WADE-8134

Mini ITX Main Board

User's Manual

Version 1.1

Table of Contents

How to Use This Manual

How to Use This Manual

The manual describes how to configure your WADE-8134 system to meet various operating requirements. It is divided into five chapters, with each chapter addressing a basic concept and operation of Single Board Computer.

Chapter 1 : System Overview. Presents what you have in the box and give you an overview of the product specifications and basic system architecture for this model of single board computer.

Chapter 2 : Hardware Configuration. Shows the definitions and locations of Jumpers and Connectors that you can easily configure your system.

Chapter 3 : System Installation. Describes how to properly mount the CPU, main memory and flash disk to get a safe installation and provides a programming guide of Watch Dog Timer function.

Chapter 4 : BIOS Setup Information. Specifies the meaning of each setup parameters, how to get advanced BIOS performance and update new BIOS. In addition, POST checkpoint list will give users some guidelines of trouble-shooting.

The content of this manual and EC declaration document is subject to change without prior notice. These changes will be incorporated in new editions of the document. **Portwell** may make supplement or change in the products described in this document at any time.

Updates to this manual, technical clarification, and answers to frequently asked questions will be shown on the following web site : http://www.portwell.com.tw

Notes :

(1) Memory type support dual-channel interleaved mode assuming DDR 400 MHz, all DIMMs in a system must be of the same type, the speed in all channels is the speed of the slowest DIMM in the system.

(2) The Power Supply must be support Ver 2.2 or Ver 2.3 or high version.

Chapter 1
System Overview

1.1 Introduction

The WADE-8134 series all-in-one Mini ITX is designed to fit a high performance Pentium 4 LGA 775 based processor and compatible for high-end computer system application with PCI bus architecture. It is made to meet today's demanding pace, and keep complete compatibility with hardware and software designed for the IBM PC/AT. The on-board devices support one PCI slot and integrated graphics and on-board Dual Marvell Gigabit Ethernet controller. It's beneficial to build up a high performance and high data availability system for VARs, or system integrators.
WADE-8134 series support the following processors:

Intel® Pentium® 4 processor Socket LGA 775 supporting Hyper-Threading technology based on 0.90 and 0.60 micron (CPUID = 0xh).**(only support 5 series and 6 series)**

Intel® Celeron D® processor Socket LGA 775 supporting Hyper-Threading technology based on 0.90 and 0.60 micron (CPUID = 0xh). **(only support 5 series and 6 series)**

This Mini ITX can run with Intel Socket LGA 775 Pentium 4(HT) processors, and support DIMM up to 2GB dual-channel DDR Memory. The enhanced on-board one PCI-IDE interface can support 2 drives up to PIO mode 4 timing and Ultra ATA33/66/100 synchronous mode feature, and 4 Serial ATA connectors high-speed data transfers at up to 150 MB/s. The on-board Super I/O chipset support two serial ports, one SIR (Serial Infrared) port, and one parallel port. Two high performance 16C550-compatible UARTs provide 16-byte send/receive FIFOs and the multi-mode parallel port supports SPP/EPP/ECP function. Two RS-232 serial port interface. Besides, H/W monitor function, and supports 4 Serial ATA interface , Intel High Definition Audio as 7.1 surround sound , Hi-Speed USB 2.0 x 8 ports offer up to 40X greater bandwidth over USB 1.1 Also provide dual display function by VGA and DVI interface.

The Mini-ITX standard makes the WADE-8134 series work with the one slot PCI . One 6-pin Mini-DIN connectors are provided to connect PS/2 mouse and keyboard. The on-board Flash ROM is used to make the BIOS update easier. The high precision Real Time Clock /calendar is built to support Y2K for accurate scheduling and storing configuration information. One 24-pin standard connector is designed to support ATX power function. A feature of CPU overheat protection will give user more security and stability. All of these features make WADE-8134 series excellent in stand-alone applications.

Notes:
(1) The WADE-8134 series only support Intel Pentium 4 processor 5 series and 6 series for 0.90 and 0.65 micron.

(2) The WADE-8134 series only support DDR 400 memory module.

1.2 Check List

The WADE-8134 package should cover the following basic items

- ✓ One WADE-8134 Mini ITX Main Board
- ✓ One 40pin IDE cable
- ✓ Two Serial ATA cable
- ✓ One Serial port cable for COM2
- ✓ One I/O Shield bracket
- ✓ One DVI and USB 2.0 cable optional
- ✓ One CD-Title to support internal VGA display driver and Intel internal (or Marvell Gigabit Ethernet) network controller driver

If any of these items is damaged or missing, please contact your vendor and keep all packing materials for future replacement and maintenance.

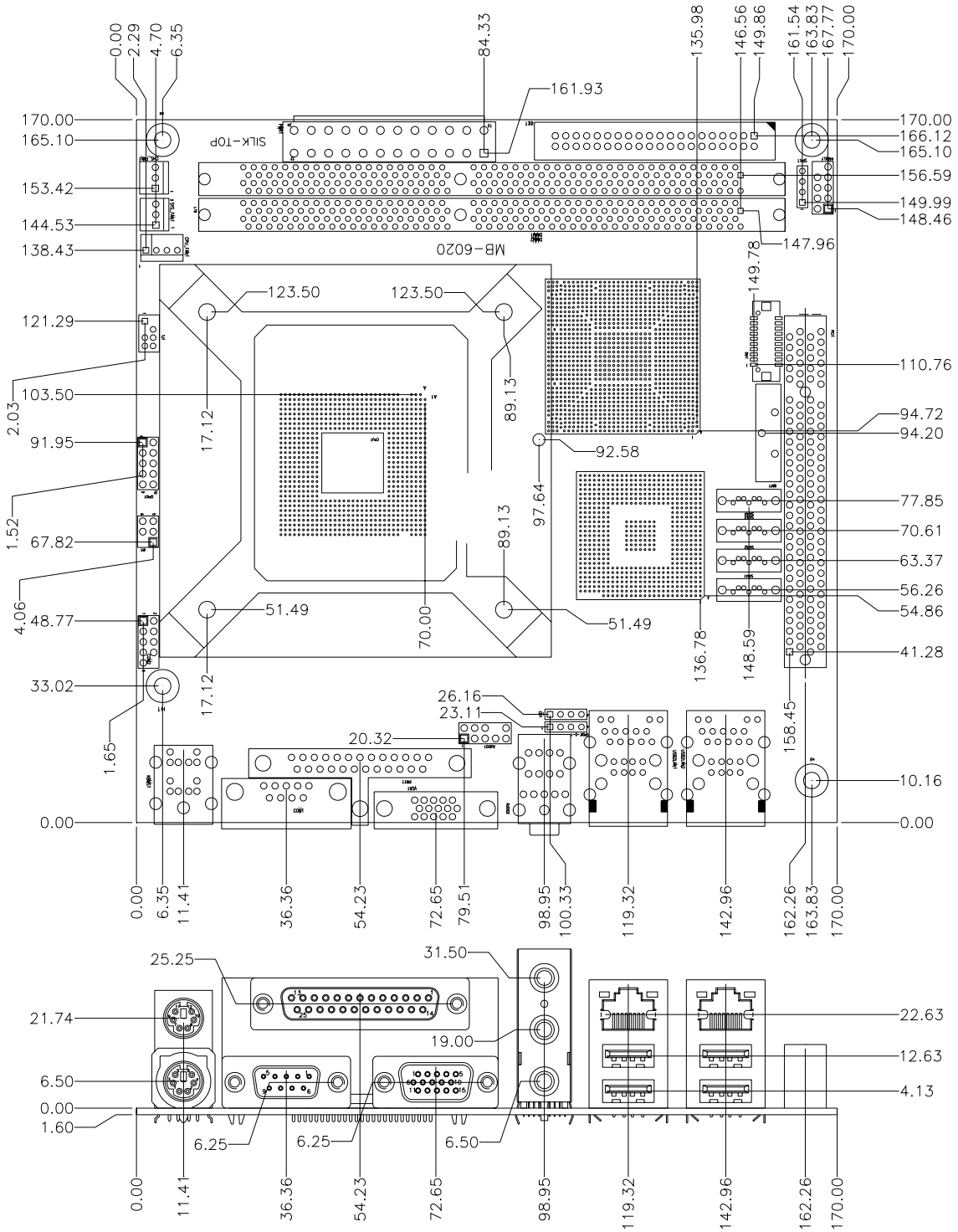
1.3 Product Specification

- **Main processor**
  - Support Intel Pentium 4 processor (HT) up to 3.8GHz and above or Celeron D processor up to 3.20GHz
  - CPU bus clock : 533/800 MHz
- **Chipset Intel® 82915GV GMCH & 82801FR ICH6 (R)Main Memory**
  - Two 184-pin DIMM sockets
  - 256 MB to 1GB using 256MB/512MB/1GB
  - Dual-channel interleaved mode assuming DDR 400 MHz to 6.5GB/s
  - Supports up to CL2 or 2.5 DIMMs at 400MHz memory bus.
- **System BIOS**
  - AWARD BIOS with PC'99 support
  - FWH 4Mb Flash ROM for easy upgrades
  - Support ACPI, DMI, PnP, and Green function
- **Super I/O Winbond W83627HF-AWLPC I/O**
  - Serial Ports : Support Two RS232 ports
  - IrDA Interface : Support one Infrared port
  - Parallel Port : Support one SPP, EPP/ECP bi-directional parallel port

- **Storage IDE Interface**
  Support one enhanced IDE ports up to one IDE devices with Ultra DMA 33/66/100, Four Serial ATA connector high-speed data transfers at up to 150 MB/s.
- **USB**
  Support 8 x USB 2.0 ports
- **Keyboard and PS/2 Mouse Interfaces**
  Support two mini-DIN 6-pin connector for Keyboard and Mouse.
- **Auxiliary I/O**
  - One 2-pin system reset switch
  - One 4-pin external speaker interface
  - One 2-pin system power on LED
  - One 2-pin HDD active indicator interface
  - One 2-pin ATX power control interface
  - One 4-pin smart fan for CPU cooler
  - Two 3-pin headers for chassis and system fan
- **Real-Time Clock/Calendar (RTC)**
  - Build-in ICH6(R)
  - Y2K compliant
- **Watchdog Timer**
  Set 0.6 ~600 sec. from ICH6 with GPIO 0~255 sec. with Super I/O chip
- **System Monitoring and Protection**
  - Monitoring system temperature, voltage, and cooling fan status
  - Auto throttling control when CPU overheats
  - System automatically restored on recovery of AC power loss
- **Bus Interface**
  - Follow Mini_ITX standard 6.69" x 6.69" (170mm x 170mm)
  - Support one master of PCI slot
- **Wake On LAN & Modem Ring on**
  Support system wake up function from Network and Modem
- **On-chip 3D AGP VGA Display**
  - Integrated Intel Graphics Media Accelerator 900 (GMA900), and share system memory to 224MB by Intel 82915GV
  - Display core frequency of 333MHz
  - One DSUB-15 connector for CRT display interface
  - Support Maximum resolution up to 1600 x 1200, 32-bit colors for 3D at refresh rates 85Hz
  - Multiple Maximum overlay display resolution up to 2048 x 1536 32-bit
- **On-board DVI interface**
  Chrontel CH7307 transmitter with DF13-20DP

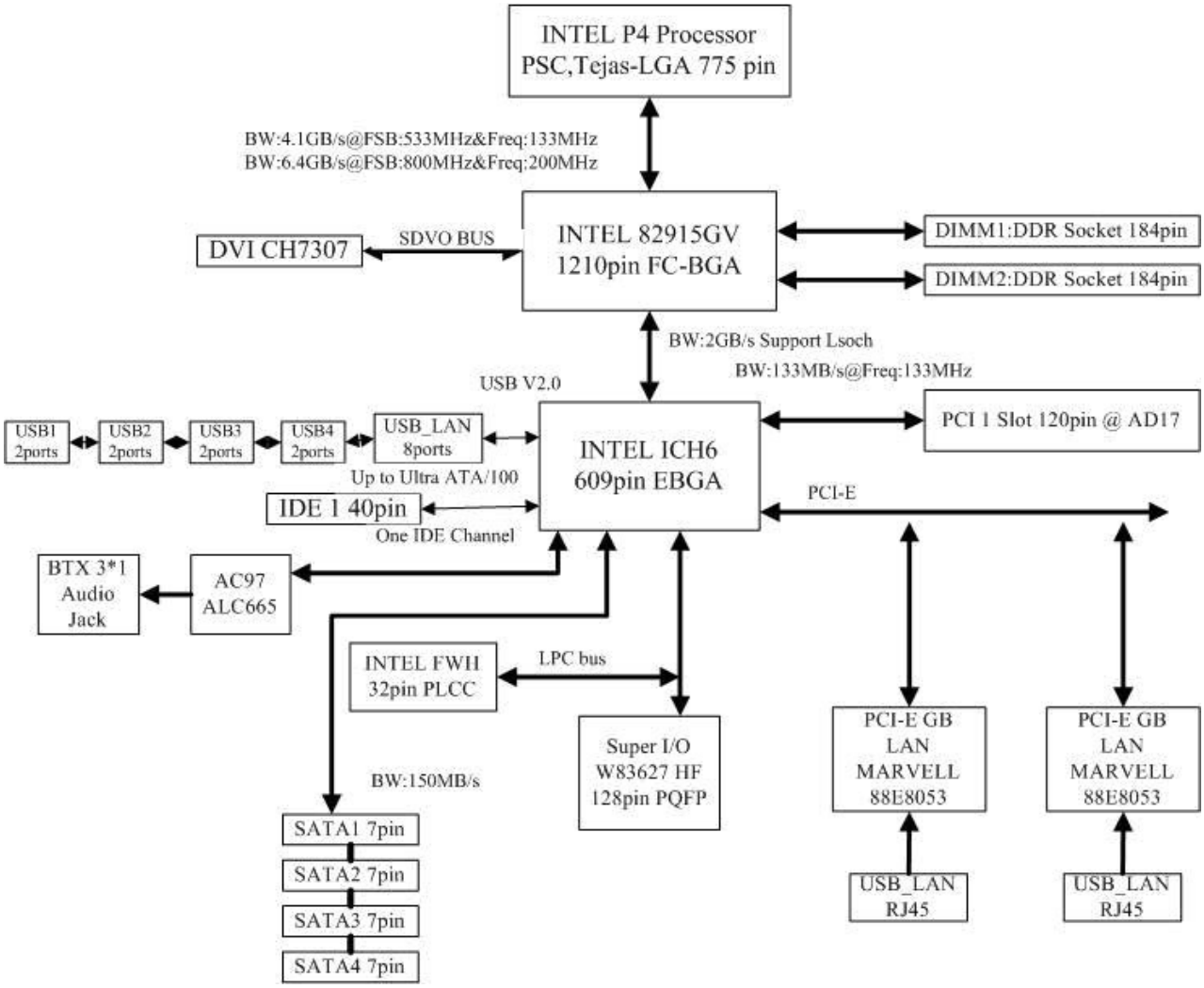
- **On-board Ethernet Function**
  - Support Dual Marvell Gigabit Ethernet controller Support 10/100/1000BASE-T with two RJ-45 interface ports
  - Support two LED indicators to display active and link message
- **One PCI Interfaces**
  Support one extended PCI slot.
- **Physical and Environmental requirements :**
  - Outline Dimension (L x W) : 170mm (6.69 inch) X 170mm (6.69 inch)
  - Power Requirements : +5V@7.5A (typical), +12V@140mA, -12V@30mA
  - Operating Temperature : 0 ~ 55 ℃
  - Storage Temperature : -20~70℃
  - Relative Humidity : 5% to 95%, non-condensing

1.3.1 Mechanical Drawing



1.4 System Architecture

All of details operating relations are shown in WADE-8134 series System Block Diagram.



