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If you do not properly set the motherboard settings, causing the motherboard to malfunction or fail, we cannot guarantee any responsibility.

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# TH7-RAID Motherboard User's Manual

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# Chapter 1. Introduction

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## 1-1. Features

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The ABIT TH7-RAID Motherboard is designed for use with Intel's latest generation of Pentium 4 processors. Based on the new Intel 850 chipset, the ABIT TH7-RAID supports 400MHz system bus. The bandwidth is now 3.2GB/s between CPU to MCH. The Intel Pentium 4 processors feature the new NetBurst Micro-architecture, which enriches the user experience in Net surfing and Multimedia activities.

This TH7-RAID motherboard utilizes the latest standard in the memory technology – Direct Rambus. The Intel 850 chipset supports dual Rambus channels. The bandwidth is now 3.2GB/s between MCH to RAMBUS. It supports PC800/PC600 RDRAM up to 2GB max.

The TH7-RAID has a built in ATA/100 function. This means that it can process data to and from the HDD faster. ATA/100 is the newest standard for IDE devices. It improves on existing ATA/66 technology by boosting performance and data integrity. This new high-speed interface dramatically increases the burst data transfer rate from 66.6 Mbytes/sec to 100Mbytes/sec. The result is maximum disc performance using the current PCI local bus environment. On the TH7-RAID all four IDE ports support up to ATA/100.

TH7-RAID's built-in HighPoint HPT370 IDE controller allows for RAID, which improves both HDD speed and data security. RAID 0 (striping) duplicates data structures on two or more drives in order to boost data throughput, while RAID 1 (mirroring) duplicates data structures in order to improve data integrity. RAID 0 (striping) and RAID 1 (mirroring) can also be implemented together – this requires four hard drives.

The 850 chipset supports the newer AGP 4x format. Because the slot is restricted to 1.5v only newer devices are compatible. In addition to the AGP slot, the TH7-RAID also supports five PCI slots and one CNR slot. In addition, the TH7-RAID has an integrated AC'97 Digital Audio Controller. This means you can enjoy high-quality audio without the added expense of a sound card

TH7-RAID gives users enormous flexibility through ABIT's SoftMenu II with plenty clock frequency selections. The user is able to alter both the FSB speed and the multiplier to get the CPU processing speed of your choice.

The TH7-RAID has built-in hardware monitoring functions which monitors and protects your computer, insuring a safe computing environment.

The TH7-RAID motherboard provides high performance suitable for servers and other high-end users. It also meets future multimedia requirements for desktop systems.

## 1-2. Specifications

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### 1. CPU

- Supports Intel Pentium® 4 socket 423 processor
- 400MHz System Data Bus

### 2. Chipset

- Intel 850 (ICH2) chipset
- Supports 400MHz (Front Side Bus)
- Supports AGP 4X 1.5V device only
- Supports Advanced Configuration and Power Management Interface (ACPI)
- Supports Ultra DMA 100/66/33 mode

### 3. Ultra DMA 100/RAID

- HighPoint HPT370 IDE controller
- Supports Ultra DMA 100MB/sec data transfer rate
- Supports RAID0 (Stripping mode for boosting performance) mode
- Supports RAID1 (Mirroring mode for data security) mode
- Supports RAID 0+1 (Stripping and Mirroring) mode

### 4. Memory

- Supports four 184-pin Direct Rambus RIMM module
- Supports up to 2GB Max. (64, 128, 256, 512MB RDRAM)
- Supports PC600 or PC800 RDRAM

### 5. Audio

- AC'97 Digital Audio controller integrated
- AC'97 2-channel Audio CODEC on board

### 6. System BIOS

- SoftMenu™ II technology
- Award Plug and Play BIOS supports APM and ACPI
- Write-Protect Anti-Virus function by AWARD BIOS

### 7. Multi I/O Functions

- 4 Channels of Bus Master IDE Ports supporting Ultra DMA 33/66/100
- PS/2 Keyboard and PS/2 Mouse connectors
- 1 Floppy Port (up to 2.88MB)
- 1 Parallel Port (EPP/ECP)
- 2 Serial Ports
- 3 ports USB Connectors
- Audio Connector (Line-in, Line-out, Mic-in, and Game Port)

### 8. LAN (Manufacturer Option)

- On board Intel 82559 PCI local bus Fast Ethernet controller
- 10/100Mb Operation
- Supports ACPI & Wake on LAN
- User friendly driver included

### 9. Miscellaneous

- ATX form factor
- 1 AGP4X slot, 5 PCI slots and 1 CNR slot

- Hardware Monitoring – including Fan Speed, Voltages, CPU and system temperature and one thermal header for other devices temperature monitoring
- Keyboard and Mouse Power On
- \* **The Switching Power Supply must meet ATX 2.03 specification with ATX12v and AUX Power connectors.**
- \* **A chassis designed for Pentium 4 platform is required.**
- \* **Specifications and information contained herein are subject to change without notice.**

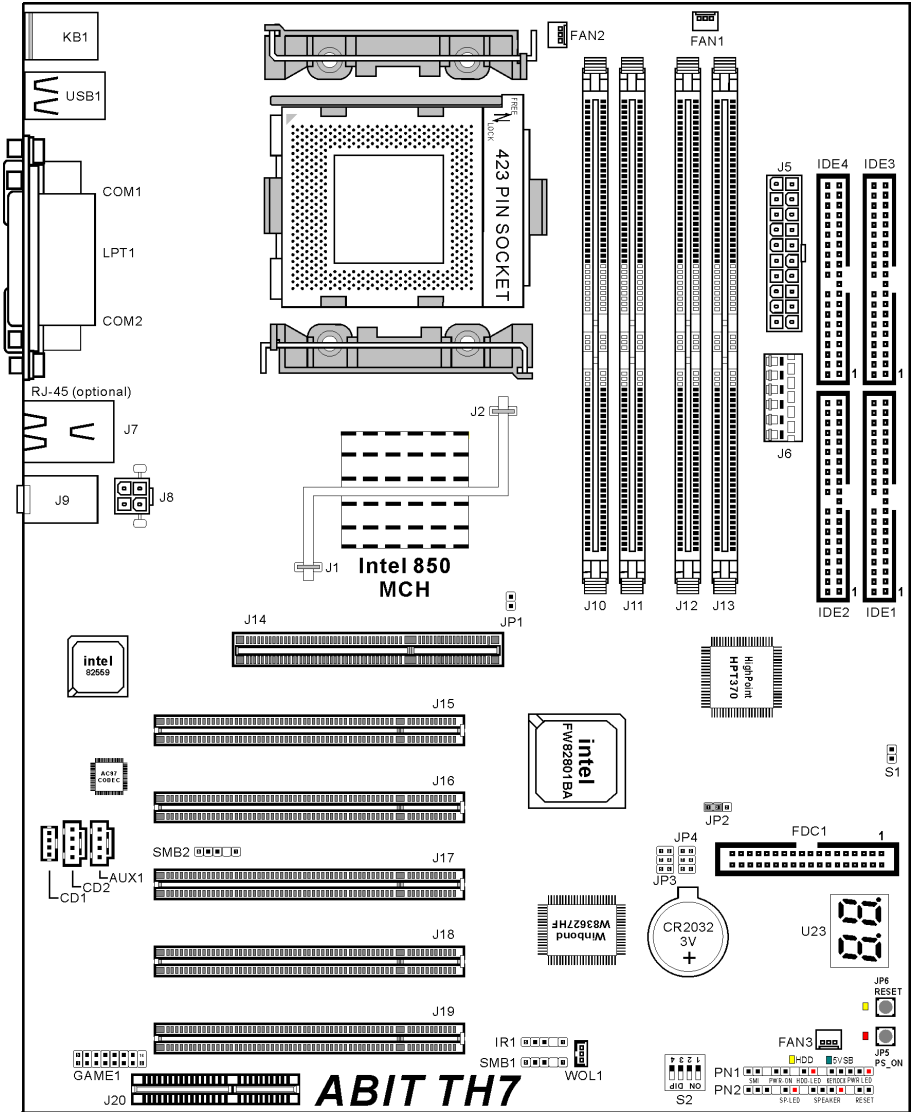
## **1-3. Package List**

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Check the following list. If there is any item damaged or missing, please contact your local dealer.

- (1) TH7-RAID Motherboard
- (2) Ribbon Cable for Master and Slave Ultra DMA 66/100 IDE Drives
- (1) Ribbon Cable for Floppy Disk Drives
- (1) Game Port Bracket with Extension Cable
- (1) I/O Shield
- (2) C-RIMM
- (1) Thermal Cable
- (1) TH7-RAID Installation & Utility Disc (CD-Title)
- (1) This User's Manual

# 1-4. Layout Diagram





## Chapter 2. Hardware Setup

### 2-1. Getting Started

It is required to adopt an ATX12V power supply to meet the power requirement of Pentium® 4

This motherboard provides all standard equipment for classic personal computers with great flexibility for meeting future upgrade demands. This chapter will introduce step-by-step all of the standard equipment and will also present, as completely as possible, future upgrade capabilities.

This chapter is organized with the following features:

- 2-1 Install The Motherboard
- 2-2 Install Pentium® 4 CPU and Heatsink Supporting-Base
- 2-3 Install The System Memory
- 2-4 Connectors, Headers and Switches



#### Before Proceeding with the Installation



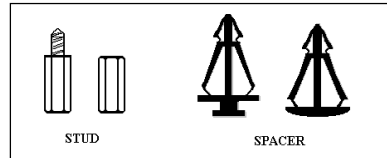
Please be reminded to turn the ATX12V power supply switch off (fully turn the +5V standby power off), or disconnect the power cord before you install or unplug any connectors or add-on cards. Failing to do so may cause the motherboard components or add-on cards to malfunction or be damaged.

### 2-2. Install The Motherboard

Most computer chassis have a base with many mounting holes to allow motherboard to be securely attached on and at the same time, prevented from short circuits. There are two ways to attach the motherboard to the chassis base:

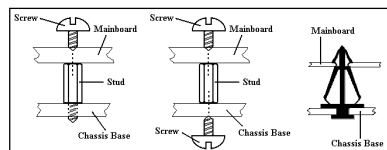
- use with studs
- or use with spacers

Figure 2-1 shows the shape of studs and spacers. There may be several types, but all look similar.



**Figure 2-1. The outline of studs and spacer**

In principle, the best way to attach the board is to use with studs. Only if you are unable to do this should you attach the board with spacers. Line up the holes on the board with the mounting holes on the chassis. If the holes line up and there are screw holes, you can attach the board with studs. If the holes line up and there are only slots, you can only attach with spacers. Take the tip of the spacers and insert them into the slots. After doing this to all the slots, you can slide the board into position aligned with slots. After the board has been positioned, check to make sure everything is OK before putting the chassis back on. Figure 2-2 shows the ways to fix the board to chassis by studs or spacers.



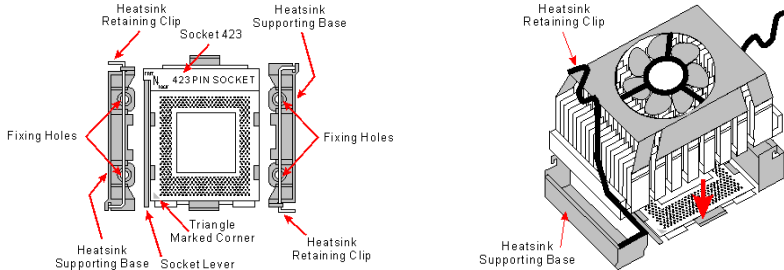
**Figure 2-2. Three ways to fix the motherboard onto the chassis**

#### NOTE

This motherboard must be installed onto the chassis first before installing the CPU cooler. Be careful not let the screws contact the printed circuit wire or parts on the PCB that are near the mounting holes.

## 2-3. Install Pentium® 4 CPU and Heatsink Supporting-Base

This motherboard provide a ZIF (Zero Insertion Force) socket to install the Intel® Pentium® 4 CPU. Its installation is the same as Socket 370 or Socket A, only a tiny difference on heatsink installation. The CPU you bought should had a heatsink and fan along with. If that's not the case, buy one specially designed for Pentium® 4. Please refer to figure 2-3 to follow these steps:



**Figure 2-3. Installing P4 CPU and its heatsink into supporting base.**

1. This motherboard supports the installation on both the chassis specially designed for Pentium® 4 or not. If you are using the chassis not designed for Pentium® 4, there is no need to make further movement on the heatsink supporting-base as it is already fastened with screws and nuts. If you are planning to use the chassis designed for Pentium® 4, loosen the four nuts first before installing the motherboard.
2. Attach all the studs or spacers needed for installing motherboard (Especially the four studs or spacers for holding CPU heatsink supporting-base if you are using the chassis specially designed for Pentium® 4).
3. Align the CPU heatsink supporting-base through its fixing holes over the holes on motherboard to the studs or spacers that had already installed on the chassis. Use the screws that came with this heatsink supporting-base to fasten onto motherboard. Here you have to watch out for the direction of the supporting-base, please refer to figure 2-3.
4. Now you may install the CPU. Lift up the socket lever, hold the CPU with the pins side down without touching the pins. Align CPU over this socket to match the triangle-marked corner with the one on the socket. As the CPU fits in only one orientation, there is absolutely no need to push the CPU real hard into the socket. It should drop into the socket by itself; this is why we call it ZIF socket. Otherwise, it will bend the pins and damage the CPU.
5. Secure the CPU by lifting down the socket lever and firmly clicking to its locking point.
6. Now you may install the heatsink. Lift up the two retaining clips on the heatsink supporting-base. Lay down the heatsink onto the CPU. Of course you have to put some heat-dissipation glue on the joints of CPU and heatsink if there isn't any.
7. Secure the heatsink by lifting down the retaining clips and firmly clicking to its locking point.

### NOTE

It is a must to install heatsink and cooling fan for sufficient heat dissipation of CPU. Failing to do so may result in overheating and damaging the CPU. Please refer to the documentation that came with your boxed processor for detailed installing instructions.

## 2-4. Install The System Memory

This motherboard provides four Rambus Inline Memory Modules (RIMM) slots that support 128Mbit and 256Mbit Direct RDRAM technologies. A maximum of 64 RDRAM devices are supported on the paired channels without external logic. The following table shows the maximum RDRAM array size and the minimum increment size for the various RDRAM densities.

**Table 2-1. RDRAM Densities Supported**

RDRAM Technology	Directly Supported	
	Increments	Maximum
128 Mb	32 MB	1 GB
256 Mb	64 MB	2 GB

Different from DIMM slots, these RIMM slots must be used in pairs in the slots that are not populated by RDRAMs. This is used to avoid breaking signal lines and to assure electrical integrity of Rambus interface. A C-RIMM (Continuity RIMM, as shown in Figure 2-4) must be used in pairs.

Note that the memory configuration of RIMM-A1 and RIMM-A2 on Channel A (J10 and J12 on this motherboard) must be identical with that of RIMM-B1 and RIMM-B2 on Channel B (J11 and J13 on this motherboard). If you are installing one pair of 64MB RDRAM, please refer to type (1) or type (2) of Figure 2-5. If you are installing one pair of 128MB and another pair of 64MB RDRAM, please refer to type (3) or type (4) of Figure 2-5.

### How to install and remove memory modules:

Power off the computer and unplug the AC power cord before installing and removing the memory modules.

See Figure 2-6. Hold two edges of the module carefully and keep away of touching its connectors. Align the two notch keys on the module with the two ribs on the slot. Firmly press the module into the slots until the ejector tabs at both sides of the slot automatically snaps into the mounting notch. As the module can only fit in one orientation, do not push the module in with extra force.

To remove the modules, push the two ejector tabs of the slot outward together, and pull out the module.

**WARNING**

RDRAM becomes extremely hot during operation. Don't touch the heat spreader before it cools down.

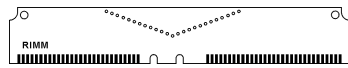


Figure 2-4. An outlook of typical C-RIMM module

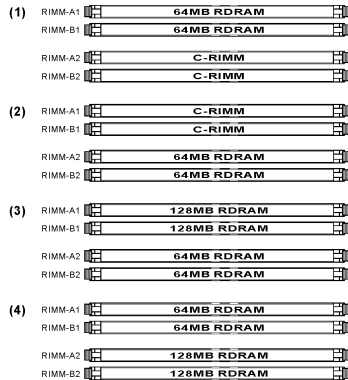


Figure 2-5. Example of memory modules configurations

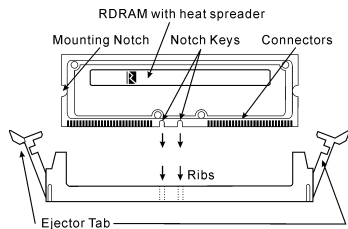


Figure 2-6. Memory module installation

## 2-5. Connectors, Headers and Switches

Inside the case of any computer there are several cables and plugs that have to be connected. These cables and plugs are usually connected one-by-one to connectors located on the board. You have to pay attention carefully to any connection orientation the cables may have and, if any, notice the position of the first pin.

Here we will show you all of the connectors, headers and switches, and how to connect them. Please read the entire section for necessary information before attempting to finish all the hardware installation inside the computer chassis. A complete enlarged layout diagram is shown in section 1-4 for all the position of connectors and headers on the board that you may refer to.

All the connectors, headers and switches mentioned here are depending on your system configuration. Some features you may (or may not) have to connect or to configure depending on the peripherals you have connected.

### WARNING

Always power off the computer and unplug the AC power cord before adding or removing any peripheral or component. Failing to do so may cause severe damage to your motherboard and/or peripherals. Plug in the AC power cord only after you have carefully checked everything.

#### (1). S2: DIP Switch

This switch allows you to manually setting the Safe Mode (DIP SW 1), Automatic Timeout Reboot (DIP SW 2), and SoftMenu selection (DIP SW 4). See Table 2-1 for detailed settings.

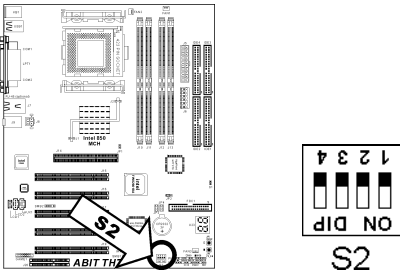


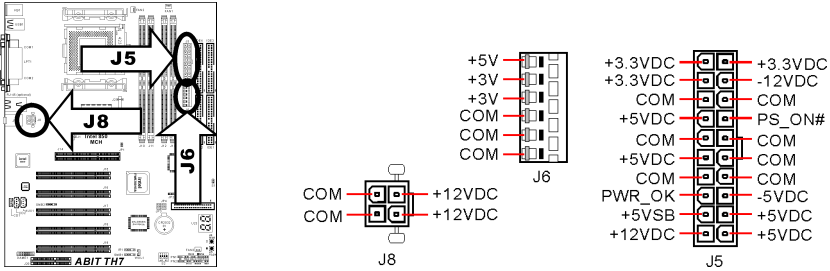
Table 2-1. SW1 Configurations

DIP SW	Position	Description	Default
1	ON	Force CPU Freq Strap to Safe Mode (1111)	OFF
	OFF	Use CPU Freq Strap in ICH Register	
2	ON	No Reboot on 2 <sup>nd</sup> Watchdog Timeout	OFF
	OFF	Reboot on 2 <sup>nd</sup> Watchdog Timeout	
3		No Define	OFF
4	ON	Disable SoftMenu	OFF
	OFF	Enable SoftMenu	

**(2). ATX12V (J5, J6, J8): ATX Power Input Connectors**

The Pentium 4 requires a power supplier different from the regular one. It's a newly designed ATX12V power with 300W, 20A +5VDC capacity at least for heavily loaded system, and 720mA +5VSB at least for supporting Wake-On-LAN feature.

There are three connectors from this ATX12V power supply to plug on motherboard, please refer to the figure below. Each connector has its proper plug to connect to. Find out the location for each connector, check its orientation, and then firmly push the plugs down into these connectors to have a solid connection.

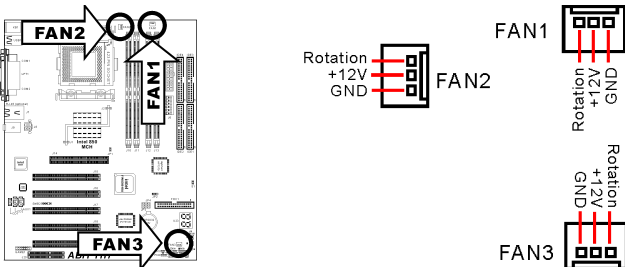


**(3). FAN1, FAN2 & FAN3 Connectors:**

- FAN1: Power Fan**
- FAN2: CPU Fan**
- FAN3: Chassis Fan**

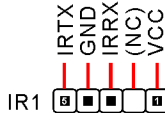
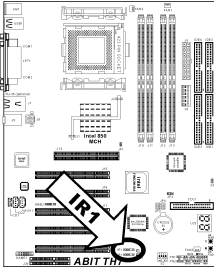
These connectors are located separately on the board to serve as fan power connectors. FAN1 is used for attaching Power Fan, FAN2 for CPU Fan, and FAN3 for Chassis Fan.

You have to attach a powerful CPU cooler onto the processor before turning on the system power. Failing to do so or to use a poor cooler will ruin the CPU or cause abnormal working eventually. A chassis fan is also highly recommended to keep the computer's internal temperature low and steady.



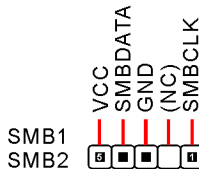
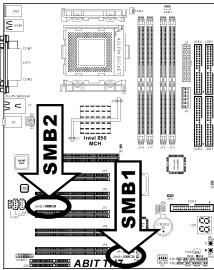
**(4). IR1: Infrared Device Header**

This header connects to an optional IR device attached to chassis. This motherboard supports standard IR transfer rates.



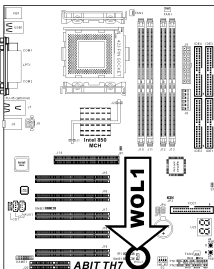
**(5). SMB1, SMB2: System Management Bus Headers**

These two headers are reserved for system management bus (SM bus). The SM bus is a specific implementation of an I<sup>2</sup>C bus. I<sup>2</sup>C is a multi-master bus, which means that multiple chips can be connected to the same bus and each one can act as a master by initiating a data transfer. If more than one master simultaneously tries to control the bus, an arbitration procedure decides which master gets priority.



**(6). WOL1: Wake-On-LAN Connector**

This connector connects to the Wake-On-LAN output of a LAN card to wake up your computer through a Local Area Network.

