RamFAST™

High Performance SCSI Interface

For Apple II & IIGS series computers

Owner's Manual

R<small>AM</small>FAST ™

SCSI Interface for the Apple II

Owner's Manual
First Edition

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Thank you for purchasing Sequential Systems' RamFAST ™ card. Your satisfaction is important to us, so we offer these three simple assurances:

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Sequential Systems' RamFAST™
card.

   RamFAST is a Small Computer
Systems Interface or "SCSI" adapter
for use with Apple Computer Inc.'s
Apple IIe and GS personal
computers. RamFAST utitlizes
Direct Memory Access (DMA) for
high speed throughput and has a
standard 256K Byte "cacbe" for fast
disk direct access. memory The
printed circuit board is of multi-
layer construction with inner power
and ground planes for noise
immunity. RamFAST is compatible
with most SCSI devices such as Disk
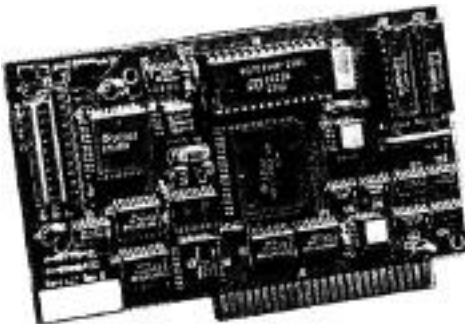Drive, Tape Drive & CD-ROM Drives.

**Package
 Contents**

*Each
RamFAST Package
should contain:*
 *1 RamFASTBoard
 1 "Pigtail" SCSI Cable
 Owner's Manual*

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Conventions used in this manual:
   Sn (where n can be 1,2, 3,4,5,6, or 7) is used to refer to a slot number in your computer.

   Dn (where n can be 1 or 2) is used to refer to which ProDOS 8 drive number is assigned to a volume (or partition if you prefer). Together then, S7,D2 refers to Slot 7,Drive 2. If you are still lost then you should read the chapters in your computer s user's manual that refer to ProDOS 8 and disk drives.

   It is assumed that you will be using a mouse to interact with the utility program. If this is not the case (i.e. IIe users and mouse haters) the following steps can be used to reproduce the actions of the mouse:
   1 To execute commands that the mouse clicks on at the top of the screen you can hold down the OPEN-APPLE and the highlighted letter in the command at the same time. For example, to execute the ScsiUtils command (the letter "U" is highlighted) you would hold down OPEN-APPLE and U at the same time.
   2 When told to select something you can move the cursor bar with the arrow keys and select the item you want by pressing RETURN or SPACEBAR when it's highlighted.

1 If you already have data on the drive BACK IT UP!

2 Open the case, plug in the RamFAST/SCSI into any available slot (except slot 3), and connect the hard drive. (Most people install a hard drive controller in S7.)

3 Make sure that the control panel setting for the slot holding the RamFAST/SCSI is set to "Your Card".

*4 If necessary, format and partition the hard drive using the RamFAST/SCSI Utilities program. It's especially important to do this if your hard drive is formatted at an interleave other than 1:1.

*5 Install the operating system from your original floppies or restore your backup to the hard drive.

6 Boot the hard drive, run the RamFAST.System program (it's on the ROMDISK volume (CVTech.ROM)), and execute the Install command to copy the RamFAST/SCSI System Files onto the hard drive.

7 Now disable the ROMDISK with the Options command. (The ROMDISK overrides your second partition as long as it is enabled!)

8 That's all folks.

· These steps are not necessary if you are just upgrading from a previous version of the RamFAST/SCSI.

If this list makes no sense whatsoever then you should just go on to the chapters on Hardware Installation and System Setup and follow the step-by-step instructions for getting the RamFAST/SCSI up and running.

This chapter covers the steps necessary to physically install the RamFAST/SCSI into your computer. The only tool you should need is the hex wrench that should have come with your computer so that you can lighten the cable on the RamFAST/SCSI to the back of your computer. Also, if the hard drive has already been used with another controller. MAKE SURE YOU HAVE BACKED UP ANY DATA ON THE DRIVE BEFORE YOU CONTINUE.

NOTE: If you are installing the RamFAST/SCSI with a Sider hard drive you need to check the back and bottom of the Sider hard drive for a plate or sticker that says something like this: "This drive supplies terminator power to the bus. Make sure you modify the controller board to NOT supply terminator power." If you find such a warning you MUST remove the jumper that is in the upper left hand corner of the RamFAST/SCSI (just above where the cable connects, it's labeled JP1). If you are NOT installing the RamFAST/SCSI with a Sider hard drive you can ignore this paragraph.

Here now is a step-by-step list of things to do to install the RamFAST/SCSI controller card in your computer:

0 If you are installing a RamFAST/SCSI Rev C (full size board) you should turn on DIP switch #1. If it is being installed into an Apple IIe you must also turn on DIP switch #2.

