

Chapter 1

System Board

1.1 Features

This high-performance system board supports the new Intel Pentium Pro CPU running at 150/180/200 MHz. Designed to work with Intel chipsets composed of PCI bridge, memory controller, data bus accelerator, and data buffers, the CPU carries a new generation of power not present in its predecessors. The CPU also incorporates the first-level (L1) and second-level (L2) caches, the advanced peripheral interrupt controller (APIC), and the system bus controller.

The system board utilizes both the ISA and the PCI local bus architecture. Three ISA and four PCI bus slots reside on the board to allow installation of either master or slave devices.

The board has three memory banks composed of two 72-pin SIMM sockets each that support a maximum system memory of 384 MB using 64-MB SIMMs. The SIMM sockets support both EDO and fast-page mode SIMMs.

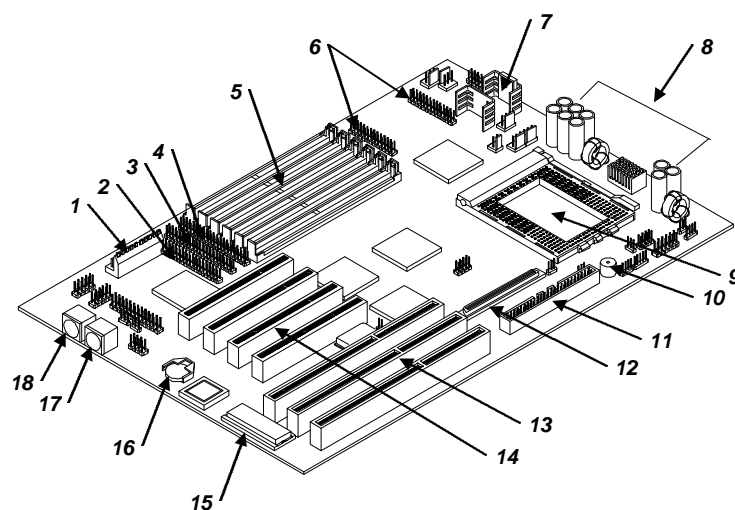
A 50-pin Fast SCSI-II and a 68-pin Wide SCSI interface come with the system board to connect SCSI devices. Standard I/O features such as two enhanced IDE drive interfaces, two serial interfaces, one parallel port interface, a diskette drive interface, and PS/2 mouse and keyboard connectors reside on the system board.

1.2 Major Components

The system board has the following major components:

- One zero-insertion force (ZIF) socket for Intel Pentium Pro CPU
- Three memory banks (Bank 1 to Bank 3) composed of six 72-pin SIMM sockets
- Three ISA and four PCI expansion slots
- 256-KB Flash ROM for system BIOS
- 50-pin Fast SCSI-II and 68-pin Wide SCSI interfaces
- RDM connectors (optional)
- Enhanced IDE hard disk and diskette drive interfaces
- Power connector for 200-watt switching power supply
- I/O, SCSI, and memory, controller chipsets
- ASM controller chipset (optional)
- USB interface for additional peripheral support (optional)
- External ports:
 - PS/2-compatible keyboard port
 - PS/2-compatible mouse port

1.2.1 System Board Layout



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|----------------------------|----------------------------|
| 1 Power connector | 10 Buzzer |
| 2 Diskette drive connector | 11 Narrow SCSI connector |
| 3 IDE 1 connector | 12 Wide SCSI connector |
| 4 IDE 2 connector | 13 ISA bus slots |
| 5 SIMM sockets | 14 PCI slots |
| 6 RDM connectors | 15 BIOS |
| 7 CPU voltage regulators | 16 Battery |
| 8 VRM components | 17 PS/2 mouse connector |
| 9 Pentium Pro CPU socket | 18 PS/2 keyboard connector |

Figure 1-1 System Board Layout

1.3 Jumpers and Connectors

1.3.1 Jumper and Connector Locations

Figure 1-2 shows the jumper locations on the system board. The blackened pin on a jumper represents pin 1.

