PCI to Wide SCSI Host Adapter User Manual

3307-0041 Rev.3

Products:

Ultra2:	**ASB3940U2W (LVD)**
	ASB3950U2W (2-CHL LVD)
UltraWide:	**ASB3940UW**
	ASB3950UW

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Revision Control

Part Number 3307-0041, Revision 3, March 1, 2000

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FCC Part 15 Class B Registration Warning

This equipment generates and uses radio frequency energy. If the equipment is not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference with radio and television reception. It has been type-tested and found to comply with the limits for a Class B computing device in accordance with the specification in Subpart B of Part 15 of FCC Rules & Regulations, which is designed to provide reasonable protection against such interference in a residential installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: (1) Reorient the receiving antenna (2) Relocate the computer with respect to the receiver (3) Move the computer away from the receiver (4) Plug the computer into a different outlet so that the computer and receiver are on different branch circuits. If necessary, the user should consult the dealer or an experienced radio/ television professional for additional suggestions. The Federal Communications Commission produces a booklet: *How to Identify and Resolve Radio-TV Interference Problems*, which the user may find helpful. This booklet is available from the U.S. Government printing office, Washington, DC 20402. Stock No. 004-000-00345-4

Shielded cables and certified Class B peripherals must be used with this product. Using unshielded cables or uncertified peripherals may result in this unit being out of compliance with FCC Rules Part 15.

Changes or modifications not expressly approved by the manufacturer can void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules & Regulations. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Table of Contents

Chapter 1

Overview and Quick Installation

AdvanSys SCSI Host Adapters are high-performance PCI Bus Master Host Adapter Cards that provide highly integrated solutions for attaching SCSI devices and operating them with your PC or Mac.

This manual is for the AdvanSys Wide SCSI products listed on the cover. All AdvanSys SCSI Host Adapters and software are installed in the same basic way. Any installation or setup differences between the host adapters, hardware or software are indicated wherever they apply.

Low voltage differential (LVD) signaling, offered by Ultra2 SCSI products, provides improved reliability, higher data transfer rates (up to 80 MB/s) longer cable lengths (up to 12 meters), and more devices (up to 15) connected to a SCSI channel. However, connecting a legacy, single ended (SE) SCSI device (Fast, Ultra, or UltraWide) to the SCSI chain of a LVD SCSI host controller limits the operation of that SCSI chain or channel to SE limitations (bandwidth less than or equal to 40 MB/s, a maximum of 7-15 SCSI devices supported, and a maximum cable length of 1.5 meters).

Installation of the AdvanSys SCSI Host Adapter is fully Plug-and-Play compatible. Board configuration is automatically controlled by the system BIOS. If your operating system is Windows 95/98 or Windows 2000, it is strongly recommended that the *driver software be installed first*, and then the AdvanSys SCSI Host Adapter. Complete instructions for installing the AdvanSys SCSI Host Adapter and drivers are covered in *Chapter 3, Hardware Installation*, *Chapter 4, SCSI Installer Software CD*, and *Chapter 5, Software Driver Installation*.

There are a small number of older PCI motherboards that do not correctly assign interrupts for Plug-and-Play products. If you have difficulty during installation, check the system BIOS settings for PCI configuration. The PCI slots should be enabled, and interrupts should be available for each slot. For PCs, interrupt 10 is a good choice to use on a PCI slot for an AdvanSys SCSI Host Adapter.

Quick Installation — Software

Quick installation assumes that the system has a functional CD-ROM to read the AdvanSys CD. See *Chapter 5, Software Driver Installation* for directions to install a SCSI CD-ROM and/or to make installation diskettes from the AdvanSys CD.

Windows 95/98 and Windows 2000

- Verify that your Windows 95/98 and Windows 2000 operating system is running.
- Insert the AdvanSys CD into your working CD-ROM drive and wait for the Autorun program to come up. (If Auto insert notification is disabled for your CD-ROM drive, you can manually start the Autorun program by opening the *My Computer* icon - press F5 to refresh the *My Computer* window - and double-clicking on the CD-ROM drive icon).
- Click the *SuperInstall button* to install the Windows 95/98 or Windows 2000 SCSI drivers.
- Your AdvanSys Windows 95/98 or Windows 2000 driver is now installed. To install the AdvanSys SCSI Host Adapter and internal or external SCSI devices to your computer system. For more instructions, see *Chapter 3, Hardware Installation.*

DOS 6.x

- Install your AdvanSys SCSI Host Adapter before loading drivers in DOS 6.x.
- After you have installed your AdvanSys SCSI Host Adapter, power-on the computer and let it boot up to DOS.
- Insert the AdvanSys CD into your working CD-ROM drive.
- Type the letter of your CD drive (such as ‘d:’) at the command prompt and press Enter.
- Type cd d:\advansys\drivers\wide\dos\install at the command prompt and press Enter.
- Type ***install*** at the command prompt and press *Enter*. This starts the DOS drivers installation program. Press *Enter* to go past the introduction screen.

- Use the arrow keys to highlight Automatic installation. Press Enter to continue. (If you are installing SCSI removable disk drives, select Custom Installation so that you have the option of installing an additional AdvanSys removable disk driver.)
- Follow the instructions on the screen. Press *Enter* to proceed or press *ESC* to cancel. You can use arrow keys to make selection, if necessary.
- When the program ends (and you are back at the command prompt), remove the AdvanSys CD from your CD-ROM drive and press *Ctrl+Alt+Delete* to reboot the system, so that the newly installed drivers can take effect.
- Your AdvanSys SCSI Host Adapter is now installed.

Windows NT 4.0

Install your AdvanSys SCSI Host Adapter before loading drivers in Windows NT 4.0. From d:\advansys\drivers\wide\winnt (assuming CD-ROM is in drive d:\), copy the following files to the root directory of a newly formatted 3.5” diskette:

NT4ADV.TXT	TXTSETUP.OEM
NT4ADV.SYS	NT4ADV.INF

This is your AdvanSys Wide SCSI Windows NT Diskette. Read NT4ADV.TXT for instructions on using this diskette.

MAC OS 7.X, 8.X, 9.X

No special drivers are required for the PowerMac Power PC G3 and G4. Drivers for the host adapter are built into the card. Included is the Anubis disk mounting and CD ROM utilities from Charismac Engineering, Inc.

For the Mac Blue and White G3 and newer models, the AdvanSys SCSI Host Adapter must be configured to support booting from a SCSI driver on these machines. The “AdvanSys SCSI Utility”, is used to configure the card to boot on these machines. Execute this utility and follow the on screen instructions. The firmware is configured and/or updated with a file like xxxU2W Update.bin.

If possible, it is always a good idea to check the AdvanSys web site at
`http://www.connectcom/macuw.html`
for the latest firmware updates.

In general, for faster disk performance:

- Disable virtual memory using the memory control panel, or
- Avoid using virtual memory whenever possible.

Other Operating Systems

Install your AdvanSys SCSI Host Adapter before loading drivers in Windows 3.1 and Novell NetWare.

Drivers are located in various subdirectories of d:\advansys\drivers (assuming your CD-ROM is in drive d:\). The instructions are located either in those subdirectories or the d:\advansys\drivers\wide\(operating system)\image directories, which also contain driver diskette image files (you can create driver diskettes from the image files by typing unixfer filename.144 a: from a DOS command prompt while in those image directories.) See *Chapter 5, Software Driver Installation* for more detail.

Quick Installation — Hardware

AdvanSys SCSI Host Adapter

Use the following steps to install your AdvanSys SCSI Host Adapter in a PCI slot:

- Shut down the computer.
- Turn the computer power off.
- Remove the PC chassis cover to access the expansion slot and expansion slot covers.
- Identify an unused PCI expansion slot. Remove the cover from the selected expansion slot.
- Align the PCI bus connector on the bottom of the AdvanSys SCSI Host Adapter with the available slot.
- Carefully insert the AdvanSys SCSI Host Adapter into the slot.
- Attach the bracket to the PC chassis with the expansion slot cover screw.

Connecting Internal SCSI Devices

Follow the steps listed below to connect SCSI devices mounted inside your PC. If you are installing a low voltage differential (LVD) host adapter card, do not mix LVD and single ended (SE) devices (Fast, Ultra, and/or UltraWide SCSI) on the Ultra2 (LVD) SCSI chain or channel. Install only LVD devices on an LVD SCSI channel of an Ultra2 (LVD) SCSI host adapter. Use the internal SCSI cable included with the AdvanSys SCSI Host Adapter to connect your SCSI devices, or use an internal cable that supports the number of devices you wish to connect. Please note that the conductors of LVD cables are twisted approximately every three inches and often have a terminator on one end of the cable. If the cable does not have a built-in terminator, make sure you terminate the last internal device on the cable. See *Chapter 3, Hardware Installation*, for detailed SCSI device installation information.

- Follow the instructions that came with your SCSI devices and disable termination on all but the last internal SCSI device.
- Plug the 50-pin connector on the end of your internal cable into the 50-pin SCSI connector on the Host Adapter Card (make sure this end of the cable is not terminated). When installing, match up pin 1 on the connector (indicated by an arrow) with pin 1 on the ribbon cable connector (also indicated by an arrow).

Note: If you are using a 68-pin high-density connector, the shape of the connector, which can only be plugged in one way, determines pin alignment. All other steps are the same.

- Plug the other end of the cable into the connector of the closest internal SCSI device. Maintain Pin 1 orientation as in Step 2.
- If you have another SCSI device to connect, repeat step 3 by plugging the connector on the cable into the connector of the next SCSI device you wish to attach.
- After your device(s) are connected, make certain that the last device on the cable is properly terminated. (See *Chapter 3, Hardware Installation* for detailed termination instructions, or consult the documentation that came with your SCSI device)
- Replace the chassis cover before powering up the computer.

Connecting External SCSI Devices

Use the following steps when connecting external SCSI devices to your AdvanSys SCSI Host Adapter:

- Attach the external SCSI cable connector to the external SCSI connector of the host adapter (pin 1 orientation is predetermined, since external cables can only be attached one way.)
- Plug the second end of the cable into one of the SCSI connectors at the back of the external device you wish to connect.
- If you wish to add more external devices, repeat step 2 for each subsequent device.

Insert an active standard or active pass through terminator plug into the SCSI connector on the last external SCSI device. See instructions in your device documentation, if necessary. You can now power up your system after all the devices have been properly connected.

Chapter 2

Host Adapter Specifications

This chapter lists the features of the AdvanSys Wide SCSI Host Adapters.

Product Features

The following table lists the Ultra Wide SCSI and the Ultra2 Wide SCSI features.

