

System Board

1.1 Features

The AOpen DX2G Plus is a dual-processor system that supports two Intel Pentium II/III Xeon processors running at 400/450/500/550 MHz with possible higher frequencies supported in the future. It integrates the latest multi-processor and I/O technology in the industry to provide the best performance for workstation users.

AOpen DX2G Plus has been designed to support Intel latest and highest performance processor, the Pentium II/III Xeon. Like its predecessors, the Pentium Pro and Pentium II/III processors, the Pentium II/III Xeon processor implements a Dynamic Execution micro-architecture - a unique combination of multiple branch prediction, data flow analysis, and speculative execution. This means that the Pentium II/III Xeon can deliver higher performance than the Pentium processor while maintaining binary compatibility with all previous Intel Architecture processors. Other than that, the Pentium II/III Xeon processor is available in 512K, 1MB, and 2MB L2 cache options with the introduction of the Slot 2 socket. Unlike Pentium II/III processors, which access the L2 cache at half the processor core speed, the Pentium II/III Xeon processors access the L2 cache at full processor core speed. DX2G Plus has the design to leverage this benefit to process workstation applications with large data sets.

AOpen DX2G Plus was designed to support 100MHz front side bus processors to maximize the performance of Pentium II/III Xeon processors. It also provides 72-bit PC-100 ECC SDRAM DIMM support to expand both memory bandwidth and data correction to the limit. With four DIMM sockets, DX2G Plus supports up to 2GB system memory which is enough for almost all workstation applications and even more than most Unix workstations.

Keeping in mind that graphics performance is key for workstation users, AOpen DX2G Plus supports an AGP 1X/2X graphics port so the graphical data transmission bandwidth can reach up to 533MB/s, four times higher than that of traditional PCI VGA transmission. With DX2G Plus, Acer also provides several leading edge professional graphics solutions for high-end workstation users.

To eliminate the I/O bottleneck common in traditional workstations, AOpen DX2G Plus has a built-in dual channel Ultra2 SCSI (Small Computer System Interface) system. This system enables the throughput of a single channel SCSI bus to reach 80MB/s. Therefore, the system throughput can reach 160MB/s, four times higher than the original single channel Ultra-wide SCSI system. This system especially helps users with large storage data and heavy access traffics. AOpen DX2G Plus also supports narrow SCSI devices, like SCSI tape drives, and DAT, by populating a 50-pin fast SCSI connector on SCSI channel A.

AOpen DX2G Plus is a highly integrated system which tries to incorporate all workstation users' needs in one system. Besides the features introduced above, DX2G Plus also integrates the following features:

- PCI IDE Interface: For IDE devices to be used in the system. This interface supports Ultra DMA/33 and LS-120.
- USB (Universal Serial Bus): For users USB devices, if any.
- Two UART NS16C550 serial ports and one enhanced parallel port with Enhanced Parallel Port (EPP)/Extended Capabilities Port (ECP) support.

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- 10/100 Mb/s LAN: For SOHO (Small Office/Home Office) users to link with network environments. AOpen DX2G Plus also supports Wake-On-LAN (WOL) and Intel LDCM (LANdesk Client Manager) for easy management.

AOpen DX2G Plus supports a power-management function that conforms to the power-saving standards of the U.S. Environmental Protection Agency (EPA) Energy Star program. It also offers the Plug-and-Play feature. This feature saves the user from configuration troubles, thus making the system more user-friendly. For the default configuration, DX2G Plus is bundled with AOpen Bonus Pack which includes on board Lan and SCSI drivers, LDCM Utility, Anti-Virus and detail manual.

The system is fully compatible with major operating systems in the industry, like Windows NT, Windows 95/98, Novell Netware, Novell SFT III, SCO Open Server Unix/UnixWare. AOpen also plans to support Linux and Solaris when related drivers become available.

