

## ***System Board***

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### **1.1 Features**

The M9A is a dual-processor system board that supports the Intel P54C and P55C CPUs. The board contains an exclusive slot for the CPU board that carries the 321-pin zero-insertion force (ZIF) CPU sockets plus the embedded 512-KB pipeline burst second-level cache.

This high-performance 64-bit system board utilizes both the EISA and the PCI local bus architecture. Two EISA, four PCI bus slots, and one EISA/PCI shared slot reside on the board to allow installation of either master or slave devices.

The system board has four DRAM banks composed of eight 72-pin SIMM sockets that accommodate both fast-page mode and EDO (extended data output) SIMMs. The sockets support a total of 512-MB system memory using 64-MB SIMMs.

A 50-pin Fast SCSI-II interface and a 68-pin Wide SCSI interface come with the system board to connect SCSI devices. Standard external I/O interfaces include two 9-pin serial ports, one parallel port, a video port, and keyboard and mouse ports.

The system board supports two optional features that allow better server management, the ASM Pro and the remote diagnostic management (RDM). The ASM Pro detects system problems, such as CPU thermal condition, 5V/3.3V detection, and PCI bus utilization calculation. The RDM allows execution of a diagnostic program from a remote station to fix the detected problems or to reboot the system.

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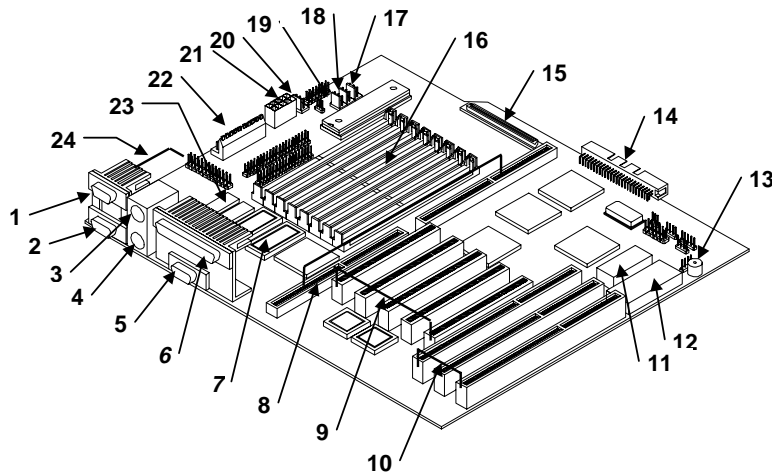
## 1.2 Major Components

The system board has the following major components:

- Four DRAM banks composed of eight 72-pin SIMM sockets that support single- and double-density 60 ns SIMMs
- CPU board slot
- Four PCI, two EISA bus slots, and one EISA/PCI shared slot
- 256-KB Flash ROM for system BIOS
- System clock/calendar plus 8 KB extended 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 350-watt or 420-watt switching power supply
- Super I/O, SCSI, VGA, memory, and Advanced Server Management (ASM) controller chipsets
- External ports:
  - Two 9-pin serial ports
  - PS/2-compatible keyboard port (optional AT-keyboard port)
  - PS/2-compatible mouse port
  - Parallel port
  - Video port

## 1.3 Layout

Figure 1-1 shows the system board components.



- |    |                       |    |                                 |
|----|-----------------------|----|---------------------------------|
| 1  | COM1                  | 13 | Buzzer                          |
| 2  | COM2                  | 14 | Narrow SCSI connector           |
| 3  | Mouse port            | 15 | Wide SCSI connector             |
| 4  | Keyboard port         | 16 | SIMM sockets                    |
| 5  | Video port            | 17 | Fan connector 1 (FA1)           |
| 6  | Parallel port         | 18 | Fan connector 2 (FA2)           |
| 7  | Video upgrade sockets | 19 | Fan connector 3 (FA3)           |
| 8  | CPU board slot        | 20 | 420W 5V standby power connector |
| 9  | PCI slots             | 21 | Power connector                 |
| 10 | EISA slots            | 22 | Power connector                 |
| 11 | Real-time clock       | 23 | Video RAM                       |
| 12 | Flash ROM BIOS        | 24 | RDM connectors                  |

Figure 1-1 System Board Layout

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## 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.

