EMXP

on macOS (Mac OS X) with Wine

INSTALLATION AND USER MANUAL

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DISCLAIMER

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DDRescue-GUI: see https://launchpad.net/ddrescue-gui

SCSI2SD: see http://www.codesrc.com (by Michael McMaster)

Support: **I am not a professional hardware and software builder.**

This means I don't have a lot of time to give support on (using) EMXP, the EMuSer, ...

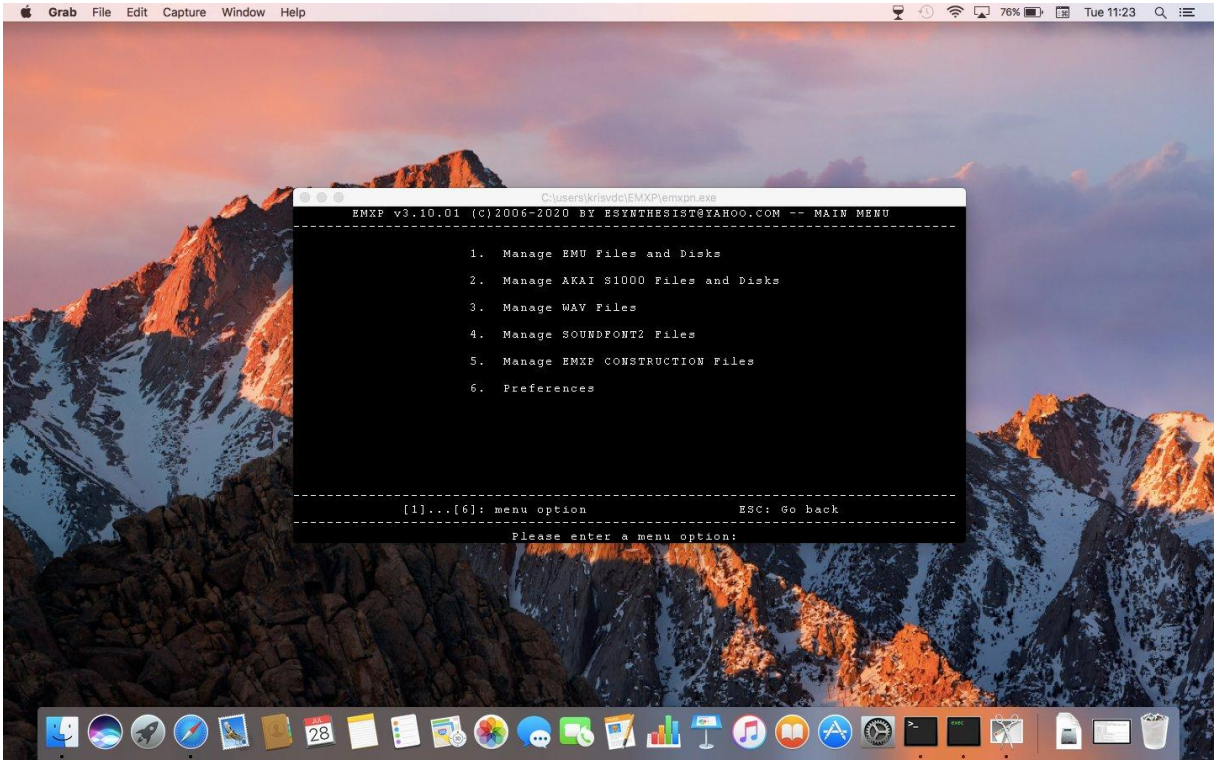
I will try however to respond to as many questions and problem as possible.

I can be contacted on the esynthesist [at] yahoo [dot] com e-mail address.

INTRODUCTION

While EMXP is written for the Windows platform, it's also possible to use EMXP on macOS[1] by means of Wine (https://www.winehq.org).

Wine is a compatibility layer capable of running Windows applications on several POSIX-compliant operating systems, such as Linux and macOS. The software is downloadable free of charge.



When running EMXP in Wine on macOS, most (but not all) EMXP functions will be available on macOS. These include:

- Viewing the contents of sampler files/banks (e.g. presets, voices, samples and their parameters)
- Copying between different file types
- Conversions between different sampler types
- Conversions between samples and WAV files
- Audio player: listening to samples and WAV files
- Constructing sampler banks from scratch
- MIDI communication, except for SP12 (see Note 1 on the next page)
- RS422 communication (see Note 2 below)
- ...

The only EMXP functionalities currently not supported yet in Wine/macOS are *direct read and write access to sampler disks* and SP12 MIDI communication (see Note 1 on the next page). This is due to limitations imposed by Wine.
As a consequence EMXP can't directly read banks from and write banks to EMAX-I, EMAX-II, Emulator-II and Emulator-III/IIIX/ESI hard disks, CD-ROMS, memory cards, ... But there's a work-around, as explained below ! It's not possible to access floppy disks neither, but that's not only due to Wine but also to hardware constraints of the Apple computers.

[1] In this manual we use the name "macOS" instead of the older "Mac OS X" name for Apple's operating system. But EMXP can also be used in Wine on Mac OS X El Capitan or higher.

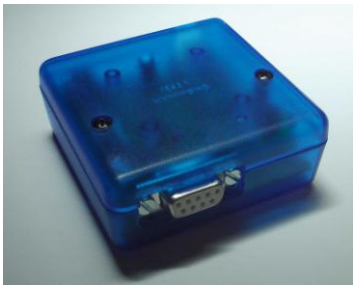
Please note that DREM is supported by EMXP in Wine/macOS because the DREM emulator uses hard disk *image files* (.DSK files) on its SD card, instead of treating its SD card as a hard disk replacement itself. Fortunately there's a work-around for reading and writing sampler hard disks:

- To read or write sampler disks like an EMAX-II hard disk or memory card or a SCSI2SD card containing multiple E-Mu partitions, you can create an ISO image of the disk first. This can't be done with EMXP when running in Wine, but other software is available on macOS for creating disk images. An example is *DDRescue-GUI*, as explained later in this document.
- EMXP can then read and write these ISO (hard) disk images.
- Once you have updated an ISO hard disk image in EMXP, you can write it back to the sampler disk (but again not with EMXP, another software utility like *DDRescue-GUI* should be used on macOS, as explained in later in this document)
- Note that EMXP can also read and write IMG and HFE (floppy) disk images for all E-Mu samplers supported by EMXP. If you'd rather like to use the HxCFloppyEmulator conversion software to convert IMG files to HFE files (and vice versa), that's of course still possible as well. The HxCFloppyEmulator conversion software is available for Windows and for macOS, see http://hxc2001.free.fr/floppy_drive_emulator/

Notes:

1. MIDI data transfer between EMXP and the EMAX-I/EMAX-II should work without any problem, but MIDI communication with the SP12 doesn't work. This is due to the length of these MIDI messages and the fact that these MIDI messages are not MMA compliant. These messages are not supported by Wine on macOS.

2. For enabling the RS422 functionality of EMXP on Wine, firmware v1.02.1 or higher must be installed in the EMuSer. Updating the firmware is a piece of cake and can be done by anyone: see *chapter "STEP 3: UPDATE EMUSER FIRMWARE"* below.



3. Running EMXP in Wine on macOS has only been tested on Mac OS X 10.11 (El Capitan) and macOS 10.12 (Sierra). Moreover it is assumed that ACM/CDC Kernel Extensions version 5.0.0 (or higher) have been installed (see System Report, Software → Extensions: AppleUSBACM v5.0.0 and AppleUSBCDC v5.0.0 should be installed and loaded when using the EmuSer in Wine)

INSTALLATION PROCEDURE

To use EMXP on macOS by means of Wine, the following installation steps should be performed:

1. Install Wine for macOS version 1.8 or higher
2. Install EMXP
3. Update the EMuSer firmware (only if RS422 communication is required)
4. Assign a COM port to the EMuSer for Wine (only if RS422 communication is required)
5. Start EMXP

Installation is fairly simple and will take only a few minutes.
Each step is explained in more detail in the sections below.
This manual assumes that macOS 10.12 (Sierra) and AppleUSBACM and AppleUSBCDC kernel extensions v5.0.0 or higher have been installed on the Mac computer.

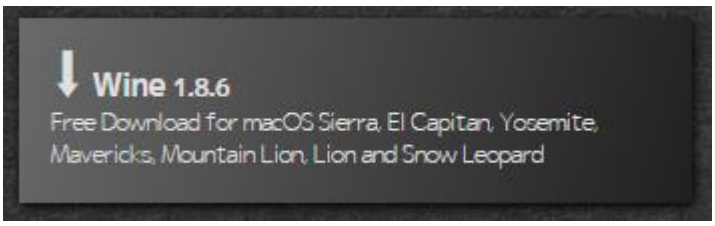
STEP 1: INSTALL WINE

EMXP requires Wine version 1.8 or higher.

Wine can be downloaded from the official website (https://www.winehq.org/download) but in this manual we assume that the Wine.App package provided by WineBottler will be used (http://winebottler.kronenberg.org). The installation process is illustrated based on version 1.8.6 of Wine.

1. Download Wine.app

Download the Wine.App DMG file from http://winebottler.kronenberg.org/downloads
You don't have to download the WineBottler.app. Downloading the Wine.app is sufficient.
It can be found on http://winebottler.kronenberg.org/downloads by scrolling down.
Make sure you download version 1.8 or higher.

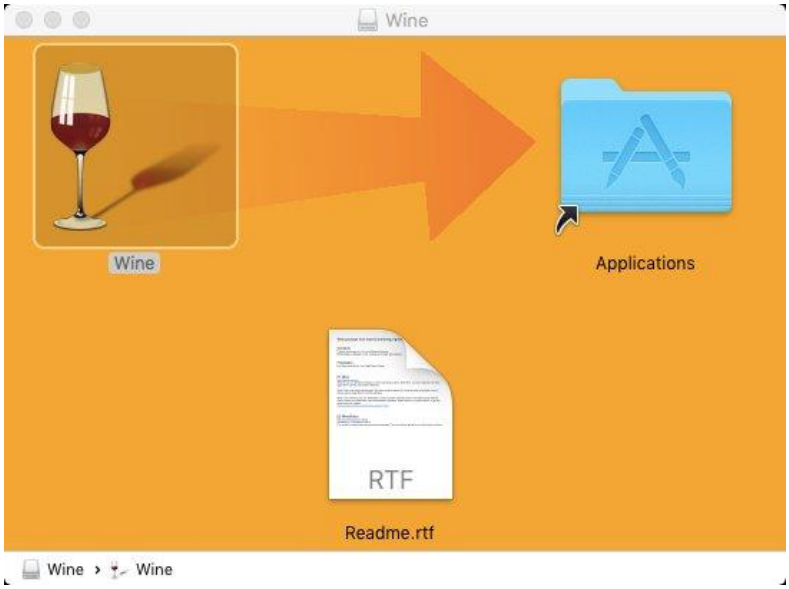


If for some reason this download is not available, you can also download the complete WineBottler.app. The Wine App is part of that download and it's perfectly possible to only install the Wine App.

2. Install Wine.app

Double-click on the Wine_x.DMG file (e.g. Wine_1.8.6.dmg) or WineBottlerCombo_x.DMG file (e.g. WineBottlerCombo_1.8.6.dmg)

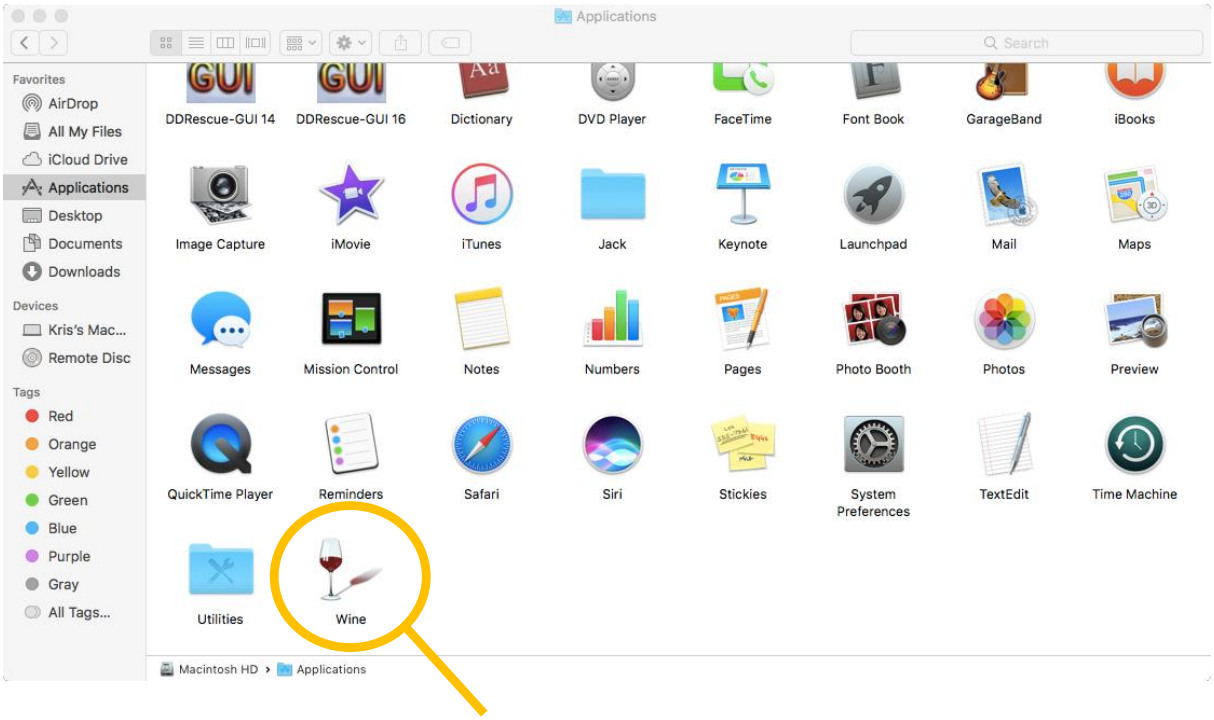
After installation, one of the following windows will appear:
If you downloaded the Wine App:



If you downloaded the WineBottler App:

Drag the *Wine* icon into the Applications folder (if you downloaded the WineBottler combo, you don't have to drag the *WineBottler* icon to the Applications folder)

Wine is available now as an application on macOS:



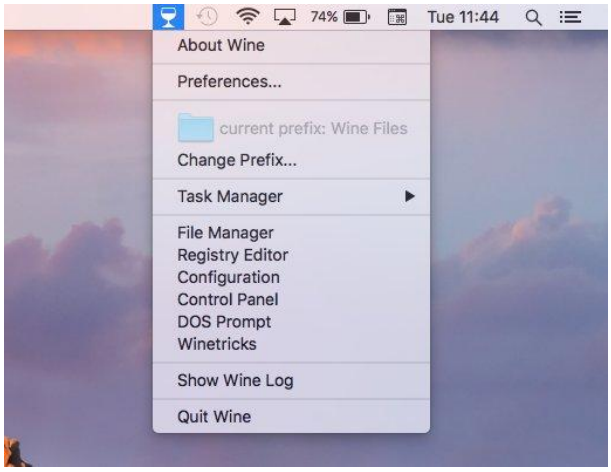
3. Open Wine

Double-click on the Wine icon in the Applications folder.

When opening Wine for the first time, three windows will appear. On the Winetricks windows, select "silent install", and click on apply.