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Standard Memory Test

1 If more than one drive is being installed make sure that they all have unique SCSI ID's. A SCSI ID number is an "address" on the SCSI bus for the device; it has no connection with the slot number that you install the RamFAST/SCSI in.

2 Turn off the power to your computer and all of your peripherals.

3 Remove the cover of the computer.

Memory Refresh Test

4 If there is another controller card for the drive installed, detach it's cable from the back of the computer and remove the old card from the computer.

Unique Address Test

5 Install the RamFAST/SCSI in an available slot in the computer. Most people install a hard drive controller in slot 7; however, it is possible to install the RamFAST/SCSI in any open slot (except slot 3). If you are installing the RamFAST/SCSI in a IIgs you need to make sure that the setting in the control panel for the slot you selected is set to "Your Card". If you don't know what the control panel is then you need to read the chapters in your computer's user's manual that refer to the Control Panel.

Exit to BASIC

Exit to System

6 Now the end of the cable should be attached to the back of the computer. You just remove the hex shaped screws from the cable, insert it into an available hole in the back of the computer, and then screw the screws back in from the outside of the case to hold it in position. Check to make sure that the connection to the RamFAST/SCSI has the cable installed so that the red wire (it might be blue) is toward the bottom of the board. Ribbon cables have one wire painted a different color to designate pin 1. Do NOT go

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by the orientation of anything that may be
written on the cable itself!

7 Replace the cover of the computer.
8 It's now time to prepare the hard drive for
use. Turn to the next chapter (System Setup)
for instructions on how to install an operating
system (ProDOS 8, GS/OS, etc.) onto the hard
drive.

System Setup

If you bought your RamFAST/SCSI and hard
drive as a package they should be configured
to work together from the start. If that is the
case your hard drive should boot right up after
the hardware installation is done and you can
skip the rest of this discussion and start using
your hard drive. Otherwise, continue reading
for information on how to get your system up
and running.

If this is the first time you have used your
computer with the RamFAST/SCSI the utility
program should auto-boot on its own, but if for
some reason it does not you can force it to by
holding down the "0" key when you turn on
your computer (make sure that you hold it
down until a few seconds AFTER the the
RamFAST/SCSI displays its "Searching the
SCSI bus   message or until the utility
program appears.

Once you are in the utility program go ahead
and click OK if an any messages appear
("Configuration Data Missing" is the most
likely).

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Format the Hard Drive

If the hard drive has any data on it that you want to save you should skip this step (at least for now) until you have backed up the bard drive.

Click on the command ScsiUtils at the top of the screen. If you only have one drive attached the screen should change to the SCSI Utilities screen. If you have more than one drive attached you should first be presented with a list of Online SCSI Devices; you should select the drive that you want to work with from the list.

If, when you click on ScsiUtils, you are presented with a message stating that "The RamFAST/SCSI did not find any SCSI devices then you should turn everything off again and check to make sure that the card and cables are installed correctly. If you still get the message you should turn to the Trouble Shooting section and read about possible causes/solutions for this message.

If, once you make it to the SCSI Utilities screen, you see your partitions listed under the column labeled Partition Name and the entry for Interleave at the top of the screen is 1:1 it is not necessary to re-format the hard drive. If you see your partitions, but the Interleave is something other than 1:1 it is strongly recommended that you go ahead and re-format the drive; running with an Interleave other than 1:1 will slow the RamFAST/SCSI down a lot. If you don't see any partitions listed under Partition Name you will have to format the hard drive in order **to** use it with the RamFAST/SCSI.

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To format the drive just click on Format. If the drive you are formatting is a SASI drive (Siders) you will then be asked to specify which one it is. After that you will be presented with a message telling you that Format will wipe out any data on the drive! If you have data on the drive that is not backed up STOP NOW and BACK IT UP! We are not responsible if you click OK but didn't mean it.

Formatting the drive can take anywhere from a few seconds to several minutes (and up to 30 minutes for a Sider D2). After the formatting is completed the RamFAST/SCSI will put a default set of partition(s) on the drive (it makes as many equal sized partitions as it can). If you want to change the size and/or names of the partitions you should read the section RamFAST/SCSI Utilities.

Once you are satisfied with the partitions you can click on Quit.

Once you are back at the Volumes screen you should see your partitions listed under GS/OS Volumes. It's now time to move on to the next section and install the system software onto the drive.

If you are still looking at the SCSI Utilities screen go up and click on Quit. You should now be at the Volumes screen. Go up and click on Quit again. You should get a message with two choices: SELECT and BOOT.

If you received the hard drive pre-formatted from the seller you should be able to select BOOT. If it boots up, great! If you get the message "UNABLE TO LOAD PRODOS" or the system just hangs then you need to shut off the computer and turn it back on while holding down the 0 key. This should take you back to the Volumes screen. Now Just click on Quit again and this time pick SELECT.

