

**M54E2 PCI/EISA  
Dual Pentium Processor  
System Board Manual**

**MICRONICS**  
COMPUTERS INC.

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Dual Pentium Processor  
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COMPUTERS INC.

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# 1 Introduction

Thank you for choosing the Micronics M54E2. The M54E2 is a high-performance system board designed to be a foundation for advanced systems and applications.

The M54E2 is a dual Pentium processor board. You can operate the M54E2 with a single Pentium processor or add a second matching processor for increased performance.

Additional features include onboard support for two IDE hard drives, two floppy drives, a bi-directional parallel port and two high speed serial ports.

Micronics builds all products to exacting standards, using the highest quality components available. We are proud to provide this system board and believe you will be pleased with your purchase.

## Features

The M54E2 includes the following features:

- ④ Dual Pentium processor support for 75, 90, 100, 120, 133, 150, 166 and 200MHz processors
- ④ Two 32-bit PCI slots, five 32-bit EISA slots and one shared (PCI or EISA) slot
- ④ L2 Write-back cache support (256K or 512K)
- ④ PCI: Intel Neptune chipset  
PCEB/ESC EISA Bridge  
I/O: SMC 665 Super I/O controller
- ④ Support for up to 512MB of onboard system memory
- ④ ISA IDE controller (supports two drives)
- ④ Floppy controller for two floppy drives (supports 360KB, 720KB, 1.2MB, 1.44MB or 2.88MB floppy drives)
- ④ Two high speed NS16550 compatible serial ports
- ④ Standard AT keyboard connector
- ④ Bidirectional parallel port (ECP and EPP compatible)
- ④ Upgradeable Flash Phoenix BIOS on 1MB Flash

## Software Compatibility

The M54E2 system board has been thoroughly tested for compatibility with a variety of operating systems and environments, including:

- ④ Windows and Windows NT
- ④ OS/2 version 2.11 & SMP
- ④ SCO UNIX and Open Desktop
- ④ Novell Netware
- ④ MS-DOS
- ④ PC-DOS

## ***M54E2 Quick Installation***

We know that many experienced people prefer to read as little of the documentation as possible. If this sounds like you, here's the short form:

1. Make backup copies of your installation and configuration diskettes.
2. Ground yourself to prevent damaging static discharge, then remove the M54E2 from its packaging.
3. Configure and verify the system board's jumper settings. (See Jumper Settings in Chapter 2).
4. Install the CPU and the system memory (Chapter 3).
5. Install the motherboard into the chassis and make all necessary case connections.
6. Install any ISA, PCI and EISA add-on peripherals (Chapter 3).
7. Turn the computer on and press the <F2> key when you see the screen below:

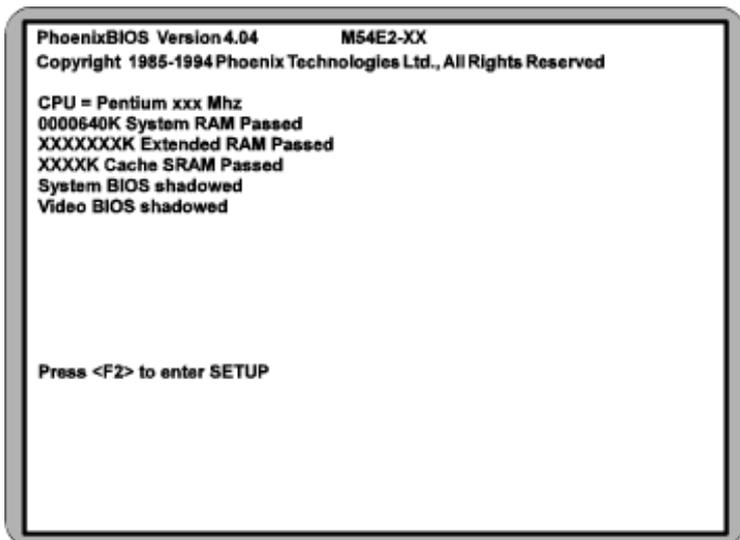


Figure 1-1: Power-Up Screen

8. Set the time and date. Adjust the BIOS settings to match your configuration. If installing an IDE drive, select the IDE device you wish to configure. Press <Enter> with Autotype Fixed Disk selected and the BIOS will automatically configure the drive for you (see Chapter 4).
9. After you have configured the Main Setup menu, make any desired setting configurations in the Advanced and Security menu. When finished, go to the exit screen, select “Save Changes and Exit” and you are finished with the BIOS configuration (Chapter 4).
10. Insert the MCS EISA Configuration Utility into Drive A or Drive B and type:

A: CF <Enter>

or

B: CF <Enter>

Follow the directions to install the necessary drivers for your EISA peripherals (Chapter 5).

# 2 Configuring the M54E2

Although the M54E2 system board is packaged in protective materials, it is important to use care while unpacking and setting up.

## Static Electricity

The M54E2 is shipped from the factory in an antistatic bag. To reduce the possibility of damage, it is important to neutralize any accumulated static charges on your body before handling the board. The best way to do this is to ground yourself using a special wrist or ankle strap. If you do not have a strap, you should touch both of your hands to a safely grounded object. After you have grounded yourself, ground the M54E2 via the solder pads surrounding one of its mounting holes.

Once the M54E2 is removed from its packaging, place it on top of the antistatic bag. Carefully inspect the board for damage which may have occurred during shipment.

## Office Environment

Make sure the finished computer system is in an area with good ventilation. The system should not be in direct sunlight, near heaters, or exposed to moisture, dust or dirt.

# M54E2 System Board

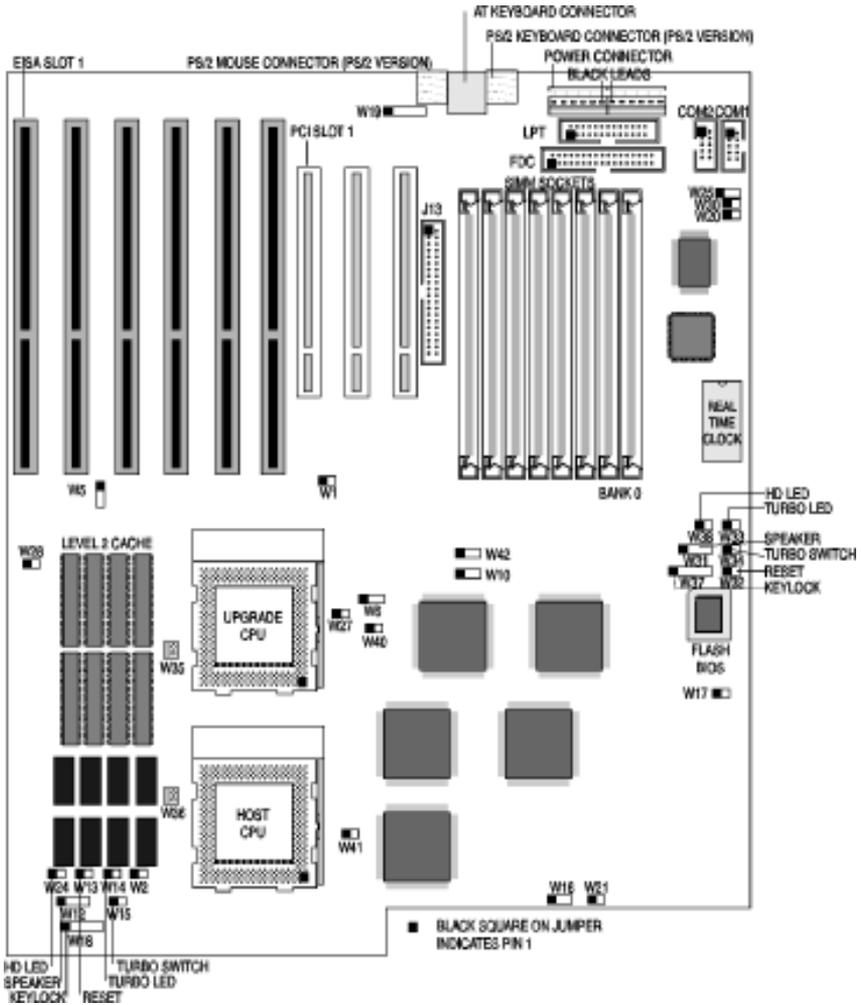


Figure 2-1: M54E2 System Board

## Jumper Settings

**Table 2-1: Jumper settings to select between write-back and write-through cache.**

Jumper	Function	Settings
W1	Write-through Write-back (default)	Close Open

Table 2-1: Cache Type Selection

**Table 2-2: Jumper settings to select the speed of the CPU.**

	CPU Speed Bus Speed	75MHz 50MHz	90MHz 60MHz (default)	100MHz 66MHz	120MHz 60MHz	133MHz 66MHz	150MHz 60MHz	166MHz 66MHz	200MHz 66MHz
Jumper									
W2		Open	Open	Open	Close	Close	Close	Close	Open
W6		2-3	1-2	2-3	1-2	2-3	1-2	2-3	2-3
W27		Open	Open	Open	Open	Open	Close	Close	Close
W40		Close	Open	Open	Open	Open	Open	Open	Open

Table 2-2: CPU Speed Selection

**Table 2-3: Jumper settings to select the size of the external cache.**

Jumper		Function	Setting
W5	W10	256K 512K	1-2 2-3

Table 2-3: Cache Size Selection

**Table 2-4: Jumper settings to set the CPU voltage regulator selection.**

Jumper	Function	Settings
W28	VRE (Vcc3=3.6V)	Open
	VR/STD (Vcc3=3.45V) (default)	Close

Table 2-4: CPU VRE Selection

**Table 2-5: Jumper settings to set the onboard IDE IRQ.**

Jumper	Function	Settings
W25	IRQ14 (default)	1-2

Table 2-5: Onboard IDE Controller Selection

**Table 2-6: Jumper settings to select parity checking or non-parity checking DRAM.**

Jumper	Function	Settings
W41	Non-Parity DRAM	Open
	Parity DRAM (default)	Close

Table 2-6: DRAM Parity Selection

**Table 2-7: Jumper settings to enable or disable Super I/O.**

Jumper	Function	Settings
W30	Enable Super I/O (default)	Open
	Disable Super I/O	Close

Table 2-7: Super I/O Selection

**Table 2-8: Jumper settings to select the type of video installed.**

Jumper	Function	Settings
W20	Monochrome Color (default)	Open Close

Table 2-8: Video Selection

**Table 2-9: Jumper settings to enable or disable the PS2 mouse.**

Jumper	Function	Settings
W21	Disable IRQ12 (PS/2 Mouse) Enable IRQ12 (PS/2 Mouse) (default)	Open Close

Table 2-9: PS/2 Mouse Selection

**Table 2-10: Jumper settings to recover the flash BIOS from the boot block.**

Jumper	Function	Settings
W16	BIOS Code (default) BIOS Boot Block	1-2 2-3

Table 2-10: Recover Flash BIOS Selection

**Table 2-11: Jumper settings to enable or disable the turbo option.**

Jumper	Function	Settings
W15	Deturbo Turbo (default)	Open Close

Table 2-11: Turbo Selection

**Table 2-12: Jumper settings to enable or disable the APIC selection for Novell Network use. NOTE: Disable only if you are running Novell 3.12.**

Jumper	Function	Settings
W42	APIC Enabled (default)	Open
	APIC Disabled	Close

Table 2-12: APIC Selection

**Table 2-13: Case and peripheral connections.**

Connectors	Function	Notes
J1 & J2	Power Supply Connector	
J5	AT Keyboard	
J6 & J8	PS/2 Mouse & Keyboard	PS/2 Version Only
J9	Parallel Port Connector	Can be disabled at the CMOS configuration screen
J10	Floppy Connector	
J11	Serial Port (COM 1)	Can be disabled at the CMOS configuration screen
J12	Serial Port (COM 2)	Can be disabled at the CMOS configuration screen
J13	ISA IDE Connector	Secondary
J25	Reserved	Not Supported
J26	Optional Power Supply Connector	For specially equipped power supplies
W12 or W31	Speaker Connector	1 - Speaker, 2 - N/C, 3 - Ground 4 - 5V DC
W13 or W32	Reset	
W14 or W33	Turbo LED	1 - +5V DC, 2 - Ground
W15 or W34	Turbo Switch	
W18 or W37	Keylock/Power LED	1 - Speaker, 2 - N/C, 3 - Ground 4 - Keyboard Lock, 5 - Ground
W19	External Keyboard	1 - Clock (Keybd), 2 -Data, 3 - N/C, 4 - Ground, 5 - VCC
W24 or W38	Hard Disk LED	1 - +5V DC, 2 - Ground
W35	12V Fan Connector	1 - +12V DC, 2 - Ground
W36	12V Fan Connector	1 - +12V DC, 2 - Ground

Table 2-13: Case and Peripheral Connections



# 3 Installing the M54E2, System Memory, CPUs and Peripherals

This section explains how to install the M54E2 system board, SIMMs, CPUs and peripherals.

