rio car dot org FAQ (Frequently Asked Questions)

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1. Basic questions about the car player and the company

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· **1.1 What is the difference between the empeg Car and the Rio Car?**
(Entry last updated on May 15th, 2002)

The Rio Car is essentially the same product as the empeg Car Mark 2. It is different from the empeg Car Mark 1. However, all three products remain fully supported.

A bit of history:

In June 1998, Hugo Fiennes founded empeg, Ltd., based in Cambridge, England. The plan was to make the first truly commercial-quality, high-capacity car MP3 player that didn't rely upon do-it-yourself kits.

The empeg Car Mark 1 was released in the late summer of 1999, and fewer than 400 units total were shipped to customers. The Mark 1 had space for two 2.5" laptop hard disks, and it had 8 megabytes of RAM for running software and caching songs. USB and Serial were the connections available to interface with your PC. It had a plain faceplate with four simple buttons. It had a built-in FM-only tuner. Despite being a "first product", its design was very advanced. The hard disks were shock mounted, its display was highly graphical, and it allowed unprecedented levels of control over your music collection. It was the first mass-market product which truly allowed you to take your entire music collection with you anywhere.

The empeg Car Mark 2 was released in the summer of 2000. It had an updated fascia design which was more stylish, and incorporated a rotary encoder knob in addition to the buttons. The sled and car docking connector were completely redesigned to be more reliable (Mark 1 and Mark 2 sleds are not compatible). It had more RAM (12mb) and added 10baseT ethernet as one of the connection options. It added a microphone connector for the possibility of adding voice recognition software in the future. An internal radio tuner was no longer included, but there was a connector plug that allowed a higher quality add-on AM/FM/RDS tuner to be attached. A real-time clock circuit was added so that the time of day could be displayed on the screen. The output stage was improved to make the unit less suceptible to DC ground loop problems and alternator whine. Its power wiring was changed, to allow it to enter standby mode when you turn off the car's ignition. A headlight-sense display dimmer circuit and a cellphone mute input were added. Finally, the internal circuit design was cleaned up and simplified to allow for easier mass production.

In November of 2000, Sonic|blue saw the promise in empeg's products and talent, and purchased the company. The empeg team was incorporated into the Rio division, and the empeg Car Mark 2 player was renamed the **Rio Car**. Some very minor hardware details have been improved on the Rio Car, but it remains essentially the same product as the empeg Car Mark 2. Its rotary encoder was changed from a round-shaft type to a keyed-shaft type. It has a tad more RAM (16mb), but it runs exactly the same firmware, and the difference in RAM simply means that it caches a bit more song data to RAM so it hits the hard disk slightly less often. Internally, this product is known as the **Mark 2a** to differentiate it from the prior hardware revision.

All hardware attachments for the empeg Car Mark 2 and the Rio Car are identical. The sleds are compatible, the tuner attachment plug is compatible, the faceplates are compatible, etc. The only major part that's not interchangeable between the 2 and the 2a is the plastic rotary encoder knob, as the shaft of the encoder is shaped differently on the two models.

The player's firmware is exactly the same for the empeg Car Mark 2 and the Rio Car. You install the same upgrades, regardless of which of the two units you own.

However, the Mark 1 unit is not compatible. It requires a completely different sled, it has a different faceplate and handle, etc. The internal firmware is also not compatible. The Mark 1 requires its own separate player firmware. Fortunately, the Mark 1 remains fully supported, and when a new firmware update is released for the Mark 2, you will also see corresponding updates for the Mark 1.

Finally, note that the "Emplode" Windows software which loads the music into the player is compatible across all models. In fact, Emplode is designed to work with certain other future Rio products besides the car player. So there is only one download of the Emplode software. The separate downloads for Mark 1 and Mark 2 are only needed with respect to

upgrading the firmware on the player itself.

· 1.2 Where can I buy one?
(Entry last updated on February 2nd, 2003)

Sonic|blue dropped the prices to mind-boggling levels in December 2001, causing a "run" on the players. At the time of this writing, the regular retail locations are sold out of players. Click here to see why.

Some players are still changing hands among private owners. Check the For Sale forum on the Empeg BBS, or see if any have been offered on Ebay.

Accessories such as extra remote controls and extra car docking sleds were sold at the empeg international store for a while. However, this store closed on May 31, 2002, so accessories are now only available via the same channels as players (i.e., the BBS and Ebay). Note that you can use the aftermarket Kenwood KCA-R6A remote control as a subsitute for the original remote.

The original add-on tuner modules for the Mk2/2a player are sold out. There is a new *kit* version of the tuner module being offered here which is completely compatible with the original tuner module.

Note that the custom carrying cases (with the "empeg" logo embroidered upon them) are also sold out. Sonic|blue never made any carrying cases to go with the Rio Car players in the US. If you need a carrying case for your player, please see this entry for alternatives.

· 1.3 Has the Rio Car been discontinued?
(Entry last updated on August 28th, 2003)

Yes.

In September 2001, Rio announced that it would EOL ("end of life") the Car Player. In other words, the empeg Car/Rio Car product will no longer be manufactured. The total number of existing players in the world is about 4000 Mk2/2a players and about 350 Mk1 players, and no more will be made.

The reason for the EOL was that they were unable to sell enough of them. The component and manufacturing costs for the player were very high, so the retail price was also very high. As a result, only a select few people purchased them: those who understood the tremendous potential of a very high quality hard-drive-based player, and were willing to pay this high price to realize that potential. It wasn't until Rio deep-discounted the players (selling them below their original cost in order to get rid of the stock) that they were able to move the units in any sort of volume.

So Rio has decided that they're not going to be in the retail car MP3 player business. Instead, they will seek to make partnerships with OEM customers in order to bring their technology to the car. A prototype of an OEM car player was shown at the Visteon booth at the 2003 Consumer Electronics Show in Las Vegas. The empeg team in Cambridge will continue to do R&D and software development for Rio in various fields. Examples of their

post-car-player work for Rio are the Rio Receiver network player, the HSX-109 Rio Central, the Rio S-series portables, the Rio Nitrus, and the Rio Karma.

This does not mean the "end" of the car player for existing owners, however. Unofficial support will be available indefinitely in the form of user-community help on this site and on the Unofficial Empeg BBS. Also, at the time of this writing, there were plans for continuing the offical support channel via a third-party service.

If, for some reason, the empeg team can no longer repair players, then the online user community should still be able to help you. They'll be able to walk you through most repairs, or at least be able to direct you to someone who can help you. In other words, you won't be left out in the cold.

Also, it is expected that there will still be more software upgrades in the future. A beta of version 2.0 of the software was released in October 2001, despite the EOL announcement the prior month. Version 2 went final in 2003, and there is even a version 3 in the works.

Since the empeg team will continue to create new products for Rio and other OEM partners, the car player is being used as a testbed for some of the new software technologies being developed. This need for future development precludes the possibility of the current player software becoming open-sourced. That will most likely remain closed-source, because much of its code is being rolled into future products. This investment of intellectual property must be protected.

Finally, remember that the player is essentially a complete Linux computer in a very small box. The possibilities for future third-party software development are limitless. Even though its player software is proprietary, the kernel is open-source and its hardware specifications are well known. There is nothing preventing anyone from writing a completely new piece of player software (or any other kind of software for that matter) from scratch. Development efforts in this area are already underway, and the empeg team encourages and even offers advice to developers of third party software for the player.

· **1.4 What came in the box with the Rio Car player?**
(Entry last updated on May 15th, 2002)

When purchased new from Sonic|blue, the box included:

- The Rio Car player, arguably the coolest car stereo ever invented.

  Disk drive size and number of disk drives varied depending on the model. All models below 60gb were single-drive models, leaving one of the two bays free for the addition of a second disk drive at a future date. The 60gb model had two 30gb disk drives, filling both bays.

  The faceplate lens was, by default, the blue color. Lens kits, which included green, amber, and red lenses, were sold separately.

  The player did not come with a radio tuner. An add-on AM/FM/RDS radio tuner module, that installs inside the dashboard behind the docking sled, was sold

separately.

- One DIN-sized car docking sled with four 4v line-level outputs (stereo front/rear) and two line-level aux inputs (stereo).

- One credit-card sized Rio infrared remote control.

- One AC adapter for using the player indoors.

- One serial null modem cable for applying firmware upgrades to the player.

- One USB cable for loading songs into the player.

- CD-ROM disc with Windows connection software (most likely version 1.02, you can get upgrades at www.empeg.com if desired).

- User's guide.

- A one-year warranty.

· 1.5 What are the basic specifications of the player?
(Entry last updated on October 30th, 2002)

Originally from the Sonic|blue Rio Car site:

Player

Processor	220MHz StrongARM S-1100-DA
Flash memory	1Mb
RAM	16Mb 60ns FPM
DSP	SAA7705H
DACs	16 bit sign-magnitude, fourfold oversampling digital filters, noise shaping
Display	128 x 32 dot matrix vacuum fluorescent display, 2 bits per pixel
IR	SIR IrDA I/O, Consumer IR input
Controls	4 pushbuttons, 1 rotary+push
HDD ports	ATA 2.5" HDD standard 2MM header

HDD physical	ATA 2.5" HDD up to 17mm, corner mounting screws
Serial IO	9-pin PC serial port, data rate to 230Kbits/s, also docked in-car
USB	12Mbit/s standard type B socket on head unit ([slave only](#))
Ethernet	10BaseT RJ45 socket on head unit
Power input	+12V on ISO connector fused at 2A with inline fuseholder
Grounding	Negative earth only
Auxillary control output	+12V @ 1A maximum on ISO connector
Audio outputs	4V line level front & rear stereo RCA line jacks, 1V stereo RCA sockets on head unit
Audio inputs	1V line level stereo RCA line jacks
Other features	On board temperature sensor Software controlled display brightness Display night mode input (headlight dim) Audio mute input (for mobile phones)

Optional Tuner Module

Tuner (optional)	AM/FM fuzzy logic autotuning radio, RDS/RBDS capability
FM tuning range	87.5 to 108 MHz, 12.5 kHz steps
AM tuning range	520 - 1720Khz, 12.5Khz steps
RF input	Standard antenna socket with adaptor for euro socket

Audio

DAC sample rate	fixed 44.1KHz
DAC typical S/N ratio	110dBA
DAC typical output noise	3uV
DAC typical THD + N	1Khz, 0dB -70dBA
DAC typical dynamic range	1Khz (-60dB) 102dBA
DAC max crosstalk	10Khz -69dB
Aux input frequency response	20Hz to 18KHz
Aux input typical channel seperation	50dB
Volume control range	-66dB to +20dB
Balance attenuation range LR	0dB to -30dB
Fader attenuation range FR	0dB to -30dB

Tone control range, bass/treble	-12dB to +15dB
Dynamic loudness level range	0dB to +14dB
Dynamic loudness offset range	0dB to +24dB
Dynamic bass boost level range	0dB to +14dB
Dynamic bass boost offset range	0dB to +24dB
Equaliser	20 band parametric set as 2 x 10-band or 4 x 5-band
Other audio features	Dynamic range compression

Electrical

Standby power	2.75 Watts
Standby power, drive spun up	3.30 Watts
Operating power, hard drive spun down	6.20 Watts
Operating power, peak	8.90 Watts
Input voltage	7 to 16 VDC
Switched auxillary output	1A maximum load

Environmental

Operating temperature range	5 deg. C to 55 deg. C
Standby temperature range	-20 deg. C to 60 deg. C
Non-operating temperature range	TBA
Humidity, operating	10% to 90% RH, non-condensing
Humidity, non-operating	5% to 95% RH, non-condensing
Shock, operating	150G
Shock, non-operating	400G

Physical (maximum)

Docking unit	2 inches (50mm) high
	7.2 inches (183mm) wide
	6.8 inches (173mm) deep
Head unit	2.2 inches (55mm) high

	7.3 inches (186mm) wide
	6.0 inches (152mm) deep
Weight	5.5 pounds (2.5kg) with two drives
Case material	0.04 inch (1mm) stainless steel

Note: figures vary depending on hard drive type fitted, power consumption figures are shown with a single 20Gb drive. Drives are kept spun down as much as possible during operation.

· 1.6 How does the Rio Car compare to other car MP3 players on the market?
(Entry last updated on September 9th, 2003)

Not counting CD-R based players (which don't even come close to the Rio Car because of the limited capacity of the CD-R format), you can see a comparison matrix here.

At the time of its writing, the comparison matrix covered the Rio Car's two main competitors at the time, the PhatNoise and the Neo Car.

· 1.7 How is the music organized on the player? Is it easy to find a given tune?

The music organization is very flexible. This is the player's strongest feature.

You can create free-form trees of hierarchical playlists, or you can organize by artist and album. You can also do both at the same time without wasting any disk space on duplicated songs.

You can also perform alphanumeric searches by song, by artist, by album, by genre, or by year. You can queue up songs, jukebox-style, without interrupting playback of the current song.

You can listen to your albums in strict sequential order, or you can shuffle the entire player's contents. The capacity is so large that you can shuffle the player's root directory and take a cross-country trip without hearing the same song twice.

If you hear an artist you like, you can press a key and it will randomly select another song by the same artist. You can also do this by album, genre, or year.

It's so flexible that it changes the way you listen to your music. No longer are you limited to the CD/Track mentality (although you're welcome to use it that way if you prefer). You are fully in control of your entire music collection. It's like being the program director of a radio station that plays only your favorite songs.

· 1.8 Do I need to know Linux to use the Rio Car player?

No, you don't need any special knowledge to use the player.

Although the player runs the Linux operating system internally, you don't need to know anything about Linux to use it. In fact, the connection software is Windows-based.

If you happen to prefer Linux, there is also Linux-based connection software available. You can even connect with a Macintosh and load your tunes that way, using a Java-based utility.

If you want to write third-party software for the player, or you want to hack the player's internals, then you will need to know something about Linux. But this is not required.

· **1.9 How are the hard disks going to hold up to the vibration of a car?**

Very well. The disks are shock protected in three important ways:

- The disks are laptop drives, which are inherently more shock-resistant than desktop drives.

- The disks are mounted on a shock-absorbing tray inside the player.

- The software has a very aggressive caching scheme which keeps the disk drives spun down for most of the time. It only spins up the disk briefly at intervals to fill the cache RAM with music data.

The specifications for the player's shock tolerance are 150g operating, 400g non-operating.

Note: One owner reported that the car player still won't tolerate being played inside the cabin of a vehicle during an SPL (Sound Pressure Level) competition. This is to be expected, since in those conditions, a human being in the same space would be seriously injured. For those competitions, the CD player is usually removed and placed outside the vehicle. If you plan to use it in an SPL competition, you should expect to do the same thing for the Rio Car.

· **1.10 Can I use the Rio Car player in an audio competition?**

The player's audio output circuitry is certainly of competition quality. And if your MP3s were created carefully and are of high quality, they can sound every bit as good as a CD.

However, most audio competitions don't accept MP3 players for the Sound Quality part of the competition. For example, the IASCA competitions require that the judges supply the CD itself. This might change in the future, but for now, you must use a CD player in most competitions.

Remember, though, that you can still use the Rio Car's line-level aux-in jacks for a CD player. This would let you use the player's 20-band fully parametric equalizer to adjust

your sound. This might be helpful in a competition setting. You could, for example, create an EQ preset for each of the different stages of the competition.

- **1.11 Why were laptop drives used? Desktop drives are cheaper.**

    - Laptop drives are smaller than 3.5" drives, allowing room inside the case for the shock-mount mechanism.

    - Laptop drives are designed for mobile use, and have greater temperature and shock tolerances than desktop drives.

    - Laptop drives consume less power.

    - Laptop drives are quieter.

    - Laptop drives generate less heat.

You cannot retrofit a desktop drive into the car player, by the way. There's not enough room in the case and the power circuitry probably couldn't handle it.

- **1.12 Why doesn't it play MP3 CD-R discs?**

Actually, it will: If you use your PC to load the contents of the MP3 CD-R into the player ahead of time, it will play the files just fine.

It just doesn't have a CD mechanism built directly into the player. The designers felt that having room for two shock-mounted hard disks was much more useful than having a CD drive in the player.

Yes, there are other CD player products on the market which will also play MP3 CD-R discs. Sure, they're cheaper, but they'll never be as good as the Rio Car player.

The whole point of the player is so that you can have your entire music collection in the car with you at all times, without the need to shuffle CDs in and out of a player or a changer.

CD-R discs are limited to about 650 megabytes of data. At a mediocre encoding rate of 128kbps, that gives you room for about 10-12 albums' worth of MP3 files on a single CD-R. This is no better than a CD changer, and you'd still have to carry a big stack of discs around in order to have a truly large variety of music at your disposal. The Rio Car, on the other hand, allows you to go completely without CDs of any kind, and can store **vast** amounts of music.

There are also issues with the access and index times of MP3 CD-R systems. When you first insert a CD-R into one of these cheaper players, the disc must be indexed, so there is a

pause as the player reads the information. For most, there is also a pause between songs or when you skip forward to the next track. These operations are essentially instantaneous on the Rio Car.

Finally, the advanced database features of the Rio Car, such as searching, hierarchical playlists, filters, bookmarks, etc., are all made possible because the player has hard disks instead of the read-only medium of a burned CD.

· 1.13 Why doesn't it have a removable faceplate? Why must the whole unit be pulled from the dash?

Here's one good reason: because removable faceplates are totally useless.

I once had a removable-faceplate stereo stolen. They got my stereo and my subwoofer, even though the face was off and the subwoofer was hidden in the trunk. They broke in because they thought that they would either find the faceplate hidden in the car, or they could purchase a replacement faceplate from some other source. Whether or not they were successful is irrelevant, the fact is that the removable face did not deter them.

The main reason that the unit pulls completely out of the dash is because the player's hard disks need to be brought into the house in order to fill them with music. From an engineering and reliability standpoint, the best way to do this is to have a pullout stereo with USB and ethernet on the back.

Finally, this design allows the unit to double as a home music player. I regularly move my player between my desk at home, my car, and my desk at work. This lets me listen to the same music collection in all of those places.

· 1.14 Why only 10BaseT ethernet? Why didn't you put 100BaseT on the Mark 2 player?

Because the hardware doesn't include the necessary PCI data bus for 100BaseT circuitry (it's ISA only). Less expensive that way, and the extra bandwidth isn't really needed.

Yes, there is a such thing as ISA-based 100BaseT adapters, but even if one of these chips were in the player, it wouldn't be able to transfer data fast enough to take advantage of the bandwidth. It would still only run at about 10mbps.

Remember that at 10mbps, it only takes a couple of minutes to upload an entire album.

· 1.15 Do I need a separate amplifier, or will the Rio Car drive my speakers directly?

The Rio Car has line-level outputs, which require separate amplification. You can do this either by adding an amplifier, or by connecting it to the "aux-in" connectors of another stereo. Your stereo installation shop should have no trouble with it.

Please see the Installation section of this FAQ for more details.

· 1.16 How do I put music onto the player? Do I need to bring a laptop into the car?
(Entry last updated on February 14th, 2002)

You do not need to bring a laptop into the car. The player pulls out of the dash so you can bring it to your PC in the house.

First, you get some digital music files, such as MP3s. You can create them yourself from your own CD collection, using one of many different PC software titles. These programs are widely available, some are even free. You probably already have one on your PC, they often come bundled with new PCs or CD-R drives. Or, you can download your music from internet sites such as mp3.com.

If you are on a Windows PC, install and run the included Emplode software. Plug the player into the USB port using the included cable (ethernet and serial connections are also supported). Drag your music files from the Windows explorer onto Emplode. If desired, organize your music by creating playlists of your songs. Then press the Synchronize button. It will take a few moments to send the songs to the player.

If you are on a Macintosh, you may use the free JEmplode utility with the serial or ethernet connectors.

If you are on a Linux PC, you may use the Emptool utility, available from the empeg web site. JEmplode also works great on Linux, or in fact, almost any operating system, since it's written in Java.

· 1.17 What operating systems are supported?
(Entry last updated on February 14th, 2002)

- Windows 98, Windows ME, Windows 2000, and Windows XP: Fully supported. Emplode was designed to run under these operating systems.

- Windows 95 and Windows NT 4.0: Partly supported. USB devices do not work under '95 or NT4, since those operating systems do not have any USB support at all. Ethernet and serial will work as long as you have Internet Explorer 4.0 or later installed.

- MacOS: Supported by the free JEmplode utility.

- Linux: Fully supported, by both Emptool and JEmplode.

- Windows 3.1 and NT 3.51: Shyeah, right.

· 1.18 What kind of music files will it play? Will it play VQF/AAC/MPEG4/OGG/MP3Pro, etc.?

(Entry last updated on October 30th, 2003)

As of software version 2.0, the player will play MP2, MP3, WMA (unprotected), and WAV files. Variable bit rate MP3 files are fully supported.

Other formats are not supported at this time, due to a lack of demand. OGG and FLAC have been added in the version 3.0 software, which was in beta at the time of this writing.

You should be able to convert other formats into MP3 or WMA pretty easily. If not directly, then at the very least you should be able to use something like Total Recorder to do the conversion for you. Please have a peek at this entry for things to keep in mind regarding audio file format conversion.

If you wanted to write (or port) your own player software for the unit, you can add any other file formats you like. The player software you write must be able to run using the ARM microprocessor under Linux, and will need to use integer math (no floating-point, as the player does not have an FPU).

There is already some development underway, started by Greg Combs, to create a complete replacement player program. This replacement player software will play OGG and FLAC files, as well as be able to act as a Rio Receiver client when connected to a network with a Rio Receiver server. Please search the Unoffical Empeg BBS for information on this project.

· **1.19 Does the player support audio books?**

Sure!

As long as the files are in one of the supported file formats, they will work very well on the player.

You can even use some of the player's advanced features (bookmarking, nested playlists, and the "Ignore as Child" tag) to make the audio books even more useful.

If the audio book file is not in one of the player's supported file formats, you can usually convert it to the proper format with very little hassle. Even if it's a copy-protected format that requires a proprietary piece of player software, you can use something like Total Recorder to convert it into the desired format.

· **1.20 Does the tuner support XM radio or Sirius radio?**
(Entry last updated on October 30th, 2002)

No. The Rio Car's tuner module is a standard AM/FM tuner (FM only on the Mark 1) with some RDS features. XM radio and Sirius radio are satellite-based subscription services, which are a completely different animal. There are no plans to integrate such a system into the Rio Car, at least not directly.

Note that the Rio Car has line-level aux-in connectors, so a third-party XM/Sirius tuner can be added quite easily.

· 1.21 What RDS features does the tuner support?
(Entry last updated on March 3rd, 2003)

If transmitted by the local radio stations, it displays RDS (Radio Data Service) text information, and will display the RDS clock when the display is set to the Info:Radio screen. Note that the RDS clock is separate from the player's internal real-time clock, so there may be a difference between the clock shown in the Info:Radio screen and the clock shown in the other screens.

As of version 2.0, the player also supports RDS-TA (Traffic Announce) and RDS-AF (Alternate Frequency tuning) where available. Please see the software release notes for instructions on how to use these features.

Note that, in the United States, very few radio stations support RDS at all, and even fewer support the advanced features. For those that do support it, the RDS equipment seems to get ignored quite often, almost as if the technicians don't even know it's there. As a result, they often broadcast incorrect information. So the RDS features are essentially useless for most of the United States.

However, in Europe, where RDS is widely supported, it's very cool.

If you own the tuner module in the United States, you can expect to see an RDS-capable station only once in a blue moon. And when you do see one, odds are that you'll get the station's call letters and little else. And there's no guarantee they'll even be the right call letters. If you're in "Info:Radio" mode, the RDS clock might appear once in a while, with a high probablility that it will display an incorrect time.

· 1.22 What parts of the software are open-source?
(Entry last updated on September 18th, 2003)

The player's Linux kernel is heavily modified from the original Linux kernel, and this modified source code is made available.

The Linux Emptool utility is open-source.

The tool which uploads data to the player's flash RAM (for things such as custom kernels or logo images) is open-source.

The specifications for the hardware and all input/output connections are freely available.

The actual **player** software and the Emplode utility are proprietary, and their source code is not made available to the public. The player software is part of a larger codebase which is used for newer products currently being developed by Rio. For example, the upcoming V3 car player software is being built from the same source base as the Rio Karma. So they can't open-source the player code.

However, there is enough available information for someone to develop their own player

software if they were willing to expend the time and energy required. Others are already working on this, check around the Empeg BBS for information on these projects.

· **1.23 I want to start encoding my CD collection for use on the Rio Car now! Is there anything I need to keep in mind?**

The most important thing to consider is that you should have your tags carefully filled out ahead of time. Correct song tag information is important for many of the Rio Car's features. It is possible to correct errors in your tags after sending them to the Rio Car, but it's much easier to have everything well organized before sending the songs to the player in the first place.

As far as MP3 encoding quality is concerned, remember that the Rio Car has very high quality audio output circuitry, so it's important to make sure that your MP3 files are up to it. I recommend 160kbps or higher. Variable bit rate files are a good thing, and are fully supported on the car player.

Finally, it's a good idea to organize your MP3 files on your PC's hard disk in a directory structure that mirrors the playlists you plan to create on the player. For instance, if you want to organize things by artist/album on the player, then put album folders inside artist folders on your PC's hard disk. If you like to organize by Genre, you can do it that way instead.

Read the MP3 creation section of this FAQ for more details.

· **1.24 What is the largest disk drive I can put in the player?**
(Entry last updated on July 21st, 2003)

For all practical purposes, there is no limit. You can install pretty much any two laptop IDE drives you like.

The largest configuration sold by Sonic|blue was 60gb, consisting of both available drive bays filled with 30gb laptop disk drives.

If you are good with tools and electronics, you can install your own laptop disk drives. Complete instructions for doing this are here.

There is essentially no practical limit to the amount of storage you can put in the player. It is only limited by the capacity of available laptop disk drives, and newer, bigger laptop disk drives are coming out all the time. At the time of this writing, the largest available laptop drive was 60gb. There is room in the player's case for two of these drives, bringing the total potential capacity to a whopping 120gb. Some users have actually done this, so it isn't just theoretical.

· **1.25 What do all the buttons do?**

Here is a guide to the buttons on the remote controls and the front panel.

· **1.26 What does the serial number represent?**

For Mark 1 players, the serial number is just a sequential unit number. For instance, 00148 would be the 148th Mark 1 player made.

For the Mark 2 and Rio Car players, the serial number is in the format of MMYYNNNNN. So a player number 090000523 would be month 09 (Sept.) of year 00 (2000), serial number 00523.

Note that the initial zero is sometimes dropped, so, for example, 090000523 might be printed as 90000523.

By the way, if you're having trouble locating the serial number sticker for your player, don't forget to peek on the bottom (some players have the serial number on the bottom). It can also be found in the "About" screen from the player's main menu.

· **1.27 How do I upgrade my software?**

You can find details on how to upgrade the player firmware and the Emplode connection software here.

· **1.28 How can I get a replacement blue lens? The official Rio add-on lens kits don't have blue.**
(Entry last updated on August 13th, 2003)

Contact support, they can help you.

· **1.29 What is the 'Security' slot on the back of the player for?**
(Entry last updated on January 10th, 2002)

The security slot is the standard size for connecting to the little "laptop lock" mechanisms, normally used for preventing laptop computers from being shoplifted.

In practice, it's mainly been used when the player is being shown in a booth at a trade show.

· **1.30 If my player is stolen, is there anything I can do?**
(Entry last updated on February 18th, 2002)

There is no password security or owner validation built into the player, because any truly secure system would be a terrible inconvenience for legitimate users who forget the password.

However, if your player is stolen, contact support immediately and give them your serial number. There are some things they can do which may help. Details of their procedures can't be disclosed because that would defeat their purpose.

· **1.31 If I purchase a player second-hand, will the one-year warranty still be honored?**
(Entry last updated on May 1st, 2003)

Yes.

The only problem is, as of this writing, all warranties have expired. In other words, the warranties were honored from the date of the original sale, not the date of the second-hand sale.

If you're having a problem with the player, you will probably find a solution by either reading through the troubleshooting FAQ or asking the helpful group on the Unofficial Empeg BBS. The most common issues can be solved with a little bit of do-it-yourself work.

· **1.32 How do I contact Rio/empeg if I need support?**
(Entry last updated on September 29th, 2003)

Software bug reporting: Discuss on the Bug Reports Forum before reporting officially to bugs@empeg.com.

All technical support incidents: Please read carefully through the Troubleshooting section and see if you can solve the problem yourself. Failing that, try discussing your problem on the empeg BBS to see if anyone has an answer for you.

Player repairs and spare parts shipments: carsupport@xs4all.nl.

The warranty period on all players has expired at this time. Therefore, you will have to pay shipping charges to send the player back for repair. It's been reported that sometimes shipping charges can be more expensive than the cost of the repair itself. Of course, some repairs don't involve shipping the player at all, sometimes support can just mail you a replacement part. It depends on the nature of the problem.

If you're in the US, and you are worried about sending your player across the Atlantic to be repaired, don't be. The turnaround time is usually quite short once you've received the clearance to send the player. However, please understand that the support is being handled by a single person who does this in his spare time, so the initial reply to your query may be delayed for quite a while until he can get to you. In the meantime, try to avail yourself of the other resources linked above.

2. Car installation questions

- 2.1 Where can I find basic information about car audio electronics and installation?
- 2.2 Should I install the player myself, or should I have it installed by a professional?
- 2.3 What are the most common installation issues?

- 2.4 What exactly is a ground loop?
- 2.5 If I am using a separate head unit, in what order should the outputs be connected?
- 2.6 How do I run a subwoofer if the player doesn't have a subwoofer output?
- 2.7 What are the known issues installing a Rio Car into my (model X) car?
- 2.8 At what angle(s) can I mount it in the dash?
- 2.9 What's the best way to keep the player safe from harm or theft?
- 2.10 Can I run 4 volt outputs into 1 volt inputs?
- 2.11 Can I hook up a steering wheel remote?
- 2.12 Can I mount it in the trunk or the glove box?
- 2.13 Can I run a display extension or 'Y' off the display board?
- 2.14 Can I output the display to a video monitor?
- 2.15 Can it control a CD changer, or be controlled as if it were a CD changer?
- 2.16 Is it difficult to remove the car docking sled? For instance, to install the tuner or move to another car?
- 2.17 What's up with the 'Grounding leads' on the Mark 1 player?
- 2.18 How can I fix the gap around the edge of the docking sled??
- 2.19 Will installing the player affect my car alarm or my keyless-entry system?
- 2.20 I have no room directly behind the sled for my tuner module. Can I make the cable longer?
- 2.21 Do I need to combine the front and rear outputs of the player when connecting to a 2-channel input?
- 2.22 What are the pinouts of the sled docking connector?

- **2.1 Where can I find basic information about car audio electronics and installation?**
(Entry last updated on October 16th, 2002)

> Basic Car Audio Electronics
>
> The Install Doctor
>
> Crutchfield's Car Audio Info Center
>
> Download The Crutchfield Guide To Car Stereo Installation
>
> rec.audio.car Frequently Asked Questions
>
> Car Audio Answers
>
> AudioControl Technical Papers

- **2.2 Should I install the player myself, or should I have it installed by a professional?**
(Entry last updated on February 17th, 2002)

The Rio Car is the same size and shape as any other aftermarket stereo, and it has the same installation method and connections.

Whether or not you can install an aftermarket stereo depends on your level of expertise, on your car, and on the installation method. Before we go any further in this discussion, there is something that must be said:

> If you decide to install it yourself, the most important thing to remember is to *get a proper installation kit* from a stereo shop.
>
> Installation kits usually consist of a wiring harness adapter (so you don't have to cut into the car's wiring and you don't have to guess at which wires to connect), and a set of dash mounting brackets and/or trim pieces (so that the stereo screws nicely into the dash without problems).
>
> These kits can be found or ordered from any car stereo installation shop, or from mail-order companies such as Crutchfield.
>
> Whatever you do, *do not guess* at the wiring of your car. You could blow fuses (or worse, fry your car's electronics) by trying to hook up 12 volt power to the wrong wire. You should always use the wiring harness adapter from the installation kit.

Even if you have one of these installation kits, that doesn't mean the install is going to be easy. It might be easy, then again, it might not.

Best-case scenario:
Your car's dash fits the player perfectly (with the install kit), and it plugs directly into your car's factory amplification system (with the necessary adapters). This is something that could be done by just about anyone in an evening, as long as you have the proper instructions (for example, a Crutchfield Master Sheet).

Average scenario:
The player fits in the dash, but your car has no built-in amplification. So you need to either install an amplifier or daisy-chain the player to a second stereo (assuming the second stereo also fits). This requires a little bit of electronics knowledge, some skill with installing car stereos, and a significant chunk of time. If you're good at this sort of thing, plan on an entire Saturday or even an entire weekend. If you're not good at this sort of thing, then definitely pay a professional to do it.

Worst-case scenario:
Your car's dash requires modification to install an aftermarket stereo, and the factory stereo is highly integrated into the design of the car. This should be handled only by persons who are very experienced with this sort of thing.

In the end, it's up to you. Do you think you have the knowledge and skill to handle the task?

· 2.3 What are the most common installation issues?
(Entry last updated on August 5th, 2003)

Installing the Rio Car player shouldn't be any more troublesome than installing any other aftermarket stereo. Any professional car stereo installer should be able to handle the job quitre easily.

With that said, here are some common issues. Note that these are (for the most part) not specific to the Rio Car player. You could easily run into the same problems installing a Sony CD player, for example.

Separate Amplifier:

The player doesn't have any built-in amplification. It requires an outboard amp. This actually a good thing- all of the best high-end car stereo installations use separate amplifiers. But it does make it something more complicated than just a 10-minute "plug the new radio into the dash" installation.

The player should be treated as a high-end car stereo in this respect. If you're not comfortable with running cables to the car's trunk and installing an amplifier, then you should consider having a professional installer do the job.

You might already have a separate amplifier installed, whether it is an aftermarket amplifier or part of your car's factory stereo system. In that case, the player will be fairly simple to install in place of the existing stereo. For factory systems, there are interfaces available which will allow you to plug it directly into the factory amplifer. An example of just such an installation is here.

Ground loop noise and alternator whine:

This is not specific to the Rio Car player. Any car stereo can suffer from this unless the components are carefully grounded. This is a normal troubleshooting procedure for any professional car stereo shop. If there is noise in your installation, the steps to solve the problem are:

- Understand the nature of what ground loops are. The anatomy of a ground loop can be found here.

- Make sure all devices (amps, crossovers, head unit, etc.) all have the same potential to ground.

- Make sure the ground is good and solid, and uses heavy-gauge cable.

- Make the ground wire runs as short as possible.

- Make sure you have used the proper ground points. Tips here.

- Make sure the devices aren't grounding in unexpected places, such as through the chassis or the RCA cable shrouds.

- Filter the power feeds properly.

- Properly tune the input gains on the amplifiers so that you're not unnecessarily amplifying noise (detailed in the next section).

- Route the audio cables separately from the power cables to prevent inductive and RF noise.

- Double-check all connections, especially power connections. Make sure all wiring splices, crimps, and solder joints are completely solid.

- Check your sled's docking connector to make sure it doesn't have this problem.

- Check to see if your player has the EMC capacitors fitted, and if so, remove them.

Here are three excellent documents describing in great detail how to troubleshoot noise:

http://www.installdr.com/TechDocs/999501.pdf
http://www.installdr.com/TechDocs/999502.pdf
http://www.audiocontrol.com/techpapers/tech1002.pdf

Crutchfield has a graphical flowchart for diagnosing noise here. Autoaudio.com also has an engine noise troubleshooter here.

Also, it's possible that a cheaply-made amplifier might cause ground loop noise and/or alternator whine. If sound quality is important to you (and ground loop noise can be defined as a sound quality problem), always consider purchasing high quality amplification and speakers.

Something as simple as a low fluid level in your battery can also cause alternator whine.

There are also noise suppressor devices that can be fitted directly to the alternator output wire in your engine compartment. These differ from the standard kind of noise suppressors in that they go directly after the alternator and reduce noise globally for your entire electrical system (most noise suppressors only go on the wires that run to the head unit). These suppressors can be obtained from stereo installer shops, or via mail order from places such as Crutchfield.

Properly adjust the input gain level on the amplifier(s):

All car stereos that use separate amplifiers should go through this procedure. If you car has multiple amplifiers, perform this procedure separately for each amp with the other(s) disconnected.

- Turn the amplifier's input gain all the way down to zero.

- Turn the player all the way up to 0db (but not overdriven past 0db).

- Set the player's equalizer to flat (0db) and the loudness off.

- Play a loud (but sonically clean) piece of music on the player.

- Slowly turn up the input gain on the amplifier. Increase the gain until either a) you hear distortion coming from the amp or speakers, or b) the amp is playing as loud as you'd ever want it to under normal listening conditions.

- The amp is now playing at its maximum signal-to-noise ratio. Now turn the player back down before you hurt your ears.

In real life, this isn't necessarily the final level you'll leave the amp gain set to. In practice, you'll probably set it lower than this. For instance, if you want to reduce the amp's noise floor even farther, or if you need to balance the levels of multiple amplifiers so that they are similar in volume.

Is the Rio Car going to be your only stereo?

Since the player has line-level inputs and outputs, you can (if desired) hook it up to a regular CD player. If you want to do this, you need space in your dashboard for two full DIN-sized stereos (the Rio Car player and the CD player). Also, depending on how you hook it up, you'll need either line-level auxiliary inputs or line-level outputs on the CD player.

Personally, I don't miss my CD player one bit. I'm perfectly happy with the empeg as my only stereo. But some people don't want to give up their CD players, so the option is there if you really want it.

If you decide to go the two-stereo route, your choice will be: which stereo will come first in the audio daisy chain? A complete discussion of this question can be found as its own separate entry in this FAQ.

And if your dash only has room for one DIN-sized stereo, you're not completely out of

luck. Simply run a pair of audio extension cables from the player's aux-in connectors and leave them somewhere reasonably easy to reach. Use these to connect to a portable CD player (for instance, one kept in the glove compartment). For the rare instances when you need to play an actual CD (and trust me, it will be rare), this will do just fine.

Are you trying to add the Rio Car to a factory stereo?

If you are adding the player to an existing *factory* sound system (assuming you have space in the dash for both units), it may require special adapters. This is a very common problem, and it would be the same if you were trying to add, say, a minidisc player or something.

You would probably need one of the following kinds of adapters, depending on the system and how you want it connected:

- Keep the factory system, and adapt the factory system's CD changer input to accept line-level inputs as if they were from a CD changer. This may require a special module which "tricks" the factory stereo into thinking it's got a factory CD changer attached. Such adapters can be found at www.peripheral-aamp.com, www.blitzsafe.com, and www.rcainput.com. This option is complicated, since the factory systems are designed to make such additions difficult-- they want you to buy the factory CD changer from the dealership instead. And most of the aftermarket CD changer adapters only accept certain brands of CD changers, not generic line-level devices. Even if you *can* get it working this way, note that it doesn't allow you to control the player from the factory stereo's front panel, so this isn't a way to trunk mount the player. And in some cases, the adapters will only work if an actual CD changer is plugged into them.

- Keep the factory system, and use an "FM Modulator" to have the line level signal inserted into the radio's antenna input. Clarion makes a generic one (part number FM100S) that retails for about $60.00 US.

- If your factory system has a separate amplifier, such as in certain Bose systems, Chrysler-Infinity systems, or certain other "premium sound package" systems, you could adapt the factory amp to accept line-level inputs. These adapters are common, but are often specific to your make and model of vehicle. At that point, you could choose to have the Rio Car as your only stereo, or you could also use another adapter (usually a speaker-to-line-level converter) to connect the factory stereo's outputs the player's auxiliary inputs. An example of such an interface is the Pacific Accessory Corporation OEM-1 interface. An installation using the OEM-1 can be seen here.

In all cases, your stereo installation shop should have access to the necessary parts to get the job done. Some vehicles will be more difficult to adapt than others, make sure to have your installer check out your vehicle ahead of time before committing to anything. Finally, remember that you can almost always simply remove the factory stereo completely and use the player as your only stereo. You probably won't miss the original stereo one bit.

ISO Wiring connector confusion:

Most aftermarket car stereos require a special wiring harness adapter which allows the installer to connect the stereo without cutting your car's wires. On one end, it has a snap-in connector which matches your make/model of car. The other end is dangling wires that the installer solders to your new stereo. This wiring harness is readily available to professional installers. It is normally soldered to the stereo and used as follows:
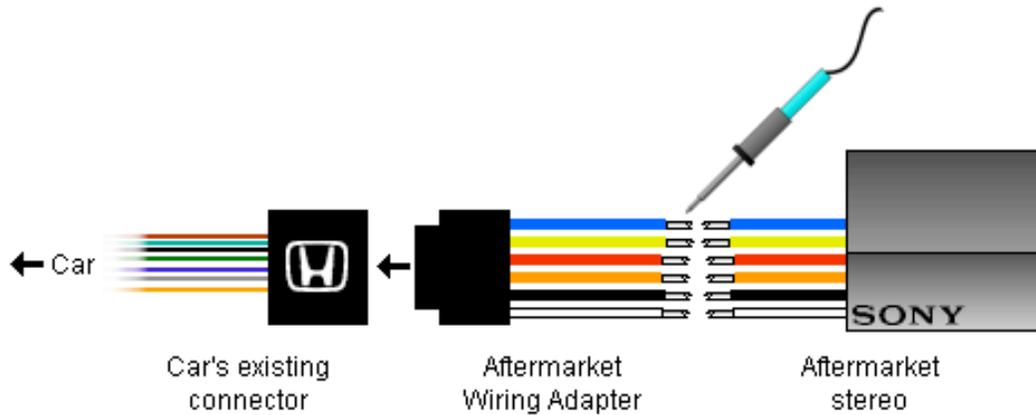
This will work with the Rio Car player, too. However, the Rio Car player goes a step further, in that it doesn't just have dangling bare wires. It also has a snap-in connector just in case your car happens to be one of the models with an *ISO* connector plug. In those models of car, you don't even need to solder the player's wires, because the plugs just snap together. Like this:
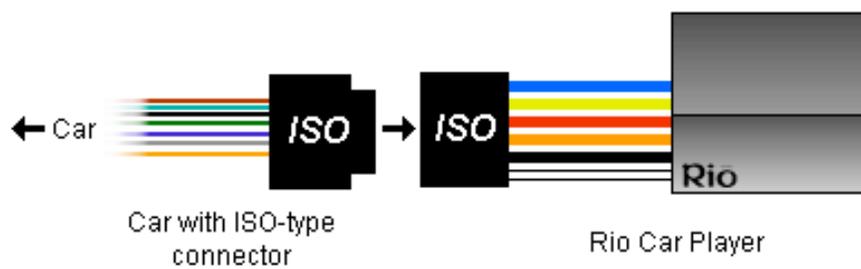
In case your car doesn't have an ISO connector, the Rio Car player ships with its own ISO wiring adapter . If your car doesn't have an ISO connector, you can either cut the connector off of the player and solder it like any other car stereo, or you can use the Rio-supplied ISO adapter combined with an aftermarket adapter. If you use the Rio-supplied adapter, the connections will go like this:
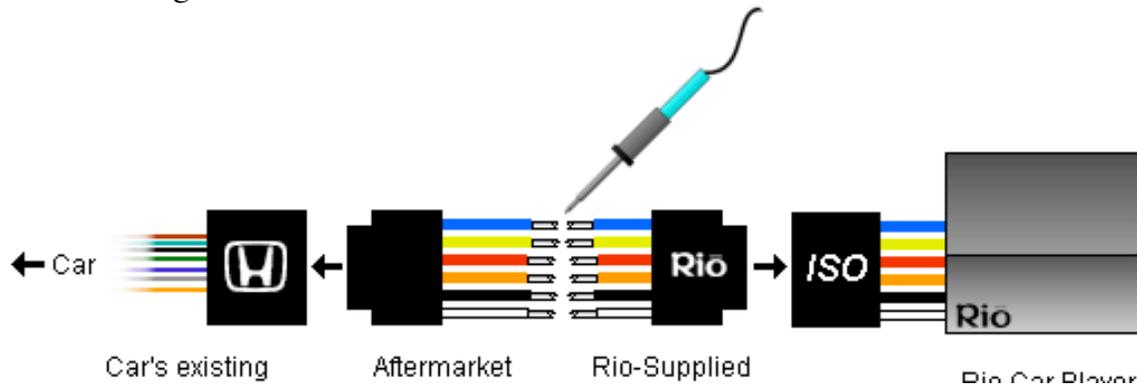
connector   Wiring Adapter   ISO Adapter   Rio Car Player

Reversed ISO wires:

There's just one problem with the whole ISO connector thing. If you own a VW or Audi, these cars have a standard ISO connector. But they have reversed two of the wires. They swap the constant power wire and the ignition-switched power wire. You will need to either cut/solder the wires or alter the connector pinouts in these vehicles.

One symptom of this problem is that the player won't enter standby mode when you shut off the ignition.

Note: It has been revealed that recent VWs might have more than just the two power wires switched. For instance, the blue wire on the player's ISO connector might correspond to a 12v power source on the VW connector. This can cause all sorts of strange problems, such as causing the player's standby light to glow steadily 100 percent of the time.

So if you have a VW, you should definitely use an aftermarket harness adapter instead of the ISO plug. Either that or learn its pinouts and swap the wires on your ISO connector accordingly.

Negative spike bug:

A minor problem was discovered after the shipment of the initial batch of Mark 2 players: Some cars produce a large negative spike on the ignition wire instead of just going to zero voltage when you shut off the ignition. This unexpected behavior confuses the player's power control circuitry, causing strange behavior when you shut off the ignition.

The symptoms of this problem include the unit forgetting its song position and/or going straight into full-power-off mode (rather than sleep mode) when you shut off the ignition. You might also get a loud power-down "thump" from your amplifier.

Click here for more information and solutions.

DIN bay size:

The player is a standard sized Euro-DIN stereo. This is the exact same size as all the other aftermarket stereos on the market. If your car accepts a DIN-sized radio, great. If it doesn't, your installer will have a mounting kit which adapts your car so that it does accept a DIN-sized radio.

The only problem is that the player is a *pullout*, a style which other stereo companies quit making several years ago. Most cars will accept a pullout radio just fine. Some cars, however, put a piece of fascia trim around the radio which is smaller than the radio itself. Such cars won't accept a pullout radio unless you cut the fascia or find some other

alternative.

Doug Morrison came up with a novel solution for this problem when he installed his player into his Toyota. A description, and pictures of his installation, can be found here.

Tuner module and microphone connectors:

The radio tuner is an add-on module, a small box that installs inside the dashboard behind the player. This connects to the small white connector dangling behind the sled. If you're installing the player without the tuner, you will need to dismantle the dashboard if you want to add the tuner at a later date.

There is also a microphone input (small round black connector) on the back of the sled. This may be used in the future for special software features such as voice recognition or automatic volume control. If you wish to use this connector at a later date, you'll need to dismantle the dashboard to reach it.

· 2.4 What exactly is a ground loop?
(Entry last updated on February 22nd, 2002)

A ground loop is what happens when the electricity that's supposed to be powering your audio equipment flows through the audio circuitry instead of through the power circuitry.

This happens in car stereos quite often, because cars use DC power, which is notoriously hard to ground properly. The more components you add to a car stereo system, the more chance you will cause a ground loop. In fact, for each component you add, the likelihood of a ground loop goes up exponentially.

Ground loops sound like noise coming out of the speakers. Humming, buzzing, whining, clicking, popping... all of these kinds of noises can be caused by an ordinary ground loop. Almost all noise problems in car stereo installations are caused by ground loops. For instance, the common term "alternator whine" makes it sound like the problem is the alternator, but usually the real source of the problem is a ground loop.

Note: In the discussion below, I will only show you what a ground loop *is.* I will not discuss the ways to fix it. That, I'll leave up to the experts. Click here to find some links to documents that will help you troubleshoot a ground loop problem.

Anatomy of a ground loop:
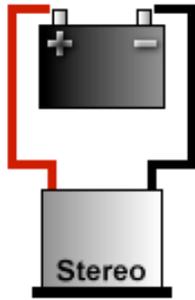
In a perfect world of pretty flowers and little fluffy bunnies, the only thing we'd have to deal with is a single 12-volt positive connection and a single 12-volt negative connection.
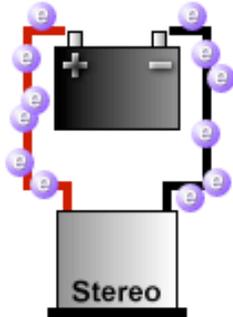
The electrons (which are the electrical energy) have to move between the poles of the battery. That's why the two connections are needed. Without this path, they will go nowhere and no energy is transferred.

This path can happen through any piece of conductive material, such as wire or sheet metal. Note that this diagram is simplified; you will usually see car audio components grounded to a metal point on the chassis of the car, rather than through an actual wire running to the battery.

In this perfect little world, the electrons would only have one path to follow. Nice, simple, easy.
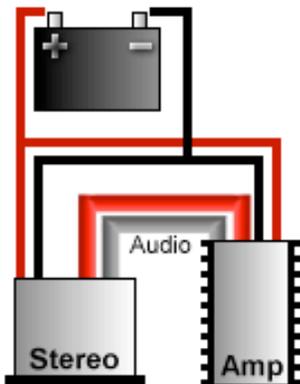
Unfortunately, we don't live in a perfect world. As soon as you add an extra amplifier, even the simplest of installations has the potential to create a ground loop.

In the illustration at left, all we've done is add an amp. This has doubled the number of connections to the car's electrical system, and added an additional set of audio connections between the amplifier and the stereo. And this is an over-simplified illustration, it doesn't even illustrate all of the other possible connection points, such as the ignition-sense, the headlight illumination, the amp remote, the cell phone mute, etc.
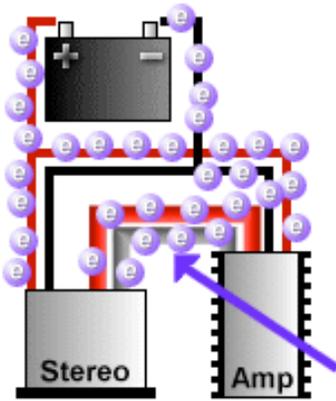
Even this simple system can cause a ground loop. If the electrons powering the stereo decide that their path between the poles is better via the amp instead of via the stereo, they will use the audio cables as their path.

THIS IS THE GROUND LOOP, the thing indicated by the arrow in the illustration. The main power is using the audio cables instead of the power wires to move between the poles of the battery.

Note that this is only one possible way for a ground loop to develop in this system. For instance, maybe it might happen opposite from what's shown here. Maybe the electrons can move along the stereo's ground wire just fine, but it's the amp's ground wire that they're ignoring.

When this happens, your stereo's audio output circuity suddenly becomes part of your car's electrical system. Every single thing in your car that interacts with the electrical system will be amplified by your stereo. The alternator, the spark plugs, the air conditioner, the headlights, the brake lights, the car's emissions-control computer, the stereo's electronics, the electric motor that spins the CD in your CD player (or spins the hard disk in your MP3 player), everything. All of these things will suddenly cause non-musical noise to come out of your speakers.

But why does this happen?

Because somewhere in the system, there is electrical resistance on one or more of the connections which is greater than the electrical resistance found via a path through the audio cables. The electrons take the route that's got the least resistance.

In the illustration above, one of the connections doesn't have a good solid ground. Can you locate the place where the ground needs to be improved? (Hint, it's where the electrons aren't flowing.)
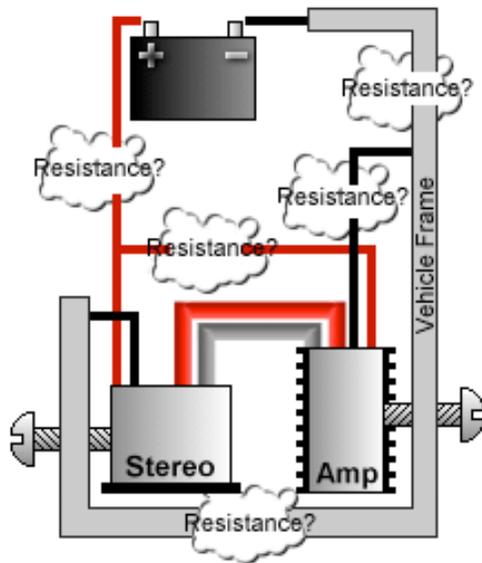
Once you put the frame of the car into the equation, things get even more dicey. Even in this over-simplified diagram, there are several places where resistance could crop up, each one of which could cause a ground loop. Some of them aren't even labeled in the picture. Can you spot them?

When you troubleshoot a ground loop, your job is to locate and eliminate each possible trouble spot, each point of possible resistance. In a complex system with multiple components, this becomes very difficult.

It's painstaking work, because resistance can be caused by about a million different things: Loosely crimped connections, bad solder joints, frayed wires, loose screws, just about anything can increase resistance. Even something as simple as using a different gauge of wire for your various power and ground runs can cause a ground loop.

And remember that *these illustrations are oversimplified*. Every single connection point on your stereo can potentially be the source of a ground loop, even when everything is connected correctly. For instance, a common source of ground loop problems is the radio antenna wire, and it's often overlooked. Or perhaps you've used the power and ground connections from your factory radio harness... do you really know every possible failure point of that factory wire along its entire length between the connector and the battery? I know that in my car, I certainly don't.

Then there's the common problem of multiple simultaneous failures... you think you've nailed it because you fixed one loose wire, but there's still noise because of another problem you missed somewhere else. You have to be absolutely methodical with your procedures when locating a ground loop, to make absolutely sure you didn't miss anything.

Okay, now that you know what a ground loop is, you can start working on a solution to the problem. Click here to find some links to documents that will help you troubleshoot a ground loop problem.

· **2.5 If I am using a separate head unit, in what order should the outputs be connected?**

That depends on how you want the system to work. Read on.

First of all, let's clarify a few things. By "head unit", we mean any standard *aftermarket* car stereo, such as a CD player, a tape player, or a minidisc player. Integration with *factory* stereo systems is a separate (thorny) issue. So for this discussion, we're talking strictly about the daisy-chain order of the line-level audio outputs of various *aftermarket* components.

Also note that you don't need a separate head unit in order to use the Rio Car. If you install

an amplifier in your car, the Rio Car can be your only stereo. That's how I have it, and it works great.

Finally, remember that you need room in the dash for both stereos if you want to do it this way. Not all cars have a double-DIN opening in their dashboards. So make sure you've got the space for it before you assume you'll be installing two stereos.

If you still want to use more than one head unit, there are three different ways to do it:

- You can plug the other head unit's outputs into the "Aux In" of the Rio Car.

- You can plug the Rio Car's outputs into the "Aux In" of your other head unit.

- You can route both devices into a line-level switcher such as the Sony XA-39II, and send both outputs to an external amplifier.

There are advantages and disadvantages to each method.

If you plug the head unit's outputs into the "Aux In" of the Rio Car:

- The head unit must have line-level outputs. Most do, but check to be sure.

- You must have a separate amplifier for the Rio Car's outputs.

- You can use the Rio Car's incredible 20-band fully parametric equalizer (with separate front/rear options) to tailor the sound of your head unit, too.

- You will be using the Rio Car's remote control and front panel to adjust the volume, EQ, and other audio settings.

- The front-rear fading will be controlled by the Rio Car. You will use either the front or the rear outputs from the head unit and leave its fader centered.

- The Rio Car must be plugged into the dash in order for the system to make any sound at all, even if you just want to listen to the head unit's radio tuner or a CD.

- If the head unit has built-in speaker amplification, you can't use it- an external amp system is required.

- If the head unit has a special separate output just for a subwoofer, you can't use that,

either (although such a thing is pretty easy to set up yourself if you need it).

If you plug the Rio Car's outputs into the "Aux In" of your head unit:

- The head unit must have a line-level "Aux In". This is not always a common feature, so check to be sure.

- You can listen to the head unit if the Rio Car gets left at home. However, if the head unit is a removable-faceplate or pullout version, then you need the head unit to be plugged into the dash in order for the system to make any sound at all.

- If desired, you can use the built-in amplification that comes with the head unit (if any). This would allow you to skip the hassle of installing a separate amplifier.

- You can't use the Rio Car's equalizer on your head unit. If you need an equalizer for the head unit, you have to install a separate EQ unit.

- You will be using the head unit's remote control and front panel to adjust the volume and other audio settings.