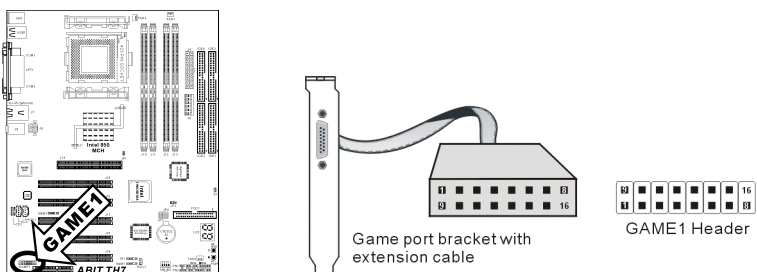


**NOTE**

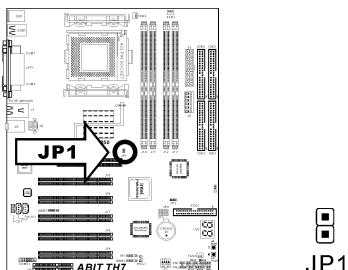
The power supply must be able to provide 720mA +5VSB at least to support Wake-On-LAN function.

**(7). GAME1: External Game Port Header**

There is no game port at the I/O shield connector on this motherboard. Connect the game port expansion cable to this header if you want to use it. Game Port Bracket with Extension Cable

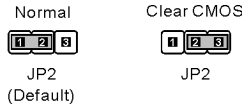
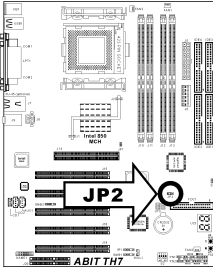
**(8). JP1: Thermal Sensor Header**

This header is a thermal sensor connector used for detecting the system environmental temperature. It may also be called a system temperature detector. You can attach one end of a two-threaded thermal cable to this header, and tape the other end of the thermal cable onto the CPU's heatsink. Generally, the location you tape the thermal sensor should be as near the CPU chipset as possible and avoid having it near the CPU fan.



**(9). JP2 (CCMOS): CMOS Memory Clearing Header**

This header uses a jumper to clear the CMOS memory. Short pin 2 and pin 3 only when you want to clear the CMOS memory. The default setting is pin 1 and pin 2 shorted for normal operation.



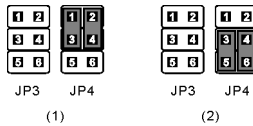
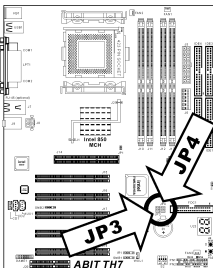
**NOTE**

Turn the power off first (including the +5V standby power) before clearing the CMOS memory. Failing to do so may cause your system to work abnormally or malfunction.

**(10). JP3, JP4: Additional USB Port Headers**

These headers provide one more additional USB port connection. As shown in the figure below, there are two ways to connect to this additional USB port:

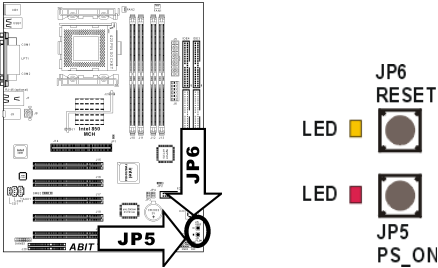
- (1) To use USB port through JP3 header: Attach jumpers to short Pin1 - Pin3 and Pin2 - Pin4 of **JP4**.
- (2) To use USB port through CNR card: Attach jumpers to short Pin3 - Pin5 and Pin 4 - Pin6 of **JP4**.





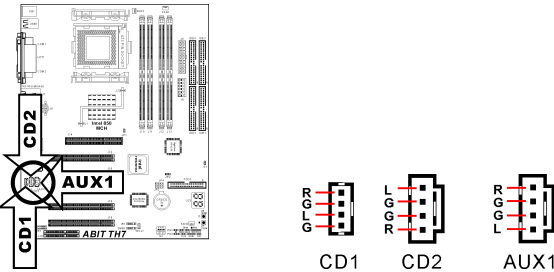
**(11). JP5 (PS ON), JP6 (RESET) On-board Switches:**

These two switches mounted onboard to power on the system (JP5) or to reset the system (JP6). The JP5 Power Switch LED lights up when the power is on, and lights off when the power is off. The JP6 Reset LED lights up at the moment when activating the switch.



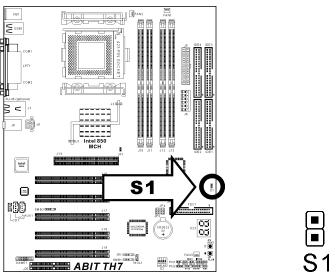
**(12). CD1, CD2, AUX1: Internal Audio Connector**

These connectors connect to the audio output of internal CD-ROM drive or add-on card.



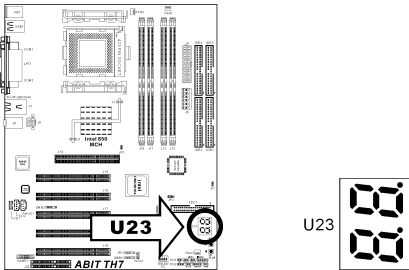
**(13). S1: Chassis Intrusion Header**

This header connects to the chassis intrusion detector on the chassis.



**(14). U23: POST Code Display**

This is an LED device to display the “POST” Code, the acronym of **Power On Self Test**. The computer will execute the POST action whenever you power on the computer. The POST process is controlled by the BIOS. It is used to detect the status of the computer’s main components and peripherals. Each POST Code corresponds to different checkpoints that are also defined by the BIOS in advance. For example, “memory presence test” is an important checkpoint and its POST Code is “C1”. When the BIOS executes any POST item, it will write the corresponding POST Code into the address 80h. If the POST passes, the BIOS will process the next POST item and write the next POST Code into the address 80h. If the POST fails, we can check the POST Code in address 80h to find out where the problem lies.



The following table shows the POST Code in detail:

POST Code	Description
CF	Test CMOS R/W functionality
C0	Early chipset initialization: -Disable shadow RAM -Disable L2 cache (socket 7 or below) -Program basic chipset registers
C1	Detect memory -Auto-detection of DRAM size, type and ECC -Auto-detection of L2 cache (socket 7 or below)
C3	Expand compressed BIOS code to DRAM
C5	Call chipset hook to copy BIOS back to E000 & F000 shadow RAM
01	Expand the Xgroup codes locating in physical address 1000:0
03	Initial Superio_Early_Init switch
05	1. Blank out screen 2. Clear CMOS error flag
07	1. Clear 8042 interface 2. Initialize 8042 self-test
08	1. Test special keyboard controller for Winbond 977 series Super I/O chips 2. Enable keyboard interface
0A	1. Disable PS/2 mouse interface (optional) 2. Auto detect ports for keyboard & mouse followed by a port & interface swap (optional) 3. Reset keyboard for Winbond 977 series Super I/O chips
0E	Test F000h segment shadow to see whether it is R/W-able or not. If test fails, keep beeping the speaker
10	Auto detect flash type to load appropriate flash R/W codes into the run time area in F000 for ESCD & DMI support

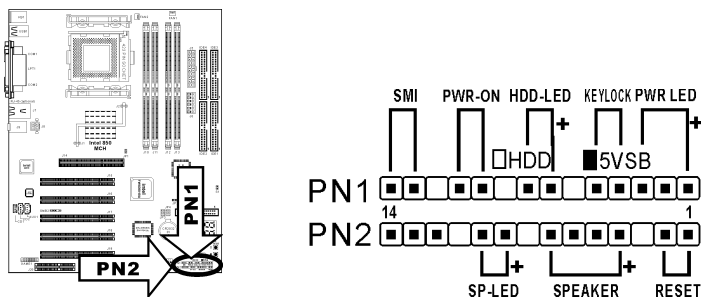
12	Use walking 1's algorithm to check out interface in CMOS circuitry. Also set real-time clock power status, and then check for override
14	Program chipset default values into chipset. Chipset default values are MODBINable by OEM customers
16	Initial Early_Init_Onboard_Generator switch
18	Detect CPU information including brand, SMI type (Cyrix or Intel) and CPU level (586 or 686)
1B	Initial interrupts vector table. If no special specified, all H/W interrupts are directed to SPURIOUS_INT_HDLR & S/W interrupts to SPURIOUS_soft_HDLR
1D	Initial EARLY_PM_INIT switch
1F	Load keyboard matrix (notebook platform)
21	HPM initialization (notebook platform)
23	<ol style="list-style-type: none"> <li>1. Check validity of RTC value: e.g. a value of 5Ah is an invalid value for RTC minute</li> <li>2. Load CMOS settings into BIOS stack. If CMOS checksum fails, use default value instead</li> <li>3. Prepare BIOS resource map for PCI &amp; PnP use. If ESCD is valid, take into consideration of the ESCD's legacy information</li> <li>4. Onboard clock generator initialization. Disable respective clock resource to empty PCI &amp; DIMM slots</li> <li>5. Early PCI initialization: <ul style="list-style-type: none"> <li>-Enumerate PCI bus number</li> <li>-Assign memory &amp; I/O resource</li> <li>-Search for a valid VGA device &amp; VGA BIOS, and put it into C000:0</li> </ul> </li> </ol>
27	Initialize INT 09 buffer
29	<ol style="list-style-type: none"> <li>1. Program CPU internal MTRR (P6 &amp; PII) for 0-640K memory address</li> <li>2. Initialize the APIC for Pentium class CPU</li> <li>3. Program early chipset according to CMOS setup. Example: onboard IDE controller</li> <li>4. Measure CPU speed</li> <li>5. Invoke video BIOS</li> </ol>
2D	<ol style="list-style-type: none"> <li>1. Initialize multi-language</li> <li>2. Put information on screen display, including Award title, CPU type, CPU speed ...</li> </ol>
33	Reset keyboard except Winbond 977 series Super I/O chips
3C	Test 8254
3E	Test 8259 interrupt mask bits for channel 1
40	Test 8259 interrupt mask bits for channel 2
43	Test 8259 functionality
47	Initialize EISA slot
49	<ol style="list-style-type: none"> <li>1. Calculate total memory by testing the last double word of each 64K page</li> <li>2. Program writes allocation for AMD K5 CPU</li> </ol>
4E	<ol style="list-style-type: none"> <li>1. Program MTRR of M1 CPU</li> <li>2. Initialize L2 cache for P6 class CPU &amp; program CPU with proper cacheable range</li> <li>3. Initialize the APIC for P6 class CPU</li> <li>4. On MP platform, adjust the cacheable range to smaller one in case the cacheable ranges between each CPU are not identical</li> </ol>
50	Initialize USB
52	Test all memory (clear all extended memory to 0)
55	Display number of processors (multi-processor platform)
57	<p>Display PnP logo</p> <p>Early ISA PnP initialization</p> <ul style="list-style-type: none"> <li>-Assign CSN to every ISA PnP device</li> </ul>
59	Initialize the combined Trend Anti-Virus code
5B	(Optional Feature) Show message for entering AWDFLASH.EXE from FDD (optional)

5D	1. Initialize Init_Onboard_Super_IO switch 2. Initialize Init_Onboard_AUDIO switch
60	Okay to enter Setup utility; i.e. not until this POST stage can users enter the CMOS setup utility
65	Initialize PS/2 Mouse
67	Prepare memory size information for function call: INT 15h ax=E820h
69	Turn on L2 cache
6B	Program chipset registers according to items described in Setup & Auto-configuration table
6D	1. Assign resources to all ISA PnP devices 2. Auto assign ports to onboard COM ports if the corresponding item in Setup is set to "AUTO"
6F	1. Initialize floppy controller 2. Set up floppy related fields in 40:hardware
73	(Optional Feature) Enter AWDFLASH.EXE if: -AWDFLASH is found in floppy drive -ALT+F2 is pressed
75	Detect & install all IDE devices: HDD, LS120, ZIP, CDROM ...
77	Detect serial ports & parallel ports.
7A	Detect & install co-processor
7F	Switch back to text mode if full screen logo is supported -If errors occur, report errors & wait for keys -If no errors occur or F1 key is pressed to continue: Clear EPA or customization logo
82	1. Call chipset power management hook 2. Recover the text font used by EPA logo (not for full screen logo) 3. If password is set, ask for password
83	Save all data in stack back to CMOS
84	Initialize ISA PnP boot devices
85	1. USB final Initialization 2. NET PC: Build SYSID structure 3. Switch screen back to text mode 4. Set up ACPI table at top of memory 5. Invoke ISA adapter ROMs 6. Assign IRQs to PCI devices 7. Initialize APM 8. Clear noise of IRQs
93	Read HDD boot sector information for Trend Anti-Virus code
94	1. Enable L2 cache 2. Program boot up speed 3. Chipset final initialization 4. Power management final initialization 5. Clear screen & display summary table 6. Program K6 write allocation 7. Program P6 class write combining
95	1. Program daylight saving 2. Update keyboard LED & typematic rate
96	1. Build MP table 2. Build & update ESCD 3. Set CMOS century to 20h or 19h 4. Load CMOS time into DOS timer tick 5. Build MSIRQ routing table
FF	Boot attempt (INT 19h)

**(15). PN1 and PN2 Headers**

PN1 and PN2 headers are used for connecting switches and LED indicators on the chassis front panel.

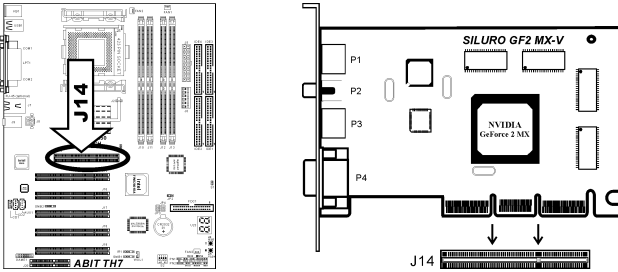
Watch the power LED pin position and orientation. The mark “+” align to the pin in the figure below stands for positive polarity for the LED connection. Please pay attention to connect these headers. A wrong orientation will only cause the LED not lighting, but a wrong connection of the switches could cause system malfunction.



- **5VSB: 5VSB LED Indicator**  
This LED lights up when the power supply is connected with power source.
- **HDD: HDD LED Indicator**  
This LED lights up when the hard drive is activating.
- **PN1 (Pin 1-2-3): Power LED Header**  
Connect to the Power LED cable of the chassis' front panel.
- **PN1 (Pin 7-8): HDD LED Header**  
Connect to the HDD LED cable of the chassis front panel.
- **PN1 (Pin 10 - 11): Power-On Switch Header**  
Connect to the Power Switch cable of the chassis front panel.
- **PN1 (Pin 13-14): Hardware Suspend Switch (SMI Switch) Header**  
Connect to the Suspend Switch cable of the chassis front panel (if there is one).
- **PN2 (Pin 1-2): Hardware Reset Switch Header**  
Connect to the Reset Switch cable of the chassis front panel.
- **PN2 (Pin 4-5-6-7): Speaker Header**  
Connect to the System Speaker cable of the chassis.
- **PN2 (Pin 9-10): Suspend LED Header**  
Connect to Suspend LED cable of the chassis front panel (if there is one).

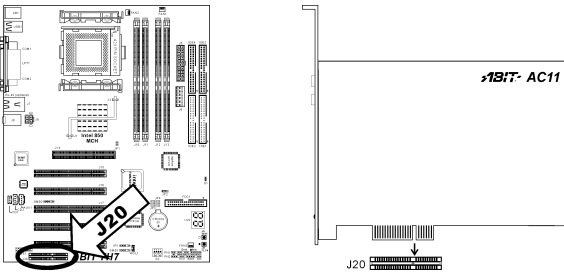
**(16). J14 (AGP Slot): Accelerated Graphics Port Slot**

This slot supports an optional AGP graphics card up to AGP 4X mode. Please refer to our Web site for more information on graphics cards.



**(17). J20 (CNR Slot): Communication and Networking Riser Slot**

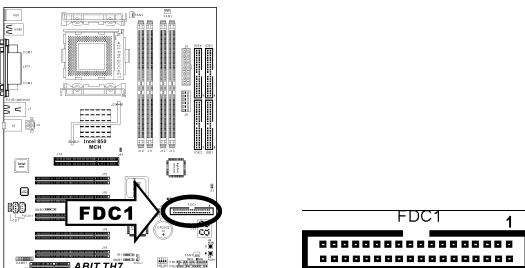
This slot is used for connecting an optional CNR of Audio, Modem, or LAN subsystems. Please refer to our Web site for more information on CNR add-on cards.



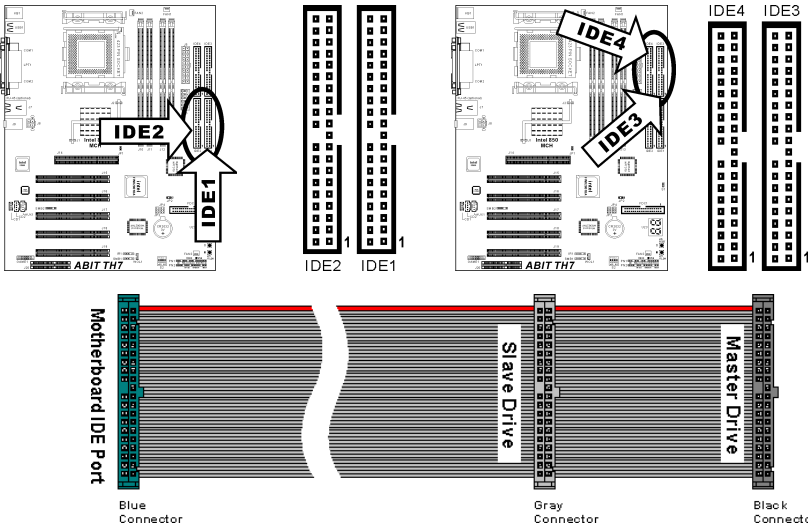
**(18). FDC1 Connector**

There are 34 wires and two connectors on each floppy cable providing two floppy disk drives connection. Connect the single end at the longer length of ribbon cable to this FDC1, and the two connectors on the other end to the floppy disk drives. Generally you need only one floppy disk drive in your system.

Note: The red line on the ribbon cable should be aligned with pin 1 on this connector.



**(19). IDE1/IDE2 and IDE3/IDE4 Connectors**



This motherboard provides four IDE ports to connect up to eight IDE drives at Ultra DMA 100 mode by Ultra DMA 66 ribbon cables. Each cable has 40-pin 80-conductor and three connectors, providing two hard drives connection with motherboard. Connect the single end (blue connector) at the longer length of ribbon cable to the IDE port on motherboard, and the other two ends (gray and black connector) at the shorter length of the ribbon cable to the connectors on hard drives.

If you want to connect two hard drives together through one IDE channel, you must configure the second drive to Slave mode after the first Master drive. Please refer to the drives' documentation for jumper settings. The first drive connected to IDE1 is usually referred to as "Primary Master", and the second drive as "Primary Slave". The first drive connected to IDE2 is referred to as "Secondary Master" and the second drive as "Secondary Slave".

Keep away from connecting one legacy slow speed drive, like CD-ROM, together with another hard drive on the same IDE channel; this will drop your integral system performance.

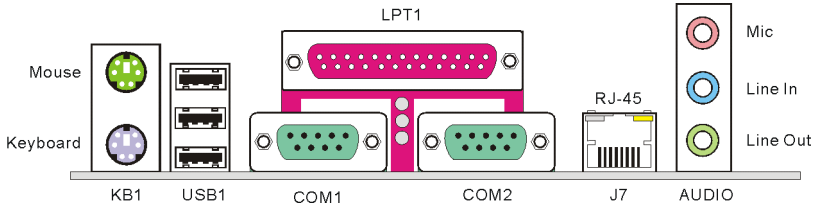
IDE3 and IDE4 are extra devices controlled by a HighPoint HPT370 chipset. This bonus feature allows for having regular Ultra DMA 100 devices ports, or a RAID array in the combination of RAID 0, RAID 1, or RAID 0+1 mode.

**NOTE**

Align the red line on the ribbon cable with pin 1 on IDE connector and hard drive. Ultra DMA 66/100 IDE devices must use a 40-pin 80-conductor ribbon cable to connect with to reach their performance.

**(20). I/O Shield Connector**

The following figure shows the I/O shield at back panel connecting external hardware.



- **Keyboard: PS/2 Keyboard Connector**

Attach a PS/2 keyboard connector to this 6-pin Din-connector. If you use an AT keyboard, you can go to a computer store to purchase an AT to ATX converter adapter. You can then connect your AT keyboard to this connector. We suggest you use a PS/2 keyboard for best compatibility.

- **Mouse: PS/2 Mouse Connector**

Attach a PS/2 mouse to this 6-pin Din-connector.

- **USB Port Connectors**

This motherboard provides three on-board USB ports to attach USB devices such as scanner, digital speakers, monitor, mouse, keyboard, hub, digital camera, joystick etc.

- **Serial Port COM1 & COM2 Connector**

This motherboard provides two COM ports to connect external modem, mouse or other devices that support this communication protocol.

- **Parallel Port Connector**

This parallel port is also called an “LPT” port because it usually connects to the printer. You can connect other devices that support this communication protocol, like an EPP/ECP scanner, etc.

- **J7: LAN Connector (Optional)**

This motherboard carries an Intel 82559 PCI local bus 10/100MB Fast Ethernet controller. You can connect your system to Local Area Network through this LAN connector.

- **Line Out**

Connect to headphone or an external powered stereo speaker.

- **Line In**

To connect to the line out from external audio sources.

- **Mic In**

To connect to the plug from microphone.



## Chapter 3. BIOS Setup

The BIOS is a program located on a Flash Memory chip on the motherboard. This program will not be lost when you turn the computer off. This program is also referred to as the boot program. It is the only channel the hardware circuit has to communicate with the operating system. Its main function is to manage the setup of the motherboard and interface card parameters, including simple parameters such as time, date, hard disk drive, as well as more complex parameters such as hardware synchronization, device operating mode, **CPU SOFT MENU™ II** features and setup of CPU speed. The computer will operate normally, or will operate at its best, only if all of these parameters are correctly configured through the BIOS.



**Don't change the parameters inside the BIOS unless you fully understand their meanings and consequences**

The parameters inside the BIOS are used to setup the hardware synchronization or the device-operating mode. If the parameters are not correct, they will produce errors, the computer will crash, and sometimes you will not even be able to boot the computer after it has crashed. We recommend that you do not change the parameters inside the BIOS unless you are very familiar with them. If you are not able to boot your computer anymore, please refer to the section “**Clearing CMOS Memory**” in Chapter 2.