**WARNING:**

*Before installing or removing any peripherals or components, make sure you have a clear work space and that you adhere to all anti-static precautions described on page 2-1.*

*Micronics recommends only trained technicians install and configure the system board. Damage which occurs to the board while adding or removing peripherals or components may void the warranty.*

*If problems arise while installing peripherals, contact the computer dealer where you purchased the peripheral or Micronics' Technical Support Department.*

## Installation of the M54E2

The installation of the M54E2 system board depends on the type of case you use. The M54E2 is a standard AT motherboard and is likely to be limited to tower cases.

Prior to installing the M54E2, make sure you have a clear work space available and adhere to all anti-static precautions. If you are unfamiliar with installing a system board, Micronics highly recommends you read the computer user's manual or contact your dealer's technical support department.

### Tools Required

Micronics recommends using the following tools to install the M54E2:

-  Small Phillips screwdriver.
-  Tweezers or a pair of needle-nose pliers.
-  Tray (to hold loose screws).

### Equipment Required

Micronics recommends using the following equipment with the M54E2 for a typical configuration:

-  Chassis with standard hardware (tower case preferable).
-  A high-quality power supply capable of providing continuous power within a 5 volt range. A power filter may be used with a noisy AC power source.
-  AT-compatible keyboard (depends on model).
-  PS/2 or compatible keyboard (depends on model).
-  Eight ohm speaker.
-  Standard ribbon cables for internal connections.
-  Standard power cord (grounded).
-  Heat sink with cooling fan for each CPU (required).

# System Memory

System memory devices, commonly known as SIMMs (Single Inline Memory Modules), are necessary to operate the M54E2 system board. The M54E2 has eight SIMM sockets and can be upgraded to 512 Megabytes of RAM. This section will explain the type of SIMMs supported, list the rules of adding memory to the M54E2, give some examples of common memory configurations, and show how to physically install the new SIMMs.

## SIMMs Supported

The M54E2 supports 72-pin, 60 or 70ns SIMMs in the following configurations:

4MB (1MBx32/36)  
8MB (2MBx32/36)  
16MB (4MBx32/36)  
32MB (8MBx32/36)  
64MB (16MBx32/36)

*NOTE: For long term reliability, Micronics recommends using SIMMs with tin-plated contacts. The use of gold-plated contacts may conflict with the tin-alloy on the SIMM socket.*

## Upgrading Rules

The following is a list of rules to follow when upgrading SIMMs. If you follow these rules, your upgrade should be trouble-free:

- ④ Use 70ns or faster SIMMs.
- ④ Upgrade SIMMs one bank at a time. Each bank must contain two SIMMs of the same size and preferably from the same manufacturer. For example, to add 16MB of memory to the system board, install two 8MB SIMMs into the same bank.
- ④ When installing SIMMs, start with Bank 0 and work your way up (0,1,2,3).

## Common Memory Configurations

The table below lists the most common memory configurations. The M54E2 will accept the following combination of SIMMs as long as the rules in the previous section are followed.

Memory	Bank 0	Bank 1	Bank 2	Bank 3
8MB	(2) 1Mx36			
16MB	(2) 1Mx36	(2) 1Mx36		
16MB	(2) 2Mx36			
24MB	(2) 1Mx36	(2) 1Mx36	(2) 1Mx36	
24MB	(2) 2Mx36	(2) 1Mx36		
32MB	(2) 4Mx36			
32MB	(2) 2Mx36	(2) 2Mx36		
32MB	(2) 1Mx36	(2) 1Mx36	(2) 1Mx36	(2) 1Mx36
48MB	(2) 2Mx36	(2) 2Mx36	(2) 2Mx36	
64MB	(2) 8Mx36			
64MB	(2) 4Mx36	(2) 4Mx36		
64MB	(2) 2Mx36	(2) 2Mx36	(2) 2Mx36	(2) 2Mx36
64MB	(2) 4Mx36	(2) 2Mx36	(2) 2Mx36	
72MB	(2) 8Mx36	(2) 1Mx36		
80MB	(2) 8Mx36	(2) 2Mx36		
80MB	(2) 4Mx36	(2) 4Mx36	(2) 1Mx36	(2) 1Mx36
96MB	(2) 4Mx36	(2) 4Mx36	(2) 4Mx36	
96MB	(2) 8Mx36	(2) 2Mx36	(2) 2Mx36	
104MB	(2) 8Mx36	(2) 2Mx36	(2) 2Mx36	(2) 1Mx36
104MB	(2) 4Mx36	(2) 4Mx36	(2) 4Mx36	(2) 1Mx36
128MB	(2) 16Mx36			
128MB	(2) 8Mx36	(2) 8Mx36		
128MB	(2) 4Mx36	(2) 4Mx36	(2) 4Mx36	(2) 4Mx36
192MB	(2) 8Mx36	(2) 8Mx36	(2) 8Mx36	
256MB	(2) 16Mx36	(2) 16Mx36		
256MB	(2) 8Mx36	(2) 8Mx36	(2) 8Mx36	(2) 8Mx36
384MB	(2) 16Mx36	(2) 16Mx36	(2) 16Mx36	
512MB	(2) 16Mx36	(2) 16Mx36	(2) 16Mx36	(2) 16Mx36

Table 3-1: Memory Configurations

## Installing the SIMMs

To install the SIMMs, locate the memory banks on the system board and perform the following steps:

1. Hold the SIMM so that the notched edge is aligned with the notch on the SIMM socket (Figure 3-1).
2. Insert the SIMM at a 45 degree angle.
3. Gently push the SIMM into an upright position until it locks into place (past the release tabs).

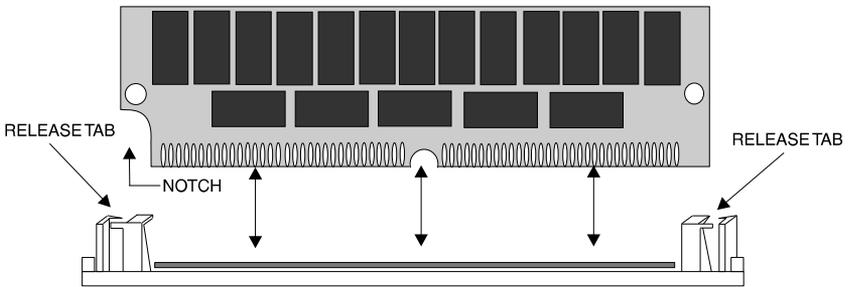


Figure 3-1: Installing a 72-Pin SIMM

## Removing SIMMs

To remove SIMMs, follow the steps below:

1. With both thumbs (or fingers), press the release tabs away from the socket.
2. With the SIMM free from the release tabs, lift the module up and place in an anti-static bag or package.

## Installing a CPU

The M54E2 is designed to support dual Pentium processors. Follow the steps below to install the main or the second processor:

1. Turn off the computer and remove its cover.
2. Locate the ZIF socket illustrated in Figure 2-1.
3. Lift the lever of the socket.
4. Locate pin 1 on the processor and pin 1 on the socket (Figure 2-1). Gently place the processor into the socket, making sure pin 1 on the processor and pin 1 on the socket are aligned.
5. Push the lever down until it locks into place.
6. Make sure the speed selection jumpers are set correctly (see Chapter 2).
7. If you are only installing the upgrade processor, you do not need to change any jumpers or BIOS settings. The system will automatically recognize the new processor. **NOTE:** Make sure the APIC jumper (W42) is set to Enabled.

**NOTE:** *If your operating system supports dual processors, you may need to reconfigure or reinstall your operating system. Refer to your software documentation for more information.*

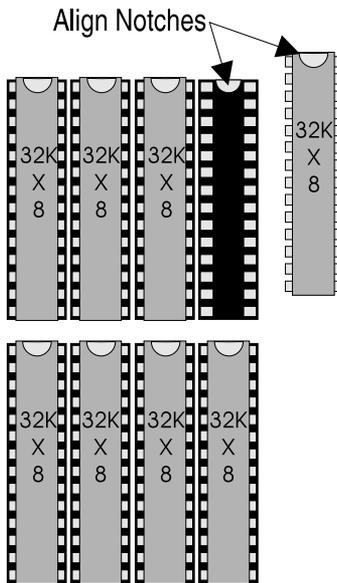
**WARNING:**

*Pentium processors require a heat-sink with a cooling fan. Failure to provide adequate cooling of the processor may seriously affect system performance or cause permanent damage to the processor.*

## Installing Cache Memory

In addition to the 16K of internal (L1) cache built into the Pentium processors, the M54E2 also supports external (L2) cache. The M54E2 is available with 256K or 512K external cache.

To upgrade to 512K cache, install eight 32Kx8-15ns 3.3V SRAMs into the open SRAM sockets (Figure 3-2). After installing the cache upgrade, refer to Table 2-4 for the correct external cache jumper settings.

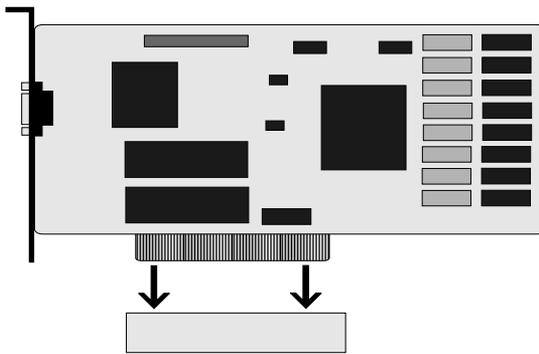


**Figure 3-2: Upgrading the External Cache**

## Installing a PCI Peripheral Card

Micronics PCI slots accommodate all PCI peripherals that meet the PCI 2.0 specifications. Complete the following steps to install a PCI card:

1. Turn the computer system off and remove its cover.
2. Choose an unused PCI slot and remove the slot cover.
3. Insert the card with the bottom edge level to the slot. *Never insert the card at an angle.*
4. Carefully push the card straight down, making sure the card is fully inserted.
5. Replace the screw which holds the card into place.
6. Replace the computer cover.
7. Refer to the card's documentation for additional instructions regarding installation and software drivers.

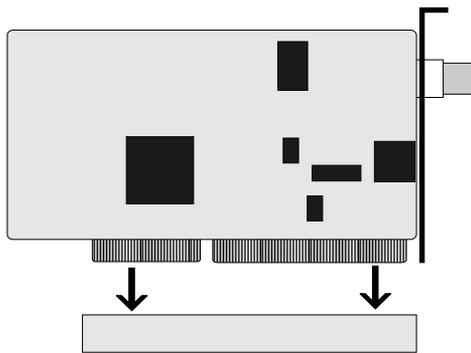


**Figure 3-3: Installing a PCI Card**

## Installing an EISA Peripheral Card

Micronics EISA slots accommodate all EISA peripherals that meet the EISA standard. Complete the following steps to install an EISA card:

1. Turn the computer system off and remove its cover.
2. Choose an unused EISA slot and remove the slot cover.
3. Insert the card with the bottom edge level to the slot. *Never insert the card at an angle.*
4. Carefully push the card straight down, making sure the card is fully inserted.
5. Replace the screw which holds the card into place.
6. Replace the computer cover.
7. Refer to the card's documentation for additional instructions regarding installation and software drivers.
8. Run the EISA configuration utility discussed in Chapter 5.

