

**PCMCIA, FLASH CARD  
COPYSTATION  
USER GUIDE**



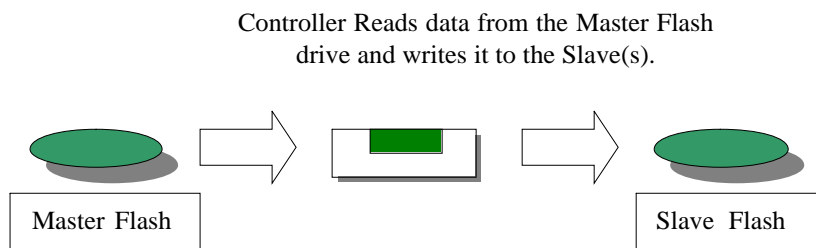
**WARNING:** This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designated to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

**OVERVIEW**

The Flash CopyStation is designed to make a *low level, block for block* copy from a single Master Flash disk to a single Slave Flash disk. The unit is based upon the Reactive Data SCSI Bridge controller which mounts in a half height tray, and desk top enclosure. Flash devices can be Compact Flash (CF) , SD, MMC, Memory Stick, Microdrive, XD or a variety of other cards using appropriate PCMCIA adapters

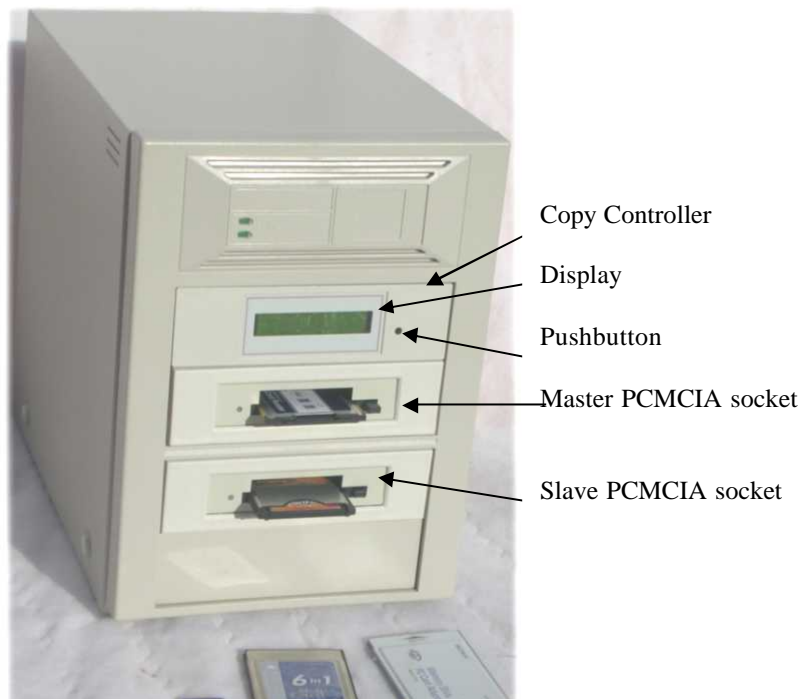
The Copystation tray has an integral LCD display and a mode selection button, which allows the operator to make various selections and access power-on configuration menus.

**Basic 1 to 1 Copy Configuration**



The Copystation controller is mounted in the top of a small tower with the Master PCMCIA socket below, and the Slave PCMCIA socket below that.

**Tower Configuration**



**OPERATION**

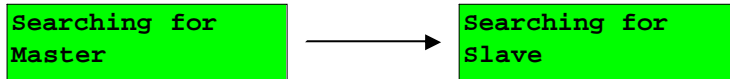
Power on the Tower, and insert the Master and Slave Flash disks  
**Operator Beware!! – check that the Master Flash device is inserted into the Master (upper) PCMCIA socket ! If it is plugged by mistake to the slave socket it will be overwritten and the data lost! If possible set the write protect tab on the Master Flash device**

On completion of the bus scan, an introductory message is presented on the LCD which provides product identifier, controller revision and code release details. This information is presented on the LCD by the following message:

```

Disk  DUPLICATOR
REVx  xxxxx CSXXX
```

Following power on initialisation, the controller attempts to scan its Slave PCMCIA socket . Once it has found the Slave socket operational it will search its Master bus for the Master PCMCIA socket . This operation is represented on the LCD by the following messages:



If the display gets stuck at either of these messages it means that SCSI communication with the device is failing. Check cables, and termination.