When you start the computer, the BIOS program controls it. The BIOS first operates an auto-diagnostic test called POST (Power On Self Test) for all of the necessary hardware. It then configures the parameters of the hardware synchronization, and detects all of the hardware. Only when these tasks are completed does it give up control of the computer to the next level, which is the operating system (OS). Since the BIOS is the only channel for hardware and software to communicate, it is the key factor for system stability, and in ensuring that your system performs at its best. After the BIOS has achieved the auto-diagnostic and auto-detection operations, it will display the following message:

### PRESS DEL TO ENTER SETUP

This message will be displayed for three to five seconds, if you press <Del> key, you will access the BIOS Setup menu. At that moment, the BIOS will display the following screen:

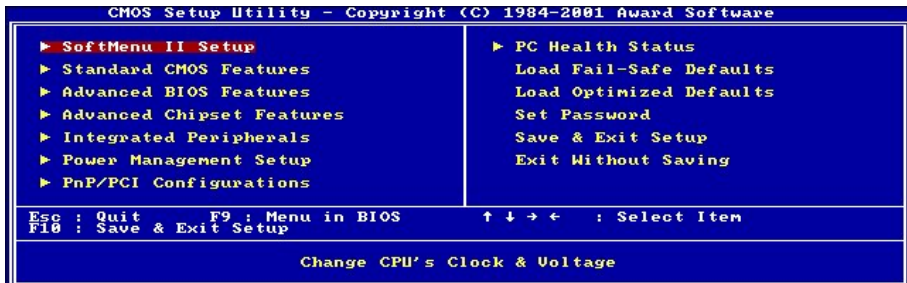


Figure 3-1. CMOS Setup Utility

In the CMOS Setup main menu of Figure 3-1, you can see several options. We will explain these options step by step in the following sections of this chapter, but let us first see a short description of the function keys you may use here:

- Press **Esc** to quit the BIOS Setup.
- Press **↑ ↓ ← →** (up, down, left, right) to choose the option you want to confirm or to modify in the main menu.
- Press **F10** when you have completed the setup of BIOS parameters to save these parameters and to exit the BIOS Setup menu.
- Press **Page Up/Page Down** or **+/-** keys when you want to modify the BIOS parameters for the active option.

#### Computer Knowledge: CMOS Data

Maybe you have heard somebody saying that his or her CMOS DATA was lost. What is the CMOS? Is it important? The CMOS is the memory used to store the BIOS parameters that you have configured. This memory is passive. You can read its data, and you can also store data in it. But this memory has to be powered by a battery in order to avoid any loss of its data when the computer is turned off. Since you may have to change the CMOS battery when it is out of power, and if doing so you will lose all CMOS data, we recommend that you write down all the parameters of your hardware, or to put a label with these parameters on your hard disk.

### 3-1. CPU Setup [SoftMenu™ II]

This CPU can be setup through a programmable switch (**SoftMenu™ II**) that replaces the traditional manual hardware configuration. This feature allows you to more easily completing the installation procedures. You can install the CPU without configuring any jumpers or switches. The CPU must be setup according to its specifications.

In the first option, you can press <F1> at any time to display all the items that can be chosen for that option.



Figure 3-2. SoftMenu™ II Setup Screen

#### CPU Name Is:

Intel Pentium 4.

#### CPU Internal Frequency:

1.3, 1.4, 1.5GHz (depending on the CPU type).

#### Amount Of RDRAM Device(s):

The system detects how many RDRAM devices had been installed.

#### CPU Operating Speed:

This option sets the CPU speed. In this field, the CPU speed is indicated like this: CPU Speed = External Clock x Multiplier Factor. Select the CPU speed according the type and speed of your CPU. For Intel Pentium® 4 processors, you can choose from the following settings: 800 (100), 900 (100), 1000 (100), 1066 (133), …, and User Define.

**User Define:****WARNING**

The wrong settings of the multiplier and external clock in certain circumstances may cause CPU damage. Setting the working frequency higher than the PCI chipset or processor specs, may cause abnormal memory module functioning, system hangs, hard disk drive data lose, abnormal functioning of the VGA card, or abnormal functioning with other add-on cards. Using non-specification settings for your CPU is not the intention of this explanation. These should be used for engineering testing, not for normal applications.

If you use non-specification settings for normal operation, your system may not be stable, and may affect system reliability. Also, we do not guarantee the stability and compatibility for settings that are not within specification, and any damage of any elements on the motherboard or peripherals, is not our responsibility.

**External Clock(CPU/PCI):**

After choosing the “CPU Operating Speed” option as “Use Define”, you can choose the figure of FSB frequency from 90.00/30.00MHz to 156.00/39.00MHz. The best frequency is either 100MHz or 133MHz depending on the CPU type and its speed. The default setting is **100.00/33.33MHz**.

**Multiplier Factor:**

The multiplier factors for this motherboard are: x8, x9, x10 ..... (These factors varied according to CPU type and specification).

**NOTE**

Some processors might have this multiplier factor locked, so there is no way to choose a higher multiplier factor.

**RDRAM Bus Frequency:**

You can select the operating frequency for the main system memory. There are three options available: 300MHz, 400MHz, and Auto. The default setting is **Auto**.

It is highly recommended not to set this option to 400MHz if you are using PC-800 RDRAM and setting the FSB frequency to over 125MHz.

**Speed Error Hold:**

This option select to hold or not when the CPU speed setting is wrong. The default setting is **Disabled**. Normally, we do not recommend you to use the “User Define” option to setup CPU speed and multiplier factors. This option is for setup of future CPUs whose specifications are still unknown. It is very easy to make mistakes when defining the external clock and multiplier factor by yourself, unless you are very familiar with all CPU parameters.

**Solution in case of booting problem due to invalid clock setup:**

Normally, if the CPU clock setup is wrong, you will not be able to boot. In this case, turn the system off then on again. The CPU will automatically use its standard parameters to boot. You can then enter the BIOS Setup again and set up the CPU clock. If you can't enter the BIOS setup, you must try turning the system on a few times (3~4 times) or press <Insert> when turning on, and the system will automatically

use its standard parameters to boot. You can then enter BIOS SETUP again and set up the new parameters.

#### **When you change your CPU:**

This motherboard has been designed in such a way that you can turn the system on after having inserted a CPU in the socket without having to configure any jumpers or DIP switches. If you change your CPU, normally you just have to turn off the power supply, change the CPU and then set up the CPU parameters through **SOFT MENU™ II**. However, if the new CPU is slower than the old one (and is the same brand and type), we offer you two methods to successfully complete changing CPU.

**Method 1:** Setup up the CPU for the lowest speed for its brand. Turn the power supply off and change the CPU. Then turn the system on again, and set up the CPU parameters through **SOFT MENU™ II**.

**Method 2:** Since you have to open the computer case when you change the CPU, it could be a good idea to use the CMOS memory clearing jumper to erase the parameters of the original CPU and to enter BIOS Setup to set up CPU parameters again.

#### **Attention**

After setting up parameters and exiting BIOS Setup, and having verified the system can be booted, DO NOT press the Reset button or turn off the power supply, otherwise, the BIOS will not read correctly, the parameters will fail and you must enter **SOFT MENU™ II** again to set up the parameters all over again.

#### **CPU Power Supply:**

This option allows you to switch between CPU default and user-defined voltages.

**CPU Default:** The system will detect the CPU type and select the proper voltage automatically. When it is enabled, the option “**Core Voltage**” will show the current voltage setting that is defined by the CPU and this will not be changeable. We recommend using this CPU default setting and not changing it unless the current CPU type and voltage setting can not be detected or is not correct.

**User Define:** This option allows you to set the core voltage manually in the “Core Voltage” option.

#### **Core Voltage:**

After setting the CPU Power Supply as User Define, you can change this Core Voltage in the range from 1.1V through 1.825V by using <Page Up> and <Page Down> keys.

## 3-2. Standard CMOS Features Setup Menu

This menu contains the basic configuration parameters of the BIOS. These parameters include date, hour, VGA card, FDD and HDD settings.



Figure 3-3. Standard CMOS Setup Screen Shot

### Date (mm:dd:yy):

You can set the date in this item: month (mm), date (dd) and year (yy).

### Time (hh:mm:ss):

You can set the time in this item: hour (hh), minute (mm) and second (ss).

### IDE Primary Master / Slave and IDE Secondary Master / Slave:

These items have a sub-menu to let you choose further options. You can refer to figure 3-4 to check what options are available.

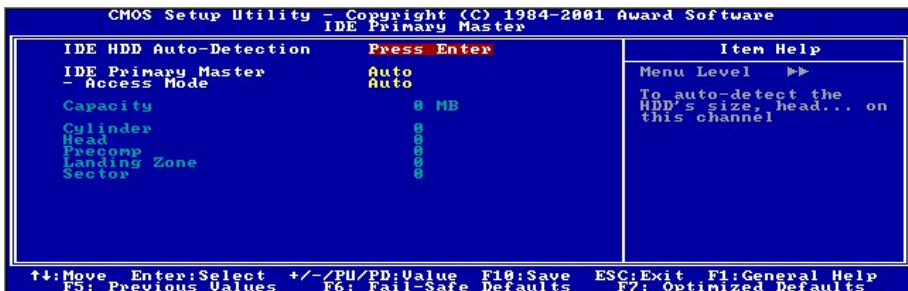


Figure 3-4. IDE Primary Master Setup Screen Shot

### IDE HDD Auto-Detection:

Press <Enter> key for the BIOS to auto detect all detailed parameters of the hard disk drives (HDD). If auto detection is successful, the correct values will be shown in the remaining items of this menu.

---

---

**NOTE**

- ❶ A new IDE HDD must be first formatted before doing any reading or writing. The basic step in using a HDD is to make a **HDD low-level format**, then run FDISK, and then FORMAT the drive. Most current HDDs have already been subjected to low-level format at the factory, so you may skip this operation. Remember though, the primary IDE HDD must have its partition set to active within the FDISK procedure.
- ❷ If you are using an old HDD that had already formatted, but was not able to be detected the correct parameters. You may need to do a low-level format or set the parameters manually to check if the HDD is working.

---

**IDE Primary Master:**

Three settings are available: *Auto, Manual and None*. If you choose Auto, the BIOS will automatically check what kind of hard disk you are using. If you want to set the HDD parameters yourself, make sure you fully understand the meaning of the parameters, and be sure to refer to the manual provided by the HDD manufacturer to get the settings right.

---

**Access Mode:**

Since old operating systems were only able to support HDDs with capacities no bigger than 528MB, any hard disk with more than 528MB was unusable. AWARD BIOS features a solution to this problem: you can, according to your operating system, choose four operating modes: CHS → LBA → LARGE → Auto.

The HDD auto detection option in the sub-menu will automatically detect the parameters of your hard disk and the mode supported.

**Auto:** Lets the BIOS detect your HDD access mode and make the decisions.

**Normal mode:** Standard normal mode supports hard disks of up to 528MB or less. This mode directly uses positions indicated by Cylinders (CYLS), Heads, and Sectors to access data.

**LBA (Logical Block Addressing) mode:** The earlier LBA mode can support HDD capacities of up to 8.4GB, and this mode uses a different method to calculate the position of disk data to be accessed. It translates Cylinders (CYLS), Heads and Sectors into a logical address where data is located. The Cylinders, Heads, and Sectors displayed in this menu do not reflect the actual structure of the hard disk. They are just reference values used to calculate actual positions. Currently, all high capacity hard disks support this mode and that is why **we recommend you use this mode**. Currently, the BIOS can support the INT 13h extension function, enabling the LBA mode to support hard disk drive capacities exceeding 8.4GB.

**Large Mode:** When the number of cylinders (CYLs) of the hard disk exceeds 1024 and DOS is not able to support it, or if your operating system does not support LBA mode, you should select this mode.

---

**Capacity:**

This item automatically detects your HDD size. Note that this size is usually slightly greater than the size given by a disk checking program of a formatted disk.

---

**Cylinder:**

When disks are placed directly above one another along the shaft, the circular vertical “slice” consisting of all the tracks located in a particular position is called a cylinder. You can set the number of cylinders for a HDD. The minimum number you can enter is 0, the maximum number you can enter is 65536.

---

**Head:**

This is the tiny electromagnetic coil and metal pole used to create and read back the magnetic patterns on the disk (also called the read/write head). You can configure the number of read/write heads. The minimum number you can enter is 0, the maximum number you can enter is 255.

---

**Precomp:**

The minimum number you can enter is 0, the maximum number you can enter is 65536.

---

**WARNING**

Setting a value of 65536 means no hard disk exists.

---

**Landing Zone:**

This is a non-data area on the disk's inner cylinder where the heads can rest when the power is turned off. The minimum number you can enter is 0, the maximum number you can enter is 65536.

---

**Sector:**

The minimum segment of track length that can be assigned to stored data. Sectors usually are grouped into blocks or logical blocks that function as the smallest units of data permit. You can configure this item to sectors per track. The minimum number you can enter is 0, the maximum number you can enter is 255.

---

**Drive A & Drive B:**

If you have installed the floppy disk drive here, then you can select the type of floppy drive it can support. Six options are available: None → 360K, 5.25 in. → 1.2M, 5.25in. → 720K, 3.5 in. → 1.44M, 3.5 in. → 2.88M, 3.5 in.

---

**Floppy 3 Mode Support:**

3 Mode floppy disk drives (FDD) are 3 1/2" drives used in Japanese computer systems. If you need to access data stored in this kind of floppy, you must select this mode, and of course you must have a 3 Mode floppy drive. Four options are available: Disabled → Driver A → Driver B → Both. The default setting is *Disabled*.

---

**Video:**

You can select the VGA modes for your video adapter, four options are available: EGA/VGA → CGA 40 → CGA 80 → MONO. The default setting is *EGA/VGA*.

---

**Halt On:**

You can select which type of error will cause the system to halt. Five options are available: All Errors → No Errors → All, But Keyboard → All, But Diskette → All, But Disk/Key.

You can see your system memory list in the lower left box, it shows the *Base Memory*, *Extended Memory* and *total Memory size* configurations in your system. It is detected by the system during boot-up procedure.



### 3-3. Advanced BIOS Features Setup Menu

#### Attention

This menu has already been set for maximum operation. If you do not really understand each of the options in this menu, we recommend you to use the default values.



Figure 3-5. Advanced BIOS Features Setup Screen

#### Virus Warning:

This item can be set to Enabled or Disabled, the default setting is *Disabled*. When this feature is enabled, if there is any attempt from a software or an application to access the boot sector or the partition table, the BIOS will warn you that a boot virus is attempting to access the hard disk.

#### CPU L1 & L2 Cache:

This item is used to enable or to disable the CPU level 1 cache. When the cache is set to *Disabled*, it is much slower, so the default setting for this item is *Enabled* since it will speed up memory access. Some old and very poorly written programs will make the computer malfunction or crash if the system speed is too high. In this case, you should disable this feature. The default setting is *Enabled*.

#### CPU L3 Cache:

The default setting is *Enabled*.

#### Compatible FPU OPCODE:

The default setting is *Disabled*.

#### CPU Fast-Strings:

The default setting is *Enabled*.

#### Quick Power On Self Test:

After the computer has been powered on, the BIOS of the motherboard will run a series of tests in order to check the system and its peripherals. If the Quick Power on Self-Test feature is enabled, the BIOS will simplify the test procedures in order to speed up the boot process. The default setting is *Enabled*.

---

**First Boot Device:**

When the computer boots up, the BIOS attempts to load the operating system from the devices in the sequence selected in these items: floppy disk drive A, LS/ZIP devices, hard drive C, SCSI hard disk drive or CD-ROM. There are eleven options to choose boot sequence. The default setting is *Floppy*.

Floppy → LS120 → HDD-0 → SCSI → CDROM → HDD-1 → HDD-2 → HDD-3 → ZIP100 → LAN → ATA100RAID → Disabled.

---

**Second Boot Device:**

Description is the same as the *First Boot Device*, the default setting is *HDD-0*.

---

**Third Boot Device:**

Description is same as the *First Boot Device*, the default setting is *LS120*.

---

**Boot Other Device:**

This setting allows the BIOS to try three kinds of boot devices that are set from the above three items. Two options are available: Enabled or Disabled. The default setting is *Enabled*.

---

**Swap Floppy Drive:**

When this feature is enabled, you don't need to open the computer case to swap the position of floppy disk drive connectors. Drive A can be set as drive B and drive B can be set as drive A. Two options are available: Enabled or Disabled. The default setting is *Disabled*.

---

**Boot Up Floppy Seek:**

When the computer boots up, the BIOS detects if the system has an FDD or not. When this item is enabled, if the BIOS detects no floppy drive, it will display a floppy disk drive error message. If this item is disabled, the BIOS will skip this test. The default setting is *Disabled*.

---

**Boot Up NumLock Status:**

**On:** At boot up, the Numeric Keypad is in numeric mode. (Default Settings)

**Off:** At boot up, the Numeric Keypad is in cursor control mode.

---

**Typematic Rate Setting:**

This item allows you to adjust the keystroke repeat rate. When set to *Enabled*, you can set the two keyboard typematic controls that follow (*Typematic Rate* and *Typematic Rate Delay*). If this item is set to *Disabled*, the BIOS will use the default setting. The default setting is *Enabled*.

---

**Typematic Rate (Chars/Sec):**

When you press a key continuously, the keyboard will repeat the keystroke according to the rate you have set (Unit: characters/second) . Eight options are available: 6 → 8 → 10 → 12 → 15 → 20 → 24 → 30 → Back to 6. The default setting is *30*.

---

**Typematic Delay (Msec):**

When you press a key continuously, if you exceed the delay you have set here, the keyboard will

---

---

---

automatically repeat the keystroke according to a certain rate (Unit: milliseconds). Four options are available: 250 → 500 → 750 → 1000 → Back to 250. The default setting is **250**.

---

#### **Security Option:**

This option can be set to System or Setup. The default setting is **Setup**. After you have created a password through PASSWORD SETTING, this option will deny access to your system (System) or modification of computer setup (BIOS Setup) by unauthorized users.

**SYSTEM:** When you choose System, a password is required each time the computer boots up. If the correct password is not given, the system will not start.

**SETUP:** When you choose Setup, a password is required only when accessing the BIOS Setup. If you have not set a password in the PASSWORD SETTING option, this option is not available.

To disable security, select *Set Supervisor Password* at main menu and then you will be asked to enter the password. Do not type anything and just press the <Enter> key and it will disable security. Once security is disabled, the system will boot and you can enter the *BIOS setup menu* freely

#### **Notice**

Don't forget your password. If you forget the password, you will have to open the computer case and clear all information in the CMOS before you can start up the system. But by doing this, you will have to reset all previously set options.

---

#### **OS Select For DRAM > 64MB:**

When the system memory is bigger than 64MB, the communication method between the BIOS and the operating system will differ from one operating system to another. If you use OS/2, select *OS2*; if you are using another operating system, select *Non-OS2*. The default setting is **Non-OS2**.

---

#### **Report No FDD For WIN 95:**

When using Windows<sup>®</sup> 95 without a floppy drive, please set this item to *Yes*. Otherwise, set it to *No*. The default setting is *No*.

---

#### **Delay IDE Initial (Secs):**

This item is used to support some old models or special types of hard disks or CD-ROMs. They may need a longer amount of time to initialize and prepare for activation. Since the BIOS may not detect these kinds of devices during system booting, you can adjust the value to fit such devices. Larger values will give more delay time to the device. You can choose from 0 to 15. The default setting is **0**.

### 3-4. Advanced Chipset Features Setup Menu

The Chipset Features Setup Menu is used to modify the contents of the buffers in the chipset on the motherboard. Since the parameters of the buffers are closely related to hardware, if the setup is not correct or is false, the motherboard will become unstable or you will not be able to boot up. If you don't know the hardware very well, use default values (i.e. use the LOAD SETUP DEFAULTS option). The only time you might consider making any changes is if you discover that data is being lost while using your system.



Figure 3-6. Chipset Features Setup Screen

#### NOTE

The parameters in this screen are for system designers, service personnel, and technically competent users only. Do not reset these values unless you understand the consequences of your changes.

The first chipset settings deal with CPU access to DRAM. The default timings have been carefully chosen and should only be altered if data is being lost. Such a scenario might well occur if your system has mixed speed DRAM chips installed. In such a case, greater delays may be required to preserve the integrity of the data held in the slower memory chips.

#### DRAM Data Integrity Mode:

Two options are available: ECC and Non-ECC. The default setting is *Non-ECC*. This option is used to configure the type of DRAM in your system. ECC is "Error Checking and Correction". Choose the ECC option only when your memory is ECC type.

#### System BIOS Cacheable:

Two options are available: Enabled and Disabled. The default setting is *Enabled*. When you select *Enabled* allows caching of the system BIOS ROM at F0000h-FFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

#### Video BIOS Cacheable:

Two options are available: Enabled and Disabled. The default setting is *Enabled*. *Enabled* allows caching of the video BIOS, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

---

**Video RAM Cacheable:**

Two options are available: Enabled and Disabled. The default setting is **Enabled**. **Enabled** allows you to get faster video RAM executing speed via the L2 cache. You must check your VGA adapter documentation to see if any compatibility problem will occur.

---

**Memory Hole At 15M-16M:**

Two options are available: Enabled and Disabled. The default setting is **Disabled**. This option is used to reserve the memory block 15M-16M for ISA adapter ROM. Some special peripherals need to use a memory block located between 15M and 16M, and this memory block has a size of 1M. We recommend that you disable this option.

---

**Delayed Transaction:**

Two options are available: Enabled and Disabled. The default setting is **Disabled**. Set the option to enabled or disabled PCI 2.1 features including passive release and delayed transaction for the chipset. This function is used to meet the latency of PCI cycles to or from the ISA bus. This option must be enabled to provide PCI 2.1 compliance. If you have an ISA card compatibility problem, you can try to enable or disable this option for optimal results.

---

**AGP Graphics Aperture Size:**

The options are: 4M → 8M → 16M → 32M → 64M → 128M → 256M. The default setting is **64M**. This option specifies the amount of system memory that can be used by the AGP device. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation. See [www.agpforum.org](http://www.agpforum.org) for AGP information.

---

**Delay Prior to Thermal:**

The options are: 4, 8, 16, and 32 Minutes. The default setting is **16 Min**.

---

**AGP Data Transfer Rate:**

You can select the AGP device data transfer rate capability. Two options are available: 2X Mode and 4X Mode. The default setting is **4X Mode**.

---

**AGP Fast-Write:**

Two options are available: Enabled and Disabled. The default setting is **Enabled**.

### 3-5. Integrated Peripherals

In this menu, you can change the onboard I/O device, I/O port address and other hardware settings.



Figure 3-7. Integrated Peripherals Menu Screen

#### Onboard IDE-1 Controller:

The onboard IDE 1 controller can be set as Enabled or Disabled. The default setting is *Enabled*. The integrated peripheral controller contains an IDE interface with support for two IDE channels. If you choose *Disabled*, it will affect the settings of four items not available. For example, if you disabled the *Onboard IDE-1 Controller*, you will also disable the *Master/Slave Drive PIO Mode* and *Master/Slave Drive Ultra DMA*.

#### Master/Slave Drive PIO Mode:

Six options are available: Auto → Mode 0 → Mode 1 → Mode 2 → Mode 3 → Mode 4. The five IDE PIO (Programmed Input/Output) items let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode (default setting), the system automatically determines the best mode for each device.

#### Master/Slave Drive Ultra DMA:

Two options are available: Auto and Disabled. The default setting is *Auto*. Ultra DMA is a DMA data transfer protocol that utilizes ATA commands and the ATA bus to allow DMA commands to transfer data at a maximum burst rate of 100 MB/sec.

