# Mini-ITX

# AIMB-240 Series

**Intel® Pentium® 4 / Celeron™ Mini ITX Motherboard**

# User's Manual

**2nd Edition – March 2007**

## FCC Statement

THIS DEVICE COMPLIES WITH PART 15 FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:

(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE.

(2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.

THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS "A" DIGITAL DEVICE, PURSUANT TO PART 15 OF THE FCC RULES.

THESE LIMITS ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST HARMFUL INTERFERENCE WHEN THE EQUIPMENT IS OPERATED IN A COMMERCIAL ENVIRONMENT. THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND, IF NOT INSTATLLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS.

OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE IN WHICH CASE THE USER WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT HIS OWN EXPENSE.

## Notice

This guide is designed for experienced users to setup the system within the shortest time. For detailed information, please always refer to the electronic user's manual.

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Advantech warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which have been subject to misuse, abuse, accident or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events. Because of Advantech high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If any of Advantech products is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time, and freight. Please consult your dealer for more details. If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU type and speed, Advantech products model name, hardware & BIOS revision number, other hardware and software used, etc.) Note anything abnormal and list any on-screen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information available.
3. If your product is diagnosed as defective, obtain an RMA (return material authorization) number from your dealer. This allows us to process your good return more quickly.
4. Carefully pack the defective product, a complete Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

# Contents

## AIMB-240 Series

# 1. Getting Started

## 1.1 Safety Precautions

**Warning!**

Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.

**Caution!**

Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.

## 1.2 Packing List

Before you begin installing your single board, please make sure that the following materials have been shipped:

- 1 x AIMB-240 Intel Socket 478 Pentium® 4/Celeron<sup>TM</sup> Mini ITX Board
- 1 x CD-ROM contains the followings:
    - User's Manual (this manual in PDF file)
    - Intel INF driver
    - Ethernet driver and utilities
    - VGA drivers and utilities
    - Audio drivers and utilities
- 1 x IDE HDD cable (40-pin, pitch 2.54mm)
- 1 x IDE HDD cable (44-pin, pitch 2mm)
- 1 x FDD cable (34-pin, pitch 2.54mm)
- 1 x Serial port cable with DB9P(M)
- 1 x Secondary port cable 14P FLAT to DB9P(M)
- 1 x I/O bracket
- 1 x Warranty Card

\* CPU Cooler is not included in packing list.  Please order Advantech's certified CPU cooler.

If any of the above items is damaged or missing, contact your retailer.

## 1.3 Document Amendment History

| Revision | Date | Comment |
|----------|------|---------|
| 1$^{st}$ | Jan. 2007 | Initial release |
| 2$^{nd}$ | Mar. 2007 | Update 2.4.20-front panel connector |

## 1.4 Manual Objectives

This manual describes in detail the Advantech Technology AIMB-240 series Single Board.

We have tried to include as much information as possible but we have not duplicated information that is provided in the standard IBM Technical References, unless it proved to be necessary to aid in the understanding of this board.

We strongly recommend that you study this manual carefully before attempting to interface with AIMB-240 series or change the standard configurations. Whilst all the necessary information is available in this manual we would recommend that unless you are confident, you contact your supplier for guidance.

Please be aware that it is possible to create configurations within the CMOS RAM that make booting impossible. If this should happen, clear the CMOS settings, (see the description of the Jumper Settings for details).

If you have any suggestions or find any errors concerning this manual and want to inform us of these, please contact our Customer Service department with the relevant details.

## 1.5 System Specifications

| System | |
|---|---|
| **Model** | **AIMB-240F-00A1E** |
| **CPU** | Supports Intel® µFC-PGA 478 Pentium® 4 / Celeron™ up to 2.8 GHz with 0.13µ process technology |
| **FSB** | 400/533 MHz |
| **BIOS** | Award 512 KB Flash BIOS |
| **System Chipset** | Intel® 852GME GMCH/ICH4 |
| **I/O Chip** | Winbond W83627HF-AW |
| **System Memory** | One 184-pin DIMM socket supports up to 1 GB DDR 266/333 SDRAM |
| **SSD** | One Compact Flash Type I/II socket |
| **Watchdog Timer** | Reset: 1 sec.~255 min. and 1 sec. or 1 min./step |
| **H/W Status Monitor** | Monitoring system temperature, voltage, and cooling fan status. Auto throttling control when CPU overheats. |
| **Expansion** | One PCI slot (PCI Rev. 2.2 compliant) |
| I/O | |
| **MIO** | 2 x EIDE (Ultra DMA 100), 1 x FDD , 1 x LPT, 5 x RS-232, 1x RS-232/422/485, 1x K/B,   1 x Mouse |
| **IrDA** | 115k bps, IrDA 1.0 compliant |
| **USB** | 6 x USB 2.0 ports |
| **DIO** | 16-bit General Purpose I/O for DI and DO |

**AIMB-240 Series**

| Display | |
|---|---|
| **Model** | **AIMB-240F-00A1E** |
| **Chipset** | Intel® 852GME GMCH integrated Extreme Graphics 2 controller |
| **Display Memory** | Intel® DVMT 2.1 supports up to 64 MB video memory |
| **Resolution** | CRT mode: 1600 x 1200 @ 32 bpp (85 Hz)<br>LCD/Simultaneous mode: 1600 x 1200 @ 32 bpp (85 Hz) |
| **Dual Display** | CRT + LVDS, or DVI/TV-out + LVDS or CRT + DVI |
| **LVDS** | Single-channel 18-bit/ Dual-channel 36-bit LVDS |
| **DVI** | Chrontel CH7009A DVI transmitter up to 135M pixels/second |
| **TV-Out** | Chrontel CH7009A TV encoder supports both NTSC/PAL<br>Supports both S-Video and composite video |
| **Audio** | |
| **Chipset** | **Intel® ICH4** |
| **AC97 Codec** | Realtek™ ALC655 supports 5.1CH AC97 Audio |
| **Audio Interface** | **Mic in, Line in, CD Audio in, Line out** |
| **Ethernet** | |
| **LAN1** | Realtek RTL8110C 10/100 Mbos |
| **LAN2** | Realtek RTL8110C 10/100 Mbos |
| **Ethernet Interface** | 100 Base-Tx Fast Ethernet compatible: Realtek™ RTL8110C |

| Mechanical & Environmental | |
|---|---|
| Model | **AIMB-240F-00A1E** |
| Power Requirement | +5 V @ 1.41 A, +12 V @ 5.19 A, +3.3 V @ 4.84 A, 5 Vsb @ 0.5 A<br>(Intel Pentium 4 2.4 GHz/ 1 GB SDRAM) |
| Power Type | AT/ATX |
| Operation Temperature | 0~60$^o$ C (32~140 $^o$ F) |
| Operating Humidity | 0%~90% relative humidity, non-condensing |
| Size ( L x W ) | 6.69" x 6.69" (170 mm x 170 mm) |
| Weight | 0.88 lbs (0.4 Kg) |

# 1.6 Architecture Overview

### 1.6.1    Block Diagram

The following block diagram shows the architecture and main components of AIMB-240.
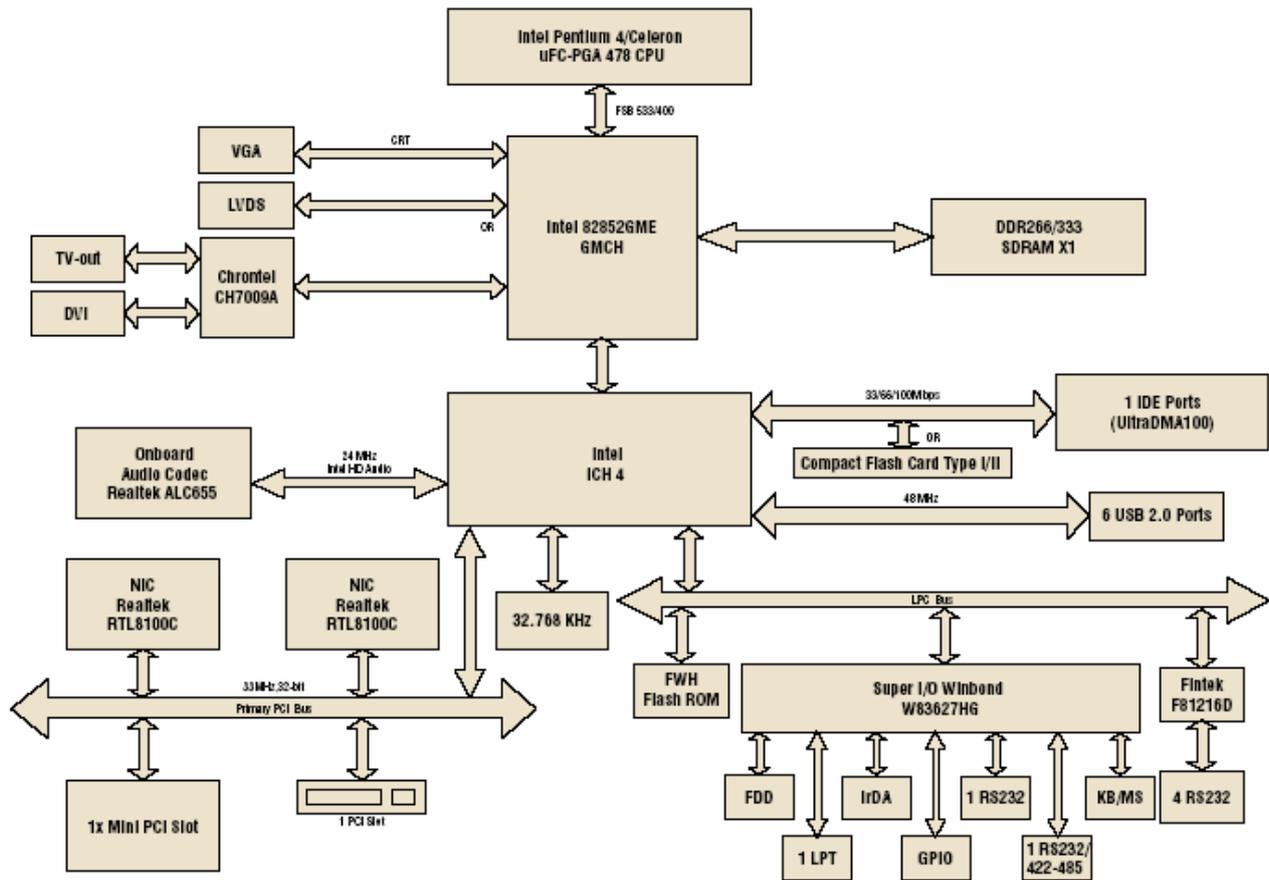


The following sections provide detail information about the functions provided onboard.

## 1.7 Architecture Overview

### 1.6.2 Block Diagram

The following block diagram shows the architecture and main components of AIMB-240F-00A1E.
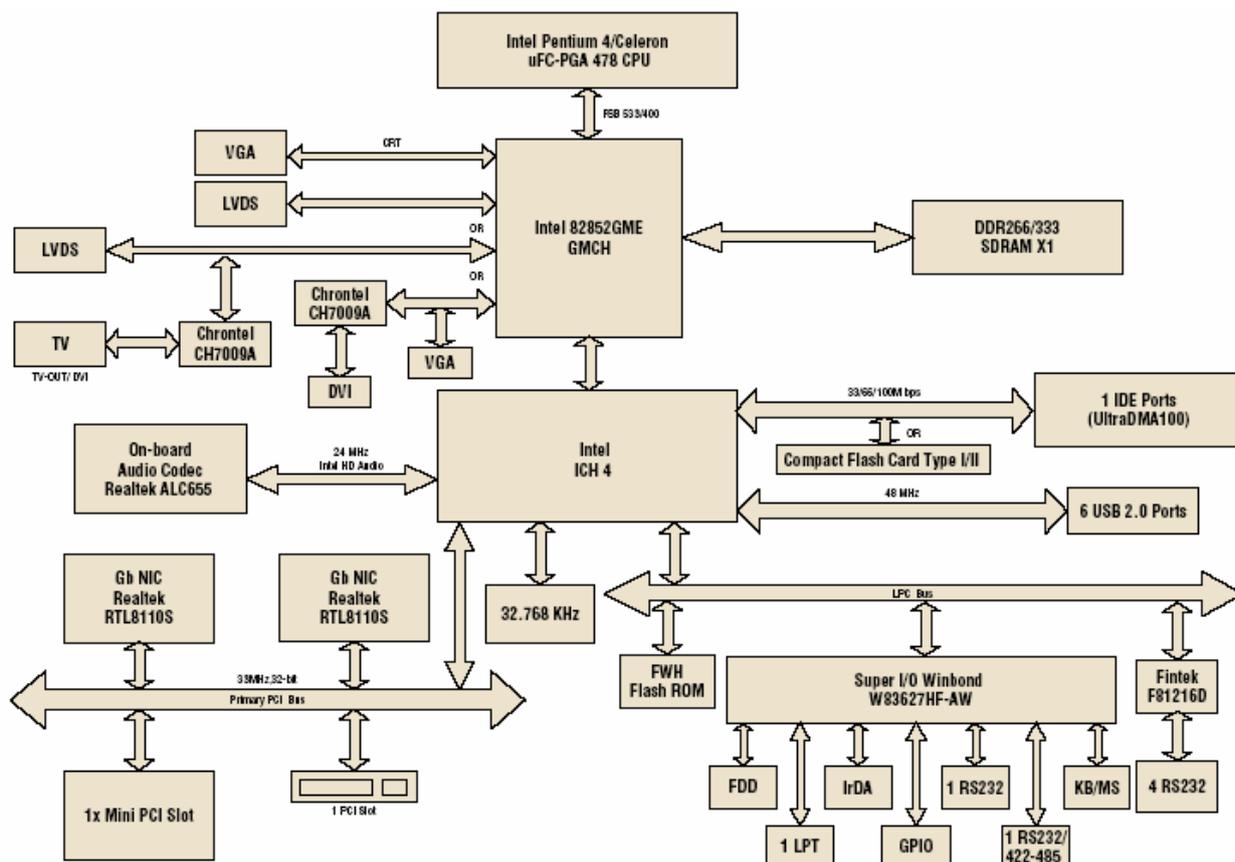


The following sections provide detail information about the functions provided onboard.

### 1.6.3    Intel 852GME and ICH4

The Intel® 852GME Chipset for Embedded Computing is an optimized integrated graphics solution with a 400/533 MHz system bus and integrated 32-bit 3D core at 133 MHz (at 533 MHz system bus). It features a low-power design, supports the Intel® Pentium® 4 processor and the Intel® Celeron® processor, and supports up to 2 GB of DDR 266/333 system memory. Intel's platform architecture delivers the performance and high scalability required for today's cutting-edge e-business and e-home applications. The Intel 852GME chipset is part of Intel's comprehensive validation process that enables fast deployment of next-generation platforms to maximize competitive advantage while minimizing development risks.

The Intel 852GME GMCH is in a 732-pin Micro-FCBGA package and general product features listed below:

- The Intel 852GME chipset is designed, validated, and optimized for the Intel Pentium 4 processor and Intel Celeron processor with Intel NetBurst® microarchitecture Supports a single channel of DDR SDRAM memory

- 400 MHz or 533 MHz system bus delivers a high-bandwidth connection between the processor and the platform

- Integrated graphics utilizing Intel® Extreme Graphics 2 technology

- AGP 4X support

- Advanced packaging technology and industry-leading electrical design innovations deliver long-term system reliability over wide operating conditions

- Three USB host controllers provide high-performance peripherals with 480 Mbps of bandwidth, while enabling support for up to six USB 2.0 ports. This results in a significant increase over previous integrated 1-4 port hubs at 12 Mbps

- The latest AC '97 implementation delivers 20-bit audio for enhanced sound quality and full surround sound capability. Integrated audio solutions continue to enjoy success as a very cost-effective, yet high-performance solution

- LAN Connect Interface (LCI) provides flexible network solutions such as 10/100 Mbps Ethernet and 10/100 Mbps Ethernet with LAN manageability

- Dual Ultra ATA/100 controllers, coupled with the Intel® Application Accelerator - a performance software package - support faster IDE transfers to storage devices

- Error Correcting Code (ECC) support in integrated graphics mode only

- The Intel Application Accelerator software provides additional performance over native ATA drivers by improving I/O transfer rates and enabling faster O/S load time, resulting in accelerated boot times

- Communication and Network Riser (CNR) offers flexibility in system configuration with a baseline feature set that can be upgraded with an audio card, modem card, or network card

- Embedded lifecycle support

- Integrated graphics

**Display**

- Analog display support
- Dual independent pipe support
  - Concurrent: different images and native display timings on each display device
  - Simultaneous: same images and native display timings on each display device
- DVO (DVOB and DVOC) support
  - Digital video out ports DVOB and DVOC with 165 MHz dot clock on each 12-bit interface; two 12-bit channels can be combined to form one dual-channel 24-bit interface with an effective dot clock of 330 MHz
  - Compliant with DVI Specification 1.0

- Dedicated Local Flat Panel (LFP) LVDS interface

**Internal Graphics Features**

Core frequency

- Display core frequency of 133 MHz
- Render core frequency of 133 MHz

**Intel® Embedded Graphics Drivers**

Graphics interface support

- GDI and DirectX* DirectDraw* with overlay for Windows* XP, Windows* 2000, and Windows* Embedded XP
- XFree86*, XAA, and Xv for Linux*

**AIMB-240 Series**

Multi-monitor support

- Multiple programmable configurations
- Dual independent display
- DVO device support/TV-Out

Dynamic display-mode support
- User definable and extensible
- Embedded video BIOS
- Common port interface support
- Full VGA compatibility

-

### 1.6.4    DRAM Interface (Intel 852GME)

The 852GME GMCH system memory controller directly supports the following:
- System SDRAM supports 266/333MHz (SSTL_2) DDR SDRAM
- Up to 2 GB (with 256-Mbit technology and two SO-DIMMs) of PC2100/2700 DDR SDRAM with ECC

### 1.6.5    PCI Interface

The ICH4 PCI interface provides a 33 MHz, Rev. 2.2 compliant implementation. All PCI signals are 5V tolerant, except PME#. The ICH2 integrates a PCI arbiter that supports up to six external PCI bus masters in addition to the internal ICH4 requests.

### 1.6.6    IDE Interface (Bus Master Capability and Synchronous DMA Mode )

The fast IDE interface supports up to four IDE devices providing an interface for IDE hard disks and ATAPI devices. Each IDE device can have independent timings. The IDE interface supports PIO IDE transfers up to 16 Mbytes/sec and Ultra ATA transfers up 100 Mbytes/sec. It does not consume any ISA DMA resources. The IDE interface integrates 16x32-bit buffers for optimal transfers.