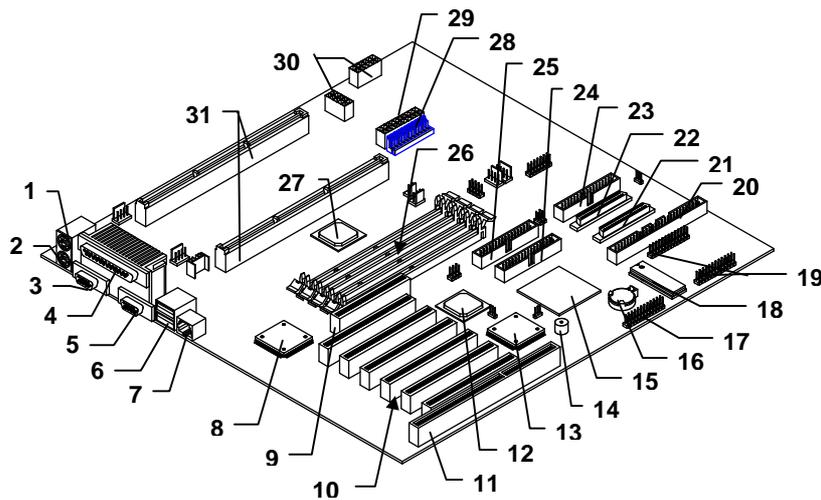
1.2 Major Components

AOpen DX2G Plus has the following major features:

- Supports dual Intel Pentium II/III Xeon processors running at 400/450/500/550 MHz (and possible higher frequencies) with an integrated 512K, 1MB or 2MB L2 write-back cache
- Four DIMM sockets that accept 16-, 32-, 64-, 128-, 256 and 512MB DIMMs with a maximum of 2048 MB system memory
- One AGP, one ISA, and six PCI bus slots (one PCI and ISA shared slot)
- 512-KB Flash ROM for system BIOS
- System clock/calendar with battery backup
- One 50-pin fast SCSI and two 68-pin Ultra2 SCSI interfaces
- I/O APIC device for SMP interrupt support
- Integrates an enhanced PCI local bus IDE controller
- Intel 440GX chipset supports AGP (Accelerated Graphics Port) and Ultra DMA/33 functions
- 10/100 Mb/s Intel 82558 LAN chip that supports Wake-On-LAN (WOL)
- IDE hard disk and diskette drive interfaces
- Auxiliary power connector for 337W SPS (Optional) and 350W ATX power supply
- Super I/O, SCSI, memory and LAN Desk Client Manager (LDCM) controller chipsets
- External ports:
 - USB connectors
 - RJ-45 jack
 - Parallel port
 - PS/2-compatible keyboard port
 - PS/2-compatible mouse port
 - Serial port 1 and 2

1.3 Layout

Figure 1-1 shows the system board components.



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|----|--|----|--|
| 1 | Mouse port | 19 | RDM connectors |
| 2 | Keyboard port | 20 | Channel 2 fast/narrow SCSI connector (50-pin) |
| 3 | Serial port 2 | 21 | Channel 1 Ultra-wide/Ultra-2 SCSI connector (68-pin) |
| 4 | Parallel port | 22 | Channel 2 Ultra-wide/Ultra-2 SCSI connector (68-pin) |
| 5 | Serial port 1 | 23 | FDD connector |
| 6 | USB connectors | 24 | EIDE connector 2 (secondary channel) |
| 7 | RJ-45 LAN connector | 25 | EIDE connector 1 (primary channel) |
| 8 | LAN controller | 26 | DIMM sockets |
| 9 | AGP slot | 27 | Intel 443GX system controller |
| 10 | PCI slots | 28 | AT power connector |
| 11 | ISA slot | 29 | ATX power connector |
| 12 | Intel 82371EB PIIX4E (PCI-ISA bridge) | 30 | Acer H90 / IDM(W) power connectors |
| 13 | Intel 21152 (PCI-PCI bridge) | 31 | Slot-2 CPU sockets |
| 14 | Buzzer | | |
| 15 | Adaptec 7896 SCSI controller | | |
| 16 | Battery | | |
| 17 | Feature Connector (supports Intel SMM cards) | | |
| 18 | System BIOS | | |

Figure 1-1 System Board Layout

1.4 Jumpers and Connectors

1.4.1 Jumper and Connector Locations

Figure 1-2 shows the jumper and connector locations on the system board.