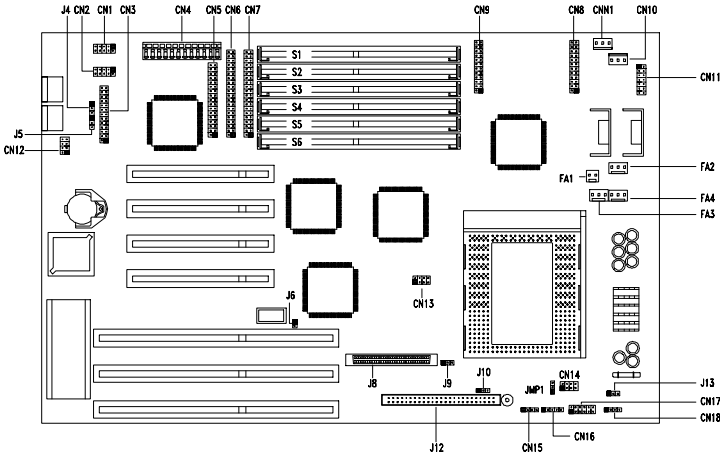


Figure 1-2 Jumper and Connector Locations



The blackened pin of a jumper or connector represents pin 1.

1.3.2 Jumper Settings

Table 1-1 Jumper Settings

Jumper	Setting	Function
BIOS Type J4	1-2* 2-3	Acer BIOS OEM BIOS
Password Security J5	1-2 2-3*	Password check Password bypass
SCSI Selection J6	Open 1-2	Narrow SCSI Wide SCSI
CPU Bus Frequency J9	1-2 2-3*	60 MHz (150/180 MHz) 66 MHz (200 MHz)
SCSI Termination J10	Open 1-2 2-3*	Terminator off for both narrow and wide SCSI Terminator on for either narrow or wide SCSI SCSI terminator switchable to On or Off using the SCSI setup utility
Sound Output J13	1-2* 2-3	Buzzer Speaker
Reset/SMM Switch JMP1	1-2* 2-3	Enables reset switch Disables reset switch and enables SMM switch

* Default setting

Table 1-2 lists the CPU core over bus frequency ratios depending on CN13 settings.

Table 1-2 CN13 Settings for CPU Core/Bus Frequency Ratio

CN13 Settings				CPU Core / Bus Freq. Ratio
1-5	2-6	3-7	4-8	
1	1	1	1	2
1	1	0	1	3
1	1	1	0	4
1	1	0	0	5
0	1	1	1	2.5
0	1	0	1	3.5

0 = Open

1 = Closed

Table 1-3 lists the CPU core voltages depending on CN14 settings.

Table 1-3 CN14 Settings for CPU Core Voltage

CN14 Settings				CPU Voltage
1-5	2-6	3-7	4-8	
1	1	1	1	3.5
1	1	1	0	3.4
1	1	0	1	3.3
1	1	0	0	3.2
1	0	1	1	3.1
1	0	1	0	3.0
1	0	0	1	2.9
1	0	0	0	2.8
0	1	1	1	2.7
0	1	1	0	2.6
0	1	0	1	2.5
0	1	0	0	2.4
0	0	1	1	2.3
0	0	1	0	2.2
0	0	0	1	2.1
0	0	0	0	Reserved

0 = Open

1 = Closed



DO NOT change the settings of CN14 unless you are qualified to do so. Ask a technician if you need help when configuring these jumpers.

1.3.3 Connector Functions

Table 1-4 lists the different connectors on the system board and their respective functions.

Table 1-4 *Connector Functions*

Connector	Function
CN1	COM1 connector
CN2	COM2 connector
CN3	Parallel port connector
CN4	Power connector
CN5	Diskette drive connector
CN6	IDE1 connector
CN7	IDE2 connector
CN8, CN9	RDM connectors
CN10	Software shutdown power control connector
CN12	Universal serial bus (USB) connector
CN15	Speaker connector
CN16	Power LED and keylock connector
CN17	Reset button and RDM cable connector
CN18	Hard disk LED connector
FA1	CPU fan connector
FA2, FA3, FA4	Reserved (for housing fans)
CNN1	Reserved
CN11	Reserved
J8	Wide SCSI connector
J12	Narrow SCSI connector

USB Bracket Installation

The system board includes a connector (CN12) for the optional universal serial bus (USB) bracket. The USB bracket has two external special connectors to support additional serial peripherals.



The USB bracket is an optional item.

Follow these steps to install the USB bracket:

1. Remove the cover of an expansion slot on the housing rear panel.
2. Insert the USB bracket into the slot until it fits in place.
3. Secure the bracket with a screw.
4. Locate CN12 on the system board. See Figure 1-2.
5. Attach the USB cable connector to CN12.