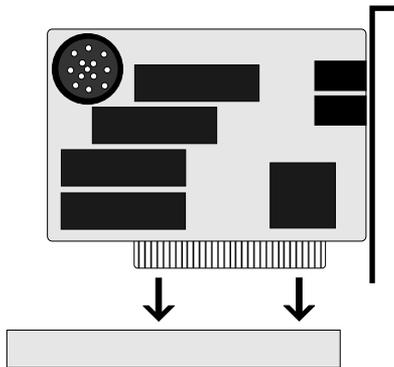


**Figure 3-4: Installing an EISA Card**

## Installing a Plug & Play Peripheral Card

Micronics EISA slots accommodate all ISA Plug & Play peripherals that meet the Plug and Play standard. Complete the following steps to install a Plug and Play card:

1. Turn the computer system off and remove its cover. *Note the slot number where you choose to install the Plug and Play card. You will need this information when you run the EISA configuration utility.*
2. Choose an unused EISA slot and remove the slot cover.
3. Insert the card with the bottom edge level to the slot. *Never insert the card at an angle!*
4. Carefully push the card straight down, making sure the card is fully inserted.
5. Replace the screw which holds the card into place.
6. Replace the computer cover.
7. Refer to the card's documentation for additional instructions regarding installation and software drivers.
8. Run the EISA configuration utility discussed in Chapter 5.



**Figure 3-5: Installing a Plug & Play Card**

# 4 The BIOS Setup Utility

## Configuration

After the M54E2 system board and all hardware is installed, the system is ready for configuration. Before turning on the computer, make sure all cables are correctly connected and all jumpers are correctly set.

It is recommended you keep the computer cover off the first time you boot the system. If you have any difficulties, they will be easier to correct.

## Initial Boot Up

Power up the M54E2. If the system doesn't properly boot, check all your cables and peripherals for bad connections. You may also get beep codes or error messages. If this occurs, consult Appendices A and/or B for a guide to possible solutions.

After the system properly boots, it is ready to be configured. The following pages explain the proper procedures for BIOS configuration.

# Setup

The Setup program is used to configure the computer's BIOS (Basic Input/Output System). The computer's BIOS is responsible for configuring the motherboard and providing hardware information to the operating system. In order for the computer to run properly, run the Setup procedure after first installing the system board and whenever you make a hardware change to the system.

After the system is turned on and goes through a memory test, the Power-Up Screen (Figure 4-1) will appear on your monitor:

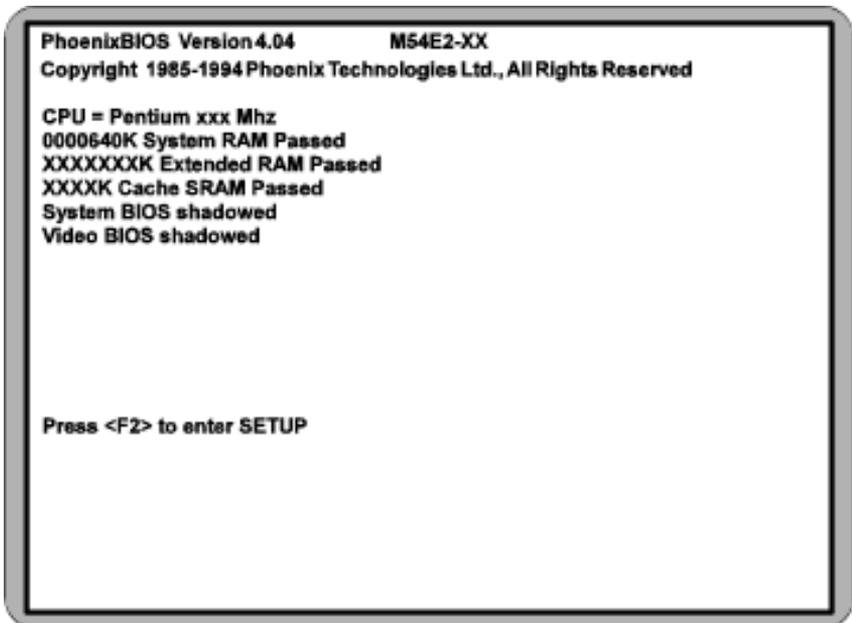


Figure 4-1: Power-Up Screen

When “Press <F2> to enter SETUP” appears at the bottom of the screen, press the F2 key to begin the Setup procedure. The CMOS Main Screen (Figure 4-2) should appear and the prompt should be on the time line. The Setup procedure can only be activated during the boot sequence.

## Running the Setup Procedure

The M54E2 system board has four primary CMOS configuration screens: the Main Screen (Figure 4-2), the Advanced Screen (Figure 4-4), the Security Screen (Figure 4-7), and the Exit Screen (Figure 4-9). To toggle between the screens, press the right arrow <→> and the left arrow <←> keys.

## Setting the Main Screen

The CMOS Main Screen (Figure 4-2) is used to set the time and date, to set the floppy drive types, to configure the hard disks, and to configure the video. This section explains how to configure each of these categories. To move between the categories, use the up arrow <↑> and the down arrow <↓>.

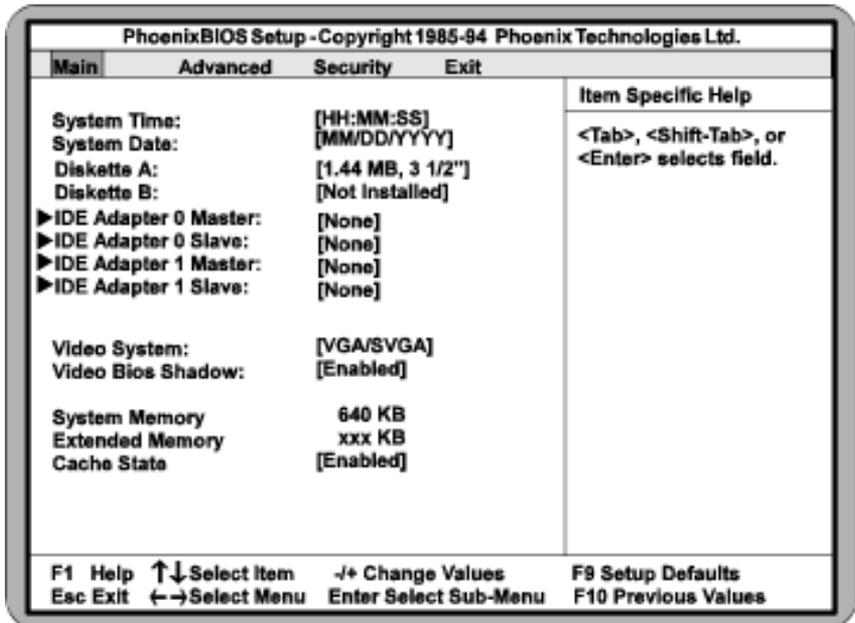


Figure 4-2: CMOS Main Screen

### System Time and Date

To set the time, use the <-> key to decrease the number and the <+> key to increase the number. To move the prompt forward, use the <Tab> key; to move the prompt backward, use the <Shift-Tab> key. To set the date, use the

up and down arrows<↑/↓> to highlight the System Date and follow the same procedure used to set the time.

### **Diskette A or B**

To configure a floppy drive added to or removed from your computer, use the up and down arrow keys <↑/↓> to select the drive you wish to set. Use the <+/-> keys to change the setting until it matches the floppy drive you have installed. The BIOS supports 2.88MB, 1.44MB, 1.2MB, 720KB, and 360KB floppy drives.

### **IDE Devices (Hard Disk Setup)**

If you are setting up a SCSI hard disk, you will probably need to select [None] in the IDE Device parameters (see your SCSI card manual for more details).

To install an IDE device, select the device you wish to configure and press <Enter>. An IDE Device submenu will appear (Figure 4-3). The easiest way to set your IDE devices is to let the BIOS do it for you. When the IDE Device submenu first appears, the Autotype Fixed Disk selection will be highlighted. Simply press <Enter> and the remaining information will automatically be entered. Do not adjust the rest of the settings unless absolutely necessary. The BIOS will automatically enter the optimal settings.

### **Video System**

This sets the type of video board installed into the system. You may choose from: VGA/SVGA (default), CGA 80x25 and Monochrome.

### **Video BIOS Shadow**

Enabling the category allows you to “Shadow” the BIOS on the video card for faster video performance. Some video cards do not support Video BIOS Shadowing. Disable this option if video problems occur.

### **System Memory**

The System Memory category identifies the size of the base memory. It cannot be changed.

### **Extended Memory**

The Extended Memory category automatically detects the amount of memory installed above the amount in the System Memory category. Because the BIOS automatically calculates the amount of memory installed in your system, you cannot change this category without adding or removing memory.

## Cache State

This category enables or disables the external (L2) cache.

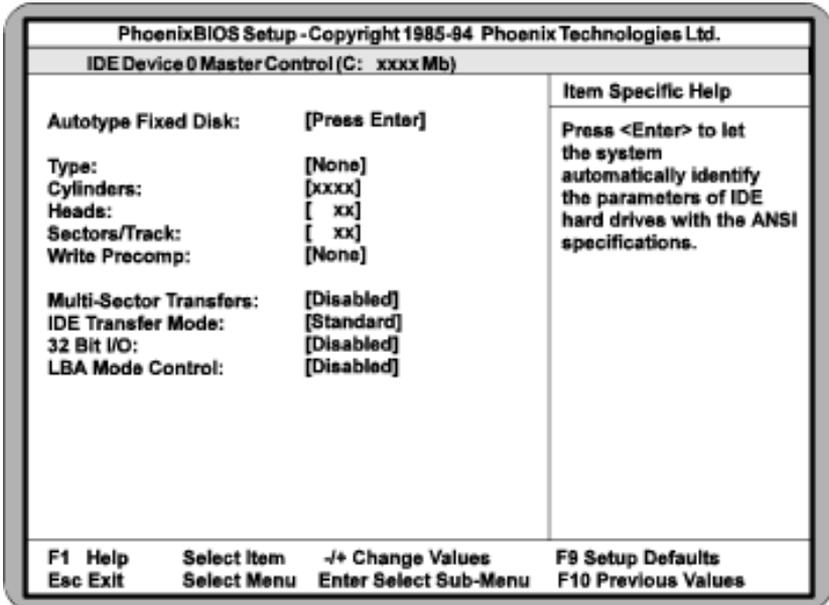


Figure 4-3: IDE Device Submenu

### Autotype Fixed Disk

The easiest way to set your IDE devices is to let the BIOS do it for you. When the IDE Device submenu first appears, the Autotype Fixed Disk selection is highlighted. Simply press ENTER and the remaining information is entered automatically. Do not adjust the rest of the settings unless absolutely necessary. The BIOS automatically enters the optimal settings.

### Type

This category selects the drive type installed in the system. The options are 1-39, User, and None. It is doubtful you will find your drive in 1-39.

If Autotype Fixed Disk does not find your drive's parameters, fill this information in manually under the User category. This information may be in the manual which came with your system. If not, contact your dealer or the hard drive manufacturer to fill in this category. If you are using a SCSI hard drive, select None and refer to the documentation which came with the SCSI adapter.

### **Multiple-Sector Transfers**

This category determines the number of sectors per block for multiple sector transfers. The options are Disabled (default), 2 Sectors, 4 Sectors, 8 Sectors, and 16 Sectors.

### **IDE Transfer Mode**

This category provides the transfer mode for the IDE controller. The default setting is Standard mode.

### **32-Bit I/O**

This category allows you to enable the 32-bit I/O function of the IDE controller. Select Disabled if your drive will not run at this speed. The default setting is Disabled.

### **LBA Mode Control**

Enable LBA (Logical Block Addressing) to support IDE drives larger than 528MB in size. The default setting is Disabled.

## Setting the Advanced Screen

The first page of the Advanced Screen (Figure 4-4) has two submenus: Boot Options (Figure 4-5) and Integrated Peripherals (Figure 4-6).

Use the up and down arrows <↑/↓> to select a menu and press <Enter>.

