

Chapter 4
Hardware Installation

This chapter provides an in-depth description of the steps required to install your *SpeedMaster* board. It includes instructions on how to:

- install your *SpeedMaster* board in your computer
- install peripheral SCSI devices
- run the "Installation / Diagnostics" utility

The *SpeedMaster* board can be used in both Plug-and-Play compatible and NON-Plug-and-Play systems.

For Plug-and-Play Systems: A Plug-and-Play system means your computer is capable of analyzing any new (plug-and-play) adapter card on the I/O bus and making the necessary adjustments to share resources without conflict. You never need to worry about I/O address, DMA channels, or Interrupt Request (IRQ) settings.

A true Plug-and-Play system must have three Plug-and-Play compliant components: *hardware* (computer and adapter cards), *BIOS* and Operating *System* (such as Windows 95). Your computer documentation will tell you if your computer is Plug-and-Play ready. The *SpeedMaster* board is fully Plug-and-Play compatible, so if you have a Plug-and-Play system, all you need to do is install the board; then run the self-booting *Drivers Installation* diskette #1. A series of diagnostics tests will be performed to ensure that the SCSI subsystem is functioning correctly.

For Non-Plug-and-Play Systems: If you do not have a Plug-and-Play system, a self-booting *Drivers Installation* diskette #1 and a 4-pin DIP switch are provided for running diagnostics and determining a compatible I/O address, DMA channel and IRQ for you. The *SpeedMaster* is factory set for compatibility in most systems. However, if the program detects a conflict in your system, use Switch 1 on the SW1 DIP switch to enable the Auto Port Address Increment configuration feature.

When you later add new peripherals to your system, simply run the onboard SCSI BIOS Setup Utility (see *Chapter 6: SCSI BIOS Setup Utility*). There is no need to run the installation program again.

After completing the hardware setup in this chapter, refer to *Chapter 5: Software Installation* to install the appropriate drivers for your operating system and devices.

4-1 Adding SCSI Boards to Your System

4-1.1 Installing Multiple SCSI Boards

If you plan to use more than one *SpeedMaster* in your system, completely install the first board and run the *Drivers Installation* diskette #1. Then install the next board and run the *Drivers Installation* diskette #1 again, and so on. This procedure makes configuration much easier.

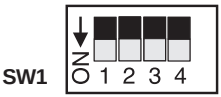
4-1.2 Replacing or Adding to Existing SCSI Boards

If the *SpeedMaster* will replace an existing SCSI host adapter, ***remove the first board, as well as any software device drivers for that board first.*** If you are simply adding the *SpeedMaster* to a system with existing SCSI or IDE controllers, there is no need to change existing boards or software.

4-2 SW1 DIP Switch

There are no jumpers to set, but your *SpeedMaster* does provide a convenient DIP switch for enabling / disabling certain features of the board when needed. SW1 is a 4-position DIP switch, which is mounted on the board where you can easily configure the switches from outside the computer case once the board is installed.

The following identifies the ON / OFF settings of the switches.



SW1-1 Auto port address increment function (default=*OFF*)

SW1-2 Onboard floppy controller
(Default=*ON* for *model i542; OFF* for *model i540)*)

SW1-3 Plug-and-Play support (Default=*OFF*)
(Set this switch ON **only** if both your computer and operating system fully supports the Plug-and-Play feature)

SW1-4 Not used

To set a switch, simply use the point of a ballpoint pen or pencil to gently push the desired switch to an up (OFF) or down (ON) position.