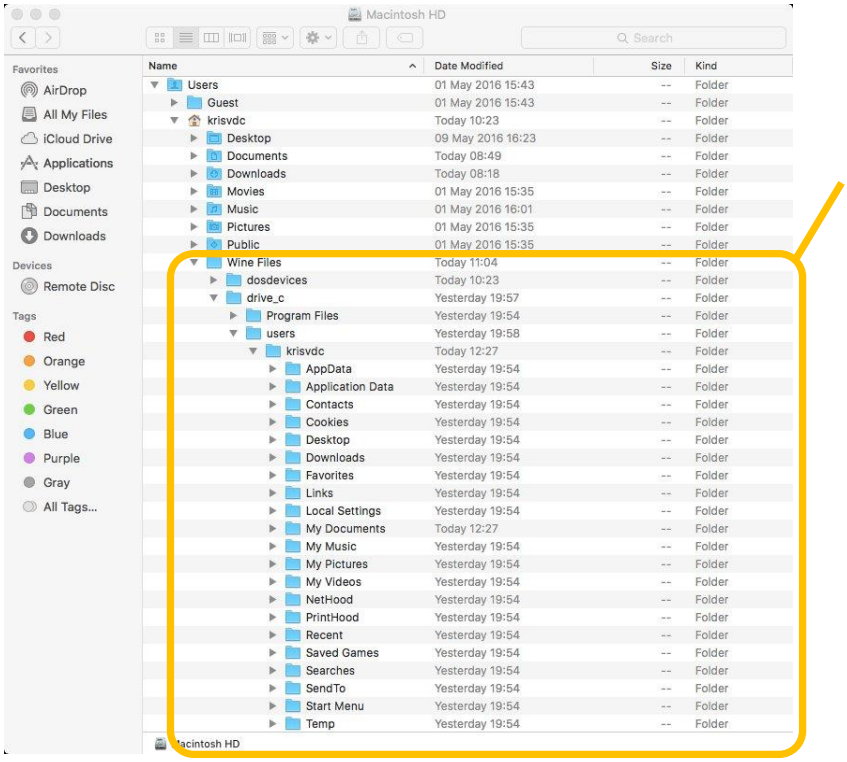
The default Wine environment (with prefix "Wine Files") will now be created and configured, including a "virtual C-drive" which will behave as the Windows C-drive in Wine.

Once this process is finished, a Wine glass icon will appear in the top macOS window bar on the right, as shown in the picture below:



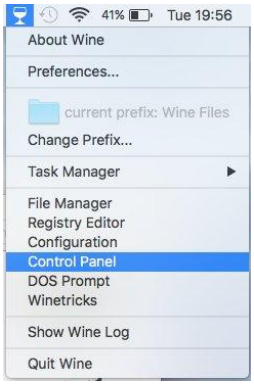
4. Verify the Wine prefix environment

Open Finder and have a look at all folders in your home folder (in the picture below, the logon account is "krisvdc")



The Wine installation process should have created a folder named "Wine Files" (called the *prefix* in Wine). One of its subfolders is called "drive_c": this folder will behave as a "virtual" C-drive in Wine and it will be the C-drive for EMXP as well. All files used in EMXP (e.g. sound bank files) can be saved in subfolders of this "drive_c", but EMXP can also access any other folder on any of your Mac drives, so it doesn't really matter where you will store your sound libraries...

If the "Wine Files" folder has not been created automatically for whatever reason, Wine will still perform this step when you try to use software in Wine for the first time. E.g. to enforce the creation of the default prefix/environment, you can click on the Wine glass in the top window bar, and select "Control Panel" or "Configuration").



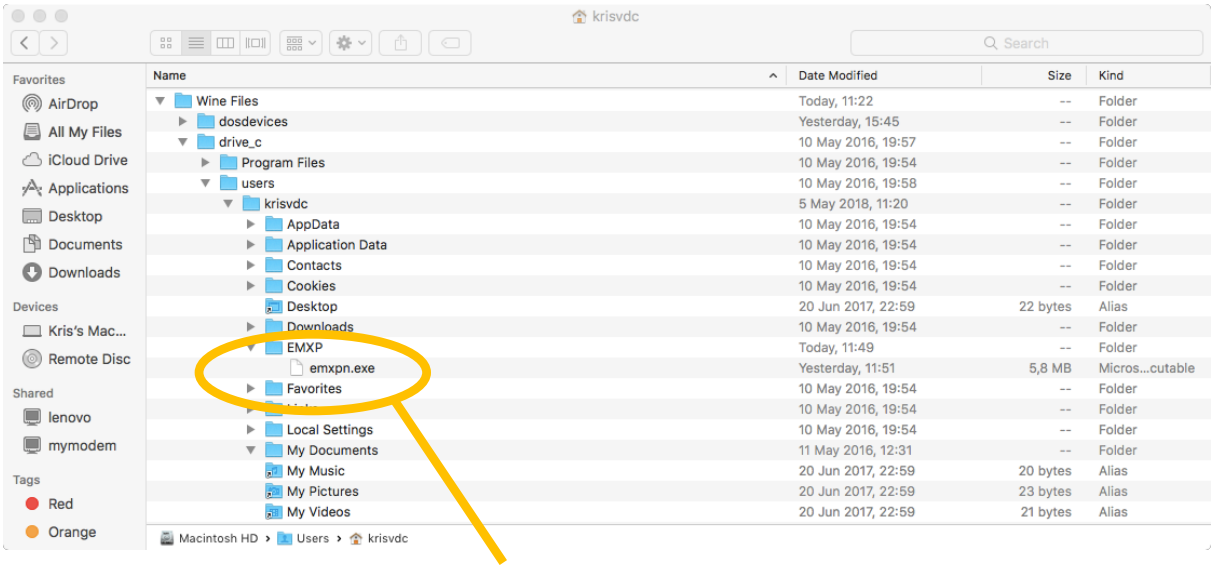
STEP 2: INSTALL EMXP

First download the most recent version of EMXP here: http://www.emxp.net
(note: the oldest version of EMXP which supports Wine is version 3.05.2)

Installing EMXP is very easy. No actual installation process must be performed.
You only have to copy the EMXPN.EXE file to a folder on your Mac hard disk. It is advised to save EMXPN.EXE in a subfolder of Wine's "drive_c", in order to make sure all that "Windows" applications are kept together on this "C-drive".

In the picture below, we used Finder to create a folder called "EMXP" in the "Wine Files/drive_c/users/krisvdc" folder, and we copied EMXPN.EXE to this folder.

That's it.



STEP 3: UPDATE EMUSER FIRMWARE

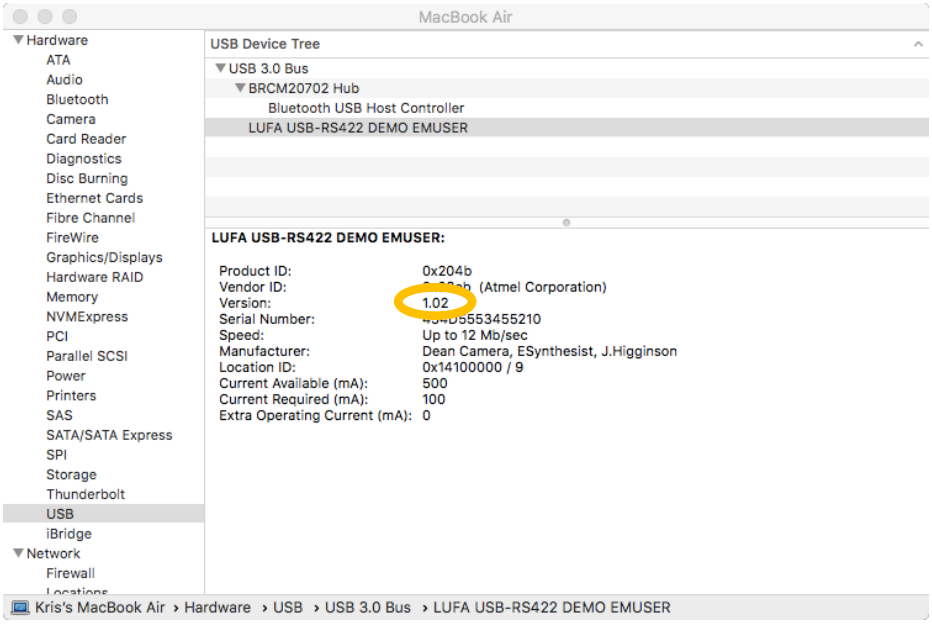
This installation step is only required if you are planning to use the RS422 functionality of EMXP and if you have an EMuSer USB←→RS422 device with an older firmware (lower than v1.02.1).

1. Verify the current firmware version of the EMuSer

Connect the EMuSer to your Mac.

Select "About This Mac" after clicking on the Apple icon in the right corner of the macOS top window bar.

Click the "System Report" button, then click on the "USB" item under "Hardware" and select the device named "LUFA USB-RS422 DEMO" or "LUFA USB-RS422 DEMO EMUSER".
The Version should be 1.02 or higher. If another version is displayed (typically 0.00 or 1.01), the firmware needs to be upgraded. In that case, go to the step 2 on the next page.



The following steps should only performed if the firmware needs to be updated (see outcome of previous step)

2. Download the latest firmware version

The firmware for the EMuSer is part of the EMuSer ZIP package which can be downloaded here: http://www.emxp.net/EMuSer.htm.

Extract the file called "USBtoSerialEmu_Teensy2_0_vxx_yy_zz.HEX" from the ZIP package and save it on your Mac computer, e.g. in the Documents folder. *(xx and zz should be 1 or higher, yy should be 2 or higher)*

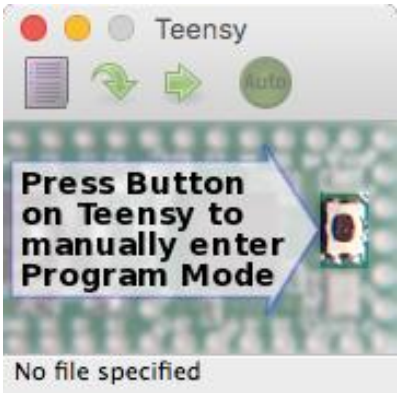
3. Download Teensy Loader

Teensy Loader is the software which is required to update the EMuSer's firmware. It can be downloaded from the PJRC website http://www.pjrc.com. At the time of writing the following URL provides a direct link to the Teensy Loader download page: http://www.pjrc.com/teensy/loader.html

Teensy Loader must not be installed.
The software can be started immediately by running the Teensy application from the downloaded DMG file.

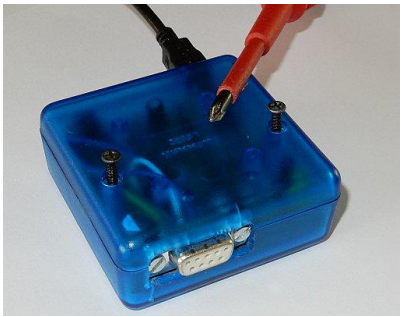
4. Open Teensy Loader

Start Teensy Loader by starting (double clicking) Teensy application in the DMG file. macOS might ask for a confirmation. After confirmation the Teensy Loader window will appear:



5. Open the EMuSer case

Open the case of the EMuSer – if the standard blue transparent case has been used, opening the case can simply be done by removing the two black screws.

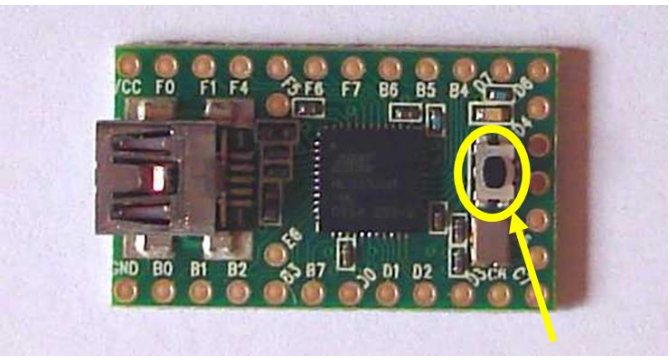


6. Connect the EMuSer to the Mac computer

Connect the EMuSer device to your computer with a mini-B USB ←→ type A USB cable.

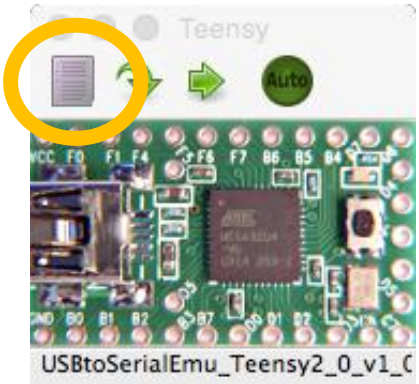
7. Put the EMuSer in "firmware update mode"

Press the small button on the Teensy Board inside the EMuSer (see picture below). The Teensy Loader software will detect the Teensy board now and will show a picture of the Teensy Board. Also, the green arrow button ("Reboot") will be activated. The orange LED on the EMuSer should be turned off now.



8. Select the firmware

Click the left button, select "Open HEX file" and select the USBtoSerialEmu_Teensy2_0_vxx_yy_zz.hex file which has been downloaded from the EMuSer webpage. The Teensy Loader window should change into:



9. Update the firmware

Press the “bowed arrow” button (“Program”). This will transfer the firmware to the EMuSer. After the transfer, the Teensy Loader window should change into:

10. Restart the EMuSer

Press the “horizontal arrow” button (“Reboot”). This will reboot the EMuSer and make it run as aUSB ←→ RS422 adapter.

11. Close the EMuSer case

The firmware has been updated now !

STEP 4: ASSIGN A COM PORT TO THE EMUSER

This installation step is only required if you are planning to use the RS422 functionality of EMXP and if you have an EMuSer USB←→RS422 device available with the latest version of the firmware (*see "STEP 3: UPDATE EMUSER FIRMWARE"*).

When running EMXP under Wine, EMXP requires a COM port number. Since macOS does not rely on COM port numbers, a symbolic link for the EMuSer must be made in macOS first before EMXP can detect the EMuSer.

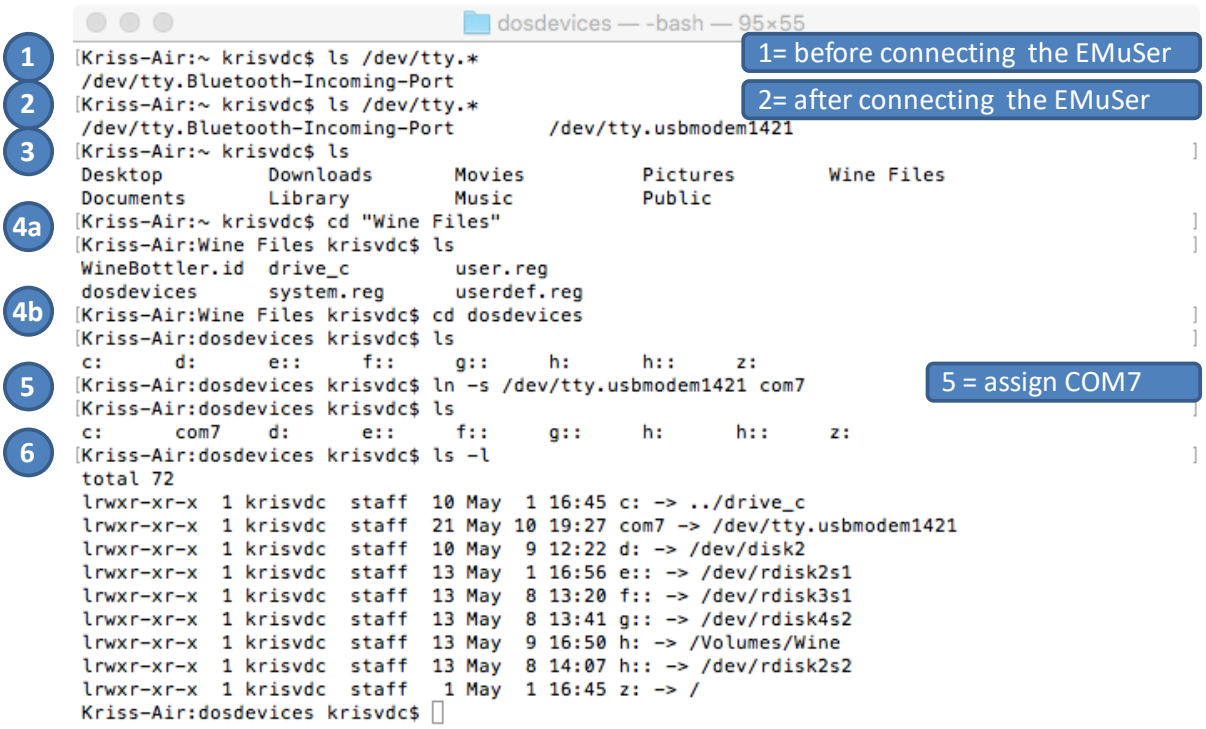
Assuming Wine 1.8 (or higher) has already been installed on your macOS system, and the default Wine prefix ("Wine Files") has been configured during the installation of Wine, this section explains how to assign a COM port number to the EMuSer.