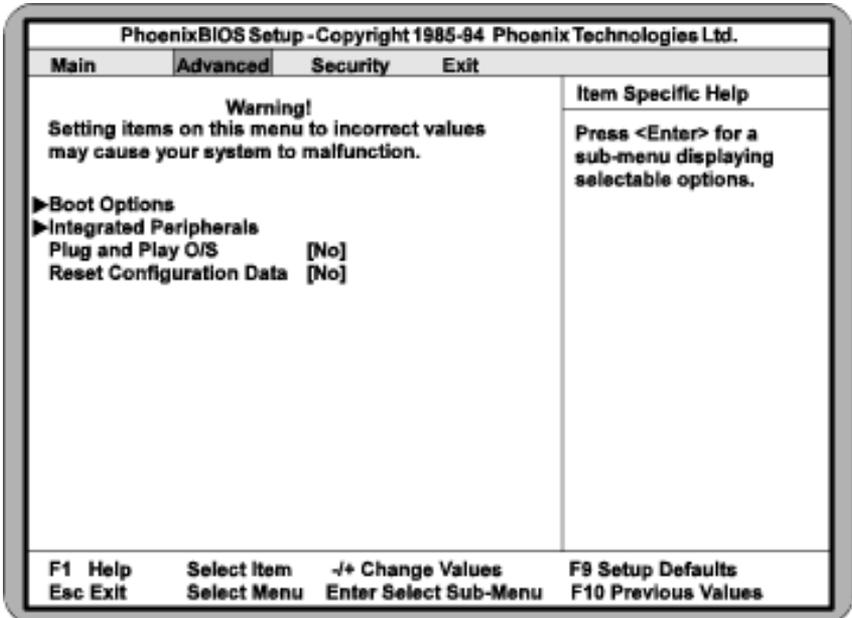


Figure 4-4: Advanced Setup Screen

### Boot Options

The Boot Options Submenu (Figure 4-5) has several useful options. Use the up and down arrow keys <↑/↓> to select a category and the plus and minus keys <+/-> to change the settings.

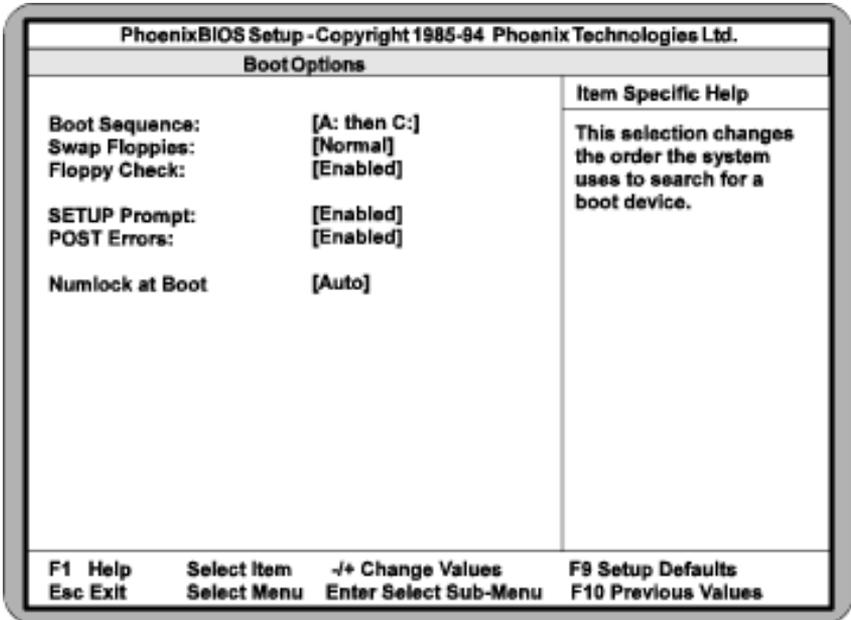


Figure 4-5: Boot Options Submenu

### Boot Sequence

This category selects the order the system searches for a boot disk and can be set for:

- A: then C:
- C: then A:
- C: only

### Swap Floppies

This category can be set to remap the floppy drives. It can be set for NORMAL (default) or SWAPPED. For normal operation, Drive A: and Drive B: work normally. When “Swapped” is selected, Drive A: becomes Drive B:, and Drive B: becomes Drive A:.

### Floppy Check

When enabled, this category verifies the floppy drive is installed on boot. For faster booting, select DISABLED (default).

### SETUP Prompt

When enabled, this category allows the system to display the “Press <F2> to enter SETUP” message during boot.

## Post Errors

When enabled, this category allows the system to display the “Press <F1> to resume, <F2> to SETUP” and pause if errors occur during boot. If disabled, the system will ignore any errors and will always attempt to boot.

## Numlock at Boot

This selection activates Numlock upon boot. Setting this to Auto activates Numlock if the BIOS detects a numeric keyboard. It may also be turned ON or OFF.

## Integrated Peripherals

The Integrated Peripherals submenu (Figure 4-6) allows you to individually enable or modify the drives, I/O ports, and other settings. Use the up and down arrow keys <↑/↓> to select a category and the plus and minus keys <+/-> to change the settings.

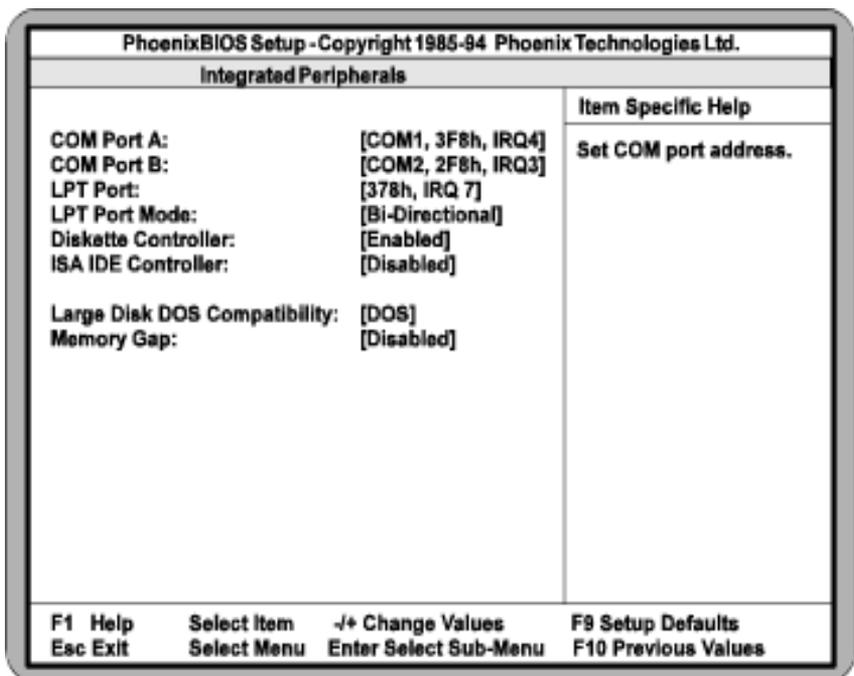


Figure 4-6: Integrated Peripherals Submenu

## COM Port A

COM Port A may be set for COM1 (default), COM2, COM3, COM4 or may be disabled.

### **COM Port B**

COM Port B may be set for COM2 (default), COM1, COM3, COM4 or may be disabled.

### **LPT Port**

The parallel port may be set for 378-IRQ7, 278-IRQ7 or Disabled (default).

### **LPT Mode**

The parallel port mode may be set for output mode bidirectional (default), Enhanced Parallel Port (EPP), Extended Capabilities Port (ECP), or Output Only.

### **Diskette Controller**

The floppy disk controller may be enabled or disabled.

### **ISA IDE Controller**

Enables the ISA IDE adapter. The ISA IDE controller may be set for Primary, Secondary or Disabled (default).

### **Large Disk DOS Compatibility**

If you are using a DOS operating system (MS-DOS, DR-DOS, or PC-DOS), set to DOS (default). If you are using anything else, set to OTHER.

### **Memory Gap**

When enabled, this category removes the memory between 15 and 16 megabytes from the system. This one megabyte hole will allow some ISA network cards to map into this memory space. Banyon network cards require this feature. Enable this feature only if needed. The default is Disabled.

### **Plug and Play O/S**

This selection, when set to Yes, allows the system to work with a Plug and Play operating system such as Windows 95. The default setting is No.

### **Reset Configuration Data**

Select Yes to clear the system configuration data. The default setting is No.

## Security Screen

The Security Screen (Figure 4-7) controls access to the computer. The security screen allows for settings of two passwords. The Supervisor Password allows access to the system and Setup. The User Password will allow access to the system, but not to all Setup features.

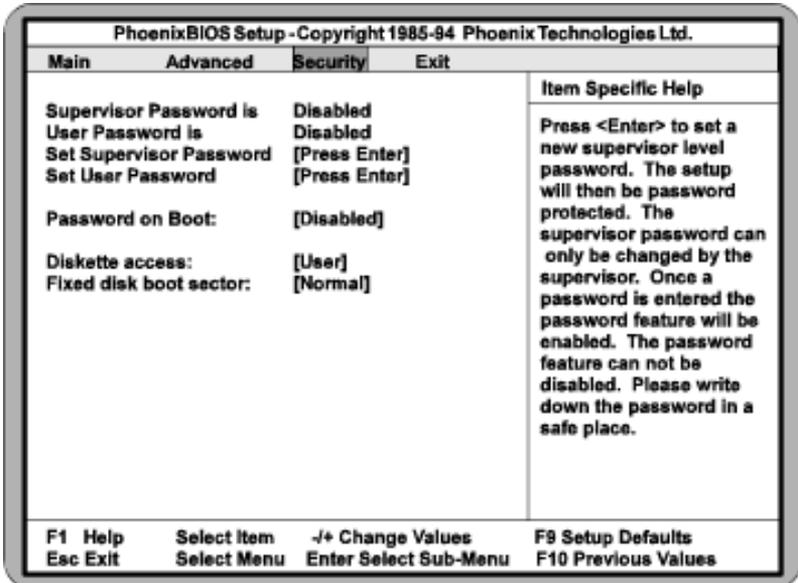


Figure 4-7 Security Setup Screen

### Supervisor Password is

If a Supervisor Password has been set up for the system, it will read “Supervisor Password is ENABLED.” If the password has not been set up, it will be disabled (default).

### User Password is

If a User Password has been set up for the system, it will read “User Password is ENABLED.” If the password has not been set up, it will be disabled (default).

### Set Supervisor Password

Press the <Enter> key to enter the Supervisor Password submenu (Figure 2-8).

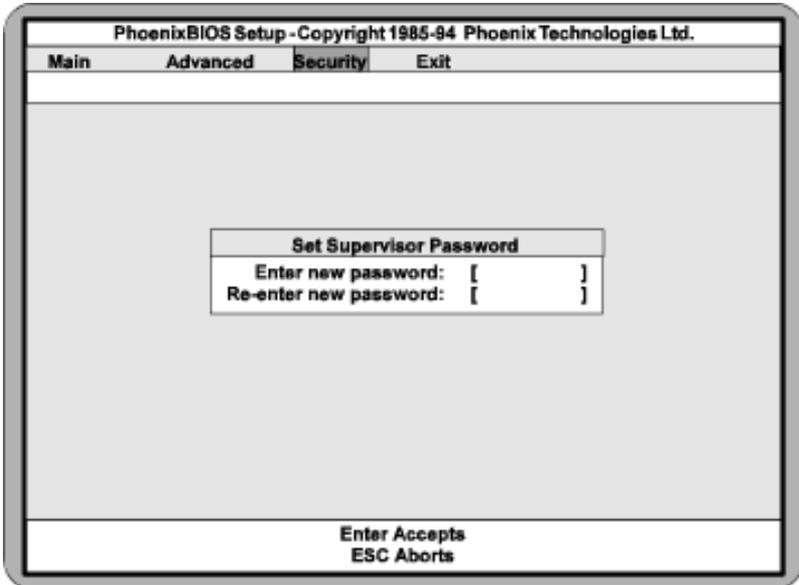


Figure 4-8 Supervisor Password Submenu

Type the password and press the <Enter> key. Retype the password and press the <Enter> key again. Write down the password somewhere safe so it will not be forgotten. The password may be disabled by setting the new password to nothing (pressing the <Enter> key without first typing a password).

