SYM8751SPE
PCI to Ultra SCSI
Host Adapter

User's Guide
Version 1.0

Federal Communications Commission (FCC)

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Declaration of Conformity

This device complies with Part 15 of the FCC Rules. 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.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful 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:

•   Reorient or relocate the receiving antenna.

•   Increase the separation between the equipment and the receiver.

•   Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

•   Consult the dealer or an experienced radio/TV technician for help.

Shielded cables for SCSI connection external to the cabinet are used in the compliance testing of this Product. Symbios Logic is not responsible for any radio or television interference caused by unauthorized modification of this equipment or the substitution or attachment of connecting cables and equipment other than those specified by Symbios Logic. The correction of interferences caused by such unauthorized modification, substitution, or attachment will be the responsibility of the user.

The Symbios Logic SYM8751SPE is tested to comply with FCC standards for home or office use.

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Preface

About This Book

This User's Guide is intended to explain how to install and configure the Symbios Logic SYM8751SPE PCI to Ultra SCSI Host Adapter in a PCI computer system. Basic information on setting up the SCSI bus is also provided.

Symbios Logic Technical Support

Your entire Symbios Logic host adapter solution has been designed for ease of use. However, if you require additional assistance, please contact the Symbios Logic Technical Support Hot Line at (719) 533-7230. The hours of operation are from 7:30 a.m. to 4:30 p.m. (MST), Monday through Friday. You may also send an e-mail to *support@symbios.com*.

Before calling or sending an e-mail, please have the following information:

* Which Symbios Logic host adapter are you installing?
* What system are you installing into?
* What SCSI devices are you connecting to the bus?
* How is your system configured?

It is also helpful if you are at your system when you call.

Revision Record

Page No.	Date	Remarks
n/a	12/97	Rev 1.0 First official release.

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General Description

The SYM8751SPE PCI to Ultra SCSI host adapter board provides a SCSI-3, Ultra SCSI interface to PCI computer systems that require BIOS support on the add-in SCSI adapter. Installing this adapter in your PCI system allows connection of SCSI devices over a SCSI bus. It has all of the functionality of the SYM8751SP with the addition of features to enable it to comply with Microsoft's PC 97 Hardware Design Guide.

The SYM8751SPE board provides a 16-bit, single-ended, SCSI interface with an onboard 128K Flash BIOS and serial EEPROM that can support both legacy Fast SCSI devices, and the newest Ultra SCSI devices. It is completely backwards compatible with the existing SYM8251S and SYM8751SP host adapter.

The Symbios Logic SCSI Device Management System (SDMS™) software is used to operate the board, but the design of the board does not prevent other software from being written and used with it. BIOS support for this host adapter is incorporated on the board in a Flash BIOS.

This guide, along with the *Symbios Logic SDMS User's Guide*, contain product information and installation instructions to help you gain the full benefits of your SYM8751SPE PCI to Ultra SCSI host adapter for your computer system.

Features

PCI Interface

- Full 32-bit DMA bus master
- Zero wait-state bus master data bursts
- Universal PCI bus voltage support

SCSI Interface

- 16-bit single-ended
- Automatically enabled active termination

- Three connectors:
  68-pin high density external
  68-pin right-angle high density internal
  50-pin vertical low density internal

- Ultra SCSI data transfer capability

- Wide SCSI

- SCSI Plug and Play

- SCAM (SCSI Configured AutoMatically)

- Serial EEPROM for SCSI Configuration information storage

- **SCSI activity LED connector**

- 128K Flash BIOS

Board Characteristics

- PCI board dimensions,
  127 x 82.55 mm (5.00 x 3.25 inches)

- PCI 5 Volt or 3.3 Volt signaling environment

- ISA/EISA bracket types

Descriptions

The PCI Interface PCI is a high-speed standard local bus for interfacing a number of I/O components to a PC processor and memory subsystem. The PCI functionality for your SYM8751SPE is contained within the Symbios Logic SYM53C875JE PCI-SCSI I/O Processor chip. The SYM53C875JE connects directly to the PCI bus and generates timing protocol in compliance with the PCI specification.

The PCI interface operates as a 32-bit DMA bus master. The connection is made through the edge connector J1 (see Figure 2-1). The signal definitions and pin numbers conform to the PCI Local Bus Specification Revision 2.1 standard. The SYM8751SPE conforms to the PCI universal signaling environment for a 5 volt or 3.3 volt PCI bus.

The SCSI Interface   The SCSI functionality for your SYM8751SPE is contained within the Symbios Logic SYM53C875JE PCI-SCSI I/O Processor chip. The SYM53C875JE connects directly to the SCSI bus and generates timing and protocol in compliance with the SCSI standard.

The SCSI interface on your SYM8751SPE operates as a 16-bit, synchronous or asynchronous, single-ended device, and supports Ultra SCSI protocols and 16-bit arbitration. The interface is made through no more than two of the connectors J2, J3, and J4. These connectors are shown in Figure 2-1. Connector J2 is a 68-pin high density right-angle receptacle. Connector J3 is a shielded 68-pin high density right-angle receptacle that protrudes through the back panel bracket. Connector J4 is a 50-pin low density vertical shrouded pin header.

Single-ended SCSI active termination is provided for your SYM8751SPE board. Termination is automatically enabled when only one of the connectors J2, J3, or J4 is used. The SYM8751SPE supplies SCSI bus TERMPWR through a blocking diode and a self re-setting 1.5 A short circuit protection device.

A 40 MHz oscillator is installed on the SYM8751SPE to provide the clock frequency to the SYM53C875JE that is necessary to support Wide Ultra SCSI transfers of up to 40 MB/sec.

Ultra SCSI   The SYM8751SPE has full support for Ultra SCSI. Ultra SCSI (also known as Fast-20 SCSI) is an extension of the SCSI-3 family of standards that expands the bandwidth of the SCSI bus, which allows faster synchronous data transfers. Special SCSI cables are specified for operation with Ultra SCSI devices, and you must consider the total number of devices and length of your SCSI bus when setting up your system. See the section on connecting your SCSI peripherals in Chapter 2 for a more detailed explanation of SCSI bus connections.

Chapter 2

Installing Your SYM8751SPE Host Adapter

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Quick Installation Procedure

This section is provided for the experienced computer user with prior host adapter installation and SCSI bus setup experience. If you prefer more detailed guidance in installing your SYM8751SPE host adapter, please follow the instructions in the next section under the heading: *Detailed Installation Procedure*.

For safe and proper installation, check the *User's Manual* that was supplied with your computer and perform the following steps.

1 Switch off and unplug the system.

2 Remove the cabinet cover on your computer to access the PCI slots. Refer to the *User's Manual* for your computer.

CAUTION GROUND YOURSELF by touching a metal surface before handling boards. Static charges on your body can damage electronic components. Handle plug-in boards by the edge; do not touch board components or gold connector contacts. The use of a static ground strap is recommended.

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3 Locate the slots for PCI plug-in board installation. Refer to the *User's Manual* for your computer to confirm the location of the PCI slots. The SYM8751SPE requires a PCI slot which allows bus master operation.

4 Remove the blank panel on the back of the computer aligned with the PCI slot you intend to use. Save the bracket screw.

5 Remove the SYM8751SPE PCI to SCSI host adapter board from the packing and check that it is not damaged.

6 Carefully insert the edge connector J1 (please see Figure 2-1) of the host adapter into the PCI slot. Make sure the edge connector is properly engaged before pressing the board into place.

NOTE You may notice that the components on a PCI host adapter face the opposite way from those on other non-PCI plug-in boards you have in your system. This is correct, and the board is keyed to go in only one way.

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7   The bracket around the connector J3 (see Figure 2-1) should fit where the blank panel was removed. Secure it with the bracket screw before making the internal and external SCSI bus connections.

8   If you are connecting any internal SCSI devices, plug a 68-pin connector on the end of the internal SCSI ribbon cable into the connector J2 for Wide SCSI, or a 50-pin connector into connector J4 for an 8-bit SCSI (see Figure 2-1). Make certain to match pin one on all internal connectors.

NOTE   It is possible to use both internal connectors if no external devices are attached to your host adapter. You may use only two of the three connectors at once.

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9   Connect the LED cable if desired. This is designed to drive the front panel LED found on most PC cabinets to indicate activity on the SCSI bus.

10   Replace the cabinet cover as described in the *User's Manual* for your computer.

11   Make all external SCSI bus connections.

Remember: The SCSI bus requires proper termination, and no duplicate SCSI IDs.

12   Finally, refer to the *Symbios Logic SDMS User's Guide* (or the guide for the software you use) to load the driver software for your particular operating system.

Detailed Installation Procedure

This section provides step-by-step instructions for installing your SYM8751SPE host adapter board, and connecting it to your SCSI peripheral(s). If you are experienced in these tasks, you may prefer to use the preceding section titled *Quick Installation Procedure*. If you are not confident you can perform the tasks as described here, we suggest getting assistance.

