

# ***PCard2SCSI Flash-Tape***

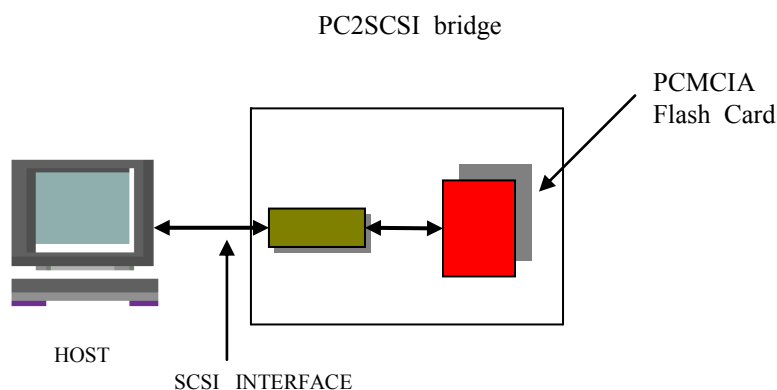
## ***User Guide***



## Overview

- The PCard2SCSI bridge PCB is a general purpose SCSI bridge PCB for a PCMCIA mounted Flash Card. A regular CF card can be plugged into the PCMCIA eject header using a suitable adapter. This card is then presented to the Host as a SCSI tape drive of a factory defined emulation. This is via the standard SCSI interface the other end of the board.
- The PCB mounts in a standard 3.5" form factor tray. It requires 5V only which is supplied via a standard disk power connector

When connected to a SCSI Host, the Host *sees* the PCB as a SCSI tape drive

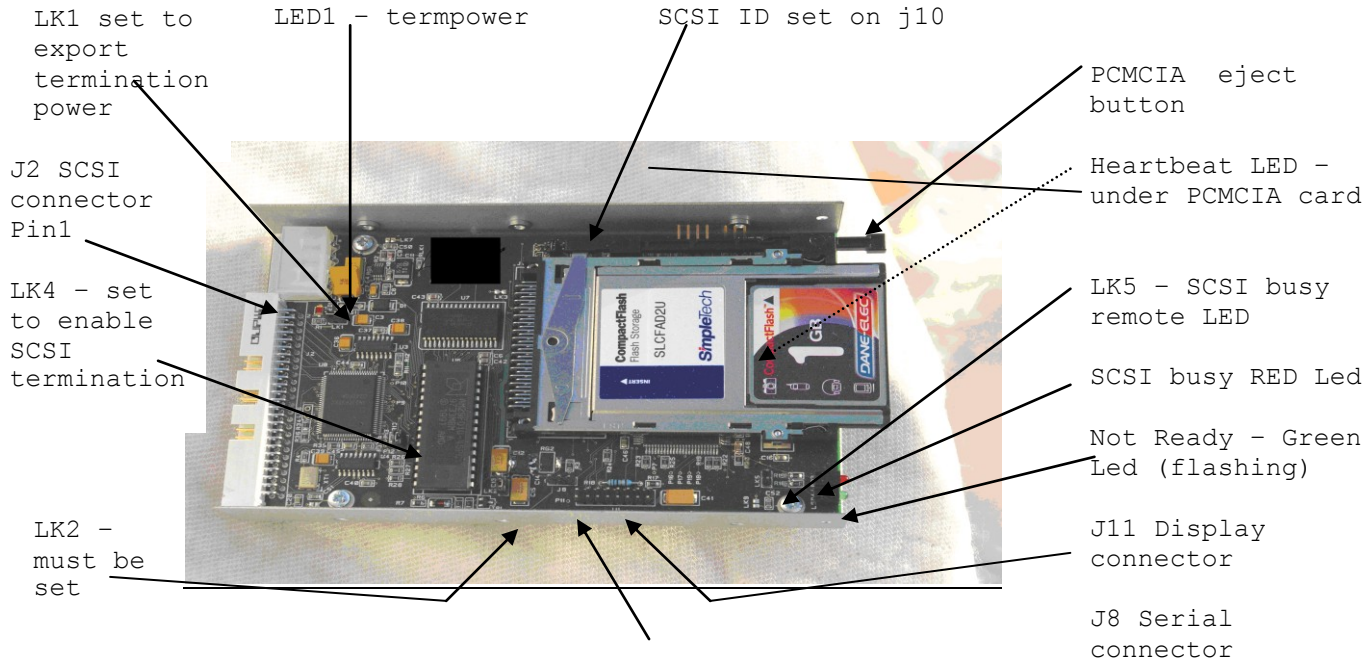


The SCSI bridge PCB carries its microcode in Flash, that can be simply updated via the SCSI or Serial ports. It has an optional standard display module interface to drive a 2 line by 16 character backlit, LCD display.