It' you just formatted the hard drive or you landed here because BOOT didn't work then click on SELECT. On the left hand side of the screen a cursor bar will appear. You need to make sure you have a current system disk in your 3.5" or 5.25" drive and know what slot is associated with that floppy drive. Move the cursor bar so that the slot for the 3.5" or 5.25" drive with the disk in it is highlighted and press RETURN. You should now be booting the floppy.

If you are using a IIgs you should now read up on the Installer if you are not familiar with it and use it to Install the current GS/OS operating system on your first hard drive partition.

If you are using an Enhanced IIe you should use Copy II Plus (or any file copying program that you are familiar with) to put a copy of ProDOS 8 and whatever else you want on the hard drive. Keep in mind that ProDOS 8 loads the first .System file that it finds so the first one you copy onto the hard drive should be some type of program launcher like Prosel, Squirt, or any of the others that are floating around out there.

It's now time for the acid test... turn off the computer, turn it back on, and it should boot your hard drive. If it doesn't, try going through the installation again making sure to follow each step in order. If the hard drive boots like it's supposed to your almost done. The only thing left to do is go on to the next section and install the RamFAST/SCSI System Software.

You should now be sitting at the GS/OS Finder screen or whatever you use as a program launcher.

Installing the
RamFAST/SCSI
Software

If you are using the GS/OS Finder you need to open (double-click) The drive icon labeled CVTech.ROM. Inside you will find two files: RamFAST.System and RamFAST.Driver. Double-click on RamFAST.System (this is the Utility Program). You should see the Volumes screen.

First, go up and click on Install. You will be asked to select the volume to install the system files on. Click on the the first partition listed under GS/OS Volumes. You should see a message at the top of the screen informing you that we are copying the files onto the hard drive (NOTE: if you are installing onto a IIe then only one file is copied).

Now go up and click on the Options command. Click on the Yes next to RomDISK and it should change to No. Also, if you DO NOT have a TranswarpGS in your computer you should click on the Yes next to TWGS and it should also change to No. Finally, go up and click on Quit. You should return to whatever program you used to launch the utility program (probably the GS/OS Finder).

If you are using a IIgs you should do a Shutdown and reboot so that the RamFAST/ SCSI driver can be loaded. That's it!

If Problems Occur   If you are having problems and you have double-checked the installation, some other things you can check are:

o If you are in a IIgs, are you SURE that the setting in the Control Panel for the RamFAST/ SCSI slot is set to "Your Card" and the boot slot is set to boot the RamFAST/SCSI? Double check.

o Desk Accessories - Try booting without ANY desk accessories and see if the problems go away. Many desk accessories have the potential to interfere with a DMA bard drive controller.

o TranswarpGS - If you are having problems and you have a TranswarpGS in the system then pull it out. If the problems go away you should turn to the Trouble Shooting section to see if your TranswarpGS is one that needs an update or if you need to disable DMA on the RamFAST/SCSI because of your memory card.

oZipGS - If you are having problems and you have a ZipGS then pull it out. If the problems go away you should turn to the Trouble Shooting section to see if your ZipGS is one that needs to be upgraded.

o Lastly, can you boot a system floppy and access the hard drive? If so then you probably just haven't installed the operating system correctly.

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If after this you are still having problems
you should turn to the Trouble Shooting section for
a more detailed examination of what could be
causing problems in your system.

The purpose of the RamFAST/SCSI Utilities   ***RamFAST/SCSI***
program is to allow you to setup and fine tune   ***Utilities***
your hard drive and RamFAST/SCSI. The
program and the GS/OS driver for the
RamFAST/SCSI are stored on a RomDISK
that is stored in the RamFAST/SCSI. This
RomDISK will show up as a volume named
CVTech.ROM on the GS/OS Finder desktop.
Under ProDOS 8 it shows up as D2 of the slot
that the RamFAST/SCSI is installed in. So, if
the RamFAST/SCSI is installed in S7 of your
computer then the RomDISK, if enabled (see
Options), will show up as S7,D2 for use by
any ProDOS 8 program.

The RamFAST/SCSI stores all of it's
information about your system and it's current
setup on a reserved block on your hard
drive(s). If this information is not found or is
found to be outdated then there may be an
informational message displayed as soon as
the program starts up.

The program is broken up into two different   ***Volumes Screen***
sections. The first of them is what we are
going to call the Volumes screen. The second,
which we will call the SCSI Utilities screen,
will be covered in a later section. Each screen
has a command bar at the top of the screen that
can be clicked on with the mouse to execute
commands.

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ProDOS 8 Volumes   The RamFAST/SCSI allows you to have access
to all of your partitions even under ProDOS8.
We do this by "mapping" entries for any or
all of your volumes into the ProDOS8 device
table.
You can tell us exactly where to map each
volume by clicking on it's name under the
column labeled GS/OS Volumes. You should
see a cursor bar appear on the left side of the
screen in the section labeled ProDOS 8
Volumes (it may have already been
highlighted). You can now click on any slot/
drive position in the ProDOS 8 display and the
name of the volume should move into that
spot. To remove a volume from the ProDOS 8
device table you can click on-it's name under
GS/OS Volumes and then click on the spot
labeled <UnMap Volume>. If a volume is not
currently mapped into the ProDOS8 table then
the <UnMap Volume> is what will be
highlighted if that volume is selected from the
list of GS/OS Volumes.

