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SCSI2SD Information

Introduction

SCSI2SD is a SCSI-powered SD card reader/writer. It is currently available in two main versions, Version 5 and Version 6, and two sub-versions of Version 5. Version 6 is more expensive, and offers up to 7 ID's, whereas Version 5 offers up to 4. There's other minor differences as well. Version 5.5 is a "plug-in" drive, a mini version of the v5.2, but otherwise functions identically.

SCSI2SD can present itself as multiple drives - that is, SCSI ID's. Since SD cards are high-capacity, and since we are talking about hardware samplers that use SCSI, users usually split an 8GB or 16GB SD card into several 2GB-sized ID's. So SCSI2SD isn't just one "drive", it's four or seven!

For our purposes, we'll only talk about the Version 5 board. Regardless, the v5 and v6 are similar in function. If there is something that is Version 6-specific, we'll note it.

Describing The Board

The SCSI2SD board (this is inside your case should you have an external) has a power connector on the back, and two openings on the front. The power connector is a standard Molex power connector, and is actually **NOT** required for many samplers, and thus is not accessible in the external case. The two jacks in front are (to the left) an Android-style USB jack, which connects to a computer or supply power (this is how you will supply power if you need it), and the other (to the right) is the SD card slot, and the SD card is factory-supplied.

Your SCSI2SD came in either an external box or on a tray for internal mounting into your sampler.
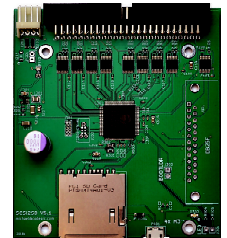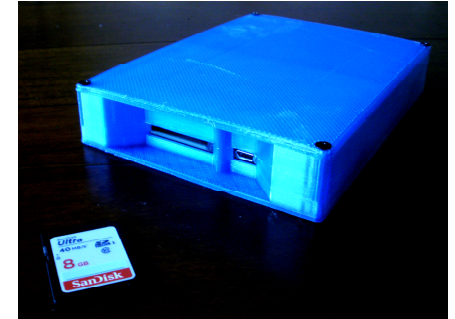
SCSI2SD Self-Setup

We have set up for SCSI2SD board, and formatted the SD card, from the factory according to the specs you gave us. However, to change it's setup, here's how. Plug the SCSI2SD circuit board into your computer via the Android-USB jack, and using the *CodeSrc Utility* program provided by the SCSI2SD designer. Download the Mac version at the App Store; for the Windows version: www.codesrc.com/mediawiki/index.php?title=SCSI2SD

Make sure you use the Utility program specific for your board; there are different ones for the v5 board and v6 board. The Utility program is for setting up your ID's and the capacity of ID's of the SD card you will use on the SCSI2SD board. (Everything else you can ignore.) The important fields on each ID tab are:

Enable SCSI Target:	This enables the ID; you don't have to have multiple ID's but most likely you'll want it
SCSI ID:	This needs to be unique for every tab
SD Card Start Sector:	Where the data starts on the SD card
Sector Size (in bytes):	Should always be 512
Sector Count:	This is the capacity, in sectors, of the ID; e.g. 4194304 sectors represents 2GB

It's best, in our opinion, not to input anything in the 'Device Size' field; let what you input into 'Sector Count' manipulate that field. Also, do not check the 'Auto' checkbox; this may enter values you don't want. Enter all values in manually.

The way SCSI2SD works; is each ID reserves a certain area of the SD card, usually one after the other. (This isn't mandatory, but we assume you'll want to be nice and neat about this and not waste any space.)

IMPORTANT: for the Version 5 boards, this ID information is written in flash memory on the SCSI2SD circuit board, so every SD card you use with it will be subject to the setup you write onto it. The Version 6 board writes this information to the last sector of the SD card, so each SD card can have a different setup.

Your SCSI2SD and SD Card has been set up for you for your sampler from the factory. Different samplers have different needs, and your factory setup is notated on the Release Sheet you received with the SCSI2SD board. Again, remember the v6.0 board has the configuration on the SD card, not the board; while the v5.x board has the configuration flashed onto the SCSI2SD board itself.

If your SD card's capacity seems a lot larger than what is actually setup and formatted onto the card, don't worry. Often 16GB cards are just as costly as 8GB cards, but most importantly a 8GB is really usually 7.5GB; thus, 4 ID's of 2GB isn't possible. So we just supply a larger card and the rest is wasted space.

Additional SD Card Setup on your Computer

Again, your SD card that came with your SCSI2SD is already set up. There is no reason to do anything more with it.

However, you may want to use additional SD cards, and you'll want to know how to set them up and format them properly. Not only so they can be used on your sampler, but so they can be used in conjunction with your computer. Though it's not required, this is highly advantageous; to take your SD card and put it into your computer. It allows you to more easily read, write, backup, or restore it (most often with Chicken Systems's utilities such as Translator [Free]).

If your sampler uses a standard computer-readable format, this should be easy enough - just insert it into your card reader and go. However, most people use SCSI2SD with samplers that have proprietary computer-nonreadable formats. The information below applies to them.

Proprietary Setup for Mac And Windows
However, the Mac - and sometimes Windows - may presents a problem or two. Although some of it we don't understand, we have found a way to avoid them, and we'll describe the solution below. Needless to say, if you don't address these issues, accessing the SD card on a computer will cause a lot of undesirable and unavoidable side-effects (nag screens, inability to write information, etc.)

