output of the stereo channels can be even recorded as a new file using an Audio Output Recorder, and/or can be addressed to your audio devices, such as your Mac audio output or to an external audio device connected to the Mac.

The next chapters will deal with how to use different Audio Generators, how to configure an effects chain, and with all the other functions of DSP-Quattro.

Audio File Editor: a special kind of Audio Generator is the Audio File Editor. It is not only capable of playing an audio file, but it allows you to edit the file by a several different editing functions.

If you are already used a digital audio editor, the Audio File Editor of DSP-Quattro will look just like what you may have already used. But please do not stop at the use of DSP-Quattro as a simple audio editor, although it has all the possibilities to do so. DSP-Quattro introduces a new dimension of audio editing, and the time you will spend to understand how it works will be spent very well.

The AudioCD Layout: another very important component of DSP-Quattro is the AudioCD Layout. The AudioCD Layout is able to play a sequence (often called also playlist) of audio files or only portions of audio files. Each of these is called 'Audio Regions'. It is also possible to set cross-fades between an Audio Region and the next one, to avoid abrupt changes of the output audio stream, making smooth transitions between them. You can also place markers to set the CD-Track starts and preGaps - or pauses - of your audio CD-ROM. The AudioCD Layout output can be rendered to disc as a new audio file, can be used – in real time - as audio generator itself, or can be used to create an image of an audio CD-ROM, using a standard format called DDP. Moreover, DSP-Quattro is able to burn audio CD-ROMs by itself, if you have an internal or external CD writer device connected to your Mac.

Following are basic examples of what can be done with DSP-Quattro. And they could be even many more…

NOTE: Everything shown in these examples is dynamic and therefore can be fully customized by the user. Nothing stops you from adding or closing any of the elements, and to create a mix of the different configurations shown in the examples.

