# ROBO-8776VG2

## Single Board Computer

## User's Manual

Version 1.0

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**Appendix A**

**Appendix B**

# How to Use This Manual

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

**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 series model of single host board.

**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 Compact Flash 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.

**Chapter 5 : Troubleshooting.** Provides various useful tips to quickly get its running with success. As basic hardware installation has been addressed in Chapter 3, this chapter will basically focus on system integration issues, in terms of backplane setup, BIOS setting, and OS diagnostics.

The content of this manual 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/.

# Chapter 1
# System Overview

## 1.1 Introduction

Portwell Inc., a world-leading innovator in the Industrial PC (IPC) market and announce a new PICMG 1.0 PCI/ISA SBC (Single Board Computer) which adopt with Intel® 945GC and ICH7 chipset. Equipped with the only dual core solution Intel® Atom™ 330 1.6GHz generates only 8W TDP, can provide the ideal and lower power consumption. The Intel® Atom™ processor 330 series is built on 45-nanometer Hi-k process technology with enhanced performance. GMCH integrated Intel® Graphics Media Accelerator (GMA) 950 graphic engine with Core Frequency of 400 MHz.

ROBO-8776VG2 supports analog VGA display up to 2048 x 1536 resolution and flexible SDVO connector for other type display via an optional daughter card. It can let users have the other kind of choice for display output.

ROBO-8776VG2 supports one 240-pin DIMM memory slot for DDR2 SDRAM up to 2GB, and comes with dual PCI Express x1 based Gigabit Ethernet ports, one parallel port, dual COM ports, one FDD port, one IDE port, four SATA ports, and Six USB2.0 ports. It also supports AC'97 and HD Audio function via one optional audio card.

**ROBO-8776VG2 brief specifications:**

- On-Board Intel® dual Core ATOM 330 1.6GHz processor
- One 240-pin DDR2 SDRAM DIMMM socket, support for DDR2 667/533/400 DIMMs, up to 2GB system memory
- Intel® 945GC integrated GMA 950 on-board graphics interface
- Equipped dual Gigabit Ethernet port
- Support two COM ports, four SATA ports and Six USB 2.0 ports (dual ports on bracket)

## 1.2 Check List

The ROBO-8776VG2 package should cover the following basic items

- ✓ One ROBO-8776VG2 single board computer
- ✓ One COM port cable with bracket
- ✓ One 4-pin ATX power control cable for backplane connection
- ✓ One Parallel port cable
- ✓ One SATA cable
- ✓ One FDD cable
- ✓ One Installation Resources CD-Title

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 dual core Atom processor 330
  - CPU bus clock: 533 MHz
- **Chipset**
  Intel® 945GC and ICH7
- **Main Memory**
  - Support signal channel DDR2 memory interface
  - Up to 2GB DDR2 SDRAM on 240-pin DIMM socket.
- **Bus Interface**
  - Follow PICMG 1.0 Rev 2.0 standard (32-bit PCI and 16-bit ISA)
  - Fully complies with PCI Local Bus specification V2.2 (support 4 master PCI slots)
  - Support ISA function via Winbond PCI to ISA bridge W83628AG and W83629AG
- **System BIOS**
  AWARD BIOS
- **Floppy Drive Interface**
  Support one FDD port up to two floppy drives and 5-1/4"(360K, 1.2MB), 3-1/2" (720K, 1.2MB, 1.44MB, 2.88MB) diskette format and 3-mode FDD
- **Parallel Port**
  Support one parallel port with SPP, EPP and ECP modes
- **SATA Interface**
  Four SATA ports
- **Serial Ports**
  Support two serial ports, one is RS232, the other is RS232/422/485 selectable.

- **ATX Power Control Interface**
  One 4-pin header to support ATX power control via backplane
- **USB Interface**

  Support six USB (Universal Serial Bus) ports (Dual USB ports on bracket dedicated to Keyboard & Mouse)
- **Audio Interface**
  - AC'97 and HD Audio reserved
  - One AC'97 optional Audio kit PA-M5A for Mic in/Line in/Line out.
- **Auxiliary I/O Interfaces**
  System reset switch, external speaker, and HDD active LED, etc
- **Real Time Clock/Calendar (RTC)**
  Support Y2K Real Time Clock/Calendar with battery backup for 7-year data retention
- **Watchdog Timer**
  - Support WDT function through software programming for enable/disable and interval setting
  - Generate system reset
- **On-board VGA**
  - Intel 945GC Integrated GMA950 Graphics device
  - Intel DVMT 3.0 supports up to 128MB video memory
- **On-board Ethernet LAN**
  Dual Realtek RTL8111C Gigabit controller to support RJ-45 connector
- **High Driving GPIO**
  Onboard programmable 8-bit Digital I/O interface
- **Cooling Fans**
  Support one 3-pin header for system fan and one 3-pin header for North Bridge fan
- **System Monitoring Feature**
  Monitor system temperature and major power sources, etc
- **Bracket**
  Support dual Ethernet port with 2 indicators, dual USB ports, and one CRT port
- **Outline Dimension (L X W):**
  338.5mm (13.33") X 122mm (4.8")
- **Power Requirements:**

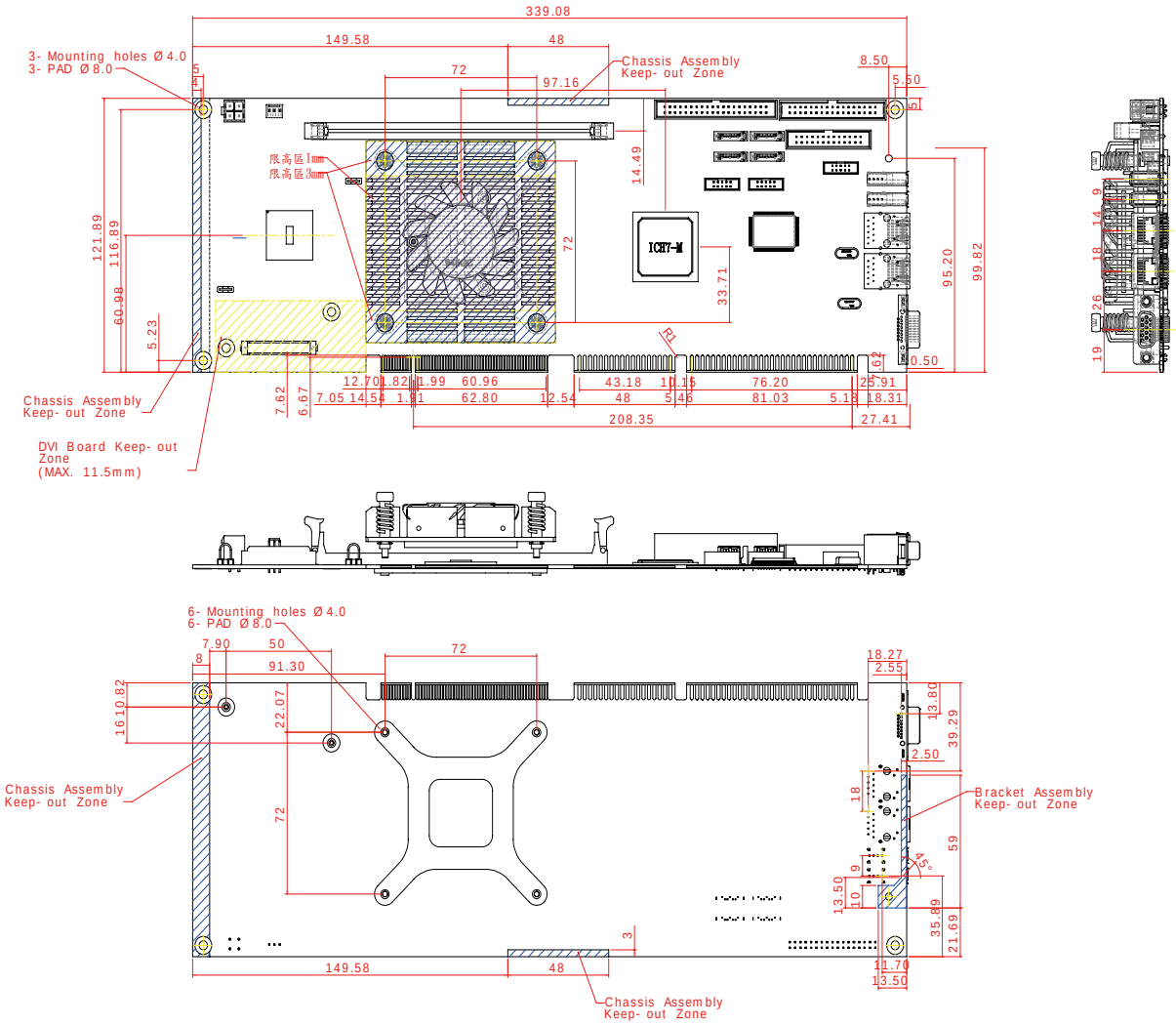
  Power Consumption test: Run Burning Test V5.3, RUN time: 10 / 30 Minutes.
  - +12V (CPU) @ 0.6A
  - +12V (System) @ 0.4A
  - +5V (System) @ 4.2A

- **Configuration:**

| System Configuration | |
|---|---|
| CPU Type | Intel Atom™ CPU 330 1.6GHz (133x12.0) FSB: 533MHz L2:2x512K |
| SBC BIOS | Portwell , Inc ROBO-8776VG2 Rev.: R1.00.W0.T1 (05072009) |
| Memory | Apacer DDR2 533 1GB*1 (ELPIDA E5108AG-5C-E) |
| VGA Card | Onboard Intel® 945GC Express Chipset Family |
| VGA Driver | Intel 82945G Express Chipset Family version: 6.14.10.4926 |
| LAN Card | Onboard Realtek RTL8111D PCI-E Gigabit Ethernet controller |
| LAN Driver | Realtek RTL8168D PCI-E Gigabit Ethernet NIC version: 5.698.701.2008 |
| External Audio | PA-M5A(Realtek ALC655 Audio controller) |
| Audio Driver | Realtek AC'97 Audio Version 5.10.0.6300 |
| CHIP Driver | Intel® Chipset Device Software Version 9.0.0.1008 |
| USB2.0 Driver | Intel® 82801G(ICH7 Fanily)USB2 Enhanced Host Controller Version 8.2.0.1008 |
| SCSI Card | ADAPTEC ASC-29160LP |
| SCSI HDD | Seagate ST39173W 9G |
| SATA HDD | WD WD1500ADFD 150GB |
| SATA CDROM | LITE-ON LH-20A1S |
| FDD | MITSUMI D353M3 1.44M |
| Power Supply | FSP400-60PFN |
| Back plane | PBP-14A7-A (401) |

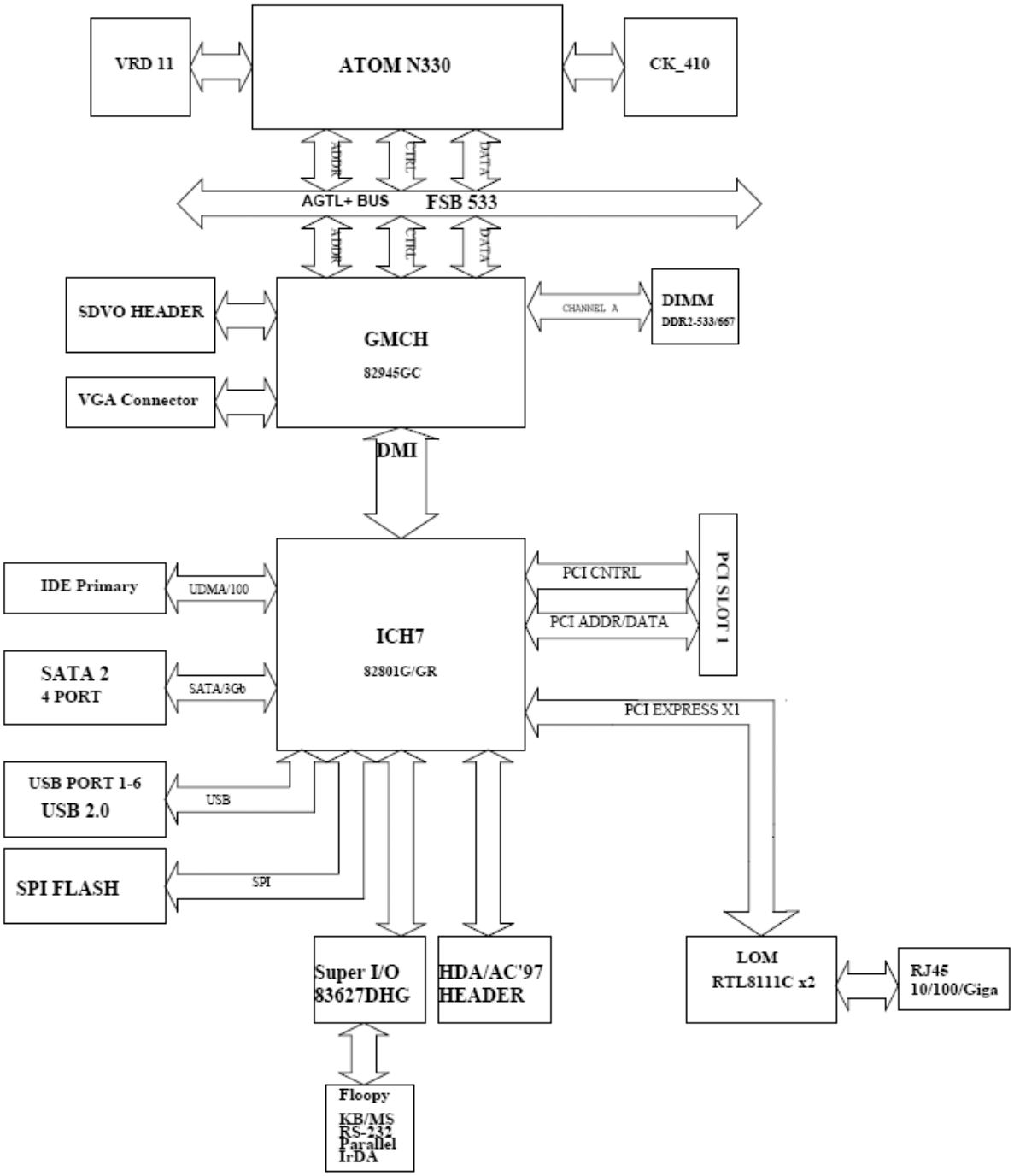
- **Operating Temperature:**
  0°C ~ 60°C
- **Storage Temperature:**
  -20°C ~ 80°C
- **Relative Humidity:**
  5% ~ 90%, non-condensing

## 1.3.1 Mechanical Drawing



## 1.4 System Architecture

All of details operating relations are shown in ROBO-8776VG2 series System Block Diagram




**ROBO-8776VG2 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 order to customize ROBO-8776VG2's features for users, in the following sections, **Short** means covering a jumper cap over jumper pins; **Open** or **N/C** (Not Connected) means removing a jumper cap from jumper pins. Users can refer to Figure 2-1 for the Jumper locations.

