

## **System Utilities**

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This chapter contains information about system utilities that you need when you upgrade your system. These utilities are the AFlash BIOS Utility and SCSISelect Configuration Utility.



*The AFlash BIOS Utility diskette does not come with the system package. Ask your dealer for assistance if you need the utility.*

### **3.1 AFlash BIOS Utility**



*Do not install memory-related drivers (XMS, EMS, DPMI) when you use AFlash.*

The AFlash functions support all the operations required for system Flash ROM. The functions are divided into four steps as follows.

1. **Load BIOS file to buffer** reads a specified file from a diskette to memory for future program use or for check only. It supports the 64-KB, 128-KB, 192-KB, or 256-KB files.
2. **Save BIOS to disk file** reads BIOS from the current BIOS area and writes to the file specified by the user.
3. **Edit OEM string** reads specified file from a diskette to memory, edits OEM string and writes to a file.

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4. **Program flash memory** programs Flash memory according to the data loaded in step 1. This function also shows the BIOS checksum and BIOS type to make sure that the operation is correct.







*AFlash features password security to prevent unauthorized access.*

### 3.1.1 Executing AFlash

Follow these steps to execute AFlash:

1. Copy the MSG.DAT and AFLASH.EXE files from the system utilities diskette into the subdirectory of your choice.
2. From that subdirectory, type:  

```
aflash 
```
3. A help message appears. Press any key to continue.
4. The main menu appears. Use the  or  key to highlight the options. Press  to select.
5. If you want to save a copy of the current BIOS into a file, select Save BIOS to Disk File.
6. Select Load BIOS File to load the BIOS file into memory.

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7. Select Program Flash Memory to erase the current BIOS, and program Flash ROM.




*Never turn off the system power while Flash BIOS is programming. This will destroy the BIOS.*

8. Reboot the system.

### 3.1.2 Quick Way to Execute AFlash

When you have already copied the AFlash files into your hard disk, you can simply type the following on the DOS prompt (subdirectory where the files are located) to quickly execute the program.

```
aflash (filename) 
```

The program automatically performs the loading and programming functions, then reboots the system.

If the program cannot find the BIOS file, it returns to the main menu and flashes the following message:

Can't Read This File !!! Press any key to continue...

In this case, follow the procedures for loading and programming the BIOS file using the main menu.

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## 3.2 SCSISelect Configuration Utility

The SCSISelect utility allows you to change SCSI controller settings without opening the system or changing jumpers.

### 3.2.1 Overview

#### Default Values

Table 3-1 lists the settings that you can change using the SCSISelect utility and the default value for each setting. Some settings apply globally to the SCSI controller and all SCSI devices on the bus. Other settings apply individually to each device on the bus.

*Table 3-1 Settings for the SCSI Controller and All Devices*

Item	Default
Host Adapter SCSI ID	7
SCSI Parity Checking	Enabled
Host Adapter SCSI Termination	Enabled
Boot Device Option	0 (zero)
Host Adapter BIOS <sup>1</sup>	Enabled
Support Removable Disks under BIOS as Hard Disks	Boot only
Extended BIOS Translation for DOS Drives > 1 GB	Enabled
Display <Ctrl-A> Message During BIOS Initialization	Enabled
Multiple Lun Support	Disabled
BIOS Support for Bootable CD-ROM	Enabled
BIOS Support for Int13 Extensions	Enabled
Support for Ultra SCSI Speed	Disabled

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<sup>1</sup> The settings are valid only if the host adapter BIOS is enabled.

**Table 3-2**      *Individual Settings for SCSI Drives*

Item	Default
Initiate Sync Negotiation	Yes
Maximum Sync Transfer Rate	20 MB/sec.
Enable Disconnection	Yes
Send Start Unit SCSI Command <sup>1</sup>	No
Initiate Wide Negotiation	Yes

### **When to Use the SCSISelect Utility**

Use the SCSISelect utility if you need to do either one of the following:

- Change any of the default values listed in Table 3-1.
- Check and/or change SCSI device settings that may conflict with those of other devices
- Perform low-level formatting on new SCSI disk devices

### **Running the SCSISelect Utility**

A screen message giving the option to access the SCSISelect utility appears after the BIOS and POST routine.