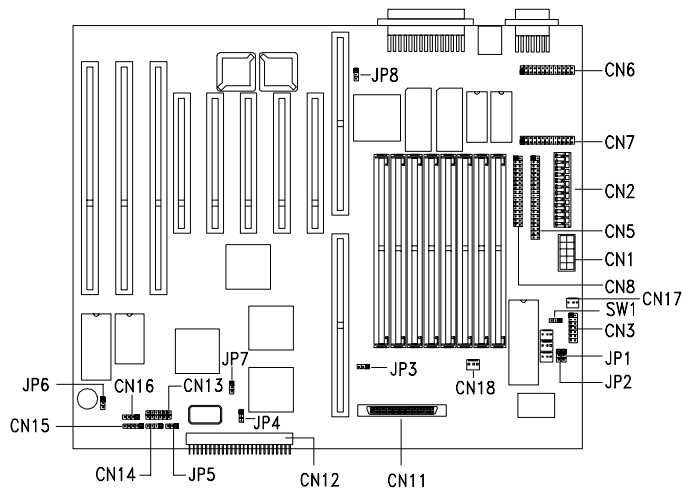


Figure 1-2 System Board Jumper and Connector Locations



Jumpers are prefixed "JP". Connectors are prefixed "CN" and "SW".

The blackened pin of a jumper 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
Password Security JP1	1-2 2-3*	Check password Bypass password
BIOS Type JP2	1-2* 2-3	Acer OEM
SCSI Termination JP3	1-2 2-3*	Terminator always set to ON Use SCSI Setup Utility to set terminator to ON or OFF
SCSI Selection JP4	1-2* 2-3	Wide SCSI Standard
Hardware Reset JP5	1-2 2-3* 3-4	Software shutdown enabled Hardware reset enabled Hardware reset button connector
Sound Feature JP6	1-2* 2-3	Buzzer Speaker
SCSI Feature JP7	1-2* 2-3	Enabled Disabled
VGA Feature JP8	1-2* 2-3	Enabled Disabled

\* Default setting

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### 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	Power connector
CN2	Power connector
CN3	Backplane board HDD status connector
CN5	IDE hard disk connector
CN6	RDM connector
CN7	RDM connector
CN8	Diskette drive connector
CN11	68-pin Wide SCSI connector
CN12	50-pin Fast SCSI-II connector
CN13	RDM cable and LED board connector
CN14	Hard disk LED connector
CN15	Power LED connector
CN16	Speaker connector
CN17	420W 5V standby power connector
CN18	200W 5V standby power connector
SW1	NMI switch

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## 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 Memory Upgrade

The system board comes with eight 72-pin SIMM sockets that support 4-MB and 16-MB single-density SIMMs as well as 8-MB and 32-MB double-density SIMMs for a total system memory of 256-MB. The sockets support both the fast page mode and EDO 60 ns SIMMs.

See Table 1-3 for a list of some possible memory configurations.

### 1.6.1 Rules for Adding Memory

- Use only one type of SIMM in a given bank. You may combine different types of SIMMs for a memory configuration as long as the SIMMs in each bank are of the same type.
- You may use the memory banks (Bank0 ~ Bank3) in any order.
- Always install SIMMs in pairs. For example, for a total memory of 16 MB, install two 8-MB SIMMs in a bank. You can not use a 16-MB SIMM alone for a 16-MB memory.

