TECHNICAL MANUAL
Of
Intel 945GC +Intel 82801G
Based

Mini-ITX M/B For Intel Atom Processor

NO.G03-NC92-F
Rev1.0

Release date: Oct., 2008

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Environmental Protection Announcement

Do not dispose this electronic device into the trash while discarding. To minimize pollution and ensure environment protection of mother earth, please recycle.
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Manual Revision Information

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<th>Revision History</th>
<th>Date</th>
</tr>
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<tbody>
<tr>
<td>1.0</td>
<td>First Edition</td>
<td>Oct., 2008</td>
</tr>
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</table>

Item Checklist

☑️ Motherboard
☑️ Cable(s)
☑️ CD for motherboard utilities
☑️ Motherboard User’s Manual
☑️ I/O Back panel Shield
Chapter 1

Introduction of the Motherboard

1-1 Feature of motherboard

* Intel 945GC Northbridge and Intel 82801G (ICH7) Southbridge chipset.


* Support FSB 533 MHz.

* Support DDRII 400/533 MHz up to 2GB.

* Onboard Realtek RTL 8111C Gigabit Ethernet LAN.

* Integrated Realtek ALC662 6-channel HD audio CODEC.

* Support USB2.0 data transport demands.
## 1-2 Specification

<table>
<thead>
<tr>
<th>Spec</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design</td>
<td>* Mini ITX form factor 6 layers PCB size: 17.0x17.0cm</td>
</tr>
</tbody>
</table>
| Chipset      | * Intel 945GC Northbridge chipset  
* Intel 82801G(ICH7) Southbridge chipset |
| Embedded CPU | * Intel Atom CPU  
* Support FSB 533  
* Low Power Consumption |
| Memory Socket| * 240-pin DDRII DIMM socket x1  
* Support DDRII 400/533MHz system Modules DDRII memory  
* Expandable to 2GB. |
| Expansion Slot| * 32-bit PCI slot x 1pcs |
| Integrate IDE| * One PCI IDE controller that supports PCI Bus Mastering, ATA PIO/DMA and the ULTRA DMA 100/66 functions that deliver the data transfer rate up to 100 MB/s; |
* Support Fast Ethernet LAN function of providing 10Mb/100Mb/1000Mb Ethernet data transfer rate |
| Audio        | * Realtek ALC662 6 channel Audio Codec integrated  
* Audio driver and utility included |
| BIOS         | * Award 8MB Flash ROM |
1-3  Layout Diagram
K.B&USB Power on Jumper (JP1)

Parallel Header

PS/2 Mouse Keyboard

COM/VGA Connector

RJ45 LAN

Over USB Port

USB 2.0 Port

USB 2.0 Port

Audio Connector

Daughter Board Expansion Connector Front Panel Audio

CD Audio In

32-bit PCI Slot

SYSFAN2

Clear CMOS (JBAT)

Intel CPU

ATX Power Connector

Intel 945GC Chipset

DDRII DIMM

Intel 82801G ICH Chipset

ATA100 IDE Connector

Floppy Disk Drive Connector

SATA Connector

USB Power on Jumper (JP3)

PWR LED Header

Front Panel Connector

USB 2.0 Port

Audio Connector

Realtek RTL8111C LAN

ALC 662 Audio Codec

8Mbit SPI Flash ROM BIOS

USB2.0 Header (USB2, USB3)
## Jumper

<table>
<thead>
<tr>
<th>Jumper</th>
<th>Name</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>JP1</td>
<td>KB/USB Power On Function Setting</td>
<td>3-pin Block</td>
<td>P.6</td>
</tr>
<tr>
<td>JP3</td>
<td>USB Power On Function Setting</td>
<td>3-pin Block</td>
<td>P.6</td>
</tr>
<tr>
<td>JBAT</td>
<td>CMOS RAM Clear Function Setting</td>
<td>3-pin Block</td>
<td>p.7</td>
</tr>
</tbody>
</table>

## Connectors

<table>
<thead>
<tr>
<th>Connector</th>
<th>Name</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>USB1,USB2</td>
<td>USB Port Connector</td>
<td>4-pin Connector</td>
<td>p.7</td>
</tr>
<tr>
<td>RJ-45 from UL1</td>
<td>RJ45 LAN Connector</td>
<td>8-pin Connector</td>
<td>p.7</td>
</tr>
<tr>
<td>VGA</td>
<td>VGA Port Connector</td>
<td>D-sub15-pin Female</td>
<td>p.7</td>
</tr>
<tr>
<td>COM1</td>
<td>Serial Port Connector</td>
<td>9-pin Block</td>
<td>p.7</td>
</tr>
<tr>
<td>Line-Out/Line-In/MIC</td>
<td>Line-Out/Line-In/MIC Audio Connector</td>
<td>3 Phone Jack</td>
<td>p.7</td>
</tr>
<tr>
<td>SATA1,2</td>
<td>Serial ATA Connectors</td>
<td>7-pin Connector</td>
<td>p.8</td>
</tr>
<tr>
<td>IDE1</td>
<td>IDE Connector</td>
<td>40-pin IDE Block</td>
<td>p.8</td>
</tr>
<tr>
<td>FLOPPY</td>
<td>Floppy Disk Connector</td>
<td>34-pin Block</td>
<td>p.9</td>
</tr>
</tbody>
</table>