Model No	Ext. Conn.	Inter. Conn.	Active/Pass. Termination	BIOS	Controller Chip
Ultra Wide SCSI:					
ASB3940UW	68 pin HD	68 pin HD; 50 pin Std.	Active	Flash	ASC3550
ASB3950UW-00	2-68 pin VHD	2-68 pin HD	Active	Flash	2-ASC3550
Ultra 2 Wide SCSI:					
ASB3940U2W-00 (LVD)	68 pin HD	68 pin HD	Active	Flash	ASC38C0800
ASB3950U2W-00 *** See Appendix A**	50 pin	2-68 pin HD 1-50 pin Std.	Active	Flash	ASC38C0800 ASC3550

Host Adapter PCI-Bus Interface

- Fully compliant with the PCI Local Bus Specification Revision 2.1
- 32-bit Bus Master DMA allows for a data transfer rate of up to 133 MB/sec across the PCI Bus
- Scatter/gather function supported

SCSI Controller Integrated Circuits

- AdvanSys SCSI controller Integrated Circuits offer industry leading performance, features, integration, and reliability. Integrated application specific RISC processors assure excellent performance while keeping required CPU utilization to a minimum.
- Host-accessible internal registers and single-step RISC instruction execution provide for efficient diagnostic capability.
- Flash ROM enables end-user field BIOS upgrades.
- An EEPROM read-and-write configuration makes jumpers unnecessary.
- Automatic Active Termination control means you never need to worry about terminating the Host Adapter, if a cable is not attached to one of the host adapter's connectors. Note: SCSI bus ends must always be terminated.
- The watchdog timer prevents system hangs caused by malfunctioning SCSI peripheral devices.
- Tagged queuing supported for SCSI
- Each wide adapter board supports up to 15 peripheral devices
- Supports the complete range of SCSI devices, including hard disk drives, CD-ROM drives, tape backup units, MOs, CD-ROMs, printers, and scanners

Compatibility

The AdvanSys SCSI Host Adapter's compatibility has been established on all types of host systems, operating systems, and SCSI peripherals through extensive testing.

The AdvanSys SCSI Host Adapter includes support for many operating systems. Refer to the I/O Operating System Support section (under Technical Specifications in this chapter) for a complete list, and to *Chapter 5, Software Driver Installation* for instructions on installing the drivers for various operating systems.

Reliability

ConnectCom builds SCSI Host Adapters to the highest quality standards in ISO-9002 certified facilities. High-level integration ensures superior reliability, and makes it possible for ConnectCom to offer the first limited lifetime guarantee in the industry. For registered owners, if anything goes wrong with your AdvanSys SCSI Host Adapter within 5 years of initial purchase, ConnectCom will replace it.

Common AdvanSys Wide SCSI Technical Specifications

- Computer Bus: PCI Bus
- Interface Protocol: Bus Master DMA
- Device Protocol: SCSI
- Bus Width: SCSI: 8-bit and 16-bit Ultra Wide SCSI; PCI: 32-bit

Data Transfer Rates

- 3 to 6 MB/sec asynchronous on the SCSI bus
- 10 MB/sec synchronous burst on the Fast Narrow
- 20 MB/sec synchronous burst on Ultra Narrow SCSI bus and Fast Wide SCSI bus
- 40 MB/sec synchronous burst on Ultra Wide SCSI bus
- 80 MB/sec synchronous burst on Ultra2 Wide SCSI bus

Typical Operating System Support

- Windows 95/98 and Windows 2000
- Windows NT (version 3.51 and 4.0)
- MS-DOS (version 6.0 or higher/Windows 3.1
- Novell Netware (version 3.12, 4.1 and greater)
- SCO OpenServer (version 5.0 and greater)
- SCO Unixware (version 2.1 and greater)
- Linux (version 1.2 and greater)
- Sun x86 Solaris (version 2.6 and greater)
- Mac OS (7.5.5 and greater)

Temperature and Humidity Specifications

Temperature and Humidity	Specification
Operating Temperature:	0℃ to 55℃
Storage Temperature:	-40℃ to 75℃
Relative Humidity:	10% to 95% non-condensing

Certification and Compliance

Certification and Compliance	Specification
FCC Certification:	47 CFR Part 15, Subpart B, Class B Digital Device Compliance to ANSI C63.4-1992
CE Compliance:	EN 50081-1:1992 Emissions, EN 50082-1:1992 Immunity Compliance in accordance with CISPR 22B:1985, IEC 1000-4-2:1995, IEC 1000-4-3:1995 and IEC 1000-4-4:1995

Replacing Part Numbers

New Part Number	Replaced Part Number
ASB3940UW	ABP-940UW, ABP-970UW
ASB3950UW	ABP-950UW

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email: support@connectcom.net

ConnectCom Web Site

http://www.connectcom.net

Anonymous FTP

ftp.connectcom.net (login: anonymous)

Chapter 3

Hardware Installation

This chapter provides detailed AdvanSys SCSI Host Adapter installation instructions. It also details SCSI device installation, termination, and ID assignments. Host adapters installation processes are generally the same; differences are noted.

Host Adapter Kit Contents

Before you install and configure your AdvanSys SCSI Host Adapter, make sure that your system meets the minimum hardware requirements, and you have the following items:

- AdvanSys SCSI Host Adapter
- SCSI Management Software Kit containing:
  - A single CD solution for PC and MAC

    The CD contains the following: **drivers**, for the various operating systems supported, the **SuperInstall utility** for installing Windows 95/98, or Windows 2000, and the **CharisMac utility** for Mac installations.
  - Quick Install Guide for Windows 95/98, Windows NT, and Windows 2000
  - Quick Install Guide for MAC
  - Warranty information and Software License Agreement
- 68-pin Wide SCSI ribbon cable for connecting up to 2 or more internal SCSI devices. SE SCSI host adapters have flat ribbon cables. LVD SCSI host adapters include LVD ribbon cables. The conductors of LVD ribbon cables are twisted every three inches.
- Some kits include a 50-pin SCSI ribbon cable for connecting up to 2 internal SCSI devices.

Please be sure to fill out and return the Registration Card to ConnectCom.

PC Installation Requirements

To install your AdvanSys SCSI Host Adapter in a PC you will need:

- An IBM PC (486 or higher) or compatible
- At least 16MB of RAM
- At least 2 MB of free disk space for a basic installation
- One or more SCSI peripheral devices (up to a total of 15 per SCSI channel)
- Available PCI slot

Mac Installation Requirements

To install your AdvanSys SCSI Host Adapter in a Mac you will need:

- Any Power Macintosh with at least one free PCI slot
- 8MB or more of RAM
- MAC OS 7.5.2 or above
- Available PCI slot

Optional External Cables (not provided by ConnectCom)

- 50-pin SCSI external cable for those host controllers with 50-pin connectors to connect external SCSI devices
- 68-pin SCSI external cable for those host controllers with 68-pin connectors to connect external SCSI devices
- 68-pin LVD SCSI external cable for those LVD host controllers with 68-pin connectors to connect external LVD SCSI devices

Single Ended SCSI Cabling

When attaching single ended Ultra/UltraWide SCSI devices to your AdvanSys SCSI Host Adapter, please follow these guidelines:

- Use a SCSI cable that is designed for use in Ultra SCSI/Fast-20 environment.

  The cable should have characteristic impedance of 90 Ω ± 6 Ω .
- Both ends of the SCSI bus should have active termination. Terminators

  employing a 200 Ω resistor to 5 volts and a 330 Ω to ground on each signal shall not be used.
- If you are attaching one to four devices to your AdvanSys SCSI Host Adapter, the maximum cumulative cable length for Ultra SCSI is 3.0 meters.
- If you are attaching five to eight devices, the maximum cumulative cable length for Ultra SCSI is 1.5 meters.
- Please refer to the *SCSI-3 Fast-20 Parallel Interface Draft*, published by ANSI, for details on extending the device count beyond eight.
- It is recommended that the devices be uniformly spaced on the SCSI bus.

Wide LVD SCSI Cabling

When attaching UltraWide LVD SCSI devices to your AdvanSys SCSI Host Adapter supporting LVD, please follow these guidelines:

- Use twisted-pair LVD SCSI cables (either twisted-flat or discrete-wire twisted pairs).
- The maximum cumulative cable length is 25 meters for connecting the LVD host adapter to a single device. For connecting two to 15 devices to the LVD host adapter, the maximum cumulative cable length is 12 meters.

Wide SCSI Host Adapter

This chapter guides you through the process of installing your AdvanSys SCSI Host Adapter and I/O devices. The connectors for the ASB3940UW, UltraWide SCSI Host Adapter, and the ASB3940U2W, Ultra2 (LVD) SCSI Host Adapter, are shown in Figures 3-1 and 3-2 as examples.

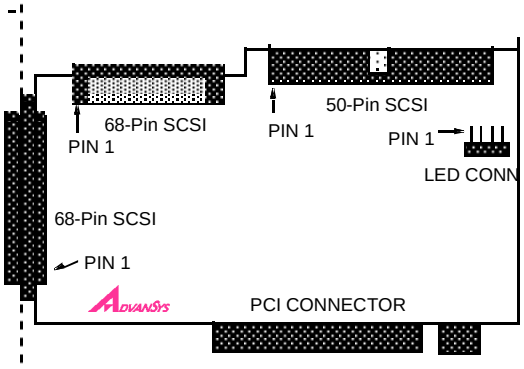

Figure 3-1 UltraWide Board Layout

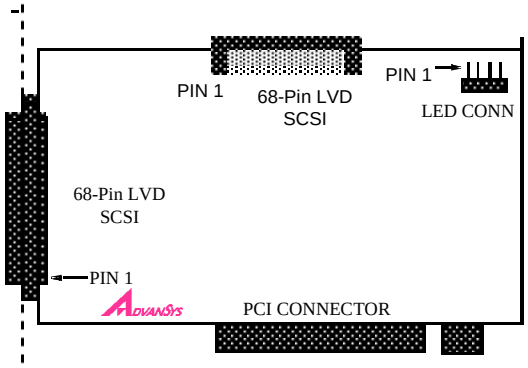

Figure 3-2 (LVD) Board Layout

Installing Your Host Adapter

- Shut down your system and turn off your PC.
- Remove the cover from your computer chassis.
- Touch the power supply of your PC to discharge static electricity.
- Find an available PCI-Bus slot, and plug in your AdvanSys SCSI Host Adapter. Make sure the AdvanSys SCSI Host Adapter is seated properly and firmly in the slot. Secure the card by tightening the mounting screw.