WADE-8134 System Block Diagram

Chapter 2
Hardware Configuration

This chapter indicates jumpers', headers' and connectors' locations. Users may find useful information related to hardware settings in this chapter. The default settings are indicated with a star sign (★).

2.1 Jumper Setting

In general, jumpers on the Mini ITX are used to select options for certain features. Some of the jumpers are designed to be user-configurable, allowing for system enhancement. The others are for testing purpose only and should not be altered. To select any option, cover the jumper cap over (SHORT) or remove (NC) it from the jumper pins according to the following instructions. Here, NC stands for "Not Connect".

2.2 Connector Allocation

I/O peripheral devices are connected to the interface connectors. (Figure 2-1)

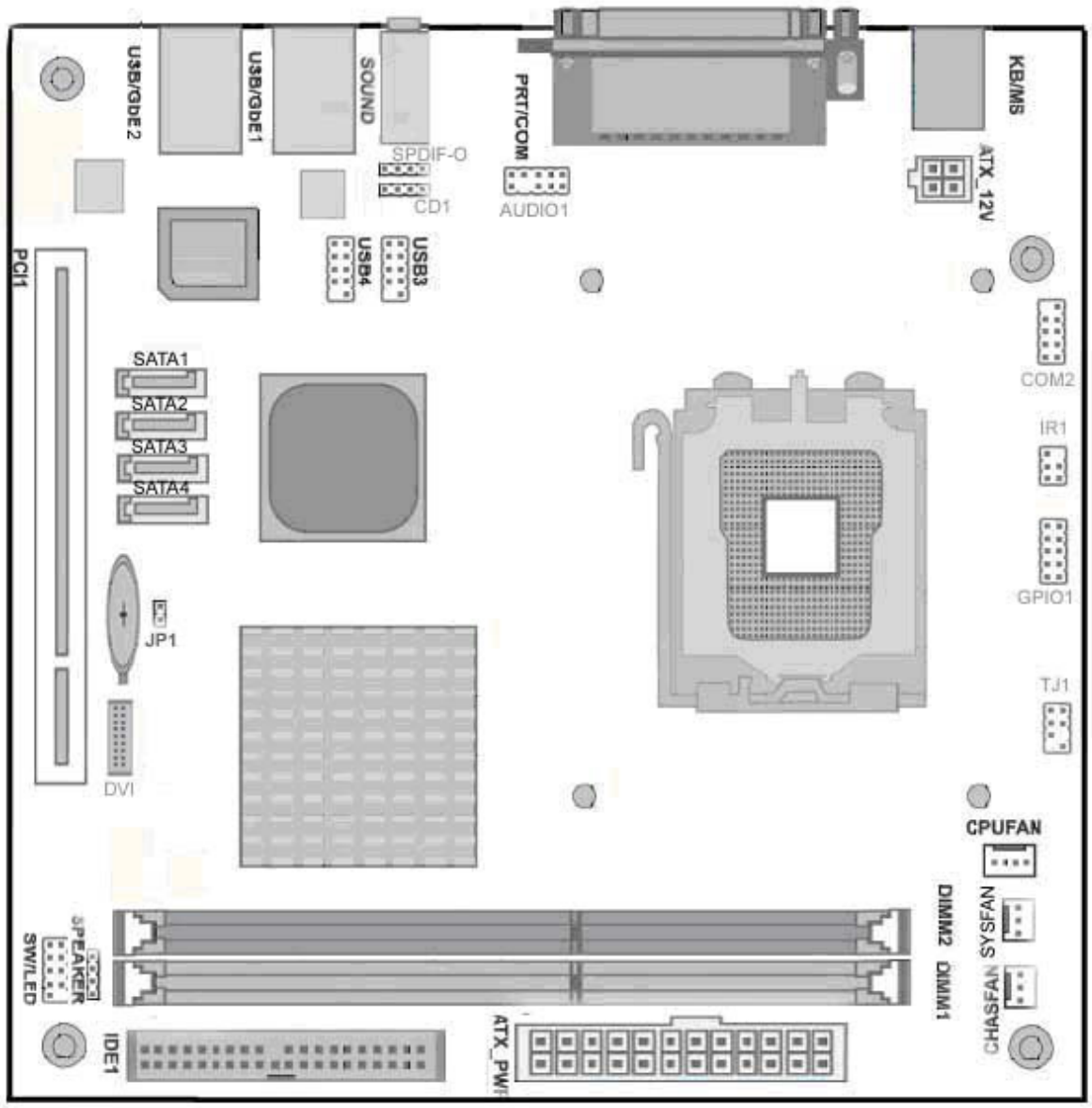


Figure 2-1 WADE-8134 Jumper and Connector Locations

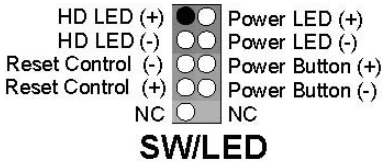
Connector Function List

Connector	Function	Remark
PANEL1 1-3	IDE1 active indicator	
PANEL1 2-4	System Power On LED	
PANEL1 6-8	System Power on Switch	
PANEL1 5-7	System reset	
VGA	DUB-15 port	VGA connector
DVI	DF13-20DP	Hirose:DF13-20DP
SPK1	External speaker interface	
IDE1	IDE1 (Primary) interface	
PWR1	24-PIN ATX Power connector	

PWR2	PW-4P2R Power connector	For CPU Power
COM1	COM1 serial port	COM1 connector
COM2	COM2 serial port	2x5 shrouded header
PRT1	Parallel port connector	Printer connector
USB1	USB 2.0 port 1	USB1LAN1 connector
USB2	USB 2.0 port 2	USB1LAN1 connector
USB3	USB 2.0 port 3	USB2LAN2 connector
USB4	USB 2.0 port 4	USB2LAN2 connector
USB5	USB 2.0 port 5	USB3 connector
USB6	USB 2.0 port 6	USB3 connector
USB7	USB 2.0 port 7	USB4 connector
USB8	USB 2.0 port 8	USB4 connector
SPDIF I/O	SPDIF I/O interface	1x4 shrouded header

JP1 : RTC CMOS Clear Jumper Setting

OPEN: Normal operation ★
SHORT: Clear CMOS contents



PANEL1 5-7 : System Reset

Pin No.	Signal Description
7	Reset
9	Ground

PANEL1 1-3 : IDE1 active indicator

Pin No.	Signal Description
1	+5V (Pull-up for HDD LED)
3	HDD active# (LED cathode terminal)

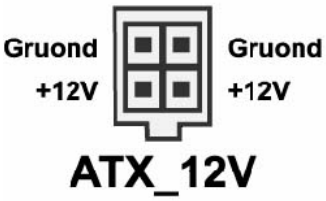
PANEL1 6-8 : ATX Power Button

Pin No.	Signal Description
6	Power button control signal
8	Ground

External Speaker (SPK1)

Pin No.	Signal Description
1	Signal
2	NC
3	Ground
4	+5V

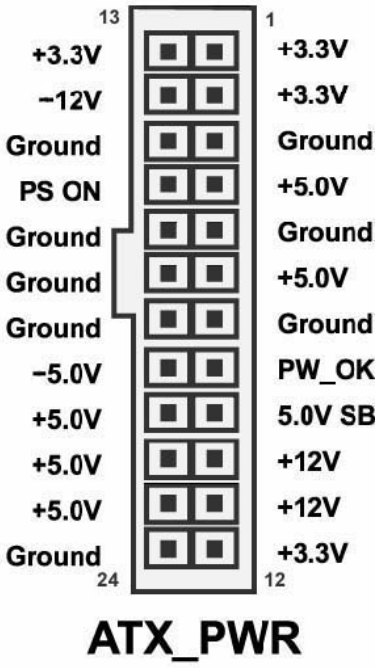
PWR2 : ATX Power Connector



Pin No.	Signal Description
1	12V_Power
2	Ground
3	12V_Power
4	Ground

PWR1 : ATX_24P2R Power Connector

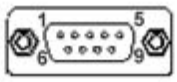
Pin No.	Signal Description
1	+3.3V
2	+3.3V
3	Ground
4	+5V
5	Ground
6	+5V
7	Ground
8	PW_OK
9	+5V SB
10	+12V
11	+12V
12	+3.3V
13	+3.3V



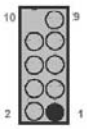
14	-12V
15	Ground
16	PS ON
17	Ground
18	Ground
19	Ground
20	-5V
21	+5V
22	+5V
23	+5V
24	Ground

COM1/COM2 Interface

COM1 DSUB9 Connector



COM 2



Pin No.	Signal Description
1	Data Carrier Detect
2	Received Data
3	Transmit Data
4	Data Terminal Ready
5	Ground
6	Data Set Ready
7	Request To Send
8	Clear To Send
9	Ring Indicator
10	Not used

External USB3 & USB4 (USB2.0)

This mainboard provides 2 USB headers on the board allowing for 4 additional USB ports. To make use of these headers, you must attach a USB bracket/cable with USB ports (some models will come packaged with a USB 4-port bracket-cable). The optionally packaged bracket will have two connectors that you can connect to the headers (USB1, USB2). The other end (bracket containing the USB ports) is attached to the computer casing.

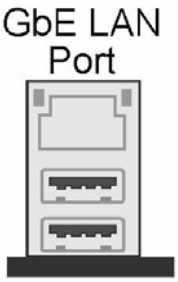
Note :

If you are using a USB 2.0 device with Windows 2000/XP, you will need to install the USB 2.0 driver from the Microsoft® website. If you are using Service pack 1 (or later) for Windows® XP, and using Service pack4 (or later) for Windows® 2000,you will not have to install the driver.

USB & (Gb) LAN Connectors: USB/ Gb LAN 1&2

This mainboard comes with 4 USB ports and a Gb/s LAN port. The USB connectors are used to attach to keyboards, mice and other USB devices. You can plug the USB devices directly into this connector. The LAN connectors can be attached directly to a network.

Pin No.	Signal Description	Pin No.	Signal Description
1	TX+	5	NC
2	TX-	6	RX-
3	RX+	7	NC
4	NC	8	NC

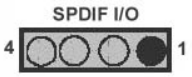


Pin No.	Signal Description	Pin No.	Signal Description
1/5	+5 V (fused)	3/7	USBP0+/P1+
2/6	USBP0-/P1-	4/8	Ground

SATA1-4 (Serial ATA connector)

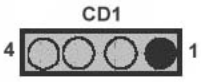
These SATA connectors (SATA1 – SATA4) support Serial ATA 150. Each SATA connector can only support one serial ATA device. **Note**: With most storage devices, there is a power cable that you need attach to a power source (power supply).

Audio Port Connectors: Sound



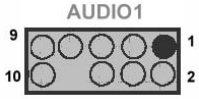
Pin No.	Signal Description
1	SPO
2	VCC5
3	NC
4	GND

Audio in



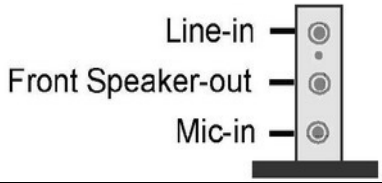
Pin No.	Signal Description
1	CD-L
2	CD-GND
3	CD-GND
4	CD-R

Audio external for chassis



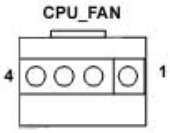
Pin No.	Signal Description
1	F_MIC1
2	GND
3	F_MIC2
4	VCC5
5	LOUTR
6	F_R
7	NC
8	NC
9	LOUTL
10	F_L

Audio Jack



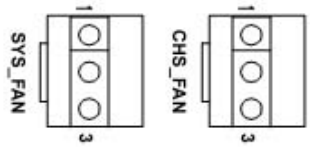
Pin No.	Signal Description
1(Blue)	Lin-in
2(Green)	Speak-Out
3(Red)	MIC-in

CPU FAN



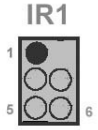
Pin No.	Signal Description
1	Ground
2	+12V
3	RPM signal
4	Control

Chas_FAN / SYS_FAN



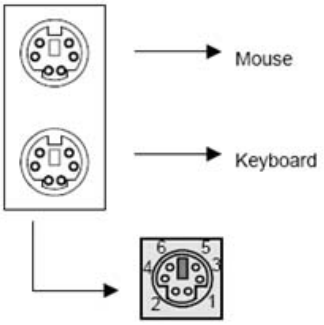
Pin No.	Signal Description
1	Ground
2	+12V
3	RPM signal

Standard IrDA (KEY)



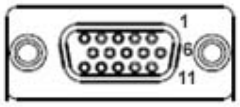
Pin No.	Signal Description
1	NC
2	Not Used
3	+5V
4	Ground
5	IRTX
6	IRRX

PS/2 Keyboard & Mouse (KBMS1)



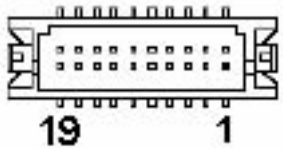
Pin No.	Signal Description
1	Keyboard Data
2	Mouse Data
3	Ground
4	+5V
5	Keyboard Clock
6	Mouse Clock

VGA D-SUB15 Connector



Pin No.	Signal Description
1	Red Signal
2	Green Signal
3	Blue Signal
4	NC
5	GND
6	GND
7	GND
8	GND
9	VCC
10	GND
11	NC
12	DCC_DATA
13	HSYNC
14	VSYNC
15	DCC_CLK

VGA DVI Connector



Pin No.	Signal Description	Pin No.	Signal Description
1	VCC5	2	TDC0#
3	GND	4	TDC0
5	NC	6	NC
7	NC	8	NC
9	HPDET	10	TDC1#
11	MDVIDATA	12	TDC1
13	MDVICLK	14	NC
15	GND	16	NC
17	TLC#	18	TDC2#
19	TLC	20	TDC2

Signal	Type	Signal Description
TDC0,TDC0#	O	**DVI Data Channel 0 Output**: These pins provide the DVI differential output for data channel 0 (Blue).
TDC1,TDC1#	O	**DVI Data Channel 1 Output**: These pins provide the DVI differential output for data channel 1 (Green).
TDC2,TDC2#	O	**DVI Data Channel 2 Output**: These pins provide the DVI differential output for data channel 2 (Red).
HPDET	I	**Hot Plug Detect (internal pull-down)**: This input determines whether the DVI is connected to a DVI monitor. When terminated, the monitor is required to apply a voltage greater than 2.4 volts. Changes on the status of this pin will be relayed to the graphics controller via the P-OUT/TLDET* or GPIO(1)/TLDET* pin pulling low.
TMDSDATA	I/O	**DVI I2C Data**: This signal is used as the I2C DOC clock for a digital display connector (i.e. TV-Out Encoder, TMDS transmitter). This signal is tri-stated during a hard reset.
TMDSDCLK	I/O	**DVI DOC Clock**: This signal is used as the DOC clock for a digital display connector (i.e. primary digital monitor). This signal is tri-stated during a hard reset.
TLC,TLC#	O	**DVI Clock Output:** These pins provide the differential clock outputs to the DVI interface corresponding a data on TDC(0:2) outputs.