## Headers

<table>
<thead>
<tr>
<th>Header</th>
<th>Name</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUDIO</td>
<td>Front Panel SPEAKER, MIC header</td>
<td>9-pin Block</td>
<td>p.9</td>
</tr>
<tr>
<td>CDIN</td>
<td>CD Audio-In Header</td>
<td>4-pin Block</td>
<td>p.9</td>
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<tr>
<td>USB2/USB3</td>
<td>USB2.0 Port Headers</td>
<td>9-pin Block</td>
<td>p.10</td>
</tr>
<tr>
<td>SPEAK</td>
<td>Speaker connector</td>
<td>4-pin Block</td>
<td>p.10</td>
</tr>
<tr>
<td>PWRLED</td>
<td>Power LED Headers</td>
<td>3-pin Block</td>
<td>p.10</td>
</tr>
<tr>
<td>JW_FP</td>
<td>Front Panel Headers</td>
<td>9-pin Block</td>
<td>P.11</td>
</tr>
<tr>
<td></td>
<td>(PWR LED/ IDE LED/ Power Button/Reset)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPUFAN, SFAN1/2</td>
<td>FAN Speed Headers</td>
<td>3-pin Block</td>
<td>P.12</td>
</tr>
<tr>
<td>PARALLEL</td>
<td>Parallel Port Header</td>
<td>25-pin Block</td>
<td>P.12</td>
</tr>
<tr>
<td>COM2</td>
<td>Serial Port Header</td>
<td>9-pin Block</td>
<td>P.12</td>
</tr>
<tr>
<td>CN1/CN2</td>
<td>Daughter Board Expansion Headers</td>
<td>50-pin block</td>
<td>p.13</td>
</tr>
</tbody>
</table>
Chapter 2
Jumper Setting, Connectors and Headers

2-1 Jumper Setting

(1) JP1 KB/USB Power on Function Setting

(2) JP3 USB Power on Function Setting
(3) Clear CMOS (3-pin): JBAT

2-2 Connectors and Headers
2-2-1 Connectors
(1) I/O Back Panel Connector
(2) Serial ATA Connector (7-pin female): SATA1/SATA2

Serial-ATA2 Port Connector

(3) IDE Connector: IDE1

IDE1
(4) Floppy drive Connector (34-pin block): FLOPPY

2-2-2 Headers
(1) Line-Out, MIC-In Header (14 pin): AUDIO
This header connects to Front Panel Line-out, MIC-In connector with cable.

(2) CD Audio-In Headers (4-pin): CDIN
CDIN are the connectors for CD-Audio Input signal. Please connect it to CD-ROM CD-Audio output connector.

(3) USB Port Headers (9-pin): USB2, USB3

(4) Speaker connector: SPEAK
This 4-pin connector connects to the case-mounted speaker. See the figure below.

(5) Power LED: PWR LED
The Power LED is light on while the system power is on. Connect the Power LED from the system case to this pin.

(6) Front Panel Headers: JW_FP

(7) FAN Speed Headers (3-pin): CPUFAN, SYSFAN1, and SYSFAN2
These connectors support cooling fans of 350mA (4.2 Watts) or less, depending on the fan manufacturer, the wire and plug may be different. The red wire should be positive, while the
black should be ground. Connect the fan’s plug to the board taking into consideration the polarity of connector.

(8) Parallel Port Header: PARALLEL
The onboard parallel port header is a 25-pin connector for connecting devices such as old-fashioned printer.

(9) Serial Port Connector (9-pin female): COM2
COM2 is a 9-pin RS232 D-Subminiature serial port connector.
(10) Expansion Daughter Board Headers: CN1/CN2

To install a daughter board into CN1, CN2 is very easy, user just press down the daughter board directly into these two connectors, in the direction shown as the above picture.
Chapter 3

Introducing BIOS

The BIOS is a program located on a Flash Memory on the motherboard. This program is a bridge between motherboard and operating system. When you start the computer, the BIOS program will gain control. The BIOS first operates an auto-diagnostic test called POST (power on self test) for all the necessary hardware, it detects the entire hardware device and configures the parameters of the hardware synchronization. Only when these tasks are completed done it gives up control of the computer to operating system (OS). Since the BIOS is the only channel for hardware and software to communicate, it is the key factor for system stability, and in ensuring that your system performance as its best.

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

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

3-1 Entering Setup

Power on the computer and by pressing <Del> immediately allows you to enter Setup.
If the message disappears before your respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the “RESET” button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt> and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to

Press <F1> to continue, <Del> to enter Setup

3-2 Getting Help

Main Menu
The on-line description of the highlighted setup function is displayed at the bottom of the screen.