Using DSP-Quattro as Audio File Editor

You can choose to open/save audio files in all the most used formats, like AIFF, WAVE files (8, 16, 24, 32 or 32-Floats bits/sample), mp3, m4a,… or joining L&R channels from dual mono files if needed, and you can even import/export from/to RAW binary files. Again you can open different files at the same time and copy&paste data to one another audio file using the audio clipboard of DSP-Quattro.
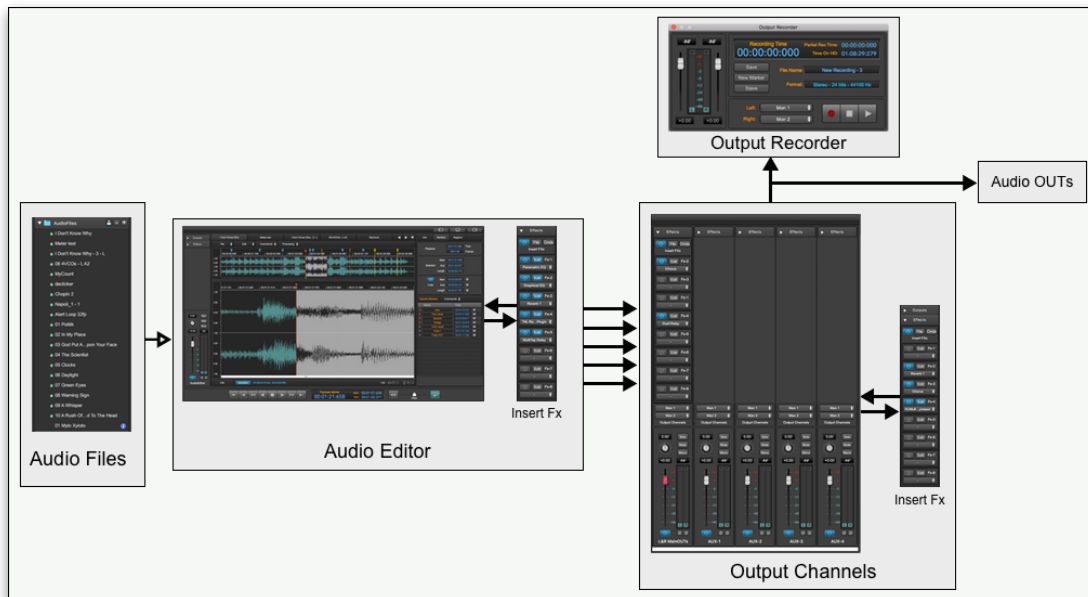
DSP-Quattro offers a range of editing possibilities. Not only the basic Cut, Copy and Paste editing commands, but also highly professional commands such as High Quality Time Stretching and Frequency Shifting algorithms, an amazing De-clicker for audio restoration, reverbs, stereo enhancers, graphical and parametrical EQs, Analog Filter Simulators. Moreover, DSP-Quattro has been developed to host standard Audio Unit effect plug-ins, which can be used as edit function as well.
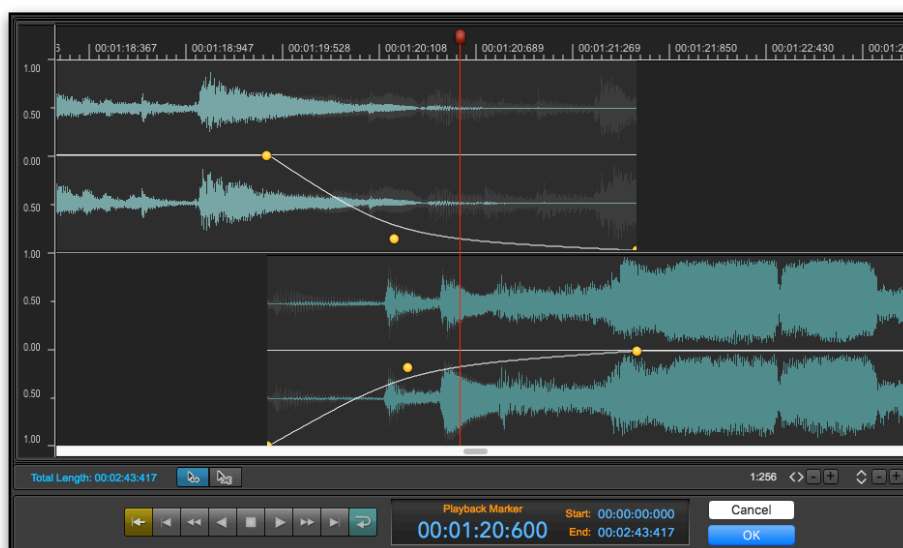
DSP-Quattro includes a very special Cut Editor as well. Using it, you can very easily remove portions, paste different audio materials on your audio file just looking to it and dragging waveforms back and forth in the time line to set crossfades between the regions, before and after the cut, avoiding abrupt changes or clicks on the resulting audio stream.

And don't forget that the editing is not destructive, because DSP-Quattro offers an infinite number of Undo/Redo levels. Last but not least, all the editing algorithms work with the precision of 64 bits floating point arithmetic when needed, to guarantee the best dynamic and professional results.

A series of real time effects can be added, both as insert on the audio file under editing and as global to the master out or to one of the auxiliary outputs.

Each effect can be chosen among the internal effects of DSP-Quattro and/or between the Audio Unit effect plug-ins installed in your system. There is also a very special internal 'plug-in' to address output/inputs of the Mac (or of the external audio device connected to your mac), so you can route your audio signals to/from an external analog/digital audio hardware.

The insert chain of effects can then even be used as an off-line editing algorithm to "render" it into a new audio file.

Not only this. Using the built-in Output Recorder of DSP-Quattro, which his able to make a new recording of what you are listening to the output of DSP-Quattro. Using it, any real time modification done on an audio file which is playing - such as pitch changes, time stretching, using jog shuttle in Audio Scrub mode, etc. - can be recorded into a new audio file.