Chapter 3
System Installation

This chapter provides you with instructions on how to setup your system. The additional information shows you how to install CPU/ FAN and memory.

3.1 Socket 775 Processors

Installing Pentium 4 / Celeron D CPU

1. Lift the handling lever of CPU socket outwards and upwards to the other end.
2. Align the processor pins with pin hones on the socket. Make sure that the notched corner or
3. Dot mark (pin 1) of the CPU corresponds to the socket's bevel end. Then press the CPU gently until it fits into place. If this operation is not easy or smooth, don't do it forcibly. You need to check and rebuild the CPU pin uniformly.
4. Push down the lever to lock processor chip into the socket.
5. Follow the installation guide of cooling fan or heat sink to mount it on CPU surface and lock it on the socket 775.
6. Be sure to follow particular CPU speed and voltage type to adjust the jumper settings properly.

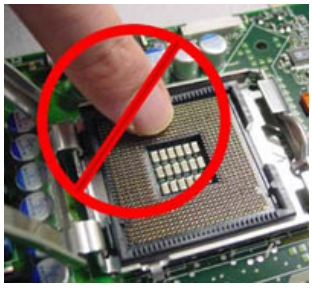
Having figured out in general what you get, the next job is to bite the bullet and build your PC

Precautions

When integrating a Pentium 4 processor-based system, be sure to take the proper electrostatic discharge (ESD) precautions. Consider using ground straps, gloves, ESD mats, or other protective measures to avoid damaging the processor and other electrical components in the system.

Warning

Do not touch socket sensitive contacts. Chain tech assumes no responsibility for the potential damages caused by this action and therefore the warranty we provide may be invalid.



Installing CPU

#1 Disengage Load Lever by depressing down and out on the hook to clear retention tab. Rotate Load Lever to fully open position at approximately 135°

#2 Rotate Load Plate to fully open position at approximately 100°. Remove Socket Protective Cover. With left hand index finger and thumb to support the load plate edge, engage protective cover finger tab with right hand thumb and peel the cover from LGA775 Socket while pressing on center of protective cover to assist in removal.

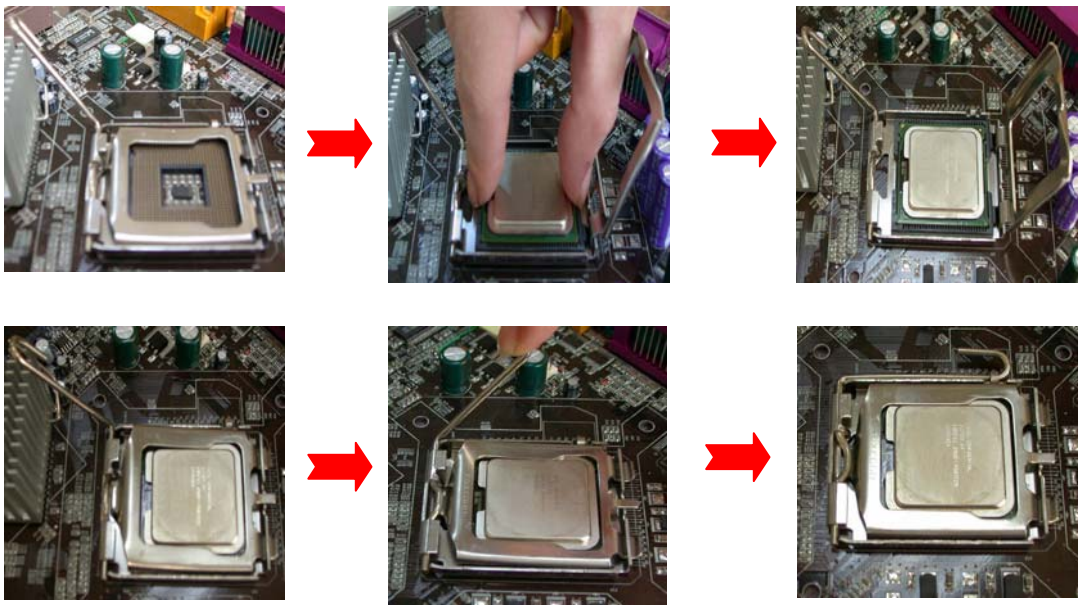
#3 Locate the two orientation key notches.

#4 Grasp the processor with thumb and index finger. (Grasp the edges without the orientation notches.) The socket has cutouts for your fingers to fit into. Carefully place the package into the socket body using a purely vertical motion. (Tilting the processor into place or shifting it into place on the socket can damage the sensitive socket contacts.)

#5 Verify that package is within the socket body and properly mated to the orientation keys

#6 Close the socket by

- Close the Load Plate
- While pressing down lightly on Load Plate, engage the Load Lever.
- Secure Load Lever with Load Plate tab under retention tab of Load Lever



Installing Cooling Fan

Warning

For a safety landing, avoid leaving prongs on hard surface.

Instructions

Smear thermal grease on the top of the CPU. Lower the CPU fan onto the CPU/CPU socket and secure it using the attachments or screws provided on the fan. Finally, attach the fan power cable to the CPUFAN adapter. For more details on this, go to http://www.intel.com

Main Memory

WADE-8134 series provides 2 DIMMs (184-pin Dual In-line Memory Module) to support 2.6V DDRAM (Synchronized DRAM) as on-board main memory. The maximum memory size is 256B~ 1GB with using 256MB/512MB/1GB technology. Supports up to 2 double sided DIMMs at 266/333/400MHz. The memory architecture adopts 128-bit data interface to support for x8 and x16 DDRAM(DDR1) device width. In addition, it only supports Non-ECC memory.

For system compatibility and stability, don't use memory module without brand. You can also use the single or double-side DIMM .The three DIMMs can be out of order. You can install different size of DDRAM module on DIMM1, DIMM2 or all to boot up system.

Without out the contact and lock integrity of memory module with socket, it will impact on the system reliability. Follow normal procedure to install your DDRAM module into memory socket. Before locking, make sure that the module has been fully inserted into the DIMM slot.

Note:
For maintaining system stability, do not change any of DDR memory parameters in BIOS setup to upgrade your system performance without acquiring technical information.

3.2 Installing the Mini ITX

To install your WADE-8134 series into standard chassis or proprietary environment, you need to perform the following steps:

1. Check all jumpers setting on proper position
2. Install and configure CPU and memory module on right position
3. Place WADE-8134 series into the dedicated position in your system
4. Attach cables to existing peripheral devices and secure it

Note:
Please refer section 3.4 to install display and Ethernet drivers and setup your system.

WARNING:
Please ensure that your SBC properly inserted and fixed by mechanism. Otherwise, the system might be unstable or do not work from bad contact of golden finger.

3.2.1 915GV Integrated Graphics Controller

The on-board graphics controller integrated in 915GV(GMCH) chipset that integrates high performance memory technology for the PCI Express x16, the on-board operates at a frequency of 2.5Gb/s on each lane while employing 8b/10b encoding, and supports a maximum theoretical bandwidth of 4Gb/s each direction, the 82915GV GMCH multiplexes the PCI Express interface with DVI & CRT support .

The 915GV supports the modes which appear in the table below.

Resolution	Bits Per Pixel (frequency in Hz)		
	256 Color	16-bit	32-bit
640x480	60,70,72,75,85,100,120	60,70,72,75,85,100,120	60,70,72,75,85,100,120
800x600	60,70,72,75,85,100,120	60,70,72,75,85,100,120	60,70,72,75,85,100,120
1024x768	60,70,72,75,85,100,120	60,70,72,75,85,100,120	60,70,72,75,85,100,120
1152x864	60,75,85,100	60,75,85,100	60,75,85,100
1280x600	60	60	60
1280x720	60,75,85,100	60,75,85,100	60,75,85,100
1280x768	60,75,85	60,75,85	60,75,85
1280x960	60,75,85	60,75,85	60,75,85
1280x1024	60,75,85,100,120	60,75,85,100,120	60,75,85,100,120
1400x1050	60,75,85	60,75,85	60,75,85
1600x900	60,75,85,100,120	60,75,85,100,120	60,75,85,100,120
1600x1200	60,75,85,100,120	60,75,85,100,120	60,75,85,100,120
1856x1392	60,75	60,75	60,75
1920x1080	60,75,85,100	60,75,85,100	60,75,85,100
1920x1200	60,75,85	60,75,85	60,75,85

1280x1024	60,75	60,75	60,75
1920x1440	60,75,85	60,75,85	60,75,85
2048x1536	60,75	60,75	60,75

3.2.2 Dual Marvell Gigabit Ethernet controller

Dual Marvell Gigabit Ethernet 10/100/1000BASE-TX controller by PCI Express. The WADE-8134 series provides two LED indicators on RJ-45 connector to show LAN interface status. These messages will give you a guide for troubleshooting.

Yellow LED indicates transmit and receive activity.

Blinking : indicates transmit/receive activity

On : indicates no activity but link is valid
Off : link is invalid

Green LED indicates Link speed

On : link speed at 1000Mbps
On : link speed at 100Mbps
Off : link speed at 10Mbps

3.2.3 Drivers Support

WADE-8134 series provides on CD-Title to support on-board VGA and Ethernet device drivers in various operating systems. Before installing the device drivers, please see the reference files in each sub-directory. You cannot install drivers from CD-Title directly.

915GV CHIPSET INTEGRATED GRAPHY: Support Win2000, XP , Win2003 and 64bit Windows … environment
INTEL 915GV & ICH6(R) CHIPSET DRIVER: Support Win2000 , XP , Win2003 and 64bit Windows … environment
Dual Marvell Gigabit Ethernet controller Support Win2000 , XP , Win2003 , and 64 bit Windows ….. environment

Chapter 4
BIOS Setup Information

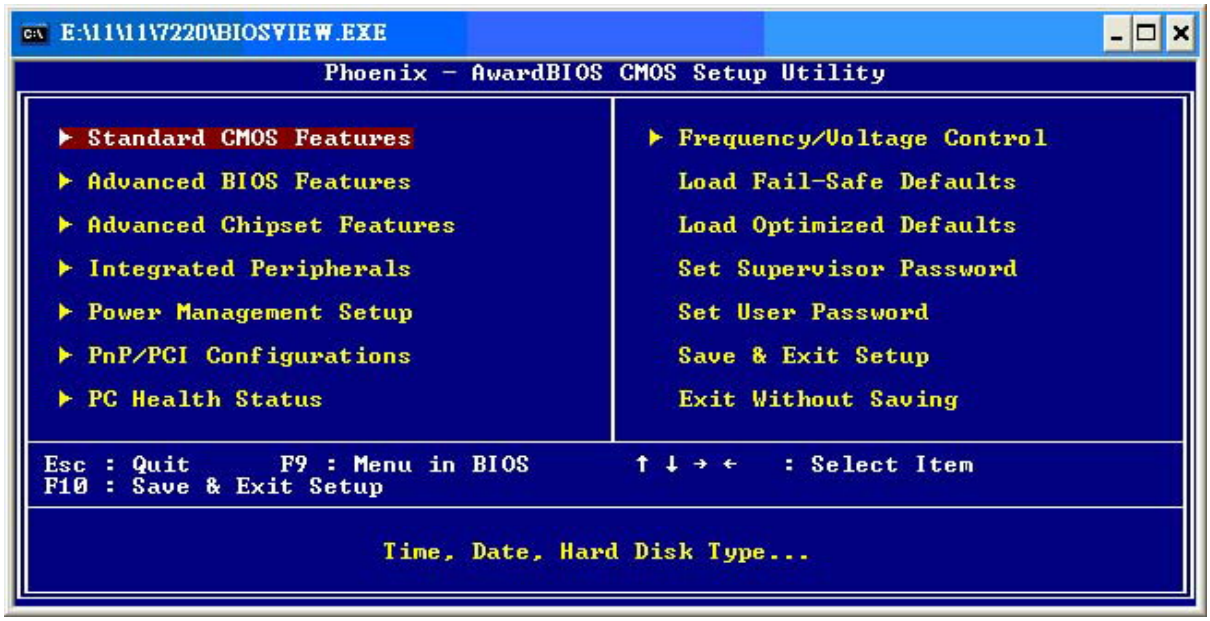
WADE-8134 series is equipped with the Phoenix (AWARD) BIOS stored in Flash ROM. These BIOS has a built-in Setup program that allows users to modify the basic system configuration easily. This type of information is stored in CMOS RAM so that it is retained during power-off periods. When system is turned on, WADE-8134 series communicates with peripheral devices and checks its hardware resources against the configuration information stored in the CMOS memory. If any error is detected, or the CMOS parameters need to be initially defined, the diagnostic program will prompt the user to enter the SETUP program. Some errors are significant enough to abort the start-up.