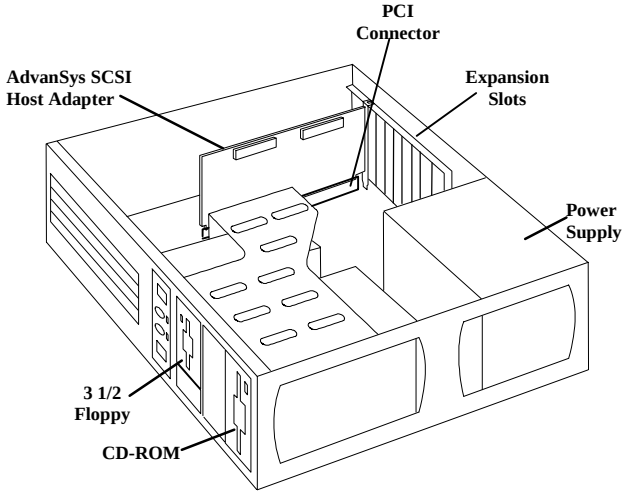

Figure 3-3 SCSI Host Adapter Seated in a PCI Slot

SCSI Devices

Installation

Install internal and external SCSI peripheral devices according to the manufacturer's installation instructions. You can install a maximum of 15 SCSI peripheral devices per AdvanSys Wide SCSI Host Adapter using 68-pin Wide SCSI cables. Keep in mind that the 50-pin narrow connectors and cables support up to only 7 SCSI devices.

Fast or Ultra SCSI devices can be mixed on a wide (16-bit) cable by using adapters to connect the devices to the cable. However, wide devices should not be connected to the host adapter through narrow cables. Fast or Ultra SCSI devices can mixed on a narrow (8-bit) cable through the use of adapters. Read and write operations between SCSI devices take place at the fastest transfer rate for each device.

For AdvanSys Ultra2 (LVD) SCSI Host Adapters, only use low voltage differential devices.

Cable Connection

On some AdvanSys UltraWide SCSI Host Adapters, there are three connectors: usually one internal high-density 68-pin, one internal 50-pin, and one external high-density 68-pin. Based on SCSI specifications, only two of these connectors can be used at one time. Examples of possible configurations are shown in the following page:

ASB3940UW Connectors

- Internal 50- Pin & External 68-Pin
- Internal 50-Pin & Internal 68-pin
- Internal 68-pin & External 68-pin

Note: Do *not* attempt to use all three connectors at the same time. The board will not function with more than two connectors in use.

Cables with 50-pin connectors will support up to 7 SCSI peripheral devices. Figure 3-4 shows how to attach the internal 50-pin SCSI flat ribbon cable to a 50-pin internal SCSI connector. Connect the colored edge of the ribbon cable to the side of 50-pin internal SCSI connector marked with an arrow (pin #1). Connect any internal SCSI devices with the colored side of the cable to pin 1 of each device.

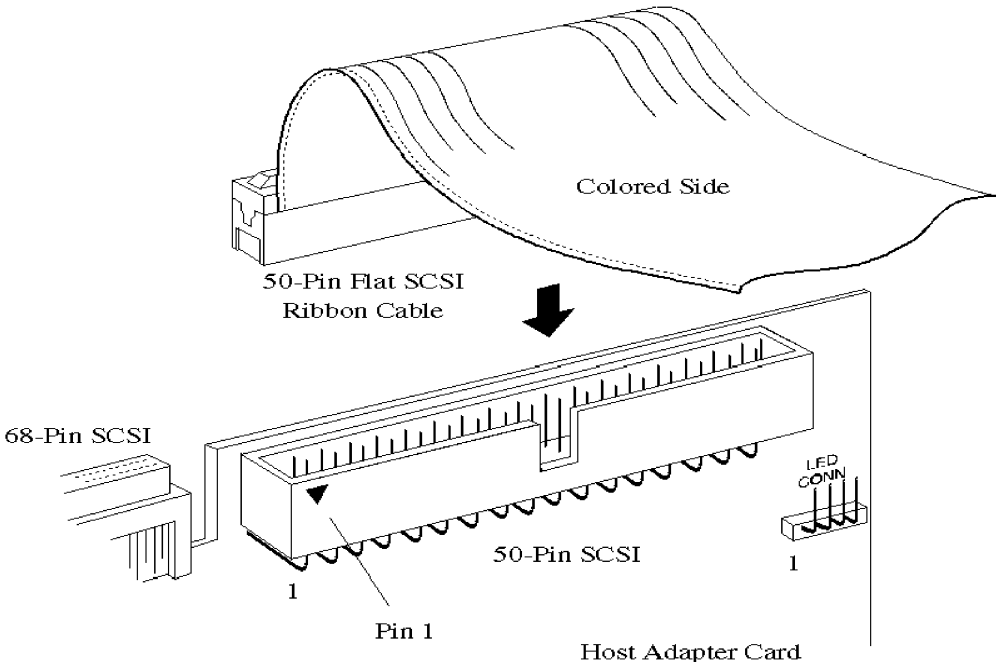

Figure 3-4 Connecting 50 pin Internal Cable to the AdvanSys SCSI Host Adapter

Connect any external SCSI peripheral devices to your AdvanSys SCSI Host Adapter external connector (*see Figure 3-1 ASB3940UW UltraWide Board Layout for connector location.*)

Connect any internal Wide SCSI peripheral devices to your AdvanSys SCSI Host Adapter internal 68-pin high density connector (*see Figure 3-1 ASB3940UW UltraWide Board Layout for connector location.*)

Use LVD SCSI cables to connect LVD SCSI devices to your AdvanSys Ultra2 (LVD) SCSI Host Adapter externally and/or internally.

You can also connect the hard disk LED cable of your PC to the “SCSI Bus Busy” LED CONN, so that the user will know when a SCSI device is active (*see Figure 3-5: Connecting the SCSI Bus Busy LED*.)

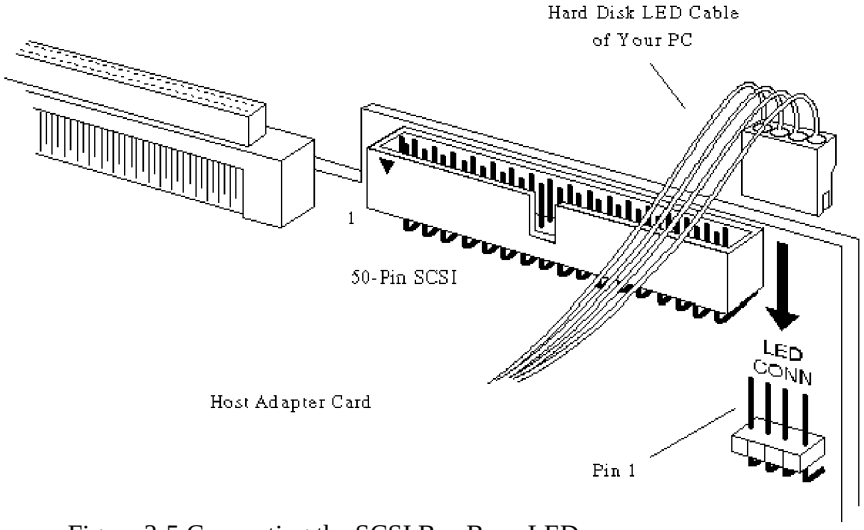

Figure 3-5 Connecting the SCSI Bus Busy LED

Termination

Devices connected by a SCSI bus (cable) form what is called a SCSI chain, so signals can be transmitted properly across the SCSI bus, the devices at both ends of the SCSI chain must be properly *terminated.* AdvanSys Wide SCSI Host Adapters have automatic termination control. This means that when the host adapter is at one end of a SCSI chain, termination is enabled *(see Figure 3-7)*, and when it is in the middle of a bus (cable), termination is disabled (*see Figure 3-8*). However, you must ensure termination at the other end (the last peripheral device only) of the SCSI chain is enabled by either the last peripheral device (if it supports termination) or by adding a terminator to the last connector of the SCSI cable at the end of the SCSI chain.

Figure 3-6 illustrates proper termination when only internal SCSI devices are attached to your AdvanSys SCSI Host Adapter. *Figure 3-7* illustrates proper termination with only external peripheral devices attached to the card. *Figure 3-8* illustrates proper termination for a combination of both external and internal SCSI devices.

Some devices use resistor networks as terminators. To enable termination, leave the resistor networks installed in their respective SIP (Single In-Line Package) connectors. To disable termination, remove these resistor networks.

Active terminators generally have a jumper or switch that controls the enable/disable feature. Refer to your SCSI device installation manual for more details.

Active termination is required when Ultra SCSI devices are involved. It should be noted that at times cable terminators are used if the last device at the end of a SCSI chain is not capable of termination, as is the case with many LVD SCSI devices. In this case, a cable terminator is plugged into the last connector of the cable at the end of the SCSI chain.

It should also be noted that there is a difference between SE and LVD terminators. Be sure to use an LVD terminator to terminate LVD devices and the Ultra2 (LVD) host controller.

