

User's Manual

M003 Motherboard
with Sound Blaster Live! onboard





Getting Started

M003 Motherboard with Creative Sound Blaster Live! onboard

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Safety & Regulatory Information

The following sections contain notices for various countries:

CAUTION: This device is intended to be installed by the user in a CSA/TUV/UL certified/listed IBM AT or compatible personal computers in the manufacturer's defined operator access area. Check the equipment operating/installation manual and/or with the equipment manufacturer to verify/confirm if your equipment is suitable for user-installed application cards.

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Notice for the USA

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

Caution

To comply with the limits for the Class B digital device, pursuant to Part 15 of the FCC Rules, this device must be installed in computer equipment certified to comply with the Class B limits.

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This product conforms to the following Council Directive:

- Directive 89/336/EEC, 92/31/EEC (EMC)

Declaration of Conformity

According to the FCC96 208 and ET95-19

Importer's Name: **Creative Labs Inc.**

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declares under its sole responsibility that the product

Trade Name: **Creative Labs**

Model Number: **M003**

has been tested according to the FCC / CISPR22/85 requirement for Class B devices and found compliant with the following standards:

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This device complies with part 15 of the FCC Rules.

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1. Le matériel ne peut être source D'interférences et
2. Doit accepter toutes les interférences reçues, Y compris celles pouvant provoquer un fonctionnement indésirable.

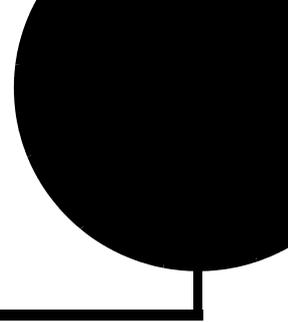
Compliance Manager

Creative Labs, Inc.

December 22, 1998



Contents



Introduction

1 The M003 Motherboard

Features.....	1-1
The Sound Blaster Live! Component	1-2
Hollywood-Quality	
Audio Re-creation.....	1-2
Powerful Audio Processing Engine.....	1-3
Environmental Audio Enhances Existing Contents.....	1-3
Multiple Speaker Output.....	1-3
1024-Voice Music Synthesis.....	1-3
Environmental Audio Extensions (EAX)/	
Broad Driver Support.....	1-4
Sound Blaster Live! Web site: www.sblive.com	1-4
Specifications	1-4
Intel Chipset.....	1-4
CPU Support.....	1-4
Versatile Memory Supports	1-4
AGP Interface	1-4
Expansions.....	1-5
Onboard PCI Bus Master IDE Controller.....	1-5



Onboard 20-pin ATX Power Supply.....	1-5
System BIOS.....	1-5
Power Management	1-5
ACPI	1-6
Board Size	1-6
Advanced Features	1-6
CPU Plug and Play	1-6
Low EMI	1-6
Dual Function Power Button.....	1-6
Modem Ring Power-on	1-6
PS/2 Keyboard & Mouse Power-on.....	1-7
Onboard Sound Blaster Live! Features	1-7
EMU10K1	1-7
Stereo Digitized Voice Channel	1-7
AC '97 Codec Mixer.....	1-8
Volume Control	1-8
E-mu Environmental Modeling™	1-8
DynaRAM™.....	1-8
Creative Multi Speaker Surround™ (CMSSTM).....	1-8
Onboard Sound Blaster Live! Connectivity.....	1-9
Audio Inputs.....	1-9
Audio Outputs.....	1-9
Interface	1-9
Connectors and Jumpers on the Motherboard.....	1-9





2	Connectors	
	Front Panel Connectors.....	2-2
	Back Panel Connectors.....	2-4
	Audio Connectors.....	2-6
	Other Connectors.....	2-7
3	Jumper Settings	
	About Jumpers.....	3-1
	Changing Jumper Settings.....	3-2
	To configure the CPU bus clock multiplier.....	3-3
	To configure the PCI bus clock.....	3-5
	To clear the CMOS.....	3-6
	To flash the EEPROM Vpp.....	3-7
	To enable or disable the keyboard & PS/2 mouse Power-On function.....	3-8
4	Memory Configuration and BIOS Settings	
	Memory Configuration.....	4-1
	BIOS Settings.....	4-2
	To change BIOS settings in CMOS.....	4-3
	The CMOS Setup Utility Menu.....	4-4
	Standard CMOS Setup.....	4-6
	BIOS Features Setup.....	4-9
	Chipset Features Setup.....	4-13
	Power Management Setup.....	4-18
	PnP/PCI Configuration Setup.....	4-22
	Integrated Peripherals.....	4-25
	Password Setting.....	4-30



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Introduction

A highly integrated IBM PC/AT compatible system board, M003 is designed to meet and exceed the requirements of the most advanced and demanding desktop applications. In addition, Sound Blaster® Live!, representing a definitive leap in digital audio technology, has been seamlessly integrated into the M003 motherboard. With Sound Blaster Live! hardware onboard, there is no need for a separate audio card. Realize immense cost savings while indulge in uncompromising audio performance!





The M003 Motherboard

This chapter is organized as follows:

- Features
- Specifications

Features

M003 is a highly integrated IBM PC/AT compatible system board designed to meet the industry's most demanding desktop applications.

This motherboard is based on the Intel 82440BX AGPset chipset which features the Intel® Pentium® II, Pentium® III or the Intel Celeron™ processor (depending on the configuration of the computer you have purchased) with MMX technology. It provides four 168-pin Dual Inline Memory Module (DIMM) sockets which can support up to a total of 1024 MB of SDRAM.

M003 also comes with an Accelerated Graphics Port (AGP) slot, a high-performance hardware interface for graphics-intensive applications, such as 3D applications. The AGP slot is independent of the Peripheral Component Interconnect (PCI) bus and is designed to be used exclusively with graphic display devices. The M003 supports 3.3V AGP devices with bus speed up to 133 MHz, and it allows a data throughput rate of up to 500 MB/sec.

M003 is built with four PCI bus slots, thus providing a high bandwidth data path for intensive data movement functions. In addition, M003 has two ISA slots.



The Intel's 82440BX AGPset chipset provides an integrated Bus Mastering IDE controller with two high-performance IDE interfaces. You can connect up to four IDE devices to the controller and achieve data transfer rates of up to 33 MB/sec.

The onboard I/O controller provides standard PC I/O functions: floppy drive interface, two First In First Out (FIFO) serial ports, an Infrared Data Association (IrDA) device port, and a parallel port that supports Standard Parallel Port (SPP), Enhanced Parallel Port (EPP), and Extended Capabilities Port (ECP).

The Sound Blaster Live! Component



See the Audio section in the BlasterPC binder for details on Sound Blaster Live!

Experience the most powerful audio technology ever! M003's Sound Blaster Live! component introduces a new dimension of audio reproduction. With features surpassing even professional Hollywood-quality audio equipment in performance, you can embrace Sound Blaster Live!'s superior surround-sound rendering capabilities today. Sound Blaster Live!'s Environmental Audio™ technology creates and reproduces sound so real it has to be Live! With an amazing 1024 voices of music synthesis and real-time audio enhancement, you'll enjoy live concert-like music productions so dynamic, you'll feel like you're right in the middle of an orchestra. The Sound Blaster Live! hardware-accelerated Environmental Audio Extensions™ (EAX™), supporting new titles, offer an experience that goes way beyond 3D audio. Add the ability to enhance all your existing games and legacy audio with true digital processing and it blows your existing home theater system away!

Hollywood-Quality Audio Re-creation

Sound Blaster Live! is designed with professional-quality synthesizers from E-mu Systems, Inc., which is highly acclaimed for its sampling and synthesis technologies used in Hollywood studios and renowned movie and music production, including the making of several blockbuster movies. Sound Blaster Live! provides audio fidelity that rivals movie theaters with digital sound. Our uncompromising attitude has produced excellent overall audio fidelity on Sound Blaster Live!. For example, we can achieve an average **Noise Floor** of **-120 dB**, a level unheard of in the PC industry.

Powerful Audio Processing Engine



The EMU10K1™ audio processor is the most powerful integrated music, audio and effects engine available. Every signal is processed at 32-bit, 48 kHz using 8-point interpolation to smoothen the sound—instantly improving any audio source. Besides advanced signal processing, the EMU10K1 also provides real-time effects including Reverb, Chorus, Flanger, Echo, and Pitch Shifter, that rival a stand-alone effects processor worth US\$500.

Environmental Audio Enhances Existing Contents

Experience depth and realism beyond existing 3D audio. Sound Blaster Live! provides preset environments such as *hall*, *cave* or *underwater* that can be applied to your existing games and applications for incredibly true sound. You can be listening to your favorite music piece in the room at one moment and in the concert hall, the next. Sound Blaster Live! also provides game environmental settings that can make your existing games come “alive” instantaneously.

Multiple Speaker Output

Produce surround-sound audio on your PC with built-in support for two or four speakers. With support for multiple-speaker digital speaker systems like Cambridge SoundWorks' PCWorks FourPointSurround™ and DeskTop Theater 5.1™ systems, you are no longer limited in your 3D audio applications.

1024-Voice Music Synthesis

Sound Blaster Live! delivers up to 1024-voice capability that goes beyond the quality and performance available in most professional music equipment. With additional voices, Sound Blaster Live! delivers richer MIDI playback, simultaneous playback of more instruments to create better quality sound, and the creation of the “sustain effect”.



Using host memory, you can choose from E-mu's 2 MB, 4 MB, or 8 MB SoundFont® professional-quality sample banks for music reproduction. Alternatively, you can use up to 32 MB of memory for amazing SoundFont music fidelity.

And Sound Blaster Live! is able to deliver all these without sacrificing CPU utilization because of its very effective hardware-accelerated processing engine.

Environmental Audio Extensions (EAX)/ Broad Driver Support

Environmental Audio Extensions is an open standard that allows the broadest support from software developers.

Supports Microsoft DirectSound® and DirectSound3D and derivative technologies. Advanced architecture is ready for the coming generations of WDM and DLS devices.

Sound Blaster Live! Web site: www.sblive.com

Exciting new applications and developer support will be available on the Sound Blaster Live! Web site. For instant access to the latest applications, enhancements, drivers, and more, visit www.sblive.com

Specifications

Intel Chipset

- ❑ Features Intel's 440BX AGPset with I/O subsystems.