- If the head unit has a separate subwoofer output, you can use it.

- The front-rear fading will be controlled by the head unit. You will use either the front or the rear outputs from the Rio Car and leave its fader centered.

- Some aftermarket head units with CD-changer controlling features might need to use the Aux Ins for that purpose, so check this out if you intend to integrate a CD changer into the system.

If you use a line-level switcher such as the Sony XA-39II:

- The head unit must have both front and rear line-level outputs.

- A separate amplifier is required.

- You can listen to either unit, regardless of whether the other one is plugged into the dash or not. The switcher will automatically select the active unit and route its output to the amplifier.

- Each unit will have its own independent audio settings and controls.

- You won't be using the Rio Car's equalizer to tailor the sound of the other head unit. A separate EQ is needed if you want to EQ the head unit.

Choose the method that works best for you.

· 2.6 How do I run a subwoofer if the player doesn't have a subwoofer output?
(Entry last updated on January 11th, 2002)

Even though the player doesn't have a separate dedicated output for a subwoofer, it's quite easy to hook one up. There are a few different ways to do it.

1) Through an aftermarket head unit:

If you have room in your dash for two DIN-sized stereos, you can use an aftermarket head unit with an Aux input and a subwoofer output, as shown:
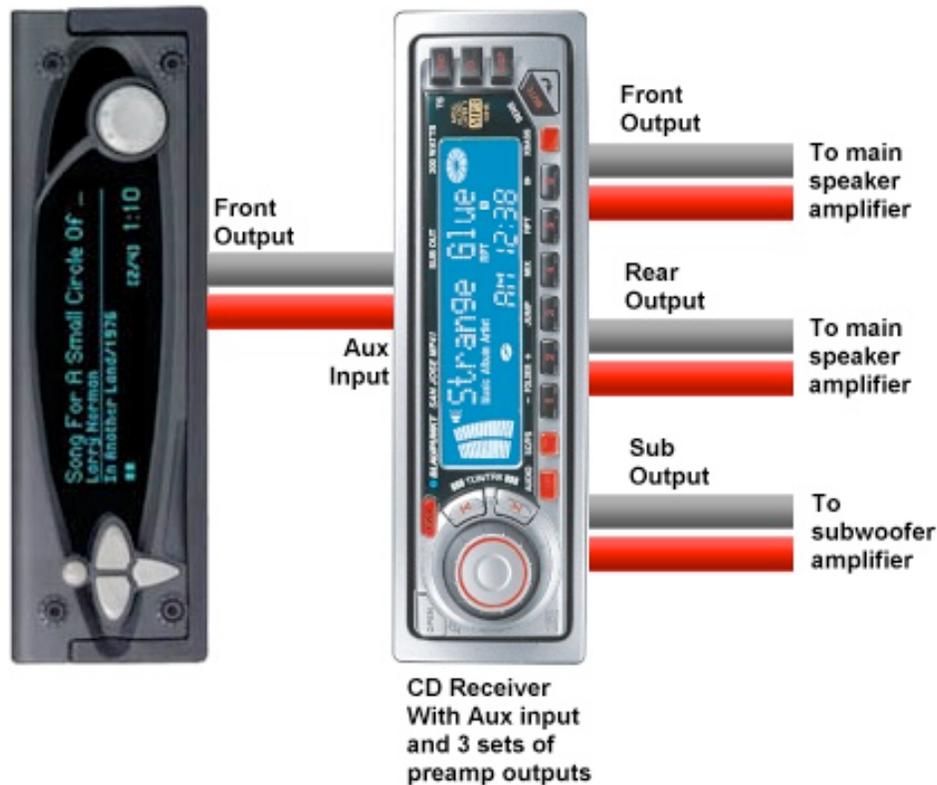
There are some limitations to doing it this way, not the least of which is that the aftermarket stereo always looks gaudy and out-of-place in the dash when compared to the

sleek-looking Rio Car. See here for more information on how this scheme works.

Note that there are also aftermarket equalizers and crossovers with dedicated subwoofer outputs. These would work in exactly the same way as pictured above, just imagine the CD receiver replaced with a picture of an equalizer.

Personally, I prefer to have the Rio Car as my only stereo, connected directly to the amplifiers. I dislike the complexity of a two-stereo system.

2) With pass-through connectors:

Some amplifiers have pass-through connectors, allowing you to daisy-chain multiple amplifiers easily. Some amplifiers have connectors for a remote level control, allowing you to change the level of the subwoofer even if your stereo does not have a dedicated output for a subwoofer. You can also install an in-line level control if the amplifier does not have one:
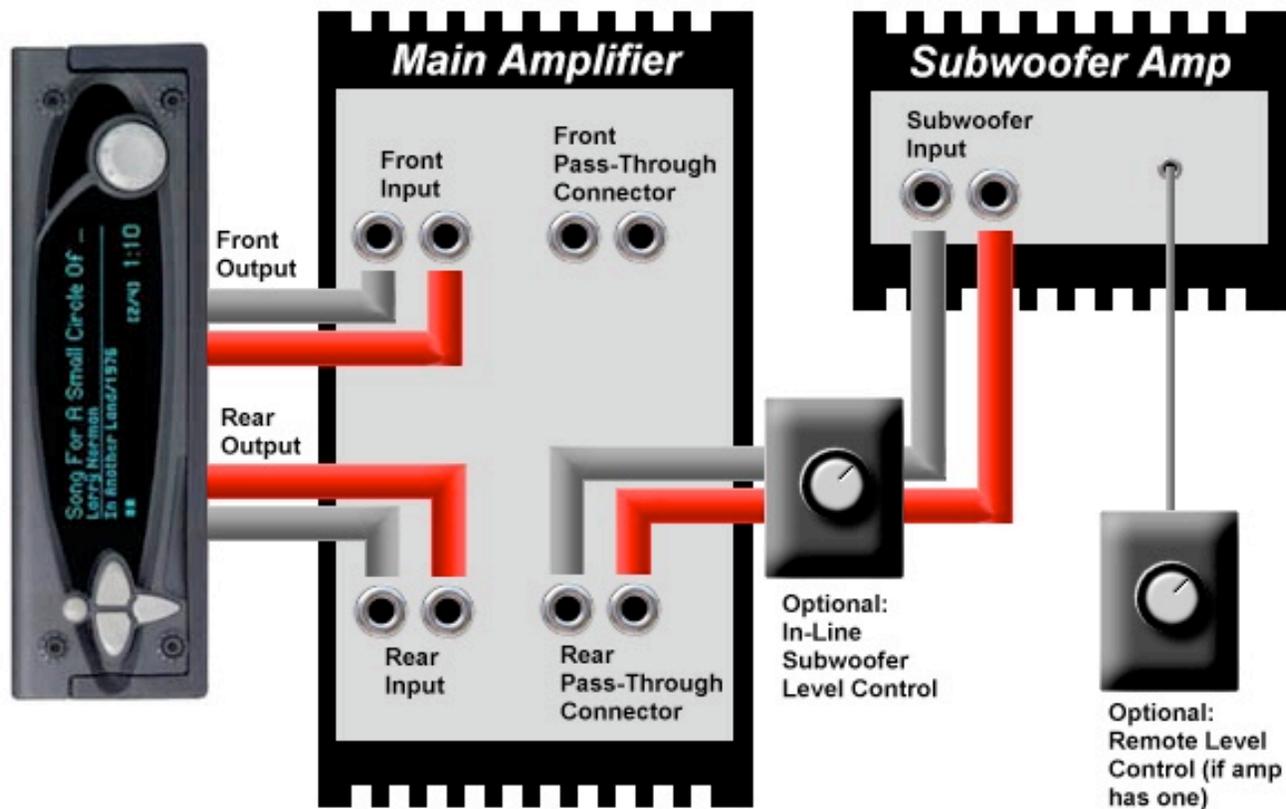
In this configuration, the subwoofer is part of the rear fader. When you fade the main speakers forward, you will also reduce the volume of the subwoofer. For some people, this is plenty of control over the subwoofer, and a dedicated subwoofer level control is not needed.

Note that if you're using a single 5-channel amplifier for this purpose (instead of a separate subwoofer amplifier), it might allow you to configure it this way internally. If not, it's still

the same principle, you just daisy-chain the rear channels into the subwoofer inputs using a pair of short RCA cables.

3) *Fader controls subwoofer only:*

If you do not have remote subwoofer level controls, you can use the rear channel as a dedicated subwoofer channel, and daisy-chain your fronts into your rears with a short pair of RCA cables:
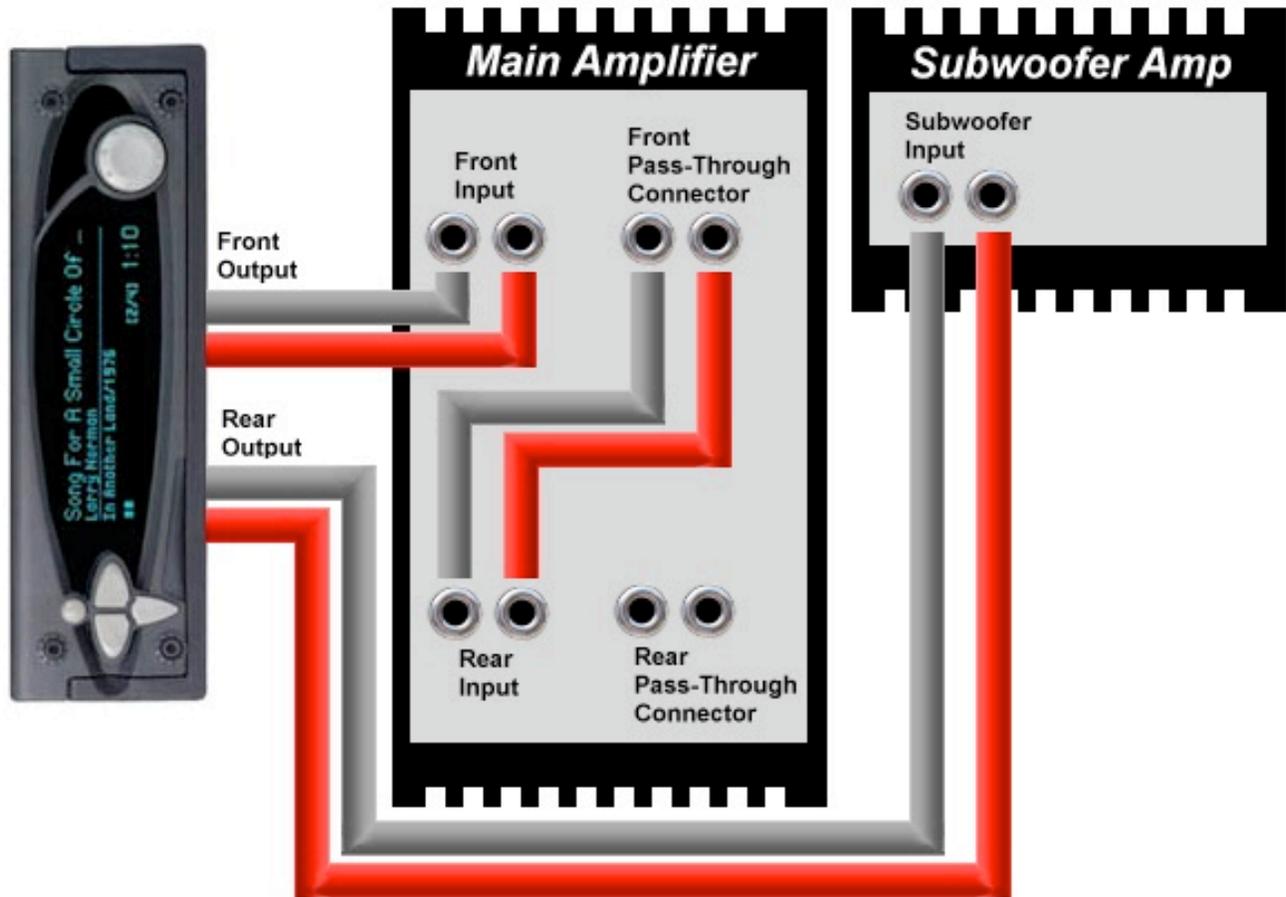
In this configuration, you lose the ability to fade front/rear between your main speakers, while the fader now controls the subwoofer level. For some people, this is fine. It depends on how you like to control the sound in the car. This happens to be the way I have my system configured. It is simple and it works very well once you've balanced the front/rear main speaker levels with the amp's onboard gain controls.

4) *With Y-adapters:*

If your system does not have pass-through connectors, you can do variations on the above schemes, but use Y-adapters instead of pass-through connectors:
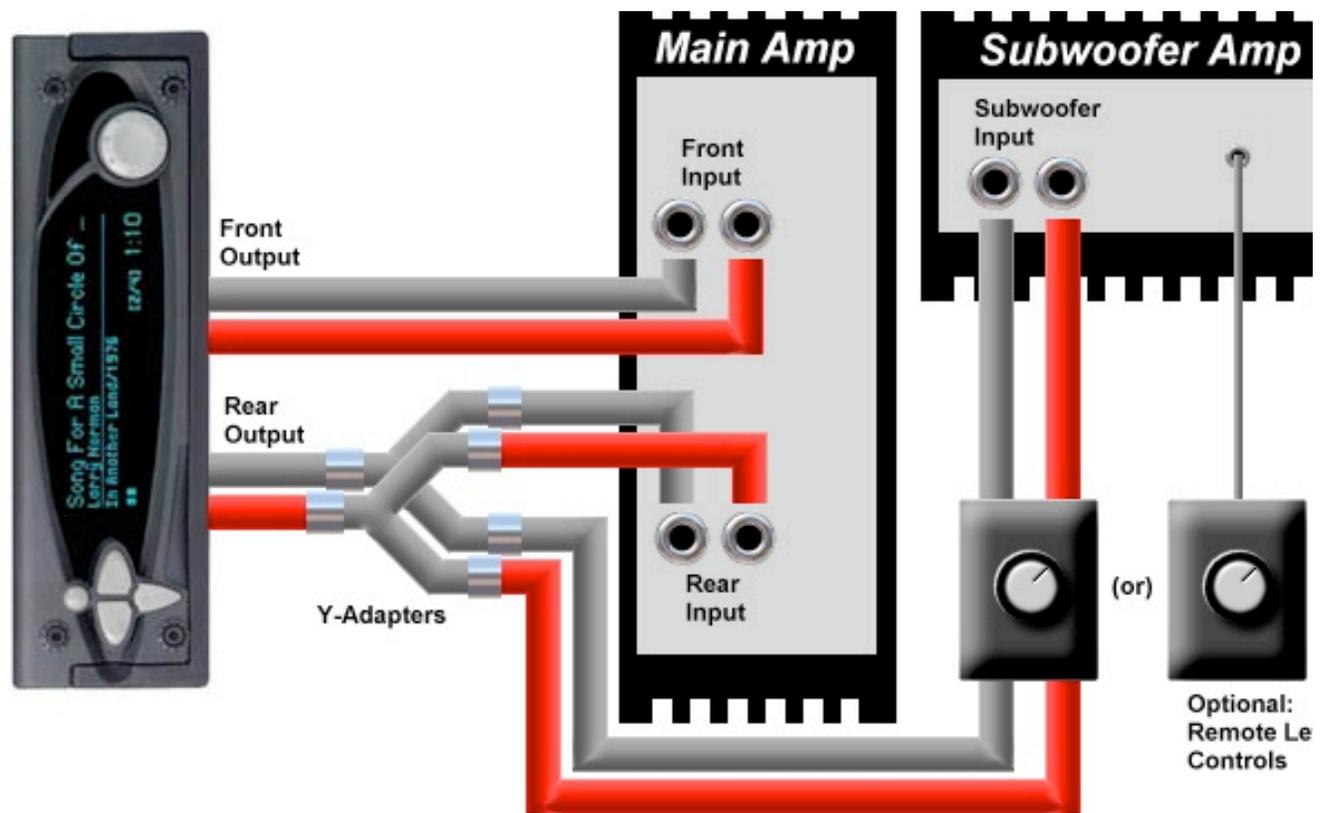
Whether or not this works well is going to depend on your particular system. I, personally, never had any trouble when I used Y-adapters in this configuration. Some people will say that you might lose some of the level voltage on the split connection, but I never noticed any signal loss. There is also the possibility that this might induce a ground loop, but you run that risk any time you run separate/multiple amplifiers anyway. Each component you add to the system increases the odds that you'll cause a ground loop, so just watch out for it and deal with it accordingly.

- **2.7 What are the known issues installing a Rio Car into my (model X) car?**

As far as installations go, it's just like any other aftermarket car stereo. So what you should really be asking is, "what are the issues for installing *an aftermarket stereo and an amplifier* in my car?"

As you can see, because there are so many different cars, the answer to this question is going to be too vast to cover in one place.

The best place to find out about installation issues for your particular model of car is by participating in internet discussion forums *specifically for that car*. A simple web search will probably reveal many web-based bulletin boards for discussing your particular car with other owners. You can also participate in Usenet newsgroups related to your car. There, you will find examples of how other owners have fared when installing aftermarket stereos.

You can also check the Installation Notes forum at the Unofficial Empeg BBS. Some good

information can be found there, but there's no guarantee you'll find anything about your particular model of car.

· **2.8 At what angle(s) can I mount it in the dash?**

The ideal mounting angle range is from 0 to 16 degrees, inclusive. This means you can mount it flat or at any angle tilting backwards up to 16 degrees. This covers most modern cars very well.

The mounting angle is important for a couple reasons. The disk drive's shock-mount tray is meant to work best within that range. Also, the disk drives themselves (off the shelf laptop disks) are meant to operate within that range. Outside that range of angles, the disks will have a different load on their spindle bearings, which might shorten the life of the disk drives.

Some users have mounted it at steeper angles (including vertical) and reported that it seems to work fine that way. You're welcome to try this, but it's at your own risk.

· **2.9 What's the best way to keep the player safe from harm or theft?**
(Entry last updated on May 1st, 2003)

When you're not driving, it's best to remove it from the dash and take it with you indoors. This will protect it from theft, as well as keep the hard disks from being exposed to extreme temperatures. The full pullout design is a great advantage in this situation.

For the dash opening, there are a few different schools of thought. Some feel that the hole in the dash is a message to thieves that there's no stereo here, and therefore nothing to steal. On the other hand, thieves might break into your car anyway, looking for a stereo to be hidden under the seat or in the glove box. I once had a removable-faceplate stereo stolen, even though the faceplate had been removed, because of this very mentality.

Some think you should cover the dash opening with a fake plate with a bunch of dangling wires, to make it look like the stereo had already been stolen. Or perhaps with a fake plate that makes it look like a cheap radio not worth stealing. These might or might not deter a thief, but would look ugly in the process.

Personally, I go for the full-stealth approach. There are photos of my Stealth install [here](). Outside the car, there are no visible signs of a custom stereo installation. All speakers are under the factory grille points or under upholstery. The amplifiers are in the trunk, and not visible from outside the car. I have also purchased a blank plastic plate from the car manufacturer to cover the dash opening. This plate is the same part that's used to cover the dash opening in cars which are sold without a stereo. It even has the car company's logo etched onto it, so it looks totally authentic. When I leave the car, I pull the player out of the dash and take it with me, then I cover the hole with this plate. From anyone looking at the outside of the car, it appears as though there is no stereo installed at all, and therefore nothing worth stealing.

Even if someone does break into the car, I've taken the player with me so that the only thing to steal is a couple of amplifiers. Those are a lot easier to replace than the player.

Another style of stealth installation is to cover the open hole with a false face that looks exactly like the factory-installed radio; factory radios are not usually a target for thieves. An excellent example of this can be seen here. Note that this only works as a theft deterrent if it's *completely authentic.* Anything that looks even slightly "aftermarket" could become a target.

Sometimes, there will be situations where you can't take the player with you when you leave the car. I don't recommend leaving the player in the car, either visible or hidden. Rather, I would simply leave the player at home before departing on those kinds of trips.

Carrying Cases

For carrying the player with you, the empeg international store used to sell a very nice carrying case for the unit, which allowed you to take it just about anywhere very comfortably. The case was small, easy to carry, and made traveling with the empeg a breeze. It even had the empeg logo embroidered on the front. Unfortunately, they are sold out of these cases and no more will be made.

The most secure carrying case would be a padded hard-shell unit such as a Pelican or Serpac brand case. These are designed to carry photo equipment or similar items. Some users report great success with Pelican cases. These are bulky, however.

Many owners have reported that certain soft-shell cases designed for cameras work well. If you're stuck trying to find a case for the player, it might not hurt to try browsing around a camera store. The CaseLogic company also sells a large selection of cases for things about the same size as the car player; for example, their cases for portable disk drives might work.

It has also been reported that some soft-shell cases designed to carry portable video games, such as the GameBoy Advance, are large enough to hold the car player. So a trip to your local video-game retailer might prove fruitful. Pelican even has one of these soft-shell GBA cases available, model PP1500.

If you are concerned about losing the player by leaving it in a restaurant or something, you can put your name and your work telephone number in the case. You can also use the empeg Logo Editor software to put that information on the player's boot-up screen for additional security.

At the current time, the player software does not have any built-in "code" security to prevent it from being used by a thief. The technical support resources required to support such a system are too great to make it feasible. However, if your player is stolen, contact support and inform them.

· **2.10 Can I run 4 volt outputs into 1 volt inputs?**

Yes, no problem. You can also run 1-volt outputs into 4-volt inputs.

The Rio Car has a plethora of plugs on the back:

- On the unit itself, there is a pair of line-level home audio outputs. These are 1-volt.

- On the car docking sleeve, there are six line-level connectors. A pair of front outputs, a pair of rear outputs, and a pair of auxiliary inputs.

- The docking sled auxiliary inputs are 1-volt.

- The front and rear docking sled outputs are 4-volt.

When mixing components, in most instances, it's perfectly fine to plug a 4-volt output into a 1-volt input, and vice-versa.

For example, if you want to route the Rio Car's audio into the "Aux In" on a CD player, it should be fine to put the car sled's 4v front outputs into the CD player's inputs, even if the CD player is designed to accept 1v.

The only difference you'll probably hear between the two is overall volume level. Simply adjust the volume (and/or input gain) on the components involved until everything sounds right.

· **2.11 Can I hook up a steering wheel remote?**
(Entry last updated on January 31st, 2002)

Yes. There are a few different options for steering wheel mounted remote control.

Third-party Infrared Steering Wheel Remotes

These are infrared devices which attach to your steering wheel and work like an infrared remote control. Some clamp to the wheel itself, others are designed to attach to the back side of one of the spokes, behind the wheel.

Models which are known to work well are the Kenwood KCA-RC700 and the Pioneer CXB3488 (SR80 in the US). Other models may work well, too, if they output IR frequencies in the proper range for the car player's IR sensor.

The Kenwood unit works without modification, as the car player responds to Kenwood IR commands by default. The Pioneer unit (and many others) will require a special custom hacked kernel to be installed on the car player, and also require edits to the config.ini file on the player. See http://empeg-hijack.sourceforge.net for software and instructions.

Note that for a third-party remote to work, it *must be* in

the proper frequency range for the player to recognize it. For example, it's suspected that the Sony RM-X5S remote will probably not work with the player because it uses a high frequency band. There's no way to tell just by looking at the remote whether or not it's in the proper frequency range, so if possible, your best bet would be to try out the remote with the Hijack kernel's "Button Codes Display" feature before you buy it.

Factory-to-Infrared Integration

These integration devices turn your car's factory radio steering wheel controls into infrared commands compatible with aftermarket radios.

These are not very common, but one company which deals in this kind of device is Pacific Accessory Corporation. Their unit is called the SWI-X.

Factory-to-Rio Car Interface

An integration device which connects your car's factory radio steering wheel controls directly to the player's serial port on the in-car docking sled.

John Lambon has done some project work in this area. Note: this is not a mass-market item, it's a do-it-yourself project for electronics hackers which requires technical skill, knowledge of your vehicle's control signals, and access to a microcontroller programmer. Details can be found here. John has also done some work in the area of connecting a Sony stalk controller, however that work has been superseded by the next option, below.

Sony Wired "Stalk" controls

These are small Sony joystick controls designed to control Sony stereos. They mount on the side of your steering column. Sony model numbers are RM-X4S and RM-X2S. These can plug directly into the add-on tuner module for the Rio Car. Note that you must purchase the add-on tuner module for this functionality to be available.

Factory-to-Sony Converters

These are third-party integration devices designed to connect factory steering wheel controls directly into the "stalk port" on Sony-brand stereos. If one exists for your model of car, then these will also plug into the add-on tuner module for the Rio Car. Soundgate is one company that makes this type of interface for Ford and GM vehicles.

If you happen to know the details of the circuitry of your steering wheel buttons, you can "roll your own" factory-to-Sony conversion system. The Sony interface is simply a set of predefined resistor values, so it's possible to construct a resistor network if you're good with electronics. Details of the resistor values can be found in the Developer Info section of this site, here.

· **2.12 Can I mount it in the trunk or the glove box?**
(Entry last updated on June 4th, 2003)

Not recommended. Much of the user interface depends upon your ability to see the on-screen menus so you know what you're selecting.

If all you ever wanted to do was to hit next/previous track and adjust the volume, then sure, you could mount it in the trunk. You could use some sort of infrared repeater system or a variation of the steering wheel control interfaces to control it. It would work.

But why? One of the reasons that the Rio Car is such a great product is its ability to search for and select music out of your vast collection. This requires seeing the screen.

Do you want to mount it in the trunk because there's already a stereo in your dash and no room for the Rio Car? Dump the existing stereo. Trust me, you won't miss it.

The Rio Car isn't like a CD changer. It's a completely different way of listening to your

music, and you're going to want it up there where you can get to it.

Now, if after reading the above, you're still serious about using it in the trunk, and you happen to have a spare PalmPilot, you can use Palm Empeg or Palantir to control certain aspects of the player from the Palm's screen. You would probably also need an infrared repeater system or some other way to remotely control the player itself. The player is not as full featured or as user-friendly this way, and these programs require some Linux knowledge to install and use correctly. For instance, Palantir requires that you have an infrared connection to the player, and it can only queue up tunes for playback, it can't remotely control all aspects of the player. But it's one possible solution if you have no other alternative.

There are also ways to use serial commands, VNC, or XML to remotely control the empeg from a computer. But if your problem is that you don't have space in your dash for the empeg, then you won't have space in your dash for a computer, either.

· **2.13 Can I run a display extension or 'Y' off the display board?**
(Entry last updated on May 16th, 2003)

A *direct* extension is not recommended. Simply extending the wires to the display board can cause very bad effects, possibly even as bad as blowing the CPU, because some of the signals are unbuffered 3.3v signals coming directly out of the CPU into the display board. There would be grounding problems, and the high speed data would probably get corrupted on the way.

One intrepid user actually did it, but he essentially had to create his own buffer circuitry and extension interface. This was a *significant* expense of time and money, and the only reason he was able to do it was because he worked for an R&D firm with a very flexible budget and was allowed to "play" with the project. It was a similar situation to the video-out project mentioned here.

Creating a "Y" to another display such as an LCD is tricky and essentially amounts to creating a whole new display board just like the first one. This would also require a significant expense of time and money.

However, there is some preliminary work being done in the area of third-party display extenders. Instead of being a direct connection to the display board, they are serial devices which turn RS-232 serial data into graphics. They require running a modified player kernel to translate screen graphics into serial commands. Click here for the project development discussion thread.

· **2.14 Can I output the display to a video monitor?**
(Entry last updated on May 14th, 2003)

Not easily. There is no "video out" connector on the unit, and no way to convert the display signals into a TV-compatible format.

There is the possibility of connecting a video title generator to the player's serial port. A configuration tweak will cause the player to put song data out on its serial port. This

would (at significant expense and hassle) get you bare-minimum ASCII track titles on the TV screen.

But this still wouldn't help you to mount the unit in the trunk, as it wouldn't give you any feedback to infrared commands or button presses.

Some users have done this, though. Do a search on the Unofficial Empeg BBS to find more information.

One lateral-thinking user was able to get a decent video display simply by mounting a cheap CCD camera aimed at the player's front panel. Details can be found on the Unofficial Empeg BBS. If you want to try this, you might need to use an infrared filter over the camera lens, because some CCDs will pick up the infrared glow of the cathode filament wires.

If you're serious about trying to do an *actual* true video out for your player, it has been done. Once. It was commissioned by a special customer who was extremely serious about making a video out board. It was demonstrated at one of the user meets, and it was billed as "the most expensive empeg ever made". It required designing and building a custom interface with 516 individual parts, on a double-sided 8-layer PCB. The components included an ARM 7500 CPU, 4MB of RAM, and 1MB of flash. The board took about 10 months to design and manufacture, and even after the board was done, it took about 20 hours of work to assemble and solder the components onto just one of the boards by hand. The total cost of design/parts/assembly, although not publicly disclosed, is hinted to be in about the same price range as a reasonably expensive sports car. And to top it all off, this particular PCB design is proprietary and cannot be publicly disclosed.

Sure you're still serious about trying to make the player output to video? Or is simply mounting it in the dash and connecting an amp starting to sound more attractive?

· **2.15 Can it control a CD changer, or be controlled as if it were a CD changer?**
(Entry last updated on February 28th, 2002)

No. There's no interface of that kind on the Rio Car player. It is designed to be a complete self-contained stereo, it is not meant to emulate a CD changer, nor is it meant to control a CD changer.

First of all, CD changers all have proprietary interfaces. There's no way it could universally control all CD changers, at least not in a cost-effective way.

And why would you want it to control a CD changer anyway? It's meant to free you of the hassle of ever having to carry CDs around. Its capacity is orders of magnitude greater than any car CD changer.

If all you want is to listen to the occasional CD, then just get a cheap portable CD player that you can plug into its aux-in. Get the cheapest one you can, because it'll just gather dust in the glove compartment, trust me.

As far as controlling the player as if it were a CD changer, that's something that just isn't implemented. The empeg team has created this kind of product in the past for OEM customers, but the Rio Car player isn't one of those products.

The problem with making your MP3 collection behave like a CD changer is that the controller limits you to 99 tracks in a playlist. What if your Trance Mixes playlist is 235 tracks long? One of the advantages of the Rio Car is the way it lets you organize, search, and select your music in a variety of flexible ways. Boxing it into the CD/TRACK mentality is missing the point.

If an "MP3 Changer" is what you're really looking for, there are other products on the market which do this specific task. The Rio Car is better, though, since it doesn't box you into the CD/TRACK format.

Note: The above is only talking about a system where you want the Rio Car to *control* a CD changer or vice-versa. If all you want to do is connect the two devices together using line-level inputs and outputs, and you don't care about one unit controlling the other unit, then that's a whole different story. Click here or here for information on these kinds of connections.

· 2.16 Is it difficult to remove the car docking sled? For instance, to install the tuner or move to another car?

It's no more difficult to remove the sled than it was to install it in the first place.

If you installed it yourself, then you already know what's involved to remove it. The hard part is usually the wiring connections. The sled itself usually just involves bending out the tabs and removing it.

If you had a professional install it, then you should probably have a professional do the moving/removing work.

· 2.17 What's up with the 'Grounding leads' on the Mark 1 player?
(Entry last updated on October 5th, 2002)

The Mark 1 player had a different kind of output stage than the Mark 2 and Rio Car players. The Mark 1 used something called *floating-ground output*, which caused problems with some amplifiers.

The Mark 1 player shipped with ground adapters. These were RCA connectors with grounding wires attached to the shrouds. Some Mark 1 owners will need to use these adapters to prevent ground loops and alternator whine. The proper connection scheme is to insert them into the signal chain, attached at the amplifier end of the connection. Then the ground wires need to be connected to the same grounding point that is used by the amplifier.

So the Mark 2's output stage was completely redesigned, and all noise and grounding

problems were solved. The Mark 2 and Rio Car should not have any more trouble with ground loops than any other aftermarket stereo.

· 2.18 How can I fix the gap around the edge of the docking sled??

Depending on how your player is installed, there might be a small gap between the edges of the sled and your dashboard.

A properly-made installation kit should get rid of this gap, but if you're a do-it-yourself type (like me) and didn't use an installation kit, you might get a small gap.

I fixed this on my car by cutting a "hollow rectangle" shape out of the cover of a black plastic notebook, using an x-acto knife and a metal ruler. Then I glued this trim piece to the front edge of the sled. Photos and details of this procedure are located here.

· 2.19 Will installing the player affect my car alarm or my keyless-entry system?

It might, but there is a simple and easy fix. Click here for details.

· 2.20 I have no room directly behind the sled for my tuner module. Can I make the cable longer?
(Entry last updated on February 13th, 2002)

The tuner module should have shipped with an extension cable just for this purpose. (See here for one possible problem with the extension cable if you decide to use it.)

If this still isn't long enough, extending the length of this cable is not recommended as it would tend to pick up noise if it were much longer.

Often, careful and creative placement of the tuner module, wires, and connectors will allow the items to fit behind most dashboards. Try to carefully route and place all of the wires rather than just cramming everything in.

If there is a problem getting the car's antenna cable to reach the tuner module, then it should be no problem to extend the antenna cable. It's the cable that goes between the tuner and the sled that shouldn't be lengthened.

· 2.21 Do I need to combine the front and rear outputs of the player when connecting to a 2-channel input?
(Entry last updated on December 19th, 2002)

No.

Just use either the front output or the rear output, and leave the other pair disconnected. Do not attempt to combine the front and the rear outputs.

More explanation:

Sometimes car installations will involve connecting the player to an amplification system that only has a single pair of L/R inputs. For example, if you're connecting the player to the "aux in" of a CD player, you'll find that there's only two input plugs (L/R) instead of four. Or maybe you're connecting to an external equalizer or active crossover system, which also only has a single pair of inputs.

By default, the outputs from the Rio car player are the same for the front and the rear. When the fader is in the center, both the front and rear outputs are at full volume. When you adjust the fader to the front, the rear outputs are reduced in volume. When you adjust the fader to the rear, the front outputs are reduced in volume. So, just leave the fader centered to get full output on all four plugs, and use only one of the two pairs to connect to your other device.

The opposite applies, too. For example, if you're connecting a CD player to the Rio car player's "aux in" connectors, use only the front output or the rear output from the CD player and leave its balance control centered.

· **2.22 What are the pinouts of the sled docking connector?**
(Entry last updated on August 5th, 2003)

Mark 1 pinouts are listed here, Mark 2/Rio Car pinouts are listed here.

Mike Tempsch has created color-coded pictures of the pinouts, available here and here.

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3. Software and player operation questions

· 3.1 Why do the visuals disappear every time I put it in the car?
· 3.2 I just got my new player and I have many gigs of MP3s to install. Is there anything I need to keep in mind?
· 3.3 Why can't I add more than one song at a time?
· 3.4 What does the flashing LED on the faceplate mean?
· 3.5 Do I have to put the player into standby mode before I pull the plug?
· 3.6 Can I copy MP3 files back onto my PC from the player?
· 3.7 Is there anything I should keep in mind when I grab files from the player?
· 3.8 Can I back up the player's playlists and music files?
· 3.9 What is the best way to organize and listen to my music?
· 3.10 How can I keep my PC and my car player in perfect synch?
· 3.11 How do I upgrade the firmware on the player, and will it erase my music files?
· 3.12 Is it bad for the player if it gets too hot or too cold?
· 3.13 Do I have to use the remote, or can I do everything from the front panel?
· 3.14 What do all the buttons do?
· 3.15 What's this I hear about a 'Stun/Kill' button on the remote control?

- 3.16 What is a parametric EQ, and what does the 'Q' parameter do?
- 3.17 Where can I download a list of EQ presets?
- 3.18 How do I know what the hard disk is doing?
- 3.19 Does disk space get wasted if I make a second copy of a song in a different playlist?
- 3.20 What about editing/renaming multiple copies of the same song?
- 3.21 How can I be sure that I've deleted all copies of a given song?
- 3.22 How do I make albums play in the correct order?
- 3.23 How do the Tweak Order functions work?
- 3.24 How does the 'Ignore as Child' option work?
- 3.25 What in the world is a 'Wendy Filter'?
- 3.26 How do the Bookmarks work?
- 3.27 Can I delete songs from the player's front panel?
- 3.28 How can I tell which tracks I have marked with the 'Mark' key?
- 3.29 What search terms can I use in the Advanced Search box in Emplode?
- 3.30 What is this 'Soup View' I hear other people talking about?
- 3.31 What do the little letters mean on the Info:Track screen?
- 3.32 When I move the player between the car and the house, what does it do differently?
- 3.33 Are there any 'Easter Eggs' in the player?
- 3.34 What do the various symbols mean on the 'Aux Info' screen?
- 3.35 Can I reset the number of plays and other statistics?
- 3.36 Why does it play clusters of artists or albums?
- 3.37 How do I cancel out of a synch?
- 3.38 How do I skip to the next album or the next playlist?
- 3.39 What are some other good tricks for using the player?

- **3.1 Why do the visuals disappear every time I put it in the car?**
(Entry last updated on September 11th, 2002)

This is probably the single most common question asked about the player.

This is by design. The company is protecting themselves from litigation. The visuals are so mesmerizing that some might consider them distracting, and therefore dangerous to have running in the car. So, by default, the player reverts to a static text display when it boots on DC (car sled) power.

It reverts to whatever the last static text display was. For example, if your last static display was "Info: Track", then it will revert to that. If your last static display was "Info: Now and Next", it will revert to that.

You can instantly toggle between visuals mode and text mode simply by pressing and holding the bottom button on the faceplate. This makes switching to the visuals **your choice**. So don't go crying to your lawyer when you rear-end that Ferrari because you were staring at Funnelweb.

Hey, it could be worse. They could make you answer a five-page disclaimer before switching to the visuals...

One way to avoid this feature is to use a hacked kernel that switches to a visual after the player is booted up. For information on using hacked kernels, see here. Remember that if you use a hacked kernel, you do so at your own risk.

If you are having trouble getting the Hijack kernel's "Restore DC Car Visuals" feature working, please click here.

· **3.2 I just got my new player and I have many gigs of MP3s to install. Is there anything I need to keep in mind?**
(Entry last updated on February 16th, 2002)

Yes.

First, make sure you are using the latest *non-beta* software to do your initial loading and organizing of the music. Here are details on how to install the latest software.

Next, plan on doing your loads in small batches, of less than one gigabyte per batch. Although non-beta software should be stable enough to handle very large music loads, this will help protect you from unforseen problems such as power loss or PC crashes. The more batches you do, the less you'll have to "back track" if something goes wrong.

If you are able to use Ethernet, then use it. It is faster than USB for large music uploads, since its transmission protocol uses less software and hardware overhead. If you don't have an ethernet connection already set up, then don't worry about it, because USB is still pretty fast.

Finally, make sure that all your songs have their tag information correctly filled out *before* you send them to the player. Read this section for more information on why this is so important.

· **3.3 Why can't I add more than one song at a time?**
(Entry last updated on June 1st, 2002)

Ah, but you can.

You're probably using the "Edit/New Tune" item in Emplode. Sure, that works, but it's not very efficient.

Let me introduce you to your new friend, *Drag and Drop*. You open up the Windows Explorer at the same time as Emplode, and you drag your tunes or folders onto the "Playlists" icon in Emplode:
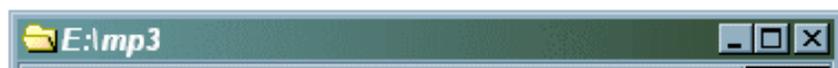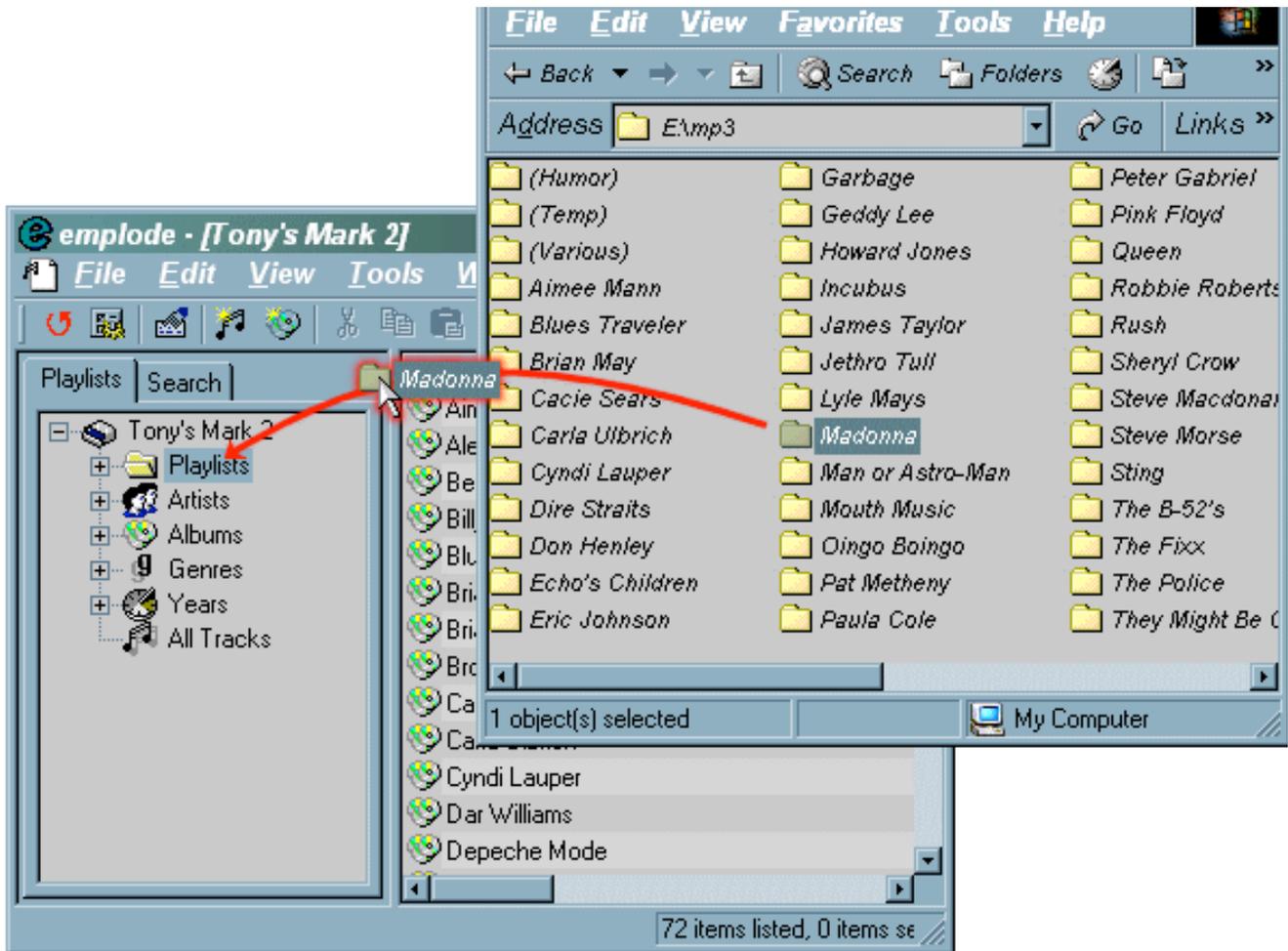
In the example above, this would not only put all of your Madonna tunes onto the player in one shot, but it would also create a playlist called "Madonna". Not only that, but if you have sub-folders for individual albums under the "Madonna" folder, it will create sub-playlists for those albums. Convenient, eh?

Note: It's best to have your tunes properly tagged and organized on your PC's hard disk before doing this. Please read this entry and this entry for information on how to organize your tunes.

· **3.4 What does the flashing LED on the faceplate mean?**
(Entry last updated on March 3rd, 2003)

The pulsing "standby" LED indicates that the unit is in standby mode. This means that when you press a button on the remote or the front panel, it will wake up and begin playing music instantly, without having to reboot.

Technically, when the unit goes into standby mode, it actually does the following:

- Pauses playback.

- Spins down the hard disk(s).

- Turns off the display.

- Turns off the Amplifier Remote line (to mute the amps in your car).

Otherwise, everything is running (CPU, software, and all) the same way it was when it was playing.

There are several ways to place the player into standby mode. You can select "Power off" from the main menu, you can press and hold the Source button on the Rio remote control, you can turn off the car's ignition, or (in version 2.0 and later) you can hold the "down" button with the "Power off" menu highlighted for a choice of timed shutdown options.

The player does not normally go into full-power-off mode when it's plugged into AC (home) power. As long as there's power to the AC plug, it will either be playing or it will be in standby mode. If you wish for the player to be fully powered off, unplug it. Note that it is not necessary to put the player into standby mode before removing the power, it's designed so that you can safely remove the power while it's playing tunes.

On DC (car) power, its behavior is slightly different. In the car, it is possible to make the player power off completely. When you turn off the ignition in your car, it should drop into standby mode, and then stay there for a couple minutes before shutting off completely. The amount of in-car standby time is configurable from within the Emplode software, in the "Configure Player" screen.

When it's in standby mode in the car, you can press any button and it will wake up and begin playing, even if the key is off. After you do this, it will continue playing as long as you like. This is useful for situations like tailgate parties. Be careful, though, because leaving it playing for long periods without the engine running can drain your battery.

If you put the player back into standby mode with the ignition key turned off, the standby timeout will begin again, and it will shut itself off completely when the timer expires. You can tell the player has shut itself off completely because blinking light will go out. After the player has fully powered off, you will need to turn on the car's ignition again in order to wake the player.

(Note: This standby-on-ignition behavior applies only to Mark 2 and 2a units. Mark 1's did not have a separate ignition-sense wire.)

Some people have reported problems with their keyless entry systems when the unit is on standby while plugged into the dash. If this happens, use Emplode to reduce the standby time to five seconds or less. Then your keyless-entry problems will go away.

Note: If your player does not go into standby mode when you turn off the car's ignition,

check to make sure it is wired correctly, then [click here](#).

· **3.5 Do I have to put the player into standby mode before I pull the plug?**
(Entry last updated on June 18th, 2002)

The player is designed so that you can completely remove power from it *at any time*. You can pull the plug whenever you want, even if it's right in the middle of playing a song. When you apply power to the player again, it should pick up right where it left off.

Here's how it works:

- When you select or shuffle a new playlist, it writes the current song running order onto a special area of the hard disk. This is the only time that the hard disk is mounted read-write while the player is in the car, and it is very brief. And it's designed so that even a power loss at this time would not harm the player. Otherwise, the hard disks are left in read-only mode at all times.

- When the power is lost to the player (and I'm talking about complete power loss here, not just turning off the car's ignition), the player uses its last dying gasp of electricity to write its current position within the song running order into flash RAM. It also writes a few other useful things into flash, things related to the player's current "state".

- When power is re-applied to the player, it re-reads the current running order from this special hard disk partition, then reads the entry from flash RAM to locate the proper position in this running order from which to begin playback.

There might be an occasional, very rare instance of the player forgetting its current position within the playlist. If that happens, it will seem to go back to its last-saved position from the *previous* power pull when power is re-applied. This should only happen once in a blue moon. I personally haven't seen this happen to my player in months. If it happens to you all the time, for instance, if it happens to you every time you turn off the car's ignition, please click [here](#) for information on how to fix it.

There may also be an indexing issue with Variable Bit Rate MP3 files, discussed [here](#). However, this is totally unrelated to pulling the power.

The only time when it's dangerous to pull the power is when it's in the middle of a synchronization operation, or when you're hacking on the player's hard disk at the shell prompt and you've manually placed the disk drives into read-write mode. If you lose power at this time, you might corrupt the files that were being transferred at the time of the power loss. If so, those files would need to be sent to the player again, and then a [disk check](#) should be performed.

· **3.6 Can I copy MP3 files back onto my PC from the player?**
(Entry last updated on March 17th, 2003)

As of Emplode version 2.0, *YES*. Right-click on any file or playlist and select "Download".

And there was much rejoicing.

This can also be done with Jemplode, including advanced options for preserving the tree structure and formatting the file names based on the track information.

· **3.7 Is there anything I should keep in mind when I grab files from the player?**
(Entry last updated on March 17th, 2003)

If you made edits to the song information in Emplode, and now you want to migrate those changes back to the files on your PC, there's a problem.

When you change the song information in Emplode, it's only changing the player's internal database. The MP3 files and their ID3 tags are not altered. So if you copy the songs from the player, their tags are still the same old tags they were when you sent them to the player in the first place. The Emplode software does not write tags as it downloads.

So if you made changes to the song information, you can't 'rescue' that data by downloading the songs with Emplode. Generally, it's best to make sure all your tags are correct *before* sending your songs to the player in the first place.

Fortunately, the Jemplode software has an option to write corrected tags back to the files as they're downloaded, provided that you set its options correctly. So if you need your player track information written to your MP3 files, you can use Jemplode to do it.

· **3.8 Can I back up the player's playlists and music files?**
(Entry last updated on May 13th, 2003)

Yes.

Most people don't bother with doing this, as it's much easier to just leave your MP3s on the PC's hard disk. If you keep your MP3s organized on your PC's hard disk in the same way they're organized on the player (as described here), it's pretty easy to rebuild your player if its hard disk needs to be replaced.

If you really want to go to the trouble of a file-by-file backup of the player, you can do it via FTP. Here's how:

- Make sure you've got a working ethernet connection to the player. If you're having trouble getting ethernet working, click here.

- Install the player software version 2.0 or later as described here. Make sure to install the *developer* version.

- Install an FTP server on the player. The easiest way to do this is by installing the Hijack kernel using the instructions here.

- Using an FTP client on your PC, copy the following files from the player to your desired backup location:

  All files in **/drive0/fids/**
  All files in **/drive1/fids/** (if you have two disk drives in the player)
  /drive0/var/config.ini

  Make sure to use *binary* mode on your FTP client software when you do this.

The above only works on a Mk2 or Mk2a player, since the Mk1 doesn't have an ethernet port and therefore can't use FTP. If you own a Mk1, you just need to keep your MP3s backed up somewhere else and keep them organized the same way as they are on your player.

There are some important things you need to remember about this, however...

This procedure only backs up the songs, the playlists, and your user information. It does not back up the information stored on the player's dynamic data partition: bookmarks, tuner presets, equalizer presets, and the dynamic song data such as play count and last played. Some of these things can be written down on a piece of paper (such as the EQ and tuner presets), so you should probably do that, too, if backing up the information is important to you.

If you've got a particular need to back up the dynamic data (most people would not need to do this), it can be done with the Linux "dd" command at the player's [shell prompt]. The backup command would be **dd if=/dev/hda3 of=/drive0/dynamicbackup** and you would use **dd if=/drive0/dynamicbackup of=/dev/hda3** to restore. Note that the music partition must be in read-write mode, and it's up to you to actually get the **dynamicbackup** file itself on and off of the player.

It's also important to remember what to do when *restoring* the data. After putting these files back on the player, you have to kill the auto-generated database files and make the player rebuild them.

An example of the restoration procedure would be:

- Repair/rebuild/replace the player as necessary to get it working again. If replacing a bad hard disk, refer to the [Disk Upgrade Guide] for details on how to use the builder image to partition and format the hard disk(s).

- Get 2.x developer and Hijack onto the new/repaired/rebuilt player as described above.

- Using a serial connection to the player, exit the player software to the shell prompt as described [here].

- Set the disk drives to read-write using Hijack as detailed <u>here</u>.

- Using your FTP software, wipe out everything in **/drive0/fids/** and **/drive1/fids/** (if anything is there).

- Copy all the backed-up files onto the player, back to their original locations.

- If you backed up a two-drive player, it's possible to restore everything onto a one-drive player if there's enough space. Just put the files that came from the old **drive1/fids** into the new player's **drive0/fids** folder.

- This is the important part: ***delete*** the following files from the player if they exist:

  /drive0/var/database
  /drive0/var/playlists
  /drive0/var/tags

- Put the player's hard disks back into <u>read-only mode</u> (don't forget this!).

- Reboot the player. Then connect once with Emplode and do a synch, which will force the player to rebuild its database files.

- You should now be able to re-enter your tuner and EQ presets to get it back to normal again. If you restored the data to a different player, you might also need to re-enter the information stored in flash RAM, such as your fader and balance settings, your dimmer settings, etc.

Special thanks to CHiP from the Unofficial Empeg BBS for being the guinea pig for this procedure.

Although not strictly a backup/restore operation, there are also ways to use the Linux rSync software to keep two players in synch. <u>Click here</u> to see some of Roger's guides on this topic.

· **3.9 What is the best way to organize and listen to my music?**
(Entry last updated on April 18th, 2002)

The player lets you select music in several different ways. It's very flexible, and its system of hierarchical playlist "trees" allows you to organize your music into very unique and

personalized groups. There are also features which let you search the player, as well as features which let you filter the music based on predefined criteria.

The player can be simple, too. There's no need to get complicated about it if you don't want to. Simply throwing a bunch of songs onto the player and shuffling it will work just fine. If that's all you ever want to do, then you don't need to read any further. But if you have a vast music collection, the player's advanced music organization features are there to help you find specific types of music or specific songs as quickly as possible.

Because the player is so flexible, there is no single "best" way to organize the music on the player. Mess around with its features and come up with something that works well *for you*. For example, it's easy to rearrange the playlists in Emplode, so make sure to try different kinds of playlist structures until you like what you've got.

Now, having said that, here is a description of how I use my player on a daily basis. It seems to be a fairly common way of using it, and it's a good starting point for further experimentation.

In my player's root Playlists folder, I have a bunch of playlists named after each artist. Beneath those, I have album playlists. Like this:
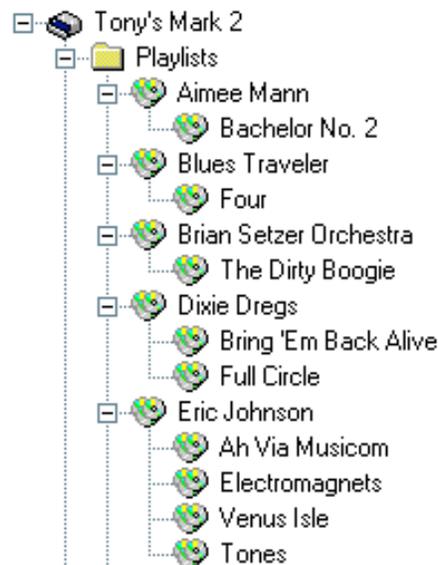
Some people like to split up their root playlist into more tree levels. For example, starting with different genres at the top level instead of the artists. That's a perfectly valid way to do it, too. I prefer to have a "flatter" playlist structure, though, so that I don't have to navigate as many levels when I'm fishing through the playlist tree. So I put my artists at the top.

> *Note that in a future release of the software, we won't even need to create Artist/Album playlists any more, those will appear automatically as part of the Soup Views.*

There are many other ways you could organize your playlist structure. For example, if

there is a lot of Classical music in your collection, you might want to create playlists organized by composer, as well as by conductor and by orchestra. The main thing to keep in mind is that you should be able to navigate these playlist trees with a minimum of effort. So do whatever you feel is easiest to control when you're using the player's front panel.

In the root directory, I also have some "mood" playlists. For example, some of my mood playlists are:

Note how I enclose the names of these mood playlists in parentheses. The parentheses are there for two reasons: First, to make them stand out from the rest of the artist playlists. Second, the parentheses are a trick to make them fall "first" alphabetically so that they appear at the beginning of the Playlists menu on the player. Square brackets or hyphens would also work well for this purpose.

In practice, I hardly ever dig into the playlists tree. Usually, I play the contents of the entire player, shuffled by Least Recently Played. When this shuffle mode is activated, I select and play the root playlist simply by pressing "down down down" on the player's front panel.

When I'm shuffling the entire player like this, the "next track" button gets used a lot. When a new song starts, if it's not the most perfect song for my mood at the time, I press Next until I get to one that is. Note that I'm not usually skipping the song because I dislike it (there isn't a lot of stuff on the player I dislike), I'm skipping it because it's not *absolutely perfect* for my mood at that exact time. Usually it takes only a few "skips" before a song comes up that I want to hear. (Do *that* with a CD changer, heh.)

> *Note that exessive track-skipping is often annoying to passengers in your car.*
> *To prevent this, I recommend using "mood" playlists when you've got*
> *passengers, or simply resisting the urge to hit the skip button.*

Now, at this point, there are probably a lot of purists screaming about how it's sacrilege to listen to certain songs without hearing the rest of the album to go with that song. That's OK, the player handles albums just fine, too.