Before You Start

Before you start, look through the task list below to get an overall idea of the steps to perform.

- Open your PC cabinet and select an open PCI slot

- Insert your host adapter

- Connect your SCSI peripherals

  - Internal

  - External

- Terminate the SCSI bus

- Set the SCSI IDs

- Make any configuration changes

- Close your PC cabinet

- Install your software

Your SCSI host adapter acts on your computer's behalf as the host to your suite of SCSI peripherals. Each chain of SCSI peripheral devices and their host adapter work together, and are referred to as a SCSI bus.

Each SCSI host adapter that you install can act as host for up to 15 peripheral devices (depending on Ultra speeds), not including the adapter itself.

Inserting Your Host Adapter

For safe and proper installation, check the *User's Manual* that was supplied with your computer and perform the following steps.

1   Switch off and unplug the power from your system.

2   Remove the cabinet cover on your computer to access the PCI slots. Refer to the *User's Manual* for your computer to find out how this is done.

CAUTION   GROUND YOURSELF by touching a metal surface before removing the cabinet top. Static charges on your body can damage electronic components. Handle plug-in boards by the edge; do not touch board components or gold connector contacts. The use of a static ground strap is recommended.

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3   Locate the slots for PCI plug-in board installation. Refer to the *User's Manual* for your computer to confirm the location of the PCI slots. The SYM8751SPE requires a PCI slot which allows bus master operation.

4   Remove the blank panel on the back of the computer aligned with the PCI socket you intend to use. Save the bracket screw.

5   Remove the SYM8751SPE PCI to SCSI host adapter board from the packing and check that it is not damaged. Remember to ground yourself first because a static discharge could damage your board.
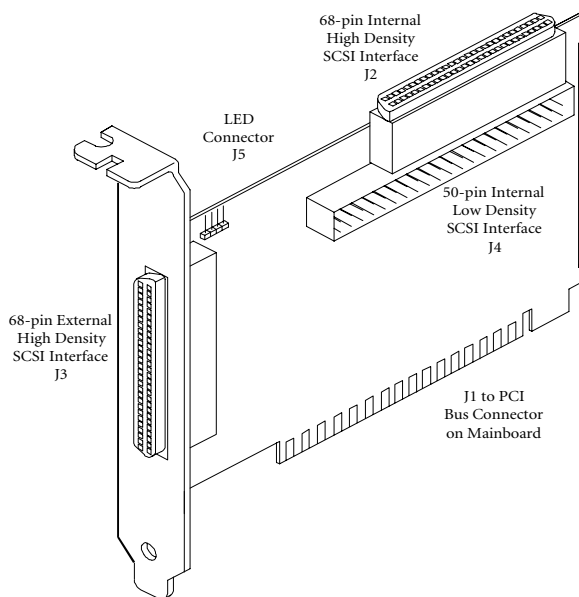
WARNING: Never use more than two SCSI interface connectors simultaneously

Figure 2-1 Hardware Connections for Your SYM8751SPE Host Adapter

6 Carefully insert the edge connector J1 (please see Figure 2-1) of the host adapter into the PCI slot. Make sure the edge connector is properly engaged before pressing the board into place as shown in Figure 2-2.

You may notice that the components on a PCI host adapter face the opposite way from those on other non-PCI plug-in boards you have in your system. This is correct, and the board is keyed to go in only one way.
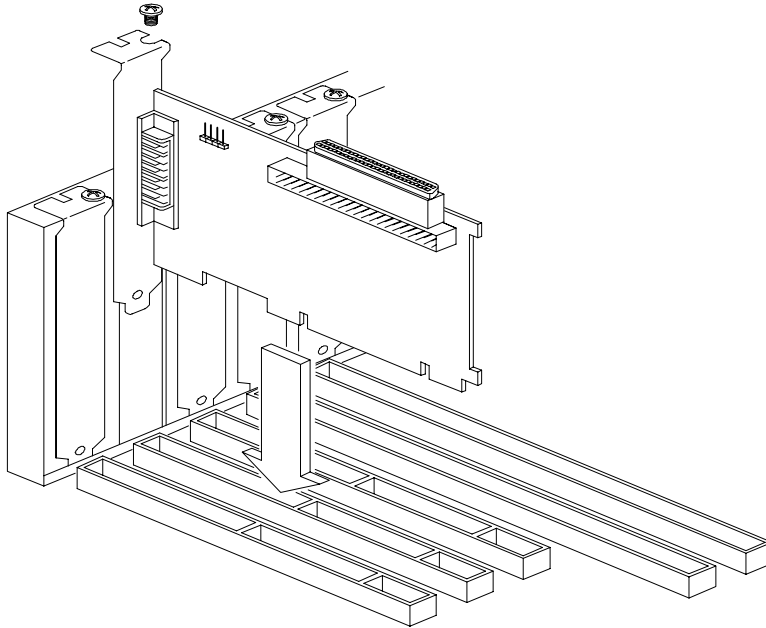
Figure 2-2 Inserting Your Host Adapter

7 The bracket around the connector J3 (see Figure 2-1) should fit where the blank panel was removed. Secure it with the bracket screw (see Figure 2-2) before making the internal and external SCSI bus connections.

Connecting Your SCSI Peripherals

SCSI bus connections to the SYM8751SPE host adapter inside your computer are made with an unshielded, 68 or 50-conductor ribbon cable (see Figure 2-3). One edge of this cable is marked with a color to indicate the pin-1 side. Sometimes the connectors on this cable are keyed to ensure proper pin-1 connection.

All external SCSI bus connections to the SYM8751SPE host adapter are made with shielded, 68-conductor cables (see Figure 2-3). The connectors on this cable are always keyed to ensure proper pin-1 connection.

IMPORTANT: You can connect up to 8 SCSI, Fast SCSI, and Ultra SCSI devices on a single-ended Ultra SCSI bus only if they are evenly spaced on a 1.5 meter Ultra SCSI cable (0.19 m between devices). You can connect up to four Ultra devices if they are evenly spaced on a 3 meter Ultra SCSI cable (0.75 m between devices). The single-ended SCSI bus should not exceed 3 meters (total internal and external cable lengths), even with fewer than four devices.

SCSI cables for Internal Connections

68-pin
high density

and/or

50-pin
low density

SCSI cable for External Connections
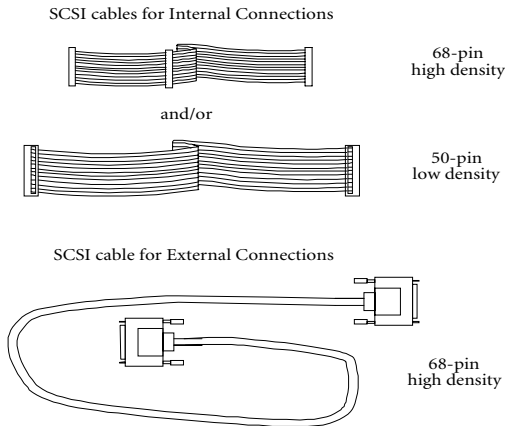
68-pin
high density

Figure 2-3   SCSI Cables

Making Internal SCSI Bus Connections

1 If you are connecting an internal Wide SCSI device, plug the 68-pin connector on one end of a wide internal SCSI ribbon cable into the connector J2 (see Figure 2-4). Make certain to match pin one on both connectors.
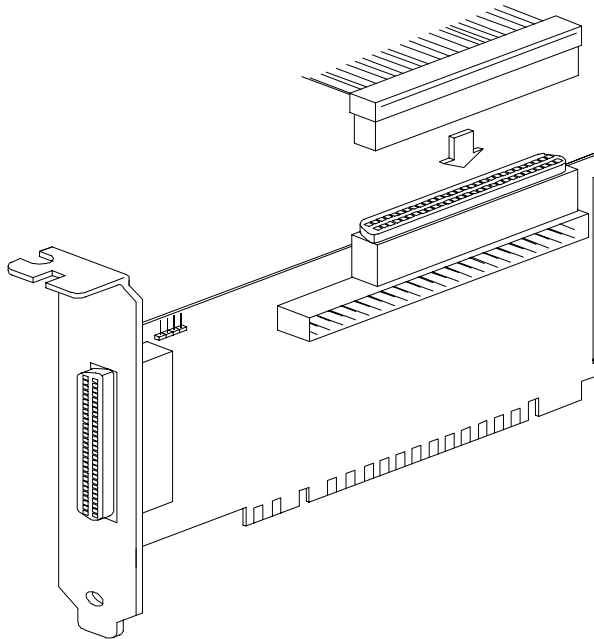
Figure 2-4   Internal Wide SCSI Ribbon Cable to Host Adapter

