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# User's Reference

SCSI Card 2940U2W

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# ▾▾▾▾ SCSI Card 2940U2W

## User's Reference

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# Understanding SCSI

*SCSI* (pronounced "scuzzy") stands for Small Computer Systems Interface. SCSI is an industry standard computer interface for connecting SCSI peripherals (such as a hard disk drive, CD-ROM drive, or scanner) to a common SCSI bus.

A SCSI bus is an electrical pathway that consists of a SCSI adapter card (such as the SCSI Card 2940U2W) installed in a computer and one or more SCSI peripherals. SCSI cables are used to connect the peripherals to the SCSI adapter card.

For the SCSI bus to function properly, SCSI IDs must be assigned to SCSI devices (SCSI peripherals and SCSI card), and the SCSI bus must be properly terminated.

## SCSI IDs

Each peripheral attached to the SCSI Card 2940U2W, as well as the SCSI Card 2940U2W itself, must be assigned a unique SCSI ID number from 0 to 15. A SCSI ID uniquely identifies each SCSI device on the SCSI bus and determines priority when two or more devices are trying to use the SCSI bus at the same time.

Refer to the peripheral's documentation to set the SCSI ID. Here are some general guidelines for SCSI IDs:

- For internal SCSI peripherals, the SCSI ID usually is set by configuring a jumper on the peripheral.
- For external SCSI peripherals, the SCSI ID usually is set with a switch on the back of the peripheral.

- SCSI ID numbers don't have to be sequential, as long as the SCSI Card 2940U2W and each peripheral has a different number. For example, you can have an internal SCSI peripheral with ID 0, and an external SCSI peripheral with ID 6. Gaps in the sequence of numbers don't matter.
- SCSI ID 7 has the highest priority on the SCSI bus. The priority of the remaining IDs, in descending order, is 6 to 0, 15 to 8.
- The SCSI Card 2940U2W is preset to SCSI ID 7 and should not be changed. This gives it the highest priority on the SCSI bus.
- Most internal SCSI hard disk drives come from the factory preset to SCSI ID 0.
- If you have 8-bit SCSI peripherals, they must use SCSI IDs 0, 1, 2, 3, 4, 5, or 6. SCSI ID 0 is recommended for the first SCSI hard disk drive.
- If you are booting your computer from a SCSI hard disk drive connected to the SCSI Card 2940U2W, the Boot Target ID setting in the SCSI*Select* utility must correspond to the SCSI ID of the peripheral from which you are booting. By default, the Boot Target ID is set to *0*. See *Boot Device Options* on page 18 to change the Boot Target ID.
- In Windows® 95, you can use the Device Manager to view the SCSI ID (and other details) assigned to each SCSI device installed.
- If you installed Adaptec® EZ-SCSI® software, you can use the SCSI Explorer utility to view the SCSI ID (and other details) assigned to each SCSI device installed.

## SCAM Protocol

The SCSI Card 2940U2W supports the SCSI Configured AutoMatically (SCAM) protocol, which assigns SCSI IDs dynamically and resolves SCSI ID conflicts automatically when you start the computer. If your computer includes SCSI disk drives or other peripherals that support SCAM, you do not need to manually assign SCSI IDs to these peripherals. To enable SCAM support, see *Configuring the SCSI Card 2940U2W with SCSISelect* on page 15.

## Terminating the SCSI Bus

To ensure reliable communication on the SCSI bus, the ends of the SCSI bus must be properly terminated. This is accomplished when the peripheral at the end of each cable, or the end of the cable itself, has a terminator installed (or enabled). The peripherals between the ends of each cable must have its terminator removed (or disabled).

Since the method for terminating a SCSI peripheral can vary widely, refer to the peripheral's documentation for instructions on how to enable or disable termination. Here are some general guidelines for termination:

- Termination on internal SCSI peripherals usually is controlled by manually setting a jumper or a switch on the peripheral, or by physically removing or installing one or more resistor modules on the peripheral.
- Termination on external SCSI peripherals usually is controlled by installing or removing a SCSI terminator. On some external peripherals, termination is controlled by setting a switch on the back of the drive.
- By default, termination on the SCSI Card 2940U2W itself is automatic (the preferred method). To manually set termination on the SCSI Card 2940U2W, see *Configuring the SCSI Card 2940U2W with SCSISelect* on page 15.
- Internal Ultra2 peripherals are set at the factory with termination disabled and cannot be changed. Proper termination for internal Ultra2 peripherals is provided by the built-in terminator at the end of the Ultra2 internal SCSI cable.
- Most non Ultra2 SCSI peripherals come from the factory with termination enabled.

# Troubleshooting

Most problems can be resolved by following the recommendations in *Troubleshooting Checklist* below. If you still experience problems after following the recommendations, continue with the remainder of this section.

## Troubleshooting Checklist

Most problems with using the SCSI Card 2940U2W result from errors in preparing and connecting peripherals on the SCSI bus. If you have problems, check these items first.



**Note:** If you have problems with a specific SCSI peripheral when other connected SCSI peripherals are working correctly, please contact the manufacturer of the problem peripheral for troubleshooting information.