If I'm shuffling, and I hear a song that happens to fit well within an album, I can press the "0" button on the remote control. This unshuffles "around" the current song, so that I'm dropped into the middle of that album. For instance, if I'm shuffling the whole player and "Money" comes up, I press "0" and can listen to the remainder of Side Two of *Dark Side of the Moon* uninterrupted. See this entry for more details about how to make the player unshuffle like this for you.

If I decide I want to listen to a specific album off the top of my head, I can easily turn off shuffle and go fish for the album in my playlists tree. Note that the remote control can be used as a quick shortcut to specific alphabet letters when scrolling through the Playlists menu. For instance, I can press the 7 key ("PRS") twice to reach the R's to play a Rush

album.

Some people make extensive use of the player's PIN feature to access specific playlists or songs. I don't do this, but the feature is there if you want it.

If I'm shuffling the whole player, and I simply want to hear more of a given artist/album without regard to the song order, I use the Tweak Order feature to queue up more songs by that artist. For example, if I hear a song by Carla Ulbrich, I can press the "2" button on the remote control a few times, and it will queue up a few more Carla Ulbrich tunes.

If there is a specific song that I want to play, I use the Search by Title feature, set to "Insert" mode. Searching is described in the manual, but also make sure to read this and this for answers to a couple of common questions about searching.

I have some stuff on my player that I don't want to appear in a "down down down" shuffle, so I use either Wendy Filters or the Ignore As Child tag to handle those situations.

Use these ideas as a starting point for learning about the player's features. You'll soon come up with your own way of organizing your music that works the best for you.

· **3.10 How can I keep my PC and my car player in perfect synch?**
(Entry last updated on June 21st, 2002)

Many people want their car player to have exactly the same songs as their PC's hard disk. That way, every time you add songs to the PC, you can update the car player with the same songs.

This can be done, but there are a few limitations you need to keep in mind. Emplode doesn't keep track of what songs are on your PC's hard disk, it only cares about what's stored in the player. Although there has been some talk about turning Emplode into a complete music-management program, at the current time, it only works with the database stored on the player. This is actually a good thing for most people, as it allows you to manage the player's database from any computer, without having to worry about what songs are stored on that particular computer's hard disk. You can also throw songs onto the player and then delete them from your PC's hard disk without looking back.

But for some, it's important to be able to maintain two separate collections. One way to do this is to religiously update the player by hand each time you update your MP3 collection on the PC. Some people, though, will go for long periods without updating the car player, and can't remember what they've added to their PC since the last synch. In this case, the easiest way to keep the player and the PC in synch is as follows:

- Make sure you are using version 2.0 or later of Emplode, and software version 2.0 or later on player itself (instructions here).

- Organize your PC's hard disk so that its folders and MP3 files are arranged in the *exact same* tree structure as you want to have as playlists in the player's database. For example:
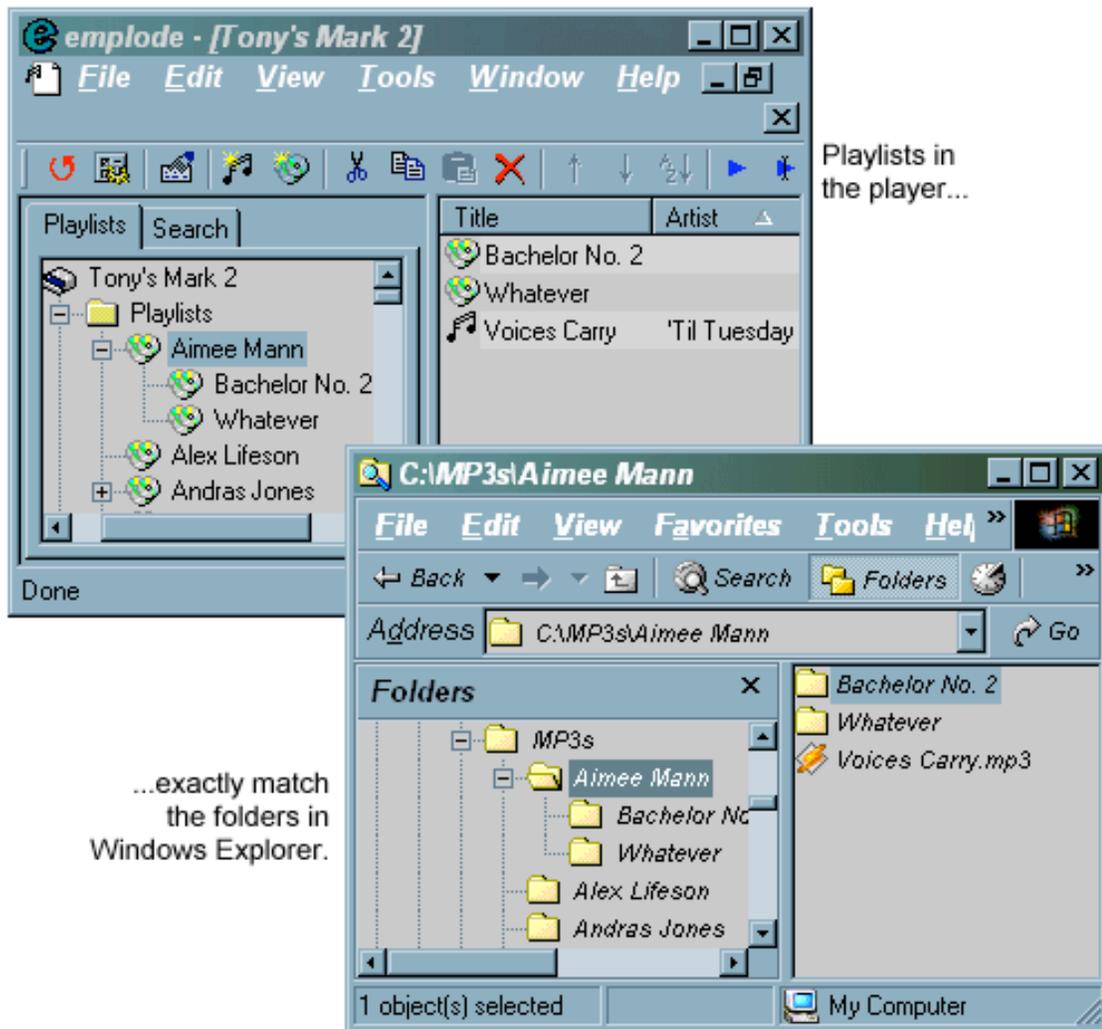
- Make sure that your tag information is completely and correctly filled out for all of the MP3 files on your PC's hard disk. Whenever you add new songs to the PC's hard disk, put them into the proper folder structure as shown above, and correct their tags.

- Then, whenever you want to update the player, select all of the parent folders in your PC's "MP3s" directory and drag them onto the "Playlists" folder in Emplode, as shown:
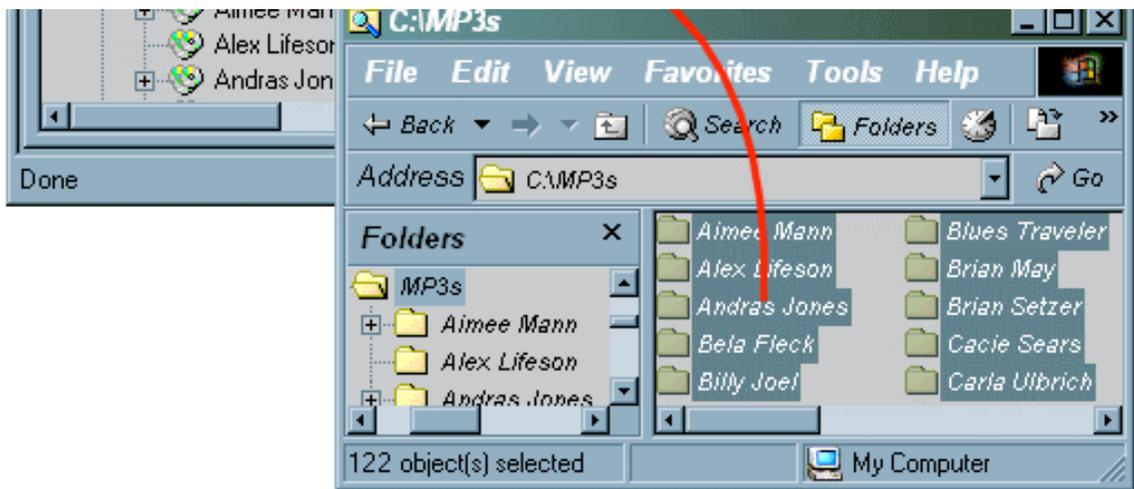
- Emplode will take a while to churn on the list. Perhaps quite a while, if it's a big list.

- Songs that already exist on the player, and which haven't been changed on the PC, will be considered a "duplicate" and will be skipped. Emplode will eventually show a dialog box reporting how many duplicates were skipped, and how many new songs were added.

- At this point, you can synch, and if all goes well, only the new songs will be added to the player.

This system isn't perfect, though. There are some important things to remember:

- This doesn't help you with *deletions*. If you delete a song from the PC, it won't get deleted from the player. You still have to do those manually.

- It doesn't help you with *changes* to the songs. Emplode uses the song tag information as one of its criteria for detecting a duplicate. For instance, if you change a song's tag on the PC, Emplode will probably mistake it for a new song and add it to the player without deleting the original song. You have to handle edits manually.

- When Emplode checks for duplicates, it only checks for them within the same folder, it does not scan the entire file set for duplicates. So if you move a file from one folder to another on the PC, Emplode won't catch it as a duplicate and will just copy it again to the new folder.

- If a song exists on your hard disk in two places, it will get copied to the player twice. Please read this for notes on handling duplicate songs.

- If you want to keep additional playlists other than the basic artist/album playlists illustrated above, you'll have to handle those manually. For instance, on my player, I have "mood" playlists named things like "(Low Key)" and "(LAN Party)", for special occasions. These contains links to other songs already in the artist/album playlists. I still have to manually update those playlists each time I add songs to the player. It would be nice if Emplode would interpret M3U files on the PC's hard disks as "soft" playlist links, but at the moment, it doesn't. It just blindly imports any files pointed to by M3Us, and if they already exist in an artist/album folder, they will be considered duplicates. Another option would be just to create complete "mood" folders on your PC and fill them with a second copy of each of the songs. This would work, but it would waste some disk space on both the PC and the player.

It's hoped that future versions of the Emplode software will include options for helping you keep your PC and your player in synch without as much manual labor.

Finally, there is one completely different option available: Some people have created special scripts using the command-line version of the Linux Emptool utility. These can be written to take special cases into account, like deletions and changes. If you're interested in using this kind of a script, ask around the Unofficial Empeg BBS for help.

· **3.11 How do I upgrade the firmware on the player, and will it erase my music files?**
(Entry last updated on April 3rd, 2003)

Upgrading the player's firmware will ***not*** hurt the music files or the database of playlists. Music is kept on a completely separate partition from the player firmware, and this partition is not altered during the upgrade.

As far as upgrades go, here are the important things to know:

- The official software and firmware downloads can be found here.

  If you are interested in testing unfinished beta software, the beta versions can be found here. However, be warned that beta software may not be stable.

- When grabbing these files from the web, it is recommended that you use a "download manager" program such as GetRight to make sure that you've grabbed the file correctly. There are many strange errors that can appear due to a corrupted download, and using a download manager right from the start will prevent these problems.

- The player firmware and the PC management software are two separate things and must be installed separately. You should try to keep both of them current to the latest version if possible. Sometimes new features are introduced in the PC management software which are only useful if you also have the latest player

firmware. Also, the communication protocol between PC and player sometimes changes, requiring that you upgrade both of them in order to use them. For example: The 1.0 player firmware won't talk to the 2.0 PC software and vice-versa.

- The PC management software, called "Emplode", is universal to all models of car player. The same version of Emplode works for the Mark 1, the Mark 2, and the Rio Car.

- The Emplode setup is a complete all-inclusive install, and doesn't require previous versions in order for it to work. For best results, de-install any previous versions of Emplode before installing the new one.

- The emplode setup is "zipped", you need an unzipping program to extract the files. Odds are, you've already got an unzipping program, so this isn't usually an issue.

- If you have trouble with the Emplode installer, for instance, if you get error messages when trying to run it, you might need to upgrade your Microsoft Installer (MSI) engine. Click here for Windows 95/98/ME, and here for Windows NT/2000.

- If, after installing or upgrading Emplode, you don't have any USB drivers for the player and you can't connect via USB, please read the release notes for Emplode. It has instructions on how to re-install the USB drivers.

- There is also something at the web site called "Linux/x86 Download Tools". This is the Linux "Emptool" utility. It is not required if you are a Windows user, you can safely ignore it.

- The player firmware upgrades are distributed in the form of ".upgrade" files. These files can only be used by the "empegUpgrade.exe" utility that's included with Emplode.

- Before upgrading the firmware on the player, you should first install the latest version of Emplode.

- The player firmware upgrades are all-inclusive, and do not require previous versions to have been installed. They replace an entire partition on the player's hard disk, as well as replace the Linux kernel in the player's flash RAM.

- When upgrading the player firmware and the Emplode software at the same time, install them in the order of: Emplode first, Player firmware second.

- When you download the ".upgrade" files from the web site, make sure to get the correct one for your player. The ones labeled "Car1" are for the empeg Car Mark 1 model of player. The ones labeled "Car2" are for the empeg Car Mark 2 and the Rio Car.

- The upgrades are also available in "Consumer" and "Developer" flavors. The difference is that the developer version includes a Linux terminal shell prompt available via the serial port. Choose the one that is most appropriate for your intended usage. If you plan to poke around on the player and make software modifications (such as installing third-party programs), then you should choose the Developer version.

- Although the upgrade is not supposed to hurt your music files or player settings, it might be a good idea to note a few things on paper before upgrading to a new version: Your equalizer preset details, loudness setting, dimmer setting, and radio station presets. In most cases these will not be harmed, but it doesn't hurt to be safe.

- At the time of this writing, a null-modem serial cable was required to install firmware upgrades to the player. You should have been supplied one with the player. Make sure your PC's serial port is in working order-- for example, make sure the port is not disabled in the system BIOS, its interrupt does not conflict with another device in the system, and it doesn't show up with a Little Yellow Boo-Boo Icon* in the Windows Device Manager.

- After downloading the correct ".upgrade" file, you should be able to simply double-click on the file to invoke the upgrading utility and begin the process. Follow the on-screen prompts.

- If you have trouble, for instance, if you get an error message or if the upgrade does not seem to proceed properly, the file might have been downloaded incorrectly. Try downloading the file again with the GetRight utility to make sure it's been correctly retrieved. Also check for problems with the serial port and cable. A small handful of empeg Car Mark 2 players were shipped with an incorrect serial cable. Although to my knowledge, all affected users were already shipped a corrected serial cable. If you are using your own cable, make sure it is a null-modem cable. If you get an error message with the words "bad pump" in it, see here.

- Another common cause of serial-port problems is another piece of software grabbing the serial port. Only one application can use the serial port at a given time. The worst offender is Palm Sync, which tends to take over serial ports even when there is no Palm device connected. Check to make sure that all serial port software is deactivated before trying to perform an upgrade.

- One user even reported that the serial port wouldn't work properly for him until he upgraded his motherboard's flash BIOS to the latest version. Seems there was a bug with serial port communications in the BIOS that needed to be fixed before he could properly connect to the player.

- Sometimes you will need to leave the player's power cable unplugged until you are prompted on the screen (by the upgrade software) to apply power. In most cases, this is not needed because the upgrader will try to reboot the player automatically. But sometimes it's still necessary. This "worst case scenario" is hard-coded into the player's protected flash so that you can still upgrade the player even if the installed software is totally hosed.

- Certain hacks and customizations of the player will be erased when you perform an upgrade. For instance, if you have replaced the kernel with a hacked version, the kernel will be overwritten when you upgrade. You will need to locate or compile a new version of the hacked kernel that's compatible with your upgrade, then re-install that hacked kernel to the player. One of the customizations that is **not** erased by an upgrade is the boot logo. Custom boot logos will remain untouched.

- If you decide you don't like the upgrade (for example, if you were testing a beta version and there is a bug giving you trouble), remember that you can always downgrade to the prior version. Downgrading is exactly like upgrading, you just use the older version of the files instead of the newer version.

* = Official Microsoft Name

· 3.12 Is it bad for the player if it gets too hot or too cold?
(Entry last updated on June 12th, 2002)

Yes. It contains either one or two hard disk drives, which can be damaged by exposure to extreme temperatures. You should treat the player as you would treat a laptop computer in this regard.

Don't panic, though. Laptop disk drives are a bit tougher than desktop disk drives, since they were designed for mobile use. The technical specifications, directly from the Rio Car web site, are as follows:

Operating range (disks spinning and being read): 5ºc (41ºf) to 55ºc (131ºf)

Standby range (disks spun down): -20ºc (-4ºf) to 60ºc (140ºf)

As you can see, that's a pretty wide range. I personally would never allow my player to get that cold or that hot, since I don't want to shorten the life span of the disk drives. I do my best to keep the player at room temperature.

There is an internal temperature-sensing circuit inside the player. In theory, this circuit could be used to detect extreme temperatures and shut the player down. This hasn't been implemented in the default software, though, because it was discovered that on some units the temperature sensor was faulty and would report the wrong value. In general, the lack of a temperature cutout hasn't been a problem (not even for a couple users in Alaska).

If you would like to use the internal temperature sensor, Mark Lord's Hijack Kernel will allow you to enable it. See http://empeg-hijack.sourceforge.net for software and instructions.

The player should not overheat with normal use. But under special circumstances, installation of a cooling fan is possible, as described here.

· 3.13 Do I have to use the remote, or can I do everything from the front panel?

Both the front panel and the remote can be used in the car or at home. You can do almost anything you need to do with the front panel, so the remote is not required.

There are some things that are easier to do on the remote because you can do it with a single button-press instead of looking at the player's screen to navigate sub-menus. Also, there are a few things you can *only* do with the remote, such as alphanumeric searches. But most of what you need to do can be done with the front panel.

By the way, there are two remote controls available for the Rio Car. The original empeg Car products shipped with a Kenwood KCA-R6A remote control, and the Rio Car ships with a custom-made Rio remote control. The Rio remote control has its own custom infrared control code set, and its button layout is slightly different Both models of remote control will work with all of the empeg Car and Rio Car players, provided the player is running a recent version of the player firmware.

Here's a run-down of what you can/can't do with each:

.	Front Panel	Remote
Volume control	Yes	Yes
Track skip	Yes	Yes
FF/Rew	Mk2 and Rio Car only	Yes
Play/Pause	Yes	Yes

Power off (standby)	Single button	Single button on Rio Remote only
Select user-defined playlists	Yes	Yes, via menu or via PIN
Select a specific song or artist	Yes, but only by scrolling through playlists	Yes, by playlist, by alphanumeric search, or by PIN
Sound adjustments (loudness, EQ, balance, etc.)	Yes	Yes
Source selection (player, radio, aux)	Yes	Single button
Select a radio preset	Yes	Single button (0-9)
Scan to next audible radio frequency	Mk2 and Rio Car only	Yes
Shuffle on/off	Yes	Single button
Select visuals	Yes	Single button
Select text information screen mode	Yes	Single button
Toggle between visual and text screen	Single button	Yes
Switch banks of radio presets	Yes	Single button on Rio Remote only
Alphanumeric searches (by artist, by title, etc.)	No	Yes
Tweak the order of the current playlist (match artist, etc.)	No	Yes

Select a numeric radio frequency directly	No	Yes
Name a radio station or EQ preset	No	Yes
View a detailed track information screen with fields such as file size and bit rate	No	Rio remote control only, 2.0 software and later only
"Hush" the audio (as opposed to simply pausing the playback)	No	Rio remote control only, 2.0 software and later only
Toggle between "All Visuals" selection mode and "Favorite Visuals" selection mode	No	Rio remote control only, 2.0 software and later only

· 3.14 What do all the buttons do?

[Here is a guide](#) to the buttons on the remote controls and the front panel.

· 3.15 What's this I hear about a 'Stun/Kill' button on the remote control?
(Entry last updated on May 29th, 2002)

It was an internal joke. Hugo always wanted a remote control that had a Star-Trek-style "Stun/Kill" button.

A small handful of the early prototypes for the empeg remote (and later, the Rio remote) had one of the buttons labeled as a Stun/Kill button. These were never sold at retail, they were only used for internal testing.

The text was removed from the actual production models, so if you have one now, it's a collector's item.

The Rio version of the Stun/Kill remote looks like [this](#).

· 3.16 What is a parametric EQ, and what does the 'Q' parameter do?
(Entry last updated on July 18th, 2002)

The Rio Car player has one of the most powerful equalizers found on a consumer car stereo. The power comes from its *fully parametric* operation, something rarely found outside of professional audio recording gear. The term *parametric* comes from the word *parameter*. It means that you can adjust all of the parameters related to a given equalizer band, not just its level.

Graphic equalizers

Before we talk about parameters, let's make sure we understand graphic equalizers:

An equalizer changes the frequency response of the sound. In other words, it allows you to change the tone of the music, from high to low. For instance, Bass and Treble controls are a very coarse form of equalization. If you turn up the bass, the low notes (such as the bass guitar) are louder. If you turn up the treble, the high notes (such as the cymbals) are louder.

A graphic equalizer lets you change more than just the bass and treble. It gives much finer control, giving you a range of several frequencies to adjust. The adjustments are usually displayed in the form of a graph (hence the name 'graphic'), with each band displaying a higher or lower adjustment in relation to the others. For many analog graphic equalizers, the bands are controlled by sliders, with the knobs themselves providing the "graphic" view of the equalization curve. For computer-controlled equalizers (such as the one on the car player), the graph is displayed in LEDs or pixels.

Why use an equalizer at all?

In car stereos, an equalizer's main purpose is to compensate for variations in the listening environment and the amps/speakers. Since all cars are shaped differently and are made of different materials, it's impossible to build a stereo that sounds the same in all cars. For instance, if your car's cloth interior soaks up more high frequencies than you'd like, you can adjust the EQ to compensate for this. Or if your speakers tend to produce too many midrange tones, you can bring down the center frequencies to balance out the sound.

Better amplifiers and speakers will tend to reduce the need for severe equalization, at which point you'd mostly be compensating for the quirks of the listening environment. You must be careful not to equalize beyond the limits of your equipment. Increasing frequencies that your equipment can't properly reproduce might damage the drivers or the amplifiers. For instance, trying to turn up the bass too much in a car without a subwoofer/crossover system might blow the speakers.

Another possible use of an equalizer is to accentuate frequencies you like to hear. For example, cranking up the bass so that your car thumps with each kick drum beat. Most audiophiles would consider this an abuse rather than a legitimate use of an equalizer, but it's possible.

An important note about using digital equalizers:

Whenever possible, do your best to *decrease* equalizer bands rather than increase them. In a digital audio system such as the one used by the car player, you might clip the signal past 0db if you've done nothing but boost. In a digital system, this will produce hard-edged digital distortion, which sounds terrible.

For example, if you have one of your bass frequencies boosted by 10db, and you usually play your music at -6db on the volume control, then any low-frequency sounds which go louder than -4db will clip.

So if you want to boost a particular frequency band, it's better to cut the other bands and turn up the volume (or increase the gains on your amplifiers). Like so:

Proper equalizer usage
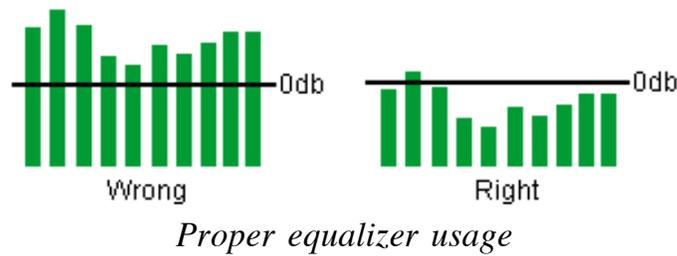
So what's this parametric thing about?

A parametric equalizer takes things one step beyond a graphic equalizer. Whereas a graphic equalizer allows you to adjust the gain (loudness level) of a given frequency, parametric equalizers let you adjust the frequency itself as well as the bandwidth, or "Q", of that frequency. These other two settings are the remaining parameters that most equalizers don't give you any control over.

Equalizer parameters
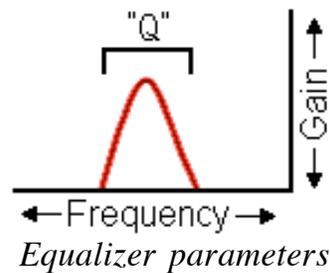
The Frequency parameter controls the "note" of the correction, from low to high. The Gain controls the volume amount of that correction, from soft to loud. The Q controls the bandwidth of the correction, or how "wide" of a frequency range gets altered, as follows:

Low Q setting   *High Q setting*
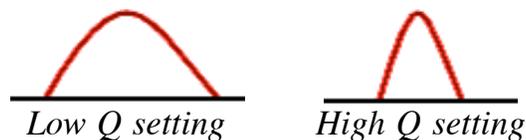
So as you can see, as you decrease the "Q" value on a boosted frequency, it drags more of the surrounding frequencies up with it. The same holds true in the other direction, i.e., if you are cutting frequencies instead of boosting them.

You can't see the alteration of the advanced parameters on the player's screen. The player doesn't provide a visual graph of changes to the Q or the frequency, because the screen doesn't have enough pixels to give a good representation. All you can do is edit the numeric value and listen for changes in the audio spectrum.

Note that by default, the Rio Car player automatically adjusts the Q parameter for you as you adjust a given frequency. It is not necessary to adjust the Q parameter unless you have a specific need to do so.

What would I use this for?

(Note: Since the operation of the equalizer has changed from version to version, we will not discuss the actual button presses required. Here, we will talk about what the parameters do rather than the exact keystrokes to change them.)

The most direct use for the "frequency" parameter would be to dial in a specific frequency that needs adjusting. For example, let's say your speakers have an unnatural peak at exactly 1575hz. By default, the player doesn't have one of its frequency bands centered around that spot in the spectrum. With the parametric features of the EQ, you can adjust one of the bands to exactly 1575hz and pinpoint that problem area for correction.

The Q is a little more esoteric, but can be just as useful. Here is one example:

Let's say you're using the equalizer in "4-channel" mode, which allows you to equalize the front speakers and the rear speakers separately. This leaves you with only five bands per speaker.

Suppose you needed to make three very fine and narrow corrections in the low registers to eliminate certain boomy harmonics coming from that cheap ported subwoofer you just bought at Circuit City. And maybe you need to eliminate a particular buzzy rattle you get from the car every time you play the bass solo in a particular song. So you use another frequency for that. For such precise pinpoint corrections, you would not only carefully dial in the frequency of each, but you would also increase the Q so that each one corrected a very narrow band.

But now you've only got one band left for the rest of the upper spectrum, even though you need a broad increase of frequencies in the upper registers. You might want to decrease the Q value of this last band to make it cover a broader range of the upper frequencies.

This complex arrangement of frequency corrections might end up looking something like this:
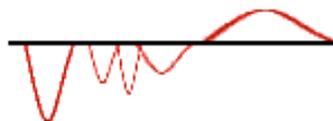
Complex EQ adjustments

Here is another example:

The player, by default, automatically adjusts the Q as you make the gain higher or lower. It does this to prevent a given band from dragging too many neighboring frequencies along with it. As you get farther away from 0db, the Q value increases so that the bandwidth is

narrower. However, if you adjust the gain too far away from 0db, this can cause notches in the spectrum that aren't affected by the bands because the Q value is now too high for its own good.

You can't see these notches on the player's screen because it doesn't visually graph the curve of the Q parameter. But if you've got a good ear and the proper test tracks, you can hear them. So in those cases, you could adjust the Q as desired to cover exactly the bandwidth you want.

There's one thing you shouldn't do with the equalizer, though: Do not attempt to use the car player's equalizer as a substitute for a crossover circuit (high pass filter and/or low pass filter). This doesn't work, I've tried it. It doesn't completely attenuate a given frequency, and no matter how much you play with the Q, you can't get it to do a proper 'shelving' cutoff. If you need to do a crossover, use a proper crossover circuit. Many good amplifiers today have variable-frequency crossovers built into them.

I don't get it!

Don't worry if this doesn't make sense to you. It's probably safe to say that if you don't understand why someone would want to adjust these settings, then you probably don't need to adjust them yourself. This is a highly technical and very powerful feature that's only needed in very specific situations by very picky audiophiles.

The good thing is that you don't need to understand the parametric features to use the equalizer. For most users, the regular default bands are fine and you can use it like any other graphic EQ.

· 3.17 Where can I download a list of EQ presets?
(Entry last updated on October 24th, 2002)

You can't.

If you want to copy someone else's equalizer settings, you're missing the whole point of what an equalizer is for.

An equalizer is supposed to tailor your audio output to compensate for the specific characteristics of **your** amplifiers, **your** speakers, and **your** listening environment. Also, your personal tastes are a significant part of the equation.

If you copied someone else's equalizer settings, it would sound like crap on your system, because all of the characteristics of the audio chain would be different for your case than for someone else's case. They would have different amplifiers than you do, different speakers, a different listening environment, and different personal tastes.

Some commercial car stereos have a feature that they call "EQ presets". These are preconfigured factory settings that cannot be changed. For instance, you could select presets called "Jazz", "Rock", or "Classical". This is not equalization, and it's essentially garbage. It also misses the point. All it does is turn up the bass for Rock, turn down the bass for Classical, etc. A properly equalized system should sound good regardless of the

genre of music played.

The most common way to adjust the EQ for your car is to actually sit in the car, play a variety of different kinds of music, and twiddle the various bands up and down until it sounds good to your ear. If you don't have any opinion on what sounds good to your ear, then you probably aren't the sort of person who should be messing with the EQ in the first place.

Keep in mind that you'll need to "live with" any changes you make to the EQ for a while. After you've got a basic EQ curve dialed in for the first time, you'll need to let it "simmer" for a few days and listen to lots of different types of music. Then, when you're sure there's something you need to change, go in and find the band that will correct the problem and change only that one band. Then live with it for a few more days. Repeat until it's dialed in to where you like it. Most audiophiles will agree that getting the EQ "just right" is a process that takes weeks.

One short-cut would be to use RTA (realtime analysis) software with a calibrated microphone and calibrated test tracks to adjust your system's output curve. High-end professional stereo shops are often equipped for doing this, or you can purchase spectrum analyzer software with a calibrated microphone and run it on a laptop computer. Adjusting to RTA is usually a good starting point for getting the perfect EQ setting, but you still have to tweak to taste after the RTA adjustments are done. Just remember that if you're using the car player to play the test tracks, make sure they have been ripped directly from the original test CD in WAV format rather than MP3 format.

Finally, before adjusting the player's EQ, make sure to read this section for details on what the various parameters do.

· **3.18 How do I know what the hard disk is doing?**
(Entry last updated on February 10th, 2002)

In the "Configure Player" dialog box in Emplode, in the "Advanced" tab, there is an option to turn on a hard disk indicator. Make sure to synchronize with the player after making this change.

Now, when the player is accessing the disk drive, an icon will appear on its screen.

Legend:

No icon:	Disk drives are spun down.
Icon with empty center:	Drives are spinning up.
Icon with gray line in center:	Drives are spun up.
Icon with bright line in center:	Data is being read.
Icon with the letter W:	Audio thread is waiting for data (for diagnostic purposes).

Smaller icon with solid gray in center:	(Unknown at this time.)

· **3.19 Does disk space get wasted if I make a second copy of a song in a different playlist?**
(Entry last updated on February 24th, 2002)

No, your disk space is not wasted. The player only stores one copy of the actual song file. When you use Emplode to move and copy the song among different playlists, you're only moving and copying the *database link* to the song file, not the actual song file itself.

There are exceptions to this, however:

If you deliberately upload the song to the player twice, then it will create a second copy. For instance, if you've got "Tom Sawyer" on the player already, and you open Emplode and drag "Tom Sawyer" from the Windows Explorer onto Emplode again and synch, then there will be two copies of the song file on the player. This is by design: Sometimes you might want to compare two different versions of the same song, for instance, if you re-ripped it or were testing a different encoder.

If the song exists on your PC's hard disk in several places, and you drag your entire MP3 directory onto Emplode, then the song will be copied to the player as many times as it existed on the hard disk.

There is some limited duplicate-checking built into versions 2.0 and later of Emplode. However, it does not search the entire player for duplicates on each song upload.

> *Important:* If you just added a folder's worth of new files to your player, and they seem to have consumed twice as much disk space as you expected them to (for instance, you dragged a 5gb folder onto Emplode, and the player's free space dropped by 10gb), the files might have been added twice. You probably had .M3U playlists pointing to the files, right? There's an option in Emplode 2.0 which allows you to import .M3U files. So each file probably got added twice: Once because you dropped the folder onto the player and once because you dropped the .M3U file onto the player.
>
> To locate the doubled files, either use the "all tracks" view, or do an advanced search on "refs=0" to list all tracks that aren't in playlists. To prevent the problem from happening in the future, go to Tools/Options/Import in Emplode and disable the "Import playlists" and "Follow Windows Shortcuts" features.

· **3.20 What about editing/renaming multiple copies of the same song?**

Assuming that you didn't deliberately upload the song twice, then any edits you make to the song in playlist A will automatically appear in its copy in playlist B. They are both

links to the same database entry.

This goes for playlists, too. When you move and copy playlists in Emplode, you're working with the database link to the playlist. So if you make a copy of a playlist, then edit one copy, the changes automatically appear in the other copy. (If you don't want this to happen, then create a new playlist from scratch instead of making a copy of it.)

By the way, beginning with Emplode version 2.0 and later, you can group-select songs or playlists and edit their properties as a group. This is helpful when re-tagging entire albums.

· **3.21 How can I be sure that I've deleted all copies of a given song?**

In versions of Emplode prior to 2.0, you must delete every copy of the song from every playlist. After the last copy has been deleted from the last playlist, the song file will be removed from the player.

In Emplode 2.0 and later, there is a special set of views which automatically categorize your songs. They are named "Artists", "Albums", "Genres", "Years", and "All Tracks". If you delete a song from your personal playlists, it will still exist in these views. Delete the song from one of these views to remove it from the player.

· **3.22 How do I make albums play in the correct order?**
(Entry last updated on February 27th, 2002)

If unshuffled songs aren't playing in the correct order, select View/Details in Emplode. Select the playlist that's giving you trouble, and make sure you can see the "Position" column on the screen.

If you can't see the "Position" column, you might have to change the size of the window, or the width of the columns. In Emplode 2.0 and later, you can also right-click on the column headers and select the "Columns" option to activate and deactivate specific columns.

After you can see the "Position" column, click on the word "Position" at the top of the column and it will sort the screen by position. Now *Alt*-drag the songs up and down in the list until they are in the desired order.

Note: The above applies to the playlists, themselves, too. To control the order of playlists, view them by position and Alt-drag them up and down in the list.

If you want to make sure that the songs are always placed in the correct order when you first drop them onto Emplode, make sure the files are named correctly on your PC's hard disk. They should be in alphanumeric order with the track number as part of the file name, and the track number should precede the song title. For instance:

> Rush - Moving Pictures - 01 - Tom Sawyer.mp3
> Rush - Moving Pictures - 02 - Red Barchetta.mp3
> Rush - Moving Pictures - 03 - YYZ.mp3
> Rush - Moving Pictures - 04 - Limelight.mp3

(etc.)

Most MP3 creation programs will save your MP3s as those file names by default. If you need to globally rename all of your MP3 files at once, MP3 Tag Studio will help you do this. Also highly recommended is Tag&Rename, a Windows utility which will (in recent versions) retrieve tag information from the Allmusic.com database.

Emplode versions 1.02 and later will sort by file name when you drop a folder onto Emplode. Emplode versions 2.0 and later will sort by file name when you drop a folder or a selected group of songs.

Note: By default, changing the "position" order of songs and playlists will alter their *playback order*, but not their alphabetical position in the player's "Playlists" menu. If you wish for the player's menu screen to show the playlists in position-order instead of alphabetically, there is an option in the "Configure Player" screen in emplode, on the Advanced tab. Turn off the "Sort playlist menu by title" option and synch. Use caution, however, because this makes it hard to use the numeric shortcut keys on the remote control when navigating the playlist menus.

· **3.23 How do the Tweak Order functions work?**
(Entry last updated on February 21st, 2002)

The keys 2, 3, 5, 6, and 8 on the remote control are used for the Tweak Order functions. On the Rio remote control, they are even labeled:

    2= Tweak order by Artist
    3= Tweak order by Source (Album)
    5= Tweak order by Genre
    6= Tweak order by Year
    8= Swap Next

This is mostly useful when you are listening to the entire contents of your player shuffled. It works like this: If you are listening to a large shuffled list of songs, and you come across an artist you like, you can press the 2 key.

This will search the remainder of the current list of songs for another song by the exact same artist. If it finds one, it will swap the next song with the song it found. It will do this without interrupting playback.

To see it in action, it's best to watch it using the "Info:Now and Next" screen. It will work in any screen, you can just see the results best in Now and Next mode.

Note that it only searches the *remainder* of the current list of songs in its search for a match. For instance, if there was a song by that artist *before* the current song, it won't be found in the search. It assumes you already heard it and don't want to hear it again.

You can press the 2 key multiple times, and it will continue to search for more of the same

artist, and queue the songs up after the last tweaked result. For instance, if you press the 2 key several times, it will place one song after the current song, then another after *that* song, then another after *that* song, etc.

The other keys (by Source, by Genre, and by Year) work the same way. If you press 3, it looks for more songs from the same album, etc.

In version 2.0 of the player software, they added the functionality to filter *out* undesired artists, albums, and genres. Hold down the desired Tweak button to make it skip all upcoming songs which match the criteria. For instance, if a Britney Spears song comes up in the shuffle, hold down the 2 key to skip all Britney Spears tunes. This has been nicknamed the "hate artist" tweak, but you can also do it with the Genre button, for example. Note that you must own a Rio remote control for this purpose, it won't work with the Kenwood remote.

The 8 key (swap next) works a little differently. It lets you randomly swap a song into the next song position. Again, it's mostly useful when in "Now and Next" mode. If you see that the next song is one you're not in the mood for, but you don't know exactly what you *are* in the mood for, you can press the 8 key and it will randomly choose another song in place of the next song. It also does this without interrupting playback.

Note that all of these tweaks are only temporary. If you are playing a specific playlist, and you use a Tweak Order feature, it only affects the current running order of the songs, not the actual playlist itself. Re-selecting that playlist will put things back the way they were. For instance, if you use the "hate artist" tweak, the artist will still be in that playlist, they have just been temporarily sorted out of that particular song run.

· **3.24 How does the 'Ignore as Child' option work?**

Playlists have an option called "Ignore as Child" in their properties dialog box. This allows you to play its parent playlist in the tree without playing it as a child of that tree. The playlist will only play if you specifically select it from the playlists menu. When you select a high-level tree branch to play (even the top "everything" level), anything below that level tagged with "Ignore as Child" won't be played.

Here is an example of how I have used it:

I have a few Nine Inch Nails albums on my player. I am not a big fan of NIN other than my immense respect for Trent as a texturalist and producer. My problem isn't with Trent's skill as a musician (he is brilliant), it's just the subject matter. I can take angst in sugar-coated doses, such as is the case with Tori Amos' songs, or in most modern Folk music. But I just can't listen to Trent's brand of angst on a regular basis.

So why do I have any NIN at all on my player? Two reasons:

- I have a couple of friends who just lurve NIN and request it on a regular basis.

- NIN is the perfect background music for LAN parties. My special "(LAN Party)"

playlist is populated by NIN, Prodigy, Crystal Method, etc. It's always a hit. Great music to frag to, and I'm too busy aiming to pay attention to the lyrics anyway.

So, my goal is as follows: To leave NIN out of my regular "down-down-down" (play everything) shuffle, but not out of my "(LAN party)" playlist, and not out of my main menu tree.

So here's what I do: I go into Emplode and tag my "Nine Inch Nails" playlist with "Ignore as Child". But I leave the individual NIN albums, which are subtrees of the "Nine Inch Nails" playlist, "normal", with that box unchecked. Then I copy all of the individual NIN albums into the "(LAN Party)" playlist. (Note: I also have to tag the "(LAN Party)" playlist with "Ignore as Child"; I forgot to do this the first time and couldn't understand why it wasn't working.)

Now it works! When I shuffle the whole player (down down down), NIN doesn't play. But when I specifically select the "Nine Inch Nails" playlist or the "(LAN Party)" playlist, they play fine.

This has other useful applications, such as with audiobooks or IASCA test tones. You could create a playlist of "Books" or "Test Tones", tag those as "Ignore as Child" and then they won't appear in a down-down-down shuffle.

· **3.25 What in the world is a 'Wendy Filter'?**
(Entry last updated on April 15th, 2003)

Wendy is the name of one of Hugo's former girlfriends. The idea goes something like this:

He wanted to be able to tell the player when Wendy was in the car. Then the player would simply not play any tunes that Wendy didn't like. The tunes would, for all intents and purposes, be "hidden" from the user interface, even if you performed a direct search for a specific tune.

In version 2.0 of the software, Wendy filters were added, but in a slightly more complicated version. Wendy filters can now be "positive" as well as "negative". A negative filter will hide the filtered tracks during playback on the player, a positive filter will show *only* the filtered tracks. Note that the tracks are hidden only at playback time on the player, and only when the appropriate filters are selected. The tracks are not hidden in the Emplode screens.

There are three parts to creating Wendy Filters:

- **Wendy Flags**: These are tags which get applied to individual songs. Examples of flags on my player are:

  Jenny hates this song
  Tod likes this song
  Song contains profanity

For example, I would tag all of the Nine Inch Nails tunes on my player with both the "Tod likes" and "Jenny hates" flags. Certain tunes on the player would be flagged with the "Profanity" flag, which happens to include many NIN tunes, but also certain Paula Cole tunes and even a Sarah McLachlan tune.

- **Wendy Filters**: These are *behaviors* which use the flags for reference. Examples of filters on my player are:

  Jenny is present
  Tod is present
  Children or grandparents are present

  For each filter, you choose whether a given flag is excluded, preferred, or "don't care".

- **Filters selection on the player**: This chooses which filter (if any) is active at any given time.

The first step in using Wendy Filters is to open Emplode and connect to your player. Open the Tools/Wendy Filters menu, select the "Flags" tab, and create some flags:

These flags are simply names. They don't do anything yet, until you assign them to some filters and to some songs.

Next, go to the "Filters" tab and create some filters. Then assign some flags to those filters by checking the box next to the filter name. **IMPORTANT:** click on the box **more than once** to see how it works. This is how you select positive or negative. It cycles between "preferred" (a check mark, a positive filter), "exclude" (an X, a negative filter), and "don't care" (empty). Here is an example of some excludes:

In the example above, songs with profanity and songs that Jenny hates will be excluded

when Jenny is in the car. Note the X's in the boxes.

Here is an example of using a flag in "preferred" mode:

In the above example, if Tod is present, the player will play only Tod's favorite songs. Note the check mark in the box.

Then you need to go through your collection and select songs and apply flags. Select single songs, or group-select songs, right-click and hit Properties, then select the "Wendy Flags" tab:

After you're done, don't forget to synch with the player.

After adding the filters and synching, a new "Filters" option will appear in the player's main menu. You can choose to have only one filter active at any given time (or "none"). When Jenny sits down in my car, for example, I can select the "Jenny is present" filter, and all of the songs which Jenny hates will not play (and will, for all practical purposes, be invisible on the player).

When I'm by myself, I can go to the Filters menu and select "none", and all of the hidden songs will re-appear.

· **3.26 How do the Bookmarks work?**

They "save your place" in a playlist, including the entire contents of the playlist and your position within the current song.

When you want to save your place, go to the Bookmarks menu and set a bookmark (you can have up to three of them). You are now free to re-shuffle the player and choose other playlists.

When you want to go back to where you were, go to the desired bookmark in the

Bookmarks menu.

This is very useful for audio books (go figure).

Note that this is different from the "Mark Track" feature, which is used to mark tracks for future attention (for instance, if you want to re-rip the track or delete it from the player the next time you use Emplode).

· **3.27 Can I delete songs from the player's front panel?**
(Entry last updated on May 6th, 2002)

No. The player's music-storing partition is mounted read-only at playback time. You can only delete songs with Emplode, or another synchronization tool such as emptool or jEemplode.

If you are using software version 2.0 or later, you can mark tracks during playback, and call up a list of "marked" songs the next time you start Emplode. Details here.

Also make sure to read this note on deleting songs.

· **3.28 How can I tell which tracks I have marked with the 'Mark' key?**
(Entry last updated on May 6th, 2002)

If you have used the 'Mark' key in version 2.0 or later of the player software (it's the 4 button on the Kenwood remote or the Cancel/Mark button on the Rio remote), you can use Emplode 2.0 or later to see the marked tracks. There are a few ways you can do it:

- Marked tracks have a different icon in Emplode than the other tracks. If you like, you can use the "All Tracks" view to see them.

- You can select View/Details, right-click on the column headers, select the "Columns" menu option, and add the column for "Marked" to the display. You can sort on this column by clicking on its header if you like.

- You can also use Emplode's Advanced Search feature to find the tracks. Do an Advanced Search on the term *marked* to locate all marked tracks.

The purpose of marking tracks is so that you can remind yourself to do editing on the files the next time you run Emplode. For instance, maybe you decide you don't like a song and you want to delete it. Or perhaps the song was a bad rip and you want to re-rip it. You could also mark your favorite tracks so that you can create a special playlist out of them later.

Note that there is only one kind of mark. You can't specify different types of marks. It's meant to be just a reminder, so when you see the mark in Emplode, you can check the song and remember what you wanted to do with it.

· 3.29 What search terms can I use in the Advanced Search box in Emplode?
(Entry last updated on October 24th, 2002)

From the empeg development team:

Comparison   operators:
=, ==, is *(equality)*
<>, != *(inequality)*
<=
<
>=
>
contains
like

Boolean   operators:
&&, and
||, or

Unary   operators:
!, not

true and **false** are available as constants.

The tokeniser works as follows:

- Items in quotes are treated as string literals, e.g. "Pop"

- Items beginning with digits are treated as integer literals, e.g. 35

- Durations and times can be entered as, e.g. 3 minutes 45 seconds.

- Abbreviations allowed: minutes,min,m,seconds,sec,s.

- Anything else that isn't a reserved word is treated as a field name.

Operator precedence is as you'd expect. Brackets are allowed to group operations. Strings evaluate to true if they're non-empty, false otherwise. e.g.:

(year >= 1970 && year < 1980) and not(genre and artist and source)

Would find tracks from the 70's that are missing one of the genre, artist or source tags.

The field names are deliberately vaguely defined to allow us to add new ones whenever. If you hack on your *1 files, you can add them yourselves.

Currently, defined fields are (this is not an exhaustive list):

> **fid**
> **title**
> **artist**
> **source**
> **genre**
> **year**
> **duration** (in ms unless otherwise specified as above)
> **comment**
>
> **bitrate** (fixed/variable,stereo/mono,bitrate, specified as, e.g. fm64 or vs192.)

codec (mp3,wma or wave)
ctime (creation time as a Unix time_t.)

refs (number of references on this item.)
new (is it new this session?)
changed (did you change it this session?)
marked (is it marked?)
drive (which drive is it on? 0 or 1.)
play_count (how many times played)
play_last (last played? (time_t))
skipped_count (how many times skipped?)

You can also do some limited searches on Wendy flags, such as "wendy=5" or "wendy!=0". The numeric value is the bitmask of the Wendy flags, which you can figure out by looking at your config.ini file. Note that there are no bitwise operators in the Search function, so you can't easily search for a specific flag independently of other flags. You can easily search for tunes which have "no" flags, "any" flags, or which have only a single specific known flag, but complicated And'ing and Or'ing would be required to do more advanced Wendy searches (such as in the example given below).

Searching on the **options** value will work to find the various bits associated with track and playlist options. I don't have a list of the various bit values at this time, but I believe they can be found by looking at the Emptool source code. Here is an example (provided by Bitt Faulk on the Unofficial Empeg BBS) of using the options value to locate all playlists tagged with the "Ignore as Child" flag:

type="playlist" and ((options>31 and options<64) or (options>95 and options<128) or (options>159))

The above searches for all playlists where bit number 7 (Ignore as Child) is set in its options.

· **3.30 What is this 'Soup View' I hear other people talking about?**
(Entry last updated on March 29th, 2002)

'Soup' is the nickname for the trees in Emplode that aren't playlists. These trees are automatically generated based on the tag information from the song files:
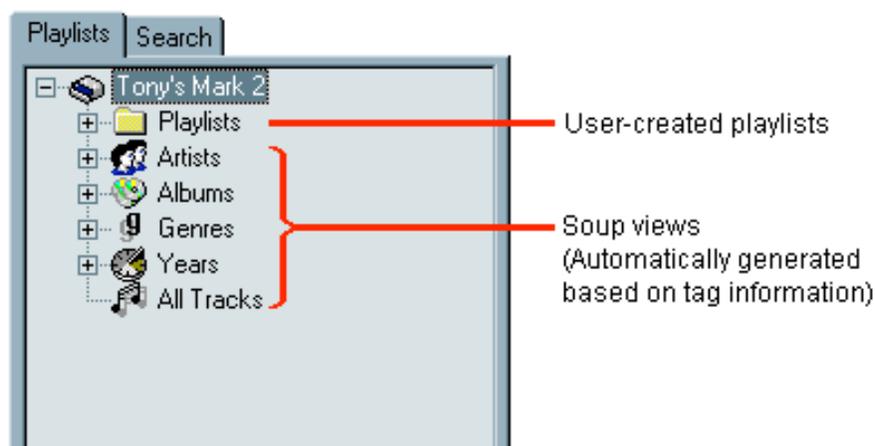
It doesn't actually say "Soup" anywhere in the software. This is just a nickname used by the developers while writing the software. Sometimes you will see this mentioned in discussions about the player because it's easier to say than "Artist, Album, Year, Genre, and All Tracks Views".

These views are only available in version 2.0 and later of the Emplode software. Prior to version 2.0, the only way to organize your music was with playlists.

At the time of this writing, you still can't "play" a soup view on the car player-- they don't appear in the player's menu. This will be updated in a later release of the software, at which time the Soup views can be treated like playlists. When that happens, you can remove all of your artist/album playlists if you like. Playlists will only be needed for special collections such as "mood" playlists.

In the meantime, orphaned songs (songs which are in the soup but don't appear in any playlists) can still be played by using the Search feature on the player. If you wish to find out which songs on your player are orphaned, do an advanced search in Emplode for **refs=0**.

The Rio HSX-109 Digital Audio Center fully implements these Soup views already, and you can play them from its front panel.

· **3.31 What do the little letters mean on the Info:Track screen?**
(Entry last updated on February 14th, 2002)

When you are on the Info:Track screen, there might be some small letters at the bottom of the screen, between the playlist position counter and the time counter. Some (but not all) of these may also appear in the Now and Next screen:

s	Shuffle
f	Filtered
r	Repeat All
R	Repeat One
h	Hush
‼	Marked

· **3.32 When I move the player between the car and the house, what does it do differently?**
(Entry last updated on June 1st, 2002)

The player has two different personalities, commonly referred to as "Home" and "Car", or "AC" and "DC". The player decides which personality to use depending on how it's getting its power.

If it's getting its power from an AC adapter plugged into the AC adapter jack on the back of the player, it assumes it's in the house, and uses its "Home" or "AC" personality. If it's getting its power from the connector on the car docking sled, it assumes it's in the car, and will use its "Car" or "DC" personality.

Note that the terms "AC" and "DC" are actually used incorrectly. The player always runs on DC 12v current, we just say "AC" as shorthand for "current that comes from the indoor AC adapter power supply". Also note that you can fool the player into thinking it's running on AC-adapter power even though the current is coming from the docking sled. You can fool it by tripping the sensor switch on the AC adapter jack, usually by inserting a "blank" non-wired 2.1mm DC power plug into the jack. This trick is commonly used by owners who have built in-home docking stations for their car player, but still want the player to have two distinct personalities. This sensor switch can also malfunction, causing the player to remain stuck in the "Home" personality, as described here.

The following things change when the player switches personalities:

- If you have installed custom boot-up logos on your player, the logo will change depending on whether it's using the home or the car personality. The logo editor software should allow you to create two completely different bitmap images, one for the home personality and one for the car personality.

- The speed of the player's serial port is 115200 bits per second in Home mode, and 4800 bits per second in Car mode. See here for more details.

- The power-on boot upgrade sequence, which normally listens for an upgrade signal from a host PC, is disabled when in Car mode. See here for more details.

- For the Mark 2 and Rio Car players, there is a Dimmer option available in the Settings menu when in Car mode. The dimmer has two levels, depending on the state of the headlight-illumination-sense wire on the car docking sled. See here for more information on the operation of the dimmer.

- In Car mode, there will be a front/rear fader option in the Sound menu, allowing you to balance the sound between the front and rear outputs on the docking sled. This option is hidden in Home mode, and the fader is locked to center.

- In Car mode, you will have an option to switch the equalizer to 4-channel (front/rear/left/right) mode. In Home mode, you can only have a 2-channel (left/right) equalizer. 4-channel mode gives you five parametric EQ bands per output channel. 2-channel mode gives you ten bands each, but for left and right only. And

before you ask, there is no way to make it give you ten bands each for front and rear. If you want ten bands, the only option is left and right. If you want front/rear, then you only get five bands. This is a limitation of the player's DSP chip, not a limitation of the software. But hey, they're fully parametric bands, so they give you a lot of flexibility.

- The player has two storage areas for remembering certain settings: one for the Home personality and one for the Car personality. So when you change a setting in the car, it remembers that change for the car. When you change that setting in the home, it remembers that setting for the home. The following things are remembered differently between home and car:

    - Volume setting.

    - Loudness setting.

    - Balance setting.

    - Fader setting (locked out in home mode, remembered for car).

    - EQ Preset number 1 details.

    - EQ Preset number 2 details.

    - EQ Preset number 3 details.

    - EQ Preset number 4 details.

    - EQ Preset number 5 details.

    - EQ Preset number 6 details.

    - EQ Preset number 7 details.

    - EQ Preset number 8 details.

    - EQ Preset number 9 details.

    - EQ Preset number 10 details.

    - EQ Preset number 11 details.

    - EQ Preset number 12 details.

    - EQ Preset number 13 details.

    - EQ Preset number 14 details.

    - EQ Preset number 15 details.

       ◦ EQ Preset number 16 details.

Note that the *selected* EQ preset is **not** one of the things that's remembered separately. If you change it to EQ preset number 4 in the car, then it will come up with EQ preset number 4 selected in the house. The ***individual details*** of EQ preset number 4 are remembered separately for home and car. It's meant to be "set it and forget it" for each environment, so remember to adjust your EQs while you're in the environment you're adjusting them for. Do not create a "preset 1=home, preset 2=car" situation, because then you will have to manually switch it. Just use the same preset for both, adjust them while in the proper environment, and it will automatically be different between home and car.

Note: The above is most likely an incomplete list. Contact TFabris on the Unofficial Empeg BBS if you can think of any additions. Thanks.

· **3.33 Are there any 'Easter Eggs' in the player?**
(Entry last updated on July 14th, 2002)

An "Easter Egg" is a trick or surprise, hidden by the developers, in a computer program, a web site, or a piece of hardware. Perhaps one of the earliest and most famous easter eggs is Warren Robinett's signature in the Atari 2600 game "Adventure".

Easter eggs are a long and grand tradition among developers of high-tech software and hardware, and the empeg developers continue this tradition faithfully. The current known easter eggs in the car player are:

- Various printed messages on different revisions of the player's main PC board. Some of these messages self-refer to other messages on earlier revisions of the board. At this time, a comprehensive list of these messages is not available.

- Some of the printed messages are beneath soldered-down chips on the board, so you can't see them unless you desolder the chips. I do not recommend trying this, as the boards aren't made any more and cannot be replaced. You won't get any prizes for finding these messages (other than a player that doesn't work any more). An example of one of the messages is: printed beneath the flash memory chip are the words "Where Gordon Lives". Some photos of the messages can be found here.

- In the player software, if you reach the end of a playlist (with repeat turned off) or if you start the player with an empty playlist, the "Info Tex" visuals will display a list of developer credits.

Mark Lord's Hijack Kernel also has a few easter eggs:

- When you lose the Breakout game, it displays the Hijack version number. This is how you can check the version after boot-up. (Okay, not really an easter egg.)