Now that the latest version of ProDOS 8
(2.0.1) also has the ability to map extra
volumes to free slots it's necessary to choose
which method you want to use to do the
mapping (since if we both do it ProDOS gets
very confused). The way you map your
devices into the ProDOS 8 Volumes table in
the Utility Program determines who's
responsible. If you map any volumes into a
slot other than the slot that the RamFAST/
SCSI is installed in then we will do the
mapping of volumes. If you ONLY map
volumes into the slot that the RamFAST/SCSI
is installed in the we will let ProDOS 8 handle
the mapping of volumes (this is the default).

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IIe users: You must map all of your partitions into the ProDOS 8 Volumes table in order to have access to them.

```
ProDOS 8 Volumes (*= RamFAST Slot)  GS/OS Volumes
                          System.6.O
    Drive I     Drive 2        System.Tools
  S7 *System.6.0  CVTech.ROM        PROGRAMS
  56 Diskport     Diskport      DATA
  S5 Smartport
  S4
  S3           RAM3
  S2
  SI
    <UnMap Volumes>
```

There is a column labeled Lookahead next to the list of volume names. This is the largest amount of disk data that the RamFAST/SCSI will read ahead on an operating system read call in anticipation of having the data for the next call available immediately. Normally the RamFAST/SCSI will adjust this value on the fly and you shouldn't need to change it from Auto.

lookahead and Write Protect

The last column in the display is labeled WrProt. The RamFAST/SCSI allows you to write protect any and all volumes whenever you want. This will prevent the operating system (programs) from writing to that volume. Keep in mind though that this does NOT prevent the ability to do a low level format or partition of the drive in the RamFAST/SCSI utility program. It also does not prevent doing a built-in Backup/Restore to the hard drive/volume.

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Backup
The RamFAST/SCSI has the built-in ability to backup and restore your bard drive to a SCSI tape drive or optionally a removable hard drive such as the SyQuest hard drives. (To allow the selection of a removable hard drive as the destination of a Backup command you will need to set the MD Backup Option to Yes.)

To begin the process just go up and click on Backup. You will be prompted for what volume(s) you want to backup. Select as many as you want. A running total of the amount of space needed for the backup is displayed in the top half of the screen. Do NOT select more than your tape can bold! (A 60Mb tape holds approx. 60000k, a 155Mb tape holds approx. 155000k, etc.)

When you have selected all of the volumes that you want backed up then go up and click on Backup again. You will be asked to confirm that you want to overwrite any data that may be on the tape (or the hard drive if you have enabled that option). If everything's Ok then click on OK.

Now, if you want you can boot up a game or anything else you want. The RamFAST/SCSI will continue to backup your hard drive in the background! Keep in mind though that your hard drive partitions WILL be WRITE-PROTECTED until the backup completes.

The Restore command is the partner of
Backup. You can select any volume on a
backup tape and have it restored to any volume
listed under GS/OS Volumes. To begin go up
and click on Restore. You will be prompted to
select the volume on the tape you want to
restore from. After you select the volume from
the tape you are prompted to select the volume
you want to OVERWRITE from those listed
under GS/OS volumes. You will be asked to
confirm that you want to overwrite any data
that may be on the destination volume. If
everything's Ok then click on OK.

It is also possible (although it's painfully slow)
to restore a single file from a volume backed
up to tape. Before starting this, if you are
using GS/OS and the original volume is still
being used under the same name as it was
backed up as you will need to change it's
name to something else. This is because we
are going to make the backed up volume come
up on the desktop just like any other volume
and GS/OS doesn't like to see two volumes
with the same name online at the same time.

To begin you need to go up and click on
ScsiUtils and select the tape drive when you
are asked to choose a SCSI device. When you
are on the SCSI Utilities screen you need to go
over to the column labeled Active and change
the entry for the volume that contains the file
to "Y". Now go up and click on Quit. When
you are back on the Volumes screen you
should see the backed up volume listed as one
of those under GS/OS Volumes. Now you can
click on Quit again and access the backed up
volume just like a (VERY SLOW) hard drive.

Options

If you go up and click on Options you will see the following menu appear (the Yes's and No's will vary according to your setup).

