SCSIFlash2

User Guide Version S

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Overview

The SCSIFlash Emulator is a general purpose SCSI bridge to a removable Compact Flash (CF) Card. There are previous versions of the product known as SCSIFlash-1™ and CF2SCSI™, but this User Guide applies to the SCSIFlash-2™ and SCSIFlash-2R™ variants.

The product can emulate Hard Disk, Magneto Optic, Floppy, Jazz and Zip Drives. Tape Drives may also be emulated. Most SCSI-1/-2 interfaced products may be emulated. Our engineering team is able to develop new emulations if your requirement is not listed.

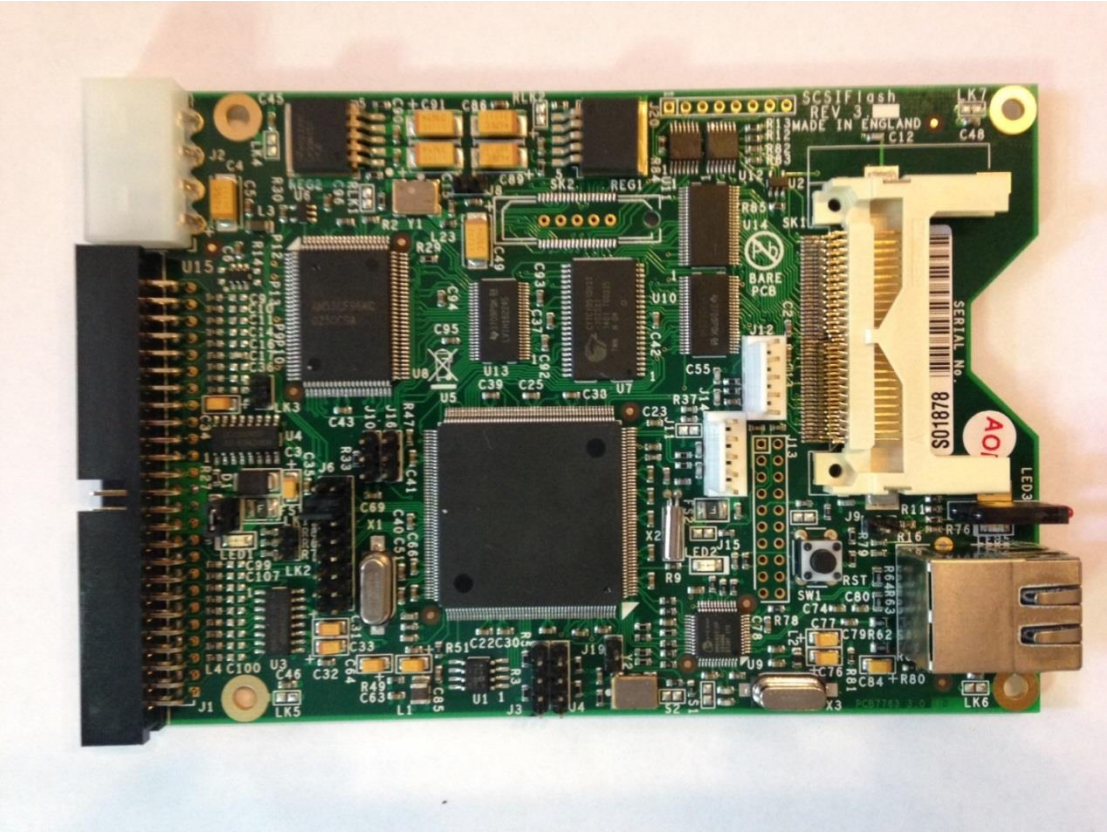
An approved industrial CF card for Hard Disk applications is normally supplied by Solid State Disks Limited (SSDL), but approved commercial grade CF cards may be used for other applications. A discussion of the relative merits of the different CF technologies for each user application is beyond the scope of this User Guide, but explanatory literature is available from SSDL. The appropriate CF card is plugged into the socket at the front of the product and either sits within the product's envelope or protrudes slightly for ease of withdrawal. When emulating products which require removable media a push-button ejector is also used.

The standard 50 pin ribbon cable interface connection to the SCSI Host is at the rear of the enclosure, together with the SCSI power connector. Note that there are two versions of the main SCSIFlash-2 circuit board, SCSIFlash-2 (SF-2) and SCSIFlash-2R (SF-2R). The only difference is that the rear power and interface connectors are transposed on the SF-2R to allow for hosts where the physical fit and cable routing is critical. The circuit board only requires a single +5V supply.

Various interface adaptors are available from SSDL and others, for example SCSI 68 pin, but users should be aware of the 8 bit data bus and speed limitations and must ensure there is sufficient additional mounting space and power.

The SF-2/2R circuit board is normally mounted within an industry standard 3.5" form factor enclosure or open-topped tray. Mountings and connectors are similar to those used with the product to be emulated. Optional adaptors are available if required, for example 5.25" form factor, to ensure the best fit within the host hardware.

An optional, front panel Ethernet Port connection is available for use with the FTP feature for Data Backup and Restore to a server or dedicated PC. For more information on available options contact sales@reactivegroup.com for further technical data and pricing.



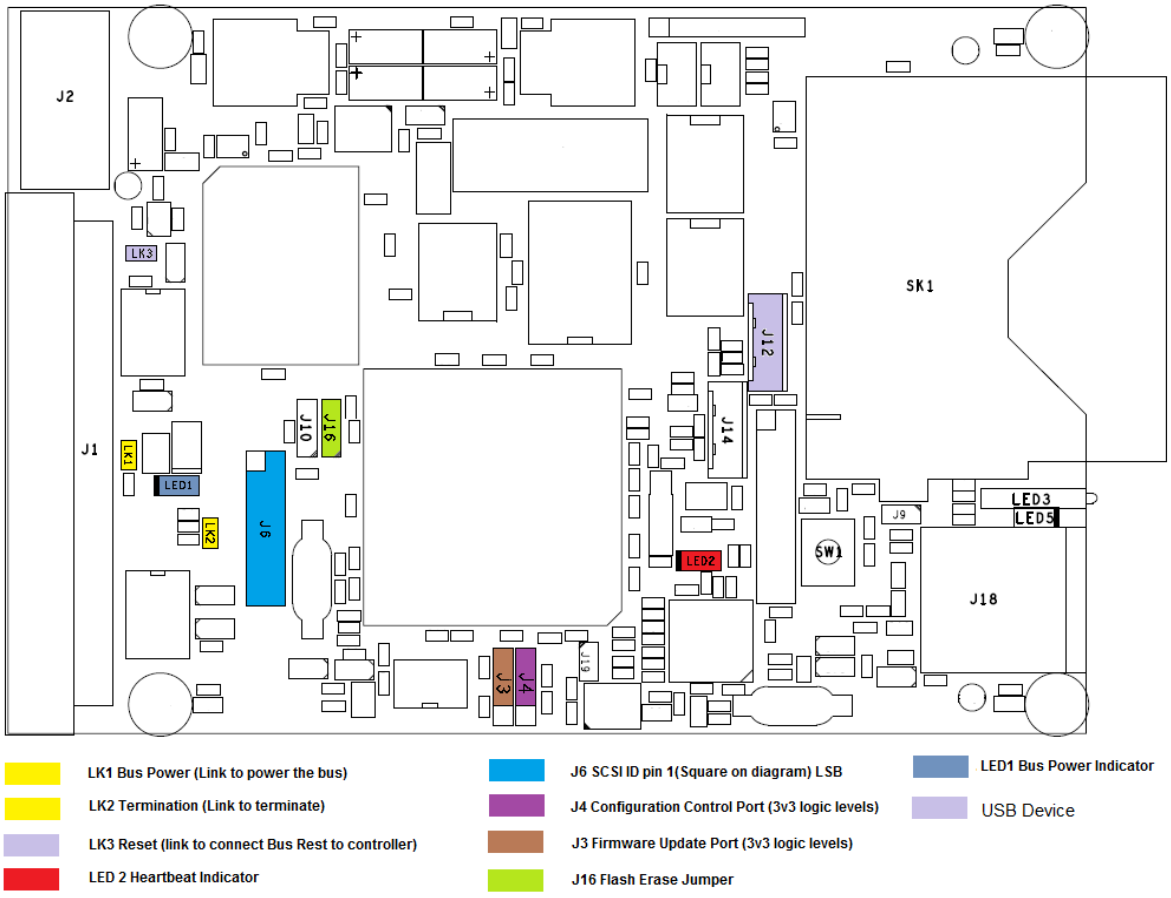
Main Features

3.5 inch form factor
Standard single ended 50 pin SCSI-1/-2 or optional SASI interface
Maximum 6.8 MB/sec asynchronous/synchronous transfer rate
Internal active SCSI termination, disabled/enabled by jumper
Wide range of SCSI product emulations available
Hardware emulation, no requirement for host software change
SCSI tape drive-DAT/DLT option
Ethernet backup/restore option
Easy field upgrade of SCSIFlash-2 emulation microcode
Remote/local integration support
Field emulation selection, set-up and BITE access via GUI

Setting Up

SCSIFlash-2 Circuit Board (PCB)

Note: On the SF-2R variant PCB the connector J10 is not present and the layout is slightly different, with J1 and J2 being transposed.