CPU Support

- ❑ Intel Pentium III 450 MHz~600 MHz and faster CPU (at 100 MHz system bus frequency)
Intel Pentium II 233 MHz~333 MHz (at 66 MHz system bus frequency)
or Intel Pentium II 350 MHz~500 MHz (at 100 MHz system bus frequency)
or Intel Celeron processor 266 MHz and 300 MHz (at 66 MHz system bus frequency)
or Intel Celeron processor 366 MHz~500 MHz and faster CPU (at 66 MHz system bus frequency with Socket 370 adapter).

Versatile Memory Supports

- ❑ Four DIMM sockets that support 168-pin 3.3V SDRAM memory modules, with maximum possible memory size of up to 1024 MB.
- ❑ Configurable support for Error Checking (EC) and Error Checking and Correcting (ECC).

AGP Interface

- ❑ Supports AGP cards for high-performance, component-level connection targeted at 3D graphical display applications.
- ❑ AGP 66~133 MHz 3.3V devices supported



Expansions

- Synchronous coupling to the host bus frequency
- One AGP slot
- Four 32-bit PCI slots
- Two 16-bit ISA slots
- One floppy drive port
- One parallel port with SPP, EPP, and ECP capabilities
- Two high-speed 16C550 compatible UART serial ports that support infrared communication.
- One PS/2 mouse connector and one PS/2 keyboard connector
- Two Universal Serial Bus (USB) ports via the front panel

Onboard PCI Bus Master IDE Controller

- Two Ultra DMA/33 Bus Master IDE ports that support four IDE devices and provide data transfer rates of up to 33 MB/sec. This controller supports Enhanced PIO Modes 3 and 4, and Bus Master IDE DMA Mode 2 devices.

Onboard 20-pin ATX Power Supply

- ATX power connector onboard supports soft-on/off function.

System BIOS



- Licensed Award PnP BIOS on Flash Electrically Erasable Programmable Read-Only Memory (EEPROM).
- Supports Green PC, Desktop Management Interface (DMI) and Display Power Management Signalling (DPMS) compliance standards.

Power Management

- Two power management modes: Full On and Standby.

ACPI

- ❑ Support Advanced Configuration and Power Interface (ACPI) function. ACPI provides more energy-saving features for future operating systems that support OS Direct Power Management (OSPM) functionality.

Board Size

- ❑ ATX form factor 305mm x 180mm.

Advanced Features

CPU Plug and Play

- ❑ CPU Plug and Play function. This means that there is no need to adjust the onboard system clock and CPU multiplier. When the system is switched on for the first time, BIOS will set the CPU clock speed to 233 MHz automatically. If your CPU speed is higher than 233 MHz, just adjust the CPU speed in the CMOS setup. For details, see “Chipset Features Setup” on page 4-13.
For newer Pentium® III or the Intel Celeron™ CPUs, the CPU speed is selected automatically.

Low EMI

- ❑ Automatic clock shut-off of unused PCI/SDRAMS slots to reduce the EMI.

Dual Function Power Button

- ❑ The system can be in one of two modes, Suspend or Soft Power-off.
If you hold the Power button down for less than 4 seconds, the system will go into the Suspend mode. If you hold the Power button for more than 4 seconds, the system will go into the Soft Power-off mode.
Select the setting you want in the BIOS setup.

Modem Ring Power-on

- ❑ Automatic switching on of the system when the modem ring is activated.

PS/2 Keyboard & Mouse Power-on

- Automatic switching on of the system by stroking the keyboard or double-clicking the PS/2 mouse. For details, see “To enable or disable the keyboard & PS/2 mouse Power-On function” on page 3-8.



Modem Ring Power-on must be enabled before this feature can be enabled. For details, see “Power Management Setup” under “Memory Configuration and BIOS Settings” on page 4-18.

Onboard Sound Blaster Live! Features

EMU10K1

- Advanced hardware accelerated digital effects processing
- 32-bit digital processing while maintaining a 192 dB dynamic range
- Patented 8-point interpolation that achieves the highest quality of audio reproduction
- 64-voice hardware wavetable synthesizer
- Professional-quality digital mixing and equalization
- Up to 32 MB of sound RAM mapped to host memory



Stereo Digitized Voice Channel

- True 16-bit Full Duplex operation
- 16-bit and 8-bit digitizing in stereo and mono modes
- Playback of 64 audio channels, each at an arbitrary sample rate
- ADC recording sampling rates: 8, 11.025, 16, 22.05, 24, 32, 44.1 and 48 kHz
- Dithering for 8-bit and 16-bit recording

AC '97 Codec Mixer

- Mixes EMU10K1 audio sources and analog sources such as CD Audio, Line In, Microphone, Auxiliary, TAD and PC Speaker
- Selectable input source or mixing of various audio sources for recording
- 16-bit Analog-to-Digital conversion of analog inputs at 48 kHz sample rate



Volume Control

- Software record and playback control of Master, Digitized Voice, and inputs from MIDI device, CD Audio, Line, Microphone, Auxiliary, TAD, PC Speaker, I²S (PC-DVD), SPDIF, Wave/DirectSound device, and CD Digital (CD SPDIF)
- Separate bass and treble control
- Front and Rear Balance control
- Muting and balance control for individual playback sources

E-mu Environmental Modeling™

- Realistic 3D experience that increases depth and breadth in perceived audio
- Highly accurate positioning of audio objects in 3D space
- Exceptional reproduction of various ambient and environmental effects

DynaRAM™

- Dynamically allocating host memory for storing and processing sound samples
- Need not rely on onboard audio card memory

Creative Multi Speaker Surround™ (CMSS™)

- Multispeaker technology
- Professional-quality panning and mixing algorithm
- Independent multiple sounds can be moved and placed around a listener



Onboard Sound Blaster Live! Connectivity



Audio Inputs

- One mono Microphone analog input via stereo jack on front panel
- One line-level analog Line input via stereo jack on front panel
- One mono Microphone analog input via stereo jack on rear bracket
- CD_IN line-level analog input via 4-pin Molex connector on card
- AUX_IN line-level analog input via 4-pin Molex connector on card
- TAD line-level analog input via 4-pin Molex connector on card
- CD_SPDIF digital input via 2-pin Molex connector on card, accepting sampling rates of 32, 44.1 and 48 kHz

Audio Outputs

- Two line-level analog outputs via stereo jacks on rear bracket, Front and Rear Line-Outs
- Stereo headphone (32-ohm load) support on Front Line-Out via front panel

Interface

- PC_SPK 1x4 pin header
- Joystick interface connects to front panel joystick connector



Connectors and Jumpers on the Motherboard

Figure 1-1 on page 1-10 is a diagram of the M003 motherboard for your reference.

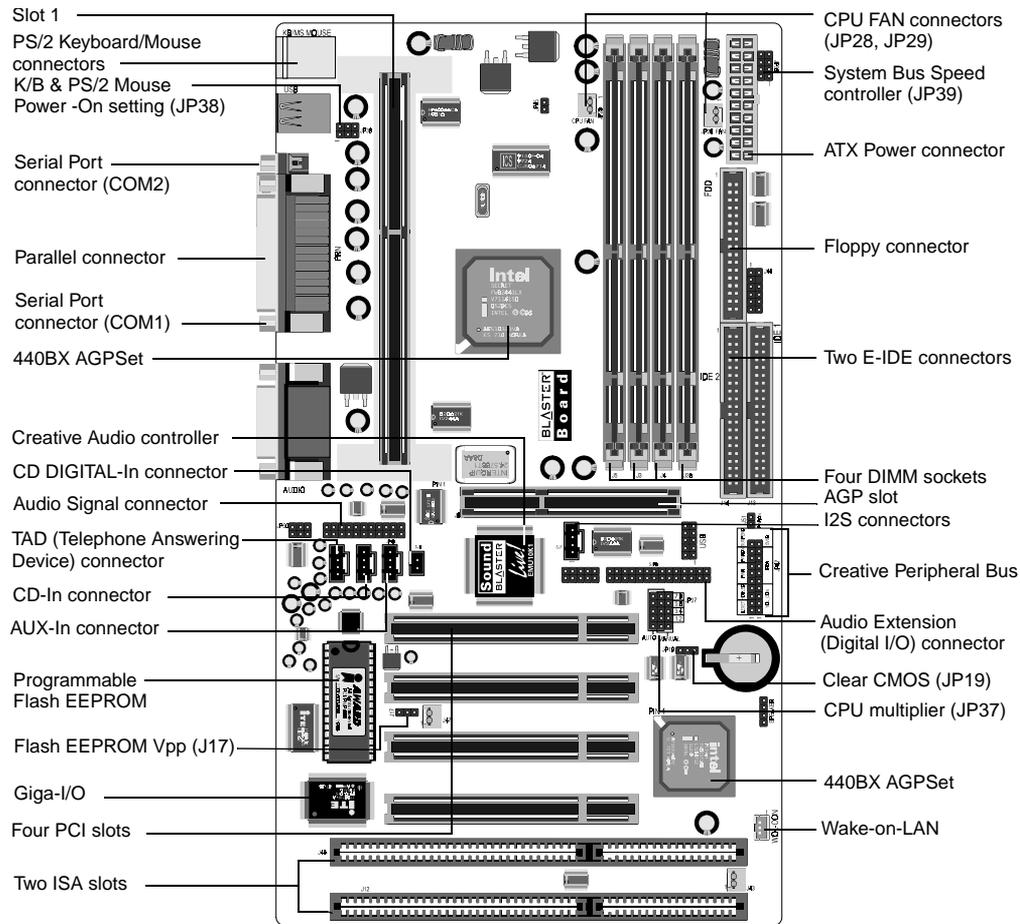


Figure 1-1: The M003 motherboard



Connectors

This chapter is organized into the following sections:

- Front Panel Connectors
- Back Panel Connectors
- Audio Connectors
- Other Connectors



Front Panel Connectors

Figure 2-1 below shows the positions of the front panel connectors on your motherboard.

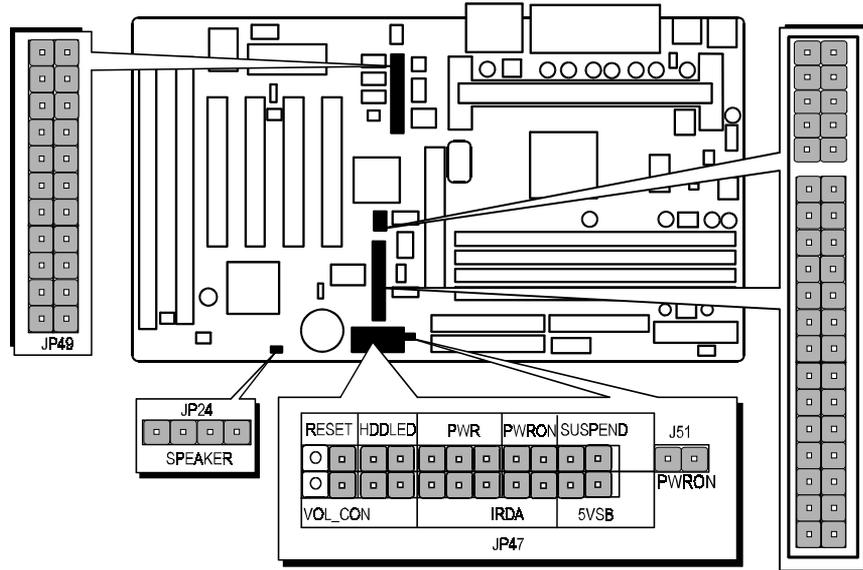


Figure 2-1: The front panel connectors.