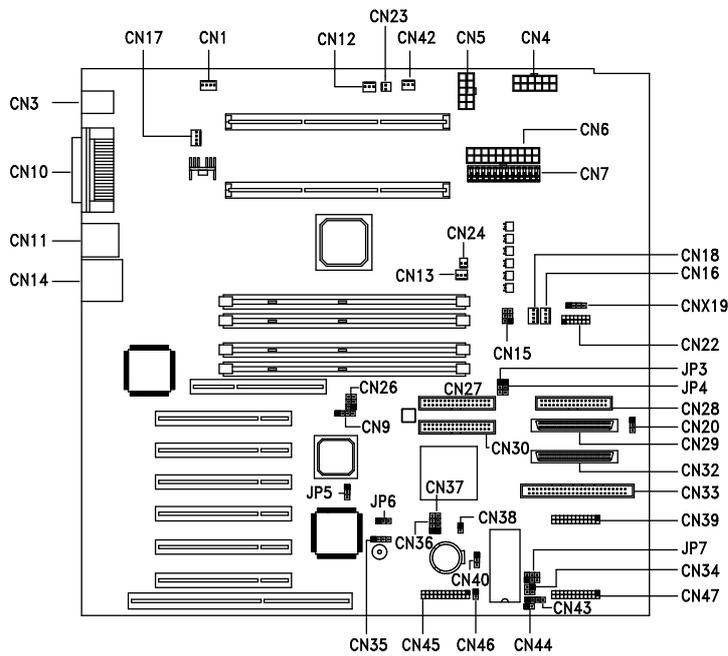


Figure 1-2 System Board Jumper and Connector Locations



Jumpers are prefixed **JP**. Connectors are prefixed **CN**. The blackened pin of a jumper or connector represents pin 1.

1.4.2 Jumper Settings

Table 1-1 lists the system board jumpers with their corresponding settings and functions.

Table 1-1 System Board Jumper Settings

Jumper	Setting	Function
BIOS Logo JP3	1-2* 2-3	Logo OEM
Password Security JP4	1-2 2-3*	Check password Bypass password
Boot Block Mode JP5	1-2* 2-3	Disabled Enabled
Sound Output JP6	1-2* 2-3	Buzzer Speaker
AlertPack Select JP7	1-2/4-5 2-3/5-6*	AlertPack and LM80 LM80 Only

* Default

1.4.3 Connector Functions

Table 1-2 lists the different connectors on the system board and their respective functions.

Table 1-2 Connector Functions

Connector	Function
CN1	Cabinet Fan Connector
CN3	Mouse (above) and Keyboard (below) Ports
CN4, CN5	Specified Power Supply Connector
CN6	ATX 337W Power Connector (3.3V or 5V)
CN7	AT Power Supply Connector
CN9	Modem Card Ring-in Connector
CN10	Parallel (above), Serial 1 (left), and Serial 2 (right) Ports
CN11	USB Connectors
CN12	CPU1 Fan Connector
CN13	CPU2 Fan Connector
CN14	RJ-45 (LAN) Port
CN15	Fail Report LED Connector
CN16	Cabinet Fan Connector
CN17	Cabinet Fan Connector
CN18	Cabinet Fan Connector
CN20	2 Color Power LED Connector
CN22	Redundant Power Status Connector (not used by AOpen DX2G Plus)
CN23	CPU1 Temperature Connector
CN24	CPU2 Temperature Connector
CN26	PC-PCI Connector (for Audio Card)
CN27	Primary IDE Connector
CN28	FDD Connector
CN29	SCSI Channel 2 Connector
CN30	Secondary IDE Connector

Table 1-2 Connector Functions

Connector	Function
CN32	SCSI Channel 1 Wide Connector
CN33	SCSI Channel 1 Narrow Connector
CN34	RDM LED Connector (not used by AOpen DX2G Plus)
CN35	External Speaker Connector
CN36	Hard Disk LED Connector
CN37	Hard Disk LED Connector
CN38	Power Switch Connector
CN39/47	RDM/ASM Module Connector (not used by AOpen DX2G Plus)
CN40	Wake-on-LAN (WOL) Connector
CN42	3-pin Standby Power Connector
CN43	Hard Disk LED Connector
CN44	Reset Button Connector
CN45	Feature Connector (Intel SMM Card)
CN46	Door Switch Connector
CNX19	I2C Connector

1.5 ESD Precautions

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

1. Do not remove a component from its antistatic packaging until 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 described in the following sections unless you are a qualified technician.

