EOS 4.7

Operation Manual Addendum

This is the Operation Manual Addendum for EMU Operating System version 4.7 for the E4 Ultra synthesizer/samplers. This revision includes the EOS FAT file system, which allows efficient use of large hard disks, and the RFX Compressor plug-in.

To Install EOS version 4.7:

FIRST: If you have an RFX card installed, erase ALL your old plug-ins: The plug-in structure has changed in EOS version 4.7 and your old RFX plug-ins are no longer valid. But never fear, all existing RFX plug-ins will be automatically re-installed with version EOS 4.7.

☞ **To Erase all RFX Plug-ins:**

1. Press **Master**, **Bank**, **Flash**.
2. Press **Erase**. A popup window allows you to select the type of FLASH objects to erase.
3. Select **RFX Plugin**.
4. Press **Erase** (F6).
5. A popup dialog box asks if you're sure. Press **OK** to erase the all your old Plug-ins. Press **Cancel** to cancel the operation.

NEXT: Download and Install the Software:

1. Download EOS 4.7 from the E-MU web site (www.emu.com).
2. **Copy the software** to a DOS formatted 3.5" floppy disk.
3. **Insert the EOS 4.6 software disk** and turn power on. The display asks, "Update FLASH from floppy?"
4. **Press Enter.** The display reads, "Loading OS…" This takes a minute or two.
5. The display then asks, "Burn to flash?" **Press Enter.**
6. A few seconds later the Emulator will boot normally.
7. Power off the Emulator and re-boot.

EOS FAT

The major feature in this upgrade is the EOS FAT file system. EOS FAT is based on the FAT32 disk file system as used by Microsoft™ corporation and others.

✎ The EOS file system was designed for high speed loading and saving of files and is faster than FAT32 in this regard.

Therefore, you may want to keep your internal drive formatted as EOS for live performance and use your removable FAT32 drive for backups and archiving.

The FAT32 file system allows more efficient use of large hard disks than the EOS disk file system, which was designed before the availability of gigabyte-sized hard disks in common use today. EOS FAT allows much more data to be stored on large hard drives. In addition, EOS FAT makes it much easier to export as .wav or .aiff and transfer the files to your computer. In addition, you can troubleshoot corrupted FAT32 disks using standard PC diagnostic tools such as the Norton utilities.

EOS recognizes both types of disk formatting, so you can continue to use your current disks. You'll probably want to format any new disks using EOS FAT in order to take advantage of the improved storage efficiency.
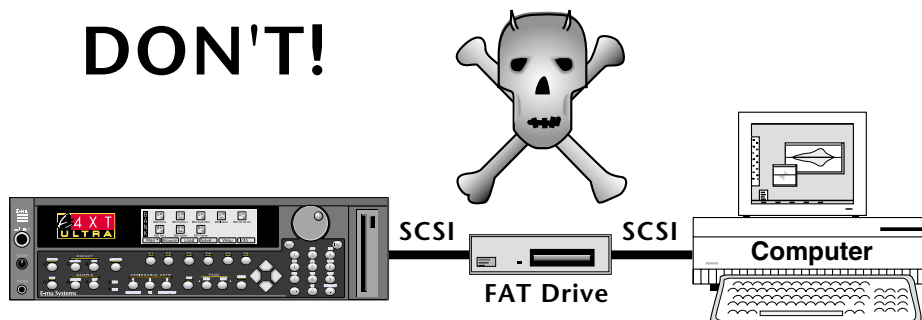
File Sharing using EOS Fat

The FAT32 disk file system makes it much easier to share files between your E4 and your PC or Mac. The following rules should be strictly followed in order to prevent data loss.

1. The E4's internal IDE bus is not sharable. The drive may be shared by physical removal and reconnection to the PC. *See #4 below.*

2. FAT formatted floppy disks may be physically moved between the E4 and the PC.

3. It is acceptable and recommended to have 2 writable removable media devices (Zip, Jaz, DVD-RAM, etc.) of the same type, one on the E4 and one on the PC, and physically move the media between the non-shared drives.

4. It is acceptable to use a single writable removable media device and/or a single fixed (hard) disk if it is only connected to EITHER the E4 or the PC, but not both simultaneously. The device must be physically moved from the E4 to/from the PC to share data. (rebooting both PC and E4 is highly recommended).