0. Start the Terminal application

Start the Terminal application, which can be found in the Utilities folder of the macOS applications.

After opening Terminal, the "active" folder in Terminal should be the home folder (in the example shown below, the active user account on macOS is "krisvdc", see the first line in the picture above: "~krisvdc$")

Steps 1 → 6 refer to the numbers 1 → 6 in the picture below, which shows all commands and their output in a single Terminal session.



Don't connect the EMuSer yet or disconnect it now !

1. Identify the communication devices before the EMuSer is connected

Find the serial ports currently known/detected by macOS. Make sure the EMuSer is not connected yet. Listing the serial ports can be done by listing all terminal devices (/dev/tty*) and checking whether some serial ports are part of them. But since the EMuSer will normally be detected as a /dev/tty.* terminal (with a dot after tty), you can limit the output by only listing the /dev/tty.* devices:

Enter command: **`ls /dev/tty.*`**

In this example, only a bluetooth device is found with a device name starting with "tty."

Connect the EMuSer now

2. Identify the device corresponding to the EMuSer

Make sure the EMuSer is connected now. Then enter the same command as in step 1.

Enter command: **`ls /dev/tty.*`**

In this example, an additional device is found. It's called tty.usbmodem1421. This is the device corresponding to the EMuSer RS422 port.

3. Navigate to Wine's DOS devices

Let's assign a COM port number now to the EMuSer.
This COM port is required as a "DOS" device in Wine, so let's navigate to the "dosdevices" folder first.
First, check if Wine's prefix is available as a folder in the home folder. The default prefix is "Wine Files".

Enter command: **`ls`**

In this example, the "Wine Files" is indeed available as a sub folder. This is normal if a standard Wine installation has been performed. If you have created another prefix, or it is located elsewhere (e.g. in the Documents subfolder), you should navigate to that folder first by using the "CD "command.

4. Navigate to Wine's DOS devices [steps 4a and 4b]

Navigate to the "dosdevices" folder of Wine, by entering the following commands:

Enter command: **`cd "Wine Files"`**
Enter command: **`cd dosdevices`**

You can check which DOS devices currently exist in Wine:

Enter command: **`ls`**

In this example, no COM ports are assigned yet.
Only some drive letters can be found.

5. Assign the COM port number

Assign a COM port to the EMuSer by defining a symbolic link to the serial device. Choose a COM port which is still available. Avoid COM0, COM1, COM2 and COM3. In this example we will use COM7.

Enter command: **`ln -s /dev/tty.usbmodem1421 com7`**

You can check which dos devices can be used in Wine after having created the COM port link:

Enter command: **`ls`**

In this example, COM7 has been added to the dos devices.

6. Verify the COM port assignment

Assigning the COM port to the EMuSer is finished now. To check to which device the COM port is assigned, you can use the following command:

Enter command: **`ls -l`**

The link between com7 and /dev/tty.usbmodem1421 can be found here.

Note: undoing a COM port assignment

If for some reason you want to undo a COM port assignment, e.g. because you want to assign the COM port to another serial device, you can use the following command

Enter command: **`unlink com7`**

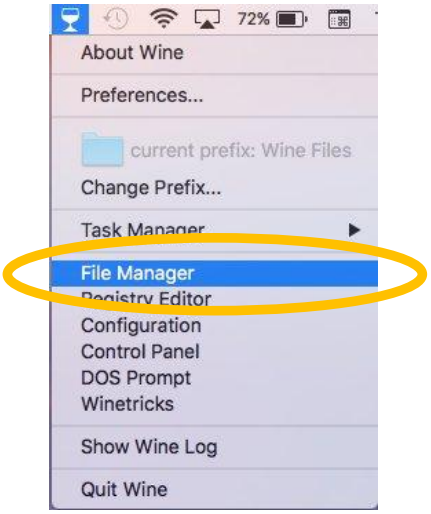
You can assign the COM port to another device now, see steps 5 and 6.

STEP 5: START EMXP

The installation is finished now.
It's time to start EMXP on macOS in Wine.
It is assumed that Wine has already been started (see *step 3 in "STEP 1: INSTALL WINE").*

1. Open the File Manager in Wine

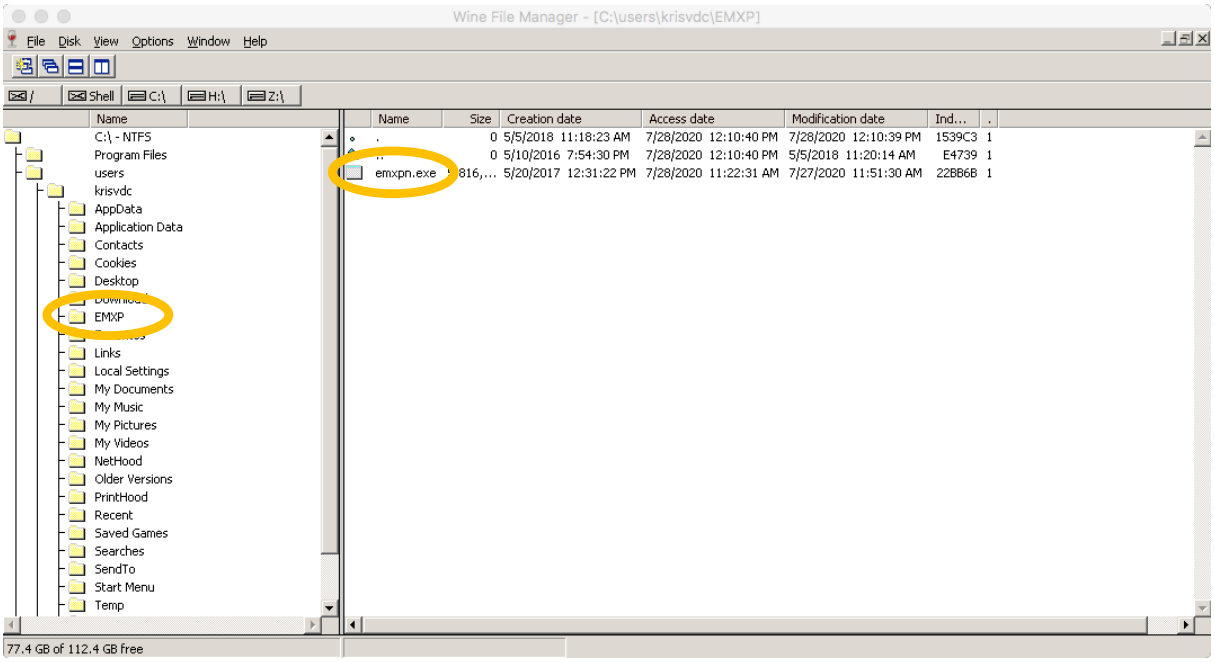
Click on the Wine glass in the top window bar of macOS and select "File Manager".



A "Windows XP"-like File Manager will open now.

2. Navigate to EMXP

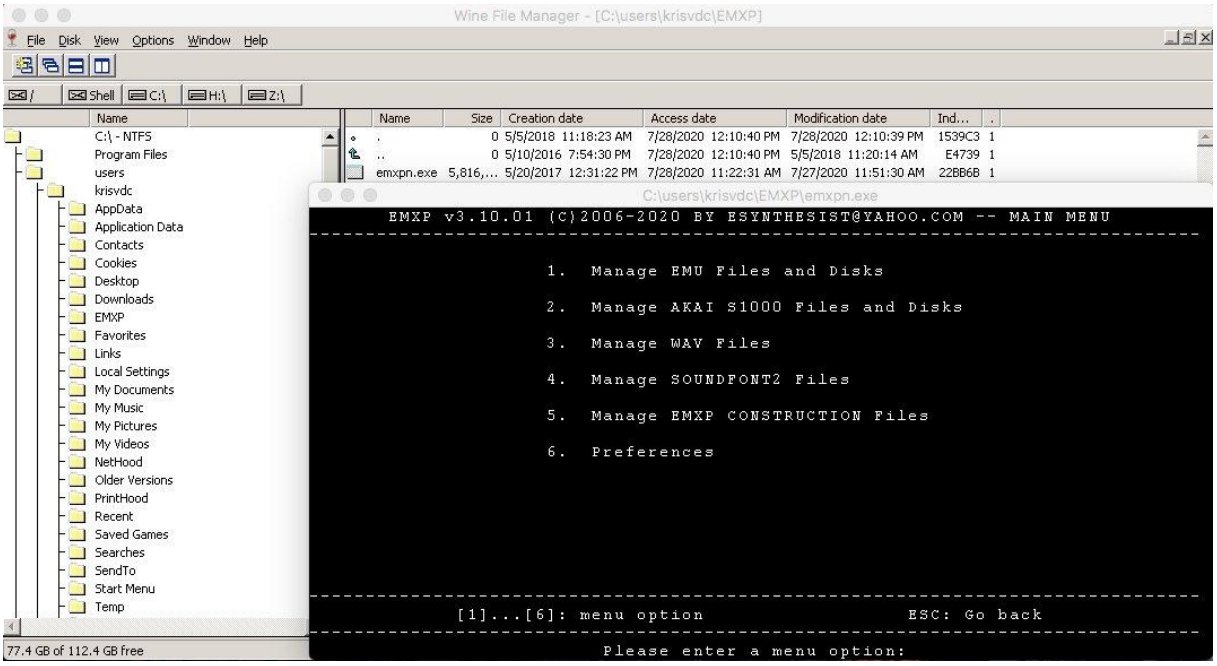
Navigate to the folder in which EMXPN.EXE has been saved (*see "STEP 2: INSTALL EMXP").* Navigating can be done by double-clicking on the folders in the left frame of the File Manager window.



3. Start EMXP

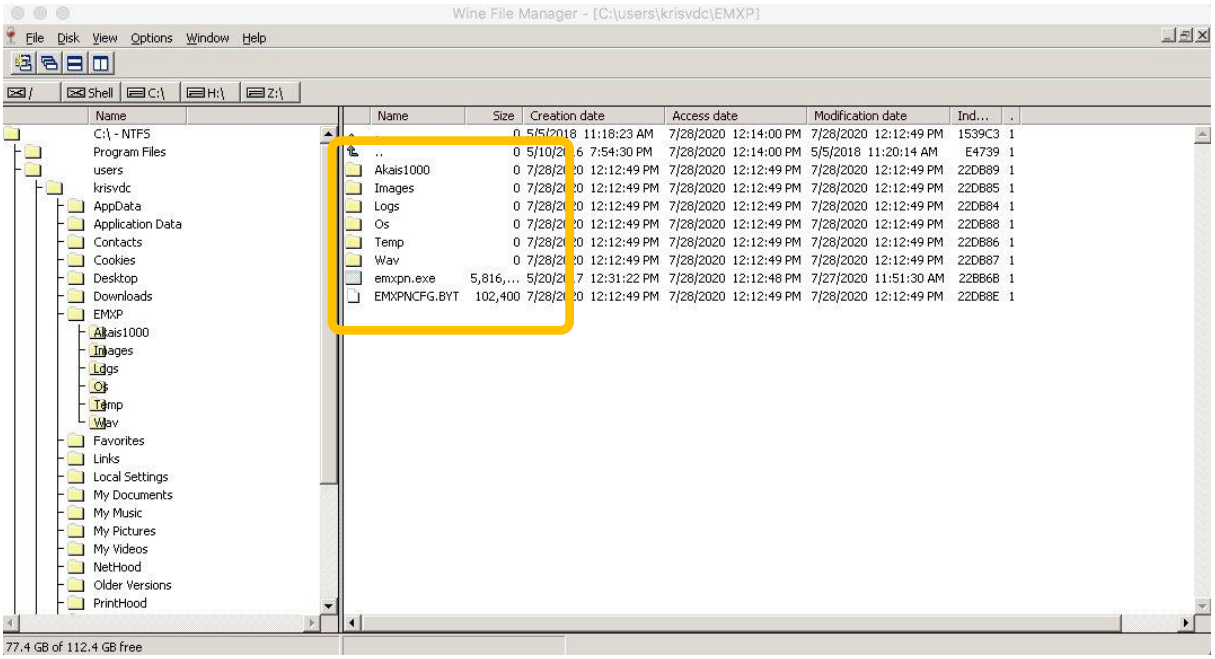
Start EMXP by double-clicking on EMXPN.EXE

The main window of EMXP will appear now. EMXP can only be controlled by a keyboard (not by a touchpad nor a mouse).



4. Verify EMXP installation

In the File Manager, click on "Window" and select "Refresh".
EMXP should have created some subfolders and its EMXPNCFG.BYT configuration file, as shown in the picture below.



5. Verify the COM port assignment

This step is only useful if you are planning to use RS422 communication and if you have an EMuSer connected to the Mac Computer.
It is assumed that *"STEP 3: UPDATE EMUSER FIRMWARE" and "STEP 4: ASSIGN A COM PORT TO THE EMUSER"* have been done before using EMXP in Wine.

In EMXP, go to the "Emulator-II RS422 Communication Preferences" screen by entering 6, then 5 and finally 1. The following screen will appear:

```
                    EMULATOR-II RS422 COMMUNICATION SETTINGS
-------------------------------------------------------------------------------
   > <  01. RS422 COM Port Number                                    3
   [ ]  02. Baud Rate for setting Ext. Clock (Normal Mode)           500000
   [ ]  03. Baud Rate for setting Ext. Clock (Posix/Wine Mode)       50
   [ ]  04. Baud Rate for setting MIDI Speed (Posix/Wine Mode)       38400
   [ ]  05. Data Packet Size (Bytes)                                 256
   [ ]  06. Maximum Retry Count for reading RS422 port               50
   [ ]  07. Maximum Retry Count for writing RS422 port               10
   [ ]  08. Maximum Retry Count for opening RS422 port               60
   [ ]  09. Maximum Retry Count for closing RS422 port               6
   [ ]  10. Delay Time for opening/closing RS422 port (Msecs)        60
   [ ]  11. Maximum Re-handshake Count per data packet               25
   [ ]  12. Maximum Re-handshake Count for all data packets          600
   [ ]  13. PC RS422 Port Timeout for High Speed (Milliseconds)      5
   [ ]  14. PC RS422 Port Timeout for Low Speed  (Milliseconds)      100
   [ ]  15. Delay Time for changing Port Speed   (Milliseconds)      50
   [ ]  16. Delay Time during bulk data transfer (IN)  (Msecs)       0
   [ ]  17. Delay Time during bulk data transfer (OUT) (Msecs)       0
   [ ]  18. Enable Fast Bank Upload (0 = No, 1 = Yes)                1
   [ ]  19. Enable Fast Bank Unload (0 = No, 1 = Yes)                1
-------------------------------------------------------------------------------
[SPACE|01-19]Select [A]All_____ [M]Range___ [U/D]Scroll [ESC]Back__ ___________
-------------------------------------------------------------------------------
                            Please enter your choice:
```

Select the first item in the configuration parameter overview by pressing the space bar or by entering 0 and 1 ("01"). The cursor will change into ">X<" as shown in the picture above.
Now press ENTER.
If the COM port installation went well, the following screen should appear.

```
            SELECT COM PORT FOR RS422 COMMUNICATION WITH EMULATOR-II
-------------------------------------------------------------------------------
                         >X<  1. Port 0: COM7



-------------------------------------------------------------------------------
[SPACE|1-1]Select__ ___________ ___________ [U/D]Scroll [ESC]Back__ [RET]Go____
-------------------------------------------------------------------------------
                            Please enter your choice:
```

At least COM7 should be available in the COM port overview, but perhaps other COM ports will be shown as well. Select COM7 to use the EMuSer in EMXP.