**WARNING:** *If you forget the Supervisor Password, it cannot be disabled without discharging the CMOS.*

### Set User Password

Follow the same procedure used to set the Supervisor Password.

**NOTE:** *When a password has been entered, it is saved immediately. All other changes may still be discarded (see Exit Screen).*

### Password on Boot

When enabled, the system will require a password to be entered upon boot. Either the Supervisor or User Password may be entered.

### Diskette Access

This category allows floppy disk access with an option of the Supervisor or User. Selecting Supervisor gives floppy disk access to the supervisor only.

Selecting User (default) will give floppy disk access to both the user *and* the supervisor. If the passwords are enabled, this option may only be changed by the supervisor.

## Fixed Disk Boot Sector

This category allows the boot sector of the fixed disk to be write protected. The default setting is Normal. When set for Write Protect, it serves as a form of virus protection. If the passwords are enabled, this option may only be changed by the supervisor.

## Exit Screen

After you have completed configuring the BIOS, select the Exit Screen (Figure 4-9).

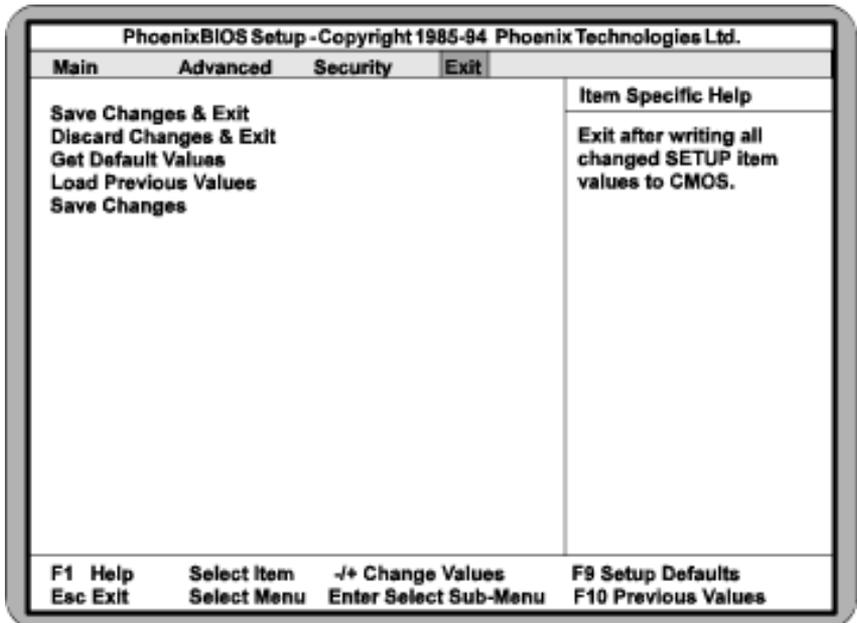


Figure 4-9 Exit Screen

Choose “Save Changes and Exit” and reboot the computer. After running the EISA configuration utility explained in Chapter 5, the computer will be ready for use.



# 5 EISA Utility

## Introduction

The M54E2 is shipped with the Micro Computer System EISA Configuration Utility. The EISA Configuration Utility is a software utility designed to configure EISA peripherals.

The MCS EISA utility is designed to optimize the performance of your EISA peripherals and to maintain conflict-free configuration information. This is achieved through a series of initialization commands stored in nonvolatile memory. The EISA Utility determines the configuration, creates the initialization commands and makes sure the configuration is correct.

***NOTE:** For more information on the EISA Configuration Utility, consult the manual on the CF diskette.*

## When Should You Run the EISA Utility?

The EISA utility retains the configuration information in nonvolatile memory. If this information is lost, the utility retains a backup copy (the file with the .sci extension) on your hard disk. Run the EISA utility the first time your computer is booted up and every time you add or remove EISA, PCI or ISA Plug and Play peripheral cards.

## What You Will Need

Prior to running the EISA utility, you will need to do the following:

- Install all peripheral cards.
- Locate and set aside the EISA Utility diskette and all diskettes that came with your EISA peripherals. They contain the .cfg and .ovl files necessary for configuration.

## Starting the Utility

Perform the following steps to start the EISA utility:

1. Insert the System Configuration diskette into Drive A (or B).
2. At the A: prompt, type “cf” and press <Enter>. The Configuration Introduction screen will appear (Figure 5-1).

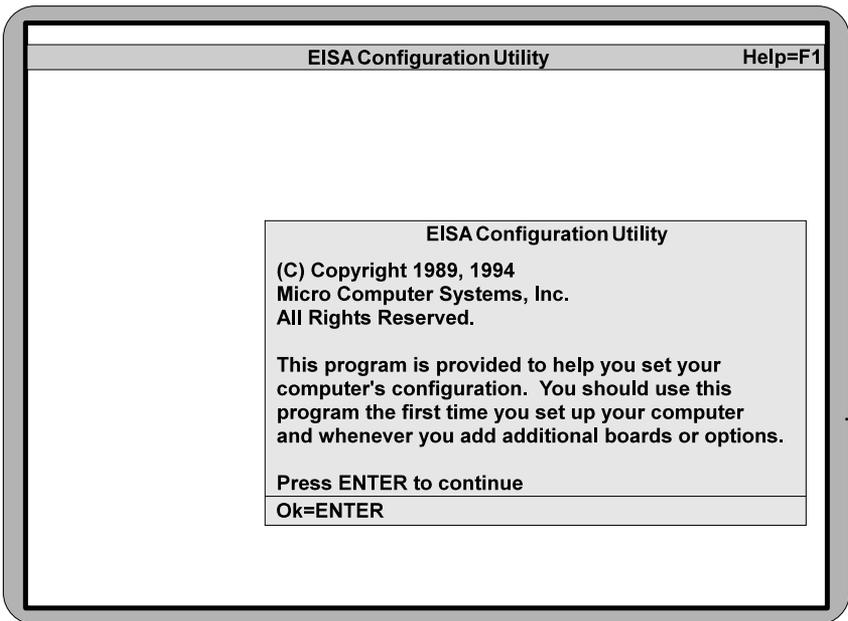


Figure 5-1 EISA Configuration Introduction Screen

## Main Menu

After pressing <Enter>, the main menu appears. The main menu lists five steps for configuring the system board. To select a step, highlight the appropriate selection, and press <Enter>. Figure 5-2 shows the main menu.

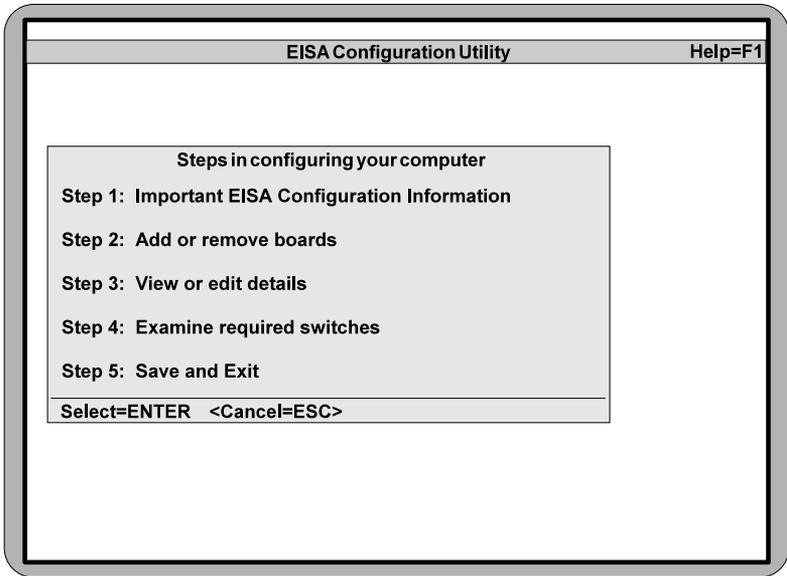


Figure 5-2 EISA Configuration Main Menu

## Step 1: Important EISA Configuration Information

Step 1 provides seven pages of useful information on the configuration utility. Read this prior to using the utility.

## Step 2: Add or Remove Boards

When you select Step 2, the utility scans and locates the EISA boards installed. This section allows you to add or remove any EISA, PCI, and ISA Plug and Play peripherals. Beyond physically adding or removing the boards, it is important that you run this utility in order for your system to run properly.

When you select “Step 2: Add or Remove Boards,” the following screen (Figure 5-3) will appear.

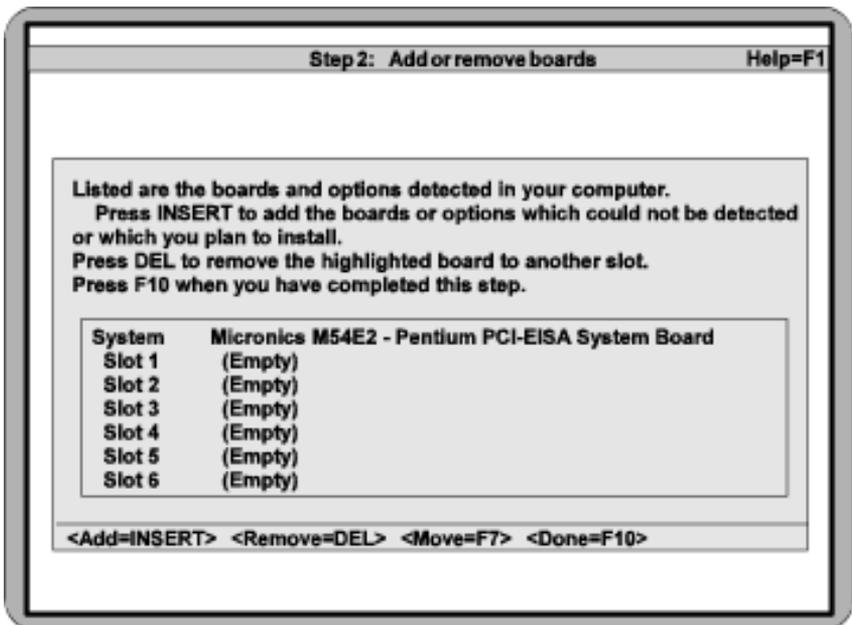


Figure 5-3 Add or Remove Boards Screen

Press <Insert> to add the boards that could not be detected or boards you plan to install. After you press the <Insert> key, the following screen (Figure 5-4) will appear.

You will need to have the configuration disks that came with each of the add-on cards you are installing. Insert the configuration disk for the peripheral you are installing and press <Enter>.

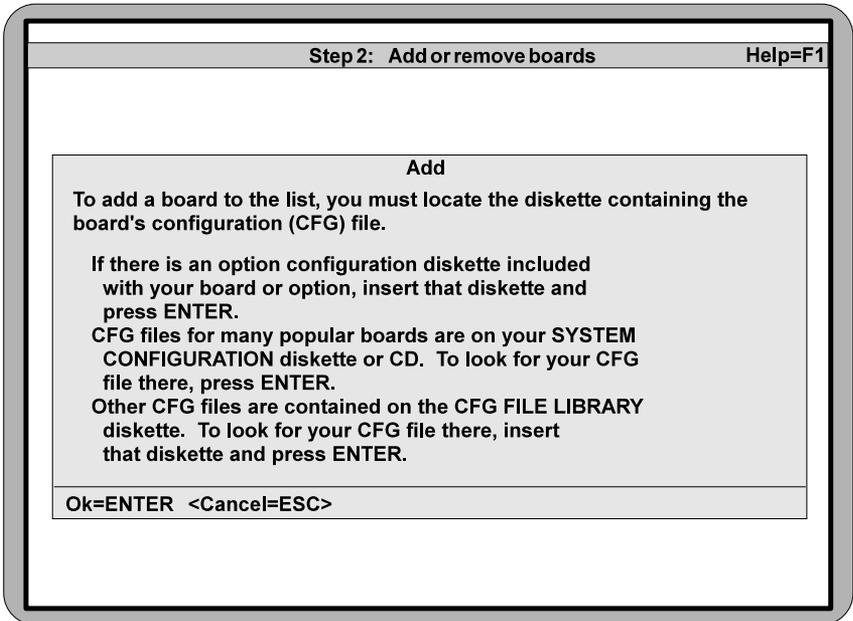


Figure 5-4 Adding an EISA Configuration (CFG) File

When you are finished installing the EISA CFG files, press the <F10> key.