Ultra DMA 33 or Ultra DMA 66/100 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows® 95 OSR2 / 98 / ME/ NT / 2000 or a

third-party IDE bus master driver).

**Auto:** If your hard drive and your system software both support Ultra DMA, select *Auto* to enable BIOS support.

**Disabled:** If you encounter a problem in using Ultra DMA devices, you can try to disable this item.

---

#### **Onboard IDE-2 Controller:**

Description is same as the *Onboard IDE-1 Controller*.

---

#### **USB Controller:**

Two options are available: Enabled and Disabled. The default setting is *Enabled*. This motherboard provides two Universal Serial Bus (USB) ports, thus supporting USB devices. If you don't want to use USB devices, set it to *Disabled*, then the item *USB Keyboard Support & USB Mouse Support* will also be disabled.

**USB Keyboard Support:** Two options are available: OS and BIOS. The default setting is *OS*. If you want to use USB keyboard in DOS environment, please set it to BIOS.

**USB Mouse Support:** Two options are available: OS and BIOS. The default setting is *OS*. If you want to use USB mouse in DOS environment, please set it to BIOS.

---

#### **Init Display First:**

Two options are available: PCI Slot and AGP. The default setting is *PCI Slot*. When you install an additional display card, you can choose either a PCI display card or an AGP display card to activate the display boot-up screen.

---

#### **AC97 Audio**

Two options are available: Auto and Disabled. The default setting is *Auto*. If you set it to *Auto*, it will allow the BIOS to detect the audio device you use. If an audio device is detected, the onboard audio controller (ICH2 chipset family) will be able to support it. If you want to use another audio adapter card to connect the audio connectors, please set this item to *Disabled*.

---

#### **AC97 Modem**

Two options are available: Auto and Disabled. The default setting is *Auto*. If you set it to *Auto*, it will allow the BIOS to detect the modem device you use. If a modem device is detected, the onboard modem controller (ICH2 chipset family) will be able to support it. If you want to use another modem adapter card to connect the modem signal connectors, please set this item to *Disabled*.

---

#### **IDE HDD Block Mode:**

Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select *Enabled* for automatic detection of the optimal number of block read/writes per sector the drive can support. The default setting is *Enabled*.

---

#### **Onboard LAN Controller: (Manufacturer Option)**

This option enables or disables the LAN controller. The default setting is *Enabled*.

---

---

**Onboard LAN Boot ROM: (Manufacturer Option)**

This option enables or disables the Boot ROM on LAN controller. The default setting is *Enabled*.

---

**ATA100RAID IDE Controller:**

This option enables or disables the IDE3 and IDE4 controller. The default setting is *Enabled*.

---

**Onboard IEEE1394 Controller: (Manufacturer Option)**

This option enables or disables the IEEE1394 controller. The default setting is *Enabled*.

---

**Power ON Function:**

This item allows you to select which way you want your system to power on. Seven items are available: Password → Hot Key → Mouse Left → Mouse Right → Any Key → BUTTON ONLY → Keyboard 98. The default setting is *BUTTON ONLY*.

**NOTE**

The mouse wake up function can only be used with the PS/2 mouse, not with a mouse that uses the COM port and USB connection. *Mouse Left (Mouse Right)* means you need to double click the mouse *left (right)* button, for the computer to power on. You also need to note the compatibility issue with your PS/2 mouse. Some PS/2 mice cannot wake up the system because of compatibility problems. Also, if the specs of your keyboard are too old, it may fail to power on.

**KB Power ON Password:** This option allows you to set a password required in order to Power ON your computer. You will be asked to enter your password and then to confirm it. Do not forget your password. Should you forget your password, you will have to open your computer case, clear the CMOS and reset all parameters again in order to be able to utilize this function.

**Hot Key Power ON:** There are twelve options available, Ctrl-F1 to Ctrl-F12. You can select this item and using the Ctrl plus the one of each function key (F1 to F12) to power on the computer. The default setting is *Ctrl-F1*.

---

**Onboard FDD Controller:**

Two options are available: Enabled and Disabled. The default setting is *Enabled*. You can enable or disable the onboard FDD controller.

---

**Onboard Serial Port 1:**

This is used to specify the I/O address and IRQ of Serial Port 1. Six options are available: Disabled → 3F8/IRQ4 → 2F8/IRQ3 → 3E8/IRQ4 → 2E8/IRQ3 → AUTO. The default setting is *3F8/IRQ4*.

---

**Onboard Serial Port 2:**

This is used to specify the I/O address and IRQ of Serial Port 2. Six options are available: Disabled → 3F8/IRQ4 → 2F8/IRQ3 → 3E8/IRQ4 → 2E8/IRQ3 → AUTO. The default setting is *2F8/IRQ3*.

**Onboard IR Function:** Three options are available: IrDA (HPSIR) mode → ASK IR (Amplitude Shift Keyed IR) mode → Disabled. The default setting is *Disabled*.

**RxD , TxD Active:** Four options are available: Hi, Hi → Hi, Lo → Lo, Hi → Lo, Lo. The default setting is *Hi, Lo*. Set IR transmission/reception polarity as High or Low.

---



**IR Transmission Delay:** Two options are available: Enabled and Disabled. The default setting is **Enabled**. Set IR transmission delays 4 character-time (40 bit-time) when SIR is changed from RX mode to TX mode.

**UR2 Duplex Mode:** Two options are available: Full and Half. The default setting is **Half**. This item lets you choose the operation mode for your IR KIT. Some IR device only can work at half duplex mode. Refer to your IR KIT user's guide to find out which setting is correct.

**Use IR Pins:** Two options are available: RxD2, TxD2 and IR-Rx2Tx2. The default setting is **IR-Rx2Tx2**. If you choose *RxD2*, *TxD2*, your motherboard must support a COM port IR KIT connection. Otherwise, you can only choose the *IR-Rx2Tx2* to use the IR header on your motherboard to connect your IR KIT. Please use the default setting.

---

### **Onboard Parallel Port:**

Sets the I/O address and IRQ of the onboard parallel port. Four options are available: Disable → 378/IRQ7 → 278/IRQ5 → 3BC/IRQ7. Default setting is **378/IRQ7**.

**Parallel Port Mode:** Four options are available: SPP → EPP → ECP → ECP+EPP. The default setting is **SPP** mode.

**EPP Mode Select:** Two options are available: EPP1.7 → EPP1.9. The default setting is **EPP 1.7**. When the mode selected for the parallel port mode is EPP, the two EPP version options are available.

**ECP Mode Use DMA:** Two options are available: 1 → 3. The default setting is **3**. When the mode selected for the parallel port mode is ECP, the DMA channel selected can be Channel 1 or Channel 3.

---

### **PWRON After PWR-Fail:**

This setting lets you set the system action after a power failure. Three options are available: On → Former-Sts → Off. The default setting is **Off**.

---

### **Game Port Address:**

Three options are available: Disabled → 201 → 209. The default setting is **201**. This item sets the address of the onboard game port connector.

---

### **Midi Port Address:**

Four options are available: Disabled → 330 → 300 → 290. The default setting is **330**. This item sets the address of the onboard midi port connector.

**Midi Port IRQ:** Two options are available: 5 → 10. The default setting is **5**. This item sets the IRQ of the onboard midi port connector. If you choose disable the *Midi Port Address*, then this field is not available.

---

### **NOTE**

If you bought an audio adapter and wanted to replace the use of onboard audio solution, you have to disable three items in BIOS. These three items are:

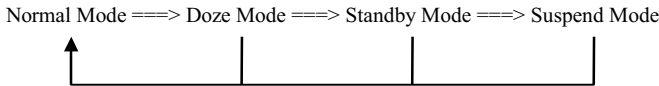
**AC 97 Audio:** set to *Disabled*

**Game Port Address:** set to *Disabled*

**Midi Port Address:** set to *Disabled*

### 3-6. Power Management Setup Menu

The difference between Green PCs and traditional computers is that Green PCs have a power management feature. With this feature, when the computer is powered on but inactive, the power consumption is reduced in order to save energy. When the computer operates normally, it is in Normal mode. In this mode, the Power Management Program will control the access to video, parallel ports, serial ports and drives, and the operating status of the keyboard, mouse and other device. These are referred to as Power Management Events. In cases where none of these events occur, the system enters the power saving mode. When one of the controlled events occurs, the system immediately returns to normal mode and operates at its maximum speed. Power saving modes can be divided into three modes according to their power consumption: Doze Mode, Standby Mode, and Suspend Mode. The four modes proceed in the following sequence:



The system consumption is reduced according the following sequence:



1. In the Main Menu, select “Power Management Setup” and press <Enter>. The following screen is displayed:



Figure 3-8. Power Management Setup Menu

2. Use the arrow keys to go to the item you want to configure. To change the settings, use ↑, ↓ and <Enter> key.
3. After you have configured the power management feature, press <Esc> to go back to the Main Menu.

If you want ACPI functions to work normally, you should notice two things. One is your operating system must support ACPI. Now the Windows® 98, Windows® 2000, and Windows® Millennium all supports these functions. The second thing is that all devices and add-on cards in your system must fully support ACPI, both hardware and software (drivers). If you want to know if your devices or add-on cards support ACPI or not, please contact the device or add-on card manufacturer for more information. If you

want to know more about ACPI specifications, please go to the address below for more detailed information: <http://www.teleport.com/~acpi/acpihtml/home.htm>

ACPI requires an ACPI-aware operating system. ACPI features include:

- Plug and Play (including bus and device enumeration) and APM functionality normally contained in the BIOS.
- Power management control of individual devices, add-in cards (some add-in cards may require an ACPI-aware driver), video displays, and hard disk drives.
- A Soft-off feature that enables the operating system to power off the computer.
- Support for multiple wake-up events (see Table 3-1).
- Support for a front panel power and sleep mode switch. Table 3-2 describes the system states based on how long the power switch is pressed, depending on how ACPI is configured with an ACPI-aware operating system.

**System States and Power States:**

Under ACPI, the operating system directs all system and device power state transitions. The operating system puts devices in and out of low-power states based on user preferences and knowledge of how devices are being used by applications. Devices that are not being used can be turned off. The operating system uses information from applications and user settings to put the system as a whole into a low-power state.

**Table 3-1: Wake Up Device and Events**

The table below describes which devices or specific events can wake the computer from specific states.

<b>These device/events can wake up the computer.....</b>	<b>.....from this state</b>
Power switch	Sleeping mode or power off mode
RTC alarm	Sleeping mode or power off mode
LAN	Sleeping mode or power off mode
Modem	Sleeping mode or power off mode
IR command	Sleeping mode
USB	Sleeping mode
PS/2 keyboard	Sleeping mode or power off mode
PS/2 mouse	Sleeping mode or power off mode

**Table 3-2: Effect of Pressing the Power Switch**

<b>If the system is in this state.....</b>	<b>.....and the power switch is pressed for</b>	<b>.....the system enters this state</b>
Off	Less than four seconds	Power on
On	More than four seconds	Soft off/Suspend
On	Less than four seconds	Fail safe power off
Sleep	Less than four seconds	Wake up

---

**ACPI Suspend Type:**

Two options are available: S1(POS) and S3(STR). The default setting is *S1(PowerOn-Suspend)*. Generally, ACPI has six states: System S0 state, S1, S2, S3, S4, S5. S1 and S3 states are described below:

**The S1 (POS) State (POS means Power On Suspend):**

While the system is in the S1 sleeping state, its behavior is as described below:

- The processor is not executing instructions. The processor's complex context is maintained.
- Dynamic RAM context is maintained.
- Power Resources are in a state compatible with the system S1 state. All Power Resources that supply a System Level reference of S0 are in the OFF state.
- Devices states are compatible with the current Power Resource states. Only devices which solely reference Power Resources which are in the ON state for a given device state can be in that device state. In all other cases, the device is in the D3 (off) state.
- Devices that are enabled to wake the system and that can do so from their current device state can initiate a hardware event which transitions the system state to S0. This transition causes the processor to continue execution where it left off.

To transition into the S1 state, the operating software does not have to flush the processor's cache.

**The S3 (STR) State (STR means Suspend to RAM):**

The S3 state is logically lower than the S2 state and is assumed to conserve more power. The behavior of this state is defined as follows:

- Processor is not executing instructions. The processor complex context is not maintained.
- Dynamic RAM context is maintained.
- Power Resources are in a state compatible with the system S3 state. All Power Resources that supply a System Level reference of S0, S1, or S2 are in the OFF state.
- Devices states are compatible with the current Power Resource states. Only devices which solely reference Power Resources which are in the ON state for a given device state can be in that device state. In all other cases, the device is in the D3 (off) state.
- Devices that are enabled to wake the system and that can do so from their current device state can initiate a hardware event which transitions the system state to S0. This transition causes the processor to begin execution at its boot location. The BIOS performs initialization of core functions as required to exit an S3 state and passes control to the firmware resume vector. Please see the ACPI Specification Rev. 1.0 book section 9.3.2 for more details on BIOS initialization.

From the software point of view, this state is functionally the same as the S2 state. The operational difference can be that some Power Resources that could be left ON in the S2 state might not be available to the S3 state. As such, additional devices can be required to be in logically lower D0, D1, D2, or D3 state for S3 than S2. Similarly, some device wake events can function in S2 but not S3.

Because the processor context can be lost while in the S3 state, the transition to the S3 state requires that the operating software flush all dirty cache to DRAM.

- ✱ **The information above for system S0 & S3 were referring to ACPI Specification Rev. 1.0.**

**USB Dev Wake-Up From S3:**

Two options are available: Enabled and Disabled. The default setting is *Disabled*.

**Power Management:**

This item allows you to select the type (or degree) of power saving and is directly related to the following modes: (1) Suspend Mode and (2) HDD Power Down.

There are three options for power management, two of which have fixed mode settings:

- **User Define:** “User Define” defines the delay for accessing the power modes.  
Suspend Mode: Disabled → 1 Min → 2 Min → 4 Min → 8 Min → 12 Min → 20 Min → 30 Min → 40 Min → 1 Hour. The default setting is *Disabled*.  
HDD Power Down: Disabled → 1 Min → 2 Min → 3 Min → 4 Min → 5 Min → 6 Min → 7 Min → 8 Min → 9 Hour → 10 Min → 11 Min → 12 Min → 13 Min → 14 Min → 15 Min. The default setting is *Disabled*.
- **Min Saving:** When these two saving modes are enabled, the system is set up for minimum power savings.  
Suspend Mode = 1 Hour  
HDD Power Down = 15 Min.
- **Max Saving:** When the two saving modes are enabled, the system is set up for maximum power savings.  
Suspend Mode = 1 Min.  
HDD Power Down = 1 Min.

**Suspend Mode/HDD Power Down:**

These two items will be enable to change setting when item *Power Management* is set to *User Define*, these two item will also changes as deccribed in table 3-3.

**Table 3-3: Power Management Settings**

Items	Power Management Settings		
	User Define	Min Saving	Max Saving
<b>Suspend Mode</b>	Disabled → 1 Min → 2 Min → 4 Min → 8 Min → 12 Min → 20 Min → 30 Min → 40 Min → 1 Hour. The default setting is <i>Disabled</i> .	1 Hour	1 Min
<b>HDD Power Down</b>	Disabled → 1 Min → 2 Min → 3 Min → 4 Min → 5 Min → 6 Min → 7 Min → 8 Min → 9 Hour → 10 Min → 11 Min → 12 Min → 13 Min → 14 Min → 15 Min. The default setting is <i>Disabled</i> .	15 Min	1 Min

**Video Off Method:**

Three video off methods are available: “Blank Screen”, “V/H SYNC + Blank” and “DPMS”. The default is “*V/H SYNC+Blank*”.

If this setting does not shut off the screen, select “Blank Screen”. If your monitor and video card support DMPS standard, select “DPMS”.

- **Blank Screen:** This option only writes blanks to the video buffer.
- **V/H SYNC + Blank:** This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
- **DPMS:** Initial display power management signaling.

---

#### **Video Off In Suspend:**

Two options are available: Yes or No. The default setting is *Yes*. This item determines the manner in which the monitor is blanked.

---

#### **Suspend Type:**

Two options are available: Stop Grant and PwrOn Suspend. The default setting is *Stop Grant*.

---

#### **Modem Use IRQ:**

You can specify the IRQ for modem use. Eight options are available: NA → 3 → 4 → 5 → 7 → 9 → 10 → 11. The default setting is *NA*.

---

#### **Soft-off by PWR-BTTN:**

Two options are available: Instant-off and Delay 4 Sec.. The default setting is *Instant-Off*. Pressing the power button for more than four seconds forces the system to enter the Soft-Off state when the system has “hung”.

---

#### **Wake-Up by PCI card/LAN:**

This option enables or disables the Wake-Up function by PCI card/LAN. The default setting is *Disabled*.

---

<b>NOTE</b>
-------------

This LAN is an optional function for this motherboard. Also be noted that the ATX 12V power supply must be able to provide 720mA +5VSB at least for supporting Wake-On-LAN feature.
---

---

#### **Power On by Ring:**

Two options are available: Enabled and Disabled. The default setting is *Disabled*. If you connect an external modem to the onboard serial port, the system will be turned on when a telephone ring-up occurs.

---

#### **CPU Thermal-Throttling**

This option is used during Suspend To RAM (STR) mode. It controls the CPU speed as a percentage of regular power. The options include 87.5%, 75.0%, 62.5%, 50.0%, 37.5%, 25.0%, 12.5%. The default setting is set at **62.5%**.

---

#### **Resume by Alarm:**

Two options are available: Enabled and Disabled. Default setting is *Disabled*. The RTC alarm can turn on the system. You can set Date (of month) and Time (hour, minute, and second) when you set this item to *Enabled*.

---

**Reload Global Timer Events**

When one of the specified events occurs, the count down made for entry in power saving mode goes back to zero. Since the computer will enter a power saving mode only after an inactivity delay specified (time specific for Doze, Standby and Suspend modes) and after it has no activity, during this time period, any event will cause the computer to re-count the time elapsed. Resume events are operations or signals that cause the computer to resume time counting.

---

**Primary IDE 0 / Primary IDE 1:**

Two options are available: Enabled and Disabled. The default setting is *Disabled*. If any primary IDE master/slave I/O activity occurs, it will cause the computer to re-count the time elapsed.

---

**Secondary IDE 0 / Secondary IDE 1:**

Two options are available: Enabled and Disabled. Default setting is *Disabled*. If any secondary IDE master/slave I/O activity occurs, it will cause the computer to re-count the time elapsed.

---

**FDD, COM, LPT Port:**

Two options are available: Enabled and Disabled. Default setting is *Disabled*. If any floppy disk, COM ports and Parallel port I/O activity occurs, it will cause the computer to re-count the time elapsed.

---

**PCI PIRO[A-D]#:**

Two options are available: Enabled and Disabled. Default setting is *Disabled*. If any INTA~INTD signal activity occurs, it will cause the computer to re-count the time elapsed.

---

**FAN Off In Suspend:**

This option select the On or Off status of chassis fan and/or CPU fan when the system enters suspend mode. The options are: CHAFAN/CPUFAN, CHAFAN, CPUFAN, and Disabled. The default setting is *CPUFAN*.

---

**FAN Speed Adjustable:**

This option select the percentage of the FAN speed in Suspend mode. The options are: Stop, 20%, 40%, 60%, 80%, and Fully. The default setting is *Stop*.

---

**Green PC LED Status:**

This option selects the lighting status of the Suspend mode. The options are: Off, On, and Blinking. The default setting is *ON*.

## 3-7. PnP/PCI Configurations

This section describes configuring the PCI bus system. PCI, or Personal Computer Interconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.



Figure 3-9. PnP/PCI Configurations Setup Screen Shot

### Force Update ESCD:

If you want to clear ESCD data next time you boot up, and ask the BIOS to reset the settings for the Plug & Play ISA Card and the PCI Card, select Enabled. But the next time you boot up, this option will automatically be set as Disabled.

### Computer Knowledge: ESCD (Extended System Configuration Data)

The ESCD contains the IRQ, DMA, I/O port, memory information of the system. This is a specification and a feature specific to the Plug & Play BIOS.

### Resources Controlled By:

Two options are available: Auto(ESCD) and Manual. Default setting is *Auto(ESCD)*. When the setting is Auto(ESCD), the *IRQ Resources* and *Memory Resources* can not be changed. When resources are controlled manually, the *IRQ Resources* and *Memory Resources* can then be changed.

*Legacy ISA* devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1).

*PCI/ISA PnP* devices compliant with the Plug and Play standard, whether designed for the PCI or ISA bus architecture.

The Award Plug and Play BIOS has the capability to automatically configure all of the boot and Plug and Play compatible devices. If you select *Auto (ESCD)*, The IRQ Resources item will be disabled, as the BIOS automatically assigns them. But if you have trouble in assigning the interrupt resources automatically, you can select *Manual* to set which IRQ and DMA are assigned to PCI/ISA PnP or legacy ISA cards.



Figure 3-10 shows you the screen of IRQ resources. Each item has two options: PCI Device and Reserved. The default setting is *PCI Device*.



Figure 3-10. IRQ Resources Setup Screen Shot

### PCI/VGA Palette Snoop:

This option allows the BIOS to preview VGA Status, and to modify the information delivered from the Feature Connector of the VGA card to the MPEG Card. This option can solve the display inversion to black after you have used the MPEG card. The default setting is *Disabled*.

### Allocate IRQ For VGA :

Two options are available: Disabled or Enabled. The default setting is *Enabled*. Name the interrupt request (IRQ) line assigned to the USB/VGA/ACPI (if any) on your system. Activity of the selected IRQ always awakens the system.

You can assign an IRQ for the PCI VGA or *Disabled*.

### Allocate IRQ For USB:

Two options are available: Disabled or Enabled. The default setting is *Enabled*. If you need another IRQ to be freed up, you can choose to disable this item, and you can get an IRQ. But in some situations in Windows® 95 it may cause the USB port to malfunction or have other problems!

### PCI Latency Timer:

This option selects the controls for the amount of time that the ICH2 arbiter allows a PCI initiator to perform multiple back-to-back transactions on the PCI bus. The options are: 32, 64, 96, 128, 160, 192, 224, and 248 PCI Clocks. The default setting is *32 PCI Clocks*.

### PIRQ 0 Use IRQ No. ~PIRQ 3 Use IRQ No. :

The options are: Auto, 3, 4, 5, 7, 9, 10, 11, 12, 14, and 15. The default setting is *Auto*.

This item allows the IRQ number for the device installed on PCI slots to be specified by the system automatically or you can specify a fixed IRQ number. This is a useful function when you want to fix the IRQ for a specific device. For example, if you want to move your hard disk to another computer and don't want to re-install Windows® NT, then you can specify the IRQ for the device installed on the new computer to fit the original computer settings.

This feature is for the operating system that will record and fix the PCI configuration status, if you want to change it.