4.1 Entering Setup

Phoenix-Award BIOS has a built-in setup program that allows users to modify the basic system configuration. This information is stored in CMOS RAM whose power is supplied by a battery so that it can retain the setup information even when the power is turned off. Press Delete when you Power on or Reboot the computer system. (i.e. After the logo appears at the center of the screen, please press Delete to enter the BIOS setup program). In the BIOS, make sure that everything is working fine before you try to optimize it for maximum performance.

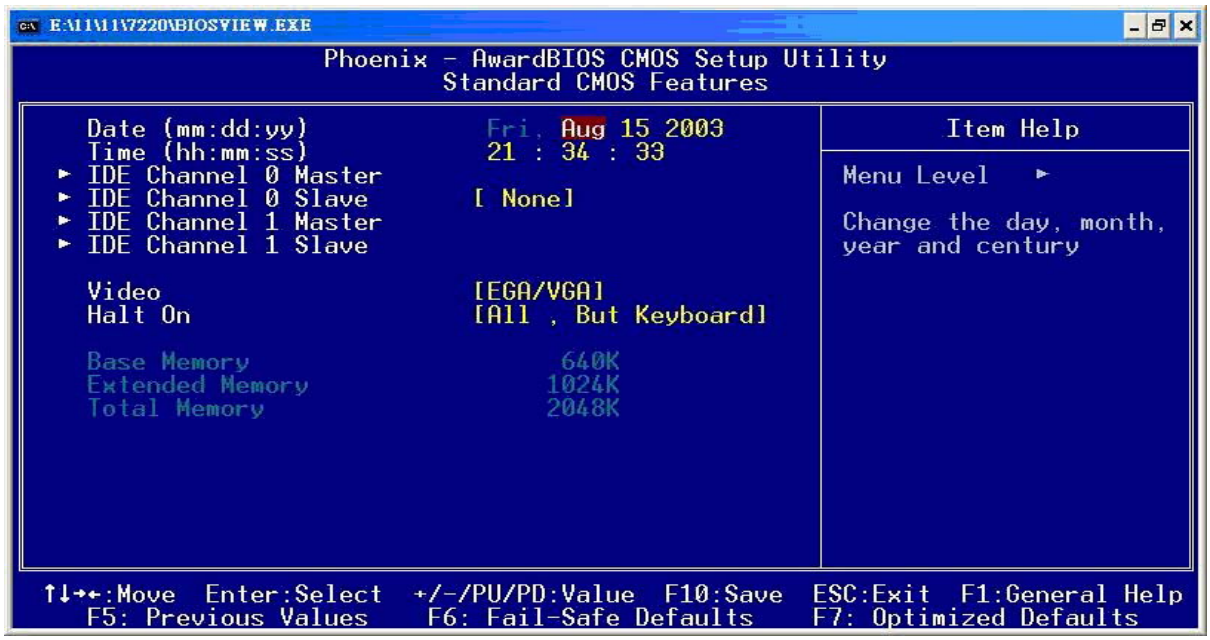
General Help	
↑ ↓ → ←	: Move
Enter	: Select
+ / - /PU /PD	: Value
ESC	: Exit
F1	: General Help
F2	: Item Help
F5	: Previous Values
F6	: Fail-Safe Defaults
F7	: Optimized Defaults
F9	: Menu in BIOS
F10	: Save

4.2 Main Menu



When you enter the PHOENIX-AWARD™ CMOS Setup Utility, the **Main** will appear on the screen. The Main allows you to select several configuration options. Use the left/right arrow keys to highlight a particular configuration screen from the top menu bar or use the down arrow key to access and configure the information below.

4.3 Standard CMOS Features



Date (mm/date/year) and Time (hh/mm/ss)

Allow you to change the date and time of the system clock. No matter how good the quality of the motherboard, remember that losing (or gaining) several seconds per month is not a surprising thing.

IDE Channel 0 Master/Slave

You can press **Enter** to see the submenus they contain.

Video

Allows you to select the type of displaying standard you are using. Available options are **EGA/VGA, CGA 40, CGA 80** and **MONO**.

Halt On

Select the situation in which you want the BIOS to stop the POST process and notify you. Available options are **All Errors, No Errors, All, but keyboard, All, but diskette,** and **All, but disk/key**.

Base Memory

Displays the amount of conventional memory detected during boot up.

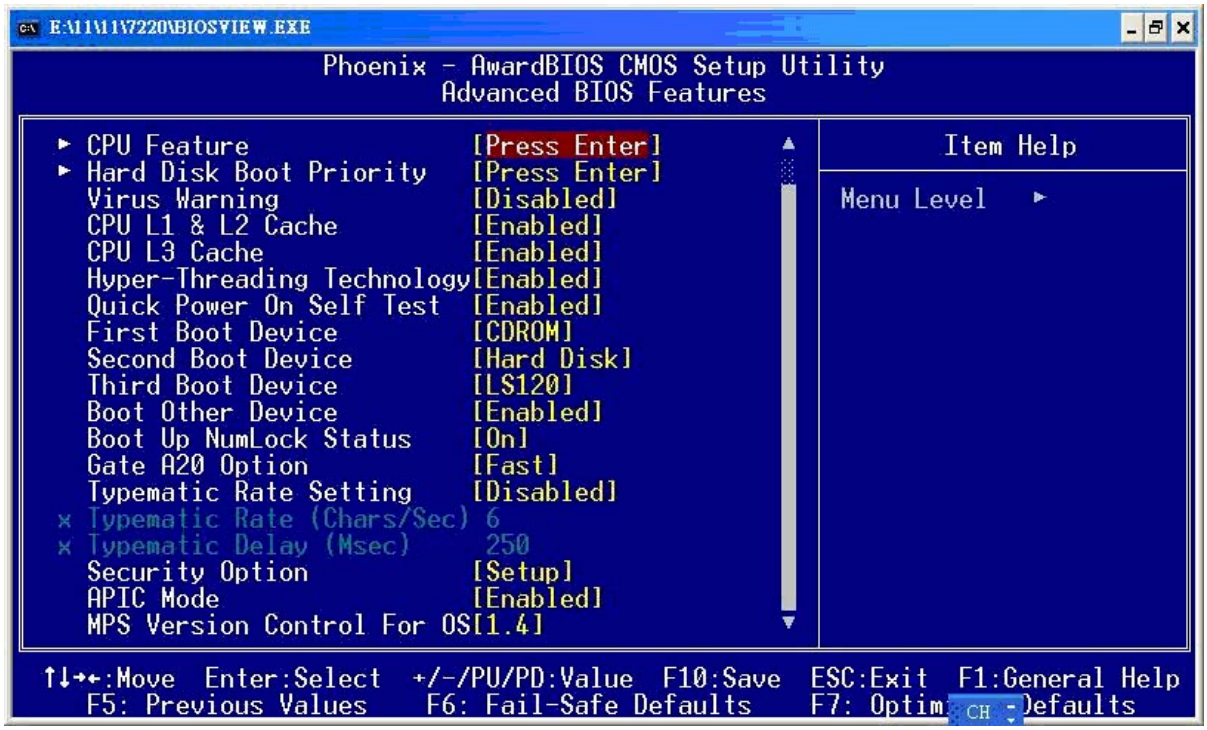
Extended Memory

Displays the amount of extended memory detected during boot up.

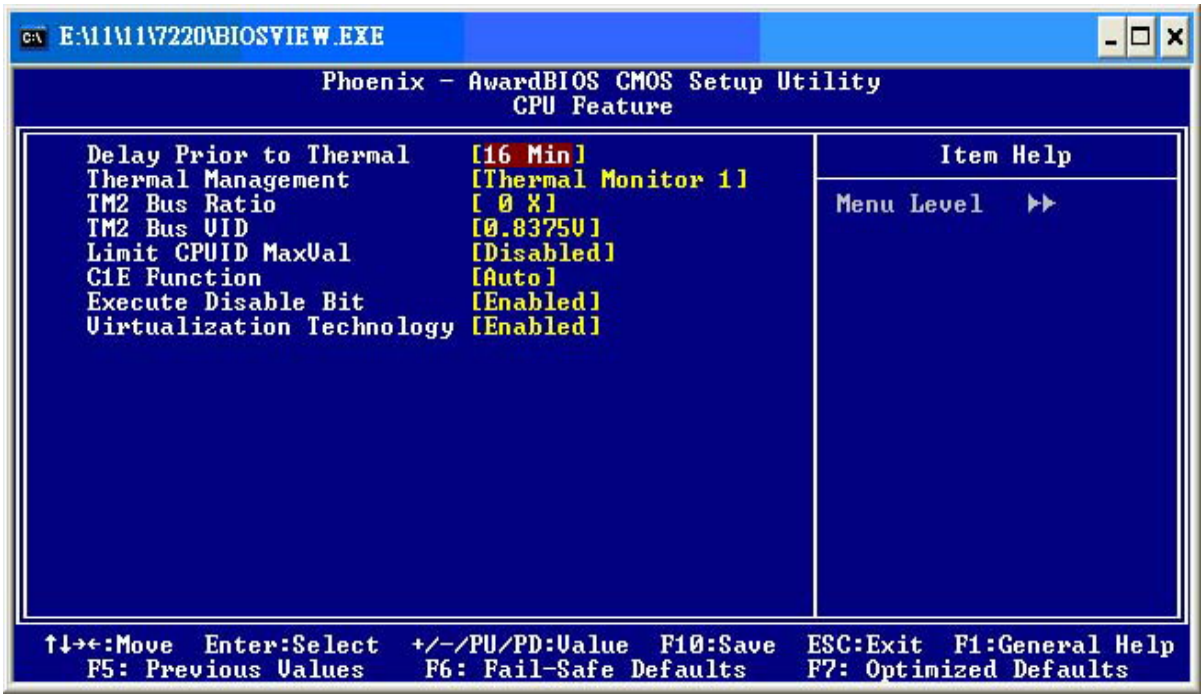
Total Memory

Displays the total memory available in the system.

4.4 Advanced BIOS Features



4.4.1 CPU Feature



Delay Prior to Thermal

Select the delay thermal time. Configuration options: [4min][8min][16min][32min]

Thermal Management

This BIOS feature controls the activation of the Thermal Monitor's automatic mode. It allows you to determine when the Pentium 4's Thermal Monitor should be activated in automatic mode after the system boots. In general, the Thermal Monitor should not be activated immediately on booting since the processor will be under a heavy load during the booting process, which results in the sharp rise in die temperature from its cold state, which leads to the unstable system. Therefore, to ensure optimal booting performance, the activation of the Thermal Monitor must be delayed for a set period of time. But how do you possibly know the optimal delay time? It is recommended that you set this to its lowest value that exceeds the time it takes to fully boot up your computer. This item will monitor the CPU thermal to prevent the CPU damage from high temperature.

TM2 BUS Ratio

Select the Represents the frequency (bus ratio of the throttled performance state that will be initiated when the on-die sensor goes from not hot to hot

TM2 BUS VID

Select Represents the voltage of the throttled performance state that will be initiated when the on die sensor gose from not hot to hot.

Limit CPUID MaxVal

When the limit CPUID MaxVal is set to 3, the item should be set to "**Disabled**" for Windows XP.

The choice: Enabled、Disabled (default).

C1E Function

Select CPU C1E Function Select

Execute Disable Bit

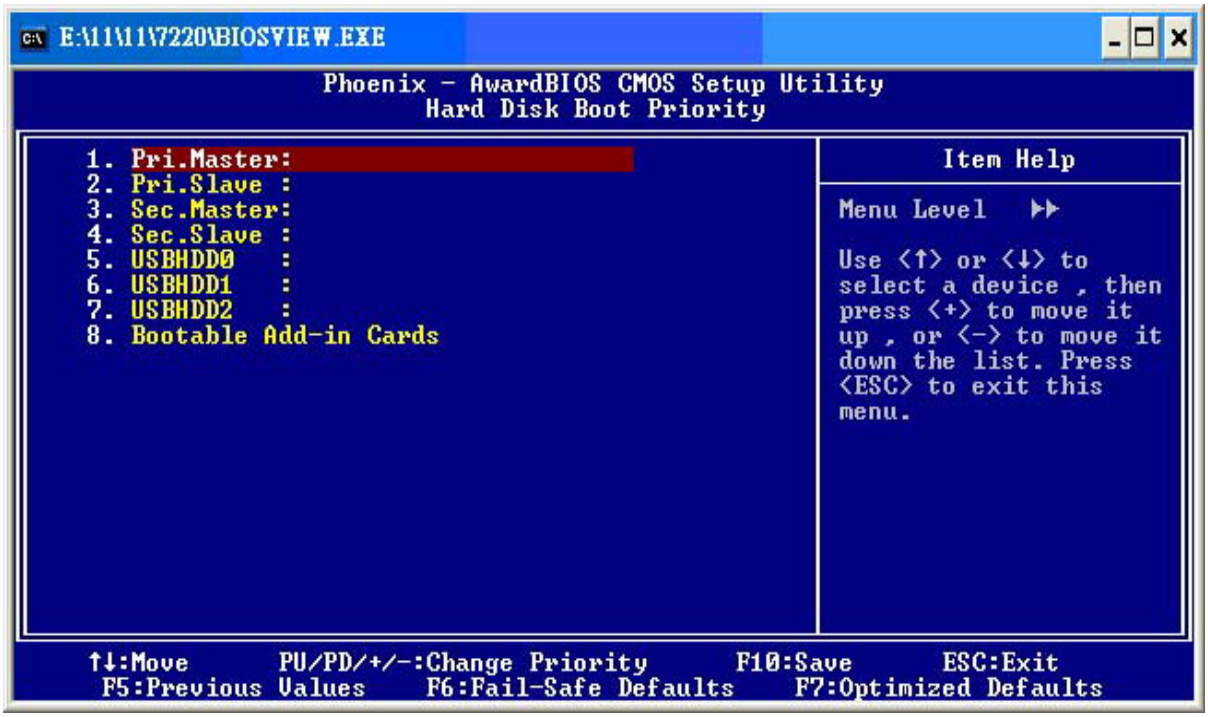
Select when disable, forces the XD feature flag to always return 0.

Virtualization Technology

Select when enable, a VMM can utilize the additional hardware capabilities provided by Vander pool Technology

4.4.2 Hard Disk Boot Priority

Select removable device priority, such as Pri.Master, Pri.Slave, USBHDD0 ,USBHDD1,USBHDD2 and Bootable Add-in Cards.



Virus Warning

Allows you to choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempts to write data into this area. BIOS will show a warning message on screen and alarm beep.

