Mac OS QuickStart
CD-R Deluxe & CD-R Pro

Packing List

The following items should be present in your CD-R bundle:

CD-R Deluxe:
- TEAC 6x24 external CDR drive (CD-R56S)
- CD-R Deluxe Software CD

CD-R Pro:
- TEAC 8x24 external CDR drive (CD-R58S)
- CD-R Pro Software CD

Both Bundles:
- SCSI Card (Adaptec 2903B)
- SCSI Cable
- SCSI Terminator
- (2) Blank CDR media
- TEAC CD-R Drive Installation Guide
- CD-R QuickStart Guide (That'd be this book.)

Installing the Software

A hardware installation booklet has been included with this package; look to it for installation of the CD-Recorder. Also, if you are new to installing software on your Mac, be aware that you will probably have to restart the computer in between each installation.

To install the software, make sure your CD-Recorder is connected. If you are using a Macintosh that does not have a standard SCSI Port, install the included SCSI card before installing the software. (You will need to have the card in place before installing the drivers to control the card.)

Insert the software CD into your CD-ROM or CDR drive. There are several programs you will need to install:

Adaptec Toast - Data CD & Audio CD Authoring

TC Works SparkLE - Audio Recording, Editing and Processing

Apple QuickTime 4.0 - Offers support for more advanced multimedia, including playback of MP3 files. *The QuickTime installer may ask for your type of internet connection. The install is on your software CD-ROM, so an internet connection is not necessary. It is there to help QuickTime select the best streaming settings for your machine.*

Adaptec 2903B Driver - If you are using the 2903B SCSI card, you will need to install this driver to recognize the card. If you are not using the SCSI card, DO NOT install this driver.

CD-R Pro Only:

Xing Technologies AudioCatalyst - MP3 Encoding

Adaptec Jam - Advanced Audio CD Authoring *The CD-R58S driver file MUST be placed in the same folder as the Jam application. This file is on the CD-R Pro software CD.*

CDR Introductory Tutorial

CDR (Compact Disc Recordable) media can store up to 74 minutes of stereo audio, or up to 650 megabytes of data. CDR media can only be written to once, so the CDR authoring software allows you to design your CD completely before you burn it. Since the CD must contain a directory of what is on it, and since that directory is on the write-once only media also, <u>all</u> of the information must be burned to the CD at the same time. Recording the information to a CD is done in a *Session*.

While audio CD players will only recognize the first session on the CD, many CD-ROMs will read multiple sessions. A CD with more than one session is called a *Multi-Session CD*. So, if the first session only contained 200 megabytes of data, you could record another session behind it up to approximately 450 megabytes. (It won't be quite that big

because of the extra space taken by the new directory.) Remember though, older CD-ROMs may not search for those extra sessions.

When you get ready to design the session, you will first need to determine the format of the CD. Some of the common CD formats you can create with Adaptec Toast and Jam are listed below:

Audio CD - This is the standard CD format you can use in your Audio CD player. You can have up to 99 *tracks* of audio, with adjustable silence breaks in between each track. The audio tracks must be recorded in stereo at the CD standard of 16 bit/44.1kHz. Remember, multiple sessions will not be recognized by an audio CD player. If you do not have the audio in the computer yet, you may need to use Peak LE to record and prepare your audio.

Mac Volume - Use this format if you want to make the CD a *bootable CD*. That is, it can be a Mac Startup Disk. This is great when you are making a troubleshooting CD, or if you just need a different system set-up occasionally. Keep in mind that to create a Mac volume, you must set up a hard drive or a partition exactly as you want the CD to turn out. You will not have the opportunity to add or remove other files when using this format.

Mac Files and Folders - When all you want to do is throw a couple of files on a CD for personal back-up or distribute a few select files to another user who is definitely on a Macintosh, the Mac Files and Folders is the easiest way to do that. Unlike a Mac Volume, you can pick and choose the files you want, rearrange the hierarchy, and change the names if you choose. However, you cannot make a bootable CD with a Mac Files and Folders format.

