

# **Chapter 1**

## **System Board**

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### **1.1 Features**

This high-performance system board is designed to support the Intel P54C and P55C CPUs running at 75/100/120/133/150/166/200 MHz. It utilizes both the EISA and the PCI local bus architecture. Three EISA and four PCI bus slots reside on the board to allow installation of either master or slave devices, except for one PCI slot that supports only slave devices.

The board has three memory banks composed of two 72-pin SIMM sockets each that support a maximum system memory of 192 MB using 32-MB SIMMs. The SIMM sockets support both EDO and fast-page mode SIMMs. A second-level cache socket is available for a 256-KB or 512-KB synchronous SRAM module.

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) come with the system board to connect SCSI devices. Standard I/O features such as two serial interfaces (COM1, COM2), one parallel port interface, an IDE drive interface, a diskette drive interface, and PS/2 mouse and keyboard connectors reside on the system board.

The system board also supports a remote diagnostic management (RDM) feature that allows execution of the RDM diagnostic program from a remote RDM station to fix any problem or to reboot the system. Two 24-pin connectors come onboard for the RDM daughter board.

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## 1.2 Major Components

The system board has the following major components:

- One zero-insertion force (ZIF) socket for Intel P54C or P55C CPU
- Three memory banks (Bank 1 to Bank 3) composed of six 72-pin SIMM sockets
- Synchronous cache module socket that supports 256 KB and 512 KB second-level cache
- Three EISA and four PCI expansion slots
- 256-KB Flash ROM for system BIOS
- RTC chip that contains clock/calendar plus 128 bytes CMOS RAM with battery backup
- 50-pin Fast SCSI-II and 68-pin Wide SCSI interfaces
- Two 24-pin RDM interfaces
- IDE hard disk and diskette drive interfaces
- Onboard VRAM and VRAM sockets for video memory upgrade
- Power connector for 200-watt switching power supply
- I/O, SCSI, VGA, memory, and Advanced Server Management (ASM) controller chipsets
- External ports:
  - PS/2-compatible keyboard port
  - PS/2-compatible mouse port

