Pi8G

User's Manual

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FCC Statement

FCC Class B Radio Frequency Interference Statement

Note:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of 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 installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio/television technician for help.

Notice 1:

The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Notice 2:

Shielded interface cables, if any, must be used in order to comply with emission limits.

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Chapter

Features 1

The Pi8G is a Pentium-based system board that provides a unique "deep-green" Pentium PCI solution. "Deep-green" systems go a step beyond being just "green". Power-saving extends from the system's components to your display monitor. With ASIC (application-specific integrated circuits) chipsets, the Pi8G is able to use the SMM functions present in the Pentium chip, offering more power-saving features than before.

The Pi8G offers great expandability with four PCI slots, four ISA-AT slots (includes one PCI and ISA shared slot). It also has six 72-pin SIMM (single inline memory module) slots that support up to 160 MB of memory. A super I/O controller is onboard, supporting two serial ports, one parallel port and 1.2MB/1.44MB/2.88MB FDD (floppy diskette drive). The system board also has two local-bus enhanced IDE connectors that support up to four IDE devices.

The Pi8G system board is easy to install and configure. Components like jumpers and connectors are clearly labeled for easy configuration and connection. Every connector has a notched edge indicating pin 1 which allows correct peripheral connection every time.

The Pi8G board measures 22 x 33 cm, the full baby-AT size.

Chapter

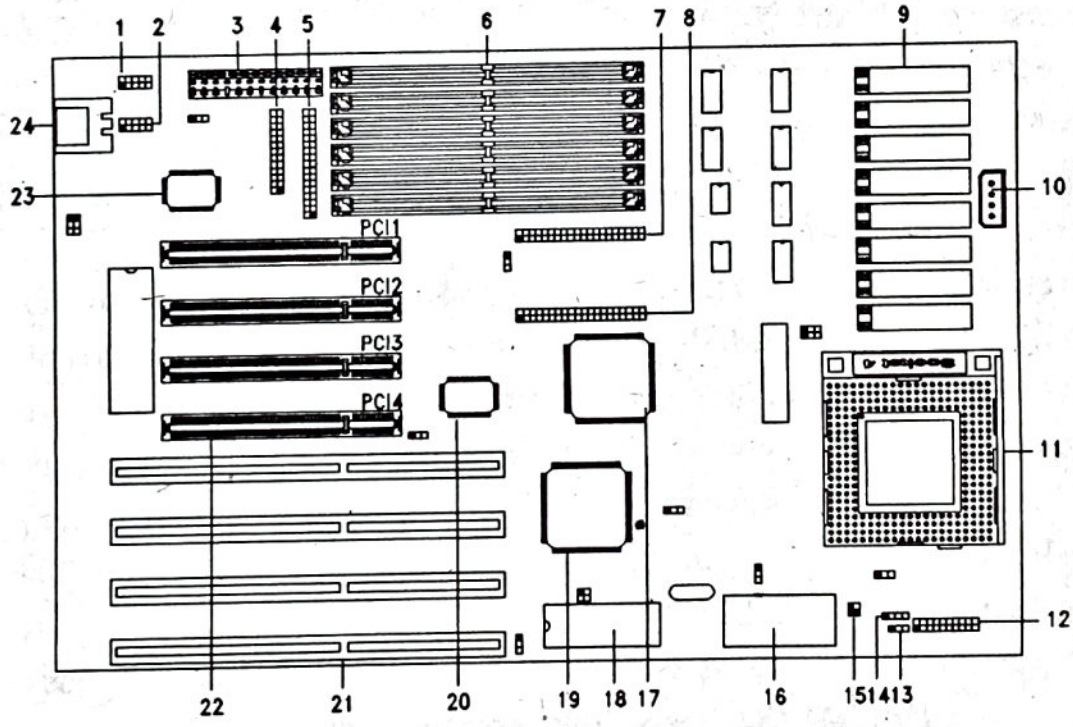
1 Features

Specifications

Microprocessor	Supports Intel Pentium, 60/66 MHz
Memory	2 MB up to 160 MB
SIMM sockets	Six 72-pin, 32-bit SIMM type
ASIC chips	ALI M1449 ALI M1451
Bus architecture	ISA, PCI
Expansion slots	four PCI slots four ISA slots (includes one PCI and ISA shared slot)
Ports	onboard I/O control for two serial ports one parallel port 1.2M / 1.44M / 2.88M FDD two-channel enhanced IDE
Secondary cache	256 KB / 512 KB / 1 MB
BIOS	AMI
RTC	Dallas 12887A
Board size	22 x 33 cm (full baby AT)

Layout

1. *COM2 port connector*
2. *COM1 port connector*
3. *Power connector*
4. *Parallel port connector*
5. *FDD connector*
6. *72-pin SIMM sockets*
7. *Enhanced IDE connector #1 (primary IDE)*
8. *Enhanced IDE connector #2 (secondary IDE)*
9. *Secondary Cache (SRAM)*
10. *4-pin fan power connector*
11. *ZIF-type CPU socket*
12. *Multifunction connector*
13. *EPA suspend function switch*
14. *Enhanced IDE LED connector*
15. *2-pin fan power connector*
16. *RTC*
17. *ALI M1451 chip*
18. *BIOS*
19. *ALI M1449 chip*
20. *Enhanced IDE controller*
21. *ISA-AT slots*
22. *PCI slots*
23. *Super I/O controller chip*
24. *Keyboard connector*



Chapter

1 Features

System Board Components

Microprocessor

The Pi8G system board supports the Intel Pentium processor, running at 60 and 66 MHz.

ASIC Chips

The two major ASICs onboard are the ALI M1449 and ALI M1451. The ALI M1449 chip serves as a bridge between the PCI bus and ISA bus. It also acts as a fast peripheral controller. The ALI M1451 chip serves as a chip controller for cache and system memory, provides high-performance CPU to PCI to main memory interfaces. This chip also harness the SMI and SMM functions found in the CPU. Together, these chipsets are designed to give a high-performance, compact, and cost-effective product for a "deep-green" Pentium system. There are two other ASICs onboard. The ALI 5215N chip is an enhanced IDE controller that supports up to four IDE devices, including IDE CD-ROM drives. The SMC665 is the onboard super I/O controller chip. The SMC665 super I/O controller supports the EPP/ECP (enhanced parallel port / extended capabilities port) functions. The EPP is a new, high performance parallel port interface that greatly improves performance for bi-directional block mode data transfers. Burst data transfer rates of 50~150 KB/sec for standard parallel ports jump to 2 MB/sec for EPP. The ECP is a fast, bi-directional parallel interface that is backward-compatible with the standard parallel port just like the EPP. It boosts the I/O bandwidth to meet the demands of high performance peripherals.

BIOS

The BIOS (basic input-output system) resides in the ROM (read-only memory) chip. It contains the program that performs the power-on self-tests (POST) upon booting. During POST, this program activates the peripheral devices, tests onboard memory, and prepares the system for operation. Chapter 3 gives more information on the BIOS.

Expansion Slots

The board expansion slots consist of four ISA-AT slots and four PCI slots (includes one PCI and ISA shared slot). These expansion slots are parallel bars on the system board. Rows of golden pins inside each slot serve as a clutch to secure the contacts of expansion boards.

DRAM Sockets

The six DRAM sockets can accommodate system memory from 2 MB to a maximum of 160 MB* using 72-pin SIMMs. Chapter 2 discusses the different memory configurations available.

SRAM

The system board supports 256-KB, 512-KB and 1-MB second-level write-back caches.

* The circuit control logic supports up to 512 MB using future 16Mx32/36 and 32Mx32/36 SIMM types which cannot be tested as of this moment.

Chapter

1 Features

Keyboard Connector

The keyboard connector at the rear of the system board accepts any AT-compatible keyboard. PS/2 keyboard and mouse connectors are options.

I/O Ports

The system board has an onboard super I/O controller chip. It supports two UART 16450/16550-compatible serial ports and a parallel port (SPP, EPP, ECP)[1] . The chip also supports 1.2M/1.44M/2.88M diskette drives. This allows access to the full-range of diskette drives available for both 5.25-inch (360KB,1.2MB) and 3.5-inch (720KB, 1.44MB, 2.88MB) formats. There is also an IDE controller chip which supports two-channel enhanced IDE connectors for a maximum of four IDE devices.

1 SPP=Standard Printer Port EPP=Enhanced Parallel Port (IEEE 1284 compliant) ECP=Enhanced Capabilities Port (IEEE 1284 compliant)

Chapter

Hardware Setup 2

This chapter describes the CPU options, tells how to set jumpers, change the system battery and install the system board.

Install the CPU, memory, and set the jumpers before installing the system board inside a housing. You may add the other components after installing the board. Read this chapter to become familiar with the components before installation.

CPU Options

The system board may or may not include a CPU. The system board supports the Intel Pentium series processor running at 60/66 MHz.

Installing the Microprocessor

ESD Precautions

Before you begin the installation, observe the following precautions:

1. Do not remove system components such as the CPU, expansion boards or SIMMs, from their anti-static packaging until you are ready to install them.
2. Wear a wrist grounding strap before handling electronic components. Wrist grounding straps are available at most electronic component stores.

It is important that you follow these precautions to prevent damaging the chip or component from electrostatic discharge.

Chapter

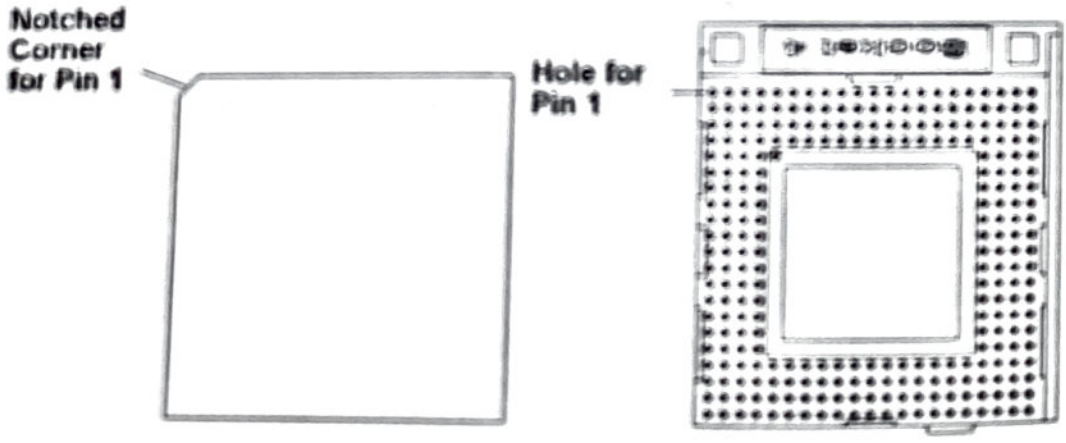
2 Hardware Setup

ZIF Microprocessor Socket

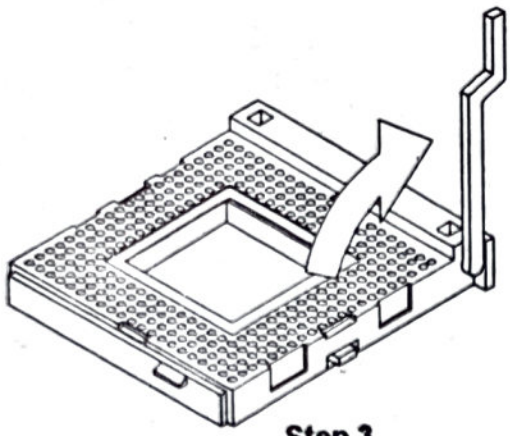
The Pi8G motherboard features a zero-insertion force (ZIF) microprocessor socket. The ZIF-type microprocessor socket allows you to install a CPU without using any tools. The socket is designed to keep the CPU from overheating and make it more secure. Follow these steps to install the CPU:

Follow these steps to install a CPU in a ZIF-type socket:

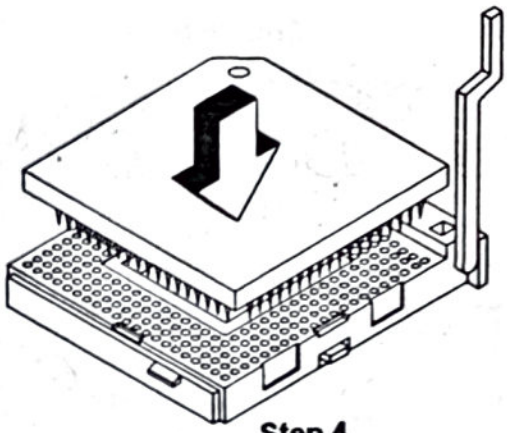
1. Turn off the system power.
2. Locate the CPU socket on the system board. See the section *Board Layout* for the location of the CPU socket.
3. Lift the lever of the CPU socket.
4. Align the microprocessor pins with the holes on the socket. Make sure that the notched corner of the chip corresponds to pin 1 on the socket. Press the CPU gently until it fits into place.
5. Push down the lever to lock the chip into the socket.