Jumpers and Links

J1: 50 pin SCSI connector

J2: 5 Volt power connector

SK1: CF connector

LK1: External SCSI bus power link,

LK2: Termination link, link to locally terminate the SCSI bus

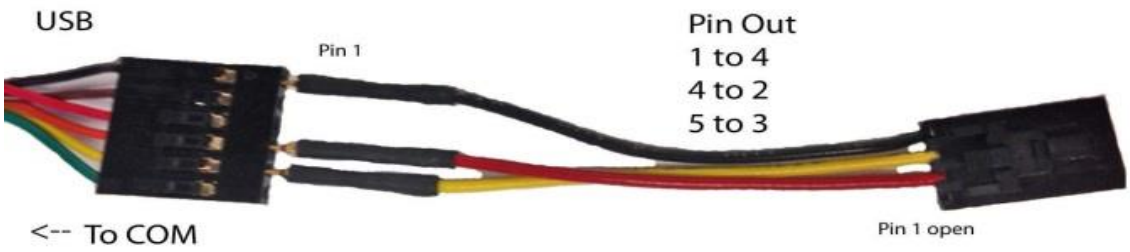
LK3: Reset link to connect RST to RSTC (default not connected)

J6: SCSI ID jumpers pin 1 = LSB. (Pin 1 end is square on diagram and PCB)

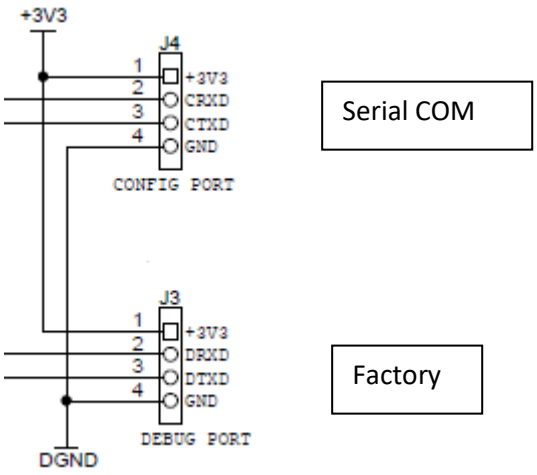
J12: System USB Port Using USB to USB Cable

J4: User serial Com port. To change emulations or access the user commands use USB to serial cable TTL-232R-3V3. Connections to J4, use the cable as shown below; (when you purchase cable TTL-232R-3V3, you will need to modify / add the cable changes as shown below.)

User Port Cable



TTL-232R-3V3



Setup Steps

Set Termination Disable/Enable at LK2 – If linked, i.e. jumper added, local SF-termination power is ENABLED.

Do you need to export termination power to the SCSI bus (pin 26)?
This is generally not necessary, but if you need to export power fit a jumper at LK1.
LK1 links local SF-2 termination power to the SCSI bus via a thermal fuse link. If the LK1 link is in place and the fuse intact, then on-board LED1 (green) will illuminate.

Connect the SCSI cable - Ensure that pin 1 of the cable is near the edge of the SF-2 circuit board. For SF-2R pin 1 of the cable should be near the power connector.

Connect the +5V power. Note that a standard 5V/12V SCSI power lead can be used here as the 12V pin is not connected on the circuit board.

Also note that the front panel green LED will flash if no CF is inserted, and will go out when the CF card is inserted. This is normally for use in removable media emulations such as MO drives or floppy disks. For HDD emulations the CF should be inserted before powering up and booting the Host. The green LED will not flash, when the CF inserted. If it is still flashing then the CF you are using is not compatible with the SCSIFlash-2 device. CF should always be purchased from SSD to ensure correct specification and operation for your application.

Setting the SCSI Device Number

J6 is used to set the SCSI ID. Set the jumper links as follows:

J6 SCSI ID 1 starts on the right of the PIN outs when you view the SCSIFlash drive with the CF card mounting, SK1, in front and the 50 pin SCSI connector away from you. See the circuit board diagram on page 3. Set the SCSI ID on the SCSIFlash-2 (SF-2) to be the same as the drive you are removing. For example:-

ID 0 - No Jumpers set
ID 1 - J6-1 set : : : : : : : **[:]**
ID 2 - J6-2 set : : : : : : **[:]** :
ID 3 - J6-1and 2 set : : : : : : **[:] [:]**
ID 4 - J6-3 set : : : : : **[:]** : :

Configuration

A number of user accessible configurations options are available, as are some system status reporting and diagnostic options. These features are accessed via the USER serial port of the SCSIFlash-2 Board (J4). This feature is most useful to gain insight into unexpected operating system exceptions, or to change emulations which are seen in the menu (LIST). This section of the User Guide assumes that problems with SCSI ID, SCSI Termination and other hardware issues have been solved, but system problems which have to do with software, timing or protocol are present.

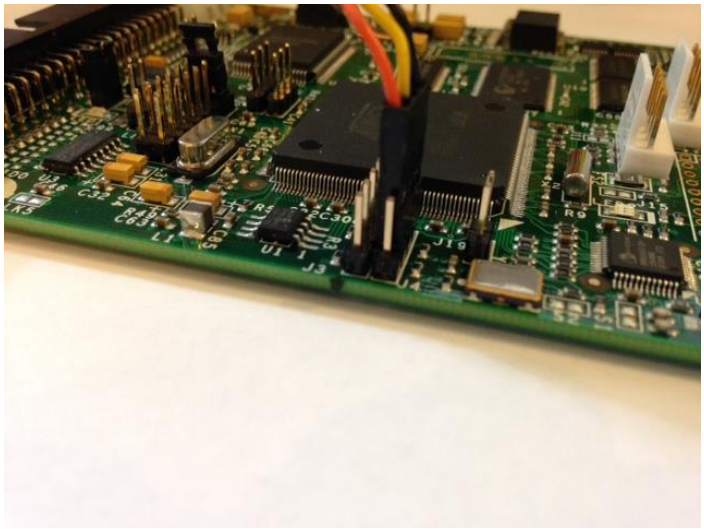
Installation

Note: Use M3x6mm screws to install the SF-2 enclosure or tray. Excessive screw length may cause damage to the internal circuit board.

Serial Cable Connections

The serial cable should be connected to J4 (User serial Com port). This connection and the following description should only to be used as directed by our support team, where difficulties have occurred in getting the emulator running, e.g., for taking traces, or for selecting/changing of available emulation firmware. It is not needed if just updating the installed firmware (microcode). Normally the SCSIFlash-2 emulator will have been factory set to emulate the correct drive and should operate normally after installation.

Connect a modified USB serial cable TTL-232R-3V3 to J4 (as shown in the picture below) and use TERATERM (see page 16) to access the menu to change emulations, or to access user commands, then power up the unit (Note: At this point there is no need to connect the 50 pin SCSI connector to the host, the following is completed off line.)



You must use TERATERM SETUP to access Terminal commands See Page 15

Using the Terminal Commands

When the SCSIFlash-2 is powered up with TERATERM terminal emulator connected a prompt character should be displayed.

```
>
```

If it does not just press the enter key and it should appear.

Commands are entered by typing their name followed by any parameters, separated by spaces, followed by the enter key.