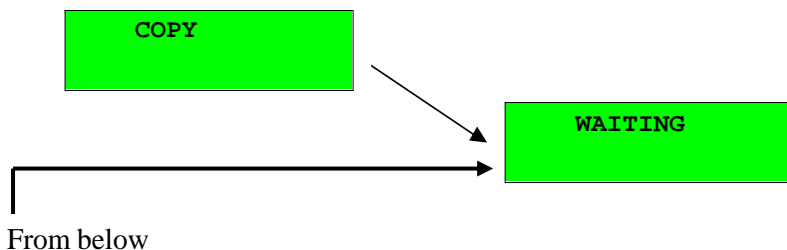
If the Controller finds both drives successfully, it advances to the **COPY & VERIFY** screen .

```

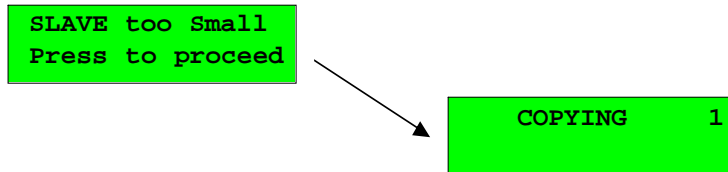
COPY Auto
  VERIFY
```

Choosing the **COPY** option starts the automatic looping Copy process. This copies from the Master to the Slave and when complete, invites the operator to unload the Slave and insert a new one. As soon as the new one is sensed by the Copy controller, it begins the copy process again. This goes on *ad-infinitum* until enough copies have been made. At this point the Copier should be powered off. A count of the current copies is shown on the LCD screen.

Choosing the **VERIFY** option starts the automatic looping Verify process. This reads the Master and the Slave, block for block and compares the data. When complete, the controller invites the operator to unload the Slave and insert a new one. As soon as the new one is sensed by the Copy controller, it begins the Verify process again. This goes on *ad-infinitum* until enough copies have been Verified e. At this point the Copier should be powered off. A count of the current Vrfify passes is shown on the LCD screen.

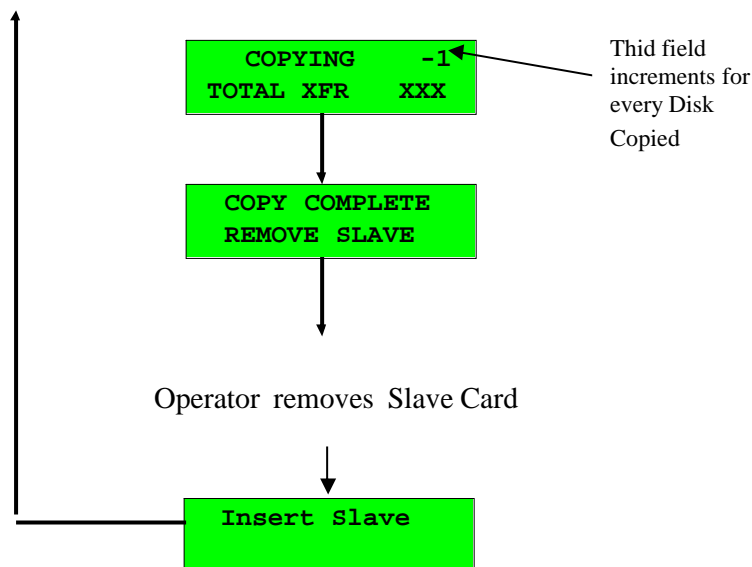


Once the Copy process has begun, the controller attempts to LOAD first the Master followed by the Slave. During this time the display shows the message "WAITING". Then it will read the block size and capacity (top block address) of the drives. If the block size is different between the drives the Copy process will fail. If the Sizes of the drives are different, the screen will show a warning message and then allow the operator to continue the copy process. Once the drives are ready, the capacities of each are sensed, if they differ, then a warning is displayed. Usually it is not a problem if the Slave device is bigger than the Master, and this is not considered to be an error. However if it is the other way round, then all of the Master's data may not fit on the Slave. If the operator decides not to proceed, he should simply press "escape"—the unit will reboot.