ISO-9660 - Originally specified for DOS CD-ROM use, the ISO-9660 now has multiple improved variations for DOS, Windows 95, and Macintosh. This format has good back-up capabilities for Macintosh when used as a multisession CD. Also, since most Macintosh computers are able to read Windows CDs, this is a great method to store cross platform material such as JPEGs, HTML, or even basic word processing and graphic files.

Hybrid Mac/ISO - The hybrid format allows the maximum control when delivering files to Mac and PC users. You can create a CD where PC users will only see the ISO-9660 format, and the Mac users will only see the Mac Volume format.

> *The CD that came with your bundle is a great example of the Hybrid format. If you put the CD in a Macintosh, you'll see the Mac software. If you put the CD in a Windows machine, you'll see the Windows software.*

For more information on the various types of CD formats, check the Adaptec Toast manual. (It is in PDF format on your software CD-ROM.)
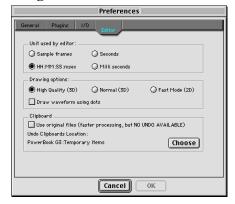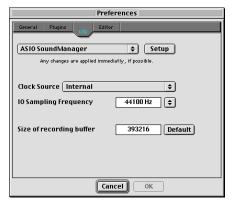
TC Works SparkLE
Setting Up the Program

If this is the first time you've run SparkLE, there are a couple of preferences we would recommend changing. To get to SparkLE's preferences, start the SparkLE application, then click on the **File** menu and drag down to **Preferences**.

Clicking on the tabs in the top of the window will take you through the various options. Here, we have chosen to use the regular time readout instead of viewing the total samples.

If you have a slower machine and the screen takes a while to re-draw the waveforms, you may wish to use lower quality drawing options to speed up the drawing. This would also help machines with limited RAM.

The I/O tab shows the sound source. Again, if you have a special sound card you wish to use, you will need to select that at the top.

Once you've made these changes, you will probably need to restart the program to have the changes take effect. So, quit SparkLE.

While we're out of SparkLE, this might be a good time to change the RAM allocation. The program defaults around 24MB. Depend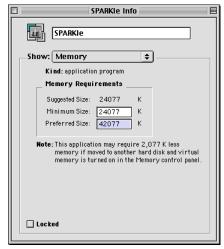ing on your use of the DSP and your CPU speed, you may want to bump this up. With our G3, we allocated 40MB of RAM, and didn't have any problems.

To change your RAM allocation, click on the SparkLE icon once, and press Apple-I. The info box above should pop up. Then, click on the pop-up bar at top and select Memory. Change your "Preferred Size" to how much RAM you need.

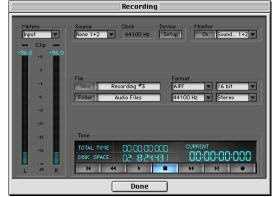It is important to understand that "Preferred Size" is how much memory the program will try to take, but "Minimum Size" is the minimum that the program will accept before refusing to boot up. So, if you only change your preferred size, that doesn't mean that the program is actually getting any more memory, but rather that it is asking for more. The actual allocation depends on the available memory.

To be sure that you are getting more memory, increase the minimum size as well. This way, if the program cannot get the memory, it will prompt you to quit other applications to gain more memory.
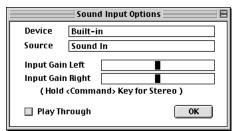
Recording into SparkLE

Now that the program is properly configured, we're ready to start recording audio into the computer. When you press Record, you should get the recording screen.

From this screen, you will be able to record audio into the computer. You should be able to discern if the input is selected properly. (The level meters will display the audio coming into the computer.) If you are not getting any readings there, click on the button in the top center of the menu that is labeled **Device, Setup**.
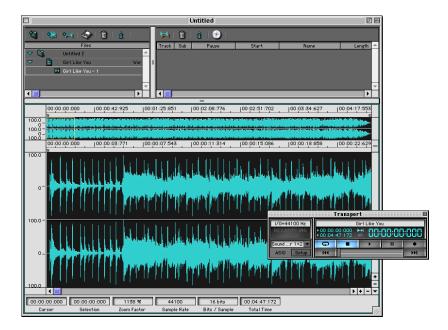
When you click there, you can select the input to use for recording, and adjust the gain on the input. If this is properly set, click **OK**.