Commands incorrectly keyed may be corrected either by pressing backspace, to delete the last typed character, or by using the 'Left' and 'Right' cursor keys to move to the place to be corrected and then using either backspace to delete backwards or the delete key to delete forwards. The command may be entered by pressing enter at any time no matter where in the text the cursor is.

The 'Up' and 'Down' cursor keys may be used to navigate backwards and forwards through the history of previously entered commands. Up to 10 previous commands may be recalled this way.

A previous command selected this way may be modified if required. Any modifications replace the original text; they do not become a new command in the history.

Commands may be auto completed by typing a few characters and then pressing the 'Tab' key. If two commands start with the same characters then only the characters up to the first difference are displayed. A further character must be typed in order for the 'Tab' to make a further guess.

Format for Command Documentation

Items contained in angle brackets <> are required elements.

Items contained in square brackets [] are optional elements.

So command names are required and are always in angle brackets.

```
<command name>
e.g.
<VER>
```

Since a command name is always required angle brackets are usually ommitted from a description.

Required parameters may have a fixed number of options. The parameter is required so one of the options must be present.

The syntax is

```
<[]..[]>
```

for example

```
<[START][STOP]>
```

If the command requires the above start/stop parameter then either START or STOP must be pesent in that parameter position.

Required elements that are numbers usually have a description of the required number between the brackets. For example to indicate the number of data blocks to transfer in a data transfer type command might be described:-

```
<Number of Blocks>
```

Commands that may have a variable number of parameters will be defined a number of times once for each valid combination of parameters, e.g.

```
SCSI
SCSI <[REG][DUMP]>
```

The SCSI command may appear on its own with no parameters.

or

may have one parameter which may be either REG or DUMP.

This command syntax appears in the full documentation and is also used in the detailed description provided by the HELP command.

The HELP command itself may take zero or one parameter, the name of a command. Select the SCSIFlash-2 icon, press return you should see (>) cursor. When the SCSIFlash-2 is powered up with a terminal emulator connected a prompt character should be displayed.

```
>
```

If it does not just press the enter key and it should appear.

To ensure that you are able to talk to the SCSIFlash-2

Type VER <return> you will see version information.

VER Command 'Display Current Version'

User Command

Entering a 'VER' at the command prompt will display the revision level of the firmware 01.XXX.0, model of the drive being emulated, and SCSI ID that is set

Usage

```
VER
```

Then Type **LIST** <return>

LIST Command 'List Available Emulations'

User command

List all available emulations supported by the firmware.

Usage

```
LIST
```

SETDEV Command

To change emulations

Type **SETDEV XX** <return> (where XX is the Device ID)

Once changed it will remain set in the emulator until another emulation is set.

To check

Type **VER** <return>

You can now connect the SCSIFlash-2 to the Host, (leave the USB > Serial cable connected if you are requested to complete other commands).

User Commands

HELP Command

User command

Display list of supported commands and optionally a brief descriptionof thier usage. If a command name is specified as the parameter then a more detailed description for the specified command is displayed.

Usage

```
HELP
```

```
HELP <command name>
```

CONFIG Command 'System Configuration'

User Command

Display the current nonvolatile configuration settings.

Usage

```
CONFIG
```

SCSI Command 'SCSI related functions'

Developer command

Manage SCSI test functions

Usage

```
SCSI
SCSI <[REG][DUMP]>
```

CF Command 'CF related functions'

Developer command

Compact flash memory access command

Usage TBA

VER Command 'Display Current Version'

User Command

Entering a 'VER' at the command prompt will display the revision level of the firmware.

Usage

```
VER
```

TRACE Command 'SCSI Trace Enable (E) Disable (D)'

User command

Manage TRACE functions

Usage

```
TRACE
```

```
TRACE <[E][D]>
```

TRACEMODE Command 'Set the Trace Mode'

User command

Set the SCSI TRACE display mode.

Usage

```
TRACEMODE
```

```
TRACEMODE <[NOTRACE][CONCISE][VERBOSE][CBD]>
```

The SCSI Real Time Trace consists of a number of modes of operation:

(a) NOTRACE
(b) CONCISE
(c) VERBOSE
(d) CBD

NOTRACE Option

Selecting this option also disables the SCSI TRACE. If this mode is set then no trace will appear whether TRACE is enabled or not. TRACE may be re-enabled but will have not effect until anothe mode is selected.

CONCISE Option

This mode displays the command name, address parameter and length parameter for each SCSI command received.

Format

```
<Command name> [Addr xxxxxxxx, Length xxxxxxxx]
```

VERBOSE Option

This mode displays the command name, address parameter and length parameter for each SCSI command received. It also displays any other relevant command field in the decoded form.

Command to be completed

CBD Option

This mode displays the whole CBD data packet, followed by the Command Name and the returned command status. It also shows any returned data for some commands. This is the preferred command to get the most information for our SCSI support team..

Example

```
CBD=03 00 00 00 12 00   REQUEST SENSE
   STS=00 GOOD, SENSE=00 NO SENSE, ASC=00 NO ADDITIONAL INFO
   MODE DATA=70 00 02 00 00 00 00 10 00 00 00 00 3A 00 00 00
         00 00
```

TRACEMODE Command 'low level trace'

Trace mode also supports the reporting of additional low level trace information

Usage

TRACEMODE <[LOW][HIGH]>

The SCSI Real Time Trace consists of a number of modes of operation:

- (a) LOW
- (b) HIGH

LOW Option

To enable this use the command

TRACEMODE LOW

HIGH Option

to disable this use

TRACEMODE HIGH

LIST Command 'List Available Emulations'

User command

List all available emulations supported by the firmware.

Usage

```
LIST
```

List Format

```
deviceID   Manufacturer   Device Name
```

SETDEV Command 'Select an emulation'

User command

Set the SCSI device to be emulated. Enter the deviceID that is shown in the device list.

Usage

```
SETDEV <deviceID>
```

DELAY Command 'Set access time delay'

User command

The DELAY command allows the ability to set the average access of the drive being emulated.

The average access time is always fixed at the value set; there is no attempt to vary it according to the sector being accessed relative to the previous sector, as in a real disk. The average simply applies to every access.

Usage

```
DELAY ENABLE            Enable access time emulation
DELAY DISABLE           Disable access time emulation
DELAY DEVICE            Set access time option to that of the drive being emulated
DELAY CUSTOM            Set access time option to the user defined custom time
DELAY TIME < time mS >  Set the user defined custom access time
```

The DEVICE/CUSTOM choice is always remembered when DELAY is disabled and restored when DELAY is enabled again.

The CUSTOM value defaults to the DRIVE value when a new emulation is selected with the SETDEV command otherwise it is maintained through a power cycle or ENABLE/DISABLE sequence.

Example

The Seagate ST34520N has an average access time of 9.5 mS so it is set to 10mS in the emulation as we can't set times smaller than 1mS. If the mode is set to DEVICE then the access time will be 10mS.

If the CUSTOM value is set to 15mS and the mode is set to CUSTOM then the access time will be 15mS

If the mode is set to DISABLED then the access time is close to 0 mS.

CAPACITY Command 'Set the emulation storage capacity'

User command

The CAPACITY command supports the ability to set the capacity of the drive being emulated. Actual capacity can be selected from

The size of the loaded media card
The original capacity of the emulation
A user defined custom value

Usage: Selecting the capacity option

```
CAPACITY DRIVE
CAPACITY MEDIA
CAPACITY CUSTOM
```

The DRIVE option sets capacity to that of the real disk drive. Or the MEDIA if that is smaller.

The MEDIA option sets capacity to the loaded MEDIA (the CF card)

The CUSTOM option sets capacity to a custom value. Or the MEDIA if that is smaller.

CUSTOM follows the same rules as delay, in that it is always maintained unless a setdev is issued when it resets to that of the DRIVE chosen. Also when SETDEV is issued the CAPACITY mode always defaults back to MEDIA.

You can set CAPACITY as number of blocks or number of Mega Bytes.

Usage: Setting the custom value

```
CAPACITY SIZE < size in MB >
CAPACITY BLOCKS < size in number of BLOCKS decimal number >
CAPACITY BLOCKSH < size in number of BLOCKS hexadecimal number >
```

NOTE To use the **CUSTOM SIZE** option, you must first complete the following.