The ICH4's IDE system contains two independent IDE signal channels. They can be electrically isolated independently. They can be configured to the standard primary and secondary channels (four devices). There are integrated series resistors on the data and control lines.

Access to these controllers is provided by two standard IDC 40-pin connectors.

### 1.6.7    USB 2.0

The ICH4 contains an Enhanced Host Controller Interface (EHCI) compliant host controller that supports USB high-speed signaling. High-speed USB 2.0 allows data transfers up to 480Mb/s which is 40 times faster than full-speed USB. The ICH4 also contains three Universal Host Controller Interface (UHCI) controllers that support USB full-speed and low-speed signaling.

The ICH4 supports 6 USB 2.0 ports.   All six USB ports are high-speed, full-speed, and low-speed capable. ICH4's port-routing logic determines whether a USB port is controlled by one of the UHCI controllers or by the EHCI controller.

### 1.6.8    Realtek<sup>TM</sup> ALC655 supports 5.1CH AC97 Audio

The ALC655 is a 16-bit, full-duplex AC'97 Rev. 2.3 compatible six-channel audio CODEC designed for PC multimedia systems, including host/soft audio and AMR/CNR-based designs.

The ALC655 incorporates proprietary converter technology to meet performance requirements for PC99/2001 systems. The ALC655 CODEC provides three pairs of stereo outputs with 5-bit volume control, a mono output, and multiple stereo and mono inputs, along with flexible mixing, gain, and mute functions to provide a complete integrated audio solution for PCs.

The digital interface circuitry of the ALC655 CODEC operates from a 3.3V power supply for use in notebook and PC applications. An integrated 50mW/20ohm headset audio amplifier for Front-Out and Surround-Out, a 14.318MHz -> 24.576MHz PLL, and a PCBEEP generator cut BOM costs. The ALC655 also supports S/PDIF input and output for easy connection of PCs to consumer electronic products, such as AC3 decoders/speakers and mini-disk devices.

The ALC655 CODEC supports host/soft audio from Intel ICHx chipsets as well as audio controller-based VIA/SIS/ALI/AMD/nVIDIA/ATI chipsets. Bundled Windows series drivers (98/ME/NT/2000/XP), EAX/Direct Sound 3D/ I3DL2/A3D compatible sound effect utilities (supporting Karaoke, 26 types of environment sound emulation, 10-band equalizer), HRTF 3D positional audio and Sensaura<sup>™</sup> 3DPA (optional) provide an excellent entertainment package and game experience for PC users. In addition, the ALC655 is embedded with an impedance sensing capability to detect when a device has been connected to input or output jacks.

**AIMB-240 Series**

The Key features listed as below :

- Meets performance requirements for audio on PC99/2001 systems
- Meets Microsoft WHQL/WLP 2.0 audio requirements
- 16-bit Stereo full-duplex CODEC with 48KHz sampling rate
- Compliant with AC'97 Rev 2.3 specifications
    - Front-Out, Surround-Out, MIC-In and LINE-In Jack Sensing
    - 14.318MHz -> 24.576MHz PLL to eliminate crystal
    - 12.288MHz BITCLK input
    - Integrated PCBEEP generator to save buzzer
    - Interrupt capability
- Three analog line-level stereo inputs with 5-bit volume control, LINE_IN, CD, AUX
- High-quality differential CD input
- Two analog line-level mono inputs: PCBEEP, PHONE-IN
- Two software selectable MIC inputs
- Dedicated Front-MIC input for front panel applications (software selectable)
- Boost preamplifier for MIC input
- LINE input shared with surround output; MIC input shared with Center and LFE output
- Built-in 50mW/20ohm amplifier for both Front-out and Surround-Out
- External Amplifier Power Down (EAPD) capability
- Power management and enhanced power saving features
- Supports Power-Off CD function
- Adjustable VREFOUT control
- Supports 48KHz S/PDIF output, complying with AC'97 Rev 2.3 specifications
- Supports 32K/44.1K/48KHz S/PDIF input
- Power support: Digital: 3.3V; Analog: 3.3V/5V
- Standard 48-pin LQFP package
- EAX™ 1.0 & 2.0 compatible
- Direct Sound 3D™ compatible
- A3D™ compatible
- I3DL2 compatible
- HRTF 3D positional audio
- Sensaura™ 3DPA enhancement (optional)
- 10-band software equalizer
- Voice cancellation and key shifting in Karaoke mode
- AVRack® Media Player

### 1.6.9 Chrontel CH7009A TV/DVI Transmitter

The Chrontel CH7009A is a display controller device which accepts a digital graphics input signal, and encodes and transmits data through a DVI (DFP can also be supported) or TV output (analog composite, s-video or RGB). The device accepts data over one 12-bit wide variable voltage data port which supports five different data formats including RGB and YCrCb.

The DVI processor includes a low jitter PLL for generation of the high frequency serialized clock, and all circuitries are required to encode, serialize and transmit data. The CH7009 comes in versions able to drive a DVI display at a pixel rate of up to 165MHz, supporting UXGA resolution displays. No scaling of input data is performed on the data output to the DVI device.

The TV-Out processor performs non-interlace to interlace conversion with scaling and flicker filters, and encode the data into any of the NTSC or PAL video standards. The scaling and flicker filter is adaptive and programmable to enable superior text display. Eight graphics resolutions are supported up to 1024 by 768 with full vertical and horizontal underscan capability in all modes. A high accuracy low jitter phase locked loop is integrated to create outstanding video quality. Support is provided for Macrovision$^{TM}$ and RGB bypass mode which enables driving a VGA CRT with the input data.

### 1.6.10 Ethernet

### 1.6.10.1 Realtek RTL8100C Ethernet Controller

The Realtek RTL8100C(L) is a highly integrated, cost-effective single-chip Fast Ethernet controller that provides 32-bit performance, PCI bus master capability, and full compliance with IEEE 802.3u 100Base-T and Power Interface (ACPI), PCI power management for modern operating systems that are cpable of Operating System-Directed Power Management (OSPM) to achieve that most efficient power management possible. The RTL8100C(L) does not support CardBus mode (the RTL8139C does).

In addition to the ACPI feature, the RTL8100C(L) also supports remote wake-up (including AMD magic Packet, LinkChg, and Microsoft® wake-up frame) in both ACPI and APM (Advanced Power Management) environments. The RTL8100C(L) is capable of performing an internal reset through the application of auxiliary power. When auxiliary power is applied and the main power remains off, the RTL8100C(L) is ready and waiting for a Magic Packet or Link Change to wake the system up. Also, the LWAKE pin provides 4 output signals (active high, active low, positive pulse, and negative pulse). The versatility of the RTL8100C(L) LWAKE pin provides motherboards, with Wake-On-LAN (WOL) functionality.

The RTL8100C(L) also supports Analog Auto-Power-down. The analog part of the RTL8100C(L) can be shut down temporarily according to user requirements, or when the RTL8100C(L) is in a power down state with the wakeup function disabled. When the analog part is shut down and the IsolateB pin is low (i.e. the main power is off), both the analog and digital parts stop functioning and the power consumption of the RTL8100C(L) is negligible. The RTL8100C(L) also supports an auxiliary power auto-detect function, and will auto-configure related bits of its PCI power management registers in PCI configuration space.

PCI Vital Product Data (VPD) is also supported to provide hardware identifier information. The information may consist of part number, serial number, OEM brand name, and other detailed information.

### 1.6.11 Winbond W83627HF

The Winbond W83627F/HF is made to fully comply with Microsoft PC98 and PC99 Hardware Design Guide. Moreover, W83627F/HF is made to meet the specification of PC98/PC99's requirement in the power management: ACPI and DPM (Device Power Management). Super I/O chip provides features as the following:

- Meet LPC Spec. 1.0
- Support LDRQ# (LPC DMA), SERIRQ (serial IRQ)
- Include all features of Winbond I/O W83977TF and W83977EF
- Integrate Hardware Monitor functions
- Compliant with Microsoft PC98/PC99 Hardware Design Guide.
- Support DPM (Device Power Management), ACPI
- Programmable configuration settings
- Single 24 or 48 MHz clock input
- 

### 1.6.12 Compact Flash Interface

A Compact Flash type II connector is connected to the secondary IDE controller. The Compact Flash storage card is IDE compatible. It is an ideal replacement for standard IDE hard drives. The solid-state design offers no seek errors even under extreme shock and vibration conditions. The Compact Flash storage card is extremely small and highly suitable for rugged environments, thus providing an excellent solution for mobile applications with space limitations. It is fully compatible with all consumer applications designed for data storage PC card, PDA, and Smart Cellular Phones, allowing simple use for the end user. The Compact Flash storage card is O/S independent, thus offering an optimal solution for embedded systems operating in non-standard computing environments. The Compact Flash storage card is IDE compatible and offers various capacities.

# 2. Hardware Configuration

## 2.1 Product Overview



CD-ROM Audio-In

RJ-45 & 2 USB

VGA

Parallel Port

KBMS

COM2

COM2 RS

PCI

IrDA

Digital In/Out

Floppy

COM 3/4/5/6

Front Panel

System Fan

COM1_1

CPU Fan

ATX12V

ATXPWR

DIMM

Primary
IDE

Secondary
IDE

LCD
Inverter

LVDS

TV Out

JTMDS1

LVLCPW
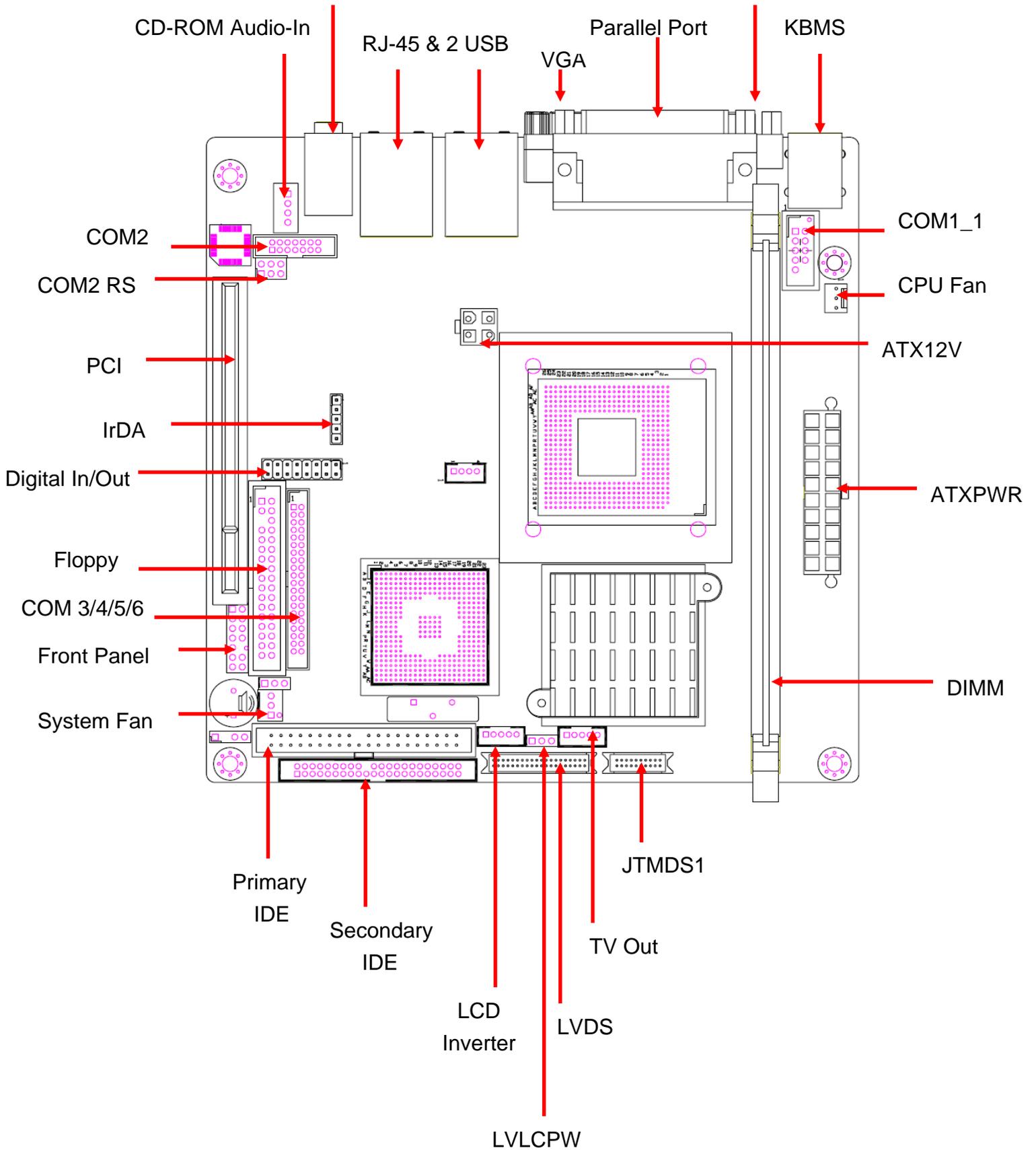
## 2.2 Installation Procedure

This chapter explains you the instructions of how to setup your system.

1. Turn off the power supply.
2. Insert the DIMM module (be careful with the orientation).
3. Insert all external cables for hard disk, floppy, keyboard, mouse, USB etc. except for flat panel. A CRT monitor must be connected in order to change CMOS settings to support flat panel.
4. Connect power supply to the board via the ATXPWR.
5. Turn on the power.
6. Enter the BIOS setup by pressing the delete key during boot up. Use the "LOAD BIOS DEFAULTS" feature. The *Integrated Peripheral Setup* and the *Standard CMOS Setup* Window must be entered and configured correctly to match the particular system configuration.
7. If TFT panel display is to be utilized, make sure the panel voltage is correctly set before connecting the display cable and turning on the power.

### 2.2.1    Processor Installation
### 2.2.1.1    Installing Pentium$^®$ 4 / Celeron$^{TM}$ CPU

Please note that AIMB-240 uses socket 479 connector to accommodate Intel Pentium 4/Celeron socket 478 processor.    Please only use the CPU cooler inside the box.   If requires the CPU cooler to support Pentium 4 2.8 GHz processor, please contact with Advantech.

**Below is a procedure to install Pentium$^®$ 4 / Celeron$^{TM}$ CPU.**

1.  **Open the socket handle (A)**

    **Install the processor by carefully aligning the pins to the socket (B)**

**Note:** Do not force the CPU into the socket. It may bend the pins and damage the CPU.

### 2.2.1.2 Installing the Fan and Heat Sink

- Insert the copper studs to the screw holes around the CPU socket from the top through the rear side of the board with screw nuts fastened.
  Match and place the CPU fan and heat sink assembly on the top of the CPU and copper studs. Tighten the screws into the copper studs through washers and the screw holes around the heat sink.

**Note:** Make sure the CPU fan and heat sink assembly and the CPU top surface are in total contact to avoid CPU overheating problem that would cause the system to hang or unstable

*Installing Retention Module*
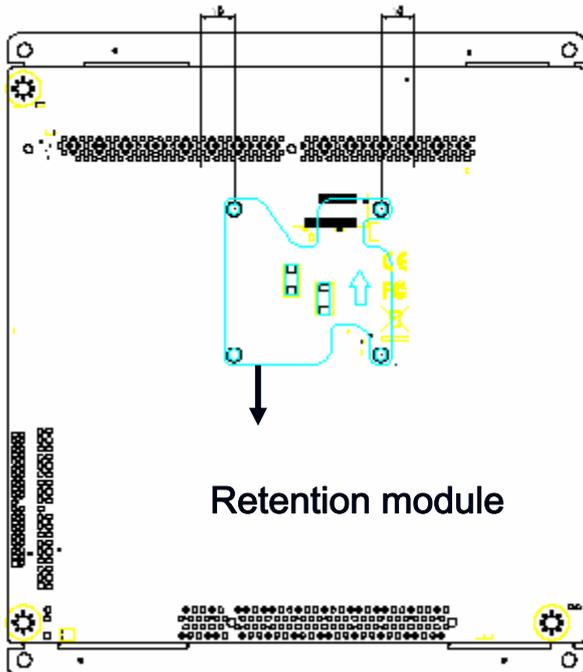


Retention module

Retention module can be found in the cooler box.    Please install the retention module correctly to align with the mark on PCB

### 2.2.1.3 Removing CPU

- Disconnect the CPU fan connector.
- Remove the CPU fan and heat sink assembly first.
- Unfasten the copper studs from the board.
- Unlock the Pentium processor.

- Carefully lift up the existing CPU to remove it from the socket.
- Follow the steps of installing a CPU to change to another one.

Please find below information for the power button connection.
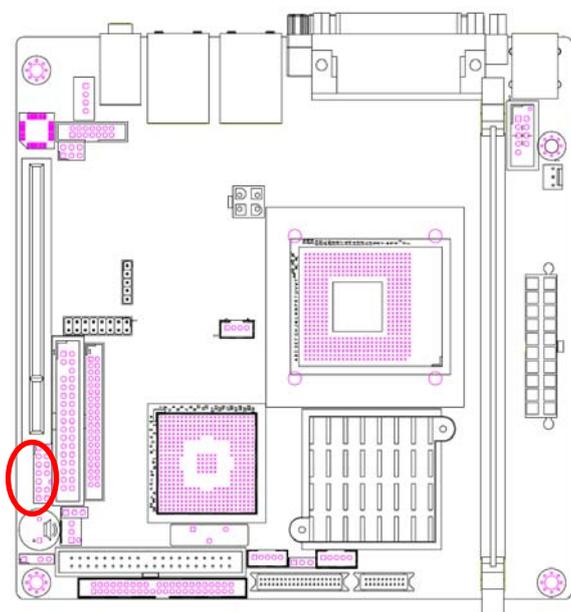
| Signal | PIN | PIN | Signal |
|---|---|---|---|
| HDLEDA | 1 | 2 | HDLED# |
| GND | 3 | 4 | GND |
| SUS_LED | 5 | 6 | GND |
| LAN_ACKLED | 7 | 8 | LAN_ACKLED# |
| STAT_LED | 9 | 10 | No Pin |
| F_PWRBTN# | 11 | 12 | PWRBTN |
| GND | 13 | 14 | FPRST# |

Pin 11 and Pin 12 are used for power button

**AIMB-240 Series**

### 2.2.2    Main Memory

AIMB-240 provides one 184-pin DIMM socket to support DDR SDRAM. The total maximum memory size is 1GB.

Make sure to unplug the power supply before adding or removing DIMMs or other system components. Failure to do so may cause severe damage to both the board and the components.

