

Mini-ITX i945GM-LINI

**Intel® Core 2 Duo/Core Duo/Core Solo
Mini ITX Main Board**

User's Manual

Ver. 1.00

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Revision History

Revision	Revision History	Date
V1.0	First release	November, 2006

Technical Support

If a problem arises with your system and no solution can be obtained from the user's manual, please contact your place of purchase or local distributor. Alternatively, please try the following help resources for further guidance.

Safety Instructions

1. Always read the safety instructions carefully.
2. Keep this User's Manual for future reference.
3. Keep this equipment away from humidity.
4. Lay this equipment on a reliable flat surface before setting it up.
5. The openings on the enclosure are for air convection hence protects the equipment from overheating. DO NOT COVER THE OPENINGS.
6. Make sure the voltage of the power source and adjust properly 110/220V before connecting the equipment to the power inlet.
7. Place the power cord such a way that people can not step on it. Do not place anything over the power cord.
8. Always Unplug the Power Cord before inserting any add-on card or module.
9. All cautions and warnings on the equipment should be noted.
10. Never pour any liquid into the opening that could damage or cause electrical shock.
11. If any of the following situations arises, get the equipment checked by service personnel:
 - The power cord or plug is damaged.
 - Liquid has penetrated into the equipment.
 - The equipment has been exposed to moisture.
 - The equipment does not work well or you can not get it work according to User's Manual.
 - The equipment has dropped and damaged.
 - The equipment has obvious sign of breakage.
12. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT UNCONDITIONED, STORAGE TEMPERATURE ABOVE 60⁰ C (140⁰F), IT MAY DAMAGE THE EQUIPMENT.

CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.

FCC-B Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the measures listed below.



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

Notice 1

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

Notice 2

Shielded interface cables and A.C. power cord, if any, must be used in order to comply with the emission limits.

VOIR LA NOTICE D'INSTALLATION AVANT DE RACCORDER AU RESEAU.



This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and*
- (2) this device must accept any interference received, including interference that may cause undesired operation.*

WEEE (Waste Electrical and Electronic Equipment) Statement



ENGLISH

To protect the global environment and as an environmentalist, Advansus must remind you that... Under the European Union ("EU") Directive on Waste Electrical and Electronic Equipment, Directive 2002/96/EC, which takes effect on August 13, 2005, products of "electrical and electronic equipment" cannot be discarded as municipal waste anymore and manufacturers of covered electronic equipment will be obligated to take back such products at the end of their useful life. Advansus will comply with the product take back requirements at the end of life of Advansus-branded products that are sold into the EU. You can return these products to local collection points.

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Chapter 1

Getting Started

Thank you for choosing the i945GM-LINI Mini ITX main-board.

Based on the innovative **Intel® 945GM & ICH7M** controllers for optimal system efficiency, the i945GM-LINI accommodates the latest **Intel® Core 2 Duo/Core Duo/Core Solo** processors and supports one 240-pin 533/667MHz DDRII DIMM to provide the maximum of 2GB memory capacity.

In the entry-level and mid-range market segment, the i945GM-LINI can provide a high-performance solution for today's front-end and general purpose workstation, as well as in the future.

Mainboard Specifications

Processor Support

- Intel® Core 2 Duo/Core Duo/Core Solo CPU
- Supports 3 pin CPU Fan Pin-Header with Fan Speed Control
- Supports Intel Dual Core Technology to 533/667MHz and up

Supported FSB

- 533/667MHz

Chipset

- North Bridge: Intel® 945GM chipset
- South Bridge: Intel® ICH7M chipset

Memory Support

- DDRII 533/667 SDRAM (2GB Max)
- 1 DDRII DIMM slot (240pin / 1.8V)

LAN

- Supports 2 PCI Express Gb Ethernet by Intel 82573L

Audio

- HDA Codec by Realtek® ALC888 7.1 channel
- Compliant with Azalia 1.0 Spec.

EIDE

- 1 EIDE port by ICH7M
- Supports Ultra DMA 100 mode
- Supports PIO, Bus Master operation mode

SATA

- SATA ports by ICH7M
- Supports two SATA devices
- Supports storage and data transfers at up to 150MB/s

Connectors

● Back Panel

- 2 RJ-45 LAN jacks
- 2 USB 2.0 ports
- 1 D-Sub VGA connector
- 1 serial port

- 1 PS2 keyboard/mouse port
- 1 Line-In/Line-Out/Mic-In stacked audio jack

● **Onboard Pinheaders**

- 1 USB 2.0 pinheader (2 ports)
- 1 parallel port pinheader
- 1 front audio pinheader
- 1 LVDS connector
- 1 Digital I/O pinheader (16GPIO)
- 1 RS232/422/485 COM port header for COM2~COM5 (optional)
- 1 front panel pinheader

Slots

- 1 PCI Express x16 slot (supports MS-V004 ADD2 DVI Card)
- 1 PCI 32-bit/33MHz slot