Status Page Setup Menu/Option Page Setup Menu
Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press <Esc>.

3-3 The Main Menu
Once you enter Award® BIOS CMOS Setup Utility, the Main Menu (Figure 3-1) will appear on the screen. The Main Menu allows you to select from 12 setup functions and 2 exit choices. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.
### Phoenix - AwardBIOS CMOS Setup Utility

<table>
<thead>
<tr>
<th>Feature</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard CMOS Features</td>
<td>Miscellaneous Control</td>
</tr>
<tr>
<td>Advanced BIOS Features</td>
<td>Load optimized Defaults</td>
</tr>
<tr>
<td>Advanced Chipset Features</td>
<td>Load Standard Defaults</td>
</tr>
<tr>
<td>Integrated Peripherals</td>
<td>Set Supervisor Password</td>
</tr>
<tr>
<td>Power Management Setup</td>
<td>Set User Password</td>
</tr>
<tr>
<td>PnP/PCI Configuration</td>
<td>Save &amp; Exit Setup</td>
</tr>
<tr>
<td>PC Health Status</td>
<td>Exit Without Saving</td>
</tr>
</tbody>
</table>

- Esc : Quit
- F10 : Save & Exit Setup

**Figure 3-1**

**Standard CMOS Features**
Use this Menu for basic system configurations.

**Advanced BIOS Features**
Use this menu to set the Advanced Features available on your system.

**Advanced Chipset Features**
Use this menu to change the values in the chipset registers and optimize your system’s performance.

**Integrated Peripherals**
Use this menu to specify your settings for integrated peripherals.

**Power Management Setup**
Use this menu to specify your settings for power management.

**PnP/PCI Configuration**
Use this menu to specify your settings for PnP/PCI Configuration.

**PC Health Status**
This entry shows your PC health status.
**Miscellaneous Control**
Use this menu to specify your settings for Miscellaneous Control.

**Load Optimized Defaults**
Use this menu to load the BIOS default values that are factory settings for optimal performances system operations.

**Load Standard Defaults**
Use this menu to load the BIOS default values for the minimal/stable performance system operation.

**Set Supervisor Password**
Use this menu to set supervisor password.

**Set User Password**
Use this menu to set user password.

**Save & Exit Setup**
Save CMOS value changes to CMOS and exit setup.

**Exit Without Saving**
Abandon all CMOS value changes and exit setup.

### 3-4 Standard CMOS Features
The items in Standard CMOS Setup Menu are divided into several categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.
Phoenix – AwardBIOS CMOS Setup Utility
Standard CMOS Features

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date (mm:dd:yy)</td>
<td>Wed, Aug 13, 2008</td>
</tr>
<tr>
<td>Time (hh:mm:ss)</td>
<td>16:48:35</td>
</tr>
<tr>
<td>&gt; SATA Port 1 Master</td>
<td>None</td>
</tr>
<tr>
<td>&gt; SATA Port 1 Master</td>
<td>None</td>
</tr>
<tr>
<td>&gt; IDE Channel 1 Master</td>
<td>WDC WD800BB-00JHC0</td>
</tr>
<tr>
<td>&gt; IDE Channel 1 Slave</td>
<td>None</td>
</tr>
<tr>
<td>Drive A</td>
<td>1.44M, 3.5 in.</td>
</tr>
<tr>
<td>Video</td>
<td>EGA/VGA</td>
</tr>
<tr>
<td>Halt On</td>
<td>All Errors</td>
</tr>
<tr>
<td>Base Memory</td>
<td>639k</td>
</tr>
<tr>
<td>Extended Memory</td>
<td>1039360k</td>
</tr>
<tr>
<td>Total Memory</td>
<td>1040384k</td>
</tr>
</tbody>
</table>

Menu Level >
Change the day, month, year and century

↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Optimized Defaults F7:Standard Defaults

Date

The date format is <day><month><date><year>.

**Day**
Day of the week is from Sun to Sat, determined by BIOS. Read-only.

**Month**
The month is from Jan. through Dec.

**Date**
The date from 1 to 31 can be keyed by numeric function keys.

**Year**
The year depends on the year of the BIOS.

Time

The time format is <hour><minute><second>.