Using DSP-Quattro as Digital Audio Recorder

Input Recorder Module
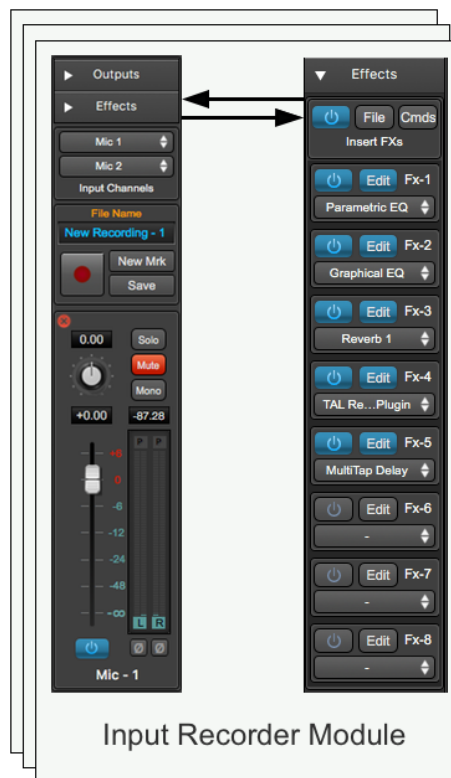
The easiest way to make a new recording is to open an Input Recorder. This object is able to create a new audio file, choose a pair of stereo audio inputs (or only one input, if you prefer) and then record everything exactly as with a traditional recorder.

You can open how many Input Recorders you wish at the same time. This could be very useful when you have audio interfaces with multiple audio inputs. All them will be synchronised with the transport control of the Mixer Transport bar.

Each Input Recorder may have its own effect chains on insert.

DSP-Quattro offers also another possibility to make a new recording: the Output Recorder. It works almost as the Input Recorder, but it dumps to file everything that DSP-Quattro sends to the audio outputs. Because it takes its inputs after the mixer, in the case in which you use multiple Input Recorders, ending a multiple recording sessions you will get one new file for each Input Recorder, plus one file with the mixed audio. And, last but not least, you can configure different insert Fx for each recording, and for the mixed recording on output, of course.

And, of course, while listening to one input DSP-Quattro can play any other audio file and record everything mixed by using the Output Recorder...

Using DSP-Quattro for audio CD-ROM Mastering

DSP-Quattro allows you to do new recordings, get your audio files, edit them, improve the audio quality of your product, build your AudioCD layout, and even burn and audio CD-ROM which is compliant with the Redbook standard, extended to include CD-Text, EAN/UPC CD-ROM Disc code, CD-Track ISRC and PQ sub-codes. You can import/export the AudioCD layout according to the DDP 2 standard as well.

In just a few steps you will have your AudioCD ready for the distribution:

Step 1: *Record your audio files or import your audio files into the DSP-Quattro Project.*