Form Factor

- Mini ITX

Mounting

- 4 mounting holes

Environmental

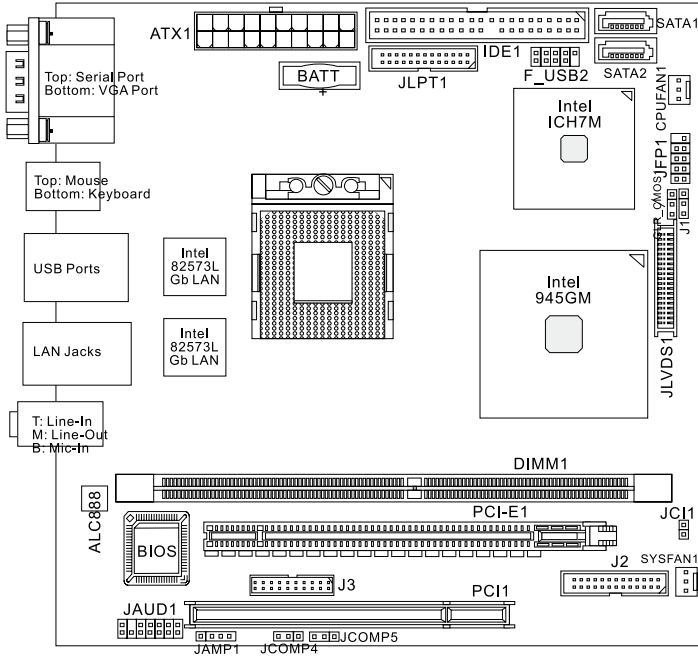
Storage Temperature

- - Temperature: -10°C ~ 70°C
- Humidity: 10% RH ~ 80% RH

Operation Temperature

- - Temperature: 0°C ~ 60°C
- Humidity: 80% RH

Mainboard Layout



i945GM-LINI Mini ITX Mainboard

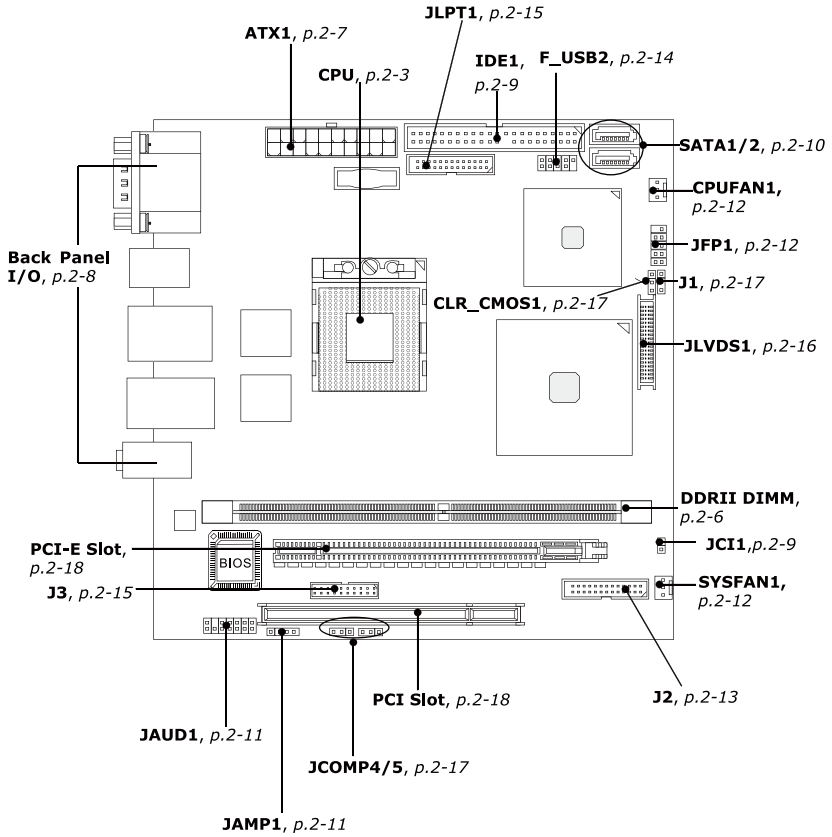
Chapter 2

Hardware Setup

This chapter provides you with the information about hardware setup procedures. While doing the installation, be careful in holding the components and follow the installation procedures. For some components, if you install in the wrong orientation, the components will not work properly.

Use a grounded wrist strap before handling computer components. Static electricity may damage the components.

Quick Components Guide



CPU (Central Processing Unit)

The mainboard supports Intel® Core 2 Duo/Core Duo/Core Solo processors. When you are installing the CPU, **make sure the CPU has a heat sink and a cooling fan attached on the top to prevent overheating.** If you do not have the heat sink and cooling fan, contact your dealer to purchase and install them before turning on the computer.



Important

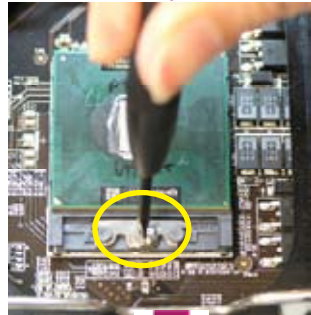
1. *Overheating will seriously damage the CPU and system. Always make sure the cooling fan can work properly to protect the CPU from overheating.*
2. *Make sure that you apply an even layer of heat sink paste (or thermal tape) between the CPU and the heatsink to enhance heat dissipation.*
3. *While replacing the CPU, always turn off the ATX power supply or unplug the power supply's power cord from the grounded outlet first to ensure the safety of CPU.*

CPU & Cooler Set Installation

1. Place the CPU on top of the socket. Make sure to align the gold arrow on the CPU with the arrow key on the socket.
2. Push the CPU down until its pins securely fit into the socket.



3. On the front end of the CPU socket is a locking mechanism designed into the form of a screw. Make sure that you actuate or deactivate this mechanism with a screwdriver before and after installing the CPU.



4. Release the metal clips on the retention mechanism.



Mainboard photos shown in this section are for demonstration only and may differ from the actual look of your mainboard.





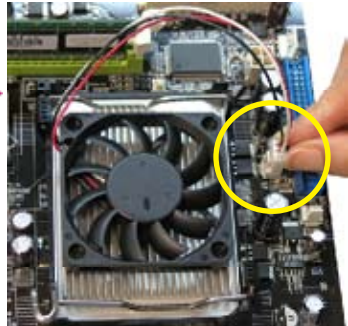
5. Mount the cooler set (fan & heatsink bundled) on top of the CPU and fit it into the retention mechanism.



6. Secure the metal clips back to the retention mechanism.

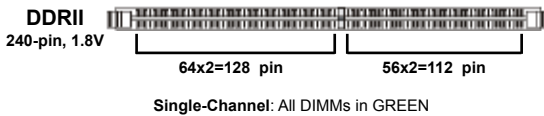


7. Connect the fan power cable from the mounted fan to the 3-pin fan power connector on the mainboard.



Memory

The mainboard provides one 240-pin non-ECC **DDRII 533/667** DIMM slot and supports up to 2GB system memory.



Installing DDRII Modules

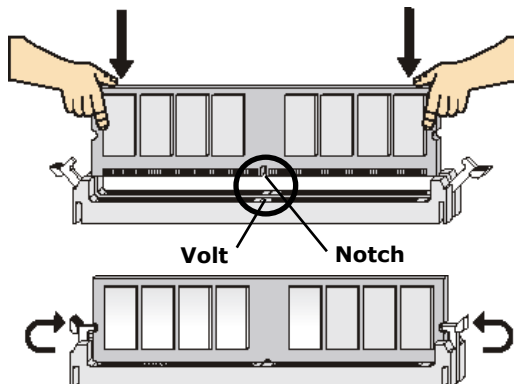
1. The memory module has only one notch on the center and will only fit in the right orientation.
2. Insert the memory module vertically into the DIMM slot. Then push it in until the golden finger on the memory module is deeply inserted in the DIMM slot.



Important

You can barely see the golden finger if the memory module is properly inserted in the DIMM slot.

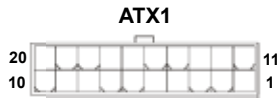
3. The plastic clip at each side of the DIMM slot will automatically close.



Power Supply

ATX 20-Pin System Power Connector: ATX1

This connector allows you to connect to an ATX power supply. To connect to the ATX power supply, make sure the plug of the power supply is inserted in the proper orientation and the pins are aligned. Then push down the power supply firmly into the connector.



ATX1 Pin Definition

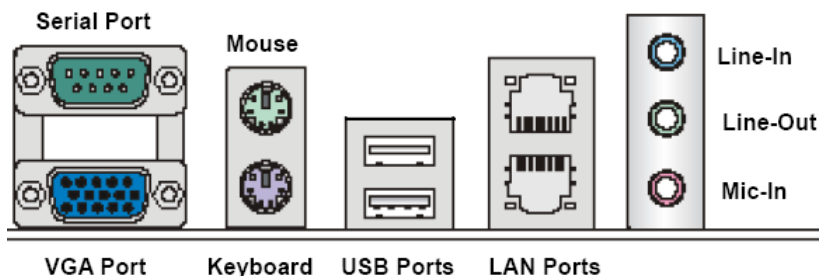
PIN	SIGNAL	PIN	SIGNAL
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	GND	13	GND
4	5V	14	PS_ON
5	GND	15	GND
6	5V	16	GND
7	GND	17	GND
8	PW_OK	18	-5V
9	5V_SB	19	5V
10	12V	20	5V



Important

*Power supply of **350watts** (and above) is highly recommended for system stability.*

Back Panel



► Serial Port Connector

The serial port is a 16550A high speed communications port that sends/ receives 16 bytes FIFOs. You can attach a serial mouse or other serial devices directly to the connector.

► VGA Connector

The DB15-pin female connector is provided for VGA monitors.

► Mouse/Keyboard Connector

The standard PS/2[®] mouse/keyboard DIN connector is for a PS/2[®] mouse/keyboard.

► USB Connectors

The OHCI (Open Host Controller Interface) Universal Serial Bus root is for attaching USB devices such as keyboard, mouse, or other USB-compatible devices.

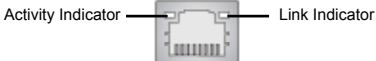
► Audio Port Connectors

These audio connectors are used for audio devices. You can differentiate the color of the audio jacks for different audio sound effects.