DIMM1
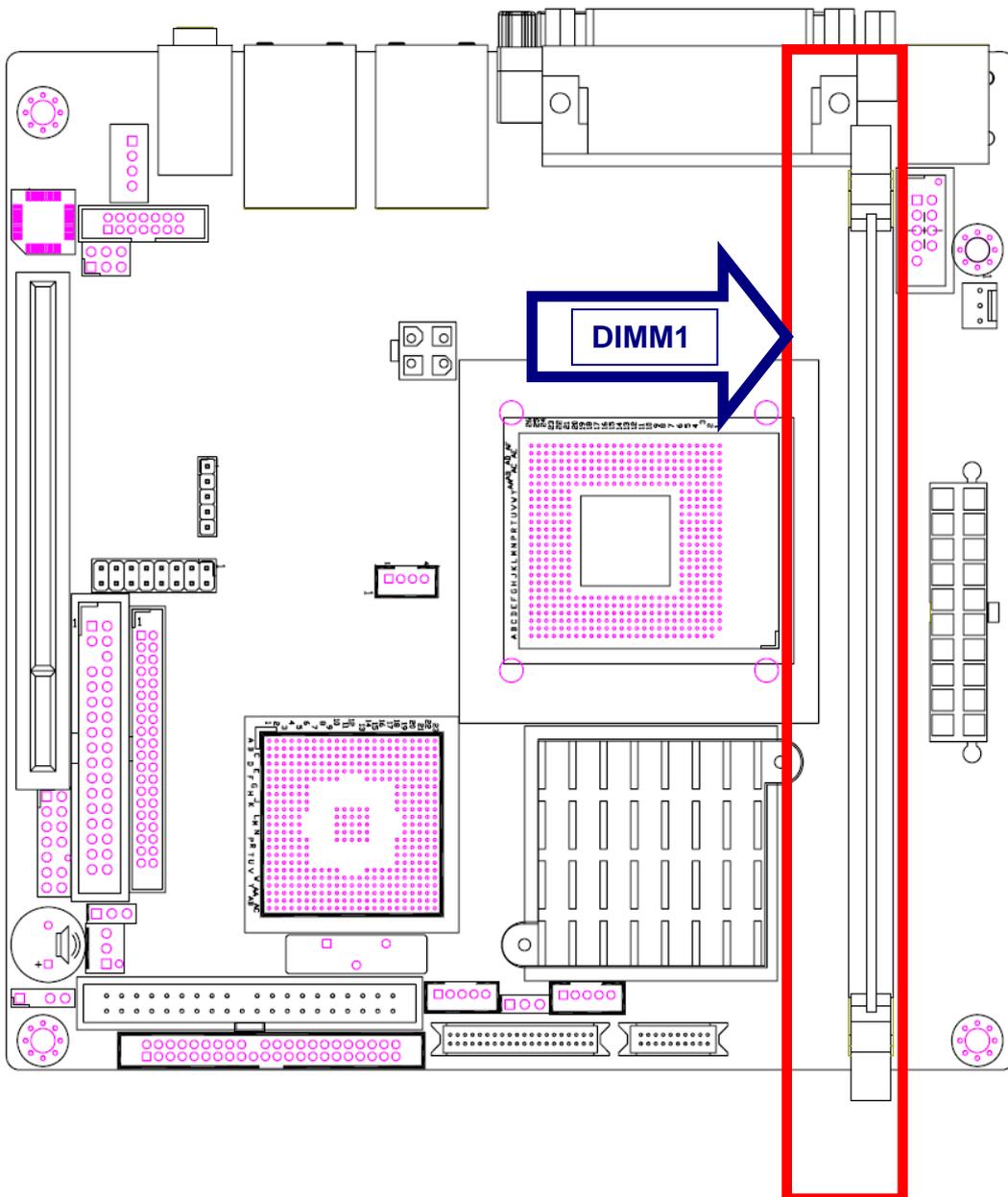
- Locate the DIMM slot on the board.
- Hold two edges of the DIMM module carefully. Keep away of touching its connectors.
- Align the notch key on the module with the rib on the slot.
- Firmly press the modules into the slot automatically snaps into the mounting notch. Do not force the DIMM module in with extra force as the DIMM module only fit in one direction.
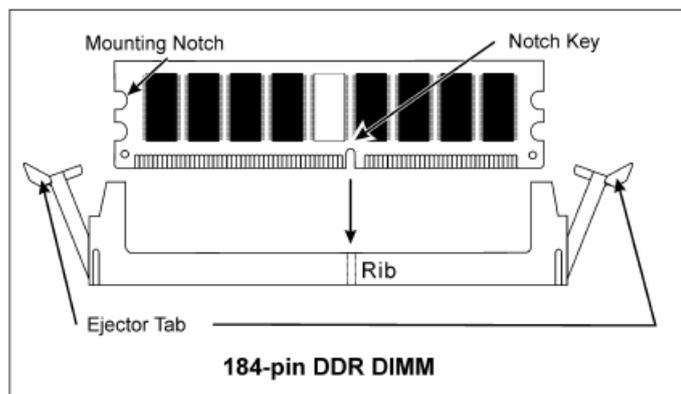


- To remove the DIMM modules, push the two ejector tabs on the slot outward simultaneously, and then pull out the DIMM module.
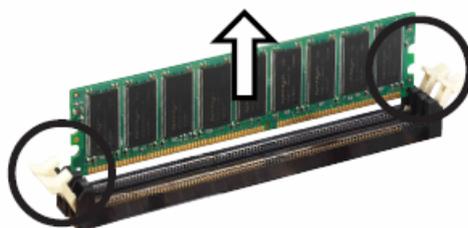


**Note:** (1) Please do not change any DDR SDRAM parameter in BIOS setup to increase your system's performance without acquiring technical information in advance.

(2) Static electricity can damage the electronic components of the computer or optional boards. Before starting these procedures, ensure that you are discharged of static electricity by touching a grounded metal object briefly.

## 2.3 Jumper

You can configure your board to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch.

It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To "close" a jumper you connect the pins with the clip. To "open" a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2, and 3. In this case, you would connect either two pins.
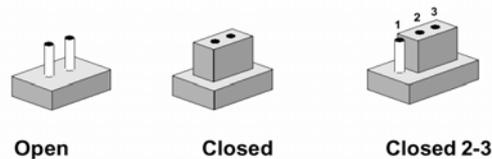
The jumper settings are schematically depicted in this manual as follows:

A pair of needle-nose pliers may be helpful when working with jumpers.

Connectors on the board are linked to external devices such as hard disk drives, a keyboard, or floppy drives. In addition, the board has a number of jumpers that allow you to configure your system to suit your application.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

## 2.4 Setting Jumpers & Connectors

### 2.4.1    Clear CMOS
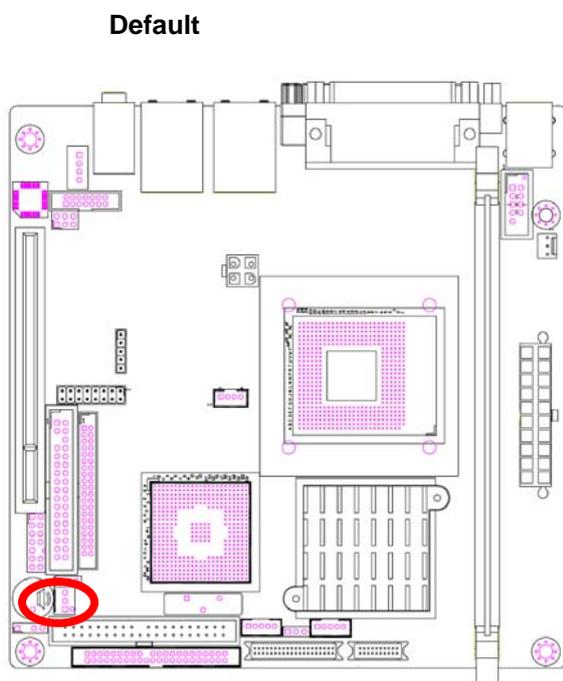
**Default**



**Protect***



**Clear CMOS**
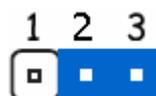


| Pin | 1 | 2 | 3 |
|---|---|---|---|
| Define | NC | RTCRST# | GND |

### 2.4.2    Serial Port Connector (COM1)

● **Default**
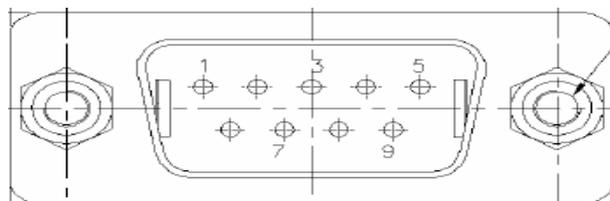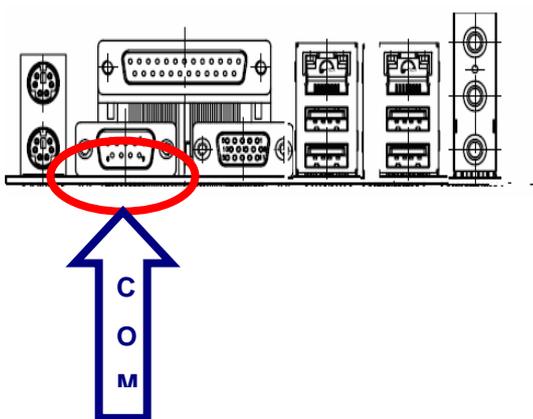




| Define | Pin | Pin | Define |
|---|---|---|---|
| DDSR1# | 6 | 1 | DDCD1# |
| RRTS1# | 7 | 2 | RRXD1 |
| CCTS1# | 8 | 3 | TTXD1 |
| RRI1# | 9 | 4 | DDTR1# |
|  |  | 5 | GND |

## 2.4.3 Serial Port Header (COM1_1)

**Default**
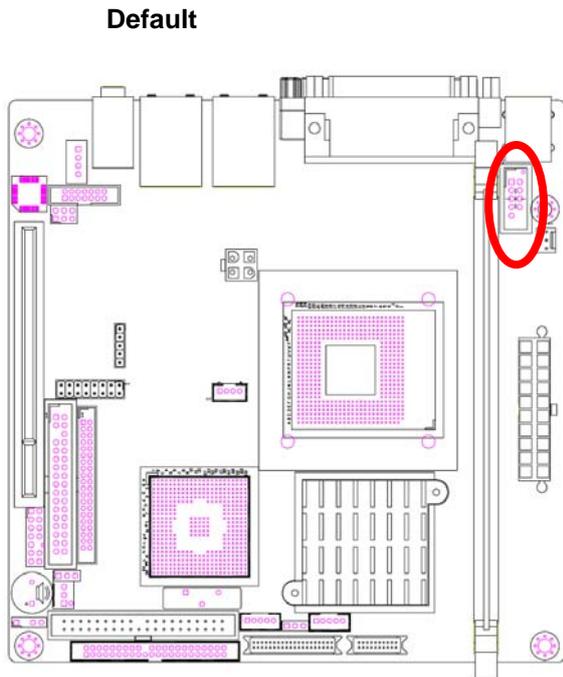


| Signal | PIN | PIN | Signal |
|--------|-----|-----|--------|
| DDCD1# | 1 | 2 | RRXD1 |
| TTXD1 | 3 | 4 | DDTR1# |
| GND | 5 | 6 | DDSR1# |
| RRTS1# | 7 | 8 | CCTS1# |
| RRI1# | 9 | 10 | No pin |

**COM1_1 and COM1 (Rear I/O) are using the same link, so both connectors cannot be used at the same time.**

| Signal | Signal Description |
|--------|--------------------|
| TTXD1 | Serial output. This signal sends serial data to the communication link. The signal is set to a marking state on hardware reset when the transmitter is empty or when loop mode operation is initiated. |
| RRXD1 | Serial input. This signal receives serial data from the communication link. |
| DDTR1# | Data Terminal Ready. This signal indicates to the modem or data set that the on-board UART is ready to establish a communication link. |
| DDSR1# | Data Set Ready. This signal indicates that the modem or data set is ready to establish a communication link. |
| RRTS1# | Request To Send. This signal indicates to the modem or data set that the on-board UART is ready to exchange data. |
| CCTS1# | Clear To Send. This signal indicates that the modem or data set is ready to exchange data. |
| DDCD1# | Data Carrier Detect. This signal indicates that the modem or data set has detected the data carrier. |
| RRI1# | Ring Indicator. This signal indicates that the modem has received a telephone ringing signal. |

## 2.4.4    Serial Port Header RS-232/422/485 Select (COM2/COM2 RS)
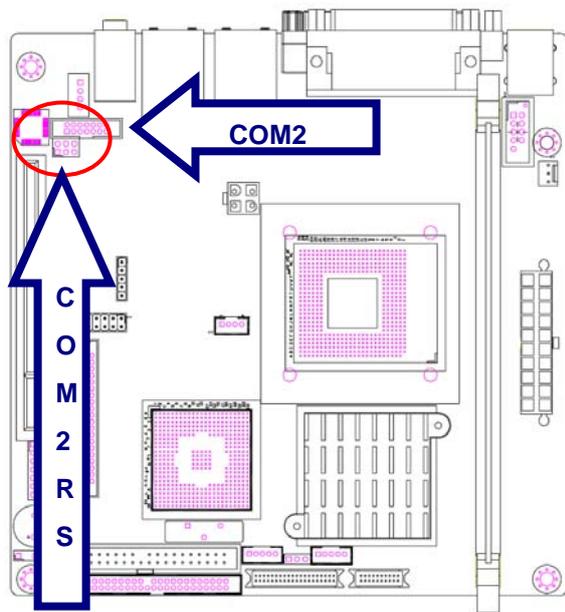
**(COM2 RS)**

**RS-485    RS-422    RS-232\***
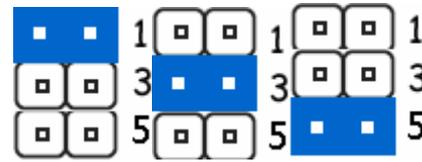


| pin | define | | define | pin |
|-----|--------|---|--------|-----|
| 6 | RXD232 | | RXD2 | 5 |
| 4 | RXD422 | | RXD2 | 3 |
| 2 | RXD485 | | RXD2 | 1 |

**COM2**

**COM2 RS**

**\*Default**

**(COM2 )**



RS-232

RS-422/485

| Pin | define | | define | Pin |
|-----|--------|---|--------|-----|
| 14 | RXD485- | | RXD485+ | 13 |
| 12 | TXD485- | | TXD485+ | 11 |
| 10 | GND | | GND | 9 |
| 8 | RRI2# | | DDTR2# | 7 |
| 6 | CCTS2# | | TTXD2 | 5 |
| 4 | RRTS2# | | RRXD2 | 3 |
| 2 | DDSR2# | | DDCD2# | 1 |

## 2.4.5 Serial Port Header (COM 3/4/5/6)
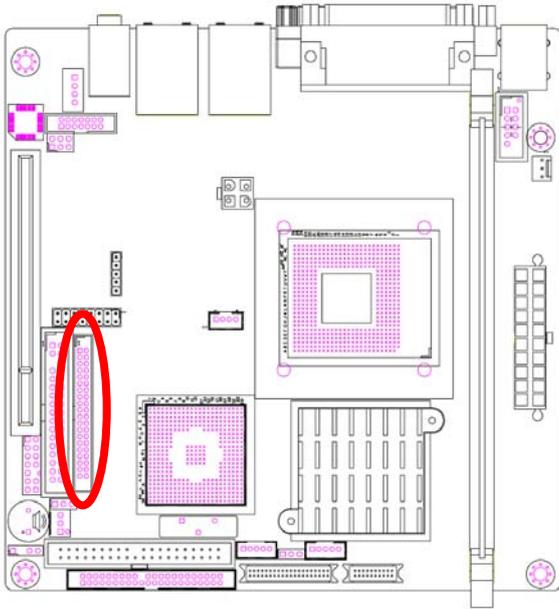
**\* Default**

| Com # | Define | Pin | | | Pin | Define | Com # |
|---|---|---|---|---|---|---|---|
| COM3 | DDCD3# | 1 | | | 2 | DDSR3# | COM3 |
| | RRXD3 | 3 | | | 4 | RRTS3# | |
| | TTXD3 | 5 | | | 6 | CCTS3# | |
| | DDTR3# | 7 | | | 8 | RRI3# | |
| | GND | 9 | | | 10 | GND | |
| COM4 | DDCD4# | 11 | | | 12 | DDSR4# | COM4 |
| | RRXD4 | 13 | | | 14 | RRTS4# | |
| | TTXD4 | 15 | | | 16 | CCTS4# | |
| | DDTR4# | 17 | | | 18 | RRI4# | |
| | GND | 19 | | | 20 | GND | |
| COM5 | DDCD5# | 21 | | | 22 | DDSR5# | COM5 |
| | RRXD5 | 23 | | | 24 | RRTS5# | |
| | TTXD5 | 25 | | | 26 | CCTS5# | |
| | DDTR5# | 27 | | | 28 | RRI5# | |
| | GND | 29 | | | 30 | GND | |
| COM6 | DDCD6# | 31 | | | 32 | DDSR6# | COM6 |
| | RRXD6 | 33 | | | 34 | RRTS6# | |
| | TTXD6 | 35 | | | 36 | CCTS6# | |
| | DDTR6# | 37 | | | 38 | RRI6# | |
| | GND | 39 | | | 40 | GND | |

## 2.4.6 ATX Power Connector (ATXPWR)
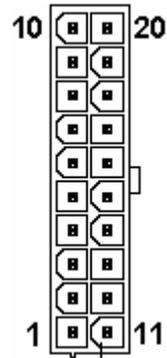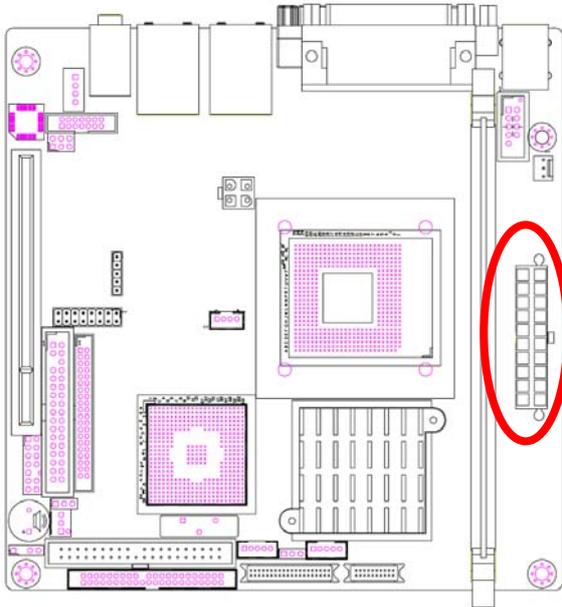
| Signal | PIN | PIN | Signal |
|---|---|---|---|
| +12V | 10 | 20 | +5V |
| +5VSB | 9 | 19 | +5V |
| PATX_PWRGD | 8 | 18 | -5V |
| GND | 7 | 17 | GND |
| +5V | 6 | 16 | GND |
| GND | 5 | 15 | GND |
| +5V | 4 | 14 | ATX_PSON# |
| GND | 3 | 13 | GND |
| +3V | 2 | 12 | -12V |
| +3V | 1 | 11 | +3V |