Now you're ready to record. Click on the Record button in the Record Window, and start playing your source audio. When you're done, click stop. You can check your audio before leaving the window by using the transport bars inside the window. Once you're happy with the recording, click on **Done**.

The program will save the recording, and start generating a waveform. When that's done, the audio should be displayed in the normal window. The top waveform shows the entire song. The bottom waveform is your zoom window for editing and processing.

Before we go any further, it would probably be good practice to save the project. Save frequently and often. It's a good practice to get into.

Audio Editing & Processing in SparkLE

Now that the audio is inside the computer, let's go over some basic techniques that will take your mixdown, and give it the professional touch!

Tight Leadering - To delete the dead space before and after the audio, click and drag across the audio that you want to keep. You can audition the audio by pressing the space bar. To move the edges of the selection, hold shift, and drag across to your new selection point. Once the region is as you want it, drag down from the **Edit** menu, and select **Trim**.

Fade - To add a fade to the beginning or end of a file, simply select the portion of the file to be faded, go to the **Process** menu, and select **Fade**. You will get a menu that offers several different Fade curves. Choose the one you want, and press **OK**.

Normalization - SparkLE also has a normalization function. This takes your recording, find the loudest point in the audio clip, then mathematically increases the volume of the audio clip so that the loudest point is at maximum volume. This is great for increasing the volume of recordings that were done too quietly. To normalize the audio file, drag down from the **Process** menu and select **Normalize**.
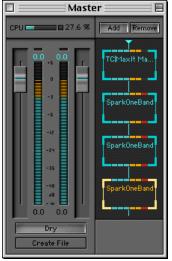
The Master Screen

Also included with SparkLE are several plug-ins for real time processing. TC|MaxIt is a look ahead compressor. SparkOneBand is a single band of parametric EQ. There's also TC|DelayIt, a delay processor.

To get to the plug-in control screen, click on the **Windows** menu above, and select **Show Master**. The window should pop up with 4 blank plug-in sockets. To add a plug-in to the chain, select a location, and press **Add** in the top of the window. The plug-in screen should show up, offering controls for the plug-in. To remove a plug-in, select the plug-in you want to remove, and press **Remove** at the top.

The great thing about having several plug ins, is the ability to mix and match. You can have the maximizer, a delay, and two bands of EQ. Or, you can have 4 bands of parametric
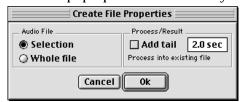

EQ. Mix and match. Swap 'em up. Whatever you need to do to get the sound you want, go for it.

The important thing to keep in mind here is that the plug-ins are processed in real time. The processing isn't written to the hard drive at all.

If you want to apply this processing to the file for use in another program, you'll need to click on **Create File** at the bottom 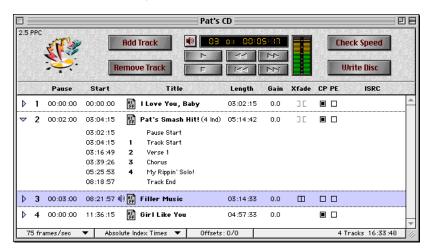of the Master Window. A pop up window will ask you if you want to write the entire file, or just a selection. Make your choice, and you're done! You've just completely mastered your audio!

Adaptec Jam!
CD-R Pro Only

To start assembling your CD, boot up Jam and simply drag and drop all the song files into the Jam window.

The songs you have selected for this CD will appear in the window, along with pause between tracks, time the track starts, and the track length. You can change the order simply by dragging the song files around.

There are some powerful real-time (non-destructive) processing features in Jam that make assembly of professional sounding CDs a snap. You'll notice there is a column for **Gain** on each song. If your songs are playing back at different volumes because of varied levels during recording, you can make fine adjustments here.

Also, if you are trying to have continued play from one track to another, such as with live recordings, you can do a crossfade in the **Xfade** column. For this, this pause between tracks have to be set to zero. There are different gain curves that you can experiment with to make the transition as smooth as possible. (The crossfades are represented by two curves; each curve represents channel levels over the length of the crossfade.)