- Are all SCSI peripherals turned on?
- Are all SCSI cables and power cables properly connected?
- Is the SCSI Card 2940U2W firmly seated and secured in the PCI expansion slot?
- Is the PCI expansion slot PCI Rev. 2.1 or higher compliant and does it support Bus Mastering?
- Are all SCSI peripherals and the SCSI Card 2940U2W assigned unique SCSI IDs? (See Setting Up SCSI Peripherals on page 3.)
- Are all SCSI peripherals terminated properly? (See Setting Up SCSI Peripherals on page 3.)
- If your computer allows you to set up configuration options when the computer first boots up (that is, through CMOS setup), are the following options set up as specified?
  - If there is an Interrupt Type or Interrupt Line option in the Setup program, select Int-A or Interrupt Type = A (you may also be required to change a motherboard jumper setting).
  - If there is a Triggering Interrupt option, select Level.

- If there is an option to enable or disable bus mastering for the PCI slots, select Enabled.
- If there is an option to enable or disable individual PCI slots, be sure the slot in which you install the SCSI Card 2940U2W is Enabled.
- If your computer has a combination of ISA (or EISA) boards and PCI boards, you may need to mark the IRQs used by ISA/EISA boards as Used so the computer BIOS will not try to assign these IRQs to other PCI boards.
- In some computers the BIOS reserves a set of available IRQs for PCI boards, and you have to assign these IRQs manually.



**Note:** Some configuration options apply to a specific PCI bus slot, so if you change any option be sure you are applying the change to the correct slot. Check your computer documentation to determine the correct PCI bus slot.

## Troubleshooting in Windows 95

**When I start Windows 95, the system locks up when the Windows logo is displayed. How can I get the system to start so that I can verify that the SCSI card is functioning normally?**

1. Start or restart your computer. View the messages that appear onscreen.
2. When the message "Starting Windows 95" appears, press and release the **F8** function key while the text is on your screen.
3. From the menu that is displayed, select **Safe Mode.** (It may take several minutes for Windows 95 to load.)
4. If the system completes the boot to the desktop, the core software is functional; resources, software conflicts and/or hardware need to be checked.
5. If the system still fails to boot, and the boot drive is on an existing IDE or SCSI controller, shut down the system, remove the SCSI Card 2940U2W, and restart the computer.

6 Verify an IRQ is available by viewing resources in System Properties.

7 Verify the Operating System is set to Optimal Performance by checking the Performance tab under System Properties.

**How can I tell if the SCSI Card 2940U2W software driver is loading properly?**

1 Click the **Start** button, point to **Settings**, then click **Control Panel**.

2 Double-click the **System** icon.

3 Click the **Device Manager** tab.

4 Double-click the **SCSI Controller** icon. The software driver for the SCSI Card 2940U2W is listed as "Adaptec AHA-2940U2W PCI Ultra2 SCSI Controller."

- If the driver is listed, the SCSI Card 2940U2W driver is loading properly.
- If the driver is listed but has an exclamation mark inside a yellow circle, the software driver may be in conflict with other hardware using the same resources. Double-click the icon to see the device status and possible solutions.
- If the driver is listed but has an "X" inside a red circle, the SCSI Card 2940U2W software driver is disabled and isn't loading (see below).
- If the SCSI Controller icon or the SCSI Card 2940U2W software driver is not listed, reinstall the driver (see below).



**Note:** Software upgrades (including downloadable drivers) for Adaptec products are available on the Adaptec Web Site at *http://www.adaptec.com*.

**An "X" inside a red circle appears with the SCSI Card 2940U2W software driver in Device Manager. What does this mean?**

The SCSI Card 2940U2W software driver is disabled and isn't loading. To enable the driver:

1. Double-click the SCSI Card 2940U2W software driver in Device Manager.
2. Under the **General** tab, check the Original Configuration (current) box.

**What if there is no SCSI controller icon under Device Manager, or the software driver for the SCSI Card 2940U2W does not appear under Device Manager?**

If the SCSI controllers icon or the software driver do not appear:

1. Double-click the **Add New Hardware** icon in Control Panel.
2. Select **Yes** on the second screen of the Add New Hardware Wizard to have Windows search for the SCSI Card 2940U2W.
3. Follow the onscreen instructions.

If Windows 95 does not detect the SCSI Card 2940U2W, run the Add New Hardware Wizard again:

1. Double-click the **Add New Hardware** icon in Control Panel.
2. Select **No** on the second screen of the wizard.
3. Select **SCSI controllers** on the next screen.
4. Select "Adaptec AHA-2940U2W PCI Ultra2 SCSI Controller."

If "Adaptec AHA-2940U2W PCI Ultra2 SCSI Controller" is not on the list, you may be able to install the driver from the Adaptec EZ-SCSI Setup Diskette. Follow these steps:

1. Place the Adaptec EZ-SCSI Setup Diskette in the floppy disk drive.
2. Double-click the **Add New Hardware** icon in Control Panel.
3. Select **No** on the second screen of the wizard.
4. Select **SCSI controllers** on the next screen.
5. Click the **Have Disk** button, then click the **Browse** button.