Speaker Connector (SPEAKER, JP24)

You may attach a 4-pin PC speaker cable to the PC speaker connector.

Creative Peripheral Bus (JP47)

- Volume Control Connector (VOL_CON)

Controls the volume level of all audio output through the front panel volume control knob.

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- ❑ **Infrared Connector (IRDA)**

When this connector is connected to an infrared receiver, you can use the infrared transfer function. The M003 motherboard meets ASKIR and HPSIR specifications. It is also fully compatible with Creative's infrared receiver on the BlasterPC's front panel for a wireless interface. When this infrared receiver is enabled, it re-routes commands it receives from the credit card-sized Creative iNFRA remote control to BlasterPC's COM2 serial port. Thus, the COM2 serial port will not be available when Creative infrared receiver is enabled. To free up COM2 for connecting to devices, you need to disable the infrared receiver first. Use the CMOS Setup Utility to enable or disable the infrared receiver. For details, see the section "Integrated Peripherals" on page 4-25.

- ❑ **5V Standby Connector (5VSB)**

- ❑ **Hardware Reset Connector (RESET)**

A 2-pin hardware reset switch is attached to it.
Closing the reset switch restarts the system.

- ❑ **HDD LED Connector (HDDLED)**

The LED lights up when an IDE device is active.

- ❑ **PowerLED Connector (PWR)**

This connector is connected to the casing's Power LED.

Audio Signal Connector

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This connector is connected to the Front Interface Connector on the front I/O card of the BlasterPC, thus providing front panel connectivity in the form of the Stereo Phone jack, Microphone In jack, Line In jack, and the Joystick connector.

ATX Power On/Off Switch Connector (PWRON, J51)

A 2-pin momentary type switch is attached to this connector. The switch is used to turn your ATX power supply on and off.

Back Panel Connectors



- Jacks are one-hole connecting interfaces whereas connectors consist of many pairs of pins. Some connectors here may not be available on your card.
- The COM2 serial port will not be available when Creative infrared receiver is enabled. To free up COM2 for connecting to devices, disable the infrared receiver by using the CMOS Setup Utility to change the setting for the UR2 Mode item. For details, see “Integrated Peripherals” on page 4-25.

Audio Extension (Digital I/O) Connector

You can connect this connector to a similar connector on the Digital I/O card using a Digital I/O cable. This connection facilitates the 2-way transmission of digital audio signals between the onboard Sound Blaster Live! component and the Digital I/O card.

Figure 2-2 shows the back panel connectors of your motherboard.

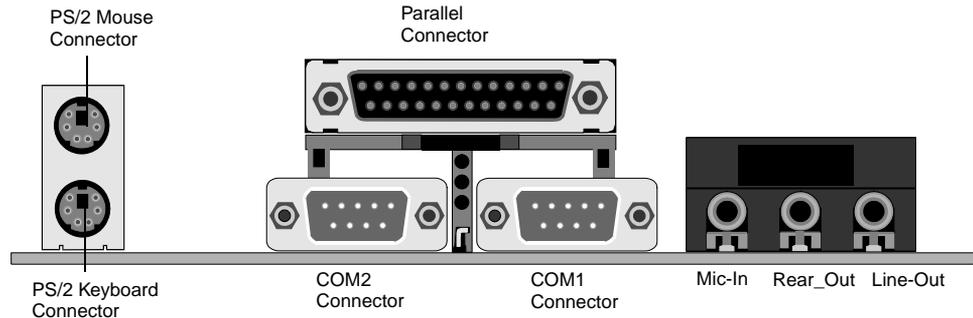


Figure 2-2: The back panel connectors.

COM1 and COM2 Connectors

Attach the serial device cables to these connectors.

PS/2 Keyboard & PS/2 Mouse Connectors

Two 6-pin female PS/2 keyboard & Mouse Connectors are located at the rear of the motherboard. Plug the PS/2 keyboard and mouse into their respective connectors.

Parallel Port Connector

A 25-pin female connector is located at the rear of the motherboard. Plug the parallel port device cable into this connector.



Line Out and Rear Out jacks can be used simultaneously to power 4.1 channel speaker systems, for example, PCWorks™ FourPointSurround™ from Cambridge SoundWorks.

Microphone In Jack

Connects to an external microphone for input.

Rear Out Jack

Connects to powered speakers or an external amplifier for audio output.

Line Out Jack

Connects to powered speakers or an external amplifier for audio output. Headphones can also be plugged in here.

Audio Connectors

Figure 2-3 below shows the onboard Sound Blaster Live! connectors of your motherboard.

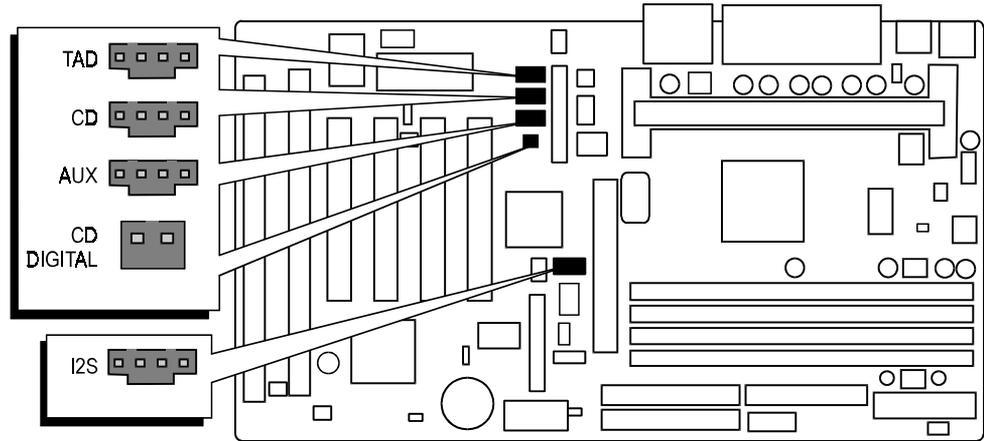


Figure 2-3: The audio connectors.

Telephone Answering Device Connector (TAD)

Provides for a Mono connection to a standard voice modem, and transmits microphone signals to the modem.

CD Audio Connector (CD)

Connects to the Analog Audio output on a CD-ROM or DVD-ROM drive using a CD audio cable.



AUX Connector (AUX)

Connects to internal audio sources such as TV Tuner, MPEG, or other similar cards. For BlasterPCs, it is typically used for FM radio input.

CD SPDIF Connector (CD DIGITAL)

Connects to the SPDIF (Digital Audio) output (where available) on a CD-ROM or DVD-ROM drive.

I²S In Connector (I²S)

Connects to an I²S source such as the Digital Out connector of the Creative MPEG2 decoder card.

Other Connectors

ATX Power Supply Connector (J31)

It is a twenty-pin male connector. Plug the connector from the power supply directly into the board connector. Make sure that pin 1 is inserted into the correct position. The motherboard requires a power supply of at least 200 watts with good power transmission.

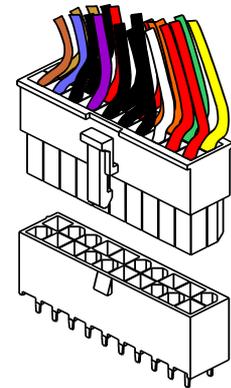


Figure 2-4: The ATX Power Supply connector.



CPU, Chassis & AGP cooling FAN connectors (JP28, JP29, J43 and J47)

The motherboard provides three onboard 12 V cooling fan power connectors for the CPU (JP28 and JP29), Chassis (J43) and AGP device (J47) cooling fans. Depending on the fan's manufacturer, the wiring and plug type may be different. The red wire should be connected to +12 V and the black wire should be connected to ground (GND).

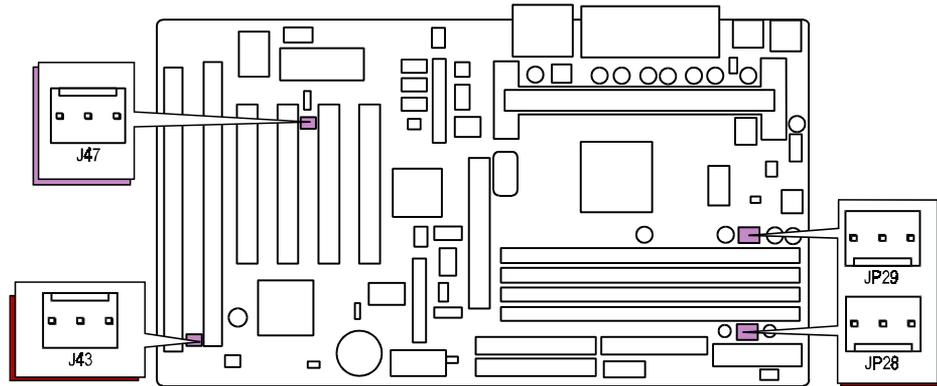


Figure 2-5: Locations of the FAN connectors.

Enhanced IDE and Floppy Connectors

The motherboard is shipped with one 40-pin ribbon cable for IDE hard disk drives and one 34-pin ribbon cable for floppy disk drives. Make sure that the colored or dotted stripe of each cable is aligned to Pin 1 of its corresponding connector.

Jumper Settings

This chapter is organized into the following sections:

- About Jumpers
- Changing Jumper Settings

About Jumpers



Each jumper is outlined with a silk screen border. To locate pin 1 of each jumper, you can look for the corner of the border with thickened silk screen lines.

Several hardware settings are made through the use of jumper caps to connect jumper pins on the motherboard. Pin 1 of each jumper on the motherboard is either on the top or the left of the jumper when holding the motherboard with the keyboard connector away from yourself.

Table 3-1 below shows the jumper conventions used in this manual:

Table 3-1: Jumper conventions.