To start SCSISelect, press **CTRL**+A when the following message appears during power on or system reset:

Press <Ctrl> <A> for SCSISelect™ Utility!

<sup>1</sup> The settings are valid only if the host adapter BIOS is enabled.



Your screen may show the key sequence as **CTRL**+<Hot Key> instead of **CTRL**+A. The correct sequence is **CTRL**+A.

### 3.2.2 Utility Options

When the SCSISelect utility detects that AIC-7880 SCSI controller in the system, it displays the following Options menu.

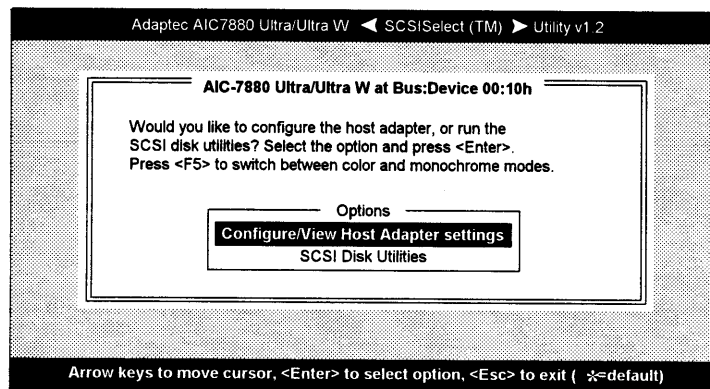


Figure 3-1 Options Menu Screen

Use the **↑** and **↓** keys and press **ENTER** to make selections in the SCSISelect utility. Press **ESC** at any time to return to the previous menu.



You can press **F5** to toggle the display between color and monochrome modes.

*This feature may not work with some kinds of monitors.*

## Configure/View Host Adapter Settings Menu

The Configure/View Host Adapter Settings menu lists three settings under SCSI Bus Interface Definitions and three additional options.

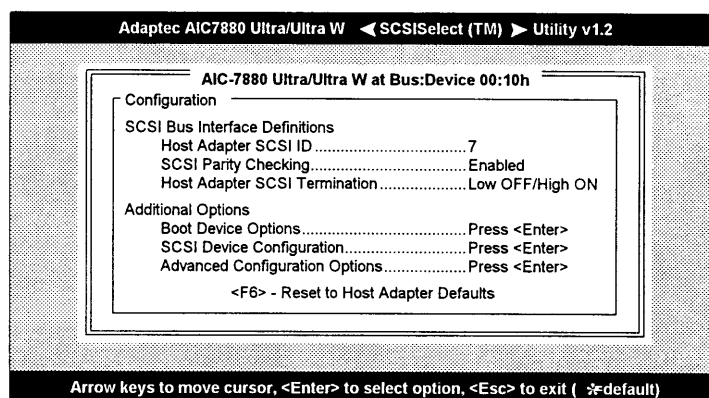






Figure 3-2 Configure/View Host Adapter Settings Screen

Use the  and  keys to select a parameter. Press  to display a pop-up menu with a list of possible settings for the parameter. Press  at any time to return to the previous menu.



Press to reset all settings to the SCSI controller defaults. SCSI controller default settings are marked with an asterisk (\*) throughout the selection submenus.

### HOST ADAPTER SCSI ID

This parameter allows you to change the host controller SCSI ID. Figure 3-3 shows the available IDs for use with the AIC-7880. The default setting is SCSI ID 7, which has the highest priority on the SCSI bus. We recommend that you keep the default setting since most system applications run only in this setting.