The USB cable is a 10-pin female connector. Note that one pin on the connector is covered to ensure the correct orientation when you attach it to CN12 which is an 8-pin connector.

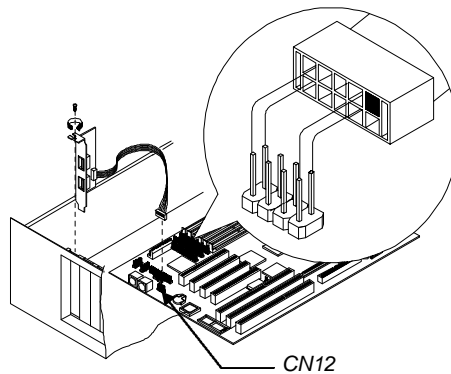


Figure 1-3 USB Bracket Installation

1.4 ESD Precautions

Always observe the following ESD (electrostatic discharge) precautions before installing any system component:

1. Do not remove any system component from its packaging unless you are ready to install it.
2. Wear a wrist grounding strap before handling electronic components. Wrist grounding straps are available at most electronic component stores.



DO NOT attempt the procedures in the following sections unless you are confident of your capability to perform them. Otherwise, ask a service technician for assistance.

1.5 Installing a Pentium Pro CPU

1.5.1 Installation with the Sliding Heat Sink

Follow these installation steps if your CPU board comes with the sliding heat sink:

1. Release the heat sink locks.
2. Attach the heat sink by sliding its rails along the longer sides of the rectangular Pentium Pro CPU. Make sure that the heat sink completely covers the CPU.
3. Hold the CPU and the heat sink firmly together then slide the locks on the sides of the heat sink to secure the CPU.

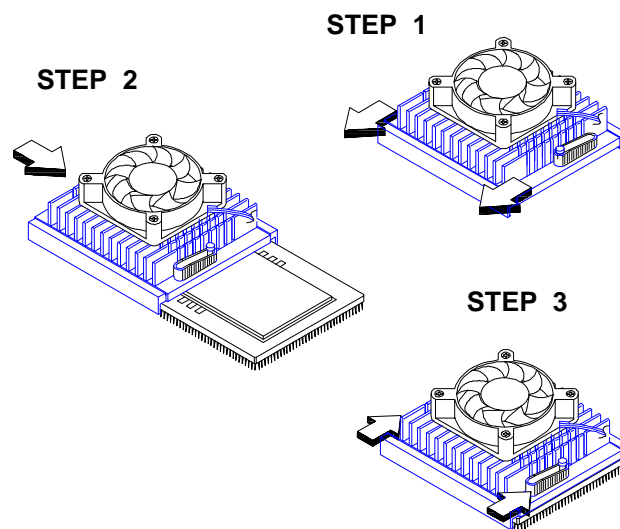


Figure 1-4 Attaching the Sliding Heat Sink to the CPU

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4. Lift up the CPU socket lever.
 5. Look at the underside of the CPU and note the area where the pins are denser or closely embedded. Gently insert the CPU pins into the socket, matching the denser pins with the denser holes on the socket.



Be careful not to bend any pins.

6. Push down the socket lever.
7. Connect the CPU fan cable to the fan connector FA1 on the system board.

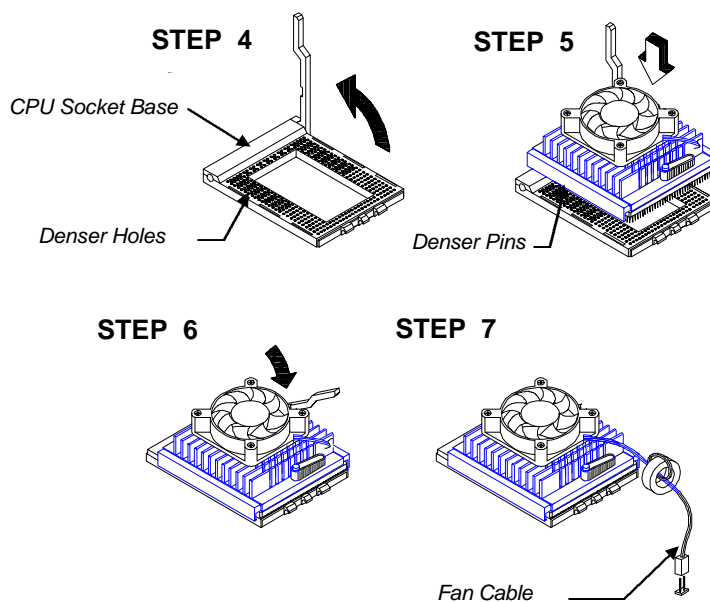


Figure 1-5 Installing a CPU with the Sliding Heat Sink

1.5.2 Installation with the Hook-Type Heat Sink

Follow these installation steps if your CPU board comes with the hook-type heat sink:

1. Lift up the CPU socket lever.
2. Look at the underside of the CPU and note the area where the pins are denser or closely embedded. Gently insert the CPU pins into the socket, matching the denser pins with the denser holes on the socket.
3. Push down the socket lever.
4. Place the heat sink and fan over the CPU such that the rear heat sink hook matches the holding tab on the socket base, and the front heat sink hook (locking hook) matches the tab on the front of the socket.

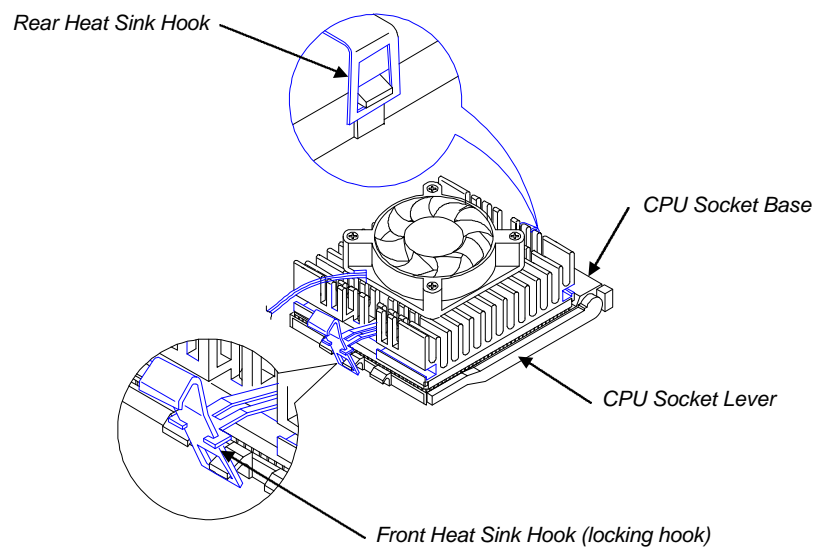


Figure 1-6 Installing the Hook-Type Heat Sink and Fan

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5. Link the rear heat sink hook to the holding tab at the base of the socket, then the front hook to the holding tab on the front. This locks the heat sink and fan to the CPU socket.



To remove the heat sink and fan, simply press the upper part of the front heat sink hook inward.

6. Attach the CPU fan cable to the fan connector FA1 on the board.

1.6 Memory Upgrade

The six 72-pin SIMM sockets onboard support both Extended Data Output (EDO) and fast-page mode SIMMs. You may install 4-MB and 16-MB single-density as well as 8-MB, and 32-MB double-density SIMMs for a total of 192-MB system memory. The SIMM sockets also support 64-MB SIMMs, when available, to achieve 384-MB system memory.

1.6.1 Rules for Adding Memory

- Use only the same type of SIMM in a given bank
- You may combine different types of SIMMs for a particular memory configuration as long as the SIMMs in each bank are of the same type.
- Always install SIMMs in pairs. For example, for a total memory of 16 MB, install two 8-MB SIMMs into the sockets marked S6 and S5 (bank 1) or S2 and S1 (bank 3). You can not use a 16-MB SIMM alone for a 16-MB memory.
- Always **install** SIMMs starting from an inner socket. For example, install SIMMs in socket S6 before in socket S5, or in socket S2 before socket S1.
- Always **remove** SIMMs starting from an outer socket. For example, remove SIMMs in socket S5 before in socket S6, or in socket S1 before socket S2.

1.6.2 Memory Configurations

Table 1-5 lists the available memory configurations.