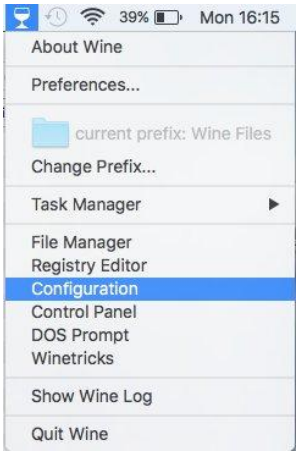
CONFIGURING WINE

Although EMXP can run in Wine without any configuration of Wine, it may be a good idea to open the Configuration window of Wine and have a look at the configuration of:

- the disk drives
- the audio device

1. Open Wine Configuration

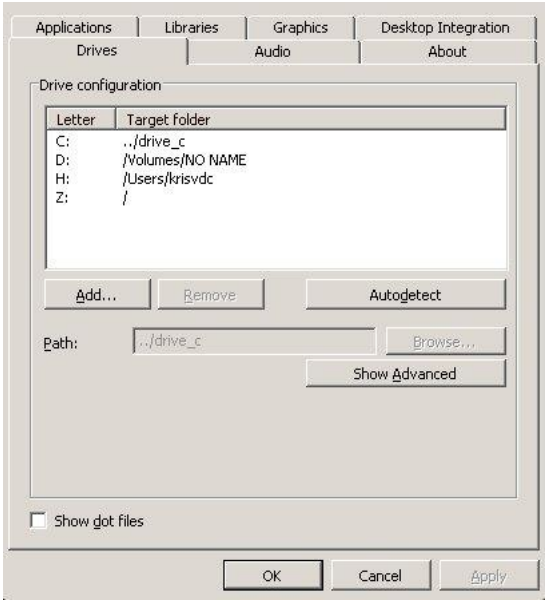
Click on the Wine glass in the top window bar of macOS and select "Configuration".



2. Configure drives

In the "Drives" tab you can define the *mapping* between the disks or folders in macOS and the *Windows drive letters* used by Wine and EMXP. Wine automatically detects disks in macOS and assigns drive letters to them, but you can always add or remove them manually in this window.
By default:

- drive letter C is assigned to the "drive_c" folder on the main Mac hard disk
- drive letter Z is assigned to the full Mac hard disk



It can occur that the auto-detection of Wine does not work 100 pct correctly, e.g. that Wine didn't "see" that another drive has been connected to the Mac computer, or that a drive has been ejected from the Mac computer.

Please note that it doesn't make sense to assign a drive letter to a *sampler hard disk* that you may have connected to your computer. Wine does not allow direct read/write access to this type of disks, so EMXP won't be able to use them. In fact EMXP's Disk Manager will not display these drives in its drive overview window, even if you have assigned a drive letter to them in Wine's configuration window.

All *accessible* drives defined in the Wine configuration window (NTFS, FAT32, ...) will appear with the same drive letters in EMXP, as shown in the picture below:

```
                              PLEASE SELECT A DRIVE
-------------------------------------------------------------------------------
                                CURRENT DRIVE = D
-------------------------------------------------------------------------------
  [ ]  1. C:  Hard Disk             -          -          -      DISK FOUND
  >X<  2. D:  Removable Disk        -          -          -      DISK FOUND
  [ ]  3. H:  Hard Disk             -          -          -      DISK FOUND
  [ ]  4. Z:  Hard Disk             -          -          -      DISK FOUND









-------------------------------------------------------------------------------
[SPACE|1-4]Select__ ___________ ___________ [U/D]Scroll [ESC]Back__ [RET]Go____
___________________ ___________ [R]Refresh_ [S]ScanType ___________ ___________
-------------------------------------------------------------------------------
                            Please enter your choice:
```

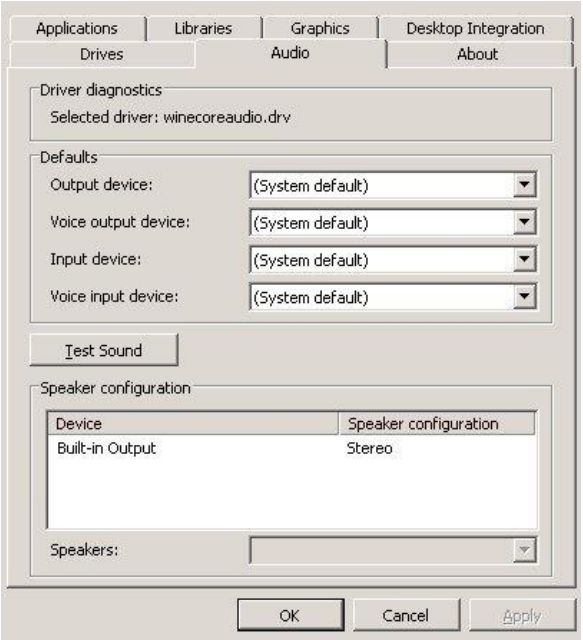
Note that no other information is shown (see the "-" signs in the picture): this is due to the fact the drive product and vendor information is not available in Wine.
When requesting for a *disk type scan* in EMXP (by pressing the shortcut key "S"), EMXP will display the file system of each drive. But typically they will all be recognized as "NTFS" disks, even if they are not. Again that's a consequence of using Wine, which acts as a translation layer between the original file system and NTFS.

```
                              PLEASE SELECT A DRIVE
-------------------------------------------------------------------------------
                                CURRENT DRIVE = D
-------------------------------------------------------------------------------
  [ ]  1. C:  Hard Disk             -          -          -      NTFS
  >X<  2. D:  Removable Disk        -          -          -      NTFS
  [ ]  3. H:  Hard Disk             -          -          -      NTFS
  [ ]  4. Z:  Hard Disk             -          -          -      NTFS









-------------------------------------------------------------------------------
[SPACE|1-4]Select__ ___________ ___________ [U/D]Scroll [ESC]Back__ [RET]Go____
___________________ ___________ [R]Refresh_ [S]ScanType ___________ ___________
-------------------------------------------------------------------------------
                            Please enter your choice:
```

3. Configure audio device

In the "Audio" tab you can define the *mapping* between the audio devices in macOS and the Windows audio devices used by Wine and EMXP. Wine automatically detects the available audio devices.

In the picture below, there's only one audio device on the Mac computer (the built-in audio device).



This audio device is detected by EMXP, see the picture below which shows the audio device list in the audio preferences window (from the EMXP main menu, press 6 → 6 → 1 → then select item 1)

```
              SELECT AUDIO DEVICE FOR PLAYING WAV-FILES AND SAMPLES
-------------------------------------------------------------------------------
                        >X<  1. Device 0: Built-in Output
-------------------------------------------------------------------------------
[SPACE|1-1]Select__ ___________ ___________ [U/D]Scroll [ESC]Back__ [RET]Go____
-------------------------------------------------------------------------------
                            Please enter your choice:
```

READING AND WRITING SAMPLER HARD DISKS

INTRODUCTION

As mentioned before, due to limitations of Wine it's not possible in EMXP to have direct read and write access to proprietary sampler disks like EMAX-II hard disks, Emulator-III CD-ROMs, EMAX-I CF cards, etc.

These disks will not appear in the drive overview of the Disk Manager in EMXP.

But fortunately there's an alternative: you can create an *ISO disk image* of a sampler hard disk first (either by actually copying a sampler disk to a disk image with a tool like DDRescue-GUI as explained below, or by generating a new disk image from scratch in EMXP, as explained in the EMXP Reference Manual).
Once an ISO disk image of a sampler disk is available on the Mac hard disk, EMXP can perfectly read this image and you will be able to add sound banks to it or remove banks from it.
Finally the disk image can be written back to the actual sampler disk, again by using a tool like DDRescue-GUI.
It's also possible to burn the disk image to a CD-ROM by means of Finder (or Disk Utility in older versions of Mac OS X).
The above method is applicable for both normal un-partitioned sampler hard disks and for SCSI2SD partitioned sampler hard disks.

The above procedure is of course not as comfortable as having direct disk access available in EMXP (which is only possible when running EMXP on Windows), but in practice it works quite fast as well.

Important note: if you are using a DREM in your Emulator-II+HD, this chapter is not applicable. The SD card in the DREM uses .DSK files, which are perfectly supported by EMXP in Wine on macOS. The DREM SD card itself is *not* a replacement of a sampler hard disk, so EMXP does not need direct sampler hard disk access to the SD card.

Downloading and installing DDRescue-GUI

In the next sections we will illustrate the procedure my means of using DDRescue-GUI, which is a GUI on top of the ddrescue command. Other tools exist as well (e.g. DD-GUI) but DDRescue-GUI works fast and it provides a good level of controlling the copy process.

DDRescue-GUI can be downloaded here: http://launchpad.net/ddrescue-gui

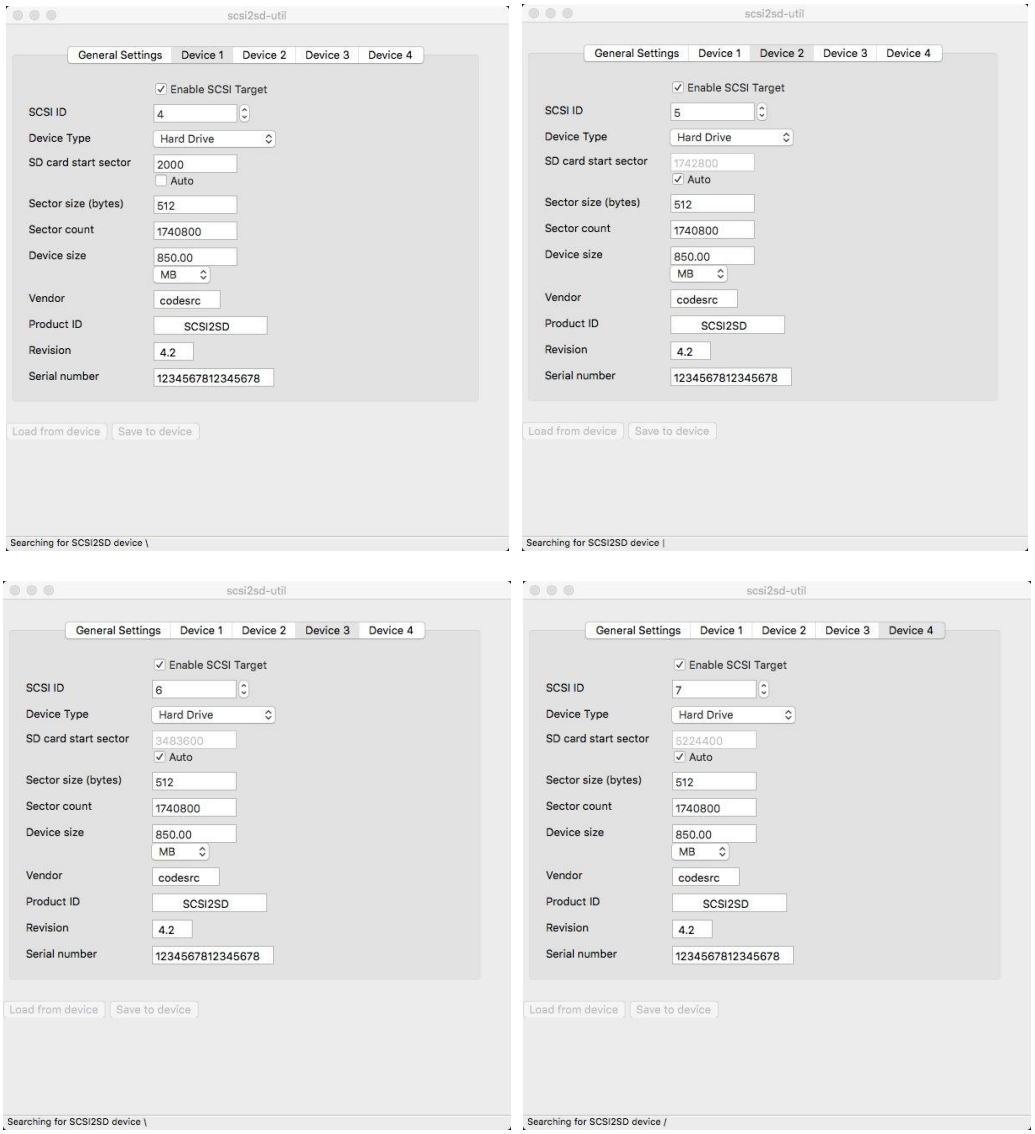
At the time of writing, version 2.1.x of DDRescue-GUI is the highest version available, but in this manual we have used an older version (v1.7.x). Normally higher versions should work just fine as well for EMXP.

In the remainder of this chapter it is assumed that you have downloaded and installed DDRescue-GUI .

Examples of sampler disks used in this chapter

In the examples below, we are using an SD card with a total capacity of 16GB which is used in an EMAX-II sampler containing a SCSI2SD device.

- In the first example, the SD card is used as a normal, un-partitioned external hard disk for EMAX-II While the total capacity of the card is 16GB, only 96MB has been formatted for EMAX-II use.
- In the second example, the SD card has been configured by the SCSI2SD with 4 partitions *(called devices in the SCSI2SD language…).* Each partition is 850MB in size, and the first partition starts at sector 2000 (meaning there's an offset of 1MB = 2000 x 512 bytes). See the pictures below, which illustrate the configuration of each partition in the scsi2sd-util software:



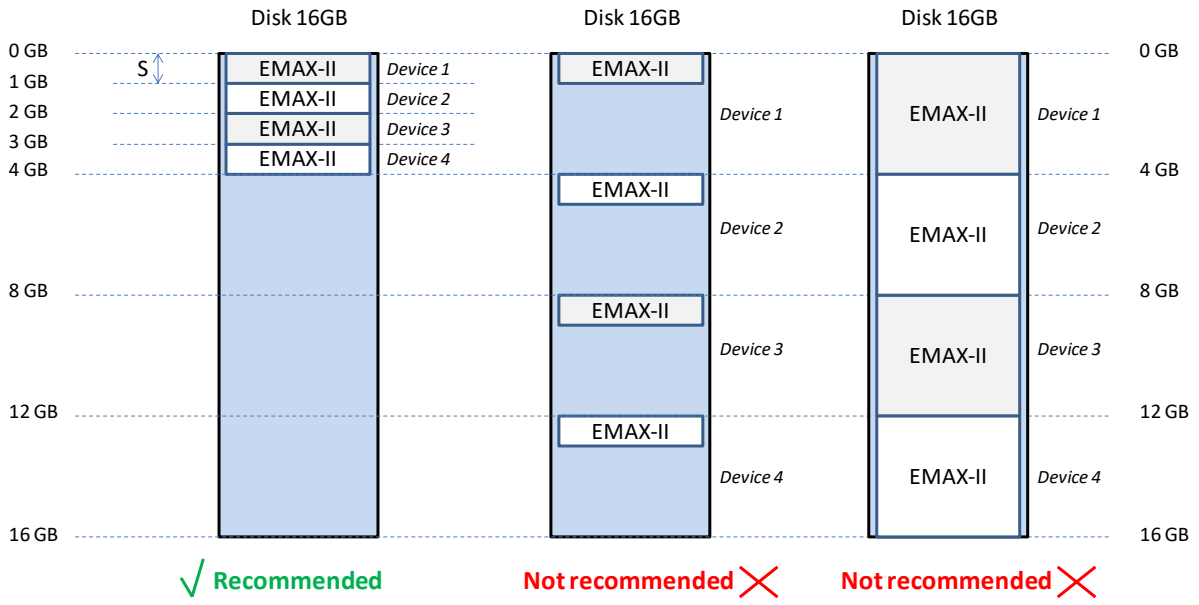
The SD card will be read and written on macOS with the internal Mac card reader (if available) or with an external card reader connected to the Apple computer via USB.

Hint for using multi-partition SCSI2SD cards

When using multiple partitions *("devices")* on SCSI2SD SD cards, it's recommended to

- limit the size of each partition to a size which still makes sense for the sampler, e.g. sizes larger than 1GB don't make sense for an EMAX-II because the EMAX-II can only use 800MB of sound bank data on a hard disk. See the table below for an overview of maximum sizes you can use for each sampler.
- let the first partition start at sector 0 and let the other partitions start immediately after the end of the previous partition, i.e. don't leave any gap in between two partitions.

This is illustrated in the picture below for an SD card of 16GB which will be used in an EMAX-II sampler.



Recommended maximum sizes (S) for a single SCSI2SD partition for different E-Mu samplers

Sampler	RAM memory size	S (max partition size)
EMAX-I	512KB	20MB
EMAX-II	2MB	300MB
	4MB	500MB
	8MB	1GB
Emulator-III	4MB	500MB
	8MB	1GB
Emulator-IIIX	8MB	1GB
	16MB	2GB
	24MB	3GB
	32MB	4GB
ESI-32, ESI-2000, ESI-4000	2MB	300MB
	4MB	500MB
	8MB	1GB
	16MB	2GB
	18MB	2GB
	32MB	4GB
	64MB	8GB
	66MB	8GB
	72MB	8GB
	128MB	14GB

The advantage of taking into account the above guidelines is that all *useful sampler* data will be located at the beginning of the SD card.
So if you want to make a copy (backup) of all sampler data on the SD card to a hard disk image file (or vice versa), you'll only have to copy the first part of the SD card.