## Features

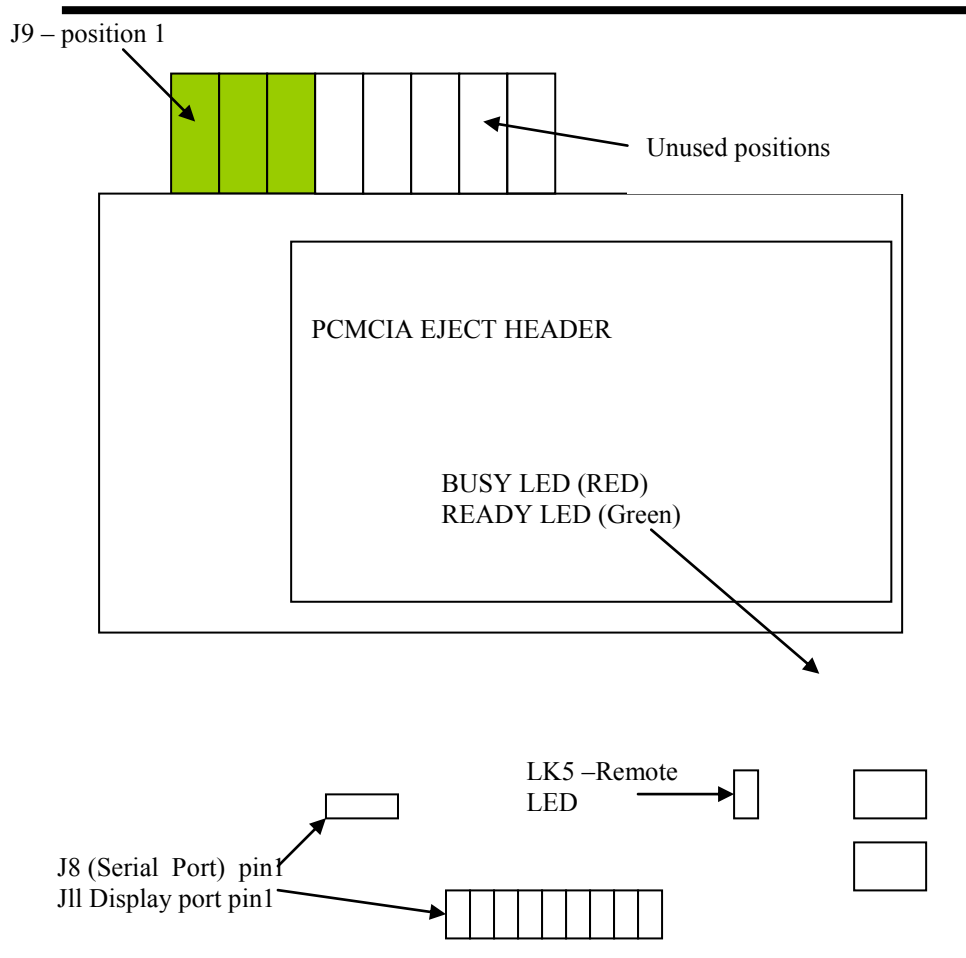
- 3.5 inch form factor
- Standard 50 pin SCSI1/2 interface
- 10 Mbytes/sec SCSI burst rate
- Internal active SCSI termination, disabled/enabled by jumper
- Optional HVD SCSI interface
- Compatible with most CF cards
- Various emulations available.- SCSI2/SCSI1 or SASI
- Emulates a standard SCSI tape drive— QIC, DAT, DLT or 3490 etc –

## PCard2SCSI board configuration settings



- Set the SCSI ID as required at J10 - (under PCMCIA eject lever)

SCSI ID = 0 no jumpers  
SCSI ID = 1 jumper position 1  
SCSI ID = 2 jumper position 2  
SCSI ID = 3 jumper position 1 & 2  
SCSI ID = 4 jumper position 3  
SCSI ID = 5 jumper position 1 & 3  
SCSI ID = 6 jumper position 2 & 3  
SCSI ID = 7 jumper position 1,2 & 3