4-3 Installing the *SpeedMaster*

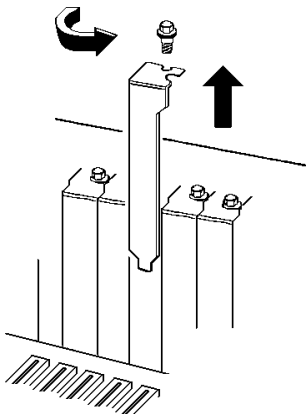
WARNING: *STATIC ELECTRICITY DISCHARGE may permanently damage your system. In order to avoid possible static electricity discharge during installation procedures, please follow the guidelines below:*

- *Discharge any static electricity build up in your body by touching a large grounded metal surface such as the computer case if plugged in, a metal window frame, refrigerator, or water tap for a few seconds.*
- *During installation procedures, avoid any contact with internal parts. Handle cards only by their edges.*

WARNING: Disconnect the AC power source before removing the cover.

Proceed with the following instructions to install the *SpeedMaster* in your computer. General instructions for installing the board are given since the design of computer cases varies. Refer to your computer's reference manual whenever in doubt.

1. Turn OFF the power to your computer and any other connected peripheral devices.
2. Unplug all power cords and cables from the back of the computer. (Be sure to note the cable connections for reconnection when the installation is complete.)
3. Remove your computer's cover by removing its mounting screws with a screwdriver. Slide the cover OFF.
4. Remove the *SpeedMaster* board from its anti-static wrap. Verify the **SW1** DIP switch settings.
   - **For *i542 SpeedMaster* model only:** Verify the **Switch 2** position for the Floppy Controller. Your system can only use one floppy controller. To use the *i542* floppy controller, make sure **Switch 2** is **ON**. If you plan to use another floppy controller, set **Switch 2** to **OFF**.
5. Your *SpeedMaster* board must be installed in a 16-bit ISA-bus expansion slot.
6. Remove the board's selected slot cover by unscrewing the holding screw and sliding it out. Save this screw for securing the *SpeedMaster* board after it's installed.



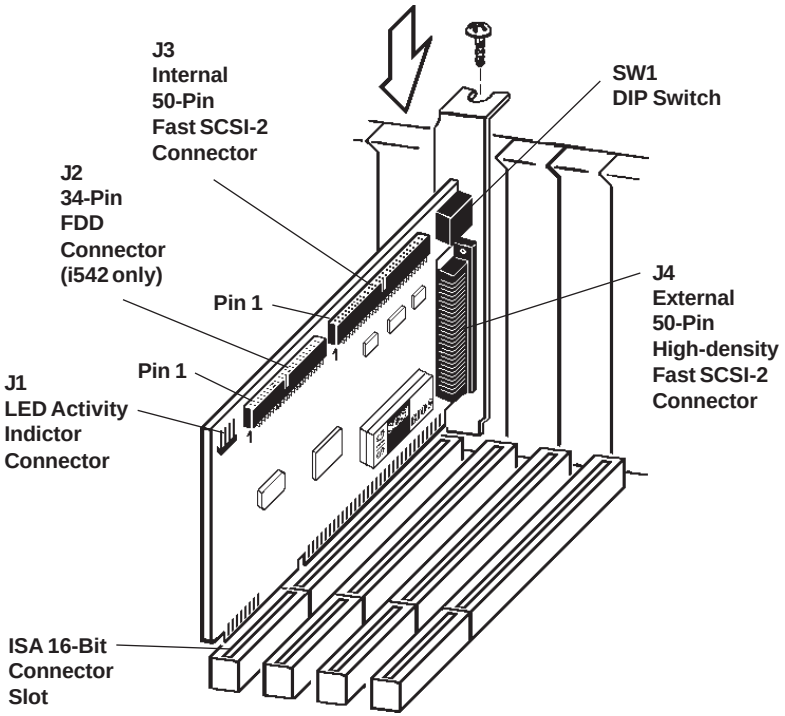
Remove the Slot Cover

7. To install the *SpeedMaster*, carefully align the board's bus connector with the selected ISA-bus expansion slot on the motherboard. Push the board down firmly, but gently, until it is well seated.

   NOTE: Hold the board by its external edges only. Try to avoid touching the components, connectors or pins.