Table 1-5 Memory Configurations

Bank 1		Bank 2		Bank 3		Total Memory
S6	S5	S4	S3	S2	S1	
8 MB	8 MB					16 MB
8 MB	8 MB	4 MB	4 MB			24 MB
8 MB	8 MB	8 MB	8 MB			32 MB
16 MB	16 MB					32 MB
16 MB	16 MB	4 MB	4 MB			40 MB
16 MB	16 MB	8 MB	8 MB			48 MB
16 MB	16 MB	8 MB	8 MB	4 MB	4 MB	56 MB
8 MB	8 MB	8 MB	8 MB	16 MB	16 MB	64 MB
4 MB	4 MB	8 MB	8 MB	32 MB	32 MB	88 MB
16 MB	16 MB	16 MB	16 MB	16 MB	16 MB	96 MB
32 MB	32 MB	8 MB	8 MB	16 MB	16 MB	112 MB
32 MB	32 MB	32 MB	32 MB			128 MB
32 MB	32 MB	32 MB	32 MB	16 MB	16 MB	160 MB
32 MB	32 MB	32 MB	32 MB	32 MB	32 MB	192 MB
64 MB	64 MB	64 MB	64 MB	64 MB	64 MB	384 MB



The above configurations are only some of the available memory combinations. You can use other combinations as long as you follow the rules for upgrading memory. See section 1.6.1.

1.6.3 Installing a SIMM

Follow these steps to install a SIMM:

1. Carefully slip a SIMM at a 45° angle into a socket making sure that the curved edge indicating the pin 1 of the SIMM matches pin 1 of the socket.



A SIMM fits only in one direction. If you slip in a SIMM but would not completely fit, you may have inserted it the wrong way. Reverse the orientation of the SIMM.

2. Gently push the SIMM to a vertical position until the pegs of the socket slip into the holes on the SIMM, and the holding clips lock the SIMM into position. The SIMM should be at a 90° angle when installed.

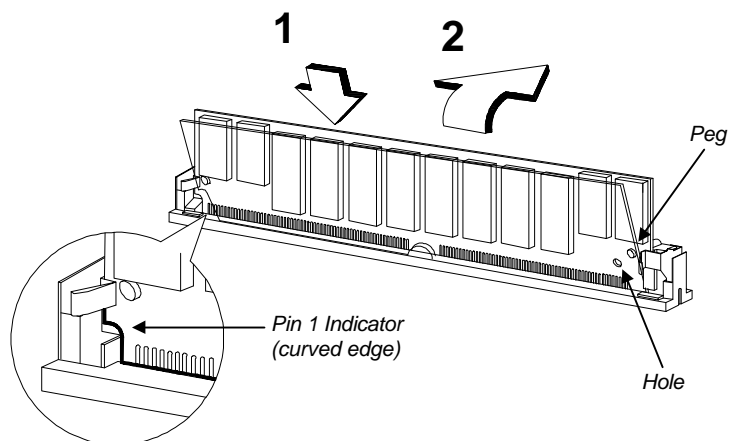


Figure 1-7 Installing a SIMM

1.6.4 Removing a SIMM

Follow these steps to remove a SIMM:

1. Press the holding clips on both sides of the SIMM outward to release it.
2. Push the SIMM downward to a 45° angle.
3. Pull the SIMM out of the socket.

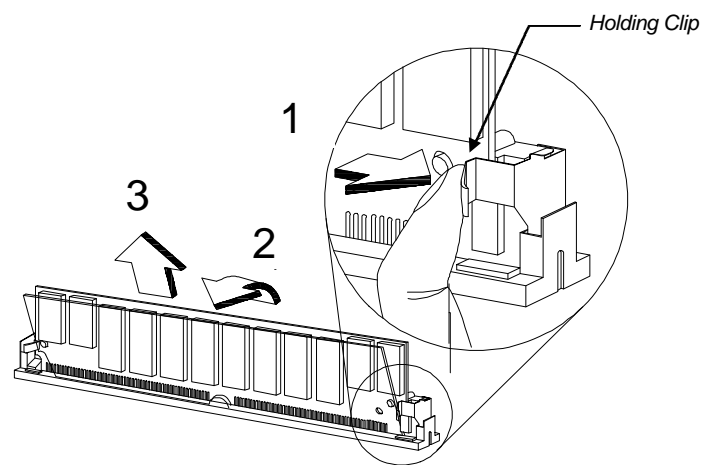


Figure 1-8 Removing a SIMM

1.6.5 Reconfiguring the System

Reconfigure the system after installing or removing SIMMs.

Follow these steps to reconfigure the system:

1. Reboot the system. A memory error message appears, indicating that the total memory does not match the value stored in CMOS.
2. Press **CTRL** + **ALT** + **ESC** during the power-on self-test (POST) routine to run Setup. During POST, a message indicating a wrong memory configuration appears.
3. Press **ESC** twice to exit Setup and reboot the system. The system boots with the new memory configuration.