2 To connect an 8-bit internal SCSI device, plug the 50-pin connector on one end of an 8-bit internal SCSI ribbon cable into the connector J4 (see Figure 2-5). Make certain to match pin one on both connectors.
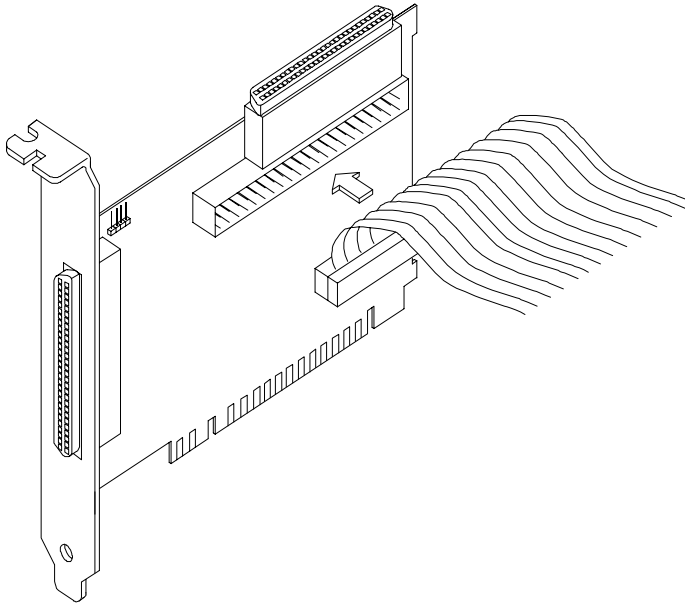
Figure 2-5   Internal SCSI Ribbon Cable to Host Adapter Connection

3 Plug the 68 or 50-pin connector on the other end of the internal SCSI ribbon cable into the SCSI connector on your internal SCSI device. An example of this connection is shown in Figure 2-6. Make sure to match pin-1 on all connections.
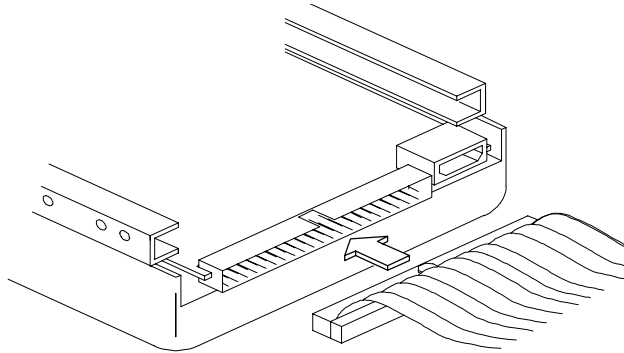
Figure 2-6 Internal SCSI Ribbon Cable to Internal SCSI Device Connection

4 Additional internal SCSI devices are plugged in by using an internal SCSI ribbon cable with the required number of connectors attached along its length as shown in Figure 2-7.
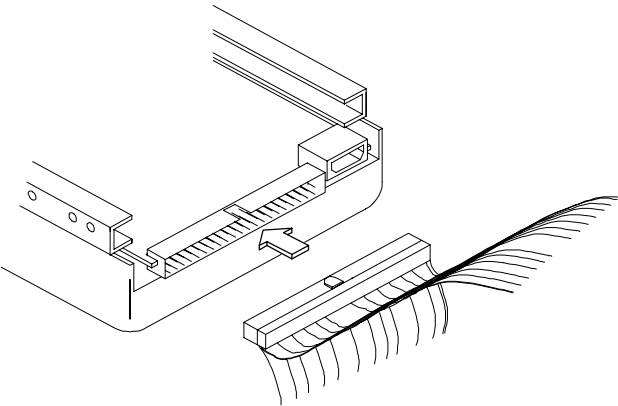
Figure 2-7   Connecting Additional Internal SCSI Device

An example of this type of chained connection is shown in Figure 2-8. Make sure to match pin-1 on all connections.
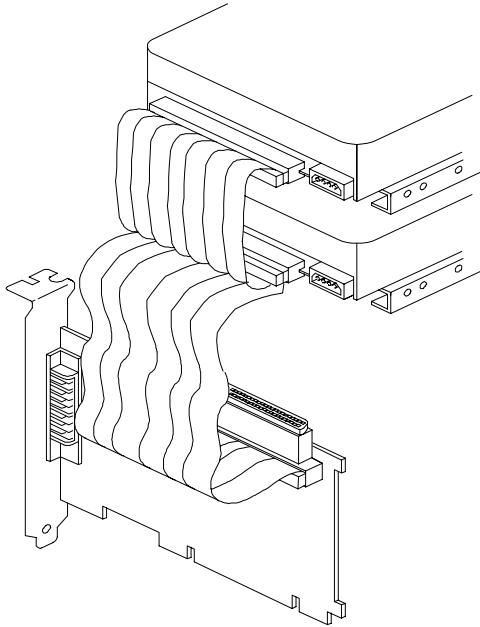
Figure 2-8   Multiple Internal SCSI Devices Chained Together

5   It is also possible to use both internal connectors (J2 and J4) if
    you do not attach any external devices to connector J3. An
    example of this configuration is shown in Figure 2-9.
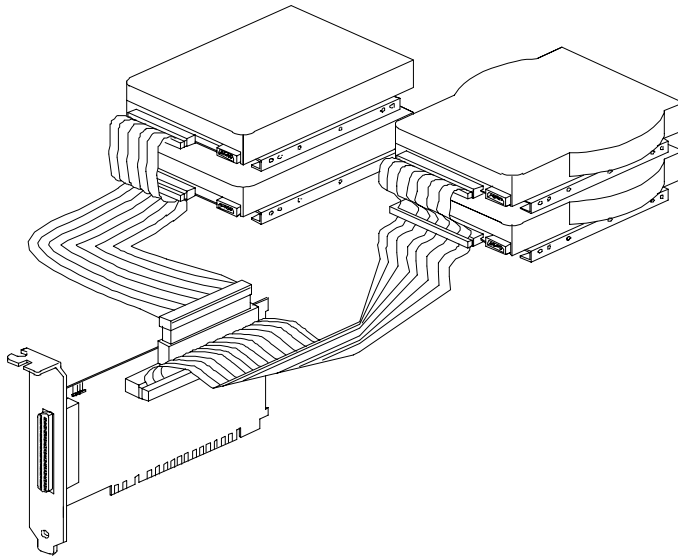
Figure 2-9   Using Both Internal Connectors

6   Most PC cabinets are designed with a front panel LED
    (sometimes already connected to an existing IDE controller).
    You may connect the LED cable to connector J5 on your host
    adapter, as shown in Figure 2-10. This causes the front panel
    LED to indicate activity on the SCSI bus.

    Connector J5 is not keyed. The orientation of the LED cable
    does not matter as long as all four pins connected.
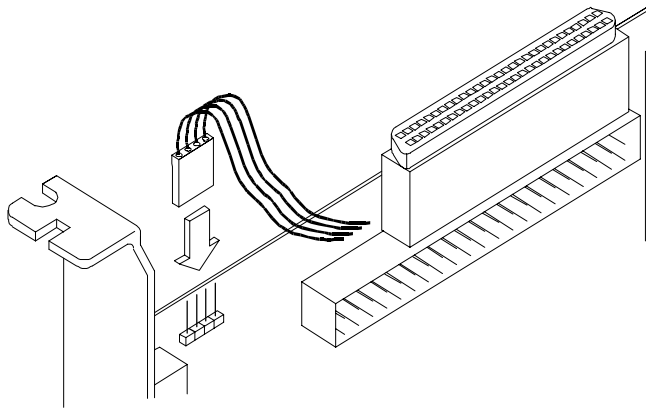
Figure 2-10   SCSI LED Connector

Some LED cables have only two wires. In this case, place the
connector on one end or the other of J5. If the LED does not
light during SCSI bus activity from this host adapter, you may
have to rotate the LED cable 180º on J5.

Making External SCSI Bus Connections

1 If you need to connect external SCSI devices to the SYM8751SPE host adapter, plug the 68-pin connector on one end of a shielded external SCSI cable (see Figure 2-3) into the host adapter connector J3 (see Figure 2-1).