CAPACITY SIZE XXX where XXX is the capacity required. You can them use the **CAPACITY CUSTOM** command; this will set the device at XXX capacity. If you do not complete the CAPACITY CUSTOM command the device will revert to the capacity of the CF MEDIA.

CUSTOM follows the same rules as delay, in that it is always maintained unless a SETDEV is issued when it resets to that of the DRIVE chosen. Also when SETDEV is issued the CAPACITY mode always defaults back to MEDIA.

FORMAT Command 'Set the SCSI FORMAT command behaviour'

User command

The FORMAT command supports the ability to set the behaviour of the SCSI FORMAT command. Currently behaviour is limited to selecting the type of format done when the SCSI command is issued Actual behaviour can be selected from

QUICK for a limited but fast format
FULL for a full format that may take some time to complete.

Usage: Selecting the format option

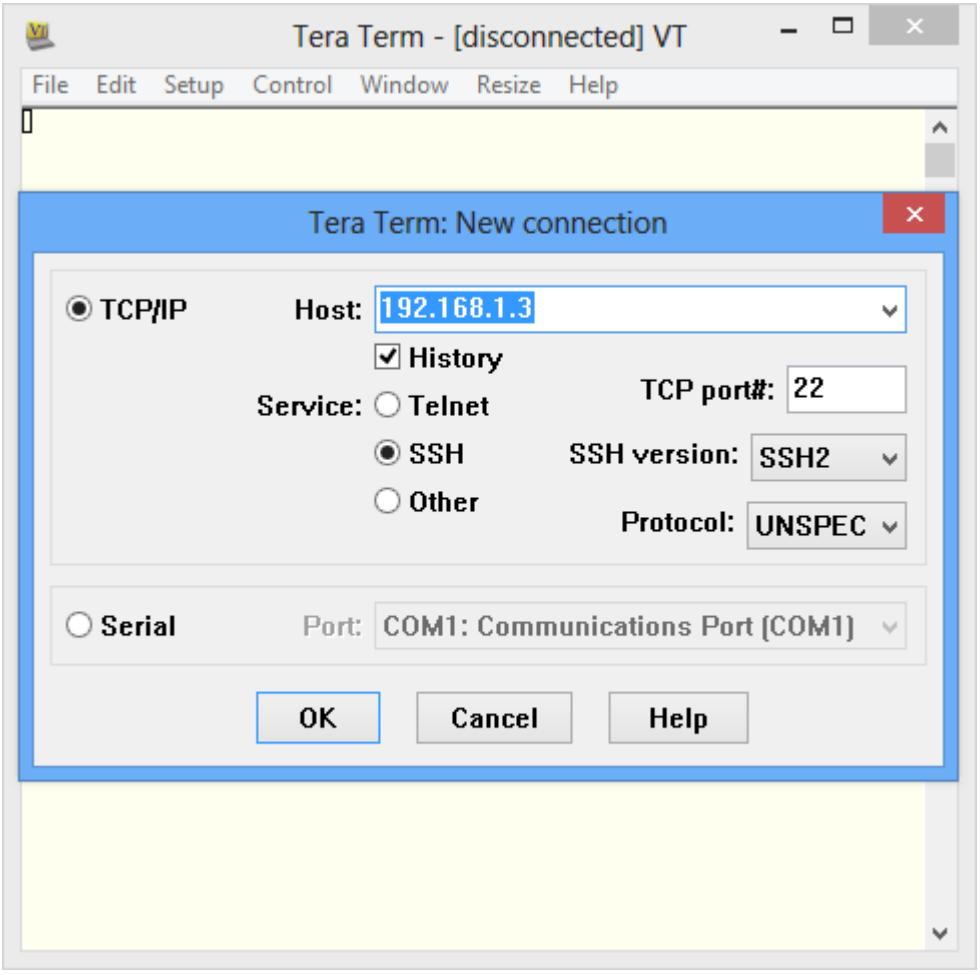
```
FORMAT QUICK
FORMAT FULL
```

Note! When changing emulation the FORMAT QUICK option is always selected

Setting up the Terminal emulator Teraterm (obtainable from SCSISUPPORT@REACTIVEGROUP.COM

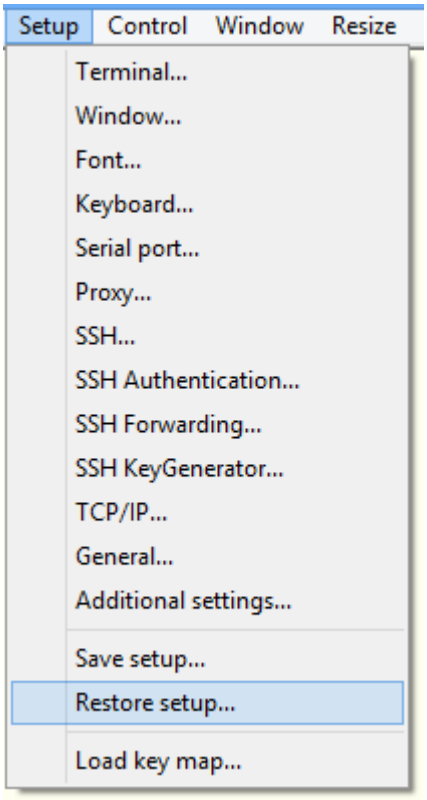
(Info on drivers)

When you first run Teraterm you will see the following window:



Click on **Cancel**. Don't worry about which serial port at this stage

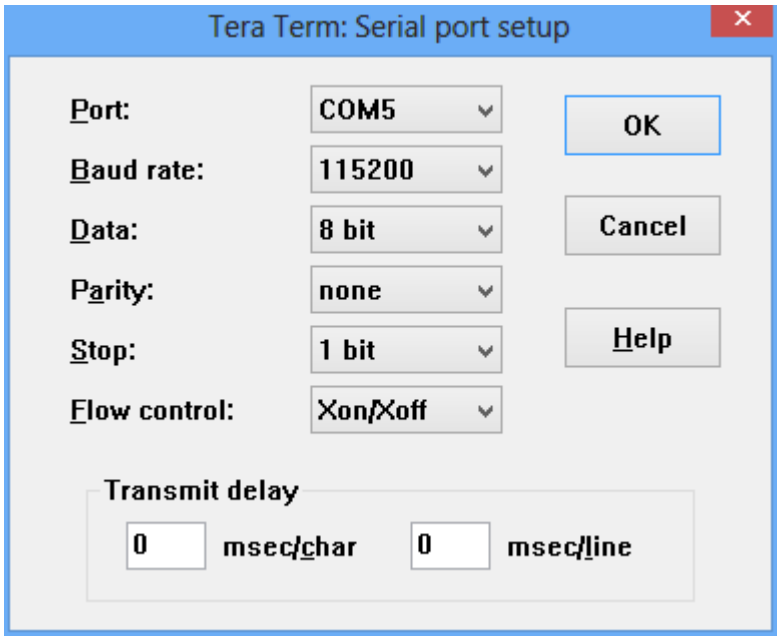
Click on the **Setup** Menu and select **Restore setup…**



In the dialogue box navigate to the place where you put the supplied setup file 'SSD_Card_Reader.ini' and click **Open**

You should see the Teraterm window change to a bigger size.