1.7 SCSI Feature

The system board features a single-chip SCSI host adapter that adds SCSI I/O capability to the system. The chipset consists of an onboard microcontroller, bus master interface controller, and SCSI controllers. A 50-pin Fast SCSI-II interface with 10 MB/s transfer rate and a 68-pin Wide SCSI interface that transfers at 20 MB/s (Wide SCSI) and 40 MB/s (Ultra SCSI) are also onboard to accommodate various SCSI devices.

1.7.1 Using the SCSI Feature

Follow these steps to use the SCSI feature:

1. Install a SCSI device in the system and connect it to the SCSI interface on the system board. See Figure 1-1 for the location.
2. Set jumper J6 and J10 accordingly. Refer to Table 1-1 for the jumper settings.
3. Enter the BIOS utility to set the corresponding SCSI parameters.
4. Enter the SCSI Configuration Utility and make the necessary changes. Refer to Chapter 3 for information on the SCSI Configuration Utility.

For more information about the installation procedures under different operating systems, read the README.XXX in the subdirectory of the target operating system.

1.8 Server Management Features (optional)

1.8.1 ASM Pro

The ASM Pro is a server management tool based on the Simple Network Management Protocol (SNMP). It detects server problems related to the CPU thermal condition, 5V/3.3V detection, or PCI bus utilization calculation.

This feature is designed primarily for server supervisors and management information system (MIS) personnel to help them detect errors or potential trouble spots in their network servers through a single management station.

The ASM Pro consists of two major parts:

- ASM-Station - a Windows-based monitoring station that communicates with the ASM-Agents.
- ASM-Agent(s) - the individual servers managed by the ASM-Station.

Refer to the ASM Pro user's manual for more information.

1.8.2 Remote Diagnostic Management

The Remote Diagnostic Management (RDM) is a network management tool that utilizes modems and telephone lines to control a host of servers from a remote station. It monitors and analyzes the server condition, updates the BIOS settings if necessary, or reboots the server in the event of failure and quickly return it to normal operation. This capability to execute the RDM program from a remote site bridges the distance barrier in fixing server problems and reduces wasted time due to system failure.

Installing the RDM Module

The system board comes with connectors CN8 and CN9 to accommodate the RDM module, and CN17 to connect the RDM cable.

Follow these steps to install the RDM module and connect the cable:

1. See Figure 1-1 for the location of the RDM connectors.
2. Gently insert the RDM module into CN8 and CN9. The module fits only in one direction. Do not force it into to the connectors.

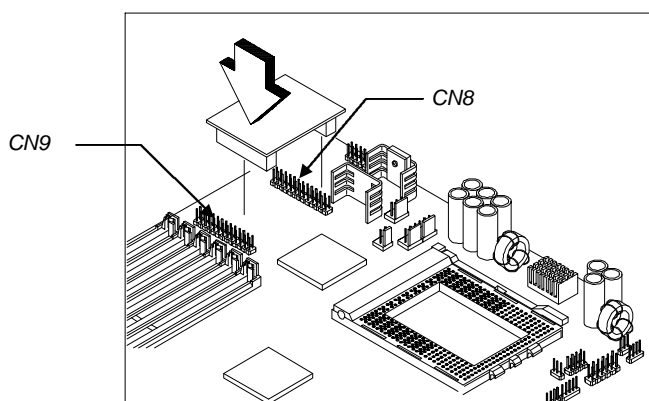


Figure 1-9 Installing the RDM Module

3. Insert the cable end with the RDM button into the slot on the housing front panel.
4. Attach the other end of the RDM cable to CN17 (pins 5-6, 11-12) on the system board. Note that the covered pin of the cable connector does not connect to any pin.

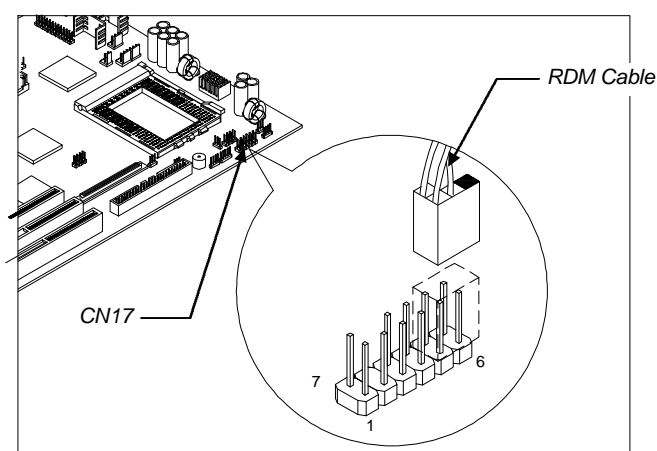


Figure 1-10 Connecting the RDM Cable

Refer to the RDM User's Guide for detailed instructions on RDM installation.