CPU ZIF Socket

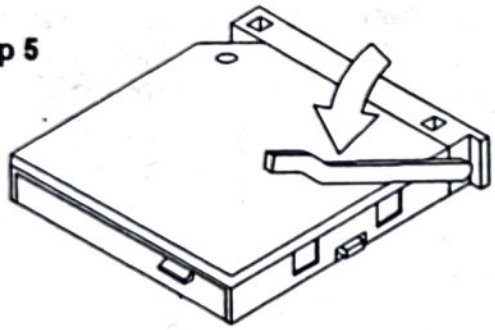


Step 3



Step 4

Step 5



6. Set the jumpers on the system board. See the following sections for the proper jumper settings.

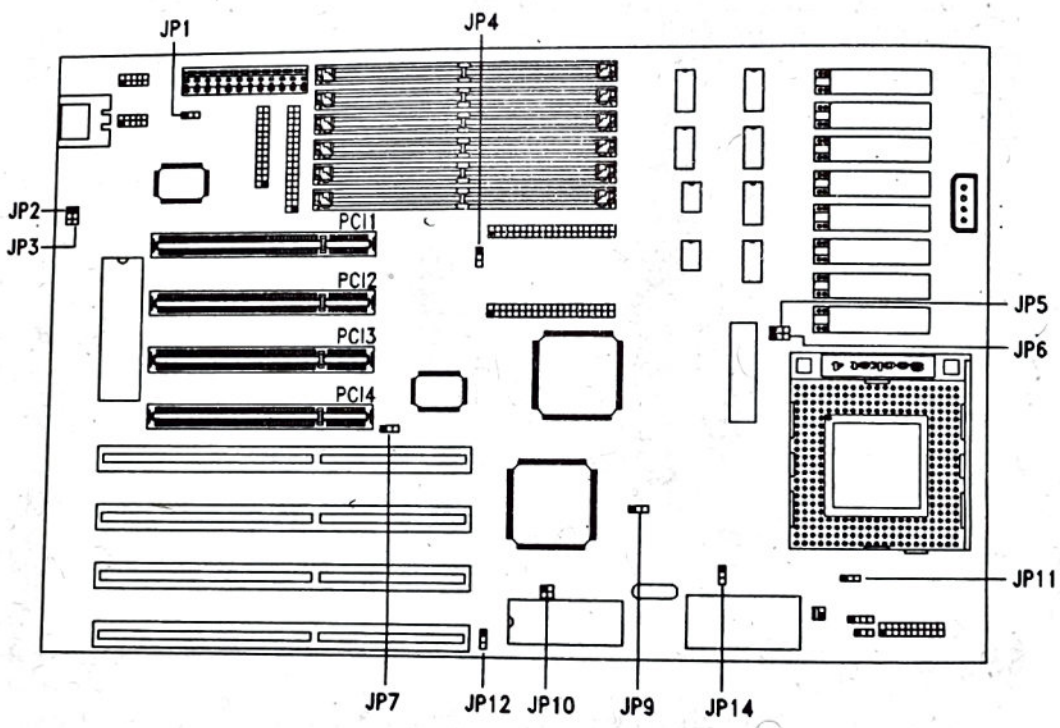
Chapter

2 Hardware Setup

Jumpers

Jumper Locations

You must reset the jumpers if you change the configuration of your system. This section tells how to set the jumpers. The figure below shows the jumper locations.



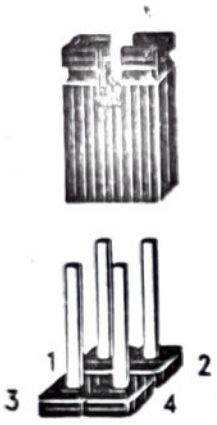
NOTE

The shaded pin represents pin 1.

Changing the Clock Generator Frequency

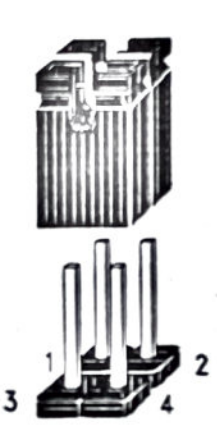
Reset jumper **JP10** when you change the clock generator frequency. Refer to the figures below for the correct settings.

JP10



60 MHz
(1-2)

JP10

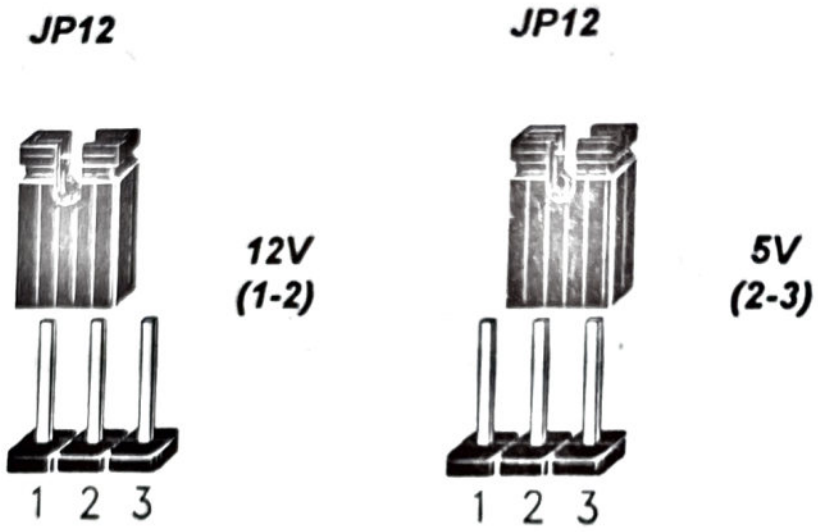


66 MHz
(1-2, 3-4)

The default setting depends on the CPU speed.

Changing the Flash ROM Type

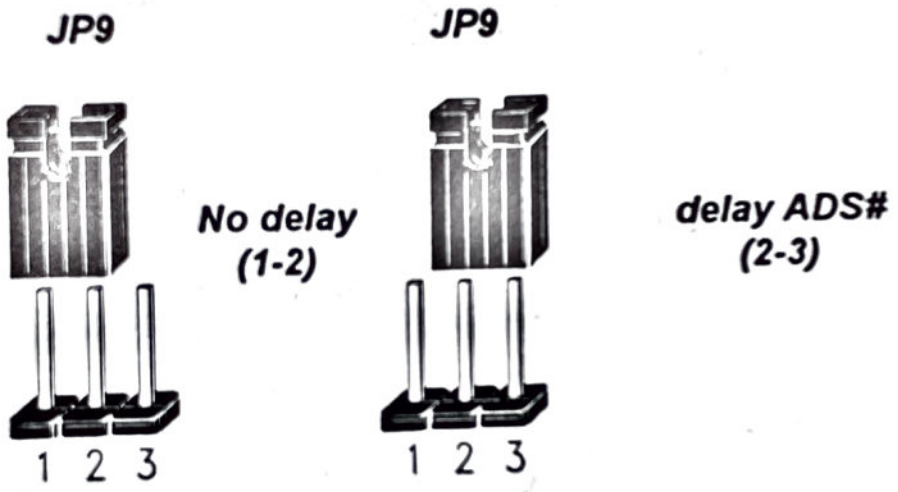
Set jumper **JP12** according to the type of flash ROM in use.



If the system uses EPROM (instead of Flash ROM), please adjust the this jumper to 2-3. The default setting depends on the BIOS ROM type.

Selecting the Latch Timing

The address strobes (ADS) are issued by the CPU. Once issued, the chipset must latch the ADS. If you want to change the delay of the latch timing by one cycle, you must reset a 3-pin jumper **J9**. See the figure below. The default setting is 1-2.

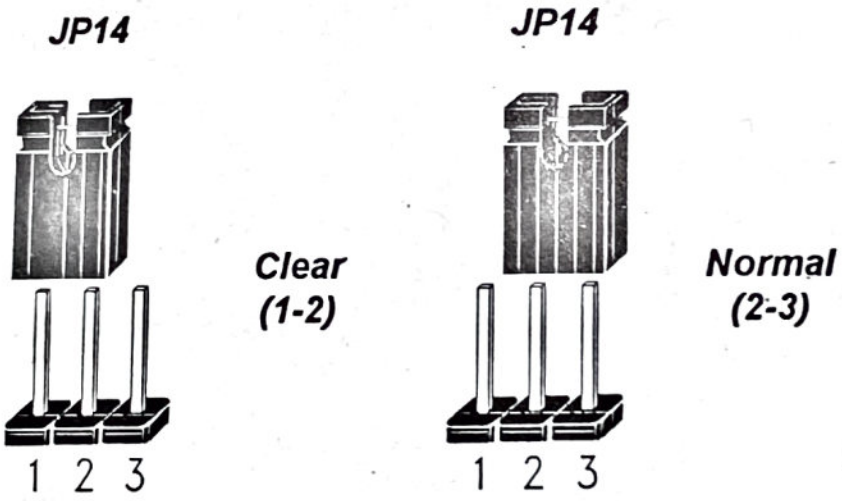


NOTE:
When your system is operating under extremes in temperature and humidity, you may try to set this jumper to 2-3.

Clearing the CMOS

The jumper **JP14** is a 3-pin jumper used to clear the CMOS. The default setting is 2-3.

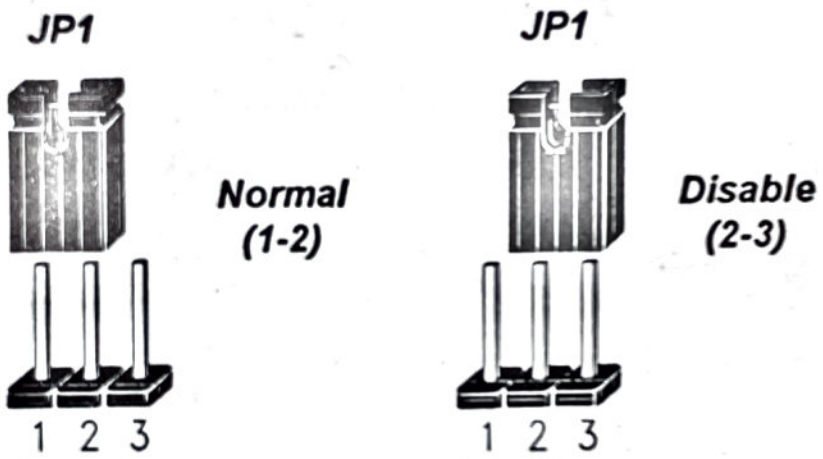
You need to clear the values in the CMOS if you forget your system password. To do this, shut off the system power. Then short or close pins 1-2 with a jumper cap for a few seconds. Then, set the jumper cap on pins 2-3 (the normal setting). Enter Setup to specify a new password.



NOTE:
Make sure to set the jumper back to the normal setting after clearing the CMOS data. Please take note of the setting values before clearing the CMOS data.

Enabling the Super I/O Chip

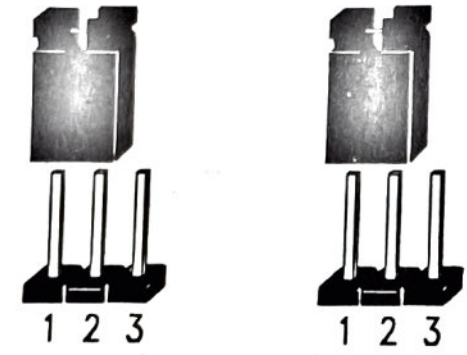
The jumper **JP1** is used to enable or disable the SMC665 super I/O chip controller. You can disable the chip if you want to install a separate I/O card. The onboard SMC665 chip supports two serial port, one parallel port and FDD functions. The default setting is 1-2.

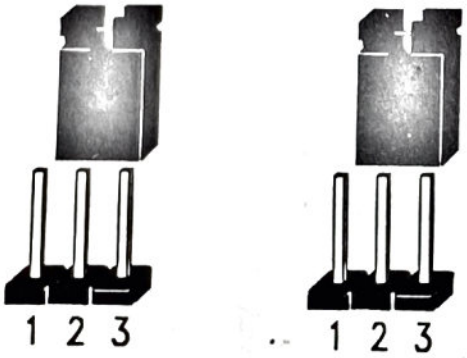


Selecting the DMA for ECP

The jumper **JP2** and **JP3** lets you select the DMA channel for the ECP function. Select a DMA channel that does not conflict with those used by other add-on cards. The default setting is the DMA 3 channel.

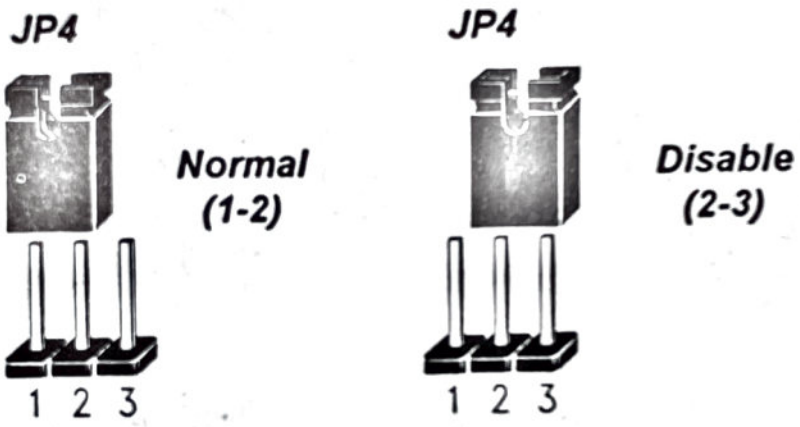
	JP2	JP3
DMA 3	1-2	1-2
DMA 1	2-3	2-3



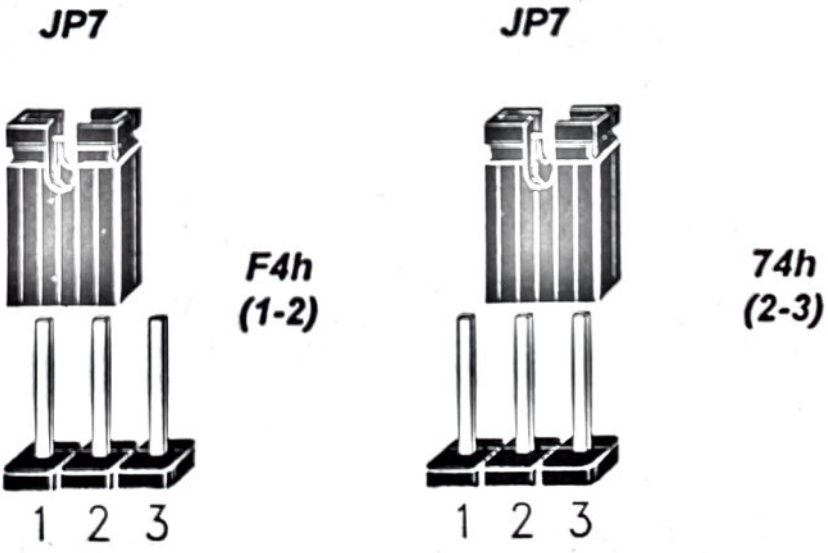


Enabling the Enhanced IDE Controller

The onboard M5215N Enhanced IDE controller supports a maximum of four IDE devices. The jumper **JP4** allows you to enable or disable the IDE controller. If you want to install an separate IDE controller card, you can disable the onboard controller. The default setting is 1-2.