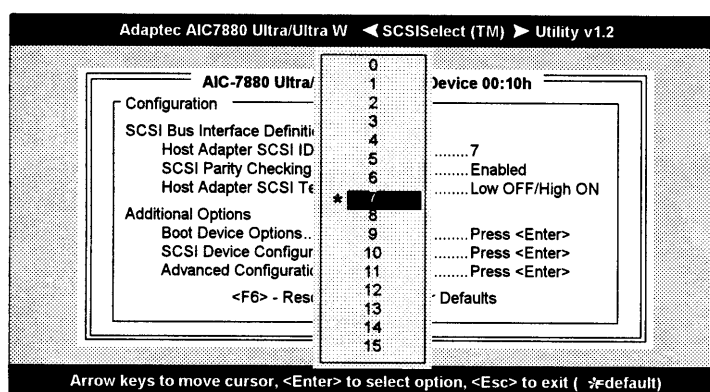






Figure 3-3 Host Adapter SCSI ID Selections

Each device on the SCSI bus, including the SCSI controller, must be set to a unique SCSI ID. The SCSI ID serves two purposes. It uniquely identifies each SCSI device on the bus, and it determines the device's priority on the bus during the arbitration phase. The arbitration phase determines which device controls the bus when two or more devices request for the use of it.

Use the  or  keys then press  to select the SCSI ID if you need to change it. Press  at anytime to return to the previous menu.



### SCSI PARITY CHECKING

Select this option to enable or disable the SCSI parity checking function on the SCSI controller. Figure 3-4 displays the selections. The default setting is **Enabled**.

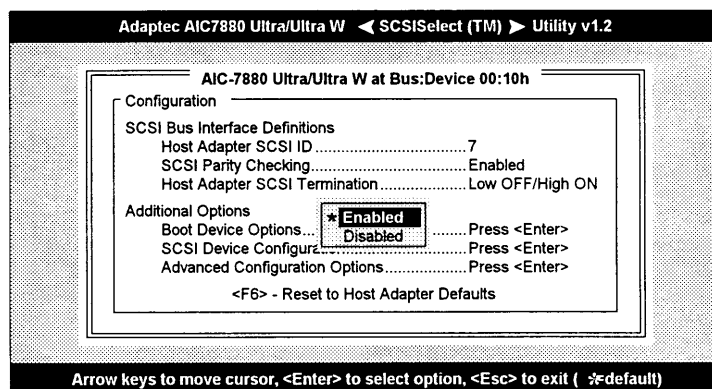


Figure 3-4 SCSI Parity Checking Selections

The SCSI controller always checks parity when reading from the SCSI bus to verify the correct transmission of data from the SCSI devices. You should disable the SCSI Parity Checking parameter if any of the installed SCSI devices does not support SCSI parity. Most currently available SCSI devices support this feature.

Use the **↑** or **↓** keys then press **ENTER** to select options. Press **ESC** at anytime to return to the previous menu.

### HOST ADAPTER SCSI TERMINATION

This parameter allows you to configure the host controller SCSI termination function. Figure 3-5 shows the possible settings. The default setting is Enabled.

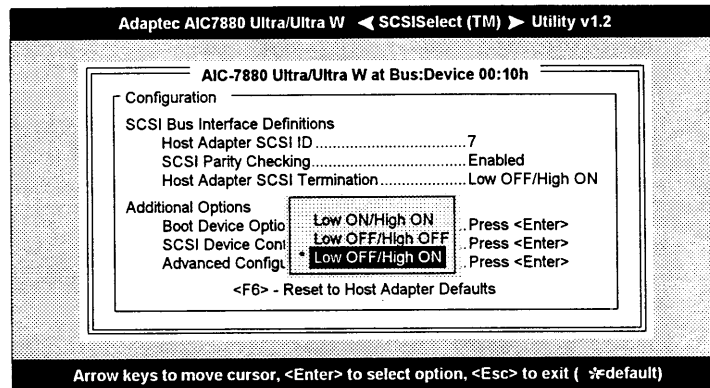


Figure 3-5 Host Adapter SCSI Termination

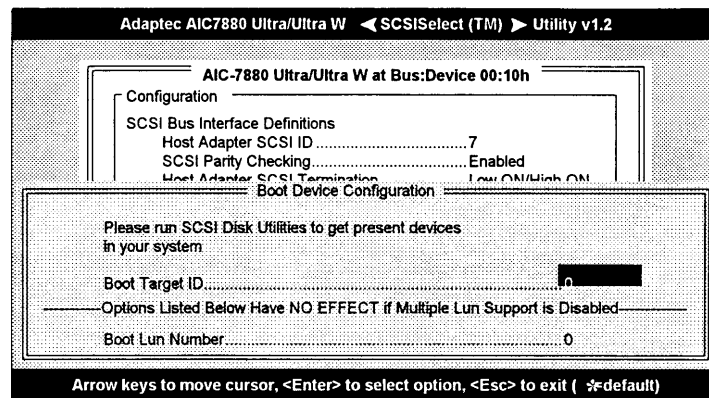
Use the  or  keys then press  to make a selection. Press  at anytime to return to the previous menu.