## 2.4.7 ATX Power Connector (ATX12V)
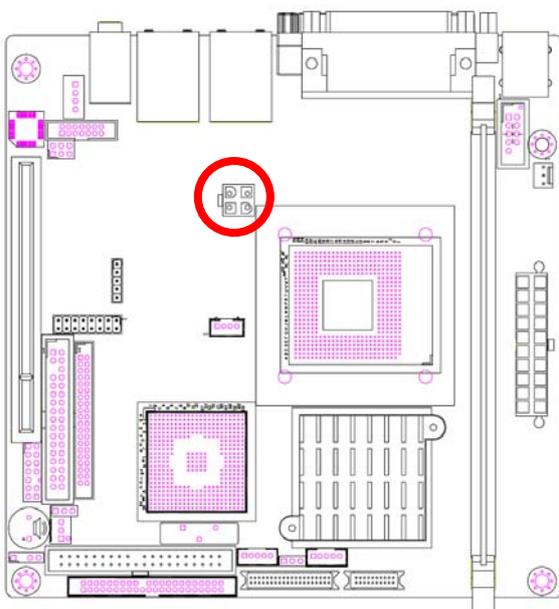
| Pin | 1 | 2 |
|---|---|---|
| Signal | GND | GND |
| Pin | 3 | 4 |
| Signal | CPU_12V | CPU_12V |

**AIMB-240 Series**

## 2.4.8    CPU Fan Connector
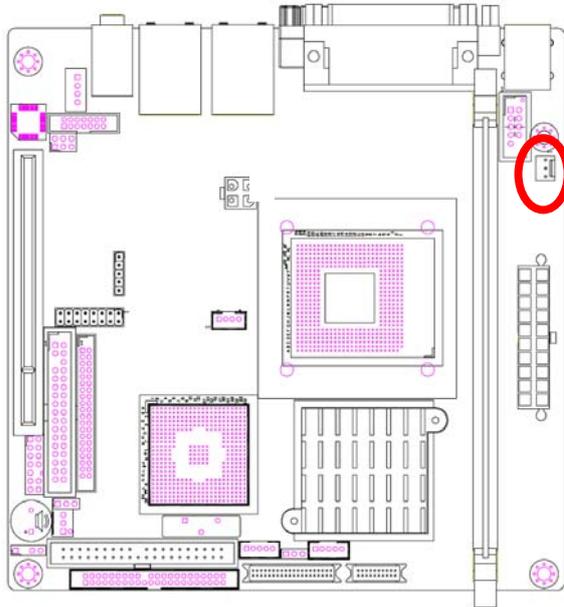


| Signal | PIN |
|---|---|
| GND | 3 |
| CPUFANPWR | 2 |
| CPUFANIN | 1 |

## 2.4.9    System Fan Connector
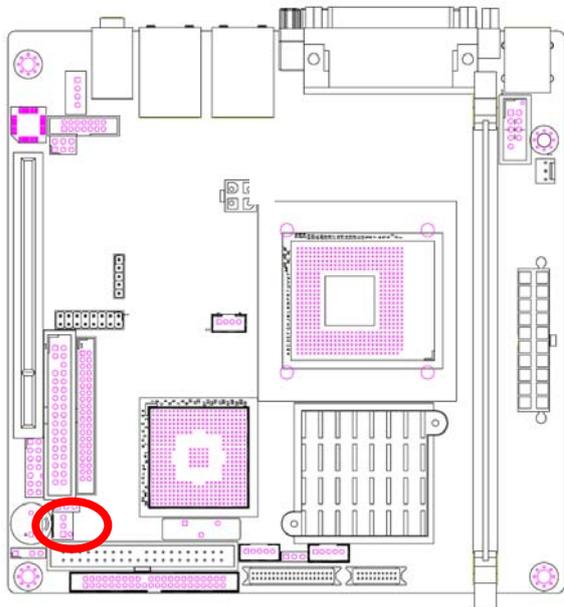


| Signal | PIN |
|---|---|
| GND | 3 |
| SYSFANPWR | 2 |
| SYSFANIN | 1 |

## 2.4.10    VGA Connector
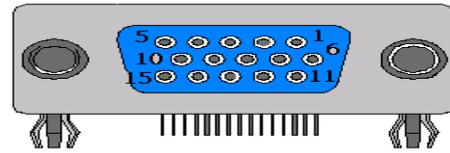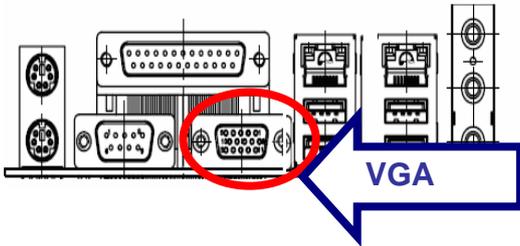
TOP SIDE VIEW

| Signal | PIN | | | Signal |
|---|---|---|---|---|
| | | 6 | | GND |
| RED | 1 | | 11 | |
| | | 7 | | GND |
| GREEN | 2 | | 12 | DDCADATA |
| | | 8 | | GND |
| BLUE | 3 | | 13 | VHSYNC |
| | | 9 | | VGA_5V |
| | 4 | | 14 | VVSYNC |
| | | 10 | | GND |
| GND | 5 | | 15 | DDCACLK |

VGA

## 2.4.11   Parallel Port Connector
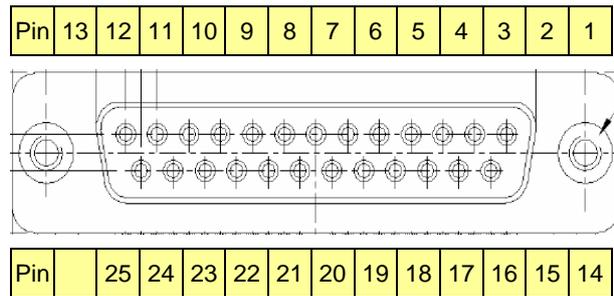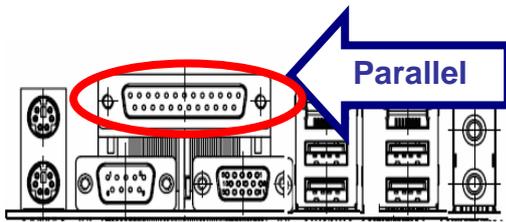
| Pin | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|-----|----|----|----|----|---|---|---|---|---|---|---|---|---|



| Pin | | 25 | 24 | 23 | 22 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 |
|-----|--|----|----|----|----|----|----|----|----|----|----|----|----|

| Pin | Signal | Signal | Pin |
|-----|--------|--------|-----|
|     |        | SLCT   | 13  |
| 25  | GND    | PE     | 12  |
| 24  | GND    | BUSY   | 11  |
| 23  | GND    | ACK#   | 10  |
| 22  | GND    | SPD7   | 9   |
| 21  | GND    | SPD6   | 8   |
| 20  | GND    | SPD5   | 7   |
| 19  | GND    | SPD4   | 6   |
| 18  | GND    | SPD3   | 5   |
| 17  | SLIN#  | SPD2   | 4   |
| 16  | PINIT# | SPD1   | 3   |
| 15  | ERROR# | SPD0   | 2   |
| 14  | AFD#   | STB#   | 1   |

## 2.4.12   Audio Connector
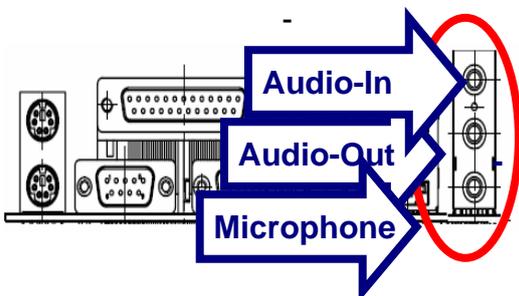


| Port | Description |
|------|-------------|
| Audio-In | Connects a tape player or other audio sources. |
| Audio-Out | Connects a headphone or a speaker. |
| Microphone | Connects a microphone. |

## 2.4.13 RJ-45 Ethernet / USB 1 & 2, 3 & 4 Connectors
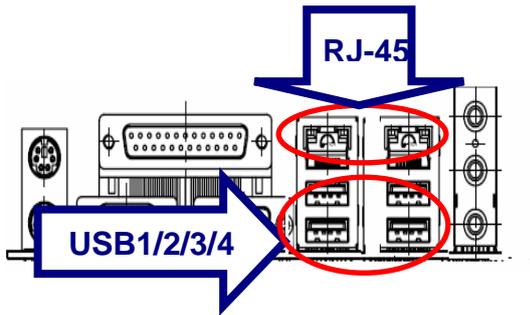


| Port | Description |
|------|-------------|
| RJ-45 | Allows connection to a Local Area Network (LAN) through a network hub. |
| USB 2.0 | For connecting USB port 1,2,3,4 |

## 2.4.14 Floppy Connector
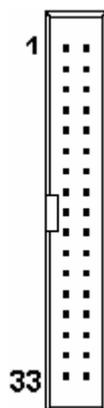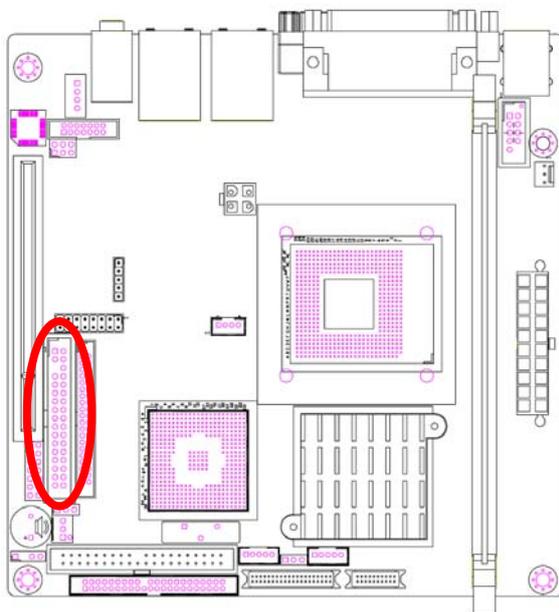


| Signal | PIN | PIN | Signal |
|--------|-----|-----|--------|
| GND | 1 | 2 | DENSEL# |
| GND | 3 | 4 | NC |
| No pin | 5 | 6 | NC |
| GND | 7 | 8 | INDEX# |
| GND | 9 | 10 | MTRA# |
| GND | 11 | 12 | NC |
| GND | 13 | 14 | DRVA# |
| GND | 15 | 16 | NC |
| GND | 17 | 18 | DIR# |
| GND | 19 | 20 | STEP# |
| GND | 21 | 22 | WDATA# |
| GND | 23 | 24 | WGATE# |
| GND | 25 | 26 | TRK0# |
| GND | 27 | 28 | WPT# |
| GND | 29 | 30 | RDATA# |
| GND | 31 | 32 | HDSEL# |
| GND | 33 | 34 | DSKCHG# |

**AIMB-240 Series**

## 2.4.15    Primary IDE Connector IPRI_IDE)
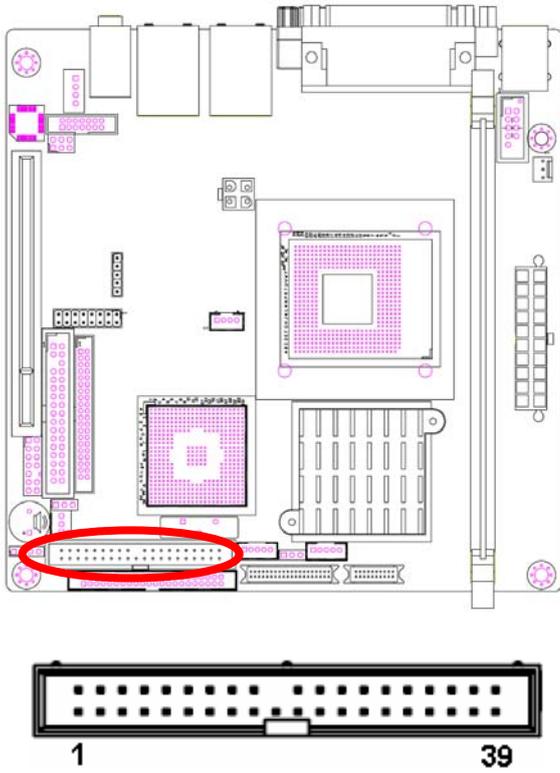


| Signal | PIN | PIN | Signal |
|---|---|---|---|
| RST#_IDE | 1 | 2 | GND |
| PIDE_D7 | 3 | 4 | PIDE_D8 |
| PIDE_D6 | 5 | 6 | PIDE_D9 |
| PIDE_D5 | 7 | 8 | PIDE_D10 |
| PIDE_D4 | 9 | 10 | PIDE_D11 |
| PIDE_D3 | 11 | 12 | PIDE_D12 |
| PIDE_D2 | 13 | 14 | PIDE_D13 |
| PIDE_D1 | 15 | 16 | PIDE_D14 |
| PIDE_D0 | 17 | 18 | PIDE_D15 |
| GND | 19 | 20 | No pin |
| PIDE_DDREQ | 21 | 22 | GND |
| PIDE_DIOW# | 23 | 24 | GND |
| PIDE_DIOR# | 25 | 26 | GND |
| PIDE_DIORDY | 27 | 28 | GND |
| PIDE_DDACK# | 29 | 30 | GND |
| PIDE_IRQ14 | 31 | 32 | NC |
| PIDE_DA1 | 33 | 34 | P66DETECT |
| PIDE_DA0 | 35 | 36 | PIDE_DA2 |
| PIDE_DCS1# | 37 | 38 | PIDE_DCS3# |
| PIDE_ACT# | 39 | 40 | GND |

## 2.4.16    Secondary IDE Connector (SEC_IDE)
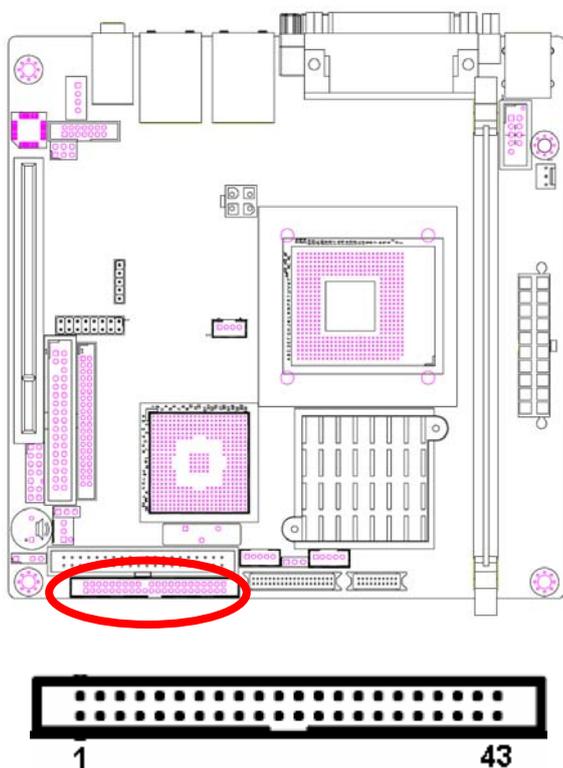


| Signal | PIN | PIN | Signal |
|---|---|---|---|
| RST#_IDE | 1 | 2 | GND |
| SIDE_D7 | 3 | 4 | SIDE_D8 |
| SIDE_D6 | 5 | 6 | SIDE_D9 |
| SIDE_D5 | 7 | 8 | SIDE_D10 |
| SIDE_D4 | 9 | 10 | SIDE_D11 |
| SIDE_D3 | 11 | 12 | SIDE_D12 |
| SIDE_D2 | 13 | 14 | SIDE_D13 |
| SIDE_D1 | 15 | 16 | SIDE_D14 |
| SIDE_D0 | 17 | 18 | SIDE_D15 |
| GND | 19 | 20 | Np pin |
| SIDE_DDREQ | 21 | 22 | GND |
| SIDE_DIOW# | 23 | 24 | GND |
| SIDE_DIOR# | 25 | 26 | GND |
| SIDE_DIORDY | 27 | 28 | GND |
| SIDE_DDACK# | 29 | 30 | GND |
| SIDE_IRQ15 | 31 | 32 | NC |
| SIDE_DA1 | 33 | 34 | S66DETECT |
| SIDE_DA0 | 35 | 36 | SIDE_DA2 |
| SIDE_DCS1# | 37 | 38 | SIDE_DCS3# |
| SIDE_ACT# | 39 | 40 | GND |
| +5V | 41 | 42 | +5V |
| GND | 43 | 44 | NC |

Due to IDE compatibility issue, do not use CF and IDE device on secondary IDE channel at the same time.