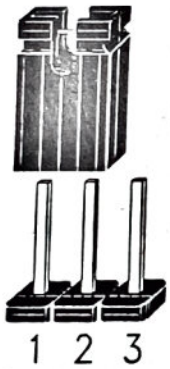
The jumper **JP7** allows you to configure the M5215N I/O port. The default setting is 1-2.



Setting EPA Fan Adjustment

The EPA fan adjusts automatically depending the CPU speed when this function is enabled. The fan power consumption is also controlled in this situation. The jumper **JP11** lets you configure the EPA fan. The default setting is 1-2.

JP11



EPA Control (1-2)

JP11

No EPA Control (2-3)

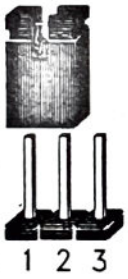
NOTE:

The fan speed adjusts itself according to the CPU speed, but the fan revolution never fully stops.

The fan power consumption cannot exceed 2.4 watts. If it exceeds 2.4 watts, you must adjust the jumper to the 2-3 setting for the No EPA Control mode.

Selecting Cache Type and Size

The system board supports 256 KB, 512 KB and 1 MB second-level cache. When upgrading the cache, install the SRAM chips and reset jumpers **JP5** and **JP6** according to the following figure.

JP6	JP5		JP6	JP5
		*256 KB (32Kx8)*	*1-2*	*1-2*
		*512 KB (64Kx8)*	*1-2*	*2-3*
		*1 MB (128Kx8)*	*2-3*	*2-3*

NOTE

Always use 15/20ns SRAMs and 32Kx8, 64Kx8, 128Kx8 SRAM types. Make sure that bottom edges are aligned. The cache sockets are U4, U10, U11, U16, U20, U21, U26, U27.

Chapter

2 Hardware Setup

Memory Configuration

The system board supports a maximum memory of 160 MB. The six 72-pin SIMM sockets accomodate 1-MB, 4-MB, 16-MB and 64-MB single-density SIMMs, and 2-MB, 8-MB, 32-MB and 128-MB double-density SIMMs. All SIMMs support a DRAM speed of 70/80 ns or less.

Below is a table of SIMM types:

SIMM Type	Total
256K x 32/36	1 MB
512K x 32/36	2 MB
1M x 32/36	4 MB
2M x 32/36	8 MB
4M x 32/36	16 MB
8M x 32/36	32 MB
16M x 32/36	64 MB
32M x 32/36	128 MB

You can configure the system memory using different SIMM combinations.

Block 1 (SIMM0 and 1)	Block 2 (SIMM2 and 3)	Block 3 (SIMM4 and 5)	Total Memory
256K x 32/36			2 MB
256K x 32/36	256K x 32/36		4 MB
256K x 32/36	256K x 32/36	256K x 32/36	6 MB
512K x 32/36			4 MB
512K x 32/36	256K x 32/36		6 MB
512K x 32/36	256K x 32/36	256K x 32/36	8 MB
512K x 32/36	512K x 32/36		8 MB
512K x 32/36	512K x 32/36	256K x 32/36	10 MB
1M x 32/36			8 MB
1M x 32/36	256K x 32/36		10 MB
1M x 32/36	256K x 32/36	256K x 32/36	12 MB
1M x 32/36	512K x 32/36		12 MB
1M x 32/36	512K x 32/36	256K x 32/36	14 MB
1M x 32/36	1M x 32/36		16 MB
1M x 32/36	1M x 32/36	256K x 32/36	18 MB

Block 1 (SIMM0 and 1)	Block 2 (SIMM2 and 3)	Block 3 (SIMM4 and 5)	Total Memory
1M x 32/36	1M x 32/36	1M x 32/36	24 MB
2M x 32/36			16 MB
2M x 32/36	256K x 32/36		18 MB
2M x 32/36	256K x 32/36	256K x 32/36	20 MB
2M x 32/36	1M x 32/36		24 MB
2M x 32/36	1M x 32/36	256K x 32/36	26 MB
2M x 32/36	1M x 32/36	1M x 32/36	32 MB
2M x 32/36	2M x 32/36		32 MB
2M x 32/36	2M x 32/36	1M x 32/36	40 MB
4M x 32/36			32 MB
4M x 32/36	256K x 32/36		34 MB
4M x 32/36	256K x 32/36	256K x 32/36	36 MB
4M x 32/36	512K x 32/36		36 MB
4M x 32/36	512K x 32/36	256K x 32/36	38 MB
4M x 32/36	1M x 32/36		40 MB
4M x 32/36	1M x 32/36	256K x 32/36	42 MB
4M x 32/36	1M x 32/36	1M x 32/36	48 MB
4M x 32/36	4M x 32/36		64 MB
4M x 32/36	4M x 32/36	256K x 32/36	66 MB
4M x 32/36	4M x 32/36	1M x 32/36	72 MB
4M x 32/36	4M x 32/36	4M x 32/36	96 MB
8M x 32/36			64 MB
8M x 32/36	256K x 32/36		66 MB
8M x 32/36	256K x 32/36	256K x 32/36	68 MB
8M x 32/36	512K x 32/36		68 MB
8M x 32/36	512K x 32/36	256K x 32/36	70 MB
8M x 32/36	1M x 32/36		72 MB
8M x 32/36	1M x 32/36	256K x 32/36	74 MB
8M x 32/36	1M x 32/36	1M x 32/36	80 MB
8M x 32/36	2M x 32/36		80 MB
8M x 32/36	2M x 32/36	256K x 32/36	82 MB
8M x 32/36	2M x 32/36	1M x 32/36	88 MB
8M x 32/36	4M x 32/36		96 MB
8M x 32/36	4M x 32/36	256K x 32/36	98 MB
8M x 32/36	4M x 32/36	1M x 32/36	104 MB
8M x 32/36	4M x 32/36	4M x 32/36	128 MB
8M x 32/36	8M x 32/36		128 MB
8M x 32/36	8M x 32/36	256K x 32/36	130 MB
8M x 32/36	8M x 32/36	1M x 32/36	136 MB
8M x 32/36	8M x 32/36	4M x 32/36	160 MB

The total memory size equals the sum of the three blocks. When installing SIMMs, always start with Block 1, SIMM0, always fill both SIMM banks in a single block using the same SIMM type.

NOTE:

The design reserves circuitry to support up to 512MB using future 16Mx32/36 and 32Mx32/36 SIMM types. These two SIMM types cannot be tested as of this moment.

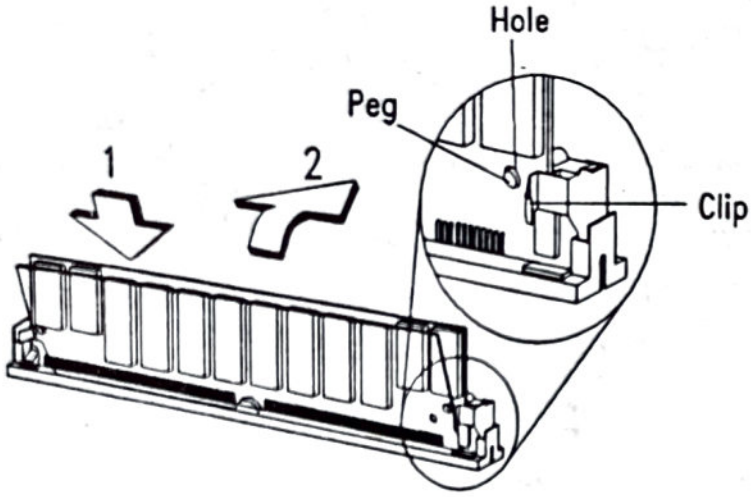
Installing SIMMs

Follow these steps to install a SIMM:

1. Slip a SIMM at a 45° angle into a socket.
2. Gently press the SIMM up until the pegs of the socket slip into the holes on the SIMM and the holding clips lock the SIMM into position.

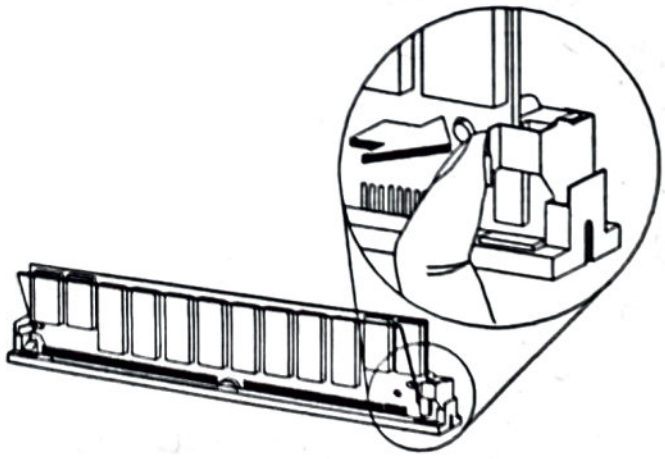
NOTES

1. *Always install SIMMs beginning with Bank 0.*
2. *The SIMM should be at a 90° angle when installed.*



Removing SIMMs

1. Press the holding clips on both sides of the SIMM outward to release the SIMM.
2. When the SIMM is free from the holding clips, gently remove it from the SIMM socket.



NOTE

Always remove SIMMs from the highest bank first.

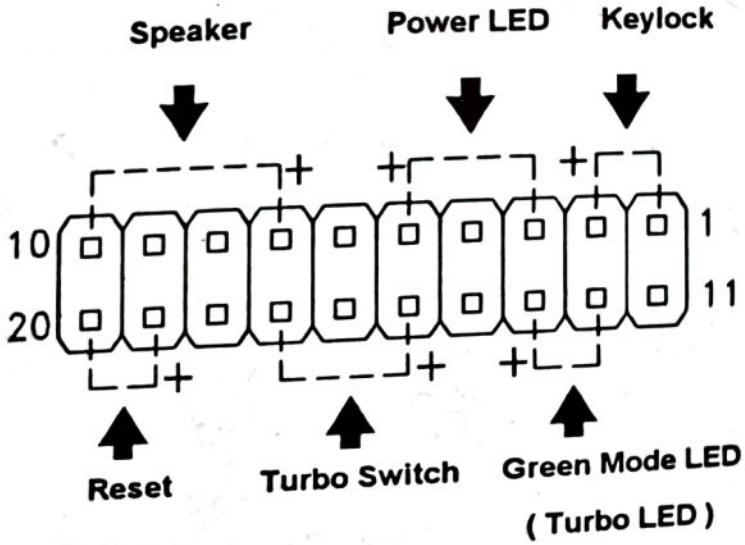
Chapter

2 Hardware Setup

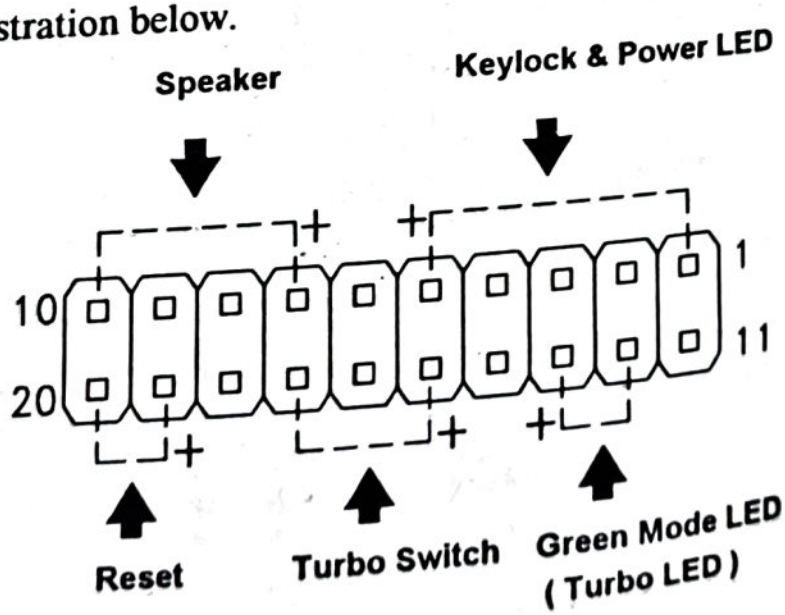
Connectors

Multifunction Connector

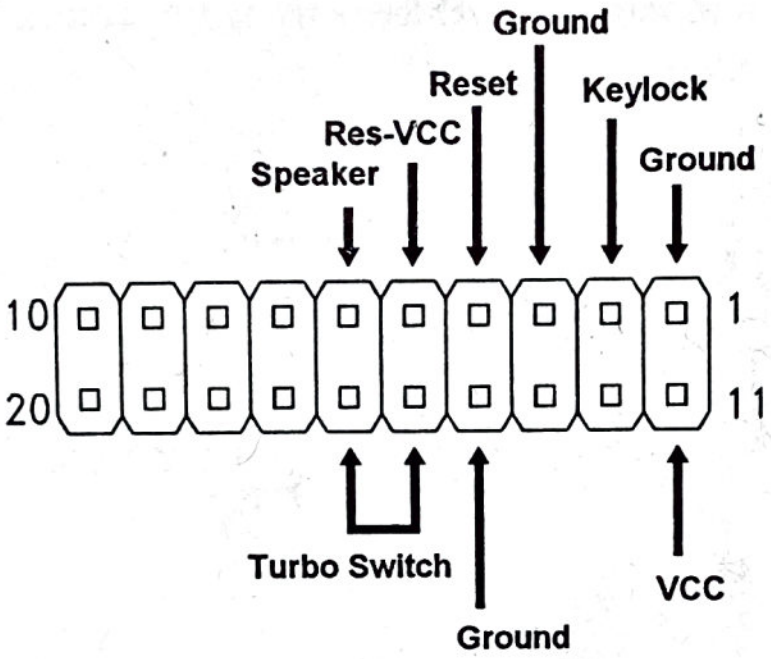
This 20-pin connector is marked **CN20** on the system board. It serves as a connector for the green mode LED, power LED, turbo switch, reset, keylock and speaker functions. Attach the front-panel connectors to the corresponding pins as shown in the illustration below.