- **Blue audio jack** - Line In is used for external CD player, tapeplayer or other audio devices.
- **Green audio jack** - Line Out, is a connector for speakers or headphones.
- **Pink audio jack** - Mic In, is a connector for microphones.

► LAN (RJ-45) Jack

The standard RJ-45 jack is for connection to single Local Area Network (LAN). You can connect a network cable to it.



LED	Color	LED State	Condition
Left	Orange	Off	LAN link is not established.
		On (steady state)	LAN link is established.
		On (brighter & pulsing)	The computer is communicating with another computer on the LAN.
Right	Green	Off	10 Mbit/sec data rate is selected.
		On	100 Mbit/sec data rate is selected.
	Orange	On	1000 Mbit/sec data rate is selected.

Connectors

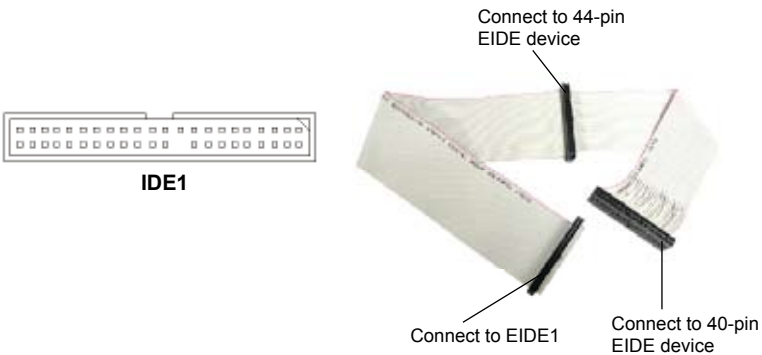
Chassis Intrusion Switch Connector: JCI1

This connector connects to a 2-pin chassis switch. If the chassis is opened, the switch will be short. The system will record this status and show a warning message on the screen. To clear the warning, you must enter the BIOS utility and clear the record.



44-Pin EIDE Connector: IDE1

This 44-pin EIDE connector connects to an optional converter that enables connection to one 44-pin EIDE device and one 40-pin EIDE device, such as hard disk drives, CD-ROM and other EIDE devices.

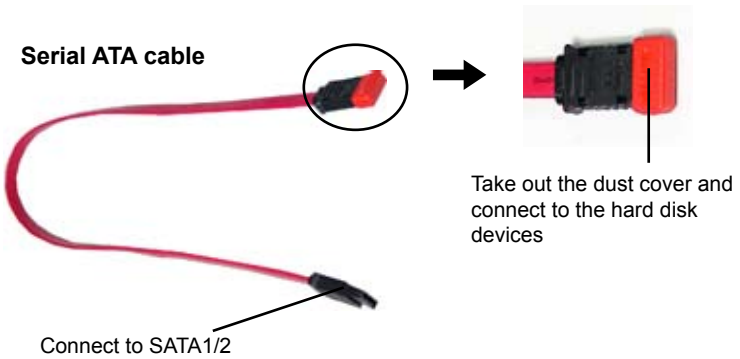
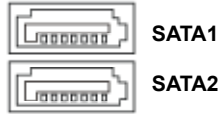


Important

If you install two hard disks on cable, you must configure the second drive to Slave mode by setting its jumper. Refer to the hard disk documentation supplied by hard disk vendors for jumper setting instructions.

Serial ATA Connectors: SATA1, SATA2

SATA1~SATA2 are high-speed SATA interface ports and support SATA data rates of 150MB/s. Each SATA connector can connect to 1 hard disk device and is fully compliant with Serial ATA 1.0 specifications.



Important

Please do not fold the Serial ATA cable into 90-degree angle. Otherwise, data loss may occur during transmission.

Audio Amplifier Connector: JAMP1

The JAMP1 is used to connect audio amplifiers to enhance audio performance.

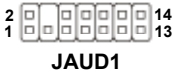


Pin Definition

PIN	SIGNAL
1	AMP_L-
2	AMP_L+
3	AMP_R-
4	AMP_R+

Front Audio Connector: JAUD1

The JAUD1 connects to an optional audio bracket that provides extra front panel audio IO jacks.



JAUD1 Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	5V_SB	2	VCC3
3	SPDF0	4	NA
5	GND	6	SPDF1
7	LEF_OUT	8	SURR_OUT_R
9	CEN_OUT	10	SURR_OUT_L
11	AUD_GPIO21	12	AUDIO GND
13	SIDE_L	14	SIDE_R

Fan Power Connectors: CPUFAN1, SYSFAN1

The fan power connectors support system cooling fan with +12V. When connecting the wire to the connectors, always take note that the red wire is the positive and should be connected to the +12V, the black wire is Ground and should be connected to GND. If the mainboard has a System Hardware Monitor chipset on-board, you must use a specially designed fan with speed sensor to take advantage of the CPU fan control.

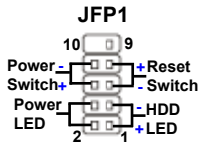


Important

Please refer to the recommended CPU fans at Intel® / AMD® official website or consult the vendors for proper CPU cooling fan.

Front Panel Connector: JFP1

The mainboard provides one front panel connector for electrical connection to the front panel switches and LEDs. The JFP1 is compliant with Intel® Front Panel I/O Connectivity Design Guide.

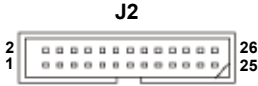


JFP1 Pin Definition

PIN	SIGNAL	DESCRIPTION
1	HD_LED +	Hard disk LED pull-up
2	FP PWR/SLP	MSG LED pull-up
3	HD_LED -	Hard disk active LED
4	FP PWR/SLP	MSG LED pull-up
5	RST_SW -	Reset Switch low reference pull-down to GND
6	PWR_SW +	Power Switch high reference pull-up
7	RST_SW +	Reset Switch high reference pull-up
8	PWR_SW -	Power Switch low reference pull-down to GND
9	RSVD_DNU	Reserved. Do not use.

Serial Port Connector: J2

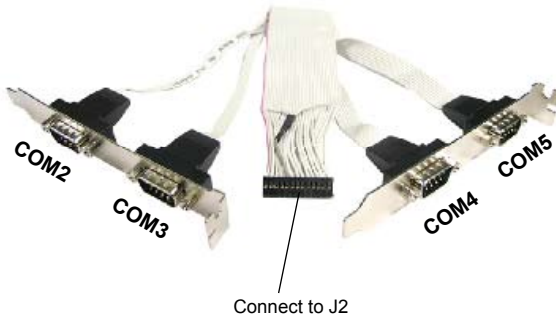
The J2 is a RS232/422/485 COM port pinheader that connects to serial devices.



	RS232	RS422	RS485
COM2	X	V	V
COM3	X	V	V
COM4	V	X	X
COM5	V	X	X

V = supported X = not supported

Serial Port Bracket (Optional)



J2 Pin Definition

Voltage Select	Serial Port	PIN	SIGNAL	PIN	SIGNAL	Serial Port	Voltage Select
N/A	COM2	1	422 RXD1#	2	422 RXD2#	COM3	N/A
		3	422 RXD1	4	422 RXD2		
		5	422 TXD1	6	422 TXD2		
		7	422 TXD1#	8	422 TXD2#		
		9	GND	10	GND		
JCOMP4 (page 2-17)	COM4	11	NDCD3#	12	NDCD4#	COM5	JCOMP5 (page 2-17)
		13	NSIN3	14	NSIN4		
		15	NSOUT3	16	NSOUT4		
		17	NDTR3	18	NDTR4		
		19	NDSR3#	20	NDSR4#		
		21	NRTS3	22	NRTS4		
		23	NCTS3#	24	NCTS4#		
		25	0V/5V/12V	26	0V/5V/12V		

Front USB Connector: F_USB2

The mainboard provides one USB 2.0 pinheader (optional USB 2.0 bracket available) that is compliant with Intel® I/O Connectivity Design Guide. USB 2.0 technology increases data transfer rate up to a maximum throughput of 480Mbps, which is 40 times faster than USB 1.1, and is ideal for connecting high-speed USB interface peripherals such as **USB HDD, digital cameras, MP3 players, printers, modems and the like.**



Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	VCC	2	VCC
3	USB0-	4	USB1-
5	USB0+	6	USB1+
7	GND	8	GND
9	Key (no pin)	10	USBOC



Important

Note that the pins of VCC and GND must be connected correctly to avoid possible damage.