5. It is acceptable to have a SCSI CD-ROM drive connected to the E4 and the PC simultaneously.

6. **It is unacceptable, not recommended, and DANGEROUS to share** (by simultaneous connection on the SCSI bus) **a writable removable media or fixed device. YOU MAY LOSE DATA!**
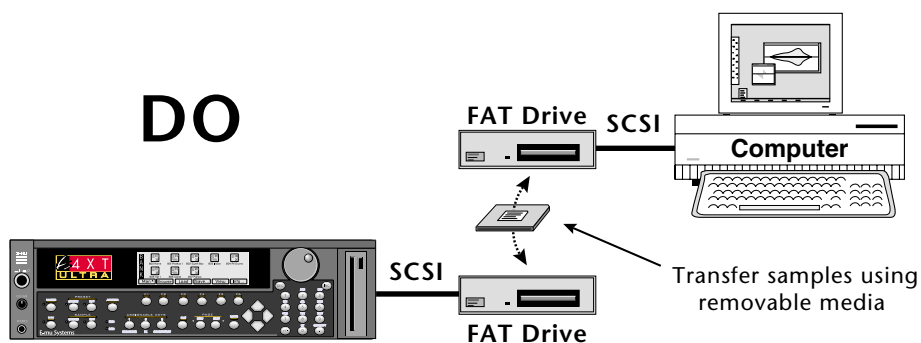
❖ We realize that these rules are contrary to the previous system of connecting the E4 and computer to the same SCSI bus. We hope the advantages of using the FAT 32 file system will outweigh the disadvantages for you. If not, you can continue to use the E4 file system and connect both devices via SCSI.

DON'T!

FAT formatted drives CANNOT share the SCSI bus with EOS and a PC. The PC's operating system does not understand the concept of two master SCSI devices and may overwrite and damage your EOS sample files.

DO

This is the recommended procedure for transferring sample files between EOS and your PC. The availability of low cost removable media makes this method both practical and fairly economical.
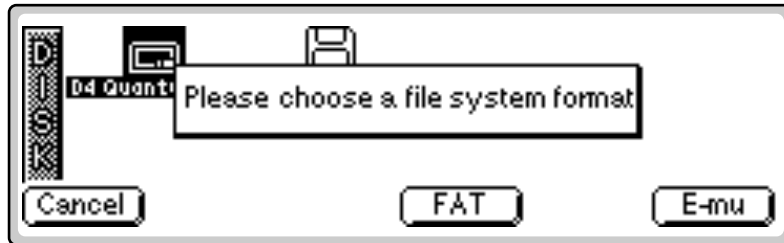
Disk Formatting

The EOS FAT file system supports FAT12, FAT16 and FAT32 file system formats. When you format your disk with a FAT file system, EOS automatically chooses one of the three FAT volume types: FAT12, FAT16 or FAT32.

- FAT12 will be always set for floppy disk.
- FAT16 for disk capacity close to or less than 1Gbyte.
- FAT32 for disk capacity above or close to 1Gbyte.

For example a 100/200 Mbyte ZIP disk will be formatted as a FAT16 volume and a 20Gbyte disk will be formatted as a FAT32 volume.

The EOS disk format screen now includes an EOS FAT formatting option. This procedure installs the E-MU or FAT file system on the selected disk.

Please choose a file system format

☞ **To Format a Hard Disk:**

1. From the Disk Browser, **select the desired SCSI drive** using the Data Entry Control, cursor keys or INC/DEC keys.

2. Press the **Utilities** function key.

3. Press the **Format** function key. The screen shown above appears.

4. Choose either **FAT** or **E-mu** format. A pop-up dialog box now warns that you are about to destroy data.

5. Press **OK** to install the file system on the disk or **Cancel** to cancel the operation. Installing the file system time takes a minute or more, depending on the size of the disk.

Low-level Formatting

EOS cannot perform low-level formatting in IDE disk drives. Most IDE hard disks come preformatted with the low-level formatting, so this is usually not a problem. In the rare instance that you have an IDE hard disk without low-level formatting, you must use your PC to low-level format the disk. In some cases you must use specific low-level formatting utilities provided by the manufacturer of your hard disk.

Use your PC's disk diagnostic tools to troubleshoot defective FAT formatted IDE disk drives.