This connector is now bracketed to the back panel of your computer. Figure 2-11 shows how this connection is made.
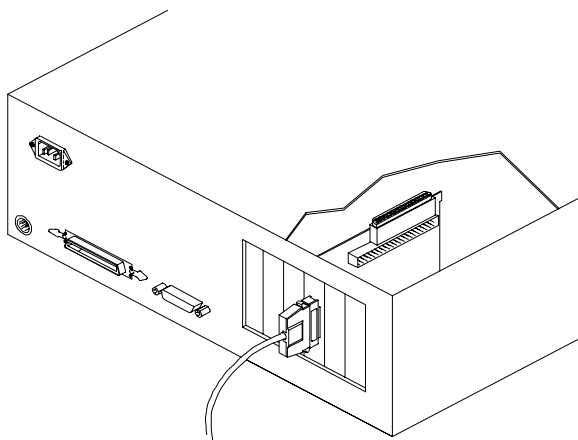
Figure 2-11   External Cable to Host Adapter

2   Plug the 68-pin connector on the other end of the shielded external SCSI cable into the SCSI connector on your external SCSI device. An example of this connection is shown in Figure 2-12.
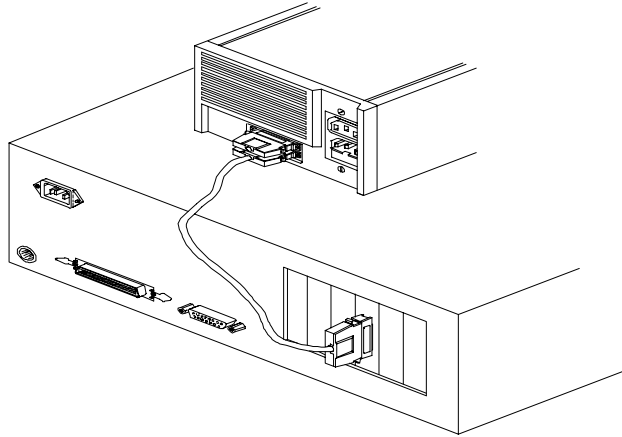
Figure 2-12   External Cable to External SCSI Device

3 If you wish to connect more than one external SCSI device to your host adapter, you must chain them together with shielded external SCSI cables. An example of these chained connections is shown in Figure 2-13.
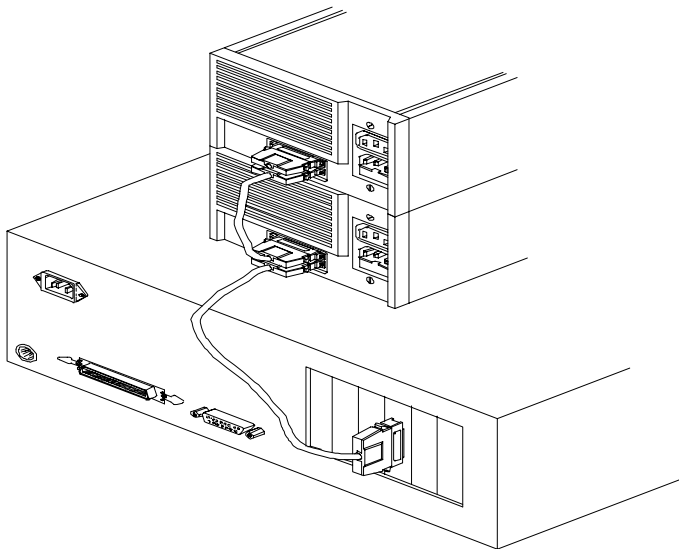
Figure 2-13 Multiple External SCSI Devices Chained Together

SCSI Bus Termination

The devices making up the SCSI bus are connected serially (chained together) with SCSI cables. The first and last physical SCSI devices connected on the ends of the SCSI bus must have a set of resistors called terminators. All other SCSI devices on the bus must have their terminators removed or disabled. Remember that the SYM8751SPE Host Adapter is also on the SCSI bus — its termination is automatically enabled when it is connected to the end of the bus.

The peripheral device terminators are usually set with jumpers, resistor modules, or with a switch on the peripheral. Refer to the peripheral manufacturer's instructions and to the *User's Manual* for your computer for information on how to identify the terminator setting of each device and how to change it.

CAUTION The auto-enable/disable sensing feature on your SYM8751SPE may enable termination erroneously if it is directly cabled to another SCSI device or host adapter using the same sensing method. The SYM8751SPE senses SCSI devices by detecting the ground signal on conductor 22 of a 50-conductor SCSI cable, or conductor 50 of a 68-conductor SCSI cable.

The SYM8751SPE has two shunts on the host adapter board:

1   A two position shunt labelled LOWER is used for termination control of the terminator, which has the lower data bits 0-7 and the control lines.

2 A three-pin shunt labelled UPPER is used for controlling the terminator, which has the upper data bits 8-15.

The termination may be controlled manually by turning the terminators off or leaving the upper terminator on. To turn off UPPER or LOWER termination, remove its shunts from the host adapter board. To leave the upper termination on at all times, move the UPPER shunt from the pins with the inked box (left most and center) to the right (center and right most pins).

The SYM8751SPE automatically controls SCSI bus termination for four different bus configurations, depending on the use of connectors J2, J3, and J4 on the host adapter (see Figure 2-1). The shunts (UPPER and LOWER) are to remain in the box for automatic termination control. The following are the four different bus configurations for:

1 only internal SCSI connections,

2 only external SCSI connections,

3 internal and external SCSI connections, and

4 connections to both internal connectors.

1   If only internal SCSI device connections to your host adapter
    have been made, then terminate the last internal device on the
    SCSI bus. You must disable the termination on all other
    device(s). Termination on the host adapter is automatically
    enabled in this case.

    Figure 2-14 shows an example of how termination is
    determined for this SCSI bus configuration.

Last Device
on Chain -
Termination
Enabled

Does Not
End Chain -
Termination
Disabled

Host Adapter
Automatically
Terminated
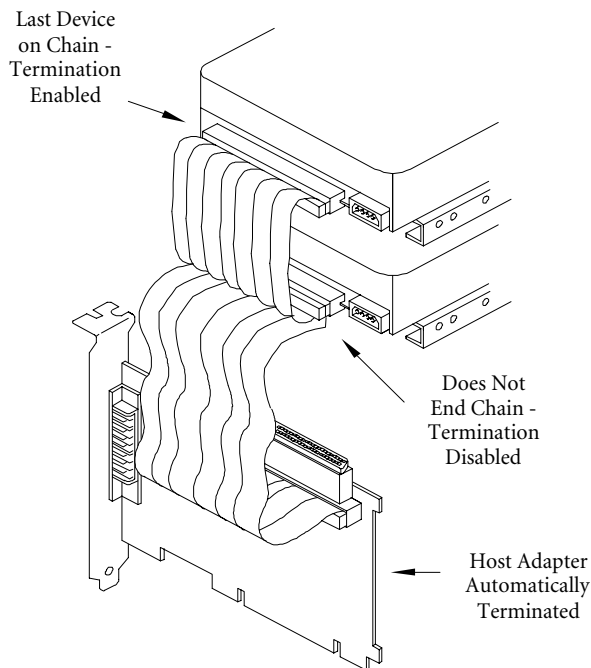
Figure 2-14   Internal SCSI Device Termination

2   If only external SCSI device connections to your host adapter
    have been made, then terminate the last external device on the
    SCSI bus. You must disable the termination on all other
    device(s). Termination on your host adapter is automatically
    enabled in this case.

Figure 2-15 shows an example of how termination is
determined for this SCSI bus configuration.
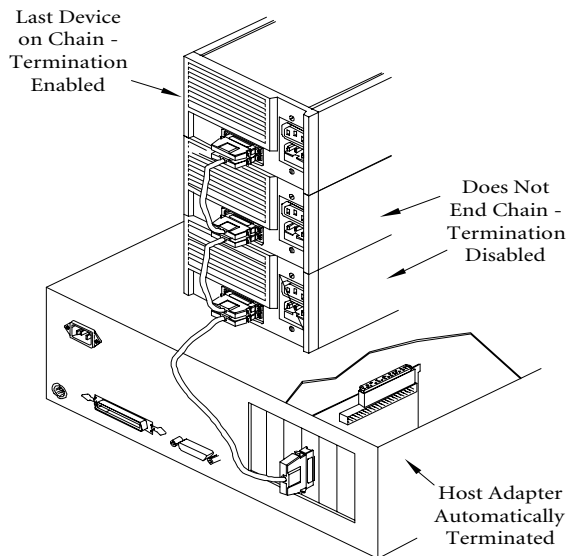
Figure 2-15   External SCSI Device Termination

3 If internal and external SCSI device connections to your host adapter have been made, then terminate the last internal and external devices on the SCSI bus. You must disable the termination on all other device(s). Termination on your host adapter is automatically disabled in this case.