## 1.6.2 Memory Configurations

Table 1-3 Memory Configurations

Bank0		Bank1		Bank2		Bank3		Total Memory
S1	S2	S3	S4	S5	S6	S7	S8	
8 MB	8 MB							16 MB
16 MB	16 MB							32 MB
32 MB	32 MB							64 MB
64 MB	64 MB							128 MB
8 MB	8 MB	16 MB	16 MB					48 MB
8 MB	8 MB	32 MB	32 MB					80 MB
16 MB	16 MB	32 MB	32 MB					96 MB
64 MB	64 MB	32 MB	32 MB					192 MB
8 MB	8 MB	16 MB	16 MB					48 MB
8 MB	8 MB	16 MB	16 MB	16 MB	16 MB			80 MB
8 MB	8 MB	16 MB	16 MB	32 MB	32 MB			112 MB
8 MB	8 MB	16 MB	16 MB	32 MB	32 MB	64 MB	64 MB	240 MB
8 MB	8 MB	8 MB	8 MB	16 MB	16 MB	16 MB	16 MB	96 MB
8 MB	8 MB	8 MB	8 MB	32 MB	32 MB	32 MB	32 MB	160 MB
16 MB	16 MB	16 MB	16 MB	32 MB	32 MB	32 MB	32 MB	192 MB
32 MB	32 MB	32 MB	32 MB	64 MB	64 MB	64 MB	64 MB	384 MB
8 MB	8 MB	8 MB	8 MB	8 MB	8 MB	8 MB	8 MB	64 MB
16 MB	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB	16 MB	128 MB
32 MB	32 MB	32 MB	32 MB	32 MB	32 MB	32 MB	32 MB	256 MB
64 MB	64 MB	64 MB	64 MB	64 MB	64 MB	64 MB	64 MB	512 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 in section 1.6.1.*



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### 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.

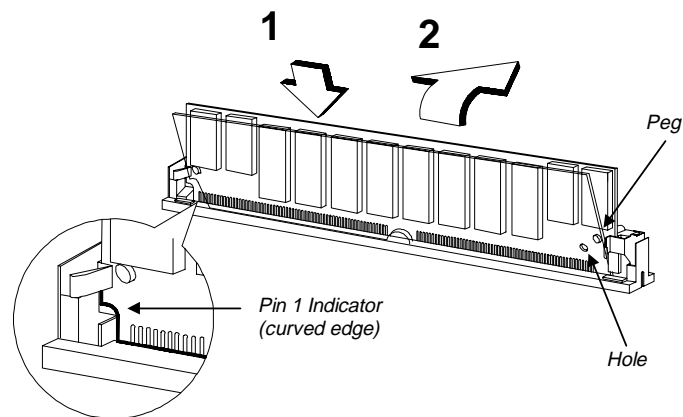


Figure 1-3 Installing a SIMM

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### 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. Move the SIMM to a 45° angle.
3. Pull the SIMM out of the socket.

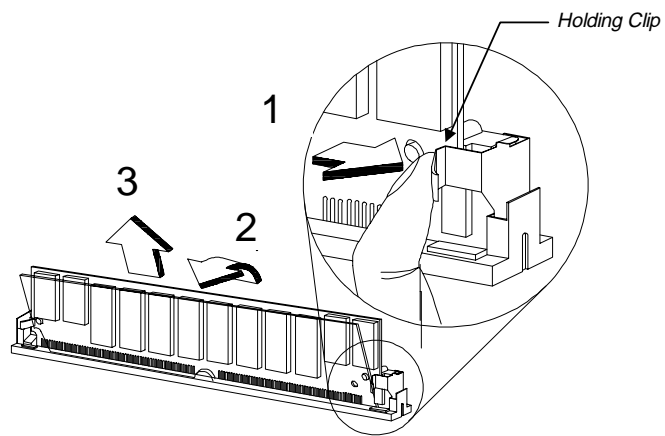


Figure 1-4 Removing a SIMM

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## 1.6.5 Reconfiguring the System

You must enter Setup after installing or removing SIMMs to reconfigure the system.

Follow these steps to reconfigure the system:

1. Turn the system on. A memory error message appears, indicating that the total memory does not match the value stored in CMOS.
2. Press **CTRL** + **ALT** + **ESC** to enter Setup. A warning message appears indicating an incorrect memory configuration.
3. Press **ESC** twice to exit and reboot the system.

The system boots with the new memory configuration.