Use DSP-Quattro as Digital Audio Recorder, as described above, to do your new recordings. DSP-Quattro will add the new recordings to the list of the imported audio files, ready for being used for editing or for building a new AudioCD Layout.
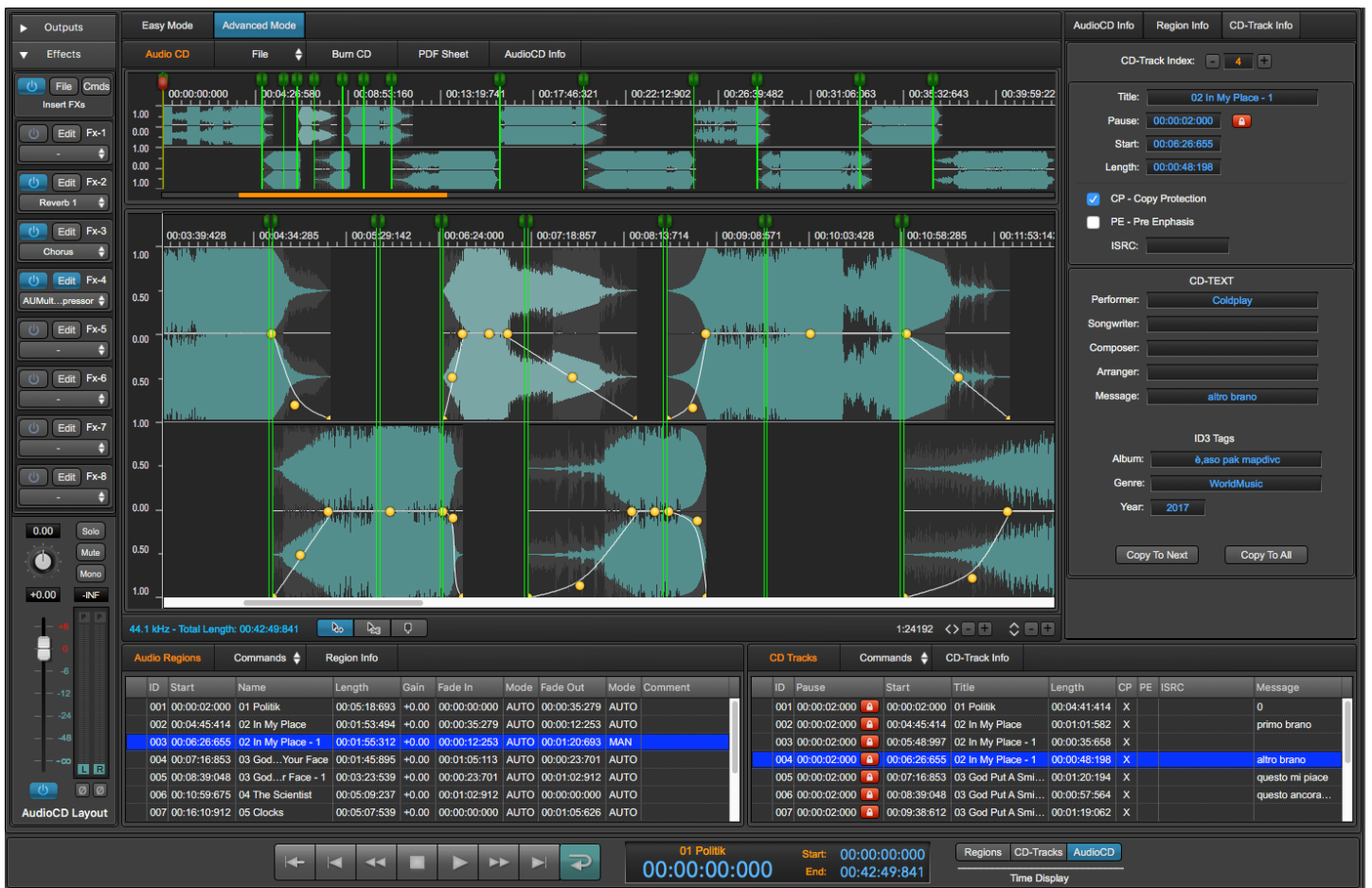
Step 2: *Edit your audio files and improve the audio quality.*

Use the Audio File Editor of DSP-Quattro to edit your audio files and to apply its internal effects or your favorite Audio Unit plug-in to clean or to improve their dynamics, modify their frequency spectrums, add reverbs and enhance the stereo image, and more.