As a result the copy process will be much faster.

When EMXP is running in Windows, it applies this optimization by default when using its internal disk copy (backup/restore) functions.

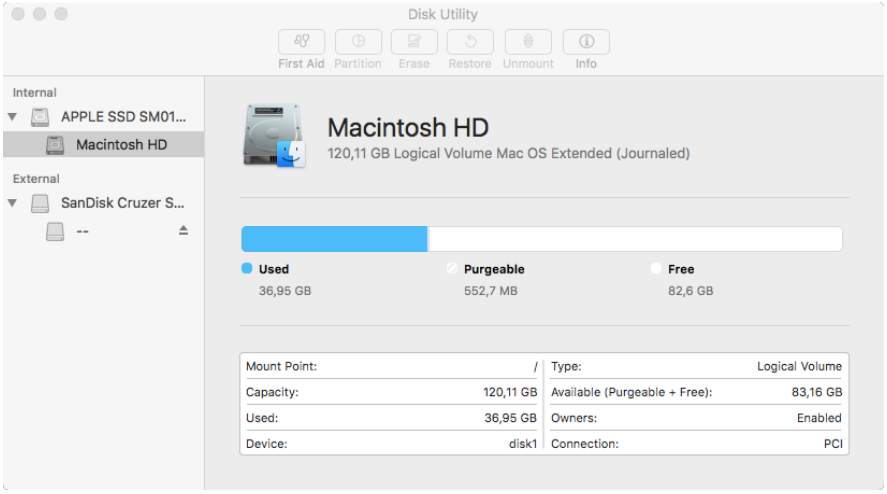
When EMXP is running in Wine on macOS, the optimization can be applied by aborting the copy process in DDRescue-GUI as soon as the useful part of the SD card (the part containing the useful sampler data) has been copied successfully. This is illustrated in *STEP 2* below.

STEP 1:CONNECT AND IDENTIFY THE SAMPLER DISK

1. Check the disks currently connected/mounted in macOS

Don't insert the card yet in the card reader of the computer !

Open *Disk Utility*. This application can be found in the Applications → Utilities folder.



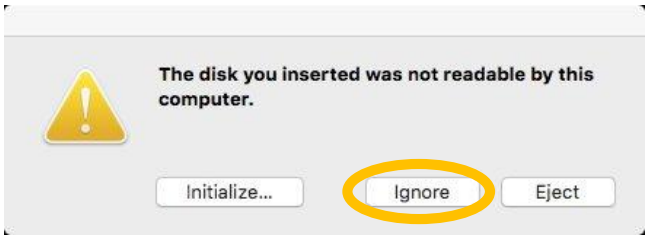
Currently two disks are mounted in macOS: */dev/disk1* and */dev/disk2* (the Apple SSD internal hard disk and an external USB disk with no name (untitled)…)

It's very important **not** to select any of these disks in DDRescue-GUI later.
This might destroy your system !

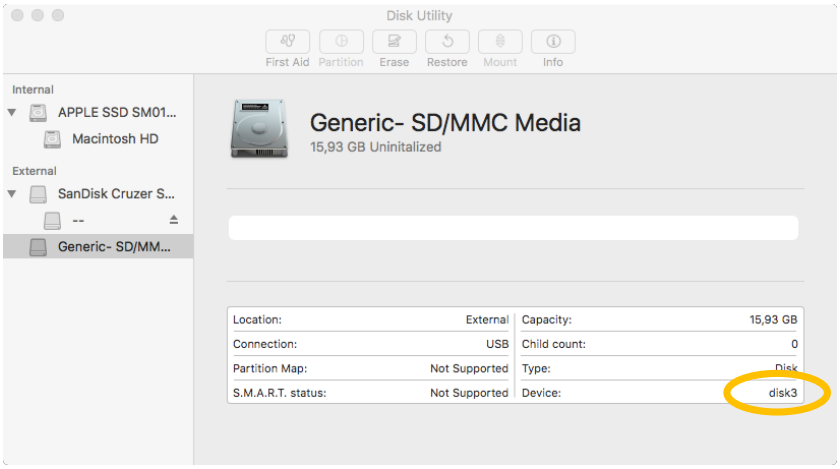
2. Identify the sampler disk

Now connect the sampler disk to the computer, e.g. insert the SD card in the card reader of the computer.

macOS does not recognize the file system of the sampler hard disk or SCSI2SD card, so it will ask to initialize or eject the disk, or to ignore the disk. Select *Ignore.*



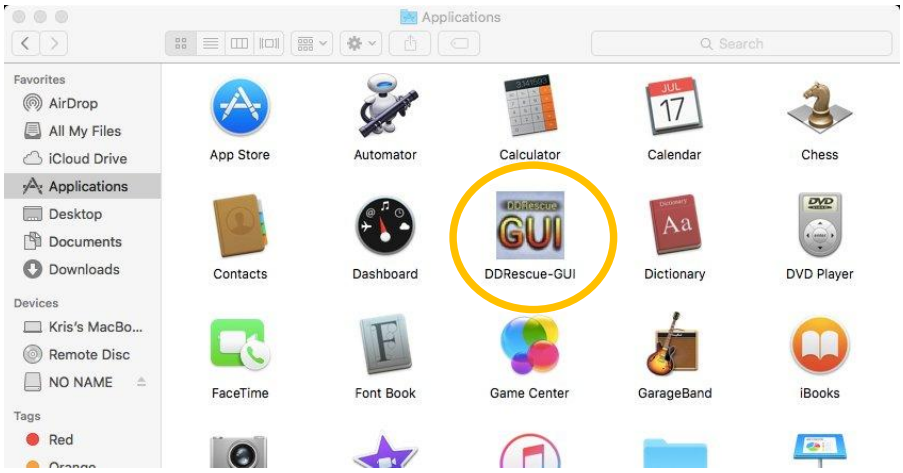
The disk appears as **disk 3** in *Disk Utility* now. This means the sampler disk has been assigned to */dev/disk3*. This is the disk we will read and write in DDRescue-GUI.


Disk Utility
First Aid
Partition
Erase
Restore
Mount
Info
Internal
APPLE SSD SM01...
Macintosh HD
External
SanDisk Cruzer S...
--
Generic- SD/MM...
Generic- SD/MMC Media
15,93 GB Uninitalized
Location: External
Connection: USB
Partition Map: Not Supported
S.M.A.R.T. status: Not Supported
Capacity: 15,93 GB
Child count: 0
Type: Disk
Device: disk3

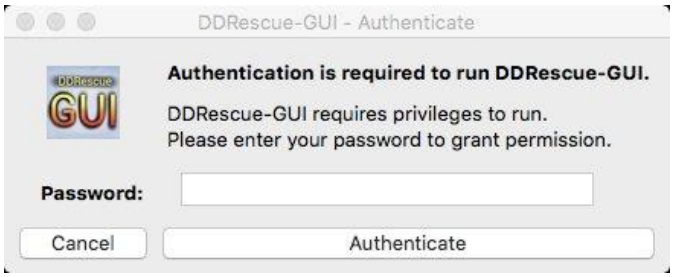
STEP 2: MAKE AN ISO DISK IMAGE OF THE SAMPLER DISK

1. Open DDRescue-GUI

Open DDRescue-GUI from your Applications folder.

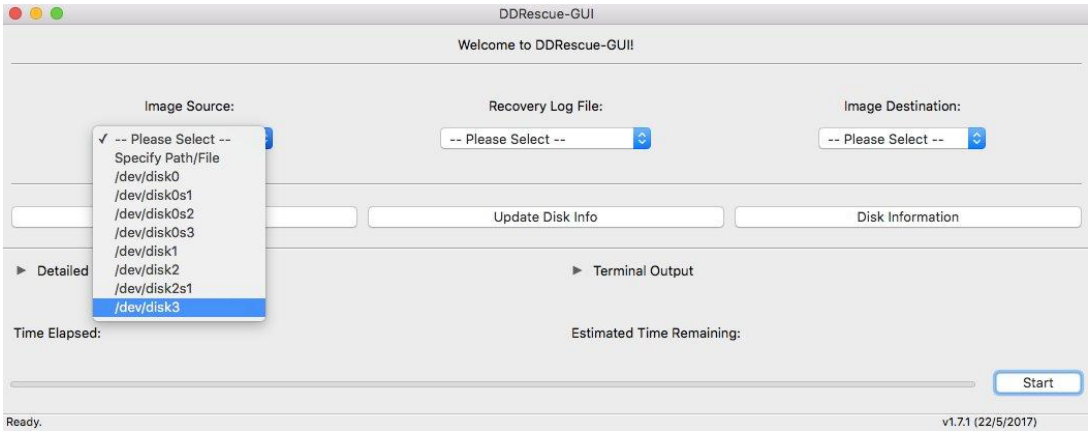


Since quite some risk is involved when using a power-tool like DDRescue-GUI, you will first have to authenticate yourself.



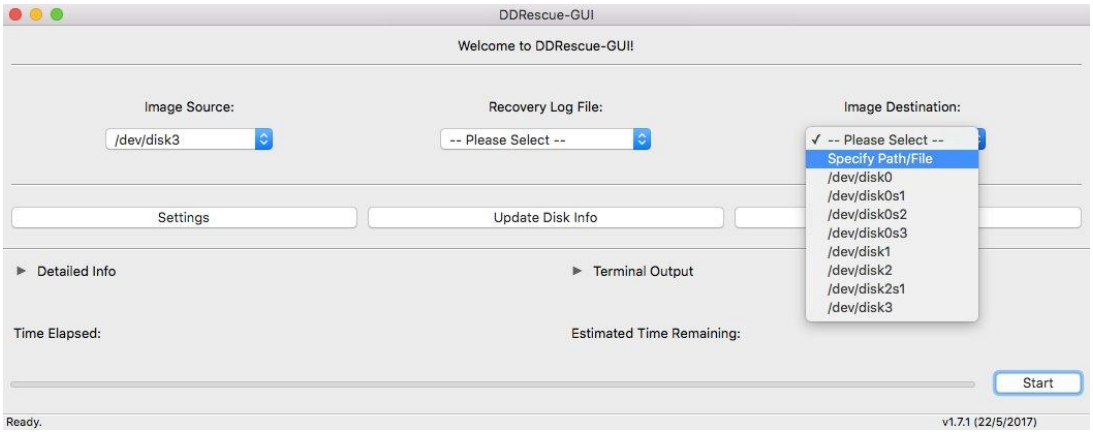
2. Select the sampler disk as source

Now select **/dev/disk3** (the sampler disk) as the source of the DDRescue copy process.

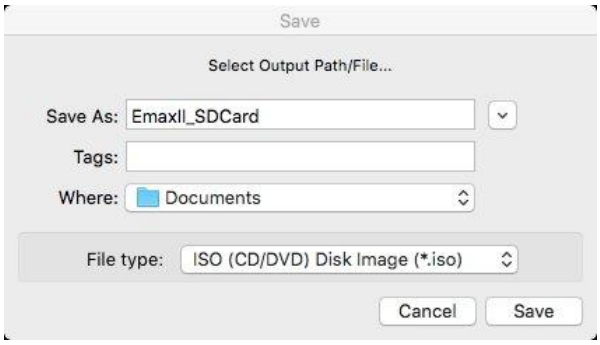


3. Select an ISO image file as target

Then specify the name of the ISO file that will be created and the folder in which it should be saved.



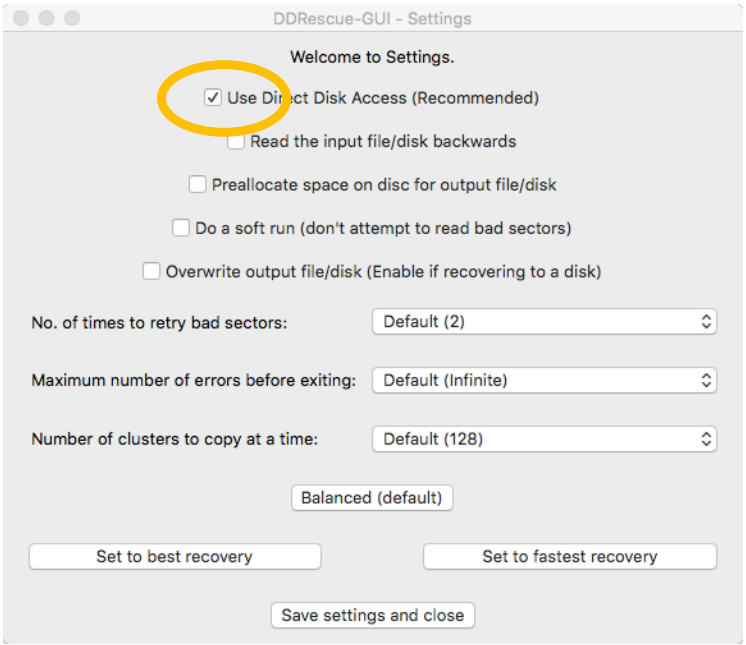
In this example, we name the file "EmaxII_SDCard" and save it in the "Documents" folder.
Make sure to select the **ISO (CD/DVD) Disk Image (*.iso)** format from the dropdown list !



We also tell DDRescue-GUI not to use a Log File by selecting "None (not recommended)". But if you like to use a log file it's perfectly allowed to specify one of course.

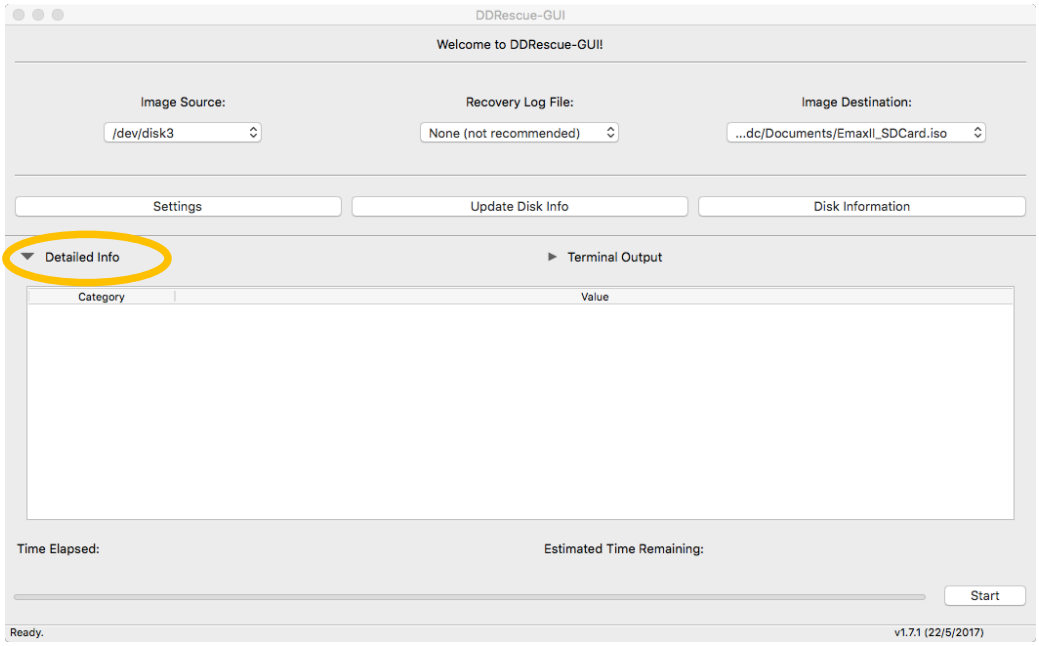
4. Configure the settings

Make sure that the "Use Direct Disk Access" box is selected. The other settings are fine. Then press "Save settings and close".



5. Before you start the copy process: some important information !

Before actually starting the disk copy process, click on the "Detailed Info" knob. This will open a window frame in which DDRescue-GUI will display information about the progress of the copy process.