Jumper Setting	Represented As	Jumper Setting	Represented As
Closed (On)		Pin 1-2 Closed	
Open (Off)		Pin 2-3 Closed	
No pin			



Instead of removing the jumper cap completely, you can place the cap over one pin so that the cap will not be misplaced.

Changing Jumper Settings



Do not change the jumper settings unless you have a good understanding of how they work and know the effects of any changes you make. Incorrect jumper settings may cause your system to stop functioning.

To close a 2-pin jumper

- ▶ Place a jumper cap over the two jumper pins.

To open a 2-pin jumper

- ▶ Remove the jumper cap from the two jumper.

This section provides instructions on how to configure some important jumpers on your motherboard. These jumpers have already been set to the factory default. If you do not need to change the jumper settings, you can leave them as the factory default.

Figure 3-1 is a diagram showing the relative positions of some of the jumpers on the M003 motherboard.

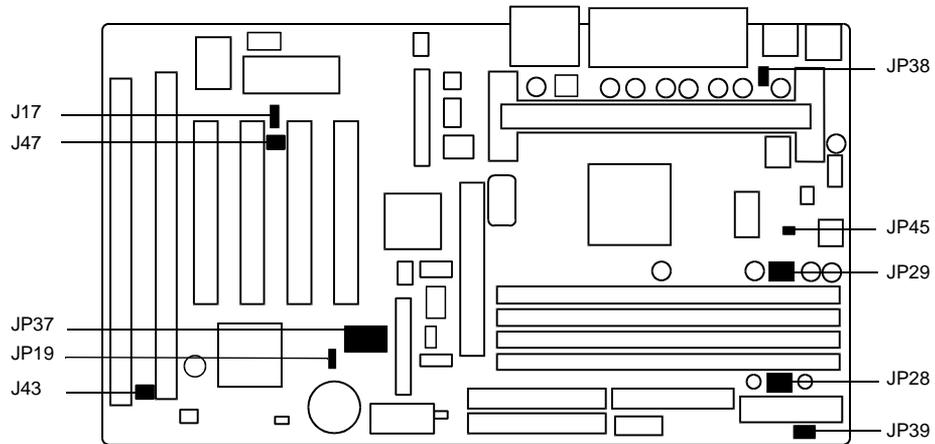


Figure 3-1: Relative positions of jumpers on the M003 motherboard.

To configure the CPU bus clock multiplier



- Newer Pentium III and Celeron processors are locked-speed. This means that you will not be able to overclock these processors. The clock speed can be detected by the BIOS. There is also no need to change any BIOS settings.
- In Auto, the jumper pack is placed over the two columns on the left, leaving only one column of pins exposed.
- To switch to Manual, place the jumper pack over the first column on the left, leaving the second and third columns exposed. Then, place the jumper blocks on the second and third columns of pins according to the multiplier value that you want.

The JP37 jumper is used to configure the CPU bus clock multiplier. If you want the CPU clock speed to be set by BIOS, do not remove the jumper pack from the JP37 jumper (Auto setting). As the motherboard features CPU Plug & Play function, the BIOS will select the CPU clock speed corresponding to the processor automatically when the system is switched on for the first time. The clock speed selected will depend on your CPU type. If the CPU clock speed is higher than that selected, you can use the CMOS Setup utility to change it.

Alternatively, if you want to specify the CPU clock speed manually, you should first remove the jumper pack and use the JP37 jumper settings shown below to achieve the multiplier ratio you want (Manual setting).

You can then use JP39 jumper settings to set the CPU clock speed manually. Table 3-2 shows the multiplier needed for various processor speeds with the system clock speed at 66 MHz and at 100 MHz.

Table 3-2: Typical settings for System Clock and Multiplier.

Pentium II/ Celeron Processor	System Clock	Multiplier	Pentium II Processor	System Clock	Multiplier
233 MHz	66 MHz	3.5x	350 MHz	100 MHz	3.5x
266 MHz	66 MHz	4x	400 MHz	100 MHz	4x
300 MHz	66 MHz	4.5x	450 MHz	100 MHz	4.5x
333 MHz	66 MHz	5x	500 MHz	100 MHz	5x

To enable the CPU Plug & Play function

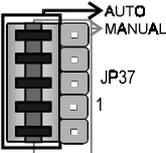
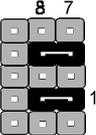
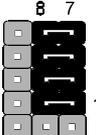
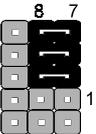
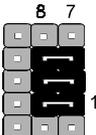
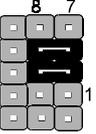
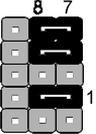
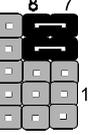
- ▶ Leave the jumper pack on the Auto group (factory default setting).

To configure the Host Bus Clock/CPU Core Clock ratio (multiplier) manually

- ▶ Remove the jumper pack from the Manual group, and then set the jumper according to the multiplier that you want (see Table 3-3).

Table 3-3 shows some of the multipliers that the motherboard supports.

Table 3-3: Jumper Settings for Multiplier.

Multiplier	JP37 Jumper	Multiplier	JP37 Jumper
Setting from BIOS		3.5x (233/66 or 350/100)	
2x (133/66 or 200/100)		4x (266/66 or 400/100)	
2.5x 166/66 or 250/100)		4.5x (300/66 or 450/100)	
3x (200/66 or 300/100)		5x (333/66 or 500/100)	

To configure the PCI bus clock

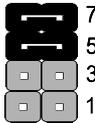
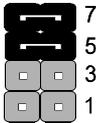
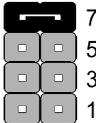
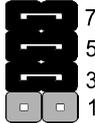
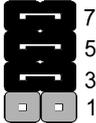
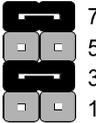
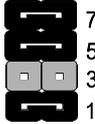
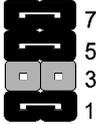
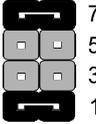


- Newer Pentium III and Celeron processors are locked-speed. This means that you will not be able to overclock these processors. The clock speed can be detected by the BIOS. There is also no need to change any BIOS settings.
 - JP39 jumper settings cannot be used if the jumper pack is left on the JP37 jumper (Auto setting; factory default setting).
 - For 66 MHz-based Pentium II/ Celeron processors, 75 MHz and 83 MHz are for overclocking the CPU bus.
- For 100 MHz-based Pentium II processors, 112 MHz and 133 MHz are for overclocking the CPU bus.
- Generally, overclocking the CPU bus is not recommended.

The motherboard's clock generator provides an adjustable system clock frequency. The JP39 jumper is used to indicate the system clock frequency which can range from 66 MHz to 133 MHz. The CPU Plug & Play function is supported with a default 100 MHz system frequency.

Table 3-4 shows various speeds of the system bus clock that the motherboard supports.

Table 3-4: Jumper Settings for PCI Bus Clock.

CPU Host Clock	JP39 Jumper Settings for		CPU Host Clock	JP39 Jumper Settings for	
	66 MHz-based processor	100 MHz-based processor		66 MHz-based processor	100 MHz-based processor
66 MHz			100 MHz (Default)	Not applicable	
75 MHz			112 MHz	Not applicable	
83 MHz			133 MHz	Not applicable	

To clear the CMOS

Under some unusual circumstances, the configuration record created by the CMOS Setup utility can become corrupted and unusable. This can cause the motherboard to stop functioning properly. In such cases, you need to clear the CMOS record by using jumper JP19.

To clear the CMOS

1. Switch off the computer.
2. Remove the jumper cap from JP19 pins 1 and 2.
3. Place the jumper cap over JP19 pins 2 and 3 for two seconds.
4. Remove the jumper cap from pins 2 and 3.
5. Place the jumper cap back on pins 1 and 2.

Table 3-5: Jumper Settings for CMOS.

Clear CMOS	JP19 Jumper
Clear CMOS	1 
Normal Operation (Default setting)	1 

To flash the EEPROM Vpp

The M003 motherboard supports two types of flash EEPROM: 5V and 12V. By setting up jumper J17, the motherboard can use either 5V or 12V to flash the EEPROM with new system BIOS files when necessary.

Table 3-6: Jumper Settings for Flash EEPROM.

Flash EEPROM Vpp	J17 Jumper
12V Flash	1 
5V Flash (Default setting)	1 

To enable or disable the keyboard & PS/2 mouse Power-On function



- Power-on by serial mouse is not supported.
- After enabling the power-on function, you must initialize the system hardware:
Use the Power On button to switch on the system for the first time. After using your system, perform a proper shutdown *without* switching off the mains power. The system hardware is initialized and you will be able to power-on the system using the keyboard or mouse.
- If your system is disconnected from mains power, you must initialize the system hardware again before using the keyboard and mouse power-on function.

The M003 motherboard supports a power-on by keyboard and PS/2 mouse. Enable this function and you can switch on the system with any keystroke (or with an assigned hot-key) or by double-clicking the PS/2 mouse.

J44 and JP38 are jumpers used to enable or disable the keyboard and PS/2 mouse power-on function. When you enable the keyboard & PS/2 Mouse power-on function, you also have to make the appropriate adjustments to the POWER ON Function item in the Integrated Peripherals screen of the CMOS Setup utility. For details, see Table 4-9, “The Integrated Peripherals Screen items,,” on page 4-26.

Table 3-7: Jumper Settings for Keyboard and PS/2 Mouse.

Keyboard Power-on	PS/2 Mouse Power-on	JP38 Jumpers
Disabled	Disabled	<p>JP38</p>
Enabled	Enabled	<p>JP38</p>
Disabled	Enabled	<p>JP38</p> <p>(Default setting)</p>
Enabled	Disabled	<p>JP38</p>

Memory Configuration and BIOS Settings

This chapter is organized into the following sections:

- ❑ Memory Configuration
- ❑ BIOS Settings

Memory Configuration

The motherboard provides four 168-pin DIMM sockets that make it possible to install from 8 MB up to 512 MB of 66 MHz or 100 MHz SDRAM. The DIMM sockets support 8 MB, 16 MB, 32 MB, 64 MB, 128 MB, and 256 MB 3.3 V single- or double-sided SDRAM DIMM.

The four DIMM sockets are arranged in four banks of one socket each. Each bank provides a 64/72-bit wide data path.

The M003 provides optional data integrity features, including EC (Error Checking) and ECC (Error Checking and Correcting) in the memory array. The EC mode provides single- and multiple-bit error detection. The ECC mode provides error checking and correction of the data during reads from the DRAM. To support ECC, you must use true 72-bit parity-type (as opposed to phantom parity generated by TTL chips) DIMM for all modules.