6 Look in the *drivers**storage* directory of the Windows 95 CD-ROM (or the root directory of the EZ-SCSI Setup Diskette) and select the model of your SCSI card.

**How can I check the status of a resource (for example, IRQ, Memory, I/O)?**

1 Click the **Start** button, point to **Settings**, then click **Control Panel**.

2 Double-click the **System** icon.

3 Click the Device Manager tab.

4 Double-click the **Computer** icon.

5 On the View Resources tab, click the option button for the type of resource you want to check.

6 The setting and the hardware using the setting are displayed.

- If a specific resource is not listed, the resource is not used by a device.
- If a resource is listed more than once, the resource is used by more than one device.
- If a resource is used by an unknown device, the resource is used but the device using the resource cannot be detected.

**How do I use the Hardware Conflict Troubleshooter in Windows 95?**

1 Click the **Start** button, then click **Help**.

2 From the Contents tab, double-click **Troubleshooting**.

3 Double-click **If you have a hardware conflict**.

4 Follow the step-by-step instructions in the Windows Help window.

## Common Error Messages

The following messages may appear at bootup:

**"Device connected, but not ready"**
The host received no answer when it requested data from an installed SCSI peripheral.

- Run SCSI*Select*® and set the Send Start Unit Command to **Yes** for the particular SCSI peripheral.
- Make sure the drive is set to spin up when the power is switched on. (See the documentation for the peripheral.)

**"Start unit request failed"**
The SCSI Card BIOS was unable to send a Start Unit Command to the peripheral.

- Run SCSI*Select* and disable the Send Start Unit Command for the peripheral.

**"Time-out failure during..."**
An unexpected time-out occurred.

- Verify the SCSI bus is properly terminated.
- Verify all cables are properly connected.
- Try disconnecting the SCSI peripheral cables from the SCSI card and then starting the computer. If the computer successfully restarts, one of the SCSI peripherals may be defective.

# Using the SCSI Card 2940U2W and SCSI Peripherals

This section provides useful information on using the SCSI Card 2940U2W and your SCSI peripherals. For specific information, refer to the documentation that came with your SCSI peripheral.

## Using SCSI Peripherals

### Hard Disk Drives

- Every SCSI hard disk drive must be physically low-level formatted, partitioned, and logically formatted before it can be used to store data. SCSI hard disks are physically low-level formatted at the factory and do not usually need to be formatted again.

  If you connect a new SCSI hard disk drive to your SCSI card, you must partition and logically format the drive. For DOS and Windows (3.x and 95) use the DOS Fdisk and Format commands (see your computer, DOS, and Windows documentation). For other operating systems, see your operating system documentation.

- If you are booting from a SCSI hard disk drive, make sure the Hard Disk (or Drives) setting in your computer's CMOS setup program is set to **None** or **No Drives Installed**, as is required for SCSI hard disk drives. See your computer documentation for details.

- If both SCSI and non-SCSI (for example, IDE) disk drives are installed, then the non-SCSI disk drive is typically the boot drive. If your computer supports BBS (BIOS Boot Specification), both SCSI and non-SCSI disk drives can coexist and you can specify which drive to boot from. Refer to your computer documentation for more information.

### Ultra2 Hard Disk Drives

- We recommend keeping your Ultra2 hard disk drives separate from your non Ultra2 peripherals. Connecting a non Ultra2 hard disk drive to the Ultra2 connector on the SCSI Card 2940U2W causes the Ultra2 SCSI segment of the SCSI bus to drop down to Ultra SCSI performance levels (40 MBytes/sec).
- Do not connect your Ultra2 hard disk drives to connectors other than the Ultra2 connectors on the SCSI Card 2940U2W.

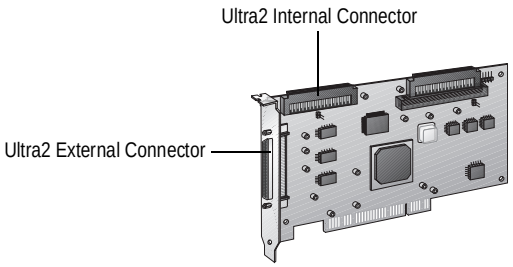



Figure 1. Ultra2 Internal and External Connectors

- Internal Ultra2 SCSI peripherals come from the factory with termination disabled and cannot be changed. Proper termination is provided by the built-in terminator at the end of the Ultra2 internal SCSI cable provided in the kit.

## Scanners

- You will need to install the scanner manufacturer's proprietary software drivers. See your scanner's documentation for details.

## SCSI Peripheral Display at Bootup

At bootup, each peripheral attached to the SCSI Card 2940U2W is identified by SCSI ID, name, the SCSI segment to which it is attached (Ultra2 or Fast/Ultra), and the mode (LVD-Ultra2 or SE-Ultra) in which it is running. For example, a message similar to the following appears on the screen at bootup:

```
SCSI ID:0  Seagate ST39173LC  Ultra2  LVD
```

In this example, the peripheral is assigned SCSI ID 0; "Seagate ST39173LC" refers to the name of the peripheral; "Ultra2" indicates that the peripheral is attached to the Ultra2 SCSI segment; "LVD" means that the peripheral is running in LVD-Ultra2 mode.