## 1.2.1 System Board Layout

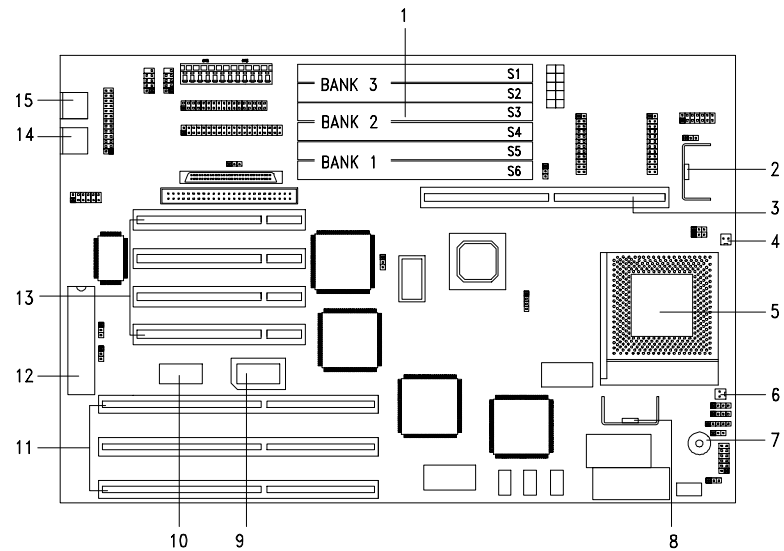


Figure 1-1 System Board Layout

## 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.

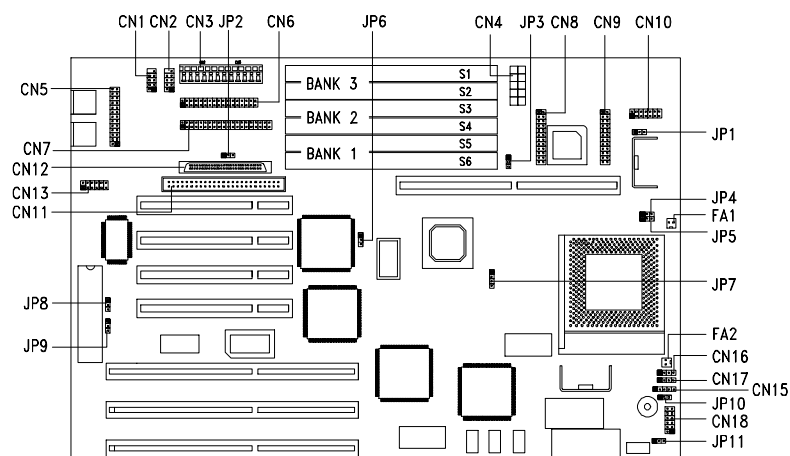


Figure 1-2 Jumper Locations



Jumpers are prefixed "JP". Connectors are prefixed "CN". FA1 and FA2 are fan connectors.

The blackened pin of a jumper represents pin 1.

### 1.3.2 Jumper Settings

Table 1-1 Jumper Settings

Jumper	Setting	Function
CPU Voltage JP1	1-2 2-3*	VR VRE
SCSI Termination JP2	1-2 2-3*	Terminator always ON Use SCSI Setup Utility to set terminator ON or OFF
Cache Size JP3	1-2* 2-3	256 KB 512 KB
SCSI Selection JP6	1-2* 2-3	16-bit 8-bit
BIOS Version JP8	1-2* 2-3	Acer Generic
Password Security JP9	1-2 2-3*	Enabled Disabled
PC Sound Source JP10	1-2* 2-3	Buzzer Speaker
Front Panel Reset JP11	1-2* 2-3	Enabled Disabled

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\* Default setting

*Table 1-1 Jumper Settings (continued)*

Jumper	Setting			Function		
Core/Bus Freq. JP4, JP5, JP7	JP4	JP5	JP7	Bus Freq.	Core Freq.	Ratio
	2-3	2-3	1-2	50 MHz	75 MHz	3/2
	1-2	1-2	2-3	60 MHz	150 MHz	5/2
	2-3	1-2	2-3	60 MHz	120 MHz	2/1
	2-3	2-3	2-3	60 MHz	90 MHz	3/2
	1-2	1-2	3-4	66 MHz	166 MHz	5/2
	2-3	1-2	3-4	66 MHz	133 MHz	2/1
	2-3	2-3	3-4	66 MHz	100 MHz	3/2

### 1.3.3 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	COM1
CN2	COM2
CN3	Power connector for 200-watt SPS
CN4	Power connector for 300-watt SPS
CN5	Parallel port connector
CN6	Diskette drive connector
CN7	IDE drives connector
CN8	Remote diagnostic module (RDM) connector
CN9	Remote diagnostic module (RDM) connector
CN10	Faulty-drive LED connector
CN11	Fast SCSI-II (narrow SCSI) connector
CN12	Wide SCSI connector
CN13	VGA daughter board connector
CN14	Voltage regulator module (VRM) connector

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## 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.



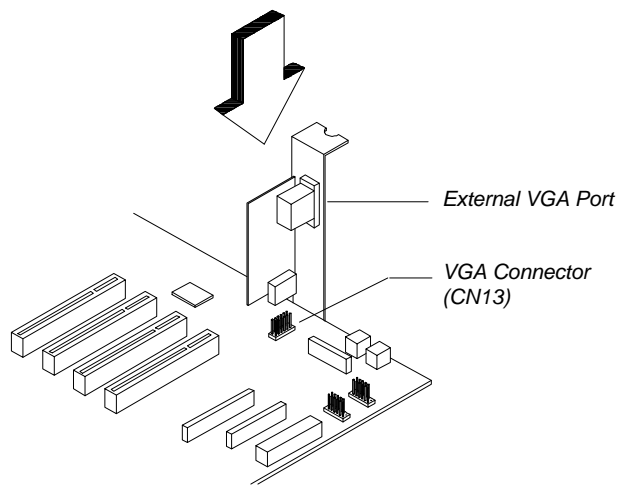
*DO NOT attempt the procedures in the following sections unless you are confident of your capability to perform them. Otherwise, ask a service technician for assistance.*

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## 1.5 Installing a VGA Daughter Board

The system board comes with a video controller, a video connector, and a VGA daughter board. These components save you the trouble of buying a video board and save one bus slot for another expansion board. The daughter board carries an external video port.