Again, there are far more advanced features included with this package, but we'll leave that to the Jam manual.

Once you've got your CD assembled, click on Check Speed in the upper right corner. For the first few CDs you make, we highly recommend doing test burns first. Depending on what your source data is coming from, the source drive may not be fast enough to support 6x burns. This can be even further complicated if your drive is "fragmented," meaning the data is not in a continuous block on the drive. (This happens frequently when the drive is nearing capacity.) So just to be safe, run the test before burning so you are sure the system will run properly. If your system is having trouble keeping up with the drive, read the "Troubleshooting Underruns" section at the end of this Guide.

Once the test has successfully been completed, go ahead and click on Write Disc. You will get a screen that gives you the option of Write Session or Write Disc.
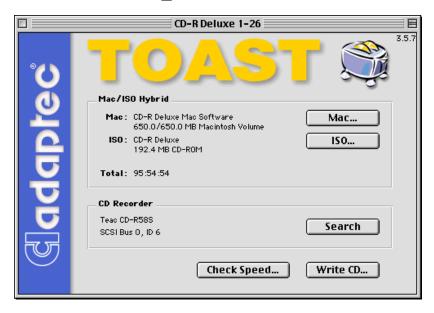

Write Session means you will burn a disc, but you do not close it off. An application like Adaptec Toast will still be able to write data information in another Session behind it.

Write Disc means the disc is closed off, and no further sessions can be recorded behind it. If you are making a CD that is going to a duplication house, you will want to use Write Disc. Also, if you have no intention of recording anything else after the CD, you can close it off.

Once you've clicked on your option, the CD will start recording. When it's finished, you're on CD!

Adaptec Toast

Open Adaptec Toast, and go to the **Format** menu to select the type of CD you wish to record. If you are burning an Audio CD, then choose **Audio CD**. If you are simply trying to back up select files from your computer, use **Mac Files & Folders**. If you are trying to distribute data to both Mac and PC users alike, use the **ISO-9660** format. (Both PCs and Macs can read those.)
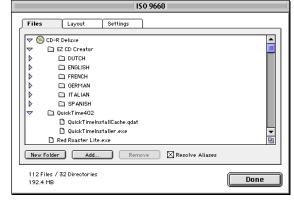

The files can be selected by dragging and dropping the files and folders on the Toast window. To see the hierarchy of the disc you are assembling, click on the **Data** button (or the **Audio** button if you are making an Audio CD.)

You can move files from one folder to another, create new folders, or remove files from this screen. To rename the disc,

double click on the CD icon and name it whatever you like. When you are through assembling the CD, click **Done**.

Once you've got your CD assembled, click on **Check Speed** in the bottom. As we mentioned in the Jam burning process, it is wise to try a test burn to get a feel for the performance of your computer. If your system is having trouble keeping up with the CDR drive, read the "Troubleshooting Underruns" section at the end of this Guide.

Once the test has successfully been completed, go ahead and click on **Write Disc**. You will get a screen that gives you the option of **Write Session** or **Write Disc**.

Write Session means you will go ahead and burn a disc, but you do not close it off. Toast will still be able to write data information in another Session behind it.

Write Disc means the disc is closed off, and no further sessions can be recorded.

Once you've clicked on your option, the CD will start recording. When it's finished, you've recorded your CD!

AudioCatalyst Tutorial

(CD-R Pro Only)

What is MP3?

MP3 has created quite a buzz, but what is it really? MP3 is a compression format for storing audio with excellent fidelity, yet only taking approximately 9% of the data space. MP3 is short for MPEG (Moving Picture Expert Group) type 1, layer 3. If you're curious about other types of MPEG compression, you can find their web site at:

http://drogo.cselt.stet.it/mpeg/

What MP3 offers is a way to distribute your music much easier. Currently, the main uses for MP3 are for personal players (walkman-type units) and for internet distribution of audio. You can use MP3 to put a clip of your band on the internet, or even to exchange musical ideas with someone else via email.