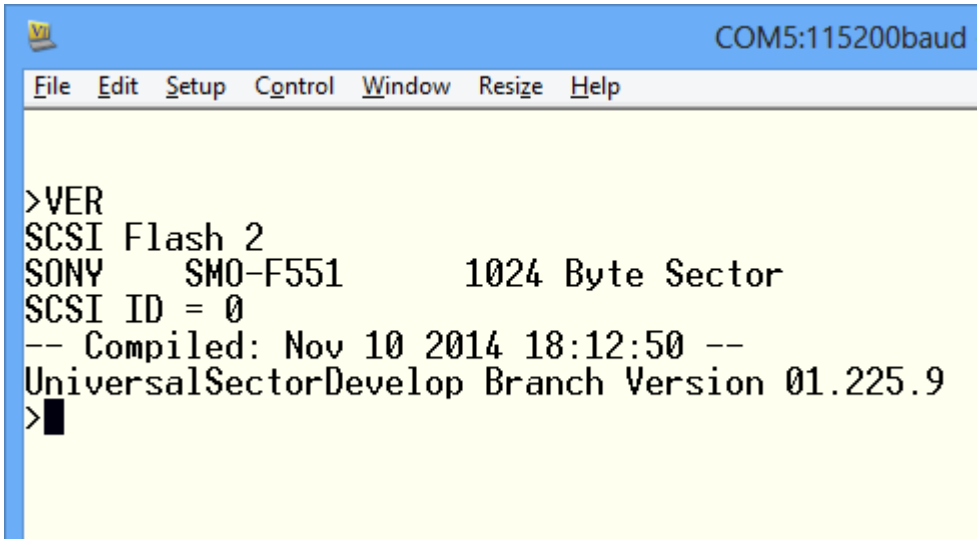
Click on the Setup Menu again and select **Serial Port**



Change the Port via the dropdown menu to the one you have connected the SCSI Flash cable to and click **OK**. Do not change anything else.

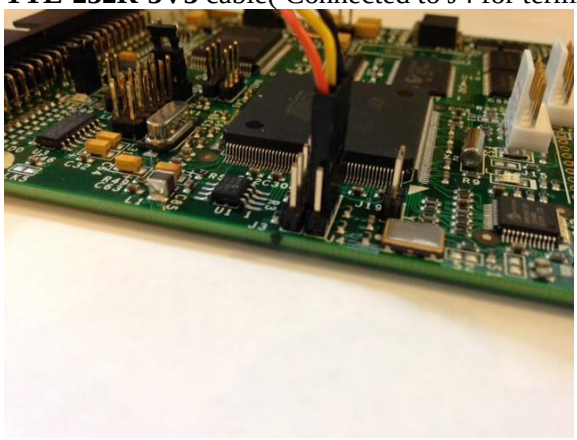
Connect the SCSI Flash 2 and turn it on. You should see a > appear. If it does type **VER** and press 'enter'

You should see something like this, and you will now be able to enter user commands.



For Command and user command connection.

Connect a modified USB serial cable TTL-232R-3V3 to **J4** (as shown in the picture) to User Com Port and use **TERATERM Page 15** , to access the menu to change emulations, or user commands then power up the unit. (at this point there is no need to connect the IDC 50 pin rear connector to the Host, the following is completed off line from the HOST) Driver for **TTL-232R-3V3** cable(Connected to J4 for terminal command usage)



Drivers can be found at
http://www.ftdichip.com/Drivers/VCP.htm

Taking a Trace

To complete this, proceed as follows:-

Enabling Trace Mode

To set the trace mode enter **TRACEMODE CBD**

To enable the trace mode enter **TRACE E**

```
>TRACEMODE CBD
TRACE Enabled CBD mode
>TRACE E
TRACE Enabled
>
```

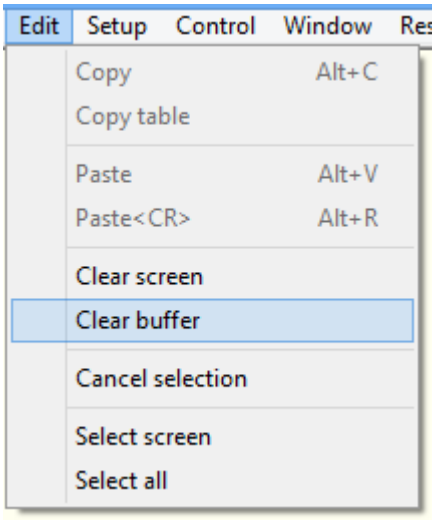
Disabling Trace Mode

To disable the trace mode enter **TRACE D**

```
>TRACE D
TRACE Disabled
>
```

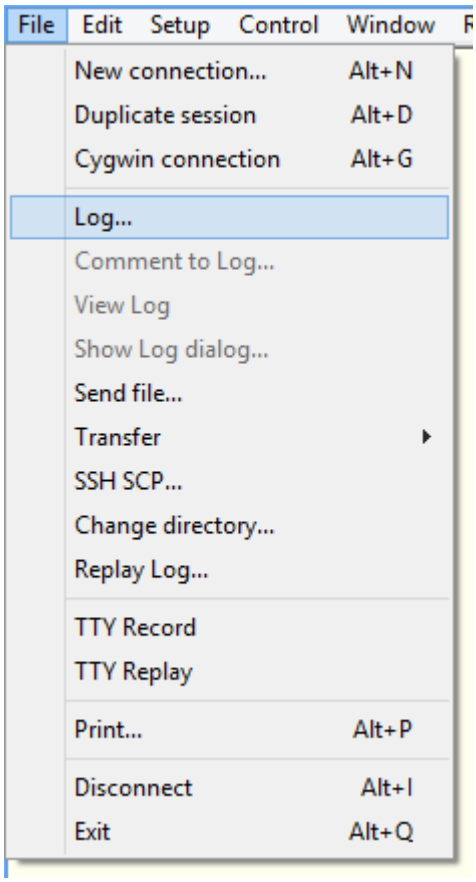
Capturing a trace

First clear the screen and history buffer by clicking **Edit** and **Clear Buffer**

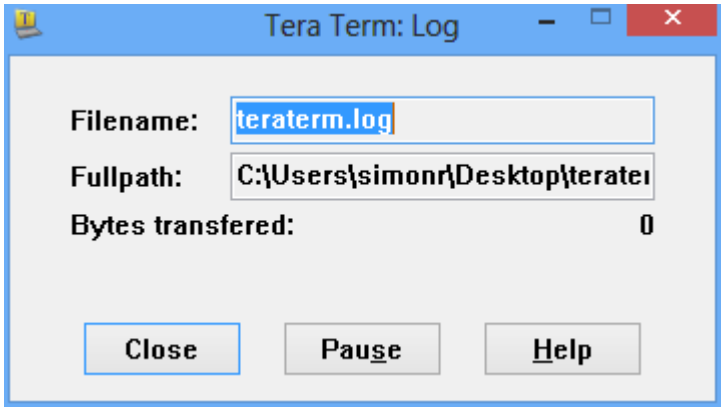


Now create a log file to capture the trace to.

Click **File** and the **Log…** then choose a log file name that relates to the trace taken, and a place to save it using the dialogue box.



A log control window will show



Now run your test. The data is captured to the file. When the test is complete click **Close** and then copy the log file to a safe place, attach a copy to an email directed to SCSISUPPORT. Repeat the above procedure for a new trace.

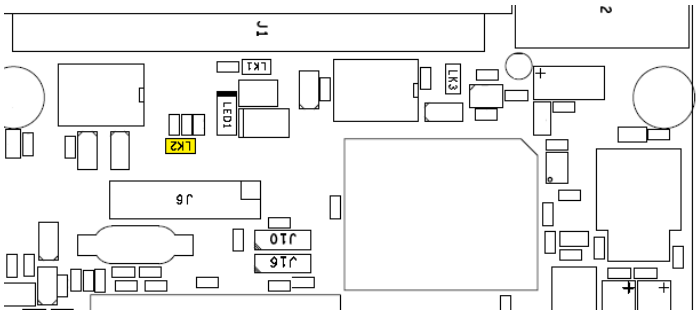
Updating the Firmware

Preparing to update

In order to update the firmware in a SCSI Flash 2 or any of its variants you will need the following:

1. A way to power the SCSI Flash 2, most systems will allow this but not all, so a separate 5Volt PSU may be required.
2. A USB cable
3. The Bootloader Application, (Only available from scsisupport@reactivegroup.com).
4. The firmware Update File. This a .ZIP file, you do NOT need to unzip the file the Bootloader will read it directly

Note When updating SCSI Flash 2 boards prior to issue 6 a jumper must be placed on LK2 to enable termination. These boards did not have a pull up resistor on the SCSI Reset Pin which could result in interference during the update process. This will not actually affect the update process but does affect the post update check. You can remove the termination jumper once the board is back in circuit if it is not required.



The USB Cable

Use a USB to USB cable, and fit it to J12 as shown in the picture. Cable colours Red, White, Green, Black, Black Shield , where Red is nearest to J13 you will have to modify the J12 end of the USB end of the cable to be the same as shown, unless a cable is sent to from SSDL.