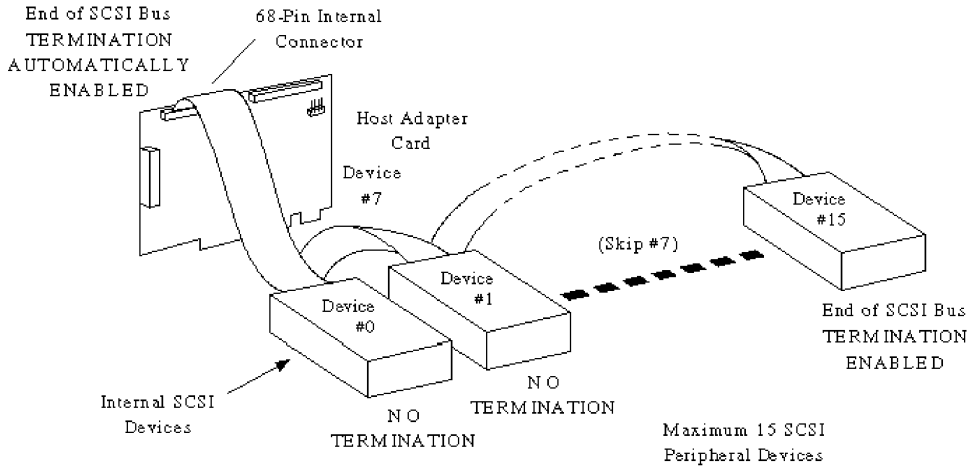

Figure 3-6 Terminating Internal Device Only

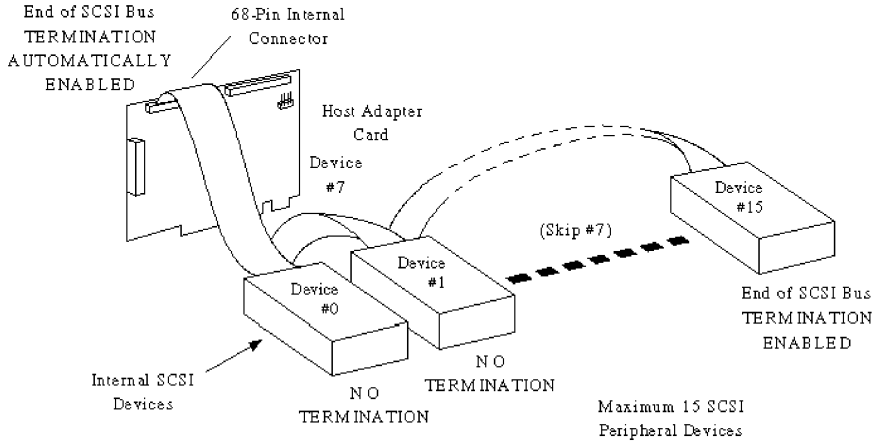

Figure 3-7 Terminating External Device Only

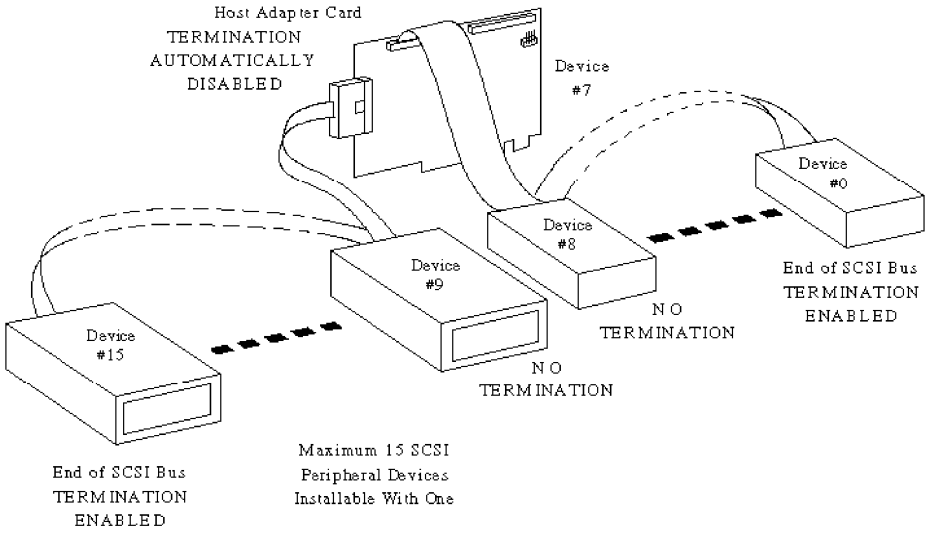

Figure 3-8 Terminating Internal and External Devices

ID Assignment

Each SCSI peripheral device connecting to the AdvanSys SCSI Host Adapter (including the Host Adapter itself) must be assigned its own unique SCSI ID. SCSI IDs are numbered from 0 to 15. The default setting for the AdvanSys SCSI Host Adapter is SCSI ID 7.

Figure 3-9 illustrates SCSI ID assignment to eight internal and seven external SCSI peripheral devices attached to an AdvanSys SCSI Host Adapter. Each device on the SCSI Bus has a unique SCSI ID number. You can assign the IDs randomly, as long as there is no conflict. The default SCSI ID for the AdvanSys SCSI Host Adapter is always #7.

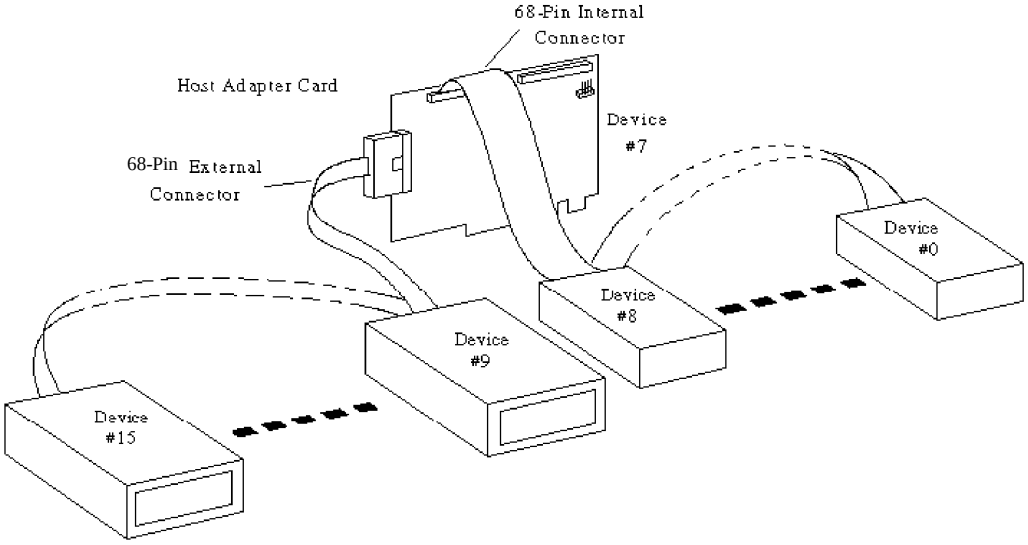

Figure 3-9 SCSI ID Assignment

Chapter 4

SCSI Installer Software CD

This chapter guides you through AdvanSys drivers installation using the AdvanSys SCSI Installer Software CD. After completing installation of Windows 95/98 or Windows 2000, refer to *Chapter 3: Hardware Installation*, for AdvanSys SCSI Host Adapter installation instructions.

AdvanSys SCSI Installer Software CD

The SCSI Installer Software CD contains SCSI drivers for all major operating systems and leading-edge utilities, incorporating the latest and most powerful integration of SCSI software and hardware available in the market. The SCSI Installer Software CD includes SuperInstall for the Windows 95/98 and Windows 2000 environments, and CharisMac™ Anubis & AutoCache utilities for the Mac environment.

SuperInstall is a software installation program for your Windows 95/98 and Windows 2000 environments. It loads your Windows 95/98 and Windows 2000 SCSI host adapter drivers with a one-button click.

Included on the SCSI Installer Software CD is a complete User Manual in Adobe Acrobat pdf file format. The Adobe Acrobat Reader is also included on the CD. To print (or view) the manuals, install the Adobe Acrobat reader for your operating system from the AdvanSys CD and then, from the Adobe Acrobat reader open the manual pdf file of interest, from the AdvanSys CD. You can print the entire manual or selected pages.

Figure 4-1: Adobe Subdirectory for Readers to View Manuals in pdf Format shows a directory listing of the SCSI Installer Software CD and the Adobe subdirectory where the various versions of the readers can be found. Instructions can be found in the text files in these subdirectories.

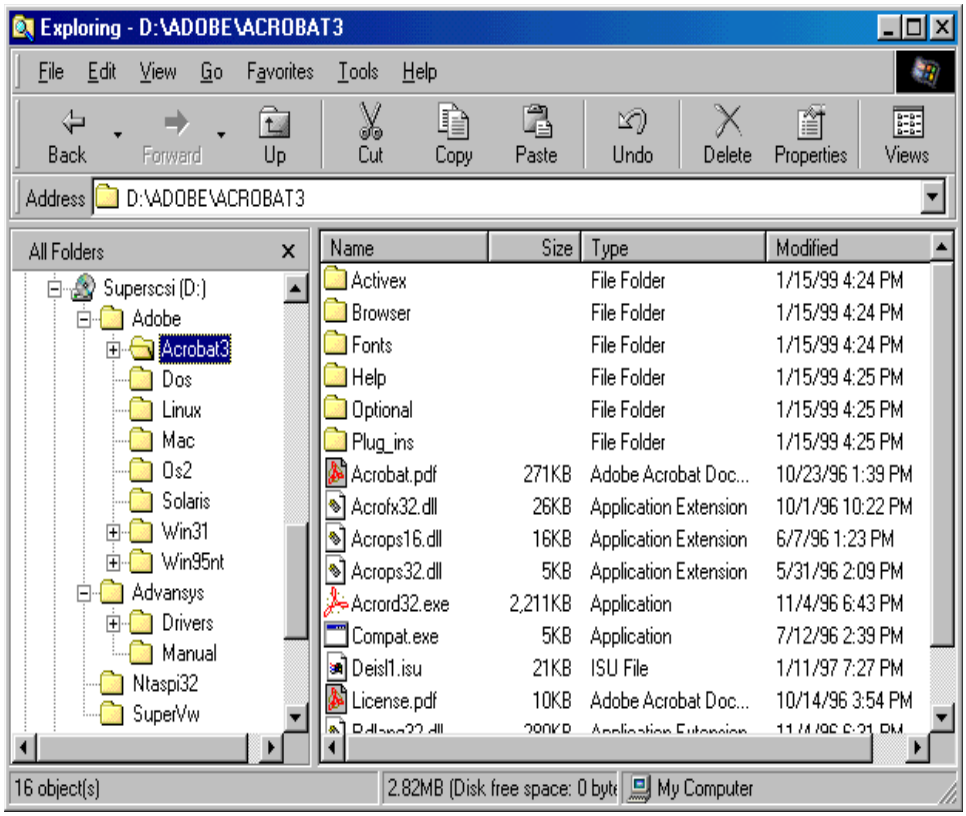

Figure 4-1: Adobe Subdirectory for Readers to View Manuals in .PDF Format

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******* IMPORTANT NOTICE *******

Unlike the driver software for other operating systems, the AdvanSys drivers for Windows 95/98 and Windows 200 are installed before the Host Adapter Card, using the AdvanSys SuperInstall utility on the SCSI Installer Software CD. Follow the instructions in this chapter to install Windows 95/98 and Windows 2000 drivers first.

SuperInstall Instructions

Auto Insert Notification

Windows 95/98 and Windows 2000 comes with *Auto insert notification* activated. If you have disabled it, make certain that it is activated before attempting installation by performing the following steps:

- Click on *START*.
- Choose *SETTINGS*.
- Click on *CONTROL PANEL*.
- Double-click on the *SYSTEM* icon.
- Click on *DEVICE MANAGER*.
- Double-click on the *CD-ROM* icon.
- Double-click on the listing for your CD-ROM drive.
- In the Properties window, click on the *Settings* tab.
- Click on the checkbooks next to *Auto insert notification*.
- Reboot your system.