Some housings have a 5-pin connector for the keylock and power LED. See the illustration below.

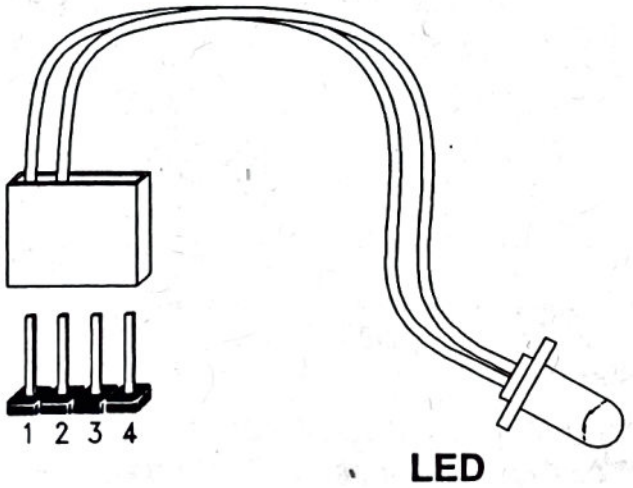


Other housings may have a 12-pin connector. If your housing has this type of connector, plug the connector as shown in the following figure.



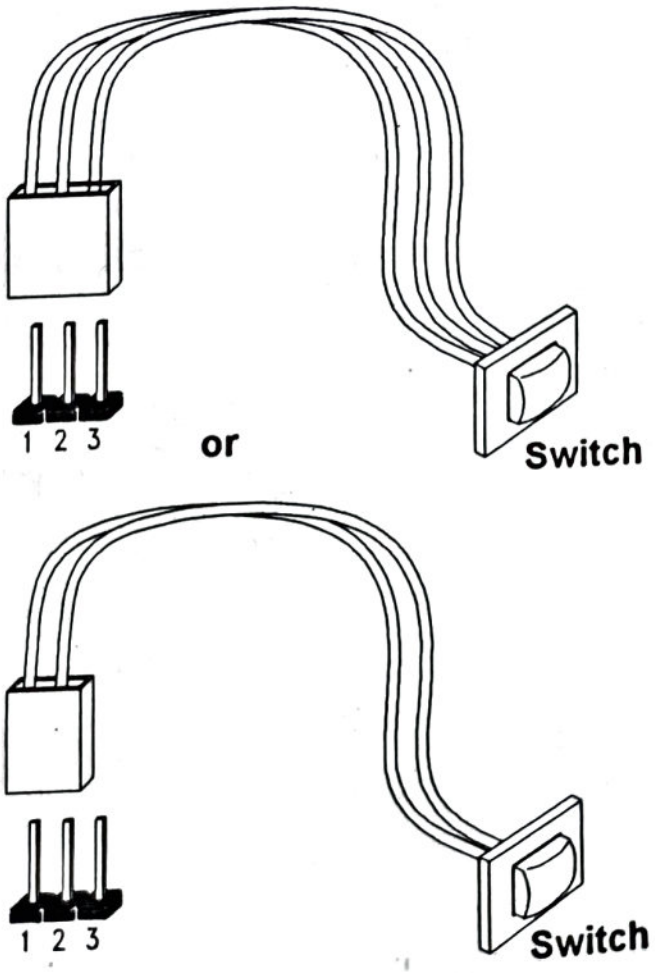
IDE LED Connector

There is a 4-pin LED indicator socket **CN17**. It allows you to connect an LED indicator that lights up when there is IDE activity.



Break/Suspend Connector

This is a 3-pin connector labeled **CN19** on the system board. Pressing the break switch on the front bezel forces the system to enter suspend mode.



NOTE:

You can connect either the turbo switch or the break connector to the front bezel but not both.

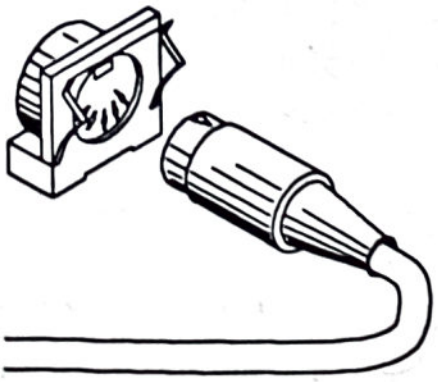
When you use the turbo switch, the Green Mode LED (Turbo LED) lights up when the system is in turbo mode.

When you use the break/suspend switch, the Green Mode LED (Turbo LED) lights up when the system is in "green" mode. Depending on the situation, four power-saving modes may occur:

Mode	Green Mode LED
Normal	always on
Doze	blinks at an interval of 1 second
Standby	blinks at an interval of 2 seconds
Suspend	blinks at an interval of 2 seconds

Keyboard Connector

The keyboard connector is a 5-pin, AT-compatible connector. The following figures show how to connect the keyboard.



A PS/2 connector is an option.

Enhanced IDE Connectors

There are two enhanced IDE connectors on the system board, and these support four IDE devices (IDE-1/master, IDE-1/slave, IDE-2/master, IDE-2/slave). Use the primary IDE connector (**CN11**), labeled **IDE-1** before using the secondary IDE connector (**CN12**), labeled **IDE-2**. These two connectors allow you to install hard disk drives, CD-ROM drives, and other compatible IDE-interface drives.

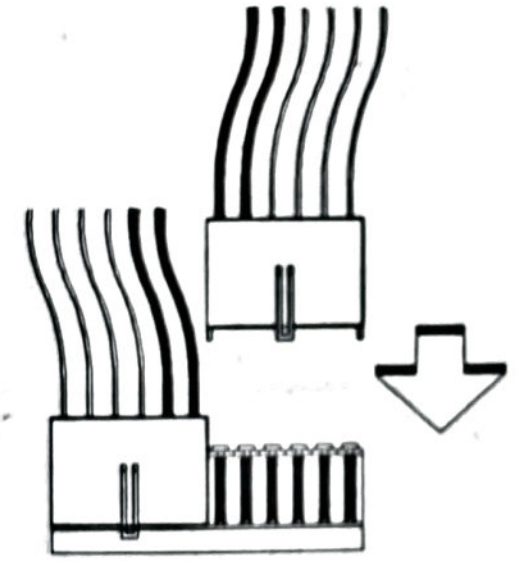
> **NOTE:**
>
> *CD-ROM drives cannot be connected as the primary IDE connector's master device (IDE-1/master).*

I/O Connectors

There are two serial port connectors for COM1(**CN7**) and COM2 (**CN1**) available on the system board. There is also one parallel port connector (**CN8**) which supports EPP/ECP functions. A diskette drive connector (**CN9**) is also onboard. All these I/O functions are controlled by an onboard super I/O chip.

Power Connector

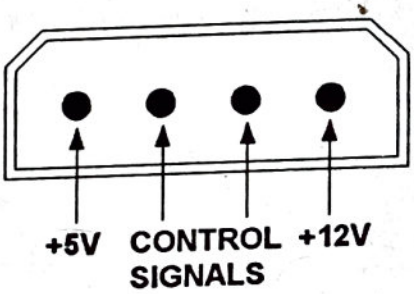
A standard power supply has two cables with six wires each. Attach these cables to the power connector on the board in such a way that all the black wires are in the center.



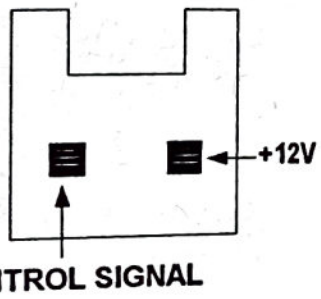
Fan Power Connector

There are two fan connector types available on the system board. The 4-pin and 2-pin fan power connectors are marked **CN15** and **CN16** respectively. To connect, simply plug into the appropriate connector.

CN15 (4-pin)



CN16 (2-pin)



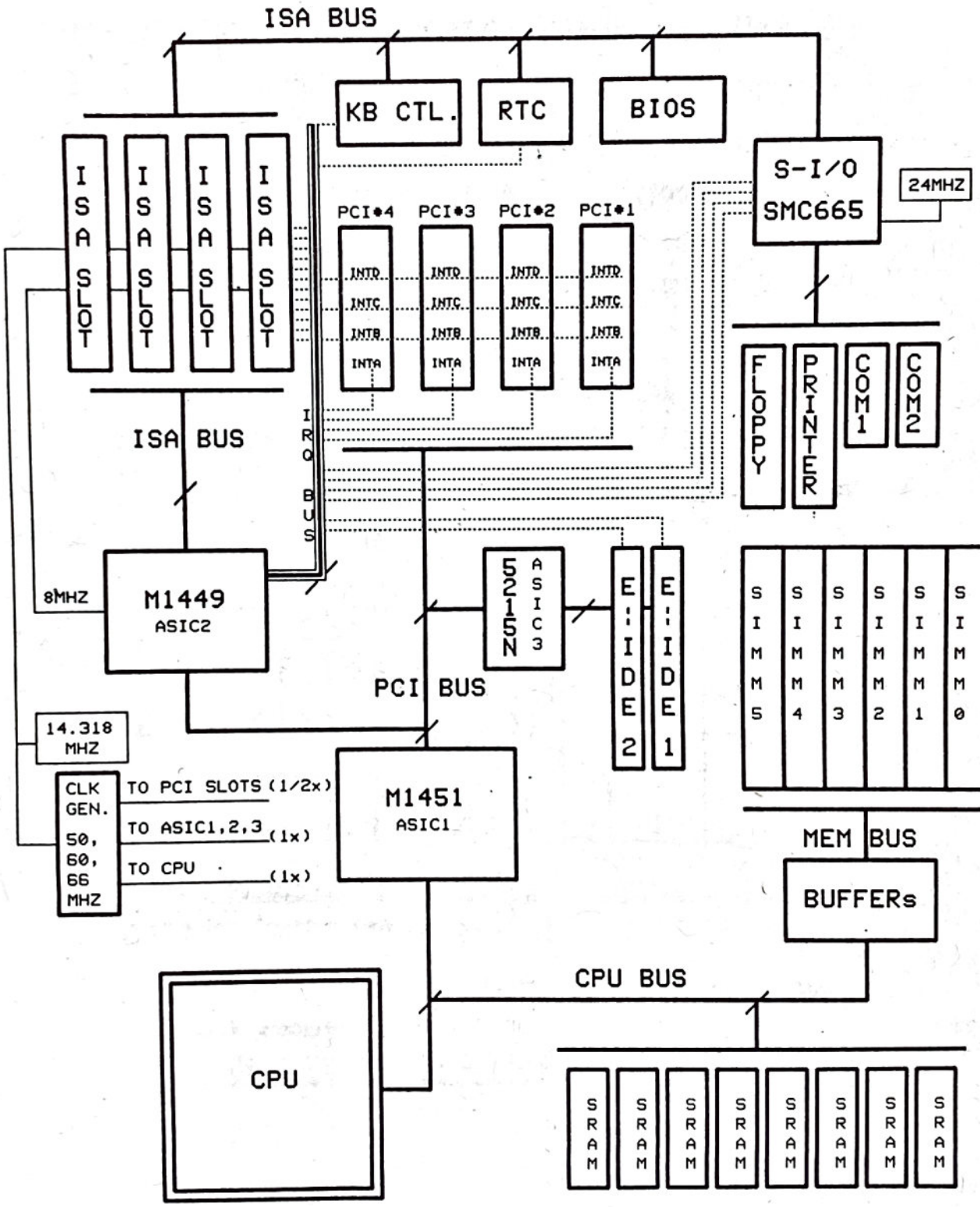
WARNING!

Do not plug the power supply connector into the fan connector, because this will cause serious damage to the system.

The fan connector can only be used under 2.4 watts for the fan, and not for any other device.

In green mode, the fan slows down but does not fully stop.

Hardware Block Diagram



Block Diagram Notes

1. The IRQ comes from the on-board devices, on-board system logic, PCI slots and ISA slots. The Pi8G has IRQ channels IRQ0-IRQ15.
2. IRQ0, IRQ1, IRQ2, IRQ8 and IRQ13 are always used by the on-board system logic.
3. IRQ3, IRQ4, IRQ6, IRQ7, IRQ14 and IRQ15 channels are made available to the PCI slot or ISA slot devices, depending on the disabled devices COM2, COM1, FDD, Printer, IDE-1 and IDE-2 respectively.
4. IRQ5, IRQ9, IRQ10, IRQ11 and IRQ12 are open to all slot devices.
5. All the IRQ resources make automatic alignments by BIOS settings.

IRQ	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
ON-BOARD DEVICES	✓	✓	✓						✓					✓		
FREE FOR SLOTS						✓				✓	✓	✓	✓			
SHARED FOR ON-BOARD. DEVICES or SLOTS (see note)				✓	✓		✓	✓							✓	✓

NOTE:

IRQ3, IRQ4, IRQ6, IRQ7, IRQ14 and IRQ15 by default are reserved for on-board devices COM2, COM1, FDD, Printer, IDE-1 and IDE-2 respectively.

Installation

The Pi8G system board easily fits most housings. It has mounting holes that conform to the standard system housing.

Some housings may differ slightly in design, requiring additional steps to install the board. Read the documentation that comes with the housing.