Here follows the P/N of the items you can purchase from RS components.
1.8Mtr USB A Male to USB A Female. RS P/N: 481-3440.
5 Way Socket housing, 2.54 pitch. RS P/N: 296-4962
Crimp terminal for socket housing. RS P/N: 467-598

After cutting the female end of the cable off, be careful when stripping the insulation off the wires, use the outer screen as shown in the picture below along with colour code.

When a SCSI Flash 2 with erased flash memory is connected to the PC you should see in the Windows 'Device Manager' a new COM port showing AT91 USB to SERIAL connector (COMXX).
Follow the instructions that follow in this User Guide to erase the flash memory.

The driver is in windows, but if it asks then browse to C>program files(x86)>solid state disks>drivers

Installing the SSD Boot Loader Program

Install the bootloader application by running ‘setup.exe’.

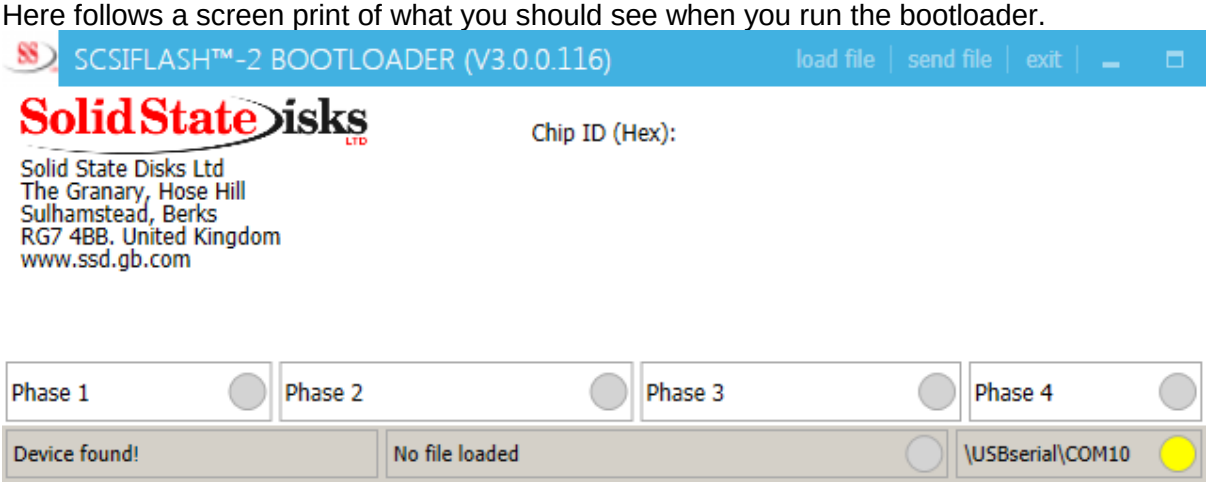
Whenever you run the bootloader it will ask for Windows UAC permission so always click ‘YES’ to proceed. The reason for this is so that the bootloader can access the USB drivers which are provided by the manufacturer of the SF-2 microcontroller.

Occasionally when installing the bootloader you may be asked for a driver. If this happens then browse to C>program files(x86)>solid state disks>drivers. But usually you will not need to do this.

Note. When you first run the bootloader and plug in a SCSI Flash 2 it may take much longer than you might expect before the SCSI Flash 2 is detected by the application. This is particularly true on windows 7 and 8 and has been known to take 10 minutes. Once the first delay is over then all subsequent connections will be instant.

Once the SSD Bootloader program has been installed on the PC, click on the SSD SCSIFLASH-2 BOOTLOADER Icon, the program will load.

Here follows a screen print of what you should see when you run the bootloader.



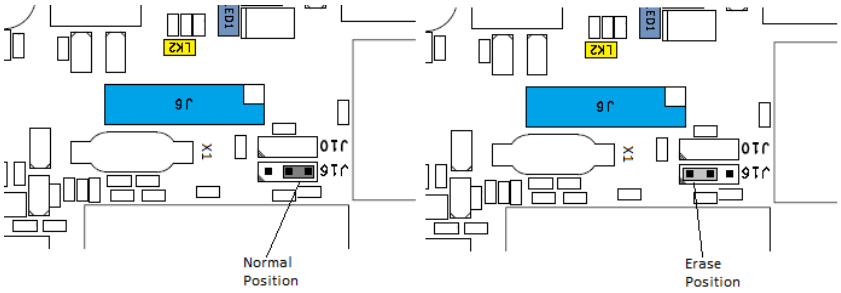
In the grey area at the bottom of the Bootloader Icon there are three sections from left to Right showing “Not Valid Device,”, “No File Loaded”, and yellow DOT. When a SCSI Flash 2 USB cable is plugged in it should show USB/Serial and COM port used. If it does not show the COM port then, you may have to remove the USB cable from the PC and reinsert.

Sometimes the COM port / cable is not seen in the Bootloader program, if so

- Power up the SF2 / SF2R
- Erase the flash by connecting a jumper (link) to the J16 pins closest to X1
- Remove Jumper
- Power cycle the SF2

Erasing the Flash Memory

Before the flash can be loaded using the SSD Bootloader program, the flash must be erased, to remove previous versions of the F/W Place a jumper on J16, with the jumper fitted on the two pins closest to crystal X1. Now power up the board and wait a few seconds and power it down again. Replace the jumper in the normal position on J16. Power up the SCSIFLASH-2 (SF2 or SF2R)



Note: if the SF2/SF2R is not erased the com port will not show when connected by USB and the Heart Beat LED will still be flashing.
When a SCSI Flash 2 with erased flash memory is connected to the PC you should see in the Windows 'Device Manager' a new COM port showing AT91 USB to SERIAL connector (COMXX) Connect the USB header onto the J16 socket on the SF2

As a test, if you remove the connector from J12 the device disappears from the device manager, replacing it should appear again. Leave connected

When you run up the Bootloader program it should now see the new COM port.

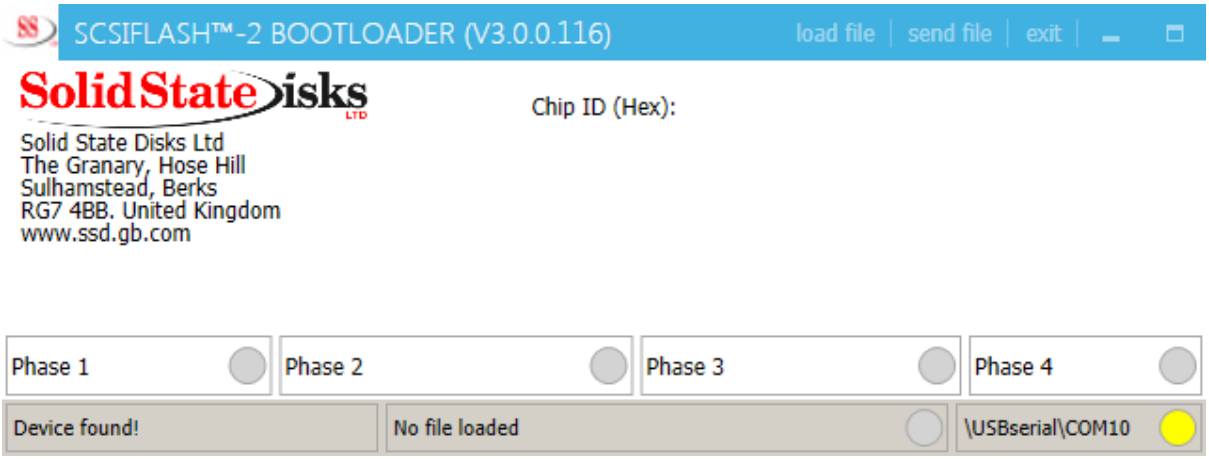
Updating the Firmware

To update the firmware use the following steps.

1. Run the Bootloader Application
2. Fit a jumper to LK3 if required
3. Power up the board.
4. Erase the previous firmware using J16 as described.
5. Power cycle the board.
6. Connect the board to the PC using the USB cable on J12
7. Load the update file and press 'Send File' as described below
8. Power cycle the board.
9. Check that the Heart Beat LED is flashing
10. Power down the board and connect the next one in its place if you are upgrading more than one.
11. Go to step 2 and repeat for as many boards as you need.