- It displays an animation when you win the Breakout game. In version 99 of Hijack, there was also a Wayne Gretzky reference displayed on the screen (Mark's Canadian, you see).

- In Hijack version 276, if the player's date is set to June 14, 2002, it displays a box with "European Meet 2002" a few seconds after the player software starts. This is to commemorate the owner's meet being held in the Netherlands on this day.

· 3.34 What do the various symbols mean on the 'Aux Info' screen?
(Entry last updated on December 4th, 2002)

When you have the auxiliary input selected, you can select "Aux Info" from the player's "Info" menu, and it will display some text and symbols. David (empeg support) had this to say about it:

> If there is no aux input, then it will say 'waiting'. The aux input looks at the signal and determines when a track starts and ends and increments the track counter.

> The lines [of text below the word 'waiting'] are configurable from the player config dialog of emplode.

> There are various level and signal meters on the screen, intended to help you setup the source input and show the levels of normalisation being applied. The bar across the bottom shows software gain, the rising bars show DSP gain and the level meter on the right shows output level. You'll notice that when the input level is low, the DSP gain goes high to compensate. A good signal will have none or very little DSP gain when playing music.

· 3.35 Can I reset the number of plays and other statistics?
(Entry last updated on May 16th, 2003)

Each song on the player has some dynamic statistics associated with it, such as the last time the song was played, how many times it has been played, and the graph of its volume levels for the Seek Tool screen. This information is stored on the player's dynamic data partition.

To erase this data and start over from scratch, install the developer version of the software and use the shell prompt to run the following command:

dd if=/dev/zero bs=512 skip=4096 count=28672 of=/dev/hda3

This should erase the per-song dynamic data without harming the player settings such as the tuner and EQ presets.

· 3.36 Why does it play clusters of artists or albums?
(Entry last updated on June 16th, 2003)

It doesn't. At least not on purpose, and not because of any bugs in its randomization routines.

Assuming the following...

- You have selected "Random" as its shuffle mode instead of one of the weighted shuffles, and you're really shuffling the whole contents of the player.

- Your collection is reasonably varied; you're not talking about an artist who takes up a majority of your collection, like all the Rush albums in my collection.

- Your collection is large enough so that you can reasonably expect a pretty good random shuffle each time. Say, a couple thousand songs at least.

- You're not doing something special to the playlists to cause certain artists to be weighted differently than others. Such as deactivating the "de-dupe" feature, or using the special features of the playlists to deliberately skew the weighting.

... then the shuffle is truly random and it does not cluster artists or albums any more than it should.

What we're talking about here is **perception**. Any time the player plays a few songs by the same artist within, say, a stretch of ten songs in one sitting, you're automatically going to complain and say, "This thing's playing nothing but Rush today, it must be a bug."

But that's just your perception based on that particular session. Maybe your "session" was ten songs while driving to and from work that day. Or maybe even a few hours' worth of songs on a long drive. For any given subsection of a large shuffle, any perceived patterns which happen to fall into that session will stand out as unusual. Like four aces coming up in a row at the blackjack table; your immediate reaction is to assume the dealer is cheating.

But what you're **not** seeing is the actual random distribution of the sample across the whole set. At the blackjack table, you don't see the entire shoe of all six decks at once, you only see one hand's worth of cards at a time. Likewise, you never hear the entire player's song shuffle in one sitting. So patterns that appear in that short sample aren't representative of the true distribution across the entire shuffle set.

When you look at the kinds of sample criteria that you're seeing in the car player (usually a few thousand total songs, with a few albums by each artist, and about a dozen songs in each album), then it turns out that the kinds of patterns that you'd perceive as unusual are not only **possible**, but they're actually **statistically frequent**. Even unusual patterns, like "combs" of artists (Rush song, 2 random songs, Rush song, 2 random songs, etc.) are

common with this kind of sample set.

Still not convinced? Jeff Sylvester, in a discussion on the Unofficial Empeg BBS, wrote a program to graph this very phenomenon. With this program, you can clearly see how a truly random distribution will produce exactly these kinds of perceived "patterns".

· **3.37 How do I cancel out of a synch?**
(Entry last updated on July 31st, 2003)

You can't, at least not at the time of this writing.

When you begin synchronizing with your player in emplode, the cancel button is grayed out.

If you really need to cancel a synch, leave the player running and terminate the Emplode task using the task manager. If possible, wait until the word "Synchronising" disappears from the player's screen before removing power. This will ensure that the player's hard disks have been mounted read-only again.

Afterwards, you might end up needing to do this or this to make sure the hard disk and databases are in good shape. You also might end up with orphaned files that aren't attached to playlists, click here for information on how to locate those files.

· **3.38 How do I skip to the next album or the next playlist?**
(Entry last updated on September 12th, 2003)

Assuming you're playing a sequential list of albums, press and *hold* the "3" ("source") key on the Rio remote control to skip to the next album.

This is just a trick that uses the "hate album" tweak (tweaks are described here) to drop the current album out of the running order and play whatever is next in line. I know it's not exactly what you were asking for, but it's close, and it's good enough for most people.

Skipping to the next sub-playlist in a larger shuffle isn't possible, since the player has no concept of sub-playlists once it begins playing them. When it begins playing a tree of playlists, it simply creates a flattened list of all the songs in that section of the tree and stores it. So it doesn't know anything about which songs belonged to which sub-playlist.

However, if you had deliberately selected *just* a single sub-playlist to hear, and now you want to select and play the next adjacent playlist, there is a trick described here that lets you jump directly to that position in the playlist tree without all the intermediate scrolling. This makes it very painless to reach the next playlist.

· **3.39 What are some other good tricks for using the player?**
(Entry last updated on July 24th, 2002)

Quick power-off with Kenwood remote control

There is a dedicated button for power-off on the Rio remote control, but there is no corresponding button on the Kenwood remote control.

To quickly power off the player from the Kenwood remote control, use the number keys to quick-select the "Power Off" menu: *** 5 DNPP**

Tactile feedback for the remote control (so you know which way it's pointed in the dark)

If you have trouble knowing which way the remote is pointed when you're using it in the dark, place a small drop of five-minute epoxy on the Menu/OK button (Rio remote) or the DNPP button (Kenwood remote). Allow it to dry before using it. Then you can feel it with your thumb. This is similar to computer keyboards having the small bumps on the F and J keys.

The bump will eventually come off of the remote, but it's easy to re-apply.

Quick playlists

You can set up your player with "Mood" playlists in addition to Artist/Album playlists. For example, I have a playlist specifically for "Low Key" songs, and a playlist specifically for playing at LAN parties called "LAN Party".

To keep these playlists separate from the other playlists in the main menu of the player, I surround them with parentheses, like so:

(Low Key)
(LAN Party)

This keeps them at the beginning of the playlists menu, making them easy to select quickly, and easy to distinguish from the other regular playlists.

Accessing the player on a different subnet than your PC

This is useful if your player is assigned a fixed IP address that doesn't fall into the range of IP addresses of the LAN subnet it's currently plugged into.

This might be accidental, for example, if you bring your player to work and plug it into the work LAN. Your home LAN might have a different IP addressing scheme than your work LAN. Or you might choose to do this on purpose, for example, so that co-workers' computers on your work LAN can't access the player.

The trick is to remember that you can add more than one TCP/IP protocol to the Windows network properties. You can have one TCP/IP entry which points to your work LAN, and another one which is on a fixed subnet matching your player's IP address.

Simply open the network control panel and add another TCP/IP protocol. Give it a fixed address where the last digit is different than the IP address shown in the player's "About" screen, and a netmask of 255.255.255.0.

Note: This works well for Windows 95/98 and Windows XP, but it only works in some

situations with Windows 2000. Win2K doesn't allow you to mix static and dynamic IP addressing on the same machine (at least I haven't found a way to do it without third-party software).

Un-shuffle around current song

Let's say you are listening to the entire contents of the player, shuffled. You hear a song from an album you like. For instance, you hear "Money" from "Dark Side of the Moon". If you press the 0 key on the remote control (or choose Shuffle/Off from the front panel), the player will un-shuffle around the current song. You will then be able to listen to the remainder of Dark Side of the Moon in the correct order. Or, if you want, you can press the "previous track" button a few times to go back to the beginning of the album. When you're done, shuffle again to go back to hearing the entire player randomized.

Note: If you have more than one reference to the song in multiple playlists, for instance, if you have the song in both an "Album" playlist and a "Mood" playlist, then you need to do something special to make sure this works correctly every time. First, make sure you're using version 2.0 or later of the player software. Then, in Emplode, view your playlists by Position. Make sure your album playlists are ordered first, and your mood playlists are ordered last. The player will un-shuffle around the current song, giving priority to the earlier playlists in the order.

Track name suffixes

Sometimes you'll have more than one track on the player that's got the same title. For instance, you might have a studio recording of a song as well as a live performance of the same song. Or perhaps an acoustic or instrumental version of the same song.

Because those songs have the same title, they will look exactly the same in the Search by Title screen on the player. If you want to be able to distinguish the songs from each other in that screen, add some text in parentheses to the end of the title. For example, on my player, I have:

Big Love
Big Love (Live)

So when I perform a search, I can tell the difference.

Go back to last playlist menu

The following is a new feature that was added in version 2.0 of the software. You must have version 2.0 or later to use it.

Let's say you've just selected something that's three levels deep in the menu. For instance, you just played Rush/Moving Pictures/Tom Sawyer. Now you want to select another adjacent item, for example, Rush/Hemispheres/La Villa Strangiato. If you go back in through the top menu level, that's a lot of scrolling to do.

Instead, do the following: Open the main menu so that the "Playlists" item is highlighted. Then **press and hold** the bottom button on the faceplate. It should pop you down into the

Moving Pictures playlist without all that intermediate scrolling. From there, you can navigate to nearby menus much more easily.

Note that the Menu/OK button on the Rio Remote also works for this trick (you can press and hold it). The Kenwood remote does not work for this trick, though, since its DNPP button doesn't have a "hold" option.

Insert/append from playlists menu.

The following is a new feature that was added in version 2.0 of the software. You must have version 2.0 or later to use it.

You can insert a song or playlist from within the playlists menu itself. This works in a similar fashion to the Insert and Append features of the Search screens.

Let's say that you're listening to your Rush/Moving Pictures playlist, and YYZ comes up. While listening to YYZ, you decide you want to hear La Villa Strangiato inserted as the next song, without interrupting the current playlist.

Navigate to Rush/Hemispheres/La Villa Strangiato (perhaps using the quick menu trick above). With the song name highlighted, **press and hold** the bottom button on the faceplate (or the OK button on the Rio remote). Another menu will appear, giving you the option to Enqueue, Append, Replace, or Insert.

They work as follows:

- **Insert:** Inserts the selected item immediately after the current song.

- **Enqueue:** The first time you select this option, it inserts the selected item immediately after the current song. If you do this multiple times, it will insert the results *after* your last insert. Sort of like queing up songs on a jukebox.

- **Append:** Adds the selected item to the very end of the currently-playing list of songs without interrupting playback.

- **Replace:** Completely throws out the current playlist and instantly plays the selected item. Same as if you'd just selected the item normally.

If you wish to insert a playlist instead of a single song, press and hold on either the playlist name or the "triangle" play icon for that playlist. For instance, if you wanted to insert the entire Hemispheres playlist instead of just the one song, you can press and hold on the "Hemispheres" menu item, or you can press and hold on the triangle "play" icon that appears after you select the "Hemispheres" item.

4. MP3 creation and playback questions

- 4.1 What is the best way to create MP3s?
- 4.2 How should I name my MP3 files and ID3 tags?
- 4.3 What tools can I use to diagnose and repair problems with my MP3 files?
- 4.4 Can I increase the quality of an MP3 by decoding and re-encoding it?
- 4.5 How does the player handle gapless playback?
- 4.6 How can I create files that will play back gaplessly on the player?
- 4.7 Why do all my songs play at different volumes?
- 4.8 If I normalize my MP3s, will they sound like they are at the same volume?
- 4.9 Can I use software to apply a "relative volume" offset to each track so they can sound equal?
- 4.10 So how do I do dynamic range compression at playback time?

- **4.1 What is the best way to create MP3s?**
(Entry last updated on June 15th, 2002)

The Rio Car player is a very high quality piece of equipment, so it's important to make sure your MP3s are created carefully. The old adage is "garbage in, garbage out", which applies here: If you create awful-sounding MP3 files, then they will sound awful when played back in the player. But if you use care in creating your MP3 files, you will get fantastic-sounding results that will make your Rio Car sound every bit as good as a high-end CD player.

There are so many different MP3 creation packages, though, it's tough to give specific advice in this area. Each package has strengths and weaknesses, and they are changing and updating their features all the time.

For those who are just getting into making MP3s, the quick answer (for Windows users, anyway) is to use the either Exact Audio Copy or AudioGrabber, with the latest version of the LAME encoder. However, MP3 creation is still a bit of a black art, and you still need to consider the issues outlined below.

Because MP3 is a "lossy" method of data compression, judgements about the quality of the resulting audio can be very subjective. However, there are some general concepts you should understand about creating MP3s which will help you make your own choices.

When you create an MP3 from a CD, there are three stages involved. The first is *ripping*, the process of digitally extracting the audio data from the CD. The second is *encoding*, which is how the raw audio data gets data-compressed and converted into the MP3 file format. The third stage is *tagging*, which is how the song, album, and artist info gets entered into the file.

Many software packages will seem to do all three stages at once, making it look like one seamless process. In fact, the entire process of all three stages is sometimes referred to as "ripping", but technically that term really refers to only the first stage. The important thing

to understand is that all three are separate processes and each has its own quirks. Some software packages will separate the three stages and allow you to use your own tool choices for each stage. These are the most flexible and have the potential to produce the best results, but they are not the most easy to use. The packages which hide all the details from you will be the most easy to use, but will give you less control over the process, and less control over the quality.

Ripping

Ripping is the slang term for DAE, or Digital Audio Extraction.

The goal of ripping is to extract the audio data from the CD in the form of an exact digital copy. If there are problems during this stage, there can be audible errors in the music, ranging from very subtle to irritatingly obvious.

- The CD-ROM drive you use to perform the rip is a vital component of the system. Some drives will do better than others at DAE. Even different models of drive from the same company will produce different results. It has been said that the SCSI drives made by Plextor are the best at this job because they can do block-accurate addressing on audio CDs.

- The speed at which the extraction happens (usually expressed as some multiplier of the realtime audio playback speed) is a factor. For instance, a drive may allow 24x ripping, but it might do a terrible job at it. Sometimes it's better to rip at a slower speed. This depends on the drive.

- The speed of your computer, the speed of its IDE data bus, and the amount of RAM in the computer might be a factor. If the computer can't stream the data smoothly, there might be errors in the rip.

- Different pieces of software will use different methods to make sure that the audio data is extracted correctly. Some will go to great lengths to verify that the extraction worked, others will just assume that the CD drive fed them the data OK and won't give any warning at all if there's a problem. Others will only do this extensive error checking if you select the appropriate options in its configuration menu. Please see Andy McFadden's CD Recordable FAQ for more information on this subject. Software that's known to do a good job at this are CDParanoia (for Linux), and AudioGrabber, AudioCatalyst, and Exact Audio Copy (for Windows).

- If your rips are getting errors, don't forget to check the online help in your ripping software for information on how to enable the error-checking features (sometimes called "sector synchronization"), if any.

- Some computers will get rip errors if you try to do anything else on the computer

while a rip is proceeding. If this is the case, learn to start the ripper and then just leave the mouse alone. Also remember to disable any screen savers before ripping.

- Depending on the software installed on your PC, you might need to install a third-party ASPI driver before your ripper works properly. Check your ripper's documentation for details about ASPI drivers.

- Sometimes a given drive/ripper will have trouble extracting the last track of a given disc. Although it could be due to a bad drive or some other problem, it might be something very simple: It might be due to a CD-ROM data track being embedded at the end of the CD. If this is the case, alter the length of the last track (usually done by opening the properties box for the last track before ripping) so that it ends at the correct spot. If your ripper doesn't have the option to change the track start/end times, throw it away and find a better ripper. You could also try ripping the disc on a different PC and see if you get better results.

- At first, you must listen to your rips carefully for audible errors. Only after you've ripped and previewed several albums can you be sure that your particular combination of PC, drive, software, and settings is doing a good job. Make sure to preview using headphones, because some of the problems are only detectable with careful headphone listening.

- Examples of audible ripping errors would be: Pops and clicks, skipped sections of the track, brief bursts of static, loss of stereo image, and sudden shifting of the stereo image between channels.

Encoding

Encoding is the process of changing the raw wave audio data into an MP3 file. It involves data-compressing the audio stream so that it takes up less storage space (this is the whole point of MP3).

MP3 encoding is "lossy", meaning that some data is lost in the process. Different encoders go about the job differently and produce different results. These differences are incredibly subtle, and most people can't tell the difference between encoders.

Encoders are constantly changing and evolving, with each group of engineers trying to outdo the others in encoding quality. Any advice given here regarding which encoder to use would probably be outdated in a month, so I'll refrain from recommending a specific one. Rather, I'll give more general advice regarding encoders.

- You don't always get to choose your encoder. You might have purchased a ripping package which includes a built-in encoder, with no option to change it.

- Even if you do have an option to change the encoder, you might only get to choose from the Windows built-in codecs. Remember that some of these built-in codecs are the low-quality for-free versions, and will produce substandard results. More advanced options for selecting encoders can be found in some software packages. The most flexible are the ones which allow you to run batch files or to invoke command-line encoders. Then you can use any encoder you like.

- Some encoders allow you to choose between high quality encoding and fast encoding. This isn't the same as the bit rate (discussed below). This is the choice of the encoder's analysis algorithm: How much CPU time do you want to devote to the analysis of the audio file? When encoding files for the Rio Car, you should always choose the high quality option.

- If an encoder claims to be able to do its job in "real time", make sure it's not using its low-quality option. The best encoders will take a little while to churn on each file.

- The most popular encoders are Fraunhofer, Xing, and LAME. There are others. They all have their strengths and weaknesses. Xing is known for being fast even in its high quality mode, and for being able to create variable bit rate files. LAME is known for being fully open-source and free from licensing restrictions. LAME is also undergoing constant improvement and is probably the most customizable of all the encoders. Fraunhofer is a very solid encoder that produces extremely high quality results, but it is expensive, slow, and it only produces constant bit rate files.

- The bit rate is a choice you make in your encoder. Your choices will range between around 96kbps up to about 320kbps. It determines just how much disk space the resulting file will consume. For instance, a 5-minute song at a bit rate of 128kbps will be approximately 5 megabytes in size. The more you increase the bit rate, the larger the file, but also the higher the quality of the sound.

- Most people are happy listening to 128kbps files on cheap stereo equipment. However, an audiophile will probably be able to hear the loss of quality at 128kbps on good equipment. 160kbps is the rate at which it starts to become hard to hear differences between encoders and between the CD and the MP3. It depends on the music, though. A given song might sound fine at 128, and another song might need to be cranked up to 256 before the compression artifacts disappear.

- The differences between encoders are primarily noticeable at low bit rates. For instance, when you see a shootout test between different encoders, they will usually do their tests at 128. Above that rate, it starts to get harder and harder to tell the difference between encoders. So if you encode everything at bit rates of 160, 192, or above, it probably will make little difference which encoder you use.

- Some encoders allow you to use Variable Bit Rate, or VBR. This is a good feature. The encoder decides, based on the content of a given frame (an MP3 frame is a block of audio about .02612 seconds long), what bit rate the frame should be encoded at. For instance, if a frame contains relatively simple audio frequencies, it can use fewer bits and therefore take up less disk space. A VBR file will give you more "bang for your buck" in terms of the quality/size tradeoff. Given two files of equal size, the Variable Bit Rate file will sound better than the Constant Bit Rate file.

- High frequency rolloff is something to consider for some audiophiles. High frequencies are the hardest thing for an encoder to produce. The higher the frequency, the more bits are required to reproduce it properly. For this reason, most encoders will roll off frequencies above about 16-18khz. Most people don't even have equipment that will produce frequencies that high, or hearing good enough to hear frequencies that high, so it's rarely noticed unless the software is doing a particularly harsh job of it. Early versions of the Xing encoder got bad reviews because of this rolloff (and keep in mind the latest version of AudioCatalyst now has an option to allow the high frequencies with the Xing encoder).

- The types of quality losses you can expect to hear on a given MP3 file will depend on the music being encoded, the encoder, and the bit rate. Common complaints about low bitrate MP3 files include a loss of high frequency detail, a loss of stereo image, a loss of presence or a lack of "air" around the instruments, strange burbly artifacts in the silent spaces between notes, pre-echo on percussive material, and swishy- or burbly-sounding cymbal crashes. All of these problems can be reduced by increasing the bit rate of the encoding. For most listeners, these problems are so subtle as to be completely inaudible. I can hear some of these artifacts in a few of my lower-bitrate MP3s, and when I try to point them out to people (including some audiophiles), they can rarely hear them.

- The best way to pick out compression artifacts is to examine what they sound like in pathological situations, then listen for more subtle versions of the same artifacts in high-bitrate material. For example, encode a track of a lone female singer with a lot of air around the voice (I like the album "Mouth Music" for this) at a low bit rate (say, 96kbps) and listen intently at high volume on headphones. Another type of track which will point out encoder artifacts is solo piano pieces. There are also tracks on the IASCA competition CD which will help you pinpoint encoder problems. Once you know what to listen for, then try encoding the tracks at higher bit rates with different encoders, and see if you can pick out the same artifacts, but more at a much more subtle level. Once you can't pick out the artifacts any more, that's the encoder's "sweet spot" for your ears.

- Finally, remember something important: When you're trying to compare an actual CD with an MP3, remember that the CD's audio playback circuitry is different than the MP3 audio playback circuitry, even if you're playing the CD and the MP3 on the

same computer. There will be differences in frequency response between any CD player and an MP3 player. CD audio usually has artificially boosted bass, for example. So if you're planning on a head-to-head comparison, make sure you're comparing apples to apples first, for instance, by using the ripped WAV file for comparison instead of the CD audio track.

Tagging

Surprisingly, tagging is one of the most important parts of creating an MP3. It is especially important for the Rio Car player, because this information is what you use to categorize, select, and search for your music on the player. If your tags aren't correct, you won't be able to find the music you're looking for.

More information on tagging can be found below.

- **4.2 How should I name my MP3 files and ID3 tags?**
(Entry last updated on February 2nd, 2002)

Tags vs. Filenames

The ID3 tag is a block of text information embedded in the MP3 file, which contains data such as Title, Artist, Album, Year, and Genre. There are two types of ID3 tags: Version 1 tags (usually referred to as just "ID3"), and version 2 tags, referred to as "ID3v2". V1 tags are limited to 30 characters for each field, but V2 tags don't have this limit. Tags are usually used to categorize and organize your MP3s.

The player goes entirely on its internal database of song information, which it pulls from the song's tags. You don't absolutely have to have the tags filled out ahead of time... but it REALLY helps a lot. If your tags are wrong, the track information can be edited after you've already put the songs into the player, but it's much easier to have your ID3 tags in order before you start sending them to the player.

Many people use file names to organize their MP3 collection on their PC, but file names are not used by Emplode or the player. So it's important to get your tags right ahead of time.

The file names are only important when you're dragging and dropping the songs onto Emplode for the first time, and they are only used to define the order of songs in a given album. Personally, I make sure to have the album and track number as one part of the file name, so that I can drag them into Emplode in the correct order. For instance, my file names look like:

Rush - Moving Pictures - 01 - Tom Sawyer.mp3
Rush - Moving Pictures - 02 - Red Barchetta.mp3
Rush - Moving Pictures - 03 - YYZ.mp3
(etc.)

Almost all MP3 creation programs allow you to save your MP3s as those file names by default, ensuring that they will drop into Emplode correctly. Full support for alphanumeric file ordering is found in Emplode version 2.0 and later.

Note: If you feed Emplode a song without a tag, it will populate the "Title" field with the file name and leave all the other fields blank. Although this is true, it is not recommended, since most of the player's search functions and information screens wouldn't work as intended.

Tagging with your ripper

Most ripping packages will, if desired, automatically connect to the internet and download the CDDB (Compact Disc Database) title information for that album. This is a nice feature, and it's plenty for most folks.

However, it's important to remember that the CDDB is filled out by members of the general public. In case you haven't checked lately, the grammar skills of the general public aren't too great. In other words, the CDDB is riddled with errors. So if your ripping package is using the CDDB to grab its track data, you might want to proofread it carefully and make corrections where needed.

While you're at it, you might want to standardize things such as artist names. For instance, I change all of my "Steve Morse Band" tags to simply say "Steve Morse" in order to match his other albums. I know that this is not technically correct, but it makes categorizing and searching for his tunes on the player much easier. You might take this a step further and correct all of his songs to "Morse, Steve" if strict alphabetization is your cup of tea.

Because this sort of thing is very haphazard in the CDDB database, I find that it's almost as easy to enter the album information myself by hand. That way, I can make sure it's correct the first time.

Tagging after-the-fact

There are many third-party tag editing utilities available. A search on MP3.com will give you a very large list. The one most recommended by Rio Car owners seems to be MP3 Tag Studio, a Windows program. Although its user interface has a slight learning curve, it's very powerful and can do advanced things like rule-based processing on your entire collection. You can, for example, rewrite all your tags based on the file names or vice-versa. You can strip files of their V1 tags, their V2 tags, or both. You can copy V1 tags to V2 tags or vice versa. It's a veritable swiss army knife of tag editing tools.

Also highly recommended is Tag&Rename, a Windows utility which will (in recent versions) retrieve tag information from the Allmusic.com database.

V1 vs V2 tags

If a file has both a V1 tag and a V2 tag embedded within it, Emplode will pull its data from the V2 tag. So if your file has incorrect V2 tags combined with correct V1 tags, you will have to either strip or update the V2 tags. More details on this can be found in the Troubleshooting section of this FAQ.

Fixing less-than-perfect tag data

Sometimes the CDDB will contain tag data which is *technically* correct, but not necessarily ideal for the purposes of using the songs on the Rio Car player.

The biggest example of this would be compilation and soundtrack albums. For instance, if you purchased the soundtrack album to The Sopranos, you'll find that all the ripped songs say "Various Artists", "The Sopranos", and "1999". If you're really anal, you might want to look up the data for each song and enter it correctly.

This is time-consuming, but it's nice to be able to punch in the year and have it actually play songs recorded in that year instead of spouting all the tunes that ended up on movie soundtracks from that year. It's also nice to be able to punch in an artist and have *all* of their songs come up, including ones from compilation albums.

If you want to enter this information, but can't glean it from the album's liner notes, you can look it up at Allmusic.com.

Track name suffixes

Sometimes you'll have more than one track on the player that's got the same title. For instance, you might have a studio recording of a song as well as a live performance of the same song. Or perhaps an acoustic or instrumental version of the same song.

Because those songs have the same title, they will look exactly the same in the Search by Title screen on the player. If you want to be able to distinguish the songs from each other in that screen, add some text in parentheses to the end of the title. For example, on my player, I have:

Big Love
Big Love (Live)

So when I perform a search, I can tell the difference.

This is also useful for being able to tell a remixed or remastered version of a song from its original recording. For instance, if a compilation or soundtrack album contains a different version of the song than the original album.

Folder Structure

Although the file names are not used by the Emplode software, you can (optionally) use the PC's directory structure to your advantage.

If you organize your MP3 files on your PC's hard disk in a directory structure that mirrors the playlists you plan to create on the player, then it becomes easy to drop whole directory trees onto Emplode. If you drag and drop a tree of folders from Explorer onto Emplode, it will create playlist trees that mirror the folder structure.

· **4.3 What tools can I use to diagnose and repair problems with my MP3 files?**

(Entry last updated on February 12th, 2002)

For checking the structure of the MP3 file itself, you want MP3Trim. This will tell you if the file is a "good" file or not. If MP3Trim gives the file a clean bill of health, then it should play on any playback software. In some cases, simply opening the file in MP3Trim and re-saving it will correct many errors. Note that the free download version only works on one file at a time, and it has a file-size limit. The pay version does not have this limitation.

For simply repairing VBR headers (useful if you've got time-index problems playing back a VBR file on the player) you want VBRFix under Windows, and MP3Tool under Linux. MP3Tool even has a version that will run on the shell prompt of the player itself.

For playing with ID3 tags and straightening them out, you want MP3 Tag Studio. This is an incredibly powerful tool that allows you to do rule-based processing on every tag in your MP3 folder. Also highly recommended is Tag&Rename, a Windows utility which will (in recent versions) retrieve tag information from the Allmusic.com database.

For looking at the bit rate and quality of all your MP3s as a group, you want EncSpot. This will tell you what encoder was used to create a given file and will make a judgement call as to whether it's good quality or not.

· **4.4 Can I increase the quality of an MP3 by decoding and re-encoding it?**

No.

Some people think that you can decode a low-bitrate MP3 file (say, 128kbps) file to a WAV file, then re-encode that WAV file at a higher bit rate (say, 192kbps), thereby increasing its quality. Or perhaps they might want to change the format of an audio file, for example converting from low-bitrate MP3 to WMA to improve the sound. If you don't understand the way audio compression works, this might actually seem logical.

But this will not work to increase quality. In fact, you will probably make the file sound even worse in the process.

Compressed audio files such as MP3 and WMA use a **lossy** method of data compression. This means that you can't get the lost data back by decoding the file.

When you create a WAV file from an MP3 file, you are simply decoding the file as-is. All of the data compression artifacts that existed in the 128kbps MP3 will be audible in the resulting uncompressed WAV file.

If you then re-encode that WAV file, you will be adding even more data compression artifacts (however slight) on top of the existing data compression artifacts. This will result in a file that actually sounds slightly worse than what you started with. Even if you re-encode it at a higher bit rate, you are still adding some artifacts without improving the original track. This is generally a Bad Thing.

Note that some audio-editing software packages will let you do this without properly

warning you of the consequences. For example, they will let you do a "File/Open" on an MP3 file, and then do a "File/Save As" to a new file. In many cases, they are decoding the file when it is opened, then re-encoding it when it is saved. (There are a few rare exceptions, such as MP3Trim, but these programs can only can do a very limited set of things to the file.)

This is similar to using a graphics application to open a JPG file and then re-saving again as a JPG. Each time this is done, the image loses some quality because of the lossy JPG compression.

So use caution when editing/saving MP3 files, and edit only the original raw uncompressed WAV files whenever possible.

There are times when have no choice but to re-encode material that's already been data compressed. For example, if you're stuck with files compressed in a certain file format and can't go back to the original source material to re-encode them from scratch. Maybe you need to get an audio book into MP3 format and you're forced to grab it with Total Recorder. If you've got no other choice, then hey, make do with what you've got. Just remember that each lossy conversion increases the amount of compression artifacts.

If you simply want to increase the quality of your existing music collection, your best bet is to re-rip from the original CDs at a higher quality setting.

· **4.5 How does the player handle gapless playback?**
(Entry last updated on June 3rd, 2002)

If you've ever tried to listen to Pink Floyd albums in MP3 format, you'll know what we're talking about: Albums with "continuous track" material.

Some albums have songs which run together. For instance, on Pink Floyd's *Dark Side of the Moon*, the song *Money* blends smoothly into the next song, *Us and Them*. If you perform a standard rip of this album, and play it back in a standard MP3 player, there will be a slight "blip" in between the two songs. This small space of silence sounds something like a skip in the recording.

As of version 2.0 of the Rio Car player software, gapless playback is fully supported. The player will play two tracks precisely adjacent to each other without inserting any space between them at all.

However, there's a big "but..." attached to this.

MP3 files themselves are not inherently gapless. In fact, most MP3 encoders will insert artificial silence into the beginning and end of each MP3 file. It's part of the encoding process, and it's not a bug. The authors of the LAME and BladeEnc encoders are working on ways around this, but these require careful configuration in order to work their magic, and it is reported that they are not yet 100 percent perfect in their results.

So just because the player can play files gaplessly doesn't mean that they will sound right

when played back. The files themselves probably have bits of silence at the beginning and end of each file. The player will faithfully play back this silence, since it's part of the MP3 file.

· **4.6 How can I create files that will play back gaplessly on the player?**
(Entry last updated on August 21st, 2002)

There are a few ways to go about this, and none of them are perfect.

Recent versions of the LAME and BladeEnc encoders have options for encoding your MP3s gaplessly. Reportedly, there is still a very tiny, almost imperceptible blip between some tracks when doing this.

According to those who have experimented with the "nogap" parameter in LAME, it only works if you do the following:

- You must have all of the wave files pre-ripped on your hard disk, then put them all on the same command line to LAME. You cannot do them individually, they must be done as a group. This prevents you from being able to do it with most of the automated ripping packages since they do the rip/encodes one at a time. An example of a proper command line would be:

  LAME --nogap track01.wav track02.wav track03.wav

- Because of the command-line limitations, you will probably have to hand-tag the files after the fact. The tagging should not affect gapless playback on the car player.

- LAME disables VBR headers when it encodes with the nogap parameter. It seems to do this on purpose, perhaps because VBR headers cause problems with gapless playback on certain players. Those who have tried adding the VBR headers back in with an after-the-fact VBR fixing tool have reported that it does cause a glitch to appear between tracks on playback. However, it was recently reported that that the problem might have simply been due to a bug in VBRFix which truncates the last frame of the files it fixes. The Rio Car player should (in theory) be able to play the files gaplessly even if they have VBR headers added *as long as the headers were added properly*.

- Because adding VBR headers might possibly cause a problem, but they are required if you want to be able to FF/REW properly in a VBR file, then you might choose to just not even use VBR at all. It's probably easier to encode to a fixed (CBR) bit rate for the albums you want gapless. To achieve the same quality as VBR in a CBR file, you should use a high bit rate such as 160, 192, or higher. This means that the popular parameter "alt preset standard" cannot be used, although "alt preset cbr 192" would be just fine.

Whatever you do, it's important that you read the documentation for your encoder very

closely to make sure you are using the correct command line parameters.

Here are some other ways to create gapless MP3 files:

- Rip your CD as one huge single track (usually done by selecting only the last track then editing the track start time in the ripper software). Encode it and listen to it this way, as one huge track. This will always work perfectly every time, but is very unwieldy.

- Rip your CD as one huge single track, encode it as one huge MP3, then hand-split the MP3 into individual tracks. Split it cleanly at frame boundaries. The GapKiller utility (available from the Download section of this site) has a feature to help you do this.

  This method isn't perfect, because MP3 frames are not fully independent of one another. If a file is split at a frame boundary, some of the data from the previous file is not carried over when the next file starts playing. This creates a tiny "blip" at the transition point between two songs. It's much less annoying than an actual gap of silence, though.

  This also causes a problem with VBR headers, which causes the split files to display incorrect seek times. So you might wish to only use this method on CBR files.

- Rip and encode your CD normally, as individual tracks. Then hand-trim frames off of the beginning and end of adjacent file pairs. This method is tricky, because you must use trial-and-error. You're trimming some valid audio data as well as trimming silence, and it will take several tries before you can make the transition sound smooth. The GapKiller utility (available from the Download section of this site) can help you do this by making this trial-and-error previewing as painless as possible.

  This last technique seems to work quite well, although it's still not 100 percent perfect. There are some song pairs which simply refuse to trim into a smooth set. But you can certainly make every song pair listenable, and you can get about 95 percent of them sounding great.

· **4.7 Why do all my songs play at different volumes?**
(Entry last updated on April 15th, 2003)

They don't. All of your music is playing at the same volume.

Each album is *produced* differently, giving the *illusion* that two albums have different volumes, but the fact is that all CDs have the same upper volume limit, and pretty much every CD will hit that upper volume peak (or very close to it) on each and every track.

There are exceptions to this rule. Some tracks on some CDs may not be properly normalized, but these are *extremely rare*. For most music collectors, it's safe to say that the

vast majority of the CDs in your collection will all hit exactly the same volume peaks on each and every track.

So if everything hits the same peak, why does one album sound louder than another?

Because of something called *dynamic compression*. It's a technique used in producing audio recordings. Different albums are produced with different amounts of dynamic compression. But before we can talk about compression, you need to understand *normalization*.

Normalization

Normalization is the process of increasing the volume of a digital audio track until its peak reaches very close to the upper limit of the audio format.

For the purposes of our discussion, this upper audio limit will be referred to as "zero decibels", notated as **0db**. For those not familiar with digital audio concepts, this sounds a little backwards. In this scale, the top is zero and anything below the top is notated with a negative number.

To normalize an audio file, a piece of software scans the audio waveform, looking for the highest peak, then increases the volume of the entire file equally so that the highest peak falls very near 0db. Typically, a track will be normalized to 98 percent, meaning that the highest peak will fall 2 percent short of 0db. The 2 percent is left as "headroom", in case the playback equipment doesn't handle transient peaks well. Normalization looks like this:
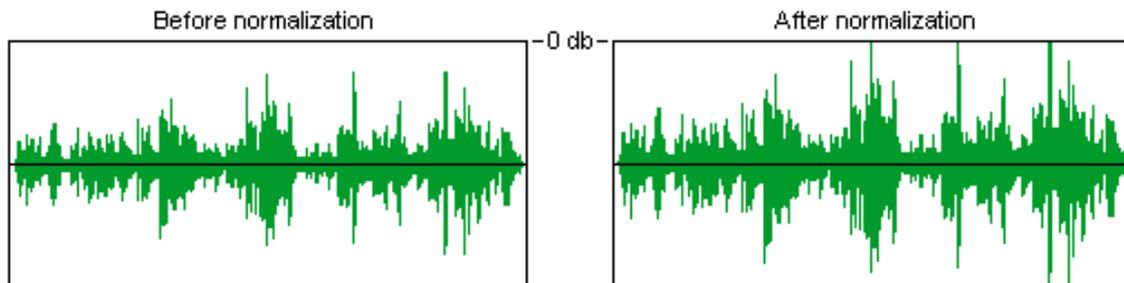
Normalizing an audio file

Note that the audio file *sounds exactly the same* after it's been normalized, it's just "turned up" so that its overall volume is louder.

Your CD ripping software probably has a check box for normalization. It might even have some complicated "if/then" options for how to handle the normalization. I will repeat, to make myself perfectly clear:

> **Your CDs were already normalized to begin with. Normalizing your audio files will probably not change anything.**

There are rare instances when you might run into a CD that is not normalized, and checking this little box in your ripping software might help those few CDs. But it will be

very rare.

Differences in production

The reason that one album will tend to sound louder than another is because some recordings will hit this upper peak a lot more often than others. The seemingly-louder music is carefully produced and engineered to fill more space in the sonic spectrum. For example, an average pop song, compared to an average classical recording, looks like this:
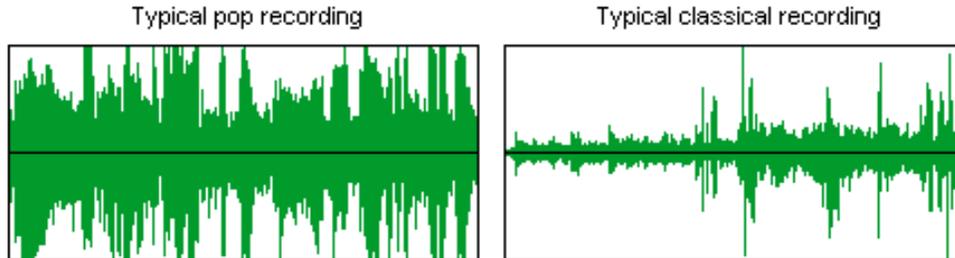
Different recording styles

It's no wonder the pop song sounds louder than the classical one. Note that both tracks hit the same audio peaks, it's just that the pop recording hits those peaks quite a bit more often. Also, the quieter spaces between the peaks are still louder on the pop recording than on the classical recording.

Now here's an important concept: The pop song isn't just simply "turned up louder". If it were, then it would distort terribly and sound awful, because the peaks would exceed 0db and they would be clipped, causing digital noise. Instead, the pop song is engineered so that the *difference* between the loud parts and the quiet parts is not as great. This is done with...

Dynamic range compression

Before explaining dynamic compression, let's get one bit of semantics straight: The word "compression" can be used in two ways, and it's important you don't confuse the two terms. One use of the word refers to reducing the size of a computer file so that it takes up less storage. This is **data compression**. For example, .ZIP files and .MP3 files are *data-compressed* files. We're not talking about this kind of compression here. We're talking about *dynamic compression*.

Dynamic compression has been around for a very long time. It is used in almost all audio recordings. Its original purpose was to prevent clipping, so that the signal did not overload the recording tape medium. Compression is still used for this today, but now it is also used to make an instrument or a song sound louder overall without clipping.

A compressor simply reduces the difference between the loudest and the softest sounds in an audio signal. It tends to "smooth" out the signal, making it easier to work with in a recording environment. There are several different kinds of compressors and they each have different adjustable parameters such as ratio, attack time, release time, and gain.

Today, a given piece of music might have been produced with literally *dozens* of different compressors in the audio chain. For instance, take an electric guitar. Its raw signal goes into a rack of effects. Among the first effects in the chain will probably be a mild compressor. Then, the signal is piped through other effects (echo, distortion, etc.), and the resulting "wet" signal might go through another compressor to smooth out the sound even more. The resulting signal might go directly into the mixing board, or it might go through an amplifier, which will be recorded by a microphone. The microphone will probably be routed through another compressor before hitting the mixing board. The mixing equipment will probably include several compressors, and various tracks will be patched through the different compressors to produce different amounts of "smoothing". After the final mixdown is complete, the audio tracks will be sent to a mastering facility where the entire album is run through another compressor before being put onto CD.

Part of the art of mixing a piece of music is compressing it properly without ruining its punch. A detailed discussion of this art can be found here.

Because compression is such an art, you're going to hear different amounts of compression from album to album, even within the same genre or the same artist. In fact, the *same album*, when re-released as a remaster, might have a different amount of compression applied to it. Even the *same song*, when re-released on a Greatest Hits compilation, will probably have a different amount of compression applied to it.

By the way, this is the same reason a television commercial will sound louder than a television program. The commercials are compressed more.

· **4.8 If I normalize my MP3s, will they sound like they are at the same volume?**

No. Read the previous section. The CDs that you used to make the MP3s were already normalized.

· **4.9 Can I use software to apply a "relative volume" offset to each track so they can sound equal?**

No, at least not with good results. Take our "pop vs. classical" example:
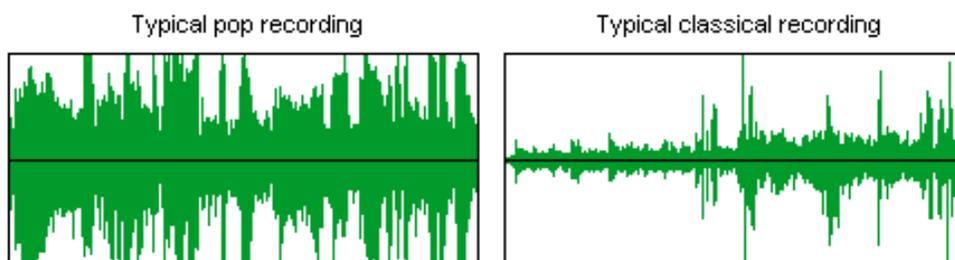
If you applied a positive volume offset (increase) to the classical piece, then the peaks would distort terribly and maybe even ruin your speakers. If you applied a negative

volume offset (decrease) to the pop piece, you would lose any subtle details in the quiet parts.

The only workable solution is to apply additional dynamic range compression at playback time.

· **4.10 So how do I do dynamic range compression at playback time?**
(Entry last updated on July 28th, 2003)

For your Rio Car, there's **Richard Lovejoy's Volume Adjustment Kernel**. It is a dynamic range compressor that works in real time during playback by intercepting the audio stream and altering it before it's sent to the DSP. It makes the quiet parts louder. Its main purpose is to make the quiet parts of songs rise above the noise floor of the car environment while you are driving. But it also helps make songs sound like they are closer to equal in volume.

The volume adjustment code is available as part of Mark Lord's Hijack Kernel, under the heading 'Auto volume adjust' in its main menu. You have the ability to turn it on and off and set the degree of adjustment from this menu. See http://empeg-hijack.sourceforge.net to get it.

Note that this *changes* the character of the way some songs sound. Depending on the song, it may be subtle or it may be overt. That's the nature of compression. If you decide you don't like it, you can turn it off.

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5. Networking and home connection questions

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· 5.14 Can I connect to the player via FTP or HTTP?
· 5.15 Can I connect to my player 'by name' over ethernet?

· 5.1 I don't have a serial port on my PC. Is the serial port required?

The serial port is not required to load music onto the player. In fact, USB and Ethernet are the preferred methods because they are much faster.

However, the serial port is required whenever you upgrade the player software. It's also the only way you can send custom logos or kernels to to the player. And if you intend to do any software development for the player, you can't even get started without the initial serial connection.

If your PC has only USB ports, there are USB-to-serial adapters available which should work. Also, if you have a free slot (even a PCI slot), you can add a serial card fairly easily.

As a last resort, you could perform your software upgrades on a friend's PC if it had serial ports.

· 5.2 Which is faster, USB or Ethernet?
(Entry last updated on February 16th, 2002)

For loading music onto the car player, Ethernet is faster. Some people report that it's up to twice as fast as USB, or faster.

But isn't USB 12mbps? That should be 20% faster than the 10mbps ethernet on the car player.

And if we lived in a perfect world of blue skies, flowers and little fluffy bunnies, manufacturers wouldn't over-inflate hardware specifications.

USB is interrupt-driven and has a lot of overhead in its protocol, making it very CPU-bound. As a result, USB doesn't approach its theoretical maximum as often as ethernet does.

· 5.3 How do I hook up the player with ethernet?
(Entry last updated on April 22nd, 2003)

Setting up an ethernet network at home can be tricky. Many have done it, and once you understand how networks work, there are many benefits to having a home LAN. However, you should make sure you've got a working network in place before adding the car player to the mix. I don't recommend using the car player as your first network troubleshooting project.

If you'd like to learn about the basics of ethernet networks, here is a good basic primer on how they work. Once you understand the basics of networking, and you've got a multi-computer network running, then the car player can be treated the same as you would treat any other computer being added to an existing network.

Also, this text assumes that you're doing the basic step of reading the manuals that came with all of your networking gear, such as the manual that came with your ethernet card or your hub. I'm not going to tell you exactly where to click in Windows to set your IP address, that belongs in the manual for your ethernet card.

Here are a few examples of the most common ways you can connect the car player to a network:

Through a hub or a switch (recommended)

In this configuration, the PC (or multiple PCs) and the car player are connected to an ethernet hub or switch with standard "straight-through" 10baseT network cables. This, of course, requires that the PC has an ethernet adapter card installed and working.

The difference between a "hub" and a "switch" is rather subtle and technical. For the purposes of hooking up the car player, hubs and switches can be considered to be pretty much the same thing. They look the same on the outside and serve the same function, which is to connect multiple computers on the same LAN. Switches are generally faster, and are therefore sometimes more expensive to buy, but even switches are pretty cheap these days. Although just about any hub or switch should work, there have been a few documented cases of the car player being incompatible with certain switches, so if you're using a fast switch, you might need to daisy-chain a basic 10baseT hub between the car player and the switch to get it working.

The IP addressing scheme of the computer and the car player will depend on how you want the network configured. You can either set fixed IP addresses for all the devices, making sure they all have unique addresses in the same subnet as described here, or you can configure everything to obtain an IP address automatically, which is the default setting. Automatic addressing is usually only used when you've got a DHCP server (a device that assigns addresses) on the network, but sometimes you can configure the devices as "automatic" and they'll still work even without a DHCP server. The latter works because recent versions of the Windows operating system will drop back to a randomly-selected UPNP (universal plug and play) address in the absence of a DHCP server, and so will the car player.

If setting fixed IP addresses yourself, use addresses either in the range of 192.168.0.*x*, or 10.*x.x.x*. These are the most common addressing schemes for local LANs, and will guarantee that the addresses never conflict with the public

internet when you connect to it.

Direct connection with a crossover cable (not recommended)

If you don't have a hub, and you don't have any reason to connect your computer to other computers or to a broadband internet link, you can use this method to connect the car player directly to your PC's ethernet card. I don't recommend doing this, since hubs are dirt-cheap and can be found at any computer store. Hubs allow you to connect multiple computers to the same network and take advantage of all of the features networks have to offer.

The most important thing to remember is that this requires a special "crossover" network cable in order to work. These can be purchased at most computer stores, but are more rare than the regular kind of network cable. If you don't know whether your cable is a straight cable or a crossover cable, you have to look closely at the wire pairs and determine the pinouts as described on this page.

If you use this connection method, all the things previously mentioned about fixed IP addresses still counts. This configuration has no DHCP server, and the two devices must both have addresses in the same subnet.

Connected to a DSL or Cable Modem

If you're connected to the internet through a DSL modem or a Cable modem, your first order of business, regardless of whether or not you own a Rio Car player, should be to purchase a *NAT Router/Firewall* device, sometimes known as a *DSL router*. This is a box that goes between your DSL/Cable modem and the rest of your network. These routers serve several purposes. They allow more than one computer to share the DSL/Cable connection, they act as a DHCP server and a NAT (network address translator), and they work as a firewall to protect your home LAN from hackers.

If you have your computer plugged directly into your DSL/Cable modem, your PC is exposed directly to the internet with a fixed IP address, and could, in theory, be hacked. This counts for the car player, too, since it's essentially just a Linux computer in a very small box. The only time you'd want a computer plugged directly into the DSL/Cable modem is if you really know what you're doing and therefore don't need to be reading this section in the first place.

Like hubs and switches, these routers are pretty cheap and can be found at just about any computer store. Most of them have built-in four-port hubs or switches, essentially combining a router and a hub/switch into the same box. In the illustration at left, I've pictured the connection scheme if you need to use a separate hub. You may be able to eliminate the hub from the system if your router contains a built-in hub. Although you still might need a hub if you're working around an incompatibility problem with certain switches as described here.

In this configuration, the router acts as the DHCP server, and the computers and the car player should be configured to get their IP addresses automatically from the DHCP server.

I don't recommend sharing the car player on the internet through your cable/DSL connection. It's (a) dangerous if you don't know what you're doing, and (b) potentially illegal if you're doing it for the purpose of sharing copyrighted music. But if you know what you're doing, you can set up either *port forwarding* or a *DMZ* on your router to accomplish this. Consult the documentation that came with your router for details. Just remember that almost anything exposed to the internet which isn't behind a NAT layer or a firewall can be hacked.

There are other ways to connect the car player to a network, but these are the simplest and most common methods. More complicated schemes are best left to those who are experts at configuring networks. If you still have trouble when using one of these simple schemes, check the troubleshooting steps described here.

Once you've got ethernet working, you can press the Options button in the first screen in Emplode and select the "Network Broadcast" and/or the "Specific Address" option to connect to the car player. You can also get fancy and try connecting to it with a web browser or an FTP client.

· **5.4 Why can't I get ethernet to work?**
(Entry last updated on April 22nd, 2003)

There are about 6.8 billion different reasons why ethernet might not work. Most of them aren't the fault of the player, rather, they are problems with your network configuration.

Troubleshooting ethernet connections is a tricky business for professionals, let alone newbies. If you're setting up ethernet for the first time *just* for the purpose of connecting to the Rio Car, my advice is to forget it and just use the USB port. You really should have a working LAN in place for other reasons (such as file and printer sharing or broadband internet access sharing) before you even think about plugging in the car player. The car player doesn't work well when you try to use it as a network troubleshooting tool; if the network isn't working to begin with, trying to get the car player working "first thing" is just

going to confuse the issue.

With that said, here are some common reasons ethernet might not work on your player:

- You're using some kind of an advanced connection scheme, above and beyond one of the basic connections. Try getting the player to work using one of these simple connection schemes first. You can complicate it later, once you're sure the basic connectivity is working.

- You're plugging it into a 100-megabit hub or switch. The car player only works on 10baseT. If you want it to participate on a 100baseT network, it must be plugged into a switch with 10/100 autosensing ports.

- Sometimes even autosensing ports aren't enough. You might have to "force" the port into 10mbps half-duplex mode on some switches. If your switch doesn't let you do this, check to see if things work on a separate 10mbps-only hub.

- Sometimes even forcing it into 10mbps mode is not enough. It has been reported that certain 10/100 hubs/switches simply refuse to work with the car player. Just because the link lights appear and the '10mbps' light is lit, doesn't mean that it will work. Check to see if things work on a separate 10mbps-only hub.

- You have a bad or incorrectly wired cable. Try a different cable, preferably a "known good" cable from a reliable connection to another device. I don't care if you get a Link light with the current cable, the light doesn't mean diddly-squat. I don't care if the cable passes a continuity test, either, because there can be errors in the way the pairs are twisted that won't show up on a continuity test. Just try a "known good" cable to rule out the cabling as a possible problem.

- You're plugging it straight into your PC's ethernet jack with a regular cable. For that kind of a connection, you need a special crossover cable with its transmit and receive wires swapped. Regular cables are for plugging into hubs.

- If you're plugging it straight into your PC's ethernet jack with a crossover cable, the 10/100 thing also applies to you. Try forcing the ethernet adapter into 10mbps half-duplex mode and see if that works.

- You just upgraded the software and you accidentally put the Mark 1 (car1) build of the software on your Mark 2/Rio player. Ethernet does not exist on the Mark 1 player, so it's not enabled in that build of the software.

- You've got the player set for DHCP but your network is fixed-addressing, or vice versa. If you do not have a DHCP server on your network, you should try running fixed IP addresses.

- You're on a different subnet than the player. The first three IP address octets of your PC must match the first three IP address octets of the car player. For instance, if you are on 192.168.0.*54*, then the player must be on 192.168.0.*something* before you can talk to it. You can check the player's IP address by choosing the "About" menu from the front panel. You can check the computer's IP address by running **winipcfg** on Windows 95/98/ME, and **ipconfig /all** at a command prompt on Windows NT/2K/XP.

- You have got the wrong values filled out for fixed IP addresses. If this is your first attempt at setting up a fixed-IP network, then try entering the following values into the fields:

  PC's IP address (set in Windows Network Properties):
  IP Address: 192.168.0.1
  Subnet Mask: 255.255.255.0

  Player's IP address (set this in the Configure Player screen in Emplode):
  IP Address: 192.168.0.2
  Subnet Mask: 255.255.255.0

- You're on a fixed-address network but your subnet mask is wrong. In most cases, the subnet mask of both the player and the PC must be 255.255.255.0.

- The player's IP address conflicts with another existing IP address on the network.

- You entered values into the "Gateway" field without knowing what it means. In most cases, the gateway should be blank if the player is on the same network as your PC. (A gateway is a device that connects separate networks, such as a DSL or cable router.)

- You accidentally tried plugging your USB cable into the ethernet port and bent the pins (don't feel bad, I actually did this once). Or worse, you tried to plug a telephone wire into the ethernet jack, also bending the pins (you're perfectly welcome to feel bad about doing that one, be my guest). Either contact support or carefully repair the pins as shown here in this movie (562k mpeg).

- There might be a piece of firewall software getting in the way. For example, the personal firewall built into Windows XP (details here), or a third-party program like BlackICE Defender or ZoneAlarm. You can temporarily disable these things to see if

ethernet starts working. If it does, then work on configuring the firewall to allow Emplode to talk to the player without compromising your security.

- If you're having trouble setting the player's IP address in the "Configure Player" screen of emplode, first make sure you're using USB or serial to connect to the player. Set the networking features, synch once, then after that you should be able to use the network. The ability to change the player's networking features is disabled in Emplode if you're already connected via the network. For example, if you are already connected via dynamic IP and want to change the player to a fixed IP, you will be prevented from using the Networking tab of the "Configure Player" screen.

For the most part, troubleshooting network problems with the car player is exactly like troubleshooting network problems for a PC. This FAQ doesn't cover that kind of scope; you're going to have to rule out the above items and then start asking around. Just make sure that the rest of your network functions first before blaming the player.

· **5.5 Can I use the ethernet connection with the car docking sled?**
(Entry last updated on April 15th, 2003)

The car docking sled does not have an ethernet port on it. Oh, they wanted one all right, but there just weren't any docking connectors with enough pins.

So they did the next best thing: They left a hole in the docking sled so you could put an ethernet cable in there if you wanted.

The only problem is getting it to dock reliably. This is tricky. Some folks simply leave some slack in the ethernet cable behind the sled, pull it out through the sled hole, plug it directly into the player, then insert the player into the sled. This works, even if it's not ideal.