1.6 Installing and Removing the Pentium II/III Xeon Processors

Intel Pentium II/III Xeon CPU is a Slot 2 (SC-330) processor that uses a 330-pin single edge connector which is a bit longer than a Slot 1 processor. Other than the size, the major improvement of the Slot 2 processor is at the L2 cache. Pentium II/III Xeon processors access the L2 cache at full clock speed, up to 550MHz and possible higher frequencies, whereas a Slot 1 processor accesses the L2 at only half the CPU clock speed. This significantly boosts performance and speed.

1.6.1 Installing the Retention Mechanisms

Follow these steps to install the retention mechanisms:

1. Attach both the retention mechanisms with the joint bar. Snap-in the joint bar on both sides of each retention mechanism.

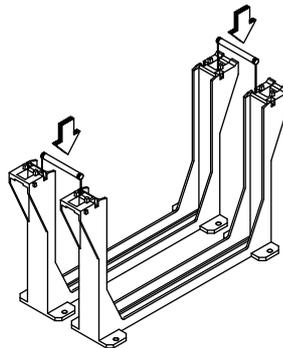


Figure 1-3 Inserting the joint bar into the Retention Mechanisms

2. Insert both retention mechanisms into the Slot 2 sockets. Make sure that the shafts of the retention mechanisms with a O sign are facing the external ports of the system board.

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- Align the metal brace beneath the system board along the Slot 2 retention holes and secure the retention mechanisms with eight screws: six screws (see figure below) to secure the retention mechanisms and two screws afterwards, when fitting the system board to the housing.

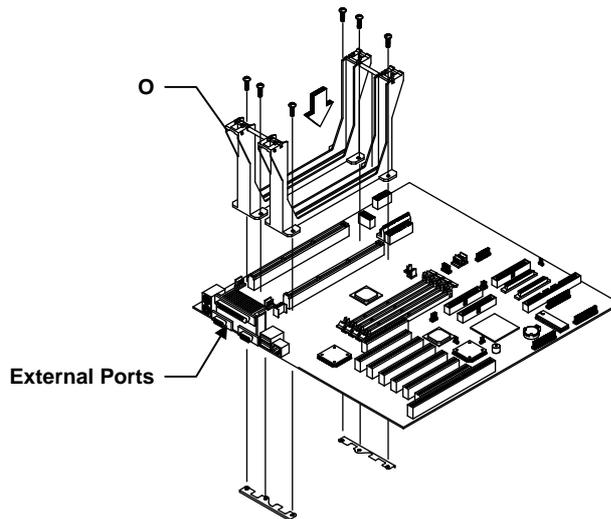


Figure 1-4 *Installing the Retention Mechanisms*

1.6.2 Installing an Intel Pentium II/III Xeon processor

Follow these steps to install a Pentium II/III Xeon processor:

1. Attach the fansink module to the Pentium II/III Xeon processor and secure it with four screws.

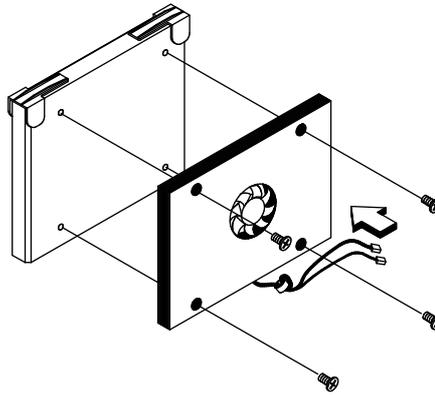


Figure 1-5 Installing a Fansink

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2. Insert the Pentium II/III Xeon processor into an empty Slot 2 socket.

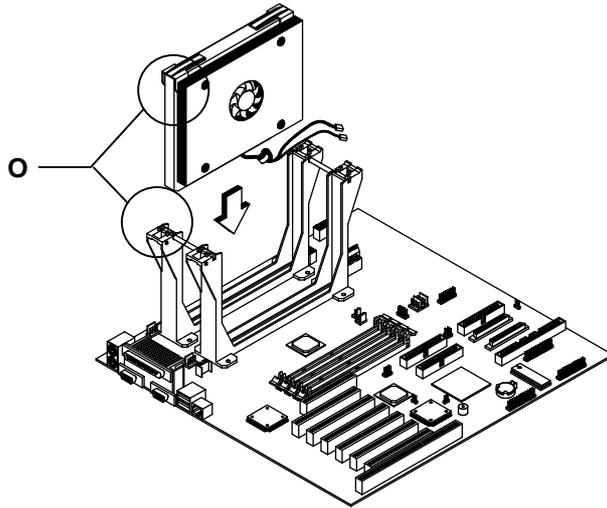


Figure 1-6 Installing a Pentium II/III Xeon Processor

3. Carefully press down the Pentium II/III Xeon processor until it is properly inserted into the socket.

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4. Use the retention mechanism cover to secure the processor by pressing it down until it locks onto the retention mechanism as shown below.