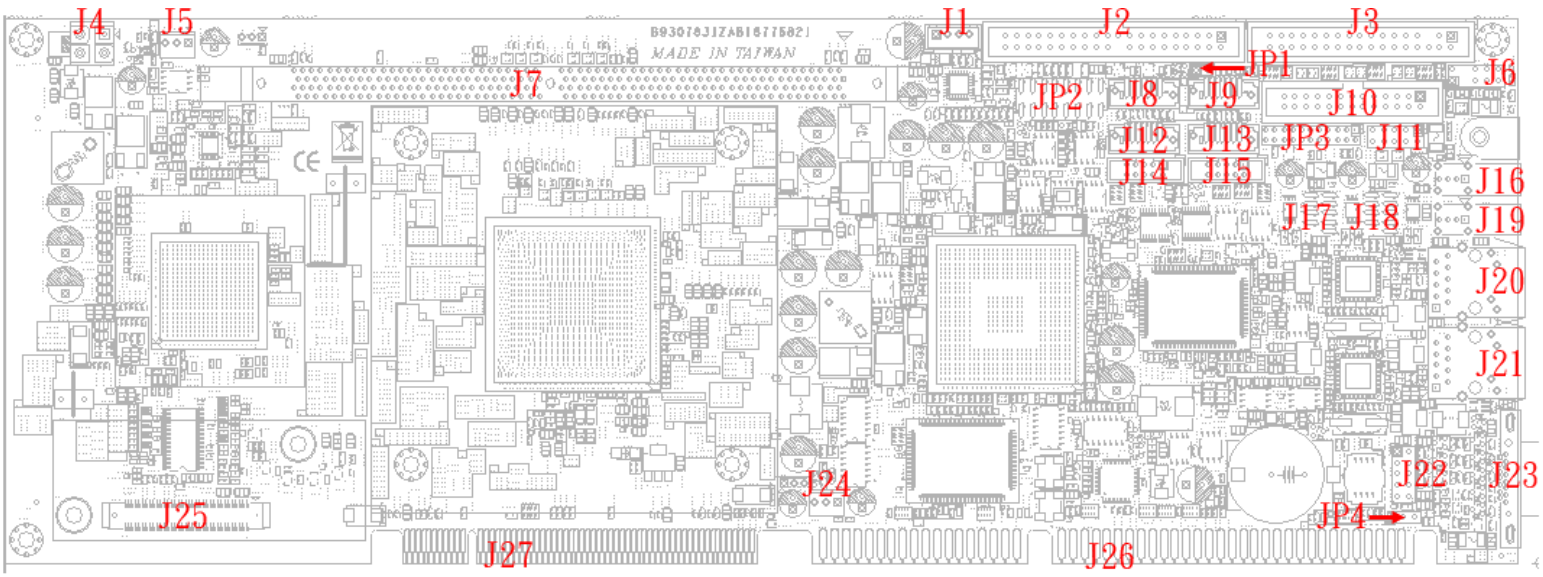
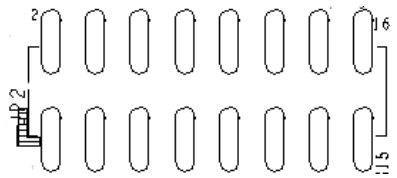



**Figure 2-1 ROBO-8776VG2 Top-side Jumper and Connector Locations**

**JP1: Auto power on jumper**

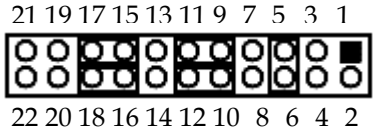
| JP1 | Function |
|---|---|
| 1-2 Short | System boots up automatically with jumper populated after PSU powered. |
| 1-2 Open | System requires power button pushed to boot up without jumper populated. ★ |

## JP2: Front panel control and LED/Buzzer connector

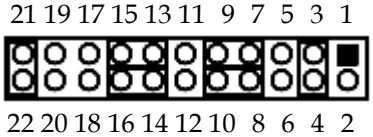


| PIN No. | Signal Description | PIN No. | Signal Description |
|---|---|---|---|
| 1 | HDD LED (+)<br>w/150-ohm pull-up | 2 | Power LED (+)<br>w/330-ohm pull-up |
| 3 | HDD LED (-) | 4 | NC |
| 5 | NC | 6 | Power LED (-) |
| 7 | Power Button (+) | 8 | NC |
| 9 | Power Button (-) | 10 | Buzzer (+) |
| 11 | NC | 12 | NC |
| 13 | Reset Button (+) | 14 | NC |
| 15 | Reset Button (-) | 16 | Buzzer (-) |

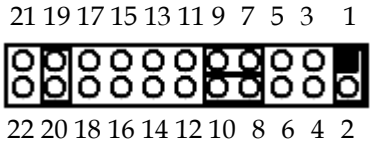
## JP3: COM2 (J15) Interface Selection




RS-232



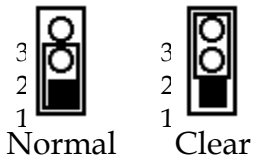

RS-422




RS-485

| JP3 | Function |
|---|---|
| 5-6,9-11,10-12,15-17,16-18 Short | RS-232 ★ |
| 3-4,7-9,8-10,13-15,14-16,21-22 Short | RS-422 |
| 1-2,7-9,8-10,19-20 Short | RS-485 |

**JP4: CMOS Normal / Clear Jumper**




| JP4 | Function |
|---|---|
| 1-2 Short | Clear CMOS Disable (Normal) ★ |
| 2-3 Short | Clear CMOS Enable (Clear) |

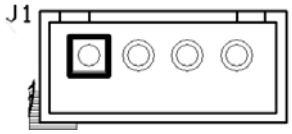
## 2.2 Connectors

I/O peripheral devices are connected to the interface connectors.

| Connector | Function | Remark |
|---|---|---|
| J1 | ATX Power Supply Control Connector | |
| J2 | IDE Connector | |
| J3 | Floppy Connector | |
| J4 | ATX 12V Power Supply Connector | |
| J5 | Fan Connector 1 | |
| J6 | PS/2 Keyboard Mouse Y Cable Pin Header | |
| J7 | DDR2 DIMM Socket | |
| J8 | SATA Port 3 | |
| J9 | SATA Port 1 | |
| J10 | LPT Connector | |
| J11 | 8-bit GPIO Pin Header | |
| J12 | SATA Port 2 | |
| J13 | SATA Port 0 | |
| J14 | COM Port 1 | |
| J15 | COM Port 2 | |
| J16 | USB Connector 1 | |
| J17 | USB 2/3 Pin Header | |
| J18 | USB 4/5 Pin Header | |
| J19 | USB Connector 0 | |
| J20 | LAN 1 RJ-45 Connector | |
| J21 | LAN 2 RJ-45 Connector | |
| J22 | AC'97/HDA Signal Pin Header for External AC'97/HDA Audio Module | |
| J23 | VGA Connector | |
| J24 | Fan Connector 2 | |
| J25 | SDVO Signal Connector for External SDVO Transmitter Module | |
| J26 | ISA Finger of PICMG 1.0 | |
| J27 | PCI Finger of PICMG 1.0 | |

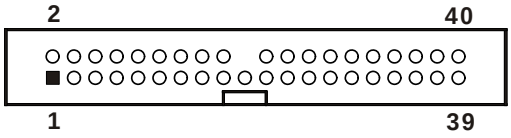
## Pin Assignments of Connectors

### J1: ATX Power Supply Control Connector




| JP4 | Function |
|---|---|
| 1 | Power OK |
| 2 | 5V Stand By |
| 3 | PS_ON# |
| 4 | GND |

### J2: IDE Connector

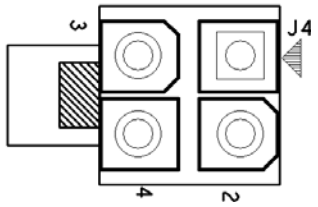



| PIN No. | Signal Description | PIN No. | Signal Description |
|---|---|---|---|
| 1 | RESET# | 2 | Ground |
| 3 | Data 7 | 4 | Data 8 |
| 5 | Data 6 | 6 | Data 9 |
| 7 | Data 5 | 8 | Data 10 |
| 9 | Data 4 | 10 | Data 11 |
| 11 | Data 3 | 12 | Data 12 |
| 13 | Data 2 | 14 | Data 13 |
| 15 | Data 1 | 16 | Data 14 |
| 17 | Data 0 | 18 | Data 15 |
| 19 | Ground | 20 | NC |
| 21 | DMA REQ | 22 | Ground |
| 23 | IOW# | 24 | Ground |
| 25 | IOR# | 26 | Ground |
| 27 | IOCHRDY | 28 | Pull-down |
| 29 | DMA ACK# | 30 | Ground |
| 31 | INT REQ | 32 | NC |
| 33 | SA1 | 34 | CBLID# |
| 35 | SA0 | 36 | SA2 |
| 37 | HDC CS0# | 38 | HDC CS1# |
| 39 | HDD Active# | 40 | Ground |

## J3: Floppy Connector

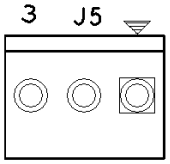
| PIN No. | Signal Description | PIN No. | Signal Description |
|---|---|---|---|
| 1 | Ground | 2 | Density Select 0 |
| 3 | Ground | 4 | N/C |
| 5 | Ground | 6 | N/C |
| 7 | Ground | 8 | INDEX# |
| 9 | Ground | 10 | Motor ENA# |
| 11 | Ground | 12 | N/C |
| 13 | Ground | 14 | Drive Select A# |
| 15 | Ground | 16 | N/C |
| 17 | Ground | 18 | Direction# |
| 19 | Ground | 20 | Step# |
| 21 | Ground | 22 | Write Data# |
| 23 | Ground | 24 | Write Gate# |
| 25 | Ground | 26 | Track 0# |
| 27 | Ground | 28 | Write Protect# |
| 29 | N/C | 30 | Read Data# |
| 31 | Ground | 32 | Head Select# |
| 33 | N/C | 34 | Disk Change# |

## J4: ATX 12V Power Supply Connector



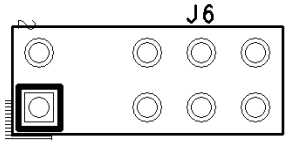

| PIN No. | Signal Description | PIN No. | Signal Description |
|---|---|---|---|
| 1 | Ground | 2 | Ground |
| 3 | 12V | 4 | 12V |

## J5: Fan Connector 1



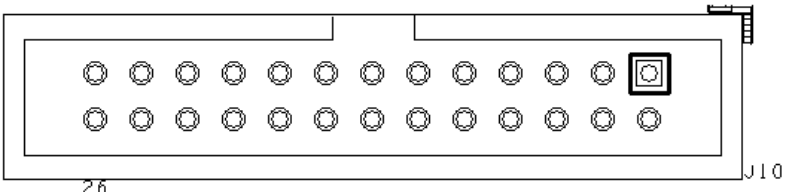

| PIN No. | Signal Description |
|---|---|
| 1 | Ground |
| 2 | Fan Power (12V maximum) |
| 3 | Fan PWM Input |

## J6: PS/2 Keyboard Mouse Y Cable Pin Header



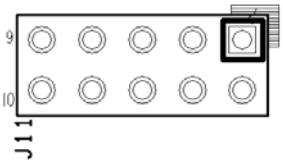

| PIN No. | Signal Description | PIN No. | Signal Description |
|---|---|---|---|
| 1 | Mouse Data | 2 | Keyboard Data |
| 5 | Ground | 6 | Ground |
| 7 | Mouse Power | 8 | Keyboard Power |
| 9 | Mouse Clock | 10 | Keyboard Clock |

## J10: LPT Connector



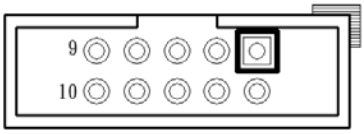

| PIN No. | Signal Description | PIN No. | Signal Description |
|---|---|---|---|
| 1 | Strobe# | 14 | Auto Form Feed# |
| 2 | Data 0 | 15 | Error# |
| 3 | Data 1 | 16 | Initialization# |
| 4 | Data 2 | 17 | Printer Select IN# |
| 5 | Data 3 | 18 | Ground |
| 6 | Data 4 | 19 | Ground |
| 7 | Data 5 | 20 | Ground |
| 8 | Data 6 | 21 | Ground |
| 9 | Data 7 | 22 | Ground |
| 10 | Acknowledge# | 23 | Ground |
| 11 | Busy | 24 | Ground |
| 12 | Paper Empty | 25 | Ground |
| 13 | Printer Select | 26 | NC |

## J11: 8-bit GPIO Pin Header



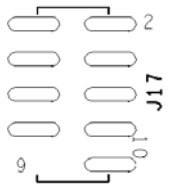

| PIN No. | Signal Description | PIN No. | Signal Description |
|---|---|---|---|
| 1 | GPIO34 (From SUPER I/O) | 2 | GPIO30 (From SUPER I/O) |
| 3 | GPIO35 (From SUPER I/O) | 4 | GPIO31 (From SUPER I/O) |
| 5 | GPIO36 (From SUPER I/O) | 6 | GPIO32 (From SUPER I/O) |
| 7 | GPIO37 (From SUPER I/O) | 8 | GPIO33 (From SUPER I/O) |
| 9 | Ground | 10 | 5V |

## J14: COM Port 1; J15: COM port 2



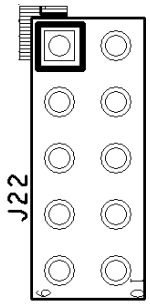

| Pin No. | Signal Description |
|---|---|
| 1 | Data Carrier Detect |
| 2 | Data Set Ready |
| 3 | Receive Data |
| 4 | Request To Send |
| 5 | Transmit Data |
| 6 | Clear To Send |
| 7 | Data Terminal Ready |
| 8 | Ring Indicator |
| 9 | Ground |
| 10 | NC |

## J17: USB 2/3 Pin Header; J18: USB 4/5 Pin Header



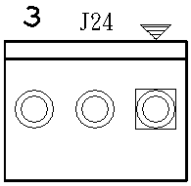

| PIN No. | Signal Description | PIN No. | Signal Description |
|---|---|---|---|
| 1 | +5V | 2 | +5V |
| 3 | DATA- | 4 | DATA- |
| 5 | DATA+ | 6 | DATA+ |
| 7 | Ground | 8 | Ground |
| | | 10 | Ground |

## J22: AC'97/HDA Signal Pin Header for External AC'97/HDA Audio Module



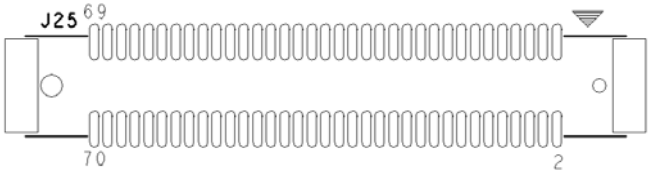

| PIN No. | Signal Description | PIN No. | Signal Description |
|---|---|---|---|
| 1 | NC | 2 | Ground |
| 3 | 12V | 4 | Bit Clock Input |
| 5 | Serial Data Out | 6 | Serial Data In |
| 7 | Sync | 8 | Reset |
| 9 | 3.3V | 10 | NC |