*If the AIC-7880 is not at one end of the SCSI cable, the terminating resistors located on the system board must be disabled by setting the SCSI terminator to Low OFF/High OFF. See Figure 3-5. The three resistors are in the SIP packages installed in the sockets.*

### **BOOT DEVICE OPTIONS**

This parameter shows the target ID of your boot device. The default setting is 0 (zero). We recommend that you keep the default setting since most system applications run only in this setting. Figure 3-6 shows the boot device configuration menu.



*Figure 3-6 Boot Device Configuration*

### SCSI DEVICE CONFIGURATION

This parameter allows you to configure details of each SCSI device on the SCSI bus. A screen similar to Figure 4-7 appears. The screen shows a column of information for each SCSI ID, even if some SCSI IDs are not assigned to a device. To configure a specific SCSI device, you need to know which SCSI ID it uses. See the SCSI Disk Utilities later in this section for instructions on how to determine the SCSI ID used by a device.

Adaptec AIC7880 Ultra/Ultra W ◀ SCSISelect (TM) ▶ Utility v1.2

AIC-7880 Ultra/Ultra W at Bus:Device 00:10h

SCSI Device Configuration




SCSI Device ID	#0	#1	#2	#3	#4	#5	#6	#7
Initiate Sync Negotiation.....	yes	yes	yes	yes	yes	yes	yes	yes
Maximum Sync Transfer Rate.....	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Enable Disconnection.....	yes	yes	yes	yes	yes	yes	yes	yes
Initiate Wide Negotiation.....	yes	yes	yes	yes	yes	yes	yes	yes
Options Listed Below Have NO EFFECT if the BIOS is Disabled								
Send Start Unit Command.....	no	no	no	no	no	no	no	no

SCSI Device ID

#8	#9	#10	#11	#12	#13	#14	#15
Initiate Sync Negotiation.....	yes	yes	yes	yes	yes	yes	yes
Maximum Sync Transfer Rate.....	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Enable Disconnection.....	yes	yes	yes	yes	yes	yes	yes
Initiate Wide Negotiation.....	yes	yes	yes	yes	yes	yes	yes
Options Listed Below Have NO EFFECT if the BIOS is Disabled							
Send Start Unit Command.....	no	no	no	no	no	no	no

Arrow keys to move cursor, <Enter> to select option, <Esc> to exit ( \*default)

Figure 3-7 SCSI Device Configuration

Use the  or  keys to move between options, then press  to display a pop-up menu with a list of values.

Use the  or  keys to select a value, then press .

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#### Initiate Sync Negotiation

This option determines whether the SCSI controller initiates synchronous negotiation with the SCSI device.

When set to **Yes**, the SCSI controller initiates synchronous negotiation with the SCSI device. When set to **No**, the SCSI controller does not initiate synchronous negotiation. The SCSI controller, however, always responds to synchronous negotiation if the SCSI device initiates it. The default setting is **Yes**.

Data is transferred in asynchronous mode if neither the SCSI controller nor the SCSI peripheral negotiates for synchronous data transfers.



*Some older SCSI-1 devices do not support synchronous negotiation. This may cause the system to operate erratically or hang when the Initiate Sync Negotiation is enabled. Set this item to **No** if you installed SCSI-1 devices.*

#### Maximum Sync Transfer Rate

This option determines the maximum synchronous data transfer rate that the SCSI controller can support. The SCSI controller supports rates up to the Fast Wide SCSI maximum of 20.0 MB per second. The default value is 20.0.

In most cases, you can use the maximum value of 20.0. However, if the SCSI controller is not set to negotiate data transfer (i.e., Initiate Sync Negotiation is set to **No**), the value selected here is the maximum rate that the SCSI controller accepts from the device during negotiation. This is a standard SCSI protocol.