## 2.4.17 LCD Inverter Connector
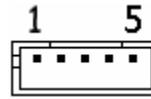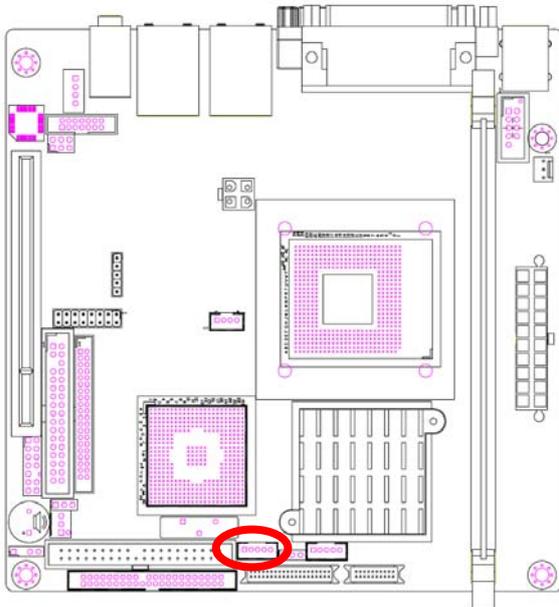


| Signal | PIN |
|-------------|-----|
| +12V | 1 |
| GND | 2 |
| LVDS_BKLTEN | 3 |
| VBR | 4 |
| +5V | 5 |

## 2.4.18 CD-ROM Audio Input Connector
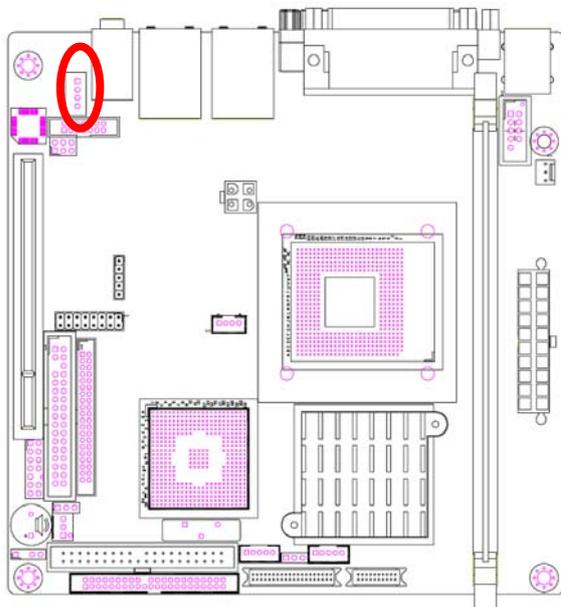


| Signal | PIN |
|----------|-----|
| CD_IN_R | 1 |
| CDGND | 2 |
| CDGND | 3 |
| CD_IN_L | 4 |

### 2.4.18.1 Signal Description – CD-ROM Audio Input Connector

| Signal | Signal Description |
|---------|--------------------|
| CD_IN_R | Right CD-IN signal |
| CD_IN_L | Left CD-IN signal |

## 2.4.19 Digital Input / Output Connector
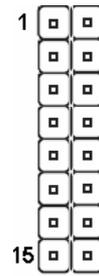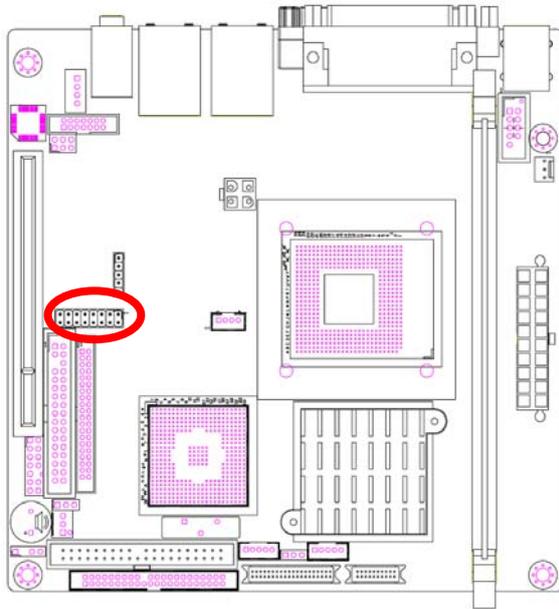
| Signal | PIN | PIN | Signal |
|--------|-----|-----|--------|
| DIOIN0 | 1 | 2 | +5V |
| DIOIN1 | 3 | 4 | DIOOT0 |
| DIOIN2 | 5 | 6 | GNDDIO |
| DIOIN3 | 7 | 8 | DIOOT1 |
| GND | 9 | 10 | +12V |
| NC | 11 | 12 | NC |
| DIOOUT3 | 13 | 14 | GNDDIO |
| DIOOUT2 | 15 | 16 | +12V |

## 2.4.20    Front Panel Connector
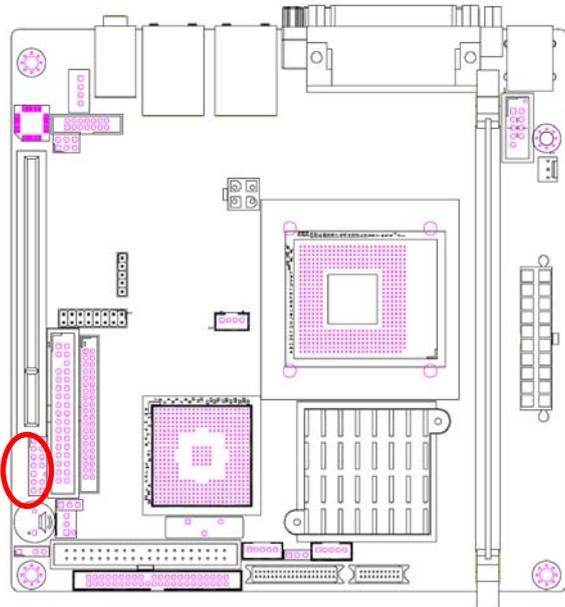


| Signal | PIN | PIN | Signal |
|--------|-----|-----|--------|
| HDLEDA | 1 | 2 | HDLED# |
| POWER_LED | 3 | 4 | GND |
| SUS_LED | 5 | 6 | GND |
| LAN_ACKLED | 7 | 8 | LAN_ACKLED# |
| STAT_LED | 9 | 10 | No Pin |
| F_PWRBTN# | 11 | 12 | PWRBTN |
| GND | 13 | 14 | FPRST# |

Pin 11 and Pin 12 are used for power button

## 2.4.21    IrDA Connector
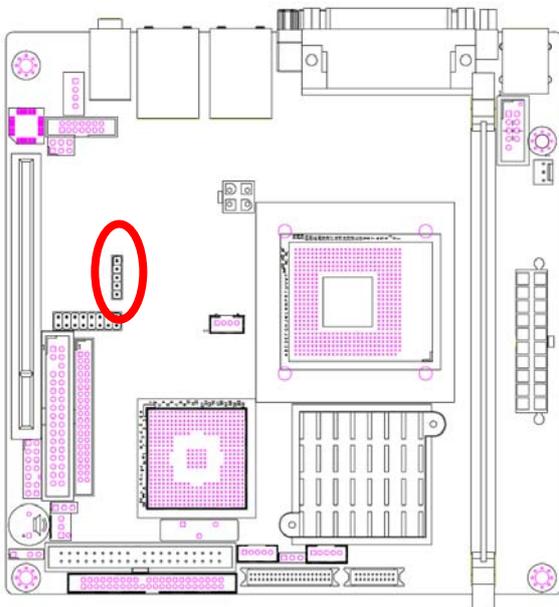


| Signal | PIN |
|--------|-----|
| +5V | 1 |
| CIRRX# | 2 |
| IRRX | 3 |
| GND | 4 |
| IRTX | 5 |

### 2.4.23.1    Signal Description – IrDA Connecter

| Signal | Signal Description |
|--------|--------------------|
| IRRX | Infrared Receiver input |
| IRTX | Infrared Transmitter output |

## 2.4.22 LVDS Connector
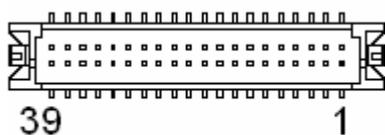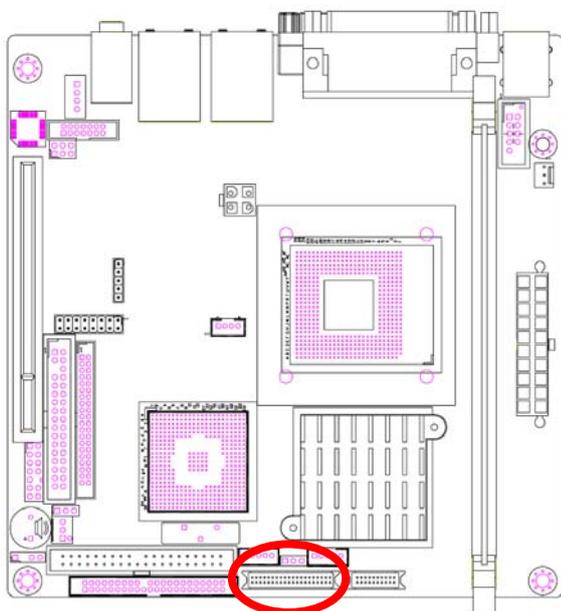


| Signal | PIN | PIN | Signal |
|---|---|---|---|
| VDD_LVDS_PANEL | 2 | 1 | VDD_LVDS_PANEL |
| GND | 4 | 3 | GND |
| VDD_LVDS_PANEL | 6 | 5 | VDD_LVDS_PANEL |
| LVDS_YBM0 | 8 | 7 | LVDS_YAM0 |
| LVDS_YBP0 | 10 | 9 | LVDS_YAP0 |
| GND | 12 | 11 | GND |
| LVDS_YBM1 | 14 | 13 | LVDS_YAM1 |
| LVDS_YBP1 | 16 | 15 | LVDS_YAP1 |
| GND | 18 | 17 | GND |
| LVDS_YBM2 | 20 | 19 | LVDS_YAM2 |
| LVDS_YBP2 | 22 | 21 | LVDS_YAP2 |
| GND | 24 | 23 | GND |
| LVDS_CLKBM | 26 | 25 | LVDS_CLKAM |
| LVDS_CLKBP | 28 | 27 | LVDS_CLKAP |
| GND | 30 | 29 | GND |
| LVDS_DDCPDATA | 32 | 31 | LVDS_DDCPCLK |
| GND | 34 | 33 | GND |
| LVDS_YBM3 | 36 | 35 | LVDS_YAM3 |
| LVDS_YBP3 | 38 | 37 | LVDS_YAP3 |
| VCON | 40 | 39 | NC |

## 2.4.23 LVLCPW Header ( Panel Voltage Select)

**5 V***
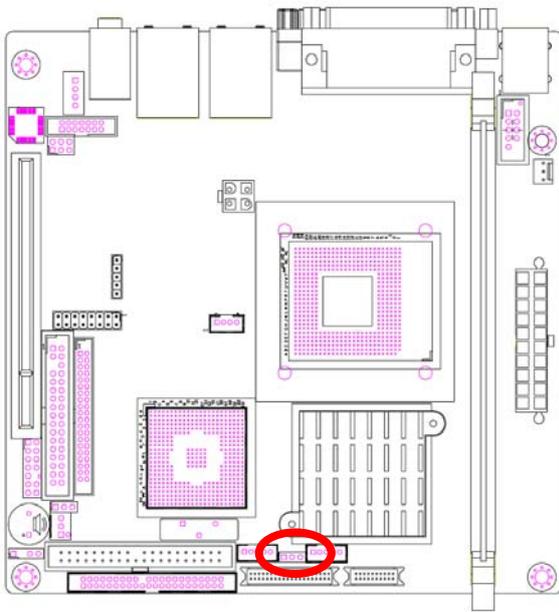
| Pin | 1 | 2 | 3 |
|---|---|---|---|
| Define | +5V | VDD_LVDS_PANEL_SEL | +3V |

**3.3 V**

**\* Default**

## 2.4.24 TMDS DVI Connector (DVI)
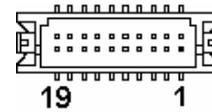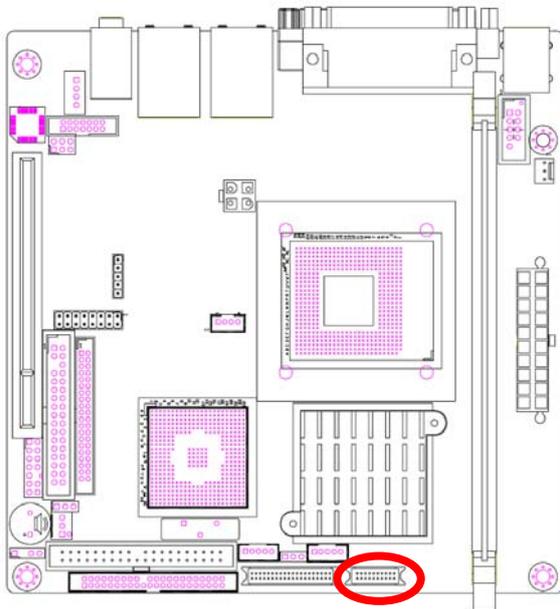
| Signal | PIN | PIN | Signal |
|---|---|---|---|
| VCC_DVI | 2 | 1 | TMDS_C0# |
| TMDS_CK# | 4 | 3 | TMDS_C0 |
| TMDS_CK | 6 | 5 | GND |
| GND | 8 | 7 | TMDS_C1# |
| MDVI_CLK | 10 | 9 | TMDS_C1 |
| MDVI_DATA | 12 | 11 | GND |
| HP_DET | 14 | 13 | TMDS_C2# |
| MI2C_DATA | 16 | 15 | TMDS_C2 |
| MI2C_CLK | 18 | 17 | VCC_DVI |
| NC | 20 | 19 | NC |

## 2.4.25 TV Out Connector
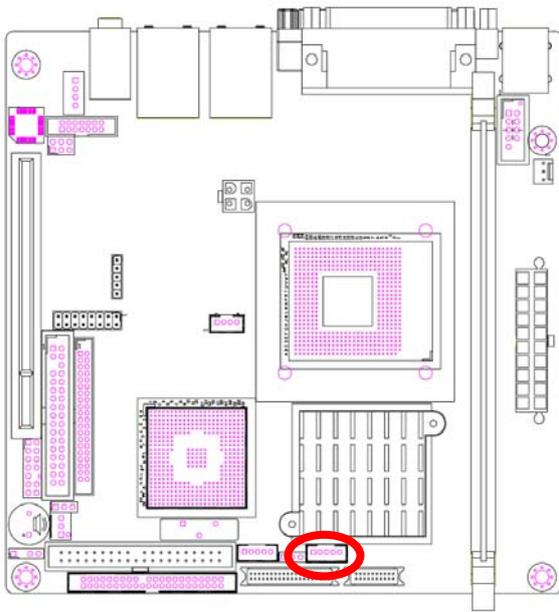
| PIN | Signal |
|---|---|
| 1 | Y_OUT |
| 2 | C_OUT |
| 3 | TAGND |
| 4 | TAGND |
| 5 | CVBS_OUT |

## 2.4.26 USB header 5 & 6
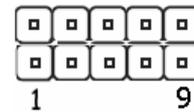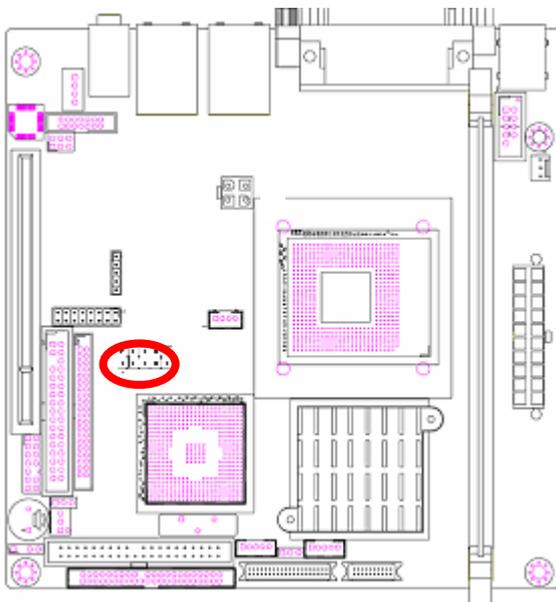
| Signal | PIN | PIN | Signal |
|---|---|---|---|
| SBV45 | 1 | 2 | SBV45 |
| LP5- | 3 | 4 | LP4- |
| LP5+ | 5 | 6 | LP4+ |
| GND | 7 | 8 | GND |
| No Pin | 9 | 10 | NC |

## 2.4.27    PS/2 Keyboard & Mouse Connector (KB_MS1)
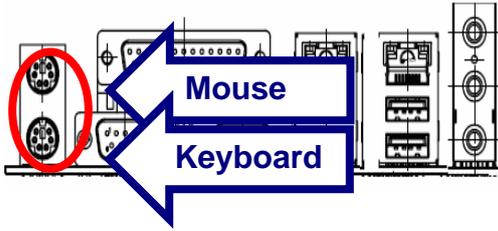


| Port | Description |
|------|-------------|
| Mouse | PS/2 Mouse connector |
| Keyboard | PS/2 Keyboard connector |

# 3 BIOS Setup

## 3.1 Starting Setup

The AwardBIOS™ is immediately activated when you first power on the computer. The BIOS reads the system information contained in the CMOS and begins the process of checking out the system and configuring it. When it finishes, the BIOS will seek an operating system on one of the disks and then launch and turn control over to the operating system.

While the BIOS is in control, the Setup program can be activated in one of two ways:

By pressing <Del> immediately after switching the system on, or

By pressing the <Del> key when the following message appears briefly at the bottom of the screen during the POST (Power On Self Test).

**Press DEL to enter SETUP**

If the message disappears before you 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 Using Setup

In general, you use the arrow keys to highlight items, press <Enter> to select, use the PageUp and PageDown keys to change entries, press <F1> for help and press <Esc> to quit. The following table provides more detail about how to navigate in the Setup program using the keyboard.

| Button | Description |
|--------|-------------|
| ↑ | Move to previous item |
| ↓ | Move to next item |
| ← | Move to the item in the left hand |
| → | Move to the item in the right hand |
| Esc key | Main Menu -- Quit and not save changes into CMOS<br>Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu |
| PgUp key | Increase the numeric value or make changes |
| PgDn key | Decrease the numeric value or make changes |
| + key | Increase the numeric value or make changes |
| - key | Decrease the numeric value or make changes |
| F1 key | General help, only for Status Page Setup Menu and Option Page Setup Menu |
| (Shift) F2 key | Change color from total 16 colors.   F2 to select color forward, (Shift) F2 to select color backward |
| F3 key | Calendar, only for Status Page Setup Menu |
| F4 key | Reserved |
| F5 key | Restore the previous CMOS value from CMOS, only for Option Page Setup Menu |
| F6 key | Load the default CMOS value from BIOS default table, only for Option Page Setup Menu |
| F7 key | Load the default |
| F8 key | Reserved |
| F9 key | Reserved |
| F10 key | Save all the CMOS changes, only for Main Menu |

- **Navigating Through The Menu Bar**

  Use the left and right arrow keys to choose the menu you want to be in.

**Note:**   Some of the navigation keys differ from one screen to another.

- **To Display a Sub Menu**

  Use the arrow keys to move the cursor to the sub menu you want. Then press <Enter>.   A "➢" pointer marks all sub menus.

## 3.3 Getting Help

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> or the F1 key again.

## 3.4 In Case of Problems

If, after making and saving system changes with Setup, you discover that your computer no longer is able to boot, the AwardBIOS™ supports an override to the CMOS settings which resets your system to its defaults.

The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both Award and your systems manufacturer to provide the absolute maximum performance and reliability. Even a seemingly small change to the chipset setup has the potential for causing you to use the override.