- Set Termination Disable/Enable at LK4 -- If jumpered termination is ENABLED
- Do you need to export termination power? -- This is generally not necessary --If so jumper LK1. Note that the internal terminators always have power.
- Connect the SCSI cable – Note that pin 1 of the cable is next to the power connector
- Connect the 5V power. Note that a standard 5V/12V disk power lead can be used here as the 12V pin is a no-connect on the board.
- Note the green heartbeat LED will flash. Also note that the 5mm front panel green LED will briefly flash while the CF card is being initialised.

## Installation:

Use M3x6mm screws ( and no longer) to install the tray

## INTERNAL DIAGNOSTICS

The Diagnostic Feature is accessed via the RS232 port of the PCard2SCSI Board. This feature is most useful to gain insight into unexpected operating system exceptions. This section of the manual 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.

Connect a TTL compatible RS232 terminal or a PC running a terminal emulation to the 9-pin bulkhead connector on the PV enclosure or direct to the 3-pin header at location J8 on the board. Set the terminal at 19200 baud, 8 bits and no parity.

The cable contacts are as follows:

Signal name	J8	RS232	RS232
		9-Pin Connector	25-Pin Connector
Receive in	1	3	2
Ground	2	5	7
Transmit out	3	2	3

After the problem has occurred, key in (Control Z) on the terminal to enter the diagnostic mode. The Diagnostic Menu will appear on the terminal screen.

The Diagnostics are designed to run as a 'background' task to the 'foreground' operation of the SCSI handling routines. This means that the user may 'dial' into the diagnostic menu options at any time without any significant degradation of SCSI performance in order to activate the real-time SCSI trace.

The diagnostic command list shown below is by no means complete. Other commands: Display, Modify and Fill memory; Execute from Specified Address and Download Intel Hex code are for use by the factory only. These additional specialised commands listed may prove useful to isolate problems where the Real Time Trace fails to provide an answer.

<u>Diagnostic Command</u>	<u>Function</u>
A	Activate SCSI Real Time Trace
C	Display Firmware Revision and Checksum
F	Firmware Upload from Serial Port using Intel HEX Format
H	Display this Diagnostic Menu
Z	Execute a Power-on Reset

The command prompt is PV>

## Menu Choice A: Activate SCSI Real Time Trace

This option requires special firmware

The SCSI Real Time Trace consists of three modes of operation:

- (a) Print mode = nothing (power-on default)
- (b) Print mode = only errors
- (c) Print mode = all

These options may be cycled and advanced to the next mode by the keying of the 'A' character.

PV> A

### **Real time trace, print mode = nothing**

This effectively disables the logging and display capability of the Real Time Trace.

PV> A

### **Real time trace, print mode = only errors**

This mode displays both the command which caused the drive to generate a check condition status and the corresponding Request Sense command with bytes 2, 12 and 13 extracted from the sense data returned.

Example Monitor Trace:

PV>

**CDB=00 00 00 00 00 00, STS=02.**

**CDB=03 00 00 00 FF 00, SENSE=06, ASC=2900.**

**CDB=00 00 00 00 00 00, STS=02.**

**CDB=03 00 00 00 FF 00, SENSE=02, ASC=0401.**

PV> A

**Real time trace, print mode = all**

This mode displays all logged commands with their associated data phases.

Example Monitor Trace:

PV>

**CDB=00 00 00 00 00 00, STS=02.**

**CDB=03 00 00 00 FF 00, SENSE=02, ASC=0401.**

**CDB=12 00 00 00 FF 00.**

**CDB=1A 00 00 00 FF 00**

**MODE DATA=10 85 10 08 8C 45 F8 40 00 00 00 00 0E 00 80 80  
07 .**

**CDB=15 00 00 00 0C 00**

**MODE DATA=00 00 10 08 8C 00 00 00 00 00 00 00.**

*NB: Logging the data for diagnostic purposes - In order to redirect the displayed information from the standard output device, ie VDU, the user may copy the output to a log file on a local disk by keying Alt-F1.*

**Menu Choice C: Display Firmware Revision and Checksum**

Entering a “C” at the command prompt will display the revision level and checksum of the electronics firmware.