CPU L1 & L2 Cache

Cache memory is much faster than conventional DRAM system memory. These fields allow you to **enable** or **disable** the CPUs Level 1 built-in cache and Level 2 external cache. Both settings are left as Enabled to significantly enhance the performance of your computer.

Hyper-Threading Technology

When you install a CPU featuring Hyper-Threading Technology, this item will allow you to **enable** or **disable** the Hyper-Threading technology.

The choice: Disabled、Enabled (default).

Quick Power On Self Test

Enable this function to reduce the amount of time required to run the POST (Power On Self Test). BIOS will save time by skipping certain tests during POST. It is recommended that you **disable** this setting. Finding a problem during boot up is better than loosing data during your work.

First/Second/Third Boot Device

Allow you to select the First, Second and Third Boot Device. If your computer is newly constructed, the next thing you want to do is load the Operating System from scratch, directly off its CD. Before that, you need to set the First Boot Device to the CDROM. This instructs the BIOS to boot from the CD drive before trying to boot from the hard drive, which is still blank.

Boot Up NumLock Status

This function defines keyboard's numberpad as number keys or arrow keys. If set at **On** the number keys will be activated, if set at **Off** the arrow keys will be activated.

Typematic Rate Setting

When **enabled**, you can set the following two-typematic control items. When **disabled**, the keyboard controller determines keystrokes arbitrarily in your system.

Typematic Rate (Chars/Sec)

The typematic rate sets the rate at which characters on the screen repeat when a key is pressed and held down.

Typematic Delay (Msec)

The typematic delay sets how long after you press a key that a character begins repeating.

APIC Mode

By enabling this option, "**MPS version control for OS**" can be configured. **Disabled** is recommended.

MPS Version Control for OS

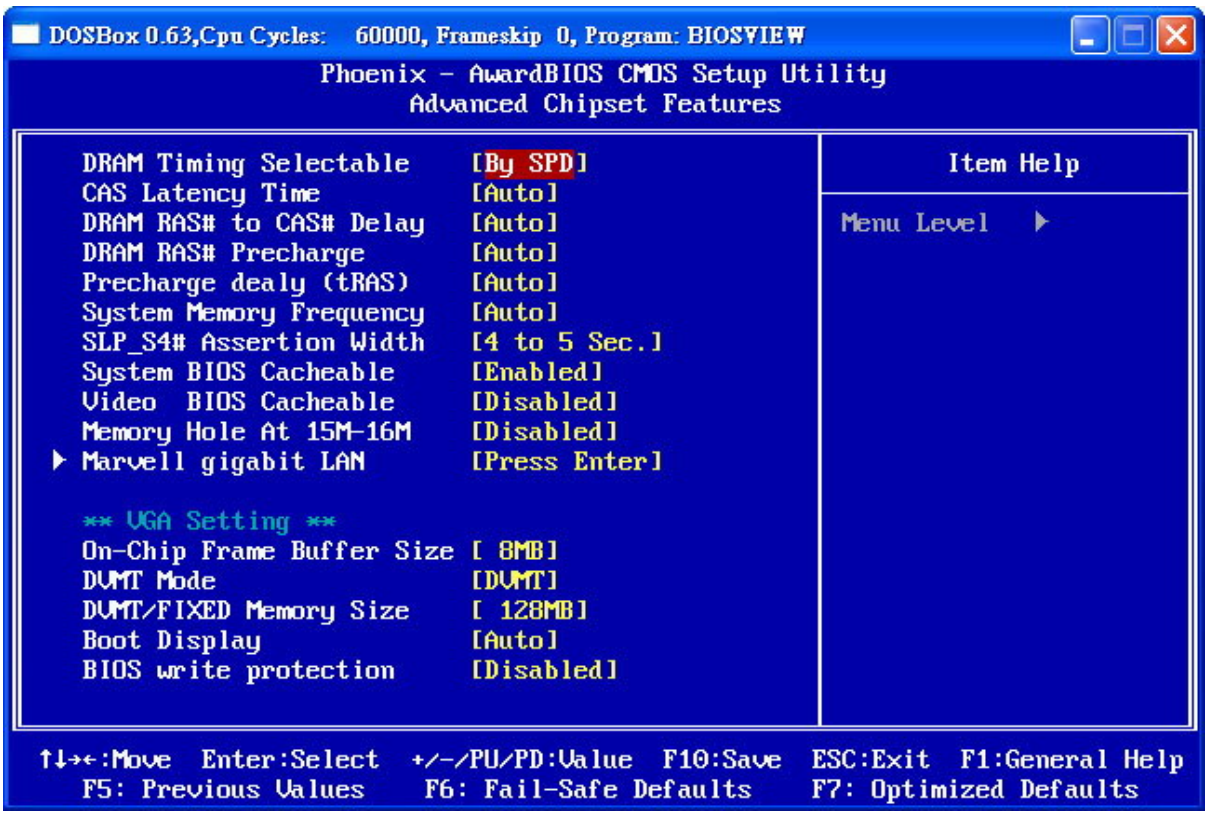
The 1.1 version is the older version that supports 8 more IRQs in the Windows NT environment. Choose the new 1.4 version for Windows 2000 and Windows XP.

The choice: 1.4 (default)、1.1

OS Select For DRAM > 64MB

IBM's relic. If your system's DRAM is larger than 64MB and you are running OS/2, select OS/2 as the item value. Otherwise, set the item value to Non-OS/2 for all other operating systems.

4.5 Advanced Chipset Features



DRAM Timing Selectable

This item determines DRAM clock/timing using SPD or manual configuration. Make sure your memory module has SPD (Serial Presence Data), if you want to select the "**By SPD**" option.
The choice: Manual、By SPD (default).

CAS Latency Time

CAS is short for column address strobe, which is a kind of signals. When the CPU needs data from SDRAM, CAS signals will be sent via the CAS line to specify the column where the data is needed. This controls the time delay (in clock cycles - CLKs) that passes before the SDRAM starts to carry out a read command after receiving it. This also determines the number of CLKs for the completion of the first part of a burst transfer. In other words, the lower the latency, the faster the transaction.

Note that some SDRAM modules may not be able to handle the lower latency and will become unstable and lose data. Therefore, set the DRAM CAS Latency Time to **2** for optimal performance if possible but increase it to **2.5** if your system becomes unstable.

Interestingly, increasing the CAS latency time does have an advantage in that it will enable the SDRAM to run at a higher clockspeed, thereby giving you an edge in overclocking your system. So, if you hit a snag while overclocking, try increasing the CAS latency time.

DRAM RAS# to CAS# Delay

This item allows you to select a delay time between the CAS and RAS strobe signals. It only applies when DRAM is written to, read from, or refreshed. This field is adjustable only when "DRAM Timing Selectable" is set to "manual". This field is locked when "DRAM Timing Selectable" is set to "By SPD" and is automatically determined by the system.

The choice: 4、3、2

DRAM RAS# Precharge

This item allows you to select the DRAM RAS# precharge time. The ROW address strobe must precharge again before DRAM is refreshed. An inadequate configuration may result in incomplete data. This field is adjustable only when "DRAM Timing Selectable" is set to "**manual**". This field is locked when "DRAM Timing Selectable" is set to "**By SPD**" and is automatically determined by the system.

The choice: 4、3、2

Precharge Delay

This item allows you to select DRAM Active to Precharge Delay. This field is locked when "DRAM Timing Selectable" is set to "By SPD" and is automatically determined by the system.

The choice: 8、7、6、5

System BIOS Cacheable

Enabling this function allows caching of the system BIOS ROM at F0000h-FFFFFh, which results in better system performance. However, if any program writes to this memory area, a system error may result. It is advisable to leave it in default setting. Caching the system BIOS results in better performance than shadowing the system BIOS.

Video BIOS Cacheable

Select "**Enabled**" to allow caching of the video BIOS which may improve performance. If any other program writes to this memory area, a system error may result.

The choice: Enabled, Disabled (default)

Memory Hole at 15M-16M

Enabling this function will reserve the memory address space between 15MB and 16MB for ISA expansion cards. However, it will also result in not allowing the system to have access to memory above 16MB. Please note that some expansion cards require this setting to be enabled. The default setting is **Disabled**. If Auto Configuration is enabled, you must set the DRAM timing function to 60ns or 70ns, depending on the type of DRAM you install.

Marvell gigabit LAN

This item allows you to **enabled** or **disabled** the LAN 1 or LAN 2 , Enable (default)、Disabled

On-Chip Frame Buffer Size

This item allows you to setting the VGA memory form share system . Options: 1M(minimum)、8M(Maximum default)

DVMT Mode

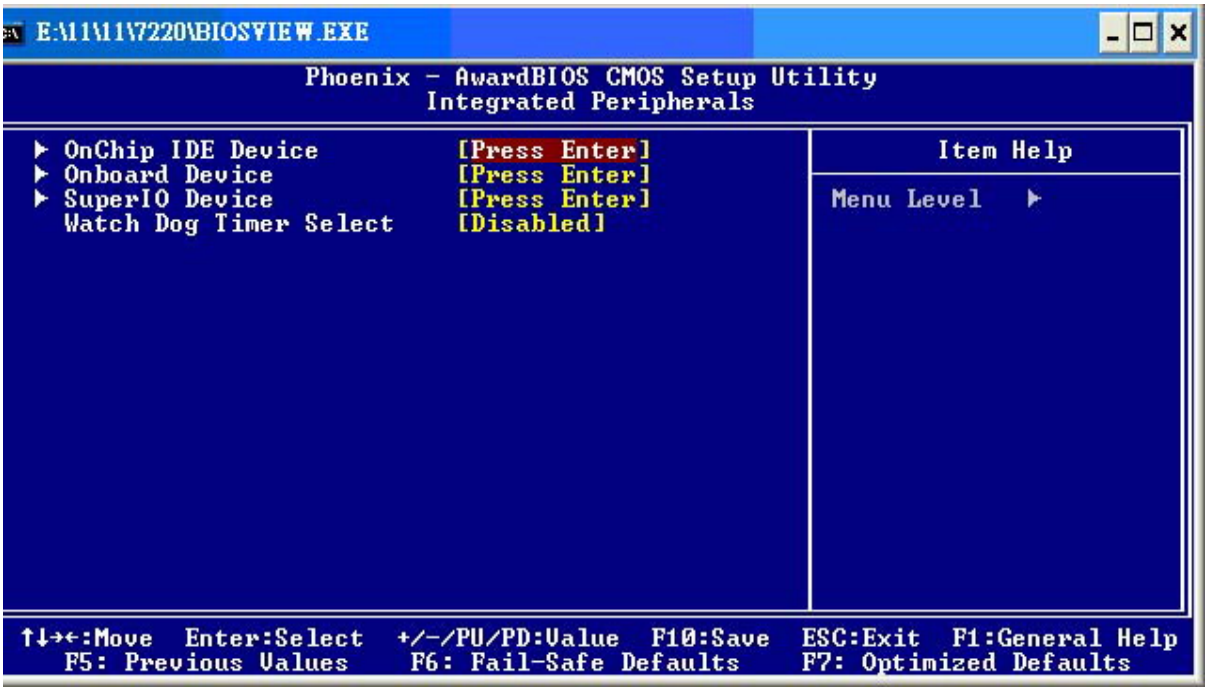
DVMT/FIXED Memory Size

Boot Display

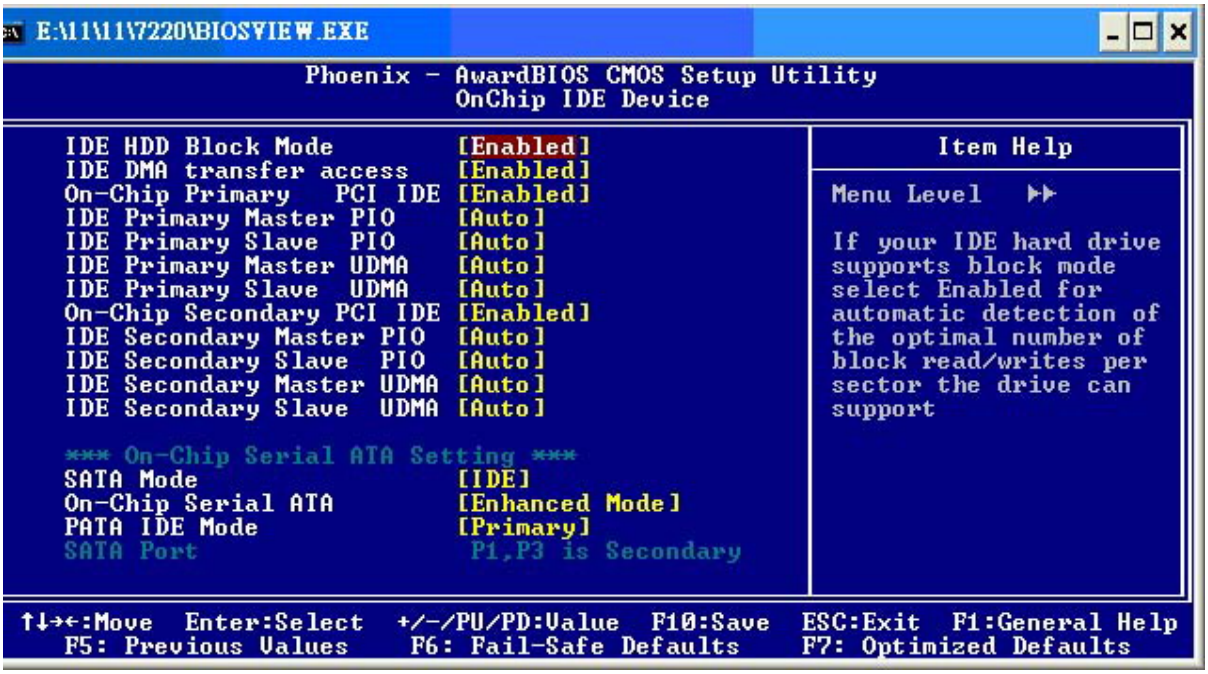
This item allows you to setting CRT monitor only or CRT with EFP(DVI) together display.

BIOS write protection

4.6 Integrated Peripherals



4.6.1 OnChip IDE Device



IDE HDD Block Mode

Enabled is recommended for the best hard drive performance. Windows NT 4.0 users should set this to Disabled unless they can confirm they have been updated with a Service Pack that will work with it.

On-Chip channel0/channel1 PCI IDE

The mainboard chipset contains a PCI IDE interface with support for two IDE channels. These two IDE channels are for IDE1 and SATA1/2/3/4 connectors use. Select "**Enabled**" to activate the first and/or second IDE interface. Select "**Disabled**" to deactivate the interface if you are going to install a primary and/or secondary add-in IDE interface.