For the relations between the hardware layout of PIRQ (the signals from the ICH2 chipset), INT# (means PCI slot IRQ signals) and devices, please refer to the table below:

Signals	PCI-1	PCI-2	PCI-3	PCI-4	PCI-5	LAN	HPT370	IEEE1394
PIRQ_0 Assignment	INT A	INT B	INT C	INT D	INT A	INT B	INT C	INT D
PIRQ_1 Assignment	INT B	INT C	INT D	INT A	INT B	INT C	INT D	INT A
PIRQ_2 Assignment	INT C	INT D	INT A	INT B	INT C	INT D	INT A	INT B
PIRQ_3 Assignment	INT D	INT A	INT B	INT C	INT D	INT A	INT B	INT C

- Each PCI slot has four INT#s (INT A~INT D).
- AGP, PCI-1 and PCI-5 share an IRQ.
- USB1 shares IRQ signals with PCI4.
- USB2 shares IRQ signals with PCI3.
- PCI-2 and AC97 share an IRQ.
- PCI-3 shares IRQ signals with HPT370 IDE controller. The driver for HPT 370 IDE controller supports IRQ sharing with other PCI devices. But if you install a PCI card that doesn't allow IRQ sharing with other devices into PCI-3, you may encounter some problems. Furthermore, if your Operating System doesn't allow peripheral devices to share IRQ signals with each other, such as Windows<sup>®</sup> NT for example, you can't install a PCI card into PCI-3.
- According to PCI 2.1 standard, the IRQ sharing is normal. But as there are some add-on cards against this rule, the IRQ sharing problem may occurred. You may try to change another slot. If your system goes well without problem, there is no IRQ sharing problem.
- If you want to install two PCI cards into these PCI slots that share IRQ with one another at the same time, you must make sure that your OS and PCI devices' driver support IRQ sharing function.
- PIRQ\_0 is for AGP, PCI-1, and PCI-5  
PIRQ\_1 is for PCI-2, and AC97  
PIRQ\_2 is for PCI-3, and HPT370  
PIRQ\_3 is for PCI-4, and USB controllers

### 3-8. PC Health Status

You can set the warning temperature for your computer system, and you can check the fan speeds and power supply voltages of your computer. The features are useful for monitoring all the important parameters within your computer system. We call it the *PC Health Status*.



Figure 3-11. PC Health Status Screen Shot

#### FAN Fail Alarm Selectable:

This item lets you select which one of the fans will be monitored for malfunction. The options are: Disabled → CHAFAN → CPUFAN → PWRFAN → Auto. The default setting is *Disabled*.

#### CPU Warning Temperature:

This item lets you select the temperature at which you want the system to send out a warning message to the PC speakers or when the temperature goes beyond either limit. You can select the temperatures you want. The ranges are from 30°C/86°F to 120°C/248°F, default setting is 75°C/167°F.

#### All Voltages, Fans Speed and Thermal Monitoring:

These items list the current states of the CPU and environment (using RT1 and RT2 to detect them.) temperatures as well as fan speeds (CPU fan and chassis fan).

#### NOTE

The hardware monitoring features for temperatures, fans and voltages will occupy the I/O address from 294H to 297H. If you have a network adapter, sound card or other add-on cards that might use those I/O addresses, please adjust your add-on card I/O address, to avoid the use of those addresses.

### 3-9. Load Fail-Safe Defaults



Figure 3-12. Load Fail-Safe Defaults Screen Shot

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

**Load Fail-Safe Defaults (Y/N) ?** **N**

Pressing “Y” loads the BIOS default values for the most stable, minimal-performance system operations.

### 3-10. Load Optimized Defaults



Figure 3-13. Load Optimized Defaults Screen Shot

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

**Load Optimized Defaults (Y/N) ?** **N**

Pressing “Y” loads the default values that are factory settings for optimal performance system operations.

### 3-11. Set Password



Figure 3-14. Set Password Screen Shot

**Set Password:** You can enter but do not have the right to change the options of the setup menus. When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

**ENTER PASSWORD:**

Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable a password, just press <Enter> when you are prompted to enter the password. A message will confirm the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

**PASSWORD DISABLED.**

When a password has been enabled, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted. This would prevent unauthorized use of your computer.



Figure 3-15. Password Disabled Screen Shot

You can determine when the password is required within the BIOS Features Setup Menu and its Security option. If the Security option is set to “System”, the password will be required both at boot and at entry to Setup. If it is set to “Setup”, the prompting only occurs when trying to enter Setup.

### 3-12. Save & Exit Setup



Figure 3-16. Save & Exit Setup Screen Shot

Pressing <Enter> on this item asks for confirmation:

Save to CMOS and EXIT (Y/N)? **Y**

Pressing “Y” stores the selections made in the menus in CMOS - a special section of memory that stays on after you turn your system off. The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS. After saving the values the system is restarted again.

### 3-13. Exit Without Saving

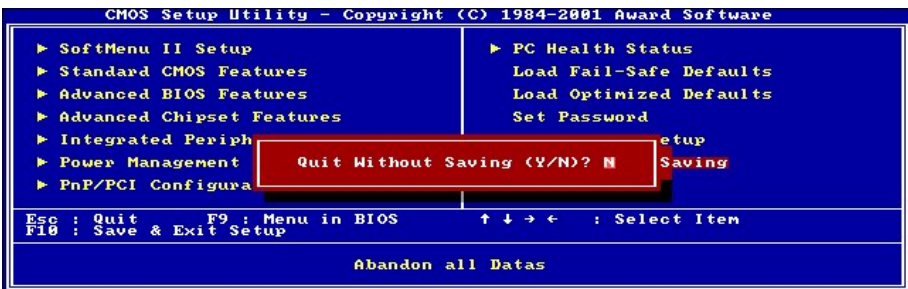


Figure 3-17. Exit Without Saving Screen Shot

Pressing <Enter> on this item asks for confirmation:

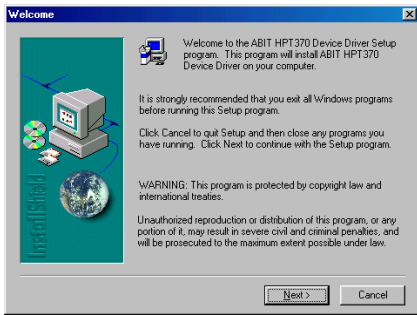
Quit without saving (Y/N)? **Y**

This allows you to exit Setup without storing in CMOS any change. The previous selections remain in effect. This exits the Setup utility and restarts your computer.

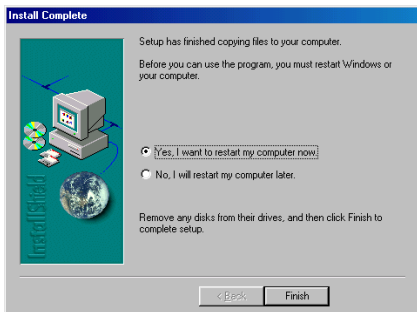
# Chapter 4. RAID Setup

## 4-1. Drivers Installation for Windows 9x/ME

Insert the TH7-RAID CD-Title into your CD-ROM drive, it should execute the program automatically. If not, execute the execution file at the main directory of this CD-Title. After it has been executed, enter the screen of driver installation, the installation wizard appears:



1. The welcome screen appears. Click **“Next>”** to start installing.

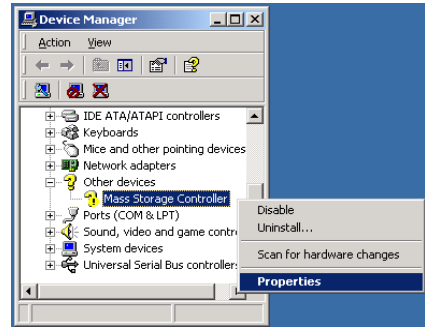


2. Choose **“Yes, I want to restart my computer now”** and click **“Finish”** button to restart your computer to finish the installation.

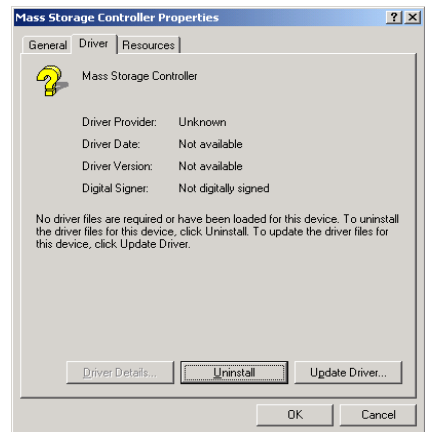
The system restarts and updates drivers. Follow the on-screen instruction and click **“Next”** button to finish the process and to restart again.

## 4-2. Drivers Installation for Windows 2000

It is currently unavailable to install the RAID driver for Windows 2000 automatically via the TH7-RAID CD-Title. You have to do it manually. Enter **“Device Manager”** by entering the Windows toolbar and click the **“Start”** → **“Settings”** → **“Control Panel”** → **“System”**:



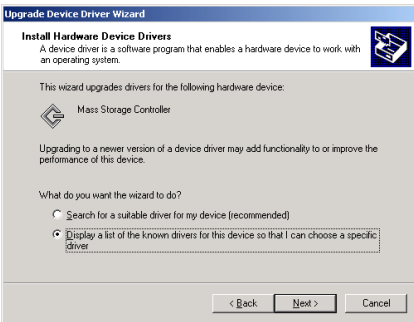
1. Right-click the mouse where the cursor stops at the **“Mass Storage Controller”**, and click **“Properties”** to start updating the driver.



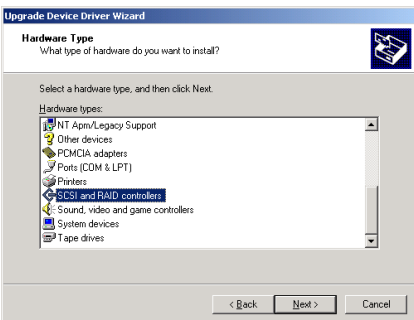
2. Enter the Driver tab and click **“Update Driver...”**.



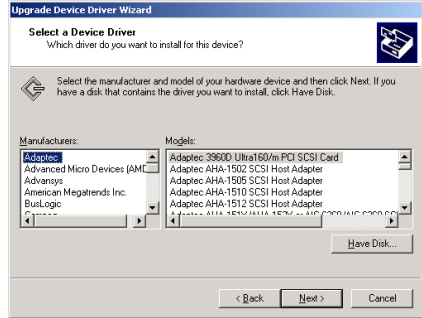
3. The upgrade wizard appears. Click “**Next>**” to continue.



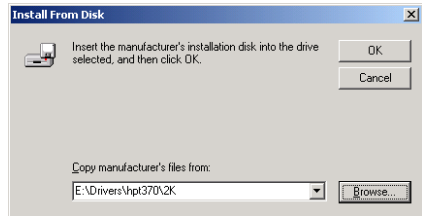
4. Choose “**Display a list of the known drivers for this device so that...**” and then click “**Next>**” to continue.



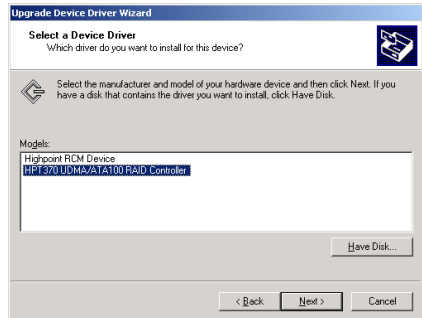
5. Choose “**SCSI and RAID controllers**” and click “**Next>**” to continue.



6. Click “**Have Disk...**” to continue.

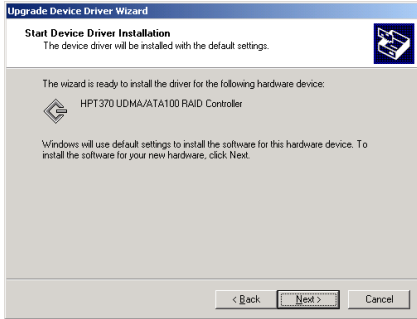


7. Insert the TH7-RAID CD-Title into your CD-ROM. Use the “**Browse...**” button or type in the path “**E:\Drivers\hpt370\2K**”. E: is the CD-ROM drive.

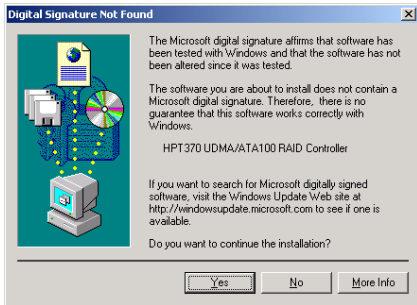


8. Choose “**HPT370 UDMA/ATA100 RAID Controller**” and click “**Next>**” to continue.





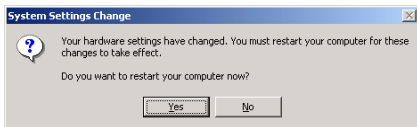
9. Click “Next”.



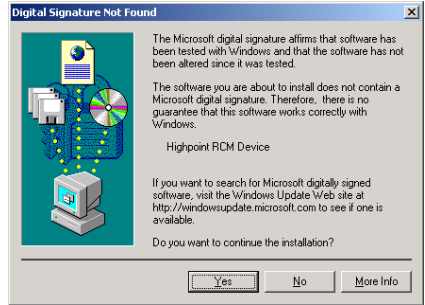
10. Click “Yes” to continue.



11. Click “Finish” to close the wizard.



12. Click “Yes” to restart the computer.



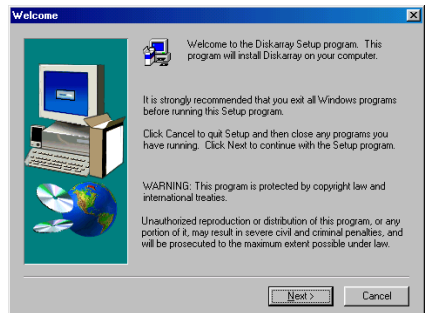
13. After the system restarted, Click “Yes” to continue the installation of HighPoint RCM Device.

Now the driver updating for Windows 2000 is completed.

### 4-3. HPT370 Utility

The “HPT370 Utility” is an application to provide you with the on-screen monitoring function about the device information of disk array you had installed.

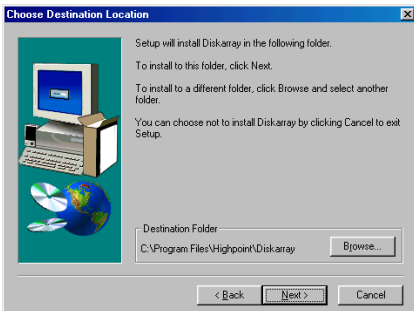
Insert the TH7-RAID CD-Title into your CD-ROM drive, it should execute the program automatically. If not, execute the execution file at the main directory of this CD-Title. After it has been executed, enter the screen of driver installation, the installation wizard appears:



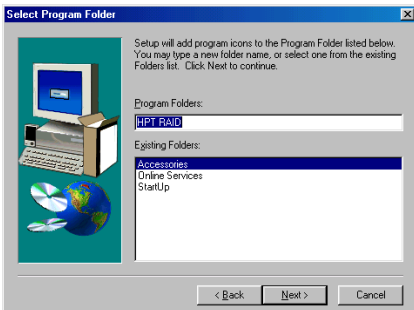
1. The welcome screen appears. Click “Next” to continue.



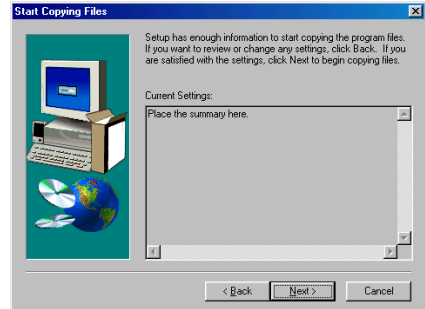
2. Type in the information of your name and company and click “**Next>**” to continue.



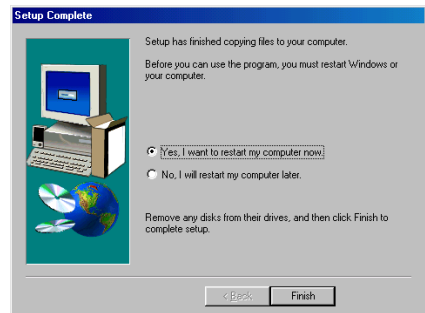
3. Click “**Next>**” to continue, or you may click “**Browse...**” to choose the destination folder you want.



4. Click “**Next>**” to continue, or you may choose the program folder you want in the existing folders list.

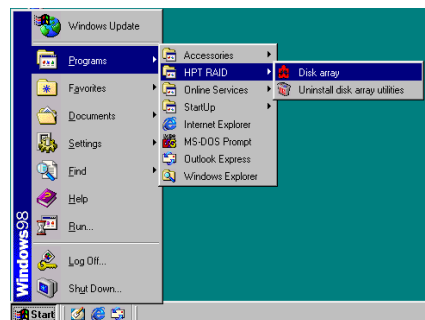


5. Click “**Next>**” to continue.

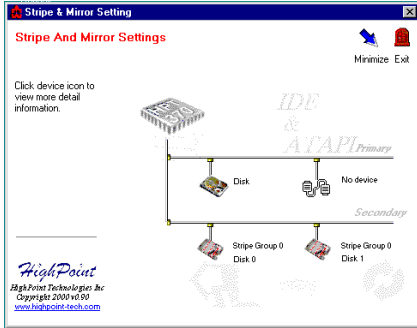


6. Choose “**Yes, I want to restart my computer now.**” and click “**Finish**”.

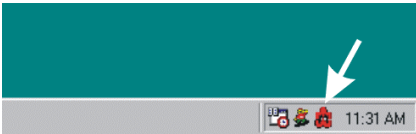
After the system restarted, you can run this monitoring program.



7. Execute the “**Stripe And Mirror Settings**” by entering the Windows toolbar and click the “**Start**” → “**Programs**” → “**HPT RAID**” → “**Disk Array**”.



8. The monitoring screen pops up. Now you are in the monitoring screen. Your current device allocation is viewable at a glance. Move the cursor to the drive icon you want to view and click on it.



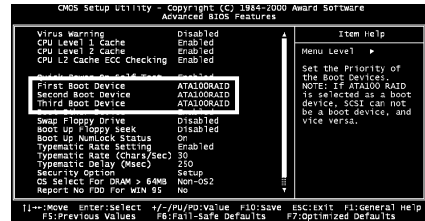
9. Note that there will be a shortcut icon appears in the tool bar. This is used for bringing out the screen again after you had clicked the “Minimize” icon on the upper right corner of the screen. This short cut icon will disappear after you click the “Exit” icon.

## 4-4. BIOS Setup for RAID

For further information on RAID concept, you can find it on the “**Technological Terms**” from our WEB site, or you can search the related information on the Internet.

This motherboard supports the RAID operation of “**Striping (RAID 0)**”, “**Mirroring (RAID 1)**”, or “**Striping/Mirroring (RAID 0+1)**”. For the striping operation, the identical drives can read and write data in parallel to increase system performance. The Mirroring operation creates a complete backup of your files. Striping with Mirroring operation offers both read/write performance and fault tolerance.

After completed the installation of HPT370 driver, you have to enable the RAID function in BIOS setup menu. Enter the “**Advanced BIOS Features**” in the BIOS setup menu. Change the settings of “**First Boot Device**”, “**Second Boot Device**” and “**Third Boot Device**” to “**ATA100RAID**”. See the figure below:



### NOTE

The option of “**SCSI**” cannot be worked as a booting device if this “**ATA100RAID**” had been selected as booting device, and vice versa.