We will use the *detailed information* to stop the copy process as soon as all sampler data has been copied. In our examples the SD card has a size of 16GB, but we don't need a copy of the full 16GB of data on the card:

- In our first example, only 96MB has been formatted for the EMAX-II, so we only need the first 96MB of the card
- In our second example, 4 partitions of 850MB have been configured for the SCSI2SD device installed in the EMAX-II sampler, and there's an initial offset of 1MB. So we only need the first 3,401GB of the card.

During the copy process, the *detailed information* window frame will show how much data has already been copied. **Once the 96MB (example 1) or 3,401GB (example 2) of data have been copied, we can abort the process.**

DDRescue-GUI will save the data that has been copied to the .ISO file anyway, even if the process is aborted. The resulting .ISO file is valid and can be used in EMXP if at least the E-Mu formatted part of it has been copied

If you're using a normal, un-partitioned disk and you don't know the size of the E-Mu file system on the disk, you can derive the formatted size with the following method:

Copy only the first few MBs and *immediately* abort the process. The resulting .ISO file will probably not contain all sound banks and will not be usable, but based on this file EMXP will be able to tell you the size of the E-Mu file system on the disk (see step 1 in *section "STEP 3: USE THE ISO IMAGE IN EMXP"*). Once you know this size, you can restart the copy process and copy at least this formatted amount of data. The result will be a valid and usable .ISO file which contains all sound banks.
Note: if the file size is smaller than the E-Mu formatted size, EMXP will also give a warning (as shown below), so you will definitely be informed that the ISO file is not valid.

```
                                    WARNING
-------------------------------------------------------------------------------



                While looking for EMAX-II hard disk image files
              EMXP detected that file EmaxII_CFCard_TooSmall.iso
                has a smaller size than the Emu formatted size.
      This can cause unexpected errors when reading or writing this file.
       Press any key to continue or press ESC to skip these warnings...
         (change Preferences if you never want to see these warnings)






-------------------------------------------------------------------------------
      [Any key]: Continue                            [ESC]: Skip warnings
-------------------------------------------------------------------------------
                            Press a key (or ESC)...:
```

If you're using a SCSI2SD disk which contains multiple partitions and you don't know the total size of these partitions:

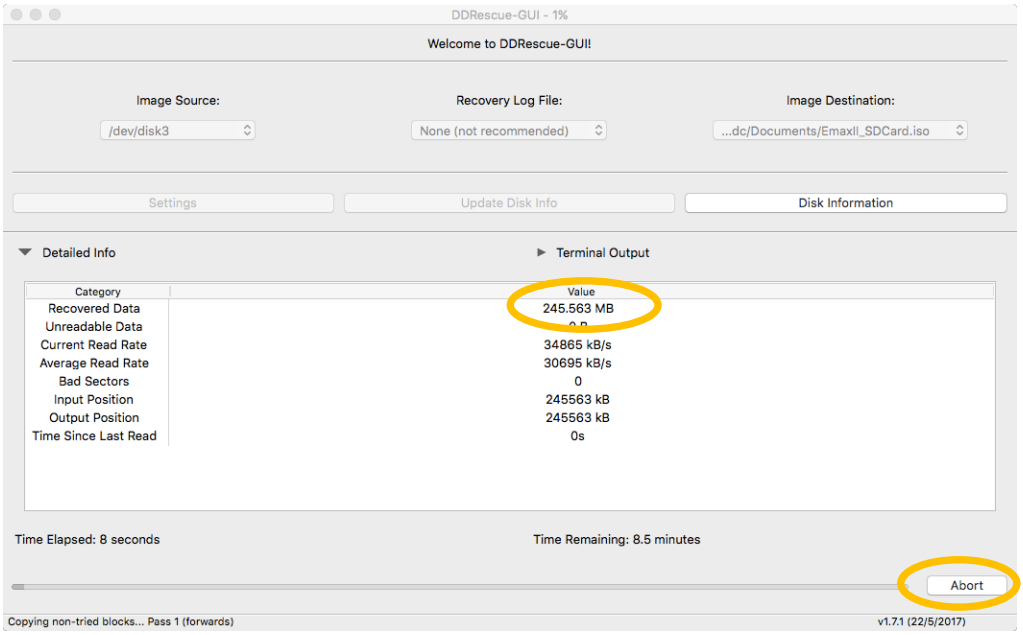
You will have to read out the configuration stored in the SCSI2SD flash memory. This can be done with the *scsi2sd-util* software[2] while the SCSI2SD board is connected to your computer's USB port.

[2] can be downloaded from http://www.codesrc.com

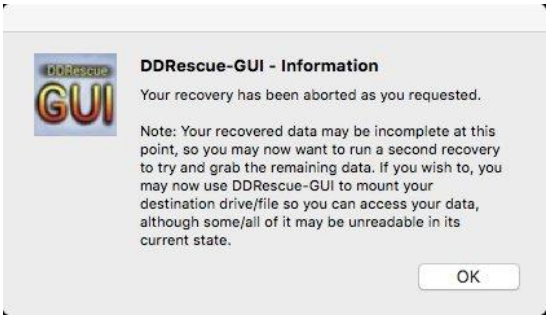
6. Start the copy process

Press the "Start" button and keep an eye on the detailed information.

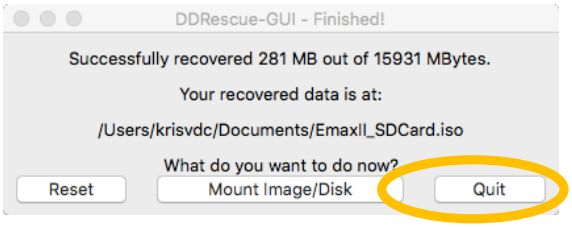
- In our first example we will abort the copy process when we have copied approximately 250 MB *(see screenshot below)*
- In our second example we will abort the copy process when we have copied approximately 4GB.



DDRescue-GUI will show a message now telling that the copy process has been aborted.

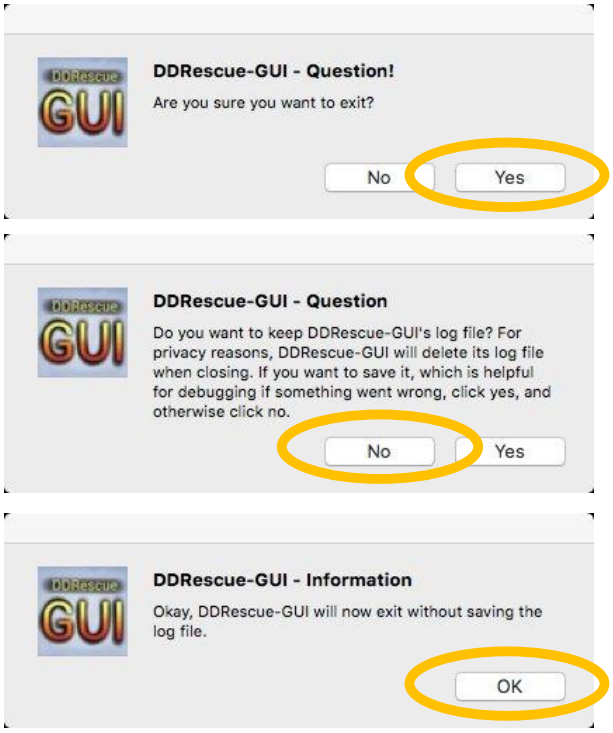


The next window will tell that the .ISO file has been saved anyway. Press "Quit".



7. **The ISO file is ready. Leave DDRescue-GUI**

We can leave DDRescue-GUI now. A few confirmations must be done before actually quitting DDRescue-GUI, as shown below.



STEP 3: USE THE ISO IMAGE IN EMXP

1. Open the ISO file in EMXP

When navigating to the "Documents" folder in the EMXP File Manager, the ISO file we have created in step 2 will appear in the overview list.

In this EMAX-II example, select menu options 1 → 2 → 4 → 1 starting from the EMXP main menu. Then use the File Manager to navigate to the folder as explained in the EMXP Reference Manual.

Example 1: a normal un-partitioned hard disk image file

For the first example, we get the following file overview screen:

```
                    EMAX-II HARD DISK IMAGE FILE OVERVIEW
-------------------------------------------------------------------------------
                CURRENT FOLDER = Z:\Users\krisvdc\Documents\
-------------------------------------------------------------------------------
   [ ]  1. -- CHANGE FOLDER --
   >X<  2. EmaxII_SDCard                    #Bank: 3    %Used:    4       96MB

-------------------------------------------------------------------------------
[SPACE|1-2]Select__ ___________ ___________ [ARW]Scroll [ESC]Back__ [RET]Go____
[+]More [C]SCSI2SD_ [G]SDConfig [D]Details_ [B]Banks___ [O]OS______ [H]ToHD____
-------------------------------------------------------------------------------
                          Please enter your choice:
```

In this file overview screen, you can see the E-Mu formatted size of the hard disk image (here: 96 MB). So the next time we will copy the disk, it will be sufficient to copy the first 100 MB of the disk and abort the copy process…

When we press the "B" key on the keyboard, we will get an overview of the sound banks stored on the disk. There are currently 3 sound banks on the disk, as shown below.

```
                    EMAX-II HARD DISK IMAGE BANK OVERVIEW
-------------------------------------------------------------------------------
  > <  1. B00 12 STRING          EMAX-II   #Pres: 12  #Samp: 6   1036 Kb
  [ ]  2. B01 6 STRING GTR       EMAX-II   #Pres: 25  #Samp: 7   717 Kb
  [ ]  3. B02 AFRICAN INST       EMAX-II   #Pres: 16  #Samp: 13  952 Kb



-------------------------------------------------------------------------------
[SPACE|1-3]Select__ [A]All_____ [M]Range___ [U/D]Scroll [ESC]Back__ ___________
___________________ ___________ ___________ ___________ ___________ ___________
-------------------------------------------------------------------------------
                           Please enter your choice:
```

Example 2: a partitioned SCSI2SD hard disk image file with 4 EMAX-II partitions

For the second example, we get the following warning screen and file overview screen:

```
                                   WARNING
-------------------------------------------------------------------------------



                 No EMAX-II hard disk image files could be found
                              in the current folder.

                       Please select another folder, or
             make sure there are valid EMAX-II hard disk image files
              with a correct file extension in the current folder.

                          Press any key to continue...



-------------------------------------------------------------------------------
      [Any key]: Continue                              [ESC]: Skip warnings
-------------------------------------------------------------------------------
                            Press a key (or ESC)...:
```

```
                    EMAX-II HARD DISK IMAGE FILE OVERVIEW
-------------------------------------------------------------------------------
                 CURRENT FOLDER = Z:\Users\krisvdc\Documents\
-------------------------------------------------------------------------------
   > <  1. -- CHANGE FOLDER --

-------------------------------------------------------------------------------
[SPACE|1-1]Select_ ___________ ___________ [ARW]Scroll [ESC]Back__ ___________
[R]Refresh________ [C]SCSI2SD_ [G]SDConfig [N]SortName [T]SortTime [Z]SortSize
-------------------------------------------------------------------------------
                           Please enter your choice:
```

No file is found.

That's because there's no file in the folder which has been identified as a normal, un-partitioned EMAX-II hard disk image file. The "EmaxII_SDCard.ISO" file is a *partitioned* SCSI2SD file. If the first EMAX-II partition in that file would have started at sector 0, the file would have appeared as a normal, un-partitioned EMAX-II hard disk image file… but the SCSI2SD in the EMAX-II sampler was configured with its first partition starting at sector 2000. That's why no files are found.
In order to find the "EmaxII_SDCard.ISO" file with its partitions, we have to press "C" in the file overview screen. It is assumed in this manual that the SCSI2SD configuration scheme has already been defined IN EMXP before. We select the appropriate SCSI2SD configuration (called "EMAX-II 4x850"), and we select option 11 as well to make sure EMXP will not show this screen anymore the next time we press the "C" key when scanning for EMAX-II hard disk images.

We refer to the EMXP Reference Manual and the EMXP Guided Tours manual (Guided Tour 5) for more details about using SCSI2SD disks and files in EMXP.

```
                    PLEASE SELECT A SCSI2SD CONFIGURATION
                      FOR EMAX-II HARD DISK IMAGE FILES
-------------------------------------------------------------------------------
 [X]  01. EMAX-II 4x850        DEFAULT  #4:850MB #5:850MB #6:850MB #7:850MB
 [ ]  02. (no name)                     No dev1  No dev2  No dev3  No dev4
 [ ]  03. (no name)                     No dev1  No dev2  No dev3  No dev4
 [ ]  04. (no name)                     No dev1  No dev2  No dev3  No dev4
 [ ]  05. (no name)                     No dev1  No dev2  No dev3  No dev4
 [ ]  06. (no name)                     No dev1  No dev2  No dev3  No dev4
 [ ]  07. (no name)                     No dev1  No dev2  No dev3  No dev4
 [ ]  08. (no name)                     No dev1  No dev2  No dev3  No dev4
 [ ]  09. (no name)                     No dev1  No dev2  No dev3  No dev4
 [ ]  10. (no name)                     No dev1  No dev2  No dev3  No dev4

 >X<  11. Don't show this screen anymore
-------------------------------------------------------------------------------
[SPACE|01-11]Select ___________ ___________ [U/D]Scroll [ESC]Back__ [RET]Go____
____________________ ___________ [U]Update__ ___________ ___________ ___________
-------------------------------------------------------------------------------
                           Please enter your choice:
```

After having pressed "C" we get an overview of the 4 partitions. Each of them has been formatted for EMAX-II with a size of 850MB.

```
                    EMAX-II HARD DISK IMAGE FILE OVERVIEW
-------------------------------------------------------------------------------
                CURRENT FOLDER = Z:\Users\krisvdc\Documents\
-------------------------------------------------------------------------------
   [ ]  1. -- CHANGE FOLDER --
   [ ]  2. EmaxII_SDCard                    SCSIID#4   #Bank: 5   850MB,  1%
   [ ]  3. EmaxII_SDCard                    SCSIID#5   #Bank: 2   850MB,  1%
   >X<  4. EmaxII_SDCard                    SCSIID#6   #Bank: 3   850MB,  1%
   [ ]  5. EmaxII_SDCard                    SCSIID#7   #Bank: 4   850MB,  1%

-----------------------------------------[SCSI2SD #1-EMAX-II 4X850 SCAN ON]---
[SPACE|1-5]Select__ ___________ ___________ [Alt]Scroll [ESC]Back__ [RET]Go____
[+]More [C]SCSI2SD_ [G]SDConfig [D]Details_ [B]Banks___ [O]OS______ [H]ToHD____
-------------------------------------------------------------------------------
                           Please enter your choice:
```

Let's select the third partition (with SCSI-ID# 6) and press the "B" key on the keyboard to get an overview of the sound banks stored in that partition.