Digital IO Connector: J3

The J3 connects to the General-Purpose Input/Output (GPIO) peripheral module.

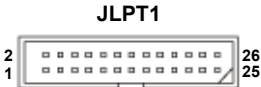
J3 Pin Definition



PIN	SIGNAL	PIN	SIGNAL
1	VCC3	2	VCC5
3	N_GPIO10	4	N_GPIO20
5	N_GPIO11	6	N_GPIO21
7	N_GPIO12	8	N_GPIO22
9	N_GPIO13	10	N_GPIO23
11	N_GPIO14	12	N_GPIO24
13	N_GPIO15	14	N_GPIO25
15	N_GPIO16	16	N_GPIO26
17	N_GPIO17	18	N_GPIO27
19	GND	20	NC

Parallel Port Header: JLPT1

The mainboard provides a 26-pin header for connection to an optional parallel port bracket. The parallel port is a standard printer port that supports Enhanced Parallel Port (EPP) and Extended Capabilities Parallel Port (ECP) mode.



Parallel Port Bracket (Optional)

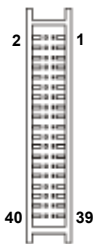


Pin	Signal Name	Pin	Signal Name
1	RSTB#	2	AFD#
3	PRND0	4	ERR#
5	PRND1	6	PINIT#
7	PRND2	8	LPT_SLIN#
9	PRND3	10	GND
11	PRND4	12	GND
13	PRND5	14	GND
15	PRND6	16	GND
17	PRND7	18	GND
19	ACK#	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SLCT	26	GND

LVDS Flat Panel Connector: JLVDS1

The LVDS (Low Voltage Differential Signal) connector provides a digital interface typically used with flat panels. After connecting an LVDS interfaced flat panel to the JLVDS1, be sure to check the panel datasheet and set the J1 LVDS Power Selection Jumper to a proper voltage.

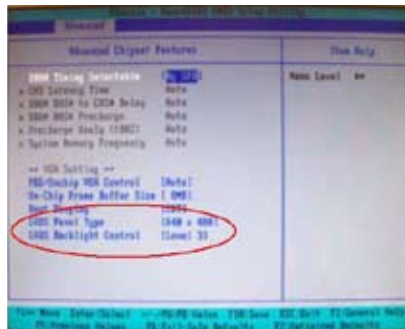
JLVDS1



SIGNAL	PIN		SIGNAL
+12V	2	1	+12V
+12V	4	3	+12V
GND	6	5	+12V
GND	8	7	+3V
LCDVCC	10	9	LCDVCC
DCC DATA	12	11	DDC CLK
VDD ENABLE	14	13	BKLTCTL
GND	16	15	BKLTEN
LVDS A0+	18	17	LVDS A0-
LVDS A1+	20	19	LVDS A1-
LVDS A2+	22	21	LVDS A2-
LVDS ACLK+	24	23	LVDS ACLK-
NC	26	25	NC
GND	28	27	GND
LVDS B0+	30	29	LVDS B0-
LVDS B1+	32	31	LVDS B1-
LVDS B2+	34	33	LVDS B2-
LVDS BCLK+	36	35	LVDS BCLK-
NC	38	37	NC
GND	40	39	GND



After hardware installation is done, select the LVDS panel type and tune the LVDS backlight in the BIOS Setup Utility.



Jumpers

LVDS Power Selection Jumper: J1

Use this jumper to specify the LVDS power.



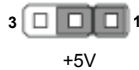
Pin	Signal Name
1	VCC3
2	LCD_SRC (default VCC3)
3	VCC5

COM Port Power Jumpers: JCOMP4, JCOMP5

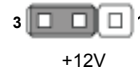
These jumpers specify the operation voltage of the serial port COM4 & COM5.



JCOMP4



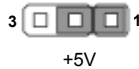
+5V



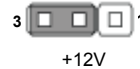
+12V



JCOMP5



+5V



+12V

Clear CMOS Jumper: CLR_CMOS1

There is a CMOS RAM onboard that has a power supply from external battery to keep the data of system configuration. With the CMOS RAM, the system can automatically boot OS every time it is turned on. If you want to clear the system configuration, set the CLR_CMOS1 (Clear CMOS Jumper) to clear data.



CLR_CMOS1



Clear Data



Keep Data



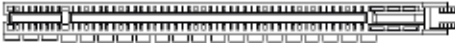
Important

You can clear CMOS by shorting 1-2 pin while the system is off. Then return to 2-3 pin position. Avoid clearing the CMOS while the system is on; it will damage the mainboard.

Slots

PCI (Peripheral Component Interconnect) Express Slot

PCI Express architecture provides a high performance graphics infrastructure for Embedded Platforms doubling the capability of existing AGP 8x designs with transfer rates of 4.0 GB/s over a PCI Express x16 lane for graphics controllers



PCI Express x16 Slot

PCI (Peripheral Component Interconnect) Slot

The PCI slot supports LAN cards, SCSI cards, USB cards, and other add-on cards that comply with PCI specifications. At 32 bits and 33 MHz, it yields a throughput rate of 133 MBps.



32-bit PCI Slot

PCI Interrupt Request Routing

The IRQ, acronym of interrupt request line and pronounced I-R-Q, are hardware lines over which devices can send interrupt signals to the microprocessor. The PCI IRQ pins are typically connected to the PCI bus pins as follows:

	Order 1	Order 2	Order 3	Order 4
32-bit PCI1	INT A#	INT B#	INT C#	INT D#



Important

When adding or removing expansion cards, make sure that you unplug the power supply first. Meanwhile, read the documentation for the expansion card to configure any necessary hardware or software settings for the expansion card, such as jumpers, switches or BIOS configuration.

Chapter 3

BIOS Setup

This chapter provides information on the BIOS Setup program and allows you to configure the system for optimum use.

You may need to run the Setup program when:

- ◆ An error message appears on the screen during the system booting up, and requests you to run SETUP.
- ◆ You want to change the default settings for customized features.

Entering Setup

Power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press <Delete> key to enter Setup.

Press Delete to enter SETUP

If the message disappears before you respond and you still wish to enter Setup, re-start the system by turning it OFF and On or pressing the RESET button. You may also restart the system by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys.



Important

- 1. The items under each BIOS category described in this chapter are under continuous update for better system performance. Therefore, the description may be slightly different from the latest BIOS and should be held for reference only.*
- 2. Upon boot-up, the 1st line appearing after the memory count is the BIOS version. It is usually in the format:*

W9642IMS V1.0 031506 where:

1st digit refers to BIOS maker as A = AMI, W = AWARD, and P = PHOENIX.

2nd - 5th digit refers to the model number.

6th digit refers to the chipset as I = Intel, N = nVidia, and V = VIA.