8. Replace the cover slot holding screw to secure the board to the rear slot panel.

Your *SpeedMaster* board is now installed.



Installing the SpeedMaster

4-4 Connect the SCSI Devices

You can connect up to seven internal and/or external SCSI devices to your system via the external **J4** and internal **J3** SCSI ports on your *SpeedMaster* board.

NOTE

It is important that you always use quality cables to shield from noise interference–do not buy cheap cable. External device cables should be constructed of double-shielded twisted pair cable.

In order to run 10MBytes/sec data transfer rate, Fast SCSI-2 specifications limit the total length of all cables to up to 3 meters (9.84 feet).

4-4.1 Internal SCSI Devices

1. Configure and install each internal mountable SCSI device, such as hard disk or CD-ROM drives in your computer according to the manufacturer's instructions.

   a. Follow the rules for terminating devices on the SCSI bus (see page 4-7). Refer to the manufacturer's documentation for proper termination of the devices you plan to install.

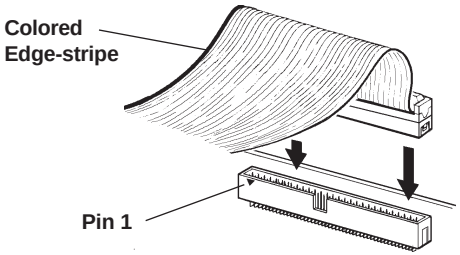
   b. Verify that the factory default SCSI ID number set on each device you plan to install is valid. If there is a conflict, reset it to an available ID (0-6) following the manufacturer's instructions.

2. Attach the 50-pin ribbon cable that was included with the *SpeedMaster* to the **J3** internal connector on the *SpeedMaster* board. Make sure the connector is well seated when making the connection.

   NOTE

   When making ALL cable connections, it is VERY IMPORTANT that pin 1 on the cable's connector (indicated by the colored edge-stripe) is matched with the connector's pin 1 (indicated by an arrow).

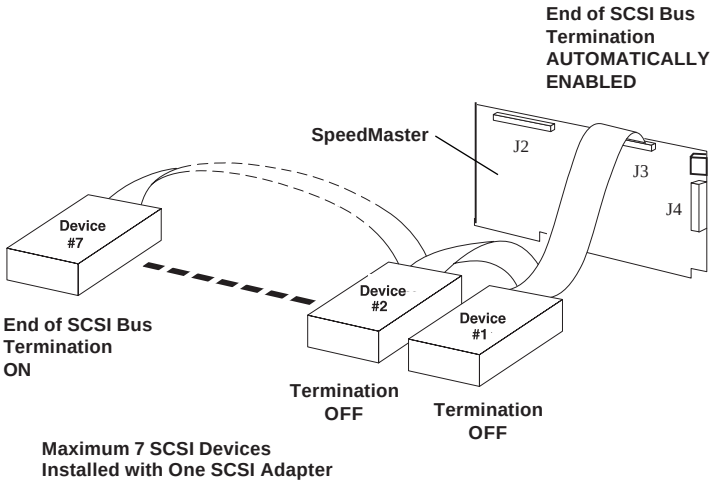
   Note that the cable provided enables you to connect two peripheral devices. If you plan to connect more than two devices, see your local dealer for a ribbon cable that supports multiple devices.



Connecting the Internal SCSI Cable

3. If you are installing only one internal device, attach the *last* connector at the end of the 50-pin cable to the 50-pin connector of the installed SCSI device. Again, make sure that pin 1 on the cable (indicated by the colored stripe) matches pin 1 on the device's connector when making the connection.

   To connect a second internal SCSI device, attach the middle connector of the SCSI ribbon cable to the SCSI connector on the second internal SCSI device. Again, make sure that pin 1s match when making the connection.



Connecting Internal SCSI Devices

4. Most computers have a disk drive activity indicator light (LED) on its front panel. You can plug in the cable from this LED, to the **J1** connector on your *SpeedMaster* board. The LED will light when there is SCSI bus activity. (Refer to your computer's manual regarding this LED cable.)