Figure 2-16 shows an example of how termination is determined for this SCSI bus configuration.
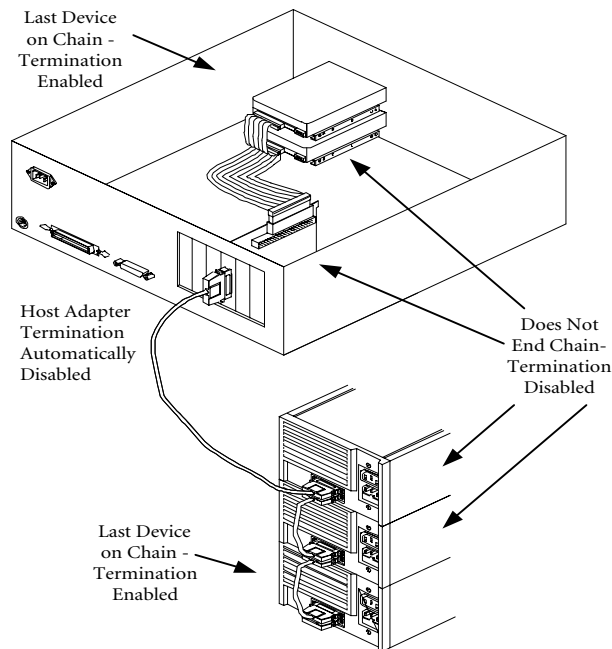
Figure 2-16   Internal and External SCSI Device Termination

4 If internal SCSI device connections to both internal connectors (J2 and J4) on your host adapter have been made, then terminate the internal devices on each end of the SCSI bus. You must disable the termination on all other devices. Termination on your host adapter is automatically disabled in this case. Remember, you must not use the external connector J3 if you use both internal connectors.

Figure 2-17 shows an example of how termination is determined for this SCSI bus configuration.
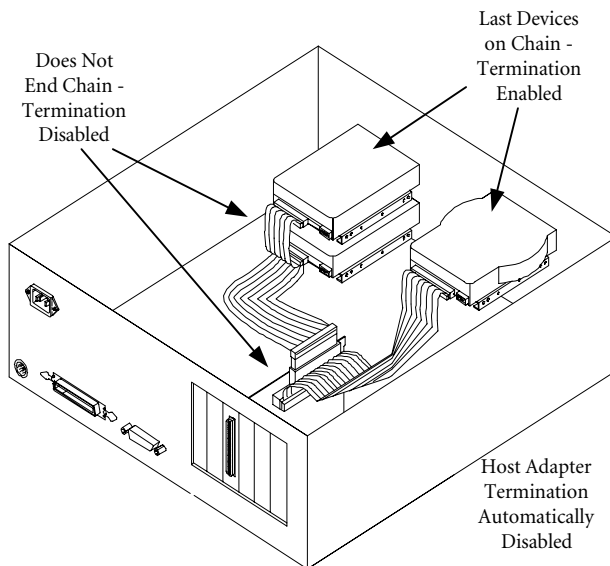
Figure 2-17 Internal and Internal SCSI Device Termination

Setting SCSI IDs

Each SCSI device and the host adapter must have a separate SCSI ID, 0 through 15 for a 16-bit SCSI or 0-7 for an 8-bit SCSI. SCSI ID 7 is the preset host adapter setting, giving it the highest priority on the SCSI bus. If you plan to boot your computer from a SCSI hard disk drive on the SCSI bus, that drive should have SCSI ID 0. Chapter 3, *Configuring Your Host Adapter*, explains how to set your host adapter ID using the Symbios Logic SCSI Configuration utility.

The peripheral device SCSI IDs are usually set with jumpers or with a switch on the peripheral. Refer to the peripheral manufacturer's instructions and to the *User's Manual* for your computer to determine the ID of each device and how to change it. No duplication of SCSI IDs is allowed on a SCSI bus.

1   Determine the SCSI ID of each device on the SCSI bus. Note any duplications.

2   Make any necessary changes to the SCSI IDs and record the IDs for future reference. The following table is provided as a place to keep this record.

Table 2-1   SCSI ID Record

SCSI ID	SCSI Device
15	
14	
13	
12	
11	
10	
9	
8	
7	SYM8751SPE Host Adapter (default)
6	
5	
4	
3	
2	
1	
0	

Completing Your Installation

Before replacing the cover on your computer, review this installation procedure check list. This can save you effort later.

Table 2-2   Installation Procedure Check List

Verify Installation Procedures	Done
Host adapter connection in PCI bus slot secure	
Internal SCSI bus connections secure (pin-1 continuity)	
External SCSI bus connections secure	
Proper SCSI bus termination established	
Unique SCSI IDs set and recorded for each device	

1   Replace the cabinet cover on your computer.

2   Plug in all power cords, and switch on power to all devices and your computer.

3   Boot your computer.

4   To change the configuration of your host adapter, see Chapter 3, *Configuring Your Host Adapter*.

5   Finally, refer to the *Symbios Logic SDMS User's Guide* (or the guide for the software you use) to load the driver software for your particular operating system.

Chapter 3

Configuring Your Host Adapter

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When to Configure Your SYM8751SPE Host Adapter

In most cases you should not need to change the default configuration of your host adapter. You may decide to alter these default values if there is a conflict between device settings, or if you need to optimize system performance.

The following tables list the configuration settings you can change. The global settings effect your host adapter and all SCSI devices which are connected to it. The device settings effect only individual SCSI devices.

Table 3-2   Global Default Settings

Settings for the Host Adapter and All Devices	Default Settings
SCAM Support	Off*
Parity Checking	Enabled
Host Adapter SCSI ID	7
Scan Order	Low to High (0-Max)

*After 4.09 version of the BIOS

Table 3-3   Device Default Settings

Settings for Individual SCSI Devices	Default Settings
Synchronous Transfer Rate (MB/sec)	40
Data Width	16
Disconnect	On
Read/Write I/O Time-out (secs)	10
Scan for Devices at Boot Time	Yes
Scan for SCSI LUNs	Yes
Queue Tags	Enabled

Starting the SCSI BIOS Configuration Utility

If you have SCSI BIOS version 4.0, and it includes the Symbios Logic SCSI BIOS Configuration utility, you can change the default configuration of your SCSI host adapters. You may decide to alter these default values if there is a conflict between device settings or if you need to optimize system performance.

You can see the version number of your SCSI BIOS in a banner displayed on your computer monitor during boot. If the utility is available, the following message also appears on your monitor:

```
Press Ctrl-C to start Symbios Logic Configuration Utility...
```

This message remains on your screen for about five seconds, giving you time to start the utility. If you decide to press "Ctrl-C," the message changes to:

```
    Please wait, invoking Configuration Utility...
```

After a brief pause, your computer monitor displays the Main Menu of the Symbios Logic SCSI BIOS Configuration utility.

To make changes with this menu driven utility, one or more Symbios Logic SCSI host adapters must have NVRAM (non-volatile random access memory) to store the changes.

IMPORTANT: This utility is a powerful tool. If, while using it, you somehow disable all of your controllers, pressing Ctrl-A (or Ctrl-E on version 4.04 or later) after memory initialization during reboot allows you to re-enable and reconfigure.

NOTE   Not all devices detected by the Configuration utility can be controlled by the BIOS, such as tape drives and scanners. These devices require that a device driver specific to that peripheral be loaded.

Configuration Utility Main Menu

When you start the Symbios Logic SCSI BIOS Configuration
Utility, the Main Menu appears. This menu displays a list of up to
four Symbios Logic PCI to SCSI host adapters in your system and
information about each of them. To select an adapter, use only the
arrow keys and enter key. Then you can view and/or change the
current settings for that adapter, and the SCSI devices attached to
it.

You can select an adapter only if Current Status is "On". Changes
are possible only if NVRAM (non-volatile random access
memory) on your adapter is present.

The Main Menu looks like this:

```
Main Menu

            Port    Irq--------Status--------NVRAM
            Num
                    Level   Current   Next-Boot  Found

SYM53C875   FC00      9        On        On       Yes
SYM53C895   F800      9        On        Off      Yes

Change Adapter Status
Adapter Boot Order
Additional Adapter Configuration
Display Mode = Verbose
Mono/Color
Language
Help
Quit
```

Below the list of host adapters on the Main Menu display, you see eight options. They are described in detail below. If these settings are altered, the system reboots upon exit from the configuration utility via the Quit option.

Change Adapter Status

The change adapter status allows you to activate or deactivate a host adapter and all SCSI devices attached to it. When this option is used to make a change, the change takes place after a reboot that is automatic upon exit from the utility. The Change Status on Next Boot menu looks like this:

```
Main Menu

Change Status on Next Boot:

            Port    Irq--------Status-------NVRAM
            Num
                    Level   Current   Next-Boot   Found

SYM53C875   FC00     9        On         On        Yes
SYM53C895   F800     9        On         Off       Yes
```

To change an adapter's status, select it and press Enter. Then press the Escape (Esc) key to exit from this menu.