7th - 8th digit refers to the customer as MS = all standard customers.

V1.0 refers to the BIOS version.

031506 refers to the date this BIOS was released.

Control Keys

<↑>	Move to the previous item
<↓>	Move to the next item
<←>	Move to the item in the left hand
<→>	Move to the item in the right hand
<Enter>	Select the item
<Esc>	Jumps to the Exit menu or returns to the main menu from a submenu
<+/PU>	Increase the numeric value or make changes
<-/PD>	Decrease the numeric value or make changes
<F6>	Load Optimized Defaults
<F7>	Load Fail-Safe Defaults
<F10>	Save all the CMOS changes and exit

Getting Help

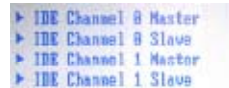
After entering the Setup menu, the first menu you will see is the Main Menu.

Main Menu

The main menu lists the setup functions you can make changes to. You can use the arrow keys (↑↓) to select the item. The on-line description of the highlighted setup function is displayed at the bottom of the screen.

Sub-Menu

If you find a right pointer symbol (as shown in the right view) appears to the left of certain fields that means a sub-menu can be launched from this field. A sub-menu contains additional options for a field parameter. You can use arrow keys (↑↓) to highlight the field and press <Enter> to call up the sub-menu. Then you can use the control keys to enter values and move from field to field within a sub-menu. If you want to return to the main menu, just press the <Esc>.



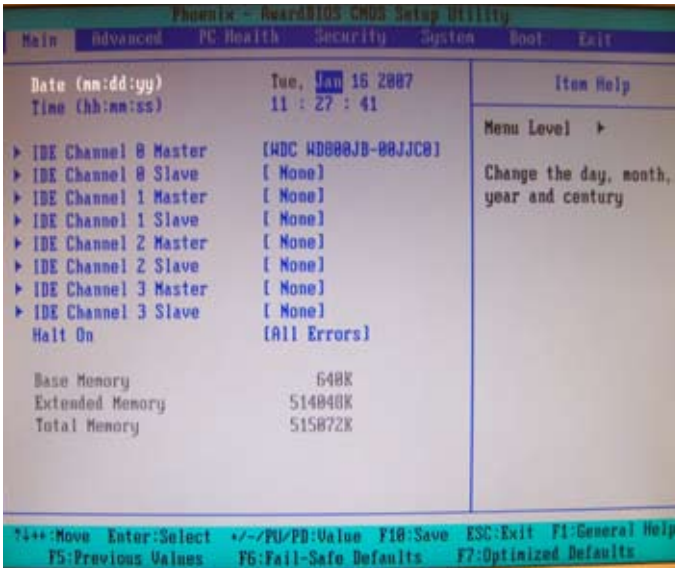
```

> IDE Channel 0 Master
> IDE Channel 0 Slave
> IDE Channel 1 Master
> IDE Channel 1 Slave
  
```

General Help <F1>

The BIOS setup program provides a General Help screen. You can call up this screen from any menu by simply pressing <F1>. The Help screen lists the appropriate keys to use and the possible selections for the highlighted item. Press <Esc> to exit the Help screen.

The Menu Bar



► Main

Use this menu for basic system configurations, such as time, date etc.

► Advanced

Use this menu to set up the items of special enhanced features available on your system's chipset.

► PC Health

This entry monitors your hardware health status.

► Security

Use this menu to set Supervisor and User Passwords.

► System

This entry shows your system summary.

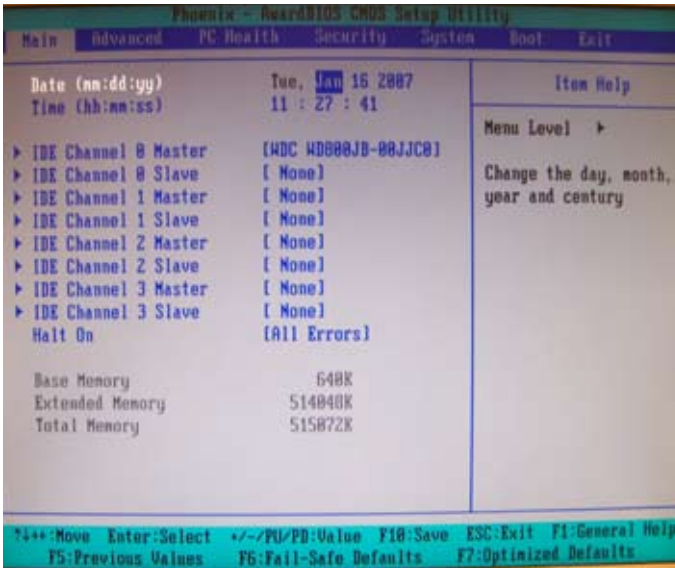
► Boot

Use this menu to specify the priority of boot devices.

► Exit

This menu allows you to load the BIOS default values or factory default settings into the BIOS and exit the BIOS setup utility with or without changes.

Main



▶ **Date (mm:dd:yy)**

The date format is <Day>, <Month> <Date> <Year>.

▶ **Time (hh:mm:ss)**

The time format is <Hour> <Minute> <Second>.

▶ **EIDE Channel 0/1/2/3 Master/Slave**

Press PgUp/<+> or PgDn/<-> to select [Manual], [None] or [Auto] type. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category. If your hard disk drive type is not matched or listed, you can use [Manual] to define your own drive type manually.

If you select [Manual], related information is asked to be entered to the following items. Enter the information directly from the keyboard. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.

Access Mode	The settings are CHS, LBA, Large, Auto.
Capacity	The formatted size of the storage device.
Cylinder	Number of cylinders.
Head	Number of heads.
Precomp	Write precompensation.
Landing Zone	Cylinder location of the landing zone.
Sector	Number of sectors.

► **Halt On**

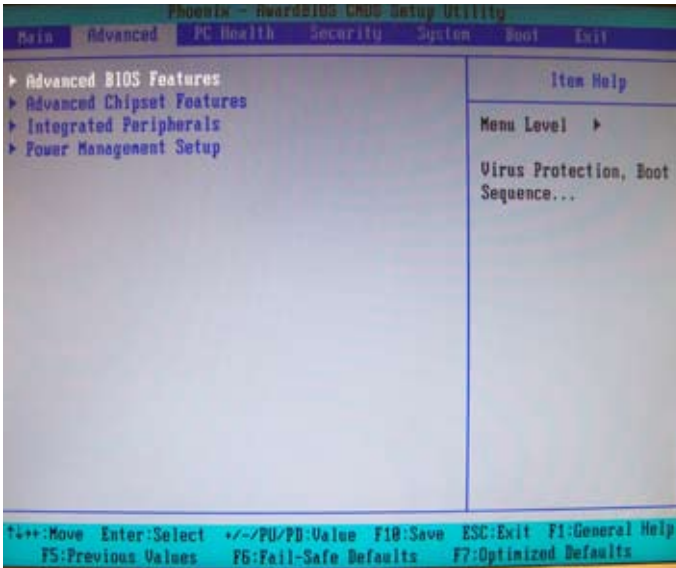
The setting determines whether the system will stop if an error is detected at boot. When the system stops for the errors preset, it will halt on for 15 seconds and then automatically resume its operation. Available options are:

[All Errors]	The system stops when any error is detected.
[No Errors]	The system doesn't stop for any detected error.
[All, But Keyboard]	The system doesn't stop for a keyboard error.