LVD (Low Voltage Differential) is the enabling technology for Ultra2. If the peripheral is running in LVD-Ultra2 mode, this indicates that the peripheral's maximum transfer rate is set at the Ultra2 SCSI performance level (80 MBytes/sec). SE (Single-Ended) is the enabling technology for Fast SCSI and Ultra SCSI. If the peripheral is running in SE-Ultra mode, this indicates that the peripheral's maximum transfer rate is set at the Ultra SCSI performance level (40 MBytes/sec).



**Note:** If any peripheral is attached to the Ultra2 SCSI segment and is running at SE mode, one or more Wide Ultra/Ultra peripherals is attached to the Ultra2 SCSI segment and is causing the Ultra2 SCSI segment to run at speeds up to 40 MBytes/sec instead of 80 MBytes/sec.

## Installing Multiple SCSI Cards

- You can install multiple SCSI cards in your computer; you are limited only by the available system resources (for example, IRQ settings, I/O port addresses, BIOS addresses, and so forth) not used by other cards installed in your computer.
- Each SCSI card you install forms a separate SCSI bus with a different set of SCSI peripherals. SCSI IDs can be reused as long as the ID is assigned to a peripheral on a different SCSI card (for example, each SCSI card can have a peripheral with SCSI ID 2).

- If you have two or more SCSI cards, enable the BIOS on the boot SCSI card only; disable the BIOS on the remaining SCSI cards.

## Connecting the LED Connector

(*Optional feature*) Most computers have an LED disk activity light on the front panel. If you choose to disconnect the cable from the LED connector on the motherboard and connect it to the LED connector on the SCSI card, the LED on the front panel of the computer will light whenever there is activity on the SCSI bus (see Figure 2).



**Note:** If you are using non-SCSI disk drives (for example, IDE), you may not want to connect your computer's LED to the SCSI card, since the LED will no longer indicate non-SCSI disk activity.

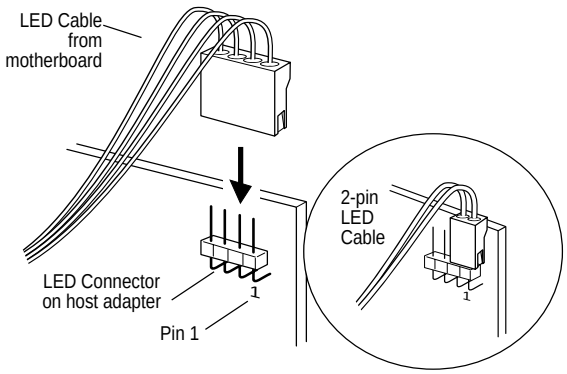



Figure 2. Connecting the LED Cable to the LED Connector

## Using SCSI and IDE (or EIDE) Peripherals

- All Adaptec SCSI cards can coexist with another controller (IDE, EIDE, RLL, etc.) installed in the computer.
- If you have both an IDE hard disk drive and a SCSI hard disk drive, the IDE drive is typically the boot drive. In this case, disable the BIOS on the SCSI card (see *Advanced Configuration Options* on page 20). If your computer supports BBS (BIOS Boot Specification), both SCSI and non-SCSI disk drives can coexist and you can specify which drive to boot from. Refer to your computer documentation for more information.
- You cannot connect an IDE peripheral to a SCSI card, or a SCSI peripheral to an IDE card (controller).
- Disable the BIOS on the SCSI card if no SCSI hard disk drives are installed (see *Advanced Configuration Options* on page 20).

## Replacing a Non-Adaptec SCSI Card with an Adaptec SCSI Card

- SCSI is standard, but how data is translated on to a hard disk drive is not. Each SCSI card manufacturer uses its own translation schemes for writing data to a disk. To use a hard disk drive previously connected to a non-Adaptec SCSI card, low-level format the drive after connecting to the Adaptec SCSI card. (See *Using SCSI Disk Utilities* on page 22.)



**Caution:** A low-level format destroys all data on the drive. Be sure to back up your data before performing a low-level format.

# Configuring the SCSI Card 2940U2W with SCSI*Select*

SCSI*Select*, included with the SCSI Card 2940U2W, enables you to change SCSI settings without opening the computer or handling the card. SCSI*Select* also enables you to low-level format or verify the disk media of your SCSI hard disk drives. Table 1 lists the available and default settings for each SCSI*Select* option.



**Note:** The default settings are appropriate for most systems. Run SCSI*Select* if you need to change or view current settings, or if you would like to run the SCSI disk utilities. See the descriptions of each option on page 17.