Audio Editor

Audio CD Layout

Audio Files

MacOS X Finder
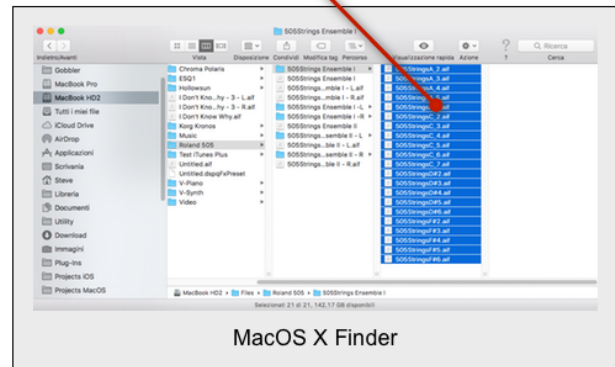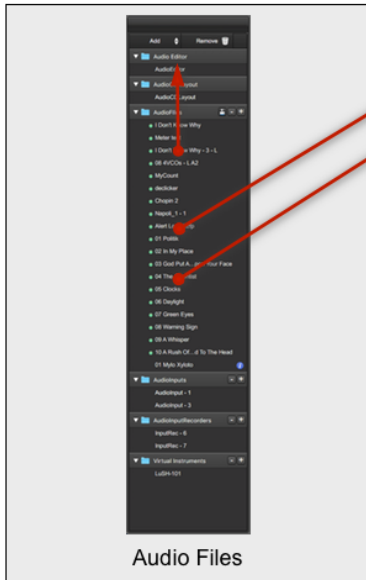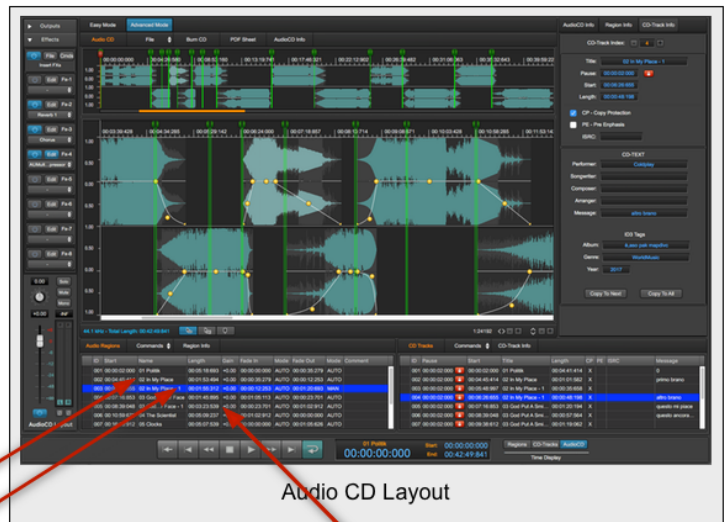
Step 3: *Build the AudioCD layout.*

Use the audio files, or simply their selections/regions to build the sequence you want to burn on your AudioCD. By mouse dragging each region on the AudioCD row on the table on the left of the Project main window, DSP-Quattro will automatically add a new AudioRegion on the AudioCDLayout. The, step to the AudioCD to set the cross-fades between Audio Regions to avoid clicks and for the smoothest transitions between them just dragging each AudioRegion waveforms back and forth on the time line. You can also use DSP-Quattro for setting realtime non-destructive serial chains of effects differently for each track, or on the AudioCD Layout output if you want to apply the same effects to all the Audio Regions. You can choose the effects among the real-time effects internal to DSP-Quattro or Audio Unit effect plug-ins installed on your configuration.

**Step 4**: *Save your work, burn and AudioCD or export as DDP.*

As soon as your AudioCD layout suites all your needs, save your Project. Then, you can export the AudioCD Layout as and audio file using the very best audio audio format (DSP-Quattro allows you to save even with 32 float sample bit precision), export each CDTrack as single audio file, choosing the audio file format you prefer, including the iTunes Plus AAC, the format used to upload the audio file to iTunes Music Store.

DSP-Quattro allows you also to burn an audio CD-ROM directly using your Mac, without the need of additional software. The resulting audio CD-ROM will be compliant with the Redbook standard, to guarantee the perfect compatibility with all the audio CDROM players available on the market.

If you need to distribute your AudioCD as a master Audio CD-ROM image, export it as DDP. DSP-Quattro will then create a folder including all the files needed, including CD-Texts, EAN-UPC, ISRC and PQ codes.