Options	DMA	Yes
Menu	TranswarpGS	Yes
	AutoSave	Yes
	Mouse	Yes
	Password	No
	RomDISK	No
	HD Backup	No
	Short Timeout	No

Each of these settings affects the way that the RamFAST/SCSI works in your system. To change an Option just click on the current setting next to the Option you want to change. The following is a short description of each option:

o DMA - This setting is used to determine whether the RamFAST/SCSI should use DMA in your system. If you have a non DMA-compatible memory card installed in your system you should set this to No.

o TranswarpGS - Pretty self-explanatory. If you lave a TranswarpGS installed in the system then make sure this option is set to Yes. If it's not you will not be able to work.

o AutoSave - If this is option is Yes (the default) then every time you quit out of the program the current configuration will be saved to disk. This is used to keep everything up to date. If you flip this option to No you will have to explicitly click on the Save command to update the saved configuration data.

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o Mouse -If you are in a IIgs and don't want to use the mouse for some reason you can set this option to No.

o Password -If you don't want people to be able to change your RamFAST/SCSI configuration without your knowing it you can set a password for access to the utility program. Make sure you are VERY careful when you set a password as they are CASE SENSITIVE.

o RomDISK -This setting should normally be No after you get your system setup and running. You can always bring up the utility program if you need to by holding down the 0 key when you turn on your computer.

o HD Backup -Normally the built-in Backup and Restore only deal with tape drives. If you wish to be able to backup to a (presumably removable) hard drive you need to set this option to Yes. Now you will be asked to choose the destination/source device whenever you click on Backup or Restore.

o Short Timeout -If you normally leave some of your scsi drives powered down (such as a tape drive or CD) you can set this option to Yes to get rid of the 45 second delay at power-up while the RamFAST/SCSI is waiting on those devices to appear. Be aware that if you do set this option to Yes you will need to power-up your hard drive before you turn on your computer.

Also, if you have one of the newer RevD RamFAST/SCSI cards and you set the TranswarpGS option to No then the setting for DMA is ignored. This is because the RevD RamFAST/SCSI card can DMA into any memory card, independent of it's DMA computability, provided you DO NOT have a TranswarpGS in the system.

Install   The Install command is usually only used when you are first setting up the RamFAST/ SCSI. It is used to place copies of RamFAST.System and RamFAST.Driver onto the hard drive. To install these files just go up and click on Install and you will be prompted for which volume to install the files on. Just click on the name under GS/OS Volumes.

Save   The Save command is used to save the current RamFAST/SCSI configuration data to the hard drive. You shouldn't have to use this command unless you set the AutoSave option to No.

ScsiUtils   The ScsiUtils screen allows you to Format and Partition your hard drive. It also allows you to control whether a partition is visible to the operating system (Active) or ignored (Inactive). For those of you with very old hard drives there is also a Headpark command. And lastly there is a Rewind command for use with tape drives.

When you first go up and click on ScsiUtils in the Volumes screen, if you have more than one (1) SCSI device attached to the RamFAST/SCSI you will be prompted to select which one you want to work with from a list like the one below.

Online SCSI Devices
    1D7
    1D6 SyQuest *SQ555*
    1D5
    1D4
    1D3
    1D2 Sony CD-ROM CDR36
    ID1
    ID0

Once you have selected a device (if you only have one (1) it is selected for you automatically) the screen should change and you should see a display of information about the device on the top half of the screen and a list of all of the partitions on the drive on the bottom of the screen. This is the SCSI Utilities screen.

At the top of the screen is a display similar to the one below. The major entry to take note of (for hard drives) is the value for Interleave. If the interleave is not 1:1 you should definitely consider reformatting the hard drive. Any interleave other than 1:1 will slow the RamFAST/SCSI's performance down considerably (2:1 cuts it in half, 3:1 cuts it to a third, etc.). (Some Sider hard drives are an exception to this. If you have a Sider SASI bard drive the best interleave that they support is 4:1.)

SCSI Utilities Screen

```
           Device Name SYQUEST 5Q555      SCSI ID
6
  Serial Number              Interleave 1:1
                     Cylinders 1067
  Device Size  43328k        Sectors/Track      64
  Space Available 320k       Heads          2
                     Defect list Size 48
```

Format   The Format command performs a low-level
                    format of the hard drive or tape. This WILL
                    erase any data that may be on the drive so
                    make sure you have a backup if you need
                    anything that's on it!

                    After the format completes a default set of
                    partitions will be created on the hard drive. If
                    these are satisfactory you can just Quit now
                    and continue on with whatever is next.
                    Otherwise read on and find out how you can
                    change the size and/or name of the partitions.

Add/Delete   The Add and Delete commands are kind of a
                    linked pair. They are used to add a new
                    partition to the list at the bottom of the screen
                    or to delete the currently selected partition.
                    You can add up to a total of twelve (12)
                    partitions onto any single drive. If you wish to
                    change the name just select the partition that
                    you wish to change and press the DELETE
                    key. The line will clear and you will be able to
                    type in a new name; after you finish with the
                    name just press RETURN.

To change the size of a selected partition you *Resizing Partitions*
can use the mouse to click on one end or the
other of either thermometer to decrease or
increase it's size by the amount stated under
that thermometer. The left side of the
thermometers decrease the size and the right
side increases the size.