   For systems with a two-position LED cable, plug its 2-pin connector to pins 1 and 2 of connector **J1**. (Pin 1 is indicated by the silk screened "1".)

If you plan to attach external peripheral device(s) at this time, make sure the termination on all devices is correct. Then, continue with the next section to make your external connection(s) to the SpeedMaster's **J4** port.

4-4.2 External SCSI Devices

NOTE

Your *SpeedMaster* is shipped with only one internal ribbon cable. You will need an additional external cable for each external peripheral device you wish to connect — which should be daisy-chained off the external connector on the *SpeedMaster*. (Refer to the next figure.)

If the device you purchase does not include cabling, you must also purchase a connector cable. The *SpeedMaster* requires a double-shielded cable with a high-density 50-pin connector for its external connection.

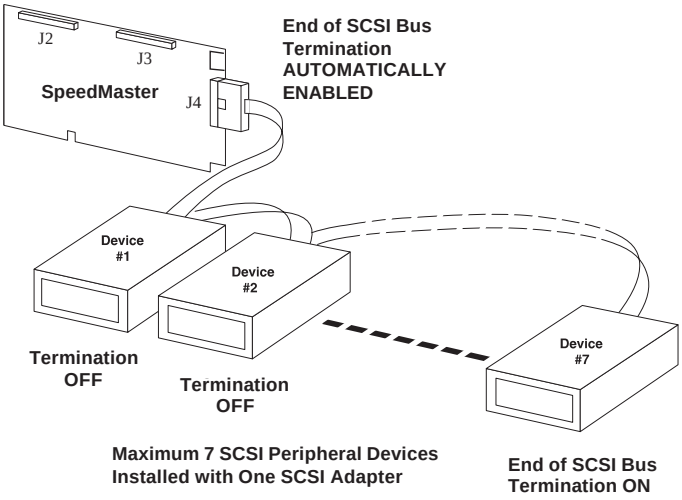
1. Configure each SCSI device, such as a scanner or CD-ROM drive according to the manufacturer's instructions.

   a. Follow the rules for terminating SCSI devices. (See page 4-9.)

   b. Verify that the default SCSI ID number set on each device is valid. If there is a conflict, change it to an available ID number (0-6) following the manufacturer's instructions. (The default SCSI ID # for your *SpeedMaster* is SCSI ID 7.)

2. Attach the 50-pin high-density SCSI cable connector end to the **J4** external connector on the *SpeedMaster* and the other end to your SCSI device. External cable connectors are keyed to plug in only one way to ensure proper pin 1 orientation.

   If you are connecting more than one device, connect the cables between the SCSI devices in a daisy-chained configuration.

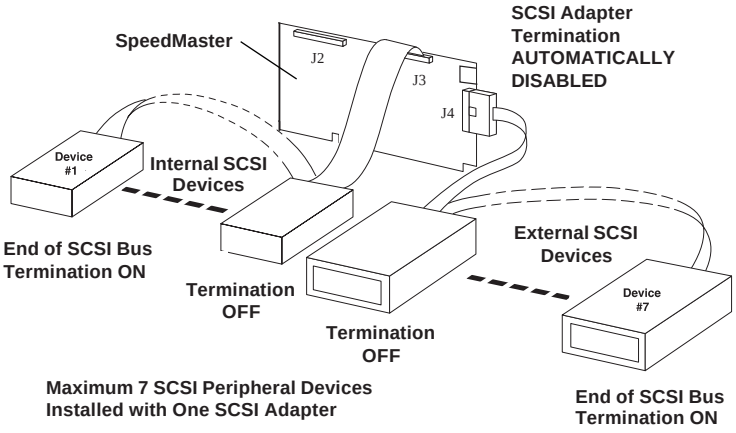


Connecting External Devices

3. Connect the power cords to the peripherals and refer to their manuals for operation.

4-4.3 Internal & External SCSI Devices

The following figure illustrates the configuration for attaching both internal and external SCSI devices to your *SpeedMaster.*