If you're set on making docked ethernet, the first thing is to remember to break the keeper tab off the plug or your player might end up permanently docked.

Then, you need to find a way to rigidly support the plug while still being able to adjust it so that it docks reliably every time. This is the hard part. Some have done it by carefully tying the ethernet cable to a piece of a metal bracket using cable ties. Here are two examples of docked ethernet, courtesy of BMihulka and CharcoalGray99 from the Unofficial Empeg BBS:

These are examples of homemade component boxes with integrated docking sleds, but docked ethernet in the car could be handled in a similar way.

Here's a clever version by Jim Hogan, using plywood and RTV silicone (Shoe Goo, actually) to give the plugs a slight amount of flex:

Note that Jim's version also includes the AC adapter jack which happens to solve this problem quite nicely.

· **5.6 Can the Rio Car player be used as a server for the Rio Receiver?**

Not at this time. There is no Rio Receiver server built into the car player software.

Although it is possible to port the server software to Linux and run it on the car player (someone actually demo'd this very thing at one of the user meets), the database code eats up a lot of memory. So having the player be a server and also having it continue to work as a player at the same time probably isn't going to work very well.

You're welcome to give it a shot yourself, if you like. If you come up with something that works well, let us know.

· **5.7 Can the Rio Car player play streaming audio from a Rio Receiver server?**
(Entry last updated on September 4th, 2002)

Yes, but it requires modifying the software on the player, therefore you need some Linux knowledge to make it work.

Greg Combs has ported one of the third-party Rio Receiver clients to run on the car player. If you have a Mk2/2a player with the ethernet port, you can use this software to connect to a network and play audio streams from a Rio Receiver server.

The software is still under early development at the time of this writing and it doesn't have an official web site yet. (Greg, let me know when there is one so I can link it here.) In the meantime, poke around the Unoffical Empeg BBS to locate threads discussing this topic.

· **5.8 Can I use a wireless ethernet connection to the player?**
(Entry last updated on February 6th, 2002)

Yes. Others have done it.

It's got a standard ethernet port, so simply plugging it into a wireless ethernet bridge will work. For example, one of the empeg demonstrator vehicles had an Apple Airport base station running off of the car's 12v power supply.

The tricky part is getting the ethernet bridge to talk to the rest of your network. In the example above, you could talk to the Airport base station with an 802.11 card, but not with another base station. This is a limitation of the base station, not of the Rio Car player. Some base stations can be easily configured to talk to each other, some can't. It depends on the base station.

There are other solutions which have been discussed on the [Unofficial Empeg BBS](http://riocar.org), search there using the keyword "wireless" for more details. All of these options involve plugging something into the ethernet port on the Rio Car player, because remember, there's no PCMCIA card slots on the player.

Also note that the sleep timeout of the player is an important issue. If you leave the player in your car, assuming it's wired correctly, it will shut itself off after a few minutes and it won't respond to ethernet. So if you're set on synching from your office without removing the player from the dash, make sure to increase the player's sleep timeout in the Emplode software.

· **5.9 Can I connect the headphone output from another device to the aux input of the player?**

Yes. You can get adapter cables for this sort of thing at a local electronics store or stereo store. You need a 1/8" stereo male jack on one end of the cable, and a stereo pair of male RCA jacks on the other end.

Remember, though, that headphone outputs are amplified (albeit with a very low-power amp). If the other device has a line-level output, you should use that instead. The headphone output should be used as a last resort only.

If you plug the headphone output of another device (say, a portable CD player) into the Rio Car's aux-in, start with the CD player's volume turned all the way down. Then slowly increase its volume until you can hear it well but don't hear any distortion.

· **5.10 Can I use headphones to listen to the player directly?**

Yes.

I know the manual specifically says not to plug speakers or headphones directly into the player's outputs. But you **can** do it. Here's the situation:

The player does not have any amplified outputs. It has only line-level outputs. Line-level outputs cannot drive speakers, there's just not enough juice to move the speaker cones.

But if you use **really small** headphones with tiny drivers, such as the tiny in-ear

headphones, then they hardly require any juice at all to work. So you'll actually be able to hear them that way. Perhaps not at a very high volume, but they'll work. If you create a special EQ preset just for headphone listening, you can even get them sounding fairly decent.

You need an adapter cable to do this, of course. Depending on what your local stereo store has in stock, you might need to get more than one adapter and daisy-chain them together to get the proper combination of male and female connectors to plug your headphones into the player. The final assembly needs a **female** 1/8" stereo jack at one end (for the headphones to plug into), and a stereo pair of male RCA jacks at the other.

· **5.11 How can I listen to the player on my computer?**

I personally like to plug my player's outputs into the line input of my PC's sound card. Then I can use the Windows sound mixer applet to balance the level of the player with the level of my PC sounds.

Again, you need an adapter cable to do this. The correct adapter can be found at your local stereo store or electronics store. You will probably need a 1/8" stereo male plug at one end, and a stereo pair of RCA male jacks on the other end.

This is useful on versions of Windows which don't automatically mix the wave sound from multiple apps. It allows you to listen to music without silencing your New Mail message or the sounds of your games.

Even on versions of Windows which will mix multiple wave sources, it's still nice. It lets you listen to MP3s while you play games, without having WinAmp running in the background sucking up precious CPU cycles.

· **5.12 Where can I get a spare AC power supply for my player?**
(Entry last updated on August 22nd, 2003)

You should have received one power supply with your player. But it's always good to have spares, especially if you like to use the player in more than one indoor location.

You can [contact support in the UK](#) for information on purchasing an extra power supply. Their stock is a compact "plug top" style adapter that is integrated with a US plug. Unfortunately, they are sold out of units with European plug capability.

There are many third-party power supplies that are reported by other users to work fine with the player. In the US, you can order the [All Electronics PS-131](#) or [PS-1215](#). In the UK, you can order part code number PJ89W from [Maplin Electronics](#), which is another brick-style adapter with an interchangeable main power cord.

Also, you might just have a spare power supply lying around that'll work. I've seen lots of different power supplies that'll do the trick. The requirements are:

- It must be a DC power supply. It must supply direct current as output, not alternating

current.

- The connector jack must have the center pin as positive (+) connection, and the outer sleeve as the negative connection.

- The connector jack must have a 2.1mm center pin and a 5.5mm outside diameter. Make sure it's the correct size, or you might damage the car/home sensing switch by forcing the jack into the player.

- The voltage can be in the range of about 12v-16v DC, the exact voltage doesn't matter much.

- It must be able to supply a minimum peak current of about 1 amp (1A) at 12V for disk spinup. Remember that the rating printed on the power supply is its maximum capability. So it's OK, and in fact desirable, to have the amperage rating be a little higher than 1A (Such as 2A or 3A).

- It has been reported that some power supplies rated at exactly 12v 1000mA (1A) are not sufficient. This is the absolute minimum rating which leaves no room for variance in the components or fudge factors in the power supply's rated specs. The voltage and/or amperage rating may need to be higher than that if you really expect the power supply to work.

- Make sure the adapter meets all of the above requirements before plugging it in, or you might let out the expensive blue smoke that powers the player. If these specifications are not clearly printed on the power supply, do not use your player as an experimental voltage tester (it's not particularly good at that job).

I've seen lots of power supplies which meet these requirements and work for the player. IBM ThinkPad power supplies, small inkjet printer power supplies, small flatbed scanner power supplies, and multimedia speaker power supplies often meet these requirements. Simply by digging around my garage, I was able to scrounge enough power supplies so that I can use the player in three different spots without having to cart a power supply back and forth.

Note: If you add a second disk drive to the player, it will require more juice. If a scrounged power supply works for a one-disk player, that doesn't necessarily mean it will work for a two-disk player.

Symptoms of an inadequate power supply are: The unit starts to boot (you see the boot logo), but it never finishes booting because the disk drives do not spin up. Or, the unit boots, but occasionally stops playing and the "battery" icon appears on the screen. Other symptoms are messages such as "Failed to unmask IDE" and "No hard disk found contact support".

· 5.13 Can the Rio Car connect to other USB devices such as portable USB hard drives?
(Entry last updated on February 15th, 2002)

The Rio Car only has a USB "slave" port. It does not have a USB "master" port, so it cannot act as a host to other slave devices.

This precludes many things. The following things *cannot be done* with the car player's USB port:

- Attach a portable USB hard drive for offline storage.

- Attach a portable USB CD, CD-R, or DVD drive.

- Attach a portable MP3 player and send tunes to it.

- Attach a USB-ethernet converter.

- Attach a USB-based wireless 802.11b adapter.

- Attach a digital camera for storing its pictures on the car player's hard disk.

- Connect two car players directly to each other for sharing tunes.

The only USB ports it can be connected to are those on PC computers with the proper driver software. At the current time, that is only Windows PCs running the Emplode software.

In the future, it is hoped that the Rio HSX-109 (which has USB master) will get a software update which allows it to transfer songs to the car player.

Finally, keep in mind that the player has a fully-functional 10baseT ethernet port, and there's a lot more useful stuff you can do with ethernet.

· 5.14 Can I connect to the player via FTP or HTTP?
(Entry last updated on February 25th, 2003)

Not by default, but this can be easily added to the player using third-party software.

The most popular way to do this is to install the Hijack kernel (instructions here). Note that a working ethernet connection is required in order to make use of the Hijack FTP and HTTP features.

After Hijack is installed, you can connect to the player simply by entering http://*player_ip_address* or ftp://*player_ip_address* in your web browser. You can find the IP address by selecting "About" from the player's main menu.

The player's hard disks are set to read-only by default. Before being able to copy files to the player with FTP, you will need to set the disks to read-write. Please see the [Hijack section of the FAQ](#) for details of its operation.

After you have Hijack working, you might want to try putting a slick web interface on the player, such as [CharcoalGray99's XML interface found here](#).

· **5.15 Can I connect to my player 'by name' over ethernet?**
(Entry last updated on September 21st, 2002)

On most private networks, other computers show up as a name. For example, you can do a "ping" command for *computername.mycompany.com* and it will respond. Or, if you are on a Windows network, you can see the names of some computers in the Network Neighborhood screen.

These are actually handled by two different systems. The former is called *DNS* or Domain Name Services. The latter is handled by the Windows *computer browser* service.

Depending on your network's configuration, your player may or may not resolve to a DNS name. It will most likely never show up in the Windows computer browser, though.

Why?

Let's take the latter case first. The Windows computer browser is very Windows-specific, and requires a bunch of Microsoft proprietary code to implement. There's no Windows-specific network code on the car player at all.

Even if you could get the player to show up in the Network Neighborhood, you still couldn't access its disk drives through Windows-style "shares", as there are no Windows-sharing services on the car player. The Linux version of the Windows file-sharing services is called "Samba", and setting up Samba on the car player is, in most cases, more trouble than it's worth.

DNS might still work, though. DNS can be useful if you've got FTP services installed on the car player and you want to access the player's files that way.

In order for your player to resolve to a DNS host name on your LAN, the servers must not only support DHCP, but must also support dynamic DNS. This allows a computer to request a hostname which is granted by the DNS server. Note that many Windows-centric networks do not implement this capability. You might be able to *ping computername.mycompany.com* on a Windows network, but that computer most likely used the Windows-centric features to request and be granted that name.

If your network supports true Dynamic DNS, then the player's host name will be the name

you gave to the player in the Emplode "Configure Player" screen. For simplicity, make sure to name your player with DNS-legal characters in its name-- no spaces or non-alphanumeric characters. For instance "Tony's Empeg Mark 2" is not a good DNS name, but "tonysempeg" is fine.

If you happen to be the administrator of the DNS server, and your player is on a fixed IP address, then you can create a static name for your player on the server if you like.

If you only need to access the player by name via one or two computers, there is a utility called "FindEmpeg" that can add your player's name and address to the local workstation's HOSTS file. It is detailed [here].

Keep in mind that in most cases, name-resolution of the player is not required. You can usually connect to the player just fine on *any* network simply by using its direct IP address instead of a name. You can find the IP address by selecting "About" from the player's main menu.

6. Upgrade, customization, and third-party software questions

- 6.1 How do I upgrade my player's hard disk?
- 6.2 How are the songs stored on a two-drive player?
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6.1 How do I upgrade my player's hard disk?

Here is a complete disk upgrade guide for for your enjoyment.

6.2 How are the songs stored on a two-drive player?
(Entry last updated on October 16th, 2002)

If a player has two disk drives, newly-added songs will be stored on the disk drive with the most available disk space, as measured in free blocks.

For example, if your first disk drive has 1 gigabyte free, and you add a second blank disk drive to your player, then all new music you add to the player will go on to the second drive until you've filled it up to the point where there is only 1 gigabyte left on the second drive.

After both drives have the same amount of free space, it will tend to alternate between storing the files on the first drive and the second drive.

There is currently no way to tell which files are stored on which drive without fishing through the FIDs by hand at the shell prompt. Plans to implement a feature for this in the software have been cancelled. The player software currently does not care nor report whether a given song is on /drive0 or /drive1, and will search both drives for files when retrieving songs. Also note that a given database file (*1) might be on a different drive than its corresponding song file (*0).

6.3 Can I make my own visuals for the player?
(Entry last updated on April 5th, 2003)

Yes and no.

The source code for the Prolux real-time visuals is closed-source. There's currently no way to create your own full visuals, there is no plug-in interface for doing it in the player software.

However, some of the existing visuals can have their graphics modified. At the time of this writing, you could do the following:

- You can add a custom logo that appears on the screen during the player's boot-up process. This is done with the Logo Editor (instructions here) or with jEmplode. Examples of custom boot up logos can be found here.

- You can replace the animated company logo which appears before the custom logo when the player boots. This is done with jEmplode, and requires the latest version of the Hijack kernel. Complete instructions here. Examples of custom boot up animations can be found here.

- You can replace the backdrop to the Anna Vu visual. This is done either with the Logo Editor or the EmRAWerter utility. If using EmRAWerter, the file must be uploaded to the player using one of these methods. The file to be edited is /empeg/lib/visuals/vuback.raw, and it must not be RLE-compressed. Examples of modified Anna Vu backdrops can be found here.

- You can replace the graphic used as the basis for the Tux Much, Tux Too Much, and Tubular visuals. This is done either with the Logo Editor or the EmRAWerter utility. If using EmRAWerter, the file must be uploaded to the player using one of these methods. The file to be edited is /empeg/lib/visuals/logo.raw, and it must not be RLE-compressed. Examples of modified Tux images can be found here.

- The graphic used for the "Logo" visual, although it is similar to the Tux Much graphic, is not the same file. The Logo visual is not changed when you edit the Tux Much graphic. Instead, this graphic is embedded in the player binary and can only be replaced by hacking that file. Because a mistake with the player binary could render your player temporarily inoperable, attempting to change this file is not recommended. If you're hell-bent on changing the Logo visual, do a search on the Unofficial Empeg BBS to locate a utility that will help you hack a new graphic into the player binary.

- You can replace the graphic used in the Image Pan visual. This is done with the EmRAWerter utility. The file must be RLE compressed, and then uploaded to the player using one of these methods. The file to be edited is /empeg/lib/visuals/escher.raw. Examples of modified Image Pan files can be found here.

- You can create new animated dances for the stick figures in the FlanceDoor visual. This is done with the FlanceEdit utility. The files must be uploaded to the player using one of these methods. The files to be edited are /empeg/lib/visuals/*dance.raw.

- You can edit the player's text fonts. The editing utility for this can be found in the downloads section of this site. The edited font files must be uploaded to the player

using one of these methods. The files to be edited can be found in the /empeg/lib/fonts folder.

When editing the graphics on the player, remember that most of them must be reduced to only 128 pixels wide by 32 pixels high, and all of them are made up of only four colors: Black, white, and two shades of gray. Continuous-tone photographic images must be posterized and/or dithered before they will display on the player. Note that the two gray shades are not the same as the two standard shades of gray you find in the Windows default palette. You must create a custom palette and use it exclusively when creating your graphics. The palette values for the four colors are 0 (black), 80 (dark gray), 96 (light gray), and 255 (white).

· **6.4 How do I put custom logos or kernels into the player?**
(Entry last updated on April 5th, 2003)

Use my Empeg Logo Editor, available in the Windows Utilities section of the Downloads Page here at this site. It will import, export, edit, and install custom boot-up logos into the player's flash RAM. It also has a Kernel Flash Utility that will install custom kernels into the player's flash RAM. (If you are running Linux/Unix, click here.)

Kernels:

The kernel is the part of the Linux operating system that handles all of the basic input and output. On the car player, the kernel is stored in flash RAM at address 10000. The kernel is a separate component from the player software, and unlike the player software, is open-source. As a result, it's possible to create hacked versions of the kernel and install them into the player's flash RAM.

Kernels must be pre-compiled for the correct version and model of player. For instance, if you are running version 2.0 of the player software, make sure to get a 2.0 kernel. Also make sure that the kernel is compiled properly for a Mk1 player or a Mk2 player, depending on what you own.

A collection of various kernel hacks can be found at the Downloads Page on this site, or check here for the popular "Hijack" kernel. For information on hacking and compiling your own kernels, visit the Developer Info section of this site.

> *Note:* Sending a hacked kernel to the player is not the same thing as an upgrade. An upgrade is a complete replacement of the kernel and the player software together. Hacked kernels only replace the kernel. So it's important to make sure your kernel is compatible with whatever player software you're currenty running.

Note: If your player stops working after installing a custom kernel, the file was probably corrupted during the download. Try grabbing the file again with GetRight to make sure it downloaded correctly. Also make sure the file is the correct one for your player.

Custom Logos:

The player can optionally display a custom logo on the screen during boot time. It will display the company logo first, then your custom logo, then it will launch the player software. The custom logo is stored in flash RAM at address A000 on the player.

Logos are 128 pixels wide by 32 pixels high, and are made up of only four colors: Black, white, and two shades of gray. Continuous-tone photographic images must be posterized and/or dithered before they will display on the player. Note that the two gray shades are not the same as the two standard shades of gray you find in the Windows default palette. You must create a custom palette and use it exclusively when making your logo. The palette values for the four colors are 0 (black), 80 (dark gray), 96 (light gray), and 255 (white). Use the Empeg Logo Editor to preview how the gray shades will look on your player.

Visit the Boot Logos section of this site to see examples of custom logos you can put on your player. If you are using Internet Explorer, you can right-click on one of those logos, select "copy" from the menu, and paste it directly into the Empeg Logo Editor.

When you install a custom logo onto the player, it will be displayed briefly after the main company logo appears. The main company logo will be either an empeg logo or a Rio logo, depending on your model of player. With version 2.0 and later of the player software, the Rio/empeg company logos are animated.

You can change which company logo appears whenever you like. For instance, if you are running version 2.0 and want to change your Rio player to show the empeg's "waving Tux" animation, select the "Boot with the empeg personality" menu option in the Empeg Logo Editor software and then either send or delete a logo from the player.

· **6.5 How do I change the animated company logo?**
(Entry last updated on October 19th, 2002)

With version 2.0 of the player software, the company logo (the one that appears when the player first boots) is animated. Normally this logo cannot be edited because it is hard-coded into the kernel.

However, the popular Hijack kernel allows you to replace the animated company logo with a custom animated logo. Here is how to do it:

- Make sure your player is connected to your computer via ethernet, and the connection is working properly. If you are having trouble getting ethernet to work, the troubleshooting tips are here.

- Make sure your player is running version 2.0 of the player software. Instructions for upgrading the player software are here.

- Install the latest Hijack kernel onto your player, using the instructions here.

- Install the latest version of jEmplode onto your computer. It includes an animation editor. Note that running the jEmplode installer might not be the only thing you have to do to get the latest version. You might also need to download the most recent prerelease ".JAR" file from the jEmplode site and copy it by hand into the installation directory.

- Draw your animation frames, either directly into the animation editor in jEmplode, or by using a third-party painting program such as Paint Shop Pro. If you are using a third-party program, make sure it can save individual images as .PNG files or save entire animations as animated .GIF files.

- When drawing the animation, make sure you use the correct size and colors. The size is 128 pixels wide and 32 pixels high. The color palette is only four colors: White, black, and two shades of gray. The shades of gray are not common, and they are not the same shades of gray normally used when color-reducing an image. You must create a custom palette and use it exclusively when making your animation. The palette values for the four colors are 0 (black), 80 (dark gray), 96 (light gray), and 255 (white).

- When drawing the animation, make sure you don't make it too long. The original factory animations were only 27 frames long, with each frame being displayed for 1/12 of a second. If you make it longer than this, any custom logo you have showing after the animation will not stay on the screen long enough. Also, the custom animations have a limit to the number of frames you can display, so that it saves memory. I recommend keeping the animations under 27 frames, or if you have to push it, don't push it past 32 frames.

- If desired, visit the Boot Logos section of this site to see examples of animated logos you can put on your player. Save the ".RAW" files to your PC and open them in the jEmplode animation editor.

- If you are using the jEmplode animation editor to assemble your animation frames, you must understand the concept of frame re-use. The left-hand pane edits the actual frames themselves. The right-hand pane edits the order in which the frames are actually played back. For instance, you might have only 13 unique frames (13 individual drawings) in the left-hand pane, but the animation running order in the right hand frame might have 25 total frames, because several of the 13 frames on the left side get re-used over and over again in the actual playback. This is to help save space in the flash RAM.

- After you are satisfied with the animation, you should be able to send it to the player using the menu in the jEmplode animator.

- If you have any trouble sending the animation to the player, check to make sure that the latest Hijack is installed properly, that your ethernet connection is working properly, and that you have either *removed* the passwords from Hijack and the Jemplode configuration screen, or that you have properly *set* the passwords in both places.

· **6.6 What is the file format for the boot logo files?**
(Entry last updated on February 6th, 2003)

Examples and code can be found here.

· **6.7 Is it dangerous to put a custom kernel or a custom logo onto the player?**

For logos, it's not dangerous at all.

For kernels, as long as the kernel was carefully written, there's little danger of anything going wrong.

The worst thing that can happen is that your player will stop working properly because of a bug or because of an incorrect kernel file. But at that point, all you have to do is re-apply one of the factory upgrade files. This will replace all of the kernel and player software, putting it back to original factory specification (without even hurting the music).

Even if the kernel completely trashes your hard disk (highly unlikely, the person writing the kernel would have to be either deliberately malicious or incredibly careless for this to happen), you can always rebuild the hard disk from scratch using the builder software, apply an upgrade, then re-load all your music.

· **6.8 Where can I find source code for writing to the player's flash RAM?**
(Entry last updated on April 5th, 2003)

Hugo's original source code is here: download.c. This code can be compiled to run under either Win32 or Linux. Note that this simplified code only works on COM1 and has at least a couple known bugs.

The Empeg Logo Editor software for Windows includes an updated Win32 version which lets you choose COM1-COM4 and has the bugs fixed. Details of the bug fixes can be found here and here, and the full source code for the Win32 version can be downloaded from here.

An updated version of the Linux/Unix code was made by Bitt Faulk. This version supports Solaris, Linux, and other Unix operating systems, and its full source code can be found here.

When using this code to flash your player, make sure you know the correct flash memory address on the player. The addresses are **a000** (hex) for logo files, and **10000** (hex) for complete kernels. You need to know the difference, because if you put a logo into the

kernel memory location or vice-versa, the player won't boot.

· **6.9 What controls the combination of company logos and custom logos at boot up?**
(Entry last updated on April 22nd, 2003)

The first four bytes of the flash RAM at block **a000** control the player's boot up behavior:

> "**rioc**": Rio logo followed by the custom logo
> "**rio** ": Rio logo only (no custom logo)
> "**empg**": empeg logo followed by the custom logo
> "**emp** " or any other value: empeg logo only

Note that in two of those instances, the fourth byte is an ASCII space character (0x20 hex).

Usually, these four bytes are included as part of a logo file before you upload it to the player. My Empeg Logo Editor software handles this for you automatically.

With version 2.0 and later of the player software, the Rio/empeg company logos are animated.

You can change which company logo appears whenever you like. For instance, if you are running version 2.0 and want to change your Rio player to show the empeg's "waving Tux" animation, select the "Boot with the empeg personality" menu option in the Empeg Logo Editor software and then either send or delete a logo from the player.

Note that the custom Hijack kernel changes this behavior slightly. It plays only one animated logo, regardless of whether the player is set for the Rio personality or the empeg personality. If you want to change the Hijack animated logo, see this entry. For example, if the Hijack animation stays on the screen too long to display your custom logo, you can replace it with a shorter animation, or replace it with frames that are the same as your custom logo.

· **6.10 How do I edit the 'config.ini' file on the player?**
(Entry last updated on March 28th, 2003)

The config.ini file contains several 'hidden' options that aren't available through the normal settings. These options are mostly useful to developers. For example, there is a config.ini option that will output track information to the player's serial port.

Complete documentation for all config.ini options can be found in the Developer Info section of this site.

You may either edit the config.ini file using Linux shell prompt commands on the player itself, or you may use a hidden option in Emplode version 2.0 or later. To activate this hidden option, exit Emplode and edit your Windows system registry as follows:

> **HKEY_CURRENT_USER**
> **Software**

SONICblue
emplode
2.0
Settings
New DWORD value named *allow_edit_config* with a value of 1.

Note that this may require that you actually create the 2.0/Settings key. The key does not normally exist. Do not confuse this with the emplode/Settings key:
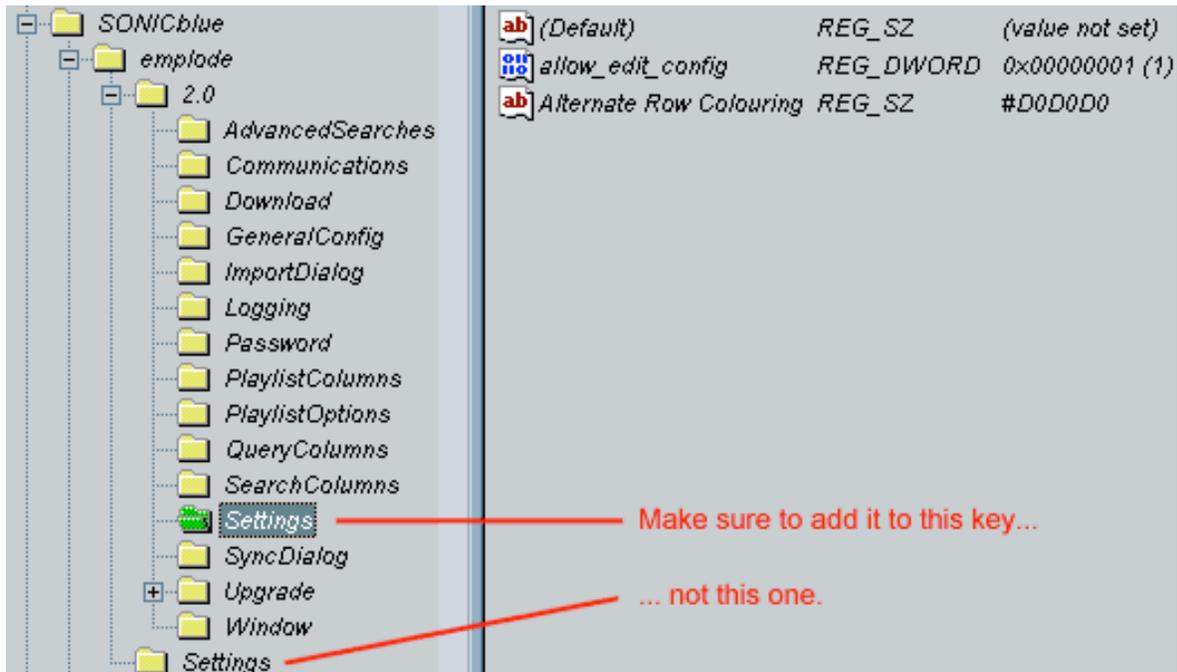
If you aren't any good at using the registry editor, head over to the Downloads Section. In the Windows Utilities area, there is a ".reg" file that you can run directly and it will put this into the registry for you.

After you have edited the registry, start Emplode and there should be a new menu option for working on config.ini. Remember to synch after making changes, and also make sure to *fully reboot the player* so that the config.ini can be re-read and your changes can take effect.

> *Important:* Only use this feature for editing options that aren't available through the regular Emplode configuration screens. For instance, do not use this to edit the Favorite Visuals, use the "Favorite Visuals" menu instead.

Note that you can also edit the config.ini with the JEmplode software or with the Emptool "config" command. Do not use Windows Notepad to edit the config.ini file, or else you will cause a problem with carriage returns and linefeeds which are not readable by the Linux software on the player. Click here to read about potential problems editing the config.ini file.

Finally, note that certain problems can arise if your config.ini file gets too large. Some users have reported that the player software malfunctions if the config.ini is full of extra

data (such as when this bug bit them). There is also a limit of 1023 bytes per line in config.ini, but under normal use, you probably wouldn't ever run into this limit.

· **6.11 Can I customize the alternate-row coloring in Emplode?**
(Entry last updated on January 27th, 2003)

Emplode version 2.0 and later, when in View/Details mode, lists the tracks and playlists in rows of alternate colors. It looks kind of like an accountant's spreadsheet.

One of the two colors is the default window background color as defined in your current Windows color scheme. The other color is Cyan by default, and can be changed by creating/editing the following registry key:

> **HKEY_CURRENT_USER**
> **Software**
> **SONICblue**
> **emplode**
> **2.0**
> **Settings**
> **New STRING value named** *Alternate Row Colouring* **(note the English spelling of Colouring).**

The value of the string is HTML-tag-style hexadecimal. For example ***#FFEEFF*** is 255 red, 238 green, 255 blue.

Note that this may require that you actually create the 2.0/Settings key. The key does not normally exist. Do not confuse this with the emplode/Settings key. Please click here for more details on which registry key should be edited.

Make sure to exit Emplode before editing the registry. After you have edited the registry, you can start Emplode to see the new colors.

· **6.12 How do I create a set of 'favorite' visuals?**
(Entry last updated on April 1st, 2003)

Favorite Visuals is a feature on the Emplode "Tools" menu. Edit the visuals you wish to see in each mode: FM, AM, Aux, and "DSP" (which is the MP3 player). After you're done with the edits, do a synch.

Next, *press and hold* the Visual button on the Rio remote control. Each time you do this, it should toggle between Favorites mode and All Visuals mode. Note that you must also do this same press-and-hold trick in order for the "auto change visuals" feature to use your favorites.

> *Note:* If, after having used software version 2.0 beta 11, you are having trouble editing the config.ini file, if you are having trouble editing favorite visuals, or

if additional entries seem to have been added to your favorites list, you might be running into a known bug. Please click here for details on how to fix the problem.

· **6.13 How do I use Hyperterminal to connect to the player's shell prompt?**
(Entry last updated on February 16th, 2003)

The player's serial port is useful for many things, one of which is ASCII terminal communication with the player. Examples of things you can do are:

- Diagnosing and debugging problems.

- Remote controlling the player with ASCII commands.

- Accessing the Linux shell prompt to run programs or perform disk operations on the player.

Any piece of terminal software will work for this purpose, but Hyperterminal is most commonly used since it comes with Windows. If you can't find Hyperterminal on your Windows Start menu, search for the file "hypertrm.exe" on your hard disk, or search for "Hyperterminal" in the Windows Help. In some versions of Windows, it's an optional component and you may need the original Windows installation CD to install it. If you're not a Windows user, or you can't use Hyperterminal, you may use any other terminal program you like. There are many available for download on the internet, many of them freeware.

The first step is to make sure you've got a working COM (serial) port that you can use for the purpose. You can check the Windows Device Manager to make sure your serial ports are working and there are no conflicts.

Depending on your system configuration, you may have a working COM port that shares an IRQ with another device. For instance, on my system, I once had a modem on COM3 and a serial port on COM1. These ports both used the same IRQ, so I couldn't dial the internet and communicate with the player at the same time (although I had no trouble doing those things independently of each other). I later reconfigured the system so that this was no longer a problem.

Also make sure that there aren't any other applications grabbing the COM port. If another program is using the COM port, it will prevent Hyperterminal from working. For instance, one common problem is people who leave their PalmSync program running when they try to run Hyperterminal. Or perhaps you just used Emplode or EmpegUpgrade and forgot to close it before running Hyperterminal.

The next thing you need is the proper cable, a 9-pin "null modem" cable. One was shipped along with the player, so you probably already have it. (There was a brief period where incorrect cables were accidentally shipped to customers, if you were affected, you may

have received a replacement cable by now.) If your computer has a 25-pin serial port instead of a 9-pin port, you can get an adapter from most computer stores.

Next, run the Hyperterminal program from the Windows Start menu.

Note: If you don't have a modem installed on your computer, Windows might complain, and give you an annoying box which asks you to install a modem. Just close this box without installing a modem, and continue with the rest of the procedure below. It may also force you to enter your dialing area code (Windows just doesn't know when to give up, does it?), just feed it something so it will shut up and let you get on with the direct COM port connection.

Now Hyperterminal will ask you to create a new connection. Name it something like "Empeg on COM1" (or whichever COM port you're using). The next two boxes will give you a chance to change parameters, change them as shown:
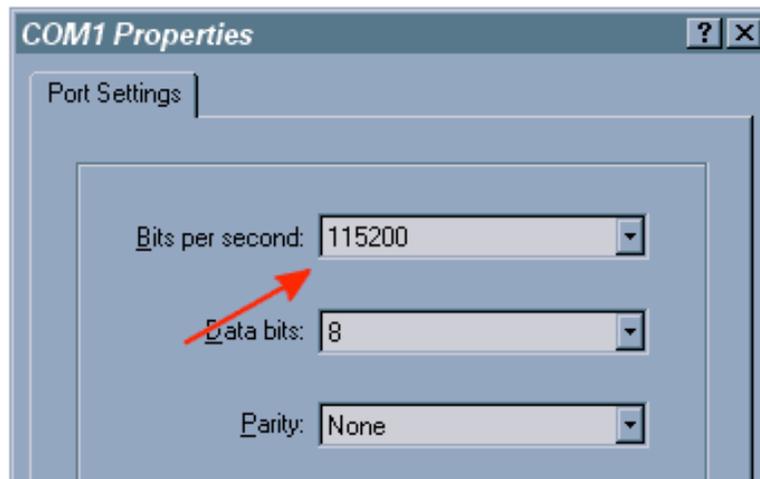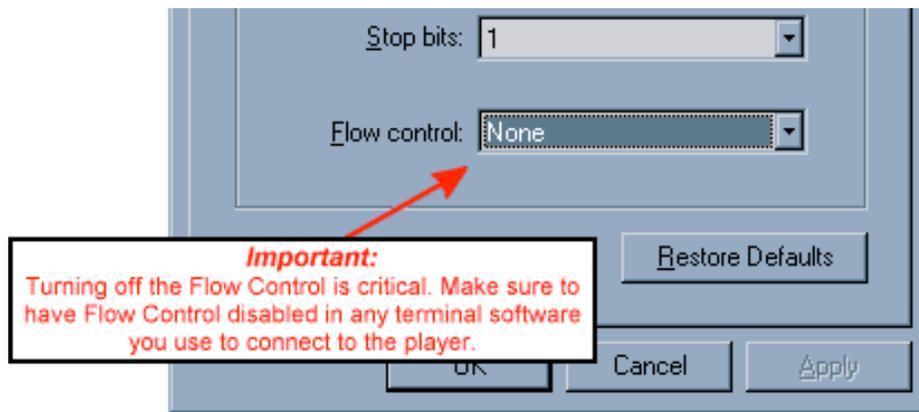
Note: The above settings assume you're connecting to the player when it's running on AC power. If you're trying to connect to the player via the in-car serial connector, you must change the "Bits Per Second" value to 4800. When it's running on DC power, the serial port speed is lowered to 4800 for better compatibility with other in-car hardware devices.

Alternatively, you can change this value on the player itself, allowing faster communication with Hyperterminal when sled-docked. The change is made by adding the following entry to the player's config.ini file:

> **[serial]**
> **car_rate=115200**

Also, according to Hugo, Mark 2 units with serial numbers below 1050 are be missing a ground wire on the in-car serial connector. To get them to work, you need to connect a ground wire between your laptop's serial cable shroud and a ground point on the vehicle. Another thing to remember is that the serial port on the docking sled is already "crossed over" with the RX and TX pins swapped. So you need to use a straight-through serial cable instead of the supplied null-modem cable if you're connecting your PC to the docking sled's serial connector.

You have just created a Hyperterminal "profile", and you can now save the profile as an ".ht" file on the hard disk. Double-clicking on the .ht file will connect you directly to the player.

At this point, you can cycle the power on the player and you should see text begin to scroll down the screen. It should look something like this:

```
empeg-car  v0.04  19990121  (altman@empeg.com)
If there is anyone present who wants to upgrade the flash, let them speak now, or forever
hold their peace...it seems not. Let fly the Penguins of Linux!
Copying  kernel...
Calling  linux  kernel...
Uncompressing  Linux...................... done,  booting  the  kernel.
(Etc...)
```

If your player is working properly, you can control it at this point by typing commands such as N (Enter) for the next track. A full list of commands can be found in the Developer Info section of this site.

Note: On some systems, Hyperterminal won't communicate with the player properly unless you reboot the player after starting Hyperterminal. If your keyboard commands don't seem to work, unplug the power from the player then plug it in again. Look to make sure you can see the bootup messages scrolling by as the player boots.

If you have installed the special developer version of the player software, pressing Q (Enter) will quit out of the player software and drop you to the Linux shell prompt to fool around. If you just have the consumer software installed, you'll get:

```
Switching  to  shell-player  loop
Starting  bash.
no  shell!
Shell   exit
```

... and the player will start playing where it left off.

So, if you want to do things at the shell prompt, the consumer software isn't enough. You need to install the developer software before you can get to the shell prompt. Instructions on how to obtain and install the developer software are here.

Warning: Don't fool around at the Linux shell prompt unless you know what you're doing. You could render the player inoperable if you alter certain files. See the next FAQ entry for links to some Linux help documents.

Some problems can be diagnosed simply by reading the text that's output by the player on bootup. Sometimes, if the player has problems, it will output some debug data on the serial port. If an error message appears, you copy the relevant text from the Hyperterminal window (select it and press Ctrl+C), and paste it into an e-mail message to support.

If you have a large problem and the errors scroll past too quickly, you can increase the size of the Hyperterminal scrollback buffer by selecting File, Properties, Settings. After that, you will be able to scroll backwards through the text until you find what you're looking for.

Examples of things you can look for in the text:

- Program errors, such as "Memory Violation" or "Kernel Panic".

- Huge memory dumps full of hexadecimal numbers.

- Disk errors, such as long pauses on "Probing Primary Interface". Note that a short pause and a couple of retries are normal during this stage as the drives spin up.

Finally, if you own a Mark II player, you can initiate a diagnostic test cycle via Hyperterminal. This will test the unit's RAM chips. To do this, apply the power to the player and immediately press Ctrl-T in Hyperterminal. You should get an output similar to this:

```
empeg-car  bootstrap  v1.00  20000601  (hugo@empeg.com)
If there is anyone present who wants to upgrade the flash, let them speak now, or forever
hold  their  peace...
0000  empeg-car  board  test  version  0.04
0100  ram  test  starting
0110  testing  ic  1  (0-3mb,  low  word)
0120  testing  ic  2  (0-3mb,  high  word)
0130  testing  ic  3  (4-7mb,  low  word)
0140  testing  ic  4  (4-7mb,  high  word)
0150  testing  ic  19  (8-11mb,  low  word)
0160  testing  ic  32  (8-11mb,  high  word)
01f0  ram  test  done
0200  ide  detect
0210  command  issued
0220  drive  id  IBM-DARA-206000
02f0  ide  ok
0300  dsp/i2c  test
03f0  dsp/i2c  ok
0400  temperature  detect
0410  temperature  is  27
04f0  temperature  ok
0500  usb  detect
0510  usb  rev  1012
05f0  usb  ok
0600  ethernet  detect
0610  ethernet  rev  334b
06f0  ethernet  ok
0700  cs4231  detect
0710  cs4231  rev  a0
07f0  cs4231  ok
00f0  tests  complete
```

If you have a bad RAM chip, it should show up somewhere in the listing.

Note: According to Hugo, if you're having trouble getting the Ctrl-T to work, you can try holding down Ctrl-T in Hyperterminal and then apply the power to the player.

· **6.14 Where can I find help on Linux commands?**

The Linux Documentation Project.

IBiblio's Linux users guide.

From DOS/Windows to Linux HOWTO.

BASH Programming - Introduction HOW-TO.

Linux Journal Helpdesk.

· 6.15 How do I send and receive files from the player?
(Entry last updated on May 13th, 2003)

If you want to make modifications to the files stored on the player, you'll need to know how to get them from the player and send them back again. For instance, some third-party programs need to be uploaded to the player in order to be run. Or perhaps you have a tool for editing some of the images used in the player's visuals, and you need to save the modified versions to the player's hard disk.

The easiest way is to install Mark Lord's Hijack kernel, which includes FTP services. FTP (File Transfer Protocol) allows you to send and receive files via ethernet. Fire up your favorite FTP software, set the player to read-write using the SITE RW command, transfer the files, set the file permissions (important!), then set the player back to read-only with SITE RO. Don't forget to set the player back to read-only, or bad things can happen.

I can't stress this enough: If you can use a piece of graphical FTP client software, it is the easiest way to send and receive files from the player. Please click here to learn how to use FTP with the Hijack kernel.

If you don't know how to use FTP, if you don't have ethernet, or if you're having trouble getting it working, then you can use the serial cable with the shell prompt instead, as follows.

Connecting to the shell prompt:

1. Make sure you have the developer version of the player software installed. Instructions here.

2. Fire up Hyperterminal with the special settings for the car player. Instructions here.

3. Press **Q (enter)** to get to the shell prompt.

Now you are at the shell prompt, and you can send or receive files.

Grabbing a file from the player:

To retrieve a file, you just use the Send Zmodem (sz) command. Let's say, for instance, that you want to alter the contents of the FlanceDoor visual on the player, and you want to grab one of the existing files to make modifications to it.

1. Change to the directory where the file resides:

cd /empeg/lib/visuals

2. No, I will not give a complete listing here of what every single file on the system does and where it is located. This is just a set of quick instructions on how to send and receive files. If you don't know where the file is, or you just want to change files to see what they do, then you have no business messing around at the shell prompt. In these instructions, I will assume you know which file you're after because you've been told which one to get, and that you'll behave yourself and leave all the other files alone. Capice? OK, good.

3. Get a listing of the directory:

   ls -l
   (Note: Those are lower-case letter L's.)

4. Decide which file you want to grab, then grab it with the Send Zmodem command:

   sz stonkdance.raw

5. Some strange characters will appear on the screen for a moment, and the file will be sent to your PC.

6. You might not know where the file has been saved on your PC's hard disk. Go to Hyperterminal's main menu and select Transfer/Receive File and you will see the name of the folder to which the file was saved.

7. Use the Windows Explorer to go to this folder and look at the received file. There is a chance that its filename may have been changed from all-lower-case to all-upper-case by the Hyperterminal program. For example, on my system, the file is now saved as "STONKDANCE.RAW" instead of "stonkdance.raw". I hate that. Rename the file to all-lower-case. This is important, because the file names in Linux are case-sensitive and they must match exactly.

Important: Let me repeat this again. The Linux file system is case-sensitive and the file names absolutely must be the correct case. If you do not name them in all lower-case on the player, the software will crash and restart in an infinite loop because it cannot find the files.

The file now exists on your PC's hard disk. You may now examine and modify the file in Windows. For example, if you are editing the file, you would need the appropriate editor program. Note that the files on the car player use proprietary file formats, and they cannot be edited by regular Windows utilities. For instance, you can't edit visuals in Microsoft Paint or Photoshop. Check the Downloads Section of this site or the Unofficial Empeg

BBS to locate programs for editing the files on the car player.

By the way, if you intend to edit ASCII text files from the player, such as config.ini, make sure to read the note here about linefeeds in Windows text editors before doing anything.

When you are done editing the file, you probably want to put it back onto the player, right? Okay...

Putting a file onto the player:

1. If you're not already there, change to the directory where the file resides:

   cd /empeg/lib/visuals

2. Set the player's hard disk partitions to read-write:

   rw
   rwm *(rwm may take a couple minutes to respond)*

   (You don't technically have to do both commands, because each one mounts different partitions. I just never can remember which one does which partitions, so I just issue both commands to set everything RW.)

3. If, at this time, an error message about "e2fsck" appears, please see this FAQ entry for details on how to fix it.

4. Assuming the mount went OK, get a listing of the directory:

   ls -l
   (Note: Those are lower-case letter L's.)

5. Now, look for the name of the file you're going to replace. In this example, we're going to replace "stonkdance.raw". Look closely at the text to the left of the file name. The text to the left of "stonkdance.raw" might say:
   -rw-r--r--
   These are the property and permission flags of the file.

   A complete discussion of Unix file permssions is too much to go into right now (click here to learn more), but you need to know enough to be able to set the permissions of the file. So here's the Reader's Digest version.

   Ignore the first character for now. It indicates whether it's a directory or a file. Now you're only looking at the last nine characters of the group:
   rw-r--r--

   Now, mentally split that up into three groups of three:
   rw- r-- r--

Each of those three groups will be represented by a single digit. This entire line is going to get represented by a three-digit number. The value of each digit depends on whether there's a letter or a hyphen in each spot. The letters are R for read, W for write, and X for execute. So, for each spot, the values are:

4+2+1 4+2+1 4+2+1

So, in the case of **rw- r-- r--**, the values would be:

4+2+0=6
4+0+0=4
4+0+0=4

So, **rw- r-- r--** translates to **644**.

Other common combinations you will see are:

rwx r-x r-x = 755
rwx rwx rwx = 777

For instance, executable programs on the player's hard disk need permissions of 755 or they will refuse to run.

Okay, so now you've got the number noted? Good, you'll need it later.

6. Delete the file you're going to replace, using the RM (remove) command:

rm stonkdance.raw

7. Tell the player to Receive Zmodem:

rz

8. Some strange characters will appear on the screen. Go to Hyperterminal's main menu and select Transfer/Send File. Browse to your modified file (in this example, your local PC's copy of stonkdance.raw), and then click on the Send button.

9. Remember that number? The one representing the file's properties just before you deleted it? Use it now, to set the properties of the file you just sent to the player:

chmod 644 stonkdance.raw

If you are sending new files to the player from scratch, you will need to figure out what the correct file permissions should be. For example, executable programs most likely need to be set to 755 (although make sure to read this important note about running executable programs).

10. *Important:* Set the player's hard disk partitions back to read-only:

ro
rom

11. Exit the shell prompt, back to the player software:

    exit

Now you know how to send and receive files from the Linux shell prompt. Feel like a Linux geek yet? Watch out, it's a slippery slope. Next thing you know, you'll be troubleshooting your company's Apache server...

· **6.16 Can the player make MP3s from the radio, aux, or microphone inputs?**

Some ideas for the player have involved doing real-time digital recording to its hard disk. Examples of these ideas are:

- Using the microphone input for voice memo recording.

- Doing Tivo/Replay style timed recordings from the radio.

- Recording a different device from the Aux input, or mixing the Aux input with the output of another device (such as a voice-directing GPS system).

Although some of these are *theoretically* possible, it is unlikely that they will ever be implemented in the main player software. There are certain limitations in the hardware that prevent them from being easy or ideal to implement. These limitations are present because the player was designed from the ground up to be a *playback* device, not a *recording* device.

First of all, any sort of hard-disk recording would require that the hard disks are mounted read-write and remain fully spun-up during recording. This is contrary to the player's main design philosophy, which is to protect the hard disks by leaving them spun down as much as possible when in the car.

Then there are some issues with signal routing. The audio signal of the aux/tuner inputs is routed in such a way that prevents you from recording it in the background while listening to MP3s. In order to record from the radio, you would have to be listening to the radio while it recorded. This precludes the Replay/Tivo functionality.

Also, the recording quality of anything you recorded would be fairly low because of some limitations to the available sampling rates.

If you are a software developer and you want to see about implementing this sort of thing yourself, you're welcome to give it a shot. Some of these things can be done if you're willing to work around the limitiations. All of the input/output specifications of the player are fully public, and if you asked the empeg guys questions about it, I'm sure they'd be happy to answer them.

· 6.17 How do I get this Displayserver thing working?
(Entry last updated on June 12th, 2003)

Displayserver has pretty much been replaced by the web-interface features of the Hijack Kernel. Most everything that you could do with Displayserver can now be done with a web browser as long as you have Hijack and CharcoalGray99's XML Interface.

· 6.18 Can I use Ghost or Drive Image with the disks?
(Entry last updated on January 11th, 2002)

Not recommended. More details:

Sometimes there are situations where you want to make an exact copy of all the music on the player. For instance, if you bought a new player and want to transfer all the music to it.

There is a utility installed along with Emplode called "EmpegClone" which uses USB to copy all the music from one player to another. This works fine, but some people would prefer something which works faster than USB.

The first idea that comes to mind is to use IDE cable adapters to plug the laptop drives into your desktop PC, then use a third-party utility like Ghost or DriveImage to clone one disk to another. This would be very fast, true. But it might cause trouble and is not recommended.

The car player uses a custom partitioning scheme which needs to be done a very specific way. Utilities like Ghost or DriveImage might not duplicate this scheme exactly right. In fact, there was at least one version of Ghost which had a very specific bug related to this. What happened is that the player seemed to work fine with the ghosted drive, until you attempted to upgrade the player. Then the upgrader attempted to rewrite the player partition using its custom scheme, unaware that Ghost had changed the drive geometry. This made the whole partitioning scheme go kablooey, the player stopped working, and all the music was lost.

If you happen to find yourself in this situation (player went kablooey after using Ghost), your only choice is to bare-metal-format the disk drive using the Builder utility and start over.

· 6.19 Can I add extra RAM to my player?
(Entry last updated on March 5th, 2002)

Short answer: No. You can upgrade the disk drive storage, but you can't upgrade the RAM.

Medium length answer: Yes, but it would be way more trouble than it's worth, because it would be of essentially no benefit to you. No software would take advantage of the extra RAM.

Long answer: The RAM is not plug-in-style, it is chips soldered directly to the player's motherboard. Due to the design of the board, you would have to do a rather major hack

involving piggybacked RAM chips soldered onto tiny SMT-sized connections. This would be terribly difficult to do.

Even if you did manage to get extra RAM working on the player, it wouldn't **do** anything. None of the existing software will take advantage of the extra RAM. It's not like Windows where the extra RAM magically gets allocated. The software would need to be written specifically to take advantage of the new RAM.

All of the third-party and future player add-ons (those existing or planned at the time of this writing) will work in the amount of factory RAM shipped with the player.

· **6.20 Can the player's buttons be made to light up in the dark?**
(Entry last updated on May 28th, 2002)

Yes.

It requires some very fine surface-mount soldering on the display board (which is hard to repair or replace if you damage it in the process), so it's not for everyone.

But if you're brave, and good with a soldering iron, Brian Mihulka sells backlit button kits here.

· **6.21 Will we ever get voice recognition for the player?**
(Entry last updated on February 12th, 2003)

Unlikely.

The empeg team fully intended to provide VR (voice recognition) from the beginning of Mk2 development. They were evaluating various packages from third-party software companies for inclusion into the car player distribution. However, they ran into some snags along the way.

At one time, they had some promising software running on the player, but it turned out that it was only reliable in quiet environments. As soon as you started putting background noise (such as the road noise from the highway) into the equation, it stopped working well enough to be useful.

Now that the player has been End-of-Life'd, there is no real incentive to pursue it. There's hope that something still might happen, but it's unlikely. An unofficial comment from Roger on the BBS:

> At the time, the software available just wasn't up to the job -- it couldn't cope adequately with the noise levels in a car, and it required too much CPU to do the job.
>
> The situation was improving (and is probably up to the job now), but car player development got canned, so we had to stop work on the VR.
>
> One problem ... is that open-source (or free) VR packages just aren't up to the standard of the commercial stuff, and the commercial stuff is *expensive* to license.

· 6.22 Can I install a cooling fan into the player?
(Entry last updated on August 24th, 2003)

As stated here, you probably don't need to worry about putting in a fan; the player has a reasonably wide operating temperature range.

However, unusual circumstances might make you want to do this. For instance, if you have your player installed in the dash directly above a CD player which puts out a lot of heat. If you really have a desperate need for a fan, it can be done.

Click here for a detailed description of Frank Devocht's fan installation project. This uses a thermistor to control the fan speed, so that it doesn't make undue noise when the player isn't too hot.

Note that there are two pins on the player's main board labeled "Fan". Both of these pins supply a positive voltage, they are not + and - as you might expect. So if you are attempting to use these pins as your power source for the fan, just plugging the connector onto these pins is not enough. You will need to fashion your own connection to ground. Also make sure to measure the voltage you're getting from the pins, and construct the necessary circuit to ensure that the voltage is correct for the fan you're installing.

What kind of fan you install on the player is up to you. Remember that removing the player's lid will become more difficult when you've installed a fan, so the thinner the better. As long as you supply it with the right voltage, just about any low-profile 40mm fan will work. Patrick has the following suggestions using Farnell part numbers, quoted from the Empeg BBS:

> *306-2600 - 40mm x 40mm x 6mm fan, 5V operation, 2.6 l/s flow.*
> *306-2612 - 40mm x 40mm x 6mm fan, 5V operation, 2.07 l/s flow, low noise.*
> *306-2624 - 40mm x 40mm x 6mm fan, 5V operation, 1.66 l/s flow, super low noise.*
>
> *Note that these fans have absolutely NO reverse polarity protection. Connect them backwards and you're out one fan. The fan can be held in very easily with the same plastic rivets that were used on the power devices on the Mk1 player. These are in packs of 100, farnell number 722-4321.*

For a US source, try the ADDA AD0412MX-K90, which is Mouser Electronics Part Number 664-D4006MX-12V.

· 6.23 Can I add a digital output to the player?
(Entry last updated on September 30th, 2002)

Yes, Stuart "Maczrool" Euans of the Unofficial Empeg BBS has produced S/PDIF digital output boards for the player. They require modifying both your player and your sled, and as such, require some skill to install. The boards are sold here.

· 6.24 Can I use my player as a GPS navigation system?
(Entry last updated on May 8th, 2003)

Yes.

Jan Harkes has begun the GPSapp project, found here. It requires Mark Lord's Hijack Kernel, and a little bit of knowledge about Linux file management, to install and use.

It also requires a GPS receiver with an RS-232 serial connection (many GPS receivers come with this kind of connector already, or can be adapted). The receiver does not need to have an integrated screen, it can be one of the less expensive "receiver-only" units designed to hook up to a laptop or a PDA. GPSapp supports receivers that speak the standard NMEA protocol as well as certain proprietary protocols. If the GPS receiver can run off of 12 volt power, connection to the car docking sled should be easy, as long as it's wired properly to the docking sled's serial port.

At the time of this writing, the main limitation of all GPS projects for the empeg (including Kim Salo's GPS project that was never publicly released) is getting good map data. All of the really good map data is proprietary. We've found that all of the "open" map data available has limitations such as no one-way street information, so routing information is often faulty when trying to use such data. Without this special information, a programmed route might tell you to drive the wrong way up a freeway onramp, for example.

GPSapp works around this (for now) by screen-scraping a set of directions and waypoints from a mapping web site. It is hoped that in the future, a solution for better mapping data can be found.

· **6.25 Can the player scroll lyrics in synch with the music?**
(Entry last updated on June 11th, 2003)

Yes, using the third party application *emphatic* by Tony Cebzanov. The official web site for emphatic is here.

It requires the Hijack kernel, and you must tag your MP3 files with time-stamped lyrics using the ID3v2 Synchronized Lyric (SYLT) tag before uploading them to the player. Emphatic includes a command-line utility for converting LRC or Lyrics3 information into SYLT tags.

It's really amazing to see it in action, but it can't do anything to make sure you've got the lyrics right in the first place...

· **6.26 Can I customize the way the track information is displayed on the screen?**
(Entry last updated on June 11th, 2003)

Yes, using the third party application *emphatic* by Tony Cebzanov. The official web site for emphatic is here. It requires the Hijack kernel.

· **6.27 Can I use a Palm organizer to control the player?**
(Entry last updated on June 4th, 2003)

Yes, in a limited way. Palm Empeg and Palantir can do this. You can't control every feature

of the player with these applications, but you can some useful things. Refer to the documentation of these applications for details.