Adapter Boot Order

The adapter boot order allows you to set the order in which host adapters will boot when you have more than one Symbios Logic host adapter in your system. When this option is selected, the Boot Order menu appears:

```
Main Menu

BootSeq          Bus DevFunc BootSeq          Bus DevFunc

   0   SYM53C860 00    A0       1   SYM53C895 00    98

   2   SYM53C875 00    90
```

To change an adapter's boot order, select it and press Enter. You are then prompted to enter the new boot sequence number. To remove an adapter's boot order, press Enter again rather than entering a new sequence number. While the maximum capacity is 32 adapters, only 0 through 3 can be assigned a boot order. If an invalid number is entered, an error message appears. When the adapters are ordered as desired, press the Escape (Esc) key to exit from this menu.

Additional Adapter Configuration

The additional adapter configuration allows you to configure an adapter that is not assigned a boot order. When this option is selected, the Adapter Configuration menu appears:

```
Main Menu

BootSeq         Bus DevFunc BootSeq        Bus DevFunc

   1    SYM53C875 00    A0      0    SYM53C895 00    98

        SYM53C860
```

Highlight the adapter to be configured and press Enter. The message "Resetting Adapter, Please wait" appears, and then the system scans for devices. Finally, the Utilities Menu appears and lists the available options, which are described below.

Display Mode

Display mode determines how much information about your host adapters and SCSI devices appear on your computer monitor during boot. For more complete information, choose the verbose setting. For a faster boot, choose the terse setting.

Mono/Color

Mono/color allows you to choose between a monochrome or color display for the SCSI BIOS Configuration utility. You might need to choose the mono setting to get a more readable screen on a monochrome monitor.

Language

If enabled, the Language option allows you to select from five languages for the configuration utility: English, German, French, Italian, and Spanish.

Help

Selecting the Help option brings up a help screen with information about the Main Menu.

Quit

Choosing the Quit option allows exit from the SCSI BIOS Configuration utility when on the Main Menu.

Esc

Pressing the Esc key allows exit from all the screens except the Main Menu.

Utilities Menu

When you select a host adapter on the Main menu, the Utilities menu appears:

```
SYM53C875

          Utilities

                  Adapter Setup
                  Device Selections
                  Help
                  Exit this menu
```

Choose Adapter Setup to view and change the selected adapter settings. Choose Device Selections to view and change settings for the devices attached to the selected adapter.

You are returned to this menu after making changes to the configuration of any host adapter or connected SCSI device. Before you exit this menu, you are prompted to save or cancel any changes.

Adapter Setup Menu

When you select Adapter Setup, the Adapter Setup menu appears:

```
SYM53C875

        Adapter Setup

            SCAM Support   Off
            Parity         Enabled
            Host SCSI ID   7
            Scan Order     Low to High <0..Max>
            Removable Media Support
            Help
            Restore Default Setup
            Exit this menu
```

The settings in this menu are global settings that affect the selected host adapter and all SCSI devices attached to it.

SCAM Support   The Symbios Logic BIOS version 4.0 and above supports the SCSI Plug and Play protocol called SCAM (SCSI Configured AutoMatically). SCAM support by default is off in versions 4.09 and later. You may choose to turn this on.

Parity   The Symbios Logic PCI to SCSI host adapters always generate parity, but some older SCSI devices do not. Therefore, you are offered the option of disabling parity checking.

NOTE When disabling parity checking, it is also necessary to disable disconnects for all devices, as parity checking for the reselection phase is not disabled. If a device does not generate parity, and it disconnects, the I/O never completes because the reselection never completes.

Host SCSI ID In general, it is suggested that you do not change your host adapter ID from the default value of 7, as this gives it the highest priority on the SCSI bus.

Scan Order This option allows you to tell the SCSI BIOS and device drivers to scan the SCSI bus from low to high (0 to max) SCSI ID, or from high to low (max to 0) SCSI ID. If you have more than one device on the SCSI bus, changing the scan order changes the order in which drive letters are assigned by the system. Drive order is assigned differently in systems supporting the BIOS Boot Specification (BBS).

See the *Symbios Logic SDMS User's Guide,* Chapter 2 "SCSI BIOS" for additional information regarding BBS.

NOTE This scan order option may conflict with operating systems that automatically assign a drive order.

Removable Media Support   This option defines the removable media support for a specific drive. When this option is selected, a window appears with three choices:

- None
- Boot Drive Only
- With Media Installed

<u>None</u> indicates there is no removable media support whether the drive is selected in BBS as being first, or first in scan order in non-BBS.

<u>Boot Drive Only</u> provides removable media support for a removable drive if it is first in the scan order.

<u>With Media Installed</u> provides removable media support wherever the drive(s) actually resides.

One of these choices can be selected by highlighting it and pressing Enter.

Device Selections Menu

When you select the Device Selections option, the corresponding menu appears:

```
SYM53C875

Device Selections 0-7

          Sync Data  Disc Time     Scan     Queue

          Rate Width      Out  Bus  LUNS   Tags

0-Dev0 N/A  80   16   On   10  Yes    Yes   Enabled

1-Dev1 N/A  80   16   On   10  Yes    Yes   Enabled

2-Dev2 N/A  80   16   On   10  Yes    Yes   Enabled

3-Dev3 N/A  80   16   On   10  Yes    Yes   Enabled

4-Dev4 N/A  80   16   On   10  Yes    Yes   Enabled

5-Dev5 N/A  80   16   On   10  Yes    Yes   Enabled

6-Dev6 N/A  80   16   On   10  Yes    Yes   Enabled

SYM53C895

Device Selections 8-15

Help

Exit this menu
```

The settings in this menu affect individual SCSI devices attached to the selected host adapter. Changes made from this menu do not cause the system to reboot upon exit from the SCSI configuration utility.

Sync Rate (mega Bytes/sec)   The value set with this option defines the maximum data transfer rate the host adapter attempts to negotiate. The host adapter and a SCSI device must agree to a rate they can both handle.

Width (bits)   The value set with this option defines the maximum SCSI data width the host adapter attempts to negotiate. The host adapter and a SCSI device must agree to a width they can both handle. Only host adapters that can do16-bit data transfers have this option enabled.

Disconnect   SCSI devices have the ability to disconnect from the initiator during an I/O transfer. This disconnect frees the SCSI Bus to allow other I/O processes. This option tells the host adapter whether or not to allow a device to disconnect. Some devices run faster with disconnects enabled (mostly newer devices), while some run faster with disconnects disabled (mostly older devices).

Read Write I/O Time-out (secs)   This option sets the amount of time the host adapter waits for a read, write, or seek command to complete before trying the I/O transfer again. Since this provides a safeguard allowing the system to recover if an I/O operation fails, it is recommended that you always set the time-out to a value greater than zero.

NOTE   If the time-out is set to zero, then the I/O will never time-out.

Scan for Device at Boot Time   When there is a device you do not want to be available to the system, set this option to "No" for that device. Also, on a bus with only a few devices attached, you can speed up boot time by changing this setting to "No" for all unused SCSI IDs.

Scan for SCSI Logical Units (LUNs)   You can set this option to "No" if you have problems with a device that responds to all LUNs whether they are occupied or not. For example, if there is a SCSI device with multiple LUNs but you do not want all of those LUNs to be available to the system, then set this option to "No." This will limit the scan to LUN0 only.

Queue Tags   This option allows you to enable or disable the issuing of queue tags during I/O requests when your device driver can do this.

Format Device   If enabled, this option allows you to low-level format a magnetic disk drive. Low-level formatting will completely and irreversibly erase all data on the drive.

To Exit the SCSI BIOS Configuration Utility

Since some changes only take effect after your system reboots, it is important that you exit this configuration utility properly. Return to the Main menu and exit via the Quit option. If you reboot the system without properly exiting the utility, some changes may not take effect.

Appendix A

Technical Specifications

. . . .

SYM8751SPE Mechanical Drawing
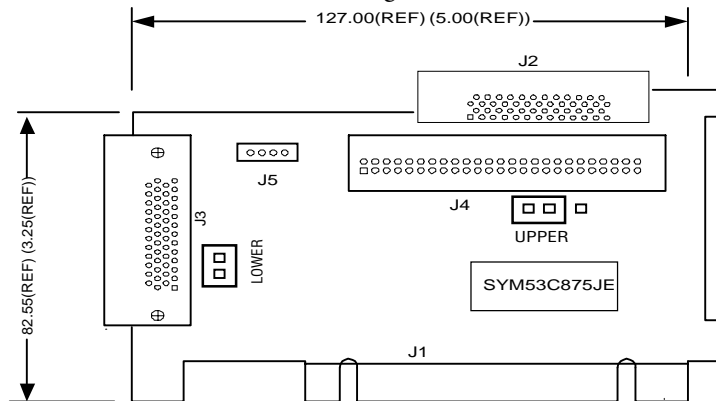
All dimensions are given in mm and (inches)

Physical Environment

Physical Characteristics

The dimensions of the SYM8751SPE host adapter board are 5.00" x 3.25". PCI connection is made through the edge connector J1. Internal 16-bit SCSI connection is made through the 68-pin high density connector J2. Internal 8-bit SCSI connection is made through the 50-pin low density connector J4. External SCSI connection is made through the 68-pin high density connector J3. The J3 connector extends external to the cabinet the SYM8751SPE is installed in through a bracket attached to the face of the connector. The bracket is a standard ISA type with a cutout to accommodate connector J3. The J5 connector is for the Busy LED connection using a 4-pin one row right angle header. The component height on the top and bottom of the board follows the PCI specification.