If you are not using the mouse you can adjust
the size in 1Mb increments by holding down
the OPEN-APPLE key and the left or right
arrow keys. You can adjust the size in 32k
increments by holding down the OPTION (or
CLOSED-APPLE on a IIe) and the left or right
arrow keys.

                       Partition Name
                       System.6.0
  <<::::::::::::::::::::::::   >>
System.Tools
   0 Adjust Size by +/- 1mb   32+mb
PROGRAMS
                          DATA
  <<   >>
   0 Adjust Size by +1- 32k   1024k

The Partition command is used to write a new *Partition*
partition map to the drive that corresponds to
the list of partitions in the bottom half of the
screen. Any partitions less than or equal to
32Mb in size will also have a blank ProDOS
directory structure put on them. Partitions
larger than 32Mb will not be formatted by us
(no space in the ROM for the necessary code
to format HFS style). GS/OS will say that it
does not recognize it so you should go ahead
and format it using the HFS file system
(ProDOS can't use partitions larger than
32Mb).

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Headpark   The Headpark command is not necessary on
any drive manufactured in the last few years.
All drives manufactured today have an auto-
headpark feature. If you do need to park your
heads you can use this command or create a
system file using the code fragment below to
do it for you. (If the code fragment below is
meaningless to you just ignore it.)

```
        jsr    $c70d              *Assumes card is

in Slot7 db      $08
        dw     ?parameters
        rts                       * Ignores errors
?parameters
        db     $05
        db     $86               * Assumes Scsi ID
6
        dw     ?headpark
        db     $FF
        dw     $0000
        dw     $0000
?headpark
        db
$1B,$00,$00,$00,$00,$00,$00,$00,$00,$00,$00,$00
        blkb $40,$00
```

Rewind   Rewind can be used to rewind a tape in a tape
drive that is not at the beginning. This
shouldn't really be needed since the built-in
Backup and Restore commands rewind the
tape before doing any processing.

The last column in the display at the bottom of the screen is labeled Active and has entries below it that say "Y" or "N". What this means is thai you can selectively choose which partitions you want the system to have access to at any given time. The main use for this feature is for those of you with multiple hard drives with a total of more than twelve (12) partitions. This allows you to switch among the partitions you want to have access to up to a maximum of twelve at a time.

Active vs. Inactive Partitions

Keys used during the boot process
One thing that has only been mentioned in passing up to now is that the RamFAST/SCSI also allows you to change the way it behaves at power up by holding down certain keys. It is also possible to use these keys when you do an Open-Apple/Control/Reset, but this might seem better suited to an octopus.

Special Features and Upgrades

If you hold down a number key from "1" through "9" when you turn the power on then the partition in the Logical Devices list corresponding to the number held down is booted. For example: holding down the "2" key will boot the second partition in the list; holding down the "6" key will boot the sixth partition in the list; etc. This can be very handy if you sometimes want to boot GS/OS and other times want to boot ProSel or even ProDOS8. One thing to be aware of is that the selected partition becomes the default boot partition until another key is held down or you turn off the power to the computer. You can make the change permanent by running The Utility Program and saving the current configuration.

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Also, if you hold down the "0" key at power up the utility program will boot. This can be handy if you have lost or misplaced the copy of the utility program that the Install command put on your hard drive.

Lastly, if you hold down the space bar the RamFAST/SCSI will "basically cease to exist." It will not put partitions in its device list and will just immediately boot through to the next slot. This is handy if you (or maybe your kids) want to boot something on 3.5" or 5.25" disks without having to worry about your hard drive. If you want to do this with the hard drive powered down or disconnected you will have to have the jumper (JP1, just above where the cable plugs onto the card) installed or the RamFAST/SCSI will crash immediately into the monitor. To get the partitions back after you have booted this way you can turn the power off and back on or perform an OpenApple/Control/Reset while holding down a number key. This will tell the *RarnFAST/SCSI* to rebuild its partition table and boot the selected partition.

Upgrading to 1meg of cache The RevD RamFAST/SCSI is upgradable from 256k of cache to 1 meg of cache. To do the upgrade yourself you will need to order "two (2) 1 meg X 4 DRAMs in a 300 mil DIP package." The Toshiba part number for these chips is "TC514400AP-10 or -8"; they should be able to convert from this part number to whatever manufacturer's chips they have in stock.

After you receive the new memory chips all you need to do is pry the old memory chips (U19 and U20 in the upper right hand corner of the board) out of their sockets with a small flathead screwdriver. Now put the new chips

in the sockets making sure that the notch on the one end of the chip points to the TOP of the board (same as the old chips) and that none of the pins are bent under or out of the socket.

Trouble Shooting

The first thing to do if you are experiencing problems is to make sure that all of the cables are plugged an securely, that the power is turned on to all of your drives and your computer. If everything seems to be installed correctly, scan through the list of problems below, read the descriptions, and follow the directions for any of them that apply to your system.