> **NOTE**
>
> *Make sure that you have already installed the system board components like the CPU and memory, and have set the appropriate jumpers before you proceed.*

Installing the System Board

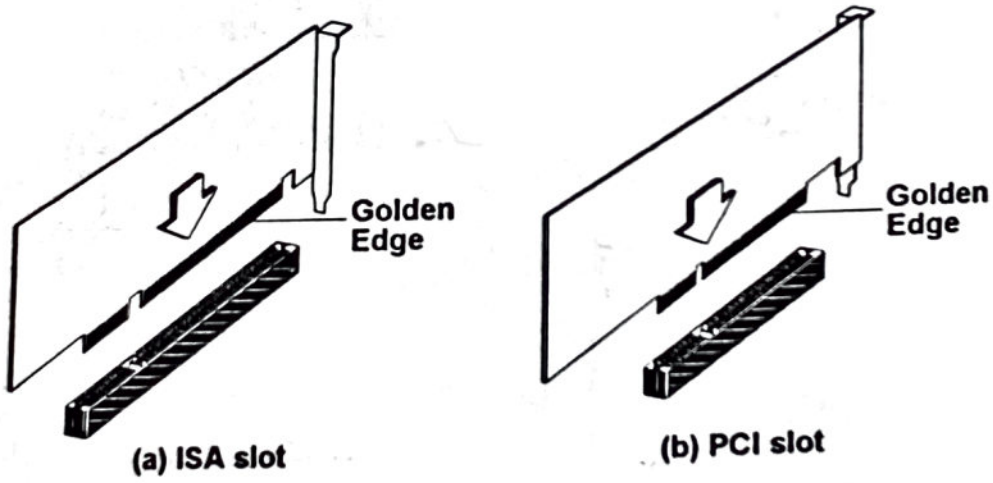
To install the system board, follow these steps:

1. Open the system housing.
2. Position the system board over the housing.
3. Secure the board with at least two screws.
4. Attach the power supply cables to the power connector, device connector cables and the front panel connectors to the multifunction connector onboard. See the section *Multifunction Connector*.
5. Install any additional components that you have not yet installed.

Installing Expansion Boards

Install the expansion boards after you have installed the system board into the housing. Follow these steps to install expansion boards:

1. Remove the bracket opposite the slot that you want to use. Save the cover for future use. Save the screw to secure the expansion board.
2. Remove the board from its protective packaging.
3. Gently insert the golden edge of the board into the slot until it fits.

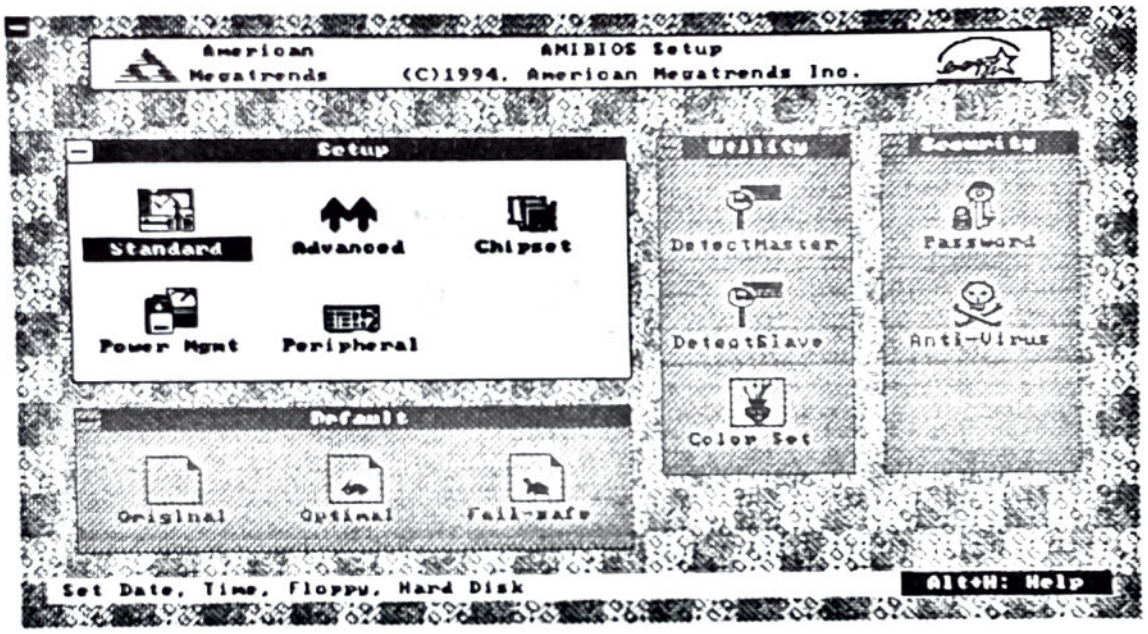


(a) ISA slot (b) PCI slot

4. Secure the board bracket with the screw.

AMI BIOS Setup Main Menu

The AMI BIOS Setup Main Menu appears below. Press the Del key to enter the system menu.



The AMI BIOS is in Windows form. You can use either your keyboard or mouse to move between the items. To select among the Setup groups, use the Tab key to highlight the selected group or simply use the mouse to click on the icon of the selected Setup menu.

To select among the options, you can either use the arrowkeys to move the highlight bar or use the mouse to simply click on the icon of the desired option.

After selecting, press Enter or double-click on the icon to open the menu.

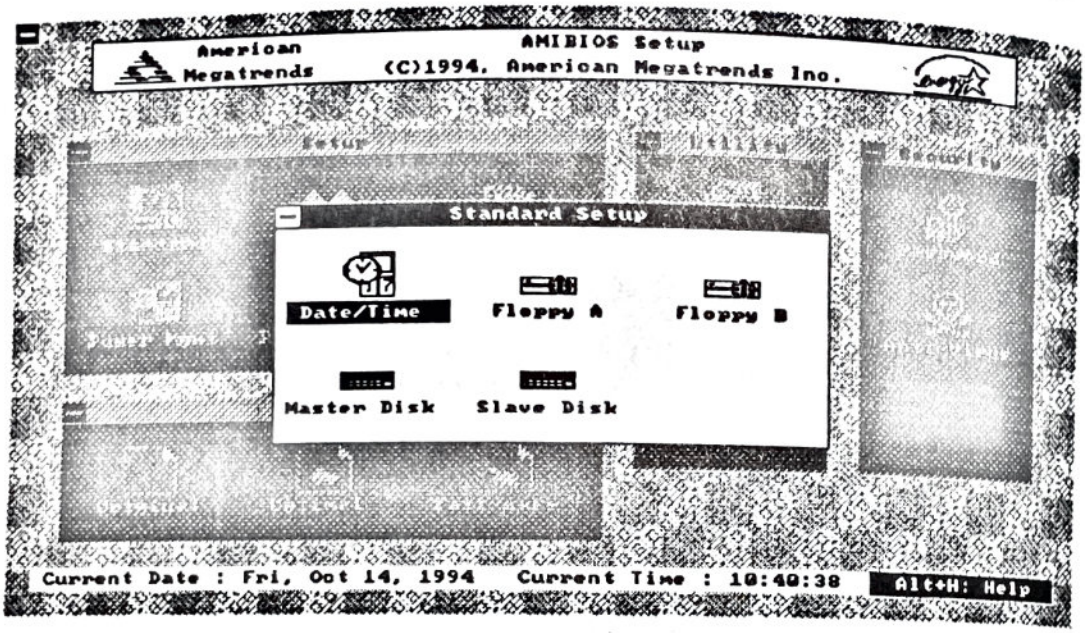
For a list of the keyboard and mouse functions, press Alt-H at any point while in the setup screens.

Chapter

3 AMI BIOS Setup

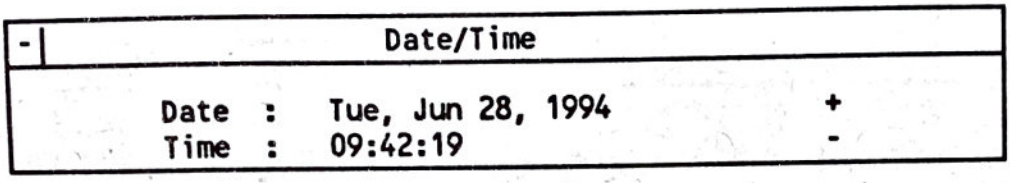
Standard CMOS Setup

Highlight Setup using the Tab key or simply click on the Setup icon. Select Standard to input configuration values such as the date, time, and disk types. The Standard CMOS Setup pop-up window appears below:



Date/Time

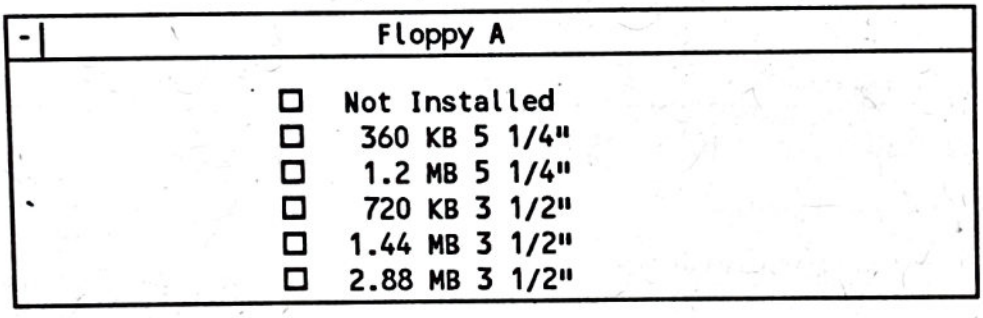
To set the date and time, highlight `Date/Time` and press Enter or double-click on the Date/Time icon. The following screen appears:



Use the arrowkeys to move among the items. Press the + and - keys or click the + and - icons to set the current date and time Close the window by pressing Enter or double-clicking the Control menu box in the upper-left corner of the window.

Floppy Drives A and B

To configure floppy drive A, select `Floppy A`. The following values appear on the screen:



Use the up and down arrow keys to move among the items. After selecting the proper setting, press Enter or double-click the Control menu box to close the window.

Select Floppy B and follow the same procedure to configure the floppy drive, if present.

Hard Disk Drives

Select Master Disk to configure the first hard disk. The following values appear on the screen:

-	Hard Disk C					
Type	Cyl	Hd	WP	LZ	Sec	Size (MB)
Not Installed						
1	306	4	128	305	17	11
2	615	4	300	615	17	21
3	615	6	300	615	17	32
4	940	8	512	940	17	65
.						
.						
.						
.						
.						
.						
46	1224	15	65535	1223	17	152
USER						
ESDI						
SCSI						

If you cannot find your hard disk drive type on the list, select User and enter your disk parameters. You can also select the Utility Setup icon to automatically detect and configure your hard disk. Refer to the section *Utility Setup* for more information.

Select ESDI or SCSI depending the device installed.

Follow the same procedure in configuring the Slave Disk.

Advanced CMOS Setup

The window below appears if you select the Advanced option.

-	Advanced Setup		
Typematic Rate (chars/sec)	:	30
System Keyboard	:	Present
Primary Display	:	VGA/EGA
Parity Error Check	:	Disabled
System Boot Up Num Lock	:	On
Floppy Drive Seek At Boot	:	Disabled
System Boot Up Sequence	:	A:,C:
External Cache Memory	:	Enabled
Internal Cache Memory	:	Enabled
Password Checking	:	Setup
IDE Block Mode xfer	:	Disabled
IDE Prim Controller 32Bit xfer	:	Disabled
IDE Prim Master HDD LBA Mode	:	Disabled
IDE Prim Master HDD PIO Mode	:	Auto
IDE Prim Slave HDD LBA Mode	:	Disabled
IDE Prim Slave HDD PIO Mode	:	Auto
Number of HDDs in Sec Controller	:	None
IDE Sec Controller 32Bit xfer	:	Disabled
IDE Sec Master HDD LBA Mode	:	Disabled
IDE Sec Master HDD PIO Mode	:	Auto
IDE Sec Slave HDD LBA Mode	:	Disabled
IDE Sec Slave HDD PIO Mode	:	Auto
Shadow C800, 16K	:	Disabled
Shadow CC00, 16K	:	Disabled
Shadow D000, 16K	:	Disabled
Shadow D400, 16K	:	Disabled
Shadow D800, 16K	:	Disabled
Shadow DC00, 16K	:	Disabled

Typematic Rate (Chars/Sec)

This parameter determines the typematic rate. The typematic rate settings are `15`, `20`, `30` and `Disabled`. The default setting is `30`. Set it to `Disabled` to disregard the rate setting.

System Keyboard

Set this parameter to Present if there is a keyboard connected to the system. However, some servers may not have keyboards. Select Absent if there is no keyboard present.

Primary Display

This function detects the type of VGA in use. The settings are VGA/EGA, CGA 40 x 25, CGA 80 x 25, Mono and Absent. The default setting is VGA/EGA.

Parity Error Check

This is the overall on-board system parity error check function. This includes parity error checks for the bus, DRAM and I/O. If you are certain that your slot devices and DRAM support the parity check function, set this parameter to Enabled. This function is normally set to Disabled.

System Boot-up Num Lock

Setting this parameter to On enables the numeric function of the numeric keypad. Set this parameter to Off to disregard the function. Disabling the numeric function allows you to use the numeric keypad for cursor control. The default setting is On.

Floppy Drive Seek At Boot

When Enabled, the BIOS detects whether there is a floppy disk drive installed or not. Disable the parameter to bypass the function.

System Boot-up Sequence

The settings are `C:,A:` and `A:,C:` to specify the system boot-up search sequence. The default setting is `A:,C:`.

External Cache Memory

This parameter lets you enable or disable the secondary cache. The default setting is `Enabled`. Leave it enabled unless you are troubleshooting a problem.

Internal Cache Memory

This parameter lets you enable or disable the internal cache. The default setting is `Enabled`. Leave it enabled unless you are troubleshooting a problem.

Password Checking

The settings are `Setup` and `Always`. The `Setup` setting allows the system to boot and use the password only to protect the Setup Ultity Configuration settings from being tampered with. The Always setting requires you to enter the password everytime you boot the system. The default setting is `Setup`.

IDE Block Mode xfer

This function enhances disk performance depending on the hard disk in use. This parameter is normally set to `Disabled`. If enabled, it allows data transfer in block (multiple sectors) by increasing the data transfer rate to 256 bytes/cycle. Disable the parameter if your system disk does not support this feature.

IDE Prim Controller 32Bit xfer

Normally, this parameter is set to `Disabled`. Enabling this function improves the disk performance (primary IDE) by increasing the data transfer rate from 16-bit to 32-bit. Check the manual of your HDD devices before you enable this parameter.