SuperInstall Installation

Insert the AdvanSys SCSI Installer Software CD into your CD-ROM drive and wait for the AutoRun window for the SuperInstall program to appear *(see Figure 4-2: AutoRun SuperInstall Window from the SCSI Installer Software CD).*

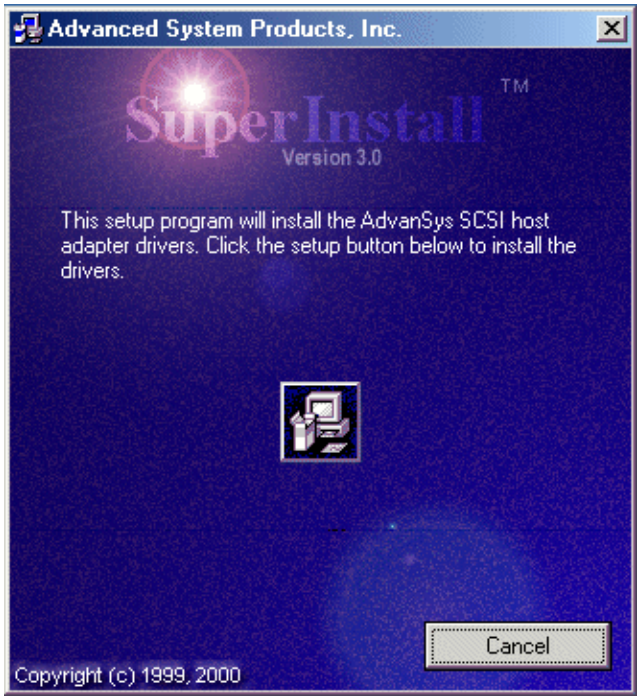


Figure 4-2: AutoRun SuperSCSI Window from SCSI Installer Software CD.

If it does not appear after a few seconds, open *My Computer* by double clicking on its icon. Press **F5** to refresh the My Computer window. Find the *AdvanSys SuperInstall* icon and double click on it. From this SuperInstall window, clicking the left button in the middle of the window will install Windows 95/98 or Windows 2000 SCSI drivers.

An information dialogue box appears to announce that the installation is complete; then, refer to *Chapter 3: Hardware Installation, for The AdvanSys SCSI Host Adapter installation instructions. When the host adapter is in place and you reboot your computer, Windows 95/98 or Windows 2000 will detect the new SCSI card and assign it the AdvanSys drivers you've installed.*

Installation from Diskette

The SCSI Installer Software CD has programs that automate the installation of Windows 95/98, Windows 2000 and Mac SCSI drivers directly from the CD. Installation of Windows NT can also be done directly from the CD. However, installation of SCSI drivers for other operating systems involves making installation diskettes on a X86 PC.

Diskette Creation

In general, driver subdirectories for each supported operating system can be found under the d:\Advansys\drivers\wide\ subdirectory, assuming the CD-ROM drive is drive d:. *See Figure 4-3: Location of Drivers for Various Operating Systems* for the drivers subdirectory location on the SCSI Installer Software CD.

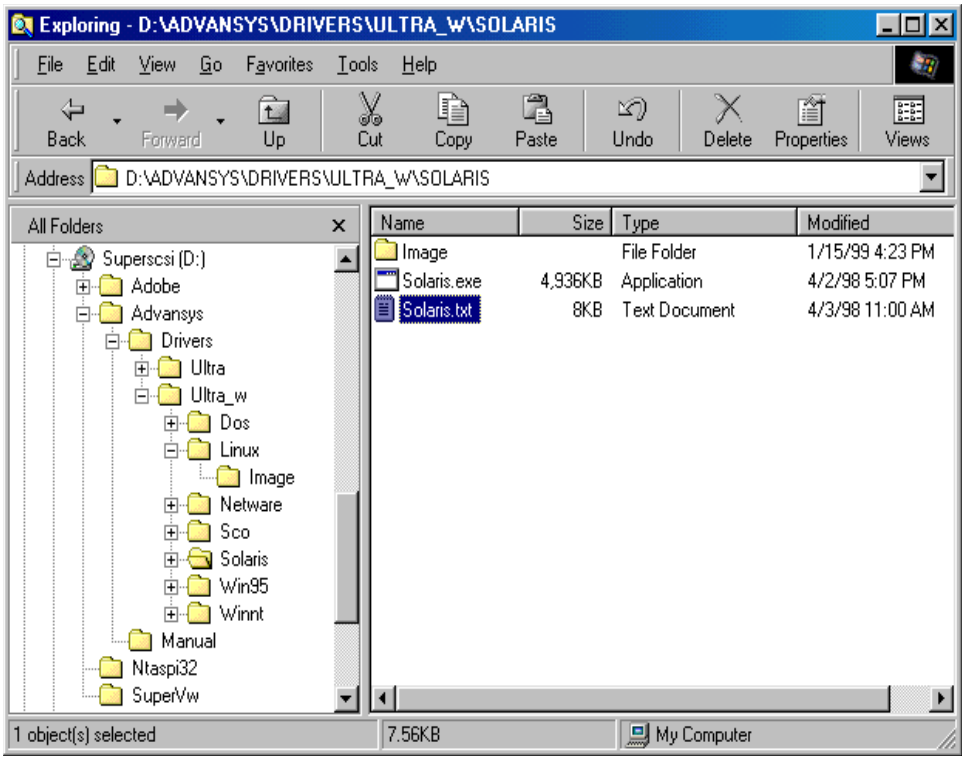


Figure 4-3 Location of Drivers for Various Operating Systems

In each operating system subdirectory is a text file with instructions for the creation of diskettes and installation of SCSI drivers for that operating system. In each operating system subdirectory is a subdirectory titled "\image\". This subdirectory usually contains a driver diskette image file and an executable file to create the driver installation diskette. Again read the instruction in the text file for the operating system being installed. An alternate method of making installation diskettes is to use BIOS Setup. See *Chapter 6: SCO OpenServer Driver Installation.*

Use the following procedure to create diskettes:

- Boot system.
- When AdvanSys Banner appears during boot up, press ***Ctrl+A***.
- On Adapter Configuration Menu, enable *CD Bootability*.
- Exit SCSI BIOS setup.
- Put AdvanSys CD in CD-ROM and reboot.
- PC should boot from AdvanSys CD and offer a menu to make installation diskettes for the various operating systems supported.
- Make the desired Installation Diskettes, following the various menu instructions.
- When finished, reboot system, re-enter SCSI BIOS setup and disable CD Bootability.

SuperView

SuperView is a tool designed for use within the Windows 95 environment. It can be downloaded from a link on the ConnectCom support page at http://www.connectcom.net/support/index.html. SuperView will help you solve any problems you may encounter after installing the AdvanSys driver and your AdvanSys SCSI Host Adapter.

Chapter 5

Software Driver Installation

This chapter guides you through AdvanSys driver installation. Refer to *Chapter 4, SCSI Installer Software CD* for instructions to create installation diskettes for your operating system. For operating systems not covered in this chapter, create installation diskettes and follow customary procedures for installing peripherals and associated drivers on the PCI bus.

The DOS/Windows 3.11, and Novell AdvanSys driver software provide the industry standard ASPI interface. We recommend that you check with your device manufacturer for instructions on using the ASPI interface with your device.

The following list shows the sections in this chapter contains installation instructions appropriate for your operating system.

- Windows 95/98 and Windows 2000
- DOS/Windows 3.11 and CD-ROM Driver installation
- Windows NT
- Mac OS 7.55 or greater
- Novell NetWare
- SCO OpenServer
- Solaris X86
- SCO UnixWare

Windows 95/98 and Windows 2000 Driver Installation

Install the driver software **BEFORE** installing your AdvanSys SCSI Host Adapter (see *Chapter 3, Hardware Installation*). Use the Autorun SuperInstall from the SCSI Installer Software CD to install drivers for Windows 95/98 and Windows 2000 as described in *Chapter 4, SCSI Installer Software CD*.

Updating Flash BIOS

Use the following procedure to update the flash BIOS:

- Turn on your system.
- Click the START button and continue until you open Windows Explorer.
- Go to the CD-ROM directory (D) and click on the plus signs (+) next to the following: Advansys; Drivers; and Wide.
- Click on the Win9x folder to open it.
- Double-click on the `advwflsh.exe` in the advscsi folder.
- When the Superflash box appears, follow the instructions to upgrade your BIOS.

DOS6.x and Windows 3.1 Driver Installation

Install the driver software after installing your AdvanSys SCSI Host Adapter (see *Chapter 3, Hardware Installation*). Windows 3.1 users follow the same instructions as DOS users.

Installing From CD-ROM

- After installing the SCSI host adapter, let the computer boot up to DOS.
- Insert the AdvanSys CD into your CD-ROM drive.
- Type the letter of your CD Drive (such as `d:`) at the command prompt and press Enter.
- Type `cd d:\advansys\drivers\wide\dos` at the command prompt and press Enter.
- Type `install` at the command prompt and press Enter. This starts the DOS drivers installation program.
- Press Enter to go past the introduction screen.
- Use the arrow keys to highlight the *Full installation (recommended choice)*. Press Enter to continue. If you are installing SCSI removable disk drives, select the *Custom Installation* choice so that you have the option of installing an additional AdvanSys removable disk driver.
- Follow the instructions on the screen. Press Enter to proceed or press ESC to cancel. You can use arrow keys to highlight selections, if necessary.
- When the program ends (and you are back at the command prompt), remove the AdvanSys CD and press Ctrl+Alt+Delete to reboot the system, so that the newly installed drivers can take effect.
- Your AdvanSys SCSI Host Adapter is installed.

Installing From Diskette

- Turn your computer power on.
- Insert the Installation diskette into the floppy drive.
- At the C:\> prompt, type A:\ and press Enter.
- At the A:\> prompt, type `Install` and press Enter. A message appears.

This program will install the AdvanSys DOS Drivers. Files will be copied to: `C:\ADVSCSI`, and default settings for hardware and software will be used.

- Press Enter
- Automatic Installation will use default setting and options. Custom Installation will prompt you for changes

- If you select *Automatic Installation*, the driver files will be copied to `C:\ADVSCSI`.
- Working....(shows the files being copied to the C:\ drive)
- If you select *Custom Installation*, you will be prompted for changes to `config.sys` and `autoexec.bat` files.
- Upon completion of either step 6 or step 7, the following screen message appears:

  "AdvanSys DOS Drivers have been successfully installed. You must REBOOT your computer for the changes to take effect."

- Press Enter to exit the installation program.
- Before continuing, remove the disk from the floppy disk drive.
- If you want the driver installation to take effect now, reboot by pressing Ctrl+Alt+Delete. Otherwise, press any key to continue.

`ADV3550.SYS` is the AdvanSCSI ASPI Manager for DOS. It is designed to support the AdvanSys Wide SCSI Host Adapters, using MS-DOS™ 6.0 or later version. `ADV3550.SYS` is loaded from the `CONFIG.SYS` file and automatically installed by the DOS installation program. To install it manually, add the following line to the `CONFIG.SYS` file:

```
DEVICE=ADV3550.SYS
```

To minimize possible confusion, it is a good idea to create a \ADVSCSI directory to hold all of the AdvanSys software files. In this case, the directory path would be:

```
DEVICE=C:\ADVSCSI\ADV3550.SYS
```

The automatic install programs use this method.