## Step 3: View or Edit Details

When you select the “View or Edit Details” menu (Figure 5-5), a display of your system resources appears. You may edit this menu to optimize the system performance and allocation of resources.

If you need to change information on this menu, select the item you wish to change and press <Enter>.

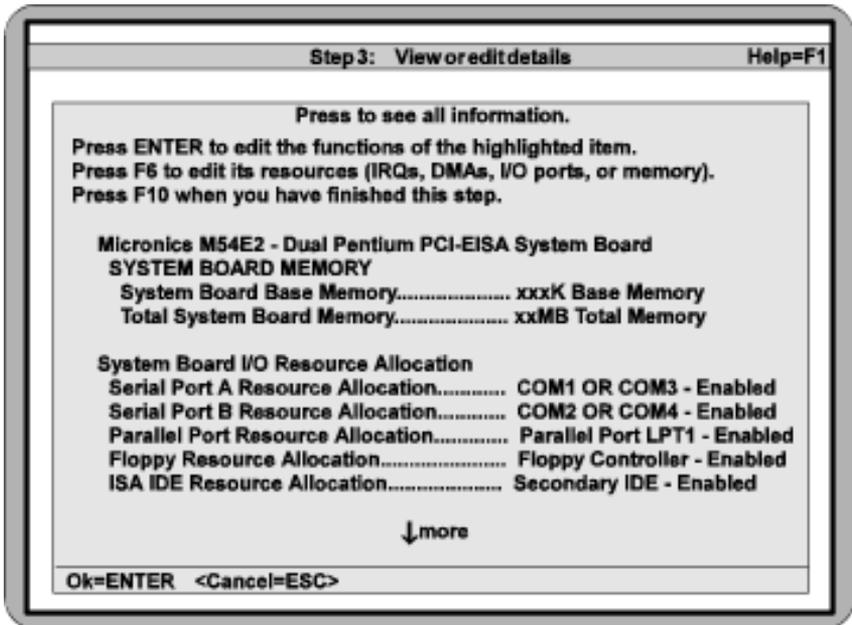


Figure 5-5 View or Edit Details Menu

### Advanced Submenu

The Advanced submenu (Figure 5-6) will allow you to make specialized configuration adjustments. To select this menu, press the <F7> key.

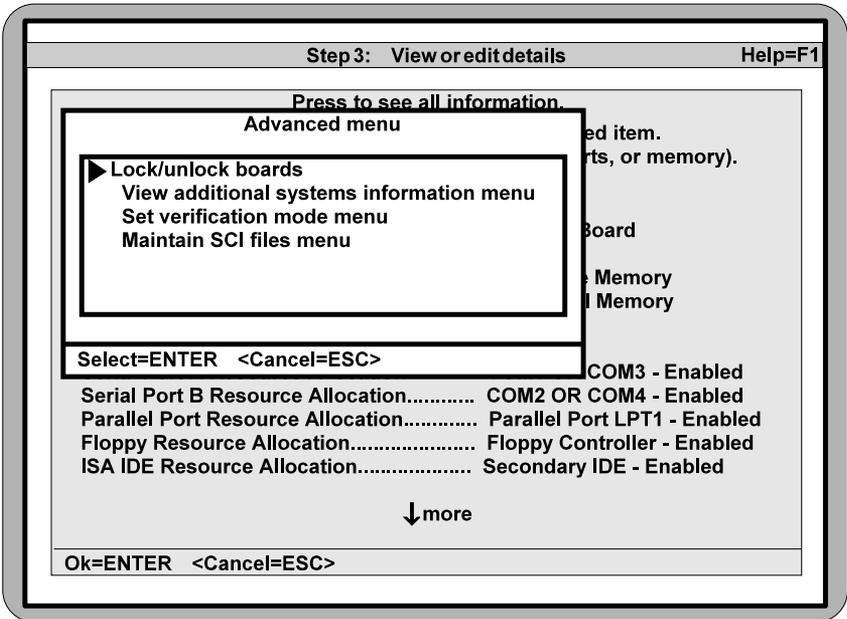


Figure 5-6 Advanced Submenu

### Lock/Unlock Boards

Locking a board will prevent changes from being made to a board's settings. You may lock or unlock each board individually.

### View Additional Systems Information Menu

This is another submenu that will allow you to view board specifications, system specifications, used resources and available resources.

### Set Verification Mode Menu

You may set this for Automatic (default) or Manual. Automatic Verification turns on automatic detection and resolution of resource conflicts caused by configuration changes.

### Maintain SCI Files Menu

'Open' will allow you to load a SCI file to replace your existing EISA configuration.

When you have finished making changes to the Advanced Submenu, press <F10> until you are back to the Main Menu.

## Step 4: Examine Switches or Print Report

### Examine Switches

This section displays a listing of the motherboard jumper settings.

### Print Report

This feature is not currently supported.

## Step 5: Save and Exit

Save the new configuration when you exit the utility. When you select Step 5, the Save and Exit Screen appears. It will give you the option of saving the new configuration or returning to the Main menu. If you have finished configuring your EISA utility, select “Save the configuration and restart the computer.”

The Reboot Screen will then appear. Press the <Enter> key and the computer will reboot. Now the changes are complete and you are ready to use your computer.

# A POST Messages

The following table lists the Power On Self Test (POST) messages, possible causes and solutions.

Message	Possible Cause	Solution
DISKETTE DRIVE A FAILURE	Drive A failed or is missing.	Check Setup and cable connections.
DISKETTE DRIVE B FAILURE	Drive B failed or is missing.	Check Setup and cable connections.
EXTENDED RAM FAILED AT OFFSET: nnnn	Extended memory not working or configured properly.	Replace defective memory.
FAILING BITS: nnnn	Memory failure in System, Extended, or Shadow memory.	Replace defective memory.
FIXED DISK X FAILURE (where X =0 or 1)	The hard disk is not configured or working properly.	Rerun SETUP and check connections, or replace hard disk.
FIXED DISK CONTROLLER FAILURE	The controller card has failed.	Check configuration and connections, or replace controller card.
INCORRECT DRIVE A TYPE	Floppy drive A: not set correctly in Setup.	Run Setup.
INCORRECT DRIVE B TYPE	Floppy drive A: not set correctly in Setup.	Run Setup.
INVALID NVRAM MEDIA TYPE	NVRAM chip is bad.	Requires repair of system board.
KEYBOARD ERROR, or KEYBOARD CONTROLLER ERROR	The keyboard or keyboard controller failed.	Check connections. You may have to replace the keyboard or controller.
KEYBOARD ERROR nn	A key is jammed or was held down during boot.	Make sure the keys are not jammed or dirty.
KEYBOARD LOCKED	Keyswitch on the front of the case is locked.	Unlock the keyswitch.

<b>Message</b>	<b>Possible Cause</b>	<b>Solution</b>
MONITOR TYPE DOES NOT MATCH CMOS	Monitor type not correctly identified in Setup.	Run Setup and enter correct monitor type.
OPERATING SYSTEM NOT FOUND	Operating system cannot be located on Drive C: or Drive A:	Check Setup to see if Drive A: and C: are properly configured, or put a bootable disk in Drive A:
PARITY CHECK 1 nnnn	Parity error found in the system bus.	Check Setup. Board repair may be required.
PARITY CHECK 2 nnnn	Parity error found in the I/O bus.	Check Setup. Board repair may be required.
PREVIOUS BOOT INCOMPLETE - DEFAULT CONFIGURATION USED	Previous POST did not complete successfully.	Run Setup, load default BIOS settings, make any necessary adjustments, and save the changes
REAL TIME CLOCK ERROR	Real-time clock failed BIOS test.	May require battery replacement or board repair.
SHADOW RAM FAILED AT OFFSET	Shadow RAM failed.	May require repair of system board.
SYSTEM BATTERY IS DEAD	System battery died.	Replace the system battery and run Setup to reconfigure the system.
SYSTEM CACHE ERROR - CACHE DISABLED	External (L2) cache failed BIOS test.	System will still run, but slower. Replace cache at convenience.
SYSTEM CMOS CHECKSUM BAD - RUN SETUP	System CMOS has been corrupted or modified incorrectly.	Run Setup and reconfigure the system.
SYSTEM RAM FAILED AT OFFSET: nnnn	System RAM failed.	Replace defective RAM.
SYSTEM TIMER ERROR	Timer test failed.	Requires repair of system board.

# B Beep and POST Codes

Beep codes are a series of beeps sent through the speaker that indicate a problem during the Power On Self Test (POST). If text appears on the video screen, the M54E2 has completed POST; any other tone from the speaker indicates something other than a POST error. These tones *are not* described in Table B-1.

The beep error codes are a series of beeps. The duration of the beep tones are constant, but the length of the pauses between the beeps varies. For example: a 1-3-3 beep code will sound like one beep, a pause; three beeps consecutively, another pause; and then three more beeps.

One beep code is often misunderstood. If a video card is not installed or is failing, the system board will generate a long-short-long-short beep code. This is often interpreted as a 1-2-1 beep code. But POST errors always vary in the length of the pause and not the duration of the beep tone.

Another way of identifying a POST error is to use a device called a POST card. This peripheral card is inserted into one of the ISA slots and has an LED (or LCD) read out showing the contents of port 80h.

The tables on the following page provides a list of all beep codes and POST routines.

Appendix B: Beep and POST Codes

Code	Beeps	POST Routine Description
02		Verify Real Mode.
04		Get CPU type.
06		Initialize system hardware.
08		Initialize chipset registers with initial POST values.
09		Get in POST Reg.
0A		Initialize CPU registers.
0C		Initialize cache initial POST values.
0E		Initialize I/O.
0F		Initialize the localbus IDE.
10		Initialize Power Management.
11		Load alternate registers with initial POST values.
12		Jump to UserPatch0.
14		Initialize keyboard controller.
16	2-2-3	BIOS ROM checksum.
18		8254 timer initialization.
1A		8237 DMA controller initialization.
1C		Reset Programmable Interrupt Controller.
20	3-1-1	Test DRAM refresh.
22	3-1-3	Test 8742 Keyboard Controller.
24		Set ES segment register to 4 GB.
28		Autosize DRAM.
2A		Clear 512K base RAM.
2C	3-4-1	Test 512K base address lines.
2E	3-4-3	Test 512K base memory.
32		Test CPU bus-clock frequency.
34		Test CMOS RAM.
35		Initialize alternate chipset registers.
37		Reinitialize the chipset (MB only).
38		Shadow system BIOS ROM.
39		Reinitialize the cache (MB only).
3A		Autosize cache.
3C		Configure advanced chipset registers.
3D		Load alternate registers with CMOS values.
40		Set initial CPU speed.
42		Initialize interrupt vectors.
44		Initialize BIOS interrupts.
46	2-1-2-3	Check ROM copyright notice.
47		Initialize manager for PCI Option ROMs.
48		Check video configuration against CMOS.
49		Initialize PCI bus and devices.

Code	Beeps	POST Routine Description
4A		Initialize all video adapters in system.
4C		Shadow video BIOS ROM.
4E		Display copyright notice.
50		Display CPU type and speed.
51		Initialize EISA board.
52		Test keyboard.
54		Set key click if enabled.
56		Enable keyboard.
58	2-2-3-1	Test for unexpected interrupts.
5A		Display prompt "Press F2 to enter SETUP".
5C		Test RAM between 512 and 640k.
60		Test extended memory.
62		Test extended memory address lines.
64		Jump to UserPatch1.
66		Configure advanced cache registers.
68		Enable external and CPU caches.
6A		Display external cache size.
6C		Display shadow message.
6E		Display non-disposable segments.
70		Display error messages.
72		Check for configuration errors.
74		Test real-time clock.
76		Check for keyboard errors.
7C		Set up hardware interrupt vectors.
7E		Test coprocessor if present.
80		Disable onboard I/O ports.
82		Detect and install external RS232 ports.
84		Detect and install external parallel ports.
86		Re-initialize on-board I/O ports.
88		Initialize BIOSData Area.
8A		Initialize Extended BIOS Data Area.
8C		Initialize floppy controller.
90		Initialize hard-disk controller.
91		Initialize localbus hard-disk controller.
92		Jump to UserPatch2.
93		Build MPTABLE for multi-processor boards.
94		Disable A20 address line.
96		Clear huge ES segment register.
98		Search for option ROMs.
9A		Shadow option ROMs.