SATA Port 1/SATA Port 2 /IDE Channel 1 Master/Slave

Press Enter and then PgUp/<+> or PgDn/<–> to select Manual, None, 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 the type of hard disk drives 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.
If the controller of HDD interface is SCSI, the selection shall be “None”.
If the controller of HDD interface is CD-ROM, the selection shall be “None”

**Access Mode**  The settings are CHS, LBA, Large and Auto.
**Cylinder**      number of cylinders
**Head**          number of heads
**Precomp**       write precomp
**Landing Zone**  landing zone
**Sector**        number of sectors

### 3-5 Advanced BIOS Features

**Phoenix – AwardBIOS CMOS Setup Utility**

**Advanced BIOS Features**

<table>
<thead>
<tr>
<th>Item</th>
<th>Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virus Warning</td>
<td>Disabled</td>
</tr>
<tr>
<td>CPU L3 Cache</td>
<td>Enabled</td>
</tr>
<tr>
<td>CPU Feature</td>
<td>Press Enter</td>
</tr>
<tr>
<td>Hard Disk Boot Priority</td>
<td>Press Enter</td>
</tr>
<tr>
<td>Hyper-Threading Technology</td>
<td>Enabled</td>
</tr>
<tr>
<td>Quick Power On Self Test</td>
<td>Enabled</td>
</tr>
<tr>
<td>First Boot Device</td>
<td>Floppy</td>
</tr>
<tr>
<td>Second Boot Device</td>
<td>Hard Disk</td>
</tr>
<tr>
<td>Third Boot Device</td>
<td>CDROM</td>
</tr>
<tr>
<td>Boot Other Device</td>
<td>Enabled</td>
</tr>
<tr>
<td>Boot Up Floppy Seek</td>
<td>Disabled</td>
</tr>
<tr>
<td>Boot Up NumLock Status</td>
<td>On</td>
</tr>
<tr>
<td>Typematic Rate Setting</td>
<td>Disabled</td>
</tr>
<tr>
<td>Typematic Rate (Chars/Sec)</td>
<td>6</td>
</tr>
<tr>
<td>Typematic Delay (Msec)</td>
<td>250</td>
</tr>
<tr>
<td>Security Option</td>
<td>Setup</td>
</tr>
<tr>
<td>APIC Mode</td>
<td>Enabled</td>
</tr>
<tr>
<td>MPS Version Control For OS</td>
<td>1.4</td>
</tr>
<tr>
<td>OS Select For DRAM &gt; 64MB</td>
<td>Non-OS2</td>
</tr>
</tbody>
</table>

↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Optimized Defaults F7:Standard Defaults
**Hard Disk Boot Priority**
The selection is for you to choose the hard disk drives priorities to boot from.

**Virus Warning**
The selection allows you to choose the VIRUS Warning feature for IDE Hard Disk booting sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep.

- **Disabled** (default)  No warning message to appear when anything attempts to access the boot sector or hard disk partition table.
- **Enabled**  Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector of hard disk partition table.

**Quick Power On Self-Test**
This category speeds up Power On Self Test (POST) after you power on the computer. If this is set to Enabled, BIOS will shorten or skip some check items during POST.

- **Enabled** (default)  Enable quick POST
- **Disabled**  Normal POST

**First/Second/Third Boot Device/Boot Other Device**
The BIOS attempts to load the operating system from the devices in the sequence selected in these items. The settings are Floppy, LS120, Hard disk, CDROM, ZIP100, USB-FDD, USB-ZIP, USB-COROM, Legacy LAN and Disabled.

**Boot Up Floppy Seek**
During POST, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. 360K type is 40 tracks while 760K, 1.2M and 1.44M are all 80 tracks.

**Boot Up NumLock Status**
The default value is On.

- **On** (default)  Keypad is numeric keys.
Keypad is arrow keys.

**Typematic Rate Setting**
Keystrokes repeat at a rate determined by the keyboard controller. When enabled, the typematic rate and typematic delay can be selected. The settings are: Enabled/Disabled.

**Typematic Rate (Chars/Sec)**
Set the number of times a second to repeat a keystroke when you hold the key down. The settings are: 6, 8, 10, 12, 15, 20, 24, and 30.

**Typematic Delay (Msec)**
Sets the delay time after the key is held down before it begins to repeat the keystroke. The settings are 250, 500, 750, and 1000.

**Security Option**
This category allows you to limit access to the system and Setup, or just to Setup.

- **System**
  The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.

- **Setup** (default)
  The system will boot, but access to Setup will be denied if the correct password is not entered.

**MPS Version Control For OS 1.4**
This option is only valid for multiprocessor motherboards as it specifies the version of the Multiprocessor Specification (MPS) that the motherboard will use. The optional settings are: 1.1 and 1.4.

**OS Select For DRAM > 64MB**
Allows OS2® to be used with >64MB or DRAM. Settings are Non-OS/2 (default) and OS2. Set to OS/2 if using more than 64MB and running OS/2®.