AudioCatalyst is an MP3 encoder/player. It can encode regular WAV files to MP3. If you already burned your audio to a CD, you can also use AudioCatalyst to encode files directly from the audio CD.

Encoding Options

There are a good deal of options when creating MP3 files. There are different data rates, CBR vs VBR, and mono vs stereo. For your first time, try doing 128kbps, CBR and stereo. That is the typical layout, and the most compatible. For reference, the terms are defined below.
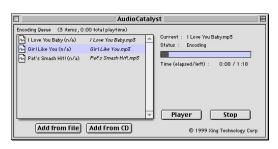
data rate - Data rate simply defines how much throughput the MP3 file will take. The data rate most people use is 128kbps (kilobits per second), but it can vary from 32kbps up to 320kbps. The higher the data rate, the higher the quality.

CBR vs VBR - In order to capture different sounds with true clarity, some sounds can take less space... other sounds are more demanding. CBR (Constant Bit Rate) was the original spec designed for MP3, and is compatible with virtually all MP3 players. VBR (Variable Bit Rate) basically adjusts the amount of data used to encode the sound according to what is needed. VBR typically sounds better, but older MP3 players may not be able to use it.

mono vs stereo - This is pretty self explanatory, but it is important to realize that a stereo signal does not necessarily take twice as much space as a mono signal. (Ain't compression skwewy?)

Encoding MP3 Files

To encode audio to MP3, start up AudioCatalyst. At the bottom of the window, you can select files to encode from either an audio file (such as AIFF) or from a CD. **Add From File** chooses audio files, and **Add From CD** chooses tracks from a CD. The songs will be shown in the list in the left side of the window.

To encode the files, press encode. AudioCatalyst will prompt you for a location to save the files to. Once you determine the location, AudioCatalyst will begin encoding.

The player button in the AudioCatalyst window is a convenience feature allowing you to launch an MP3 player from AudioCatalyst. We have included QuickTime 4 in this package which comes with a player, but you may use any player you wish. To select which player you'd like to come up, go to the Player menu and select Set Player.

Playing MP3 Files

Playing MP3 files is as easy as selecting the file to play. This player is the QuickTime 4 Movie Player.

Select an MP3 file by clicking on the File menu and dragging to New Movie. You will have the familiar browsing windows. When playing files, remember that the volume on the front of this player is further adjusted by the master volume for the computer in the Sound Control Panel.

To get the balance, bass and treble controls, click on the :: button.

Troubleshooting

Underruns

Let's start with a basic understanding of what's involved. Here are some basic terms you will need to understand to navigate the world of data transfer:

Access Time - How long does it take from the time the computer asks a drive for data until the drive starts spitting it out? This is usually measured in ms (milliseconds).

Throughput (aka Transfer Rate) - Once the drive finds the information, how fast can it transmit the data? This is usually measured in MB/sec (megabytes per second).

Fragmented or Optimized - Is the information on the drive written in one continuous data stream, or is it broken up into several pieces around the drive? If the data is in one continuous stream, it is optimized. If it is broken up, it is fragmented.

Once you understand the previous terms, then we're ready to troubleshoot! Let's first understand the relationship between all of these.

Think of a disk drive as a book. If you are reading a book from page one to the end, you can read a certain number of words per minute. When you read a newspaper, and the story on page B1 is continued on page B14, you are spending time looking for the continuation of the story. Suddenly, it takes longer for you to read the same amount of words. Even worse is a Choose-Your-Own-Adventure book. With these, you can only read a few paragraphs before you have to find the next part. This slows you down considerably.

So it is with hard drives. If everything is streamlined, then the data will flow quickly. If the drive has to search for all the parts continuously, the data flow suffers.

So, one suggestion may be to optimize your source drive. That will put each file in one continuous data stream. You

can do this with a multitude of applications, such as Norton Utilities.

Another solution is to create a **disc image**, which will write (in one continuous stream) <u>all</u> of the information for the CD to a disk drive, including the directories. This is sometimes necessary for slower hard disks to operate with faster CD burn speeds.