The solution is to reserve the first 20480 sectors of the SD card for the Mac to write it's own "partition table" and make it think it's "playing by the rules" (when it's actually not). Below are instructions how you'd set up the first ID, if each ID is 2GB apiece, using the CodeSrc Utility.

   1) Under the "DEVICE 1" tab, set the SD Card Sector Start to 20480
   2) To compensate, set 'Sector Count' to 4173824, which is 20480 less than the 2GB count of 4194304
   3) Assuming you are setting up 3 more ID's, set those (DEVICE 2, DEVICE 3, and DEVICE 4) 'Sector Counts' to the standard 4194304.
   4) Go again through DEVICE 2-4, and check and uncheck the Auto checkbox. This will automatically set the Sector Start to the appropriate number.
   5) Go File-Save To Device - that saves your information onto the SCSI2SD unit.

But - that's the easy part. Setting up the SD on the Mac is a bit more convoluted, but if you follow these step-by-step instructions, it'll work just fine. *NOTE: these are for Disk Utility within OSX 10.10 and below. Please look ahead for instructions on Disk Utility versions within 10.11 forward.*

Insert the SD card in your Mac-connected external card reader.
Open Disk Utility (in your Applications folder).
Select the SD card on the left.
Click Options and select Master Boot Record; close dialog.
Select the Partitions tab.
Select "2 Partitions".
Take your mouse, select the midpoint between the partitions in the map-graphic, and push it up as far as it will go.
Select the top partition, and type '.4' (without the quotes) in the Size field, and hit ENTER. Best case it will go to 9.4mb; if so, leave it be. If so, try it again, and it will go to it eventually.
Click Apply. This will set up the two partitions - the very small one and the other much larger one - and formats them for HFS (the "Mac" format).
Select the larger Partition and press DELETE on your keyboard; this will delete the larger Partition and leave the mini-one alone.

However, for some reason, Disk Utility in 10.11 (El Capitan) and forward isn't as capable as previous Disk Utility's, rendering the above instructions useless. For 10.1 and forward, you must use Terminal, using these instructions:

Find out which disk number your SD card is:
diskutil list

Unmount the disk, so it can be accessed
diskutil unmountDisk /dev/disk[disk number]

To partition the disk into 2 partitions, one being the much smaller one, the other is the rest of the disk:
diskutil partitionDisk /dev/disk[disk number] 2 MBR HFS+ Mac 9.4M HFS+ SCSI2SD R

To erase the larger partition (you will be prompted to enter your password):
sudo diskutil eraseVolume "Free Space" SCSI2SD /dev/disk[disk number]s2

Important: in the 'Free Space" above, make sure you type this in. If you copy/paste it, chances are the quotes will be the nonstandard *style* quotes that Mac commonly uses.

All these commands sets up the card to be "mounted" by the Mac and pacifies the OS so we can operate on the other sections of the SD card without OS interference. You'll see the volume "Untitled" mounted, but don't write anything into it using the Finder - you'll never see it in your sampler. Just leave it be and let the Chicken Systems utilities do their job.

To create this "mini-partition" on Windows, use the **diskpart** command line utility that is available on WIndows 7, 8, and 10. Go to

https://docs.microsoft.com/en-us/windows-server/administration/windows-commands/diskpart

and follow the instructions to create a boot sector and a small 20480 sector partition, regardless of the SD card size.

Using SCSI2SD On Your Sampler

Again, your SCSI2SD board and SD card have been set up for you from the factory. Just plug-and-play.

If you want to reformat your SD card, as far as formatting, you can do this using a Chicken Systems utility (our Free versions work), or you can just do it with your sampler. For the latter, that's as easy as formatted any other SCSI drive. Just hook it up and format.

You'll find SCSI2SD to be silent-quiet - a definite change from noisy mechanical fixed hard-drives or ZipDrives. As for performance, our experience is that it's just a bit faster than a ZipDrive - plenty fast! And don't forget the reliability of solid-state equipment, much more robust than mechanical storage devices. Although SD cards DO start to peter out after 5-10 years, you can always backup-restore them, and they are super-cheap. And consider the multi-gigabyte capacity - WOW!

Note: the USB port on SCSI2SD v5.x board is NOT for data transfer purposes. It is ONLY for setup connection with a computer and for power supply purposes. This an advantage of the v6.0 board, which does serve as a card reader via USB.

Warnings

There are at least two warnings to alert yourself to, regarding SCSI2SD. First, if you need to power your SCSI2SD via the USB port, do NOT use a USB battery pack. Certain battery packs - perhaps all of them - turn off power after they "think" the board doesn't need it, and thus screws up the operation. For safer operation, always use a wall outlet.

Second, you may get varied results accessing a proprietary SD card with your computer. Some cheaper SD readers don't "play ball" well with the low-level programming required to access the SD cards. And even if you are using an "internal" card reader on your laptop, for example, it still may be hooked up in an "external" fashion and still may not be high-quality. Our recommendation is that if what you have doesn't work, get another card reader, perhaps a more costly one. Once it starts working well for you, stick with it.

Technical Support

Chicken Systems provides reasonable unlimited assistance for your SCSI2SD, whether you purchased it from us or not. Email us at **support@chickensys.com**, or call us at **320-235-9798**.