You can also load `ADV3550.SYS` into high memory if you install the appropriate memory manager before loading.

Command Line Options

Command line options (separated by forward slashes and containing no spaces) can be added on the same line as the command. For example:

```
DEVICE=ADV3550.SYS /P/V
```

Several command line options can be used with `ADV3550.SYS`. Most installations will not require any of these, but there are circumstances for which one or more may be necessary.

The command lines are as follows:

- /L By default, logical units (LUNs) are not supported by ADV3550.SYS. To enable LUN support, specify the /L option at the command line.
- /P When you use the /P option, ADV3550.sys will pause until you press a key before continuing when it's loaded.
- /V A verbose display will be printed during initialization, showing adapter I/O ports, IRQs, and other miscellaneous information.

Mac PowerPC OS 7.x, 8.x and 9.x Driver Installation

Special drivers are not required for the extension manager. The drivers for the Mac OS are built into the SCSI card. However, to provide boot capability from an attached SCSI device with the new G3 or newer Macs, the AdvanSys Mac flash utility will be required to configure the SCSI card to enable this capability. Anubis disk-mounting and CD-ROM AutoCache utilities are included to mount the disk and CD-ROMs, or use your favorite Mac-mounting utility, since most mounting utilities will work.

- If you have difficulty locating your AdvanSys SCSI Host Adapter, make sure that you have the latest version of the Mac mounting software or use the included Anubis version. Anubis only supports devices mounted on AdvanSys SCSI Host Adapters.

Windows NT Driver Installation

Installation Diskette Creation for Windows NT 4.0

From `d:\advansys\drivers\wide\winnt` (assuming CD-ROM is in drive `d:\`), copy the following files to the root directory of a newly formatted 3.5" diskette:

- `NT4ADV.TXT`
- `TXTSETUP.OEM`
- `NT4ADV.INF`
- `NT4ADV.SYS`

This will now be your Windows NT AdvanSys Driver diskette.Read `NT4ADV.TXT` for instructions on using this diskette.

Installing to a New Windows NT system

- At the end of the diskette phase of a new Windows NT installation, you will be asked whether you want to: *Specify Additional Drivers.* Answer yes by selecting *S*.
- From the list of drivers displayed, select *Other*.
- When prompted, insert the installation diskette.
- When the AdvanSys driver you desire is found on the diskette, highlight its name. Once the driver is loaded, it will search for the AdvanSys SCSI Host Adapter installed in the system.
- Windows NT displays a confirmation message when the successfully loaded driver finds the AdvanSys SCSI Host Adapter. Press Enter to continue with the installation.

Installing to an Existing Windows NT 4.0 System

- Double-click *My Computer* and open the *Control Panel*.
- From the **Control Panel,** open the *SCSI Adapters* icon.
- Select the *Drivers* tab.
- From the Install Driver window, press the button labeled **Have Disk**.
- When prompted, insert the Windows NT AdvanSys Driver diskette.
- Reboot the system for the driver installation to take effect.

Novell NetWare Driver Software Installation

The AdvanSys NetWare HAM Driver, ADVHMXXX.HAM, is designed to work with the AdvanSys Wide SCSI Host Adapters, and Netware 4.0 or later.

Naming Scheme

The AdvanSys NetWare HAM Driver name reflects its version number. When you are upgrading drivers, it is important that you modify the server `STARTUP.NCF` or `AUTOEXEC.NCF` to contain the new driver name.

Installation

- Boot your system with the AdvanSys `ADV3550.SYS` and `ADVANCD.SYS` drivers in the `CONFIG.SYS` file, in order to make the CD-ROM drive visible to DOS.
- After bootup, change to the CD-ROM drive, type `install`, and then follow the NetWare installation procedures.
- You will need to use the driver diskette to load the AdvanSys driver during installation. NetWare will automatically detect AdvanSys SCSI Host Adapters and assign a unique slot number. When the system prompts with a slot number, press Enter to accept it and continue installation.
- If you want to upgrade the driver after installation, copy the driver from the diskette to the server boot directory and update the `STARTUP.NCF` file.
- After installation, NetWare will create a `STARTUP.NCF` file, which will contain the following AdvanSys driver loading statement:

  ```
  LOAD ADVHMXXX.HAM INT=B
  ```

- You may update the statement as follows for nonstop NetWare bootup:

  ```
  LOAD ADVHMXXX.HAM SLOT=10001
  ```

ADVHMXXX.DDI Installation Information File

The `ADVHMXXX.DDI` file that accompanies the HAM driver is used for automatic hardware detection during installation of NetWare 4.11. This DDI file contains driver descriptions that specify configurable driver parameters, the input required from the user, and the format of the required output.

Installing ASPI

- Novell 4.11 includes the ASPI layer:

  ```
  LOAD NWASPI.NLM
  ```

  For earlier versions of Novell, the NWPA patch is required. The NWPA patch is available on the World Wide Web at `http://developer.novell.com/devres/sas/nwpa_up.exe`.

- Note: The URL may change in the future since Novell provides the patch.

SCO OpenServer Driver Installation

The SCO OpenServer Ultra2/UltraWide Driver supports AdvanSys Wide SCSI Host Adapters for the OpenServer 5.0 or above.

In order to install the universal driver software on SCO OpenServer, you will first need to create the installation diskettes from the AdvanSys SCSI Management Software or SCSI Installer Software CD. If you haven't already done this, *see Chapter 4, SCSI Installer Software CD*.

During SCO OpenServer Installation

Set up your devices with the following SCSI Target IDs:

Hard Disk: 0

CD-ROM: 5

Tape Drive: 2

- Boot the system with the installation boot disk you created from the SuperSCSI CD.
- Type `link` at the Boot**:** prompt. SCO dynamically links the AdvanSys driver to the install kernel. The AdvanSys driver is a BTLD (Boot Time Loadable Driver).
- When the install program asks you what package to link, type `adv`, which is the name of the AdvanSys BTLD driver package.
- Next, place the AdvanSys SCO BTLD diskette into the floppy drive when the system prompts you to do so. *Do not* insert the diskette until you are asked for it. (The install program may ask for the disk more than once.)
- At the end of the installation, you may be asked: Do you want to replace auto with adv? `Y` or `N`. Answer yes (`Y`).

After SCO OpenServer Installation

- Create an AdvanSys driver diskette as described previously. Label the diskette AdvanSys SCO BTLD. Be sure to include the version of the driver on the label.
- Type the command `installpkg` from the SCO UNIX command line.
- When prompted, insert the AdvanSys SCO BTLD diskette into the floppy drive.
- After installation, type the following commands to rebuild a new kernel containing the asc driver:

```
cd /etc/conf/cf.d./link_unix
```

For more information, refer to the SCO documentation on compiling the kernel.

Installing the Solaris x86 Driver

The AdvanSys PCI wide Solaris driver (ADV) supports the AdvanSys Wide SCSI Host Adapter for Solaris 2.41 and 2.6. Earlier versions of Solaris are not supported.

The Solaris directory includes the image files listed below. If the date listed in the solaris.txt file indicates that it is more than a few months old, please check the AdvanSys FTP site to download the latest version of the driver.

`SOLARIS.TXT`	Installation Instructions
`SOLARIS.EXE`	DOS Executable File to create `ADVITU.DAT` and `RAWRITE.EXE`

Instructions for Creating the ADV Driver Diskette in Solaris

- Copy file `advitu_d.z` as `advitu.dd.Z` using

  ```
  # cp advitu.dd.z advitu.dd.Z
  ```

- Uncompress the file using

  ```
  # uncompress advitu.dd.Z
  ```

- Stop Volume Management if it is running using

  ```
  # /etc/init.d/volmgt stop
  ```

- Copy the image onto a 1.44 MB floppy.
  Insert a floppy in the floppy drive and type

  ```
  # dd if=advitu.dd of=/dev/rfd0  bs=64k
  ```

Instructions for Creating the ADV Driver Diskette in DOS

The file `SOLARIS.EXE` is a self-extracting archive, which contains the image of Solaris ADVITU diskette.

- Copy the file `SOLARIS.EXE` to a DOS system.
- Type the command `SOLARIS.EXE`. The following files will be created:

RAWRITE.EXE DOS	Executable to transfer file images to a diskette
ADVITU.DAT	Driver Update Image for AdvanSys hardware

Type `RAWRITE ADVITU.DAT A`: to create the `ADVITU` diskette

Installing the ADV Driver During Solaris Installation

Note: For other Driver Updates to be used during installation, use the Driver update diskettes (if any) supplied with the Installation media or check out **`http://access1.sun.com/drivers`**.

- Use Boot diskette to boot the Solaris operating environment.
- Insert the Solaris x86 Edition Installation CD into a CD-ROM drive and the Boot diskette into the first floppy drive.
- The system should boot off the floppy. When the Solaris Device Configuration Assistant screen is displayed, press F4_Driver Update.
- Remove Boot diskette and insert ADVTU Diskette. Press F2_Continue.
- Select Solaris OS and press F2_Continue.
- Remove the ADVITU diskette and reinsert Boot diskette. Press F4_Done.
- You will see ADV in the driver list and press F2_Continue.
- Then follow the Solaris instructions to finish the installation.
- At the end of the installation, you will be prompted to insert the ADVITU and other Driver Update Diskette(s) again.
- The installation procedure will automatically add the AdvanSys driver to the installed system. There is no need to re-add the driver after the installation has completed.

Installing the ADV Driver After Installing Solaris

- You must already have installed Solaris x86 Edition software.
- Boot the Solaris system and login as root.
- Type `ps -ef | grep` vold to see if the Volume Management software is running.
- If Volume Management is running, temporarily stop it:

  ```
  # /etc/init.d/volmgt stop
  ```

- Insert ADVITU Driver Update diskette into the floppy drive.
- Mount ADVITU Driver Update diskette at the /mnt mount point.

  ```
  # mount -F pcfs /dev/diskette /mnt
  ```

- Execute the install script on the diskette by typing:

  For Solaris 2.6:
  ```
  # /mnt/DU/sol_26/i86pc/Tools/install.sh -i
  ```

  For Solaris 2.7:
  ```
  # /mnt/DU/sol_27/i86pc/Tools/install.sh -i
  ```

- Unmount the diskette if the install.sh script exits.

  ```
  # umount /mnt
  ```

- Reboot your Solaris system and use the boot command `b -r` at the boot prompt to reconfigure the system. The `-r` option will cause the /devices and /dev directories to be rebuilt.