To install, simply plug-in the daughter board into CN13 and secure the bracket with a screw.



*Figure 1-3 Installing a VGA Daughter Board*



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## 1.6 CPU Upgrade

The system board comes with a zero-insertion force (ZIF) CPU socket for easy installation.

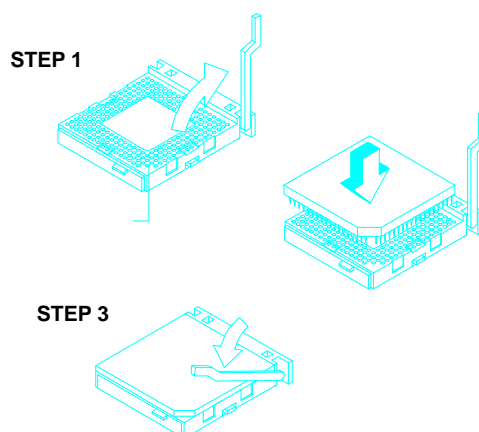
Follow these steps to install a Pentium CPU:

1. Pull up the socket lever.
2. Insert the CPU, making sure that pin 1 of the CPU connects to pin 1 of the socket.



*Be careful not to bend any pins.*

3. Pull down the socket lever.



*Figure 1-4 Installing a Pentium CPU*

4. Change the settings of jumper JP1 for the correct CPU voltage and jumpers JP4, JP5, and JP7 for the CPU frequency. Refer to Table 1-1 for the jumper settings.

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## 1.7 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 2-MB, 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.

### 1.7.1 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 an 8-MB SIMM alone for a 16-MB memory
- Always install SIMMs from the innermost bank first. For example, bank 1 before bank 2, bank 2 before bank 3.
- Always remove SIMMs from the outermost bank first. For example, bank 3 before bank 2, bank 2 before bank 1.

## 1.7.2 Memory Configurations

Table 1-3 lists the available memory configurations.

Table 1-3 Memory Configurations

Bank 1		Bank 2		Bank 3		Total Memory
S6	S5	S4	S3	S2	S1	
4 MB	4 MB					8 MB
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



*The above configurations are only some of the available memory combinations. You can use other combinations as long as you follow the rules when upgrading memory. See section 1.7.1.*

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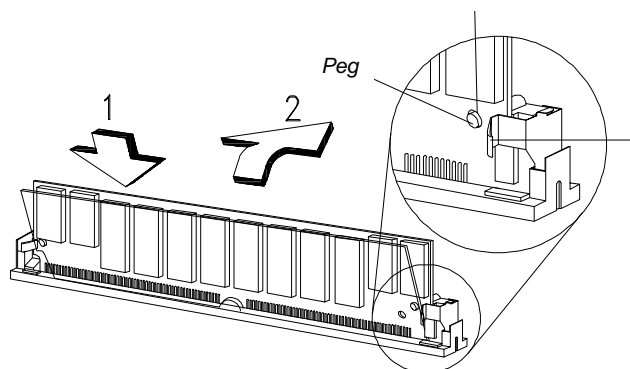
### 1.7.3 Installing a SIMM



*Read the ESD precautions in section 1.4 before proceeding.*

Follow these steps to install a SIMM:

1. Slip a SIMM at a 45° angle into a socket with the component side facing down. Be careful when inserting SIMMs to avoid damaging the SIMM or the socket.
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.



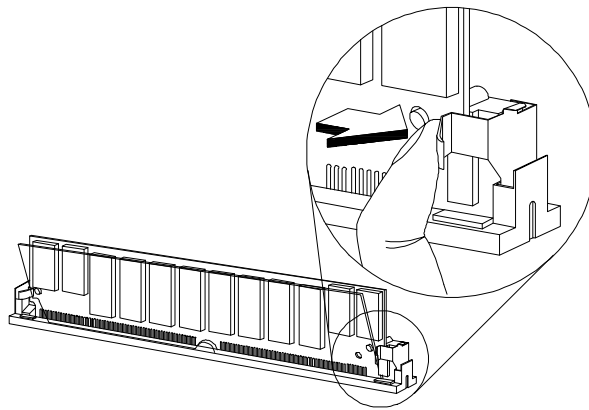
*Figure 1-5 Installing a SIMM*

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### 1.7.4 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 1-6 Removing a SIMM*

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### 1.7.5 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 b-a-^ during the power-on self-test (POST) routine to run Setup. During POST, a message indicating a wrong memory configuration appears.
3. Press ^ twice to exit Setup and reboot the system. The system boots with the new memory configuration.