## 4-5. BIOS Setting Utility

Reboot your system. Press <CTRL> and <H> key while booting up the system to enter the BIOS setting menu. The main menu of BIOS Setting Utility appears as shown below:

```

HPT370  <BIOS Setting Utility>

Menu-----
1. Create RAID
2. Delete RAID
3. Duplicate Mirror Disk
4. Set Drive Mode
5. Select Boot Disk

Help-----
Create a RAID Array with the
hard disks attached to the
HPT370

F1:      View Array Status
↑,↓:    Move to next item
Enter:   Confirm the selection
Esc:     Return to top menu

Channel Status-----
Channel          Drive Name          Mode  Size(M)  Status
Primary Master   QUANTUM FIREBALL CR4.3  UDMA4  4209  HDD0
Primary Slave    No Drive
Secondary Master QUANTUM FIREBALL CR4.3  UDMA4  4209  HDD1
Secondary Slave  No Drive

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```

For selecting the option in the menu, you may:

- Press <F1> to view array status.
- Press <↑ ↓ > (up, down arrow) to choose the option you want to confirm or to modify.
- Press <Enter> to confirm the selection.
- Press <Esc> to return to top menu.

### NOTE

If you want to create a RAID 0 (striping) array or RAID 0+1 array, all the data stored in the hard disks will first be erased! Please backup the hard disk data before starting to create these RAID arrays.

If you want to create a RAID 1 (mirroring) array, please be sure which hard disk is the source disk and which one is the destination disk. If you make a mistake, you may copy the blank data to the source disk, which will result in both hard disks becoming blank!

## 4-6. Create RAID

This item allows you to create a RAID array. After you had selected the function you want in the main menu, you may press the <Enter> key to enter the sub menu as shown below:

HPT370 <BIOS Setting Utility>

<p>Menu</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Create New Array</td> <td style="width: 50%;">Array #1</td> </tr> <tr> <td>1. Array Mode</td> <td>Striping (RAID 0)</td> </tr> <tr> <td>2. Select Disk Drives</td> <td></td> </tr> <tr> <td>3. Block Size</td> <td>64K</td> </tr> <tr> <td>4. Start Creation Process</td> <td></td> </tr> </table>	Create New Array	Array #1	1. Array Mode	Striping (RAID 0)	2. Select Disk Drives		3. Block Size	64K	4. Start Creation Process		<p>Help</p> <p>Select the appropriated RAID mode for the desired array</p> <p>F1: View Array Status              ↑,↓: Move to next item              Enter: Confirm the selection              Esc: Return to top menu</p>
Create New Array	Array #1										
1. Array Mode	Striping (RAID 0)										
2. Select Disk Drives											
3. Block Size	64K										
4. Start Creation Process											

<p>Channel Status</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">Channel</th> <th style="width: 35%;">Drive Name</th> <th style="width: 10%;">Mode</th> <th style="width: 10%;">Size(M)</th> <th style="width: 25%;">Status</th> </tr> </thead> <tbody> <tr> <td>Primary Master</td> <td>QUANTUM FIREBALL CR4.3</td> <td>UDMA4</td> <td>4209</td> <td>HDD0</td> </tr> <tr> <td>Primary Slave</td> <td>No Drive</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Secondary Master</td> <td>QUANTUM FIREBALL CR4.3</td> <td>UDMA4</td> <td>4209</td> <td>HDD1</td> </tr> <tr> <td>Secondary Slave</td> <td>No Drive</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p style="font-size: small; margin-top: 10px;">(C)1999-2000. HighPoint Technologies, Inc. All rights reserved</p>					Channel	Drive Name	Mode	Size(M)	Status	Primary Master	QUANTUM FIREBALL CR4.3	UDMA4	4209	HDD0	Primary Slave	No Drive				Secondary Master	QUANTUM FIREBALL CR4.3	UDMA4	4209	HDD1	Secondary Slave	No Drive			
Channel	Drive Name	Mode	Size(M)	Status																									
Primary Master	QUANTUM FIREBALL CR4.3	UDMA4	4209	HDD0																									
Primary Slave	No Drive																												
Secondary Master	QUANTUM FIREBALL CR4.3	UDMA4	4209	HDD1																									
Secondary Slave	No Drive																												

### Array Mode:

This item allows you to select the appropriate RAID mode for the desired array. There are four modes to choose.

**NOTE**

It is highly recommended to attach hard disks with the same model in reaching the RAID performance.

- **Striping (RAID 0):** This item is recommended for high performance usage. Requires at least 2 disks.
- **Mirror (RAID 1):** This item is recommended for data security usage. Requires at least 2 disks.
- **Striping and Mirror (RAID 0+1):** This item is recommended for data security and high performance usage. Allows Mirroring with a Strip Array. Require four drivers only.
- **Span (JBOD):** This item is recommended for high capacity without redundancy or performance features usage. Requires at least 2 disks.

**NOTE**

When you choose to create RAID 1 and your source disk is not empty. You have to do the **Duplicate Mirror Disk** to make whole data copy to the destination disk. Otherwise, it will only copy the partition table to the destination disk, not physical date.

**Select Disk Drives:**

This item allows you to select the disk drives to be used with the RAID array.

**Block Size:**

This item allows you to select the block size of the RAID array. There are five options: 4K, 8K, 16K, 32K, and 64K.

**Start Creation Process:**

After you have made your selection, choose this item and press <Enter> to start creation.

## 4-7. Delete RAID

This item allows you to remove a RAID Array on this IDE RAID controller card.

HPT370 <BIOS Setting Utility>

<p>Menu</p> <ol style="list-style-type: none"> <li>1. Create RAID</li> <li style="border: 1px solid black; padding: 2px;">2. Delete RAID</li> <li>3. Duplicate Mirror Disk</li> <li>4. Set Drive Mode</li> <li>5. Select Boot Disk</li> </ol>	<p>Help</p> <p>Remove a RAID Array on the HPT370</p> <p>F1: View Array Status            ↑,↓: Move to next item            Enter: Confirm the selection            Esc: Return to top menu</p>																									
<p>Channel Status</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Channel</th> <th style="text-align: left;">Drive Name</th> <th style="text-align: left;">Mode</th> <th style="text-align: left;">Size(M)</th> <th style="text-align: left;">Status</th> </tr> </thead> <tbody> <tr> <td>Primary Master</td> <td>QUANTUM FIREBALL CR4.3</td> <td>UDMA4</td> <td>4209</td> <td>HDD0</td> </tr> <tr> <td>Primary Slave</td> <td>No Drive</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Secondary Master</td> <td>QUANTUM FIREBALL CR4.3</td> <td>UDMA4</td> <td>4209</td> <td>HDD1</td> </tr> <tr> <td>Secondary Slave</td> <td>No Drive</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p style="font-size: small; margin-top: 10px;">(C)1999-2000. HighPoint Technologies, Inc. All rights reserved</p>		Channel	Drive Name	Mode	Size(M)	Status	Primary Master	QUANTUM FIREBALL CR4.3	UDMA4	4209	HDD0	Primary Slave	No Drive				Secondary Master	QUANTUM FIREBALL CR4.3	UDMA4	4209	HDD1	Secondary Slave	No Drive			
Channel	Drive Name	Mode	Size(M)	Status																						
Primary Master	QUANTUM FIREBALL CR4.3	UDMA4	4209	HDD0																						
Primary Slave	No Drive																									
Secondary Master	QUANTUM FIREBALL CR4.3	UDMA4	4209	HDD1																						
Secondary Slave	No Drive																									

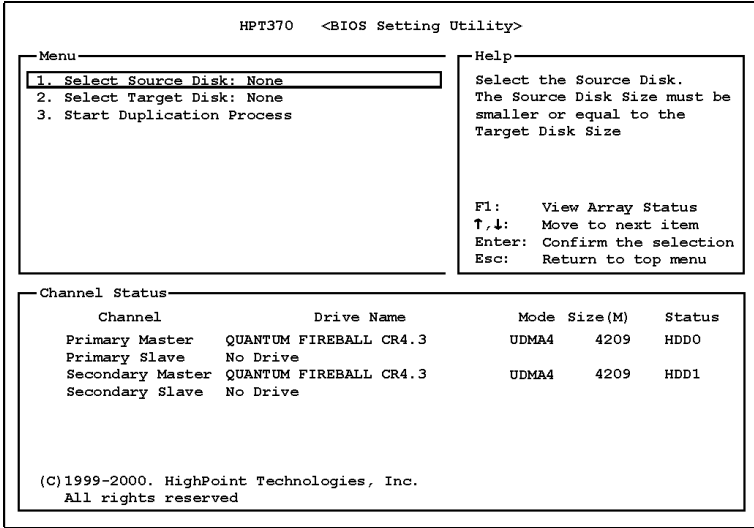
### NOTE

After you have made and confirmed this selection, all the data stored in the hard disk will be lost. (The entire partition configuration will be deleted too.)

## 4-8. Duplicate Mirror Disk

This item allows you to select the disk you wish to duplicate in preparation for a “Mirror Disk Array”.

After you have selected the function you want in the main menu, you may press the <Enter> key to enter the sub menu as shown below:



- **Select Source Disk:**

This item is to select the source disk. The size of source disk must be smaller or equal to the one of target disk.

- **Select Target Disk:**

This item is to select the target disk. The size of target disk must be greater or equal to the one of source disk.

- **Start Duplicating Process:**

After you had selected this item, the BIOS setting will take up to 30 minutes to run the duplication. Please wait or you may press <Esc> to cancel.

## 4-9. Set Drive Mode

This item allows you to select the drive transfer mode for the hard disk(s).

Use the up/down arrow to select the menu option to “Set Drive Mode” and press <Enter>. In the Channel Status, select the channel you would like to set and press <Enter>, there will come out an asterisk mark in the parentheses indicating that the channel selection had been done. Choose the mode from the pop-up menu. You can choose from PIO 0 ~ 4, MW DMA 0 ~ 2, and UDMA 0 ~ 5.

## 4-10. Select Boot Disk

This item allows you to select the boot disk among the hard disk(s).

```

HPT370  <BIOS Setting Utility>

Menu-----
1. Create RAID
2. Delete RAID
3. Duplicate Mirror Disk
4. Set Drive Mode
5. Select Boot Disk

Help-----
Select the boot disk among
the hard disk(s) attached to
the HPT370

F1:    View Array Status
↑,↓:   Move to next item
Enter: Confirm the selection
Esc:   Return to top menu

Channel Status-----

Channel          Drive Name          Mode  Size(M)  Status
(*) Primary Master  QUANTUM FIREBALL CR4.3  UDMA4  4209  HDD0
  Primary Slave    No Drive
( ) Secondary Master QUANTUM FIREBALL CR4.3  UDMA4  4209  HDD1
  Secondary Slave  No Drive

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```

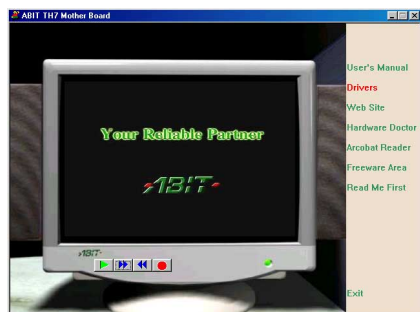
Use the up/down arrow to select the menu option to “**Select Boot Disk**” and press <Enter>. In the Channel Status, select the channel you would like to set as bootable disk and press <Enter>, there will come out an asterisk mark in the parentheses indicating that the channel selection had be done.



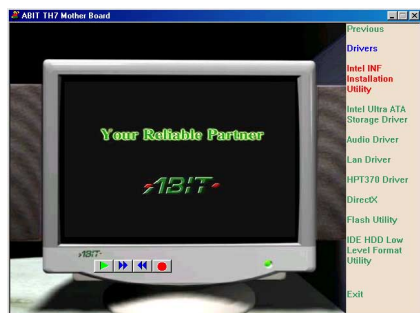
## Appendix A. Install INF Utility for Windows® 98 SE

After you've installed Windows® 98 SE, you have to install the INF Utility first before VGA and audio driver.

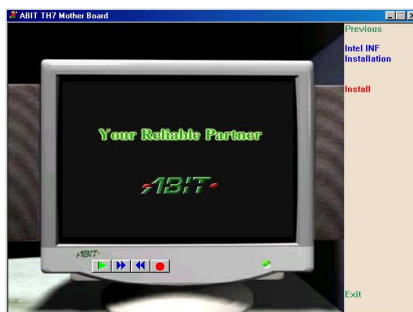
Insert the TH7-RAID CD-Title into your CD-ROM drive, it should execute the program automatically. If not, you can go to the CD location and execute the execution file at the main directory of this CD-Title. After it has been executed you will see the screen below.



1. Move the cursor to “**Drivers**” and click on it to go on.



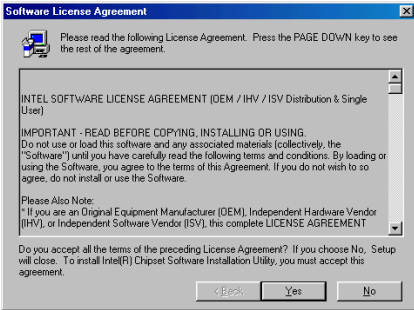
2. Move the cursor to “**Intel INF Installation Utility**” and click on it to go on.



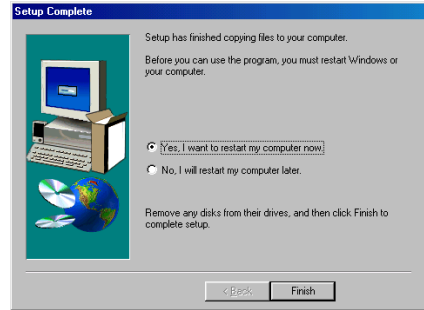
3. Move the cursor to “**Install**” and click on it to go on.



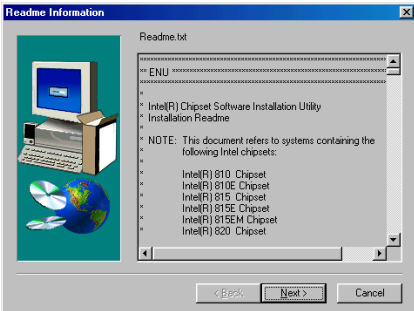
4. The Welcome screen appears. Click “**Next>**” to go on.



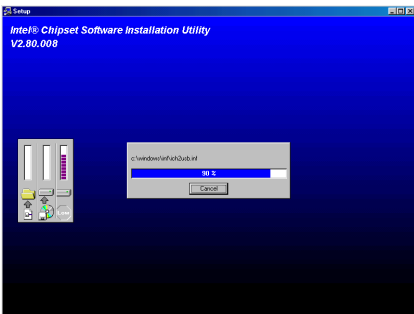
5. The License screen appears. Read it and click **“Yes”** to go on.



8. Choose **“Yes, I want to restart my computer now”**, and click **“Finish”** to end the installation.



6. Read this **“Readme Information”** and click **“Next>”** to go on.



7. The install shield is now loading.

## Appendix B. Install ATA Utility for Windows® 98 SE

In this section we will detail the Ultra ATA installation procedure.

Insert the TH7-RAID CD-Title into your CD-ROM drive, it should execute the program automatically. If not, you can go to the CD location and execute the execution file at the main directory of this CD-Title. After it has been executed you will see the screen below.



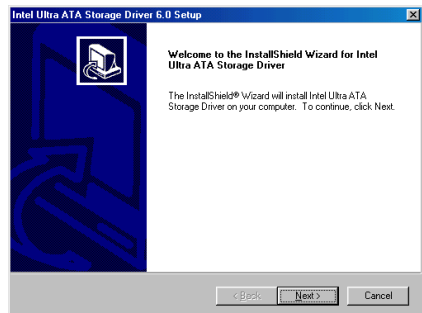
1. Move the cursor to “Drivers” and click on it to go on.



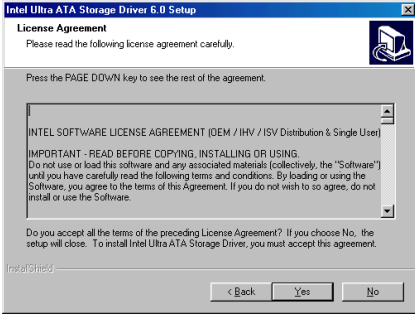
2. Move the cursor to “Intel Ultra ATA Storage Driver” and click on it to go on.



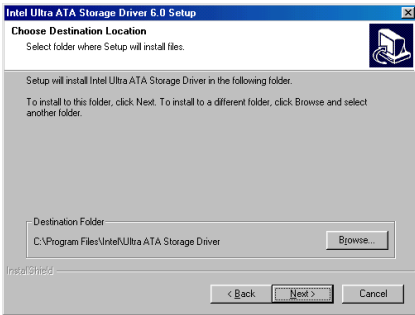
3. Move the cursor to “Install” and click on it to go on.



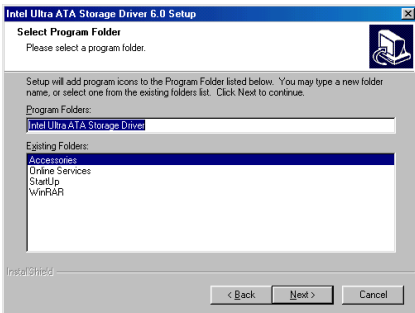
4. The Welcome screen appears. Click “Next” to go on.



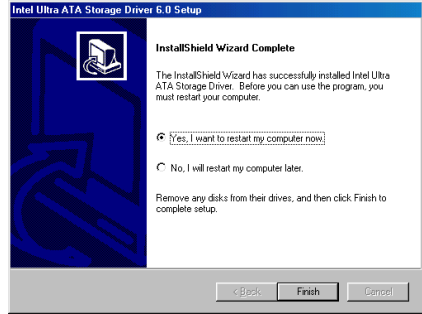
5. The License screen appears. Read it and click **“Yes”** to go on.



6. Now you can choose the folder for the destination location you want to install the driver. We suggest you use the default folder as the destination. When you have decided on the destination, click **“Next>”**.



7. Now you can choose the program folder. The Setup will add program icons to those program folders listed. Click **“Next>”** to go on.



8. Choose **“Yes, I want to restart my computer now”**, and click **“Finish”** to end the installation.

## Appendix C. Install Audio Driver for Windows® 98 SE

We will show you how to install the audio driver for Windows® 98 SE operating system.

Insert the TH7-RAID CD-Title into your CD-ROM drive, it should execute the program automatically. If not, you can go to the CD location and execute the execution file at the main directory of this CD-Title. After it has been executed you will see the screen below.



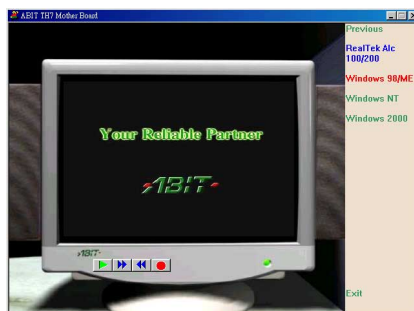
1. Move the cursor to “**Drivers**” and click on it to go on.



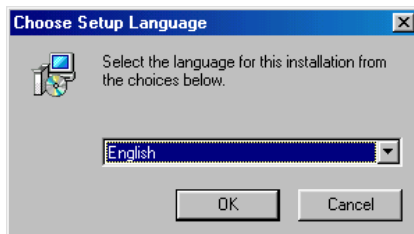
2. Move the cursor to “**Audio Driver**” and click on it to go on.



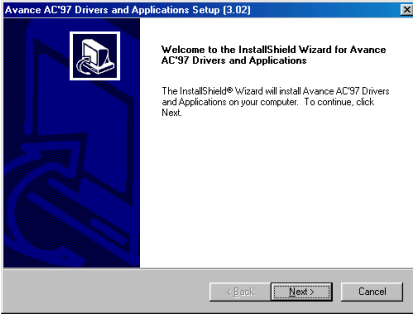
3. Move the cursor to “**RealTek ALC100/200**” and click on it to go on.



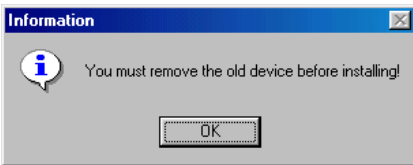
4. Move the cursor to “**Win 98/ME**” and click on it to go on.



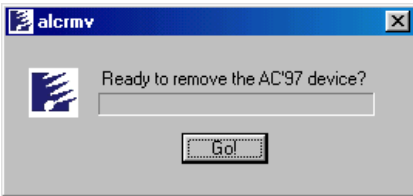
5. Choose the language for this installation.



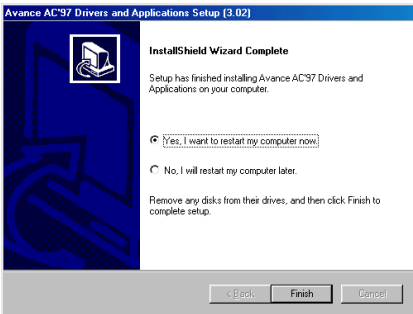
6. The Welcome screen appears. Click “Next>” to go on.



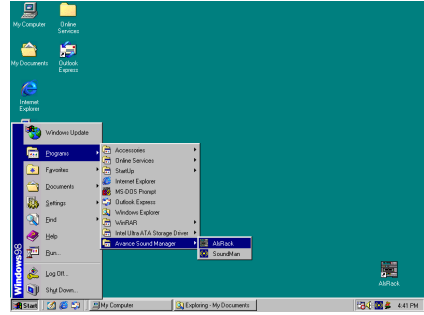
7. Click “OK” to go on.



8. Click “Go!” to go on.



9. Choose “Yes, I want to restart my computer now”, and click “Finish” to end the installation.



10. After the system restarted, there will be one shortcut icon appears in the desktop area and another in the tool bar.



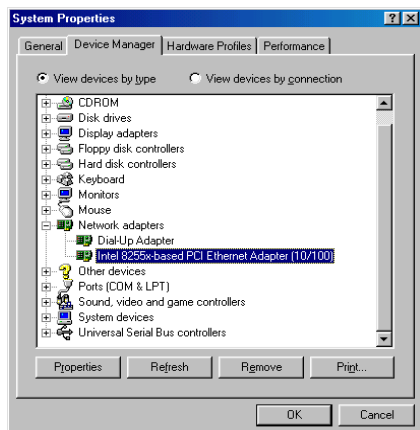
11. This audio playing menu pops up by clicking the shortcut of AlSRack icon in the desktop area.



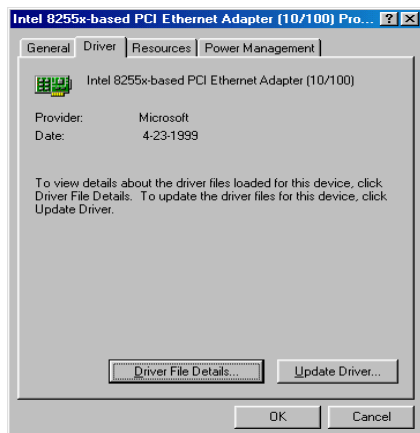
12. This sound effect control menu pops up by clicking the shortcut icon in the tool bar.

## Appendix D. Install LAN Driver for Windows® 98 SE (Manufacturer Option)

The LAN function is an optional device for this motherboard. It is currently unavailable to install the LAN driver for Windows 98 automatically with the TH7-RAID CD-Title. You have to do it manually. Enter “**System Properties**” by entering the Windows toolbar and click the “**Start**” → “**Settings**” → “**Control Panel**” → “**System**” → “**Device Manager Tab**”:



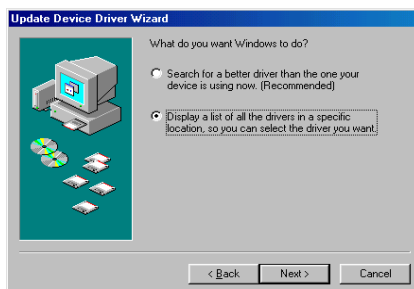
1. Move the cursor to “**Intel 8255x-based PCI Ethernet Adapter (10/100)**” and double-click on it to enter its properties.



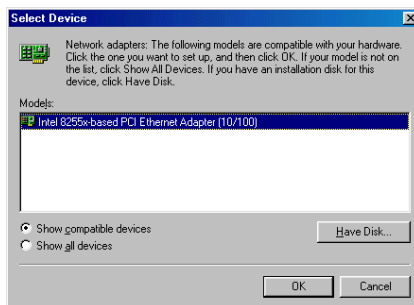
2. Enter the “**Driver**” tab and click “**Update Driver....**” to continue.



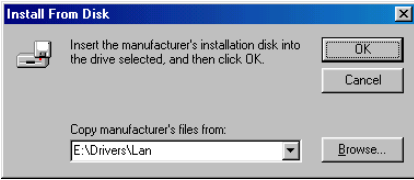
3. Click “**Next>**” to continue.



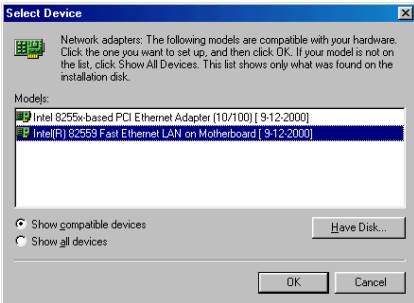
4. Choose “**Display a list of all the drivers in a specific location...**” and click “**Next>**”.



5. Click “**Have Disk...**”.



6. Insert the TH7-RAID CD-Title into your CD-ROM. Use the **“Browse...”** button or type in the path **“E:\Drivers\Lan”**. E: is the CD-ROM drive. Click **“OK”** to continue.



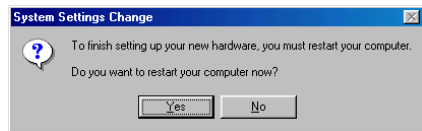
7. Choose **“Intel(R) 82559 Fast Ethernet LAN on Motherboard”** and click **“OK”** to continue.



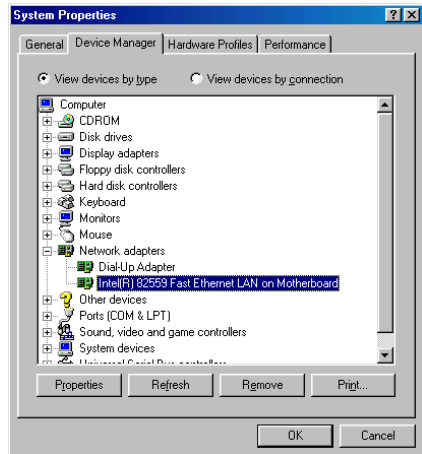
8. Click **“Next>”**.