· **6.28 Can I make a home docking station for my player?**
(Entry last updated on June 8th, 2003)

Yes, examples of home docking station projects can be found in the photo gallery here. Most of these required an extra sled and/or docking connector, which might be hard to come by if you didn't purchase an extra one with your player. If you want to purchase a pre-made home docking station, Mark Lord sells them here.

Remember that the player behaves differently between home mode and car mode. It uses a switch on the AC adapter jack to tell whether it's in the car or at home. If you're making your own docking station and you want it to behave like it's on AC power, you need to fake out the AC adapter jack somehow, or else you'll have this problem. Note that Mark Lord's docks use a different work-around for the same problem.

· **6.29 How do I upgrade my software?**

You can find details on how to upgrade the player firmware and the Emplode connection software here.

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7. Known problems and troubleshooting questions

· 7.1 Why do the visuals disappear every time I put it in the car?
· 7.2 Why is the stereo image of my MP3 messed up?
· 7.3 I get a 'pump' error when I try to upgrade my player firmware.
· 7.4 I get a Windows Installer or MSI error when I install Emplode.
· 7.5 I'm having trouble with my tuner module!
· 7.6 My tuner gets terrible reception, but the extension cable is fine.
· 7.7 My tuner doesn't tune in the correct frequency increments.
· 7.8 When I pause/un-pause, or sleep/wake the player, it starts in a different part of the song.
· 7.9 Why don't fast forward and rewind work properly?
· 7.10 When I pull the power, sometimes it plays a different song when I start it again.
· 7.11 I can't perform an upgrade, install a logo, or install a kernel when the player is in the docking sled.
· 7.12 Why did my player suddenly start freezing at the boot-up logo screen?
· 7.13 Why isn't the headlight-sense dimmer working properly?
· 7.14 Why does my player think it's at home when it's in the car?
· 7.15 Why doesn't my player go into standby mode when I turn off the ignition?
· 7.16 Why is there a 'thump' from my amplifiers when I turn off the ignition?

- 7.17 Why doesn't my Rio Car work in my Mark 2 docking sled?
- 7.18 Why is my docking connector loose?
- 7.19 Why is my Mark 1 getting harder and harder to pull out of the sled?
- 7.20 Why is my Mark 2 hard to pull out of the sled?
- 7.21 Why is my warranty seal already broken?
- 7.22 I get a 'hardware revision check failed' message when I try to upgrade!
- 7.23 Why did ethernet and/or USB quit working after I upgraded the software?
- 7.24 My tuner quit working after an upgrade!
- 7.25 Why is the song count different when I shuffle?
- 7.26 Why can't I figure out how to do searches on the player?
- 7.27 I selected the correct title in a search, and pressed OK, but the song did not play. Why?
- 7.28 Why does Emplode keep getting my tags wrong?
- 7.29 Why can't I read the display in the daylight?
- 7.30 Why am I having problems with my car alarm or my keyless entry system?
- 7.31 My rotary knob is slipping on its shaft!
- 7.32 What do the synchronization errors mean?
- 7.33 The clock on my Mark 1 player does not work.
- 7.34 The clock on my Mark 2 player does not work.
- 7.35 The Mark (cancel) key on the Rio remote doesn't work all the time.
- 7.36 Why is the Shuffle menu backwards?
- 7.37 Why does my player say 'Waiting...' on the screen?
- 7.38 Why does my player rattle when I shake it?
- 7.39 I don't like seeing the circuitry when the sun shines on the player.
- 7.40 I have database errors and all of my playlists disappeared!
- 7.41 Why does Emplode say I have less disk space than I think I should have?
- 7.42 Why does my player sound terribly distorted when I plug it into my home stereo?
- 7.43 My remote control quit working!
- 7.44 I have a Kenwood head unit, and its remote is controlling both players.
- 7.45 Why doesn't Emplode work via USB on Windows XP?
- 7.46 Why doesn't emplode work via ethernet on Windows XP?
- 7.47 Emplode freezes up on 'Checking Disk Integrity'.
- 7.48 I got an error message about 'e2fsck' at the shell prompt. What do I do to fix it?
- 7.49 My docking sled's top edge is not 'bent'.
- 7.50 Why doesn't my power antenna go up and down at the right time?
- 7.51 The upper-left corner of my screen is cut off.
- 7.52 My config.ini file went all goofy on me, and I can't edit my favorite visuals any more!
- 7.53 My buttons and/or knob are sticking.
- 7.54 What does the battery icon mean?
- 7.55 I just tried to edit one of the visuals, and now my player locks up!

- 7.56 There are glowing red lines on my display!
- 7.57 My display has become garbled or dim.
- 7.58 My display is blank!
- 7.59 Why does my Mk2 player have poor stereo separation?
- 7.60 Why doesn't my player play very high frequencies?
- 7.61 Why doesn't the car player put out as much bass as my CD player?
- 7.62 How do I stop it from trying to play a bad track?
- 7.63 My player takes a long time to boot!
- 7.64 Why does it say 'No hard disk found contact support'?
- 7.65 Some wires have pulled out of my docking connector!
- 7.66 My handle doesn't snap back into place as well as it used to.
- 7.67 My handle sticks in the 'open' position. Can I fix it?
- 7.68 There is a gap between the handle and the fascia. Can I fix it?
- 7.69 What is the proper way to remove the display board and the main board?
- 7.70 Why can't I use USB after installing or upgrading Emplode?
- 7.71 Why is my Mark 1 having intermittent power failure problems?
- 7.72 Why are there pops, clicks, screeches, and stutters when I play MP3s?
- 7.73 Half of my display is blank!
- 7.74 In DC mode, player responds extremly slowly to button presses, and music skips.

- **7.1 Why do the visuals disappear every time I put it in the car?**
(Entry last updated on September 11th, 2002)

This is probably the single most common question asked about the player.

This is by design. The company is protecting themselves from litigation. The visuals are so mesmerizing that some might consider them distracting, and therefore dangerous to have running in the car. So, by default, the player reverts to a static text display when it boots on DC (car sled) power.

It reverts to whatever the last static text display was. For example, if your last static display was "Info: Track", then it will revert to that. If your last static display was "Info: Now and Next", it will revert to that.

You can instantly toggle between visuals mode and text mode simply by pressing and holding the bottom button on the faceplate. This makes switching to the visuals **your choice**. So don't go crying to your lawyer when you rear-end that Ferrari because you were staring at Funnelweb.

Hey, it could be worse. They could make you answer a five-page disclaimer before switching to the visuals...

One way to avoid this feature is to use a hacked kernel that switches to a visual after the player is booted up. For information on using hacked kernels, see here. Remember that if

you use a hacked kernel, you do so at your own risk.

If you are having trouble getting the Hijack kernel's "Restore DC Car Visuals" feature working, please click here.

· **7.2 Why is the stereo image of my MP3 messed up?**

If you have MP3 files with strange artifiacts in the stereo image, you might have a bad rip.

For instance, if you listen to the MP3 file and you hear instruments suddenly switch from the right channel to the left channel and back again (and assuming that the original CD doesn't sound this way), then you're probably hearing rip errors. Your particular combination of CD-ROM drive, software, and settings isn't correct for ripping CDs.

See the "MP3 Creation and Playback" section of this FAQ for more details on how to create good MP3 files.

· **7.3 I get a 'pump' error when I try to upgrade my player firmware.**
(Entry last updated on June 25th, 2002)

There are several things that could cause an error while upgrading the player, but one of the most common is a corrupted ".upgrade" file.

Try using the GetRight utility to re-download the upgrade file. See if that fixes it.

Other possible problems are related to trouble with the serial port: Bad cable, hardware device conflicts, etc. Try performing the upgrade on a different PC or using a different cable. Make sure the serial port and cable are working correctly via Hyperterminal.

Try performing the upgrade by first unplugging the power to the player, and leaving it unplugged until the upgrade program specifically tells you to apply power to the player.

It has also been reported that a bad pump error can be caused by disk drive problems such as a bad disk drive, problems with the cable, or an inadequate power supply which doesn't provide enough juice to spin up the disk drives.

Also, keep in mind that when the player is running on power from the car docking sled, the player's upgrade firmware won't listen for the upgrade command. Make sure to perform the upgrade with the player running on power from the AC adapter.

· **7.4 I get a Windows Installer or MSI error when I install Emplode.**
(Entry last updated on May 1st, 2003)

If you have trouble with the Emplode installer, for instance, if you get error messages when trying to run it such as "INSTMSIA.EXE Not Found", you might need to upgrade your Microsoft Installer (MSI) engine. Click here for Windows 95/98/ME, and here for Windows NT/2000.

It also might be the same as the "pump" error, above. The installation file may have been corrupted, try grabbing it again with GetRight.

If that doesn't solve the problem, have a dig through the Microsoft Support Knowledge Base at the Microsoft site to see what you can find. The new MSI installer is known to be a tad buggy...

· **7.5 I'm having trouble with my tuner module!**
(Entry last updated on February 18th, 2002)

If your tuner module does not seem to work, if the reception is terrible despite a full signal strength meter, or you are having other strange problems, then check the extension cable.

Some cables were mis-wired. They should be straight-through (pin 1 to pin 1, pin 2 to pin 2, etc.), but a few got some of their wires crossed and were put into stock that way.

If yours is mis-wired, you can take care of the problem in one of a few ways:

- Remove the extension cable and plug the sled connector directly into the tuner module. You will lose the antenna remote wire, but some people are fine using their amp remote wire to activate their power antenna or antenna amplifier, it's up to you.

- Repair the cable yourself by swapping the pins until they are correct.

- Contact support and have them send you a corrected cable.

· **7.6 My tuner gets terrible reception, but the extension cable is fine.**

Some cars require that you apply power to a built-in antenna signal amplifier. The tuner module extension cable has a blue wire for this purpose. Check your wiring diagrams to locate the correct wire in your car's wiring for it.

Note that some cars (most notably, late-model Volkswagens) require a special aftermarket adapter to properly power their antenna amplifiers. Your local stereo installation shop should have access to this part if it is needed.

· **7.7 My tuner doesn't tune in the correct frequency increments.**

In Emplode's "Player Configuration" screen, set the correct region (Europe or United States) and synchronize.

· **7.8 When I pause/un-pause, or sleep/wake the player, it starts in a different part of the song.**
(Entry last updated on February 12th, 2002)

First, make sure you're running version 2.0 or later of the software.

Next, check and see if the song is a Variable Bit Rate (VBR) MP3 file. If so, chances are that its VBR synch headers are missing or damaged.

Damaged VBR headers can be caused by several different things:

- A bad piece of encoder software.

- Cutting or splicing the MP3.

- Corrupted MP3 file (for example, one downloaded from the internet).

- Installing RealJukebox on a computer with the Xing encoder, then using the Xing encoder to make MP3s. For instance, if you install AudioCatalyst followed by RealJukebox, you will have VBR header problems.

To repair the VBR headers in the file, use either VBRFix or the VBR repair tool in MP3 Tag Studio on your original copy of the MP3 file. Then remove the bad version of the song from the player and replace it with the repaired version.

For repairing the VBR headers directly on the player, use MP3Tool. Remember to use the "reset metadata" command in Emplode on any repaired songs, and then do a re-synch to have it re-populate the data for that song based on the new headers.

Note: In my experience, VBRFix will cure certain kinds of problems with a file, and MP3 Tag Studio will cure other kinds of problems. You may have to try both and see which one does the trick for you.

· **7.9 Why don't fast forward and rewind work properly?**
(Entry last updated on June 19th, 2003)

Fast forward and rewind were sketchy on VBR (Variable Bit Rate) files in version 1.0x of the software. Upgrade to version 2.0 and all should be well again.

If you've got issues with the song's time index counter (for example, the length is wrong or it doesn't seem to increment properly), and you're running 2.0 or later of the player software, you might be having trouble with VBR headers. Check and see if the song is a Variable Bit Rate (VBR) MP3 file. Its VBR synch headers might be missing or damaged.

Please click here for more information about VBR header problems and how to fix them.

· **7.10 When I pull the power, sometimes it plays a different song when I start it again.**
(Entry last updated on May 17th, 2002)

When power is suddenly lost to the player, it tries to use its last dying gasp of voltage to save its current position into flash RAM. It does this job surprisingly well, considering that you've just taken away the very power it needs to do the job.

If you yank the player out of the dash, it should be able to remember its "last state" most of the time. Once in a while it will not be able to do it, and the next time you plug it in, it'll start playing at the location of the *previous* state-save, i.e., several songs back in the current playlist. This is normal.

If you have a huge number of tracks on your player (tens of thousands), and the player only forgets its song index when you're shuffling the whole player, then the database might have reached one of its internal limits. The number of tracks that can be indexed keeps changing with each software release as they make modifications to the database, so you could try installing the latest software to see if it solves the problem.

If the player consistently forgets its state whenever you shut off the car's ignition, then there might be a wiring problem with the installation, or you might have the Negative Spike Bug. Please click here for more details on the Negative Spike Bug.

· **7.11 I can't perform an upgrade, install a logo, or install a kernel when the player is in the docking sled.**
(Entry last updated on April 15th, 2003)

When the player is running on "sled power", i.e., it's getting it juice from the docking connector instead of the home AC-adapter connector, the serial port behaves differently in two important ways:

- The speed of the serial port is reduced to 4800bps in order to be compatible with other in-car serial devices. This can be changed by adding the following entry to the player's config.ini file:

    [serial]
    car_rate=115200

- The player doesn't wait on the serial port for the command to write to flash memory. So upgrades, flash writes, etc., do not work. This happens in the protected boot firmware, the hard-coded routine that runs the instant the player is powered on. So even a custom kernel which forces the player into AC mode can't change this behavior; the upgrade prompt happens before the kernel is loaded.

Most of the time, you should be upgrading the player simply by bringing it into the house and plugging it into your PC as it was intended. However some people have done interesting things with docking sleds indoors, so there can be situations where you need to do upgrades through the docking sled.

You can work around this problem by faking the player into thinking it's on AC-adapter power. One way to do this is to plug an "unwired" plug of the correct dimensions into the home power jack. If you're careful, you can also trigger the jack's sensing switch with a

matchstick or similar non-conductive object. Although I wouldn't recommend it because you might damage the switch mechanism if you're not careful, and it's a pain to replace it.

It's also possible to design an indoor dock which uses the AC adapter jack for power instead of the docking connnector.

Another thing to remember is that the serial port on the docking sled has some rather funky wiring. For starters, the RX and TX pins (pins 2 and 3) are already "swapped", so you can't use the supplied null-modem cable to connect a PC to the docking sled's serial connector, your cable must have the data pins wired as straight-through. Next, some sleds were accidentally wired without a ground connection on pin 5 and you will need to come up with a makeshift solution, such as grounding your serial cable to the docking sled. Finally, some of the other pins are connected to special features such as the amp remote, the headlight sense, and the mute line. These might confuse a PC serial port. So if you need to hook your PC up to the docking sled, the best solution is probably making a custom cable that uses only pins 2, 3, and 5 (RX/TX and Ground), which are the only pins needed for PC-to-player serial communication.

· 7.12 Why did my player suddenly start freezing at the boot-up logo screen?
(Entry last updated on June 5th, 2002)

Freezing at boot-up is commonly associated with disk drive trouble. Versions of the software prior to 2.0 did not display an error message if there was disk trouble, it just froze. Please click here for more details on disk drive trouble.

· 7.13 Why isn't the headlight-sense dimmer working properly?
(Entry last updated on February 24th, 2003)

Assuming that you own a Mk2 or a Rio Car (the Mk1 did not have a dimmer), and assuming the player has been installed in the car and wired correctly (the dimmer feature only works in the car), you might just need to set the dimmer levels properly.

There are two levels, which you set from the "Settings" menu on the player while it's plugged into the car. The player doesn't know if your headlight line goes high or goes low when the lights are on. So just do the following:

- Get the player running in the car.

- Turn your lights off.

- Go into the settings menu, set the level to 100%, and exit the menu.

- Turn on your lights.

- Go into the settings menu, set the level to 70% (or whatever you want), and exit the menu.

After that, assuming your wiring is correct, it should work properly: When the headlights are off it should be at 100 percent, and when the headlights are on, it should be at 70 percent (or whatever you set it to). If not, contact support.

If, when setting your dimmer, the display seems to flicker erratically or select random levels of brightness, this is a known problem with some players. It can be fixed by soldering a capacitor onto the proper pins on the display board. Contact support and let them advise you as to whether or not you need this fix. If you do need the fix, they can help you decide whether or not to do the fix yourself or if the player should be sent in for repair. Details here, and there is a movie of the repair procedure here (3.14mb mpeg). The part used to make the repair is a .01uf (10nF) surface-mount capacitor.

Note: if your Mk2/Rio player doesn't have a "Dimmer" menu option in the car, you might have a problem with the sensor switch on the power connector. Contact support to have it repaired.

If your display is simply too dim all of the time, please check here and here for possible issues with the display brightness.

· **7.14 Why does my player think it's at home when it's in the car?**
(Entry last updated on May 9th, 2003)

The player uses a small switch on the AC adapter jack to determine whether it's running on home power or car power. On some players, this switch fails, causing the player to think it's either permanently in home mode or permanently in car mode.

Usually, it sticks in "home" mode, so you'll probably notice this when it happens the first time because you'll nearly have a heart attack when you start up the car and the volume will be at maximum (home 0db setting). You will also notice that the player doesn't shut off when you turn off the ignition.

Some things that you can check to make sure that this is really your problem:

- In the car, there should be a "Fader" option in the "Sound" menu. This option will not be present when the unit thinks it is plugged into its AC adapter.

- In the car, you should have the ability to switch a given equalizer preset from 2-channel to 4-channel, but you will not be able to do this when the player thinks it is on AC power.

- In the car, you should have a "Dimmer" option under the settings menu if your player is a Mk2 or a Rio Car. This option will not be present when the unit thinks it is running on AC power.

One other thing... The Hijack kernel has an option to force the player into AC or DC power mode. Make sure you haven't accidentally set this option, or did it on purpose and forgotten about it.

If your player has a faulty AC sensor switch, then contact support to have it repaired.

To repair it yourself, you must be able to completely disassemble the player as described here, and, as usual, be really good with a soldering iron (or more importantly, good with a desoldering tool, since you have to remove the old connector without damaging the motherboard). The replacement part is Digikey part number SC1153-ND, Switchcraft part number RAPC722, and RS Electronics part number 286-8779. *Note: All part numbers except for the Digikey one are NOT VERIFIED yet, they are assumed. Order them at your own risk.*

There is a temporary software-only work-around to this problem, but it requires that you have a tuner module installed in the car. You can install a recent version of the Hijack kernel and use its "Force AC/DC power mode" feature in conjunction with the tuner ID setting as follows:

If you own an original factory tuner module, set its ID selector wheel to some number from 1 through 5. Then go into Hijack and set "Force AC/DC Power Mode" to "If tuner=1, Force DC/Car". If you have selected a different number, then of course use that number. If you move the player between more than one car, set the tuner ID to be the same on all of those tuner modules.

If you own a PCATS tuner module *kit*, chances are you built it to the default specification without changing the hard-wired ID number, since the ID number is set internally with jumpers. By default, the PCATS kit is ID=3. So if this is the case, set it to "If tuner=3, Force DC/Car". If you have a tuner module connected to a home docking station, make sure to set the ID of that module to something other than what the car module(s) are set to.

This work around is not 100 percent perfect, though. When the switch is malfunctioning, the power control PIC still thinks the player is in AC/Home mode because the kernel hack can't talk to the PIC. So when you turn off the car's ignition, your player will still not drop into standby mode nor shut down completely. In some installations, this could potentially cause speaker-damaging "pops" if the player is still playing music when you pull it from the sled or re-start the ignition. So you have to remember to put the player into standby mode yourself before doing these things. You also have to remember to pull it out of the sled to prevent it from draining the car battery. So you still need to get the switch repaired as soon as possible even if you use this work around.

· **7.15 Why doesn't my player go into standby mode when I turn off the ignition?**
(Entry last updated on May 5th, 2003)

First of all, this feature only exists on the Mark 2 and Rio Car players. If you own a Mark 1 player, it has only one power wire. This wire should be connected to the car's ignition-switched line so that it fully powers off when the ignition is turned off.

Now, for the Mark 2 and 2a units...

When you turn off the car's ignition, the player should drop into standby mode for a few minutes before shutting off completely.

If the player keeps on playing when you shut off the ignition, you may have the 12v permanent power swapped with the 12v ignition-switched power. Volkswagen and Audi cars are notorious for this problem, since they swap those lines on the DIN connector. Simply swap the pins on the wiring harness to fix it.

Also check for blown fuses. Sometimes a blown fuse can cause this behavior, such as the inline fuse on the yellow permanent 12v power wire.

Another common reason the player might keep playing when you turn off the ignition is the AC sensor switch problem described here. Check for that.

There was a bug in some older software revisions which might have caused the player to keep playing when the ignition was turned off, so make sure you've updated to the latest player firmware. Also, there have been a couple reports of this problem which were cured simply by doing a synch with Emplode, so try that, too.

If the player goes into full-power-off mode instead of standby mode (and assuming you don't have any blown fuses or mis-wired connections), you probably have the Negative Spike bug as described here. You also might have simply configured a very short timeout value (such as one second) in the "Configure Player" screen in Emplode.

· **7.16 Why is there a 'thump' from my amplifiers when I turn off the ignition?**
(Entry last updated on May 19th, 2002)

Although there are many reasons that you might get a thump (most of which involve cheap amplifiers, blown fuses, or incorrect wiring), one of the most likely causes is the Negative Spike Bug.

A minor problem was discovered after the shipment of the initial batch of Mark 2 players: Some cars produce a large negative spike on the ignition wire instead of just going to zero voltage when you shut off the ignition. This unexpected behavior confuses the player's power control circuitry, causing strange behavior when you shut off the ignition.

Other symptoms of this problem include the unit forgetting its song position and/or going straight into full-power-off mode (rather than standby mode) when you shut off the ignition.

If you have this problem, contact support. They can send you an adapter plug which includes a diode to prevent the negative spike from reaching the player.

If you want to do it yourself and install your own diode, solder a 1N4003 (1a, 200v) inline in the ignition sense wire with the stripe towards the player, as shown:

Ignition   Diode
Sense   1a. 200v
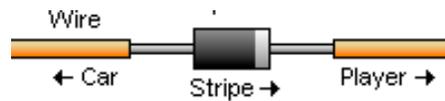
Remember to use shrink-tubing to cover the entire assembly when you're done, as it wouldn't be good to have your ignition wire shorting out.

If desired, this diode modification can be done inside the player instead of on the external wiring harness. A movie of the internal procedure can be found here (10.6mb mpeg).

This problem only existed on the Mark 2 units. The Mark 2a (Rio Car) units have the diode built-in, so the fix will only be needed on some players, and only when they are installed in certain cars. The Mark 1 units did not have separate ignition and constant-power wires, so they will not be affected by this problem, either.

· **7.17 Why doesn't my Rio Car work in my Mark 2 docking sled?**
(Entry last updated on January 17th, 2002)

If you have a Mark 2 player which seems to work correctly, but a Rio Car won't work when plugged into the same docking sled, there is probably a blown fuse or some kind of wiring error.

The correct wiring scheme for both players is as follows: Yellow sled wire connected to constant 12-volt power source. Orange sled wire connected to ignition-switched wire that provides 12 volts when the ignition is turned on.

The player is supposed to go in and out of standby mode when you turn the ignition off and on. You can tell because the front-panel LED will be pulsing on and off when it's in standby mode. If it goes completely dark when you take the key out, then it's not going into standby mode at all. See here for more information on standby mode.

The Mark 2 will seem to work when only the ignition wire (not the constant power) is functioning. If a Mark 2 player is mis-wired or has a blown fuse on its constant power line, it will still play music when the ignition is turned on. It will get its power from the ignition wire. It just won't go into standby when you pull the key. This might fool you into thinking it's working OK.

The Rio Car, on the other hand, will refuse to work at all if it only gets power on the ignition wire. It requires that the constant power line is always getting a proper 12 volts. If the constant power line is mis-wired or it has a blown fuse (including its inline fuse-- remember to check that, too), it will simply not work at all.

· **7.18 Why is my docking connector loose?**
(Entry last updated on April 22nd, 2002)

It's normal. All full-pull-out stereos have that feature. On other stereos, sometimes the wiggly part (technical term) is on the sleeve instead of the stereo. It allows the stereo to connect to the docking sleeve smoothly and easily. Without this feature, you'd have a heck of a time inserting the player.

Note that this doesn't mean the *screws* should be loose. The screws themselves should be tight. They are a special kind of screw that, when tightened down completely, still allow the docking connector to wiggle.

Some users have reported that the screws worked loose on their players, causing the docking connector to come completely disconnected from the player. This made it difficult to pull the player from the car docking sled, and also caused the wiring harnesses to pull loose from inside the player. If this happens, hopefully the only damage was the internal connectors being pulled from the motherboard, and they simply need to be plugged back in. Contact support if you need help with this.

· **7.19 Why is my Mark 1 getting harder and harder to pull out of the sled?**

If you look at the sides of the player, you will notice that the scratches from the side guide-bumps are turning into rough gouges instead of faint scratches. My work-around was to bang on the sled's side-bumps with a hammer (from the inside out) to loosen them up.

They fixed this problem on the Mark 2 by redesigning the sled slightly, after seeing Brian Mihulka's work-around. Brian made some C-shaped cuts around the side bumps in the sled. This is how the Mark 2's side bumps are now implemented.

If you wish to make these cuts on your Mark 1 sled, here is what it looked like when Brian modified his sled:

· **7.20 Why is my Mark 2 hard to pull out of the sled?**
(Entry last updated on March 31st, 2003)

There are several reasons that your Mark 2/Rio Car might be tough to pull out of the sled, but the most common problem is loose docking connector screws.

Check and tighten the two screws that hold the docking connector to the back of the player. They should be tight. Note that the docking connector is deliberately designed to wiggle even if the screws are tight (see here for details).

Some users have reported that the screws worked loose on their players, causing the docking connector to come completely disconnected from the player. This made it difficult to pull the player from the car docking sled, and also caused the wiring harnesses to pull loose from inside the player. If this happens, hopefully the only damage was the internal connectors being pulled from the motherboard, and they simply need to be

plugged back in. <u>Contact support</u> if you need help with this.

Other possible causes for difficulty would be loose screws on the sides of the case, a sled that's bent or installed crooked, or the sled's keeper tabs bending inward and interfering with the player's casing.

· 7.21 Why is my warranty seal already broken?
(Entry last updated on July 21st, 2003)

Don't worry about it. The casing flexes and breaks the seals even if the player was never opened. This was a known issue, and when the players still carried a warranty, they didn't refuse a warranty claim based on the condition of the seals alone.

· 7.22 I get a 'hardware revision check failed' message when I try to upgrade!

Chances are, you downloaded the wrong upgrade file. For instance, you have a Mark 2 or a Rio Car unit, but you downloaded the "car1" version of the upgrade file.

Make sure you get the correct file for the unit. If you have a Mark1, it has "car1" in the file name. If you have a Mark 2 or a Rio Car, it has "car2" in the file name.

· 7.23 Why did ethernet and/or USB quit working after I upgraded the software?
(Entry last updated on April 10th, 2003)

You may have installed the software upgrade for a Mark 1 player onto your Mark 2 or Rio Car player. Re-download the upgrade file, this time make sure to pick the one that says "Car2" in the filename.

Also check <u>here</u> for another possible reason USB might have quit working.

For general ethernet troubleshooting, see <u>here</u>.

· 7.24 My tuner quit working after an upgrade!

Probably same as USB/Ethernet, above. Odds are, you're using the wrong upgrade file.

· 7.25 Why is the song count different when I shuffle?
(Entry last updated on March 4th, 2003)

You might notice that the number of songs in a playlist will change when you turn Shuffle on and off.

At the bottom of the screen in "Info:Track" mode is an indicator showing the position and the total songs in the current running order. For instance, it might say **[43/2573]** in non-shuffled mode, and **[38/2298]** in shuffled mode.

This is on purpose: The player de-duplicates the current playlist and sub-playlists when it shuffles. It's so that you won't accidentally hear the same song twice in a row.

Let's say you've got a playlist called "Rush" that contains all of your Rush albums. This playlist is underneath your "Rock" playlist. But maybe you copied it into your "Heavy Metal" playlist, as well. And perhaps you also copied a few of the tunes to your "Favorites" playlist. Now let's say you play the whole contents of the player (by pressing down-down-down on the front panel). If Shuffle is turned off, it will play the songs three times total as it reaches each of those three playlists in turn. But if Shuffle is on, it will only play each Rush song once, because duplicates were removed before shuffling.

It goes by the File ID (FID) when de-duplicating. So if you've copied the song to multiple playlists (within emplode), those copies are counted as duplicates. The player does not make extra physical copies of a song when you copy tracks within emplode. However, if you have purposely or accidentally uploaded the song onto the player twice, then the song has a different FID and is not counted as a duplicate. Please click here for more information on how the player handles multiple copies of the same song.

Two different versions of a song which happen to share the same title (for instance, a studio recording and a live recording) will be considered two separate songs and will not be dupe-removed.

In other words, it does The Right Thing.

If you dislike this feature, you can disable it by adding the following entry to the player's config.ini file (works only with version 2.0 and later of the player software):

**[shuffle]
deduplicate=0**

Also note that using Wendy Filters, Tweak Order, Ignore as Child, or putting a song in the soup without putting it into a playlist may change the total number of tracks displayed.

· **7.26 Why can't I figure out how to do searches on the player?**
(Entry last updated on January 11th, 2002)

You're probably misunderstanding the way the fuzzy searches work.

Let's say, for example, that you want to Search by Title for "**La Villa Strangiato**".

- Press the Search button on the Rio remote (or on the Kenwood remote, the Direct/OK button). Press it a total of three times to reach the Search by Title screen.

- Press the 5 key on the remote, which corresponds to the letters "JK**L**".

- Now at this point, you probably think that you need to press the 5 key twice more to reach the L's. **That's where you're going wrong.** You don't cycle through to the L's. By pressing the 5 key, you have already sorted all titles beginning with J, K, and L.

- Instead, press the 2 key, which corresponds to "**A**BC" on the remote. This further narrows the search.

- Now press the 8 key on the remote, which corresponds to "TU**V**".

- Note that we have skipped the space. The search algorithm automatically skips spaces and special characters.

- By this time (three presses), everything starting with "LA V" or "LA T" or "LA U" is on the screen. For instance, on my player, two songs are up: "La Tonya" and "La Villa Strangiato".

- At this point, you can either scroll down to the desired title, or press more letters (in this case 4 GH**I**) to further narrow the search.

- Press OK on the Rio remote (or DNPP on the Kenwood remote) to select the title.

See? It's like dialing a telephone number. You don't cycle through each letter. Instead, you pretend you're trying to dial 1-800-**LAVILLA**, blasting through each letter without dwelling on it.

Now, if you're in the player's Playlists menu, and you want to scroll to the L's, then you **do** press the 5 key three times. The letter-shortcuts in the playlists menu work differently than the searches.

· **7.27 I selected the correct title in a search, and pressed OK, but the song did not play. Why?**
(Entry last updated on July 24th, 2002)

You weren't in "Replace" mode. Your search worked, and the search result was added to the current playlist. It's just queued up somewhere after the current song.

The search screen gives you multiple options for searching: **Replace**, **Append**, **Insert**, and **Enqueue**.

While you're in the Search screen, press the "Select Mode" button on the Rio remote (or the CD-MD-CH button on the Kenwood remote). You will see it cycling through these modes.

They work as follows:

- **Insert:** Inserts the selected item immediately after the current song.

- **Enqueue:** The first time you select this option, it inserts the selected item immediately after the current song. If you do this multiple times, it will insert the results *after* your last insert. Sort of like queing up songs on a jukebox.

- **Append:** Adds the selected item to the very end of the currently-playing list of songs without interrupting playback.

- **Replace:** Completely throws out the currently-playing list of songs and instantly plays the selected item.

This is useful as a sort of a "DJ" feature. It allows you to insert "requests" without interrupting your current playlist. It also lets you build playlists on the fly without interrupting the music.

· **7.28 Why does Emplode keep getting my tags wrong?**
(Entry last updated on April 11th, 2003)

First, make sure you're using the latest version of Emplode. Its tag-reading features are frequently updated to take advantage of new tagging specifications.

But even with the latest version, sometimes you will drop a song onto Emplode and it will seem to read the wrong tag data. For instance, you might think you fixed a typo in the song's tag, but the typo comes back when you drop the file onto Emplode.

This is probably because of a conflict between V1 and V2 tags, or maybe it's because of nonstandard file formatting.

There are two types of ID3 tags you can put on a file:

- **ID3 Version 1:** Fixed-length fields totalling 128 bytes appended to the end of the file, immediately after the last MP3 frame. The text fields are limited to 30 characters each, and the Genre is limited to a fixed list of styles represented by a single byte.

- **ID3 Version 2:** Variable-length fields inserted anywhere in the file. There is no limit to the length of the fields, and the Genre can be free-form text. There is an open specification for adding any kind fields you like.

If there is a Version 2 tag present, Emplode will use it in favor of a Version 1 tag. Even if the V2 tag is wrong and the V1 tag is right.

This usually happens when you use a piece of ripper software that's V2-aware, but edit

your tags later in a V1-only tag editor. To the tag editor, it looks like you're doing the right thing, and it blissfully ignores the V2 tag embedded in the file.

Generally, you can use MP3 Tag Studio, MP3Trim, or even a recent version of WinAmp to remove the unwanted data and re-save the cleaned version of the file. That usually takes care of the problem.

However...

If you really did change/strip the V2 tag, and you're still having this problem, then it's probably due to the files having a bad format which includes multiple (or possibly corrupted) V2 tags. Your tag editor isn't catching the second (or corrupted) V2 tag, but Emplode is. It's also possible that the file contains some spurious ASCII data that isn't even a proper tag at all, such as lyric text appended to the end of the file. I've seen this on some files created by a nonstandard encoder.

If this is the case, then you're going to need to strip the bad data out of the file yourself.

First, try running the file through MP3Trim. Bad data, such as incorrectly-formatted tags, will seem like truncated frames to MP3Trim. Opening and re-saving the file should strip the errant data.

If this doesn't work, open the file in a binary editor such as UltraEdit. Locate the bad data (usually, it's near the end of the file, right before the V1 tag), and delete it from the file, or change it to all zero bytes. This should take care of it once and for all.

· **7.29 Why can't I read the display in the daylight?**
(Entry last updated on August 13th, 2003)

If your player uses the green or blue lens, you should be able to read it in daylight, assuming your dimmer (found in the Settings menu) is turned up to 100%. Check your dimmer setting first.

(Note: The dimmer is not available on the Mk1 player, its display is always at full brightness.)

If the sun shines *directly* on the face of the player, then you probably won't be able to read it. I can read mine in this situation, but it's very hard. In normal, ambient sunlight, though, the green and blue lenses should be adequate for general readability.

Color

The amber and red lenses will be somewhat harder to read in ambient daylight than the blue and green lenses. The problem is that the VFD (Vacuum Fluroescent Display) is greenish-blue in tint, so the green and blue lenses have the most contrast.

The lenses, in order of readability, from best to worst, are: Green, Blue, Amber, Red. Note that the red lens is only available for the Mk2 and the Rio Car.

Please click here for a chart comparing how all the colors look in different lighting conditions.

AR Coating

Early shipments of Mk2 units were mailed with lenses that were not coated with an anti-reflective (AR) coating. If you have one of these non-AR lenses, and you think that the AR coating will help you read the screen in daylight, you can contact support and they will replace the lens with an AR-coated one.

If your faceplate is non-AR, you will be able to tell because it is very shiny. If it appears to have a slight matte coating on it, then it's an AR faceplate already and there's no issue. In practice, it makes only a small difference in readability.

Faulty VFD

Some Mk2 owners have had a problem where a capacitor in the dimmer circuit has failed. This causes the display to be quite a bit dimmer than normal.

How to tell: If you are in the car at night, you should be able to turn your dimmer down all the way to 0% and still read the display. If it goes completely black when you turn it down to 0%, then you probably have a faulty display. Contact support for a repair.

If you wish to test this in more detail, here are Hugo's instructions for performing the actual test:

> On the back of the display board are 3 through-hole components - with the display towards you, there are 2 caps on the left and an inductor on the right. The leg of the righthand capacitor nearest the inductor is the display anode power (this is also connected to TP1, which is labelled "60V" on the PCB just below this leg).
>
> With the display at maximum brightness, this leg/test point should be around 60v - test against ground, ieee the case of the empeg - (i.e., in the range 57-63v). If it's any less, the display will be dimmer than it should be. Some of the displays we had back were in the range 12-25v.
>
> WARNING! 60V is nasty voltage, it can give you a snap! Don't run your empeg with the top off unless you really know what you're doing!
>
> The cap in question is a 100nF one which stabilises the reference voltage for the 60v PSU switcher. It's under the display, connected to pin 5 of the MAX770 chip (near the rotary control). In all the cases we've had, this one fails for some reason and as such the display PSU goes very low; there is a patch to the PCB near here for another reason on empeg (not Rio) units, which may explain why the cap has failed (too much heat when the assembler was soldering the other components on?).

Blown Motherboard Fuse

Sometimes the display might be dim because of a blown fuse on the motherboard. Please see this entry for details on how to locate and test the fuses.

Dimmer Circuit Problems

Some units have had problems with the dimmer circuit, causing the display brightness to flicker erratically when setting it. Details and repair information for this problem can be found here.

· 7.30 Why am I having problems with my car alarm or my keyless entry system?

The player does emit a very small amount of RF interference when operating, which has been known to reduce the range of certain keyless entry systems. This can be worked around pretty easily (read on).

Please note that the player has been fully FCC tested and is completely compliant with all regulations for emissions of in-car electronic devices. The keyless entry systems for most cars operate at extremely low power levels, so simply looking at them sideways can cause interference. A very tiny amount of interference can have a huge effect on a keyless entry system.

If desired, you can try re-routing the stereo connection wiring behind your dash. I noticed significant changes in the range of my keyless entry system when I did some rewiring work on my player.

The quick and easy solution is to reduce the standby timeout (found in the "Shutdown" tab of the "Configure Player" screen in Emplode) to five seconds or less. If the player is wired correctly, it will power off shortly after you turn off your ignition, and will no longer produce RF interference. Your keyless entry system will work normally now.

Some car alarms will trigger when they sense a change in the electrical system's voltage. When the player goes into full shutdown mode after being in standby mode, it might set off certain kinds of alarms. In this case, the solution is the same as above: Reduce the standby timeout so that it shuts down before the alarm arms itself.

Note: The Mark 1 players have only one power wire. Mark 1 players should have their power wire connected to the car's ignition-switched wire, which makes them shut down completely when you turn off the ignition. This will prevent the Mark 1 from interfering with your alarm or your keyless entry system.

· 7.31 My rotary knob is slipping on its shaft!
(Entry last updated on February 18th, 2002)

Some early Mark 2 models were shipped with a less-than-perfect rotary knob, which doesn't grip the encoder shaft as tightly as it could. Eventually, it would start to slip, especially when hot.

If you're having this problem, contact support and they will send you a corrected knob.

Do not attempt to glue the knob, as you won't be able to remove the faceplate without damaging the encoder if you do.

(Some have applied glue to their knobs successfully by letting the glue **dry** before putting the knob onto the shaft. Although this will work, I do not recommend it because it's easier simply to get a new knob from support.)

· **7.32 What do the synchronization errors mean?**
(Entry last updated on March 2nd, 2003)

Those cryptic numbers and letters are *hexadecimal notation*, and they refer to a numeric error in a lookup table.

Emplode should be very, very stable in final releases, and for the most part, you shouldn't encounter synch errors. If you're using the latest non-beta software, and you can reproduce the error, please e-mail support with the details.

If you want to know what the errors mean, here are instructions written by Roger on how to look it up, or you can use Trevor Man's error code lookup script.

Although knowing the meaning of the error code won't solve the problem, sometimes it can help you narrow it down. For instance, if you get a "No such file or directory" error, you could maybe start looking to see if the file you're uploading was deleted accidentally.

· **7.33 The clock on my Mark 1 player does not work.**

The Mark 1 doesn't have a real-time clock circuit. Only the Mark 2 has a clock.

In theory, you could use the RDS time feature to grab the time from a radio station that's broadcasting it. Although this might work reasonably well in Europe, US stations tend to have poor support for this feature and often broadcast an incorrect time.

Look on the bright side. It's one less clock you have to set.

· **7.34 The clock on my Mark 2 player does not work.**
(Entry last updated on February 25th, 2002)

It should work... Check the following:

- Make sure you are running version 2.0 of the software or later. The clock features were only fully implemented in that version.

- To display the clock, either show one of the clock visuals, or, if you're in Info:Track, Info:Line, or Info:Now and Next, press the 1 key on the remote control to select the clock as your time display.

- Make sure you have correctly set your Time Zone from the Settings menu. After setting the Time Zone, then re-set the clock again.

- If you are tuned to the radio, and you are in Info:Radio mode, the clock displayed on this screen is the RDS (Radio Data Service) clock from your radio station. This might be wrong (in the USA, it is very likely to be wrong if it even appears at all). There is

nothing the player can do about it if the radio station hasn't set their clock correctly. Change the display to something other than Info:Radio so that you can see the player's built-in clock instead.

- When was the last time your player was plugged into a power source? The clock should be able to keep correct time for several days after the player has been unplugged. If it's been left without power for longer than that, the clock time will be lost until the next application of power.

If the clock still has problems after checking all of the above, contact support. Some players have a bad capacitor, causing the clock to be reset each time the player is unplugged.

· 7.35 The Mark (cancel) key on the Rio remote doesn't work all the time.

The Mark Track feature (labeled as being part of the Cancel button on the Rio remote) has a feature to prevent you from accidentally marking a track.

If you have just canceled out of the main menu, successive presses of the button won't mark the track for a couple of seconds after you came out of the menu. You have to wait.

This is just in case you are canceling out of the main menu by pounding on the Cancel key several times. This way, you don't inadvertently mark the current track.

The 4 key also doubles as the Mark Track key if you want to use it for marking. This key is not time-limited.

· 7.36 Why is the Shuffle menu backwards?

In version 2.0 and later of the player software, when you select the "Shuffle" menu on the player, at first glance, it might seem backwards.

For instance, if you are currently using one of the shuffle modes, when you open the Shuffle menu it will show "Off" selected. "But shuffle is on", you say. That's because the menu is showing you **what will happen when you click it**, not what the current shuffle mode is.

The reason it does it this way is so that it's easier to toggle the shuffle mode from the front panel. The default menu selection will always be the opposite of what you selected, so that the exact same keystrokes (down right down down) can be used to toggle the shuffle mode every time. This way, you can turn shuffle on and off without the remote control and without taking your eyes off the road.

· 7.37 Why does my player say 'Waiting...' on the screen?

The "Waiting..." message indicates it's set to the the Aux input, and it's waiting for some

music to be played in order to display the time length of the track. You probably want to switch to another source input.

The messages you see on the screen for the Aux input can be configured using Emplode 2.0 and later.

· **7.38 Why does my player rattle when I shake it?**
(Entry last updated on January 16th, 2002)

This is normal. Laptop hard disks simply do that. They make a rattling noise when they are shaken, it does not indicate a problem. The labels on some laptop hard disks even have a message which says something like "rattling noise is normal".

Also, if you own a Mark 2 or a Rio Car player, and you only have one disk drive installed, the header for the second IDE slave drive is loose inside the case. If you shake the player, you might hear the sound of that rattling as well. This is also normal and is nothing to worry about.

Note: This is not to be confused with the obvious and unmistakable sound of a loose screw rattling around inside the casing of the player. If you really do have a loose screw, it is critical that you fix the problem right away before applying power to the player again. If the screw contacts certain components on the motherboard when powered, it could cause permanent damage to the player. If you have a loose screw, and it turns out to have been one of the drive-mounting screws, make sure to tighten all the screws securely and use threadlock compound or some other means to ensure that they don't come loose again.

· **7.39 I don't like seeing the circuitry when the sun shines on the player.**
(Entry last updated on March 22nd, 2002)

If the sun shines directly onto the face of the player, you can see some of the circuitry through the translucent lens. If it bugs you, there are a couple of different ways to work around this.

The first is the "Magic Marker Mod". You use a black permanent marker (I used Sharpie brand Fine point and Ultra Fine point markers) to blacken certain shiny parts of the front panel, making it harder to see them in direct lighting. This was first mentioned on the Empeg BBS here.

Because some of the shiny parts are under the VFD glass, this also involves blackening the front of the VFD glass itself. If you do this, be extremely careful about the parallax angle for viewing the actual pixels of the display. Make sure to use a straightedge when coloring the edges of the VFD. Also make sure not to color the window of the IR sensor, or the domes of the IRDA transceiver.

Pictures of the Magic Marker Mod can be found here.

Another option is to print a "mask" onto overhead transparency material using an ink jet printer. Cut this mask to the same shape as the colored lens, then insert it under the lens. A thread about this subject, including template files for Corel Draw, can be found on the

Empeg BBS here.

Finally, you can use black electrical tape on the inside face of the colored lens. It may take some trial and error to cut the tape to the desired shape. Remember to leave a hole for the IR sensor.

· **7.40 I have database errors and all of my playlists disappeared!**
(Entry last updated on June 20th, 2002)

If your playlists have suddenly gone bye-bye (you go to select a playlist and it simply says "none"), and you have a two-disk-drive player, there might be a problem with the second disk drive or the cable.

If the playlist files happen to have ended up on the second disk drive, and the second disk drive goes down, then the player will seem to boot up and work, but may get strange problems such as database errors and the lack of playlists appearing in the menu. Another possible symptom is that the player locks up during boot at the "building music databases" stage.

See here for more information about possible problems with the disk drive cable.

· **7.41 Why does Emplode say I have less disk space than I think I should have?**
(Entry last updated on February 24th, 2002)

Let's say you've just bought a shiny new 20gb Rio Car. It's blank, there are no songs on it yet. You run Emplode, and it tells you that you've only got about 18.5gb of free space. What gives?

There are a few things at work here:

1. Disk drive manufacturers are rotten filthy stinking liars who are trying to rip you off as hard as they can. They are truly evil, and they should all be rounded up and thrown in jail for complete fraud and misrepresentation.

   When a disk drive manufacturer says "20 gigabytes", it is a flat-out lie. They interpret the term gigabyte to mean "1,000,000,000 bytes". This is false. It is a convenient semantic trick which allows them to artificially inflate the size of the disk drive on the label.

   I don't know what color the sky is on *their* planet, but here on Earth, a gigabyte is 1,073,741,824 bytes. A significant difference.

   Emplode reports true numbers, not fantasies and wishful thinking.

2. The player stores a significant portion of the operating system and software on the hard disk, in a 32 meg partition that's separate from the music. There is also a spare 32 meg partition reserved for future software development. So in total, about 64 megabytes gets used for software.

3. The player maintains a 16 megabyte "scratch" partition, a section of the hard disk reserved for storing run time data such as the equalizer preset details, and the running order of the music. This is part of the system which allows the player to pick up right where it left off when you plug it into the car (the other part is a small amount of flash RAM to store its state when power is lost).

4. There is a 16 megabyte "swap" partition, used when Emplode performs a disk check on the player.

5. All operating systems require a certain amount of overhead for organizing partitions and for indexing each file on the disk.

So after that's all totaled up, you end up with less disk space than you expected.

Also note, that when you're dropping new files onto emplode, a "fudge factor" is added to the size of the files to compensate for the fact that they don't know exactly how much disk space each file is actually going to consume. So a large group of new files may appear to eat more space than you think they should. But after you complete a synch, the free space number is accurate again.

Important: If you just added a folder's worth of new files to your player, and they seem to have consumed twice as much disk space as you expected them to (for instance, you dragged a 5gb folder onto Emplode, and the player's free space dropped by 10gb), the files might have been added twice. You probably had .M3U playlists pointing to the files, right? There's an option in Emplode 2.0 which allows you to import .M3U files. So each file probably got added twice: Once because you dropped the folder onto the player and once because you dropped the .M3U file onto the player.

To locate the doubled files, either use the "all tracks" view, or do an advanced search on "refs=0" to list all tracks that aren't in playlists. To prevent the problem from happening in the future, go to Tools/Options/Import in Emplode and disable the "Import playlists" and "Follow Windows Shortcuts" features.

· **7.42 Why does my player sound terribly distorted when I plug it into my home stereo?**
(Entry last updated on January 7th, 2002)

You probably plugged it into the "Phono" input on your home stereo.

Don't ever plug anything but a genuine phonograph into the Phono input. I know its plugs look the same as the Aux and CD inputs, but it's not the same thing. Phono inputs take a very low power signal compared to the other inputs.

The car player uses *line level* outputs, and should be plugged into an input on your home stereo designed to accept line level. For instance, the CD, Aux, or Tape inputs.

When you have the player plugged into your home stereo, you should be able to turn its volume all the way up to 0db without generating distortion. In fact, when plugged in at home, 0db is the correct setting.

· **7.43 My remote control quit working!**
(Entry last updated on April 1st, 2003)

Have you tried replacing the battery?

You think that's funny, but I'm serious.

There is a good chance that the battery really is dead, or at least low, regardless of whether the remote is brand new or not. And don't trust a volt-meter to tell you that the battery is good, either; just because the needle jumps on the volt-meter doesn't mean the battery really is good. And don't assume that just because the battery works in another remote that it'll work in this remote.

Seriously, your best bet is to **simply go to the store and buy a brand new battery** before assuming that it's the remote's fault. Most instances of remote trouble were immediately solved when a new battery was put in the remote. Please do this first.

The battery is a CR2025, it is very common and can be found in many stores.

> *Note:* If you are running old beta software, there were some known bugs where all input (remote, front panel, serial, whatever) will simply lock up sometimes. You can fix this problem by upgrading to any final version of the software, 2.0 or later. Note that this is a completely separate issue from a dead battery, and it has different symptoms.

After you have ruled out the battery and the known software bug, check the contacts which are supposed to touch the battery. Sometimes the springs don't make proper contact with the remote. You can bend them slightly to make better contact.

Bending the contacts is tricky because they're buried deep inside the remote. Here's a picture of the contact that's usually the problematic one, use caution when trying to mess with it inside the remote. You'll have to use something long and pointy such as a narrow screwdriver. Just try to bend the contact towards you a little bit:
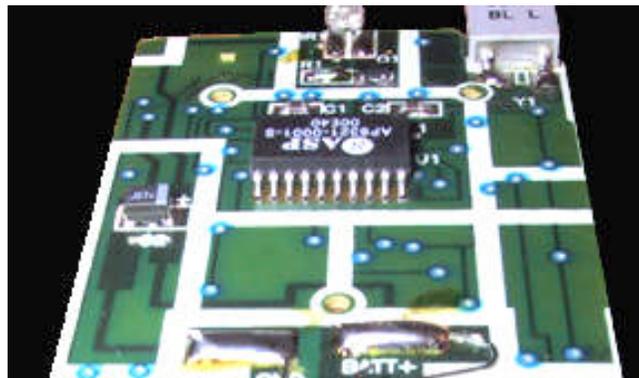
If that doesn't work, check to see if the remote is emitting any infrared light at all. There are several ways you can do this: Electronics stores sometimes sell infrared-detection paper which changes color when an infrared beam hits it. If you have an infrared repeater system such as the RS/X10/Terk Powermid, they have an indicator light that blinks with each IR command. Some video cameras and digital cameras will show infrared light, so if you've got one of those, you can use it to check and see if the LED on the front of the remote blinks when you look at it through the camera's LCD display.

Some users have reported that when they view their remote through a video/digital camera, they can see that the IR LED is steadily lit all the time, instead of blinking when a button is pressed. This can be solved by removing the battery for a minute and then replacing it, effectively "rebooting" the remote. The root cause of this particular problem is not known at this time, but it is possible that a loose battery contact and/or a low battery could be the reason. So definitely check the contacts and make sure the battery is fresh.

If the remote is emitting infrared commands, but the player is not responding to them, check to make sure you haven't done something in the software to disable infrared commands. For instance, if you have a Kenwood brand remote, make sure you haven't disabled the Kenwood remote in the Configure Player screen in Emplode. If you are using an infrared-translation feature of a custom kernel, make sure that it's not mis-programmed.

If all of the above fails, then you can contact support, because this might indicate a fault with the infrared sensor.

· **7.44 I have a Kenwood head unit, and its remote is controlling both players.**
(Entry last updated on January 11th, 2002)

By default, the Rio Car responds to Kenwood infrared remote controls. Early on in the product's history, it did not have its own remote and was sold with an aftermarket Kenwood remote.

Recent Rio Car models were shipped with a special non-Kenwood remote control. This uses its own unique code set, and it won't confuse your Kenwood head unit (if you've got one in your dash along with the Rio Car). If you don't have one of these Rio remotes, you can order them from the US and international stores.

But if you also have a remote control for your Kenwood stereo, you'll notice that the Rio Car responds to its commands. So when you change the volume on your Kenwood, the volume on the Rio Car will change, too. Ick!

The solution is quite easy. In recent versions of Emplode, in the "Configure Player" screen, there is an option to disable Kenwood remote controls. Check that box, make sure you are using one of the new Rio remotes, and all will be well.

· **7.45 Why doesn't Emplode work via USB on Windows XP?**
(Entry last updated on April 1st, 2003)

Prior to the release of Emplode 2.0 final, there were incompatibility problems between the USB driver and Windows XP. These problems have now been resolved and the USB driver has been updated. Upgrade to the latest version of Emplode and the player software.

Important: Carefully read the release notes for the Emplode software installation. It includes instructions on how to upgrade your USB driver for Windows XP.

· **7.46 Why doesn't emplode work via ethernet on Windows XP?**
(Entry last updated on January 14th, 2002)

You might possibly have XP's built-in "personal firewall" feature enabled, which is blocking communication with the player via ethernet.

The XP firewall is only one possible cause for ethernet failure. For general ethernet troubleshooting, see here.

Coutesy of Dario Baptiste on the Empeg BBS, here is how to enable Emplode to work through the XP personal firewall:

- Open Network Properties, right click on Local Area Connection, and select Properties.

- Click on the Advanced tab, hit the Settings button ("Internet Connection Firewall" should be checked).

- On the Services tab, click on the Add button.

- Enter a name for the service (I called mine "Empeg").

- Enter the IP address of the player, and enter ports 8300 & 8301.

- Click OK, and Emplode should now work fine.

· **7.47 Emplode freezes up on 'Checking Disk Integrity'.**
(Entry last updated on March 2nd, 2003)

Don't panic. Odds are, emplode is actually **not** frozen, it's just that the player is taking a long time to check the disk drives. The bigger the disks, the longer it will take. Be patient. Expect to wait about 30 seconds per gigabyte; a 60 gig player could take upwards of half

an hour to disk-check.

The disk check will happen automatically after 20 synchronizations, or every six months, whichever comes first. Some believe that the player is psychic, and can detect when you're just trying to add one quick song and dash out the door, and will always choose that moment to do the long disk check. If you don't want to have your disks checked regularly, this feature can be disabled by installing the Hijack kernel and setting the "Filesystem Check on Sync" option to "Disabled".

If you get a long "Checking Disk Integrity" twice in a row when synchronizing, or it happens even after disabling the periodic checking in Hijack, then you might have a problem with the disks or the filesystem. First rule out disk hardware trouble as a possible culprit, then check the disks by hand.

· **7.48 I got an error message about 'e2fsck' at the shell prompt. What do I do to fix it?**
(Entry last updated on May 16th, 2003)

There are two common errors you might see at the Linux shell prompt, usually when you are in the process of mounting the drives read-write to mess around with the files:

"*EXT2-fs warning: maximal mount count reached, running e2fsck is recommended*"

This means that on the next synch, your player will need to do its long "checking disk integrity" thing. It's nothing to worry about and you can safely ignore it. It will go away after the next synch.

"*EXT2-fs warning: mounting unchecked fs, running e2fsck is recommended*"

This means that at some point in the past, you neglected to re-mount your drives as read-only before rebooting the player. Bad hacker, go to your room.

To prevent this error in the future, always remember to do ro and rom after doing rw and rwm. More details here.

This error can also be caused by rebooting the player during the middle of a synch operation, either on purpose or accidentally because of a crashed synch. The drives are mounted read-write during certain phases of the synch operation, and this error will happen if the player is rebooted during that time.