Folders

EOS FAT volume (disk) can hold up to 1000 folders (F000 to F999) or FAT32 volumes. For FAT12 and FAT16 volumes the number of folders is dependent on the number of files located in the "Root" folder. In general a FAT16 volume can approximately hold up to 170 folders. You can create approximately 74 folders in a FAT12 volume (floppy disks).

There is one particular folder in an EOS FAT volume that represents the root directory of a disk (and is also the root directory when viewed on your PC). This "Root" folder will always exist in an EOS FAT volume with its number fixed at F999. The Root folder cannot be renamed or deleted. If you attempt to do so, EOS will ignore the operation.

Because FAT directories are not sorted or indexed, it's a bad idea to store all your files in the root directory. Organize your files using multiple folders for faster performance.

Files

EOS FAT volumes can currently support the following file formats:

File Format	Extension	Description
EIII Bank	E3B	Emulator 3 Bank Format
EIIIX Bank	E3X	Emulator 3X Bank Format
ESI Bank	ESI	ESI Bank Format
EIV Bank	E4B	Emulator 4 Bank Format
EIV ROM	E4R	Emulator 4 ROM Bank Format
MIDI	MID	Standard MIDI File (SMF)
WAVE	WAV	WAVE File Format
AIFF	AIF	AIFF File Format

Each folder can contain up to 1000 (B000 to B999) bank files in an EOS FAT volume. File operations (load, save, delete, rename and find) are also available in an EOS FAT volume.
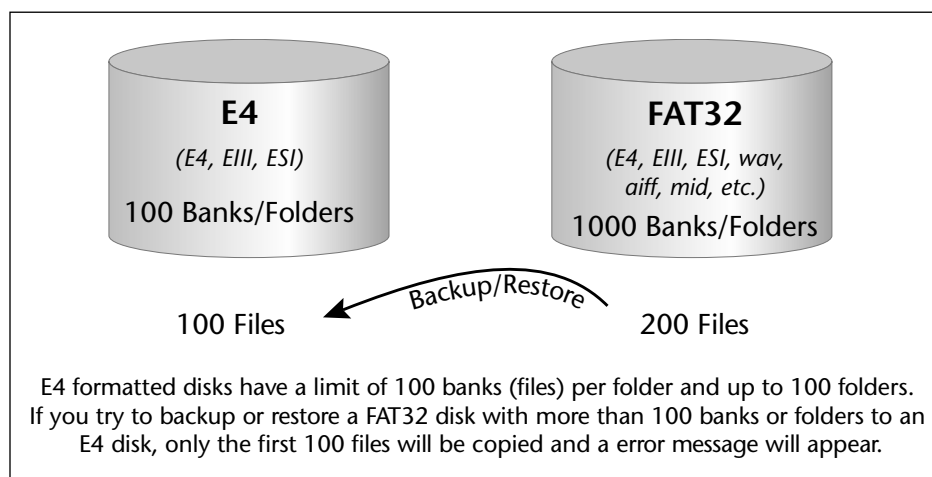
Backup and Restore

The EOS Backup and Restore utilities can be used to backup between E4 formatted disks and FAT32 disks, but there are a few things you should know before you start backing up.

E4 formatted disks have a limit of 100 banks or folders. A FAT32 disk can have up to 1o00 banks or folders. If you try to backup or restore an E4 disk from a FAT32 disk which has more than 100 banks or folders, they obviously won't all fit. If you try to do this, EOS will restore the disk up to the 100 file limit, then display an error message.

FAT32 disks may contain all kinds of files that EOS will not recognize. These files will be copied onto an E4 formatted disk during Backup/Restore.

✎ **Tip:** *Organize your FAT32 drive using folders to circumvent the EOS file limitation. By placing banks into folders the maximum number of possible files is greatly multiplied.*
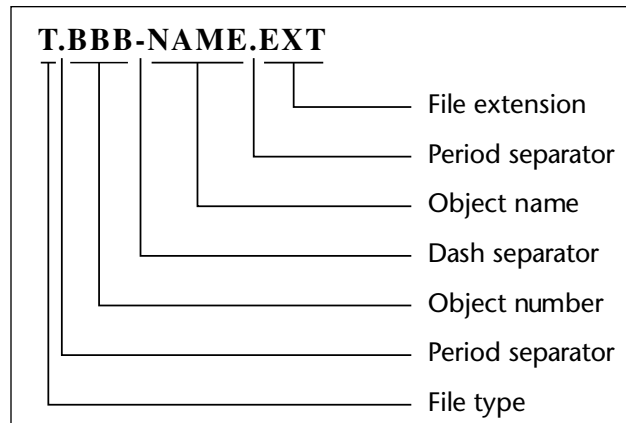