Using DSP-Quattro as Real-Time Digital Multi-Effects Unit

The chain of effects in the Master Out can be easily changed to use DSP-Quattro as a Real Time Digital Multi-Effects Unit. All you need to do is to open an Audio Input, set a couple of input, load the chosen effects in the Master Out, and choose the output.
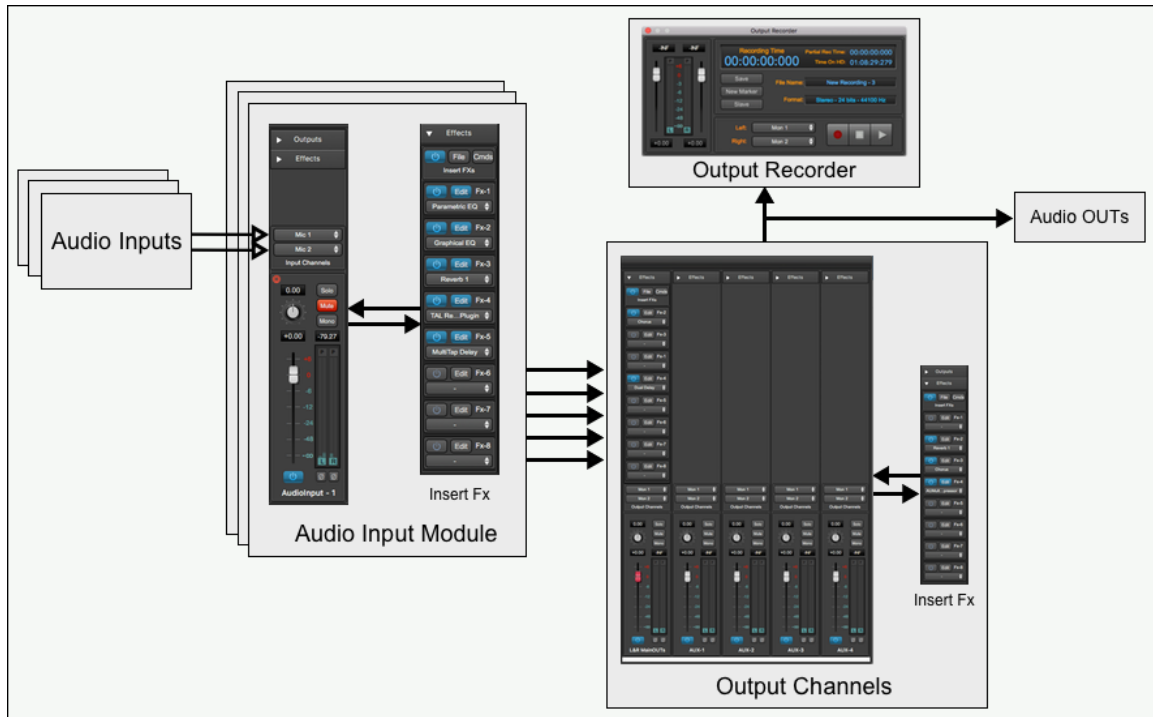
Your Mac, without any other hardware or software, is now a Digital Multi-Effects Unit. And since DSP-Quattro let you choose the input and output on your audio board, this use allows you to turn the built-in real time effects or your Audio Unit Effect plug-ins into a professional stand alone processing units for your recording studio.

This possibility can be extended, because each Audio Input may have its own insert effect chain. It allows you to set-up a fully customizable parallel real time multi effect unit, with any limitation except the CPU power…

Even more, an external hardware effect unit can very easily be integrated into the effect chain of DSP-Quattro, simply using its special internal module to address hardware Input/Output devices of your mac.

In this way, the audio stream will be routed to a pair of L&R outputs and taken again from a pair of L&R inputs, and external hardware will be seen exactly as an internal plug-in.

Using DSP-Quattro as Software Synthesizer

As with what has been said before, you can open a Audio Unit Instrument plug-in, set it to use it with a MIDI port and a MIDI channel, and play it in real