Code	Beeps	POST Routine Description
9C		Set up Power Management.
9E		Enable hardware interrupts.
A0		Set time of day.
A2		Check key lock.
A4		Initialize typematic rate.
A8		Erase F2 prompt.
AA		Scan for F2 keystroke.
AC		Enter SETUP.
AE		Clear in-POST flag.
B0		Check for errors.
B2		POST done - prepare to boot operating system.
B4		One beep.
B6		Check password (optional).
B8		Clear global descriptor table.
BC		Clear parity checkers.
BE		Clear screen (optional).
BF		Check virus and backup reminders.
C0		Try to boot with INT 19.
D0		Interrupt handler error.
D2		Unknown interrupt error.
D4		Pending Interrupt.
D6		Initialize option ROM error.
D8		Shutdown error.
DA		Extended Block Move.
DC		Shutdown 10 error.
		The following are for boot block in Flash ROM:
E2		Initialize the chipset.
E3		Initialize refresh counter.
E4		Check for Forced Flash.
E5		Check HW status of ROM.
E6		BIOS ROM is OK.
E7		Do a complete RAM test.
E8		Do OEM initialization.
E9		Initialize interrupt controller.
EA		Read in the bootstrap code.
EB		Initialize all vectors.
EC		Boot the Flash program.
ED		Initialize the boot device.
EE		Boot code was read OK.

# C Hard Disk Drive Types

The following table lists the hard disk types supported by M54E2.

Type	Cylinders	Heads	Write Precomp	Sectors	Size
1	306	4	128	17	10
2	615	4	300	17	21
3	615	6	300	17	32
4	940	8	512	17	65
5	940	6	512	17	99
6	615	4	none	17	21
7	462	8	256	17	32
8	733	5	none	17	31
9	900	15	none	17	117
10	820	3	none	17	21
11	855	5	none	17	37
12	855	7	none	17	52
13	306	8	128	17	21
14	733	7	none	17	44
15	N/A	N/A	N/A	N/A	N/A
16	612	4	0	17	21
17	977	5	300	17	42
18	977	7	none	17	59
19	1024	7	512	17	62
20	733	5	300	17	31
21	733	7	300	17	94
22	733	5	300	17	31
23	306	4	0	17	10
24	612	4	305	17	21
25	612	2	300	17	10
26	614	4	none	17	21
27	820	6	none	17	42
28	977	5	none	17	42
29	1218	15	none	36	336
30	1224	15	none	17	159

Type	Cylinders	Heads	Write Precomp	Sectors	Size
31	823	10	512	17	71
32	809	6	128	17	42
33	830	7	none	17	50
34	830	10	none	17	72
35	1024	5	none	17	44
36	1024	8	none	17	71
37	615	8	128	17	42
38	1024	8	none	26	109
39	925	9	none	17	72

# D Specifications

Part Number:	09-00210-118 (256K Cache) 09-00210-119 (512K Cache)
Main Processor:	75, 90 120, 133, 150, 166, 200MHz Pentium processor
Second Processor:	75, 90 120, 133, 150, 166, 200MHz Pentium processor
Chipset:	Intel Neptune Chipset Intel PCEB/ESC EISA Bridge SMC 665 Super I/O controller
CPU Clock Select:	Frequency synthesizer chip. Jumper selectable CPU selection
Form Factor:	Full size (12" x 13.8"). 6 layer PCB
Expansion:	Five 32-bit EISA slots Two 32-bit PCI slots One shared EISA/PCI slot
BIOS:	Phoenix 4.04 Plug and Play BIOS on 1MB Flash EPROM Auto-detection of memory size Auto-configuration of IDE hard disk drives
RAM Capacity:	512MB
Keyboard:	PS/2 (PS/2 version) AT-Compatible (AT version)
Mouse:	Built-in PS/2 support (PS/2 version only)
Internal Cache:	16K (per processor)
External Cache:	256K or 512K write-back

I/O Ports:	Built in support Two high speed serial ports (16550 compatible) One bi-directional parallel port <ul style="list-style-type: none"><li>- Enhanced Parallel Port (EPP) compatible</li><li>- Microsoft and Hewlett Packard Extended</li><li>- Capabilities Port (ECP) compatible</li></ul>
Floppy Port:	Supports two floppy drives (2.88, 1.44, 1.2, 720K, 360K)
IDE Support:	Supports two IDE hard disks LBA support
Clock:	Benchmark Real Time Clock

## Environmental Specifications

The environment in which the M54E2 is located is critical. Micronics recommends the following environmental specifications:

### Temperature Range

Operating: 50 to 104 degrees Fahrenheit (10 to 50 degrees Celsius).

Non -Operating: 50 to 140 degrees Fahrenheit (10 to 60 degrees Celsius).

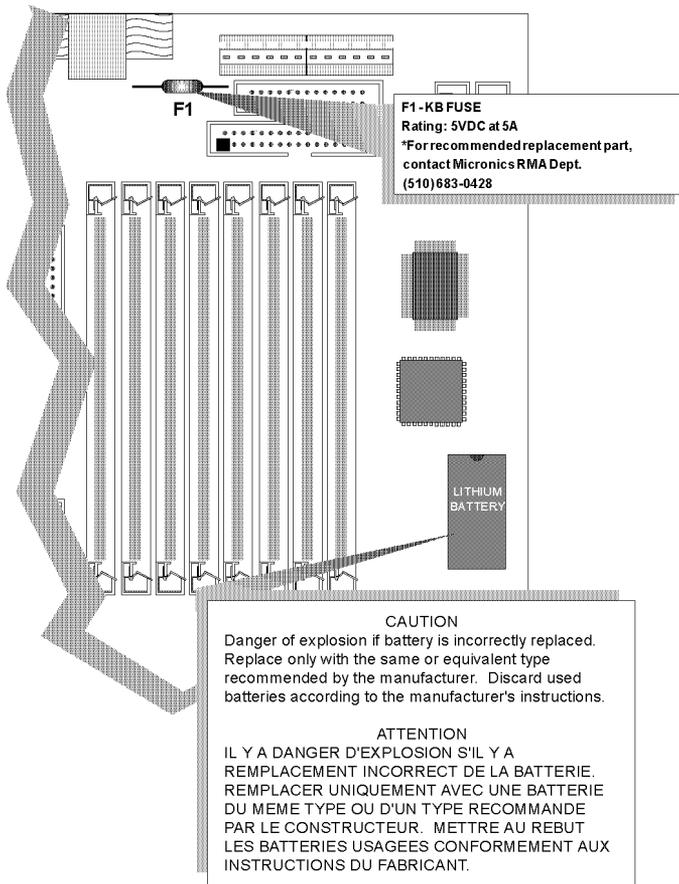
Shipping: -22 to 140 degrees Fahrenheit (-30 to 60 degrees Celsius).

### Relative Humidity

Operating: 20% to 80%

Non-Operating: 5% to 90%

# Battery Disposal



**WARNING:**

*Please do not open battery, dispose of in fire, recharge, put in backwards or mix with used or other battery types. The battery may explode or leak and cause personal injury.*

# Technical Support

If you need technical assistance, our Technical Support staff will be glad to assist you. You can contact us via telephone, fax or Bulletin Board System (BBS). Before calling please have the following information ready:

- The model name and 09 part number of your Micronics product.
- Your computer information such as CPU type, operating system, amount of installed memory and other peripherals installed in your computer.
- Try to call from the location of your computer.

NOTE: For Return Material Authorization (RMA) purposes, please keep a copy of your product receipt.

## In the United States:

Technical Support	(510) 661-3000
Technical Support Fax	(510) 651-6982
RMA Department	(510) 683-0428

## In Europe:

France Technical Support	+33 (1) 45 16 33 96
France Technical Support Fax	+33 (1) 45 16 31 10
United Kingdom Technical Support	+44 1 256 844 899
United Kingdom Technical Support Fax	+44 1 256 54476
Germany Technical Support	+49 89 6881646
Germany Technical Support Fax	+49 89 429517

## Bulletin Board System (BBS)

### In the United States:

Technical Support BBS - 14400 baud rate, Parity=N, Data Bits=8, Stop Bits=1, YMODEM and ZMODEM (recommended file transfer protocols)  
(510) 651-6837

### In Europe:

France Technical Support BBS	+33 14 784 7057
United Kingdom Technical Support BBS	+44 1256 63373
Germany Technical Support BBS	+49 89 6881686

## Online Services

### Bulletin Board (BBS)

#### **In the United States:**

Technical Support BBS - 14400 baud rate, Parity=N, Data Bits=8, Stop Bits=1, YMODEM and ZMODEM (recommended file transfer protocols)  
(510) 651-6837

#### **In Europe:**

United Kingdom Technical Support BBS	(44) 1 256 63373
Germany Technical Support BBS	49-89-6881686
France Technical Support BBS	+33 14 784 7057

### World Wide Web

You will find information on product support, new product releases and other categories of information. Access the Internet and type:

<http://www.micronics.com>



# E Updating the System BIOS

The Micronics motherboards are designed so that the BIOS can be reprogrammed using a BIOS file. You can easily FLASH a BIOS by following the steps below:

- 1) After downloading the appropriate BIOS file from our BBS, extract it to a bootable MS-DOS 6.X diskette.
- 2) Reboot your system with the MS-DOS 6.X diskette in the A: drive. To make sure a clean DOS environment is loaded, press the F5 key while “Starting MS-DOS” is displayed. After the system has rebooted, the cursor will appear at the A:> prompt.
- 3) Now you can run the FLASH utility. The filename will be either “FSH” (or FSH20, FSH20G, etc.) or “PHLASH.” Type this filename at the A:> prompt (but don’t include its extension), followed by a space and the BIOS ROM image’s filename. This file will be included in the download and has a file length of about 131K. For example, to update the M54E2 to BIOS version 05, you would type:

```
PHLASH M54E2.05 [ENTER]
```

- 4) Once the FLASH process has begun, select [Y]es, if prompted, to allow auto-sensing of the part (the FLASH chip itself).
- 5) After the update process has completed and the system reboots, verify that the new BIOS version appears on-screen. If you have problems during this process, or if you have questions about the procedure, please call Technical Support.

NOTE: If the BIOS is somehow erased or doesn’t seem to accept the upgrade, you can have your original BIOS chip reprogrammed manually by Technical Support. There is a \$29.95 fee for this service, which includes shipping charges to send your FLASH EPROM chip back to you. Also, a preprogrammed FLASH EPROM chip can be purchased from Technical Support for \$50.00. Overnight shipping costs an additional \$10.00. (Price and availability subject to change.) If you prefer to send your system board in for the upgrade, the RMA department offers this service free of charge if your system board is under warranty.



## FCC Warning Statement

This equipment has been tested and found to comply within the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not used in accordance with the instructions, may cause harmful interference to radio communications. Interference to radio or television reception can be determined by turning the equipment off and on. You are encouraged to try to correct the interference by one or more of the following measures:

-  Reorient the receiving antenna.
-  Increase the separation between the equipment and the receiver.
-  Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-  Consult your dealer or an experienced radio/TV technician for help.

To meet FCC requirements, shielded cables are required.

*NOTE: Changes or modifications not expressly approved by Micronics could void your authority to operate the equipment.*

# Declaration of Conformity

Application of Council Directives 89/336/EEC. Standards to which the conformity is declared:

EN50082-1

Manufacturer's Name: Micronics Computers, Inc.

Manufacturers Address: 221 Warren Avenue  
Fremont, California 94539  
USA  
Telephone: (510) 651-2300  
Fax: (510) 651-9450

Type of Equipment: Motherboard (AT form factor)  
Full Tower Computer

Model Name: M54E2

Tested by: Rockford Engineering Services, Inc.  
9959 Calaveras Road  
P.O. Box 543  
Sunol, CA. 94586-0543  
Telephone: (510) 862-2944  
Fax: (510) 862-9013

Test Engineers John Y. Chan/Micronics (EN50082-1)  
Paramjeet Singh/RES (EN50082-1)

I, the undersigned, hereby declare that the specified equipment conforms to the directives and standards listed above.