The choice: Enabled (default)、Disabled

IDE channel0/channel1 Master/Slave PIO

Set all of these to **Auto** and let the BIOS determine if each drive is capable of Ultra DMA support, and its respective PIO mode.

IDE channel0/channel1 Master/Slave UDMA

Same as above.

OnChip Serial ATA Setting

On-Chip Serial ATA

This field allows you to select the on-chip Serial ATA operating mode which will determine how will use your Serial ATA drives with the other standard IDE drives. This system can physically attach 2 IDE drives and 4 SATA drives but will have certain limitations as described below.

Options：

Disabled: Disable on-chip serial ATA. No Serial ATA devices installed.

Auto(default): BIOS will auto-detect the presence of any SATA devices.

2 (or 1) IDE drivers + 4 (or 3) SATA drivers → Enhanced Mode

2 (or 1) IDE drivers + 2 (or 1) SATA drivers (Must connect with SATA1 +3 or with SATA2+4) → Combined Mode

4 (or 3 or 2 or 1)SATA drivers → SATA only

2 (or 1) IDE drivers → Disabled

Combined Mode: Windows® 98/ME can recognize IDE devices but cannot directly recognize an SATA device and therefore you must use this mode to allow the SATA device to simulate an IDE device by assuming the role of one IDE channel in the system. This means that you will have one available IDE channel for 2 SATA drives to use (each IDE channel can support 2 IDE drives). If you were to install all both IDE drives and 4 SATA drives, you will only see 2 of the SATA drives along with the 2 IDE drives.

Enhanced Mode: In this mode, you can use all 6 hard disk drives (including 2 IDE drives and 4 SATA drives). Note: You cannot use "Enhanced" mode with Windows® 98/ME. It only support to install Windows® 2000/XP if you want to boot from SATA device. (It's restriction from Microsoft.)

SATA Only: Select this option when you install SATA drives only.

PATA IDE Mode

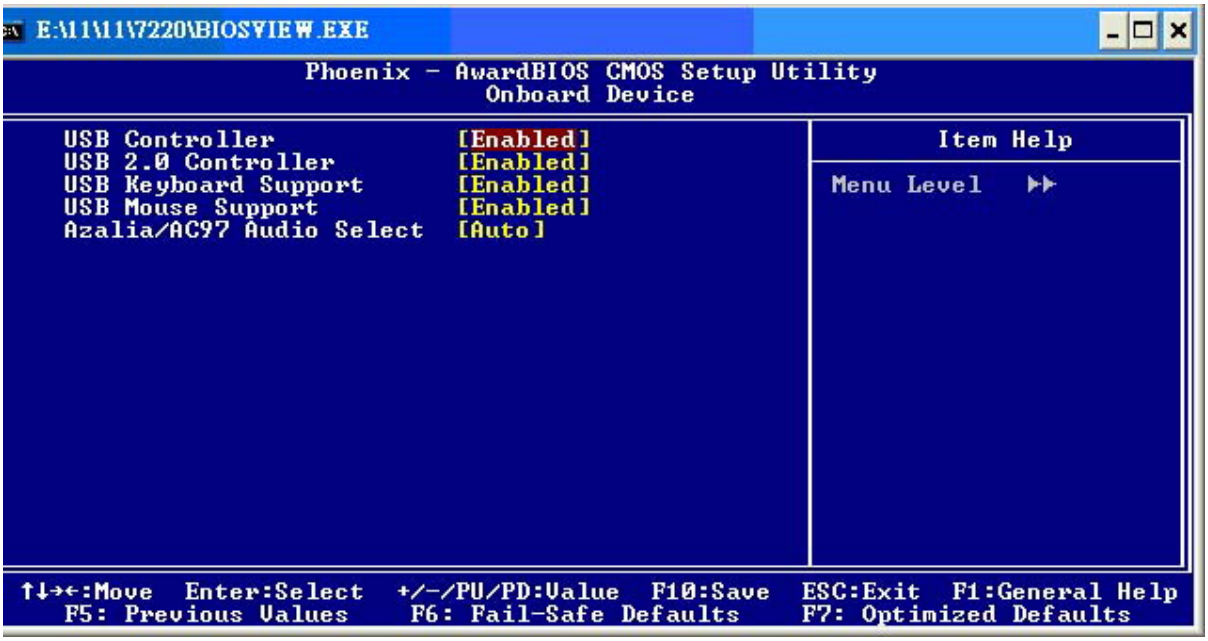
This item allows you to select an IDE channel for PATA IDE devices. When you install the SATA device(s) to the SATA1 or 3 or 1+3, this item should be set to channel 1. When you install the device(s) to the SATA2 or 4 or 2+4, this item should be set to channel 0.

The choice: Channel 0 (default)、channel 1

SATA Port

This item will display which IDE channel will be used to the SATA device.Options: SATA2, 4 is channel 1

4.6.2 Onboard Device



USB Controller

This option should be **enabled** if your system has a USB port installed on the system board. You will need to disable this feature if you add a higher performance controller.

The choice: Enabled (default)、Disabled

USB 2.0 Controller

This option should be **enabled** if your system has a USB 2.0 device installed on the system board. You will need to **disable** this feature if you install a USB 1.1 device.

The choice: Enabled (default)、Disabled

USB Keyboard Support

Enables support for USB attached keyboards.

The choice: Disabled (default)、Enabled

USB Mouse Support

Enables support for USB attached mouse.

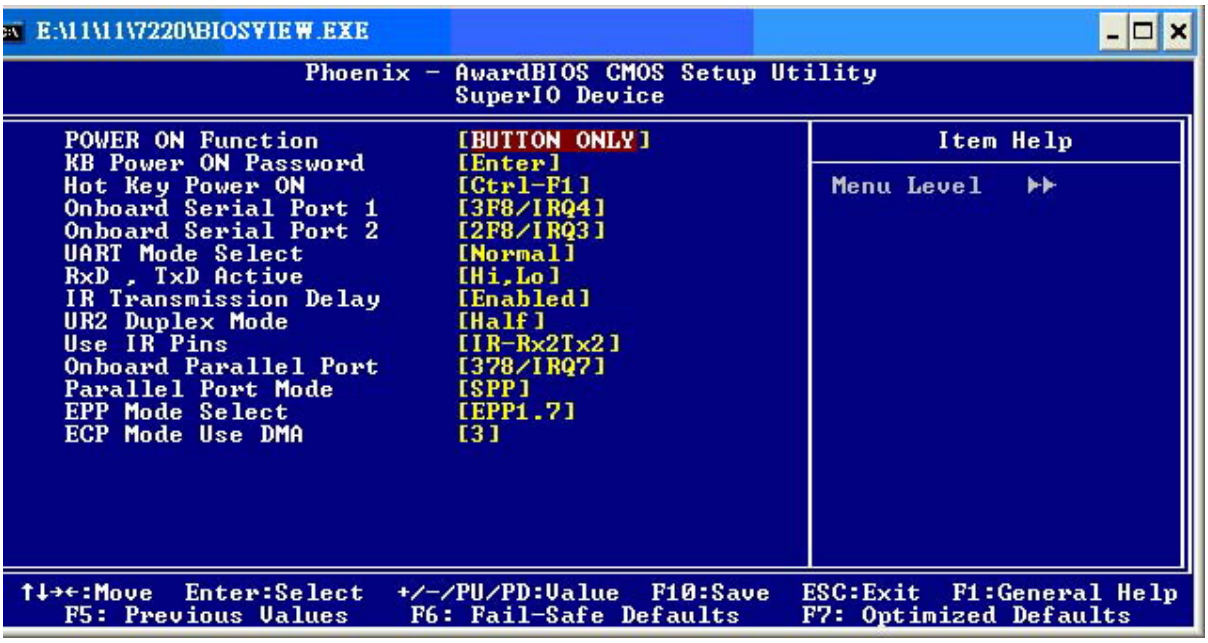
The choice: Disabled (default)、Enabled

Audio Device

This item allows you to control the onboard audio.

The choice: Auto (default)、Disabled

4.6.3 Super I/O Device



Power On Function

This option allows you to select a way to power on your computer.

The choice: Password、Hot KEY、Mouse Left、Mouse Right、Any KEY、BUTTON ONLY (default), and Keyboard 98.

KB Power On Password

This it the password that your system will use as part of the power-on sequence. This field is only configurable when "Power On Function" is set to "Password".

Hot Key Power ON

This option allows you to use the Ctrl key along with a hot key (function key) to power on your system. This field is only configurable when "Power On Function" is set to "Hot Key".

The choice: Ctrl-F1、Ctrl-F2…… Ctrl-F12

Onboard FDC Controller

Select "**Enabled**" if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install an add-in FDC or the system has no floppy drive, select "**Disabled**".

The choice: Enabled (default)、Disabled

Onboard Serial Port 1

Select an address and corresponding interrupt for the first/ second serial port.

The choice: Disabled、3F8/IRQ4 (default for port1)、2F8/IRQ3、3E8/IRQ4、2E8/IRQ3、Auto.

UART Mode Select

This item allows you to select the Infra Red (IR) standard to be used.

The choice: Disabled (default)、ASKIR、IrDA

RxD, TxD Active

This item determines the RxD and TxD frequencies. This field only configurable if "UART Mode Select" is set to "ASKIR" or "IrDA".

The choice: Hi / Lo (default)、Hi / Hi、Lo / Hi、Lo / Lo

IR Transmission Delay

This item allows you to **enable/disable** IR transmission delay. This field is only configurable if "UART Mode Select" is set to "ASKIR" or "IrDA".

The choice: Enabled (default)、Disabled

UR2 Duplex Mode

Select the transmission mode used by the IR interface. Full-duplex mode permits simultaneous bi-directional transmission. Half-duplex mode permits transmission in only one direction at a time. This field only configurable if "UART Mode Select" is set to "ASKIR" or "IrDA".

The choice: Half (default)、Full

Use IR Pins

Consult your IR peripheral documentation to select the correct setting of the TxD and RxD signals. This field is only configurable if "UART Mode Select" is set to "ASKIR" or "IrDA".Options: RxD2、DxD2 (default)

Onboard Parallel Port

Select an address and corresponding interrupt for the onboard parallel port.

The choice: 378/IRQ7 (default)、278/IRQ5、3BC/IRQ7、Disabled

Parallel Port Mode

This option allows you to select a parallel port mode for the onboard parallel port.
Options:
ECP (default) Extended Capabilities Port.
EPP Enhanced Parallel Port.
SPP Standard Printer Port.

ECP+EPP ECP & EPP mode.
Normal

EPP Mode Select

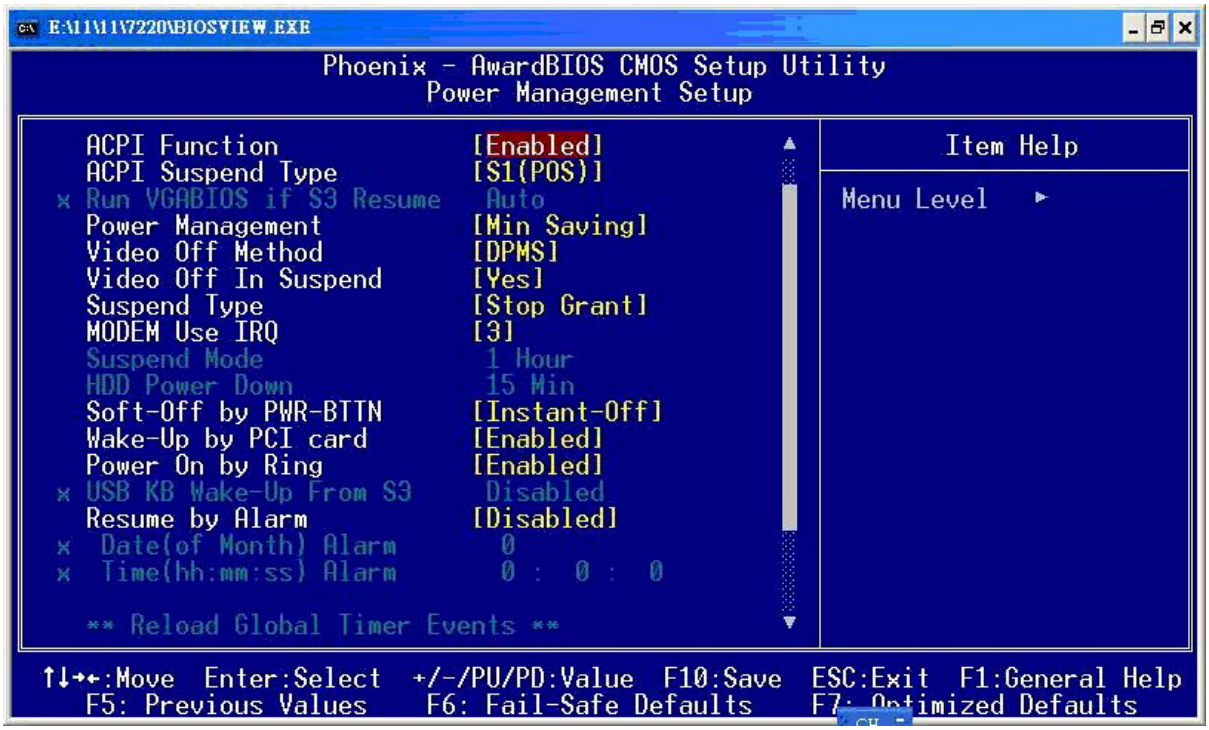
Select EPP port type 1.7 or 1.9. This field is only configurable if "Parallel Port Mode" is set to "EPP" or "ECP+EPP".

The choice: EPP 1.9(default)、EPP 1.7

ECP Mode Use DMA

Select a DMA Channel for the parallel port when using the ECP mode. This field is only configurable if "Parallel Port Mode" is set to "ECP". Options: 3 (default)、1

4.7 Power Management Setup



ACPI Suspend Mode

This item specifies the power saving modes for ACPI function. Available options are:

1. S1 (POS)
The S1 state is low power state. In this state, no system context (CPU or Chipset) is lost and the hardware maintains all system contexts.

2. S3 (STR)
The S3 state is a lower power state, where the information of system configuration and opened applications / files are saved to main memory. The remaining power of other hardware components are turn off to save energy.
The information stored in memory will be used to restore the system when a wake up event occurs.

3. S1 & S3
If S3 state is supported by the system, by default [S3] is automatically selected. Otherwise [S1] is selected.