time listening to it through the output. You can even process it with the chain of effects loaded in an Insert Effects chain (independent for each open Instrument) or in the Master Out Effects chain, recording everything while playing, if that's what you want!
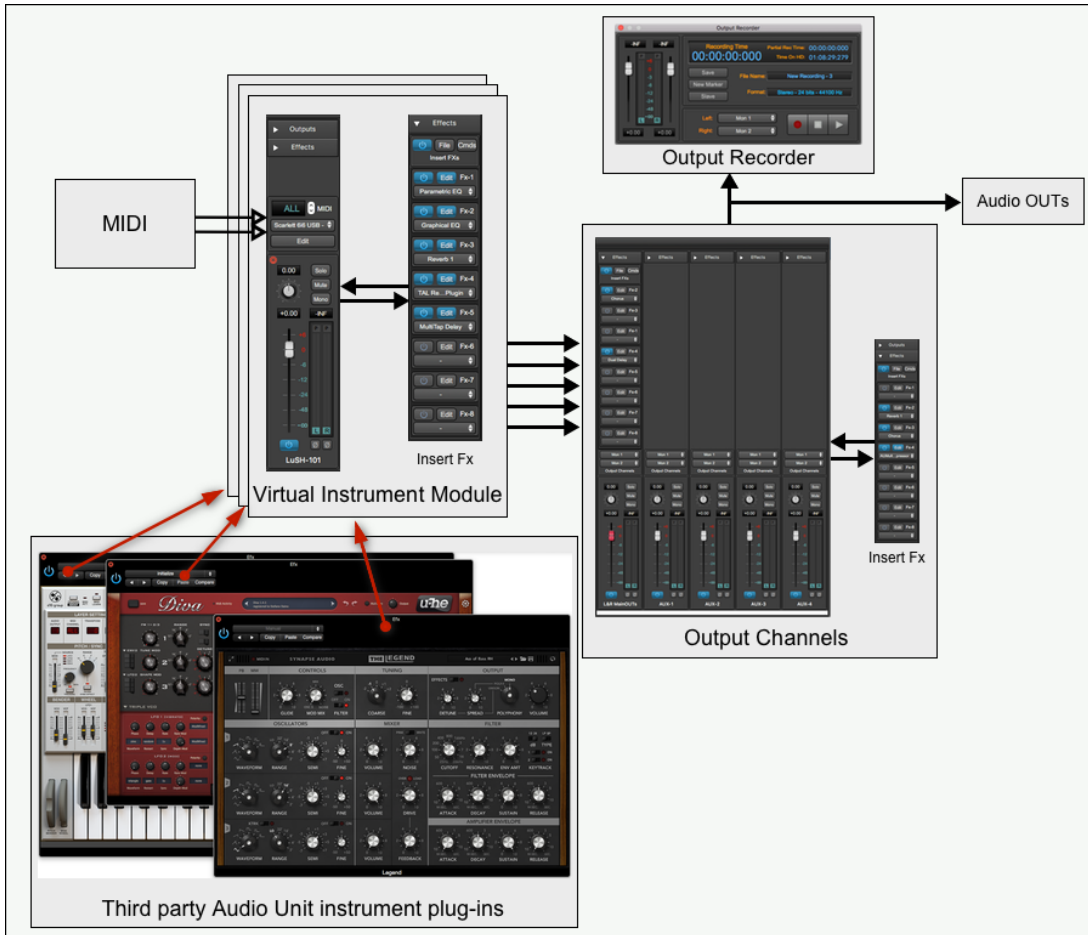
You can play a Virtual Instrument plug-in in real time by using an external MIDI control, or by using a sequencer. It is always possible to open several different virtual Instrument plug-ins at the same time (even the same plug-in more than once), and mix this configuration with the others. This allows you to record what is played while listening to an audio file, or while singing into a microphone connected to the Mac, or while you are playing a Virtual Instruments and your friend is playing a guitar connected to an Audio Input Module and using different effects on insert…
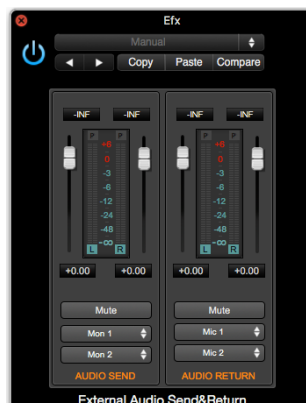
All of the above are possible simply opening, creating or closing Audio Generators, and without worries about setting new systems or make audio connections. All connections are automatically handled by DSP-Quattro.

All you need to do is open a new object to use it. And when you don't need it anymore, simply close it again.

What's next…

Now you should download and read the Full User Manual, which deals with the different parts of DSP-Quattro, how they work and how to use them. The full user manual describes the Audio Editor, the AudioCDLayout, the Mixer, the different audio generator modules, all graphic interfaces, software and hardware compatibility and so on. Also a complete list of menu commands and the instructions about how to use them are included.