► **Base/Extended/Total Memory**

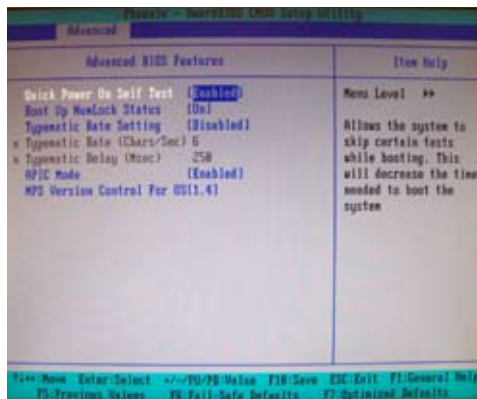
The three items show the memory status of the system. (Read-only)

Advanced



► Advanced BIOS Features

The sub-menu is used to configure chipset features for optimal system performance.



▶ **Quick Power On Self Test**

Select [Enabled] to reduce the amount of time required to run the power-on self-test (POST). A quick POST skips certain steps. We recommend that you normally disable quick POST. Better to find a problem during POST than lose data during your work.

▶ **Boot Up NumLock Status**

This setting is to set the Num Lock status when the system is powered on. Setting to [On] will turn on the Num Lock key when the system is powered on. Setting to [Off] will allow users to use the arrow keys on the numeric keypad.

▶ **Typematic Rate Setting**

This item is used to enable or disable the typematic rate setting including Typematic Rate & Typematic Delay.

▶ **Typematic Rate (Chars/Sec)**

After Typematic Rate Setting is enabled, this item allows you to set the rate (characters/second) at which the keys are accelerated.

▶ **Typematic Delay (Msec)**

This item allows you to select the delay between when the key was first pressed and when the acceleration begins.

▶ **APIC Mode**

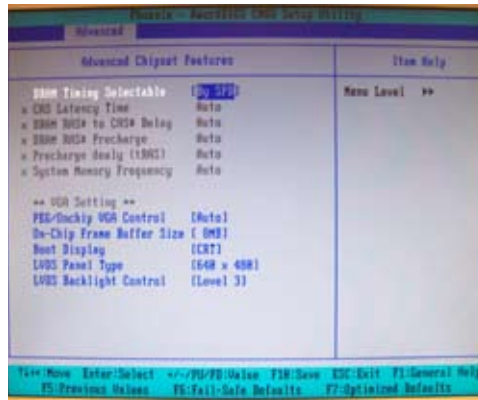
This field is used to enable or disable the APIC (Advanced Programmable Interrupt Controller). Due to compliance with PC2001 design guide, the system is able to run in APIC mode. Enabling APIC mode will expand available IRQ resources for the system.

▶ **MPS Version Control For OS**

This field allows you to select which MPS (Multi-Processor Specification) version to be used for the operating system. You need to select the MPS version supported by your operating system. To find out which version to use, consult the vendor of your operating system.

► Advanced Chipset Features

The sub-menu is used to configure chipset features for optimal system performance.



► DRAM Timing Selectable

Selects whether DRAM timing is controlled by the SPD (Serial Presence Detect) EEPROM on the DRAM module. Setting to [By SPD] enables DRAM timing to be determined automatically by BIOS based on the configurations on the SPD. Selecting [Manual] allows users to configure the following fields manually.

► CAS Latency Time

This controls the timing delay (in clock cycles) before SDRAM starts a read command after receiving it. Smaller clocks increase system performance while bigger clocks provide more stable system performance.

► DRAM RAS# to CAS# Delay

This field allows you to set the number of cycles for a timing delay between the CAS and RAS strobe signals, used when DRAM is written to, read from or refreshed. Fast speed offers faster performance while slow speed offers more stable performance.

► DRAM RAS# Precharge

This item controls the number of cycles for Row Address Strobe (RAS) to be allowed to precharge. If insufficient time is allowed for the RAS to accumulate its charge before DRAM refresh, refresh may be incomplete and DRAM may fail to retain data. This item applies only when synchronous DRAM is installed in the system.

▶ **Precharge Delay (tRAS)**

The field specifies the idle cycles before precharging an idle bank.

▶ **System Memory Frequency**

Use this item to configure the clock frequency of the installed DRAMs.

****VGA Setting****

The following items allow you to configure the VGA settings of the system.

▶ **PEG/Onchip VGA Control**

This setting allows you to select whether to use the onchip graphics processor or the PCI Express card.

When set to [Onchip VGA], the motherboard boots up using the onboard graphics processor, even when a PCI Express graphics card is installed.

When set to [PEG Port], the motherboard boots up using the PCI Express graphics card, if one is installed. Otherwise, it defaults to the onboard graphics processor.

When set to [Auto], the BIOS checks to see if a PCI Express graphics card is installed. If it detects that a PCI Express graphics card is present, the motherboard boots up using that card. Otherwise, it defaults to the onboard graphics processor.

Warning:

(a) Set to [PEG Port] only when graphics card is installed. If set to [PEG Port] without any graphic card installed, system fails to boot up. Please clean CMOS to restore default setting.

(b) If PCI Express graphic card is installed, please set to [PEG Port]. [Auto] and [Onchip VGA] will make system fail to enter OS.

▶ **On-Chip Frame Buffer Size**

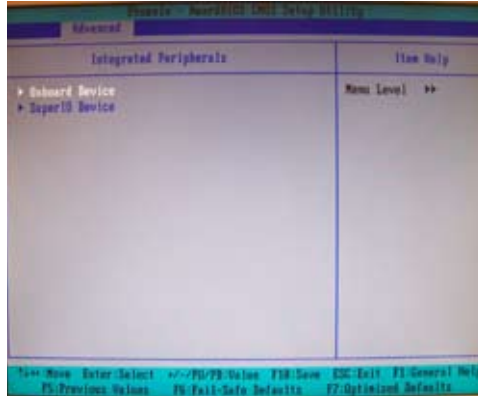
The field specifies the size of system memory allocated for video memory.

▶ **Boot Display**

Use the field to select the type of device you want to use as the display(s) of the system.

▶ **LVDS Panel Type**

This setting specifies the resolution of the LVDS panel.



▶ **LVDS Backlight Control**

This setting controls the brightness level of the LVDS panel backlight.

▶ **Integrated Peripherals**

▶ **EIDE Primary Master/Slave PIO**

The EIDE PIO (Programmed Input/Output) fields let you set a PIO mode for the EIDE devices that the onboard EIDE interface supports. Modes 0 through 4 provide successively increased performance. In [Auto] mode, the system automatically determines the best mode for each device.

▶ **EIDE Primary Master/Slave UDMA**

Ultra DMA 33/66/100/133 implementation is possible only if your EIDE hard drive supports it and the operating environment includes a DMA driver (Windows ME, XP or a third-party EIDE bus master driver). If your hard drive and your system software both support Ultra DMA/33, Ultra DMA/66, Ultra DMA/100 and Ultra DMA/133, select [Auto] to enable BIOS support.

*** **On-Chip Serial ATA Setting** ***

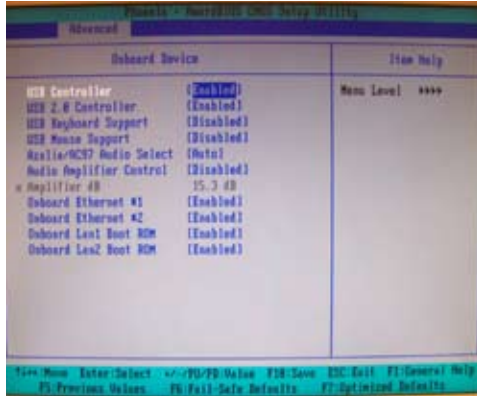
▶ **On-Chip Serial ATA**

This setting specifies the function of the on-chip SATA controller.