Run VGABIOS if S3 Resume

Select whether you want to run VGABIOS when the system wakes up from the S3 suspend function. This field is not configurable if "ACPI Suspend Type" is set to "S1(POS)". Options: Auto (default)、Yes、No

Power Management

The level of power management can be set. Disable if you don't want any of it. You can use min or max settings that are pre-determined, or set to "User Define" to specify.

Video Off Method

Blank Screen: The system BIOS will only blank off the screen when disabling video.
V/H SYNC + Blank: In addition to Blank screen, BIOS will also turn off the V-SYNC & H-SYNC signals from VGA cards to monitor.

DPMS: Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards Association (VESA). Use the software supplied for your video subsystem to select video power management values.

Note:
Green monitors detect the V/H SYNC signals to turn off it's electron gun.

Video Off In Suspend

This determines whether power to the monitor is switched off when the computer is in suspend mode. Options: Yes、No (default)

Suspend Type

This item allows you to select the suspend type under the ACPI operating system.

The choice: Stop Grant (default)、PwrOn Suspend

Modem Use IRQ

This determines the modem's IRQ.
The choice: 3 (default)、4、5、7、9、10、11、NA.

Suspend Mode

This item allows you to select the suspend time under the ACPI operating system.
The choice: Disabled(default)、1Min、2Min、4Min、8Min、12Min、20Min、30Min、40Min、1Hour

HDD Power Down

It shuts down any IDE hard disk drives in the system after an idle period. This feature does not affect SCSI hard drives. **Disabled** is recommended.

Soft-Off by PWRBTN

When set to **Delay 4 Sec**., this function allows the power button to put the system in Suspend, a power saving mode. When set to **Instant-Off**, the Soft-Off by PWR-BTN function is disabled and the computer turns completely off when the power button is pressed.

Wake Up by PCI card

If you highlight the "Wake Up by PCI card" label and then press the Enter key, it will display a submenu with the following options:.

Power On by Ring

When **enabled**, a Modem/LAN will be able to receive a signal and activate the system from soft off and green mode. You should connect the modem to the COM port and signal your PC to power on.

USB KB Wake-up from S3

Allows the activity of USB device to wake up the system from S3 power saving modes. Settings are **Enabled** and **Disabled**.

Resume by Alarm

When "**Enabled**", you can set the date and time at which the RTC (real-time clock) alarm awakens the system from Suspend mode.

The choice: Enabled、Disabled (default).

Date (of Month) Alarm

You can choose which date of the month the system will boot up. This field is only configurable when "RTC Wake Up" is set to "**Enabled**".

Time (hh:mm:ss) Alarm

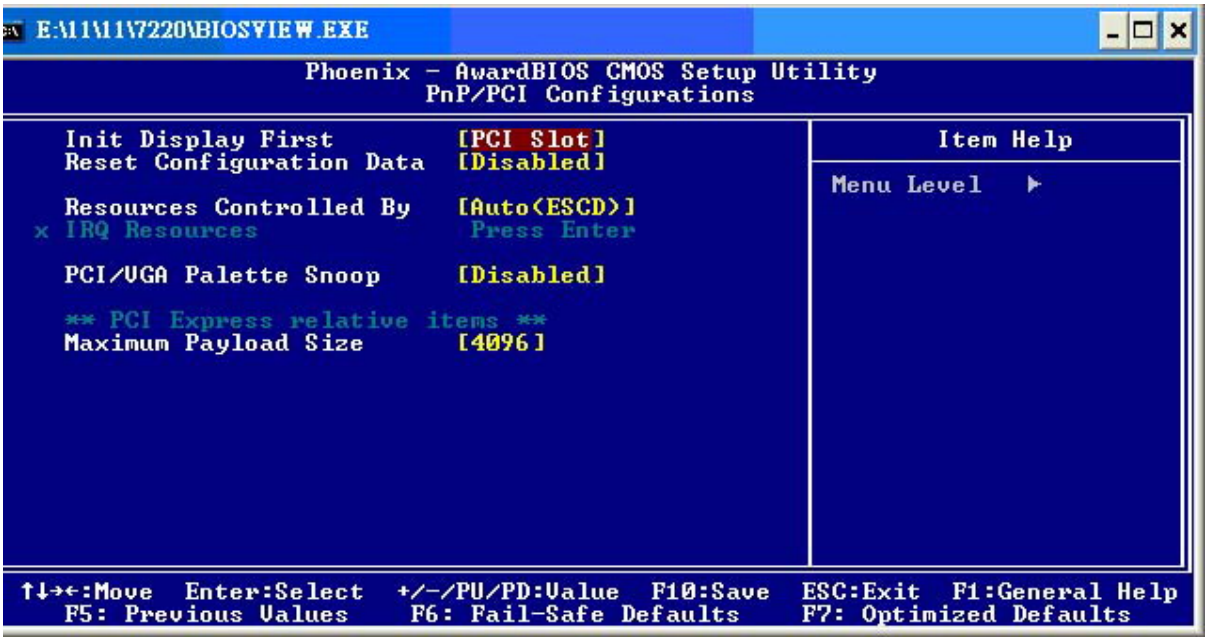
You can choose the hour, minute and second the system will boot up. This field is only configurable when "RTC Wake Up" is set to "**Enabled**".

Reload Global Timer Events

When a system goes into suspend mode, certain devices must be inactive for a period of time. Conversely, if any of those devices have any activity, the system will awaken. You can select the devices that will participate in suspend/power-on activity by configuring these fields. Devices include: Primary IDE 0/ Primary IDE 1/ Secondary IDE 0/ Secondary IDE 1/ FDD, COM, LPT Port/ PCI PIRQ [A-D] #.

The choice: Disabled (default), Enabled

4.8 PnP/PCI Configurations



Reset Configuration Data

If you just install a new hardware or modify your computer's hardware configuration, the BIOS will automatically detect the changes and reconfigure the ESCD(Extended System Configuration Data). Therefore, there is usually no need to manually force the BIOS to reconfigure the ESCD. However, the occasion may arise where the BIOS may not be able to detect the hardware changes. A serious resource conflict may occur and the operating system may not even boot as a result. This is where the Reset Configuration Data BIOS feature comes in. This BIOS feature allows you to manually force the BIOS to clear the previously saved ESCD data and reconfigure the settings. All you need to do is enable this BIOS feature and then reboot your computer. The new ESCD should resolve the conflict and allow the operating system to load normally. Please note that the BIOS will automatically reset it to the default setting of Disabled after reconfiguring the new ESCD. So, there is no need for you to manually disable this feature after rebooting.

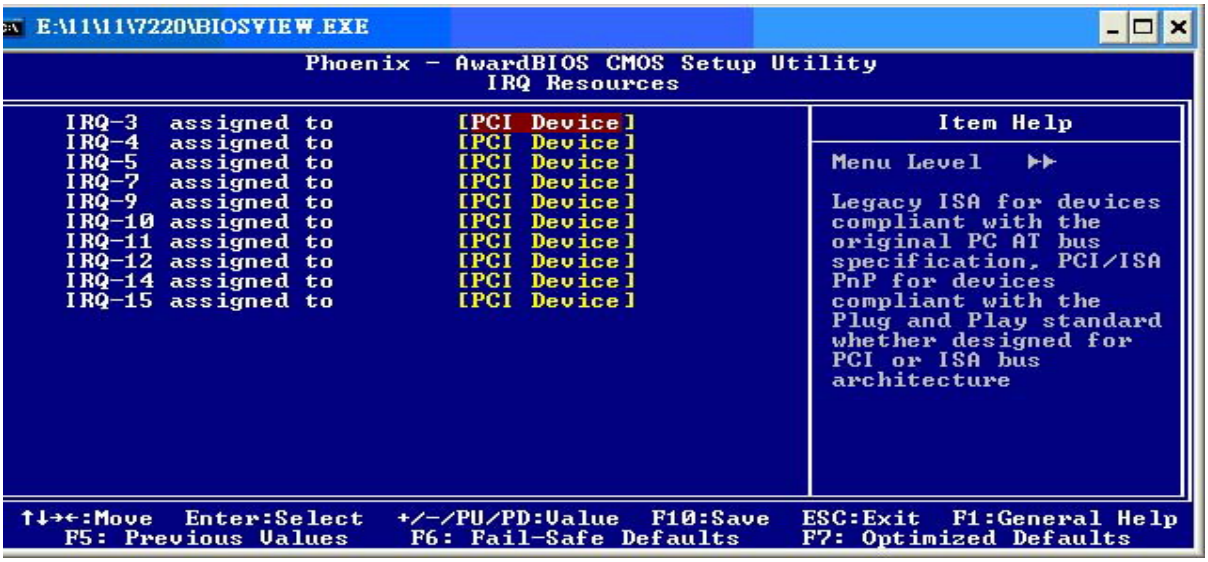
Resources Controlled By

This BIOS feature determines if the BIOS should automatically configure IRQ and DMA resources. The BIOS is generally capable of automatically configuring IRQ and DMA resources for the devices in your computer. Therefore, it is advisable that you set this feature to **Auto**. However, if the BIOS has problems assigning the resources properly, you can select the **Manual** option to reveal the IRQ and DMA assignment fields. You can then assign each IRQ or DMA channel to either **Legacy ISA** or **PCI/ISA PnP** devices. **Legacy ISA** devices are compliant with the original PC AT bus specification and require a specific interrupt and/or DMA channel to function properly. **PCI/ISA PnP** devices, on the other hand, adhere to the Plug and Play standard and can use any interrupt or DMA channel.

4.8.1 IRQ Resources

When resources are controlled manually, you can assign each system interrupt a type, depending on the type of device using the interrupt. This is only configurable when "**Resources Controlled By**" is set to "**Manual**".

The choice: IRQ-3/ 4/ 5/ 7/ 9/ 10/ 11/ 12/ 14/ 15 assigned to PCI device



PCI / VGA Palette Snoop

This option is only useful if you use an MPEG card or an add-on card that makes use of the graphics card's Feature Connector. It corrects incorrect color reproduction by "snooping" into the graphics card's framebuffer memory and modifying (synchronizing) the information delivered from the graphics card's Feature Connector to the MPEG or add-on card. It will also solve the problem of display inversion to a black screen after using the MPEG card.

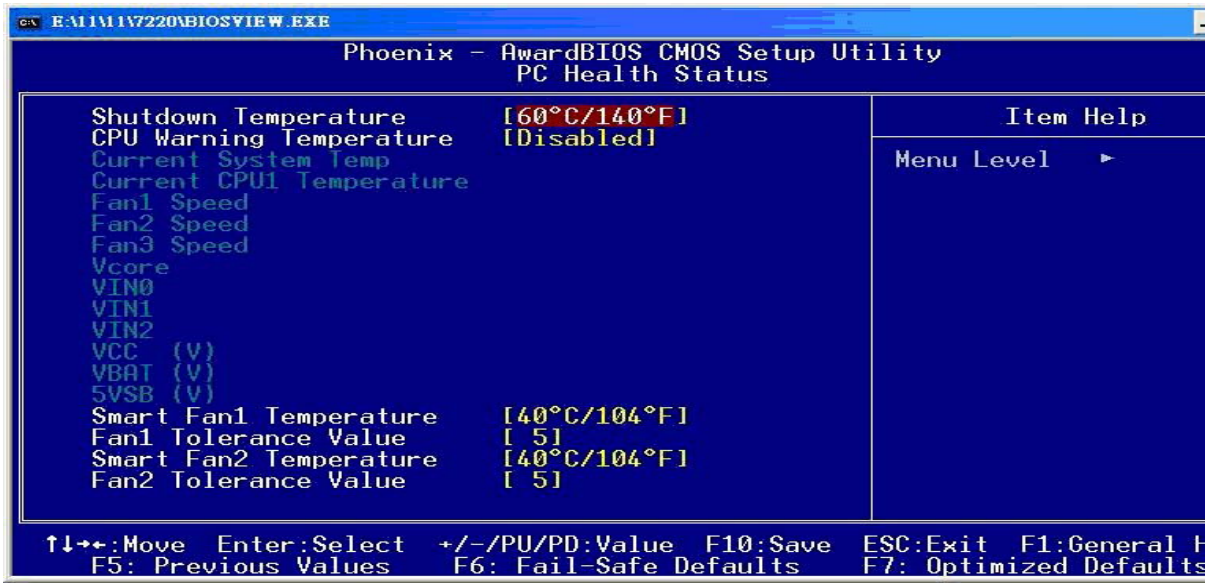
PCI Express relative items

Maximum Payload Size

This item allows you to set the PCI Express Maximum payload size per time.

The choice: 4096 (default)、128、256、512、1024、2048

4.9 PC Health Status



Case Open Warning

If this function is set to "**Enabled**" and the case had been previously opened, the system will automatically display alert messages on the screen when you power on your computer. If this function is set to "**Disabled**", the system will not show alert messages when you power on your computer even if the case had been previously opened.

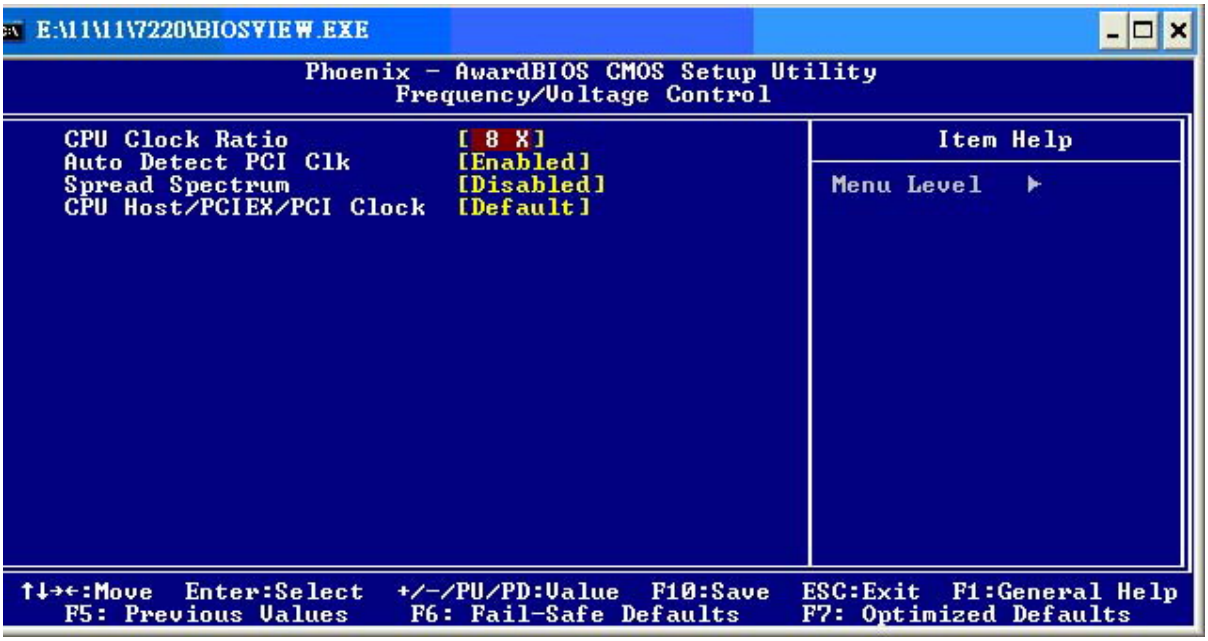
The choice: Disabled (default)、Enabled

Smart CPUFAN Temperature

This function allows you to select the CPU temperature. If the CPU temperature is higher than the value you've selected, the CPUFAN will accelerate till the temperature cools down to the defaulted value you set.