### 3-6 Advanced Chipset Features
The Advanced Chipset Features Setup option is used to change the values of the chipset registers. These registers control most of the system options in the computer.
Phoenix – AwardBIOS CMOS Setup Utility
Advanced Chipset Features

<table>
<thead>
<tr>
<th>Item</th>
<th>Help</th>
<th>Item Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRAM Timing Selectable</td>
<td>By SPD</td>
<td></td>
</tr>
<tr>
<td>* SDRAM CAS Latency Time</td>
<td>Auto</td>
<td>F10:Save</td>
</tr>
<tr>
<td>* SDRAM Cycle Time</td>
<td>Auto</td>
<td>ESC:Exit</td>
</tr>
<tr>
<td>* SDRAM RAS# to CAS# Delay</td>
<td>Auto</td>
<td>F1:General Help</td>
</tr>
<tr>
<td>* SDRAM RAS# Precharge Time</td>
<td>Auto</td>
<td>F5:Previous Values</td>
</tr>
<tr>
<td>System BIOS Cacheable</td>
<td>Disabled</td>
<td>F6:Optimized Defaults</td>
</tr>
<tr>
<td>Video BIOS Cacheable</td>
<td>Disabled</td>
<td>F7:Standard Defaults</td>
</tr>
<tr>
<td>Memory Hole at 15-16M</td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>** VGA Setting**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Onchip Frame Buffer Size</td>
<td>8MB</td>
<td></td>
</tr>
<tr>
<td>DVMT Mold</td>
<td>DVMT</td>
<td></td>
</tr>
<tr>
<td>DVMT/FIXED Memory Size</td>
<td>128MB</td>
<td></td>
</tr>
</tbody>
</table>

↑↓←→ Move Enter:Select +/-/PU/PD:Value  F10:Save ESC:Exit  F1:General Help
  F5:Previous Values  F6:Optimized Defaults  F7:Standard Defaults

**SDRAM CAS Latency Time**
When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. The settings are: Auto, 3, 4 and 5.

**SDRAM RAS-to-CAS Delay**
This field lets you insert a timing delay between the CAS and RAS strobe signals, used when DRAM is written to, read from, or refreshed. **Fast** gives faster performance; and **Slow** gives more stable performance. This field applies only when synchronous DRAM is installed in the system.

**SDRAM Ras Precharge Time**
If an insufficient number of cycles is allowed for the RAS to accumulate its charge before DRAM refresh, the refresh may be incomplete and the DRAM may fail to retain date. **Fast** gives faster performance; and **Slow** gives more stable performance. This field applies only when synchronous DRAM is installed in the system.

**System BIOS Cacheable**
Selecting Enabled allows caching of the system BIOS ROM at F000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result. The settings are: Enabled and Disabled.

**Onchip Frame Buffer Size**
Use this item to set onchip frame buffer size. The optional settings are: 1MB and 8MB.

**DVMT Mold**
The optional settings are: FIXED, DVMT and BOTH.

**DVMT/FIXED Memory Size**
The optional settings are: 64MB, 128MB and 224 MB.

### 3-7 Integrated Peripherals

**Phoenix – AwardBIOS CMOS Setup Utility**

**Integrated Peripherals**

<table>
<thead>
<tr>
<th>&gt; Onboard IDE Function</th>
<th>Press Enter</th>
<th>Item Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; Onboard Device Function</td>
<td>Press Enter</td>
<td>Menu Level &gt;</td>
</tr>
<tr>
<td>&gt; Onboard Super IO Function</td>
<td>Press Enter</td>
<td></td>
</tr>
<tr>
<td>PWR status after PWR Failure</td>
<td>Always Off</td>
<td></td>
</tr>
<tr>
<td>Init Display First</td>
<td>PCI Slot</td>
<td></td>
</tr>
</tbody>
</table>

↑↓←→ Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Optimized Defaults F7:Standard Defaults

**Onboard IDE Function**
Please refer to section 3-7-1

**Onboard Device Function**
Please refer to section 3-7-2

**Onboard Super IO Function**
Please refer to section 3-7-3

**PWR Status after PWR Failure**
The settings are: Former Status; Always On; Always Off.
Init Display First
This item allows you to decide to whether activate PCI Slot or Onchip VGA first. The settings are: PCI Slot, Onchip VGA.

3-7-1 Onboard IDE Function
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<table>
<thead>
<tr>
<th>OnChip IDE Channel</th>
<th>Enabled</th>
<th>Item Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDE Channel Master PIO</td>
<td>Auto</td>
<td>Menu Level &gt;&gt;</td>
</tr>
<tr>
<td>IDE Channel Slave PIO</td>
<td>Auto</td>
<td></td>
</tr>
<tr>
<td>IDE Channel Master UDMA</td>
<td>Auto</td>
<td></td>
</tr>
<tr>
<td>IDE Channel Slave UDMA</td>
<td>Auto</td>
<td></td>
</tr>
<tr>
<td>IDE DMA Transfer Access</td>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>IDE HDD Block Mode</td>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>*SATA Port Speed Settings</td>
<td>Disabled</td>
<td></td>
</tr>
</tbody>
</table>

↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Optimized Defaults F7:Standard Defaults

IDE DMA transfer access
The integrated peripheral controller contains an IDE interface with support for one IDE channels. Select Enabled to activate each channel separately. The settings are: Enabled and Disabled.

IDE Channel Master/Slave PIO
The two IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-2) for each of the two IDE devices that the onboard IDE interface supports. Modes 0 through 2 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device. The settings are: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

IDE Channel Master/Slave UDMA
Ultra DMA/33 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA/33 and Ultra DMA/66, select Auto to enable BIOS support. The settings are: Auto, Disabled.