### 3.5.1 Standard CMOS Features

The items in Standard CMOS Setup Menu are divided into few 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.
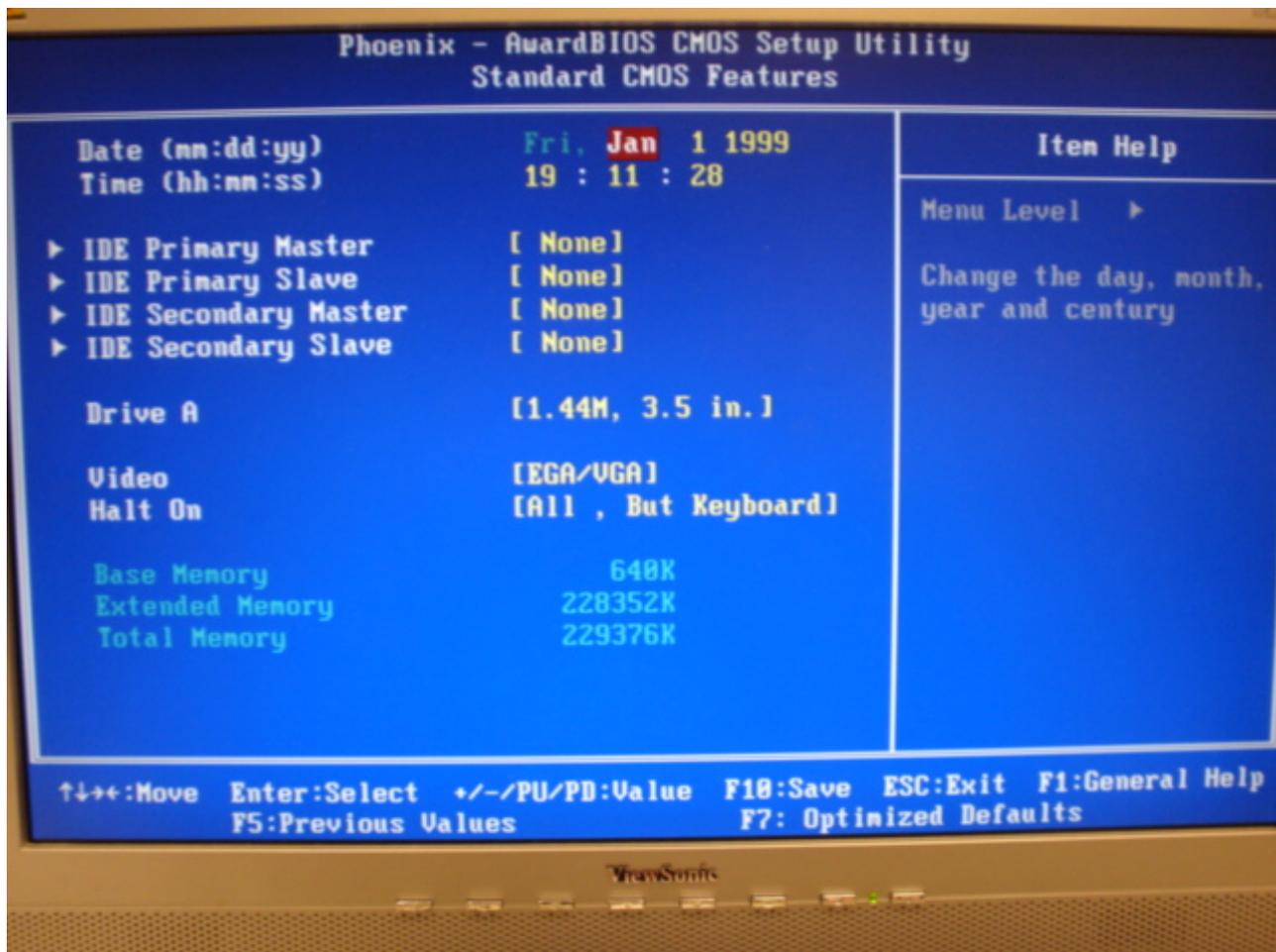


### 3.5.1.1 Main Menu Selection

This reference table shows the selections that you may make on the Main Menu.

| Item | Options | Description |
|---|---|---|
| Time | HH : MM : SS | Set the system time |
| IDE Primary Master<br>IDE Primary Slave<br>IDE Secondary Master<br>IDE Secondary Slave | Options are in 3.5.1.2 | Press <Enter> to enter the sub menu of detailed options |
| 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 | Select the type of floppy disk drive installed in your system, default setting is 1.44M, 3.5.in |
| Video | EGA/VGA<br>CGA 40<br>CGA 80<br>MONO | Select the default video device, default setting is EGA/VGA |
| Halt On | All Errors | Select the situation in which you want the BIOS |

| | No Errors<br>All, but Keyboard<br>All, but Diskette<br>All, but Disk/Key | to stop the POST process and notify you |
|---|---|---|

### 3.5.1.2 IDE Controller Setup

The IDE Controller controls the hard disk drive. Use a separate sub menu to configure each hard disk drive. The below table will shows the IDE primary master sub menu.

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

## 3.5.2 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.
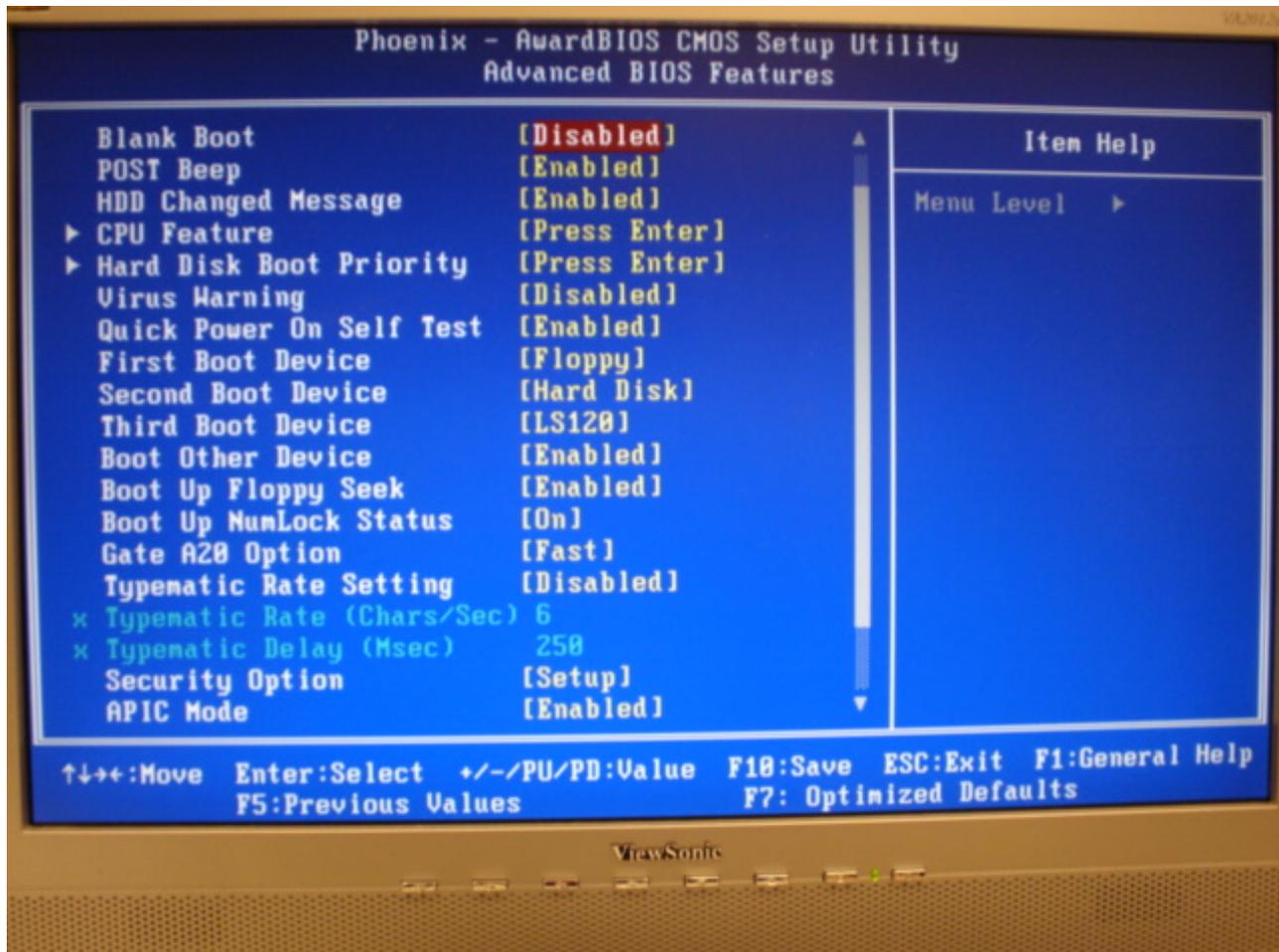


### 3.5.2.1 Blank Boot

| Item | Description |
|---|---|
| Enabled | No show bios post screen. |
| Disabled | Show bios post screen. |

### 3.5.2.2 Post Beep

| .Item | Description |
|---|---|
| Enabled | Beep speaker during boot up. |
| Disabled | No Beep speaker during boot up. |

### 3.5.2.3 *HDD Change Message*

| .Item | Description |
|---|---|
| Enabled | When hard disk has been changed bios will show the warning message. |
| Disabled | When hard disk has been changed bios will no show the warning message. |

### 3.5.2.4 CPU Feature

This item allows you to setup the CPU thermal management function.

| Item | Options | Description |
|---|---|---|
| Thermal Management | Thermal Monitor 1<br>Thermal Monitor 2 | |
| TM2 Bus VID | 0.700 ~ 1.708 | |
| Execute Disable Bit | Enabled, Disabled | |

### 3.5.2.5 Hard Disk Boot Priority

This item allows you to select hard disk boot priority when First Boot Device item set Hard Disk

### 3.5.2.6 Virus Warning

This function allows 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.

| Item | Description |
|---|---|
| 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. |

### 3.5.2.7 Quick Power On Self Test

This category speeds up Power On Self Test (POST) after you power up the computer. If it is set to Enable, BIOS will shorten or skip some check items during POST.

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

### 3.5.2.8 First/Second/Third/Other Boot Device

The BIOS attempts to load the operating system from the devices in the sequence selected in these items.

| Item | Description |
|---|---|
| Floppy | Floppy Device |
| LS120 | LS120 Device |
| HDD-0~4 | Hard Disk Device 0, 1, 2, 3, 4 |
| SCSI | SCSI Device |
| CDROM | CDROM Device |
| ZIP100 | ZIP-100 Device |
| USB-FDD | USB Floppy Device |
| USB-ZIP | USB ZIP Device |
| USB-CDROM | USB CDROM Device |
| USB-HDD | USB Hard Disk Device |
| LAN | Network Device |
| Disabled | Disabled any boot device |

### 3.5.2.9 Book Up Floppy Seek

Seeks disk drives during boot up. Disabling seeds boot up.

| Item | Description |
|---|---|
| Enabled | Enable Floppy Seek |
| Disabled | Disable Floppy Seek |

### 3.5.2.10 Boot Up NumLock Status

Select power on state for NumLock.

| Item | Description |
|---|---|

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| | |
|---|---|
| Enabled | Enable NumLock |
| Disabled | Disable NumLock |

Note: The Setting is kept volid before O.S. Booting. Most of O.S. has its default value which will overwrite this

setting in BIOS. Check O.S. if user need change the default of NumLock in O.S.

### 3.5.2.11 Gate A20 Option

Select if chipset or keyboard controller should control Gate A20.

| Item | Description |
|---|---|
| Normal | A pin in the keyboard controller controls Gate A20 |
| Fast | Lets chipset control Gate A20 |

### 3.5.2.12 Typematic Rate Setting

Key strokes repeat at a rate determined by the keyboard controller. When enabled, the typematic rate and typematic delay can be selected.

| Item | Description |
|---|---|
| Enabled | Enable typematic rate/delay setting |
| Disabled | Disable typematic rate/delay setting |

### 3.5.2.13 Security Option

Select whether the password is required every time the system boots or only when you enter setup.

| Item | Description |
|---|---|
| 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. |

**Note:** To disable security, select PASSWORD SETTING at Main Menu and then you will be asked to enter password. Do not type anything and just press <Enter>, it will disable security. Once the security is disabled, the system will boot and you can enter Setup freely.

### 3.5.2.14 APIC Mode

The BIOS supports versions 1.4 of the Intel multiprocessor specification. When enabled, The MPS Version 1.4 Control for OS can be activated.

The available options are: Enabled/Disabled.

### 3.5.2.15 MPS Version Control For OS

This feature is only applicable to multiprocessor board as it specifies the version of the Multi-Processor Specification (MPS) that the board will use.

The available options are: 1.4, 1.1.

### 3.5.2.16 OS Select for DRAM > 64MB

Select the operating system that is running with greater than 64MB of RAM on the system.

| Item | Description |
|---|---|
| Non-OS2 | Disable OS for over 64 MB DRAM |
| OS2 | Enable OS for over 64 MB DRAM |

### 3.5.2.17 Report No FDD For WIN95

The original Windows95 requires the presence of a floppy. Unless the BIOS tells it to disregard the absence of the drive, it will generate an error message. For other operating

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systems as Win98 etc this field is without relevance.

| Item | Description |
|------|-------------|
| No | Don't generate error message |
| Yes | Generate error message |

### 3.5.2.18 Full Screen LOGO Show

This item allows to enabled/disabled the full screen logo during BIOS boot up process.

| Item | Description |
|------|-------------|
| Enabled | Full Screen Logo show is enabled |
| Disabled | Full Screen Logo show is disabled |

### 3.5.2.19 Logo (EPA) Show

This item allows you enabled/disabled the small EPA logo show on screen at the POST step.

| Item | Description |
|------|-------------|
| Enabled | EPA Logo show is enabled |
| Disabled | EPA Logo show is disabled |

### 3.5.2.20 Summary Screen Show

| Item | Description |
|------|-------------|
| Enabled | Show system configuration table. |
| Disabled | Show system configuration table. |

### 3.5.3 Advanced Chipset Features

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. 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 your system. The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

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



#### 3.5.3.1 DRAM Timing Selectable

This item allows you to select the DRAM timing value by SPD data or Manual by yourself. The available options are: Manual, By SPD. "By SPD" will make the BIOS auto reading the

DRAM timing parameter from On-DIMM's SPD device. (default is by SPD)

**3.5.3.2 CAS Latency Time** (changeable when DRAM Timing Selectable setting is Manual)

This item controls the time delay (in clock cycles - CLKs) that passes before the SDRAM starts to carry out a read command after receiving it. This also determines the number of CLKs for the completion of the first part of a burst transfer. In other words, the lower the latency, the faster the transaction.

The available options are: 2, 2.5.

**3.5.3.3 Active to Precharge Delay** (changeable when DRAM Timing Selectable setting is Manual)

This item is the minimum delay time between Active and Precharge

The available options are: 5, 6, 7.

**3.5.3.4 DRAM RAS# to CAS# Delay** (changeable when DRAM Timing Selectable setting is Manual)

This option allows you to insert a delay between the RAS (**Row Address Strobe**) and CAS (**Column Address Strobe**) signals. This delay occurs when the SDRAM is written to, read from or refreshed. Naturally, reducing the delay improves the performance of the SDRAM while increasing it reduces performance.

The available options are: 2, 3.

**3.5.3.5 DRAM RAS# Precharge** (changeable when DRAM Timing Selectable setting is Manual)

This option sets the number of cycles required for the RAS to accumulate its charge before the SDRAM refreshes. Reducing the precharge time to **2** improves SDRAM performance but if the precharge time of **2** is insufficient for the installed SDRAM, the SDRAM may not be refreshed properly and it may fail to retain data

So, for better SDRAM performance, set the **SDRAM RAS Precharge Time** to **2** but increase it to **3** if you face system stability issues after reducing the precharge time.

The available options are: 2, 3.

**3.5.3.6 DRAM Data Integrity Mode** (changeable when DRAM Timing Selectable setting is Manual)

Select ECC if your memory module supports it. The memory controller will detect and correct single-bit soft memory errors. The memory controller will also be able to detect double-bit errors though it will not be able to correct them. This provides increased data integrity and system stability.

The available options are: Non-ECC, ECC.

**3.5.3.7 MGM Core Frequency**

This field sets the frequency of the DRAM memory installed.

The available options are: Auto Max 266MHz, 400/266/133/200 MHz, 400/200/100/200 MHz, 400/200/100/133 MHz, 400/266/133/267 MHz, 533/266/133/200 MHz, 533/266/133/266 MHz, 400/333/166/250 MHz, Auto Max 400/333 MHz, Auto Max 533/333 MHz.

**3.5.3.8 System BIOS Cacheable**

This feature is only valid when the system BIOS is shadowed. It enables or disables the caching of the system BIOS ROM at **F0000h-FFFFFh** via the L2 cache. This greatly speeds up accesses to the system BIOS. However, this does **not** translate into better

system performance because the OS does not need to access the system BIOS much.

The available options are: Disabled, Enabled.

### 3.5.3.9 Video BIOS Cacheable

This feature is only valid when the video BIOS is shadowed. It enables or disables the caching of the video BIOS ROM at **C0000h-C7FFFh** via the L2 cache. This greatly speeds up accesses to the video BIOS. However, this does **not** translate into better system performance because the OS bypasses the BIOS using the graphics driver to access the video card's hardware directly.

The available options are: Enabled, Disabled.

### 3.5.3.10 Memory Hole At 15M-16M

Enabling this feature reserves 15MB to 16MB memory address space to ISA expansion cards that specifically require this setting. This makes the memory from 15MB and up unavailable to the system. Expansion cards can only access memory up to 16MB.

The available options are: Enable, Disable.

### 3.5.3.11 Delayed Transaction

This feature is used to meet the latency of PCI cycles to and from the ISA bus. The ISA bus is much, much slower than the PCI bus. Thus, PCI cycles to and from the ISA bus take a longer time to complete and this slows the PCI bus down.

However, enabling **Delayed Transaction** enables the chipset's embedded 32-bit posted write buffer to support delayed transaction cycles. This means that transactions to and from the ISA bus are buffered and the PCI bus can be freed to perform other transactions while the ISA transaction is underway.

This option should be **enabled** for better performance and to meet PCI 2.1 specifications. Disable it only if your PCI cards cannot work properly or if you are using an ISA card that is not PCI 2.1 compliant.

The available options are: Enabled, Disabled.

### 3.5.3.12 Delay Prior to Thermal

When you system temperature higher, you can set the DRAM access time slowdown between on 4 min – 32 min delay.