E4	FAT32
(E4, EIII, ESI)	*(E4, EIII, ESI, wav, aiff, mid, etc.)*
100 Banks/Folders	1000 Banks/Folders

100 Files ← Backup/Restore 200 Files

E4 formatted disks have a limit of 100 banks (files) per folder and up to 100 folders. If you try to backup or restore a FAT32 disk with more than 100 banks or folders to an E4 disk, only the first 100 files will be copied and a error message will appear.

Number-naming convention specification

We have defined the following number-naming convention for EOS FAT volumes in order to maintain E4 file names and numbers in a FAT file system format.

Field convention

All files and folders names created with an EOS FAT volume will embed the following character fields:

T.BBB-NAME.EXT

- File extension
- Period separator
- Object name
- Dash separator
- Object number
- Period separator
- File type

For example, an E4 preset named "Stereo Brass" when exported into an EOS FAT volume at bank location B002 will have its file named set to:

B.002- Stereo Brass.E4B

Number-naming rules

1. When writing files (folders), EOS FAT will write the file (folder) number into the file (folder) name, using the standard number-naming field convention:

EOS Object	EOS FAT Volume File Name
Object #049	B.049-BankActualName.E4B
Object #231	B.231-SeqActualName.MID

2. When reading a directory listing, the EOS FAT subsystem will:

   a. give preference to files (folders) that follow the number-naming convention, assigning them their indicated numbers.
   b. algorithmically assign numbers to files (folders) that don't follow the number-naming convention.
   c. algorithmically assign numbers to files (folders) that follow the number-naming convention, but duplicate numbers already assigned.

4. When returning file (folder) names to the EOS application, EOS FAT will strip the numbering prefix and the extension suffix from the actual file (folder) name, and return only the "root" of the file (object) name.
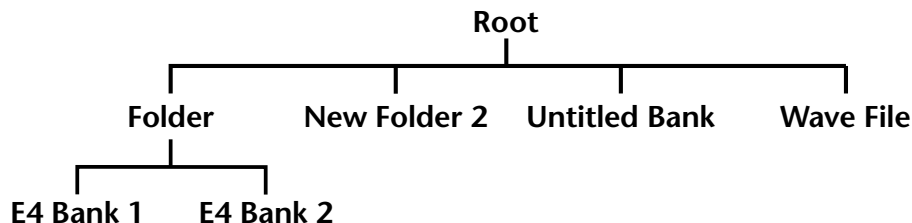
Notes:

- If the number-naming convention is strictly followed, behavior will essentially be as EOS users expect.
- Note that 2.b and 2.c (above) should never occur if all writing is done from EOS itself.
- Items 2.b and 2.c (above) may occur if the user edits the media from Windows (or equivalent), so these cases must be handled, and their behavior documented. If the user chooses to violate the number-naming convention when editing media via PC, the EOS behavior will still be predictable, but slightly non-EOS-standard.

Definition: Root Folder

The **Root folder** is the **top folder** (directory) in a file system. The root folder (directory) is provided by the operating system and has a special name; for example, in DOS systems the root directory is called "\". The root folder (directory) is sometimes referred to simply as the root.

A root folder is usually described using a tree diagram.

The root folder can contain both folders and files. When a disk is formatted, all contents (files and folders) located in the root folder are deleted. For example, if you save a file in a disk that was just formatted, the operating system will place it in the root folder.

A FAT32 volume has no limit to folders and files located in the root folder. In FAT12 and FAT16 volumes, the root folder has a fixed size which limits the number of folders and files located in the root folder. In general, a FAT16 volume can hold up to 170 folders. You can create approximately 74 folders in a FAT12 volume (floppy disks).