Terminating Resistor Plugs

There should only be one (1) set of terminating resistors installed on the SCSI bus. This usually takes the form of an external terminator plug that is installed in the daisy-chain connector of' the last drive in the chain. Some drives are supplied with internal terminators. If you know this to be the case with your drive you do not need an external terminator. If you are not sure whether your drive has internal terminators installed you can consult the documentation supplied with it or contact the seller of the drive and ask.

Terminator Power
(Note: RamFAST/SCSI RevC users should refer to DIP switch #1 when the text mentions JP1. JP1 installed is the same as DIP switch #1 on. Removing JP1 is the same as DIP switch #1 off.)

Continuing the discussion of terminating resistors, at least one device on the SCSI bus must supply power for these terminators. If your drive(s) do not supply terminator power

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to the SCSI bus you need to make sure that the jumper in the upper-left corner of the RamFAST/SCSI (JP1) is installed. If you are not sure whether your drive supplies terminator power you should consult the documentation supplied with it or contact the seller of the drive and ask. If your drive (most notably Siders) has a slicker on the back of it saying that the drive supplies terminator power and the controller card should be modified NOT to then you MUST remove the jumper. Note that this is the only case where it should be necessary to remove that jumper; it is usually perfectly fine for the card and the drive to both supply terminator power (with the exception of the Sider drives previously mentioned).

Cables If you have checked all of your cables and they seem to be lightened down correctly it's time to think about the length of the cables. Long cables (6'or more) can cause problems at the speed that the RamFAST/SCSI operates, especially when connecting multiple drives the the RamFAST/SCSI. If you are having problems and you have a long cable it is worth a try if you can to try a shorter one.

Your Power Supply If you have a number of cards installed in your computer and you still have the "stock" power supply that came with your computer you may experience problems with the RamFAST/SCSI ranging from random crashes to total failure to function. This is especially a problem in an Apple IIgs with an AE TranswarpGS, an AE PC-Transporter, and a RamFAST/SCSI. This can also be a problem in an Apple IIe if there are a lot of peripherals installed. If it sounds like this could be the case you should remove some of the cards installed in your computer

and see if that cures your problems. If it does,
you should definitely consider getting a heavy
duty power supply before reinstalling
everything in your computer.

There is a set of DIP Switches on the back of **CMS Hard Drives**
most CMS hard drives. One of these switches
controls how the drive is "talked to". You
must turn on the DIP Switch that makes the
drive compatible with the Apple Macintosh. If
you are not sure how to do this you can consult
the documentation supplied with the drive or
contact the seller of the drive and ask.

If you have connected multiple drives to the   ***Multiple Drives with***
RamFAST/SCSI you must be sure that the   ***Conflicting SCSI ID***
SCSI ID numbers assigned to the drives do not   ***Numbers***
overlap. SCSI ID numbers range from 0
through 7 and no two drives on the same SCSI
bus can have the same ID number. Information
on how to determine and/or change the SCSI
ID number of a drive should be found in the
owner's manual that came with the drive.

If you have a RamFactor installed in your   ***AE RamFactor***
computer and are having problems, try
removing the RamFactor and see if the
problems go away. Some RamFactors cause
problems (especially in an Apple IIgs) just
being installed in the same computer as the
RamFAST/SCSI. If the RamFAST/SCSI
works with your RamFactor out of the system
and doesn't work if it IS in the system there'
s not really anything that can be done beyond
removing the RamFactor.

IIe computers	Your IIe is unenhanced

The RamFAST/SCSI will NOT function in an unenhanced lIe. If you want to use the RamFAST/SCSI you will have to purchase an enhancement kit for your lIe from a mail-order firm and install it.

Apple IIe With A Number of Cards Installed

In an Apple IIe it is also possible to see the same problems described above for weak power supplies even if you have a heavy duty power supply. This is a problem that is associated with the design of Apple IIe's and there is nothing really that can be done about it. If the RamFAST/SCSI works in your Apple lie with no (or few) cards installed and doesn't work with all of them installed then, unless one of the peripherals is mentioned below as causing specific problems, it is possible that the RamFAST/SCSI may not be able to function in this computer unless some of the cards are removed permanently.

Apple IIe Accelerators

At the time that this manual was printed, there were no DMA compatible accelerators for the Apple IIe. If you have an accelerator installed in your Apple IIe then you must not enable the DMA option in The Utility Program. If you do enable the DMA option with an accelerator installed you will encounter problems. Other things to be aware of is that the 10mHz RocketChip will not work in the same system as RamFAST/SCSI. This is a problem with the RocketChip, not the RamFAST/SCSI and there is nothing that we can do about it. Also, some of the 8mHz ZipChips have problems in the same system as a RamFAST/SCSI. If you are having problems with an 8mHz ZipChip try replacing the ZipChip with the original

6502 processor and see if the problems go away. If they do then you need to call Zip Technologies and get it replaced.