## J24: Fan Connector 1




| PIN No. | Signal Description |
|---|---|
| 1 | Ground |
| 2 | Fan Power (12V maximum) |
| 3 | Fan PWM Input |

## J25: SDVO Signal Connector for External SDVO Transmitter Module




| PIN No. | Signal Description | PIN No. | Signal Description |
|---|---|---|---|
| 1 | 3.3V | 2 | 3.3V Dual |
| 3 | 3.3V | 4 | 3.3V Dual |
| 5 | 3.3V | 6 | 5V |
| 7 | 3.3V | 8 | 5V |
| 9 | 3.3V | 10 | 5V |
| 11 | 3.3V | 12 | 5V |
| 13 | 3.3V | 14 | 1.5V |
| 15 | Ground | 16 | 1.5V |

| | | | |
|---|---|---|---|
| 17 | SDVOB_RED+ | 18 | 1.5V |
| 19 | SDVOB_RED- | 20 | Ground |
| 21 | Ground | 22 | SDVOB_TVCLKIN+ |
| 23 | SDVO_CLK | 24 | SDVOB_TVCLKIN- |
| 25 | Ground | 26 | Ground |
| 27 | SDVOB_GREEN+ | 28 | Ground |
| 29 | SDVOB_GREEN- | 30 | SDVOB_INT+ |
| 31 | Ground | 32 | SDVOB_INT- |
| 33 | Ground | 34 | Ground |
| 35 | SDVOB_BLUE+ | 36 | Ground |
| 37 | SDVOB_BLUE- | 38 | SDVOB_STALL+ |
| 39 | Ground | 40 | SDVOB_STALL- |
| 41 | Ground | 42 | Ground |
| 43 | SDVOB_CLK+ | 44 | NC |
| 45 | SDVOB_CLK- | 46 | Ground |
| 47 | Ground | 48 | NC |
| 49 | SDVO_DATA | 50 | NC |
| 51 | Ground | 52 | Ground |
| 53 | NC | 54 | Ground |
| 55 | NC | 56 | Ground |
| 57 | Ground | 58 | Ground |
| 59 | NC | 60 | Platform Reset# |
| 61 | NC | 62 | Ground |
| 63 | Ground | 64 | NC |
| 65 | NC | 66 | NC |
| 67 | NC | 68 | NC |
| 69 | NC | 70 | NC |

# Chapter 3
# System Installation

This chapter provides you with instructions to set up your system. The additional information is enclosed to help you set up onboard PCI device and handle Watch Dog Timer (WDT) and operation of GPIO in software programming.

## 3.1 Intel® ATOM CPU

ROBO-8776 onboard uses Intel Atom Processor 330 CPU 1.6GHz processor. Introducing Intel Atom processor, a new microprocessor designed from the ground up for mobility, with a mobile-optimized chipset. Intel mobile processor innovative design techniques allow faster execution of instructions at lower power.

## 3.2 Main Memory

ROBO-8776 provides 1 x 240-pin DIMM sockets which supports 400/533/667 DDR2-SDRAM as main memory, Non-ECC (Error Checking and Correcting), non-register functions. The maximum memory size can be up to 2GB capacity. Memory clock and related settings can be detected by BIOS via SPD interface.

For system compatibility and stability, do not use memory module without brand. Memory configuration can be either one double-sided DIMM in either one DIMM socket or one single-sided DIMM in socket.

Watch out the contact and lock integrity of memory module with socket, it will impact on the system reliability. Follow normal procedures to install memory module into memory socket. Before locking, make sure that all modules have been fully inserted into the card slots.

**Note:**
To maintain system stability, don't change any of DRAM parameters in BIOS setup to upgrade system performance without acquiring technical information.

**Memory frequency / CPU FSB synchronization**

ROBO-8776 supports different memory frequencies depending on the CPU front side bus and the type of DDR2 DIMM.

| CPU FSB | Memory Frequency |
|---|---|
| 533 MHz | 667/533/400MHz |

## 3.3 Installing the Single Board Computer

To install your ROBO-8776 into standard chassis or proprietary environment, please perform the following:

Step 1 : Check all jumpers setting on proper position
Step 2 : Install memory module on right position
Step 3 : Place ROBO-8776 into the dedicated position in the system
Step 4 : Attach cables to existing peripheral devices and secure it

**WARNING**
Please ensure that SBC is properly inserted and fixed by mechanism.

**Note:**
Please refer to section 3.3.1 to 3.3.7 to install INF/VGA/LAN/Audio drivers.

### 3.3.1 Chipset Component Driver

The chipset on ROBO-8776 is a new chipset that a few old operating systems might not be able to recognize. To overcome this compatibility issue, for Windows Operating Systems such as Windows 2000 /XP, please install its INF before any of other Drivers are installed. You can find very easily this chipset component driver in ROBO-8776 CD-title.

### 3.3.2 Intel Integrated Graphics GMCH Chip

Using Intel ® 82945GC with Media Accelerator (GMA) 950 graphics integrated chipset is aimed to gain an outstanding graphic performance. Shared 8 accompany it to 128MB system DDR2-SDRAM with Total Graphics Memory. This combination makes ROBO-8776 an excellent piece of multimedia hardware.

With no additional video adaptor, this onboard video will usually be the system display output. By adjusting the BIOS setting to disable on-board VGA, an add-on PCI-Express by 1 VGA card can take over the system display.

**Drivers Support**
Please find Springdale GMCH driver in the ROBO-8776 CD-title. Drivers support Windows-2000, Windows XP.

### 3.3.3 Realtek Gigabit Ethernet Controller

**Drivers Support**

Please find Realtek RTL8111C LAN driver in /Ethernet directory of ROBO-8776 CD-title. The drivers support Windows 2000 /XP.

**LED Indicator (for LAN status)**

ROBO-8776 provides two LED indicators to report Realtek RTL8111C Gigabit Ethernet interface status. Please refer to the table below as a quick reference guide.

<table>
<tr><th rowspan="2">8111C</th><th rowspan="2">Color</th><th rowspan="2">Name of LED</th><th colspan="3">Operation of Ethernet Port</th></tr>
<tr><th colspan="2">Linked</th><th>Active</th></tr>
<tr><td>Status LED</td><td>Orange</td><td>LAN Linked & Active LED</td><td colspan="2">On</td><td>Blinking</td></tr>
<tr><td rowspan="2">Speed LED</td><td>Orange</td><td rowspan="2">LAN speed LED</td><td>Giga Mbps</td><td>100 Mbps</td><td>10 Mbps</td></tr>
<tr><td>Green</td><td>Orange</td><td>Green</td><td>Off</td></tr>
</table>

### 3.3.4 On-board AC-97 Audio Device

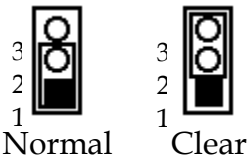
The on-board AC-97 audio device provides a more than standard sound display. It is capable for many general purposes. This onboard Audio function is supported by Winbond W83627DHG embedded AC'97 Codec Controller.

Driver Support
Please find Sound driver in \Audio\Ac97 of ROBO-8776VG driver CD-title. The drivers support Windows 2000 and Windows XP.

To disable this onboard Audio function, please configure the "Integrated Peripheral" Setup Menu in BIOS, and entry "onboard device" item list to Change the "AC'97 Audio" setting to "Disable" will turn off this PCI Audio device

## 3.4 Clear CMOS Operation

The following table indicates how to enable/disable Clear CMOS Function hardware circuit by putting jumpers at proper position.




Normal Clear

| JP4 | Function |
|---|---|
| 1-2 Short | Clear CMOS Disable (Normal) ★ |
| 2-3 Short | Clear CMOS Enable (Clear) |

## 3.5 WDT Function

The working algorithm of the WDT function can be simply described as a counting process. The Time-Out Interval can be set through software programming. The availability of the time-out interval settings by software or hardware varies from boards to boards.

ROBO-8776VG2 allows users control WDT through dynamic software programming. The WDT starts counting when it is activated. It sends out a signal to system reset or to non-maskable interrupt (NMI), when time-out interval ends. To prevent the time-out interval from running out, a re-trigger signal will need to be sent before the counting reaches its end. This action will restart the counting process. A well-written WDT program should keep the counting process running under normal condition. WDT should never generate a system reset or NMI signal unless the system runs into troubles.

The related Control Registers of WDT are all included in the following sample program that is written in C language. User can fill a non-zero value into the Time-out Value Register to enable/refresh WDT. System will be reset after the Time-out Value to be counted down to zero. Or user can directly fill a zero value into Time-out Value Register to disable WDT immediately. To ensure a successful accessing to the content of desired Control Register, the sequence of following program codes should be step-by-step run again when each register is accessed.

Additionally, there are maximum 2 seconds of counting tolerance that should be considered into user' application program. For more information about WDT, please refer to Winbond W83627DHG data sheet.

There are two PNP I/O port addresses that can be used to configure WDT,
1) 0x2E:EFIR (Extended Function Index Register, for identifying CR index number)
2) 0x2F:EFDR (Extended Function Data Register, for accessing desired CR)

Below are some example codes, which demonstrate the use of WDT.

```
//Enter W83627DHG configuration registers mode
outp(0x2E, 0x87);
outp(0x2E, 0x87);

//Assign Pin77 to be WDTO#
outp(0x2E, 0x2D);
outp(0x2E + 1, inp(0x002E + 1) & 0xFE);

//Select logic device 8
outp(0x2E, 0x07);
outp(0x2E + 1, 0x08);

// Select Count Mode (Minute or Second)
outp(0x002E, 0xF5);
outp(0x002F, (inp(0x002F) & 0xF7) | ( Count-mode Register & 0x08));

// Specify Time-out Value
outp(0x002E, 0xF6);
outp(0x002F, Time-out Value Register );

// Disable WDT reset by keyboard/mouse interrupts
outp(0x002E, 0xF7);
outp(0x002F, 0x00);

// Exit Extended Function Mode
outp(0x002E, 0xAA);
```

**Definitions of Variables:**
Value of Count-mode Register :
1) 0x00 -- Count down in seconds (Bit3=0)
2) 0x08 -- Count down in minutes (Bit3=1)
Value of Time-out Value Register :
1) 0x00 -- Time-out Disable
2) 0x01~0xFF -- Value for counting down

## 3.6 GPIO

The ROBO-8776VG2 provides 8 programmable input or output ports that can be individually configured to perform a simple basic I/O function. Users can configure each individual port to become an input or output port by programming register bit of I/O Selection. To invert port value, the setting of Inversion Register has to be made. Port values can be set to read or write through Data Register.

### 3.6.1 Pin assignment

**J11 : General Purpose I/O Connector**

| PIN No. | Signal Description |
|---|---|
| 1 | General Purpose I/O Port 4 (W83627DHG GPIO34) |
| 2 | General Purpose I/O Port 0 (W83627DHG GPIO30) |
| 3 | General Purpose I/O Port 5 (W83627DHG GPIO35) |
| 4 | General Purpose I/O Port 1 (W83627DHG GPIO31) |
| 5 | General Purpose I/O Port 6 (W83627DHG GPIO36) |
| 6 | General Purpose I/O Port 2 (W83627DHG GPIO32) |
| 7 | General Purpose I/O Port 7 (W83627DHG GPIO37) |
| 8 | General Purpose I/O Port 3 (W83627DHG GPIO33) |
| 9 | Ground |
| 10 | +5V |

All General Purpose I/O ports can only apply to standard TTL ± 5% signal level (0V/5V), and each source sink capacity up to 12mA.

### 3.6.2 ROBO-8776VG2 GPIO Programming Guide

There are 8 GPIO pins on ROBO-8776VG2. These GPIO pins are from SUPER I/O (W83627DHG) GPIO pins, and can be programmed as Input or Output direction.

JP5 pin header is for 8 GPIO pins and its pin assignment as following :

J11_Pin1=GPIO4:from SUPER I/O_GPIO34 with Ext. 4.7K PH
J11_Pin2=GPIO0:from SUPER I/O_GPIO30 with Ext. 4.7K PH
J11_Pin3=GPIO5:from SUPER I/O_GPIO35 with Ext. 4.7K PH
J11_Pin4=GPIO1:from SUPER I/O_GPIO31 with Ext. 4.7K PH
J11_Pin5=GPIO6:from SUPER I/O_GPIO36 with Ext. 4.7K PH
J11_Pin6=GPIO2:from SUPER I/O_GPIO32 with Ext. 4.7K PH
J11_Pin7=GPIO7:from SUPER I/O_GPIO37 with Ext. 4.7K PH
J11_Pin8=GPIO3:from SUPER I/O_GPIO33 with Ext. 4.7K PH

**<<<<< Be careful Pin9=GND , Pin10=VCC >>>>>**

There are several Configuration Registers (CR) of W83627DHG needed to be programmed to control the GPIO direction, and status(GPI)/value(GPO). CR00h ~ CR2F are common (global) registers to all Logical Devices (LD) in W83627DHG. CR07h contains the Logical Device Number that can be changed to access the LD as needed. LD7 contains the GPIO10~17 registers.

Programming Guide:

Step1: CR2C_Bit [7..5]. P [1,1,1]; to select multiplexed pins as GPIO32~34 pins
Step2: LD7_CR07h.P [09h]; Point to LD9
Step3: LD7_CR30h_Bit1.P1; Enable GPIO3
Step4: Select GPIO direction, Get Status or output value.

LD9_CRF0h; GPIO37~30 direction, 1 = input, 0 = output pin
LD9_CRF2h.P [00h]; Let CRF1 (GPIO data port) non-invert to prevent from confusion
LD9_CRF1h; GPIO37~30 data port, for input pin, get status from the related bit, for output pin, write value to the related bit.

For example,

LD9_CRF0h_Bit4.P0; Let GPIO34 as output pin
LD9_CRF2h_Bit4.P0; Let CRF1_Bit4 non-inverted
LD9_CRF1h_Bit4.P0; Output "0" to GPIO34 pin (J11_Pin1)

LD9_CRF0h_Bit0.P1; Let GPIO30 as input pin
LD9_CRF2h_Bit0.P0; Let CRF1_Bit0 non-inverted
Read LD9_CRF1h_Bit0; Read the status from GPIO30 pin (J11_Pin2)

How to access W83627DHG CR?

In ROBO-8776VG2, the EFER = 002Eh, and EFDR = 002Fh.
EFER and EFDR are 2 IO ports needed to access W83627DHG CR.
EFER is the Index Port, EFDR is the Data Port.
CR index number needs to be written into EFER first,
Then the data will be read/written from/to EFDR.

To R/W W83627DHG CR, it is needed to Enter/Enable Configuration Mode first. When completing the programming, it is suggested to Exit/Disable Configuration Mode.

Enter Configuration Mode: Write 87h to IO port EFER twice.
Exit Configuration Mode: Write AAh to IO port EFER.

# Chapter 4
# BIOS Setup Information

ROBO-8776 is equipped with the 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, ROBO-8776 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

Turn on or reboot the computer. When the message "Hit <DEL> if you want to run SETUP" appears, press <Del> key immediately to enter BIOS setup program.