*Some older SCSI-1 devices do not support Fast SCSI data transfer rates 10.0, 8.0, and 6.7. This may cause the system to operate erratically or hang if the transfer rate is too high. Select a Maximum Sync Transfer Rate of 5.0 for these devices.*

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#### **Enable Disconnection**

This option determines whether the SCSI controller allows a SCSI device to disconnect from the SCSI bus (sometimes called Disconnect/Reconnect). Disconnect/Reconnect allows the SCSI controller to perform other operations on the SCSI bus while the SCSI device is temporarily disconnected.

When set to **Yes**, the SCSI device may disconnect from the SCSI bus. The SCSI device, however, may choose not to disconnect, even if permitted by the SCSI controller. When set to **No**, the SCSI device is not allowed to disconnect from the SCSI bus. The default setting is **Yes**.

Keep this item set to **Yes** if two or more SCSI devices are connected to the SCSI controller. This optimizes SCSI bus performance. If only one SCSI device is connected to the SCSI controller, set this item to **No** to achieve better system performance.

#### **Initiate Wide Negotiation**

This option allows communication between all devices (lower 8-bit or upper 8-bit) on the wide (16-bit) SCSI bus. When set to **Yes**, each device can connect on the bus. When set to **No** (disabled), communication can only occur on the lower eight bits of the 16-bit SCSI bus. The default setting is **Yes**.

#### **Send Start Unit Command**

This option determines whether the Start Unit Command (SCSI command 1B) is sent to the SCSI device (most devices do not require this). Enabling this item reduces the load on the system power supply by allowing the SCSI controller to power-up SCSI devices one at a time upon booting. Otherwise, all the devices power up at the same time. Most devices require you to set a jumper before they can respond to this command.

When set to **Yes**, the Start Unit Command is sent to the SCSI device at system boot. When set to **No**, each SCSI device powers-up in the normal procedure.



*The Send Start Unit Command setting is valid only if the host adapter BIOS is enabled.*

If this option is enabled for more than one SCSI device, the Start Unit Command is sent first to the device with the lowest SCSI ID. When this device responds to the SCSI controller, the Start Unit Command is sent to the next highest SCSI ID with a setting of **Yes**. The process continues until all supported devices respond to the SCSI controller.

If many drives are set to **Yes** for Send Start Unit Command, the boot time varies depending on how long it takes each drive to spin up.

#### **ADVANCED CONFIGURATION OPTIONS**

Selecting the Advanced Configuration Options displays a screen as in Figure 3–8. Do not change the settings of the items under this parameter unless it is absolutely necessary.

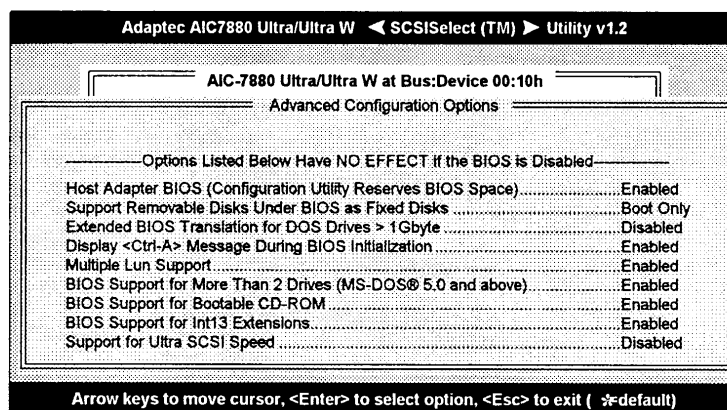





Figure 3-8 Advanced Configuration Options

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Use the  or  keys to move between options, then press  to display a pop-up menu with a list of options.

Use the  or  keys to select an option, then press .

#### Host Adapter BIOS

This option enables or disables the SCSI controller BIOS. The default setting is *Enabled*.

The SCSI controller BIOS must be enabled if you want the system to boot from a SCSI hard disk drive connected to the SCIS controller. Several *SCSISelect* options cannot be used unless the SCSI controller BIOS is enabled.