Table 4-1: Install memory in any or all of the banks in any combination as follows

DIMM Socket	Memory Modules	Module Quantity
DIMM 0	8 MB, 16 MB, 32 MB, 64 MB, 128 MB, 256 MB 168-pin 3.3V 66 MHz or 100 MHz PC SDRAM DIMM	x1
DIMM 1	8 MB, 16 MB, 32 MB, 64 MB, 128 MB, 256 MB 168-pin 3.3V 66 MHz or 100 MHz PC SDRAM DIMM	x1
DIMM 2	8 MB, 16 MB, 32 MB, 64 MB, 128 MB, 256 MB 168-pin 3.3V 66 MHz or 100 MHz PC SDRAM DIMM	x1
DIMM 3	8 MB, 16 MB, 32 MB, 64 MB, 128 MB, 256 MB 168-pin 3.3V 66 MHz or 100 MHz PC SDRAM DIMM	x1

BIOS Settings

The CMOS Setup Utility is a program that allows you to modify basic system configuration that is stored on the motherboard's BIOS chip. For the motherboard to function properly, this information must be intact and accurate. Normally, you will not need to use this utility once your system is set up.

To change BIOS settings in CMOS



Do not change the BIOS settings unless you have a good understanding of how they work and know the effects of any changes you make. Incorrect BIOS settings may cause your system to stop functioning.

1. Switch on your computer.
2. During the memory check, press the <Delete> key.
The CMOS Setup Utility menu similar to Figure 4-1 on page 4-3 appears.
If you did not respond in time, restart your system by pressing the Reset button on your computer.
3. To select a menu option, use the arrow keys to browse to the desired option and then press <Enter>.
4. After you have changed the BIOS settings, press <F10> to save the settings and exit the CMOS Setup Utility.
Your system continues to start up.

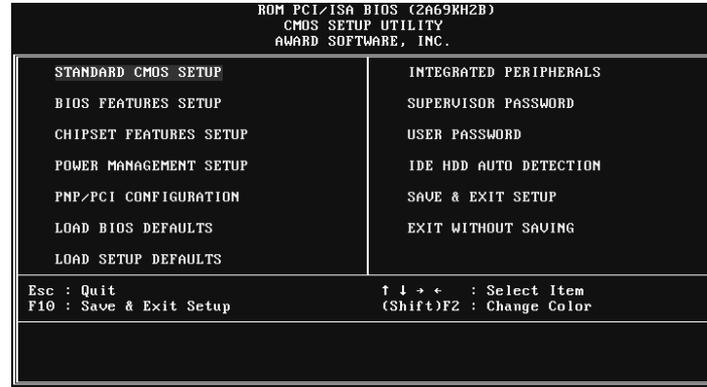


Figure 4-1: The CMOS Setup Utility menu.

The CMOS Setup Utility Menu

Selecting an option in the CMOS Setup Utility menu will display the corresponding screen or perform a function (for example, Load BIOS Defaults). Table 4-2 lists the descriptions of the menu options.

Table 4-2: The CMOS Setup Utility menu options.

This Option	Allows You To Do This
Standard CMOS Setup	Set the date, time, disk drive, video display and error handling.
BIOS Features Setup	Set the system customization features and video display settings.
Chipset Features Setup	Specify chipset settings, memory configuration feature for special add-on cards and VGA memory configuration.
Power Management Setup	Set up the power management features.
PnP/PCI Configuration	Specify the system resource settings and other settings for the PCI slots.
Load BIOS Defaults	Set the system to load the optimized settings from the BIOS ROM.
Load Setup Defaults	Set the system to load the minimum settings from the BIOS ROM.
Integrated Peripherals	Specify the settings for IDE channels and onboard ports.
Supervisor Password	Change, set, or disable supervisor password. This allows you to limit access to the system and setup, or to limit access to the setup only.
User Password	Change, set, or disable user password. This allows you to limit access to the system and setup, or to limit access to the setup only.

Table 4-2: The CMOS Setup Utility menu options.

This Option	Allows You To Do This
IDE HDD Auto Detection	Automatically detect and configure IDE hard disk drives (HDD) in your system.
Save & Exit Setup	Exit setup and save any changes you have made.
Exit Without Saving	Exit setup without saving any changes.

This menu also provides four commands, Quit, Save & Exit Setup, Select Item, and Change Color. Their descriptions are listed in Table 4-3 on the right.

Table 4-3: The CMOS Setup Utility menu commands.

This Command	Allows You To Do This
Quit	Close the Setup utility when you press the <Esc> key.
Save & Exit Setup	Save the current settings and close the Setup utility when you press the <F10> key.
Select Item	Use the arrow keys on your keyboard to move around the screen and select a menu item. The selected item will be highlighted.
Change Color	Change the Setup utility's color scheme by pressing <Shift+F2>.

The following sections provide detailed information on the setup screens and options in the CMOS Setup utility.



PU: the <Page Up> key,
PD: the <Page Down> key,
+: the plus <+> key,
-: the minus <-> key.

Standard CMOS Setup

Display this screen if you want to set the date and time of the system clock. This screen also allows you to configure your hard disks, floppy disks, video display and error handling procedure.

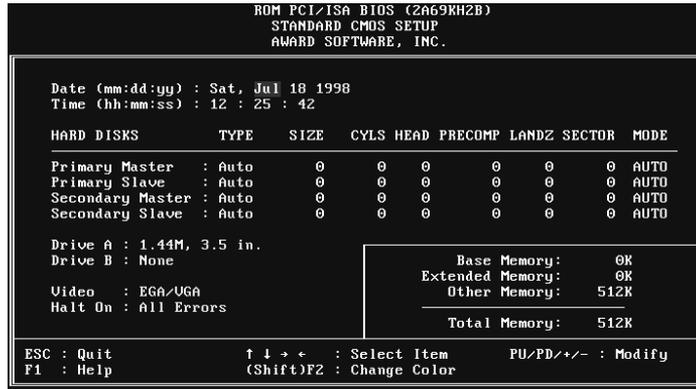


Figure 4-2: The Standard CMOS Setup screen.

Table 4-4: The Standard CMOS Setup Screen items.

Item	Description
Date	The date format of the system clock is <day>, <month> <date> <year>. To display the calendar, press <F3>.
Time	The time format of the system clock, a 24-hour clock, is <hour>:<minute>:<second>. For example, 5:00 P.M. should be entered as 17:00:00.

Table 4-4: The Standard CMOS Setup Screen items.

Item	Description
<p data-bbox="550 493 662 563">Hard Disks Type and Parameters</p>	<p data-bbox="699 174 1481 232">Identifies the types of hard disk drives that have been installed in your system. There are 46 predefined types and a user-defined type.</p> <p data-bbox="699 273 1533 362">Warning: The information entered in this Hard Disk table must match the actual specifications of your hard disk. Otherwise, your hard disk will not work properly.</p> <p data-bbox="699 402 1541 524">For IDE hard disk drives, set the entries to <i>Auto</i> under TYPE and the system will configure the hard disk drives automatically when it is switched on. You can also use the IDE HDD Auto Detection option in the Setup utility menu to do this.</p> <p data-bbox="699 564 1501 622">If your hard disk type is listed among the 46 predefined types, select the corresponding type for your hard disk.</p> <p data-bbox="699 630 1541 781">Otherwise, select <i>User</i> under the TYPE column to define the hard disk type manually. Enter the details of the hard disk in the various columns, for example, SIZE and CYLS, directly from the keyboard and press <Enter>. If you are not sure of these details, refer to your hard disk drive's documentation.</p> <p data-bbox="699 822 1528 880">If no hard disk drive has been installed or if your hard disk drive is a SCSI one, select <i>None</i> under TYPE and press <Enter>.</p>

Table 4-4: The Standard CMOS Setup Screen items.

Item	Description
Large Hard Disk Modes	<p>The last drive parameter, MODE, has four available settings: <i>Normal</i>, <i>LBA</i>, <i>Large</i>, and <i>Auto</i>. These settings are for IDE hard disks only.</p> <p><i>Normal</i>: For IDE hard disks of 528 MB or less.</p> <p><i>LBA</i>: Logical Block Addressing, the current standard access mode for large IDE hard disk drives. It allows the use of hard disks larger than 528 MB by causing the IDE controller to translate between the logical address it creates and the hard disk's actual physical address. The maximum drive size supported is 8.4 GB.</p> <p><i>Large</i>: For 1 GB or smaller drives with more than 1024 cylinders and no LBA support. This access mode causes the operating system to treat the drive as if it has fewer than 1024 cylinders by halving the cylinder total and doubling the number of heads.</p>
Drive A, Drive B	Specifies the types of floppy disk drive A or drive B that has been installed in the system.
Video	Selects the type(s) of adapter used for the primary system monitor. This setting must match those of your video display card and monitor. Although secondary monitors are supported, you do not have to configure them in CMOS setup.
Error halt	Specifies when the system stops if an error occurs during system startup.

Table 4-4: The Standard CMOS Setup Screen items.

Item	Description
Memory	<p>This item is for display only. The value is automatically determined by POST (Power On Self Test) of the BIOS.</p> <p>Base Memory refers to the amount of base (or conventional) memory installed in the system. The value of the base memory is typically 512 K for systems with 512 K memory installed on the motherboard, or 640 K for systems with 640 K or more memory installed on the motherboard.</p> <p>Extended Memory refers to the amount of memory located above 1 MB in the CPU's memory address map.</p>

BIOS Features Setup

Display this screen if you want to configure system features such as virus warning, boot sequence, and security option.

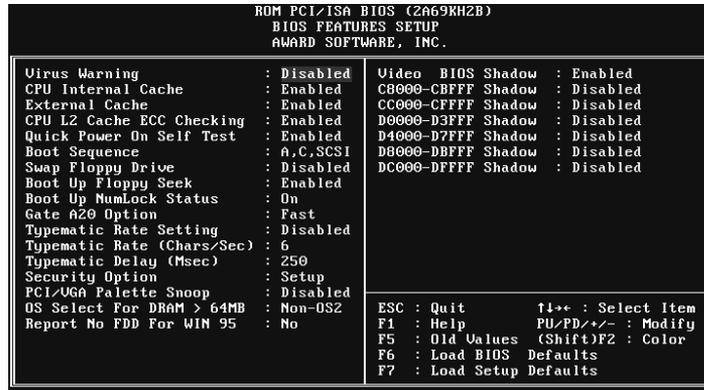


Figure 4-3: The BIOS Features Setup screen.