There are currently 3 sound banks in the partition, as shown below.

```
                    EMAX-II HARD DISK IMAGE BANK OVERVIEW
-------------------------------------------------------------------------------
  > <  1. B00 12 STRING          EMAX-II   #Pres: 12  #Samp: 6   1036 Kb
  [ ]  2. B01 6 STRING GTR       EMAX-II   #Pres: 25  #Samp: 7   717 Kb
  [ ]  3. B02 AFRICAN INST       EMAX-II   #Pres: 16  #Samp: 13  952 Kb

-------------------------------------------------------------------------------
[SPACE|1-3]Select__ [A]All_____ [M]Range___ [U/D]Scroll [ESC]Back__ ___________
-------------------- ___________ ___________ ___________ ___________ ___________
-------------------------------------------------------------------------------
                           Please enter your choice:
```

2. Change access rights of ISO file

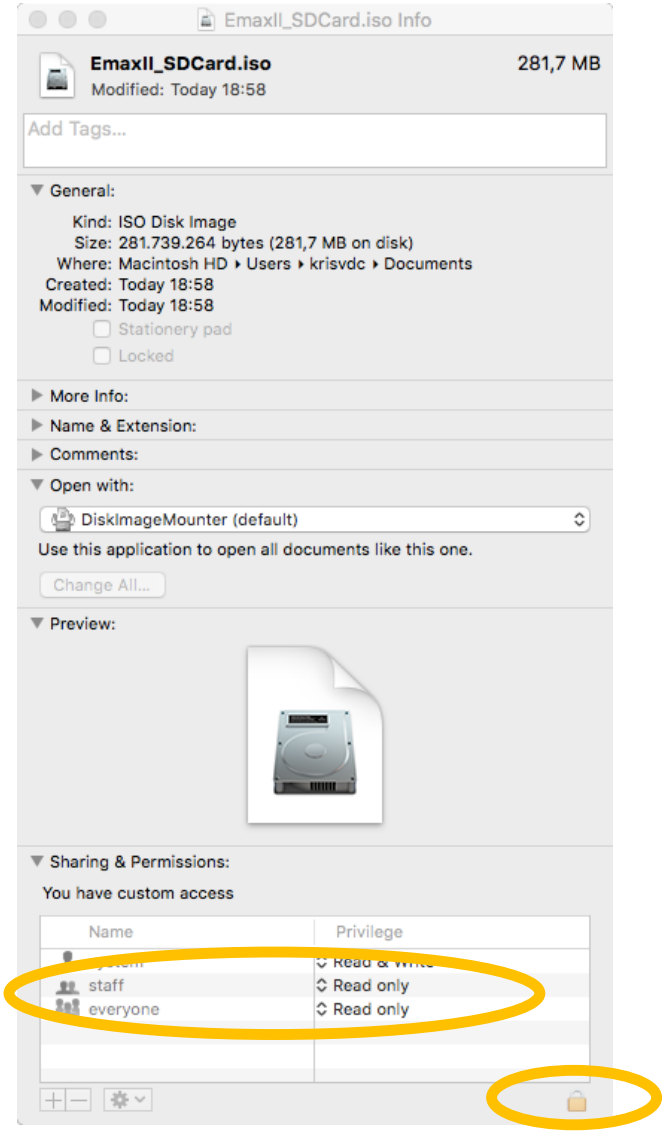
Let's copy another EMAX-II sound bank to the disk or disk partition now.
To achieve this, we will copy the bank to the ISO image and then copy the ISO image back to the sampler disk.

However, in order to be able to change the contents of the ISO file, EMXP needs write access to this file.

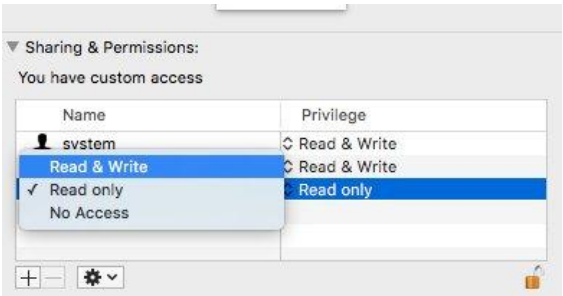
DDRescue-GUI has limited the access rights to the ISO file when it created the file.

We have to change the access rights.

Select the .ISO file in *Finder*, and select "*Get Info*". At the bottom of the window, *Finder* is telling that "staff" and "everyone" only have read access.



Press the "unlock" icon at the bottom right of the window and change the access rights (macOS might request for your password in order to be able to change the access rights…)



3. Add a bank to the ISO image file.

We will add now an EMAX-II sound bank to the EMAX-II hard disk image (example 1) or to the EMAX-II partition in the SCSI2SD image file (example 2).
Details about how to use EMXP can be found in the EMXP Reference Manual and EMXP Guided Tours Manual. The most important steps are illustrated below:

- Go to the EMAX-II bank file overview (from main menu, select 1 → 2 → 1, use "--CHANGE FOLDER--" to navigate to the disk/folder holding the bank and select the bank). Then hit the "Y" key on the keyboard to copy the file.

```
                          EMAX-II BANK FILE OVERVIEW
-------------------------------------------------------------------------------
                CURRENT FOLDER = D:\EMXP\Images\Emax II\Series 1\
-------------------------------------------------------------------------------
  [ ]  001. -- CHANGE FOLDER --
  [ ]  002. 12 STRING                      12 STRING  #Pres: 12  #Samp: 6
  [ ]  003. 6 STRING GTR                   6 STRING G #Pres: 25  #Samp: 7
  [ ]  004. AFRICAN INST                   AFRICAN IN #Pres: 16  #Samp: 13
  [ ]  005. ALEMBIC BASS                   ALEMBIC BA #Pres: 27  #Samp: 10
  >X<  006. ANALOG COMBO                   ANALOG COM #Pres: 20  #Samp: 24
  [ ]  007. ANALOG GIANT                   ANALOG GIA #Pres: 29  #Samp: 13
  [ ]  008. ANALOGSTRING                   ANALOGSTRI #Pres: 13  #Samp: 10
  [ ]  009. ARCO STRINGS                   ARCO STRIN #Pres: 26  #Samp: 11
  [ ]  010. ATMOSPHERES                    ATMOSPHERE #Pres: 15  #Samp: 6
  [ ]  011. AUTOHARP                       AUTOHARP   #Pres: 13  #Samp: 6
  [ ]  012. AUTOHARP_                      AUTOHARP   #Pres: 19  #Samp: 11
  [ ]  013. BASIC ENSMBL                   BASIC ENSM #Pres: 12  #Samp: 13
  [ ]  014. BERIMBAU                       BERIMBAU   #Pres: 34  #Samp: 9
  [ ]  015. BIG BRASS                      BIG BRASS  #Pres: 11  #Samp: 7
  [ ]  016. BLISS DISK                     BLISS DISK #Pres: 46  #Samp: 69
-------------------------------------------------------------------------------
[SPACE|001-101]Slct [A]All_____ [M]Change___ [ARW]Scroll [ESC]Back__ [RET]Go____
[+]More [P]Presets_ [S]Samples_ [Y]Copy____ [C]Convert_ [W]ToWav___ [L]Play____
-------------------------------------------------------------------------------
                           Please enter your choice:
```

- Select menu option 5 to select the ISO file as a target file for the selected bank.

```
                 PLEASE SELECT A TARGET EMAX-II FILE/DISK TYPE
-------------------------------------------------------------------------------

                 1.  Copy to EMAX-II Bank File(s)

                 2.  Copy to EMAX-II EMX File(s)

                 3.  Copy to EMAX-II Floppy Disk Image File(s)

                 4.  Copy to EMAX-II HxC Floppy Image File(s)

                 5.  Copy to EMAX-II Hard Disk Image File

                 6.  Copy to EMAX-II Hard Disk

                 7.  Copy to EMAX-II Floppy Disk(s)




-------------------------------------------------------------------------------
             [1]...[7]: menu option                  ESC: Go back
-------------------------------------------------------------------------------
                           Please enter a menu option:
```

- On the next screen, select option 1 to perform an automated copy.

```
        DEFINE WHETHER EMXP SHOULD COPY/CONVERT ITEMS AUTOMATICALLY OR NOT
  ---------------------------------------------------------------------------
  >X<  1. Yes, copy/convert items as automated as possible            (BATCH)
  [ ]  2. No, user should have maximum control                       (MANUAL)
  [ ]  3. Use custom automation level                                (MANUAL)


            BATCH: All selected items will be copied/converted
              automatically using the copy/conversion preferences, e.g.
              for sample rates. You only have to specify the folder/disk where
              the copied/converted items should be saved.
            MANUAL: You can define all copy/conversion parameters and
              you can specify the destination (e.g. target file names) for each
              copied/converted item. Define which parts of
              the copy/conversion process should be manual or automated.
            SEMI-MANUAL: The current copy/conversion settings can be a
              mix of manual and automated processing, as has been configured
              previously in MANUAL or SEMI-MANUAL mode.


  [ ]  4. Don't show this screen anymore
  ---------------------------------------------------------------------------
  [SPACE|1-4]Select__ ___________ ___________ [U/D]Scroll [ESC]Back__ [RET]Go____
  ---------------------------------------------------------------------------
                              Please enter your choice:
```

- Then navigate to the "Documents" folder and select the ISO file (example 1) or select the partition in the ISO file (example 2).

For the first example we simply select the ISO file:

```
                  SELECT TARGET EMAX-II HARD DISK IMAGE FILE
---------------------------------------------------------------------------
                 CURRENT FOLDER = Z:\Users\krisvdc\Documents\
---------------------------------------------------------------------------
  [ ]  1. -- CHANGE FOLDER --
  >X<  2. EmaxII_SDCard                  #Bank: 3    %Used:    4        96MB









---------------------------------------------------------------------------
[SPACE|1-2]Select__ ___________ ___________ [ARW]Scroll [ESC]Back__ [RET]Go____
[D]Details_________ [C]SCSI2SD_ [G]SDConfig [N]SortName [T]SortTime [Z]SortSize
---------------------------------------------------------------------------
                              Please enter your choice:
```

For the second example we press "C" to get an overview of the partitions in the ISO file and we select the third partition in that file:

```
                    SELECT TARGET EMAX-II HARD DISK IMAGE FILE
-------------------------------------------------------------------------------
                   CURRENT FOLDER = Z:\Users\krisvdc\Documents\
-------------------------------------------------------------------------------
   [ ]  1. -- CHANGE FOLDER --
   [ ]  2. EmaxII_SDCard                    SCSIID#4   #Bank: 5   850MB,  1%
   [ ]  3. EmaxII_SDCard                    SCSIID#5   #Bank: 2   850MB,  1%
   >X<  4. EmaxII_SDCard                    SCSIID#6   #Bank: 3   850MB,  1%
   [ ]  5. EmaxII_SDCard                    SCSIID#7   #Bank: 4   850MB,  1%

-----------------------------------------[SCSI2SD #1-EMAX-II 4X850 SCAN ON]---
[SPACE|1-5]Select_____________ ___________ [ARW]Scroll [ESC]Back__ [RET]Go____
[D]Details_________ [C]SCSI2SD_ [G]SDConfig [N]SortName [T]SortTime [Z]SortSize
-------------------------------------------------------------------------------
                           Please enter your choice:
```

- Since we will write to a hard disk image, EMXP is asking if we are sure we want to change the file. We hit the "Y" key on the keyboard (or "A" if we don't want to get these warnings in the future). Now EMXP starts copying the selected bank to the ISO file.

  For example 1, the warning screen looks like this:

```
                                PLEASE CONFIRM
-------------------------------------------------------------------------------



                            EmaxII_SDCard.iso
          may be an important backup of one of your EMAX-II disks.
     Are you sure you want to copy files to this EMAX-II hard disk image ?
       Press [A] to always copy to hard disk images and never ask again,
          or press [Y]es to copy to a hard disk image this time only,
                       or press any other key to cancel.









-------------------------------------------------------------------------------
  [Y]:Yes, this time only        [A]:Yes, always         [Any other key]:No
-------------------------------------------------------------------------------
                        Choose [Y]es, [A]lways or [N]o:
```

For example 2, the warning screen looks like this:

```
                              PLEASE CONFIRM
-------------------------------------------------------------------------------



                          EmaxII_SDCard.iso[#6]
          may be an important backup of one of your EMAX-II disks.
     Are you sure you want to copy files to this EMAX-II hard disk image ?
       Press [A] to always copy to hard disk images and never ask again,
          or press [Y]es to copy to a hard disk image this time only,
                      or press any other key to cancel.






-------------------------------------------------------------------------------
 [Y]:Yes, this time only        [A]:Yes, always         [Any other key]:No
-------------------------------------------------------------------------------
                       Choose [Y]es, [A]lways or [N]o:
```

(Note that the 3th partition in the "EmaxII_SDCard.ISO" is referred to as "EmaxII_SDCard.ISO[#6]" with #6 being the SCSI-ID# number assigned to the 3th partition in the SCSI2SD configuration)

When the copy is finished, a report screen will appear. From this report we learn that the bank file has successfully been copied to the ISO file. The bank is stored in bank location B03.

Report screen for example 1:

```
         REPORT: COPY/CONVERSION TO EMAX-II HARD DISK IMAGE FILE(S)
-------------------------------------------------------------------------------
 1 selected file has been processed

 -----------------------------------------------------------------------------

 EMAX-II bank file (Bank ANALOG COMBO):
   ANALOG COMBO.EB2
     in D:\EMXP\Images\Emax II\Series 1\
 ...HAS BEEN COPIED TO...
 Bank B003 ANALOG COMBO in EMAX-II hard disk image file:
   EmaxII_SDCard.iso
     in Z:\Users\krisvdc\Documents\

 -----------------------------------------------------------------------------
 The full report has been written to file:
  EMXPCOPY2EMAXIILOG_20180505120355815.TXT
 which can be found in:
  C:\users\krisvdc\EMXP\Logs\
 -----------------------------------------------------------------------------

-------------------------------------------------------------------------------
      [UP/DOWN]          [PGUP/PGDN]          [HOME/END]          [ESC]
-------------------------------------------------------------------------------
                          Please enter your choice:
```

Report screen for example 2:

```
          REPORT: COPY/CONVERSION TO EMAX-II HARD DISK IMAGE FILE(S)
-------------------------------------------------------------------------------
  1 selected file has been processed

  -----------------------------------------------------------------------------

  EMAX-II bank file (Bank ANALOG COMBO):
    ANALOG COMBO.EB2
      in D:\EMXP\Images\Emax II\Series 1\
  ...HAS BEEN COPIED TO...
  Bank B003 ANALOG COMBO in EMAX-II hard disk image file:
    EmaxII_SDCard.iso[#6]
      in Z:\Users\krisvdc\Documents\

  -----------------------------------------------------------------------------
  The full report has been written to file:
   EMXPCOPY2EMAXIILOG_20180505121008720.TXT
  which can be found in:
   C:\users\krisvdc\EMXP\Logs\
  -----------------------------------------------------------------------------

-------------------------------------------------------------------------------
       [UP/DOWN]          [PGUP/PGDN]          [HOME/END]          [ESC]
-------------------------------------------------------------------------------
                            Please enter your choice:
```

- If we would browse the contents of the (partition in the) ISO file in EMXP, we would indeed find the bank in location B03, as illustrated below.

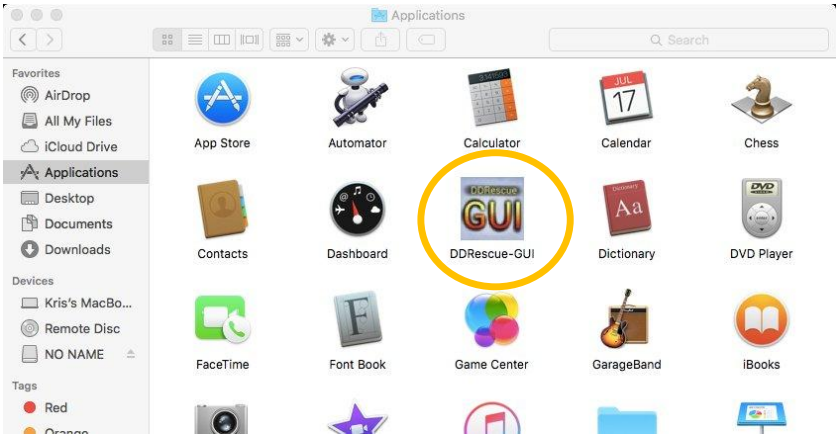
```
                     EMAX-II HARD DISK IMAGE BANK OVERVIEW
-------------------------------------------------------------------------------
  > <  1. B00 12 STRING          EMAX-II   #Pres: 12  #Samp: 6   1036 Kb
  [ ]  2. B01 6 STRING GTR       EMAX-II   #Pres: 25  #Samp: 7   717 Kb
  [ ]  3. B02 AFRICAN INST       EMAX-II   #Pres: 16  #Samp: 13  952 Kb
  [ ]  4. B03 ANALOG COMBO       EMAX-II   #Pres: 20  #Samp: 24  1003 Kb









-------------------------------------------------------------------------------
[SPACE|1-4]Select__ [A]All_____ [M]Range___ [U/D]Scroll [ESC]Back__ ___________
___________________ ___________ ___________ ___________ ___________ ___________
-------------------------------------------------------------------------------
                            Please enter your choice:
```

STEP 4: COPY THE ISO IMAGE TO THE SAMPLER DISK

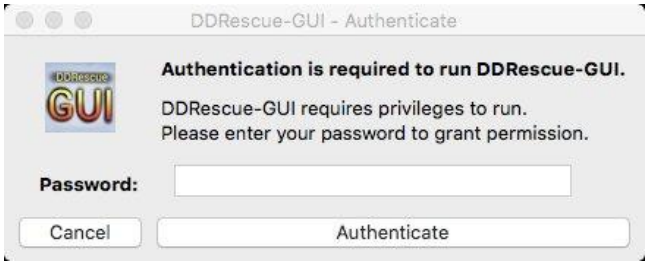
After we have added a bank to the EMAX-II ISO file, we will write the ISO file back to the sampler disk. The disk can then be used in the EMAX-II sampler.