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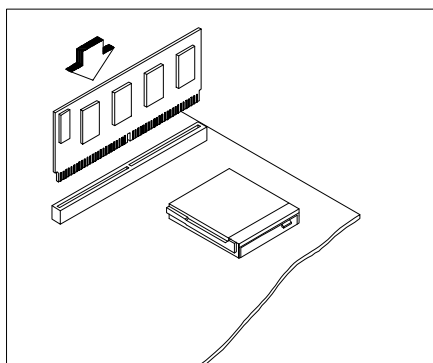
## 1.8 Second-level Cache Upgrade

The system supports synchronous pipeline burst second-level cache.

The system board has an exclusive 160-pin socket for the synchronous pipeline burst cache module. The cache module socket supports either a 256 KB or 512 KB 3.3V cache module.

Follow these steps to install a cache module:

1. Position the cache module on top of the socket such that its component side faces the CPU.
2. Insert the cache module carefully until the golden finger of the module fit into place.



*Figure 1-7 Installing a Synchronous Cache Module*

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## 1.9 Video Memory Upgrade

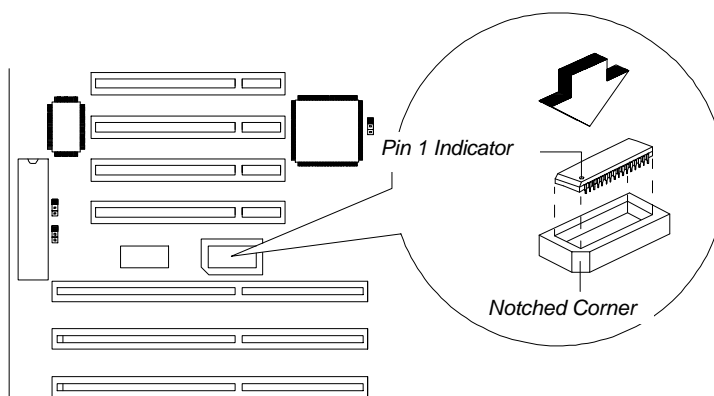
Larger video memory allows you to display higher resolutions and more colors. The system board comes with a 512-MB video memory onboard upgradable to 1 MB.

Follow these steps to upgrade the video memory:

1. Locate the video DRAM upgrade sockets labeled U5 and U6 on the system board. See Figure 1-1.
2. Gently insert a 514260ASL (256K x 16, 70ns SOJ) chip into each of the upgrade sockets.



*Make sure that the pin 1 indicator on the chip matches the notched corner of the socket.*



**Figure 1-8**      *Installing a Video Memory Chip*



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## 1.10 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.

### 1.10.1 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 JP2 and JP6 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 Setup utility and make the necessary changes. Refer to the SCSI manual for more information.

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

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## **1.11 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

### **1.11.1 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.

### **1.11.2 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 1-4 lists the system error messages.

**Table 1-4      System Error Messages**

<b>Message</b>	<b>Action</b>
CMOS Battery Error	Replace the RTC chip or contact your dealer.
CMOS Checksum Error	Check the RTC chip and the necessary jumper. If the battery is still good, run Setup.
Display Card Mismatch	Run Setup
Diskette Drive Controller Error or Not Installed	Check and connect the control cable to the diskette controller.
Diskette Drive Error	Diskette may be defective. If not, replace the diskette drive.
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 1-3.
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.
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.
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.

**Table 1-4**      *System Error Messages (continued)*

Message	Action
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 I key to continue or b-a-^ for Setup	Press I or b-a-^.
Real Time Clock Error	Check the RTC chip. If it is still good, run Setup. If not, replace the RTC chip.

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### 1.11.3 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.