Once both drives are loaded and ready the copy process begins. This is by reading 55 Blocks from the Master and writing them to the Slave. This starts at block 0 and runs to the top address of the Master drive.\* During this time the display shows the text *COPYING* together with a display of the transferred data total. This is updated approximately every 5 seconds.

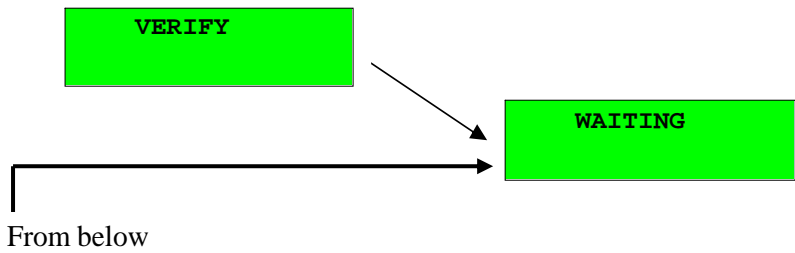
When the Copy is complete, the display shows the message *COPY COMPLETE* and invites the operator to unload and remove the Slave Flash disk by pressing the PCMCIA eject button. The Controller will sense this and prompt the operator to load the next Slave disk. The process then repeats, except that it has already loaded the Master Flash.. When all the required disks are copied, the operator can power off the unit



**VERIFY DISKS**

This feature provides a low level block by block, bit by bit verify function which performs checksum / string compare operations on each block read from the Master Flash drive against each block read from the Slave drive. This compare operation is performed sequentially from block 0 to the high-water mark (the top address of the device). Because the Verify is a potentially slow operation for very large devices (>10Gb), it is possible to interrupt and terminate the process by pressing the front panel button.

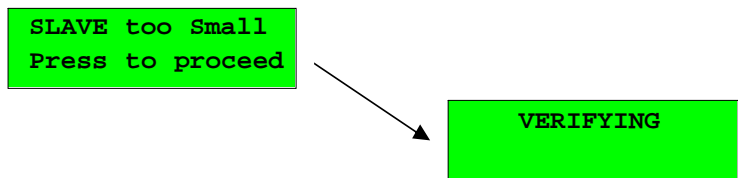
If the Verify is successful, then the operation terminates with the text “Good Copy”. If the Verify fails, the an error message shows on the screen, the most likely one being; ERROR 0003—String data miscompare.



Once the Verify process has begun, the controller attempts to LOAD first the Master followed by the Slave. During this time the display shows the message “WAITING”

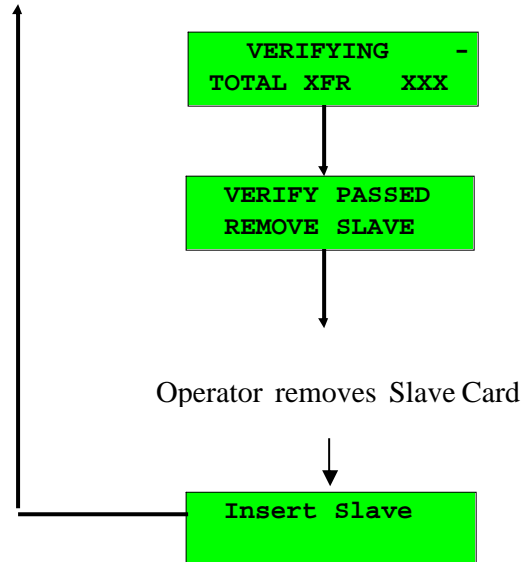
Then it will read the block size and capacity (top block address) of the drives. If the block size is different between the drives the Verify process will fail.