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

**SATA Port Speed Settings**
The optional settings are: Disabled, Force GEN1 and Force GEN2.

### 3-7-2 Onboard Device Function

<table>
<thead>
<tr>
<th>Onboard Device Function</th>
<th>Item Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onboard PCIE LAN Controller</td>
<td>Enabled</td>
</tr>
<tr>
<td>Onboard PCIE LAN BootROM</td>
<td>Disabled</td>
</tr>
<tr>
<td>High Definition Audio</td>
<td>Enabled</td>
</tr>
<tr>
<td>USB Host Controller</td>
<td>Enabled</td>
</tr>
<tr>
<td>USB 2.0 Function</td>
<td>Enabled</td>
</tr>
<tr>
<td>USB Keyboard Legacy Support</td>
<td>Disabled</td>
</tr>
<tr>
<td>USB Mouse Legacy Support</td>
<td>Disabled</td>
</tr>
<tr>
<td>USB Storage Legacy Support</td>
<td>Disabled</td>
</tr>
<tr>
<td><strong>USB Mass Storage Device Boot Setting</strong></td>
<td></td>
</tr>
</tbody>
</table>

↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Optimized Defaults F7:Standard Defaults

**Onboard PCIE LAN Controller**
Setting to [Enabled] allows the BIOS to auto-detect the LAN controller and enable it. Setting options:[ Enabled] and [Disabled].

**High Definition Audio**
The selection for you to choose the embedded Audio function or 3rd party audio interface installed. The settings are: Enabled and Disabled.

**USB 2.0 Function Keyboard/Mouse /Storage Latency Support**
Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB Mouse /keyboard. The settings are: Enabled, Disabled.
Onboard FDD Controller
Select Enabled if your system has a floppy disk controller (FDD) installed on the system board and you wish to use it. If you install add-on FDC or the system has no floppy drive, select Disabled in this field. The settings are: Enabled and Disabled.

Onboard Serial Port 1
The optional settings are: Disabled, 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3, 4E0/IRQ4, 4E8/IRQ3 and Auto.

Onboard Serial Port 2
The optional settings are: Disabled, 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3, 4E0/IRQ4, 4E8/IRQ3 and Auto.

UART2 Mode Select
This item allows you to determine which InfraRed(IR) function of the onboard I/O chip. The optional settings are Normal and IrDA.

IrDA Duplex Mode
This field is available when UART Mode is set to either ASKIR or IrDA. This item enables you to determine the infrared function of the onboard infrared chip. The options are Full and Half
(default). Full-duplex means that you can transmit and send information simultaneously. Half-duplex is the transmission of data in both directions, but only one direction at a time.

**Onboard Parallel Port**
The optional settings are: Disabled, 378/IRQ7, 278/IRQ5 AND 3BC/IRQ7.

**Parallel Port Mode**
- SPP: Standard Parallel Port
- EPP: Enhanced Parallel Port
- ECP: Enhanced Com Port

**SPP/EPP/ECP/ECP+EPP**
To operate the onboard parallel port as Standard Parallel Port only, choose “SPP.” To operate the onboard parallel port in the EPP modes simultaneously, choose “EPP.” By choosing “ECP,” the onboard parallel port will operate in ECP mode only. Choosing “ECP+EPP” will allow the onboard parallel port to support both the ECP and EPP modes simultaneously. The ECP mode has to use the DMA channel, so choose the onboard parallel port with the ECP feature. After selecting it, the following message will appear: “ECP Mode Use DMA” at this time, the user can choose between DMA channels 3 to 1. The onboard parallel port is EPP Spec. compliant, so after the user chooses the onboard parallel port with the EPP function, the following message will be displayed on the screen: “EPP Mode Select.” At this time either EPP 1.7 spec. or EPP 1.9 spec. can be chosen.

**3-8 Power Management Setup**
The Power Management Setup allows you to configure your system to most effectively save energy saving while operating in a manner consistent with your own style of computer use.
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Power Management Setup