IDE Prim Master HDD LBA Mode

This enhanced IDE feature allows you to use a hard disk with a capacity higher than 528 MB. This is made possible through the Logical Block Address (LBA) mode translation. This parameter affects the master drive connected to the primary IDE connector. The default setting is `Disabled`.

IDE Prim Master HDD PIO Mode

This enhanced IDE feature improves your hard disk drive performance. If this parameter is set to `Auto`, it automatically detects the HDD PIO mode (mode 0, 1, 2, 3) and sets the HDD interface timing. If your hard disk is of an older type, we suggest you set this parameter to `Disabled`. This parameter affects the master drive connected to the primary IDE connector. The default setting is `Auto`.

IDE Prim Slave HDD LBA Mode

This enhanced IDE feature allows you to use a hard disk with a capacity higher than 528 MB. This is made possible through the Logical Block Address (LBA) mode translation. This parameter affects the slave drive connected to the primary IDE connector. The default setting is `Disabled`.

IDE Prim Slave HDD PIO Mode

This enhanced IDE feature improves your hard disk drive performance. If this parameter is set to Auto, it automatically detects the HDD PIO mode (mode 0, 1, 2, 3) and sets the HDD interface timing. If your hard disk is of an older type, we suggest you set this parameter to Disabled. This parameter affects the slave drive connected to the primary IDE connector. The default setting is Auto.

Number of HDDs in Sec Controller

This parameter specifies the number of hard disk drives connected to the secondary controller. The default setting is None.

IDE Sec Controller 32Bit xfer

Normally, this parameter is set to Disabled. Enabling this function improves the disk performance (secondary IDE) by increasing the data transfer rate from 16-bit to 32-bit. Check the manual of your HDD devices before you enable this parameter.

IDE Sec Master HDD LBA Mode

This enhanced IDE feature allows you to use a hard disk with a capacity higher than 528 MB. This is made possible through the Logical Block Address (LBA) mode translation. This parameter affects the master drive connected to the secondary IDE connector. The default setting is Disabled.

IDE Sec Master HDD PIO Mode

This enhanced IDE feature improves your hard disk drive performance. If this parameter is set to Auto, it automatically detects the HDD PIO mode (mode 0, 1, 2, 3) and sets the HDD interface timing. If your hard disk is of an older type, we suggest you set this parameter to Disabled. This parameter affects the master drive connected to the secondary IDE connector. The default setting is Auto.

IDE Sec Slave HDD LBA Mode

This enhanced IDE feature allows you to use a hard disk with a capacity higher than 528 MB. This is made possible through the Logical Block Address (LBA) mode translation. This parameter affects the slave drive connected to the secondary IDE connector. The default setting is Disabled.

IDE Sec Slave HDD PIO Mode

This enhanced IDE feature improves your hard disk drive performance. If this parameter is set to Auto, it automatically detects the HDD PIO mode (mode 0, 1, 2, 3) and sets the HDD interface timing. If your hard disk is of an older type, we suggest you set this parameter to Disabled. This parameter affects the slave drive connected to the secondary IDE connector. The default setting is Auto.

Shadow C800, CC00, D000, D400, D800, DC00 16K

These functions are for shadowing expansion card ROMs. The default setting for these areas is `Disabled`. If you have expansion cards with ROMs on them, you need to know the specific addresses that the ROMs use to shadow them. Enable all the ROM Shadow settings if you don't know the addresses. This ensures the shadowing of any present ROMs.

> **NOTE**
>
> *The C000~C7FF, E000~EFFF and F000~FFFF addresses are exclusively shadowed for BIOS.*

Chipset Setup

This screen controls the board's chipset settings. The control methods for this screen are the same as the previous screen's.

This screen appears if you select Chipset from the Setup options.

```
-|                    Chipset Setup

External Cache Write Back                :  Enabled
DRAM Timing                              :  Normal
CPU Read from DRAM Parity Check          :  Disabled
CPU to PCI Write Buffer                  :  Disabled
PCI to CPU Write Burst                   :  Disabled
Bus Park                                 :  Disabled
I/O Recovery Period                      :  1.25us
PCI VGA Palette Snooping                 :  Disabled
NCR PCI SCSI W/O BIOS present in         :  Absent
PCI Slot 1 IRQ Select                    :  Auto
PCI Slot 2 IRQ Select                    :  Auto
PCI Slot 3 IRQ Select                    :  Auto
PCI Slot 4 IRQ Select                    :  Auto
PCI Slot INT B IRQ Select                :  None
PCI Slot INT C IRQ Select                :  None
PCI Slot INT D IRQ Select                :  None
```

External Cache Write Back

When this parameter is set to Enabled, the external cache uses Write Back protocol. Disable this item to use Write Through protocol.

DRAM Timing

The settings are slow, normal and fast. The default setting is Normal.

CPU Read from DRAM Parity Check

If the DRAM (SIMM) you installed supports parity check function, you can enable it. The default setting is Disabled.

CPU to PCI Write Buffer

If the PCI device supports the write buffer from PCI to CPU function, you can set this parameter to Enabled. The default setting is Disabled.

CPU to PCI Write Burst

When set to Enabled, this parameter lets you use burst write data from CPU to PCI if the PCI device supports this function. The default setting is Disabled.

Bus Park

When set to Enabled, this function improves bus performance by improving arbitration time. The default setting is Disabled.

I/O Recovery Period

For old PC/AT cards and software, the period between two consecutive I/O commands should be a minimum of 1.25 μsec. This I/O recovery period can be set to a higher value in the case of old cards, or a lower value for faster I/O devices. The default setting is 1.25us.

PCI VGA Palette Snooping

Some PCI VGA cards support the VGA palette snooping function. This parameter allows you to enhance VGA performance if you select Enabled and your PCI VGA card supports this function. The default setting is Disabled.

NCR PCI SCSI W/O BIOS present in

This parameter allows you to choose which PCI slot the NCR PCI SCSI (without BIOS) card will reside in. You can select from slot 1 to slot 4 or absent. The default value is Absent.

PCI Slot 1~4 IRQ Select

These parameters let you select the IRQ for INT A of each PCI slot. You can select from IRQ 5, IRQ 9, IRQ 10, IRQ 11, IRQ 12, IRQ 14, IRQ 15 or choose Auto to let the system set up automatically.

PCI Slot Int B~D IRQ Select

These parameters allow you to select the INT B, C, D for all the four PCI slots. The settings are IRQ 5, IRQ 9, IRQ 10, IRQ 11, IRQ 12, IRQ 14, IRQ 15 and None. The default setting is None.

NOTE:

IRQ14 default alignment is to the IDE-1 devices. IRQ15 default alignment is to the IDE-2 devices. If IDE-1 or IDE-2 do not have any devices connected, IRQ14 and IRQ15 can be used by selected PCI slots.

Power Management Setup

To take advantage of the power management features, select Power Management from the main menu. To select, highlight `Power Mgmt` and press Enter or double-click on the Power Management icon. The following screen appears:

Power Management Setup	
Power Management	: Disabled
APM (Advanced Power Management)	: Disabled
Doze Timeout	: Disabled
Standby Timeout	: Disabled
Suspend Timeout	: Disabled
Suspend Switch Polarity Select	: Disabled
VGA Power Down Mode Select	: Disabled
HDD Power Down When System is	: Disabled
---EVENT (Wake Up)---	
Keyboard activity detect	: Disabled
Video activity detect	: Disabled
IRQ activity detect	: Disabled
Parallel port activity detect	: Disabled
Serial port activity detect	: Disabled
Floppy disk activity detect	: Disabled
DRQ activity detect	: Disabled

Power Management

Set this parameter to `Enabled` to take advantage of the power-saving feature. When this parameter is set to `Disabled`, you cannot change the values of any item in the Power Management Setup screen. In order to set up the values, you have to set this parameter to `Enabled` first.

WARNING!

If you are running the OS/2, WindowsNT or Unix operating system, we suggest you disable the power management function.

APM (Advanced Power Management)

If your system supports the APM function, set this parameter to Enabled.

Doze Timeout

This function slows down the the CPU clock speed. Full power function returns when an activity takes place. The available settings are 10 Sec, 30 Sec, 1 Min, 5 Min, 10 Min, 20 Min, 30 Min and Disabled.

Standby Timeout

This function slows down the CPU clock speed and suspends the video signal. This activates the power-saving features on your monitor. Full-power functions return when an event is detected. The settings are 1 Min, 10 Min, 20 Min, 30 Min, 40 Min, 50 Min, 1 Hr and Disabled.

Suspend Timeout

The Suspend Timeout slows down the CPU clock speed and suspends both the IDE hard disk motor power and the video signal. Full-power functions return when an activity is detected. The settings are 1 Min, 2 Min, 3 Min, 10 Min, 20 Min, 30 Min, 40 Min, 50 Min, 1 Hr and Disabled. This feature conserves the most energy.

Suspend Switch Polarity Select

This parameter allows you to select the break/suspend switch. Refer to the section on the break/suspend connector in Chapter 2. You can select the On/Off switch or the Toggle switch as your suspend mode switch. The settings are On/Off and Toggle, depending on your break/suspend switch type. The default setting is On/Off.

VGA Power Down Mode Select

This parameter allows you to choose the VGA power down mode. The settings are None, Std.VGA, Smt.VGA and DPMS.VGA. For the proper setting, refer to the VGA specifications. The default setting is Std.VGA when the Power Management function is enabled.

HDD Power Down When System is

This function lets you decide when your IDE hard disk motor powers down. The settings are Suspend and Standby. The default setting is Suspend when the Power Management function is enabled. Some hard disks do not support this function. Please refer to the hard disk speciations.

Keyboard Activity Detect

Enabling this function allows your system to monitor the keyboard dactivities. Any video activity detected resets the power-management timers. The default setting is Enabled when the Power Management function is enabled.

Video Activity Detect

Enabling this function allows your system to monitor the video activities. Any video activity detected resets the power-management timers. The default setting is Enabled when the Power Management function is enabled.

IRQ Activity Detect

Enabling this parameter allows your system to monitor the IRQ activities. Any activity detected resets the power-management timers. The default setting is Enabled when the Power Management function is enabled.

Parallel Port Activity Detect

Enabling this parameter allows your system to monitor the parallel port activities. Any activity detected resets the power-management timers. The default setting is Enabled when the Power Management function is enabled.

Serial Port Activity Detect

Enabling this parameter allows your system to monitor the serial port activities. Any activity detected resets the power-management timers. The default setting is Enabled when the Power Management function is enabled.

Floppy Disk Activity Detect

Enabling this parameter allows your system to monitor the floppy disk drive activities. Any activity detected resets the power-management timers. The default setting is Enabled when the Power Management function is enabled.

DRQ Activity Detect

Enabling this parameter allows your system to monitor the DRQ (DMA requests) activities. Any activity detected resets the power-management timers. The default setting is Enabled when the Power Management function is enabled.

Peripheral Setup

This screen allows you to set-up your system peripherals. It appears if you select Peripheral from the Setup options.

Peripheral Setup	
Programming Mode	: Auto
Onboard FDC	: Enabled
Serial Port1	: 3F8H
Serial Port2	: 2F8H
Parallel Port	: 3BCH
Parallel Extend Mode	: SPP

Programming Mode

The setting are Auto and Manual. Manual allows you to set up the screen items manually. Selecting Auto sets up all the items automatically, except for the Parallel Port Mode parameter.

Onboard FDC

Enabling this function allows you to use the onboard FDC (floppy disk controller). The default setting is Enabled.

Serial Port 1

This parameter allows you to set the base address of serial port 1. There are four settings for this parameter: Disabled, 3F8H, 3E8H and 2E8H. The default setting is 3F8H.

Serial Port 2

This parameter allows you to set the base address of serial port 2. There are four settings for this parameter: Disabled, 3F8H, 3E8H and 2E8H. The default setting is 2F8H.

Parallel Port

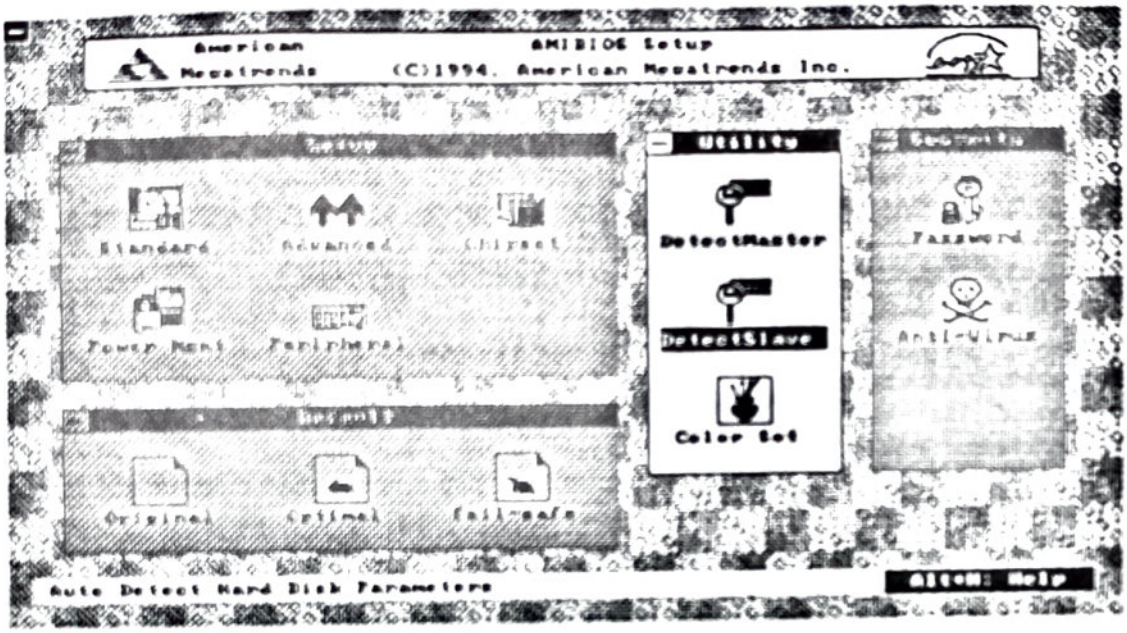
This parameter allows you to set the base address of the parallel port. There are four settings for this parameter: Disabled, 3BCH, 378H and 278H. The default setting is 3BCH. When you set the parallel extend mode parameter to ECP or EPP, we advise you not to use the 3BCH address.