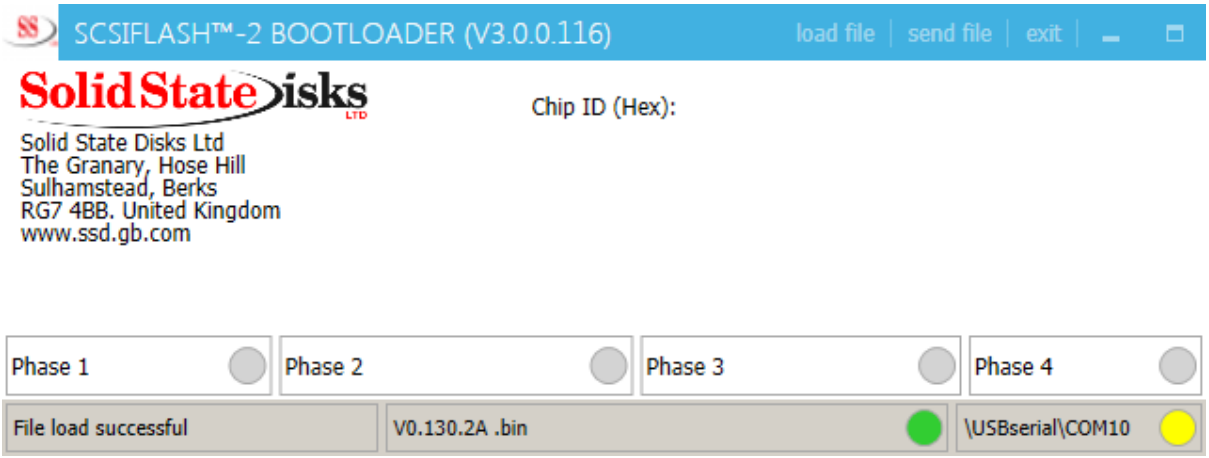
Using the Bootloader

Step 1 Here follows a screen print of what you should see when you first run the bootloader.

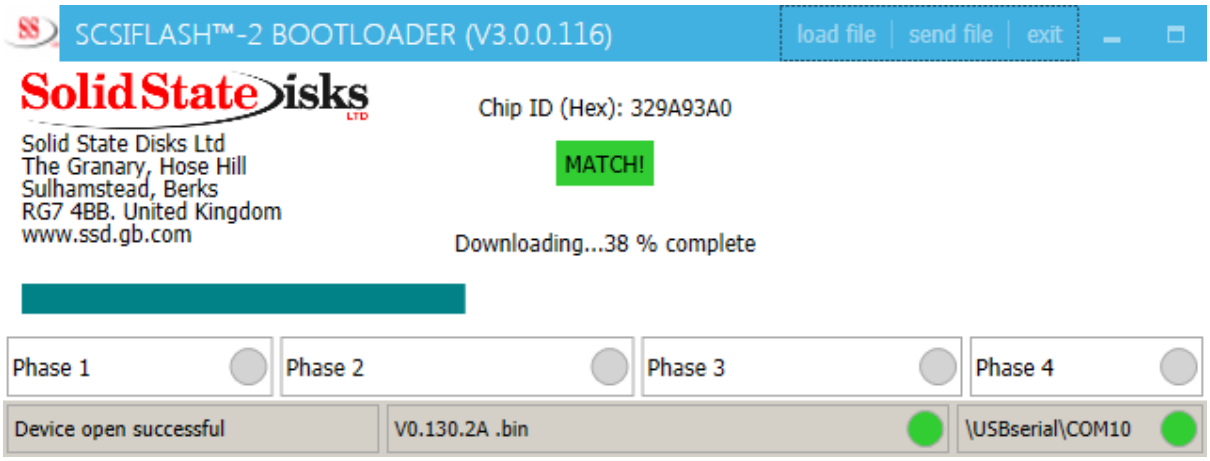


Step 2 Click on 'load File'

Step 3 Browse to where the latest revision of firmware is held, this F/W is only available from SCSISUPPORT, and is 256 AES Encrypted. The file used that contains the new F/W, is in a ZIP file, do not try to Extract, as an error will occur. Select the ZIP file.
The first grey box will now show "File Load Successful" and second grey box shows the file name that is loaded see screen-print below



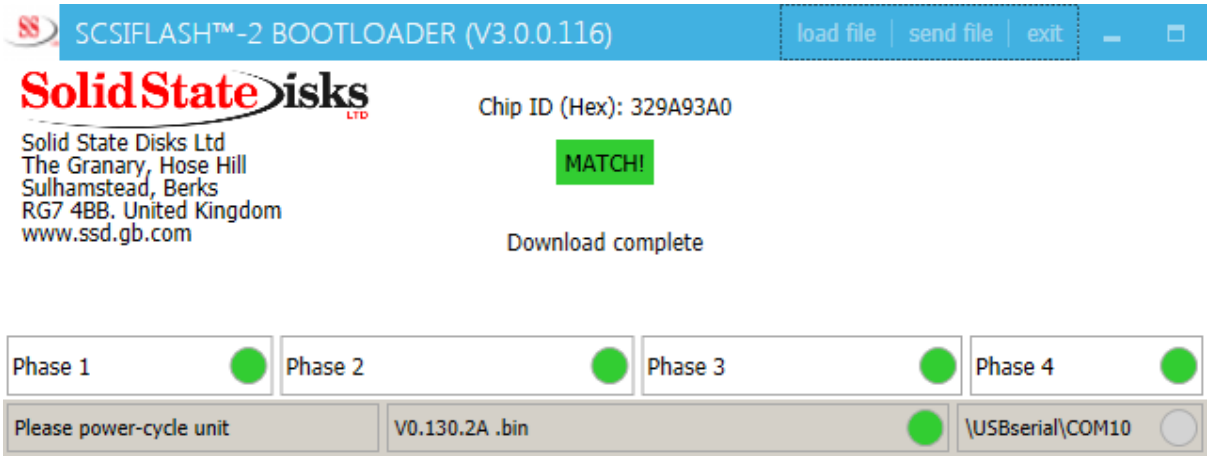
Step 4 Click 'Send File'. The program will show MATCH and load the F/W. see the screen-print that follows.



If you get a message Mismatch, close the Bootloader program, and erase the flash again using J16 jumper. Load the Bootloader program again

Step 5 The program will take about 3 seconds to load to the SCSIFLASH-2 and will show 4 phases, and eventually show Download complete see screen-shot below

.



The first Grey section now shows “Please Power Cycle Unit” complete this action

Close the Bootloader program or unplug the SCSI Flash 2 and plug in another erased one. The bootloader will not talk to another board unless the first one is unplugged. You may repeat this process for as many boards as you need to upgrade.

Cautions when Upgrading Firmware

Option Settings

When a SCSI Flash 2 is upgraded to new firmware the currently configured options, such as the selected emulation or the custom capacity settings, for example, are preserved. So the settings you had before the upgrade are still the settings after the upgrade unless the following are true.

- The new firmware does not contain the emulation you were using in the old firmware. This could happen for instance if you used tape firmware in place of disk firmware. In this case the default emulation would load and reset the relevant settings to default values for that emulation.

- If a very old version of the Firmware is loaded. The way the settings are stored changed during development. The upgrade happens automatically when new firmware is loaded so no settings are lost. However if old firmware is loaded then it will not recognize the new format and will reset them to default values. In this case you will have to connect a terminal to the serial port and reset the settings

Simple testing and Setup Confirmation
(Only if you have the Command cable, which is not needed when upgrading the FW)

Type LIST, this will show you the current emulations that we are currently available, new ones are added as required, it also shows Sector size of emulation.

To Change to a different emulation

Type SETDEV X where X is the device number or emulation required.

Type CONFIG to show Drive emulation model , and other settings .

Type VER this will show the F/W Version and drive model number

Power down and connect to the host, normally. Ensure CF is inserted prior to powering up the SCSIFlash-2

The files written on the CF card can be read in windows, unless used on non-windows operating systems i.e. OS9.