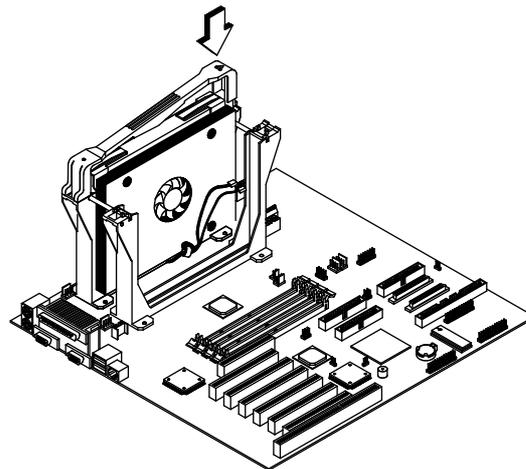


Figure 1-7 Installing a Retention Mechanism Cover

The retention mechanism cover only fits one way. Both shafts of the retention mechanism and the retention mechanism cover have a O and a OO sign. Match the O on the cover with the O on the retention mechanism first, then hook them together and then insert the OO side onto the retention mechanism. Make sure both sides are securel clipped.

1.6.3 Removing an Intel Pentium II/III Xeon processor

Follow these steps to remove a Pentium II/III Xeon processor:

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1. Unclip the retention mechanism cover.

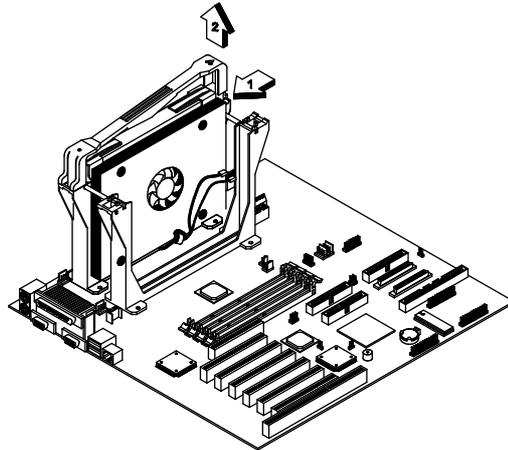


Figure 1-8 Removing a Retention Mechanism Cover

2. Flip up both plastic ears of the Pentium II/III Xeon processor. This procedure detaches the processor from the socket.

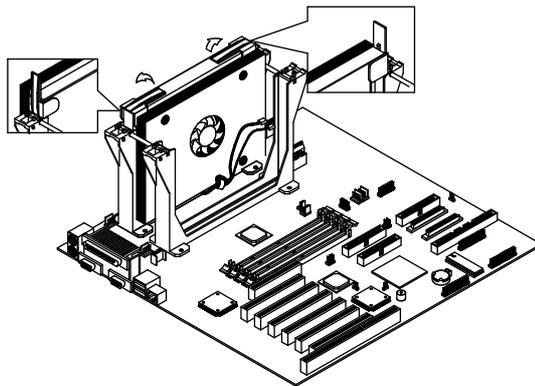


Figure 1-9 Removing a Pentium II/III Xeon Processor

3. Carefully lift up and remove the Pentium II/III Xeon processor.

1.6.4 Installing and Removing the Terminator Board

When you are not using both of the Slot 2 sockets, you must install a terminator board into the empty slot.

To install a terminator board:

1. Position the terminator board over the empty slot.
2. Carefully insert the golden fingers of the terminator board into the slot until the board fits completely.