1. Open DDRescue-GUI

Open DDRescue-GUI from your Applications folder.

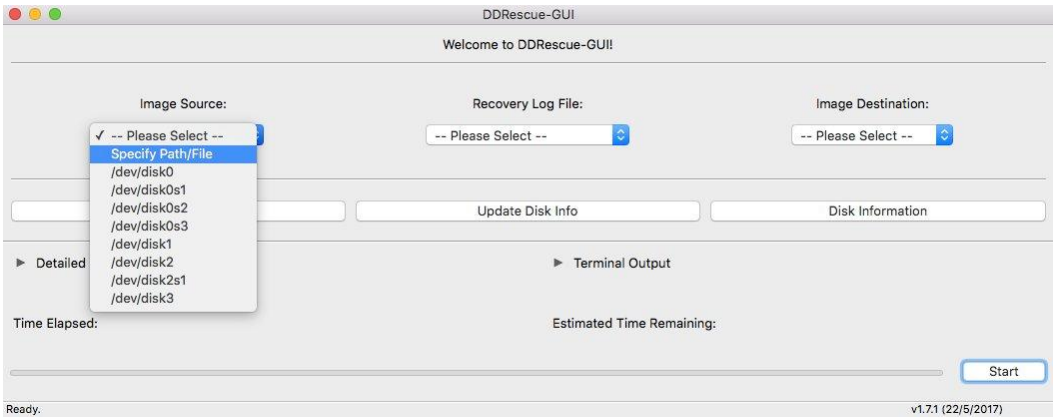


Since quite some risk is involved when using a power-tool like DDRescue, you will first have to authenticate yourself.



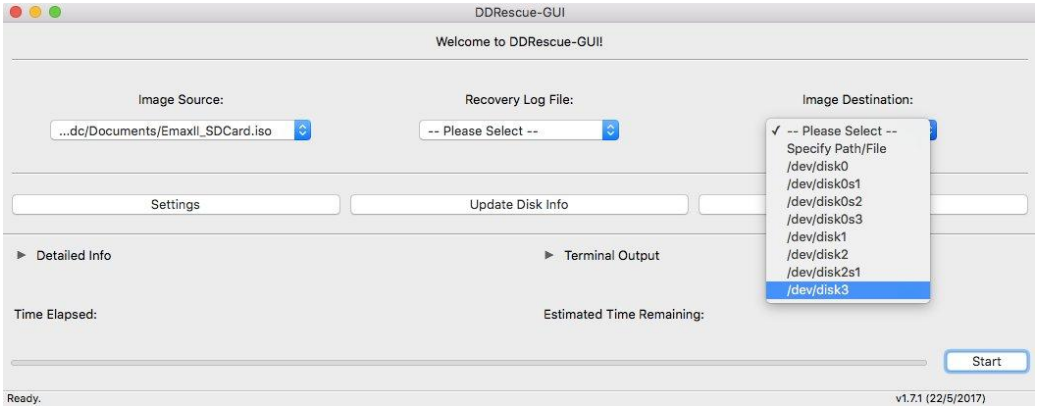
2. Select the ISO file as source

Now select **EmaxII_SDCard.iso** file in the "Documents" folder as the source of the DDRescue copy process.

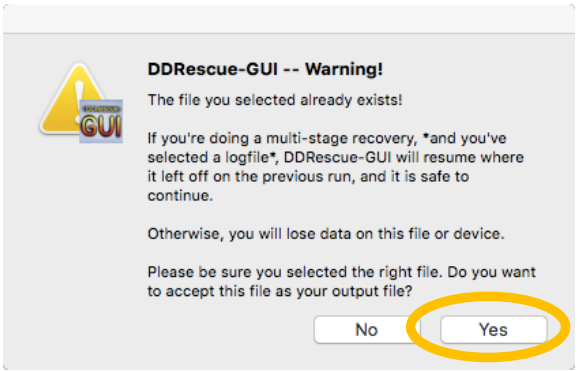


3. Select the sampler disk as target

Then select the **/dev/disk3** disk as the target disk. Make sure this disk name is still assigned to the sampler disk (see *step "STEP 1:CONNECT AND IDENTIFY THE SAMPLER DISK"*). **Don't select another disk, it may destroy your system !**



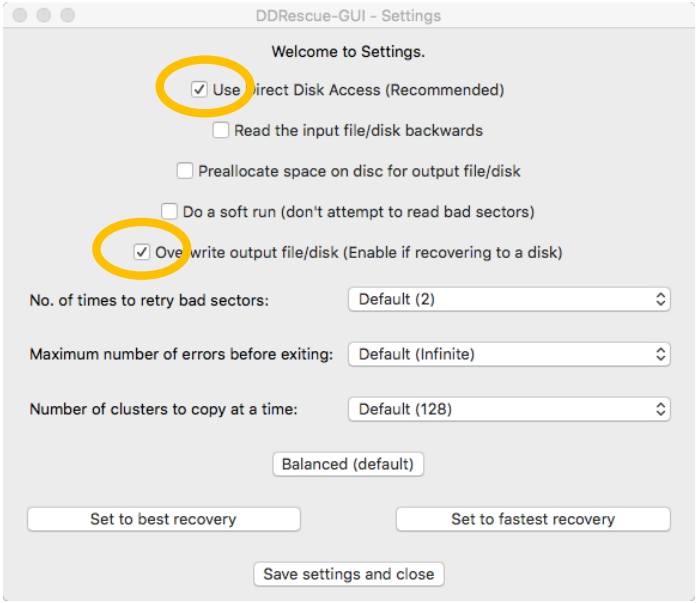
Then confirm that the disk can indeed be overwritten.



We also tell DDRescue-GUI not to use a Log File by selecting "None (not recommended)". But if you like to use a log file it's perfectly allowed to specify one of course.

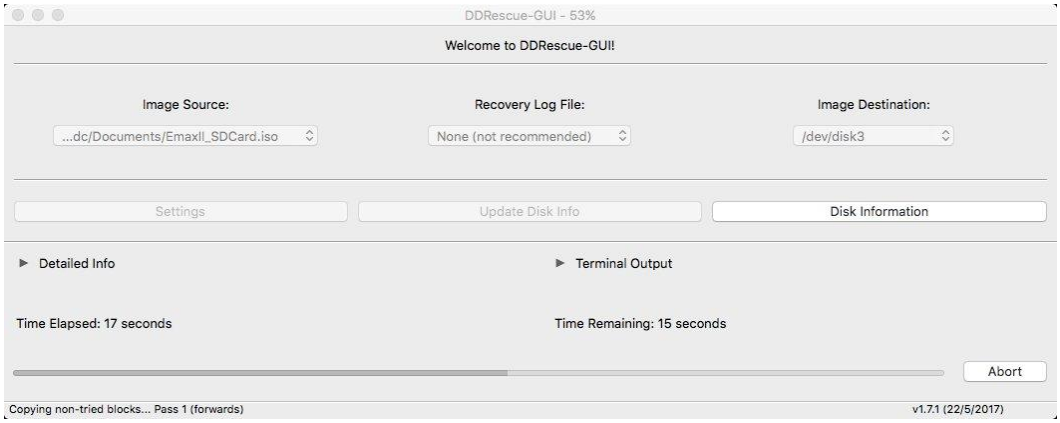
4. Configure the settings

Make sure that the "Use Direct Disk Access" box and "Overwrite output file/disk" box are selected. The other settings are fine. Then press "Save settings and close".

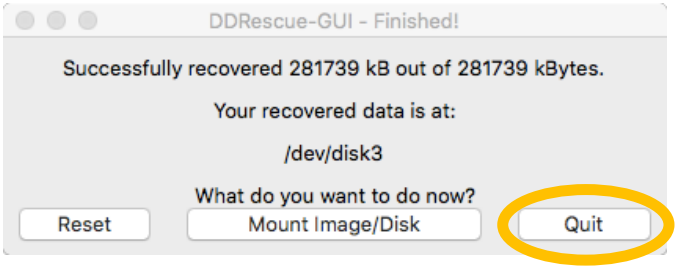


5. Start the copy process

Press the "Start" button. DDRescue-GUI will write the ISO file to the sampler disk now. **All data on the disk is destroyed and replaced by the ISO file.**

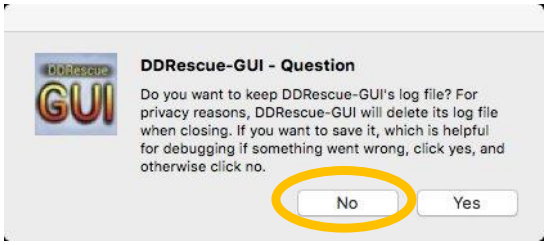


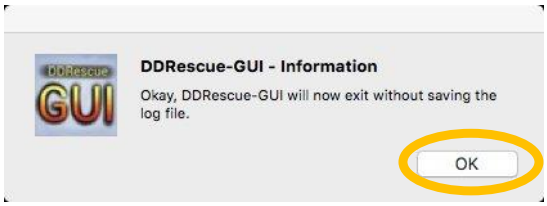
When the copy process is finished, DDRescue-GUI will show a window. Click "Quit" to close this window.



6. The disk is ready. Leave DDRescue-GUI

The sampler disk is ready now.
We can leave DDRescue-GUI. This requires some confirmations on several windows…





STEP 5: MAKE .ISO THE DEFAULT FILE EXTENSION IN EMXP

Next to editing ISO files created from actual sampler disks, EMXP can also generate new (empty) hard disk image files (e.g. for EMAX-II, select 1 → 2 → 4 → 2 starting from the main menu in EMXP).
Once such a file has been generated, you can save banks and an operating system to it, similar to the procedure described in *section "STEP 3: USE THE ISO IMAGE IN EMXP"*.
EMXP also supports the generation of SCSI2SD partitioned hard disk image files containing multiple (empty) sampler partitions.

By default, EMXP assigns the .ISO file extension to partitioned SCSI2SD hard disk image files.

But the default file extensions assigned by EMXP to normal, un-partitioned hard disk image files for the EMAX-I, EMAX-II and Emulator-III/X/ESI are .EZ1, .EZ2 and .EZ3, and for Emulator-II hard disk image files the default file extension is .DSK (which is the default file extension for DREM files).
If you want to be sure that these files are treated correctly by software like DDRescue-GUI when copying them to hard disks or memory cards (or when burning them to CD-ROM), you can ask EMXP to assign the .ISO extension to them by default as well.

Note: if you're using a DREM in your Emulator-II+HD, you should not change the extension of Emulator-II hard disk image files from .DSK to .ISO, because you don't have to use DDRescue-GUI to copy these hard disk image files to the DREM SD card. EMXP natively supports DREM .DSK files in Wine on macOS.
If you succeed however to connect a *true* Emulator-II hard disk to your Mac computer, then changing the extension to .ISO and using DDRescue-GUI is required to copy the hard disk image file to the hard disk.

Changing the extension can be done as follows:

1. **Open the File/Drive Preferences in EMXP**

   From the main menu in EMXP, hit the following sequence of keys on the keyboard: 6 → 4 → 3, then press key 1 as shown below.

```
                        FILE EXTENSION PREFERENCES MENU
-------------------------------------------------------------------------------

  1.  Define the default file extension for some specific file types

  2.  Define support for generic extensions for some specific file types

  3.  Define what to do with incompatible files with a generic file extension









-------------------------------------------------------------------------------
             [1]...[3]: menu option                    ESC: Go back
-------------------------------------------------------------------------------
                           Please enter a menu option:
```

2. Select the E-Mu hard disk image file types

Select the E-Mu hard disk image file types in the screen below. Currently the default extension for these file types are .EZ1, ..EZ2, .DSK and .EZ3. We will change them in the next step.

```
              DEFINE WHAT FILE EXTENSIONS SHOULD BE USED WHEN EMXP
                   CREATES FILES OF SOME PARTICULAR FILE TYPES
-----------------------------------------------------------------------------
 [ ]  01. EMAX-I Floppy Disk Image Files                        .EM1FD
 >X<  02. EMAX-I Hard Disk Image Files                            .EZ1
 [ ]  03. EMAX-II Floppy Disk Image Files                       .EM2FD
 [X]  04. EMAX-II Hard Disk Image Files                           .EZ2
 [ ]  05. EMULATOR-I Floppy Disk Image Files                    .EMUFD
 [ ]  06. EMULATOR-II Floppy Disk Image Files                  .EMUIIFD
 [X]  07. EMULATOR-II Hard Disk Image Files                       .DSK
 [ ]  08. EMULATOR-III Bank Files                                 .EB3
 [ ]  09. EMULATOR-IIIX Bank Files                                .E3X
 [ ]  10. ESI-V3 Bank Files                                       .ESI
 [X]  11. EMULATOR-III/X/ESI Hard Disk Image Files                .EZ3
 [ ]  12. EMULATOR-III/X OS Floppy Image Files                  .E3OFD
 [ ]  13. AKAI S1000 Program Files                                  .P
 [ ]  14. AKAI S1000 Sample Files                                   .S
 [ ]  15. AKAI S1000 Floppy Disk Image Files                      .AKI
 [ ]  16. PARTITIONED Hard Disk Image Files                       .ISO


-----------------------------------------------------------------------------
[SPACE|01-16]Select [A]All_____ [M]Range___ [U/D]Scroll [ESC]Back__ [RET]Go____
-----------------------------------------------------------------------------
                          Please enter your choice:
```

3. Change the default extensions to .ISO

For each of the samplers, a screen will appear in which the default extension can be changed. Select .ISO (item 2) on each of these screens.

```
              DEFINE WHAT FILE EXTENSION SHOULD BE USED WHEN EMXP
                   CREATES EMAX-I HARD DISK IMAGE FILES
-----------------------------------------------------------------------------
 [ ]  1. Save EMAX-I Hard Disk Image Files with extension .EZ1
 >X<  . Save EMAX-I Hard Disk Image Files with extension .ISO
 [ ]  3. Save EMAX-I Hard Disk Image Files with extension .IMG









-----------------------------------------------------------------------------
[SPACE|1-3]Select__ ___________ ___________ [U/D]Scroll [ESC]Back__ [RET]Go____
-----------------------------------------------------------------------------
                          Please enter your choice:
```

The default extensions have been changed now. From now on EMXP will always save hard disk image files with the .ISO extension.

```
              DEFINE WHAT FILE EXTENSIONS SHOULD BE USED WHEN EMXP
                   CREATES FILES OF SOME PARTICULAR FILE TYPES
-------------------------------------------------------------------------------
 [ ]  01. EMAX-I Floppy Disk Image Files                          .EM1FD
 >X<  02. EMAX-I Hard Disk Image Files                              .ISO
 [ ]  03. EMAX-II Floppy Disk Image Files                         .EM2FD
 [X]  04. EMAX-II Hard Disk Image Files                             .ISO
 [ ]  05. EMULATOR-I Floppy Disk Image Files                      .EMUFD
 [ ]  06. EMULATOR-II Floppy Disk Image Files                    .EMUIIFD
 [X]  07. EMULATOR-II Hard Disk Image Files                         .ISO
 [ ]  08. EMULATOR-III Bank Files                                   .EB3
 [ ]  09. EMULATOR-IIIX Bank Files                                  .E3X
 [ ]  10. ESI-V3 Bank Files                                         .ESI
 [X]  11. EMULATOR-III/X/ESI Hard Disk Image Files                  .ISO
 [ ]  12. EMULATOR-III/X OS Floppy Image Files                    .E3OFD
 [ ]  13. AKAI S1000 Program Files                                    .P
 [ ]  14. AKAI S1000 Sample Files                                     .S
 [ ]  15. AKAI S1000 Floppy Disk Image Files                        .AKI
 [ ]  16. PARTITIONED Hard Disk Image Files                         .ISO


-------------------------------------------------------------------------------
[SPACE|01-16]Select [A]All_____ [M]Range___ [U/D]Scroll [ESC]Back__ [RET]Go____
-------------------------------------------------------------------------------
                              Please enter your choice:
```

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