Parallel Port Mode

This parameter allows you to select the parallel port extend mode. The default setting is SPP. Other settings include ECP, EPP 1.7 and EPP 1.9*.

* The numbers following the two choices for EPP refer to version numbers. Most old EPP devices support version 1.7, while new EPP devices support version 1.9. Please refer to the EPP device menu.

Utility Setup

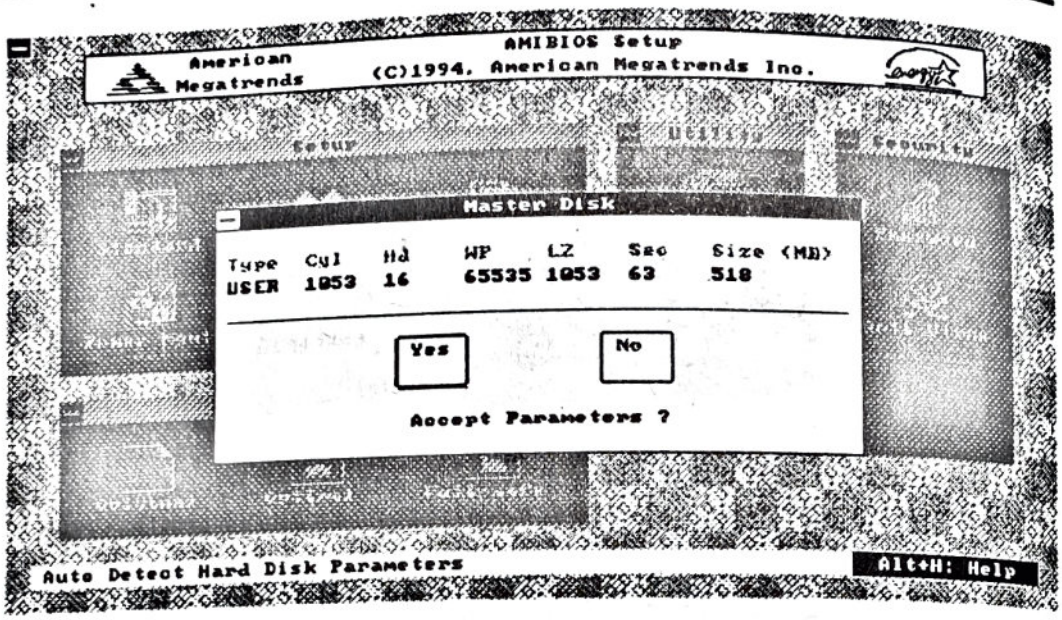


Detect Master and Slave

These functions allow your system to automatically configure the hard disk.

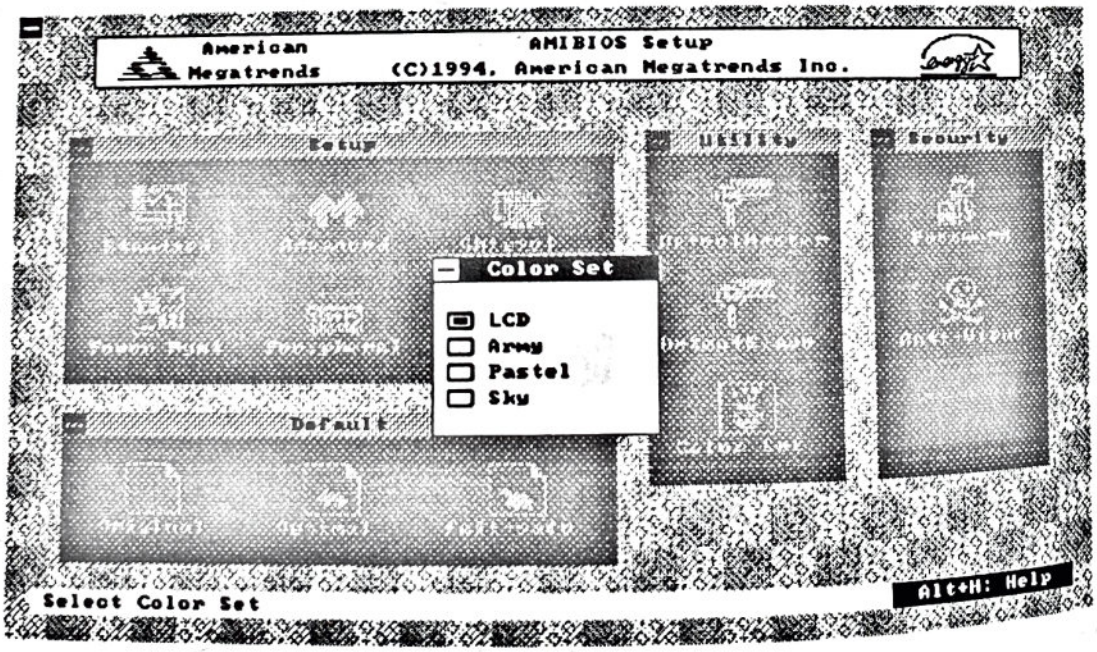
Auto-Detection in progress
CANCEL

The screen below appears showing your disk parameters. Select Yes if you want to accept the values.



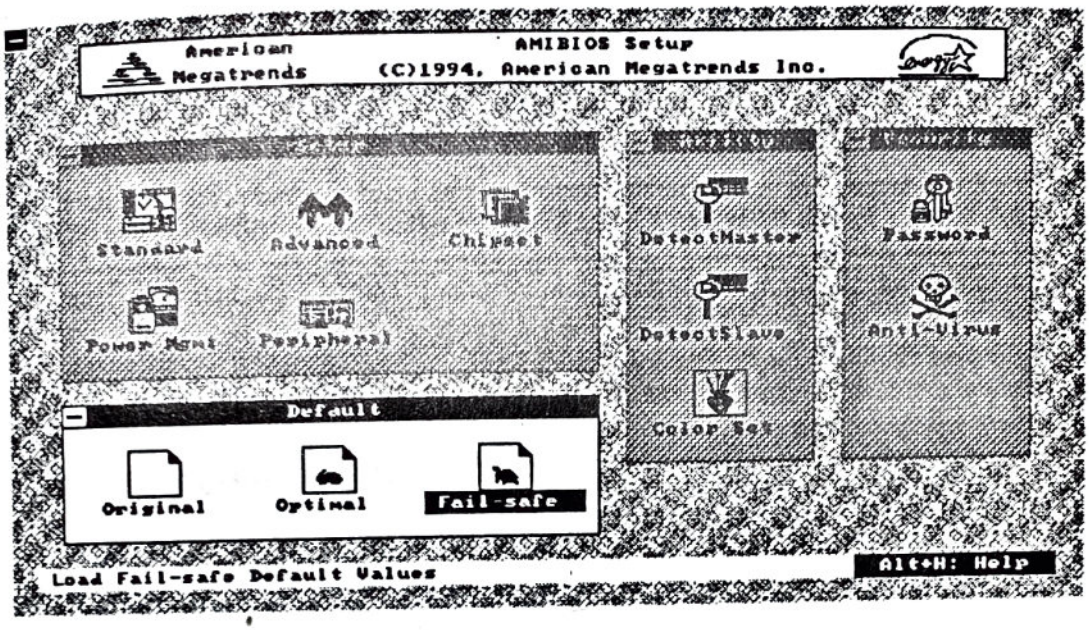
Color Set

This pop-up window appears if you select Color Set from the Utility Setup menu.



The Color Set lets you select the background color of your setup window. The selections are LCD, Army, Pastel, and Sky.

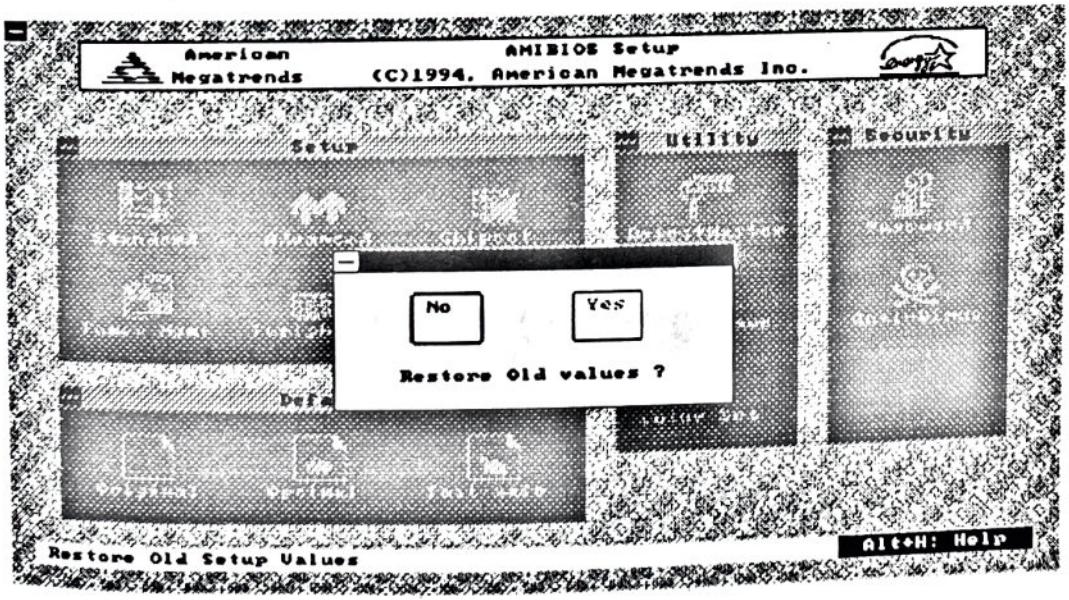
Default Setup



Select this option to automatically set your system configuration parameters. To select, highlight `Default` and press Enter.

Original

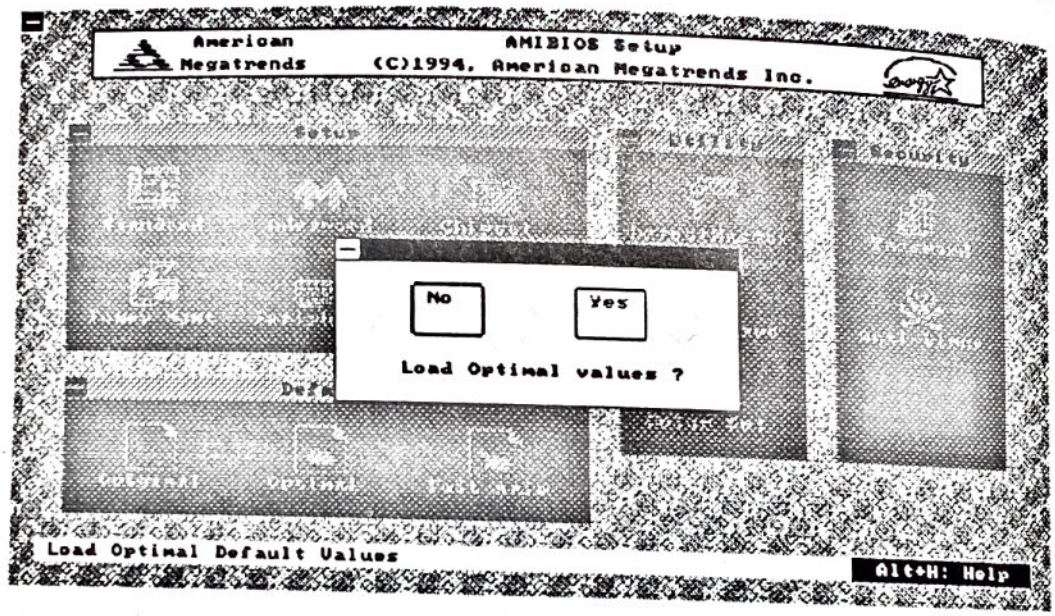
This option loads the latest values that you saved before shutting off the system. The following prompt appears if you select the `Original` option.. Select `Yes` if you want to load the original values.



Optimal

Choose this option and the BIOS configures the system using the best-case values to optimize system performance. However, these values may not be applicable to your system. If your system does not boot after choosing this setting, reconfigure your system using the Fail-Safe settings. Refer to the following section.

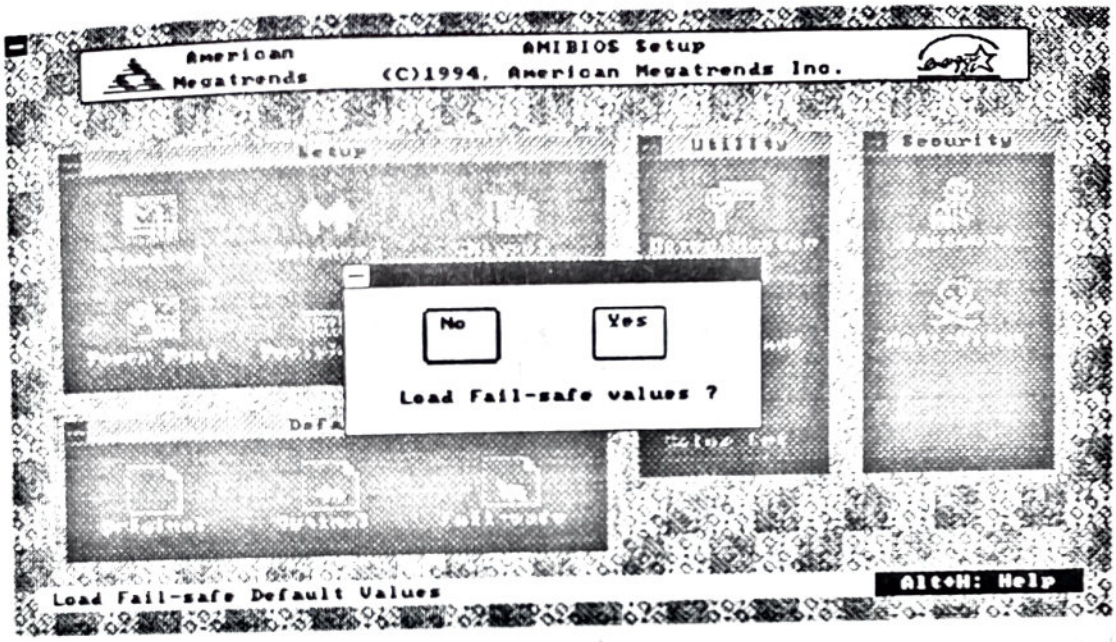
The screen below appears if you select the Optimal option. Select Yes if you want to load the optimum values.