Table 4-5: The BIOS Features Setup Screen items.

Option	Description
Virus Warning	<p>When this is enabled, the BIOS will monitor the boot sector and partition table of the primary hard disk drive and warn of any attempt to write to it. If an attempt is detected, the BIOS will halt the system and the following warning message will appear:</p> <div data-bbox="758 311 1343 423" style="border: 1px solid black; padding: 5px; text-align: center;"> <p>!WARNING! Disk boot sector is to be modified Type "Y" to accept write or "N" to abort write Award Software, Inc.</p> </div> <p>In this situation, restart your system from a virus-free bootable floppy disk and then use an anti-virus utility located on the floppy disk to check the hard disk. The default setting is <i>Disabled</i>.</p>
CPU Internal Cache	Enables CPU internal cache to speed up memory access.
External Cache	Enables CPU secondary cache to speed up memory access.
CPU L2 Cache ECC Checking	<p>Enables the CPU's ECC function. The default is <i>Enabled</i>.</p> <p>Note: Some Pentium-II processors do not support the ECC function. In such cases, this option will be bypassed.</p>
Quick Power On Self Test	If this is enabled, BIOS will shorten or skip some check items during Power On Self Test (POST) to speed up the process.
Boot Sequence	Determines which drive the computer searches first for the disk operating system. Default setting is: A, C, SCSI. BIOS also supports system bootup from CD-ROM drive or SCSI hard disk drive.

Table 4-5: The BIOS Features Setup Screen items.

Option	Description
Swap Floppy Drive	When this is enabled, the BIOS will swap floppy drive assignments so that Drive A: will function as Drive B: and Drive B: as Drive A:.
Boot Up Floppy Seek	When this is enabled, the BIOS will determine whether the installed floppy disk is 40-track or 80-track.
Boot Up NumLock Status	When this is enabled, BIOS turns on Num Lock when the system is switched on.
Gate A20 Option	Allows you to specify how the gate A20 is handled. The gate A20 is a device used to address memory above 1 MB. Initially, the gate A20 was handled via a pin on the keyboard. Today, while keyboards still provide this support, it is more common and much faster for the motherboard's chipset to provide support for gate A20. For the chipset to do this, set this item to <i>Fast</i> .
Typematic Rate Setting	Determines if the typematic rate is to be used. When this is disabled, holding down a key on your keyboard will generate only one instance of the corresponding character or movement (for arrow keys). When this is enabled, holding down a key will generate the character or movement repeatedly. For example, you can use such a feature to accelerate cursor movements with the arrow keys.
Typematic Rate (Chars/Sec)	When the Typematic Rate Setting (see description on previous page) is enabled, this item allows you to specify the speed at which the character or movement is to be repeated when you hold down a key.

Table 4-5: The BIOS Features Setup Screen items.

Option	Description
Typematic Delay (Msec)	When the Typematic Rate Setting (see description on previous page) is enabled, this item allows you to specify the amount of time that elapses before repetition of the character or movement takes place when you hold down a key.
Security Option	<p>Allows you to limit access to the System and Setup, or just to Setup. If you select <i>System</i>, the System will not boot up and access to Setup will be denied unless the correct password is entered at the prompt. If you select <i>Setup</i>, the System will boot up. However, access to Setup will be denied unless the correct password is entered at the prompt.</p> <p>Note: The password is created in the Supervisor Password and/or User Password screen(s) in the CMOS Setup menu. If no password is set, the system will ignore this Security Option.</p>
PCI/VGA Palette Snoop	Must be enabled if there is a MPEG ISA card installed in the system, and disabled if there is no MPEG ISA card installed in the system.
OS Select For DRAM > 64 MB	If you are using the OS/2 operating system, and your system has more than 64 MB of DRAM installed, selecting <i>OS/2</i> for this item allows you to access the memory that is over 64 MB in OS/2.
Report No FDD for Win95	If there is no floppy disk drive installed in your system, enabling this item allows the FDD controller IRQ to be released and used by other devices in the system. This item is also needed for passing the HCT test. Otherwise, if you have no floppy disk drive and you run HCT, HCT will try to disable the IRQ and being unable to do that, HCT will report error.

Table 4-5: The BIOS Features Setup Screen items.

Option	Description
Video BIOS Shadow	Determines whether video display card BIOS will be copied into the system DRAM to increase display speed and improve system performance. The default setting is <i>Enabled</i> .
C8000-CBFFF Shadow/ DC000-DFFFF Shadow	C8000-CBFFF Shadow to DC000-DFFFF Shadow are address ranges for shadowing other expansion card ROMs. This item allows you to specify whether other expansion card ROMs will be copied into the system DRAM. If there are any expansion cards with ROMs installed in your system and you want the system to shadow them specifically, you need to know the address range they use. The default setting for all these address ranges is <i>Disabled</i> .

Chipset Features Setup

The options on this screen are either set to the optimized values or set automatically when auto configuration is active.

Unless you have a good understanding of the effects of changing chipset feature settings, avoid making any changes to the chipset settings (except the memory hole and the AGP aperture size).

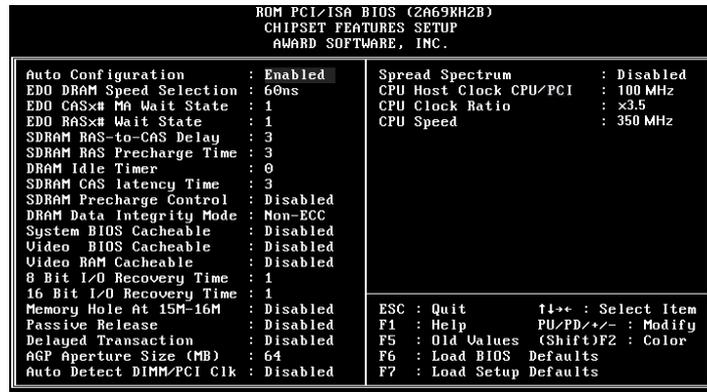


Figure 4-4: The Chipset Features Setup screen.

Table 4-6: The Chipset Features Setup Screen items.

Item	Description
Auto Configuration	If this is enabled, the system will select and apply the pre-determined optimal chipset parameters. If it is disabled, chipset parameters revert to CMOS setup information.
EDO DRAM Speed Selection	Sets the EDO DRAM Read/Write timings that the system uses. The speed required depends on how your system was designed and its memory configuration. Select either <i>50 ns</i> or <i>60 ns</i> as the DRAM Speed. When Auto Configuration is disabled, this item will not be displayed.
EDO CAS# MA Wait State	Sets the EDO DRAM CAS MA (memory address) bus timing control type. Select either 1 or 2. CAS stands for Column Address Strobe.
EDO RAS# MA Wait State	Sets the EDO DRAM RAS MA (memory address) bus timing control type. Select either 1 or 2. RAS stands for Row Address Strobe.
SDRAM RAS-to-CAS Delay	When SDRAM is refreshed, both rows and columns are addressed separately. This item allows you to specify the timing of the transition from RAS to CAS. The setting can be <i>3 CLKs</i> for Slow or <i>2 CLKs</i> for Fast.
SDRAM RAS Precharge Time	Sets the SDRAM RAS Precharge Timing. SDRAM must continually be refreshed or it will lose its data. Normally, DRAM is refreshed entirely as the result of a single request. This item allows you to specify the number of CPU clocks allocated for RAS to accumulate its charge before the SDRAM is refreshed. If the amount of time specified is insufficient, SDRAM refresh may be incomplete and data may be lost. The setting can be <i>3 CLKs</i> for Slow or <i>2 CLKs</i> for Fast.

Table 4-6: The Chipset Features Setup Screen items.

Item	Description
DRAM Idle Timer	Sets the number of CPU clocks allocated for the DRAM controller to remain in the idle state before precharging all pages (blocks of memory). This field is used for both EDO and SDRAM memory.
SDRAM CAS Latency Time	Sets the CAS latency time to HCLKS of 2 or 3. The value for this setting should have been selected already based on the specifications of the installed SDRAM. Do not change it unless the installed SDRAM or the CPU have changed.
SDRAM Precharge Control	Specifies the action to be taken when a page miss occurs (for SDRAM only). If this item is enabled, only the bank targeted by the page miss cycle will be precharged. If this item is disabled, all pages will be precharged.
DRAM Data Integrity Mode	Sets DRAM Data Integrity mode to ECC (Error Checking and Correcting) or Non-ECC. The ECC setting allows detection of single-bit and multiple-bit errors, and recovery of single-bit errors. The Non-ECC setting enables byte-wide write capability but has no provision for protecting data integrity in the DRAM array.
System BIOS Cacheable	Specifies the system BIOS F000-FFFF areas as cacheable or non-cacheable. The <i>Enabled</i> setting yields better performance but poses the danger of system errors if programs are written to this memory area.
Video BIOS Cacheable	Specifies the video BIOS C000-C7FF areas as cacheable or non-cacheable. The <i>Enabled</i> setting yields better performance but poses the danger of system errors if programs are written to this memory area.

Table 4-6: The Chipset Features Setup Screen items.

Item	Description
Video RAM Cacheable	<p>This is a new cache technology for the CPU's video memory. By caching the display data, the display speed can be greatly improved.</p> <p>Warning: If your display card cannot support this feature, you must disable this item. Otherwise, your system may not boot up.</p>
8-Bit I/O Recovery Time	<p>This is the length of time, measured in CPU clocks, which the system will delay after the completion of an 8-bit input/output (I/O) request. This delay is necessary for the CPU to recover from completing the I/O request. This item allows you to specify the amount of recovery time allowed for 8-bit I/O.</p> <p>The setting can be <i>NA</i>, or <i>1 to 8 CPU clocks</i>.</p>
16-Bit I/O Recovery Time	<p>Allows you to specify the amount of recovery time allowed for 16-bit I/O requests. The setting can be <i>NA</i>, or <i>1 to 4 CPU clocks</i>.</p>
Memory Hole at 15M-16M	<p>Some special add-on cards require a 1 MB address space between 15 MB and 16 MB. Verify with the documentation that comes with the card(s) to see if you need this address space.</p>
Passive Release	<p>If this is enabled, the chipset will provide a programmable passive release mechanism to meet the required ISA master latencies.</p>
Delayed Transaction	<p>Since PCI specification version 2.1 requires much tighter controls on target and master latency, PCI cycles to or from ISA typically take longer. If this item is enabled, the chipset will provide a programmable delayed completion mechanism to meet the required target latencies.</p>

Table 4-6: The Chipset Features Setup Screen items.