If the message disappears before you respond, but you still wish to enter Setup, please restart the system to try "COLD START" again by turning it OFF and then ON, or touch the "RESET" button. You may also restart from "WARM START" by pressing <Ctrl>, <Alt>, and <Delete> keys simultaneously. If you do not press the keys at the right time and the system will not boot, an error message will be displayed and you will again be asked to,

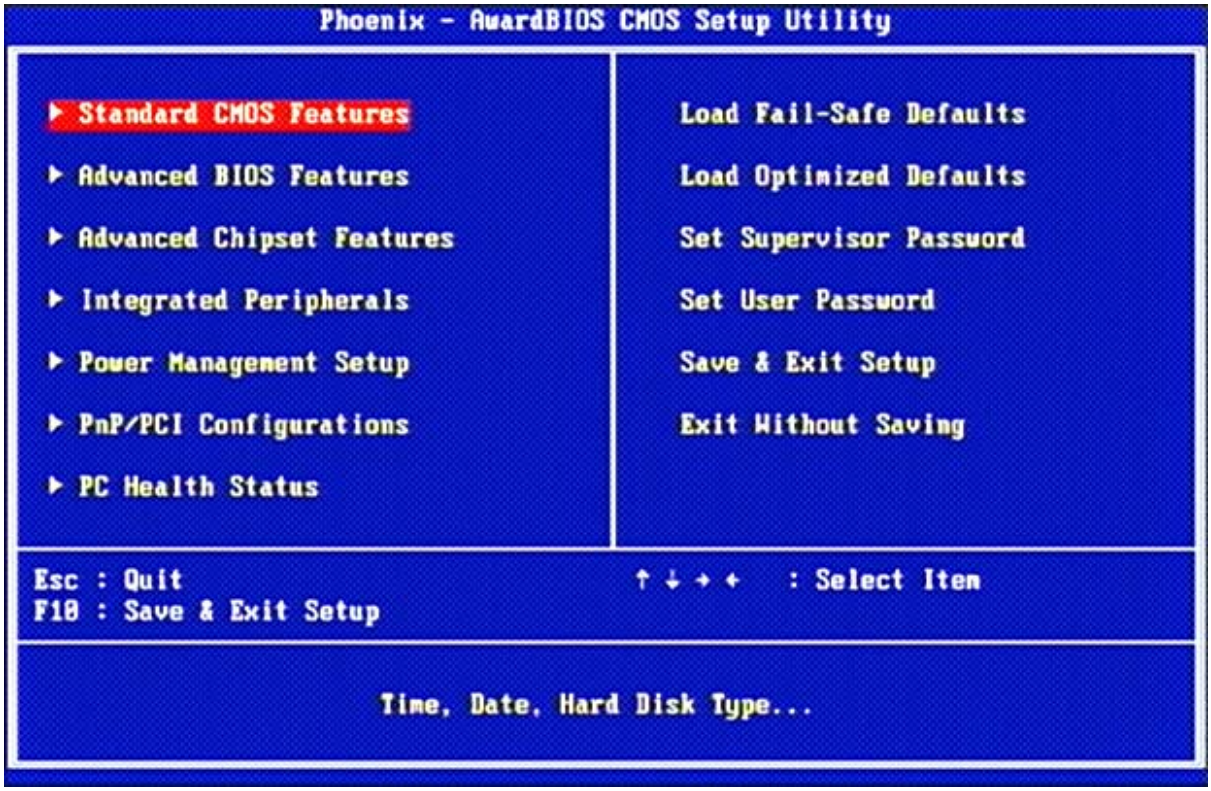
Press <F1> to Run SETUP or Resume

In HIFLEX BIOS setup, you can use the keyboard to choose among options or modify the system parameters to match the options with your system. The table below will show you all of keystroke functions in BIOS setup.

| 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

Once you enter ROBO-8776 AWARD BIOS CMOS Setup Utility, a Main Menu is presented. The Main Menu allows user to select from eleven setup functions and two exit choices. Use arrow keys to switch among items and press <Enter> key to accept or bring up the sub-menu.

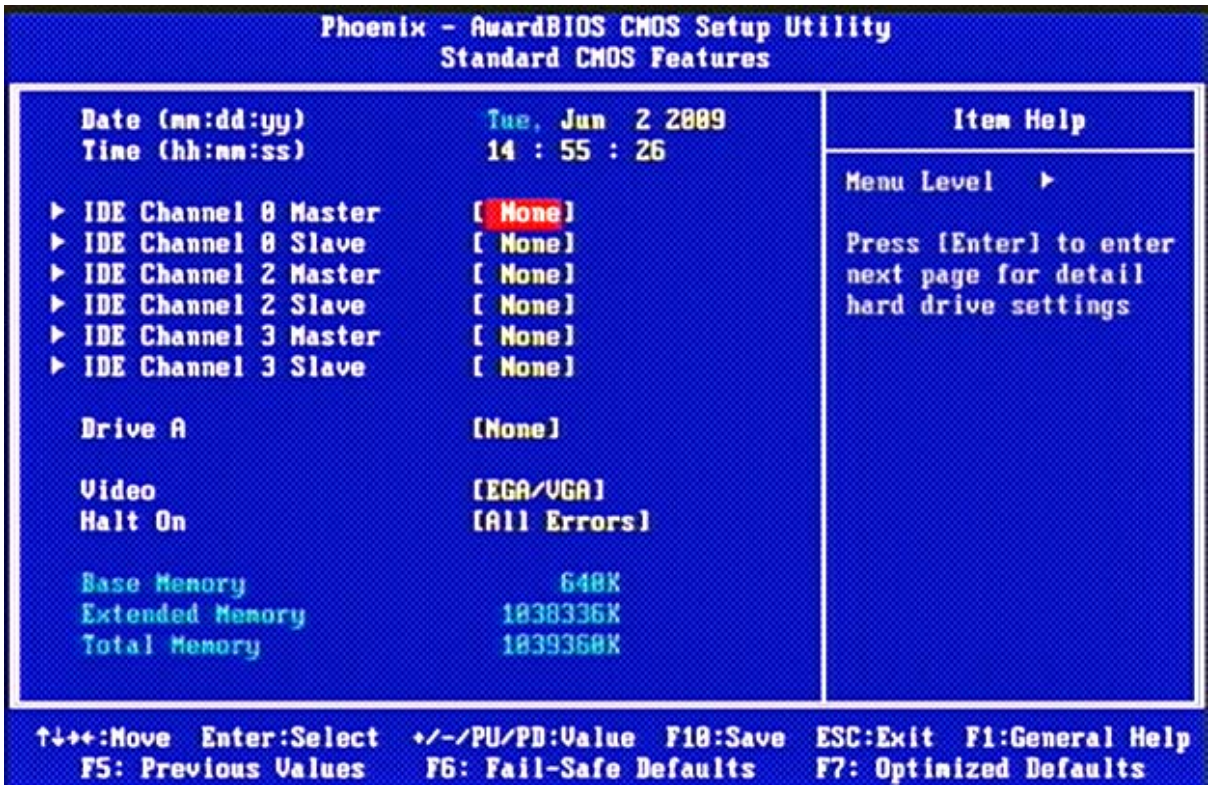



**Note:**
It is strongly recommended to reload Optimal Setting if CMOS is lost or BIOS is updated.

## 4.3 Standard CMOS Setup Menu

This setup page includes all the items in standard compatible BIOS. Use the arrow keys to highlight the item and then use the <PgUp>/<PgDn> or <+>/<-> keys to select the value or number you want in each item and press <Enter> key to certify it.

Follow command keys in CMOS Setup table to change **Date**, **Time**, **Drive type**, and **Boot Sector Virus Protection Status**.



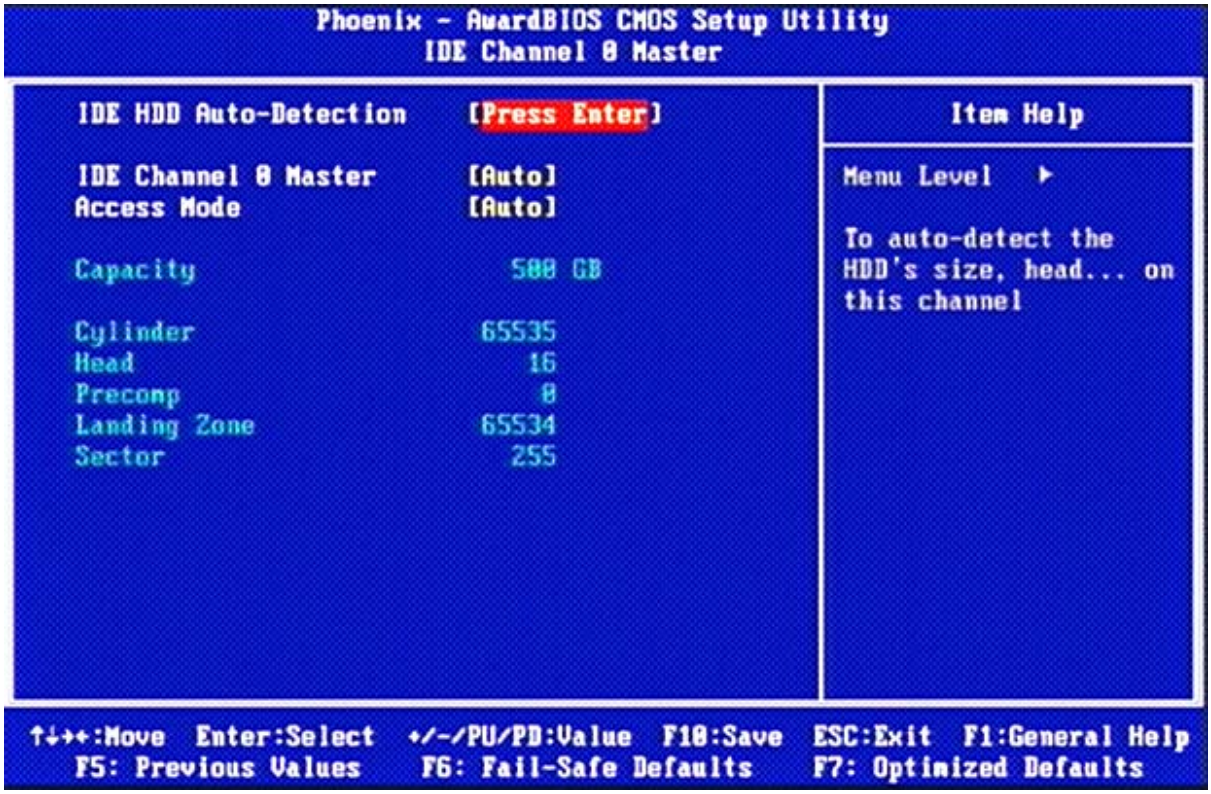

**Note:**
Oblique items are base on memory capacity which user adopts on single board.

■ **Menu Selections**

| Item | Options | Description |
|---|---|---|
| Date | mm:dd:yy | Change the day, month, year and century |
| Time | hh:mm:ss | Change the internal clock |
| IDE Channel 0 Master | Options are in its sub menu | Press <Enter> to enter next page for detail hard druve settings |
| IDE Channel 0 Slave | | |
| IDE Channel 2 Master | | |
| IDE Channel 2 Slave | | |
| IDE Channel 3 Master | | |
| IDE Channel 3 Slave | | |
| Drive A | None<br>360K, 5.25 in<br>1.2M, 5.25 in<br>720K, 3.5 in<br>1.44M, 3.5 in<br>2.88M, 3.5 in | Press <Enter> to enter the next page for detail hard drive settings |
| Video | EGA/VGA<br>CGA 40<br>CGA 80<br>MONO | Select the default video device |
| Halt On | All Errors | Select the situation in which you want the BIOS to stop the POST process and notify you |
| Base Memory | 639K | Displays the amount of conventional memory detected during boot up |
| Extended Memory | N/A | Displays the amount of extended memory detected during boot up |
| Total Memory | N/A | Displays the total memory available in the system |

## 4.4 IDE Adaptors Setup Menu

The IDE adapters control the IDE devices, such as hard disk drive or CD-ROM drive. It uses a separate sub menu to configure each hard disk drive.