If you are installing the RamFAST/SCSI into an Apple lie it is required that you have an 80 Column card. The Utility Program will not function without it.

Apple IIe 40 Column vs. 80 Column

Apple IIgs Control Panel Settings
In an Apple IIgs you need to make sure that the control panel setting for the slot that the RamFAST/SCSI is installed in is set to "Your Card and that the boot slot is set to "Scan" or to the slot that the RamFAST/SCSI is installed in.

IIgs computers

Unless you also have an Apple High Speed DMA SCSI card installed in your Apple IIgs you should disable or remove the Apple supplied SCSI drivers from the Drivers folder located in the System folder of your boot partition. The files that should be disabled or removed are: SCSI.Manager, SCSIHD.Driver, are SCSICD.Driver.

Apple SCSI Drivers

Can't run ProDOS 8 software from GS/OS
If you are having problems running ProDOS 8 software from GS/OS (prior to System 6.0) you probably have more than 8 devices in the ProDOS device table. This is a problem inherent in GS/OS. You can not have more than 8 total devices available under ProDOS if you are going to launch your applications from GS/OS (Note: this is not a problem if the hard drive boors ProDOS 8 directly). To see if this may be the problem, total up all of your 3.5" drives, 5.25" drives, and any RamFAST/SCSI

partitions you have mapped into the ProDOS Block Devices table. If the total is greater than 7 you will have this problem (the /RAM3 ramdisk gets added in too). To fix this you just need to unmap some of the partitions on the RamFAST/SCSI or possibly turn off the slot for your 3.5" or 5.25" drives if you're not using them.

Desk Accessories   If you have any of the following desk accessories or inits installed you will have problems, disable them: Mr. Apple / Fancy Apple, Twilight, Carpet Bag, FastSpeed, Ram.Namer.

Also, if you must use a screen-blanker you should use the one from Prosel or use Phantasm (from Quality Computers). If you have another one and you are having problems, try disabling it.

Zip GSx Accelerator   If you have a Zip GSx accelerator installed in your computer you need to check the version number on your board. If it is VI.01 then you need to contact Zip Technologies for a free upgrade in order to function with the RamFAST/SCSI.

IIgs with a TWGS and a RamFAST/SCSI RevC AE TranswarpGS Accelerator   If you experience problems with the RamFAST/SCSI and you have a TranswarpGS installed in your computer check to see if there is a part labeled TWGS-2A installed on your TranswarpGS. At the top right-hand side of the TWGS there are two chips with stickers on them. The top one should be TWGS-1A and the one below it should be TWGS-2B. If this chip is labeled TWGS-2A you will need to

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contact AE to obtain a replacement (TWGS-2B). The RamFAST/SCSI will not function in your computer until you get this replacement part. At the time this was printed, the replacement was free of charge. If there is already a TWGS-2B part in your TranswarpGS then you should try replacing the TranswarpGS with the original 65C816 processor and see if the problems go away. If they do you may need to send the TranswarpGS to AE for further modification.

If you have an AE TWGS in your computer you must have the Option (in The Utility Program) for TranswarpGS set to Yes. If you don't you will have problems.

AE TWGS Accelerator - RamFAST/SCSI Options

The TranswarpGS's control panel Desk Accessory has a section labeled "Configure" which in turn has the entry "AppleTalk/IRQ". You need to make sure this is ON. If it is OFF you will have problems.

AE TWGS Control Panel - AppleTalk/ IRQ

If you have an AE GS-Ram, revision "A", installed in your computer the RamFAST/ SCSI will not function. If you have a GS-Ram with a revision "B", "C", or "D" you will have to disable the DMA option in The Utility Program in order to avoid problems. Only revision "E" of the GS-Ram is completely DMA compatible. To determine the Revision of a GS-Ram card you need to remove it from your computer and look at the supporting "leg" of the card (half-way between the card-edge connector and the back end of the card). On the front or back in this area should be a message that says "REV x" where "x" can be "A", "B", "C", "D", or "F'.

AE GS-Ram

AE GS-Ram+ Rev A, if you have any of these products installed in
CheckMate Memory, your computer you will have to disable the
or RamPack 4GS DMA option in The Utility Program in order
to avoid problems. To determine the revision
of a GS-Ram Plus use the same method
described in the AE GS-Ram problem
description above.

AE RamKeeper If you have an AE RamKeeper in your
computer with two (2) memory cards you will
have to disable the DMA option in The Utility
Program. If there is only one (1) memory
card installed in the BACK pocket of the
RamKeeper and the memory card itself is
DMA compatible you should not have any
problems.

All else fails... If you have read and tried everything in the
Trouble Shooting section and you're still
having problems then gather the following
information:
1 What kind of computer (IIe, IIgs ROM01,or
IIgs ROM03)
2 Serial number and software version of your
RamFAST/SCSI
3 A list of the other cards installed in your
computer
4 A list of the equipment attached to the
RamFAST/SCSI

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