<table>
<thead>
<tr>
<th>Item</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACPI Function</td>
<td>Enabled</td>
</tr>
<tr>
<td>ACPI Suspend Type</td>
<td>S1(DOS)</td>
</tr>
<tr>
<td>Power Management</td>
<td>User Define</td>
</tr>
<tr>
<td>Video off Method</td>
<td>V/H SYNC+Blank</td>
</tr>
<tr>
<td>Video Off In Suspend</td>
<td>Yes</td>
</tr>
<tr>
<td>Suspend Type</td>
<td>Stop Grant</td>
</tr>
<tr>
<td>MODEM Use IRQ</td>
<td>3</td>
</tr>
<tr>
<td>Suspend Mode</td>
<td>Disabled</td>
</tr>
<tr>
<td>HDD Power Down</td>
<td>Disabled</td>
</tr>
<tr>
<td>Soft-off by PWR-BTTN</td>
<td>Instant-off</td>
</tr>
<tr>
<td>Wake-Up by PCI card</td>
<td>Disabled</td>
</tr>
<tr>
<td>Power On by Ring</td>
<td>Disabled</td>
</tr>
<tr>
<td>Wake-up by USB KB from S3(S4)</td>
<td>Disabled</td>
</tr>
<tr>
<td>PS2 KB/MS Wake-up from S4-S5</td>
<td>Disabled</td>
</tr>
<tr>
<td>Resume by Alarm</td>
<td>Disabled</td>
</tr>
<tr>
<td>X Date (of Month)Alarm</td>
<td>0</td>
</tr>
<tr>
<td>X Time (hh:mm:ss)Alarm</td>
<td>0:0:0</td>
</tr>
<tr>
<td>PM Timer Reload Event</td>
<td>Press Enter</td>
</tr>
<tr>
<td>PCI Express PM Reload Function</td>
<td>Press Enter</td>
</tr>
</tbody>
</table>

↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Optimized Defaults F7:Standard Defaults

ACPI Function
This item allows you to Enabled/Disabled the Advanced Configuration and Power Management (ACPI). The settings are Enabled and Disabled.

Video Off Method
This determines the manner in which the monitor is blanked.
- DPMS (default) Initial display power management signaling.
- Blank Screen This option only writes blanks to the video buffer.
- V/H SYNC+Blank This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.

Suspend Type
The settings are: Stop and PWR On Suspend.

MODEM Use IRQ
If you want an incoming call on a modem to automatically resume the system from a power-saving mode, use this item to specify the interrupt request line (IRQ) that is used by the modem. You might have to connect the fax/modem to the motherboard Wake On Modem connector for this feature to work.

**Soft-Off by PWRBTN**
Under ACPI (Advanced Configuration and Power management Interface) you can create a software power down. In a software power down, the system can be resumed by Wake up Alarms. This item lets you install a software power down that is controlled by the power Button on your system. If the item is set to Instant-Off, then the power button causes a software power down. If the item is set to Delay 4 Sec, then you have to hold the power button down for four seconds to cause a software power down. The settings are: Delay 4 Sec, Instant-Off.

**Power On by Ring**
During Disabled, the system will ignore any incoming call from the modem. During Enabled, the system will boot up if there’s an incoming call from the modem.

**Resume by Alarm**
This function is for setting date and time for your computer to boot up. During Disabled, you cannot use this function. During Enabled, choose the Date and Time Alarm:

- **Date(of month) Alarm**
  You can choose which month the system will boot up. Set to 0, to boot every day.

- **Time(hh:mm:ss) Alarm**
  You can choose what hour, minute and second the system will boot up.

**Note:** If you have change the setting, you must let the system boot up until it goes to the operating system, before this function will work.

**PM Timer Reload Event**
In this item users can either select Enabled or Disabled to enable or disable Primary IDE 0; Primary IDE 1; Secondary IDE 0; Secondary IDE 1; FDD, COM, LPT Port or PCI PIRQ(A-D).

**PCI Express PME Function**
Press Enter to either set Enabled or Disabled the PCI Express PM Function.
3-9 PnP/PCI Configuration  
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<table>
<thead>
<tr>
<th>Item Help</th>
<th>IRQ Resources</th>
<th>Press Enter</th>
<th>PCI/ VGA Palette Snoop</th>
<th>Maximum Payload Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item Help</td>
<td>IRQ Resources</td>
<td>Press Enter</td>
<td>PCI/ VGA Palette Snoop</td>
<td>Maximum Payload Size</td>
</tr>
<tr>
<td>Menu Level &gt;</td>
<td></td>
<td>Disabled</td>
<td>Disabled</td>
<td>128</td>
</tr>
</tbody>
</table>

**PCI/VGA Palette Snoop**  
This item is designed to overcome problems that can be caused by some non-standard VGA cards. This board includes a built-in VGA system that does not require palette snooping so you must leave this item disabled.

**IRQ Resources**  
Names the interrupt request (IRQ) line assigned to the USB on your system. Activity of the selected IRQ always awakens the system.

3-10 PC Health Status  
This section shows the Status of you CPU, Fan, and Warning for overall system status. This is only available if there is Hardware Monitor onboard.
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PC Health Status