If you save 170 banks to the Root folder in a FAT16 disk, you won't be able to create any more folders. For this reason we don't recommend saving banks to the Root folder when you're using a FAT16 disk with the EOS browser.
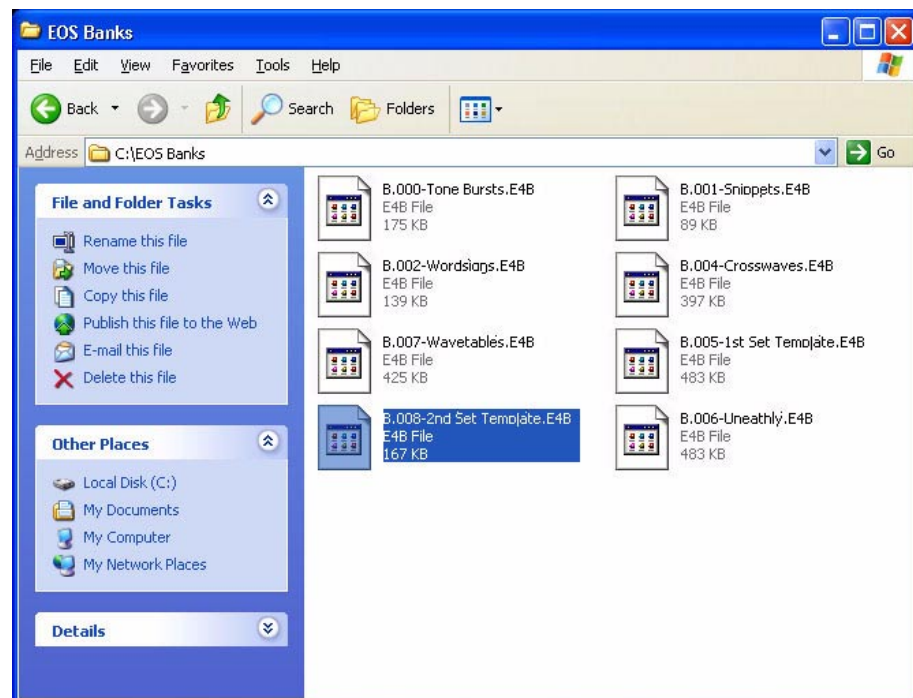
Applications

Please read the "Number Naming Convention Specification" on page 6 before trying these applications.

Rearranging EOS Bank files on your Mac or PC

EOS Banks can easily be reordered or renamed on your computer by following the Number Naming Rules outlined in the Appendix. Unfortunately the presets and samples cannot be edited or modified from your computer browser. Nevertheless, you may find this procedure useful for reordering and renaming banks.

☞ **To Rename EOS Bank files on your computer:**

1. Copy the EOS Bank files to a removable FAT disk and insert this disk into the drive on your computer.

2. Open the removable media disk from the browser on your computer. The window below shows how the files appear in Windows XP. Note the EOS Standard Naming Convention as described on page 6.

3. You can now rename and reorder the banks. When you reload the banks back into the E4, the new names and bank order will be retained.

Keeping the EOS naming convention is not necessary unless you want to preserve the bank slots of .wav or .aiff files located on removable media.

Transferring .wav/.aiff files between E4 & your computer

EOS can export samples as .wav or .aiff files in order to be read by your PC or Macintosh. EOS FAT allows these files to be freely exchanged between the E4 and your computer.

To bring the samples back into the E4, simply merge them into an EOS bank. The window below shows how the files appear in Windows XP. Note how the sample files are exported with the bank designator (B) in the name.

☞ To Transfer Samples from E4 to your Computer:

1. Export the samples as **.wav** (PC) or **.aiff** (Mac) to your removable media drive using the "Export Sample" function in the Sample Manage module.

2. Transfer the removable media disk to your computer disk drive.

3. Open the files in your computer and edit the names and sample data as desired.

☞ To Transfer Samples from your Computer to E4:

1. Save the **.wav** (PC) or **.aiff** (Mac) samples to your removable media drive on your computer.

2. Transfer the removable media disk to your E4 removable disk drive.

3. Merge the samples (which appear as banks) into a bank on your E4.

4. Save the bank.

Miscellaneous Bug Fixes

- Error handling of bad plug-ins is now much improved.
- Plug-ins are no longer reported 'bad' when they're not.
- Effects Wet/Dry Mix is no longer set to default after changing an effect in RFX Setup.
- Realtime Control of RFX now works when re-sampling.
- Plug-in MIDI Mod is now set to default when a Cord Destination is changed.
- Import Wave minor improvements (& some formats used to crash).
- MM List 3 Assign Key no longer crashes non-RFX unit.

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