**Note:**
The oblique items are meaning base on what kind of storage device user employs.

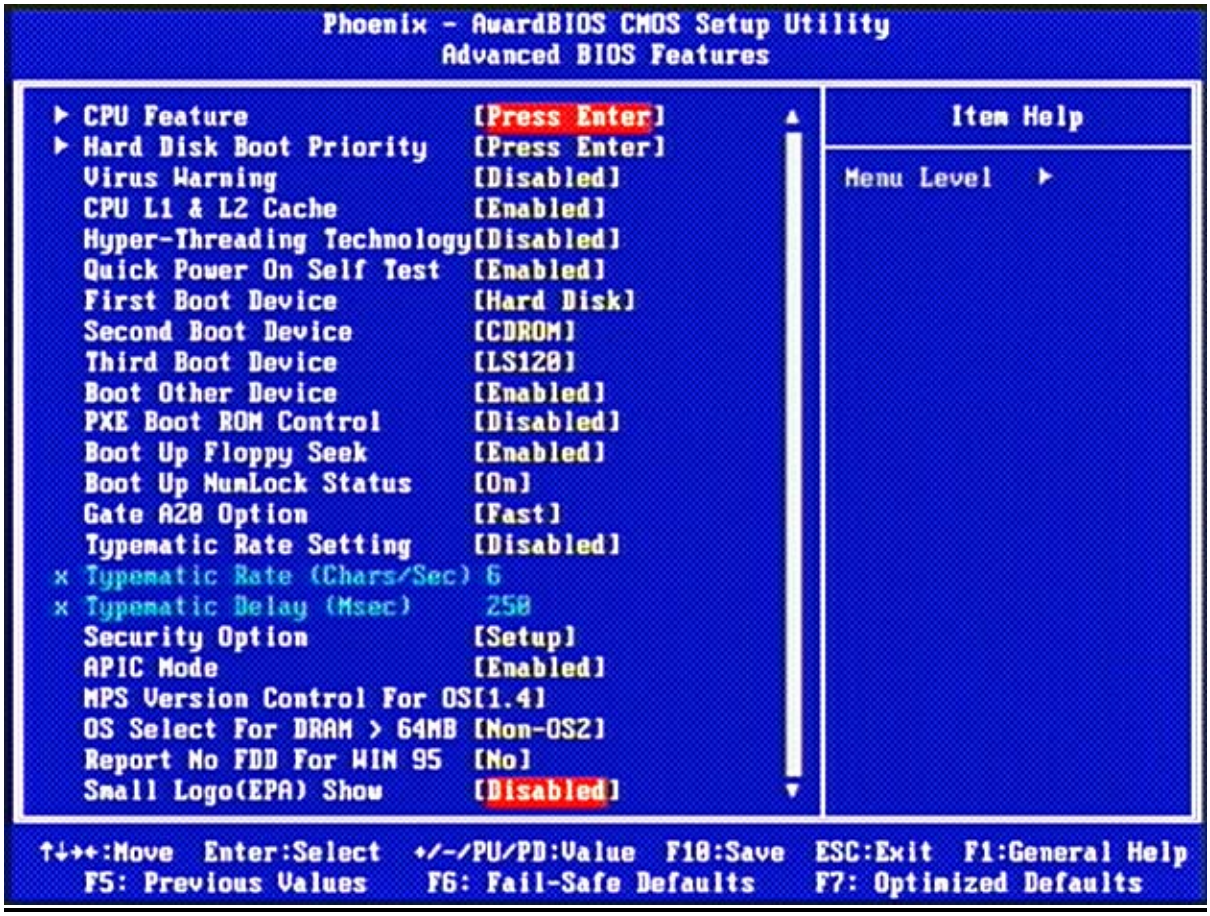
■ **Menu Selections**

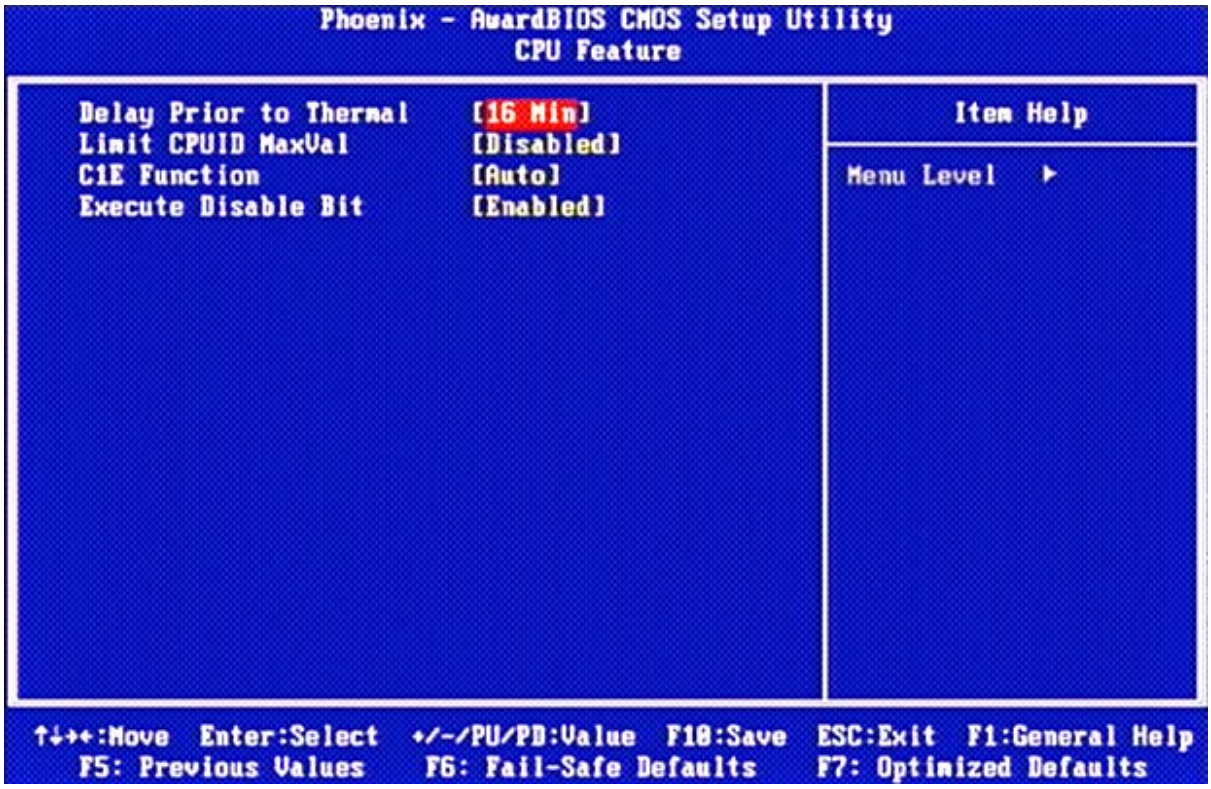
| Item | Options | Description |
|---|---|---|
| IDE HDD Auto-detection | Press Enter | Press Enter to auto-detect the HDD on this channel. If detection is successful, it fills the remaining fields on this menu. |
| IDE Channel 0 Master | None<br>Auto<br>Manual | Selecting 'manual' lets you set the remaining fields on this screen. Selects the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc. Note: PRECOMP=65535 means NONE ! |
| Access Mode | CHS, LBA<br>Large, Auto | Choose the access mode for this hard disk |
| Capacity | Auto Display your disk drive size | Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk |

| | | |
|---|---|---|
| | | checking program. |
| The following options are selectable only if the 'IDE Primary Master' item is set to 'Manual' | | |
| Cylinder | Min=0, Max=65535 | Set the number of cylinders for hard disk |
| Head | Min=0, Max=255 | Set the number of read/write heads |
| Precomp | Min=0, Max=65535 | **** Warning: Setting a value of 65535 means no hard disk |
| Landing zone | Min=0, Max=65535 | **** |
| Sector | Min=0, Max=255 | Number of sectors per track |

## 4.5 Advanced BIOS Features

This section allows you to configure your system for basic operation. You have the opportunity to select the system's default speed, boot-up sequence, keyboard operation, shadowing and security.






**C1E Function**

CPU C1E Function Select.

The choice: Auto, Disabled.

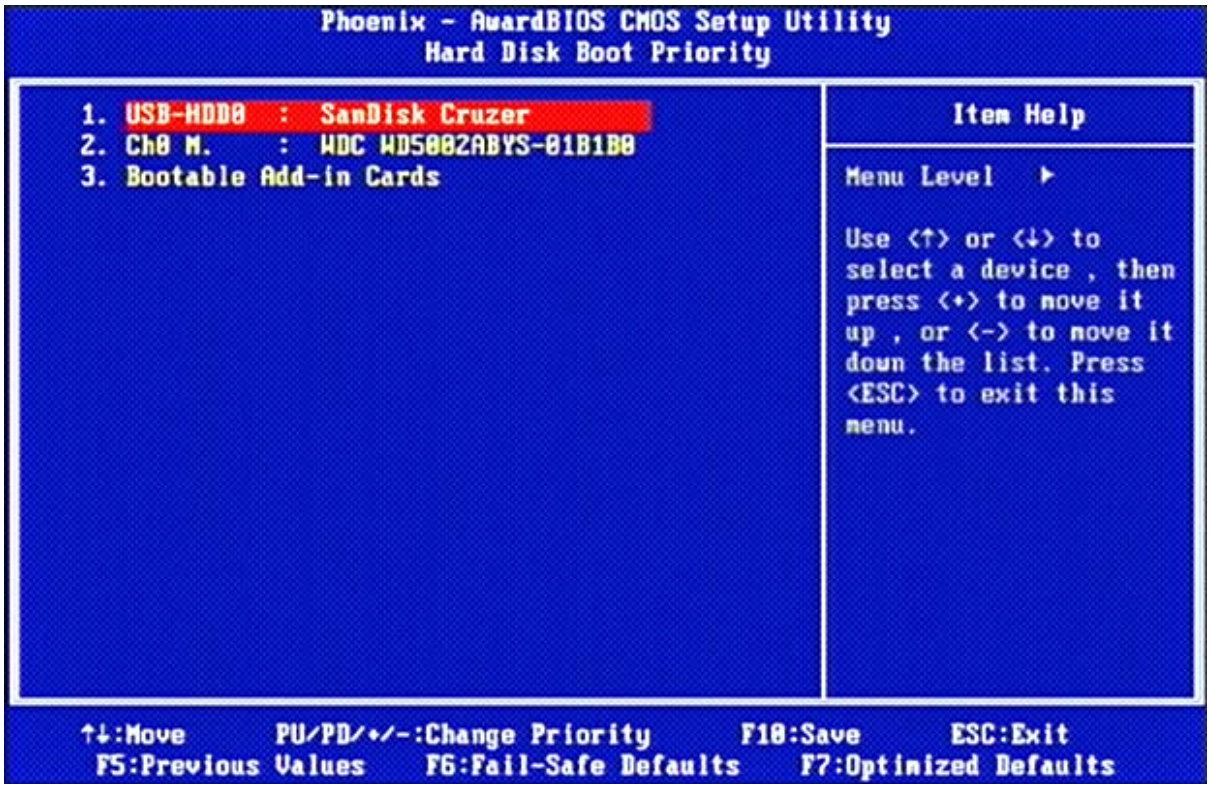
**Execute Disabled Bit**

When disabled, forces the XD feature flag to always return 0.

The choice: Enabled, Disabled.

**Core Multi-Processing**

The choice: Enabled, Disabled.




**Hard Disk Boot Priority**

Select Hard Disk Boot Device Priority. Use < ↑ > or < ↓ > to select a device, then press <+> to move it up, or <-> to move it down the list. Press <ESC> to exit this menu.

**Virus Warning**

Allow you to choose the VIRUS warning feature for IDE Hard Disk boot 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.

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

**CPU L1 Cache/L2 Cache**

These two categories speed up memory access. However, it depends on CPU/chipset design.

| | |
|---|---|
| Enabled | Enable Cache |
| Disabled | Disable Cache |

**Hyper-Threading Technology**

"Enabled" for Windows XP and Linux 2.4.X (OS optimized for Hyper-Threading Technology and "Disabled" for other OS (OS not optimized for Hyper-Threading Technology).

The choice: Enabled, Disabled.

**Quick Power On Self Test**

Allows the system to skip certain tests while boot up. This will shorter the time to boot the system.

| | |
|---|---|
| Enabled | Enable quick POST |
| Disabled | Normal POST |

**First/Second/Third Boot Device**

Select your Boot Device Priority.

The choice: LS120, Hard Disk, CDROM, ZIP 100, USB-FDD, USB-ZIP, USB-CDROM and Disabled.

**Boot Other Device**

Select your Boot Device Priority.

The choice: Enabled, Disabled.

**PXE Boot ROM Control**

Select your boot from PXE.

The choice: Enabled, Disabled.

**Boot Up NumLock Status**

Select power on state for NumLock.

The choice: Off, On.

**Gate A20 Option**

Fast-lets chipsets control GateA20 and Normal – a pin in the keyboard controller controls GateA20. Default is fast.

The choice: Normal, Fast.

**Typematic Rate Setting**

Keyboard repeat at a rate determined by the keyboard controller – when enabled, the typematic rate and typematic delay can de select.

The choice: Disabled, Enabled.

**※Typematic Rate (Chars/sec)**

The rate is which character repeats when you hold down a key.

The choice: 6, 8, 10, 12, 15, 20, 24, and 30. (Default 6)

**※Typematic delay (Msec)**

The delay before keystrokes begin to repeat.

The choice: 250, 500, 750, and 1000. (Default 250)

**Security Option**

Select whether the password is required every time the system boots or only when you enter 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** | The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt. |

**APIC Mode**

The choice: Enabled, Disabled.

**MPS Version Control For OS**

The choice: 1.1, 1.4

**OS Select For DRAM > 64MB**

Select OS/2 only if you are running OS/2 operating system with greater than 64MB of RAM on the system.

The choice: Non-OS2, OS2.

**Report No FDD for WIN 95**

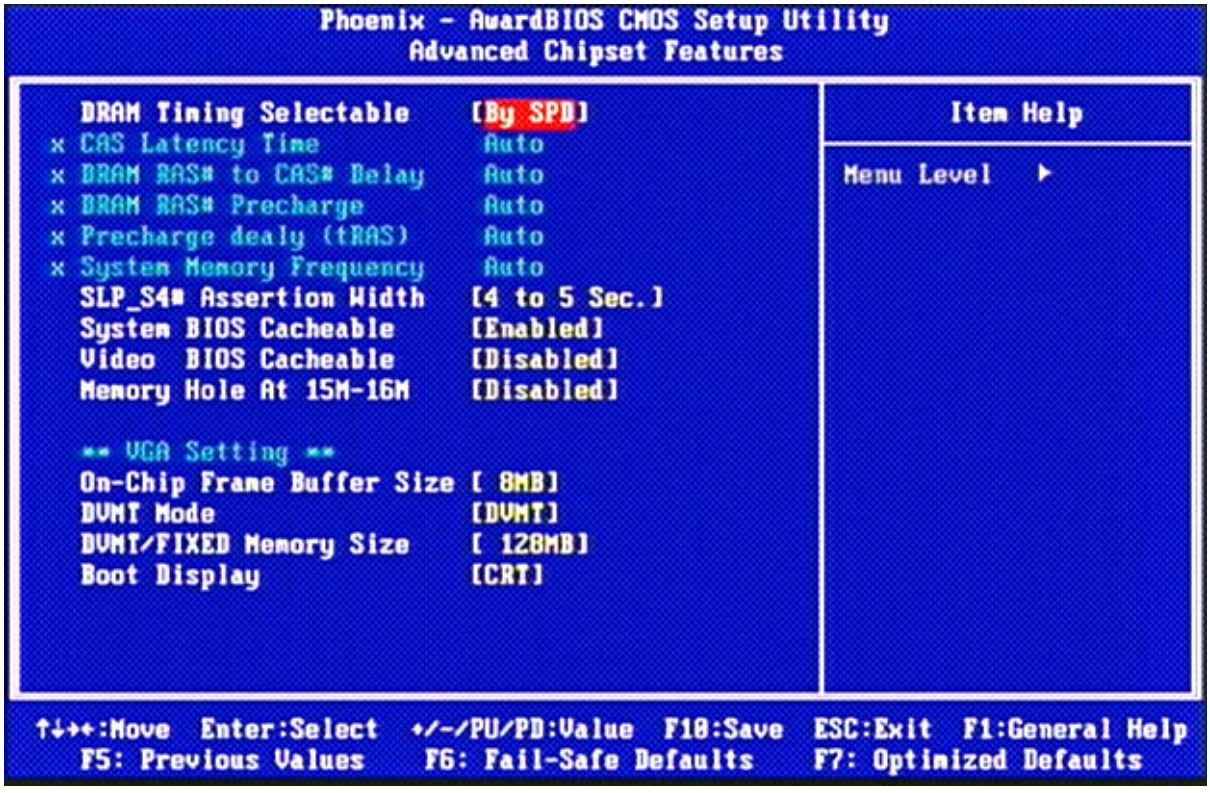
The choice: Yes, No.

**Small Logo (EPA) Show**

The choice: Enabled, Disabled.

## 4.6 Advanced Chipset Features

This section allows you to configure the system based on the specific features of the Intel GME965 chipset. This chipset manages bus speeds and access to system memory resources, such as DDR2 SO-DIMM and the external cache. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for the system. The only time user might consider making any changes would be if you discovered that data was being lost while during system operation.




**DRAM Timing Selectable**

This option provides DIMM plug-and-play support by serial presence detect (SPD) mechanism via the system management bus (SMBUS) interface.

The choice: Manual, By SPD.

**CAS Latency Time**

This option controls the number of SCLKs between the time a read command is sampled by the DRAMs and the time the GMCH samples correspondent data from the DRAMs.

The choice: 3, 4, 5, 6, and Auto.

**DRAM RAS# to CAS# Delay**

This option controls the number of SCLKs (SDRAM Clock) from a row activate command to a read or write command. If your system installs good quality of SDRAM, you can set this option to "3 SCLKs" to obtain better memory performance. Normally, the option will be set to Auto.