1.9 Error Messages

Do not continue using the computer if you receive an error message of any type. Note the message and take corrective action. This section describes the types of error messages and lists their corresponding corrective measures.

There are two general types of error messages:

- Software
- System

1.9.1 Software Error Messages

Software error messages are returned by your operating system or application. These messages typically occur after you boot the operating system or when you run your application. If you receive this type of message, consult your application or operating system manual for help.

1.9.2 System Error Messages

A system error message indicates a problem with the computer itself. A message of this type normally appears during the power-on self-test, before the operating system prompt appears. Table 1-6 lists the system error messages.

Table 1-6 *System Error Messages*

Message	Action
CMOS Battery Error	Replace the battery or contact your dealer.
CMOS Checksum Error	Run Setup.
CPU BIOS Update Code Mismatch	Contact your dealer.
Diskette Drive Controller Error or Not Installed	Check and connect the control cable to the diskette controller.
Diskette Drive Error	Check the CMOS settings in Setup and the diskette drive cable connections.
Diskette Drive A Type Mismatch	Run Setup and select the proper drive type.
Diskette Drive B Type Mismatch	Run Setup and select the proper drive type.
Equipment Configuration Error	Modify DRAM configuration to agree with one of the options in Table 1-5.
Hard Disk Controller Error	Run Setup.
Hard Disk 0 Error	Check all cable connections. Replace hard disk.
Hard Disk 1 Error	Check all cable connections. Replace hard disk.
Hard Disk 0 Extended Type Error	Run Setup.
Hard Disk 1 Extended Type Error	Run Setup.
I/O Parity Error	Contact your dealer.
Keyboard Error or No Keyboard Connected	Check and connect the keyboard to the system unit.
Keyboard Interface Error	Replace the keyboard or contact your dealer.

Table 1-6 *System Error Messages (continued)*

Message	Action
Memory Error at: MMMM:SSSS:OOO (W:XXXX, R:YYYY) where: M: MB, S: Segment, O: Offset, X/Y: write/read pattern	Check SIMMs on the system board. Contact your dealer.
Memory Size Mismatch CPU Clock Mismatch	Check the memory size based on the system specifications. Check the internal cable connections. If you are sure that connections and values are correct, ignore the message. If the message reappears, ask for technical assistance.
Onboard Serial Port 1 Conflict	Run Setup and disable the port.
Onboard Serial Port 2 Conflict	Run Setup and disable the port.
Onboard Parallel Port Conflict	Run Setup and disable the port.
Pointing Device Error	Check and connect pointing device.
Pointing Device Interface Error	Replace the pointing device or contact your dealer.
Press F1 key to continue or Ctrl-Alt-Esc for Setup	Press F1 or CTRL + ALT + ESC to enter Setup.
Real Time Clock Error	Run Setup and set the time and date.
Press Esc to turn off NMI, any key to reboot	Press ESC to disregard the NMI error. Press any other key to reboot the system.
Real-time Clock Error	Run Setup.

1.9.3 Correcting Error Conditions

As a general rule, if an error message says "Press F1 to continue," it is caused by a configuration problem, which can be easily corrected. An equipment malfunction is more likely to cause a fatal error, i.e., an error that causes complete system failure.

Here are some corrective measures for error conditions:

1. Run Setup. You must know the correct configuration values for your system before you enter Setup, which is why you should write them down when the system is correctly configured. An incorrect configuration is a major cause of power-on error messages, especially for a new system.
2. Remove the system cover, following the directions in the housing installation manual. Check that the jumpers on the system board and any expansion boards are set correctly.
3. If you cannot access a new disk, it may be because your disk is not properly formatted. Format the disk first using the FDISK and FORMAT commands.
4. Check that all connectors and boards are secure.

If you go through these steps and still receive an error message, the cause may be an equipment malfunction.

If you are sure that your configuration values are correct and your battery is in good condition, the problem may lie in a damaged or defective chip.

In either case, contact an authorized service center for assistance.