Table 1. SCSI*Select* Settings

| SCSI*Select* Option | Available Settings | Default Setting |
|---|---|---|
| **Basic Host Adapter Settings:** | | |
| Host Adapter SCSI ID | 0-15 | 7 |
| SCSI Parity Checking | Enabled, Disabled | Enabled |
| Host Adapter SCSI Termination: | | |
| Ultra2-LVD/SE Connector | Automatic, Enabled, Disabled | Automatic |
| Fast/Ultra-SE Connector | Automatic, Low ON/High ON, Low OFF/High OFF, Low OFF/High ON | Automatic |
| **Boot Device Settings:** | | |
| Boot SCSI ID | 0-15 | 0 |
| Boot LUN Number[1] | 0-7 | 0 |
| **SCSI Device Configuration:** | | |
| Initiate Sync Negotiation | Yes, No | Yes (Enabled) |
| Maximum Sync Transfer Rate | 80.0, 53.4, 40.0, 32.0, 26.8, 20.0, 16.0, 13.4, 10.0 | 80.0 |
| Enable Disconnection | Yes, No | Yes (Enabled) |
| Initiate Wide Negotiation | Yes, No | Yes (Enabled) |

Table 1. SCSI*Select* Settings *(Continued)*

| SCSI*Select* Option | Available Settings | Default Setting |
|---|---|---|
| Send Start Unit Command | Yes, No | Yes (Enabled) |
| BIOS Multiple LUN Support | Yes, No | No (Disabled) |
| Include in BIOS Scan | Yes, No | Yes (Enabled) |
| **Advanced Host Adapter Settings:** | | |
| "Plug-and-Play" SCAM Support | Enabled, Disabled | Disabled |
| Reset SCSI Bus at IC Initialization | Enabled, Disabled | Enabled |
| Extended BIOS Translation for DOS Drives > 1 GByte[2] | Enabled, Disabled | Enabled |
| Host Adapter BIOS | Enabled, Disabled | Enabled |
| Support Removable Disks Under BIOS as Fixed Disks[2] | Boot Only, All Disks, Disabled | Boot Only |
| Display <Ctrl> <A> Messages during BIOS Initialization[2] | Enabled, Disabled | Enabled |
| BIOS Support for Bootable CD-ROMs[2] | Enabled, Disabled | Enabled |
| BIOS Support for Int 13 Extensions[2] | Enabled, Disabled | Enabled |

[1] Setting is valid only if Multiple LUN Support is enabled.
[2] Settings are valid only if host adapter BIOS is enabled.

## Starting SCSI*Select*

Follow these steps to start SCSI*Select*:

1. Turn on or restart your system.

   During the startup process, pay careful attention to the messages that appear on your screen.

2. When the following message appears on your screen, press the **Ctrl-A** keys simultaneously (this message appears for only a few seconds):

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

3. From the menu that appears, use the ↑ and ↓ keys to move the cursor to the option you want to select, then press **Enter**.



**Note:** If you have difficulty viewing the display, press **F5** to toggle between color and monochrome modes. (This feature may not work on all monitors.)

### Exiting SCSI*Select*

Follow these steps to exit SCSI*Select*:

1. Press **Esc** until a message prompts you to exit (if you changed any settings, you are prompted to save the changes before you exit).
2. At the prompt, select **Yes** to exit, then press any key to reboot the computer. Any changes you made in SCSI*Select* take effect after the computer boots.

## Using SCSI*Select* Settings

To select an option, use the ↑ and ↓ keys to move the cursor to the option, then press **Enter**.

In some cases, selecting an option displays another menu. You can return to the previous menu at any time by pressing **Esc**.

To restore the original SCSI*Select* default values, press **F6** from the main SCSI*Select* screen.

### Basic Host Adapter Settings

- **Host Adapter SCSI ID**—Sets the SCSI ID for the SCSI card. The SCSI Card 2940U2W is set at 7, which gives it the highest priority on the SCSI bus. We recommend you do not change this setting.
- **SCSI Parity Checking**—When set to **Enable**, verifies the accuracy of data transfer on the SCSI bus. Leave this setting enabled unless any SCSI peripheral connected to the SCSI Card 2940U2W does not support SCSI parity.

- **Host Adapter SCSI Termination**—Determines the termination setting for the SCSI card. The default setting for both the Ultra2-LVD/SE connector and Fast/Ultra-SE connector is **Automatic**. We recommend that you leave this setting at Automatic. If you want to manually change this setting for the Fast/Ultra-SE connector, Table 2 lists the recommended configurations.

Table 2. Host Adapter SCSI Termination Configuration

| If SCSI Peripherals are Connected to These Fast/Ultra-SE Connectors on the SCSI Card 2940U2W... | ...Use this Setting |
|---|---|
| 68-pin internal connector only | Low ON/High ON |
| 50-pin internal connector only | Low ON/High ON |
| 50-pin and 68-pin internal connectors | Low OFF/High ON |

## Boot Device Options

- **Boot Target ID**—Specifies the SCSI ID of your boot device.
- **Boot LUN Number**—Specifies which LUN (Logical Unit Numbers) to boot from on your boot device. Multiple LUN Support must be enabled (see *Advanced Configuration Options* on page 20).

## SCSI Device Configuration



**Note:** To configure settings for a SCSI peripheral, you must know its SCSI ID (see *Using SCSI Disk Utilities* on page 22).