Another thing which might cause this error is trying to mount/unmount a partition, or perform an Emplode syncronization, while a third-party program is running off of that partition. When a program is active, the partition it's running from is locked and can't be unmounted. For example, if you use the Hijack @EXEC command to launch a program that's been copied to somewhere on the /drive0 partition (which is the same partition that contains the music), then you will be unable to perform a synch and will likely induce this problem. To work around this, use the @DC modifier so that you only run your programs when the player is in the car dock. Click here for more information about hijack commands.

To correct this error, enter the following at the shell prompt:

ro
umount /dev/hda4
umount /dev/hdc4
swapon /swapfile
fsck -fay /
fsck -fay /dev/hda4
fsck -fay /dev/hdc4
swapoff /swapfile
sync

(and then reboot the player by pulling its power cord)

If you have only one hard disk, you may omit the lines that include /dev/hdc4. Answer yes to any questions it gives you.

Important: After performing the above procedure, make sure to fully reboot the player by pulling the power plug and re-inserting it. If you don't, data loss may occur if you do another "rw".

"fsck.ext2: Bad magic number in super-block while trying to open /dev/hda4"

This is probably caused by Emplode or Windows crashing during a synch operation. Then you pulled the player's power plug before the player had a chance to mount its drives read-only again.

Partition corruption is very rare in this situation, as there are fail-safes built into the player software to prevent it. For instance, if Windows crashes during a synch, you should let the player just sit there for a couple minutes until the "Synchronising" message disappears from the screen, so that you know it's set the drives back to read-only, before pulling the power.

But if this problem does happen, it can usually be corrected by doing the following:

ro
rom
fsck.ext2 -fay -b 32768 /dev/hda4

(and then reboot the player by pulling its power cord)

Important: After performing the above procedure, make sure to fully reboot the player by pulling the power plug and re-inserting it. If you don't, data loss may occur if you do another "rw".

· **7.49 My docking sled's top edge is not 'bent'.**
(Entry last updated on February 18th, 2002)

The front edge of the car docking sled should have a "fold" on all four edges. The lip should be turned outward in all four directions.

A certain number of Rio Car players were shipped with docking sleds where one of the folds was 'missed' during manufacturing (pictured, photo courtesy of Ben Withers). The top edge of the sled, instead of having a turned lip, has a straight edge.

Whether or not this is a problem is going to depend on your installation and how all the parts fit together. I installed a player in my friend Tod's car, and his sled had this defect. It does not seem to have affected it adversely, the player still seems to fit snugly and it seems to make a proper set of connections.

If your sled has this defect, and you **do** notice problems (such as intermittent connections which work when you press on the player), you can solve it one of two ways:

- If you have access to the proper equipment, you can bend it yourself. And I don't mean just taking a pair of pliers to it, that would probably make it look ugly. I mean proper sheet-metal folding equipment, like the kind you might find in a machine shop. Heck, maybe you could bring it to your local machine shop and they'll just do it for you really quick.

- You can contact support and they can fix you up.

However, if it's not giving you any trouble, there is probably no need to worry about it so you should just leave it as-is.

· **7.50 Why doesn't my power antenna go up and down at the right time?**
(Entry last updated on July 2nd, 2002)

When using the Rio Car tuner module, there are a few different possible issues with raising and lowering the power antenna.

If the antenna is properly wired, it should raise when you switch to the radio, and lower when you switch back to playing MP3s. If you have activated the RDS Traffic Announce (TA) feature, it will raise whenever the player is turned on, so that TA broadcasts can interrupt MP3 playback.

Possible problems are:

1. Software Bugs:

Certain versions of the player firmware wouldn't always properly activate/deactivate the power antenna control wire on the tuner module's extension cable. Make sure you're running the latest player firmware.

2. Correct Wiring:

There is a blue wire coming directly from the docking sled itself. This is the Amp Remote wire, and it's meant to activate the amplifiers in your car. It will turn on whenever the player is on. If you have connected your power antenna to the Amp Remote wire, it will work, but your antenna will be raised even when you're just listening to MP3s. So you can't, for example, listen to MP3s while you're driving through an automatic car wash.

The extension cable for the tuner module has a separate blue wire to activate the power antenna. This is the one that will only be activated when you're listening to the radio, and this is the one that should be connected to your power antenna. Note that it will also be activated whenever Traffic Announce is turned on.

3. Current Draw Problem:

Some users have experienced a problem where their antenna does not raise and lower correctly as described above. For instance, it raises when they switch to the radio, but it does not lower when they switch back to MP3 mode. Or perhaps it raises when the player is switched on for the first time, even if it's wired properly and Traffic Announce is not activated.

Hugo discovered that some power antenna relays have a current draw problem and the voltage on the power antenna wire doesn't fall enough to make the antenna go down. If this is happening to you, try attaching a 1k resistor between the power antenna wire and ground and see if it solves the problem:
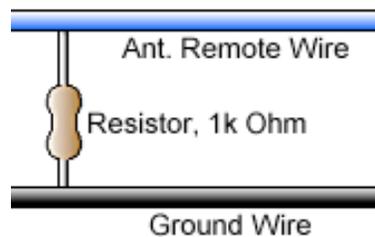
· **7.51 The upper-left corner of my screen is cut off.**
(Entry last updated on February 10th, 2002)

Depending on the mounting angle of the player, as well as your height and seating position, the parallax angle might cause the fascia to obscure the upper left corner of the VFD (Vacuum Fluorescent Display).

For most cars, this isn't a problem because the DIN slot is mounted pretty high and it's angled to face upwards towards the driver. But it can be a problem on some cars. Also, there is some manufacturing variation in the position of the VFD against the display board.

If this is bothering you, you might be able to "scooch" the VFD downwards.

Note: The VFD is made of thin glass and it is fragile. Especially the fill nipple at the lower-right corner of the VFD. So if you try this, remember that you do so at your own risk. If you break the VFD, you will need to pay for its replacement, and it's not a cheap part.

To move the VFD panel downwards, first remove the fascia, buttons, knob, and lens. You will need a 2.5mm hex tool to do this. Then press downwards on the top of the VFD. You will need to apply a constant, firm pressure with your thumbs on both sides of the top of the VFD. As you do this, you are bending the pins along the bottom which connect the VFD to the display board. You will probably also be stressing the double-sided foam that connects the back of the VFD to the display board, but you should be able to move the VFD anyway.

Check to make sure the VFD is still lined up straight and that none of its extremities come in contact with the casing or components. Then re-assemble the fascia. Do not overtighten the 2.5mm hex nuts, they should only be finger-tight. If you tighten them too much, you will make your buttons stick and possibly even crack your fascia or lens.

· **7.52 My config.ini file went all goofy on me, and I can't edit my favorite visuals any more!**
(Entry last updated on April 1st, 2003)

If, after having used software 2.0 beta 11, you are having trouble editing the config.ini file, if you are having trouble editing favorite visuals, or if additional entries seem to be getting added to your favorites list, you might be running into a known bug. If you synched more than once during the same session of Emplode 2.0 beta 11, the Favorite Visuals section of the config.ini would double in size. A few extra hits of the synch button could quickly make your config.ini too large for the player to handle.

To solve the problem, do the following: Upgrade both your player firmware and Emplode to the most recent software versions for each. Then delete all of the favorites via the Emplode "Favorite Visuals" menu, then synch. After that, you should be able to use the "Favorite Visuals" feature without having any more problems.

If your config.ini file seems to have become corrupted (for instance, it contains garbage characters), then you will need to delete it and start over again. Do this as follows:

1. Copy any vital information from the corrupted version of config.ini into a text document on your local hard disk. (Information on opening the confing.ini file is here.)

2. Connect to the player's shell prompt. (Information here.)

3. Use the following shell commands to delete the file from the player:

> **q**
> **rwm** *(rwm may take a couple minutes to respond)*
> **cd /empeg/var**
> **rm config.ini**

> **rom**
> **exit**

4. Reboot the player.

5. Use the "Configure Player" screen in Emplode to enter the basic information about your player, and then synch once.

6. Now you should be able to edit config.ini again through Emplode. Copy the desired information from the text document you created in step 1. *Note:* Copy only the information that can't be re-entered from other Emplode configuration screens. For instance, do not copy the Favorite Visuals lists back in by hand. Instead, use the appropriate configuration options in Emplode to do that work.

If you can reliably reproduce a situation which causes config.ini garbage or corruption, please let us know the exact steps it takes to cause the problem. We'd really like to know.

One final note: If you prefer to edit the config.ini by copying it to your PC, editing it, and copying it back to the player, remember that Linux text files are different than Windows text files. So don't use Windows Notepad to edit the file or you will corrupt it. Windows files contain a carriage return and a linefeed at the end of each line (hex 0D 0A), and Linux files contain only a linefeed (hex 0A). Opening the config.ini in most Windows text editors will add the CR/LF pairs when you open the file, which will ruin it.

The only way to use Windows to edit a Linux text file is with a more advanced utility such as UltraEdit. After making your text edits, place the editor into Hex mode and use search-and-replace to globally replace 0D 0A with just 0A, then save the file without switching back to text mode. Another option is to perform your edits with a Unix-aware editor program such as EditPad Classic.

· **7.53 My buttons and/or knob are sticking.**
(Entry last updated on February 12th, 2002)

The plastic fascia is probably pressing against one of the buttons or against the knob.

First, check to make sure that the docking sled installation doesn't cause stress on the player's fascia or handle. For instance, make sure your car's dash trim isn't pressing against the fascia in some way. It needs to float free. Make sure the docking sled itself is not bent or crooked.

If you're still having problems, use a 2.5mm hex tool to loosen the bolts that hold the fascia onto the player. Adjust the position of the fascia so that the knob, buttons, and handle operate freely, then re-tighten the bolts.

Important: Do not over-tighten the bolts. They should be just finger-tight. If you tighten them too much, you will crack the lens or the fascia.

· **7.54 What does the battery icon mean?**

(Entry last updated on October 19th, 2002)

The battery icon means *low voltage*, go figure. ;-)

Sometimes the player will display a battery icon in the upper left corner of the screen. At the same time, the VFD display might also go blank for a moment and your amplifier might mute as well. This indicates that the power voltage has dropped below the player's warning threshold, which I think is about 10 or 11 volts.

This can mean one of many things:

- If you are just starting your engine, the voltage in the car may have dropped briefly because the starter motor is consuming all of the juice. This particular case does not necessarily indicate a problem, and may be normal behavior for your vehicle.

- There may be too much current draw from other components in the car, such as amplifiers, subwoofers, custom lights, etc. If you have installed a lot of other high-power stereo or street-rod components, you might want to consider the possibility that your car's charging system is not up to the task and it will have to be improved in order to run them.

- Your alternator may not be charging well, and should be inspected and/or repaired.

- Your battery may be dying or be low on fluid.

- There may be a wiring problem with the stereo installation, such as a loose, shorted, or miswired connection.

- The wire that is powering your player may be too thin to supply the necessary current to power the player. You may have to re-do the wiring better, for instance, wiring the player's constant power wire directly to the battery (always through a proper fuse block, of course).

- You may have the Negative Spike Bug, click here.

- If it's indoors running off of an AC adapter, it indicates that the AC adapter is inadequate for the job, or it is faulty.

· **7.55 I just tried to edit one of the visuals, and now my player locks up!**
(Entry last updated on April 7th, 2002)

If your player locks up (or keeps rebooting in an infinite loop) after trying to edit one of

the visuals, odds are that you did one of the following things:

- You gave it the wrong file name. The Linux operating system is case-sensitive, and the visual file names must be in all lower case. For example, if you wanted to edit the Image Pan visual and you named the file "escher.**RAW**" instead of "escher.**raw**", the player will lock up.

- You did not set the file permissions properly after sending the file to the player. Instructions for setting the proper file permissions are here.

- You did not create the file correctly. For instance, the Image Pan visual must be RLE-compressed, while the Anna Vu backdrop must not be RLE-compressed. Or perhaps you tried to rename a BMP or GIF file to ".raw", praying that some magic gnome inside the player would allow the file to be read (you have to use the proper editing software to create the files). Or maybe you tried to edit a file that shouldn't be edited. A list of what is editable, and how, can be found here.

To fix it, re-install the player software from scratch by doing the following:

- Unplug the power from the player.

- Obtain and double-click on the appropriate ".upgrade" file (instructions about upgrades are here).

- When prompted by the upgrade software, plug the power into the player.

This should restore the player software to its original condition without erasing the music or playlists.

· **7.56 There are glowing red lines on my display!**
(Entry last updated on May 13th, 2002)

It's normal. The glowing red lines on the VFD are the cathode filament wires.

Usually, you will only notice them in low-light conditions when the faceplate is off or when you have a red or amber lens.

Details of how VFDs work can be found here.

The pixels of the display tend to be a slightly different brightness depending on whether they are directly under a cathode filament wire or not. So the display will tend to have a "banded" effect, with alternating light and dim bands, as shown here:

This is also normal for all VFD displays. It is usually only noticeable when displaying images with large areas of flat color.

If your display has become genuinely garbled (not just alternating bright/dim sections), then check here.

· **7.57 My display has become garbled or dim.**
(Entry last updated on February 24th, 2003)

If your player's VFD display is badly garbled, as pictured here...

...chances are that one of the fuses on the player's main board has blown.

This is usually caused by unplugging the connector to the display board, then plugging it back in again so that it's "off by one pin". If you plan on unplugging the display board for any reason, make absolutely super-duper sure that you plug it back in correctly. The fact that the IDE drive cable rests nearby (and actually interferes a bit with the display connector) makes it easy to accidentally do this even when you think you're doing it right.

However, there have been some reports of users who've had this fuse blow without provocation. For instance, simply when starting their car. We are not sure what's causing these to happen yet, perhaps it's a large voltage spike (or perhaps a negative voltage spike?) on the ignition wire, or something else about that particular car's electrical system that caused it. We just don't know yet.

In this case, replacing the fuse will make the display work again, but remember that you're just curing the symptom. There is a possibility that the fuse will simply blow again.

If you want to replace the fuse yourself, Michael Munsell has set up an excellent illustrated guide to replacing the fuse here. Otherwise, contact support to arrange to have the fuse replaced.

Note that in some cases, a blown fuse might make the display blank, or merely dim, rather than making it garbled. It depends on the player, and on which fuse has blown. Make sure to test continuity on all the fuses.

· **7.58 My display is blank!**
(Entry last updated on July 21st, 2003)

If your display is completely blank, but the player can still play music and switch tracks, you might have a broken fill nipple, a blown fuse, or a frayed display board cable.

The fill nipple is the pointy glass bit on the lower right side of the display, right next to the rotary encoder. It can only be seen clearly when the faceplate assembly is removed. This is what a good display board looks like:
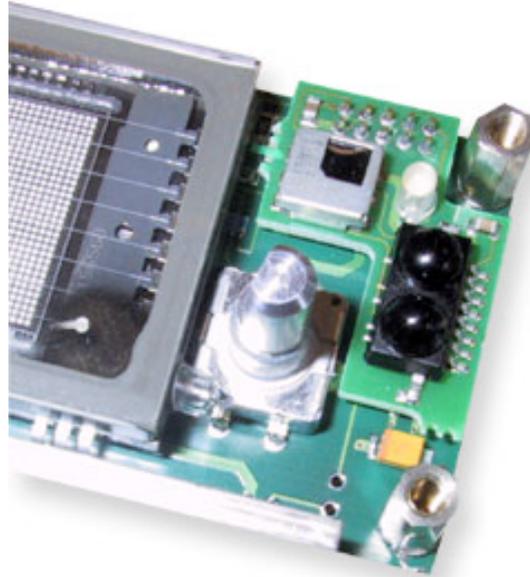
And this is what it looks like when the nipple is broken:

Note that the discolored area on the display that looks like a "burn mark" is actually normal and does not indicate a problem. The problem is the missing glass bulb at the lower right corner of the display.

Usually, only a violent shock to the player (such as dropping it) will cause this piece to break, either that or carelessness when working with an opened player. It's not the sort of thing that would just break on its own.

If this is what's happened to your player, the entire VFD must be replaced. Contact support to arrange for a repair.

If you want to replace the VFD glass yourself (assuming that you know what you're doing and can do delicate SMT soldering), you'll need to get around the fact that it's hard to source these Noritake VFD displays unless you're buying in bulk. Ask around the Unofficial Empeg BBS and see if anyone's got an extra for sale or can give you tips on sourcing the VFD.

If your fill nipple is still intact, but your display is blank despite being able to play music, you might have a blown fuse on the player's main board:
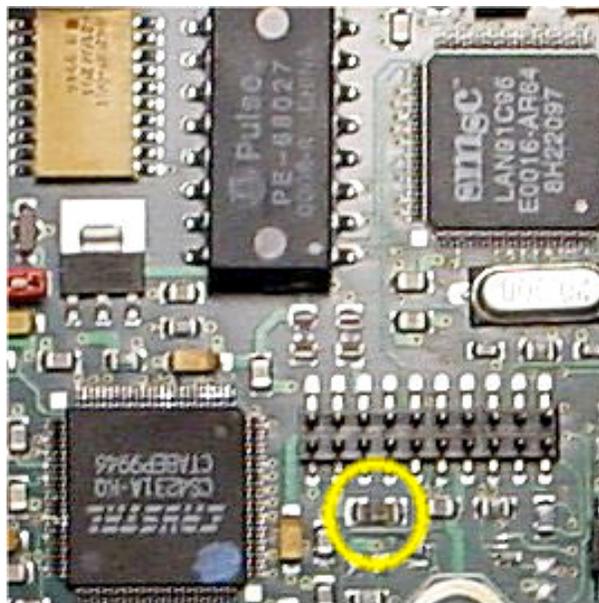
Contact support to help you diagnose the trouble. If you decide to troubleshoot and repair this yourself, use Michael Munsell's fuse-replacement page as your reference. Note that there is more than one fuse in that region of the motherboard that could be blown, be sure to check continuity on all of them. A blown fuse could also make the display appear dim, or garbled, rather than blank.

Also check to make sure the cable that runs between the motherboard and the display board is not frayed, as shown here:
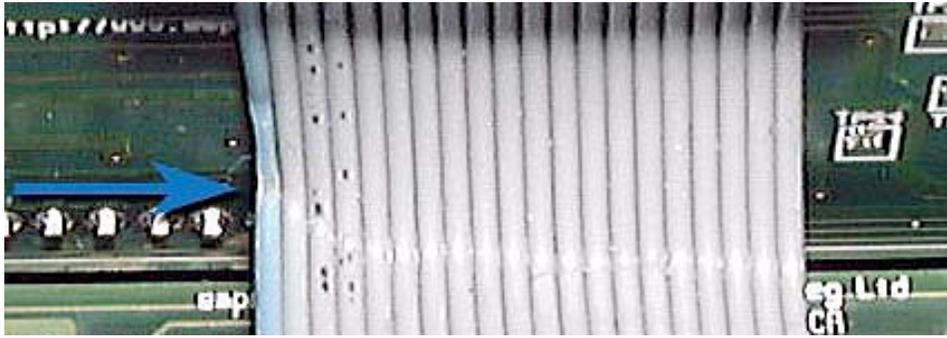
[Contact support](#) for a repair, or if you are the D-I-Y type, solder and insulate the break:
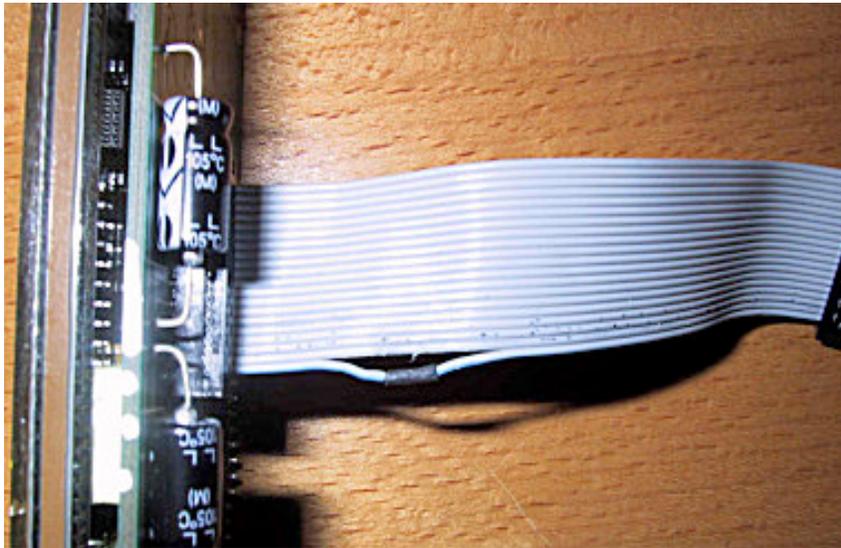
· **7.59 Why does my Mk2 player have poor stereo separation?**
(Entry last updated on May 1st, 2003)

If you own an early Mk2 player, there is a chance that it might have been fitted with an incorrect resistor in one spot on the main board. This problem did not happen on the Mk1 players and it was corrected before the Rio-branded Mk2a players came out, so those models will not have this problem.

The resistor is supposed to be a zero-ohm resistor (essentially just a bridge on the circuit board), but some players mistakenly got a resistor of a different value in that location, such as a 10-ohm resistor.

If your player is affected, you may notice a slight decrease (~20db) in the stereo separation between the left and right channels. But remember that stereo separation is greatly influenced by the quality of your speakers and amps, the speaker placement, and the acoustic properties of the listening environment. Most car systems have notoriously poor stereo separation to begin with. So don't immediately assume the player is at fault just because you don't like the stereo imaging of your system.

You can't test for this problem by using the balance control, since it doesn't fully attenuate

each channel. And don't try to test it by listening to MP3 files, since they are usually encoded using a method that can reduce stereo separation in some instances. Although it would be possible to test using a WAV file, you would then be dependent on the stereo separation of your playback and/or testing equipment, which might or might not be perfect. The only way to be absolutely sure is to open the player and look.

To check to see whether your player is affected, first make sure it is a Mk2 player, not a Mk2a.

Then, following the instructions in the Drive Upgrade Guide, carefully remove the disk drive tray assembly.

Looking down at the main board from the front, on the left side you will see the DSP chip with the Philips logo on it. To the left of that is a small blue resistor pack. To the left of the blue resistor pack is the resistor in question. It is marked with a red arrow in this photograph:
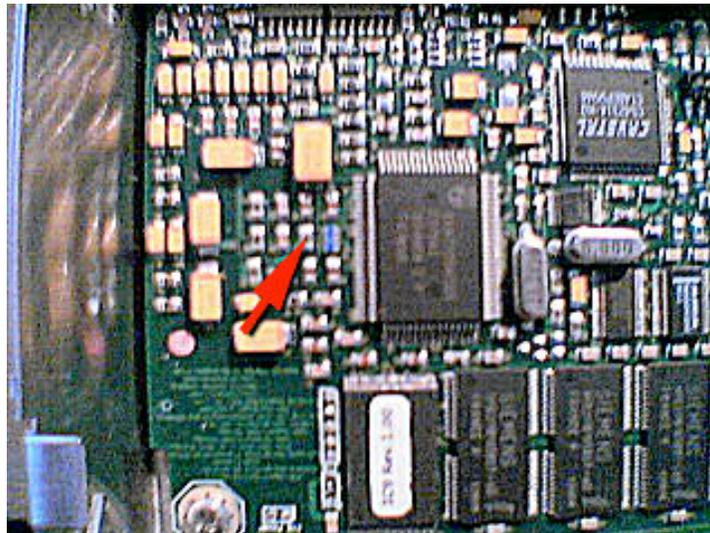
Look closely at this resistor. These SMT electronics are very small, so you might need to use magnification to see it clearly. If this resistor has **000** printed on it, your player is fine and you do not need to do anything. If this resistor has **1000** or **100** printed on it, then your player has the problem.

If you are good at soldering SMT components, you may attempt to repair this yourself. However, be warned that if you don't have experience doing this sort of thing (these components are very tiny), you could ruin your player completely if you make a mistake.

To repair the problem, simply remove the resistor and replace it with either a solder bridge or a 000 resistor. If you're solder-bridging it, be careful because there's a circuit trace that runs underneath it. If desired, you can solder-bridge over the top of the existing resistor.

Remember that this is not a major problem, and the slight reduction in stereo separation is not always noticeable, especially in the car environment. You might choose to just leave the player as-is rather than going to the trouble of repairing it.

· 7.60 Why doesn't my player play very high frequencies?
(Entry last updated on May 6th, 2003)

It might not have anything to do with your player. Maybe it's your MP3s.

Most MP3 encoders will roll off very high frequencies with a lowpass filter as part of the encoding process. This feature allows them to devote more "encoding bits" to the frequencies that can be heard and reproduced clearly. Most people can't hear frequencies that high, or don't own playback equipment that will reproduce those frequencies.

Some encoders have option settings that will let you encode the high frequencies. Please see the MP3 creation section of the FAQ for more information.

If you're noticing a difference in frequency response between a CD player and the car player, keep in mind that the CD player is going through different DAC and playback circuitry. Most consumer CD players have their output curve "tweaked" a little bit to make them sound better out-of-the-box. The car player doesn't have a tweaked EQ curve, it's ruler-flat by default. So to make the car player sound like a CD player, you will need to alter its default EQ.

Also, make sure that you've got playback equipment that is up to the task of playing very high frequencies. Most consumer speakers start rolling off around 16-18k. Just because a manufacturer lists a frequency response up to 22k, it doesn't mean it's *flat* response to 22k. Usually there is a significant amount of rolloff at the ends of the spectrum.

Now, with all of that said, some early models of Mk2 (not 2a) players were fitted with EMC capacitors that tended to reduce the extreme high frequencies of the front car outputs and the home outputs (but not the rear car outputs). These capacitors were meant to reduce noise, but it was later discovered that they were not needed, and they were removed from subsequent board revisions.

There is also a report that some owners have experienced a reduction in car installation noise after removing these capacitors. This is a bit strange, since the original purpose of the capacitors was for noise filtering. But if you've got installation noise that you can't seem to get rid of, it might be worth the effort to remove these and see if it helps. It just so happens that the reports came from BMW owners, but that may or may not mean anything significant.

To check to see whether your player is affected, first make sure it is a Mk2 player, not a Mk2a.

Then, following the instructions in the Drive Upgrade Guide, carefully remove the disk drive tray assembly.

Viewing from the front of the player, unplug the left-hand wiring loom in the rear of the player which hides the home output plugs. With this wiring loom unplugged, you should be able to see the capacitors as illustrated here:
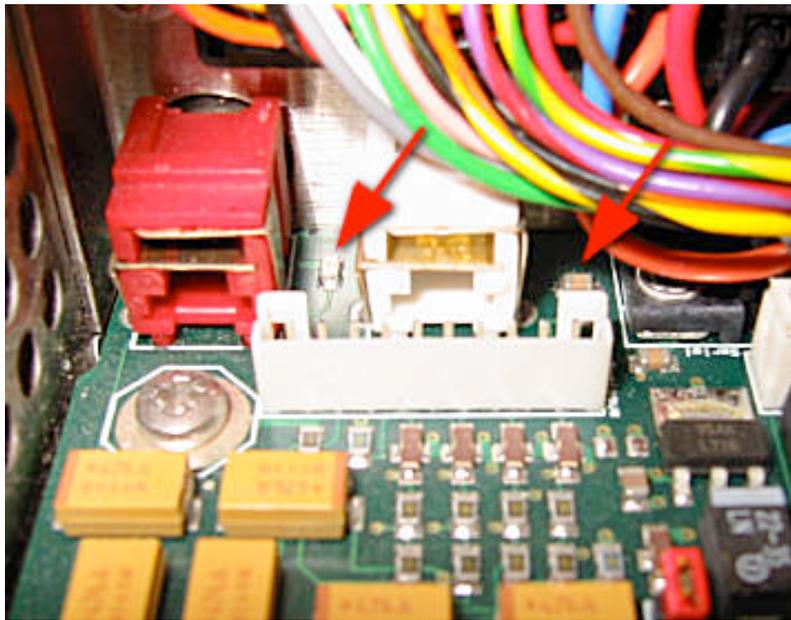
(Note that on later model Mk2 units, the capacitors will be missing from these locations, there will just be empty pads there. If that's the case, you don't need to do anything because your player is not affected.)

If desired, you may remove the main motherboard, carefully following these instructions, and de-solder these capacitors. Do not bridge them, remove them completely so that there is no longer a connection at those locations. Use caution not to interfere with the resistor that's near one of the capacitors (not shown, it's behind the wiring connector).

Note: Don't do this procedure "just because". Before you do this, please make sure that you're definitely experiencing a problem with noise or with the player's high frequency output, and not just running into the limitations of your MP3s, your hearing range, or your amps and speakers. If you're not extremely careful, you could cause damage to the player during this procedure, and it's not worth the risk unless you're pretty sure you're going to be able to hear a difference when you're done with it.

· **7.61 Why doesn't the car player put out as much bass as my CD player?**
(Entry last updated on September 27th, 2002)

The car player should have great bass output if it's properly connected, amplified, and EQ'd. And of course, assuming you've fed it well made MP3s in the first place.

If you're trying to do an A/B comparison between the car player and a consumer CD player, you're probably just noticing a difference between the two. This is normal.

Keep in mind that a CD player has different DAC and playback circuitry than the car player. Most consumer CD players have their bass boosted a little bit to make them sound better out-of-the-box. The car player doesn't have a tweaked EQ curve, it's ruler-flat by default. So to make the car player sound like a CD player, you will need to alter its default EQ.

· **7.62 How do I stop it from trying to play a bad track?**
(Entry last updated on April 17th, 2002)

Let's say you've accidentally sent a bad or corrupted song file to the player. In theory, a bad file shouldn't cause the player to crash, but in practice, sometimes it does.

The usual symptom is like this: The player tries to play the bad track, then it crashes or locks up. Either the player reboots itself, or you reboot the player by hand in an attempt to make it work again. After it reboots, it tries to play the bad track again and the cycle repeats. You can't use Emplode to remove the bad track because the player now won't respond to Emplode.

The solution is to use the shell prompt to launch the player app with an empty playlist:

- Make sure you've installed the **developer version** of the player software (instructions here). Because the player is locked up, you will have to remove the power from the player and only apply power when the upgrade software instructs you to do so.

- Use Hypterterminal to connect to the player's shell prompt (instructions here).

- Reboot the player, then press Ctrl+C in Hyperterminal just before the player software launches (right when it says something about pressing "Q"). This should terminate the player software and drop you to the Bash prompt.

- Start the player with an empty playlist:

  ./player -i

- All should be back to normal now. Connect with Emplode and remove the offending track.

· **7.63 My player takes a long time to boot!**
(Entry last updated on July 22nd, 2003)

If your player is taking an unusually long time to boot up, and the startup screen is paused on a message similar to "Building music databases", then it's got something wrong with its databases. The player should only take about 8-10 seconds to boot up.

This should only happen if something has gone wrong during the synch process. For instance, if Windows crashed during the synch or if you were running beta software which contained a bug. Also, make sure to rule out disk drive problems as described here, since disk trouble can also cause database trouble.

Usually, you need only to synch once with Emplode to cure the problem.

If synching once with Emplode doesn't solve the problem, you can force it to rebuild the database as follows:

- Make sure you've installed the **developer version** of the player software (instructions [here](#)).

- Make sure you're not running any third party programs that lock the /drive0 or /drive1 filesystems as described [here](#).

- Make absolutely sure you're not having [hardware disk or cable trouble](#). If you are, you need to solve that before messing with the filesystem.

- Use Hypterterminal to connect to the player's shell prompt (instructions [here](#)).

- Reboot the player, and after the player software starts, press **q** (enter) to get to a shell prompt.

- You should be at a shell prompt now. Enter:

  rwm *(There will be a long pause)*
  rm /drive0/var/database
  rm /drive0/var/database3
  rm /drive0/var/tags
  rm /drive0/var/playlists
  rm /drive1/var/database
  rm /drive1/var/database3
  rm /drive1/var/tags
  rm /drive1/var/playlists
  (Note that some of those RM commands will not work, that's OK)
  exit
  (The player application will run and rebuild the databases; watch the screen and wait until it is done, then q out of it again...)
  q
  (This should exit the player application back to the shell prompt.)
  rom
  exit

- Cycle the power on the player. Make sure it boots correctly, without the long pause.

Note that during this procedure, you also might get an error message about "e2fsck". If that happens, [click here](#) and perform the procedure to manually FSCK the disks. You might need to repeat the above procedure after a manual FSCK.

· 7.64 Why does it say 'No hard disk found contact support'?

(Entry last updated on October 26th, 2003)

Don't panic.

It could be a bad hard disk, but it could be something as simple as a loose/faulty IDE cable, a dry solder joint on the IDE connector, or a loose master/slave jumper. Most instances of this problem have been traced down to a problem with the cable or the IDE connector.

In versions of the player software prior to 2.0, the player would simply freeze at boot-up if something went wrong with the hard disk. They added the 'No hard disk' screen in version 2.0 of the software.

If you contact support, they can talk you through diagnosing the problem, or you can open the player and check the cabling yourself. Make sure to carefully follow the dismantling instructions in the disk upgrade guide when opening the player, because the cable is glued from beneath and you can damage it if you don't do it correctly.

There's a possibility that your unit came with a faulty cable in the first place. If this turns out to be the case, contact support and they can help you get a proper replacement cable. Rob's classic comment:

> We did get a batch of dodgy hard drive cables (it's a shame we already stopped using the supplier, otherwise we would stop using them!).

Note that a faulty cable will *look* perfectly fine on a cursory inspection, the problem is that the connectors weren't crimped onto the cable properly. If you look closely, some cables have a visible gap where you can see the contacts, as shown here:

Some users have reported success in removing the cable and re-crimping the connectors by hand, but only try this if you really know what you're doing; you might damage the cable or the connectors if you're clumsy with it. Essentially, you need to apply parallel, firm pressure on both sides of each connector, but do so without crushing them. Rob Schofield suggests using a parallel-face welding clamp with rubber faces. It has been reported that a bench vise works well, too, if you're very careful with it. The important thing is not to crush or damage the connectors while squeezing them. Here is a photo of Rob himself re-crimping a cable:

Immediately after this first squeeze, the cable looked like this:

Once the whole cable looks properly crimped, you should be good to go.

Unfortunately, the cable in the Mark 2/2a units is a custom part, with the two connectors custom-crimped at specific distances from the board connector. So it's not something you can find pre-made at a local computer store. You can't use just any cable; if the length isn't correct, the shock-mount tray might not be free to move properly. The only way to get a proper replacement is to either crimp one yourself, or order one from support.

If crimping doesn't work for you, you can try a stopgap measure while you wait for a replacement cable from support: If your player is a single-disk-drive Mk2/a player, you can change the cable so that the end connector is the one attached to the drive instead of the middle connector. The middle connector is usually the dodgy one (watch that glue if you're changing the cable-- see the disk upgrade guide for details on how to properly take apart the player). You need to move the drive itself to the "secondary" position on the drive cradle so that you don't have to twist the cable in odd ways to make it work with the other connector.

If messing with the cabling doesn't solve your problem, then your next step should be getting a serial log of the bootup messages in Hyperterminal (instructions here). If it's having trouble with the disks, the "probing primary interface" stage will fail to recognize any disks (or fail to recognize both disks in a two-drive player), or it will display an error message.

Other symptoms of hard disk trouble are "Failed to unmask IDE" messages, pops/clicks/stutters during MP3 playback, problems with the database, inability to synchronize with the player, and (in a two-drive unit) the player playing only some of the songs in a given playlist.

The known possible causes for disk trouble are:

- A bad disk drive.

- Problems with the IDE cable as described above.

- IDE Cable plugged in backwards or "off by one pin".

- Dry solder joints where the IDE connector joins to the motherboard. The pads that attach the connector to the motherboard haven't bonded to the solder properly, and will actually come loose from the motherboard if flexed. Wiggling the connector

while carefully examining the connection points should reveal if your player has this problem:
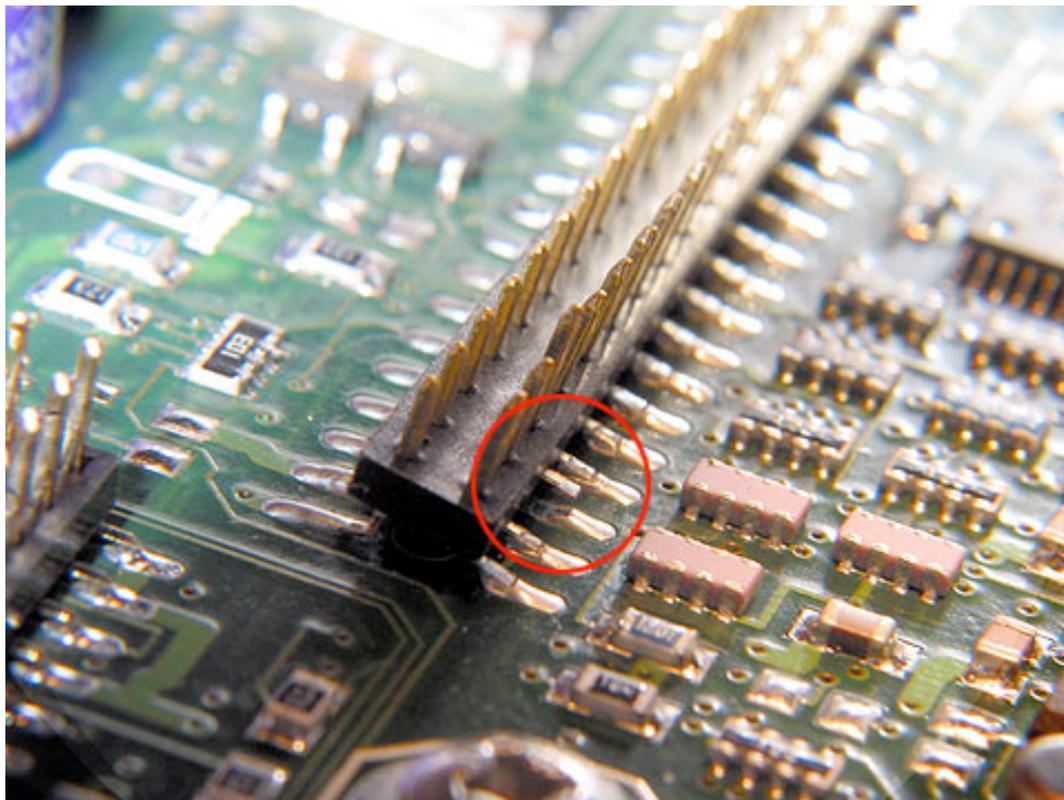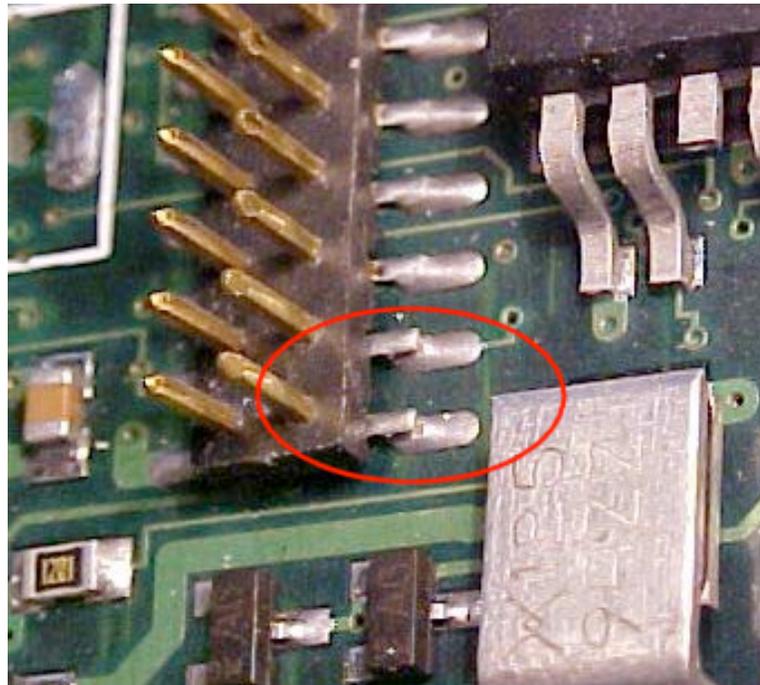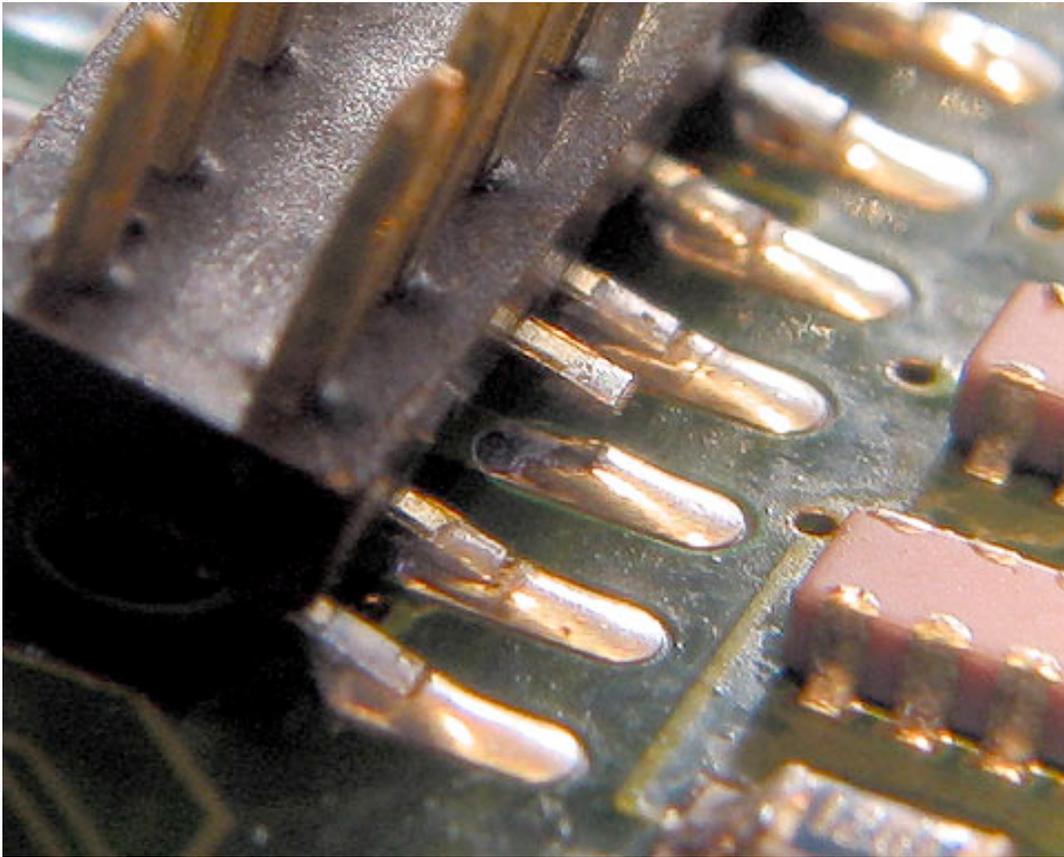
If your player does have this problem, contact support, or repair it yourself if you're really good with SMT soldering. Don't attempt the repair yourself unless you really know what you're doing, though. Tips on the repair can be found here.

- Possibly a problem with the CS4132A chip in the player. This is rare, but clearly visible in the serial boot log if it's the case. You will see it either initialize the CS4132A (good) or report that it's not found (bad). If the chip is bad, the only way to fix it is a chip or board replacement from support.

- Using the player in extreme temperatures (outside of the acceptable temperature range for the hard disks as described here).

- Problems with the jumpers, the drive order, or the spinup time of a two-disk configuration as described in the Disk Upgrade Guide. Something as simple as a loose jumper could cause this.

- Not enough juice to spin up the disk drives, for instance, if the AC adapter is faulty or if there is something wrong with the power supply wiring in the car.

- Bugs in the software, for instance, a kernel that doesn't wait long enough for the

drives to spin up before it gives up the ghost. This is highly unlikely unless you modified and compiled the kernel yourself (the factory kernel and the Hijack kernel have been very stable in this regard).

- A worn or frayed IDE cable, caused by the cable rubbing against something inside the case.

- A cable that got damaged during custom hard drive installation, because you didn't see that it was glued from underneath, and you tore off the connector trying to pull the cable loose from the drive.

If you have ruled out all of the above, or if you need help diagnosing the problem, contact support.

· **7.65 Some wires have pulled out of my docking connector!**
(Entry last updated on July 21st, 2003)

A certain batch of Mk2 players had a problem with the crimps on the docking connector. On these units, the wires have a tendency to pull out of the crimps on the back of the docking connector, even with a gentle tug.

Symptoms of this problem will vary depending on which wires have worked loose. They would be similar to the player having a wiring problem or a bad installation: Ground loops, cutting out when the car hits a bump, pops and static when the player is jarred, etc.

If your player has this problem, you can either contact support to purchase a replacement docking connector assembly, or you can repair it yourself.

To repair it yourself, remove the docking connector from the sled (read this, by the way), and use a small wire or a paper clip to disengage the affected connection pins from the docking connector. Then solder the wires to the pins carefully before re-assembling. If more than one wire has come loose, make sure that you know the proper pinouts, detailed here.

There is a movie of this repair procedure here (5.73mb mpeg).

· **7.66 My handle doesn't snap back into place as well as it used to.**
(Entry last updated on May 17th, 2003)

Sometimes the handle doesn't snap back into place with as much "spring" as it did when the player was brand new. Sometimes this causes the handle to rattle loudly while you're driving.

First, check to make sure it's not just a question of adjusting the display board position. Also, one or both of the springs might have come loose, or the screws that hold the handle to the body of the player might be loose. Check those.

Most commonly, though, the handle springs just loosen up a bit with age. You can fix this by replacing them with shorter springs (assuming you can find some). Or, you can modify the way the existing springs attach to the hinge pieces and the case, as shown:
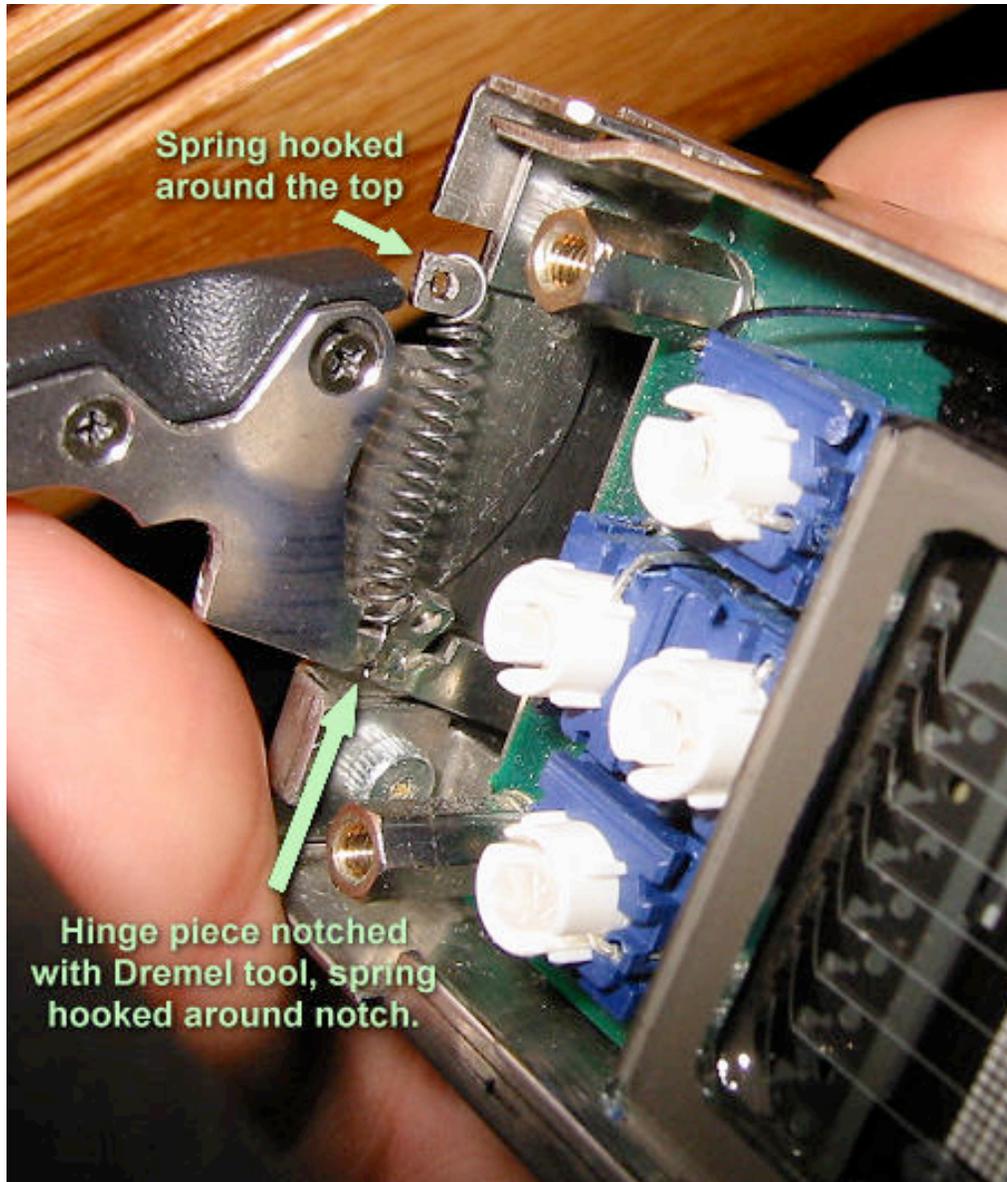
Hmm, looks like my handle screw is loose. Gotta put some threadlock on that and tighten it up. Anyway, if you decide to go this route, you must remove the handle and the springs from the player completely, and re-assembly is a complete pain in the neck. Getting the tiny springs into place exactly right is an exercise in frustration. You might need to remove the display board to get the job done, but then you run the risk of blowing a fuse if you hook it back up "off by one pin", so be extra careful about that.

· **7.67 My handle sticks in the 'open' position. Can I fix it?**

(Entry last updated on May 17th, 2003)

Yes.

Assuming the handle springs are intact and <u>tight</u>...

You can scootch the face and display assembly upwards, away from the handle mounts. This increases the space between the handle and the fascia, allowing it to move freely without rubbing.

There is a movie file of both the problem and the repair procedure <u>here (8.21mb mpeg)</u>.

· **7.68 There is a gap between the handle and the fascia. Can I fix it?**
(Entry last updated on May 20th, 2002)

Yes. Do the opposite of <u>this</u>.

Can't I have the best of both worlds?

Well, I used a dremel tool on the area of the plastic fascia where the handle tended to rub against it (on the inner corners, the area above the handle that's not visible when the handle is closed). This allowed me to put the fascia closer to the handle without having it rub. But I wouldn't recommend it since the fascia is a nearly-irreplaceable part. The plastic mold is gone, so no more of those fascia pieces will be made. So if you screw it up with the dremel tool, you're pretty much sunk.

· **7.69 What is the proper way to remove the display board and the main board?**
(Entry last updated on May 28th, 2002)

The display board and the main board should generally be left alone and not removed. They are fragile and you might not be able to get replacements for them easily.

There are some rare situations when you might want to remove the display board. For example, if you want to do <u>Brian Mihulka's Backlit Button Hack</u>. And the main board might need to be removed if you are performing a repair on the board such as replacing the home/AC power connector yourself, or repairing broken circuit traces caused by stress on the home RCA plugs.

If you do this, there is one absolutely critical thing to remember: ***Make absolutely sure that the ribbon cable to the display gets plugged back in exactly right.*** It is very easy to get it "off by one pin", causing it to blow fuses on the main board, causing <u>this problem</u>. Same with the IDE cable, the unit will appear to just "not boot" if the IDE cable is off by one. Since the two connector/cable assemblies interfere with each other a bit, you might think that one or the other is plugged in wrong even when they are plugged in right. Look closely at the ***pins and the connectors*** and make super-sure that all of the pins are properly going into all of the holes on the connector.

Also, while you are working on this, make sure not to damage the capacitors on the back of the display board, they can be broken off accidentally. Also <u>watch the fill nipple</u> on the

VFD display.

Movie files of the procedures for removing these components:

Removing Display (2.72mb mpeg). Not shown: Removing the disk drive tray and removing the screws on the sides of the casing to free the display board.

Removing Mainboard (6.21mb mpeg).

Replacing Display (5.69mb mpeg).

By the way, when working with the display, if you mess with the hex standoff bolts that hold the fascia to the display board, make sure not to over-torque them. Otherwise, this might happen:

· **7.70 Why can't I use USB after installing or upgrading Emplode?**
(Entry last updated on April 10th, 2003)

Please read the release notes for Emplode, available from the same site where you downloaded it. The release notes contain instructions on how to install the new USB driver.

Also remember that USB works only on Windows 98 and above. Windows 95 and Windows NT 4.0 do not have USB support.

Finally, check here for another reason USB might have quit working.

· **7.71 Why is my Mark 1 having intermittent power failure problems?**
(Entry last updated on July 17th, 2003)

From Rob Schofield:

I've just looked at a Mk 1 that had intermittent power fail problems. Symptoms were that the player would be working fine and then *pow* nothing. Screen out, disks stopped. However, I could contact the player through hyperterm. So it was something to do with the 12V line/power supply.

After a lot of faffing about, I discovered that the two screws for the serial post were slightly loose. This meant that the serial port could move up and down slightly. Since it's soldered to the main board, the main board moves with it. On either side of the serial port is a number of regulator ICs hard mounted with plastic pop rivets to the back of the case. These can also move up and down slightly, hence when the motherboard moves, the regulators moved too.

So what's happening? If the drives move slightly and push down on the daughter board (bump in the car, for example), or the serial port moves while you're upgrading, the leads of the 12V regulator are just long enough to touch the (earthed) lip of the back panel underneath the motherboard, shorting the output of the regulator to 0V.

What you see: screen goes out, stays out, drives spin down.

What you smell: a funny smell of burning as the regulator and the power adaptor heat up.

What you can feel: the back of the case gets BLOODY HOT.

What you do: PANIC! and make a pathetic little squealing sound (similar to a stuck pig) as you try to yank the power plug out.

Note: It's possible that other power loss problems on the Mk1, with slightly different symptoms, can be caused by a loose audio daughterboard. Check that first, and if necessary, secure it with rigid-setting hot glue as described below.

How to fix the problem.

Take the lid off the player, and remove the drive tray with any drives. Be gentle releasing the cables from the board, there aren't that many left these days.

Unplug the header of the display cable from the motherboard.

Using a Posidrive (not Philips) No. 2 cross head screwdriver, remove the six large screws holding the main board to the case bottom.

Using a PD1, remove the 4 screws at the back of the case holding the case back into the case bottom.

Remove the case back and board together as a unit.It slides backwards out of the case.

Invert the board and look at the clearance between the folded-under lip of the back panel and the protruding leads of the 5 ICs mounted on the back panel. You may see either no, or very little clearance here.

Slightly loosen the two captive hex head screws on the back panel on each side of the serial connector using a 5mm hex socket.

Slide the mainboard up and away from the lip by gripping the serial port and pushing it

upwards towards the top edge of the case back, inside it's cutout aperture, away from the lip. This should increase the clearance between the lip and the soldered legs sticking through the mainboard.

With a pair of fine, electronic sidecutters, clip away any excessively long protruding leads ends between the board and the lip making sure you remove the clippings completely to prevent shorts in the future. Don't do more than you need to, just 'cos you think you should - you probably only need to clip off about half a millimetre. Be careful not to damage the PCB or tracking.

Tighten the hex screws on the serial connector, making sure that you are holding the connector up at the top of it's cutout in the case back to maximise the distance between mainboard and lip.

Re-insert the main board assembly and back panel into the case. Replace the 4 rear case screws, and the 6 main board screws. DON'T overtighten and strip/break them. Get them finger tight, and then a gentle, slight twist will lock them.

At this point, if you have access to a hot glue gun, I recommend firstly removing the old Silicone sealant bead originally used to hold the small audio daughterboard in the middle of the main board (the one with a multi-colour ribbon cable attaching it to the main board) and then gluing the board with the rigid-setting hot glue to stop the board wibbling about.

Replace the display header cable, and PLEASE make sure you get it on correctly - not off-by-one-row or off-by-one-pin. It's not difficult on the Mk 1, so just take your time.

At this point, I would suggest you test your unit by applying power to see if the display comes up OK, which will show if you've done the job correctly.