9. Click **“Finish”**.



10. Click **“Yes”** to restart the computer.



11. Now back to the System Properties, you can see the LAN device has updated into **“Intel(R) 82559 Fast Ethernet LAN on Motherboard”**. Click **“OK”** to exit.



## Appendix E. Install INF Utility for Windows® 2000

After you've installed Windows® 2000, you need to install the driver for your IDE & USB devices. We will show you step by step in the following section on how to do this.

### NOTE

You have to install the INF Installation Utility before you install the VGA and audio driver. After installing Windows, the quality of your display will be poor because it will be set to 640\*480 and 16 color. For the best screen capture quality, install the VGA driver and set the desktop to 800\*600 using True Color.

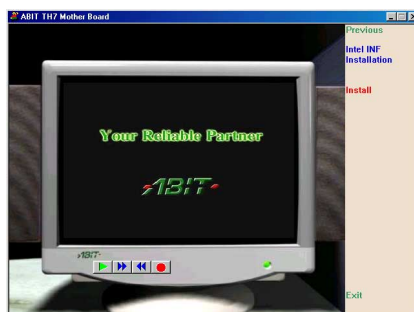
Insert the TH7-RAID CD-Title into your CD-ROM drive, it should execute the program automatically. If not, you can go to the CD location and execute the execution file at the main directory of this CD-Title. After it has been executed you will see the screen below.



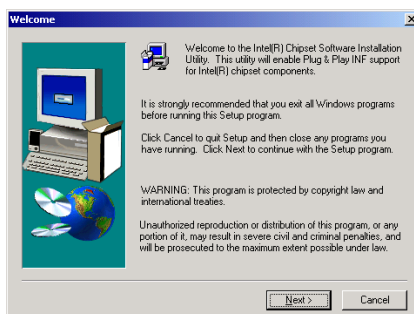
1. Move the cursor to “Drivers” and click on it to go on.



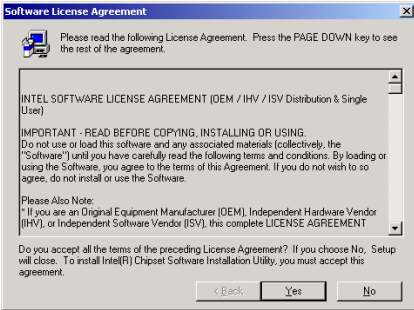
2. Move the cursor to “Intel INF Installation Utility” and click on it to go on.



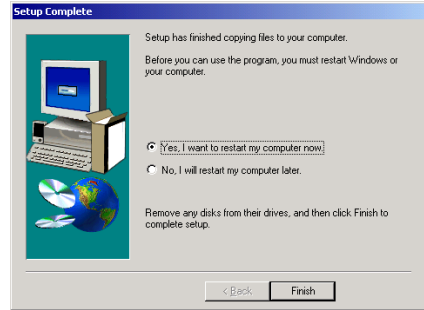
3. Move the cursor to “Install” and click on it to go on.



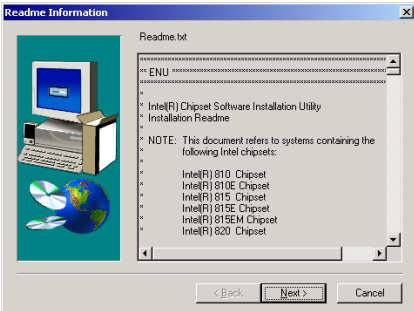
4. The Welcome screen appears. Click “Next>” to go on.



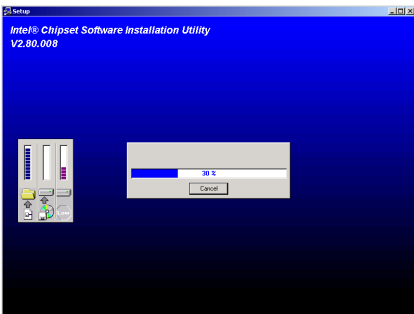
5. The License screen appears. Read it and click **“Yes”** to go on.



8. Choose **“Yes, I want to restart my computer now”**, and click **“Finish”** to end the installation.



6. Read this **“Readme Information”** and click **“Next>”** to go on.



7. The install shield is now loading.

## Appendix F. Install ATA Utility for Windows® 2000

In this section we will detail the Ultra ATA installation procedure.

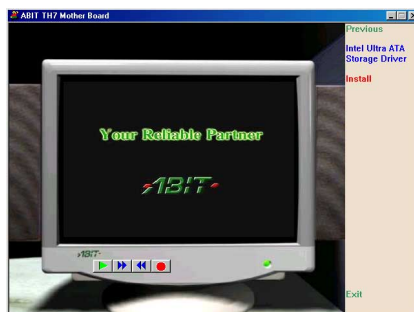
Insert the TH7-RAID CD-Title into your CD-ROM drive, it should execute the program automatically. If not, you can go to the CD location and execute the execution file at the main directory of this CD-Title. After it has been executed you will see the screen below.



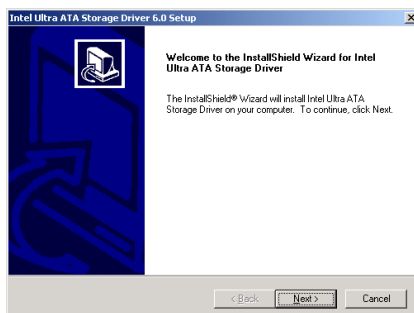
1. Move the cursor to “Drivers” and click on it to go on.



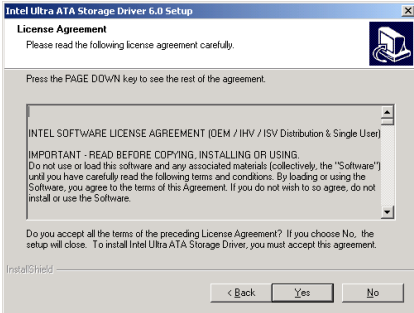
2. Move the cursor to “Intel Ultra ATA Storage Driver” and click on it to go on.



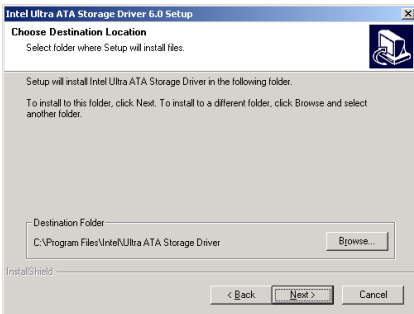
3. Move the cursor to “Install” and click on it to go on.



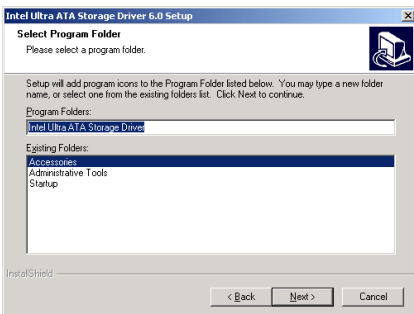
4. The Welcome screen appears. Click “Next>” to go on.



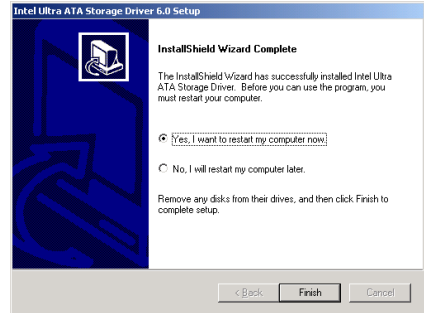
5. The License screen appears. Read it and click **“Yes”** to go on.



6. Now you can choose the folder for the destination location you want to install the driver. We suggest you use the default folder as the destination. When you have decided on the destination, click **“Next>”**.



7. Now you can choose the program folder. The Setup will add program icons to those program folders listed. Click **“Next>”** to go on.



8. Choose **“Yes, I want to restart my computer now”**, and click **“Finish”** to end the installation.

## Appendix G. Install Audio Driver for Windows® 2000

We will show you how to install the audio driver for Windows® 2000 operating system.

Insert the TH7-RAID CD-Title into your CD-ROM drive, it should execute the program automatically. If not, you can go to the CD location and execute the execution file at the main directory of this CD-Title. After it has been executed you will see the screen below.



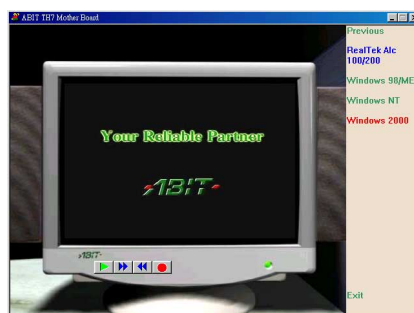
1. Move the cursor to “**Drivers**” and click on it to go on.



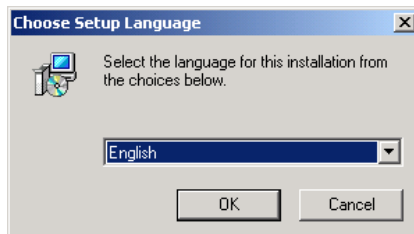
2. Move the cursor to “**Audio Driver**” and click on it to go on.



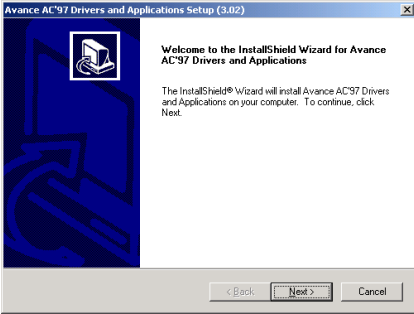
3. Move the cursor to “**RealTek ALC100/200**” and click on it to go on.



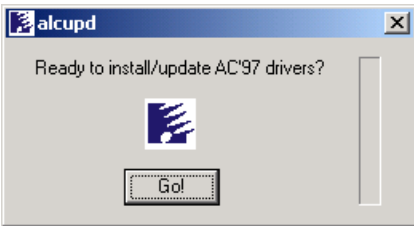
4. Move the cursor to “**Windows 2000**” and click on it to go on.



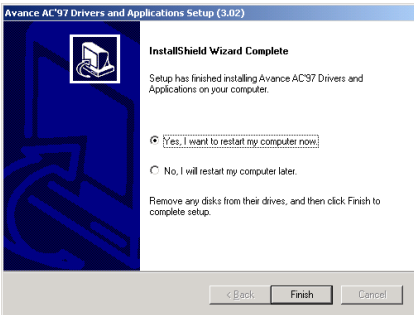
5. Choose the language for this installation.



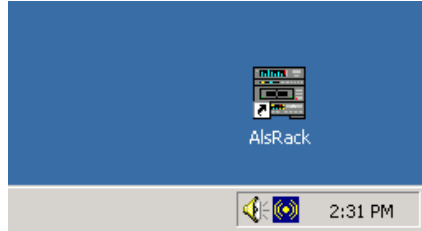
6. The Welcome screen appears. Click “Next>” to go on.



7. Click “Go!” to go on.



8. Choose “Yes, I want to restart my computer now”, and click “Finish” to end the installation.



9. After the system restarted, there will be one shortcut icon appears in the desktop area and another in the tool bar.



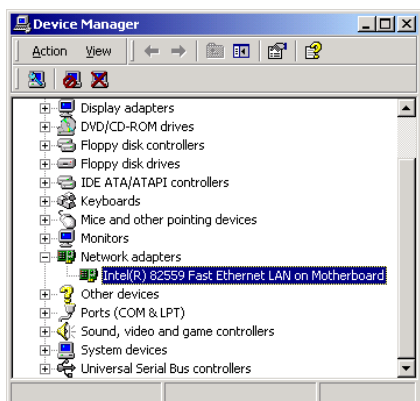
10. This audio playing menu pops up by clicking the shortcut of AlsRack icon in the desktop area.



11. This sound effect control menu pops up by clicking the shortcut icon in the tool bar.

## Appendix H. Install LAN Driver for Windows® 2000 (Manufacturer Option)

In this section we will detail the Ultra ATA installation procedure. It is currently unavailable to install the LAN driver for Windows 2000 automatically with the TH7-RAID CD-Title. You have to do it manually. Enter “**Device Manager**” by entering the Windows toolbar and click the “**Start**” → “**Settings**” → “**Control Panel**” → “**System**” → “**Hardware Tab**” → “**Device Manager**”:



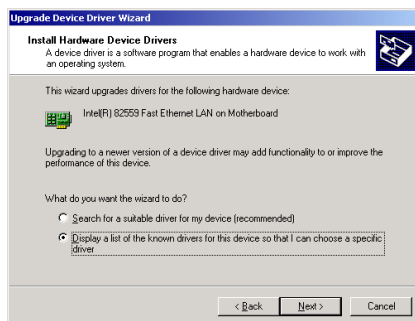
1. Move the cursor to “**Intel(R) 82559 Fast Ethernet LAN on Motherboard**” and double-click on it to enter its properties.



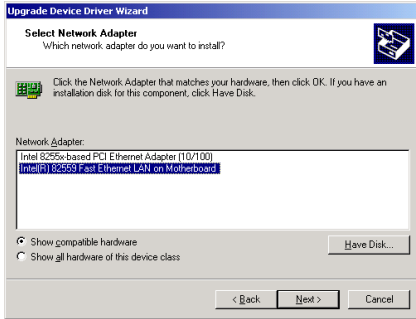
2. Enter the “**Driver**” tab and click “**Update Driver...**” to continue.



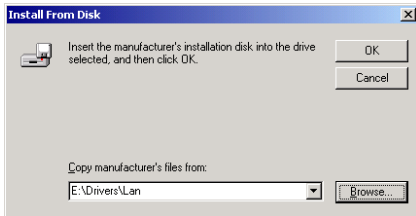
3. Click “**Next>**” to continue.



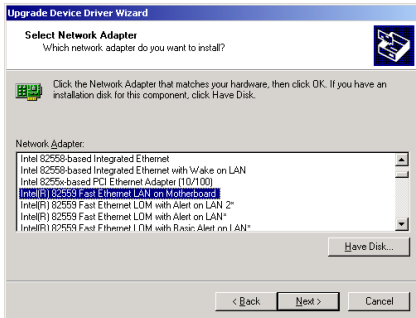
4. Choose “**Display a list of the known drivers for this device so that I can choose a specific driver.**” and click “**Next>**”.



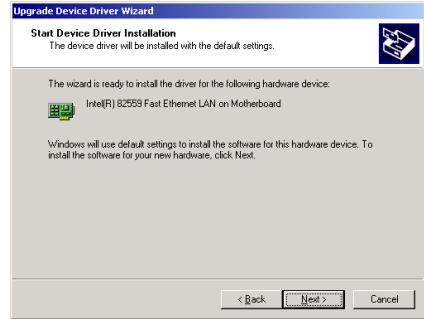
5. Click “**Have Disk...**”.



6. Insert the TH7-RAID CD-Title into your CD-ROM. Use the “**Browse...**” button or type in the path “**E:\Drivers\Lan**”. E: is the CD-ROM drive. Click “**OK**” to continue.



7. Choose “**Intel(R) 82559 Fast Ethernet LAN on Motherboard**” and click “**Next>**” to continue.



8. Click “**Next>**”.



9. Click “**Finish**” to end the driver update.



## Appendix I. BIOS Update Guide

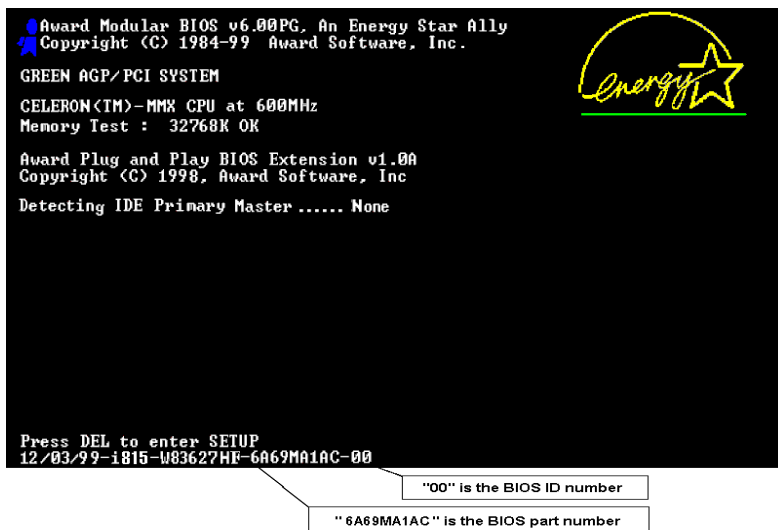
We will use the SE6 as an example; all other models follow the same process.

1. First, know your motherboard's model name and version number. You can find it on one slot of the motherboard. Each motherboard always has the label at the same place as shown in the photo below.



You will find the model name and version on the white sticker.

2. Know the current BIOS ID.



For example, in this case, the current BIOS ID is "00". If you already have the latest BIOS, no any update action is necessary. If your BIOS is not the latest BIOS, go on to the next step.

3. Download the correct BIOS file from our Web site.

### [ SE6 ]

Filename:

[SE6SW.EXE](#)

Date: 07/06/2000

ID: SW

NOTE:

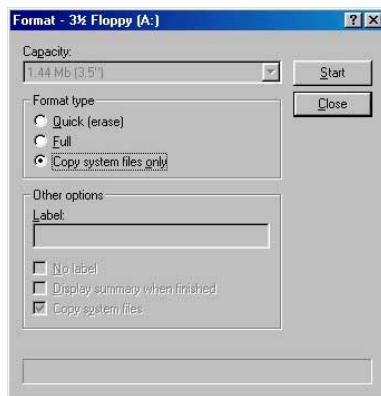
1. Fixes SCSI HDD detection problem when booting from SCSI CD-ROM and executing FDISK.
2. Supports 512MB memory modules.
3. Sets the In-Order Queue Depth default to 4, increasing the integrated video performance.

Go to our Web site and choose the correct BIOS file and download it.

4. Double click the download file, it will self-extract to .bin file.

```
LHA's SFX 2.13S <c> Yoshi, 1991
$E6_SW.BIN .....
```

5. Make a bootable floppy disk and copy the necessary files onto it.

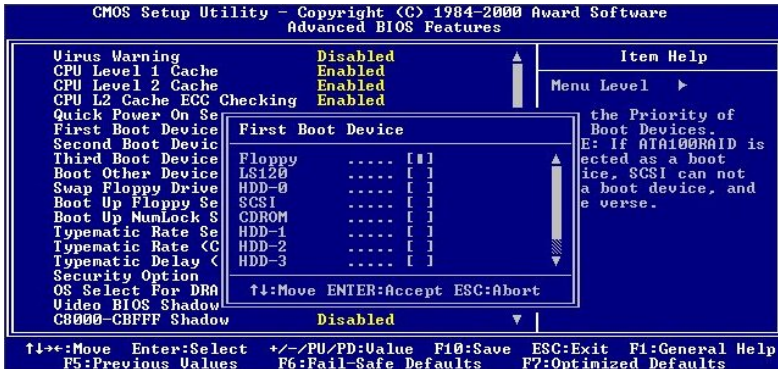
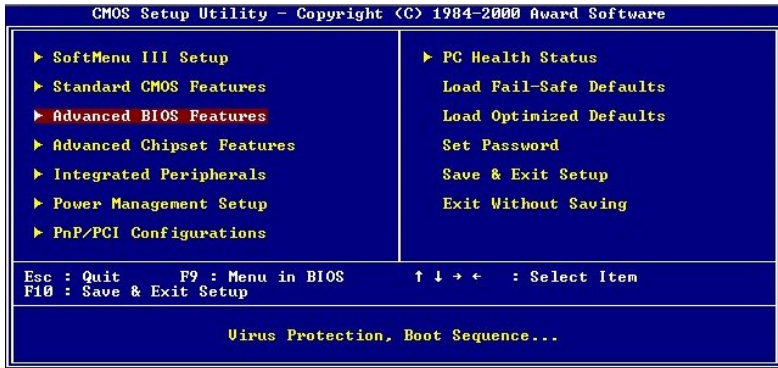


You may make a floppy disk bootable either in Explorer or in the DOS prompt mode.

```
[c:\]format a: /s
```

After formatting and transferring the system to the floppy disk, copy two files into it. One is the BIOS flash utility “**awdf flash.exe**” and the other is the decompressed BIOS binary file.

6. Boot off floppy disk.



Please set the first boot sequence as “floppy” in BIOS and boot off the floppy disk.

7. Flash the BIOS in pure DOS mode.

```
A:\>awdflash se6_sw.bin /cc /cd /cp /py /sn /cks /r_
```

After successfully booting off of the floppy, execute the flash utility according to these instructions.

**NOTE**

We strongly recommend you use the above parameters following 'awdflash' to flash your BIOS. **DO NOT** just type "awdflash se6\_sw.bin" without the above parameters following the ".bin" file.

**NOTE**

- The Award flash utility cannot be completed under the Windows® environment. It must be done in a pure DOS environment.
- You should check which BIOS file is to be used with your motherboard, don't flash with the wrong BIOS file. Otherwise, it may cause system malfunctions.

**NOTE**

Please do not use the Award flash memory writer version earlier than Version 7.52C to flash the BIOS. Otherwise, it may cause flash fail or un-anticipated problems.

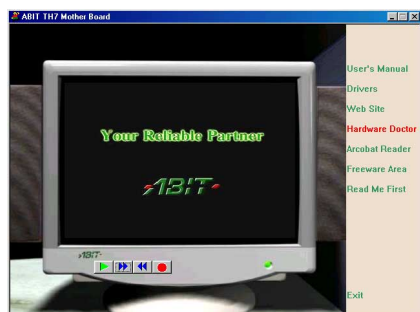
**NOTE**

During the updating, the progress will be measured by white blocks. The last four *blue* blocks of the flash update process represent the "BIOS boot block". The BIOS boot block is used to prevent the BIOS from becoming corrupt during programming. It should not be programmed every time. If this "BIOS boot block" remains intact when the BIOS becomes corrupt during programming, then you can boot from a bootable floppy next time you boot your computer. This allows you to flash your BIOS again without the need for technical support from the dealer.

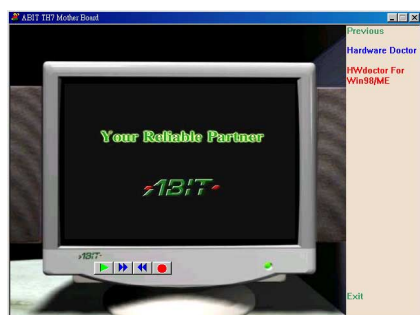
## Appendix J. Hardware Monitoring (The Winbond Hardware Doctor Utility)

Winbond Hardware Doctor is a self-diagnostic system for PCs and must be used with Winbond chipset: W83627HF IC series products. It protects PC hardware by monitoring several critical items including power supply voltages, CPU & system fan speeds and CPU and system temperatures. These items are important for the system operation. Errors may result in permanent damage to the PC. Once any item is out of its normal range, a warning message pops up reminding you to take proper measures.