Electrical Characteristics

The SYM8751SPE maximum power requirements, including SCSI TERMPWR, under normal operation are as follows:

- +5V DC ±5% 1.5A over the operating range 5-55ºC

- +3.3V ±0.3V 130mA over the operating range 5-55ºC when operating in a 3.3V PCI slot

Under abnormal conditions such as a short on SCSI TERMPWR, +5V current may be higher. At temperatures of at least 25ºC a current of 4A will be sustained no longer than 30 seconds before the self resetting TERMPWR short circuit protection device opens.

The PCI PRSNT1/ and PRSNT2/ pins are set to indicate a 7.5W maximum configuration.

Thermal, Atmospheric Characteristics

The board is designed to operate in an environment defined by the following parameters:

- Temperature range: 5-55ºC (dry bulb)

- Relative humidity range: 5-90% non-condensing

- Maximum dew point temperature: 32ºC

- Storage specification: -40 to 85ºC with 0 - 95% RH non-condensing 10ºC

Electromagnetic Compliance

The board is designed and implemented so as to minimize electromagnetic emissions, susceptibility, and the effects of electromagnetic discharge. The board meets the requirements of FCC and CISPR Class B limits and is marked with the FCC and CE mark logos.

Safety Characteristics

The bare board meets or exceeds the requirements of UL flammability rating 94V0. The bare board is also marked with the supplier's name or trademark, type, and UL flammability rating. Since this board is installed in a PCI bus slot, all voltages are below the SELV 42.4V limit.

Operational Environment

The SYM8751SPE is designed for use in PCI computer systems with an ISA/EISA bracket type. The Symbios Logic SDMS (SCSI Device Management Software) operates the board, but the design of the board does not prevent the use of other software.

The PCI Interface

The PCI interface operates as a 32-bit DMA bus master. The connection is made through the edge connector J1, which provides connections on both the top and bottom of the board. The signal definitions and pin numbers conform to the PCI Local Bus specification revision 2.1 standard. The following tables show the signal assignments.

NOTE The +3.3V pins are tied together and decoupled with high frequency bypass capacitors to ground. No current from these 3.3V pins is used on the board. The PCI portion of the SYM53C875JE chip is powered from the 3V/5V pins.

Table A-1   PCI Connector J1 (Top)

Signal Name	Pin	Signal Name	Pin	Signal Name	Pin
-12V	1	GND	22	SERR/	42
TCK	2	AD27	23	+3.3V	43
GND	3	AD25	24	C_BE1/	44
TDO	4	+3.3V	25	AD14	45
+5V	5	C_BE3/	26	GND	46
+5V	6	AD23	27	AD12	47
INTB/	7	GND	28	AD10	48
INTD/	8	AD21	29	GND	49
GND (PRSNT1/)	9	AD19	30	KEYWAY	50
RESERVED	10	+3.3V	31	KEYWAY	51
GND (PRSNT2/)	11	AD17	32	AD08	52
KEYWAY	12	C_BE2/	33	AD07	53
KEYWAY	13	GND	34	+3.3V	54
RESERVED	14	IRDY/	35	AD05	55
GND	15	+3.3V	36	AD03	56
CLK	16	DEVSEL/	37	GND	57
GND	17	GND	38	AD01	58
REQ/	18	LOCK/	39	3V/5V	59
3V/5V	19	PERR/	40	ACK64/	60
AD31	20	+3.3V	41	+5V	61
AD29	21			+5V	62

NOTE   Shaded signals are not connected.

Table A-2 PCI Connector J1 (Bottom)

Signal Name	Pin	Signal Name	Pin	Signal Name	Pin
TRST/	1	AD28	22	GND	42
+12V	2	AD26	23	PAR	43
TMS	3	GND	24	AD15	44
TDI	4	AD24	25	+3.3V	45
+5V	5	IDSEL	26	AD13	46
INTA/	6	+3.3V	27	AD11	47
INTC/	7	AD22	28	GND	48
+5V	8	AD20	29	AD09	49
RESERVED	9	GND	30	KEYWAY	50
3V/5V	10	AD18	31	KEYWAY	51
RESERVED	11	AD16	32	C_BE0/	52
KEYWAY	12	+3.3V	33	+3.3V	53
KEYWAY	13	FRAME/	34	AD06	54
RESERVED	14	GND	35	AD04	55
RST/	15	TRDY/	36	GND	56
3V/5V	16	GND	37	AD02	57
GNT/	17	STOP/	38	AD00	58
GND	18	+3.3V	39	3V/5V	59
RESERVED	19	SDONE	40	REQ64/	60
AD30	20	SBO/	41	+5V	61
+3.3V	21			+5V	62

NOTE Shaded signals are not connected.

The SCSI Interface

The SCSI interface operates as 16-bit, synchronous or asynchronous, single-ended, and supports SCSI-3 protocols and 16-bit arbitration. The interface is made through connectors J2, J3, and J4. Connector J2 is a 68-pin high density right angle receptacle used for internal connections (16-bit SCSI). Connector J3 is a 68-pin high density right angle receptacle that protrudes through the back panel bracket. Connector J4 is a 50-pin low density shrouded header used for internal connections (8-bit SCSI). Active single-ended SCSI termination is provided automatically. SCSI termination power is also supplied by the board. The following tables show the signal assignments for J2, J3 and J4.

NOTE   You may use no more than two connectors at any one time.

Table A-3   SCSI Connectors J2 and J3

Signal Name	Pin	Signal Name	Pin	Signal Name	Pin
GND	1	GND	24	SD7/	47
GND	2	GND	25	SDP/	48
GND	3	GND	26	GND	49
GND	4	GND	27	CPRSNT_A-B/[1]	50
GND	5	GND	28	TERMPWR	51
GND	6	GND	29	TERMPWR	52
GND	7	GND	30	N/C	53
GND	8	GND	31	GND	54
GND	9	GND	32	SATN/	55
GND	10	GND	33	GND	56
GND	11	GND	34	SBSY/	57
GND	12	SD12/	35	SACK/	58
GND	13	SD13/	36	SRST/	59
GND	14	SD14/	37	SMSG/	60
GND	15	SD15/	38	SSEL/	61
GND	16	SDP1/	39	SC_D/	62
TERMPWR	17	SD0/	40	SREQ/	63
TERMPWR	18	SD1/	41	SI_O/	64
N/C	19	SD2/	42	SD8/	65
GND	20	SD3/	43	SD9/	66
GND	21	SD4/	44	SD10/	67
GND	22	SD5/	45	SD11/	68
GND	23	SD6/	46		

[1] *CPRSNT_A/ (J2) and CPRSNT_B/ (J3) are used to sense the connection of a standard SCSI device by sensing SCSI standard GND on this pin.*

Table A-4   SCSI Connector J4

Signal Name	Pin	Signal Name	Pin
GND	1	SD0/	2
GND	3	SD1/	4
GND	5	SD2/	6
GND	7	SD3/	8
GND	9	SD4/	10
GND	11	SD5/	12
GND	13	SD6/	14
GND	15	SD7/	16
GND	17	SDP/	18
GND	19	GND	20
GND	21	CPRSNT_C/[1]	22
N/C	23	N/C	24
N/C	25	TERMPWR	26
N/C	27	N/C	28
GND	29	GND	30
GND	31	SATN/	32
GND	33	GND	34
GND	35	SBSY/	36
GND	37	SACK/	38
GND	39	SRST/	40
GND	41	SMSG/	42
GND	43	SSEL/	44
GND	45	SC_D/	46
GND	47	SREQ/	48
GND	49	SI_O/	50

[1] CPRSNT_C/ is used to sense the connection of a standard SCSI device by sensing SCSI standard GND on this pin.

The LED Interface

The LED interface on the SYM8751SPE is a four wire arrangement that allows the user to connect an LED harness to the board. The LED+ line (maximum output low voltage 0.4V and minimum output low current 16mA) is pulled low to complete the circuit when a harness with an LED is attached. The connector on the SYM8751SPE is J5.

Table A-5   LED Connector J5

Signal Name	Pin
LED+	1
LED-	2
LED-	3
LED+	4

Glossary

A

ASPI Advanced SCSI Programming Interface. A specification for a common structured method of supporting SCSI peripherals. ASPI provides an interface between host adapters and SCSI device drivers.

Asynchronous Data Transfer One of the ways data is transferred over the SCSI bus. It is slower than synchronous data transfer.