*If you run WindowsNT, NetWare, or UnixWare in the system, make sure to run ECU every time you change the memory size. See Chapter 4 for information on ECU.*

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## 1.7 Video Memory Upgrade

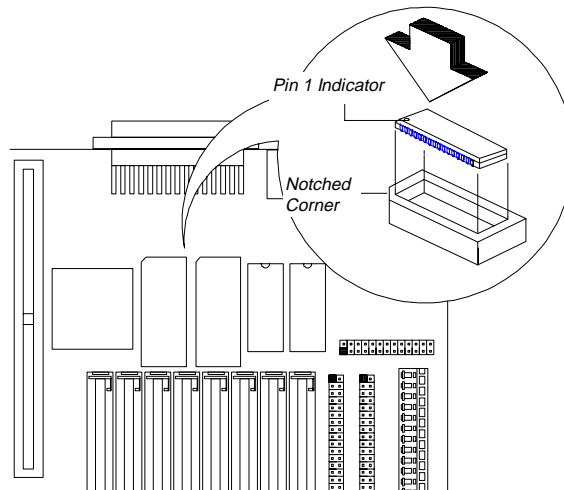
Larger video memory allows you to display higher resolutions and more colors. The system board comes with a 1-MB video memory onboard upgradable to 2 MB.

Follow these steps to upgrade the video memory:

1. Locate the video DRAM upgrade sockets labeled U18 and U21 on the system board. See Figure 1-1.
2. Gently insert a video 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 1-5 Installing a Video Memory Chip*

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## **1.8 PCI Slot Configuration**

### **1.8.1 PCI-to-PCI Bridge Feature**

The system board carries a PCI-to-PCI bridge controller chipset that expands the capability of the PCI system by allowing all the five PCI slots in the system to be bus masters. The bridge has two interfaces. The primary interface connects directly to the PCI bus close to the host CPU. The secondary interface creates a new PCI bus that can operate independently from the primary PCI bus.

### **1.8.2 Installing PCI Devices**

The devices you install in PCI slots 1 and 2 operate on the primary PCI bus while those in PCI slots 3, 4, and 5 operate on the secondary PCI bus.

Since the primary PCI bus operates faster than the secondary PCI bus, install PCI add-on boards in PCI slots 1 and 2 first then on PCI slots 3, 4, and 5 to achieve better system performance. See Figure 1-1 for the locations of the PCI slots.

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## **1.9 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.

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## 1.10 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.

### 1.10.1 Installing the RDM Module

The system board comes with connectors CN6 and CN7 to accommodate the RDM module, and CN13 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 CN6 and CN7. The module fits only in one direction. Do not force it into the connectors.

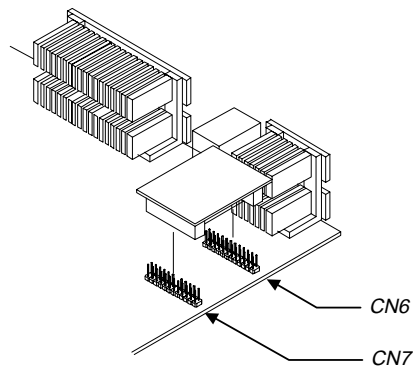
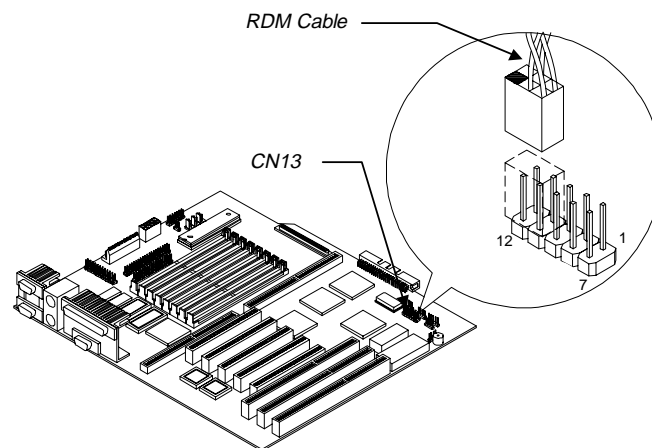


Figure 1-6 Installing the RDM Module

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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 CN13 (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 1-7 Connecting the RDM Cable*

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



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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 explains the different types of error messages and 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 applications. 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 the memory 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.

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

<b>Message</b>	<b>Action</b>
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	Run Setup. Check if the values shown in the memory parameters are correct. If correct, exit Setup and reboot the system. If the error message reappears, seek 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 <b>F1</b> or <b>CTRL + ALT + ESC</b> to enter Setup.
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 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.