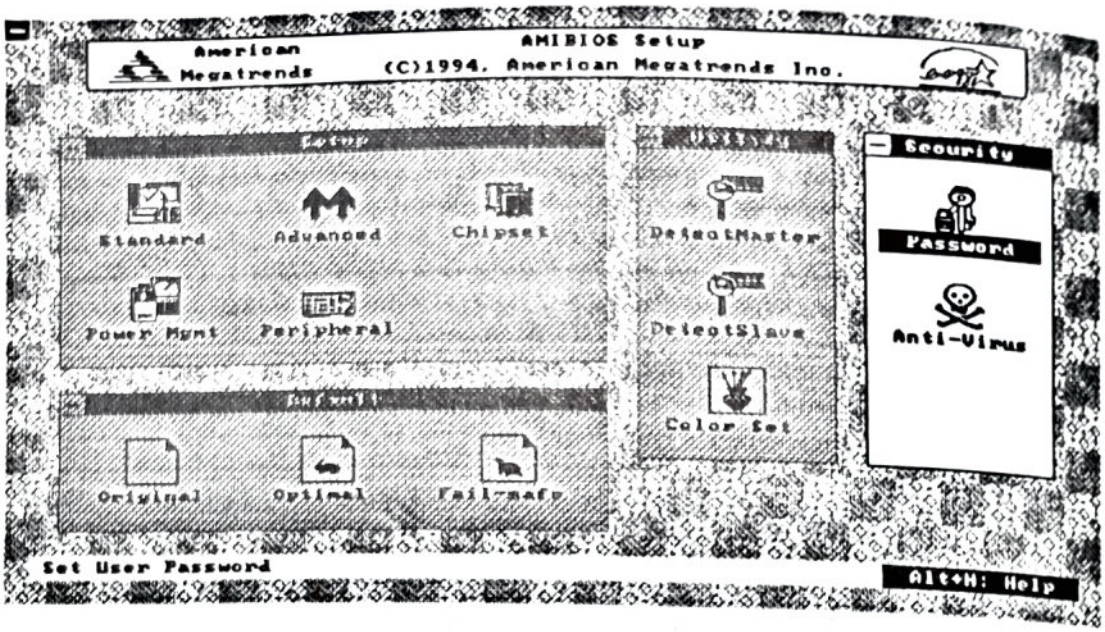
Fail-Safe

Choose this option and the BIOS automatically configures the system using the most stable settings. These settings are not necessarily the best settings for system performance, but "safe" and stable enough to guarantee you that your system will boot. This is useful if you are having problems with your current system configuration and need to determine the cause.

A prompt appears if you select the `Fail Safe` option. Select `Yes` if you want to load the fail-safe values.



Security Setup



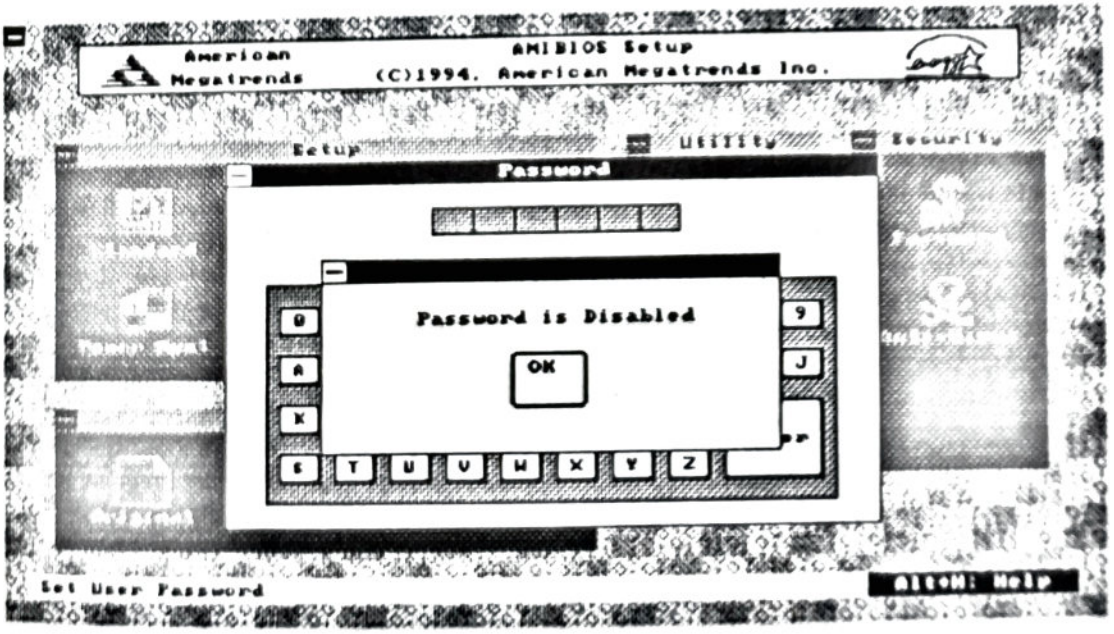
Password

The system password prevents unauthorized use of your computer. If you enabled the password feature, it is impossible to boot the computer without entering your password.

To set a password, highlight Password or simply double-click the Password icon. The following screen appears:

AMI BIOS Setup

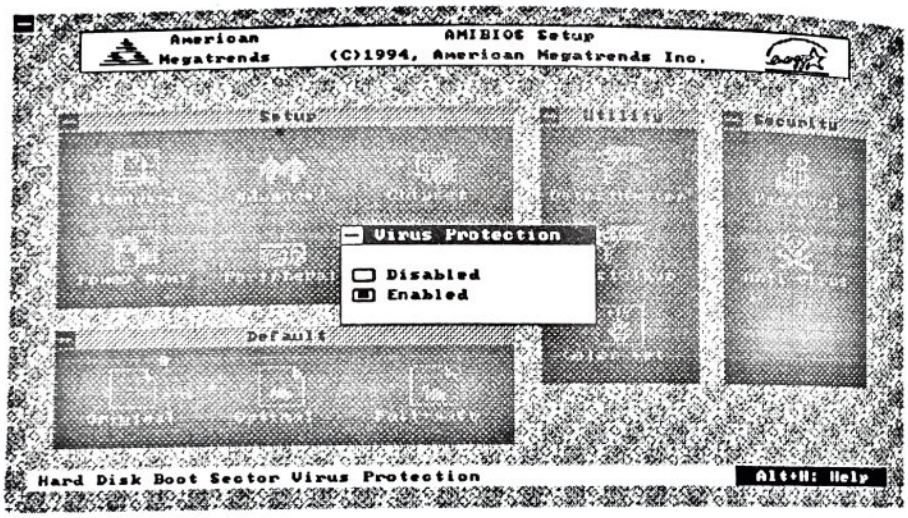
Your password can consist of up to six characters. To disable the password, press Enter when prompted for your password. The following pop-up window appears on the screen:



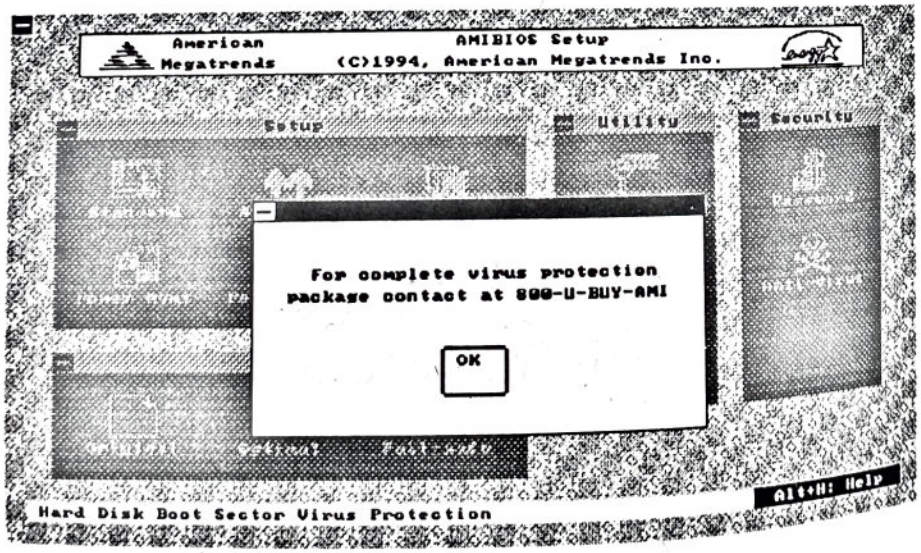
Anti-virus

Set this parameter to `Enabled` to protect the boot sector and partition table of your hard disk from virus intrusion. Set it to `Disabled` to bypass the feature.

A prompt appears when you select the `Anti-virus` option from the Security Setup menu:

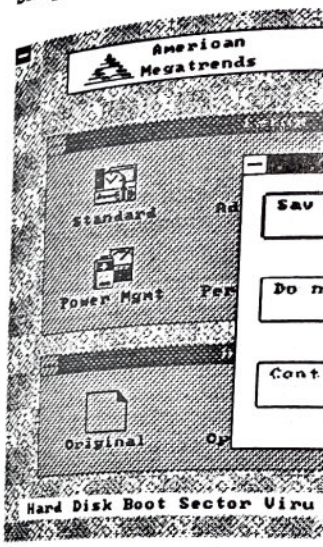


If you select `Enabled`, the screen below appears:



Exit Setup

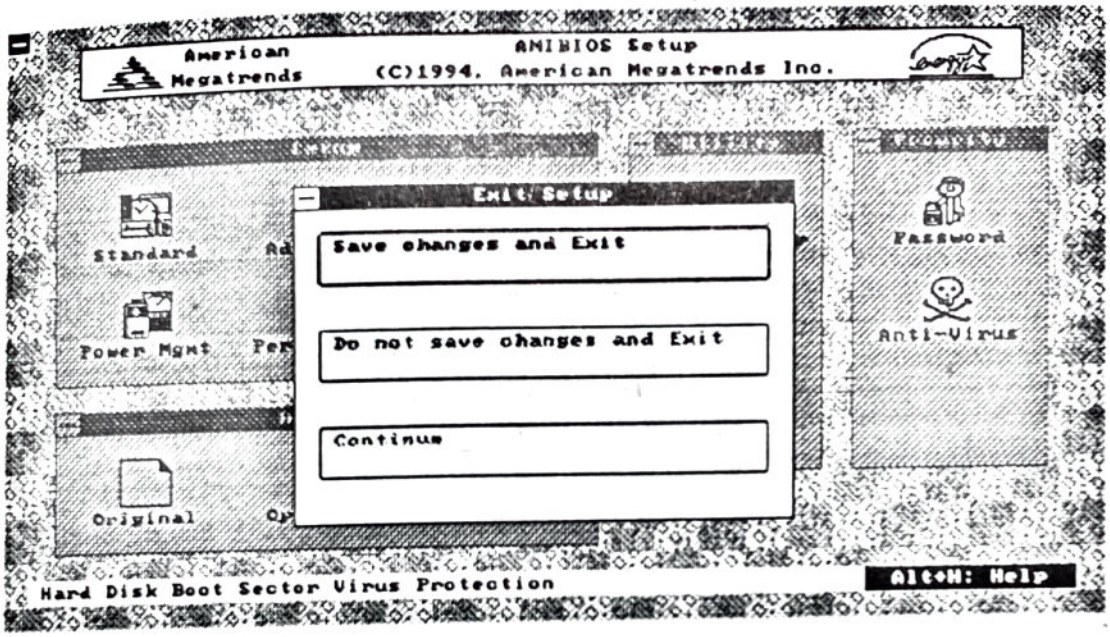
To exit Setup, you can e
simply press Esc. This d



The `Save Changes and Exit` before leaving Setup. The exit Setup without saving option allows you to return system.

Exit Setup

To exit Setup, you can either double-click on the Control menu box or simply press Esc. This dialog box appears on the screen.



The `Save Changes and Exit` option automatically saves all CMOS values before leaving Setup. The `Do Not Save Changes and Exit` option lets you exit Setup without saving the CMOS value changes. The `Continue` option allows you to return to Setup in case you want to reconfigure your system.

Appendix A

Jumper Setting Summary

Changing the Clock Generator Frequency

JP10	Clock Generator Frequency
1-2, 3-4	66 MHz
1-2, none	60 MHz
none, none	50 MHz

Changing the Flash ROM Type

JP12	Flash ROM Type
1-2 (default)	12 V
2-3	5 V

Selecting the Latch Timing

JP 9	Delay ADS
1-2 (default)	No
2-3	Yes

Clearing the CMOS

JP14	Clear CMOS
1-2	Clear
2-3 (default)	Normal

Appendix A

Enabling the Super I/O Chip

JP1	Function
1-2 (default)	Normal
2-3	Disable

Selecting the DMA for ECP

DMA	JP2	JP3
3 (default)	1-2	1-2
1	2-3	2-3

Enabling the Enhanced IDE Controller

JP4	Function
1-2 (default)	Enable
2-3	Disable

JP7	M5215N Port Address
1-2 (default)	F4h
2-3	74h

Setting EPA Fan Adjustment

JP11	Function
1-2 (default)	EPA Control
2-3	No EPA Control

Appendix A

Selecting Cache Type and Size

Cache Size	JP6	JP5
32Kx8 = 256 KB (default)	1-2	1-2
64Kx8 = 512 KB	1-2	2-3
128Kx8 = 1 MB	2-3	2-3

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