Ming Ming Hsu  
Vice President of Engineering  
June 6, 1996

# Glossary

**16550 UART** - A high speed chip for controlling serial ports. Although unnecessary for a mouse, it is required for modems that are 14,400 baud or faster.

**486DX** - A type of 32-bit CPU with a built-in math-coprocessor and internal cache.

**486DX2** - A 486DX CPU where the internal speed of the CPU operates at twice the external speed.

**486DX4** - A 486DX CPU where the internal speed of the CPU operates at three times the external speed.

**486SX** - A 486DX CPU with no math-coprocessor.

**Asynchronous** - Operations that do not require the clocks of communicating devices to be coordinated. See Synchronous.

**Baby AT** - A standard system board size measuring approximately 13.25" x 8.5".

**Bidirectional Parallel Port** - A type of parallel port that can send and receive information.

**BIOS** - An Acronym for Basic Input/Output System. Configures the system board and provides hardware information to the operating system.

**Bit** - A contraction of Binary digit. The smallest unit of information in a binary number system. A bit represents a choice between either zero or one.

**Boot** - To start up the computer and load the operating system software. See *cold boot* and *warm boot*.

**Bus** - A group of electronic paths used to send data between parts of the system. On a system board, the bus connects the peripheral cards with the microprocessor via the expansion slots.

**Bus Mastering** - The ability of an peripheral card to control the bus without requiring intervention of the CPU.

**Byte** - A group of adjacent *bits* treated as a unit. Eight bits are typically considered one byte. Also called a character.

**Cache** - A process where information is copied from the slower memory (DRAM) to the faster memory (SRAM). Information that is likely to be read or edited is stored in the cache providing significant performance increases.

**Cache Hit** - The percentage of request for data from memory that can be served from the cache.

**Cache Miss** - A memory access which cannot be supplied from cache.

**Cold Boot** - Starting the computer by turning on the power or pressing the RESET button. A cold boot makes the processor execute all of the diagnostics. See boot and warm boot.

**CPU** - An acronym for Central Processing Unit. A CPU performs arithmetic calculations, makes logical decisions, and directs the operation of the computer in conjunction with the operating system.

**Disk Drive** - A hardware device which provides for the storage of data on diskettes or hard metal disks that have a magnetic coating. A disk drive functions by spinning at high speed while moving a device called the read/write head across the disk's surface in order to read or write data in magnetic code.

**DRAM** - An acronym for Dynamic Random Access Memory. A type of memory chip that only keeps its memory if supplied with regular clock pulses and a chance to regularly refresh its data. It is slower and more cost effective than SRAM. See SRAM.

**ECP** - An acronym for Expanded Capabilities Port. A standard set by Hewlett Packard and Microsoft Corporation to expand the capabilities of the parallel port.

**EDO Memory** - An acronym for Extended Data Output. A type of DRAM with built-in cache.

**EISA** - An acronym for Extended Industry Standard Architecture. EISA is a bus design standard which is fully backward compatible with the ISA bus. Although it is a 32-bit bus, it only runs at 8MHz. See *PCI*, *VESA*, and *ISA*.

**EPP** - An acronym for Enhanced Parallel Port. A standard which increases the capabilities of the parallel port.

**EPROM** - Acronym for Erasable Programmable Read Only Memory. A type of ROM chip that can be programmed with relatively simple tools that will retain its data until erased. It can only be erased by exposing the circuitry in the chip to ultraviolet light. See also Flash ROM.

**External Cache** - Cache which is external to the CPU. See Cache.

**Fast SCSI** - A SCSI data transfer standard that allows a rate of up to 10MB/sec.

**Fast Wide SCSI** - A SCSI data transfer that allows a rate of up to 20MB/sec.

**Flash ROM** - A type of ROM chip that will retain its data until erased. It can be erased or reprogrammed by supplying it with +12V of voltage. See ROM and EPROM.

**Full Size** - A standard system board size measuring approximately 12" x 13.75".

**Gigabyte** - A disk storage capacity measurement. Approximately one thousand megabytes or 1,073,741,824 bytes.

**IDE** - An acronym for Integrated Device Electronics. A standard for communicating between a hard drive and a computer.

**Internal Cache** - Cache which is built into the CPU. See Cache.

**ISA** - An acronym for Industry Standard Architecture. A well-established bus standard that originated with the IBM AT. See *PCI*, *VESA*, and *EISA*.

**Jumper** - a small plug that fits over and shorts pins on a circuit board. Jumpers allow the various functions of the board to be enabled or disabled.

**Kilobyte (KB)** - 1,024 bytes.

**L1 Cache** - See Internal Cache.

**L2 Cache** - See External Cache.

**LBA** - An acronym for Logical Block Addressing. Any IDE hard drive that is larger than 528MB.

**Math Coprocessor** - A microprocessor designed specifically for performing mathematical calculations. A math coprocessor performs these calculations faster than the CPU, and by doing so, frees the CPU for other activities.

**Megabyte (MB)** - 1,024 Kilobytes or 1,048,576 bytes.

**Mini AT** - A standard system board size measuring approximately 8.5" x 9.5".

**Mode 1** - An IDE data transfer standard that supports transfer rates of up to 5.22 Mbytes/sec.

**Mode 2** - An IDE data transfer standard that supports transfer rates of up to 8.33 Mbytes/sec.

**Mode 3** - An IDE data transfer standard that supports transfer rates of up to 11.1 Mbytes/sec.

**Mode 4** - An IDE data transfer standard that supports transfer rates of up to 15.5 Mbytes/sec.

**Parallel** - A form of data transmission in which the data is sent one byte at a time over several wires that each carry one byte. In parallel transmission, all the bytes arrive simultaneously, as opposed to serial transmission in which bits arrive one by one.

**Parallel Port** - A connection for a printer or similar peripheral. Generally, parallel ports are output only. See Bidirectional Parallel Port and ECP.

**PCI** - An acronym for Peripheral Component Interconnect. A high performance 32-bit or 64-bit bus developed by Intel Corporation. PCI is designed to be independent of the hardware architecture to ensure compatibility with future computer systems. See *VESA*, *EISA*, and *ISA*.

**Pentium** - A high performance 64-bit CISC processor designed and manufactured by Intel Corporation. As of this writing, Pentium is the highest performing X86 processor available.

**Plug and Play** - A standard developed to ensure easy installation of peripherals. Theoretically, a newly installed card will automatically configure itself and work properly without requiring jumper configuration or device drivers.

**POST** - An acronym for Power On Self Test. A diagnostic program that is run whenever the system is cold booted.

**RAM** - An acronym for Random Access Memory. A type of memory that is used as the "working memory" of a computer system. See DRAM and SRAM.

**ROM** - An acronym for Read Only Memory. A type of memory that retains its data without requiring power. Once written, it cannot be modified. See EPROM and Flash ROM.

**SCSI** - An acronym for Small Computer Systems Interface. An interface standard used to interface hard disk drives, removable cartridge drives, tape drives, and CD-ROMs to the computer system. SCSI allows multiple, high-performance peripheral devices to be connected in a chain. Each has its own address. Data and control signals are sent along the chain and only the specifically addressed device responds.

**SCSI II** - An interface standard that adds features to the SCSI standard. These include 32-bit data transfer, command queuing, Fast SCSI, and support for a wider variety of peripherals.

**SCSI III** - A proposed standard that will support transfer rates of up to 40MB/sec.

**Serial** - A type of data transmission in which the data is sent one bit at a time over a single wire. See Parallel.

**Serial Port** - A communications port used to connect peripherals such as modems and mice.

**Setup** - A program that allows you to make changes to the system configuration.

**Shadow RAM** - A technique used to load a duplicate copy of BIOS from slower ROM into faster RAM. This enhances system performance because it provides higher access speed to the BIOS.

**SIMM** - An acronym for Standard Inline Memory Module. A small printed circuit board containing memory chips.

**SRAM** - An acronym for Static Random Access Memory. A type of memory that can retain data without requiring a regular clock signal. Although they are faster than DRAM, they hold less data and are more expensive.

**Synchronous** - Protocols that require the clocks of communicating machines or devices to be coordinated.

**Synchronous Cache** - A type of cache that uses a clock signal to latch the inputs and the data output. This structure spreads the cache access across

two or three cycles while maintaining a bandwidth of one access per cycle. Improves performance by 5-10%.

**Terabyte** - A measurement for very, very large storage capacity. One Terabyte is equivalent one-thousand gigabytes, one-million megabytes, or 1,099,511,627,766 bytes.

**VESA** - An acronym for Video Electronics and Standards Association. VESA Localbus (VL-Bus) - A high performance bus designed by VESA. A 32-bit version of the ISA bus which operates at the speed of the computer's CPU. See *PCI*, *EISA* and *ISA*.

**VGA** - An acronym for Video Graphics Array. A standard for monitor displays.

**VR** - Pentium CPU voltage ranging from 3.300 - 3.465 Volts.

**VRE** - Pentium CPU voltage ranging from 3.400 - 3.600 Volts.

**Warm Boot** - Restarting the system by simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys.

**Write-Back Cache** - Upon a cache hit, the cache is updated and the main memory is not affected. Upon a cache miss, only the main memory is updated.

**Write-Through Cache** - Upon a cache hit, the cache and the main memory are updated. Upon a cache miss, only the main memory is updated.

## Limited Warranty

Except as described below, Micronics warrants the products to be free from defects in material and workmanship in normal use for a period of one (1) year from date of purchase. Should any product fail to perform according to this warranty at any time during the warranty period, except as provided below, Micronics or its authorized service centers will, at Micronics' option, repair or replace the product at no additional charge.

The warranty does not cover loss or damage which occurs in shipment or which is due to: (1) improper installation or maintenance, misuse, neglect or any cause other than ordinary commercial application, including without limitation, accidents or acts of God; (2) adjustment, repair, or modification by other than a Micronics authorized service center; (3) improper environment, excessive or inadequate heating or air conditioning, or electrical power failures, surges or other irregularities; (4) any statement about the product other than those set forth in this warranty; or (5) nonconformity to models or samples shown to the purchaser. Any models or samples were for the sole purpose of suggesting the character of the product and are not intended to form the basis of the bargain.

A receipt or copy of the invoice with the date of purchase from a Micronics reseller is required before any warranty service can be rendered. Service can be obtained by calling Micronics for a Return Merchandise Authorization (RMA) Number.

The RMA Number should be prominently displayed on the outside of the shipping carton of the returned product. Returned product should be shipped prepaid or hand carried to Micronics. The purchaser assumes risk of loss or damage in transit, and unless otherwise agreed to in writing by Micronics, will pay inbound shipping charges.

The exclusive remedy of the purchaser under this warranty above will be repair or replace at Micronics' option, but if for any reason that remedy should fail of its essential purpose, the exclusive remedy of the purchaser shall then be actual damages up to amounts paid for the defective product by the purchaser. This limited warranty shall be deemed to "fail of its essential purpose" if, after repeated efforts, Micronics is unable to make the product operate as warranted. Micronics' liability for damages to the purchaser for any cause whatsoever; regardless of the form of action and whether in contract or in tort, shall be limited to the purchase price in effect when the cause of action arose for the product that is the basis of the claim.

Micronics will not be liable for any lost profits or any indirect, special incidental or consequential damages in connection with the product, even if Micronics has been advised of the possibility of such damages.

Micronics makes no warranties or representations as to performance of products or as to service to distributor or to any person, except as set forth in Micronics; limited warranty accompanying delivery of product.

Micronics disclaims all other warranties whether oral, written, expressed, or implied, including without limitation, the warranties of design, merchantability, or fitness for a particular purpose, if applicable, or arising from a course of dealing, usage or trade practice.

## **Non-Warranty Service**

After the one year warranty service is no longer in effect, repair service is still available for Micronics products. For more information, contact Micronics' RMA department at (510) 683-0428. The RMA department is open between 8:30 A.M. and 5 P.M. Pacific Standard Time.

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