The choice: Disabled (default)、30°C / 86°F、35°C / 95°F、40°C / 104°F、45°C / 113°F、50°C / 122°F、55°C / 131°F、60°C / 140°F、65°C / 149°F、70°C / 158°F、75°C / 167°F、80°C / 176°F、85°C / 185°F

4.10 Frequency/Voltage Control



CPU Clock Ratio

This field will only display if the CPU has not been set to a locked state by the CPU manufactory. If your CPU is locked, you will not be able to adjust the "CPU Clock Ratio". The default depends on your CPU. This item allows you to adjust your CPU core voltage.

The choice: 0.85~1.9. The default depends on your CPU.

Auto Detect PCI Clk

This item is setting the PCI Clock be automation detect.

The choice: Enable(default) , Disable.

Spread Spectrum

The spikes generated by your motherboards clock generator create EMI (Electromagnetic Interference). This function reduces the EMI by modulating the pulses so that the spikes of the pulses are reduced and hence gives reduced EMI. But this reduction can mean that some of your time-critical devices such as SCSI devices can be affected and their stability reduced. **Leave the setting disabled** especially if you are overclocking your system. If you find you have to try this use the smallest % setting possible.

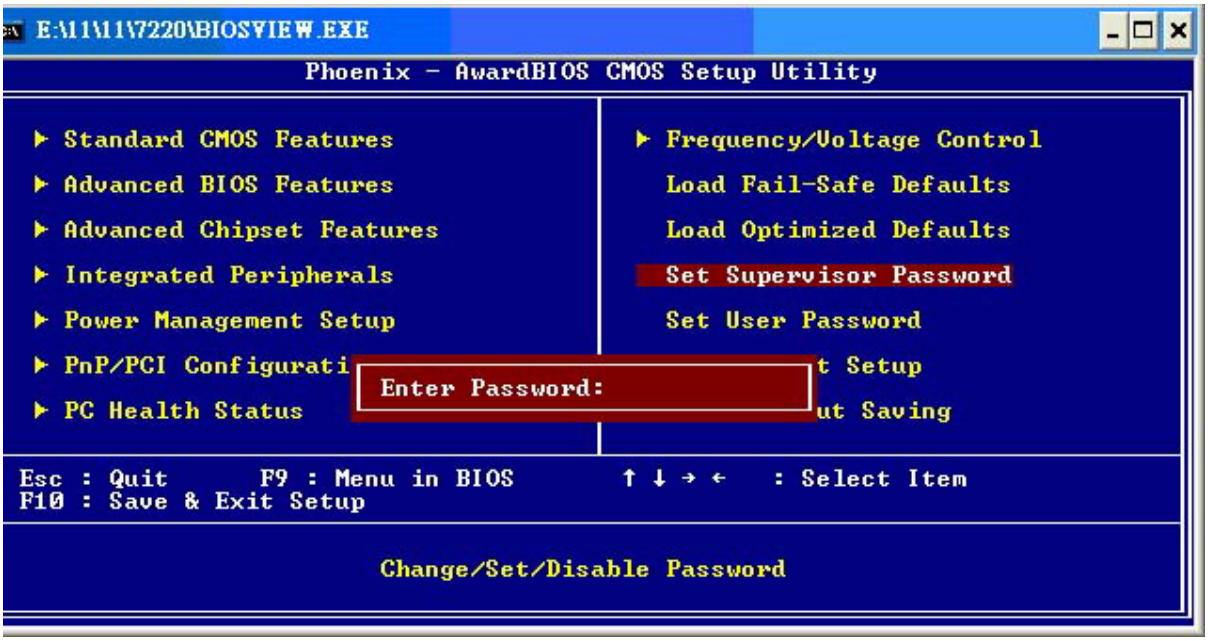
Some BIOS's have a Smart Clock setting which can turn off AGP, PCI & SDRAM clock signals when not in use which reduces EMI without giving system stability problems. This also gives a slight reduction in power consumption.

CPU Host /PCIEX/PCI Clock

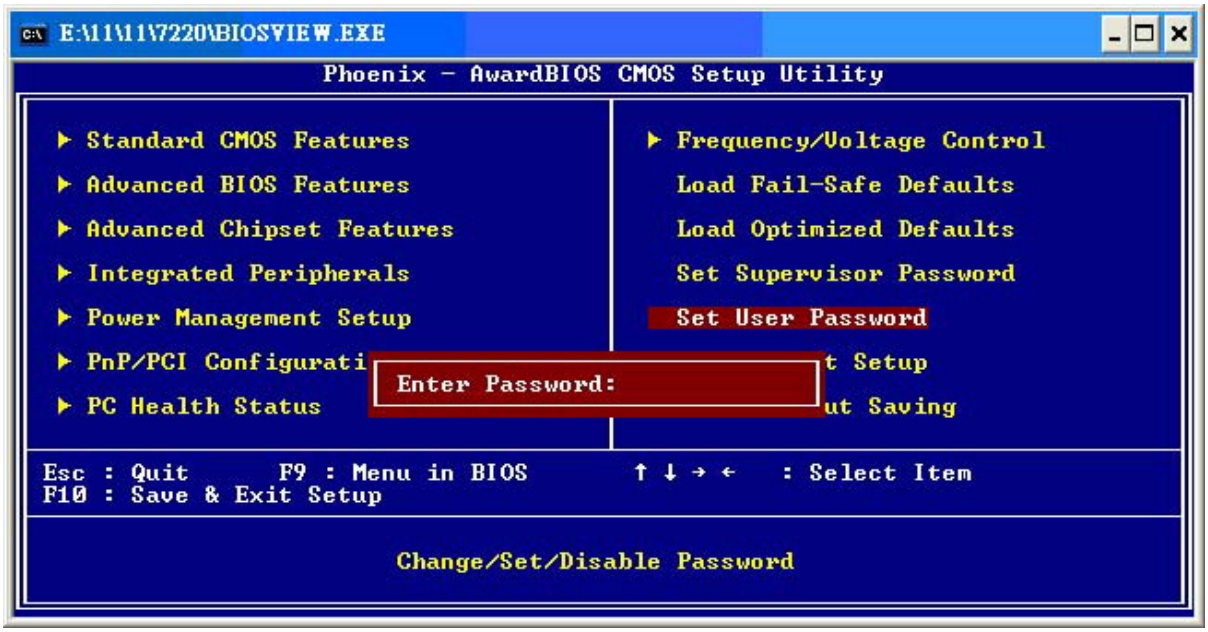
This item displays the CPU Host frequency. You can set it from XXX to 333. The default depends on your CPU frequency. The default for this field depends on the CPU installed.

4.11 Set Supervisor Password

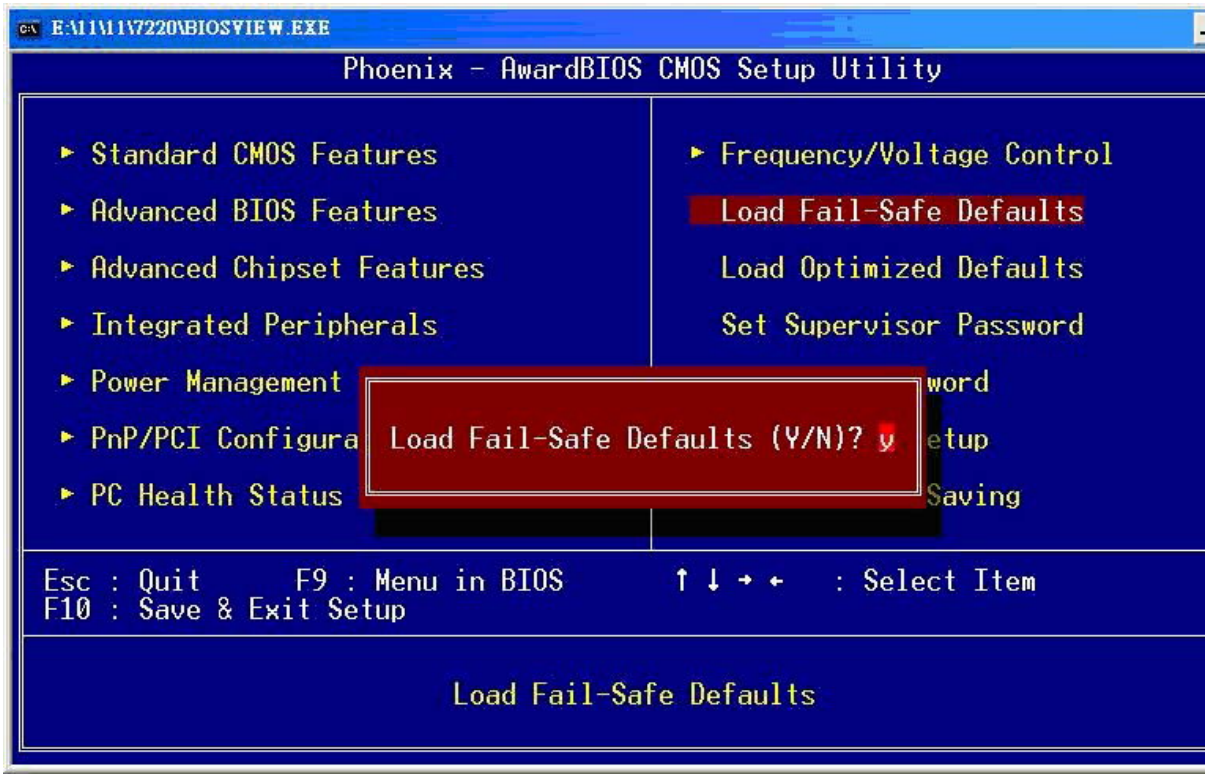
This feature consists of two options -- **Set Password** as well as **Security Option**. If you set a password for security, the Security Option will enable you to determine whether the code needs to be entered during the boot process or when you enter the BIOS settings.



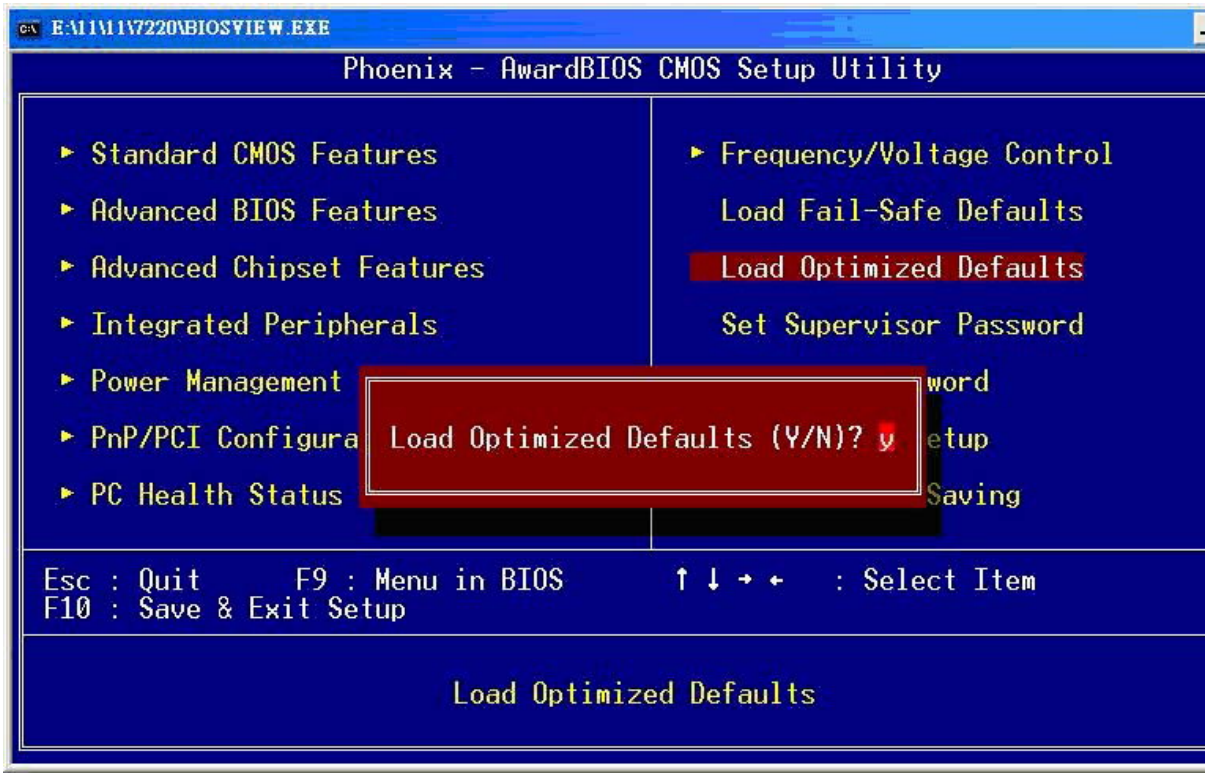
4.12 Set User Password



Load Fail-Safe Defaults



Load Optimized Defaults



Load System Default Settings

To avoid errors, this option allows you to recover the original defaults of BIOS. In fact, this is the first skill you should know as you try to set other defaults of BIOS.

Load System Turbo Settings

This option has the similar function to the previous one. The difference between them is that this is more efficient in settings, and this has the disadvantage of potentially making the system unstable. So, the decision is up to you.

Load CMOS From BIOS

Load defaults from flash ROM for systems without batteries.

Save CMOS To BIOS

Save defaults to flash ROM for systems without batteries.SAVE to COMS and Exit

Save & Exit Setup

If you select this and type **Y** followed by **Enter**, the values entered in the setup utilities will be recorded in the CMOS memory of the BIOS chip.

Exit Without Saving

Same as above, but without saving.