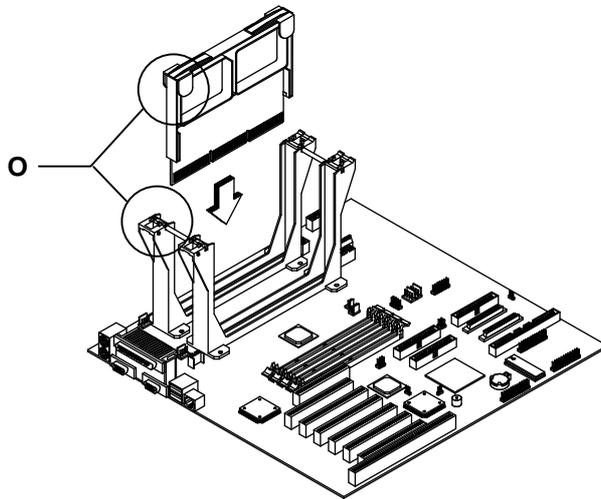


Figure 1-10 Installing a Terminator Board

3. Use the retention mechanism cover to secure the terminator board by pressing it down until it locks onto the retention mechanism. See figure 1-7 for an illustration of this step.

The retention mechanism cover only fits one way. Both the shafts of the retention mechanism and the retention mechanism cover have a O and a OO indicator. Match the O on the cover with the O on the retention mechanism first, then hook them together and insert the OO side onto the retention mechanism, make sure both sides are securely clipped.

To remove the terminator board:

1. Unclip the retention mechanism cover.
2. Flip up both plastic ears of the terminator board. This procedure detaches the terminator board from the socket.
3. Lift up and remove the terminator board.

Refer to section 1.6.3 for illustrations of this procedure.

1.7 Memory Upgrade

The four 168-pin sockets onboard support SDRAM-type DIMMs. You may install 16-MB, 32-MB, 64-MB, 128-, 256-, or 512-MB (single and double density) DIMMs for a maximum of 2048-MB system memory.

The SDRAM DIMMs should work under 3.3 volts only; 5-volt memory devices are not supported. AOpen DX2G Plus supports both 100MHz standard and registered SDRAM. However, they cannot be used at the same time in a system. Please contact your dealer for qualified DIMM vendors.



Do not use both 100 MHz (registered) and 66 MHz (standard/unbuffered) SDRAM together. Such a combination might cause your system to malfunction.

Each of the DIMM sockets is independent from the others. This independence allows you to install DIMMs with different capacities to form different configurations.

1.7.1 Memory Configurations

Table 1-3 lists some system memory configurations. You may combine DIMMs with various capacities to form other combinations.

Table 1-3 Memory Configurations

DIMM1	DIMM2	DIMM3	DIMM4	Total Memory
32 MB				32 MB
32 MB	32 MB			64 MB
32 MB	32 MB	32 MB		96 MB
32 MB	32 MB	32 MB	32 MB	128 MB
64 MB				64 MB
64 MB	64 MB			128 MB

Table 1-3 Memory Configurations

DIMM1	DIMM2	DIMM3	DIMM4	Total Memory
64 MB	64 MB	64 MB		192 MB
64 MB	64 MB	64 MB	64 MB	256 MB
128 MB				128 MB
128 MB	128 MB			256 MB
128 MB	128 MB	128 MB		384 MB
128 MB	128 MB	128 MB	128 MB	512 MB
256 MB				256 MB
256 MB	256 MB			512 MB
256 MB	256 MB	256 MB		768 MB
256 MB	256 MB	256 MB	256 MB	1024 MB
512 MB				512 MB
512 MB	512 MB			1024 MB
512 MB	512 MB	512 MB		1536 MB
512 MB	512 MB	512 MB	512 MB	2048 MB

1.7.2 Installing a DIMM

To install a DIMM, align it with the socket and press it down until the holding clips secure the DIMM in place.



The DIMM socket is slotted to ensure proper installation. If you slip in a DIMM but it does not completely fit, you may have inserted it the wrong way. Reverse the orientation of the DIMM.

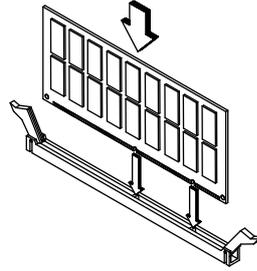


Figure 1-11 Installing a DIMM

1.7.3 Removing a DIMM

To remove a DIMM, press the holding clips on both sides of the socket outward to release the DIMM.



Place your forefingers on the top of the DIMM before you press the holding clips to gently disengage the DIMM from the socket.

