

GreenSCSI

Reference Manual

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Thank you for your purchase of a GreenSCSI Kit!

At a time when mainstream vendors have dropped commercial support and products on the market were cost prohibitive, a community has sprung up to provide storage solutions on SCSI and other vintage disk interfaces. We're glad to be part of that community and provide inexpensive options for enthusiasts in need.

GreenSCSI wouldn't be here without the work of the BlueSCSI, RaSCSI, TinySCSIEmu, and SCSI2SD projects.

Your support means that we can keep doing what we love, keeping old computers working and fun!

-David Kuder

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Appendix A - Troubleshooting

With your GreenSCSI Kit you should have received the parts listed below.
Please check your kit's contents and make sure all parts are present.

- GreenSCSI Board
- Teensy 3.5
- 50 Pin SCSI Connector
- SCSI Loop-Back Test Plug

You will need some tools and materials to assemble the kit:

- Soldering Iron (Temperature controlled preferred)
- Solder (ChipQuik and sparkfun are two of our favorite brands)
- Isopropyl Alcohol (For removing flux after soldering)

Some items that will also come in handy:

- USB Micro-B Cable
- USB microSD Reader

Depending on which version of the kit you purchased, you may have received a microSD card preloaded with an example configuration and some blank drive images.

Section 3 in this manual details the creation of such a card for use with GreenSCSI, including the creation of blank disk images and configuration via `greenscsi.cfg` or the interactive console.

Step 1.

Pre-heat your soldering iron. Typically a temperature of 320°C or 608°F is used. Once your iron is at temperature it is a good idea to clean the tip with a brass sponge to remove any residue from previous jobs.

Step 2.

Use the included header pins to align the corners of the Teensy 3.5 board with the matching footprint on the GreenSCSI board. The pads on the back of the Teensy 3.5 should be aligned with the oblong cut outs in the GreenSCSI board and there should be no gap between the boards.

[Picture 1 - GreenSCSI Board Bottom Side]

Step 3.

When you have the pads aligned in the slots you can heat the pad and the slot with the iron and begin flowing in solder. You may need to carefully scrape the pad with your iron as you start for the solder to begin adhering to the pad. At a minimum you need to solder the connections labeled DB4, DB5, DB6, and DB7. Any locations labeled with only numbers are unused pins in the design which you are free to use for adding functionality to the GreenSCSI. You can reference the "Welcome to Teensy 3.5" card included in your kit for what functions are available on each pin.

[Picture 2 - Soldering DB5]

Step 4.

With the $\overline{DB4}$ - $\overline{DB7}$ pads soldered, you should now be able to remove the pins used to align the boards in step 2. Solder the remaining named locations starting with \overline{VIN} and \overline{DBP} working your way around to not create a concentration of heat in any one area. A 10 cm length of bare wire is included in the kit to make soldering of the through holes easier. Cut the wire flush after soldering each connection.

[Picture 3 - Soldering \overline{DBP}]

Step 5.

Align the 50 pin male SCSI connector in the holes provided. Pin 1 on the SCSI connector is marked with an arrow and the alignment notch should face to the edge of the board.

[Picture 4 - Soldering the SCSI connector]

Next Section: Testing your GreenSCSI



You should now have an assembled GreenSCSI device, and are likely tempted to plug it in to your treasured vintage equipment - BUT WAIT! It is important to first test your GreenSCSI with the included LoopBack plug to ensure that all connections made during assembly are solid. This only takes a moment and saves you troubleshooting headaches later on.

[Picture 5 - LoopBack installed]

With the LoopBack plug installed and no microSD card inserted, connect your GreenSCSI to a modern computer with a USB Micro-B cable. Your computer should detect a USB Serial adapter and automatically configure it for use.

[Picture 6 - USB Detection Bubble]

Open up a terminal emulator and connect to the new serial port that was just installed. We recommend using Tera Term on Windows computers.

[Picture 7 - Tera Term]

Press ENTER on your keyboard and you should see a `/ $ _` prompt appear. Type `loopbacktest` and press ENTER. The GreenSCSI firmware will run several tests to ensure that the SCSI bus connections are correct and free from any faults. When directed, remove the loopback plug and press ENTER to complete the final tests. You will get a test report similar to the one shown below.

[Picture 8 - Loop Back Test Report]

If all went well you should now be ready to move on to configuring your microSD card. If there were any faults found, double check the soldering as directed by the test report.

Your GreenSCSI supports truly massive storage compared to the vintage systems you are likely to be using it with. The choice is yours as to the size of microSD card to use. We have tested 32GB, 64GB, 128GB, and 256GB cards from Samsung and found them to function well with the GreenSCSI hardware and firmware. In order to support disk images over 2GB in size, your microSD card should be formatted with the ExFAT filesystem.

Now that your card is formatted, you can create a `greenscsi.cfg` file using either the interactive console present in the firmware of the GreenSCSI device, or by hand with a text editor on your modern computer.