The available options are: 4 Min, 8 Min, 16 Min, and 32 Min.

### 3.5.3.13 AGP Aperture Size (MB)

Select the size of Accelerated Graphics Port (AGP) aperture. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation.

The available options are: 4, 8, 16, 32, 64, 128, 256.

### 3.5.3.14 On-Chip VGA

This item is enabled as the onboard VGA is used.

The available options are: Enabled, Disabled.

### 3.5.3.15 On-Chip Frame Buffer Size

This item is to select the amount of system memory that will be utilized as internal graphics

device memory

The available options are: 1MB, 4MB, 8MB, 16MB, 32MB.

### 3.5.3.16 *Boot Display*

This item is to Select Display Device that the screen will be shown

The available options are:: VBIOS Default, CRT, LFP(LVDS), CRT+LFP(LVDS), EFP(DVI), TV, CRT+EFP(DVI) .

### 3.5.3.17 Panel Scaling

This item is the setting of panel scaling. With scaling function, the panle output can fit intor the screen resolution connected on the output port. The available options are:: Auto, On, Off

### 3.5.3.18 Panel Resolution

This item is to select panel Resolution that you want.

The available options are: 640X480, 800X600, 1024X768, 1280X1024, 1600X1200

### 3.5.3.19 TV Standard

This item is to select the output mode of TV Standard.

The available options are: Off, NTSC, PAL, SECAM

### 3.5.3.20 Video Connector

This item is to select the type of Video display connector

The available options are: Automatic, Composite, Component, Both

### 3.5.3.21 FWH Write Protection

This item is to protection bios not to be updated by non-respected operation.

The available options are: enabled, disabled

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### 3.5.4    Integrated Peripherals

Use this menu to specify your settings for integrated peripherals.

### 3.5.4.1 OnChip IDE Device
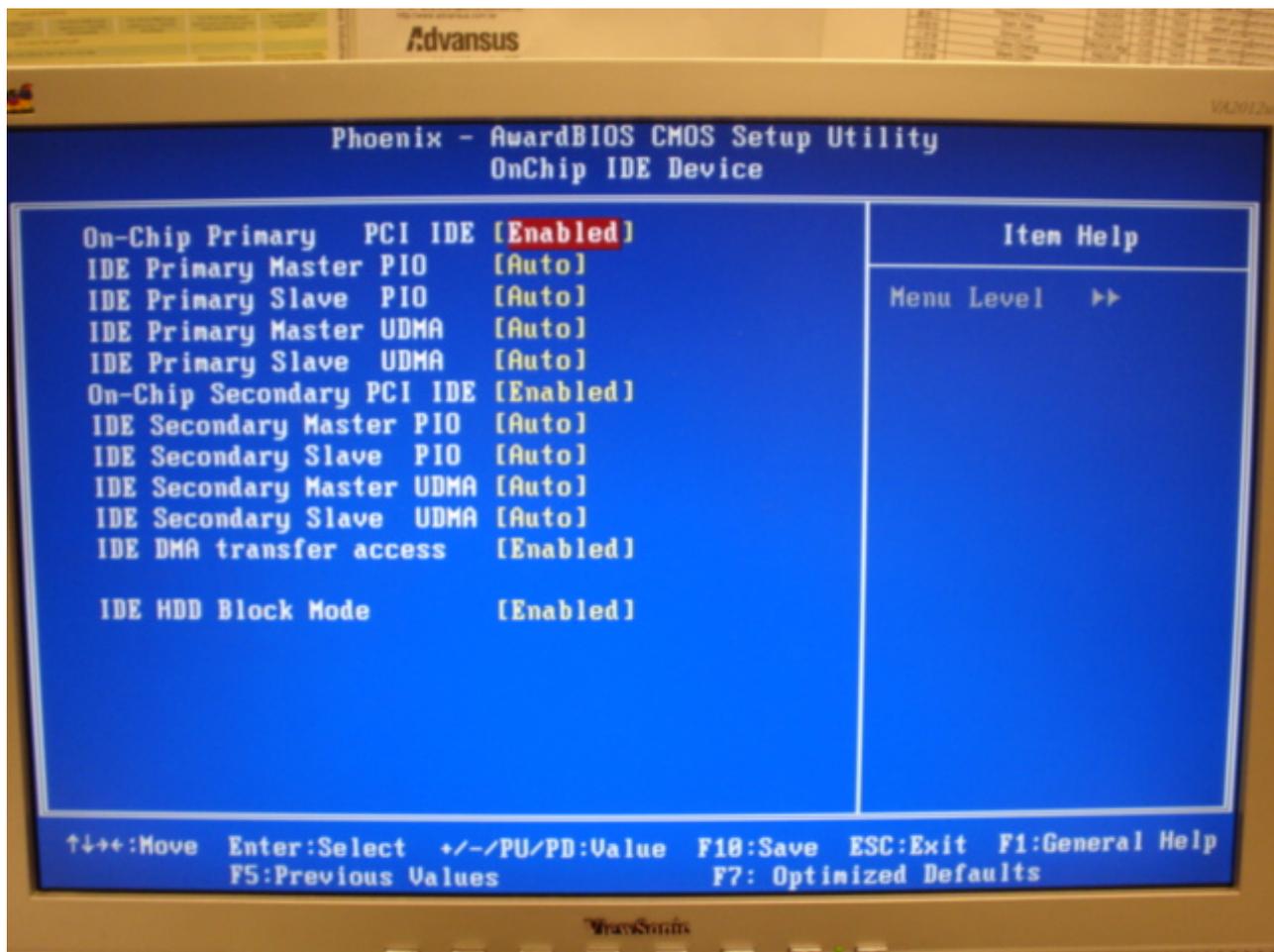


The chipset contains a PCI IDE interface with support for two IDE channels. Select Enabled to activate the primary IDE interface. Select Disabled to deactivate this interface.

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| Item | Options | Description |
|---|---|---|
| **On-Chip Primary PCI IDE**<br>**On-Chip Secondary PCI IDE** | Enabled<br>Disabled | The chipset contains a PCI IDE interface with support for two IDE channels. Select Enabled to activate the primary/secondary IDE interface. Select Disabled to deactivate this interface. |
| IDE Primary Master PIO<br>IDE Primary Slave PIO<br>IDE Secondary Master PIO<br>IDE Secondary Slave PIO | Auto<br>Mode 0<br>Mode 1<br>Mode 2<br>Mode 3<br>Mode 4 | The IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device. |
| IDE Primary Master UDMA<br>IDE Primary Slave UDMA<br>IDE Secondary Master UDMA<br>IDE Secondary Slave UDMA | Auto<br>Disabled | Ultra DMA 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 the hard drive and the system software both support Ultra DMA, select Auto to enable BIOS support. |
| IDE DMA transfer access | Enabled<br>Disabled | Enable dma controller |

## 3.5.4.2 Onboard Device

| Item | Options | Description |
|---|---|---|
| USB Controller | Enabled Disabled | This item allows you to set the USB Controller. |
| USB 2.0 Controller | Disabled Enabled | This item allows you to set the USB 2.0 Controller. |
| USB Keyboard Support | Enabled Disabled | This item allows you to set the system's USB keyboard to Enabled/Disabled. |
| USB Mouse Support | Enabled Disabled | This item allows you to set the system's USB Mouse to Enabled/Disabled. |
| AC97 Audio | Auto Disabled | This item allows you to decide to Auto/disable the Codec chip to support AC97 Audio. |
| Onboard LAN1 controller | Enabled Disabled | Control lan1 enable/disable |
| Onboard LAN2 controller | Enabled Disabled | Control lan2 enable/disable |

## 3.5.4.3  Super IO Device
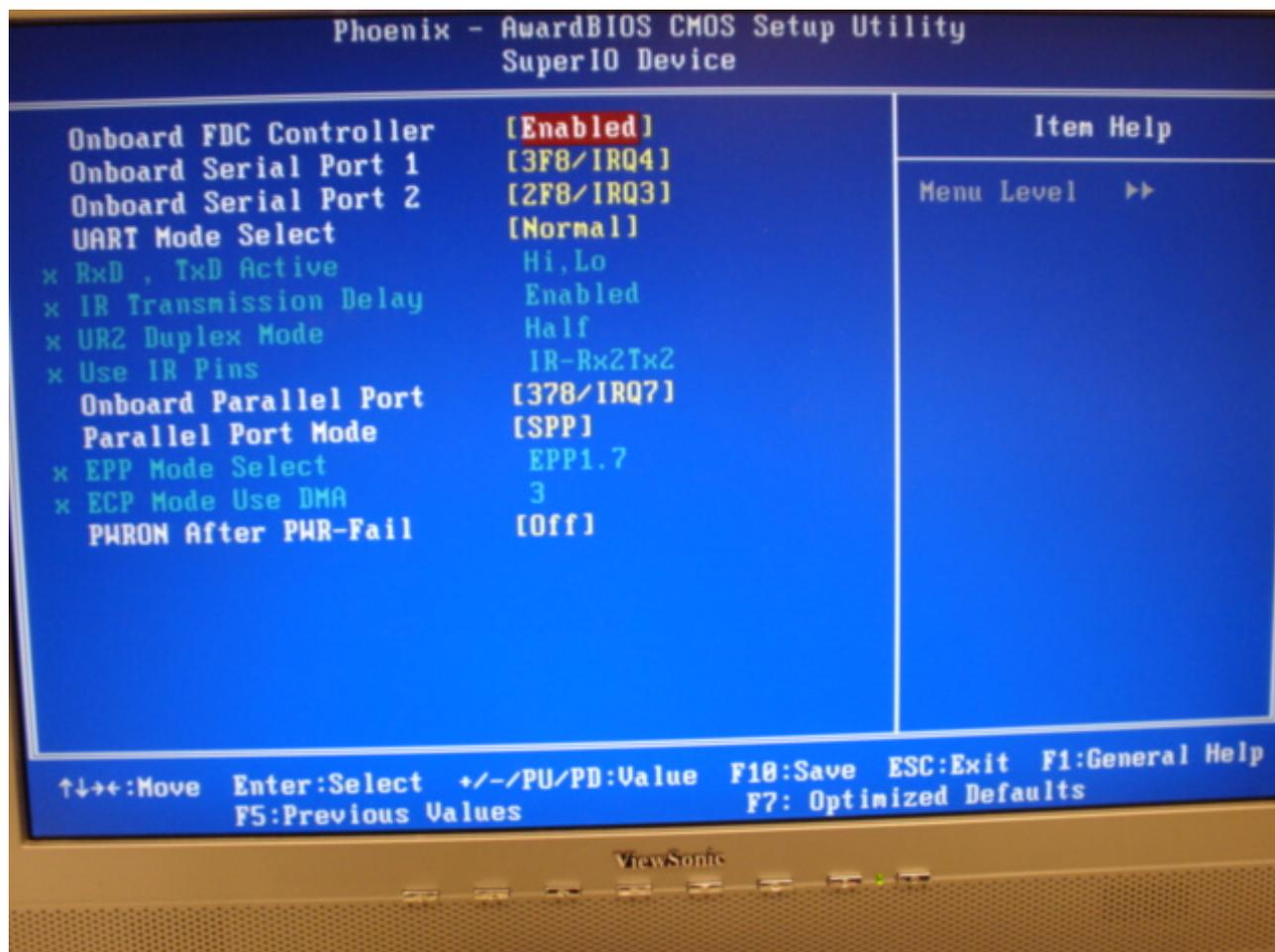
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| Item | Options | Description |
|---|---|---|
| Onboard FDC Controller | Enabled<br>Disabled | Select Enabled if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you are not going to use FDC or the system has no floppy drive, select Disabled in this field. |
| Onboard Serial Port 1<br>Onboard Serial Port 2 | Disable, 3F8/IRQ4<br>2F8/IRQ3, 3E8/IRQ4<br>2E8/IRQ3, AUTO | Select an address and corresponding interrupt for the first and second serial ports. |
| UART Mode Select | IrDA<br>ASKIR<br>Normal | IrDA/UART function select |
| RxD , TxD Active | Hi,Hi<br>Hi,Lo<br>Lo,Hi<br>Lo,Lo | This setting the Hardward IrDA signal's Logic Level |
| IR Transmission Delay | Enabled<br>Disabled | Enabled/disabled IR Transmission Delay |
| UR2 Duplex Mode | Full<br>Half | Full duplex/ half duplex mode select |
| Use IR Pins | RxD2,TxD2<br>IR-Rx2Tx2 | IR I/O pins' location select |
| Onboard Parallel Port | Disabled, 378/IRQ7<br>278/IRQ5, 3BC/IRQ7 | Select a matching address and interrupt for the physical parallel (printer) port. |
| Parallel Port Mode | SPP, EPP<br>ECP, Normal<br>ECP+EPP | Select an operating mode for the onboard parallel port. Select Compatible or Extended unless you are certain both your hardware and software support EPP or ECP mode. |
| EPP Mode Select | EPP1.9, EPP1.7 | Select EPP port type 1.7 or 1.9. |
| ECP Mode Use DMA | 1, 3 | Select a DMA channel for the port. |
| PWRON After PWR-Fail | Off, On<br>Former-Sts | This item is to set whether to run Ac Loss Auto Restart or off |
| Onboard Serial Port 3<br>Onboard Serial Port 4 | Disable, 3F8<br>2F8, 3E8,<br>2E8 | Select an IRQ address for the third and forth serial Ports. |
| Serial Port 3 Use IRQ<br>Serial Port 4 Use IRQ | IRQ3, IRQ4, IRQ5<br>IRQ9, IRQ10, IRQ11 | Select an IRQ for the third and forth serial ports. |
| Serial Port 3 Mode | Normal<br>IRDA | Select an IO address for the third serial ports |

| Item | Options | Description |
|---|---|---|
| Onboard Serial Port 3<br>Onboard Serial Port 4 | Disable, 3F8<br>2F8, 3E8<br>2E8 | Select an address for the serial ports 3 and serial ports 4. |
| Serial Port 3 use IRQ | IRQ3,IRQ4 | Select an corresponding interrupt for the Serial |

| Serial Port 4 use IRQ | IRQ5,IRQ10 IRQ11 | Port 3 and Serial Port. |
|---|---|---|
| Onboard Serial Port 5 Onboard Serial Port 6 | Disable, 3F8 2F8, 3E8 2E8 | Select an address for the serial ports 5 and serial ports 6. |
| Serial Port 5 use IRQ Serial Port 6 use IRQ | IRQ3,IRQ4 IRQ5,IRQ10 IRQ11 | Select an corresponding interrupt for the Serial Port 5 and Serial Port 6. |

### 3.5.5 Power Management Setup

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



### 3.5.5.1 ACPI Function

This item allows you to enable/disable the ACPI function.

The available options are: Enable, Disable.

### 3.5.5.2 ACPI Suspend Type

This item will set which ACPI suspend type will be used.

The available options are: S1(POS), S3(STR).S1&S3.

### 3.5.5.3 Power Management

This category allows you to select the type (or degree) of power saving and is directly related to the following modes:

| Item | Description |
|---|---|
| Min. Power Saving | Minimum power management, HDD Power Down = 15 Min, |
| Max. Power Saving | Maximum power management, HDD Power Down =1 Min, |
| User Defined | Allows you to set each mode individually.   When not disabled, each of the ranges are from 1 min. to 1 hr. except for HDD Power Down which ranges from 1 min. to 15 min. and disable. |

### 3.5.5.4　Video Off Method

This determines the manner in which the monitor is blanked.

The available options are: Blank Screen, V/H SYNC+Blank, DPMS.

### 3.5.5.5　Video Off In Suspend

This determines the manner in which the monitor is blanked.

The available options are: No, Yes.

### 3.5.5.6　Suspend Type

This function allows to select Suspend type.

The available options are: Stop Grant, PwrOn Suspend.

### 3.5.5.7　MODEM Use IRQ

This determines the IRQ in which the MODEM can use.

The available options are: NA, 3, 4, 5, 7, 9, 10, 11.

### 3.5.5.8　Soft-Off by PWR-BTTN

Pressing the power button for more than 4 seconds forces the system to enter the Soft-Off state when the system has "hung".(Only could working on ATX Power supply)

The available options are: Delay 4 Sec, Instant-Off.

### 3.5.5.9　CPU THRM-Throttling

CPU over-heating protection. It's for decrease the Processor's clock ratio in order to reduce
The available options are: Enable, Disabled.

### 3.5.5.10　Wake Up by PCI Card

This will enable the system to wake up through PCI Card peripheral.

The available options are: Enable, Disabled.

### 3.5.5.11　Power On By Ring

This determines whether the system boot up if there's an incoming call from the Modem.

The available options are: Enable, Disabled.

### 3.5.5.12　Resume By Alarm

This function is for setting date and time for your computer to boot up.

The available options are: Enabled, Disabled.

### 3.5.5.13　Primary/Secondary IDE 0/1, FDD,COM,LPT PORT, PCI PIRQ[A-D]#

Reload Global Timer events are I/O events whose occurrence can prevent the system from entering a power saving mode or can awake the system from such a mode. In effect ,the system remain alert for anything which occurs to a device which is configured as Enabled ,even when the system is in a power down mode.

The available options are: Enabled, Disabled.