Connecting Internal & External Devices

4-4.4 Floppy Drive Connections *(i542 model only)*

NOTE

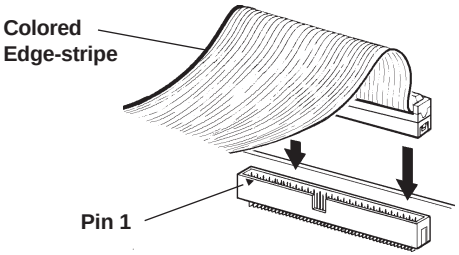
If you have another floppy disk controller in your computer, you may experience address conflicts between the controllers. Either remove the existing floppy controller or disable one of the controllers. (The floppy controller on the *i542 SpeedMaster* is factory *enabled.* If you need to *disable* it, change **Switch 2** on DIP switch **SW1** to **OFF** and disregard this installation)

1. Install the floppy drive(s) in your computer according to the manufacturer's instructions (including power connection.)

2. Attach the single end connector of the 34-pin ribbon cable that was included with your *i542 SpeedMaster* to connector **J2 FLOPPY CONNECTOR** on the board. Make sure the connector is well seated when making the connection.

NOTE

When making cable connections, it is VERY IMPORTANT that pin 1 on the cable's connector (indicated by the colored edge-stripe) is matched with pin 1 on the J2 on-board 34-pin connector (noted by a silk screened "1").

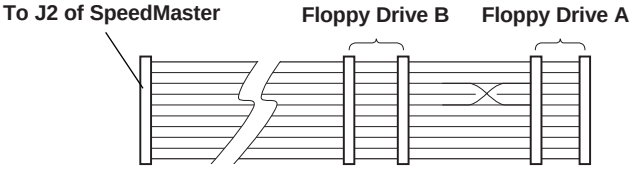


Connect Floppy Drive Cable

3. Note that the ribbon cable has two groups of double connectors at the other end.

If you have one floppy drive: attach one of the connectors of the "last group" (the connector that matches the connector on the drive) to the drive (drive A).

To attach a second floppy drive: attach one of the connectors of the "middle group" (the connector that matches the connector on the drive) to the second drive (drive B).



Floppy Drive Cable Connectors

After completing all your internal connections, double check that the devices are installed properly (including terminations), and the cable connections are secure. Then, replace the cover and reconnect all power cords and cables to the back of the computer.

4-5 Run the System BIOS Setup

Since the *SpeedMaster* includes its own SCSI BIOS, you must disable your computer's system BIOS from controlling SCSI hard disk drives by running the CMOS Setup.

1. Turn your computer ON. Start the system CMOS Setup program by pressing a specified key when prompted during boot up.

2. Go to the Standard CMOS Setup menu that enables you to set the drive options.

   a. If a *non-SCSI* drive and a *SCSI* drive are both present in your system, the *non-SCSI* hard drive will always be your boot drive (Drive C) and its drive type must be defined in CMOS Setup. The second Drive D parameter must be set to "**Not Installed**" for the SCSI drive.

   b. In a SCSI only system, CMOS setup must be run and both Drive C and Drive D must be defined as "**Not Installed**".

After updating the CMOS Setup, your system will reboot when you save the changes to rewrite the CMOS configuration.

4-6 Run the Installation/Diagnostics Program

Once the *SpeedMaster* board is installed in your system, you must reboot your system using the *Drivers Installation* diskette #1 that came with your *SpeedMaster*. Doing this will run a Diagnostic Program that will analyze the system and perform tests on the *SpeedMaster* board. This is a one-time procedure to ensure that the SCSI subsystem is functioning properly.

Perform the following steps to run the Installation / Diagnostics Program. The program will prompt you through the various screens.