Once the drives are ready, the capacities of each are sensed, if they differ, then a warning is displayed. Usually it is not a problem if the Slave device is bigger that the Master, and this is not considered to be an error. However if it is the other way round, then all of the Master’s data may not fit on the Slave. If the operator decides not to proceed, he should simply press “escape”—the unit will reboot.



Once both drives are loaded and ready the copy process begins. This is by reading 55 Blocks from the Master and the Slave and comparing them. This starts at block 0 and runs to the top adders of the Master drive.\* During this time the display shows the text *VERIFYING* together with a display of the transferred data total. This is updated approximately every 5 seconds.

When the VERIFY is complete, the display shows the message *VERIFY PASSED* and invites the operator to unload and remove the Slave Flash disk by pressing the PCMCIA eject button. The Controller will sense this and prompt the operator to load the next Slave disk. The process then repeats.. When all disks have been verified, power off.



## ERROR REPORTING

The Error screen will only be displayed in the event of one or more drive failures. Where a drive failure has been logged during COPY the Error screen is displayed immediately following the Results Screen to provide enhanced error information on drive "FAIL" status reported.

### H/W Error:xxxxx

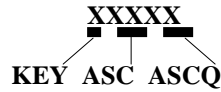
This message indicates that a Drive error has been reported during Copy or Verify operations. The error code represented by the **xxxxx** identifier can be decoded to provide an accurate failure condition. This 5 digit code should be noted, and the first digit used in association with the table detailed below to interpret the error condition: This is the SCSI Sense Key and ASC (Q).

Note. The ASC and ASCQ codes are not provided for reference as they are extensive and relate to detailed drive error conditions which require manufacturer's device manuals to decode correctly.

### H/W Error:xxxxx

This message indicates that a Flash Card error has been reported during read/write operations. The error code represented by the **xxxxx** identifier can be decoded to provide an accurate failure condition. This 5 digit code should be noted, and the first digit used in association with the table detailed below to interpret the error condition:

Note. The ASC and ASCQ codes are not provided for reference as they are extensive and relate to detailed drive error conditions which require manufacturer's device manuals to decode correctly.



KEY	ASC	ASCQ	SENSE KEY DESCRIPTOR
0	??	??	No Sense
1			Recovered Error
2			Not Ready
3			Medium Error ** See Note
4			Hardware Error ** See Note
5			Illegal Request
6			Unit Attention
7			Data Protect
8			Blank Check
9			-----
A			Copy Aborted
B			Aborted Command
C			-----
D			Volume Overflow
E			Miscompare
F			-----

**Common Flash Drive Error Codes:**

- 53000 Incompatible Medium Installed- Cannot write to that disk
- X0002 Overflow – slave drive not large enough
- D2100 Overflow - slave not large enough
- 31100 Medium Error on device – cannot read or write on this media
- 30011 as above

**Compare Error!**

This message indicates that a data verification error has occurred between the Source and the Target drive indicated. The checking algorithm has detected a mismatch between data blocks.

**Engineering Set-ups**

To access the Engineering set-up menu hold the mode button at power on time for 8 seconds before releasing it. Access set-up2 for the Engineering OPTIONS:

Note that the Options bits are additive, each digit is a hex character with 4 mutually exclusive Option bits. So each Option hex character can span the range 0 to F.

**Operator Beware!** Changing the Engineering Options string may cause the Copystation to malfunction. The Factory set value for this is 80021410

Slave Autoload feature -looping Copy and Verify: Opt2 bit15

*Block- size setting.*

OPT2, bit 13 sets the block size that the Copystation is expecting:

512 byte block size Use options 00001410

1024 byte block size Use options 20001410

*Copy/Repair mode:*

This is useful for disk repairs.

OPT2,bit11 sets the copier in a mode where it will allow errors on the Master disk to be traversed. Data is read and written at one block at a time (this will cause the copy process to be quite slow). The Master block errors are effectively ignored and the previously buffered data is written to the slave at this address.

Use Slave drive to define the Copy process High-water mark

OPT2, bit12 set indicates that the Slave Read Capacity (Top Block) will define the high-water mark of the copy process and **not** the Master drive.

10001410 = Slave

00001410 = Master drive (factory default)