- **Initiate Sync Negotiation**—When set to **Yes**, initiates synchronous data transfer negotiation (Sync Negotiation) between the peripheral and SCSI card. Leave this setting set to **Yes** unless any attached SCSI peripheral connected to the SCSI card does not support synchronous negotiation.
- **Maximum Sync Transfer Rate**—Determines the maximum synchronous data transfer rate the SCSI card supports. Use the maximum value of 80.0. If your peripheral is not Ultra SCSI, select a transfer rate of 10.0.
- **Enable Disconnection**—When set to **Yes**, allows the SCSI peripheral to disconnect from the SCSI bus. Leave the setting at **Yes** if two or more SCSI peripherals are connected to the SCSI card. If only one SCSI peripheral is connected, changing the setting to **No** results in slightly better performance.
- **Initiate Wide Negotiation**—When set to **Yes**, the SCSI card attempts 16-bit data transfer (wide negotiation). When set to **No**, the SCSI card uses 8-bit data transfer unless the SCSI peripheral requests wide negotiation.



**Note:** Set Initiate Wide Negotiation to **No** if you are using an 8-bit SCSI peripheral that hangs or exhibits other performance problems with 16-bit data transfer.

- **Send Start Unit Command**—When set to **Yes**, sends the Start Unit Command to the SCSI peripheral at bootup.
- **BIOS Multiple LUN Support**—When set to **Yes**, the SCSI card BIOS provides boot support for a SCSI peripheral with multiple LUNs. Leave this setting set to **No** if your boot device does not have multiple LUNs.
- **Include in BIOS Scan**—When set to **Yes**, the SCSI card BIOS includes the peripheral as part of its BIOS scan at bootup.

## Advanced Configuration Options



**Note:** Do not change the Advanced Host Adapter Settings unless absolutely necessary.

- **Plug-and-Play SCAM Support**—When set to **Enable**, the SCSI card automatically assigns SCSI IDs to SCSI peripherals that support the SCAM protocol (see *SCSI IDs* on page 1). The default is **Disable**, but you can set it to **Enable** even if you have a non-SCAM peripheral.
- **Reset SCSI Bus at IC Initialization**—When set to **Enable**, the SCSI card generates a SCSI bus reset during its power-on initialization and after a hard reset.
- **Extended BIOS Translation for DOS Drives > 1 GByte**—When set to **Enable**, provides an extended translation scheme for SCSI hard disks with capacities greater than 1 GByte. This setting is necessary only for MS-DOS 5.0 or above; it is not required for other operating systems, such as NetWare or UNIX.The extended translation scheme supports disk drives as large as 8 GBytes.

  To partition a disk larger than 1 GByte controlled by the SCSI card BIOS, use the MS-DOS Fdisk command.

  **Caution:** Back up your disk drives before changing the translation scheme.

- **Host Adapter BIOS (Configuration Utility Reserves BIOS Space)**—Enables or disables the SCSI card BIOS.
  - Set to **Enable** if you boot from a SCSI disk drive connected to the SCSI card.
  - Set to **Disable** if the peripherals on the SCSI bus (for example, CD-ROM drives) are controlled by software drivers and do not need the BIOS.
- **Support Removable Disks Under BIOS as Fixed Disks**—Determines which removable-media drives are supported by the SCSI card BIOS. Choices are as follows:

- **Boot Only**—Only the removable-media drive designated as the boot device is 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. Software drivers are required because the drives are not controlled by the BIOS.



**Caution:** *Do not* remove a removable-media cartridge from a SCSI drive controlled by the SCSI card BIOS while the drive is on. You may lose data. To allow removability of the media while the drive is on, install the removable-media software driver and set **Support Removable Disks Under BIOS as Fixed Disks** to **Disabled**.

- **Display <Ctrl> <A> Messages during BIOS Initialization**—When set to **Enable**, the SCSI card BIOS displays the Press <Ctrl> <A> for SCSISelect (TM) Utility! message on your screen during system bootup. If this setting is disabled, you can still invoke the SCSI*Select* Utility by pressing **<Ctrl> <A>** after the SCSI card BIOS banner appears.
- **BIOS Support for Bootable CD-ROMs**—When set to **Enable**, the SCSI card BIOS allows booting from a CD-ROM drive.
- **BIOS Support for Int 13 Extensions**—When set to **Enable**, the SCSI card BIOS supports Int 13h extensions as required by Plug-and-Play. The setting can be either enabled or disabled if your system is not Plug-and-Play.

## Using SCSI Disk Utilities

To access the SCSI disk utilities, follow these steps:

1. Select the **SCSI Disk Utilities** option from the menu that appears after starting SCSI*Select*. SCSI*Select* scans the SCSI bus (to determine the devices installed) and displays a list of all SCSI IDs and the devices assigned to each ID. (See *SCSI Peripheral Display at Bootup* on page 12 for a definition of the messages displayed.)
2. Use the ↑ and ↓ keys to move the cursor to a specific ID and device, then press **Enter**.
3. A small menu appears, displaying the options Format Disk and Verify Disk Media.