Example Monitor Trace:

PV> **Checksum=66A8, code revision = B01f**

**Menu Choice D: Download Intel HEX Code from EPROM to Serial Port**

This option is available for use by the factory only.

**Menu Choice F: Firmware Upload from Serial Port using Intel HEX Format**

The PCard2SCSI card has a Flash PROM installed. In order to update the code on this PROM, the card needs to be connected to the serial port on a PC and the code downloaded, as follows.

- 1 Run Procomm or a Terminal Emulator of your choice.
- 2 Set Baud rate to 19200, no parity, 8 data bits, one stop bit.
- 3 Switch on PCard2SCSI card. Reset message will appear together with 'Enter a "CONTROL-Z" to invoke the Diagnostic Mode!'
- 4 Get the PV Diagnostic Utility, and select 'F - Firmware upload from serial port using INTEL HEX format'.

Example Monitor Trace:

**PV> F**

**Firmware upload using Intel HEX transfer.**

**Backing up FLASH in case serial transfer fails !**

**To stop the transfer press ESCAPE if using PROCOMM then press ^C to restore FLASH and reset PG card.**

**Relocating Code...**

**Amd Device - 16k Programmed Okay**

**Amd Device - 16k Programmed Okay**

**Amd Device - 16k Programmed Okay**

**Amd Device - 16k Programmed Okay**

**Validating Code...**

- 5 Message appears 'Start your ASCII upload of the HEX file now':  
HEX ADDR = 0000

- 6 Initiate upload - selecting ASCII transfer (filename \*\*\*\*\*.HEX).

- 7 When complete ADDR = FFFF, then Checksum test is carried out.  
If Checksum test passes, board is reset.

If Checksum test fails, backup of code is restored at the end of the PROM and the old code is restored for use (if one line fails during upload, then need

to

exit transfer and old code will be restored).

Example Monitor Trace:

**Amd Device - 16k Programmed Okay**

**Amd Device - 16k Programmed Okay**

**Amd Device - 16k Programmed Okay**

**Amd Device - 16k Programmed Okay**

**Flash Programming Done**

**Checksum test PASSED.**

**RESET! \*\*\* Enter a "CONTROL-Z" to invoke the Diagnostic Mode! \*\*\***

**+++AT E0 B1 X1 M1 L2 &C0 &D0 S0=1 S7=60 S11=55 O**

**Menu Choice G:**    Go (Execute) from Specified Address

This option is available for use by the factory only.

**Menu Choice H:**    Display this Diagnostic Menu

Typing an “h” or “H” will cause the diagnostic menu to be re-displayed.

**Menu Choice M:**    Display/Modify/Fill/Tabulate Memory

This option is available for use by the factory only.

**Menu Choice Q:**    Quit Diagnostics

Hang up modem phone.

**Menu Choice Z:**    Execute a Power-on Reset

Exits the diagnostic mode by executing a power on reset.

## **FIRMWARE UPGRADES FOR PCard2SCSI UNITS**

Firmware can be upgraded via the serial port, or by replacing the flash/EPROM memory. New code can be sent via e-mail.

Connect to J4 to the computer's serial port with a standard serial (extension) cable. If you have some other configuration without the DB9 connector a three wire cable assembly can be configured as follows:

DB25 female or DB9 female to	J4
2	3
7	5
3	2
	1 (rx in)
	2 (gnd)
	3 (tx out)

Start a communications program such as ProComm with the parameters 19200,N,8,1 (19200 baud is the factory (default) standard as shipped, if you have changed it with the Setup menu, please use that value - we suggest 19200). The terminal communications for the PCard2SCSI product REQUIRES xon/xoff control. Please refer to the hints below for configuration.

Power up the PCard2SCSI board . Make a note of the firmware level displayed on the bottom line of the LCD display. This will be used to confirm the firmware upgrade. The communication program should show a menu of items. Select F for firmware upgrade.

Start the ASCII file upload (for ProComm type page-up, select ASCII format, and specify the file.hex to transfer).

When the transfer is done the screen will show the outcome of the transfer and then reset the unit. Observe the Revision level of the firmware now displayed on the LCD display to verify the new firmware is running.

### **PROBLEMS:**

If installing an EPROM observe the white outline on the PCB for orientation.

### **HINTS:**

ProComm should be set up as follows

Terminal Setup/Flow Control=xon/xoff

Ascii Transfer/Character pacing=0, line pacing=0