The choice: 2, 3, 4, 5, 6, and Auto.

**DRAM RAS# Precharge**

This option controls the number of SCLKs for RAS# precharge. If your system installs good quality of SDRAM, you can set this option to "3 SCLKs" to obtain better memory performance. It is set to auto normally.

The choice: 2, 3, 4, 5, 6, and Auto.

**Precharge delay (tRAS)**

The choice: 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, and 15, Auto.

**System Memory Frequency**

Users are recommended to use Auto for memory frequency selection.

The choice: 400MHz, 533MHz, 667MHz, and Auto.

**SLP_S4# Assertion Width**

The choice: 4 to 5 Sec., 3to 4 Sec, 2 to 3 Sec., 1 to 2 Sec.

**System BIOS Cacheable**

Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

The choice: Enabled, Disabled.

**Video BIOS Cacheable**

Select "Enabled" to enable caching VGA BIOS into L2 cache to get higher display performance. "Disabled" to ignore this BIOS caching function.

The choice: Enabled, Disabled.

**Memory Hole At 15-16M**

In order to improve performance, certain space in memory is reserved for ISA cards. This memory must be mapped into the memory space below 16MB.

The choice: Enabled, Disabled.

**On-Chip Frame Buffer Size**

Users can set the display memory size that shared from main memory.

The choice: 1MB, 8MB.

**DVMT Mode**

The choice: FIXED, DVMT, BOTH

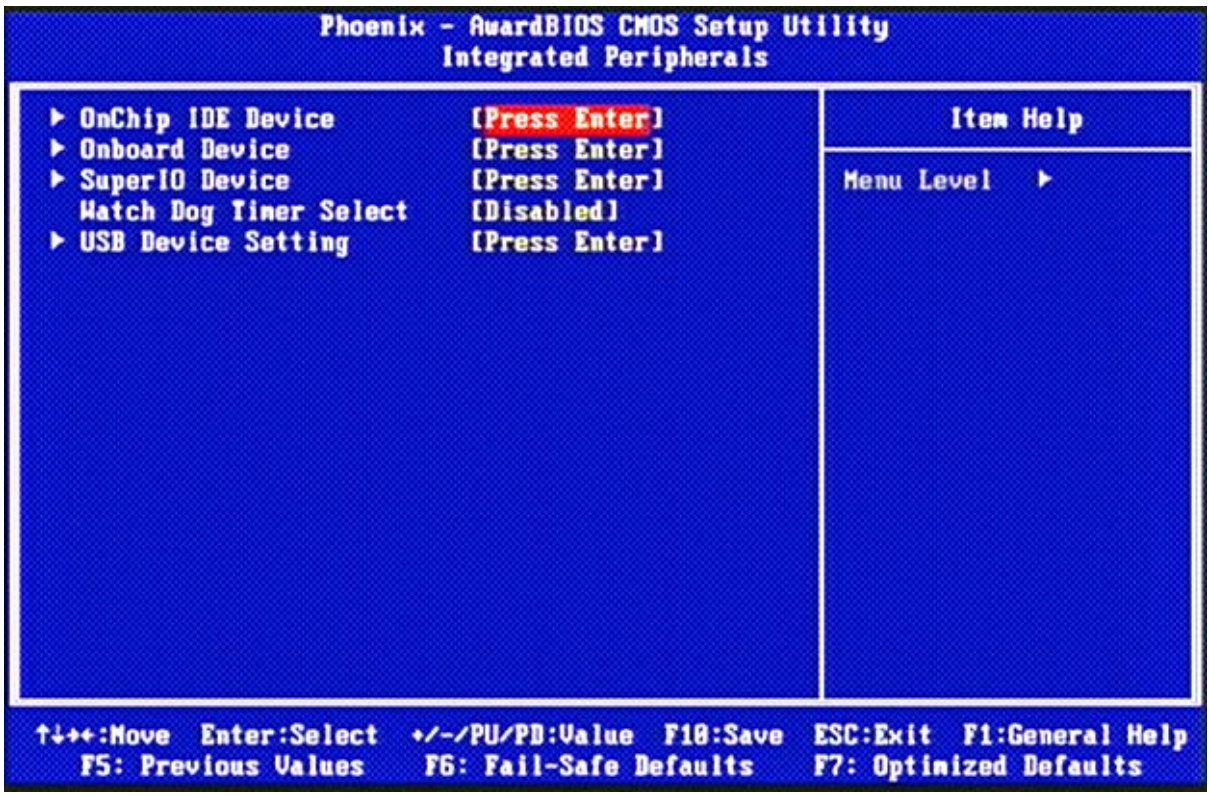
**DVMT/FIXED Memory Size**

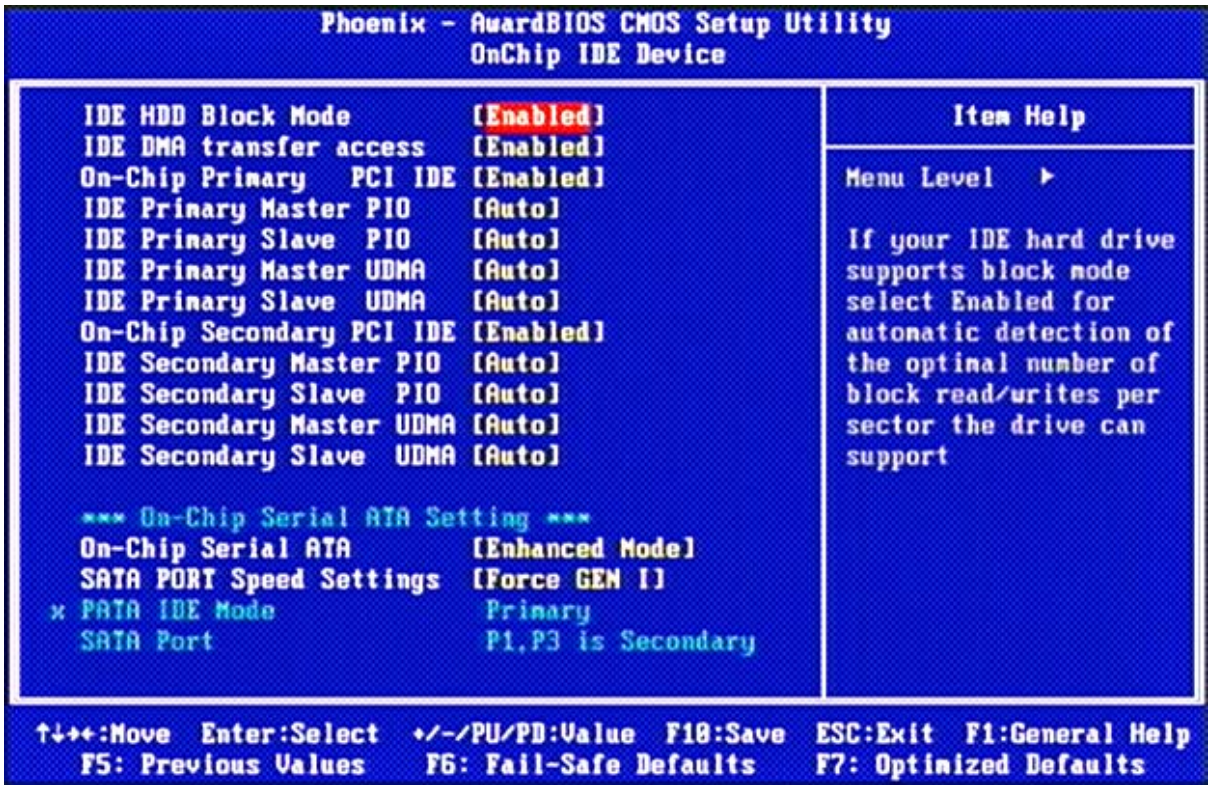
The Choice: 64MB, 128MB, 224MB.

**Boot Display**

The choice: CRT, DVI, CRT+DVI.

## 4.7 Integrated Peripherals



**IDE HDD Block Mode**

If IDE hard drive supports block mode select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.

The choice: Enabled, Disabled.

**IDE DMA transfer access**

The choice: Enabled, Disabled.

**On-Chip Primary/ Secondary PCI IDE**

The chipset contains a PCI IDE interface with support for two IDE channels. Select Enabled to activate the primary IDE interface. Select Disabled to deactivate this interface.

The choice: Enabled, Disabled

**IDE Primary/Secondary Master/Slave PIO**

The four IDE PIO (Programmed Input/Output) fields allow set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.

The choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

**IDE Primary/Secondary Master/Slave UDMA**

Ultra DMA/33/66/100 implementation is possible only if IDE hard drive supports and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and system software both support Ultra DMA/33/66/100, select Auto to enable BIOS support.

The choice: Auto, Disabled.

**On-Chip Serial ATA**

| | |
|---|---|
| Disabled | Disabled SATA Controller |
| Auto | Auto arrange by BIOS |
| Combined Mode | PATA and SATA are combined. Max. of 2 IDE drives in each Channel |
| Enhanced Mode | Enable both SATA and PATA. Max. of 6 IDE drives are Supported |
| SATA Only | SATA is operating in legacy mode |

The choice: Disabled, Auto, Combined Mode, Enhanced Mode, SATA Only.

**SATA PORT Speed Settings**

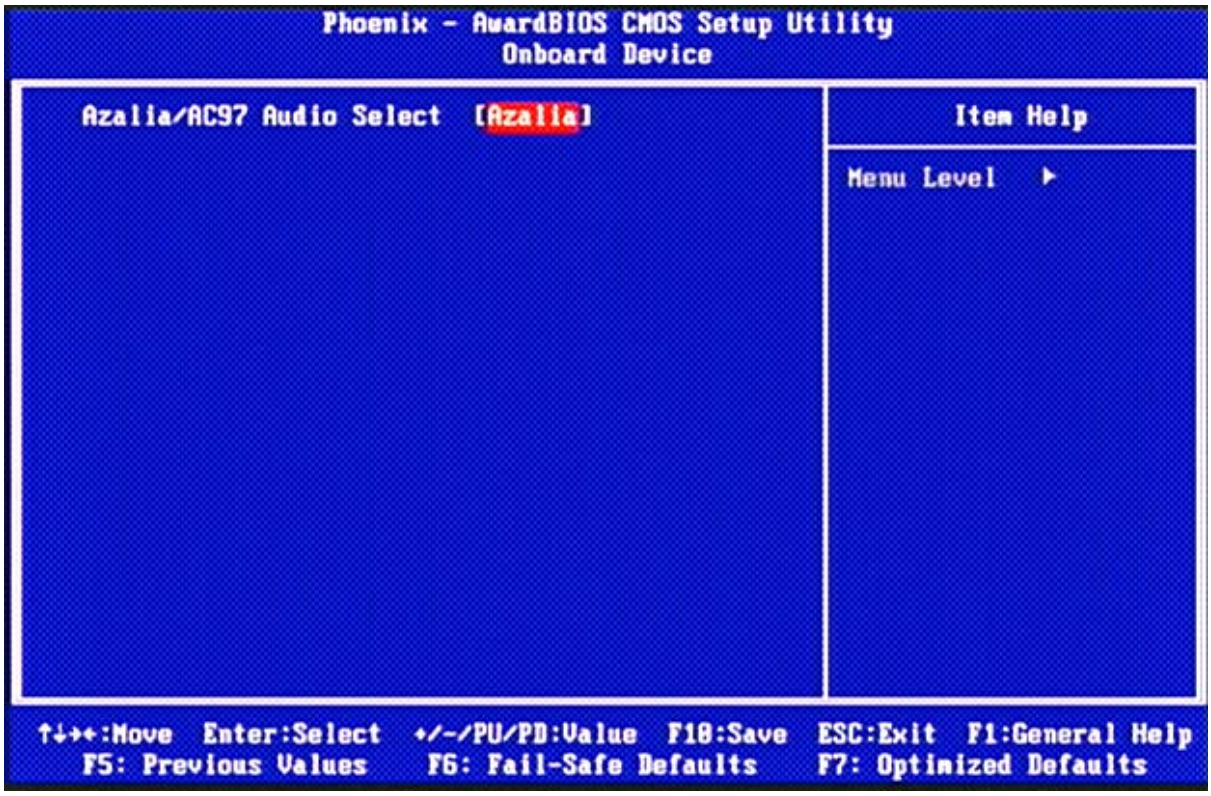
The choice: Force GEM I, Force GEM II.

**PATA IDE Mode**

The choice: Primary, Secondary

***SATA PORT**

**Onboard Device**

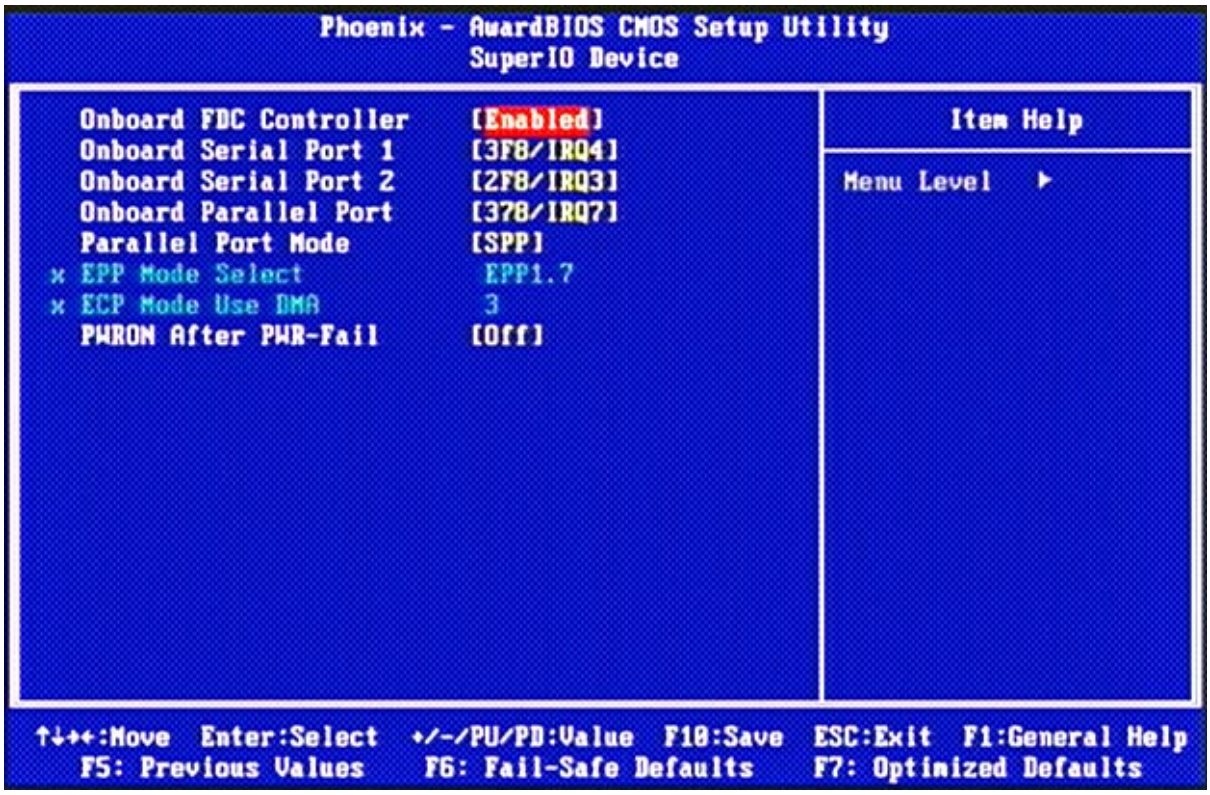



**Azalia/AC97 Audio Select**

This item allows control to Enable/Disable Audio function.