- [Disabled] Disable SATA controller
- [Auto] Automatically determined by BIOS
- [Enhanced Mode] Enable both SATA and PATA, max. 6 EIDE drives supported

[SATA Only]

SATA operates in legacy mode



► **PATA EIDE Mode / SATA Port**

These settings specify the modes of the PATA & SATA ports.

► **Onboard Device**

► **USB Controller**

This setting is used to enable/disable the onboard USB controller.

► **USB 2.0 Controller**

This setting is used to enable/disable the onboard USB 2.0 controller.

► **USB Keyboard/Mouse Support**

Set to [Enabled] if your need to use a USB-interfaced keyboard/mouse in the operating system that does not support or have any USB driver installed, such as DOS and SCO Unix.

► **Azalia/AC97 Audio Select**

Azalia is the codename of “High Definition Audio.” This setting controls the High Definition Audio interface integrated in the Southbridge.

► **Audio Amplifier Control**

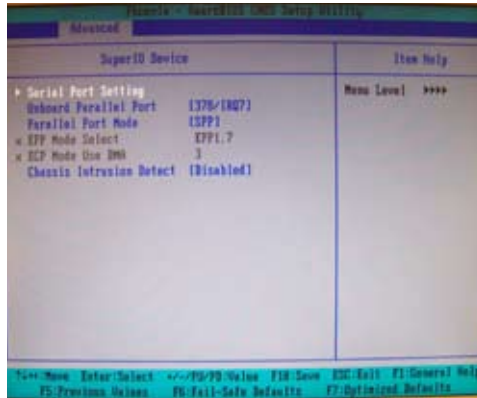
This setting disables/enables the audio amplifier.

► **Amplifier dB**

When the **Audio Amplifier Control** is set to [Enabled], users may adjust the amplifier dB range between the lowest useful output and the largest useful output level.

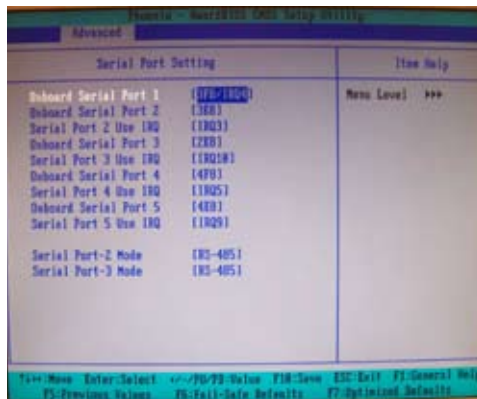
► **Onboard Ethernet #1/ #2**

These settings disable/enable the onboard Ethernet controller.



► **Onboard LAN1/ LAN2 Boot ROM**

The items enable or disable the initialization of the onboard LAN Boot ROMs



during bootup. Selecting [Disabled] will speed up the boot process.

► **Super IO Device**

► **Serial Port Setting**

► **Onboard Serial Port 1 / 2 / 3 / 4 / 5**

Select an address for Serial Port 1/2/3/4/5.

► **Serial Port 1 / 2 / 3 / 4 / 5 Use IRQ**

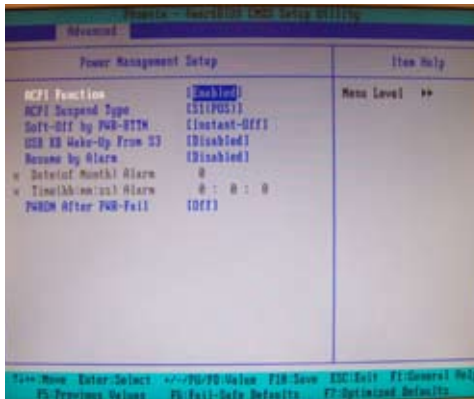
Select a corresponding interrupt for Serial Port 1/2/3/4/5.

► **Serial Port 2 / 3 Mode**

These settings specify the transmission mode of the Serial Port 2 & 3.

RS-422 defines a Balanced (differential) interface, specifying a single, unidirectional driver with multiple receivers (up to 32). RS-422 will support Point-to-Point, Multi-Drop circuits, but not Multi-Point.

RS-485 defines a Balanced (differential) interface, specifying bidirectional, half-



duplex data transmission. Up to 32 transmitters and 32 receivers may be interconnected in any combination, including one driver and multiple receivers (multi-drop), or one receiver and multiple drivers.

▶ **Power Management Setup**

▶ **ACPI Function**

This item is to activate the ACPI (Advanced Configuration and Power Management Interface) Function. If your operating system is ACPI-aware, such as Windows 98SE/2000/ME, select [Enabled].

▶ **ACPI Suspend Type**

This item specifies the power saving modes for ACPI function. If your operating system supports ACPI, such as Windows 98SE, Windows ME and Windows 2000, you can choose to enter the Standby mode in S1 (POS) or S3 (STR) fashion through the setting of this field. Options are:

[S1(POS)] The S1 sleep mode is a low power state. In this state, no system context is lost (CPU or chipset) and hardware maintains all system context.

[S3(STR)] The S3 sleep mode is a lower power state where the information of system configuration and open applications/files is saved to main memory that remains powered while most other hardware components turn off to save energy. The information stored in memory will be used to restore the system when a "wake up" event occurs.

▶ **Soft-Off by PWR-BTTN**

This feature allows users to configure the power button function. Settings are:

[Instant-Off] The power button functions as a normal power-on/-off button.

[Delay 4 Sec.] When you press the power button, the computer enters the suspend/sleep mode, but if the button is pressed for more than four seconds, the computer is turned off.

▶ **Wake-Up By PCI Card**

When setting to [Enabled], this setting allows your system to be awakened from the power saving modes through any event on PCI PME (Power Management Event).

▶ **Power On by Ring**

An input signal on the serial Ring Indicator (RI) line (in other words, an incoming call on the modem) awakens the system from a soft off state.

▶ **USB KB Wake-Up from S3**

This setting allows you to enter "Any Key" (max. 8 numbers) to wake up the system from S3 state.

▶ **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.

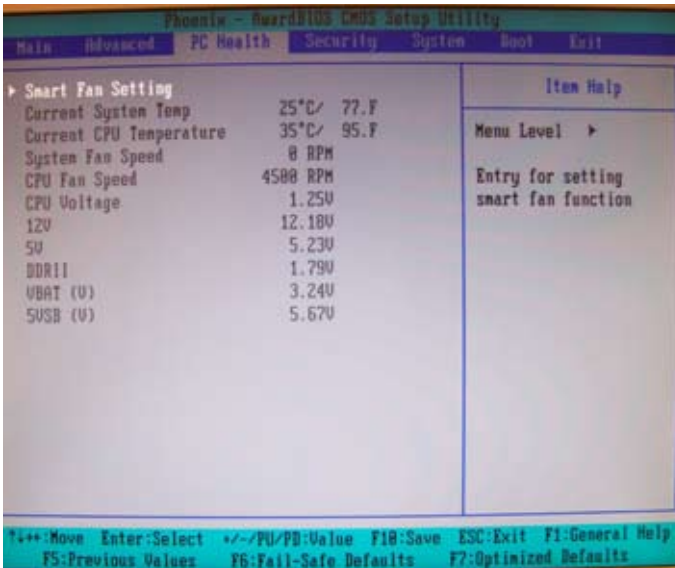
▶ **Date (of Month) Alarm**

When **Resume By Alarm** is set to [Enabled], the field specifies the month for **Resume By Alarm**.