#### Support Removable Disks Under BIOS as Fixed Disks

This option allows you to control which removable-media drives are supported by the SCSI controller BIOS. This is only valid when the SCSI controller BIOS is enabled. The default setting is *Boot Only*. The following choices are available:

- **Boot Only** - Only the removable-media drive designated as the boot device are treated as a hard disk drive.
- **All Disks** - All removable-media drives supported by the BIOS are treated as hard disk drives.
- **Disabled** - No removable-media drives are treated as hard disk drives. In this case, software drivers are needed because the drives are not controlled by BIOS.

Support for removable-media drives means that the SCSI controller BIOS allows use of a removable-media drive as if it is a hard disk drive. It does not mean that you can remove the disk media during operation.



*If a removable-media SCSI device is controlled by the SCSI controller BIOS, do not remove the media while the drive is powered-on or you may lose data!.*



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#### **Extended BIOS Translation fro DOS Drives > 1 GByte**

This option allows you to enable or disable extended translation for SCSI hard disks with a capacity greater then 1 GB. This is valid only if the SCSI controller BIOS is enabled. The default factory setting is *Enabled*.

When enabled, this options use the following translation schemes:

- SCSI hard disks < 1 GB use a translation scheme of 64 heads, 32 sectors per track
- SCSI hard disks > 1 GB use a translation scheme of 255 heads, 63 sectors per track

See the section *Disk Drives Over 1 GB* in this chapter, for more information on this option. This option should be left disabled for most operating systems except DOS.

#### **Display <Ctrl-A> Message During BIOS Initialization**

This option allows entering the *SCSISelect* utility during BIOS initialization. The default setting is *Enabled*.

#### **Multiple Lun Support**

This option allows access to multiple logical unit numbers (Lun) per SCSI ID, The default setting is *Disabled*.

#### **BIOS Support for Bootable CD-ROM**

When enabled, this option allows you to use a bootable CD-ROM device to directly load an operating system. The default setting is *Enabled*.

#### **BIOS Support for Int13 Extensions**

This option allows access to attached SCSI devices through BIOS Int13 functions. The default setting is *Enabled*.

### Support for Ultra SCSI Speed

This option enables wide SCSI data transfers at 40 MB per second. Most hard disk drives or other SCSI devices do not currently support a communication rate this high. If enabled, make sure that the device you installed is capable of running at this rate. The default setting is Disabled.

### SCSI Disk Utilities

When you select SCSI Disk Utilities from the Options menu, the *SCSISelect* Utility scans the SCSI bus and lists all SCSI devices installed on the SCSI bus. The list shows the individual SCSI IDs assigned to each device on the SCSI bus.

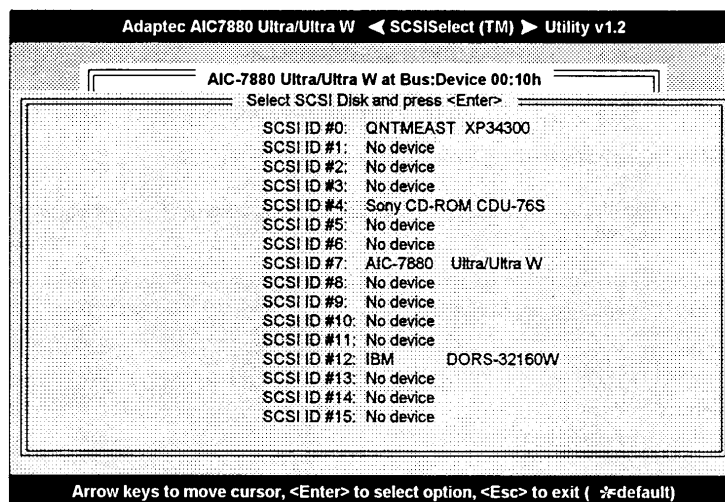





Figure 3-9 SCSI Disk Utilities Screen

Select a disk device to display a small menu window. From this menu, select *Format Disk* or *Verify Media*.

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Use the  or  keys to move between options, then press  to display a pop-up menu with a list of values.

Use the  or  keys to select a value, then press .

#### **FORMAT DISK**

The Format Disk utility performs a low-level format on disk devices.