   - **Format Disk**—Allows you to perform a low-level format on a hard disk drive. *Most SCSI disk devices are preformatted at the factory and do not need to be formatted again*. Each hard disk drive must be low-level formatted before you can use your operating system's partitioning and file preparation utilities, such as MS-DOS Fdisk and Format.



**Caution:** 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 Disk Media**—Allows you to scan the media of a hard disk drive for defects. If the utility finds bad blocks on the media, it prompts you to reassign them; if you select *yes*, those blocks are no longer used. You can press **Esc** at any time to abort the utility.

# Obtaining SCSI Cables and Adapters

High-quality cables are required in high-performance SCSI systems to ensure data integrity. Adaptec provides the highest quality SCSI cables and adapters designed specifically for use with Adaptec SCSI cards. For purchasing information, contact Adaptec at 1-800-442-SCSI (7274), Monday to Friday, from 6 a.m. to 5 p.m. (Pacific Time).

## External Cables

Table 3. External Cables

| Description | Part Number |
|---|---|
| High-Density 50-pin to High-Density 50-pin Cable (1 m) | ACK-H2H |
| High-Density 50-pin to Centronics 50-pin Cable (1 m) | ACK-H2L |
| High-Density 68-pin to High-Density 68-pin Cable (1 m) | ACK-W2W-E |
| High-Density 68-pin Wide Ultra2 (1 m) | ACK-WU2-1M |
| High-Density 68-pin Wide Ultra2 (3 m) | ACK-WU2-3M |
| Standard 50-pin Internal-to-High-density 50-pin External Ultra SCSI Cable With Two Internal Connectors (1.5 m) | ACK-50I-50E |

### External Connector Diagrams

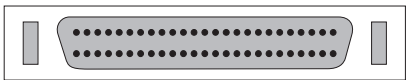


Figure 3. High-Density 50-pin

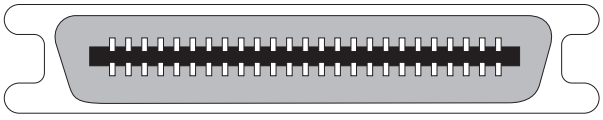


Figure 4. Centronics 50-pin

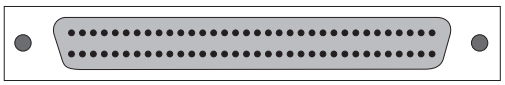


Figure 5. Ultra2 and High-Density 68-pin

# Internal Cables

Table 4. Internal Cables

| Description | Part Number |
|---|---|
| 3 position (2 peripherals + adapter card), standard 50-pin Internal Ultra SCSI (1 m) | ACK-INT3-PNP |
| 5 position (4 peripherals + adapter card), standard 50-pin Internal Ultra SCSI (1.5 m) | ACK-INT5-PNP |
| 5 position (4 peripherals + adapter card), High-Density 68-pin Internal Ultra2 SCSI (1.5 m) | ACK-68I-WU2 |
| 5 position (4 peripherals + adapter card), High-Density 68-pin connectors (1.1 m) | ACK-W2W-5I |