Using the removable device (MO, JAZZ, ZIP, or Floppy) you should use the eject function.
If you want more assistance email scsisupport@reactivegroup.com

SCSIFlash-2 Environmental and Performance Specification

"WARNING: This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction User Guide and the relevant interface specification, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A digital device pursuant to Subpart J of Part 15 of FCC Rules, which are intended to provide reasonable protection against such interference when correctly installed and operated in a commercial or industrial environment. Operation of this equipment in a residential area without the appropriate enclosure and cabling is likely to cause interference in which case the Integrator at his own expense will be required to take whatever measures may be required to correct the situation."

Electromagnetic Compatibility and Electrical Safety

This product (SF-2) meets the EMC requirements of FCC part 15 class A, EN55022:2010, EN 55024:2010, meeting the requirements of the EU Electromagnetic Compatibility directive 2004/108/EC. This includes Radiated Emissions E-field (*3.2.1) and Radiated Immunity (*3.3.1). To meet these criteria the SF-2 is assumed to be suitably enclosed, cabled and installed.

Electrostatic Discharge

For the following ESD performance the SF-2 is assumed to be suitably enclosed, cabled and installed. The maximum ESD figures refer to those areas of the product exposed during normal operation. The SF-1 will not be damaged and will continue to operate without the need for User Guide intervention.

ESD: Contact discharge -> +/-4kV
Air discharge -> +/-8kV

Note: (*2.1)

Electrical Fast Transients

For the following EFT performance the SF-1 is assumed to be suitably enclosed, cabled and installed. The maximum EFT figure refers to those areas of the product exposed during normal operation. The SF-1 will not be damaged and will continue to operate without the need for User Guide intervention

EFT: +/- 0.25kV

Note: The cable shall be screened in accordance with the appropriate interface standard (*2.2).

Electrical Safety

The SF-2 is a low voltage device (+5vdc supply).

Note: (*7)

Bonding and Grounding

The SF-2 is a low voltage, low current device with a common signal and chassis ground (which may be optionally isolated by factory request).

Note: (*9)

Performance

Burst Data
- Max Asynch 6.8 MB/sec
- Max Synch 6.8 MB/sec

Avg Seek Time	<0.2 ms
Avg Latency	<0.2 ms
Corrected BER	Refer to note 1 below
MTBF	> 3,000,000 hrs
Drive Interface	SASI, SCSI I, SCSI II
Capacity	Up to 64 GB (depending on CF capacity and configuration)

Ethernet Option

1.6 to 2MB/s
(This is limited by the host/SF-2 interface. Users typically achieve between 0.75 and 1.23MB/s)

Note 1: BER (error rate) is determined largely by the CF card. The cards are equipped with BCH ECC (Error Correction Code) functionality.

Environmental

Temperature (^{0}C)

Operating	0 to +70^{0}C (Refer to note 2 below)
Non-Operating	-25 to +85^{0}C

Note 2: Performance is warranted beyond the temperature limits of the emulated product. The temperature is the ambient skin temperature of the SF-2 standard open-frame chassis. A limited duration lower storage temperature limit of -40 ^{0}C is possible when stored in the original SSDL shipment package. A limited duration lower operating temperature of -5^{0}C is possible when housed in a suitable enclosure (a "limited duration" is less than 96 hours). (*4.1.2, 4.1.4, and 4.1.7)

For installation development purposes note that the highest temperature measured on the case of the component U5 (CPU) under worst case conditions must not exceed +102^{0}C.

Humidity

Humidity: 5% - 85% non-condensing (*4.1.2)

Earthquake, Shock and Vibration

Shock	(11 msec 1/2 sine)
Operating	100g
Non-Operating	1000g
Random Vibration	(20 to 2,000 Hz)
Operating	15g rms
Non-Operating	15g rms
Sine Vibration	(5-25 Hz)
Operating	15 G

Note: (*4.4.1 and 4.4.4)

Packaged Shock

The packaged unit will survive a 1 Metre drop test (*4.3.1 and 5.3.1)

Unpackaged Shock

The unpackaged unit will survive a 100mm drop test (*4.3.2 and 5.3.3)

Altitude (feet Operating)

30,000 feet (with enhanced cooling as required, refer to note 3)

Note 3: This is a provisional figure based on similar products (*4.1.3)

Gaseous Contaminants

The SF-2 is a solid state product and therefore has a much greater immunity to gaseous contaminants than the tape and disk products it replaces. Organic vapours can significantly affect disk drive and magnetic tape reliability and ozone can lead to degradation of polymeric media substrate materials. The SF-2 passes industry standard tests for susceptibility with regard to Nitrogen Dioxide, Sulphur Dioxide, and Hydrogen Sulphide.

Note (*5.5.2)

Hygroscopic Dust

The SF-2 is a solid state product and therefore has a much greater immunity to particulate contaminants, sulfates, nitrides and water soluble salts than the tape and disk products it replaces. The SF-2 passes industry standard tests for susceptibility to particulate contamination, but it is recommended that sensible precautions are taken with regard to overall enclosure design, general installation and cooling. If cooling fans are employed they should be fitted with suitable particulate filters.

Note: (*5.5.3)

Physical Dimensions

3.5” Industry Standard Form Factor:-

H	25mm (1”) High
W	102mm (4”) Wide
D	147mm (5.75”) Deep

(Note: There is an 8.5mm CF projection from the front panel where appropriate)

Weight (lbs)	0.75	Weight (lbs)	0.75

Power Requirements

Supply Voltage

The required input supply is **+5Vdc** ± 5%

The maximum periodic and random distortion (noise and ripple) must be less than <150 mv peak-to-peak.

Note: Only +5vdc is required, no 12vdc supply is required or monitored.

Supply Current

The following figures are for a combination of the SCSIFlash-2 product and SSDL recommended SLC Compact Flash (4GB). Refer also to note 3.

a) Non-Ethernet variant or no Ethernet activity:

Quiescent: 300mA typical
Write/Format: 500mA typical, 600mA maximum

b) Ethernet variant with live Ethernet connection:

Quiescent: 400mA typical
Write/Format: 600mA typical, 700mA maximum

Note 3: The combination is specified as the SF-2's operational specification cannot be separated from that of the approved CF. Similarly the host connection and termination method may impact the current drawn. The figures provided apply to a typical PC host connection with on-board SCSIFlash-2 termination enabled and using a 4GB CF (SF4GB-I-CF-T-INO).

Statutory and Regulatory standard compliance

RoHS (aside from essential legacy devices)
FCC
CE

Durability (Removable CF Media)

10,000 CF Insertions/Removals

Reliability/Field MTBF

8,000,000 Hours

This MTBF figure is based on analysis of the installed base of the SF-1 and SF-2 products operating in a known telecommunications environment. A full report is available on request.

Transportation and Storage Environment

The environmental limits in this section apply to the SF-2 when packaged in its normal shipping container:-

Low-Temperature Exposure and Thermal Shock

23^0C to -40^0C at a maximum rate of 30^0C/hr
-40^0C for 72 hours or less
-40^0C to 23^0C in a period of 5 minutes or more

Note: Uncontrolled humidity. (*4.1.1.1)

High-Relative-Humidity Exposure

23^0C to 40^0C at 50% RH at a maximum rate of 30^0C/hr
40^0C at between 50% and 93% RH within 2 hours or less
40^0C at 93% RH for 96 hours or less
40^0C at between 93% and 50% RH within 2 hours or less
40^0C to 23^0C at 50% RH at a maximum rate of 30^0C/hr

Note: (*4.1.1.2)

High-Temperature Exposure and Thermal Shock

23^0C to 70^0C at a maximum rate of 30^0C/hr
70^0C for 72 hours or less
70^0C to 23^0C in a period of 5 minutes or more

Note: Uncontrolled humidity. (*4.1.1.3)

***NEBS**

When suitably packaged and cabled, in an appropriate rack or enclosure, the SF-2 meets the requirements of the NEBS standard, as defined in GR-63-CORE Issue 4, GR-1089-CORE Issue 6 and associated criteria, for use in a public switch. The paragraph numbers in these documents are referred to in parenthesis in this specification.

Caveats

This specification is provisional and subject to changes and additions. The published specification cannot be guaranteed in any respect for MLC based CF or for any unapproved CF devices. To do so would require separate specifications for each combination of SCSIFlash-2 and CF device.

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