The choice: Azalia, Disabled.

## Super IO Device




### Onboard FDC Controller

This item allows enable/disable onboard Floppy disk controller.

The choice: Enabled, Disabled.

### Onboard Serial Port 1/Port 2

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

The choice: Disabled, 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3, Auto.

### Onboard Parallel Port

This item allows you to configuring I/O address of the onboard parallel port.

The choice: Disabled, 378/IRQ7, 278/IRQ5, 3BC/IRQ7.

### Parallel Port Mode

There are four different modes for the onboard parallel port :

| | |
|---|---|
| **SPP** | Switch to SPP mode |
| **EPP** | Switch to EPP mode |
| **ECP** | Switch to ECP mode |
| **ECP + EPP** | Switch to ECP + EPP mode |

**EPP Mode Select**

Select different version of EPP mode.

The choice: EPP1.7, EPP1.9.

**ECP Mode Use DMA**

Select a proper DMA channel for ECP mode.

The choice: 3, 1.

**PWRON After PWR-Fail**

This item allows user to configure the power status of using ATX power supply after a serious power loss occurs.

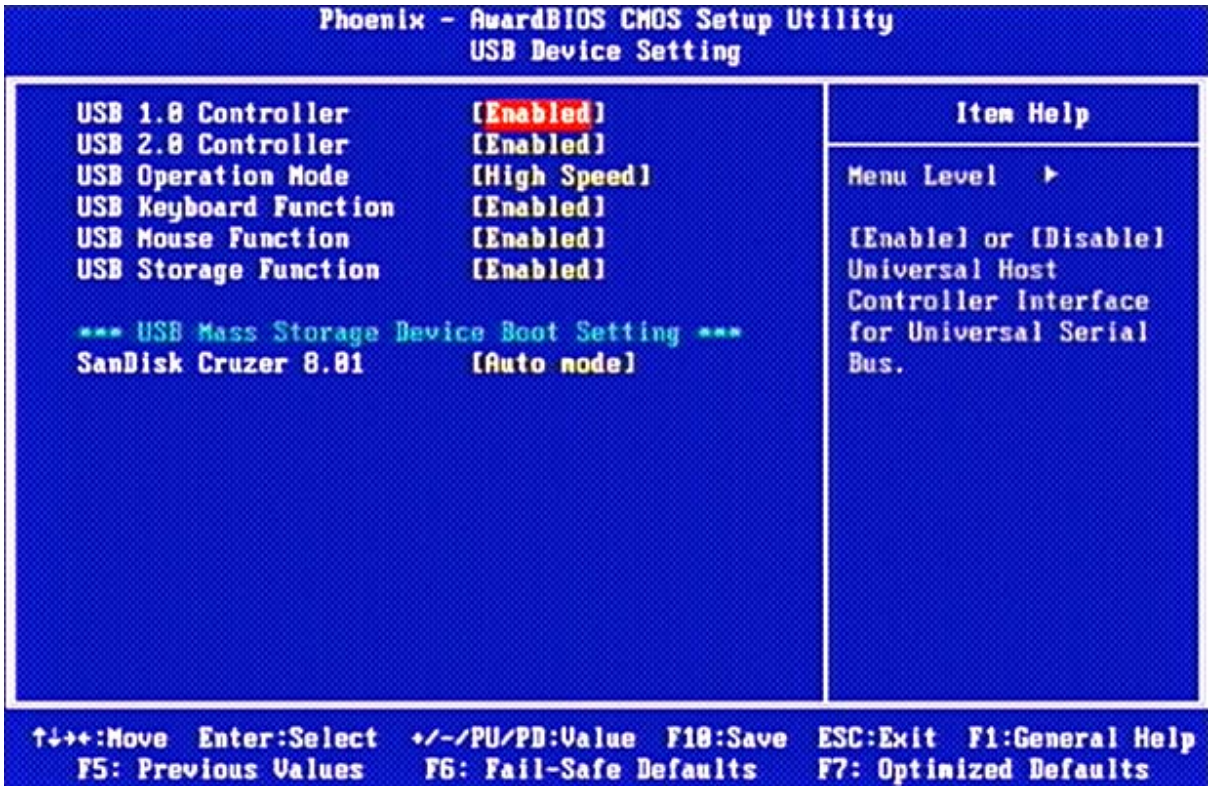
The choice: Off, On, Former-Sts

**Watch Dog Timer Select**

This BIOS testing option is able to reset the system according to the selected table.

The choice: Disabled, 10 Sec, 20 Sec, 30 Sec, 40 Sec, 1 Min, 2 Min, and 4 Min.

**USB Device Setting**



**USB 1.0 Controller**

[Enabled] or [Disabled] Universal host controller interface for universal serial bus.

The choice: Enabled, Disabled.

**USB 2.0 Controller**

[Enabled] or [Disabled] Enhanced host controller interface for universal serial bus.

The choice: Enabled, Disabled.

**USB Operation Mode**

Auto decides USB device operation mode. [High speed]: If USB device was high speed device, then it operated on high speed mode. If USB device was full/low speed device, then it operated on full/low speed mode; [Full/Low speed]: All of USB device operated on Full/Low speed mode.

The choice: High Speed, Full/Low Speed.

**USB Keyboard/Mouse Function**

[Enabled] or [Disabled] Legacy support of USB keyboard or mouse.

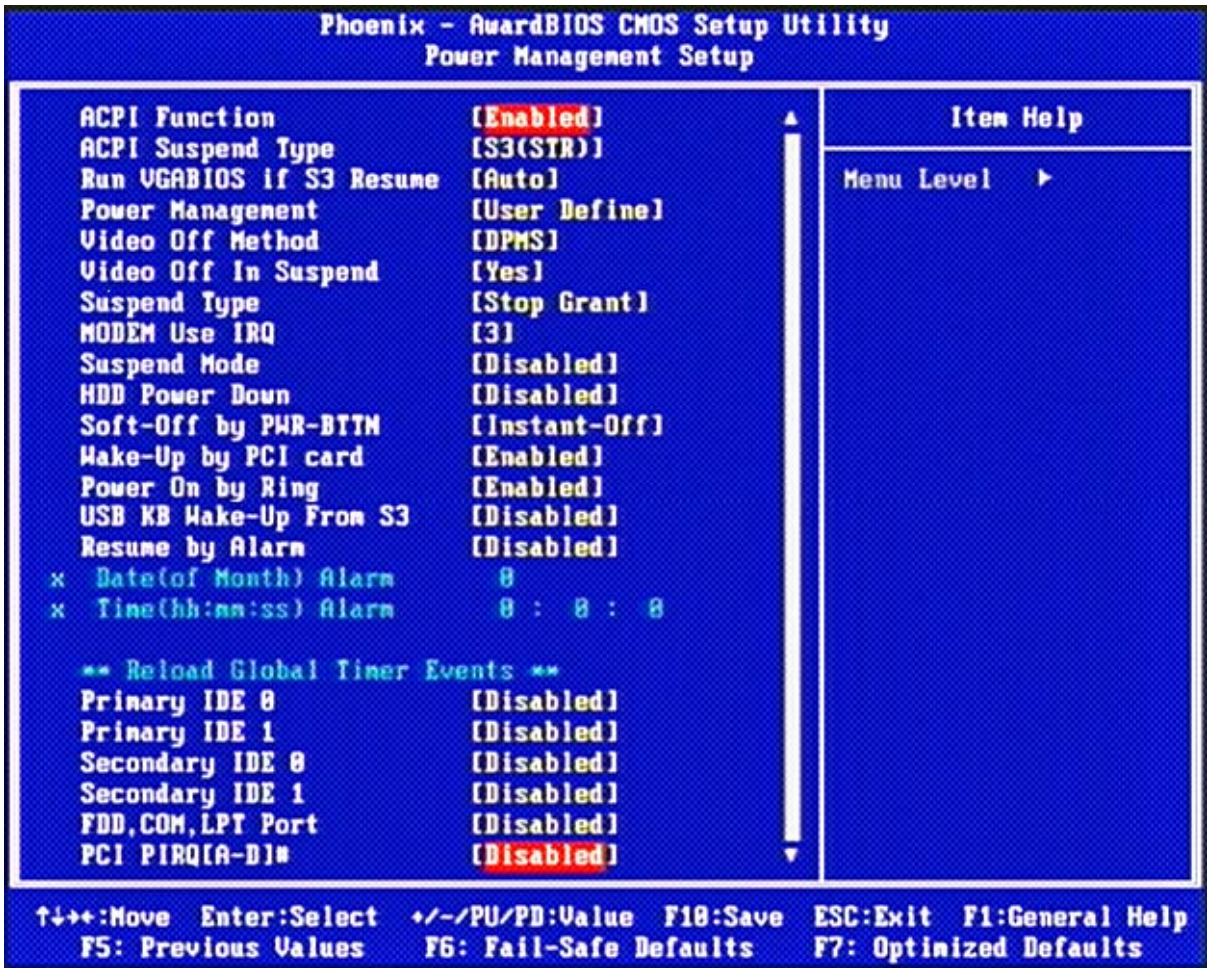
The choice: Disabled, Enabled.

**USB Storage Function**

[Enabled] or [Disabled] Legacy support of USB Mass Storage.

## 4.8 Power Management Setup

The Power Management Setup allows configuration of the system to most effectively save energy while operating in a manner consistent with your own style of computer use.




**ACPI Function**

This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI).

The choice: Enabled, Disabled.

**ACPI Suspend Type**

To decide which ACPI suspend mode to use.

The choice: S1 (POS), S3 (STR).

**Run VGA BIOS if S3 Resume**

The choice: Auto, Yes, No.

**Power Management**

This category allows selecting the type (or degree) of power saving and is directly related to "HDD Power Down", "Suspend Mode".

There are three selections for Power Management, three of which have fixed mode settings.

| | |
|---|---|
| **Min. Power Saving** | Minimum power management. Suspend Mode = 1 Hour, and HDD Power Down = 15 Min. |
| **Max. Power Saving** | Maximum power management. Suspend Mode = 1 Min., and HDD Power Down = 1 Min. |
| **User Defined** | Allows you to set each mode individually. When not disabled, Suspend Mode ranges from 1 min. to 1 Hour and HDD Power Down ranges from 1 Min. to 15 Min. |

**Video off Method**

This determines the manner in which the monitor is blanked.

| | |
|---|---|
| **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. |
| **Blank Screen** | This option only writes blanks to the video buffer. |
| **DPMS** | Initial display power management signaling. |

**Video Off In Suspend**

This allows user to enable/disable video off in Suspend Mode.

The choice: Yes, No.

**Suspend Type**

Two options are available: Stop Grant and PwrOn Suspend.

The choice: Stop Grant, PwrOn Suspend.

**MODEM Use IRQ**

The choice: NA, 3,4,5,7,9,10,11.

**Suspend Mode**

When enabled and after the set time of system inactivity, all devices except the CPU will be shut off.

The choice: Disabled, 1 Min, 2 Min, 4 Min, 8 Min, 12 Min, 20 Min, 30 Min, 40 Min, and 1 Hour.

**HDD Power Down**

When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

The choice: Disabled, 1 Min, 2 Min, 3 Min, 4 Min, 5 Min, 6 Min, 7 Min, 8 Min, 9 Min, 10 Min, 11 Min, 12 Min, 13 Min, 14 Min, 15 Min.

**Soft-Off by PWR-BTTN**

This item allows users to set the time to remove the power after the power button is pressed.

The choice: Instant-Off, Delay 4 Sec.

**Wake-Up By PCI Card**

The choice: Disabled, Enabled.

**Power On by Ring**

When select "Enabled", a system that is at soft-off mode will be alert to Wake-On-Modem signal.

The choice: Enabled, Disabled.

**USB KB Wake-Up From S3**

The choice: Enabled, Disabled.

**Resume by Alarm**

This item allows users to enable/disable the resume by alarm function. When "Enabled" is selected, system using ATX power supply could be powered on if a customized time and day is approached.

The choice: Enabled, Disabled.

**※Date(of Month) Alarm**

When "Resume by Alarm" is enabled, this item could allow users to configure the date parameter of the timing dateline on which to power on the system.

The choice: 0 ~ 31.

**※Time (hh:mm:ss) Alarm**

When "Resume by Alarm" is enabled, this item could allow users to configure the time parameter of the timing dateline on which to power on the system.

The choice: hh (0~23), mm (0~59), ss (0 ~59).

**Primary/Secondary IDE 0/1**

This item is to configure IDE devices being monitored by system so as to keep system out of suspend mode if the associated device is busy.

The choice: Enabled, Disabled.

**FDD, COM, LPT Port**

This item is to configure floppy device, COM ports, and parallel port being monitored by system so as to keep system out of suspend mode if the associated device is busy.

The choice: Enabled, Disabled.

**PCI PIRQ[A-D]#**

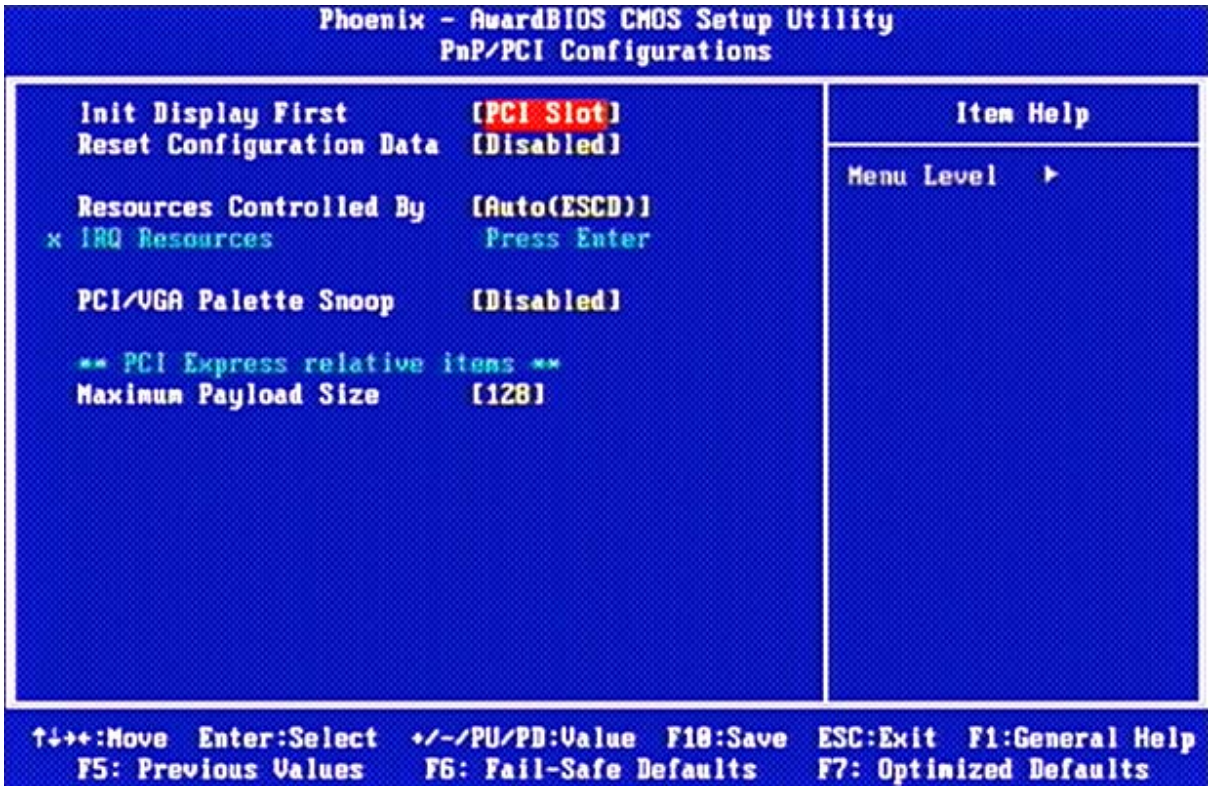
This option can be used to detect PCI device activities. If they are activities, the system will go into sleep mode.