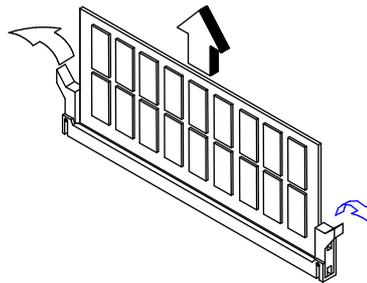


Figure 1-12 Removing a DIMM

1.7.4 Reconfiguring the System

Reconfigure the system after installing or removing DIMMs.

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 .
3. Press  twice to exit Setup and reboot the system. The system boots with the new memory configuration.

1.8 Installing Expansion Cards

1.8.1 Installing an PCI Cards

To install PCI cards:

1. Locate the PCI slots on the system board.
2. Remove the bracket on the housing opposite an empty PCI slot.
3. Insert a PCI card into the slot. Make sure that the card is properly seated.
4. Secure the card to the housing with a screw.

When you turn on the system, BIOS automatically detects and assigns resources to the PCI devices.

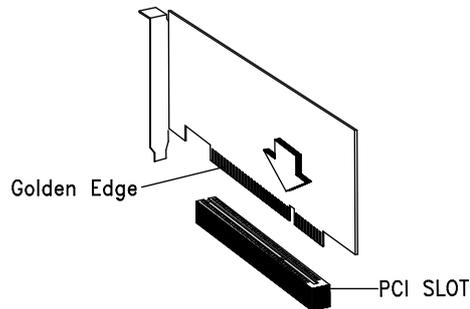


Figure 1-13 Installing a PCI Card

1.8.2 Installing ISA Cards

Both PnP and non-PnP ISA cards require specific IRQs. When installing ISA cards, make sure that the IRQs required by these cards are not previously assigned to PCI devices to avoid resource conflicts.

Follow these steps when installing ISA cards:

1. Install non-PnP ISA cards.
2. Turn on the system.
3. Use the operating system to manually assign the appropriate IRQs to the cards. This ensures that BIOS will not use the resources assigned to the non-PnP ISA cards.



BIOS detects and configures only PnP cards.

4. Turn off the system.
5. Turn on the system. This time PnP BIOS automatically configures the PnP ISA and PCI cards with the available resources.

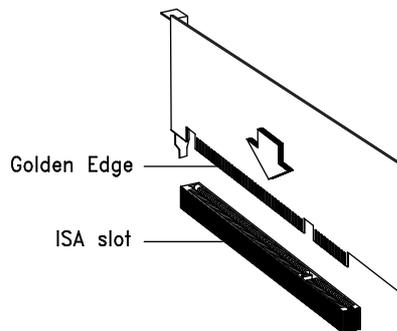


Figure 1-14 Installing an ISA Card

1.8.3 Installing an AGP Card

Follow these steps when installing an AGP card:

1. Locate the AGP slot (brown color) on the mainboard.

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2. Insert an AGP card into the slot. Make sure that the card is properly seated.

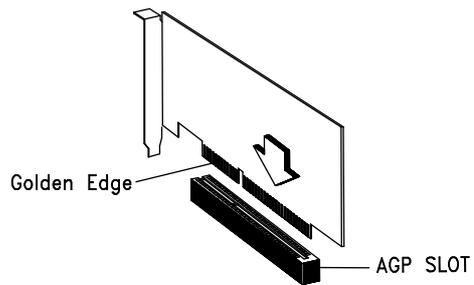


Figure 1-15 Installing an AGP Card

When you turn on the system, BIOS automatically detects and assigns resources to the AGP device.

1.9 LDCM

Intel® LANDesk® Client Manager Version 3.3 is an application that simplifies local and network management of mobile and desktop client systems. It monitors PC health to provide local and remote alerts. It gives local and remote views of hardware and software component, even via dial-up. And it does all this through standards and industry initiatives such as Desktop Management Interface (DMI), Simple Network Management Protocol (SNMP) and the Wired for Management (WfM) Initiative.

This release is pre-installed on Original Equipment Manufacturers (OEMs) PCs and is designed to lower the cost of PC ownership while providing greater control and flexibility to systems administrators.

Key features

Wired for Management Baseline Version 2.0 compliance.

Remote wake-up

Remote dial-up

Dynamic mobile devices

International languages

Real-time monitoring and alerting of hard drive, memory, fan, power supply and temperature.