Of course, one other solution is just to reduce the recording speed of the CD-Recorder. Some source disks may just be too slow for higher speed recording (ie Zip, old 44 meg SyQuest, etc). Also, if you're just making one quick CD, it may be faster to simply record the CD at 2x or even 1x, instead of defraging the drive, then burning the CD at 4x.

Other problems

<u>Jam cannot identify the CD-Recorder</u> - There is a file labeled TEAC CD-R58S. This file must be in the same folder as the Jam application at boot-up. When Jam starts up, it looks for these driver files and adds them to their list. This file MUST REMAIN in the same folder as Jam.

<u>I cannot extract audio from my CD-ROM.</u> - If you are trying to extract audio from an audio CD or trying to copy from CD to CD, your CD-ROM must be capable of these functions. (Not all CD-ROMs can do that.) If necessary, the TEAC CD-R drive that came with this bundle is capable of most of these types of functions, so you may use the CDR drive to extract to your hard drive, then burn back to the CD.

<u>The drive is not recording to the blank CDs.</u> - There could be several causes for this:

  1) Make sure the disc you are using is a regular CDR media. CD-RW discs are not compatible with this drive. "For Music Only" CDs may also cause problems, as they are designed for use with consumer component CD-Recorders.
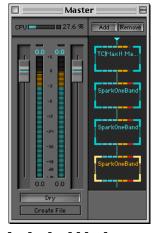
  2) Make sure the CD is right side up. (Some blank media have no labels, and it can be confusing which side is the "recording" side.)

  3) Make sure the CDR media is on the list of approved media of this drive. We have tested many types of CDR media, and the results are posted on our web site at http://www.tascam.com. The list is kept on the site so it may be kept as up to date as possible.

  4) While the CD-Recorder is recording, make sure the CDR drive is not agitated. (If you write as vigorously as I do, even writing the jewel case insert on the same table as the CD-Recorder is on could shake the unit enough.) CD Recording requires much more stability than reading. When reading a CD, players can take several passes at the data stream if the tracking is lost. However, CD-Recorders do not have this luxury. They are recording the information on the CD, and need to do so precisely the first time.

<u>The system is testing too slow for 6x or 8x recording speeds.</u> - Chances are there is more processing going on than just your CD authoring software, or your source drive is too slow for higher speed burning.

  1) If your computer has a lot of applications running in the background, this can substantially slow the efficiency of your system. (Common culprits are likely to be anti-virus software, screen savers, or advanced network applications.) These can be temporarily disabled to dedicate more processing horsepower to the CD authoring software.

  2) In recent years, large disk drives have become more and more affordable, but often the drives many stores advertise are quite slow. If the drive is too slow, then you'll have to try optimizing your drive.

  3) Even with optimizing your hard drive, some drives may still be too slow. (Especially removable media including Jaz drives, Zip drives. And other similar media.) If this is the case, you will have to select a slower burn speed.

SparkLE keeps complaining that the RealTime engine is overloaded. - The best solution may be to simply give SparkLE more RAM. (The more RAM the program has, the faster it can process everything.) If all else fails, simply restart SparkLE. That usually fixes the problem. In the upper right of the Master window, there is a CPU monitor that displays the CPU load. Check that to see if the CPU is actually overloaded, or if the program simply needs more RAM.

SparkLE consistently complains that it had a bad block error. - Some computers keep showing this error when SparkLE comes to the end of the audio file. Basically, the computer ran out of audio to play, and so the program tells you that it couldn't read "one or more samples". The problem is that the program couldn't ready anymore because there is no more! There isn't anything wrong, really. Check the box in the error message that says, "Don't show me these messages anymore.", and the error messages will go away for good.

I'm having problems with the SCSI Card in the computer. - When you went through the installation process, did you remember to install the drivers for the card? If those are not installed, then the drive will not be recognized by any program.

Technical Support

If you are still experiencing problems with the unit after reading the previous troubleshooting section, you can check for more up to date FAQ documents at TASCAM's web site at:

http://www.tascam.com

or contact TASCAM Technical Support at:

(323) 726-0303 x627
custser@teac.com