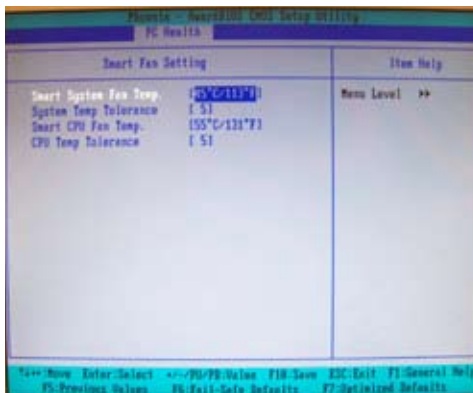
▶ **Time (hh:mm:ss) Alarm**

You can choose what hour, minute and second the system will boot up.

PC Health



▶ Smart Fan Setting



▶ Smart System / CPU Fan Temp.

Select a temperature setting here, and if the temperature of the CPU/system climbs up to the selected temperature setting, the system will automatically

increase the speed of the CPU/system fan to cool down the overheated CPU/system.

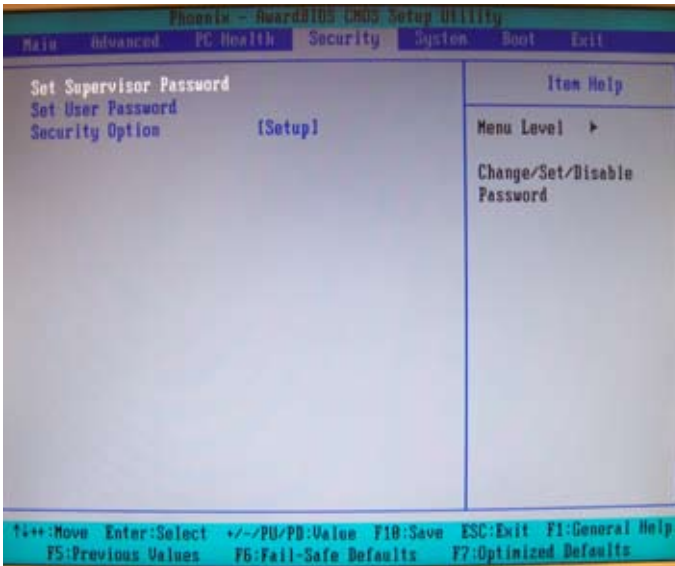
► **System / CPU Temp Tolerance**

You can select a fan tolerance value here for the specific range for the **Smart System / CPU Fan Temp.** items. If the current temperatures of the fans reach the maximum threshold (the temperatures set in the **Smart System / CPU Fan Temp.** plus the tolerance values you set here), the fans will speed up for cooling down. On the contrary if the current temperatures reach the minimum threshold (the set temperatures minus the tolerance values), the fans will slow down to keep the temperatures stable.

► **Current System Temp, Current CPU Temperature, System Fan Speed,CPU Fan Speed, CPU Voltage, 12V, 5V, DDRII, VBAT (V), 5VSB (V)**

These items display the current status of all of the monitored hardware devices/components such as CPU voltage, temperatures and all fans' speeds.

Security



- ▶ **Set Supervisor Password**
Supervisor Password controls access to the BIOS Setup utility.
- ▶ **Set User Password**
User Password controls access to the system at boot.
- ▶ **Security Option**
This specifies the type of BIOS password protection that is implemented. Settings are described below:

Option	Description
[Setup]	The password prompt appears only when end users try to run Setup.
[System]	A password prompt appears every time when the computer is powered on or when end users try to run Setup.

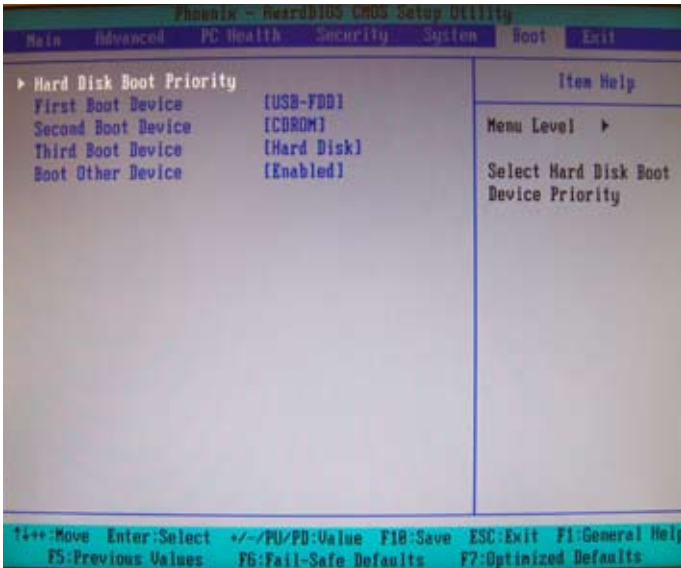
System

Phoenix - AwardBIOS CMOS Setup Utility						
Main	Advanced	PC Health	Security	System	Boot	Exit
Machine Type	i945GM-LINI				Item Help	
Processor	Genuine Intel(R)				Menu Level ▶	
Processor Cache size	2 MB				Change/Set/Disable Password	
Processor Speed	1.66 GHz					
System Memory Type	DDR2 RAM					
Video Controller	Intel(r) 82945G Inc.					
BIOS Date	Jan 15 2007					
BIOS Version	V1.12					

*←→ Move Enter:Select *~/~/PU/PD:Value F10:Save ESC:Exit F1:General Help
 F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

- ▶ **Machine Type/Model, Processor, Processor Cache Size, Processor Speed, System Memory Type, Video Controller, BIOS Date, BIOS Version**
 These items show the hardware specifications of your system. Read only.

Boot



▶ Hard Disk Boot Priority

This setting allows users to set the boot priority of the specified hard disk devices. First press <Enter> to enter the sub-menu. Then you may use the arrow keys (↑↓) to select the desired device, then press <+>, <-> or <PageUp>, <PageDown> key to move it up/down in the priority list.

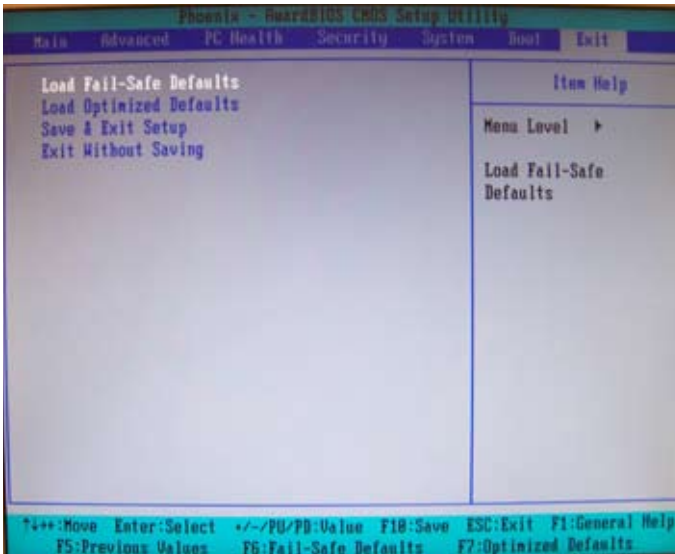
▶ First / Second / Third Boot Device

The items allow you to set the sequence of boot devices where BIOS attempts to load the disk operating system.

▶ Boot Other Device

Setting the option to [Enabled] allows the system to try to boot from other device if the system fails to boot from the first/second/third boot device.

Exit



► **Load Fail-Safe Defaults**

Use this menu to load the default values set by the BIOS vendor for stable system performance.

► **Load Optimized Defaults**

Use this menu to load the default values set by the mainboard manufacturer specifically for optimal performance of the mainboard.

► **Save & Exit Setup**

Save changes to CMOS and exit setup.

► **Exit Without Saving**

Abandon all changes and exit setup.