Installing SCSI Devices under Solaris

SCSI Disk and CD-ROM devices are controlled by the same target driver cmdk(7d). Device files are of the form:

```
/dev/[r]dsk/c[0-9]t[0-7]d[0-7]s[0-15]
```

SCSI Tape drives are controlled by st(7d). Device files are of the form:

```
/dev/[n]rmt/[0-9]
```

If you add or remove a SCSI device reboot your Solaris system and use the boot command `b -r` at the boot prompt to reconfigure the system. This will cause the /devices and /dev directories to be rebuilt.

SCO UnixWare Installation

The AdvanSys UnixWare ADV Driver supports all AdvanSys Wide SCSI Host Adapters for SCO UnixWare 7.X and 2.1 Releases.

The `UNIXWARE` directory includes the following files. The latest versions of these files are contained on the AdvanSys web site. If the date listed in the `UNIXWARE.TXT` file is more than a few months old, please check the web site for a newer version of the driver.

`UNIXWARE.TXT`	Installation Instructions
`UNIXBTLD.EXE`	DOS Self-extracting Archive Containing Diskette Image
`UNIXBTLD.Z`	UNIX Compressed Floppy Diskette Image

To install the AdvanSys Universal Driver you will need to create a Boot Loadable Diskette containing the driver. You may create the diskette using either DOS or UnixWare. Decide which system to use and follow the directions below. After the diskette is created it can be used to add the driver during the UnixWare installation or used to add the driver to an existing UnixWare system. Directions for both of these installation options are contained below.

Creating the ADV Universal Driver Diskette From DOS

The file `unixbtld.exe` is a self-extracting archive, which contains an image of a UnixWare s5 file system. The image can be copied to a 3.5" diskette to make an ADV Universal Driver HBA Diskette.

- Copy the file `unixbtld.exe` from the AdvanSys DOS diskette containing the directory `UNIXWARE` to a DOS system.

  copy `a:\unixware\unixbtld.exe`

- Type the command `unixbtld.exe`. The following two files will be created:

  `btld.dat`

  `unixfer.exe`

- Insert a blank formatted diskette in the 3.5" floppy disk drive and create the diskette with the following command.

  ```
  unixfer btld.dat a:
  ```

- To verify the contents of the diskette unixfer can also be run in reverse. The file `btld.dat` should exactly match `test.dat`.

  ```
  unixfer a: test.dat
  fc btld.dat test.dat
  ```

Creating the ADV Universal Driver Diskette From UnixWare

The file `unixbtld.Z` is a compressed image of an UnixWare s5 file system. The image can be copied to a 3.5" diskette to make an ADV Universal Driver HBA Diskette.

- Copy the file `unixbtld.Z` from the AdvanSys DOS diskette containing the directory `UNIXWARE` to a UnixWare system.

  ```
  $ doscp a:/unixware/unixbtld.Z unixbtld.Z
  ```

- Uncompress the file `unixbtld.Z` with the following command in the same directory where the file is located.

  ```
  $ uncompress unixbtld.Z
  ```

- Insert a blank diskette in the 3.5" floppy disk drive and use "dd" to create the diskette with the following command.

  ```
  $ dd if=unixbtld of=/dev/rdsk/f0t bs=64k
  ```

- To verify the contents of the diskette run dd in reverse. The file `unixbtld` should exactly match `test.dat`.

  ```
  $ dd if=/dev/rdsk/f0t of=test.dat bs=64k
  ```

  ```
  $ cmp unixbtld test.dat
  ```

Installing the ADV Driver During UnixWare Installation

Insert the ADV HBA Driver Diskette when prompted to by the install procedure. The driver will be loaded into the live system and the install will proceed.

Installing the ADV Driver After Installing UnixWare

- Type the `pkgadd` command from the command line as the root user.

  ```
  pkgadd -d diskette1
  ```

- Install the AdvanSys HBA driver. The kernel will automatically be re-built to include the driver the next time the system is shutdown.

Converting ADV Driver to a Loadable Driver

The ADV UnixWare driver by default is installed as a static driver. If the driver is not needed for booting the system (it does not control the system boot disk) it may be changed to a loadable driver with the following commands:

- Edit the file `/etc/conf/sdevice.d/adv` and remove the line containing the word "static".
- Type `/etc/conf/bin/idbuild -M adv` to build the driver as a loadable module.
- Install the loadable module with the command `modadmin -l adv`.

Checking the Software and Hardware Configuration

The ADV driver software and hardware configuration may be queried using the command `dcu`. This command will list all the installed AdvanSys adapters and their hardware settings.

Installing SCSI Devices Under UnixWare

SCSI devices will automatically be detected at boot time and device files for the devices will be created. This can also be done manually with the following commands:

```
/etc/scsi/pdimkdev -if
/etc/scsi/pdimkdtab -if
```

The following commands can be used to set-up a SCSI disk. Do not run this command on the root disk or a disk that is already set-up.

```
fdisk /dev/rdsk/cXbXtXdXs0
disksetup -I /dev/rdsk/cXbXtXdXs0
```

Here is a basic list of UnixWare device files:

Disk Device Files: `/dev/[r]dsk/c[0-9]b0t[0-7][ps][0-f]`

Tape Device Files: `/dev/rmt/c[0-9]b0t[0-7]l[0-7]`

CD-ROM Device Files: `/dev/[r]cdrom/c[0-9]b0t[0-7]l[0-7]`

Note: On UnixWare-7, the tape devices are locked by SCO ARCserve/Open utility. Because of this the tape devices are unavailable for use by backup commands like tar, cpio. To unlock these devices; the above utility could be stopped by running a stop as a root user. For more information about this, refer to UnixWare-7 Runtime Release Notes.

Chapter 6

BIOS Setup Values

Board configuration is automatically controlled by the system BIOS. However, once the Plug-and-Play compatible AdvanSys SCSI Host Adapter is installed, experienced PC users may access and adjust the default configuration values. (Macintosh users don't need the information in this chapter, since values are assigned automatically.)

Accessing the System BIOS Values

Restart your computer system. The system detects the SCSI host adapter, indicates that the system is running, conducts a BIOS scan, and lists all peripherals on the SCSI chain. The AdvanSys banner appears.

Figure 6-1: AdvanSys Banner Example

Check the BIOS version shown in the banner to verify that it is the latest by comparing version number to that offered on the ConnectCom Solutions web site support area.

Press Ctrl+A to interrupt the booting process and display the system values. The port address, IRQ (interrupt request), SCSI ID of the host adapter, BIOS address, and Serial number appear in the banner. The Main Menu also appears below the banner.

The Main Menu

The Main Menu allows you to configure the host adapter, detect which peripherals are on the SCSI bus, reformat a hard drive, and implement or discard changes.

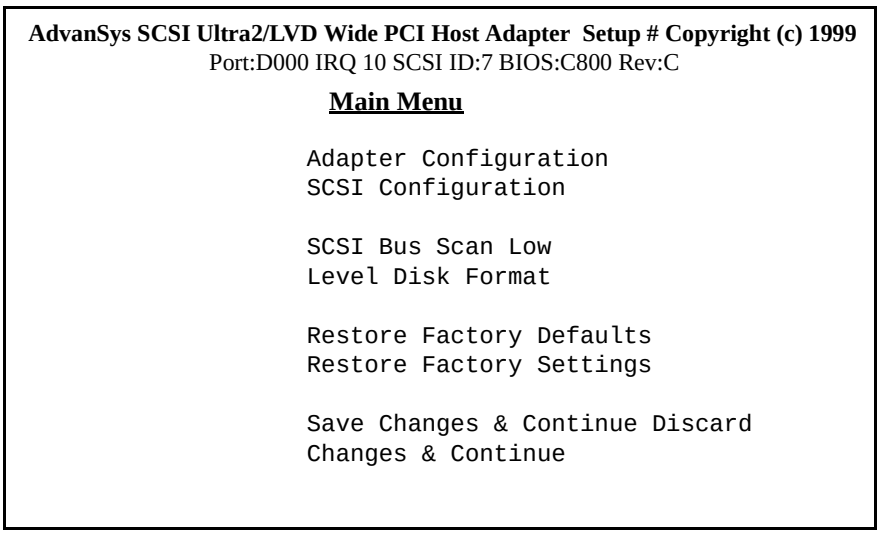


Figure 6-2: Main Menu

Use the up/down Arrow keys to select an item in the Main Menu.

Press Enter to activate the item or access the values for that item.

Adapter Configuration

When you select Adapter Configuration from the main menu, the Adapter Configuration menu appears.

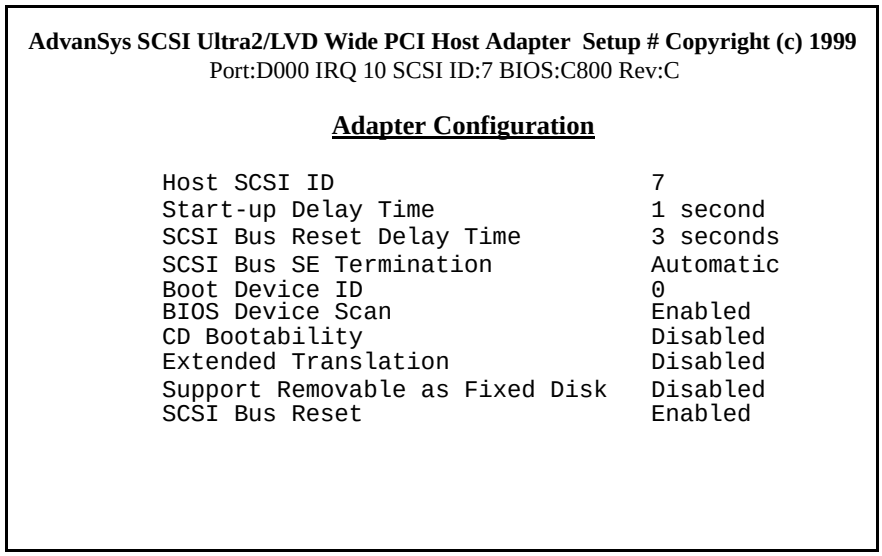


Figure 6-3: Configuration Menu

This menu allows you to configure the peripheral start-up speed, termination, data rate capacity, bootability, error-scanning, and queue.

- Press the Space bar to scroll through the menu list.
- Use the up/down Arrow keys to toggle or scroll through the value.
- Press Esc to return to the Main Menu.

Host SCSI ID

The host SCSI ID should always be **7**.

Start-up Delay Time

The **0–10** (**1** second is default, **0** seconds means there is no SCSI reset) value determines how much time is allotted for all peripherals to come up to speed at start-up.