- Do not reboot or power down the system until the program directs you to do so.
- If an error message is displayed, please write it down, then contact Technical Support.

1. Insert the *Drivers Installation* diskette #1 in Drive A. (Note that this is a bootable 3-1/2" diskette, which requires that **drive A** be a 1.44MB floppy drive.)

   If your computer boots from a hard drive, run your BIOS Setup Program and temporarily change the boot disk to drive A. Remember to run the system BIOS Setup program again after installing the *SpeedMaster* to reset your original boot drive.

2. **For Plug-and-Play systems:**

   a. Reboot your computer. After the system boots, the program will present a "Welcome" screen. If you have a monochrome monitor, press <**F9**>. Otherwise press the <**Spacebar**>.

   b. Turn ON the power to your external SCSI devices.

   c. Press the <**Spacebar**> to perform diagnostics. A complete test of the *SpeedMaster* and the SCSI subsystem will be completed within a few moments.

d. Select "**Yes**" and press <**Enter**> when the program wants to *Examine* the SCSI Bus and List Devices. Let the program perform its examination and show you a list of devices.

e. Select "**Yes**" if all your connected devices appear on the list. If they don't, select "**No**", and the program will provide troubleshooting tips and ask you to reboot.

f. Follow the prompts to complete. Then, remove the installation disk and reboot your system.

3. **For NON Plug-and-Play systems:**

a. Reboot your computer. After the system boots, the program will check the card. Follow the prompts.

If a display message indicates that there is an I/O address conflict, proceed to the next step.

If there is no message indicating a conflict, skip to *step e.*

b. Change **Switch 1** on the **SW1** DIP switch to **ON**.

c. Press the *Reset Button*, or turn the computer OFF, wait 5 seconds, then back ON. If a conflict still exists, repeat the reboot procedure until a message is displayed that notifies you that the "card is detected".

Then you will be instructed to *disable* the "Auto Port Address Increment" switch.

d. Change **Switch 1** on the **SW1** DIP switch back to the **OFF** position and reboot your computer.

e. Select "**Yes**" and press <**Enter**> when the program asks to perform diagnostics. When all tests are successful, press the <**Spacebar**> to continue.

f. Select "**Yes**" and press <**Enter**> when the program wants to *Examine* the SCSI Bus and List Devices. Let the program perform its examination and show you a list of devices.

Note: **The program will display the I/O Port Address, BIOS Address, IRQ and SCSI ID for the *SpeedMaster*. Record this information on page 1-3 for future reference.**

g. Select "**Yes**" if all your connected devices appear on the list. If they don't, select "**No**", and the program will provide troubleshooting tips and ask you to reboot.

h. Follow the prompts to complete. Then, remove the installation disk and reboot your system.

Congratulations! You have completed the hardware installation.

4-7 Where to Next?

At this point, your *SpeedMaster* and its attached SCSI hard disk drives are ready for use. However, you must now install the appropriate ASPI manager for your operating system, and drivers to support your attached peripheral devices. (Certain device drivers may also be independently supplied by the device's manufacturer.)

If your PC already has an operating system (OS) installed: go to *Chapter 5: Software Installation* and follow the applicable instructions to install the appropriate software files for your operating system.

If an operating system is not yet installed: proceed first with its installation. The SCSI BIOS has built-in hard disk drive support, so you should experience normal operation with any attached SCSI hard drive. Then, install the appropriate software files for your OS. Refer to *Chapter 5: Software Installation* for instructions.

To maximize the use of multi-tasking operating systems, such as Novell, UNIX, Windows NT or OS/2, some of the default settings of the SCSI BIOS configuration may be changed. Your *SpeedMaster* includes its own SCSI BIOS Setup Utility for configuring the SCSI Bus. Refer to *Chapter 6: SCSI BIOS Setup* for instructions on how to use this menu-driven setup program to manually configure its feature options.