Item	Description
AGP Aperture Size (MB)	Specifies the maximum amount, in MB, of system memory an AGP display card can use to store 3D texture mapping data. The larger the aperture, the better the performance of the card's 3D function. The settings range from 4 MB to 256 MB.
Auto Detect DIMM/PCI Clock	When this item is enabled, the system automatically detects and closes clock signals to empty DIMM/PCI slots to reduce EMI.
Spread Spectrum	When this item is enabled, EMI is reduced.
CPU Host Clock (CPU/PCI)	When the JP37 jumper is set to the Auto mode, you can set the CPU clock speed using this item. Otherwise, this item cannot be used. For 66 MHz-based processors, the options are 50 MHz, 66 MHz, 75 MHz, and 83 MHz. For 100 MHz-based processors, the options are 100 MHz, 103 MHz, and 112 MHz. For instructions on how to set the JP37 jumper, see "To configure the CPU bus clock multiplier" on page 3-3.
CPU Clock Ratio	When the JP37 jumper is set to the Auto mode, you can set the CPU clock ratio using this item. Otherwise, this item cannot be used. The setting can be between 2 to 5. For details on how to set the JP37 jumper, see "To configure the CPU bus clock multiplier" on page 3-3.
CPU Speed	The system calculates and displays the CPU Speed based on the CPU clock speed and CPU clock ratio specified above.

Power Management Setup

Display this screen if you want to set up the power management features.

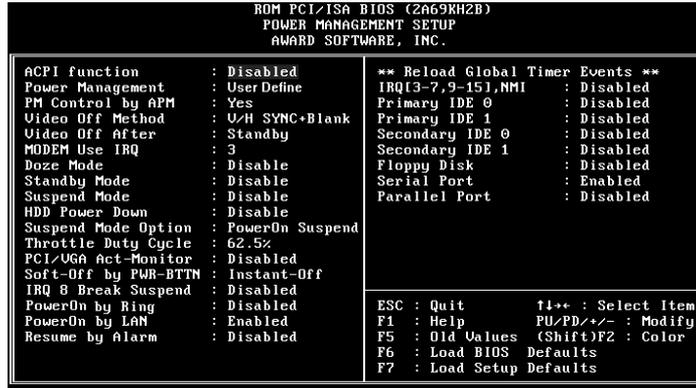


Figure 4-5: The Power Management Setup screen.

Table 4-7: The Power Management Setup Screen items.

Item	Description
ACPI Function	This item defines whether the Advanced Configuration Power Interface (ACPI) is to be supported.
Power Management	This item defines the current power management function. <i>Max Saving</i> puts the system into power saving mode after a brief period of system idle time. <i>Min Saving</i> is similar to Max Saving except the period of the system idle time is longer. <i>Disabled</i> disables the power saving feature. <i>User Defined</i> allows you to set power saving options according to your preference.

Table 4-7: The Power Management Setup Screen items.

Item	Description
PM Control by APM	<p>If this item is set to <i>Yes</i>, the Advanced Power Management (APM) feature in Microsoft Windows will control power management operation.</p> <p>The available Power Management (PM) modes include <i>Doze</i>, <i>Standby</i> or <i>Suspend</i>.</p>
Video Off Method	<p>This item defines when to activate the Video Off feature for monitor power management. The available settings are <i>V/H SYNC+Blank</i> (default), <i>Blank Screen</i> and <i>DPMS</i>.</p> <p><i>V/H SYNC+Blank</i>: the screen appears blank and both vertical and horizontal scanning is turned off.</p> <p><i>Blank Only</i>: the screen appears blank.</p> <p><i>DPMS</i>: this stands for Display Power Management System. Use this setting only if your monitor supports this feature.</p>
Video Off After	<p>This item defines when to activate the Video Off feature for monitor power management. The available settings are <i>N/A</i>, <i>Doze</i>, <i>Standby</i> and <i>Suspend</i>.</p> <p><i>Suspend</i>: the video display gets turned off after system enters Suspend mode.</p> <p><i>Standby</i>: the video display gets turned off after system enters Standby mode.</p> <p><i>N/A</i>: there will be no display shut off.</p>
MODEM Use IRQ	<p>This item defines the IRQ line that the modem can use.</p> <p>The available settings are 1, 3, 4, 5, 7, 9, 10, 11, N/A.</p>

Table 4-7: The Power Management Setup Screen items.

Item	Description
Doze Mode	When this item is enabled, the CPU clock will run at a slower speed after the preset period of system idle time, while all other devices operate at full speed.
Standby Mode	When this item is enabled, the fixed disk drive and video display will shut off after the preset period of system idle time.
Suspend Mode	When this item is enabled, all devices, except the CPU, will shut off after the preset period of system idle time.
HDD Power Down	This item defines the continuous HDD (Hard Disk Drive) idle time before the HDD enters power saving mode (motor off). The available settings are between 1 min to 15 min or <i>Disabled</i> .
Suspend Mode Option	<p>This item determines what the BIOS will do when the system enters into Suspend mode. The default option is <i>PowerOn Suspend</i>. If this option is selected, the system will turn off all power and the CPU will enter into Suspend mode. You can resume the system with predetermined actions, such as keyboard or mouse movements. If you select the option <i>Suspend to Disk</i>, all the memory information and display information will be saved to the hard disk before the system shuts down. The next time the power is switched on, the system will retrieve the system information from the hard disk and go back to its original state.</p> <p>Note: To use the <i>Suspend to Disk</i> function, you need a utility to set up the hard disk. Also, this function will only work with certain types of the display card.</p>

Table 4-7: The Power Management Setup Screen items.

Item	Description
Throttle Duty Cycle	This item defines the duty cycle for the clock control thermal throttling mode. The duty cycle indicates the percentage of time while in the thermal throttle mode. The available settings are between 12.5% and 87.5%.
PCI/VGA Active Monitor	If this item is enabled, the VGA activity event will be monitored to reload the global timer.
Soft-Off by PWR-BTTN (This feature is available for ATX power only.)	When this item is set to <i>Instant-Off</i> , the ATX switch functions as a normal system power-off button when pressed for less than 4 seconds. The setting of <i>Delay 4 Sec</i> allows the button to have a dual function, whereby pressing the button for less than 4 seconds will place the system in Suspend mode, and pressing the button for more than 4 seconds will shut the system off.
IRQ 8 Break Suspend	<p>You can enable or disable the monitoring of IRQ8 (the Real Time Clock) so that it does not wake the system from Suspend mode.</p> <p>** Reload Global Timer Events **</p> <p>If any of these items is enabled, that particular system activity event will be monitored to reload the global timer.</p> <p>These items include IRQ[3-7, 9-15], NMI, Primary IDE 0/1, Secondary IDE 0/1, Floppy Disk, Serial Port and Parallel Port.</p>
PowerOn by Ring	When this item is enabled, the system will resume through the activation of the modem ring.

Table 4-7: The Power Management Setup Screen items.

Item	Description
PowerOn by LAN (Wake-On-LAN)	This item defines if the system will resume by activity of LAN. If this feature is enabled, the system will switch itself from power-off back to the power-on state when there is activity through the LAN. Notes: M003 supports Wake-On-LAN function with Intel LAN cards only. PowerOn by Ring must be enabled before this item can be enabled.
Resume by Alarm	When this item is enabled, you can set the system to resume at a certain date and time. This feature is available for ATX power only.

PnP/PCI Configuration Setup

Display this screen if you want to specify the system resource settings and other settings for the PCI slots.

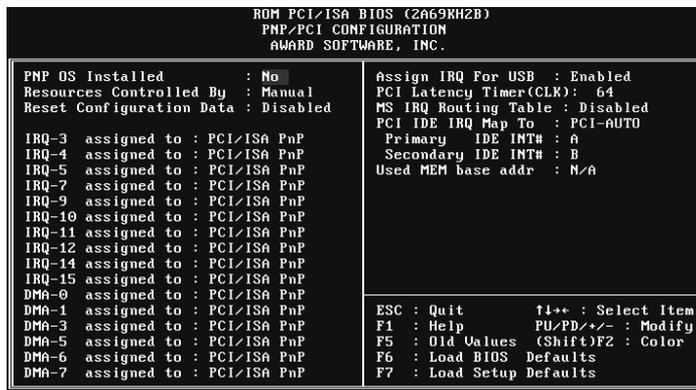


Figure 4-6: The PnP/PCI Configuration screen.

Table 4-8: The PnP/PCI Configuration Screen items.

Item	Description
PnP OS Installed	When this item is set to Yes, it will allow the PnP OS (Windows 95) to control the system resources except PCI and PnP boot devices. Default setting is <i>No</i> .
Resources Controlled By	The Award Plug and Play BIOS has the capability to automatically configure all boot and PnP compatible devices. However, this capability is not available unless you are using a PnP operating system such as Windows 95.
Reset Configuration Data	This item defines whether to reset the configuration data.
IRQ 3/4/5/7/9/10/ 11/12/14/15, assigned to	These items define the IRQ lines assigned to the ISA buses. It is not available for PCI slots. The available settings are Legacy ISA and PCI/ISA PnP.
DMA 0/1/3/5/6/7 assigned to	These items define the DMA assigned to the ISA buses. It is not available for PCI slots. The available settings are Legacy ISA and PCI/ISA PnP.
Assign IRQ for USB	Specifies whether to assign an IRQ line to the on-board USB controller. Since the on-board controller is always enabled , if no IRQ line is assigned to it, an error will be reflected on the system device under Windows 95 Device Manager.

Table 4-8: The PnP/PCI Configuration Screen items.

Item	Description
PCI Latency Timer	<p>The PCI Latency Timer is used to ensure that the PCI agents are given a minimum amount of the system resource.</p> <p>The number of clocks programmed in the PCI Latency Timer represents the guaranteed time slice allocated to the 440BX, after which it must complete the current data transfer phase and surrender the bus as soon as its bus grant is removed.</p> <p>The default setting is 64 PCI <i>clocks</i>.</p>
MS IRQ Routing Table	<p>Specifies whether the BIOS IRQ Routing Table is enabled or disabled.</p>
PCI IDE IRQ Map to	<p>This item defines the type of IDE disk controller in use in your system. By default, Setup assumes that your controller is an ISA device rather than a PCI controller.</p> <p>If you have equipped your system with a PCI controller, changing this setting allows you to specify which slot has the controller and which PCI interrupt (A, B, C or D) is associated with the connected hard drives.</p> <p>Remember that this setting refers to the hard disk drive itself, rather than individual partitions. Since each IDE controller supports two separate hard disk drives, you can select the INT# for each. Note that the Primary has a lower interrupt than the Secondary as described in “Slot x Using INT#” above.</p> <p>Selecting the PCI Auto setting allows the system to automatically determine the configuration of your IDE disk system.</p>

Table 4-8: The PnP/PCI Configuration Screen items.