## Internal Connector Diagrams

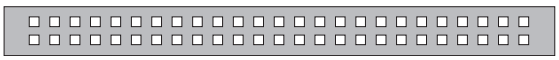


Figure 6. Standard 50-pin

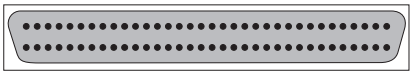


Figure 7. Ultra2 and High-Density 68-pin

# Cabling Examples

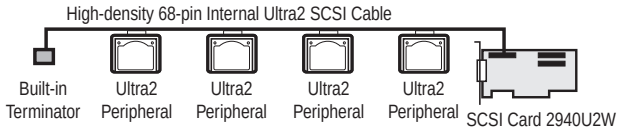



Figure 8. Connecting Ultra2 Internal Peripherals

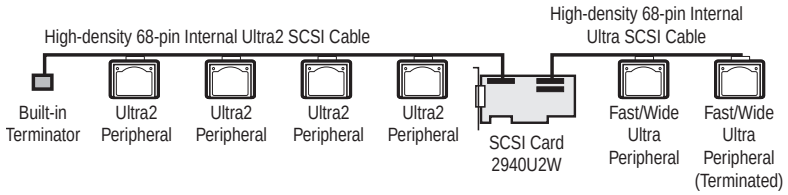



Figure 9. Connecting Ultra2 and Fast/Wide Ultra Internal Peripherals

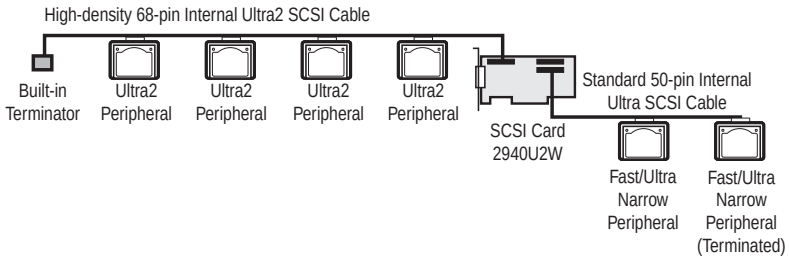



Figure 10. Connecting Ultra2 and Fast/Ultra Narrow Internal Peripherals

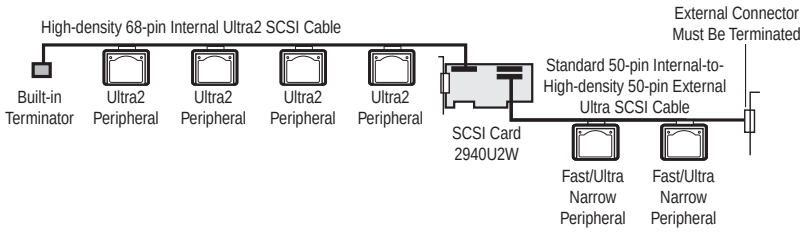



Figure 11. Connecting Ultra2 and Fast/Ultra Narrow Internal Peripherals

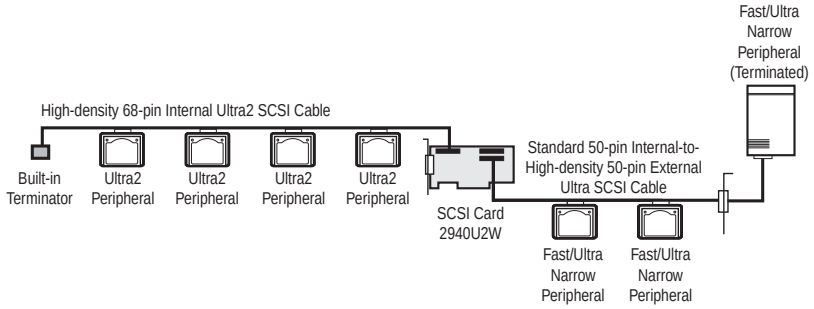



Figure 12. Connecting Ultra2 and Fast/Ultra Narrow Internal Peripherals, and a Fast/Ultra Narrow External Peripheral

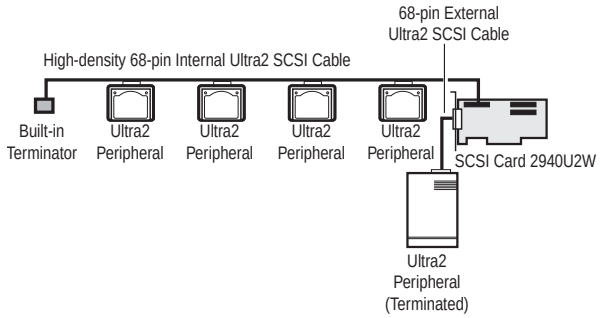



Figure 13. Connecting Ultra2 Internal and External Peripherals

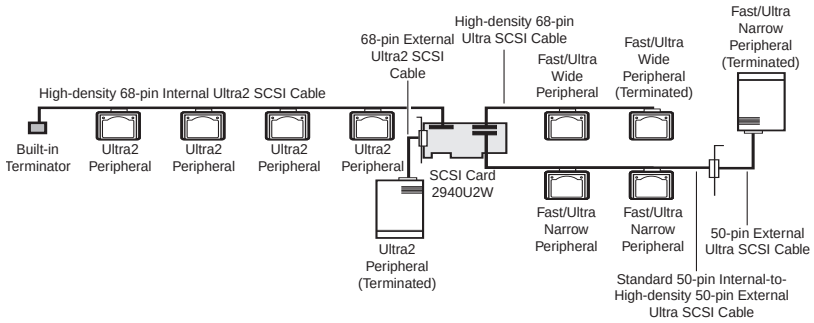



Figure 14. Connecting Ultra2, Fast/Wide Ultra, Fast/Ultra Narrow Internal Peripherals; and Ultra2, Fast/Ultra Narrow External Peripherals

## Maximum Cable Lengths

The total length of cabling (internal and external) on the SCSI bus may not exceed the maximum lengths listed in Table 5.

Table 5. Maximum Cable Lengths

| Maximum Cable Length | Data Transfer Rate | Maximum Peripherals Supported |
|---|---|---|
| 12 m (29.4 ft) | Ultra2 (80 MBytes/sec)[1] | 15 |
| 3 m (9.8 ft) | Fast SCSI (10 MBytes/sec) | 7 |
| 3 m (9.8 ft) | Wide SCSI (20 MBytes/sec) | 15 |
| 3 m (9.8 ft) | Ultra SCSI (40 MBytes/sec for 16-bit, 20 MBytes/sec for 8-bit) | 4 |
| 1.5 m (4.9 ft) | Ultra SCSI (40 MBytes/sec for 16-bit, 20 MBytes/sec for 8-bit) | 5-8[2] |

[1] Mixing Fast/Ultra peripherals with Ultra2 peripherals causes the entire SCSI bus to default to Ultra SCSI speeds and cable requirements.

[2] Ultra SCSI data transfer rates do not currently support more than eight devices.

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- Increase the separation between equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.

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