DMI v2.0-based local and remote client management.

SNMP Trap generation for enterprise alerting.

Certificate-based authentication for enhanced security.

Software Development Kit (SDK) for OEM customization.

1.10 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 explains the different types of error messages and corresponding corrective measures.

There are two general types of error messages:

- Software
- System

1.10.1 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 applications. If you receive this type of message, consult your application or operating system manual for help.

1.10.2 System Error Messages

A system error message indicates a problem with the computer itself. A message of this type normally appears during POST (Power-On Self-Test), before the operating system prompt appears.

Table 1-4 lists possible system error messages.

Table 1-4 System Error Messages

Message	Action
CMOS Battery Bad	Replace the lithium battery or contact your dealer.
CMOS Checksum Error	Run Setup*.

* Press  during POST to enter the BIOS Setup screen.

Table 1-4 System Error Messages

Message	Action
CPU BIOS Update Code Mismatch	Contact your dealer.
Diskette Drive Controller Error or Not Installed Floppy Disk Controller Error	Check and connect the floppy cable on both floppy drive and system board end.
Diskette Drive Error	Check the CMOS settings in Setup* and the floppy drive cable connections.
Diskette Drive A Type Mismatch Floppy Drive A Error	Run Setup* and select the proper floppy drive type.
Diskette Drive B Type Mismatch Floppy Drive B Error	Run Setup* and select the proper floppy drive type.
ECC Facility Fail	DIMM might be bad. Contact your dealer.
Equipment Configuration Error	Modify memory configuration to conform to one of the configurations in Table 1-3.
Expansion ROM Allocation Failed	Contact your dealer.
Hard Disk Controller Error	Run Setup* or check the hard disk cable connection.
Hard Disk 0 Error IDE Primary Channel Master Drive Error	Check all cable connections. Replace hard disk.
IDE Primary Channel Slave Drive Error	Check all cable connections. Replace hard disk.
Hard Disk 1 Error IDE Secondary Channel Master Drive Error	Check all cable connections. Replace hard disk.
IDE Secondary Channel Slave Drive Error	Check all cable connections. Replace hard disk.

* Press  during POST to enter the BIOS Setup screen.

Table 1-4 System Error Messages

Message	Action
Hard Disk 0 Extended Type Error	Run Setup*.
Hard Disk 1 Extended Type Error	Run Setup*.
IRQ Setting Error	Run Setup* to make sure there is no IRQ device conflict.
I/O Parity Error	Contact your dealer.
I/O Resource Conflict(s)	Check ISA add-on card, serial port, and parallel port to make sure there is no IRQ and I/O address conflict.
I2C Interface or Device(s) Error, System Halt	Shut down and disconnect the power cable or contact your dealer.
PS/2 Keyboard Error or No Keyboard Connected	Check and connect the keyboard to the system unit.
PS/2 Keyboard Interface Error	Replace the keyboard or contact your dealer.
PS/2 Pointing Device Error	Check and connect pointing device connection.
PS/2 Pointing Device Interface Error	Run Setup and check pointing device.
Memory Error at: MMMM:SSSS:OOO (W:XXXX, R:YYYY) where: M: MB, S: Segment, O: Offset, X/Y: write/read pattern	Check DIMMs on the system board. Contact your dealer.

* Press  during POST to enter the BIOS Setup screen.

Table 1-4 System Error Messages

Message	Action
Memory Resource Conflict(s)	Check ISA add-on card.
Memory Size Mismatch CPU Clock Mismatch	Check the memory size based on the system specifications. Run Setup*. If the message reappears, ask for technical assistance.
NVRAM Checksum Error	Contact your dealer.
Onboard Pointing Device Interface Error	Replace the pointing device or contact your dealer.
Real Time Clock Error	Run Setup and set the time and date.
RAM Parity Error	Contact your dealer.
64K System Management Memory Bad	Contact your dealer.
SMRAM Not Exist	Contact your dealer.
Press Esc to turn off NMI, any key to reboot	Press  to disregard the NMI error. Press any other key to reboot the system. If this happens repeatedly contact your dealer.

* Press  during POST to enter the BIOS Setup screen.

1.10.3 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 unit cover. 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 securely plugged in.

If you go through the corrective steps above 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.