Item	Description
Used MEM base addr	This item is used to select a base address for the memory area used by any peripheral that requires high memory. The available settings are C800, CC00, D000, D400, D800, DC00 and N/A.
Used MEM Length	This item is used to select a length for the memory area specified in the previous item. This item does not appear if no base address is specified. The available settings are 8K, 16K, 32K and 64K.

Integrated Peripherals

Display this screen if you want to configure the IDE and floppy controllers, and other onboard ports. You can also configure the USB (USB Keyboard Support) and infrared (UR2 Mode and UR2 Duplex Mode) features.

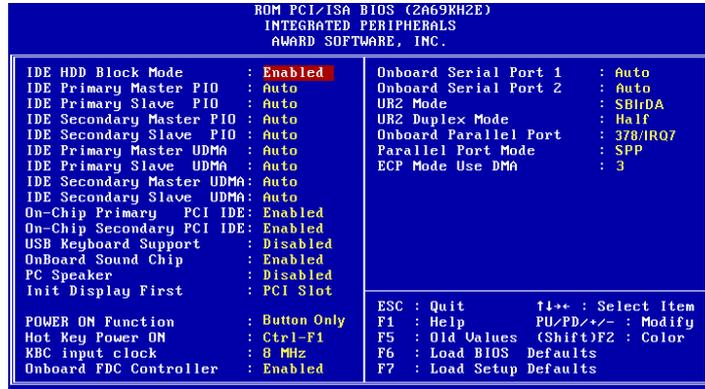


Figure 4-7: The Integrated Peripherals screen.

Table 4-9: The Integrated Peripherals Screen items.

Item	Description
IDE HDD Block Mode	If your IDE Hard Disk supports block mode, you can enable this item to speed up the hard disk drive (HDD) access time. Otherwise, disable this item to avoid HDD access error.
IDE Primary Master PIO	In this item, there are five settings (0, 1, 2, 3, and 4) defined for the manual mode and one setting (<i>Auto</i>) for the automatic mode. The default setting is <i>Auto</i> .
IDE Primary Slave PIO	In this item, there are five settings (0, 1, 2, 3, and 4) defined for the manual mode and one setting (<i>Auto</i>) for the automatic mode. The default setting is <i>Auto</i> .
IDE Secondary Master PIO	In this item, there are five settings (0, 1, 2, 3, and 4) defined for the manual mode and one setting (<i>Auto</i>) for the automatic mode. The default setting is <i>Auto</i> .
IDE Secondary Slave PIO	In this item, there are five settings (0, 1, 2, 3, and 4) defined for the manual mode and one setting (<i>Auto</i>) for the automatic mode. The default setting is <i>Auto</i> .
IDE Primary Master UDMA	UDMA stands for Ultra DMA. On this motherboard, Intel PIIX4 improves IDE transfer rate using Bus Master UltraDMA/33 IDE which can handle data transfer up to 33 MB/sec. The setting can be <i>Disabled</i> , <i>Enabled</i> or <i>Auto</i> . The default setting is <i>Auto</i> . Note: To use this feature, your hard disk drive must also support UDMA.

Table 4-9: The Integrated Peripherals Screen items.

Item	Description
IDE Primary Slave UDMA	On this motherboard, Intel PIIX4 improves IDE transfer rate using Bus Master UltraDMA/33 IDE which can handle data transfer up to 33 MB/sec. The setting can be <i>Disabled</i> , <i>Enabled</i> or <i>Auto</i> . The default setting is <i>Auto</i> . Note: To use this feature, your hard disk drive must also support UDMA.
IDE Secondary Master UDMA	On this motherboard, Intel PIIX4 improves IDE transfer rate using Bus Master UltraDMA/33 IDE which can handle data transfer up to 33 MB/sec. The setting can be <i>Disabled</i> , <i>Enabled</i> or <i>Auto</i> . The default setting is <i>Auto</i> . Note: To use this feature, your hard disk drive must also support UDMA.
IDE Secondary Slave UDMA	On this motherboard, Intel PIIX4 improves IDE transfer rate using Bus Master UltraDMA/33 IDE which can handle data transfer up to 33 MB/sec. The setting can be <i>Disabled</i> , <i>Enabled</i> or <i>Auto</i> . The default setting is <i>Auto</i> . Note: To use this feature, your hard disk drive must also support UDMA.
On-Chip Primary PCI IDE	Your system includes two built-in IDE controllers, the primary and the secondary, both of which operate on the PCI bus. This item allows you to enable or disable the primary controller. If you add a higher-performance or specialized controller, you may choose to disable the primary controller.
On-Chip Secondary PCI IDE	Allows you to enable or disable the secondary controller. If you add a higher-performance or specialized controller, you may choose to disable the secondary controller.
USB Keyboard Support	Enables or disables the USB keyboard support.

Table 4-9: The Integrated Peripherals Screen items.

Item	Description
OnBoard Sound Chip	Enables or disables the onboard sound chip.
PC Speaker	Specifies whether the PC Speaker signal should be routed to the PC Speaker input on the sound chip.
Initial Display First	Allows you to select either <i>PCI</i> or <i>AGP</i> as the initial device when the system powers up.
POWER ON Function	<p>Specifies how you want to resume the system's power. The setting can be <i>BUTTON ONLY</i>, <i>HOT-KEY</i>, <i>PS/2 MOUSE</i> or <i>BOTH</i>.</p> <p><i>BUTTON ONLY</i>: Resume the system's power only through the Power switch.</p> <p><i>HOT-KEY</i>: Resume the system's power through the Power switch and the hot-key that you set. Set the hot-key using <Ctrl> and any key from <F1> to <F12>, for example, <Ctrl><F1>.</p> <p><i>PS/2 MOUSE</i>: Resume the system's power through the Power switch and the PS/2 Mouse.</p> <p><i>BOTH</i>: Resume the system's power through the Power switch, hot-key or PS/2 Mouse.</p> <p>When <i>PS/2 MOUSE</i> or <i>HOT-KEY</i> is selected, you have to set the JP38 jumper to the corresponding setting (see Table 3-7 on page 3-8). This function does not support USB keyboard, USB Mouse and Serial Mouse. Note: Ensure PowerOn by Ring is enabled before enabling PowerOn by mouse or keyboard (see Table 4-7 on page 4-18).</p>

Table 4-9: The Integrated Peripherals Screen items.

Item	Description
KBC Input Clock	Sets the input clock to onboard keyboard controller (KBC). The setting can be 8 MHz or 12 MHz.
Onboard FDC Controller	Specifies the onboard floppy disk controller (FDC). This setting allows you to connect your floppy disk drives to the onboard floppy connector. If you have a separate control card, select <i>Disabled</i> for this item.
Onboard Serial Port 1	Sets the onboard serial port 1 to 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3, Auto or Disabled.
Onboard Serial Port 2	Sets the onboard serial port 2 as 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3, Auto or Disabled.
UR2 Mode	The default setting is <i>SBIrDA</i> . All commands received by the Creative infrared receiver will be re-routed to the COM2 serial port. Thus, the COM2 serial port will not be available when the Creative infrared receiver is in use. To use the COM2 port, disable the infrared receiver by changing this setting to <i>Standard</i> .
UR2 Duplex Mode	Specifies whether the onboard infrared transfer mode is full duplex or half duplex. The default setting is <i>Full</i> for full duplex.
Onboard Parallel Port	Sets the onboard parallel port address to 378H, 278H, 3BCH or <i>Disabled</i> .
Parallel Port Mode	Specifies the onboard parallel port mode. The settings are <i>SPP</i> (Standard Parallel Port), <i>EPP</i> (Enhanced Parallel Port), <i>ECP</i> (Extended Capabilities Port), and <i>EPP+ECP</i> .

Table 4-9: The Integrated Peripherals Screen items.

Item	Description
ECP Mode Use DMA	Specifies the DMA (Direct Memory Access) channel when ECP device is in use. The settings are <i>DMA 1</i> and <i>DMA 3</i> . This item will not be displayed when SPP or EPP printer mode is selected.

Password Setting

This section describes the two access modes, Supervisor Password and User Password, that can be configured to restrict access to your CMOS settings.



Retain a record of your password in a safe place. If you forget the password, the only way to access the system is to clear the CMOS memory. For details, see the section, “To clear the CMOS” on page 3-6.

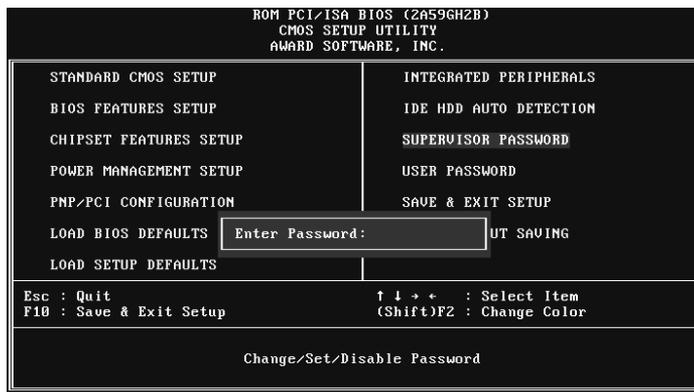


Figure 4-8: Setting password to the CMOS Setup utility.

Table 4-10: The Password Setting options.

Item	Description
Supervisor Password and User Password	<p>The options on the Password screen menu make it possible to restrict access to the Setup program by enabling you to set passwords for two different access modes: Supervisor mode and User mode.</p> <p>Supervisor mode has full access to the Setup options, whereas User mode has restricted access to the Setup options. By setting separate Supervisor and User password, a system supervisor can restrict who can change critical Setup values.</p>
Enter Password	<p>Type a password, up to eight characters long, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be prompted to confirm the password. Type the password again and press <Enter>. You can press <Esc> to abort the selection and skip entering a password.</p> <p>To disable a password, just press <Enter> when you are prompted to enter the password. A message will confirm that the password is disabled. Once the password is disabled, the system will reboot and you can enter Setup menu freely.</p>
Password Disable	<p>If you selected System at Security Option of BIOS Features Setup Menu, you will be prompted for the password every time the system is rebooted or any time you try to enter the Setup program. If you selected Setup at Security Option of BIOS Features Setup Menu, you will be prompted only when you try to enter Setup.</p>

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