SCSI Bus Reset Delay Time

Time from reset to when BIOS scans SCSI bus - some older SCSI peripheral devices require more time.

SCSI Bus Termination (SE and LVD)

The **Automatic (**default**)**, **Disable**, or **Enable** value determines the ability of the SCSI bus to terminate a peripheral. **Automatic** allows the SCSI bus to automatically sense which internal or external peripherals need termination. **Disable** means termination on the host adapter is turned off, and **Enable** means termination is on.

Boot Device ID

By default, the BIOS uses the first bootable SCSI device found for boot. This parameter will allow user to specify a target ID for boot.

BIOS Device Scan

SCSI BIOS scan required for boot from SCSI device. However, if you are not booting from a SCSI device, disabling SCSI BIOS scan can shorten system boot time.

CD Bootability

The Enabled (default) or Disabled value determines whether the computer system can boot up from a CD-ROM drive.

Extended Translation

Was originally used to get around older PC ROM BIOS limitation on drive size. Extended translation allowed partitioning of drives over 1 GB. Default is enabled. However, if using old partitioned drives (<1GB), disable extended partition.

Support Removable as Fixed Disk

Treats removable drives as a fixed drive and assigns it a drive letter.

SCSI Bus Reset

Enables or disables SCSI bus reset. Some older devices require reset to operate properly. However, if disabled, can reduce system boot time. Also, in SCSI configurations with two or more SCSI initiators or hosts on the SCSI bus, reset should be disabled.

SCSI Configuration

When you select *SCSI Configuration* from the Main Menu, a settings matrix appears

- Press the Space bar to scroll through the list, then use the arrow keys to select a number.
- Type **y** for Yes and **n** for No or use the Space bar to toggle the Yes/No values.
- Press Esc to return to the Main Menu.

Advansys SCSI Ultra2/LVD Wide PCI Host Adapter Setup # Copyright 1999
Port D000 IRQ 10 SCSI ID:7 BIOS:C800 Serial#

SCSI Device ID	#0	#1	#2	#3	#4	#5	#6	#7
Start Unit Command	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SCSI Disconnect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Command Queing	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
BIOS Target Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wide Data Transfer	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Synch Transfer	80	80	80	80	80	80	80	80

SCSI Device ID	#8	#9	#10	#11	#12	#13	#14	#15
Start Unit Command	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SCSI Disconnect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Command Queing	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
BIOS Target Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wide Data Transfer	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Synch Transfer	80	80	80	80	80	80	80	80

```
[-><-] Cursor  [y] Yes  [n] No  [Spacebar] Toggle  [Esc]
```

SCSI Device ID

Displays the ID number (**0–7**) of the peripherals and host adapter(s) on the SCSI chain. The host adapter ID should always be **7**.

Start Unit Command

The **Yes** (default) or **No** value determines whether the host adapter will start each peripheral in an automatic sequence. Allowing the host adapter to control the start sequence protects the computer power supply from overload.

SCSI Disconnection

The **Yes** (default) or **No** value determines whether SCSI peripherals can connect to and disconnect from the bus. **Yes** enables multi-threading and multi-tasking, with less idle time and maximum efficiency.

Command Queuing

The **Yes** or **No** (default) value determines whether the host and peripherals can accept multiple command queues. Most peripherals do not implement command queuing, so AdvanSys recommends setting this option to **No**. If you assign **Yes** for Command Queuing, you must specify the values for Host Queue Size and Device Queue Size through the Adapter Configuration menu, discussed later in this chapter.

BIOS Target Control

The **Yes** (default) or **No** value determines from which SCSI peripherals the BIOS can boot. The host adapter must always be **Yes**. Assign **No** to any peripheral that should not be booted from.

Wide Data Transfer

Determines if transfers are narrow (8-bit) or wide (16-bit). Required if you use a converter to connect wide SCSI through a narrow cable. In this case, it should be set narrow.

Synchronous Transfer

Sets maximum speed that SCSI host will accept data from peripheral. In marginal configurations (configurations with marginal cable quality, older devices, or approaching the maximum number of peripherals supported), setting the transfer rate lower for a problem device can at times make that device functional.

SCSI Bus Scan

When you select *SCSI Bus Scan* from the Main Menu, the message “Searching for drives...” appears. When the scan is complete, a list of all connected peripherals on the SCSI bus appears, with associated information, including the ID number, manufacturer, type of peripheral, and the firmware version number of the peripheral. Press any key to return to the Main Menu.

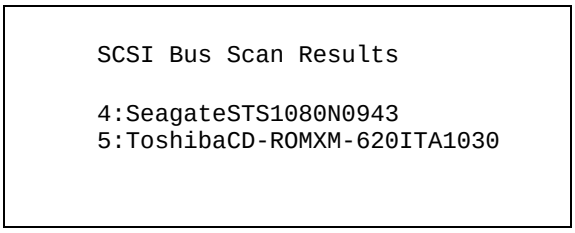


Figure 6-5: SCSI Bus Scan Results

Low Level Disk Format

WARNING: This option will destroy your boot sector!

When you select Low Level Disk Format from the Main Menu, a list of all media drives on the SCSI chain appears. If you are certain that you need to reformat your media drive, use the arrow keys to select a drive, and press Enter. A warning message appears: “Are you sure you want to format it?”

If you select **Yes** and press Enter, the selected media drive is reformatted, and the Main Menu reappears. If you select **No** and press Enter, the Main Menu reappears.

Restore Factory Defaults

When you select *Restore Factory Defaults* from the Main Menu, the AdvanSys default setup configuration values for the host adapter and SCSI are immediately restored.

Restore Previous Settings

When you select *Restore Previous Settings* from the Main Menu, the previously saved configuration values are immediately restored.

Save Changes and Continue

When you select *Save Changes and Continue* from the Main Menu, a question appears: “Do you want to save changes and continue?”

If you select **Yes** and press Enter, all changes you made will be saved to EEPROM, and the computer system will resume booting up.

If you select **No** and press Enter, the Main Menu reappears.

Discard Changes and Continue

When you select *Discard Changes and Continue* from the Main Menu, a question appears: “Do you want to discard changes and continue?”

If you select **Yes** and press Enter, all changes you made will be discarded, and the computer system will resume booting up.

If you select **No** and press Enter, the Main Menu reappears.

Appendix A

ASB3950U2W Two Channel Host Adapter

This Appendix describes the ASB3950U2W host controller. The ASB3950U2W is two SCSI controller cards in one. Through use of a PCI bridge chip, two separate PCI SCSI host controllers with related circuitry are on this board. One controller (or channel) is Ultra2; the other is UltraWide for legacy SCSI device support. The Ultra2 is a LVD that operates up to 80 MB/sec. The UltraWide is a SE that operates up to 40 MB/sec. With these controllers, up to 30 SCSI devices can be connected.

Installation

Having two SCSI controllers on one card can be a little more complicated than having just one, but not much more complicated. Most instructions for installation, configuration, and operation of single channel SCSI host adapters in the **PCI to Wide SCSI Host Adapter User Manual** also apply to the ASB3950U2W two channel host adapter. Some differences and items of interest to note include:

BIOS Configuration

Having two SCSI host controllers means that there are two SCSI host controller BIOS's to configure. Chapter 6 of the **PCI to Wide SCSI Host Adapter User Manual** describes how to access and configure the SCSI host adapter BIOS. All of Chapter 6 applies; however, the first instance of <Control A> accesses BIOS set up for the UltraWide SCSI host controller. If <Control A> is immediately keyed upon exit from UltraWide SCSI BIOS setup, you get access to the BIOS set up for the Ultra2 Wide SCSI host controller.

BIOS Flash Upgrade Utility

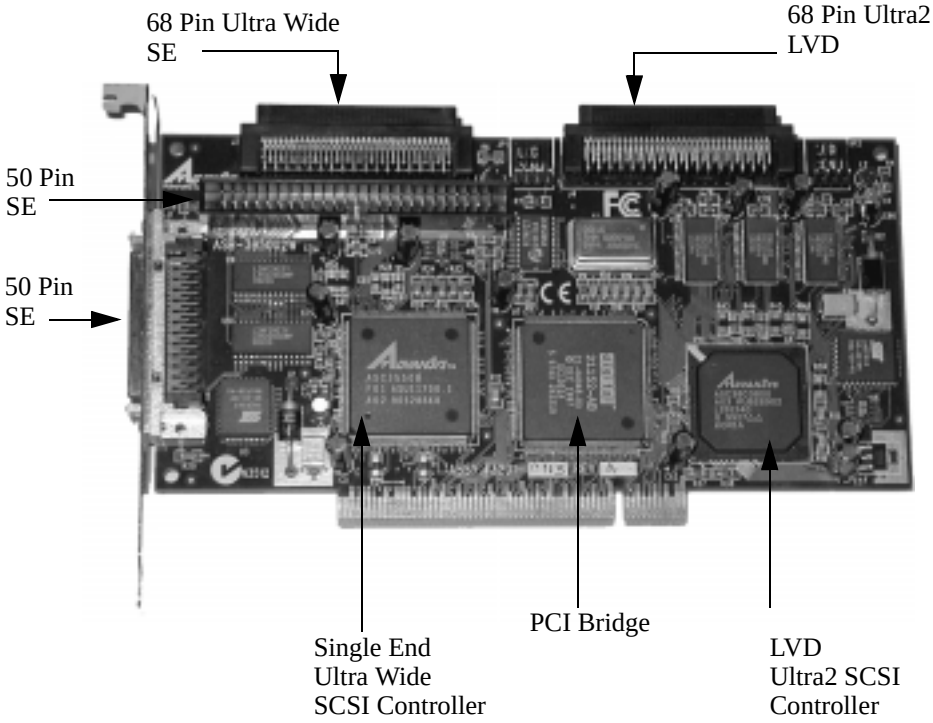
When upgrading BIOS using the BIOS flash upgrade utility, remember that there are two BIOS's and both BIOS's will need to be upgraded. Follow the instructions on the AdvanSys web site support area to upgrade the BIOS's of the ASB3950U2W.

Upgrading the Driver

Although there are two BIOS's for the ASB3950U2W, there is only one driver for a given operating system. For example, only one driver is required for Windows 98. When a driver update is required, only one driver needs to be upgraded and the upgrade process is the same as for other wide SCSI host controllers in the **PCI to Wide SCSI Host Adapter User Manual**.

ASB3950U2W Connections

The following drawing shows the connectors of the ASB3950U2W and to which SCSI host adapter controller each is connected. Please note that connecting a single ended (SE) SCSI device to the Ultra2 LVD bus will cause that SCSI bus to run in SE mode and at SE performance (40 MB/sec. maximum versus 80 MB/sec. maximum).



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