Replace your drives on the sled inside the unit, and tighten the mounting screws. Same rule applies with the drive cables as with the display cable - take your time and get it right. Again, don't overtighten the sled screws. Apply power to check that the drives spin up OK.

Finally, put the lid back on again and make a final check that everything is still functioning.

· **7.72 Why are there pops, clicks, screeches, and stutters when I play MP3s?**
(Entry last updated on September 17th, 2003)

It shouldn't do that. Assuming you've fed the player well made MP3s (download them off the player, check them, and see if they play properly on the PC), then they should play perfectly on the car player without a hint of popping, screeching, or skipping.

Those kinds of problems often indicate hardware trouble, such as disk drive trouble or docking connector trouble. Check for those first, and contact support if you can't find anything wrong with them.

Another thing that might cause this problem is third-party software running on your player that isn't getting enough memory to work properly. You might have to add a

reservecache=XX value in your config.ini to correct the problem. Please check the documentation for your third-party software to find the correct value.

· **7.73 Half of my display is blank!**
(Entry last updated on June 10th, 2003)

If half of your display has gone blank, but the other half works fine, it means that one of the column driver chips embedded in the VFD glass has failed.

This is a rare problem and has only been reported on a few of the VFDs. You need to contact support in order to have it repaired.

If you want to replace the VFD glass yourself (assuming that you know what you're doing and can do delicate SMT soldering), you'll need to get around the fact that it's hard to source these Noritake VFD displays unless you're buying in bulk. Ask around the Unofficial Empeg BBS and see if anyone's got an extra for sale or can give you tips on sourcing the VFD.

· **7.74 In DC mode, player responds extremly slowly to button presses, and music skips.**
(Entry last updated on September 24th, 2003)

Check the config.ini file for an ir_debug option. Delete this option if there is no need for it, or set car_rate under the [serial] section to 115200.

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8. Hijack Kernel Questions

· 8.1 About Hijack FAQ.
· 8.2 What is the Hijack Kernel?
· 8.3 What features does Hijack offer?
· 8.4 What does Hijack require to work?
· 8.5 Where can I get Hijack?
· 8.6 Is it dangerous to install Hijack or a hacked Kernel?
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- 8.17 Why am I getting a "Hijack Config Error" message at boot up?
- 8.18 Why doesn't the temperature ever change in 'Vital Signs'?
- 8.19 What are the Patch files for (as opposed to the .zimage files)?
- 8.20 I can't get the Restore Visuals feature to work!
- 8.21 What other Userland Apps have been made to work with Hijack?
- 8.22 How can I compensate Mark Lord for this work of genius?
- 8.23 How do I adjust the VolAdj settings, and what do they mean?
- 8.24 FAQ Changelog

• 8.1 About Hijack FAQ.
(Entry last updated on February 15th, 2002)

This FAQ is not maintained by Tony Fabris or Mark Lord, so don't bug them about it. They're both busy enough as it is, which is why i'm writing this, not them. It's maintained by me, Loren Cox.

It's in it's infancy at the moment, and will grow over time to envelop the entire known galaxy.

I am not a programmer and don't pretend to be, so there may be people reading this who understand the innerworkings of Hijack better than I do. I take critique well and welcome any and all suggestions and additions. You can PM me on the empeg BBS, my username is loren, or email me at loren @ skivvies . com (minus the spaces).

• 8.2 What is the Hijack Kernel?
(Entry last updated on March 14th, 2002)

Hijack is a hacked empeg/RioCar kernel written by Mark Lord that adds a host of new features to the empeg/RioCar. It includes Richard Lovejoy's VolAdj hack, IR translation so you can use third party remotes and remap buttons, a game, a built-in FTP and HTTP server, Christian Hack's v1.0 DelayTime hack (as of v201), Brian Mihulka's lighted button hack (as of v202), Genexia's Bass and Treble Tone adjustment hack, an easy way to attach other userland apps, and a bunch of additional features accessible through it's own menu system.

If the word "kernel" scares you... don't worry. Simply put, Hijack adds a slew of new features to your player at no risk, and is easy to install. It fixes many of the problems with the player software that people have complained about in the past. It's simple on the surface, so anyone can use it, and if you aren't afraid of doing a little config.ini modifacation or coding of your own, it's an incredibly powerful tool.

Who is Mark Lord? Well... in Mark's own words:
"I've been hacking Linux as a member of the core Linux kernel development team since 1992, best known as the original "Linux IDE Guy", writing/maintaining the drivers for ATA/IDE disks, tapes, cdroms, etc.. I wrote my first Pong implementation on an Apple-II computer in 1981. So, I guess I do have a little experience with this stuff."

· 8.3 What features does Hijack offer?
(Entry last updated on March 14th, 2002)

This is a basic list, descriptions will be added:

      Auto Volume Adjust
      Bass and Treble adjustment
      Break-Out game (for red-lights, and passengers on long drives)
      Button Codes Display (raw, untranslated values)
      Calculator (simple, integers only)
      Countdown Timer (auto on/off, alarm)
      Filesystem Check on Sync: Enable/Disable
      Font Display
      Force DC/Car Mode
      Vital Signs
      High Temperature Warning
      Knob Press Redefinition (great for in-car, with tons of options)
      Quicktimer feature using the '4' button
      Reboot Machine
      Restore DC/Car Visuals
      Screen Blanker (prevents burn-out after end of playlist)
      Vital Signs
      Long Knob Press (2+ seconds) cycles among input sources
      IR translations for "foreign" remotes in config.ini
      Different translations for long/short presses, Tuner/Aux/Main, shift-lock, etc..
      Initialization keypress macros from config.ini
      Current track information in /proc/empeg_notify
      Built-in FTP and HTTP servers, with resume download capability
      User programmable PopUp menus via ir_translate
      Playlist browsing/streaming/m3u via khttpd
      Popup message when [ir_translate] in config.ini has errors
      Popup message for [hijack] option errors in config.ini
      Intercepts config.ini and edits-in-place for ;@AC/;@DC/;@HOME/;@WORK

· 8.4 What does Hijack require to work?
(Entry last updated on February 15th, 2002)

It only requires an empeg/RioCar with any version of 2.00-beta software already installed (it will not work with 1.0 versions). It works on all revisions of the empeg hardware: Mk1, Mk2, Mk2a (Riocar). If you've got everything to install the empeg software and connect to the player with emplode, then you've got all you need.

· 8.5 Where can I get Hijack?
(Entry last updated on February 14th, 2002)

At Mark Lord's website. Mark always has the newest version up on the site.

· **8.6 Is it dangerous to install Hijack or a hacked Kernel?**
(Entry last updated on February 14th, 2002)

Not at all. Installing Hijack only flashes the Kernel in memory and does nothing to the actual hard drive or directory structure. If something gets screwed up, you can simply reapply an empeg 2.00-beta upgrade and you'll be back to normal.

· **8.7 How do I install Hijack?**
(Entry last updated on April 5th, 2003)

EASY!
MS-Windows users: Use Tony Fabris' Empeg Logo Editor to install the Hijack Kernel. Snag it from the Downloads section of this site here (and you should probably check out Tony's FAQ entry on the subject). Follow these simple directions:

1. Connect the serial cable that came with the empeg/RioCar to your computer and to the player.
2. Plug the Power cable up to the player.
3. Startup the Empeg Logo Editor program.
4. Select the appropriate COM port from the File -> Select COM Port menu
5. Select File -> Kernel flash utility, read the warning, and click yes if you haven't already disabled it.
6. Logo Editor will prompt you for the .zImage file. Find it and click Open.
7. The kernel will be installed, and the player rebooted. If the Logo Editor doesn't find the empeg/RioCar, unplug the power and plug it back in.
8. YOU DID IT! Easy as pie.

Linux/Unix Users: Grab the download.c source code (original Linux version here, alternate versions here), and compile and run it under Linux as follows:

> **cc -o download download.c**
> **## Power OFF your player, and connect up the factory serial cable**
> **./download ZZZZZZZZZ.zImage 10000**
> **## The program will now prompt you to power up the player**

Of course, you'll have to replace the 'ZZZZZZZZZ' with the correct kernel filename. The commands may be slightly different depending on which flavor of Unix you're running.

Mac/Other users: You're SOL for the time being (unless there's a way i'm not aware of). It's being discussed as an addon to Jemplode at the moment. I'll keep ya posted.

FTP
Once you've got Hijack installed, it will allow you to perform future kernel updates via ethernet, which is much faster than flashing via serial connection.

To update via FTP, you simply FTP the kernel .zimage to /proc/empeg_kernel which is a device node that Hijack creates (note that empeg_kernel is NOT a directory). If you're doing it command line style, you'd use something like this (where v135.hijack... is the

actual file name of the kernel):

> binary
> put v135.hijack...zImage /proc/empeg_kernel

If you're using a graphical FTP client, then you'll want to rename the .zimage file to "empeg_kernel", then just upload it to /proc and it will overwrite the current kernel.

If it doesn't work, try pausing the player before uploading (flashing). The kernel will be flashed and the player will reboot. If it doesn't automatically reboot, then manually reboot the player to apply the new kernel.

Remember, it will show up as a FILE in your graphical FTP client, not a directory or device.

· **8.8 Is there a way to automatically update Hijack with the newest release?**
(Entry last updated on March 14th, 2002)

Once you have a Hijack Kernal installed, yes. There are two ways at present:

AutoHijack
AutoHijack is a handy Python script written by Gary Boone that will check the Hijack website for new versions of the kernel. If it finds one that is newer than the one on your empeg, AutoHijack will automatically download and install it to your empeg. It requires a Python installation which can be had from python.org or activestate.com, and for a Hijack Kernal to be installed on your empeg/RioCar.

v5 of AutoHijack can be had from the downloads section of Riocar.org. Follow the instructions in the README file, and you should be good to go.

Jemplode
Jemplode, the opensource Java based emplode clone, now includes the ability to autoupdate Hijack. Simply go to Tools -> Options, and check "Autoupdate Hijack"... make sure you have the right Hijack Mk version for your player, and everytime you sync, Jemplode will check to see if there's a new Hijack, and update if necessary.

· **8.9 How do I access Hijack's menu on the empeg/RioCar?**
(Entry last updated on February 16th, 2002)

To access the Hijack menu system, press and hold-in either the rotary KNOB, or the (Rio remote) MENU button, until the menu appears. Alternatively, press/release the (Kenwood remote) CD button three times in succession to activate the menu. Once in the menu system, navigate using either the KNOB, or the NEXT/PREV track buttons on the remote. To activate a menu selection, press the KNOB (or CD or MENU button on the remote). To exit from the menu, either wait 5 seconds, or press the front-panel TOP button or (Kenwood remote) '*' or (Rio remote) CANCEL button

Most menu functions utilize the same buttons (KNOB, NEXT/PREV track to move around,

CD or MENU to select, TOP or '*' or CANCEL to quit).

· **8.10 What do all of the Hijack menu items do?**
(Entry last updated on March 17th, 2002)

In addition to the menu items below, a Long Knob Press (2+ seconds) cycles among input sources (Player, Aux, and Tuner if available).

Any one of these menu items can be deleted with menu_remove option in config.ini. See this faq entry.

Auto Volume Adjust
Allows you to set the Auto Volume Adjustment amount of Richard Lovejoy's percieved volume adjustment hack (which is actually a real time dynamic range compressor, as discussed in this FAQ entry), displays a real time graph of the Current Multiplier value, which is displayed numerically at the bottom of the screen. Settings are Off, Low, Medium, and High, the values of which are configurable in config.ini. (Full FAQ entry coming)

Break-Out Game
An empeg version of the classic Break-Out game. Control the paddle left and right with the knob, or with the |<< and >>| buttons on either the Rio or Kenwood remote. See if you can beat it, there's a surprise at the end!

Button Codes Display
Displays the hexidecimal codes that the empeg/RioCar recieves from IR input as well as from button pushes on the front panel. Press a button on your remote and the corresponding code will be displayed on screen. The empeg/RioCar percieves two button states, press, and release, so the first code you'll get will be the button press, and the second will be the release. Release codes begin with "8" and can be ignored, as ir_tranlate handles them automagically. Leading zeroes can be stripped off as well, so a press that returns "00AD5242" can be placed in ir_translate as "AD5242". You can use these codes with ir_translate to map one button to something else. It also displays a button-event counter.

Any remote that you get a code from can be translated. Not all remotes will work as the empeg only sees a certain range of frequencies, and the IR driver (empeg_input.c) doesn't "recognize" the IRDA format, so it just tosses the bits that it sees.

Button Illumination Level
Enables and set the level of the button LED button hack, IF you have it installed of course. Brian Mihulka provides the kits, which you can get info on and order at his website. This does not affect the brightness of the LED's when in standby mode... where they will default to the dimmest setting. You can modify this with the buttonled_off option in config.ini. See the config.ini entry for more info.

Calculator
A simple calculator that you'll need your remote to use. It has +, -, *, /, and % functions. Michael Tempsch wrote up an excellent doc on the calculator, which can be found here.

Countdown Timer Action

Sets what the Countdown Timer does when it expires. Options are beep alarm, and toggle standby. This can be used as an alarm clock which will beep, or start playing if your player is in standby mode when the Timer expires. Or it can be used as a sleep timer if the player is playing and the action is set to toggle standby when the timer expires.

Countdown Timer Timeout
Sets the amount of time until the Countdown Timer Action is triggered. Default is [Off]. The timer increments in 1 minute intervals from 1-5 minutes, 5 minute intervals from 5-60 minutes, 15 minute intervals from 60 minutes to 5 hours, and 30 minute intervals from there on out.

Can also be set with the "Quick Timer" function by holding down "4" on your remote, then using |<< and >>| to set the amount of time until the Countdown Timer Action will be triggered. Pressing "4" on the remote will cancel the "CountDown Timer" (with a confirmation tone and popup) if it was already running.

Filesystem Check on Sync
Sets whether or not the empeg/RioCar will do a full filesystem check (e2fsck) every 20-30 syncs.

Font Display
Does what it says, and that's about it.

Force AC/DC Power Mode
Allows you to force the player into thinking it's on either AC/Home or DC/Car power when it isn't, and shows what the current mode is. This is useful if you have the hardware failure where the empeg thinks the AC plug is always plugged in, and therefore will always boot in AC/Home mode (see this FAQ entry). Also useful for testing purposes.

Options are Normal, Force AC/Home, and Force DC/Car.

High Temperature Warning
Allows you to set the temperature at which the High Temperature warning is triggered. When triggered, it will overlay an audio beep to the playing track and display a flashing "Too Hot" warning. The settings are shown in both Celsius and Fahrenheit. It also displays the current temperature, and what the temperature is auto-corrected by (-4C°/-7F° being the default, which is configureable in config.ini).

Home/Work Location
Sets which option will be activated in config.ini after reboot, those marked with ;@HOME or ;@WORK. (see this FAQ entry for more on config.ini)

Knob Press Redefinition
Allows you to change what happens when you do a quick press of the volume knob. Choices are as follows:

[default]: The normal settings without the Hijack kernel, which cycles through volume, loudness, balance, and beep settings.

PopUp0: Pops up a menu with the following options by default: Clock

(displays clock), Info (switches to next info mode, KnobSeek (if selected, knob will act as seek on remote to switch to next or previous tracks), Mark (marks track for attention), NextSrc (goes to next Source), Shuffle (toggles shuffle on or off), VolAdj (allows you to change VOLAdj settings, and Visual (switches to next visual). This is handy when you don't have a remote on you. You can also redefine PopUp0 in config.ini under the [ir_translate] section. (see this FAQ entry)

VolAdj+: Pops up a quick menu to allow you to switch the current Volume Adjustment level to [Off], Low, Medium, or High.

Details: Shows the detailed track info screen. (same as Info/Detail button on Rio Remote)

Info: Switches the current Info mode. (same as Info button on the Rio Remote)

Mark: Marks current track. (same as Cancel/Mark button on the Rio remote)

Shuffle: Toggles current shuffle mode on or off. (same as 0/Shuffle button on the Rio remote)

NextSrc: Switches to next available source: Player, Tuner (if available), and Aux.

Left/Right Time Adjustment
Allows you to adjust the settings for Christian Hack's v1.0 DelayTime hack, which delays the audio output either to the right or left channel by miliseconds so that you can "center" the soundstage. Time delaying front or back is not possible due to a hardware limitation in the DSP, so don't ask for it.

Reboot Machine
Power cycles the empeg/RioCar after pressing and holding the left and right buttons on the face of the player, or 2 on the remote. Any other button aborts.

Restore DC/Car Visuals
Subverts the default function of the empeg/RioCar not showing a visual when booted in DC/Car mode, as is described in this FAQ entry. Can be set to either Active or Inactive.

There is currently a bug in 2.00-beta11 which prevents this from working all the time. It has been fixed in the next release.

Screen Blanker Sensitivity
Allows you to set the percentage of the screen which has to be inactive for the amount of time set in the Screen Blanker Timeout Menu after which Hijack will trigger it's screen blanker function. This simply blanks out the VFD, but the player will continue playing. Range is from 65% to 100%. If it is set to 100%, then any activity on the screen, including incrementing counters, will prevent the screen from blanking out.

The whole point of course being to prevent "burn-in" on the VFD.

Screen Blanker Timeout
Sets the amount of time that the percentage of the screen set in the Screen Blanker
Sensitivity menu has to be inactive for the Screen Blanker to activate. Increments are in 15
seconds all the way up to 15:45 (fifteen minutes, 45 seconds).

Show Flash Savearea
Displays the Flash Savearea in realtime. Highlighted bits are those being written to at that
moment. You can scroll down using the volume knob or |<< and >>| on the remote. Useful
for debugging.

Tone: Bass Adjust and Tone: Treble Adjust
Allows for basic Bass and Treble tone adjustments on the player, instead of the more
complicated Equilizer. This does not affect your current EQ settings, it simply works on
top of them. The code to allow this was provided by BBS member genixia, and for more
information on how this code works, see his description in this thread.

Vital Signs
Displays the following information:

(Player Model Mk1, Mk2, Mk2a):(Hard Drive sizes), (Current Temp in C°/F°)
Playlist:(FID of current playlist), Fid:(Fid of current song)
Cac:(Linux VM page cache), Buf:(# pages used as buffers), Fre:(# of free pages)
LoadAvg:(CPU load average over past minute) (5 minutes) (15 minutes)

Fid is only displayed if the "notify=1" option is set in config.ini.

· **8.11 How do I configure Hijack's options?**
(Entry last updated on February 16th, 2002)

All of Hijack's options that aren't configured in the menu system are setup by editing the
player's config.ini file (i.e. [ir_translate], [output], and [hijack] options listed in the next
FAQ entry).

See this FAQ entry on how to edit config.ini.

· **8.12 What options for Hijack are available in config.ini?**
(Entry last updated on March 29th, 2003)

Configuration options for Hijack generally follow the config.ini format as follows:

    [section]
    option=variable ;comment

Any option in config.ini can be modified with one of the following:

    ;@AC
    ;@DC
    ;@WORK

;@HOME

Hijack intercepts config.ini as it is read by the player on startup, and edits the file in-memory using ;@AC, ;@DC, ;@HOME and ;@WORK directives. If the "Home/Work Location" menu is set for ;@HOME, then lines beginning with ;@HOME will be enabled, otherwise lines beginning with ;@WORK will be enabled. If the player is on AC power (plugged into the wall), then lines beginning with ;@AC will be enabled; if it's on DC power (in the car/docking sled), then lines beginning with ;@DC will be enabled. This means the trailing portion of those lines will be passed to the player, and the next existing line (if any) lower in the file with the same setting will be commented out. Which allows things like this:

```
[network]
;@HOME DHCP=0
;@WORK DHCP=1
DHCP=0

[hijack]
;@AC fake_tuner=1
;@WORK kftpd_password=n0H4cKz
;@AC ;@HOME DHCP=0
```

;@AC and ;@DC get processed first, then ;@HOME and ;@WORK.

The logic for this is clever enough to only do the edit when the player itself is reading config.ini on startup, so this will not affect emptool, emplode, ftp, or http access to config.ini.

The following is a complete (i hope) listing of all Hijack options available to add to config.ini, under what section they go, as well as a brief description. Generally, 1=on, 0=off.

Section	Option	Description
[output]	notify=1	Allows access to /proc/empeg_notify on the play which is created by the Hijack kernel. The data shown in /proc includes track name/fid/position/artist/album/ the same is dumped to the seria port by notify=1. Also allows fo initial sequences of button pres to be run as soon as the player starts up with "Initial=xxxxx" l in IR_Translate. Also shows FII Vital Signs screen. If you're tryi to get serial output when docke the sled, make sure you also ha [serial]car_rate=115200 in you

config.ini

[ir_translate]	xxxxxxxx=vvvvvvvv	This button just sends "v" when is pressed
	xxxxxxxx=yyyyyyyy,zzzzzzzz,wwwwwwww	This button sends "y","z", and " when "x" is pressed.
	PopUp0=Info,Mark,xxx,...	This creates a PopUp menu containing the items definded.

You can define up to 4 PopUps numbering them: PopUp0, PopUp1, PopUp2, and PopUp3

Menus can be nested.

This menu can be attached to a button via translation for *Exam* "Bottom.L=PopUp0" equates to long press of front-panel botton button pops up a menu.

To attach this menu to the "qui knob press" (as was the default until v154), just go into the ma Hijack menu and select "PopUp in the "Knob Press Redefinition menu. The default settings for PopUp0 are: Clock (displays clock), Info (switches to next in mode, KnobSeek (if selected, k will act as seek on remote to sw to next or previous tracks), Mar (marks track for attention), Nex (goes to next Source), Shuffle (toggles shuffle on or off), VolA (allows you to change VOLAdj settings, and Visual (switches t next visual). This is handy whe you don't have a remote on you

For Full details on how to configure the ir_translate section, see [this](#) FAQ entry.

[hijack]	buttonled_off=n	Sets the illumination level of th LED's when the player is in standby if you have Brian Mihulka's (or your own) button LED hack installed. *n* is an inte from 0 to 7. Without this entry, buttons will remain illuminated

	the lowest level when the unit i standby.
button_pacing=20 (removed in v289)	Default value shown; (1/100ths a second) With very long macros in [ir_translate], the player softwa may sometimes discard button presses mid-sequence. To help prevent this, the translation coc inserts small delays between bu press/release pairs in the data stream it feeds to the player. In event that the default value pro too short, it can be modified wi this option.
dc_servers=1	Allows kftpd/khttpd to run in DC/Car mode, which is off by default otherwise.
disable_emplode=1	Disallows emplode access via ethernet. Blocks TCP port 830((Emplode/Emptool)
extmute_on=xxxxxxxx	Buttoncode to inject when EXT-MUTE goes active. Example: When empeg/RioCan mute line is triggered as on (as setup in emplode), you could h the empeg switch to AUX inste of muting the player.
extmute_off=xxxxxxxx	Buttoncode to inject when EXT-MUTE goes inactive.
ir_debug=1	Output to help debug IR/buttor issues. This will spew raw IR codes to serial port, along with some internal state flags and such. Yc can ignore most everything exc the first 8-digit value on each l (the raw press/release codes). T debug data comes straight from Hijack IR handler.
spindown_seconds=30	Drive spindown timeout in secc for hard drives (default shown). Since kftpd/khttpd can leave tl spinning "forever" otherwise. A value of 0 disables automatic spindown.

fake_tuner=1

Makes empeg/RioCar think it h
tuner attached when it really
doesn't. Allows people to see w
the tuner functionality looks lil
(display, menus, etc..) before
purchasing an expensive tuner
module, and use of the
"PrevVisual" button translation
(coming soon in Hijack), which
only works via the tuner interfa
Also allows trace_tuner if you
have a tuner. If you have a tune
and "fake_tuner" is activated, it
will silently reset "fake_tuner=(
and continue.

trace_tuner=1

Hijack will dump out incoming
packets from the Tuner/Stalk to
serial interface (/dev/ttyS0).
Eventually, Mark'll add button
emulation for these codes, enab
the [ir_translate] facility to ope
on them.

old_style=1

Use "original style" of hijack
menus in which menu items we
"highlighted".

quicktimer_minutes=x

Amount of minutes to incremer
the quicktimer function by whe
|<< or >>| is pressed on the rem
after activating the Quicktimer
option by holding "4" on the
remote.

standby_minutes=30

Number of minutes to
automatically stop the player a
put unit in standby after the scr
blanker fires (default shown). W
playlist completes, screen blan
begins countdown regardless of
screen activity, then it triggers
standby counter.

temperature_correction=-4

Adjust all hardware temperatur
readings by this celcius amoun
(default value shown).

menu_remove=*label*

Removes menu item from Hijac
menu. Works for all menu item:
Example: "menu_remove=Knol
Rotate Redefinition"

suppress_notify=1	For use with [output]notify=1 t suppress notify/dhcp serial port output.
PopUp1=*name*	Used to name popups defined i IR_Translate section, EX: "PopUp2=Tweak" renames Pop menu to "Tweak" instead.
max_connections=4	Maximum number of simultane ftp/http connections (default shown).
kftpd_control_port=21	kftpd control port (default show 0 to disable ftp access.
kftpd_data_port=20	kftpd data port (default shown)
kftpd_password=xxxxx	Require FTP password, replace with password.
kftpd_verbose=1	kftpd verbosity. If on, Hijack F server will log all accesses to th kernel log facility, which on th Empeg just dumps to the serial (connect something to the seria port to see the log messages as occur). If you want better recor keeping, install (or write/install syslog daemon onto the player, configure it to do whatever you want, like remote log spooling whatever.
rootdir_dotdot=1	Causes '..' to appear in FTP/HT directory listings of "/" (the top-level directory).
time_offset=nnn	Adjusts the time offset for the "Clock" virtual button code. Si the Player software does not pa timezone information to the ke the time may appear wrong whe the "Clock" virtual button code used. This offset is specified in minutes, and can be preceeded a minus sign if need be.
kftpd_show_dotfiles=1	Shows '.*' in all directory listin
khttpd_port=80	khttpd port (default shown). 0 to disable http access.
khttpd_verbose=1	khttpd verbosity. If on, Hijack HTTP server will log all accesse

	the kernel log facility, which o the Empeg just dumps to the se port (connect something to the serial port to see the log messag as they occur). If you want bett record keeping, install (or write/install) a syslog daemon the player, and configure it to whatever you want, like remote spooling or whatever.
khttpd_dirs=0	Prevents HTTP directory browsing/listing. Defaults ON otherwise.
khttpd_files=0	Prevents HTTP file downloadin except for "streaming". As of Hijack v202, access to any files ending in .htm, .html, .gif, .jpg, .png, .xsl, .jar, .js, and/or .css is allowed when khttpd_files is se 0. Defaults ON if option is not specified.
khttpd_playlists=0	Prevents HTTP playlist browsing/playing. Defaults ON otherwise enabling "?.html" or "?.m3u" functionality.
khttpd_commands=0	Disallows HTTP Hijack comma passing through http. Defaults otherwise enabling "?command capability.
khttpd_show_dotfiles=1	Shows '.*' in all directory listin
khttpd_style=xxxxxx.xsl	Defines the full path to the .xsl template (style sheet), with extension, for Hijack to look fo XML formatting. If this option not specified, Hijack looks for /default.xsl.
VolAdjLow=0x1800,100,0x1000,25,60	Default value shown. More info soon.
VolAdjMed=0x2000,409,0x1000,27,70	Default value shown. More info soon.
VolAdjHigh=0x2000,3000,0xc00,30,80	Default value shown. More info soon.
volume_boost_FM=nnn	Increases or decreases the volu from the current setting when i FM mode. Say you're listening

	MP3's in the player and when y switch to FM radio, it's always quite and you have to turn the volume up, this is how you'd m the adjustment automatic. (patc initially provided by Genexia)
	nnn is a number between -100 a 100 (i.e. -100 <= nnn <= 100). I step of boost or cut is approximately 0.5dB if your normal volume is in the range c -25dB to -3dB.
volume_boost_AM=nnn	Same as above for AM radio. -100 <= nnn <= 100
volume_boost_AUX=nnn	Same as above for AUX input. -100 <= nnn <= 100
volume_boost_MP3=nnn	Same as above for the player (MP3). -100 <= nnn <= 100
disable_bassboost_FM=1	Removes the additional +6dB b boost that Mk2/Mk2a players apply on the FM input.
stalk_debug=1	Enables the dump out of all intercepted/generated Sony sta packets.

- **8.13 What does ir_translate do and how do I configure it?**
(Entry last updated on July 30th, 2002)

The ir_translate function of the Hijack Kernel is one of it's most powerful features. It allows you to completely remap any button/knob on the empeg/RioCar, the Rio Remote, the Kenwood remote, or ANY remote that the empeg/RioCar's IR sensor can detect to any other button on the empeg/RioCar or it's remotes. Want a long press of the bottom button to switch between the Tuner and the Player instead of between Info and Visual modes? Want to use a third party steering wheel remote to control your player? Ir_translate is how you'd do it. It also allows you to define 4 of your own PopUp menus that you can organize how you'd like, and they can even be nested.

Basics
All ir_translate options go under the [ir_translate] section that you add to the bottom of the config.ini file, and will take effect immediately after you sync.

Ir_translate uses the following format, where xxxxxxxx is the hexidecimal code that you want translated to yyyyyyyy, and anything following ";" is a comment and is ignored. To find the hex codes, use the "Button Codes Display" option in the Hijack Menu, as is

described here. There is a list of the more common codes at the bottom of this FAQ entry.

```
[ir_translate]
xxxxxxxx=yyyyyyyy          ;comment
```

Button macros (single button translated to a sequence of buttons) are also possible. These get defined by supplying multiple "new" codes on a line, as in:

```
[ir_translate]
xxxxxxxx=yyyyyyyy                        ;this button just sends "y"
xxxxxxxx=yyyyyyyy,zzzzzzzz,wwwwwwww   ;this button sends "y", then "z", then '
```

Modifiers

Hijack allows modifiers for the button codes so that certain codes will only be translated in certain instances.
Here is a quick reference list of available modifiers.

Modifier	Action	Notes
.L	Long press	One second or more, should be placed before short presses of the same code
.S	Shift Lock	
.N	Not shifted	Opposite of .S, Applies on **Left** side of =
.T	Tuner	Left of = only
.A	Aux	Left of = only
.M	Main/mp3/player	Left of = only
.C	Car/DC	Left of = only
.H	Home/AC	Left of = only
.U	Menus are active	Right of = only
.N	Menus are not active	Opposite of .U, Applies on **Right** side of =

The **.L** (Long) modifier turns a short/regular button press into a long (one second or more) button press and can be used on either side of the = sign. **Note** that order is important! When processing button presses, the translator searches in top-down order, and stops as soon as a match is found. So, placing a .L translation after a plain translation of the same button will have no effect -- the .L will never match when specified in that sequence. If there is a long and short press of the same button, the LONG press should always be specified first. Examples:

```
[ir_translate]
xxxxxxxx.L=vvvvvvvv            ; (L)ong press of "x", send "v"
xxxxxxxx=zzzzzzzz                 ; short/normal of "x", send "z"
and
[ir_translate]
xxxxxxxx.L=yyyyyyyy.L          ; long press of "x", send long press of "y"
aaaaaaaa=yyyyyyyy,vvvvvvvv.L    ; any press of "a", send short-"y", long-"v"
```

The **.S** modifier specifies a shift lock state. When used on an "old" code (left of the = sign), the translation only applies when the shift lock state is active. The default state is not active, and can be toggled at will using translations which include a .S modifier on a value to the right of the = sign. You could use a shift lock to virtually double the number of buttons on a remote. Example:

```
[ir_translate]
xxxxxxxx=null.S        ; "x" toggles "shift lock" state, and sends null (more o
yyyyyyyy=yyyyyyyy.S  ; "y" toggles the "shift lock" state, as well as sending
zzzzzzzz.S=aaaaaaaa  ; this translation applies only when the "shift lock" is
```

The .N modifier, when used on the **LEFT** side of the = sign, means Not shifted.

By using one of the **.T** (Tuner), **.A** (Aux), or **.M** (Main/mp3) modifiers, translations can also be made specific to a particular input source of the player, as a modifier on the "old" code. If you don't specify one, then the translation applies to all. Example:

```
[ir_translate]
xxxxxxxx.A=vvvvvvvv      ; if in (A)UX mode, on press of "x" send "v"
xxxxxxxx.LT=yyyyyyyy     ; if in (T)uner mode, on long press of "x" send "y"
xxxxxxxx.M=zzzzzzzz      ; if in (M)ain/mp3 mode, on press of "x" send "z"
```

The **.C** (Car/DC) and **.H** (Home/AC) modifiers can be used on the left of the = sign to specify button behaviors specific to car and/or home usage, as in:

```
[ir_translate]
xxxxxxxx.C=yyyyyyyy      ; if in (C)ar, on "x" send "y"
xxxxxxxx.HM=yyyyyyyy.L  ; if at (H)ome AND in (M)ain, on "x" send (L)ong "y"
```

There are also **.U** (menus are Up/active) and **.N** (menus are Not active) modifiers. .U can only be used on the right side of the = sign, and .N only means Not active when on the right side of the = sign. This is useful for bypassing a translation while in a menu. For instance, if you wanna alter a long press of the bottom button on the front panel, but don't want to loose it's functionality in the menu system. These also work for Hijack's PopUp menus. Example:

```
[ir_translate]
xxxxxxxx.L=yyyyyyyy.N,xxxxxxxx.LU
; on (L)ong "x", send "y" if menu (N)OT active, send (L)ong "x" if (U)p/Active
```

and

```
[ir_translate]
xxxxxxxx=popup0.N, menu.U
; on "x", PopUp menu0, when in menu "x" means OK.
```

The fact that there are two **.N** modifiers is a bit confusing, but it boils down to this:

.N to the left of the = means Not shifted (opposite of .S).

.N to the right of the = means menus Not active (opposite of .U).

The various modifiers can all be combined (any sequence) in ingenious ways to produce a variety of IR behaviours.

Symbolic Names

As of Hijack v152, you can now use Symbolic Button names to correspond to the buttons on the Rio remote, Kenwood remote, and the buttons on the face of the empeg/RioCar. So instead of:

```
[ir_translate]
000006=20df14   ; make "bottom" button act as "info"
```

you could also write it as:

```
[ir_translate]
Bottom=Info     ; make "bottom" button act as "info"
```

(also note that leading zeroes can be stripped off if desired, i.e. "0020df14" is the same as "20df14")

The full list of Symbolic Button Names is as follows (organized by origin):

Rio Remote	Kenwood Remote	empeg/RioCar Face	Fakes	Sony Stalk
Source	AM	Top	PopUp0	KOff
Power	FM	Bottom	PopUp1	KSOff
Time	Direct	Bottom	PopUp1	KSource
One	*	Left	PopUp2	KSSource
Artist	Star	Right	PopUp3	KAtt
Two	Radio	KnobLeft	VolAdjLow	KSAtt
Album	Auxiliary	KnobRight	VolAdjMed	KFront
Three	Tape	Knob	VolAdjHigh	KSFront
Four	Player		BassAdj	KNext
Genre	CD		TrebleAdj	KSNext
Five	CDMDCH		VolAdjOff	KPrev
Year	DNPP		KnobSeek	KSPrev
Six			Clock	KVolUp
Repeat			NextSrc	KSVolUp
Seven			VolAdj	KVolDown
Swap			HijackMenu	KSVolDown
Eight			Initial	KRear
Title			null	KSRear
Nine			Visual-	KBottom
Shuffle				KSBottom

Zero

Tuner

SelMode

SelectMode

Cancel

Mark

Search

Sound

Equalizer

PrevTrack

Prev

Track-

NextTrack

Next

Track+

Ok

Menu

VolDown

Vol-

VolUp

Vol+

Detail

Info

Visual+

Visual

Pause

Play

Hush

Notes:
Symbolic names are not case sensative. "Album" is the Hijack name for the #3 "Source"
button. Most of the others are self-explanatory, but a few of the special ones are dealt with
further in the text below. One useful pseudo-button is the NextSrc button, which does not
exist on the standard remotes. This button code toggles among the available sound
sources, Player -> Tuner -> Aux, and skips over the Tuner if one is not installed. "Clock"
causes a 4-second popup window to appear with the current time/date in it (which can be
offset with the "time_offset" option in config.ini). All of the button names should work as
well as the hex codes, and are prefered. However, if the name doesn't work just use the hex
code.

Sony Stalk Info

As of v245, Hijack now includes full support for the Sony Stalk interface. If you have a Sony "Rotary Commander" RM-X4S connected to a Tuner module, then Hijack can intercept and translate the various buttons on the device, similar to the way it handles buttons on the IR remotes.

The Stalk has ten individual buttons, plus a shift function, giving a total of twenty assignable actions. These can be referenced in the [ir_translate] section using the button "names" shown in the table above.

On the stalk, buttons pressed while the "Vol" knob is pressed in equate to a "shifted" button. All of the names beginning with "KS" designate a "shifted" button press. In this way, the "shift" function of the Stalk is kept distinct from the "shift state" functionality of Hijack's pre-existing [ir_translate] functionality.

The Front, Bottom, and Rear names refer to the three unlabelled buttons on the Stalk. Next and Prev refer to the Seek rotary, and the rest are pretty much as factory labelled on the Stalk. Hijack automatically compensates for "left" mounted operations, which can be specified in config.ini using Emplode.

Initial Button Sequences

Also available is support for initial sequences of button presses to be run as soon as the player starts up. This is specified using **Initial=** lines, possibly with .C, .H, and/or input source modifiers. Example:

```
[ir_translate]
initial.CTA=xxxxxxxx,yyyyyyyy
;If in (C)ar in (T)uner or (A)ux, when player starts, send "x" then "y"
```

For this to work, however, you must also have these two lines together in config.ini:

```
[output]
notify=1
```

PopUp Menus

"PopUp" menus can be defined and then attached to any button (except the knob). Up to four PopUp's can be defined: PopUp0, PopUp1, PopUp2, and PopUp3. PopUp0 is slightly special, in that (1) it is the only menu that can be bound to the knob button, and (2) the most recently used Car/Home menu positions are saved/restored over power cycles for convenience. Here is the recommended way to get started with PopUps:

```
[ir_translate]
PopUp0=Info,Mark,Repeat,SelMode,Shuffle,Source,Tuner,Visual
```

This creates a PopUp menu for the most commonly needed Rio-Remote buttons for situations when the remote is unavailable (usually in the car). To attach this menu to the "quick knob press" (as was the default until v154), just go into the main Hijack menu and select "PopUp0" in the "Knob Press Redefinition" menu. This restores the pre-v154 behaviour. If you want to assign a PopUp menu to a button other than the knob, then just translate it:

```
        [ir_translate]
        PopUp0=Shuffle,Info,Mark,Swap,Repeat,SelectMode,NextSrc
        Bottom.L=PopUp0        ; long press of front-panel bottom button pops up a menu
```

And for the real hacker types, here is a more complex example, featuring nested menus:

```
        [ir_translate]
        PopUp0=Shuffle,Info,Mark,Swap,Repeat,SelectMode,NextSrc,PopUp1,Search
        PopUp1=Time,Artist,Album,Genre,Year,Cancel,PopUp0
        Bottom.LU=PopUp1       ; long press of bottom button when menus are up, PopUp
        Bottom.LN=PopUp0       ; long press of bottom button when not in menus, PopUp
```

Items on a PopUp menu are never translated, which means they are restricted to sending a single button code at a time. While it might be useful sometimes to have a menu item send multiple button codes, this was not possible to implement in any reasonable fashion inside Hijack, so it ain't there.

The PopUp menus can be given different names as follows:

```
        [hijack]
        PopUp1=Tweak    ; rename PopUp1 menu to "Tweak" instead
```

Note that this is done in the [hijack] section of config.ini, not the [ir_translate] section. Names are restricted to eight characters or less, so that they will fit in the PopUp box on screen when activated.

Timing of IR Translations

The IR translator normally delays sending the final "release" of a translation sequence until you actually release the physical button. If you want the final release code to not wait for you to let go of the button, then append a "null" button code to the end of the new sequence. Null is the symbolic name for "0xffffff".

```
        [ir_translate]
        ; Pioneer CD-SR80 remote
        AD5240.L=Top.L,null        ; long press of up button = standby
```

Verifying Translations

If you are unsure whether or not your translations are being accepted, then connect to the serial port and then restart the player. The IR translations that were in ERROR will be dumped out during startup, and a pop up window will show on the empeg/RioCar to indicate errors. See this FAQ entry for details on how to use hyperterminal to connect with the serial port.

Reference for Commonly Used Remotes

```
Rio Remote (ERC-1A) codes:

        20DF00     ;1/Time
        20DF01     ;2/Artist
        20DF02     ;3/Source
        20DF03     ;Source/Power
```

```
              20DF04      ;4
              20DF05      ;5/Genre
              20DF06      ;6/Year
              20DF07      ;Tuner-Bank
              20DF08      ;7/Repeat
              20DF09      ;8/Swap
              20DF0A      ;9/Title
              20DF0B      ;Select Mode
              20DF0C      ;Cancel/Mark
              20DF0D      ;0/Shuffle
              20DF0E      ;Search
              20DF0F      ;Sound/EQ
              20DF10      ;Prev-Rew
              20DF11      ;Next/Ffwd
              20DF12      ;Menu(OK)
              20DF13      ;Volume+
              20DF14      ;Info/Details
              20DF15      ;Visual/VisFavs
              20DF16      ;PlayPause/Hush
              20DF17      ;Volume-


     Kenwood Remote (RCA-R6A) codes:


              b94600      ;0
              b94601      ;1
              b94602      ;2
              b94603      ;3
              b94604      ;4
              b94605      ;5
              b94606      ;6
              b94607      ;7
              b94608      ;8
              b94609      ;9
              b9460A      ;PrevTrack
              b9460B      ;NextTrack
              b9460C      ;AM
              b9460D      ;FM
              b9460E      ;Prog
              b9460F      ;DirecT
              b94614      ;Volume+
              b94615      ;Volume-
              b9461B      ;Star *
              b9461C      ;Tuner
              b9461D      ;Tape
              b9461E      ;CD
              b9461F      ;CD-MD-CH
              b9465E      ;DNPP


     Front panel codes:


              000000      ;Top
              000002      ;Right
              000004      ;Left
              000006      ;Bottom
              000008      ;Knob pressed
```

```
        00000a      ;Knob Right
        00000b      ;Knob Left

  Pioneer CD-SR80 Steering Wheel Remote codes:

        AD520A      ;Volume up
        AD520B      ;Volume down
        AD520C      ;ATT
        AD5212      ;Band
        AD521A      ;Source
        AD5240      ;Up Arrow
        AD5241      ;Down Arrow
        AD5242      ;Left Arrow
        AD5243      ;Right Arrow
        AD5219      ;Func
        AD520D      ;Audio

  Kenwood KCA-RC600/700 Remotes

        b9460A      ;PrevTrack
        b9460B      ;NextTrack
        b9460C      ;AM
        b9460D      ;FM
        b94613      ;src
        b94614      ;Volume+
        b94615      ;Volume-
        b94616      ;att
```

Sample ir_translate

Here's a chunk of the ir_translate setup I use for my Pioneer CD-SR80 steering wheel
remote

```
        [ir_translate]
        ; The shift key
        AD520C.L=play.L,null            ; press and hold "ATT" = hush
        AD520C=null.S                   ; "ATT" = Shift Key
        ; "Func" sends two codes for no reason, this ignores them
        AF5067=null
        80AF5067=null
        ; Map the directional buttons to mimic those on the front panel
        AD5240.L=20DF03.L,null          ; long press of top button = standby
        AD5240=Top
        AD5241.L=Bottom.L,null          ; long press of bottom button = toggle visual
        AD5241=Bottom
        AD5242.LT=20DF10.L,null         ;in Tuner, Long left press scans back
        AD5242.T=20DF10                 ;in Tuner, left press seeks back
        AD5242.M=PrevTrack.N,Left.U
        AD5243.LT=20DF11.L,null         ;in Tuner, Long right press scans forward
        AD5243.T=20DF11                 ;in Tuner, left press seeks forward
        AD5243.M=NextTrack.N,Right.U
        ; Volume Up / Down
        AD520A=VolUp,VolUp
        AD520B=VolDown,VolDown
```

```
; Band Button
AD5212.T=Tuner                    ; if in Tuner, toggle AM / FM
AD5212.LM=Artist,null             ; long press if in Player, tweak Artist
AD5212.M=Shuffle                       ; if in Player, toggle shuffle
; Source Button
AD521A.LM=Album,null              ; if in Player, tweak Source (Album)
AD521A=NextSrc                    ; switch to next source
; Func Button
AD5219=Visual                     ; switch to next visual
; Audio Button
AD520D.LM=Info.L,null             ; long press if in Player, display track deta:
AD520D=Info                       ; switch info mode
```

PHEW!!!!

· **8.14 How do I access the built in FTP server, and what can I do with it?**
(Entry last updated on March 8th, 2002)

The Hijack kernel includes KFTPD, a kernel based FTP server. Simply point your favorite
FTP client to the IP address of your empeg/RioCar, and login. You will automatically be
logged in as root, and no login or password are required. You can browse the directories at
will. You can also issue SITE commands, as you'll see below.

Since the hard drives are mounted Read Only (RO) on bootup, you won't be able to
upload/write to the drives until you issue a Readable/Writeable (RW) command. Here's a
sample session using a command line client:

```
ftp xx.xx.xx.xx        <----- player's IP address or DNS hostname
user:                  (hit enter)
password:              (hit enter, unless you have set up a password)
site rw
cd /drive0
put afile
mput morefiles*
site chmod 0755 executablefile
site ro
quit
```

Note the RO command at the end of the session. Don't forget to remount your drives Read
Only before you logout or you could mess stuff up (descriptive i know... details
forthcoming).

Different FTP clients issue commands in different ways. Here's a quick breakdown on some
of the most popular FTP clients:

Windows FTP.EXE:
SITE commands need to be prefixed by either "literal" or "quote".
For example, a (useless) session might look like this:

```
ftp> open 192.168.1.10
ftp> login: [enter]
```

```
ftp> password: [enter]
ftp> LITERAL SITE RW
ftp> LITERAL SITE RO
ftp> quit

(LITERAL can be substituted with QUOTE if desired)
```

CuteFTP:
You have to create a Custom Command with CuteFTP, as follows:

1. Select Commands -> Custom Commands -> Define from the menu bar.
2. Type a name identifier in the Label field, we'll do "RW" for an example.
3. Enter the command text in the Command Text field, which would be "SITE RW".
4. Enter an optional hot key in the Hot Key field. The command can be executed using Control+Shift plus this hot key.
5. Click the Add button.

The commands will be saved and you can access them with the menus or the hot key you set up.

WS_FTP:
After you are logged in, right click in the Remote Site window, select FTP Commands -> SITE, and type the command (i.e. RW, RO, etc) and click [OK].

Most FTP clients have the ability to issue commands, so poke around if your client isn't shown here. If sending plain SITE commands don't work, try prefixing it with QUOTE or LITERAL. Or you could always read the client's help file. =D

Commands
Here's a list of the ftp commands Hijack utilizes with descriptions:

Command	Usage/Description
SITE RW	*Example:* SITE RW Remounts /, /drive0, /drive1 for Read-Write access.
SITE RO	*Example:* SITE RO Remounts all RW mounted drives to Read Only access.
SITE CHMOD	*Example:* SITE CHMOD 0755 *executablefile* Standard Change Mode command to alter file permissions.
SITE REBOOT	*Example:* SITE REBOOT Reboots player, but issues SITE RO before doing so.

SITE POPUP	*Example:* SITE POPUP 10 This is a popup message. Displays a timed message on the display. Format is: SITE POPUP [timeInSeconds] [message] This is useful for userland apps to display messages easily.
SITE BUTTON	*Example:* SITE BUTTON Play SITE BUTTON 20DF14.L Issues remote button commands. Works with .L modifier for Long presses.
SITE HELP	*Example:* SITE HELP Displays the list of SITE commands that Hijack understands... which should be all the ones listed here.

Multiple SITE commands can be issued at once, separated by semi-colons.

You can use FTP to update the kernal, which is described in the FTP section of the "How do I install Hijack" FAQ entry.

For FTP configuration options, check out the kftpd_control_port, kftpd_data_port, kftpd_password, and kftpd_verbose commands in the config.ini FAQ entry.

· **8.15 How do I access the built in web (HTTP) server, and what can I do with it?**
(Entry last updated on March 11th, 2002)

Working on it... but to get you going, just point your browser to the IP address of your empeg followed by "?playlists". For example:

> http://192.168.1.10?playlists

That should get you to the default playlist listings layout that Mark has included in Hijack. Clicking "Stream" will send an m3u file to your default mp3 player and stream the playlist/track that is selected. Clicking "Play" will play the selected playlist/track on the player. "Tags" displays the associated tag information in the database. Clicking a playlist name allows you to navigate the tree, and clicking a track name should download the MP3 to your computer.

Support for XML and XSL templates are built in to Hijack. For the time being do a search on the BBS for more info on this topic.

· **8.16 How can I secure my player if i'm on a LAN?**
(Entry last updated on March 8th, 2002)

In Mark's own words:

For security, I recommend that everybody on a vulnerable LAN (pretty much anything where others have access) use the following config.ini settings with Hijack:

```
[hijack]
;@WORK disable_emplode=1
;@WORK kftpd_password=N0h4cK3rz
;@WORK khttpd_files=0
;@WORK khttpd_commands=0
```

In addition, if you want a static IP at home, and dynamic IP at work, use something similar to the following:

```
[Network]
Gateway=10.0.0.1
Netmask=255.0.0.0
IPAddress=10.0.0.8
;@WORK DHCP=1
;@HOME DHCP=0
DHCP=0
```

Once you place these lines (either or both sets) into config.ini and reboot the player, the Hijack menu will have a Home/Work Location menu item, which allows selecting which group of settings to use (the default is ;@HOME).

· **8.17 Why am I getting a "Hijack Config Error" message at boot up?**
(Entry last updated on March 19th, 2002)

This message pops up to let you know there's something wrong with your config.ini file... which generally means one of two things.

1. You're experiencing the "favorite visuals" bug in 2.0b11. See this FAQ entry for details.

2. You have something in the [Hijack] or [ir_translate] section of your config.ini that Hijack doesn't like. It could either be a typo, or that you are using an option that doesn't work with your current version of Hijack. Some options have been removed or altered in the newest versions of Hijack, so make sure you check the config.ini options table to see if the commands you are using are current. I remove options from the table that have been removed from Hijack. It may not have every option from the newest release, but it definitely won't have options that are outdated.

· **8.18 Why doesn't the temperature ever change in 'Vital Signs'?**
(Entry last updated on July 21st, 2003)

Chances are that your temperature sensor inside the empeg/RioCar is broken or never worked. The sensor was never used in any version of the player software as it was known that they were flakey (or "pants" =), so no reason to worry about it affecting your empeg/RioCar's performance.

If you are super desperate to replace the sensor for some reason, Hugo provided the

following info on the chip:

> It's a SO-8W dallas DS1821S, ISTR it's somewhere just behind the RAM chips
> - quite a wide chip.
>
> It's surface mount, and so not desparately easy to replace; you may be able to
> get free samples from www.maxim-ic.com though. Personally, I wouldn't
> bother replacing it, as it doesn't really perform any useful function wrt to
> player operation!
>
> Hugo

· **8.19 What are the Patch files for (as opposed to the .zimage files)?**
(Entry last updated on March 8th, 2002)

A .patch file is a description of the differences between two other files or tree of files,
typically two different versions of program source code. By applying the .patch file, using
the *patch* program, against one version you can generate the other version. Since the
.patch file generally is much smaller than the full source code, it is much more efficient to
distribute .patch files when a change to the source is made than to redistribute the entire
source.

You only need the .patch files if you intend to compile your own kernel. In that case you
also need the original kernel source code to start from. It's available in the
linux-v2.00b11.tar.bz2 file at the Hijack web site (exact name may change, but it'll be on
the format linux-v.tar.bz2). .bz2 is a compression format that gives even higher
compression than .zip or .gz. The tools (bzip2/bunzip2) are normally included in Linux
distributions and are available for Windows here from the Redhat source site or included
in the Cygwin tool kit.

-entry by Michael Tempsch

· **8.20 I can't get the Restore Visuals feature to work!**
(Entry last updated on September 15th, 2002)

The *Restore DC/Car Visuals* feature is meant to toggle the screen back to a visual screen
(rather than a text screen) when you start the player in your car.

If you have enabled this feature but it does not seem to be working, please do the
following:

First, make sure you're using the player software version 2.0 beta 13 or later, and that you
are running the Hijack kernel *version 293 or later*.

Then, make sure that you have selected one text mode (such as Info:Track) and one visual
mode (such as Info:Transient) directly from the player's ***main menu*** while it's running in
the car.

Then, make sure you've actually enabled the *Restore DC/Car Visuals* feature from the

Hijack's menu screen. After that, it should work on every reboot in the car.

If it still doesn't work, try adding the following entries to your config.ini file (instructions for editing the config.ini can be found here):

[hijack]
suppress_notify=1
[output]
notify=1
[serial]
car_rate=115200

Note that the above is a bit of overkill, at the current time we don't know which one of the lines above will fix the problem. It is possible that only one or two of them is necessary. More research is needed on this topic.

If it *still* doesn't work, please check to make sure that you have not forced the player into AC/Home mode using the *Force AC/DC Power Mode* feature in Hijack. Also check to make sure that your player does not have the AC power sensor switch problem.

· **8.21 What other Userland Apps have been made to work with Hijack?**
(Entry last updated on February 28th, 2002)

Left/Right Time Alignment Hack by Christian Hack
Sets a timed delay to the left or right channel in 0.1ms increments. Included in Hijack as of v.201

Check this thread for details.

empeg-preinit by Bitt Faulk
A small shim that lies under the normal empeg's init process that forks off any processes that might need to start on boot. It relies on Hijack versions v160 and higher (for their ability to find /sbin/hijack before and instead of /sbin/init).

It looks for the directory /etc/preinit.d (which the install creates), and runs any scripts found in that directory (in no particular order, which will be fixed in a future release).

See this thread for more details.

Lojack by Geoff Nicol
A set of web pages that allows you to view and control the empeg/RioCar either via an image of the front panel or images of the Rio and Kenwood remotes.

See this site for details.

kload by Geoff Nicol
A set of scripts that allows you to associate .zimage files to automatically upload and install when opened or double clicked in Windows. Also uses Trevor Man's Find Empeg utility.

See [this](#) site for details.

· 8.22 How can I compensate Mark Lord for this work of genius?
(Entry last updated on February 17th, 2002)

In Mark's own words:

"I have two incoming Paypal accounts, but don't feel obligated in any way.

creditcard payments go to paypal@rtr.ca
cash payments go to mlord@pobox.com"

· 8.23 How do I adjust the VolAdj settings, and what do they mean?
(Entry last updated on March 6th, 2002)

Working on it...

· 8.24 FAQ Changelog
(Entry last updated on July 30th, 2002)

11-03-2002
-created changelog.
-added docked serial info in notify=1 section of config.ini entry.
-added basic HTTP server info.

13-03-2002
-added BassAdj and TrebleAdj to Virtual Button Codes in config.ini entry, implemented
in v239
-removed dance=xxxx options from config.ini as it was removed in v238
-added Button Illumination Level in menu items entry
-added note about front/back time delay not being possible in hardware
-added one: Bass Adjust and Tone: Treble Adjust to the menu items entry
-added a paragraph to the "What is the Hijack Kernel" entry.
-added Jemplode option to autoupdate entry
-added symbolic names table with updated info

17-03-2002
-removed notify=1 requirement from Tone Controls in menu description section

19-03-2002
-added "Hijack Config Error" entry.

23-03-2002
-added popUp info to .U and .N modifiers in ir_translate section, thanks to a find by Bruno

24-03-2002
-added volume_boost and disable_bassboost_FM info to the config.ini entry, which was

added in Hijack 247.
-added Power, Hush, Equalizer and Visual- (which is for the Stalk) to the symbolic names table in the ir_translate entry.
-added buttonled_off option in config.ini table.
-added Sony Stalk info to the ir_translate and config.ini entries. (note to self... figure out what stalk_rhs and stalk_lhs do in config.ini and add that info)

02-04-2002
-fixed "supress_notify" to "suppress_notify", as it was fixed in v252

30-07-2002
-strike through on button_pacing in config.ini section

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