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shutdown Temperature</td>
<td>Disabled</td>
</tr>
<tr>
<td>CPU Thermal-Throttling</td>
<td>Disabled</td>
</tr>
<tr>
<td>* CPU Thermal-Throttling Temp</td>
<td>70°C</td>
</tr>
<tr>
<td>* CPU Thermal-Throttling Duty</td>
<td>50.00%</td>
</tr>
<tr>
<td>* CPU Thermal-Throttling Beep</td>
<td>Enabled</td>
</tr>
<tr>
<td>Show PC Health in POST</td>
<td>Enabled</td>
</tr>
<tr>
<td>&gt; Smart FAN Configurations</td>
<td>Press Enter</td>
</tr>
<tr>
<td>VCC3v</td>
<td>3.31V</td>
</tr>
<tr>
<td>Vcore</td>
<td>1.28V</td>
</tr>
<tr>
<td>NB</td>
<td>1.26V</td>
</tr>
<tr>
<td>+5V</td>
<td>5.12V</td>
</tr>
<tr>
<td>+12V</td>
<td>11.88V</td>
</tr>
<tr>
<td>5VSB</td>
<td>5.00V</td>
</tr>
<tr>
<td>VDIMM</td>
<td>1.87V</td>
</tr>
<tr>
<td>VSB3V</td>
<td>3.37V</td>
</tr>
<tr>
<td>Vbat</td>
<td>3.28V</td>
</tr>
<tr>
<td>CPU Temperature</td>
<td>64°C/147°F</td>
</tr>
<tr>
<td>System Temperature</td>
<td>38°C/96°F</td>
</tr>
<tr>
<td>CPUFAN Speed</td>
<td>2912RPM</td>
</tr>
<tr>
<td>SYSFAN1 Speed</td>
<td>5836 RPM</td>
</tr>
<tr>
<td>SYSFAN2 Speed</td>
<td>0 RPM</td>
</tr>
</tbody>
</table>

↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Optimized Defaults F7:Standard Defaults

Shutdown Temperature
This item can let users setting the Shutdown temperature, when CPU temperature over this setting the system will auto shutdown to protect CPU.

Show PC Health in Post
During Enabled, it displays information list below. The choice is either Enabled or Disabled
CPU Temperature/ System Temperature/CPU FAN Speed, SYS FAN1, SYSFAN2 Speed/VCC 3V/Vcore/ NB/+5V/+12V/5VSB(V)/VDIMM/VSB3V/Vbat
This will show the CPU/FAN/System voltage chart and FAN Speed.
### 3-11 Miscellaneous Control

**Phoenix – AwardBIOS CMOS Setup Utility**

#### Miscellaneous Control

<table>
<thead>
<tr>
<th>Item</th>
<th>Setting</th>
<th>Item Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto Detect PCI Clock</td>
<td>Disabled</td>
<td>Menu Level &gt;</td>
</tr>
<tr>
<td>Spread Spectrum</td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td><strong>Current Host/PCI Clock is 133/33MHZ</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Host/PCI Clock at Next Boot</td>
<td>133/33MHZ</td>
<td></td>
</tr>
<tr>
<td><strong>Current DRAM CLOCK</strong></td>
<td>533 MHz</td>
<td></td>
</tr>
<tr>
<td>DRAM Clock at Next Boot</td>
<td>By SPD (DDR533MHz)</td>
<td></td>
</tr>
<tr>
<td>VDIMM Select</td>
<td>1.85V (Default)</td>
<td></td>
</tr>
<tr>
<td>VCC NB Select</td>
<td>1.53V (Default)</td>
<td></td>
</tr>
<tr>
<td>GMCH VCCP Select</td>
<td>1.12V (Default)</td>
<td></td>
</tr>
<tr>
<td>VDA C25 Select</td>
<td>2.50V (Default)</td>
<td></td>
</tr>
</tbody>
</table>

**Menu Level >**

↑↓←→ Move Enter: Select Item +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values  F6: Optimized Defaults F7: Standard Defaults

**Auto Detect PCI Clock**

This item allows you to enable/disable auto detect PCI Clock.

The settings are: Enabled, Disabled.

**Spread Spectrum**

This item allows you to set the Spread Spectrum as Enable or Disabled.

**Host/PCI Clock at Next Boot**

This item allows you to select the CPU/PCI Clock.

**DRAM Clock at Next Boot**

This item allows you to set DRAM clock.

**VDIMM Select**

This item allows you to set the voltage of DRAM DIMM. The optional settings are: 1.85v (Default), 1.95v, 2.05v and 2.15v.

**VCC NB Select**

This item allows you to set Northbridge voltage. The optional settings are from 1.41v to 1.99v.
GMCH VCCP Select
The optional settings are from 1.04v to 1.46v.

VDAC25 Select
The optional settings are from 2.31v to 3.25v.

3-12 Password Setting
You can set either supervisor or user password, or both of them. The differences are:

**Supervisor password:** Can enter and change the options of the setup menus.

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

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

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

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

Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted. This would prevent unauthorized use of your computer.
You determine when the password is required within the BIOS Features Setup Menu and its Security option. If the Security option is set to “System”, the password will be required both at boot and at entry to Setup. If set to “Setup”, prompting only occurs when trying to enter Setup.
3-13 Load Standard/Optimized Defaults

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

    Load Standard Defaults (Y/N)? N
Pressing <Y> loads the BIOS default values for the most stable, minimal-performance system operations.

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

    Load Optimized Defaults (Y/N)? N
Pressing <Y> loads the default values that are factory settings for optimal performance system operations.