Most SCSI disk devices are preformatted and do not need to be formatted again. The Adaptec Format Disk utility is compatible with the vast majority of SCSI disk drives. Run it on hard disk drives or removable-media drives that were previously used with a non-Adaptec SCSI controller.




*A low-level format destroys all data on the drive. Be sure to back up your data before performing this operation. You cannot abort a low-level format once it is started.*

#### **VERIFY MEDIA**

The Verify Media utility scans the selected device's media for defects. If the utility finds bad blocks, it prompts you to reassign them. If you select Yes, those blocks will no longer be used.



*You can press  at any time to abort the Verify Disk Media utility.*

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### 3.2.3 Configuring Multiple SCSI Controllers



*The following procedure uses AHA-2940/W/UW SCSI controller as an example.*

Follow these steps to configure multiple SCSI controllers:

1. Install the boot SCSI controller in the lowest PCI Device number. The Device number is determined by the slot number on the PCI bus.
  - a. To find out the Device number of the AHA-2940 SCSI controller(s), run the *SCSISelect* utility by pressing the key combination **CTRL**+A at power on.
  - b. On the first screen of *SCSISelect*, look for the following on the upper right hand corner.  
`Bus:Device xx:xxxh` (given in hexadecimal)
  - c. If the device number is high, move the AHA-2940 to a PCI slot at the other end of the system board then rerun *SCSISelect* to see if the number is lower.



*Step 1.3 is a recommended solution for most PCI systems. You can move the AHA-2940 SCSI controller to another PCI slot if the boot order is not what is desired.*

- d. Refer to your system documentation for further details on determining the PCI slot number and slot number order in the system.
2. If you are booting from the AHA-2940 and using ISA/EISA-based host adapters as secondary devices, you must disable the BIOS on all ISA/EISA-based SCSI controllers.

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3. If you are booting from ISA/EISA-based controllers and using AHA-2940 as a secondary device, see your ISA/EISA-based SCSI controller documentation to ensure that the SCSI controller is at the lowest BIOS base address. ISA/EISA-based SCSI controllers with their BIOS enabled boot before the AHA-2940.

### 3.2.4 Disk Drives Over 1 GByte

#### Extended Translation

Adaptec SCSI controller have always supported the full range of disk drive capacities under all major operating systems. As disk drives have recently grown beyond 1 GB in formatted capacity, they have run up against the DOS 1024-cylinder limit.

To continue its support for all SCSI disk drive capacities under DOS, Adaptec has included an extended translation scheme for the AIC-7880 SCSI controllers. This feature supports disk drives of up to 8 GB capacity under DOS. The section Extended BIOS Translation for DOS Drives > 1 GB explains how to change the setting of this option. Most operating systems leave this option disabled.

#### DOS 1 GByte Limit

All current versions of DOS are limited to 1024 cylinders per drive. The standard translation scheme for SCSI host controllers, using 64 heads and 32 sectors, gives a maximum capacity of 1 GB.

To eliminate the 1-GB limit, Adaptec's extended translation feature uses 255 heads and 63 sectors, extending the disk drive capacity limit under DOS to 8 GB.



*If you have already partitioned a large hard disk drive with one translation method, conversion to another method erases the data on the drive. Be sure to back up your disk drive prior to any change in the translation method.*

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## When to Use the Extended Translation

### WITH DOS 5.0 AND ABOVE

NetWare 386 (version 3.0 and above) and the version of UNIX do not share the 1024 cylinder limit of DOS and do not require extended translation to support large disk drives and should not be enabled.

### DRIVES WITH MIXED PARTITIONS

Use standard translation (not extended translation) on drive formatted with two or more partitions for different operating systems. Partitions for UNIX and NetWare can be larger than 1 GB when using standard translation.



*The term UNIX, as used here includes all version of AT&T/USL UNIX, SCO v3.2.4 (or later), and ISC v3.0 (or later).*

### USING FDISK

TO install a new disk, or to re-partition an existing disk, use the FDISK DOS utility as you normally would. The cylinder size increases to 8 MB when you enable extended translation. The size of the partition you request must therefore be a multiple of 8 MB. If you request a partition size that is not a multiple of 8 MB, FDISK rounds up to the nearest whole multiple of 8 MB.