Insert the TH7-RAID CD-Title into your CD-ROM drive, it should execute the program automatically. If not, you can go to the CD location and execute the execution file at the main directory of this CD-Title. After it has been executed you will see the screen below.



1. Click "Hardware Doctor".




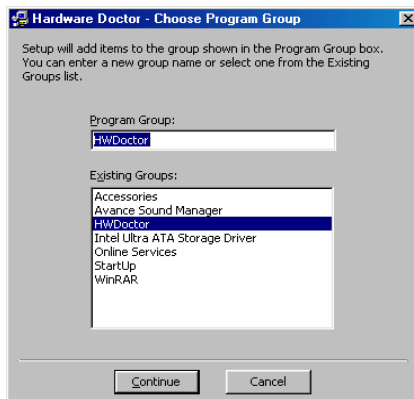
2. Click "HWDOCTOR For Win 98/ME".



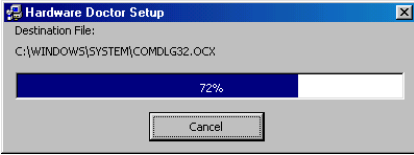
3. The welcome screen appears. Click "OK".



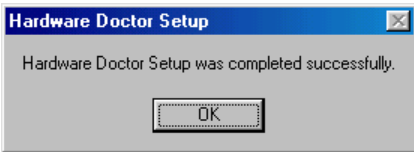
4. Click the  icon to start installing, or click "Change Directory" to specify the path.



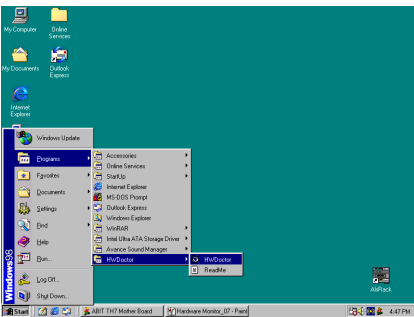
5. Click "Continue" to go on or choose a new program group.



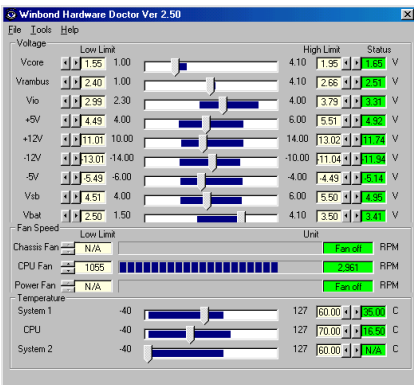
6. Now the screen will show you the percentage of installation progress.



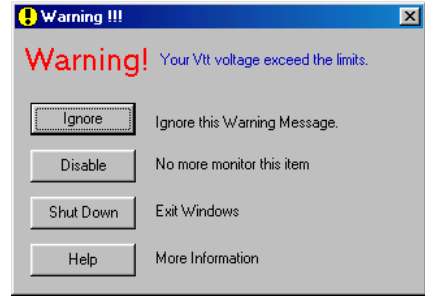
7. Click "OK" to finish setup.



8. Execute the Hardware Doctor by entering the Windows toolbar and click the "Start" → "Programs" → "HWDoctor" → "HWDoctor".



9. This screen appears. Hardware Doctor shows you the status of Voltage, Fan Speed, and Temperature readings as well. If any reading is critical or over its limitation, the reading turns red. Also, a pop-up window appears warning you the system has a problem!



10. This is the warning message window:

**Ignore:** You can ignore the warning message of the item, but it will pop up again when an error of the same item reoccurs.

**Disable:** The chosen item will be no longer monitored thereafter, unless you activate it in the "Configuration" page.

**Shutdown:** Choosing this button will shutdown the computer.

**Help:** You can read more information and self-diagnose simple problems.

If the warning message pops up due to the wrong warning limit, you can adjust it in the "Configuration" option. For example, if you set the temperature high limit to 40°C, you will easily exceed the "proper" temperature.

Pay attention to two things when you want to make any change to the "Configuration" option. Firstly, you have to make sure your new setting is in the proper range. Secondly, after you finished the configuration, you have to save it. Otherwise, the program will start with the default value next time.

If you encounter any problem or have any question about the software settings and adjustments, please use the Winbond hardware doctor on-line help. It should give you enough information to answer your questions.

## Appendix K. Installation Guide for Suspend to RAM

Suspend To RAM (STR) is a cost-effective, optimal implementation of the ACPI 1.0 specification. The ACPI specification defines the S3 sleep state, in which all system context is lost except system memory. CPU, cache, and chip set context are lost in this state. Hardware maintains memory context and restores some CPU and L2 configuration context.

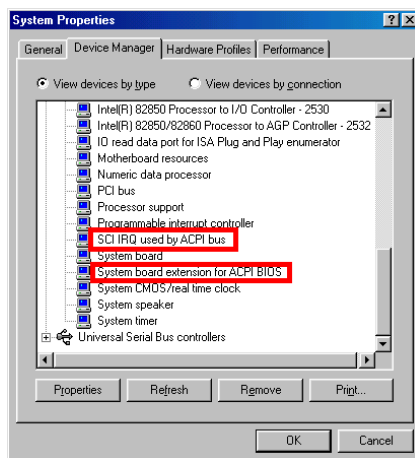
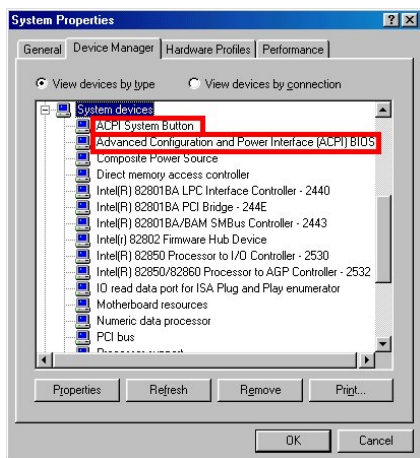
The STR function enables a PC to achieve the S3 state during idle periods, then quick “wake up” and retrieve the last “state” of the system before it went to sleep. When idle, STR-enabled systems consume only a small fraction of the power used for full operation. Instead of shutting down the system to save power when not in use and then having to reboot later, users can let the STR function take over and not have to worry about using power to run all the electronics, fans and disks. When needed, a PC with STR function can restore all applications and features to an operational state within a few seconds.

The following description will tell you how to install the STR function and use it.

### NOTE

To get Windows® 98 to enable the ACPI BIOS function, you have to type the parameter after the setup command, for example, setup /p j. This command will let Windows® 98 automatically install the necessary elements for the ACPI BIOS. If you have already installed Windows® 98 without using this command, you have to re-install Windows® 98 and use the /p j command. Otherwise, your Windows® 98 ACPI function may not work.

As above note mentioned, you have to use the parameter come with the setup command to install your Windows® 98. After you complete Windows® 98 installation and reboot your computer, you can see these items show up in the *System Properties* → *Device Manager*:



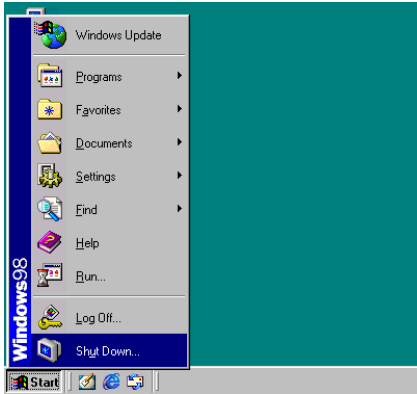
- ♦ ACPI System Button
- ♦ Advance Configuration and Power Interface (ACPI) BIOS
- ♦ SCI IRQ use by ACPI bus
- ♦ System board extension for ACPI BIOS

After these items show up, you can go to the next step for the STR function setting.

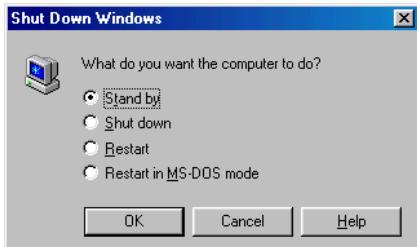
### How to use the STR function:

There are two ways to put your system into STR mode:

**Method 1:** Select “Stand by” in the “Shut Down Windows” area.

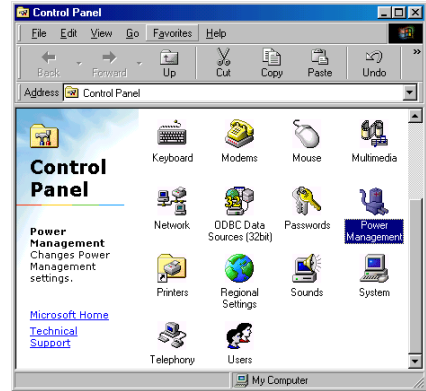


1. Click “Start” in the Windows Tools Bar, and then select “Shut Down...”

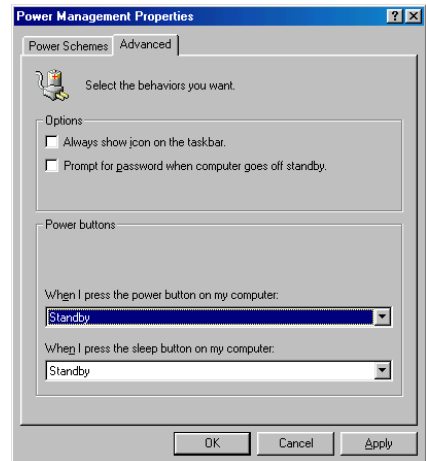


2. Select “Stand by”, and then click “OK”.

**Method 2:** Define the case “Power” button to initiate STR sleep Mode



1. Open “Control Panel”, and then enter “Power Management”.



2. Select “Advanced”, and then set the “Power Buttons” to “Standby”.

Restart your computer to put these settings into effect. Now you will only need to press the “Power” button on the front panel of the chassis when you want to put your computer into STR sleep mode.



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## Appendix L. Troubleshooting (Need Assistance?)

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If you have a problem during operation and in order to help our technical support personnel to quickly find out what the problem of your motherboard is and to give you the answers you need, before filling in the technical support form, eliminate any peripheral that is not related to the problem, and indicate on the form, the system's peripherals. Fax this form to your dealer or to the company where you bought the hardware or your nearest ABIT branch office in order to benefit from our technical support. (You can refer to the examples given below)

Example 1: With a system including: motherboard (with CPU, DRAM, COAST...) HDD, CD-ROM, FDD, MPEG CARD, SCSI CARD, SOUND CARD, etc. After the system is assembled, if you cannot boot up, check the key components of the system using the procedure described below. First remove all interface cards and try to reboot.

☛ If you still cannot boot up:

If it still does not start, note the motherboard model, BIOS identification number, CPU on the technical support form (refer to main instructions), and describe the problem in the problem description space provided.

☛ If you can boot up:

Reinsert the interface cards you have removed one by one and try to start the system each time you insert a card, until the system doesn't start anymore. Keep the interface card that causes the problem inserted on the motherboard, remove any other card or peripheral, and start again. If you still cannot start, note down the information related to both cards in the add-on Card space provided, and don't forget to indicate the motherboard model, version, BIOS identification number, CPU (refer to main instructions), and give a description of the problem.

Example 2: With a system including the motherboard (with CPU, DRAM, COAST...) HDD, CD-ROM, FDD, LAN CARD, MPEG CARD, SCSI CARD, SOUND CARD, after assembly and after having installed the Sound Card Driver, when you restart the system, when it runs the Sound Card Driver, it resets automatically. This problem may be due to the Sound Card Driver. During the Starting DOS... procedure, press SHIFT (BY-PASS) key, to skip CONFIG.SYS and AUTOEXEC.BAT; edit CONFIG.SYS with a text editor, and in function the line that loads the Sound Card Driver, add a remark REM, in order to disable the Sound Card Driver. See the example below.

```
CONFIG.SYS:
DEVICE=C:\DOS\HIMEM.SYS
DEVICE=C:\DOS\EMM386.EXE HIGHSCAN
DOS=HIGH, UMB
FILES=40
BUFFERS=36
REM DEVICEHIGH=C:\PLUGPLAY\DWCFGMG.SYS
LASTDRIVE=Z
```

Restart the system. If the system starts and does not reset, you can be sure that the problem is due to the Sound Card Driver. Note down the Sound Card model, motherboard model, BIOS identification number on the technical support file (refer to main instructions), and describe the problem in the space provided.



### Main instructions...

To fill in this “**Technical Support Form**”, refer to the step-by-step instructions given below:

- 1\* **MODEL:** Note the model number given in your user’s manual.

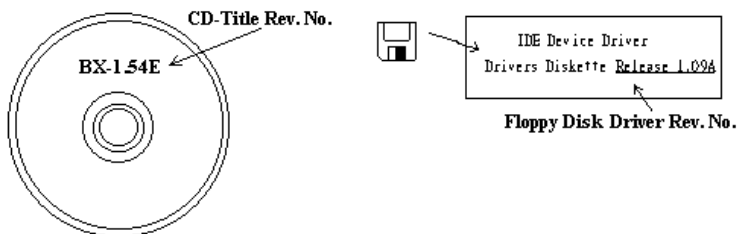
Example: WX6e, BX6, BH6, etc...

- 2\* **Motherboard model number (REV):** Note the motherboard model number labeled on the motherboard as “REV:\*.\*\*\*”.

Example: REV: 1.01

- 3\* **BIOS ID and Part Number:** See the on screen message.

4. **DRIVER REV:** Note the driver version number indicated on the DEVICE DRIVER disk (if any) as “Release \*.\*\*\*”. For example:



- 5\* **OS/APPLICATION:** Indicate the operating system and applications you are running on the system.

Example: MS-DOS® 6.22, Windows® 95, Windows® NT....

- 6\* **CPU:** Indicate the brand and the speed (MHz) of your CPU.

Example:(A) In the “Brand” space, write “Intel”, in the “Specifications” space, write “ Pentium® II MMX 300MHz” .

7. **HDD:** Indicate the brand and specifications of your HDD(s), specify if the HDD is using  IDE1 or  IDE2. If you know the disk capacity, indicate it and check (“✓”) “”; in case you give no indication, we will consider that your HDD is “IDE1” Master.

Example: In the “HDD” space, check the box, in the Brand space, write “Seagate”, in the Specifications space, write “ST31621A (1.6GB)”.

8. **CD-ROM Drive:** Indicate the brand and specifications of your CD-ROM drive. Specify if it uses  IDE1 or  IDE2 . and check (“✓”) “”; in case you give no indication, we will consider that your CD-ROM is “IDE2” Master.

Example: In the “CD-ROM drive” space, check the box, in the Brand space, write “Mitsumi”, in the Specifications space, write “FX-400D”.

9. **System Memory (DRAM):** Indicate the brand and specifications (SIMM / DIMM) of your system memory. For example:

In the Brand space, write “Panasonic”, in the Specifications space, write “SIMM-FP DRAM 4MB-06”.

Or, in the Brand, write “NPNX”, in the Specifications space, write “SIMM-EDO DRAM 8MB-06”.

Or, in the Brand space, write “SEC”, in the Specifications space, write “DIMM-S DRAM 8MB-G12”.

**10. ADD-ON CARD:** Indicate which add-on cards you are *absolutely sure* are related to the problem.

If you cannot identify the problem’s origin, indicate all the add-on cards inserted into your system.


**NOTE**

Items between the “\*” are absolutely necessary.

## Technical Support Form

 **Company Name:**

 **Phone Number:**

 **Contact Person:**

 **Fax Number:**

 **E-mail Address:**

Model	*	BIOS ID #	*
Motherboard Model No.		DRIVER REV	
OS/Application	*		
Hardware Name	Brand	Specifications	
CPU	*		
HDD			
	<input type="checkbox"/> IDE1		
	<input type="checkbox"/> IDE2		
CD-ROM-Drive			
	<input type="checkbox"/> IDE1		
	<input type="checkbox"/> IDE2		
System Memory (DRAM)			
ADD-ON CARD			

Problem Description:

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## Appendix M. How to Get Technical Support

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(From our website) <http://www.abit.com.tw>

(In North America) <http://www.abit-usa.com>

(In Europe) <http://www.abit.nl>

Thank you for choosing ABIT products. ABIT sells all our products through distributors, resellers and system integrators; we have no direct sales to end-users. Before sending email for tech support please check with your resellers or integrators if you need any services, they are the ones who sold you your system and they should know best as to what can be done, how they serve you is a good reference for future purchases.

We appreciate every customer and would like to provide the best service to you. Providing fast service to our customers is our top priority. However we receive many phone calls and a huge amount of email from all over the world. At the present time it is impossible for us to respond to every single inquiry. Therefore it is quite possible that if you send an email to us that you may not receive a response.

We have done many compatibility tests and reliability tests to make sure our products have the best quality and compatibility. In case you need service or technical support, please understand the constraint we have and **always check with the reseller who sold the product to you first.**

To expedite service, we recommend that you follow the procedures outlined below before contacting us. With your help, we can meet our commitment to provide the best service to the **greatest number of ABIT customers:**

- 1. Check the Manual.** It sounds simple but we have taken a lot of care in making a well-written and thorough manual. It is full of information that doesn't only pertain to motherboards. The CD-ROM included with your board will have the manual as well as drivers. If you don't have either one go to our Program Download Area of the Website or FTP server at:  
<http://www.abit.com.tw/download/index.htm>
- 2. Download latest BIOS, software or drivers.** Please go to our Program Download area on our Website to check to see if you have the latest BIOS. They are developed over periods of time to fix bugs or incompatibilities. **Also please make sure you have the latest drivers from your peripheral cards makers!**
- 3. Check the ABIT Technical Terms Guide and FAQ on our Website.** We are trying to expand and make the FAQs more helpful and information rich. Let us know if you have any suggestions. For hot topics check out our HOT FAQ!

- 4. Internet Newsgroups.** They are a great source of information and many people there can offer help. ABIT's Internet News group, [alt.comp.periphs.mainboard.abit](http://alt.comp.periphs.mainboard.abit), is an ideal forum for the public to exchange information and discuss experiences they have had with ABIT products. Many times you will see that your question has already been asked before. This is a public Internet news group and it is reserved for free discussions. Here is a list of some of the more popular ones:

[alt.comp.periphs.mainboard.abit](http://alt.comp.periphs.mainboard.abit)

[comp.sys.ibm.pc.hardware.chips](http://comp.sys.ibm.pc.hardware.chips)

[alt.comp.hardware.overclocking](http://alt.comp.hardware.overclocking)

[alt.comp.hardware.homebuilt](http://alt.comp.hardware.homebuilt)

[alt.comp.hardware.pc-homebuilt](http://alt.comp.hardware.pc-homebuilt)

- 5. Ask your reseller.** Your ABIT authorized distributor should be able to provide the fastest solution to your technical problem. We sell our products through distributors who sell to resellers and stores. Your reseller should be very familiar with your system configuration and should be able to solve your problem much more efficiently than we could. After all, your reseller regards you as an important customer who may purchase more products and who can urge your friends to buy from him or her as well. They integrated and sold the system to you. They should know best what your system configuration is and your problem. They should have reasonable return or refund policies. How they serve you is also a good reference for your next purchase.
- 6. Contacting ABIT.** If you feel that you need to contact ABIT directly you can send email to the ABIT technical support department. First, please contact the support team for the branch office closest to you. They will be more familiar with local conditions and problems and will have better insight as to which resellers offer what products and services. Due to the huge number of emails coming in every day and other reasons, such as the time required for problem reproduction, we will not be able to reply to every email. Please understand that we are selling through distribution channels and don't have the resources to serve every end-user. However, we will try to do our best to help every customer. Please also remember that for many of our technical support team English is a second language, you will have a better chance of getting a helpful answer if your question can be understood in the first place. Be sure to use very, simple, concise language that clearly states the problem, avoid rambling or flowery language and always list your system components. Here is the contact information for our branch offices:

**In North America and South America please contact:**

**ABIT Computer (USA) Corporation**

46808 Lakeview Blvd.  
Fremont, California 94538, U.S.A.

[sales@abit-usa.com](mailto:sales@abit-usa.com)

[technical@abit-usa.com](mailto:technical@abit-usa.com)

Tel: 1-510-623-0500

Fax: 1-510-623-1092

**In the UK and Ireland:**

**ABIT Computer Corporation Ltd.**

Unit 3, 24-26 Boulton Road  
Stevenage, Herts  
SG1 4QX, UK

[abituksales@compuserve.com](mailto:abituksales@compuserve.com)

[abituktech@compuserve.com](mailto:abituktech@compuserve.com)

Tel: 44-1438-228888

Fax: 44-1438-226333

**In Germany and Benelux (Belgium, Netherlands, Luxembourg) countries:**

**AMOR Computer B.V. (ABIT's European Office)**

Van Coehoornstraat 7,  
5916 PH Venlo, The Netherlands

[sales@abit.nl](mailto:sales@abit.nl)

[technical@abit.nl](mailto:technical@abit.nl)

Tel: 31-77-3204428

Fax: 31-77-3204420

**All other territories not covered above please contact:**

**Taiwan Head Office**

When contacting our headquarters please note we are located in Taiwan and we are 8+ GMT time. In addition, we have holidays that may be different from those in your country.

**ABIT Computer Corporation**

3F-7, No. 79, Sec. 1, Hsin Tai Wu Rd.  
Hsi Chi, Taipei Hsien, Taiwan

[sales@abit.com.tw](mailto:sales@abit.com.tw)

[market@abit.com.tw](mailto:market@abit.com.tw)

[technical@abit.com.tw](mailto:technical@abit.com.tw)

Tel: 886-2-2698-1888

Fax: 886-2-2698-1811

7. **RMA Service.** If your system has been working but it just stopped, but you have not installed any new software or hardware recently, it is likely that you have a defective component. Please contact the reseller from whom you bought the product. You should be able to get RMA service there.
8. **Reporting Compatibility Problems to ABIT.** Because of tremendous number of email messages we receive every day, we are forced to give greater weight to certain types of messages than to others. For this reason, any compatibility problem that is reported to us, giving detailed system configuration information and error symptoms will receive the highest priority. For the other questions, we regret that we may not be able to reply directly. But your questions may be posted to the Internet news group in order that a larger number of users can have the benefit of the information. Please check the news group from time to time.
9. Listed below are some **chipset vendors' WEB site addresses** for your reference:  
ALI's WEB site: <http://www.ali.com.tw/>  
HighPoint Technology Inc.'s WEB site: <http://www.highpoint-tech.com/>  
Intel's WEB site: <http://www.intel.com/>  
SiS' WEB site: <http://www.sis.com.tw/>  
VIA's WEB site: <http://www.via.com.tw/>

**Thank you, ABIT Computer Corporation**

**<http://www.abit.com.tw>**