B

BIOS Basic Input/Output System. Software that provides basic read/write capability. Usually kept as firmware (ROM based). The system BIOS on the mainboard of a computer is used to boot and control the system. The SCSI BIOS on your host adapter acts as an extension of the system BIOS.

Bit A binary digit. The smallest unit of information a computer uses. The value of a bit (0 or 1) represents a two-way choice, such as on or off, true or false, and so on.

Bus A collection of wires in a cable or copper traces on a circuit board used to transmit data, status, and control signals. EISA, PCI, and SCSI are examples of buses.

Bus Mastering A high-performance way to transfer data. The host adapter controls the transfer of data directly to and from system memory without bothering the computer's microprocessor. This is the fastest way for multitasking operating systems to transfer data.

Byte A unit of information consisting of eight bits.

C

CISPR An international committee on radio frequency interference (Committee, International and Special, for Protection in Radio).

Configuration Refers to the way a computer is set up; the combined hardware components (computer, monitor, key board, and peripheral devices) that make up a computer system; or the software settings that allow the hardware components to communicate with each other.

CPU Central Processing Unit. The "brain" of the computer that performs the actual computations. The term Micro Processor Unit (MPU) is also used.

D

DMA Bus Master A feature that allows a peripheral to control the flow of data to and from system memory by blocks, as opposed to PIO (Programmed I/O) where the flow is byte by byte.

Device Driver A program that allows a microprocessor (through the operating system) to direct the operation of a peripheral device.

E

EEPROM Electronically-Erasable Programmable Read Only Memory. A memory chip typically used to store configuration information. See NVRAM.

EISA Extended Industry Standard Architecture. An extension of the 16-bit ISA bus standard. It allows devices to perform 32-bit data transfers.

External SCSI Device A SCSI device installed outside the computer cabinet. These devices are connected in a continuous chain using shielded cables.

F

Fast SCSI A standard for SCSI data transfers. It allows a transfer rate of up to 10 MBytes/sec over an 8-bit SCSI bus and up to 20 MBytes/sec over a 16-bit SCSI bus.

FCC Federal Communications Commission.

File   A named collection of information stored on a disk.

Firmware   Software that is permanently stored in ROM. In the case of BIOS, it can be accessed during boot time without the aid of an operating or file system.

H

Hard Disk   A rigid disk permanently sealed into a drive cartridge. A hard disk can store very large amounts of information magnetically.

Host   The computer system in which a SCSI host adapter is installed. It uses the SCSI host adapter to transfer information to and from devices attached to the SCSI bus.

Host Adapter   A circuit board and/or integrated circuit device that provides a SCSI bus connection to the computer system.

I

Internal SCSI Device   A SCSI device installed inside the computer cabinet. These devices are connected in a continuous chain using an unshielded ribbon cable.

IRQ   Interrupt Request Channel. A path through which a device can get the immediate attention of the computer's CPU. The PCI bus assigns an IRQ path for each SCSI host adapter.

ISA   Industry Standard Architecture. A type of computer bus used in most PC's. It allows devices to send and receive data 16-bits at a time.

K

KByte   Kilobyte. A measure of computer storage equal to 1024 bytes.

L

Local Bus   A way to connect peripherals directly to the computer processor's data path. It bypasses the slower ISA and EISA buses. PCI is a local bus standard.

Logical Unit   A subdivision, either logical or physical, of a SCSI device. Most devices have only one logical unit, but up to

sixteen are allowed for a 16-bit SCSI bus and eight are allowed for an 8-bit SCSI bus.

LUN   Logical Unit Number. An encoded three-bit number for the logical unit.

M

Mainboard   A large circuit board that holds RAM, ROM, the microprocessor, custom integrated circuits, and other components that make a computer work. It also has expansion slots for host adapters and other plug-in boards.

Main Memory   The part of a computer's memory which is directly accessible by the CPU (usually synonymous with RAM).

Motherboard   See Mainboard. In some countries, the term Motherboard is not appropriate.

Multi-tasking   The initiation and control of more than one sequence of operations. This allows programs to operate in parallel.

Multi-threading   The simultaneous accessing of data by more than one SCSI device. This increases the aggregate data throughput.

N

NVRAM   Non-volatile Random Access Memory. Actually an EEPROM (Electronically Erasable Read Only Memory chip) used to store configuration information. See EEPROM.

O

Operating System   A program that organizes the internal activities of the computer and its peripheral devices. An operating system performs basic tasks such as moving data to and from devices, and managing information in memory. It also provides the user interface.

P

Parity Checking   A way to verify the accuracy of data transmitted over the SCSI bus. One bit in the transfer is used to make the sum of all the 1 bits either odd or even (for odd or even parity). If the sum is not correct, an error message appears. SCSI uses odd parity.

PCI   Peripheral Component Interconnect. A local bus specification that allows connection of integrated peripheral controller components, peripheral add-in boards, and processor/memory systems. It bypasses the slower ISA and EISA busses.

Peripheral Devices   A piece of hardware (such as a video monitor, disk drive, printer, or CD-ROM) used with a computer and under the computer's control. SCSI peripherals are controlled through a SCSI host adapter.

Pin-1 Orientation   The alignment of pin-1 on a SCSI cable connector and the pin-1 position on the SCSI connector into which it is inserted. External SCSI cables are keyed to ensure proper alignment, but internal SCSI ribbon cables may not be.

PIO   Programmed Input/Output. A way the CPU can transfer data to and from memory via the computer's I/O ports. PIO can be faster than DMA, but requires CPU time.

Port Address   Also Port Number. The address through which commands are sent to a host adapter board. This address is assigned by the PCI bus.

Port Number   See Port Address.

Q

Queue Tags   A way to keep track of multiple commands that allows for increased throughput on the SCSI bus.

R

RAM   Random Access Memory. Generally, the computer's primary working memory in which program instructions and data are stored and are accessible to the CPU. Information can

be written to and read from RAM. The contents of RAM are lost when the computer is turned off.

RISC Core Symbios Logic SCSI chips contain a RISC (Reduced Instruction Set Computer) processor, programmed through microcode scripts.

ROM Read Only Memory. Memory from which information can be read but not changed. The contents of ROM are not erased when the computer is turned off.

S

SCAM SCSI Configured AutoMatically. A method to automatically allocate SCSI IDs via software when SCAM compliant SCSI devices are attached.

SCSI Small Computer System Interface. A specification for a high performance peripheral bus and command set. The original standard is now referred to as SCSI-1.

SCSI-2 The current SCSI specification which adds features to the original SCSI-1 standard.

SCSI-3 The next SCSI specification, which adds features to the SCSI-2 standard.

SCSI Bus A host adapter and one or more SCSI peripherals connected by cables in a linear chain configuration. The host adapter may exist anywhere on the chain, allowing connection of both internal and external SCSI devices. A system may have more than one SCSI bus by using multiple host adapters.

SCSI Device Any device that conforms to the SCSI standard and is attached to the SCSI bus by a SCSI cable. This includes SCSI host adapters and SCSI peripherals.

SCSI ID A way to uniquely identify each SCSI device on the SCSI bus. Each SCSI bus has fifteen available SCSI IDs numbered 0 through 15 for Wide SCSI (or 0-7 for an 8-bit

SCSI). The host adapter is assigned ID 7 giving it priority to control the bus.

SDMS   SCSI Device Management System. A Symbios Logic software product that manages SCSI system I/O.

STA   SCSI Trade Association. A group of companies that cooperate to promote SCSI parallel interface technology as a viable mainstream I/O interconnect for commercial computing.

Single Ended SCSI   A hardware specification for connecting SCSI devices. It references each SCSI signal to a common ground. This is the most common method (as opposed to differential SCSI and low-voltage differential SCSI, which uses a separate return for each signal).

Synchronous Data Transfer   One of the ways data is transferred over the SCSI bus. Transfers are clocked with fixed-frequency pulses.

System BIOS   Controls the low level POST (Power On Self Test), and basic operation of the CPU and computer system.

T

Termination   The electrical connection required at each end of the SCSI bus, composed of a set of resisters.

U

Ultra SCSI   A standard for SCSI data transfers. It allows a transfer rate of up to 20 MBytes/sec over an 8-bit SCSI bus, and up to 40 MBytes/sec over a 16-bit SCSI bus. STA (SCSI Trade Association) supports using the term "Ultra SCSI" over the older term "Fast-20".

V

VCCI   Voluntary Control Council for Interference.

W

Wide SCSI   A SCSI-2 feature allowing 16 or 32-bit transfers on the SCSI bus. This dramatically increases the transfer rate over the standard 8-bit SCSI bus.

Word   A two byte (or 16-bit) unit of information.

SYMBIOS LOGIC™ SYM8751SPE PCI to Ultra SCSI Host Adapter   User's Guide