The choice: Enabled, Disabled.

## 4.9 PnP/PCI Configurations

This section describes configuring the PCI bus system. PCI, or **P**ersonal **C**omputer **I**nterconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components.

This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.




**Init Display First**

The choice: PCI Slot, Onboard, PCIEx.

**Reset Configuration Data**

Default is Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot.

The choice: Enabled, Disabled.

**Resource Controlled By**

BIOS can automatically configure the entire boot and plug and play compatible devices. If set to Auto, IRQ DMA and memory base address fields can not be selected, since BIOS automatically assigns them.

The choice: Auto (ESCD), Manual.

**※IRQ Resources**

When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the interrupt.

The choice: Press Enter.

IRQ-3/IRQ-4/IRQ-5/IRQ-7/IRQ-9/IRQ-10/IRQ-11/IRQ-12/IRQ-14/IRQ-15 assigned to.

The choice: PCI Device, Reserved.

**PCI/VGA Palette Snoop**

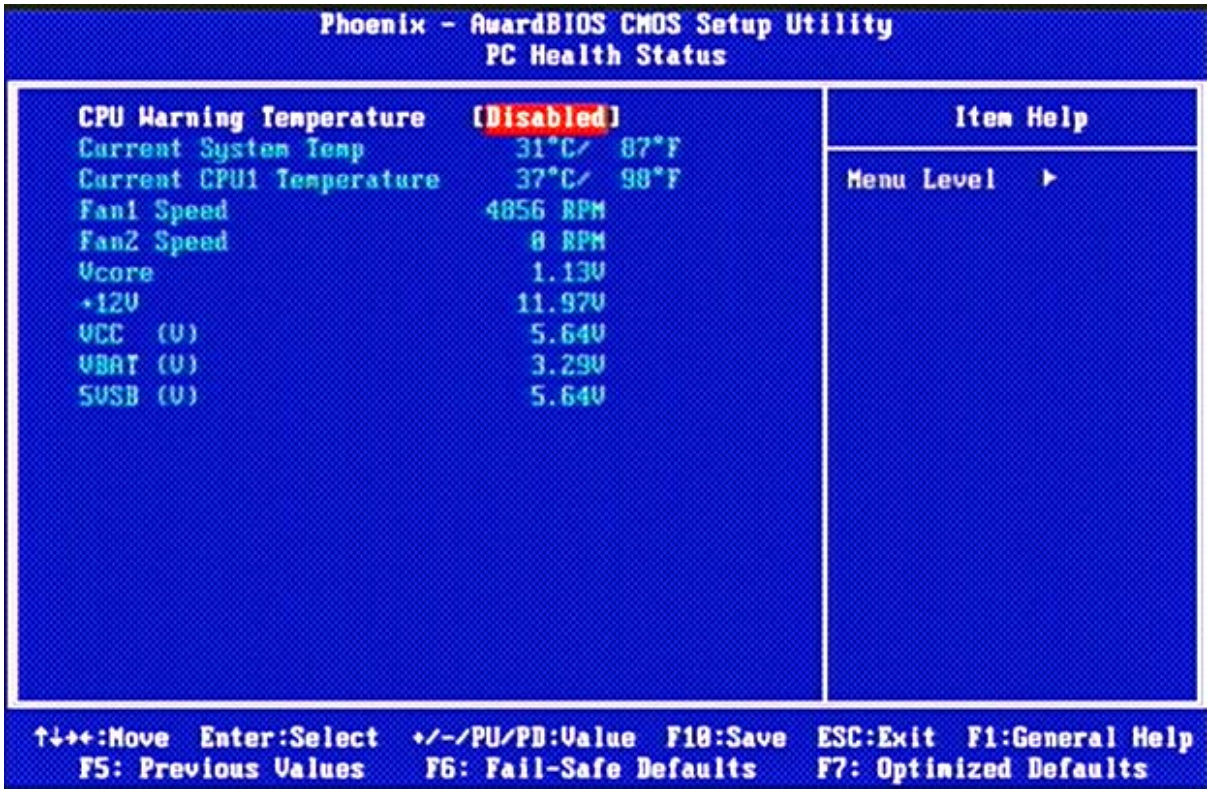
Legacy ISA for devices compliant with the original PC AT bus specification, PCI PnP for devices compliant with the plug and play standard whether designed for PCI bus architecture.

The choice: Enabled, Disabled.

**Maximum Payload Size.**

Default 4096.
The choice: 128, 256, 512, 1024, 2048, 4096.

## 4.10 PC Health Status




**CPU Warning Temperature**

This item allows you to set a temperature above which the system will start the beeping warning. Default setting is disabled. This function will only with "ACPI" power management and "S3 (STR)" suspends type.

The choices : Disabled, 50℃/122°F, 53℃/127°F, 56℃/133°F, 60℃/140°F, 63℃/145 °F, 66℃/151°F, 70℃/158°F.

## 4.11 Default Menu

Selecting "Defaults" from the main menu shows two options which are described below,

**Load Fail-Safe Defaults**

When <Enter> is pressed, a confirmation dialog box with a message similar to:

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

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

**Load Optimized Defaults**

When <Enter> is pressed, 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.

## 4.12 Supervisor/User Password Setting

Either supervisor or user password can be setup, or both of then. The differences between are:

**Set Supervisor Password :** can enter and change the options of the setup menus.

**Set User Password** : just can only enter but do not have the right to change the options of the setup menus. When selecting 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 prompted to enter the password. A message will confirm the password will be disabled. Once the password is disabled, the system will reboot and Setup can be entered freely.

**PASSWORD DISABLED**

When a password has been enabled, user will be prompted to enter it every time user tries 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 the computer.

User may determine when the password is required within the BIOS Features Setup Menu and its Security option (see Section 3). 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.

## 4.13 Exiting Selection

**Save & Exit Setup**

Pressing <Enter> on this item asks for confirmation:

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

Pressing "Y" stores the selections made in the menus in CMOS – a special section of memory that stays on after system off. During subsequnet booting of computer, the BIOS configures the system according to the Setup selections stored in CMOS. After saving the values the system is restarted again.

**Exit Without Saving**

Pressing <Enter> on this item asks for confirmation:

Quit Without Saving (Y/N)? N

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

# Chapter 5
# Troubleshooting

This chapter provides a few useful tips to quickly get ROBO-8776 running with success. As basic hardware installation has been addressed in Chapter 2, this chapter will primarily focus on system integration issues, in terms of BIOS setting, and OS diagnostics.

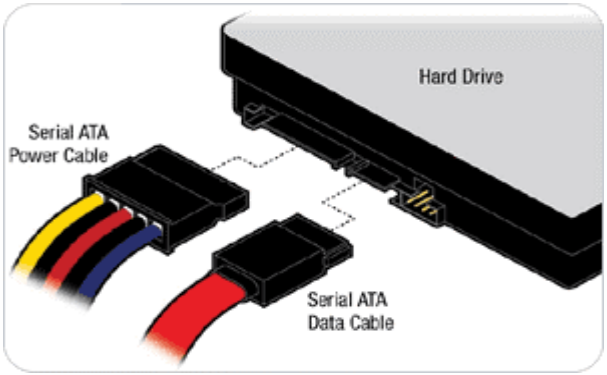
## 5.1 Hardware Quick Installation

**Backplane**

ROBO-8776 is a full-sized Signal Board Computer, and therefore is only able to run on PICMG PCI/ISA backplane. To know whether your backplane is PICMG PCI/ISA backplane, please contact with vendor or manufacturer.

**Serial ATA and IDE Hard Disk Setting**

Unlike IDE bus, each Serial ATA channel can only connect to one SATA hard disk at a time; there are total two connectors, J14 and J15. The installation of Serial ATA is simpler and easier than IDE, because SATA hard disk doesn't require setting up Master and Slave, which can reduce mistake of hardware installation.



## 5.2 BIOS Setting

It is assumed that users have correctly adopted modules and connected all the devices cables required before turning on DC 12V power. 240-pin DDR2 SDRAM, keyboard, mouse, SATA hard disk, VGA connector, device power cables, ATX accessories are good examples that deserve attention. With no assurance of properly and correctly accommodating these modules and devices, it is very possible to encounter system failures that result in malfunction of any device.

To make sure that you have a successful start with ROBO-8776, it is recommended, when going with the boot-up sequence, to hit "DEL" key and enter the BIOS setup menu to tune up a stable BIOS configuration so that you can wake up your system far well.

**Loading the default optimal setting**

When prompted with the main setup menu, please scroll down to "**Load Optimal Defaults**", press "Enter" and "Y" to load in default optimal BIOS setup. This will force your BIOS setting back to the initial factory configuration. It is recommended to do this so you can be sure the system is running with the BIOS setting that Portwell has highly endorsed. As a matter of fact, users can load the default BIOS setting any time when system appears to be unstable in boot up sequence.

**Auto Detect Hard Disks**

In the BIOS => Standard CMOS setup menu, pick up any one from Primary/Secondary Master/Slave IDE ports, and press "Enter". Setup the selected IDE port and its access mode to "Auto". This will force system to automatically pick up the IDE devices that are being connected each time system boots up.

**Improper disable operation**

There are too many occasions where users disable a certain device/feature in one application through BIOS setting. These variables may not be set back to the original values when needed. These devices/features will certainly fail to be detected.

When the above conditions happen, it is strongly recommended to check the BIOS settings. Make sure certain items are set as they should be. These include the COM1/ COM2 ports, USB ports, external cache, on-board VGA and Ethernet.

It is also very common that users would like to disable a certain device/port to release IRQ resource. A few good examples are

Disable COM1 serial port to release IRQ #4
Disable COM2 serial port to release IRQ #3
Etc…

A quick review of the basic IRQ mapping is given below for your reference.

| IRQ# | Description |
|---|---|
| IRQ #0 | System Timer |
| IRQ #1 | Keyboard Event |
| IRQ #2 | Usable IRQ |
| IRQ #3 | COM2 |
| IRQ #4 | COM1 |
| IRQ #5 | Usable IRQ |
| IRQ #6 | Diskette Event |
| IRQ #7 | Usable IRQ |
| IRQ #8 | Real-Time Clock |
| IRQ #9 | Usable IRQ |
| IRQ #10 | Usable IRQ |
| IRQ #11 | Usable IRQ |
| IRQ #12 | IBM Mouse Event |
| IRQ #13 | Coprocessor Error |
| IRQ #14 | Hard Disk Event |
| IRQ #15 | Usable IRQ |

It is then very easy to find out which IRQ resource is ready for additional peripherals. If IRQ resource is not enough, please disable some devices listed above to release further IRQ numbers.

## 5.3 FAQ

**Symptom: SBC keeps beeping, and no screen has shown.**

**Solution:** In fact, each beep sound represents different definition of error message. Please refer to table as following:

| Beep sounds | Meaning | Action |
|---|---|---|
| One long beep with one short beeps | DRAM error | Change DRAM or reinstall it |
| One long beep constantly | DRAM error | Change DRAM or reinstall it |
| One long beep with two short beeps | Monitor or Display Card error | Please check Monitor connector whether it inserts properly |
| Beep rapidly | Power error warning | Please check Power mode setting |

**Information & Support**

**Question:I forget my password of system BIOS, what am I supposed to do?**

**Answer:** You can simply short 2-3 pins on JP4 to clean your password.

**Note:**
Please visit our technical web site at
http://www.portwell.com.tw
For additional technical information, which is not covered in this manual, you can mail to tsd@mail.portwell.com.tw or you can also send mail to our sales, they will be very delighted to forward them to us.

**System Memory Address Map**

Each On-board device in the system is assigned a set of memory addresses, which also can be identical of the device. The following table lists the system memory address used.

| Memory Area | Size | Device Description |
|---|---|---|
| 0000-003F | 1K | Interrupt Area |
| 0040-004F | 0.3K | BIOS Data Area |
| 0050-006F | 0.5K | System Data |
| 0070-0E2E | 54K | DOS |
| 0E2F-0F6B | 5K | Program Area |
| 0F6C-9EFF | 574K | [Available] |
| | | |
| First Meg | -- Conventional memory end at 636K -- | |
| 9F00-9FBF | 3K | Extended BIOS Area |
| 9FC0-9FFF | 1K | Unused |
| A000-AFFF | 64K | VGA Graphics |
| B000-B7FF | 32K | Unused |
| B800-BFFF | 32K | VGA Text |
| C000-CADF | 43K | Video ROM |
| CAE0- EFFF | 148K | Unused |
| F000-FFFF | 64K | System ROM |

**Interrupt Request Lines (IRQ)**

Peripheral devices can use interrupt request lines to notify CPU for the service required. The following table shows the IRQ used by the devices on board.

| IRQ# | Current Use | Default Use |
|---|---|---|
| IRQ 0 | System ROM | System Timer |
| IRQ 1 | System ROM | Keyboard Event |
| IRQ 2 | [Unassigned] | Usable IRQ |
| IRQ 3 | System ROM | COM2 |
| IRQ 4 | System ROM | COM1 |
| IRQ 5 | [Unassigned] | Usable IRQ |
| IRQ 6 | System ROM | Diskette Event |
| IRQ 7 | [Unassigned] | Usable IRQ |
| IRQ 8 | System ROM | Real-Time Clock |
| IRQ 9 | [Unassigned] | Usable IRQ |
| IRQ 10 | [Unassigned] | Usable IRQ |
| IRQ 11 | [Unassigned] | Usable IRQ |
| IRQ 12 | System ROM | IBM Mouse Event |
| IRQ 13 | System ROM | Coprocessor Error |
| IRQ 14 | System ROM | Hard Disk Event |
| IRQ 15 | [Unassigned] | Usable IRQ |