### 3.5.6 PnP / PCI Configuration

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.
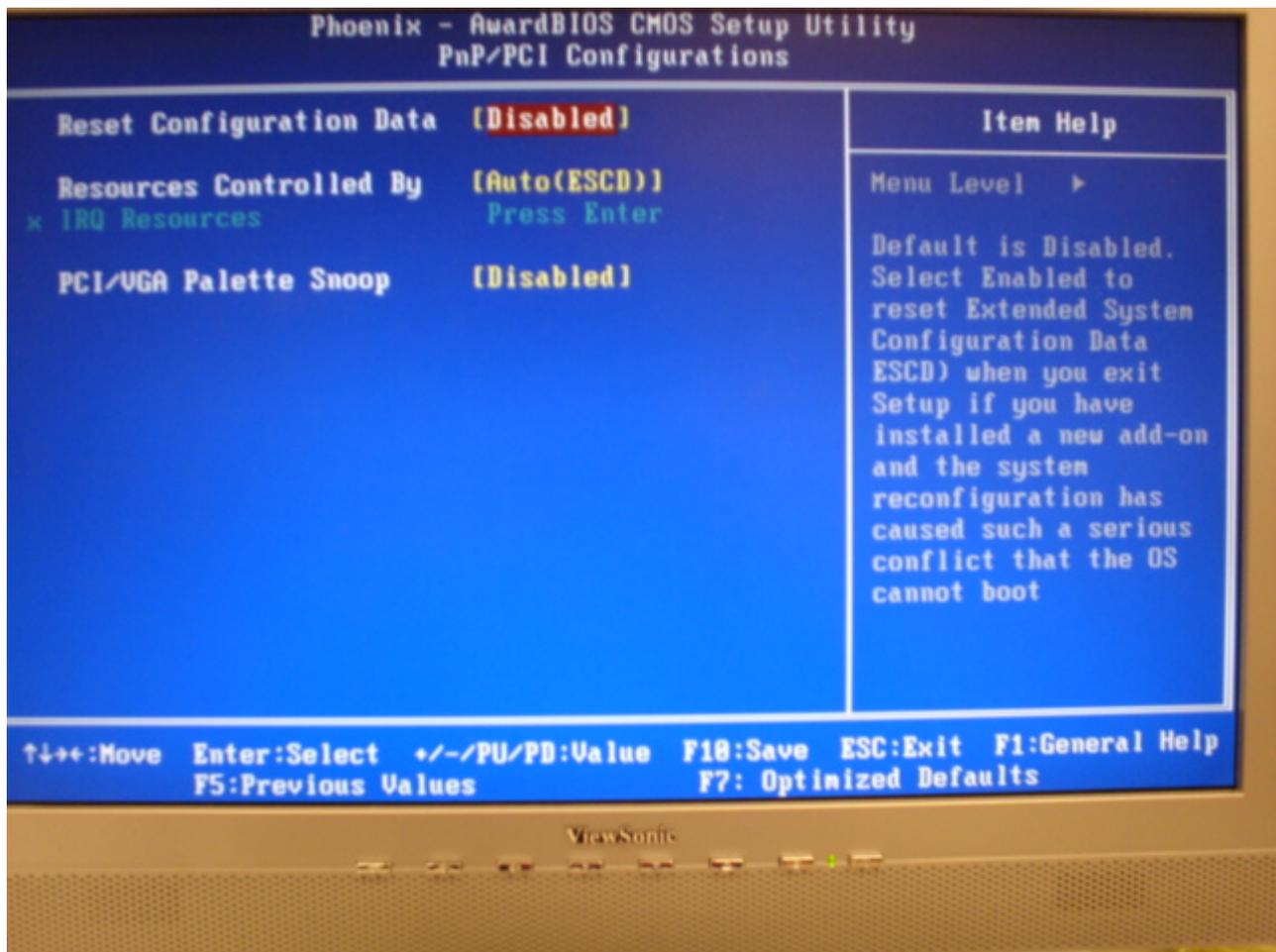


#### 3.5.6.1 Reset Configuration Data

Normally, you leave this field 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 operating system cannot boot.

The available options are: Enabled, Disabled.

#### 3.5.6.2 Resources Controlled By

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows®95. If you set this field to "manual" choose specific resources by going into each of the sub menu that follows this field (a sub menu is preceded by a "➢").

The available options are: Auto(ESCD), Manual.

### 3.5.6.3    PCI / VGA Palette Snoop

Leave this field at Disabled.

The available options are: Enabled, Disabled.

### 3.5.7    PC Health Status

This section shows the status of your CPU, Fan & System.
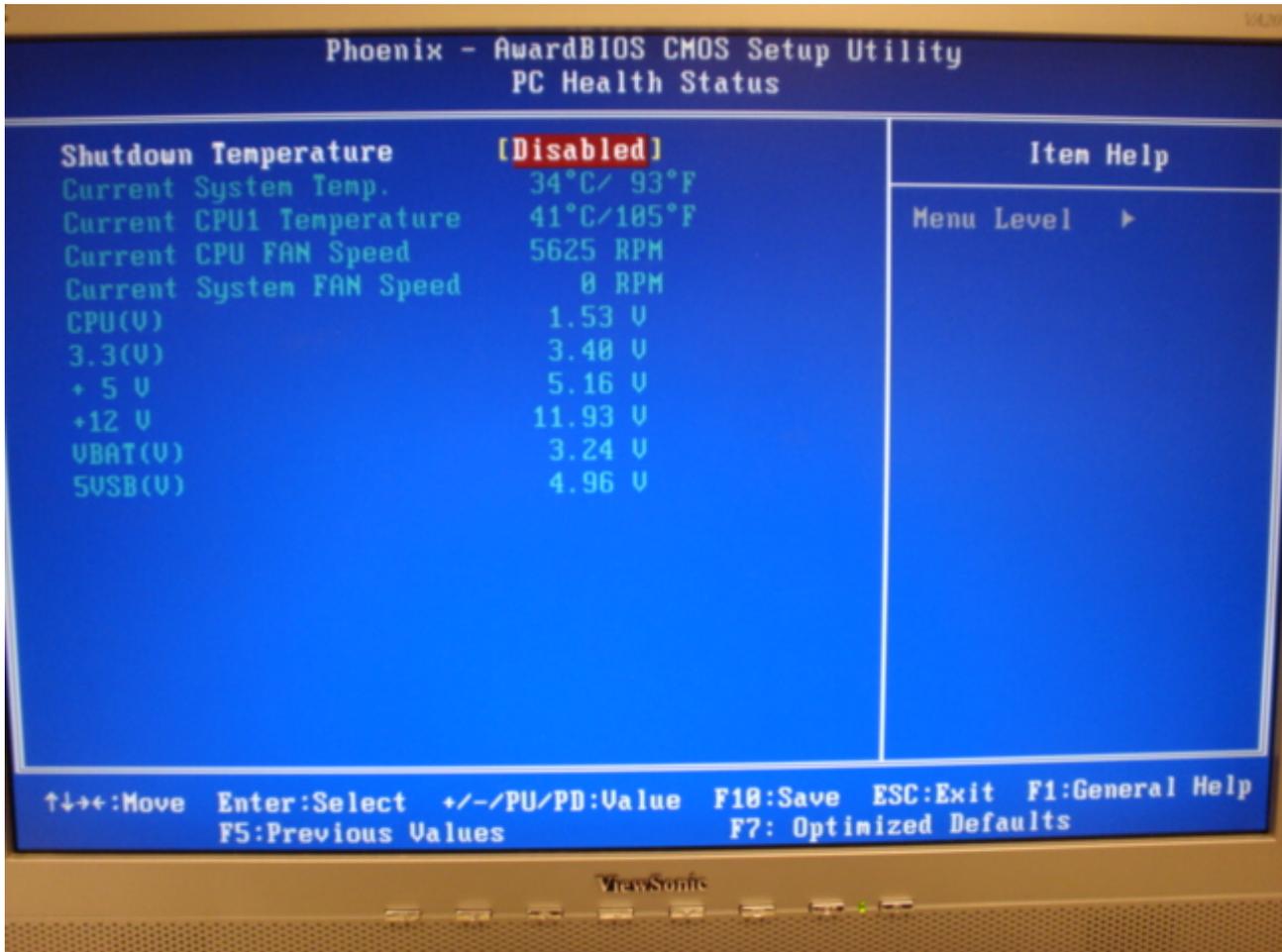


### 3.5.7.1    Shutdown Temperature

When system temperature over the setting value. This function makes the system automatically shutdown.

The available options are: 60°C/140°F, 65°C/149°F, 70°C/158°F, 75°C/167°F

### 3.5.8      Frequency / Voltage Control

This menu specifies your setting for frequency/voltage control.



### 3.5.8.1    Spread Spectrum

This item is to adjust extreme values of the pulse for EMI test.

The available options are: Enable, Disable.

### 3.5.9 Load Optimized Defaults

Use this menu to load the BIOS default values that are factory settings for optimal performance system operations. While Award has designed the custom BIOS to maximize performance, the factory has the right to change these defaults to meet their needs.

Press <Y> to load the default values setting for optimal performance system operations.

```
         Phoenix - AwardBIOS CMOS Setup Utility
┌─────────────────────────────────────────────────────────────┐
│                                                               │
│  ▶ Standard CMOS Features     │  ▶ Frequency/Voltage Control  │
│                               │                               │
│  ▶ Advanced BIOS Features     │     Load Fail-Safe Defaults   │
│                               │                               │
│  ▶ Advanced Chipset Features  │     Load Optimized Defaults   │
│                               │                               │
│  ▶ Integrated Peripherals     │     Set Supervisor Password   │
│                               │                               │
│  ▶ Power Management      ┌─────────────────────────┐ word     │
│                          │                         │          │
│  ▶ PnP/PCI Configura     │  Load Optimized Defaults (Y/N)?  etup │
│                          │                         │          │
│  ▶ PC Health Status      └─────────────────────────┘ Saving   │
│                                                               │
├─────────────────────────────────────────────────────────────┤
│  Esc : Quit        F9 : Menu in BIOS      ↑↓→←   : Select Item│
│  F10 : Save & Exit Setup                                      │
├─────────────────────────────────────────────────────────────┤
│                  Load Optimized Defaults                      │
└─────────────────────────────────────────────────────────────┘
```

### 3.5.10 Set Password

You can set password for protect your PC.

It allow user to enter/change the options of setup menus.

```
         Phoenix - AwardBIOS CMOS Setup Utility
┌─────────────────────────────────────────────────────────────┐
│                                                               │
│  ▶ Standard CMOS Features     │  ▶ Frequency/Voltage Control  │
│                               │                               │
│  ▶ Advanced BIOS Features     │     Load Fail-Safe Defaults   │
│                               │                               │
│  ▶ Advanced Chipset Features  │     Load Optimized Defaults   │
│                               │                               │
│  ▶ Integrated Peripherals     │     Set Supervisor Password   │
│                               │                               │
│  ▶ Power Management Setup      │    Set User Password          │
│                               │                               │
│  ▶ PnP/PCI Configurati   ┌─────────────────────────┐ t Setup  │
│                          │  Enter Password:        │          │
│  ▶ PC Health Status      └─────────────────────────┘ ut Saving│
│                                                               │
├─────────────────────────────────────────────────────────────┤
│  Esc : Quit        F9 : Menu in BIOS      ↑↓→←   : Select Item│
│  F10 : Save & Exit Setup                                      │
├─────────────────────────────────────────────────────────────┤
│                Change/Set/Disable Password                    │
└─────────────────────────────────────────────────────────────┘
```

User Password: able to enter but no right to change the options of setup menus.

Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be

asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password. To disable a password, just press <Enter> when you are prompted to enter the password. A message will confirm the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup freely. (some of BIOS has both supervisor and user password separately, the background diagram of BIOS setup screen may not 100% matched with exactly BIOS setup screen. It only for demonstrate the Password functionality)

**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 (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

### 3.5.11 Save & Exit Setup

Save CMOS value changes to CMOS and exit setup.

Enter <Y> to store the selection made in the menus in CMOS, a special section in memory that stays on after turning the system off. The BIOS configures the system according to the Setup selection stored in CMOS when boot the computer next time.

The system is restarted after saving the values.

```
            Phoenix - AwardBIOS CMOS Setup Utility
  ┌─────────────────────────────────────────────────────────────┐
  │  ▶ Standard CMOS Features      ▶ Frequency/Voltage Control    │
  │                                                               │
  │  ▶ Advanced BIOS Features         Load Fail-Safe Defaults     │
  │                                                               │
  │  ▶ Advanced Chipset Features      Load Optimized Defaults     │
  │                                                               │
  │  ▶ Integrated Peripherals         Set Supervisor Password     │
  │                                                               │
  │  ▶ Power Management        ┌──────────────────────┐ sword     │
  │                            │                      │           │
  │  ▶ PnP/PCI Configura       │ SAVE to CMOS and EXIT (Y/N)? Y │ Setup │
  │                            │                      │           │
  │  ▶ PC Health Status        └──────────────────────┘ Saving    │
  ├─────────────────────────────────────────────────────────────┤
  │  Esc : Quit        F9 : Menu in BIOS      ↑ ↓ → ←   : Select Item │
  │  F10 : Save & Exit Setup                                      │
  ├─────────────────────────────────────────────────────────────┤
  │                    Save Data to CMOS                          │
  └─────────────────────────────────────────────────────────────┘
```

### 3.5.12 Exit Without Save

Abandon all CMOS value changes and exit setup, and the system is restarted after exiting.

```
          Phoenix - AwardBIOS CMOS Setup Utility
┌──────────────────────────────────────────────────────────────────┐
│                                                                    │
│   ▶ Standard CMOS Features        ▶ Frequency/Voltage Control      │
│                                                                    │
│   ▶ Advanced BIOS Features           Load Fail-Safe Defaults       │
│                                                                    │
│   ▶ Advanced Chipset Features        Load Optimized Defaults       │
│                                                                    │
│   ▶ Integrated Peripherals           Set Supervisor Password       │
│                                                                    │
│   ▶ Power Management S ┌─────────────────────────────┐ ssword      │
│                        │                             │             │
│   ▶ PnP/PCI Configurat │ Quit Without Saving (Y/N)? N │ Setup       │
│                        │                             │             │
│   ▶ PC Health Status   └─────────────────────────────┘ t Saving    │
│                                                                    │
├──────────────────────────────────────────────────────────────────┤
│   Esc : Quit          F9 : Menu in BIOS      ↑↓→←   : Select Item  │
│   F10 : Save & Exit Setup                                          │
├──────────────────────────────────────────────────────────────────┤
│                        Abandon all Data                            │
│                                                                    │
└──────────────────────────────────────────────────────────────────┘
```

# 4 Drivers Installation

**Note**: Installation procedures and screen shots in this section are for your reference and may not be exactly the same as shown on your screen.

## 4.1 Install Driver

**Step 1**
Insert the Supporting CD-ROM to CD-ROM drive, and it should show the index page of Advantech's products automatically.

**Step 2.** Click **AIMB-240**
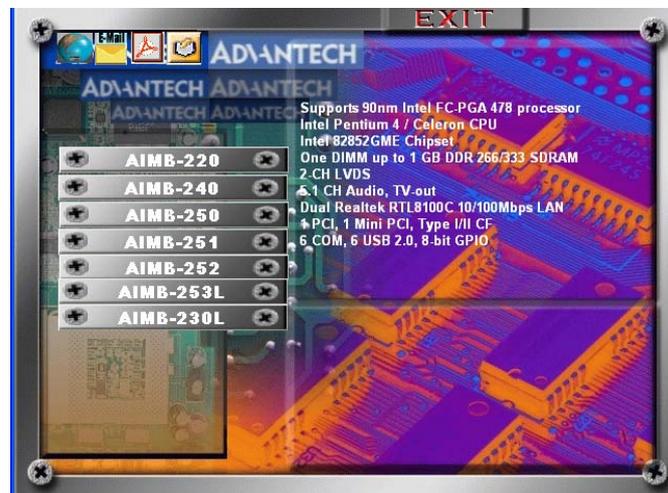


**Step 3.** Click on the driver you wan to install

# Appendix A:
# AWARD BIOS POST Messages

## Overview

During the Power On Self-Test (POST), if the BIOS detects an error requiring you to do something to fix, it will either sound a beep code or display a message.

If a message is displayed, it will be accompanied by:

PRESS F1 TO CONTINUE, CTRL-ALT-ESC OR DEL TO ENTER SETUP

## Post Beep

Currently there are two kinds of beep codes in BIOS. This code indicates that a video error has occurred and the BIOS cannot initialize the video screen to display any additional information. This beep code consists of a single long beep followed by two short beeps. The other code indicates that your DRAM error has occurred. This beep code consists of a single long beep repeatedly.

## Error Messages

One or more of the following messages may be displayed if the BIOS detects an error during the POST. This list includes messages for both the ISA and the EISA BIOS.

**1. CMOS BATTERY HAS FAILED**

CMOS battery is no longer functional. It should be replaced.

**2. CMOS CHECKSUM ERROR**

Checksum of CMOS is incorrect. This can indicate that CMOS has become corrupt. This error may have been caused by a weak battery. Check the battery and replace if necessary.

**3. DISK BOOT FAILURE, INSERT SYSTEM DISK AND PRESS ENTER**

No boot device was found. This could mean that either a boot drive was not detected or the drive does not contain proper system boot files. Insert a system disk into Drive A: and press <Enter>. If you assumed the system would boot from the hard drive, make sure the controller is inserted correctly and all cables are properly attached. Also be sure the disk is formatted as a boot device. Then reboot the system.

**4. DISKETTE DRIVES OR TYPES MISMATCH ERROR - RUN SETUP**

Type of diskette drive installed in the system is different from the CMOS definition. Run Setup to reconfigure the drive type correctly.

5. **DISPLAY SWITCH IS SET INCORRECTLY**

Display switch on the motherboard can be set to either monochrome or color. This indicates the switch is set to a different setting than indicated in Setup. Determine which setting is correct, and then either turn off the system and change the jumper, or enter Setup and change the VIDEO selection.

6. **DISPLAY TYPE HAS CHANGED SINCE LAST BOOT**

Since last powering off the system, the display adapter has been changed. You must configure the system for the new display type.

7. **EISA Configuration Checksum Error**
   **PLEASE RUN EISA CONFIGURATION UTILITY**

The EISA non-volatile RAM checksum is incorrect or cannot correctly read the EISA slot. This can indicate either the EISA non-volatile memory has become corrupt or the slot has been configured incorrectly. Also be sure the card is installed firmly in the slot.

8. **EISA Configuration Is Not Complete**
   **PLEASE RUN EISA CONFIGURATION UTILITY**

The slot configuration information stored in the EISA non-volatile memory is incomplete.

> **Note:** When either of these errors appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

9. **ERROR ENCOUNTERED INITIALIZING HARD DRIVE**

Hard drive cannot be initialized. Be sure the adapter is installed correctly and all cables are correctly and firmly attached. Also be sure the correct hard drive type is selected in Setup.

10. **ERROR INITIALIZING HARD DISK CONTROLLER**

Cannot initialize controller. Make sure the cord is correctly and firmly installed in the bus. Be sure the correct hard drive type is selected in Setup. Also check to see if any jumper needs to be set correctly on the hard drive.

11. **FLOPPY DISK CNTRLR ERROR OR NO CNTRLR PRESENT**

Cannot find or initialize the floppy drive controller. Make sure the controller is installed correctly and firmly. If there are no floppy drives installed, be sure the Diskette Drive selection in Setup is set to NONE.

12. **Invalid EISA Configuration**

    **PLEASE RUN EISA CONFIGURATION UTILITY**

The non-volatile memory containing EISA configuration information was programmed incorrectly or has become corrupt. Re-run EISA configuration utility to correctly program the memory.

**Note:** When either of these errors appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

13. **KEYBOARD ERROR OR NO KEYBOARD PRESENT**

Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot.

If you are purposely configuring the system without a keyboard, set the error halt condition in Setup to HALT ON ALL, BUT KEYBOARD. This will cause the BIOS to ignore the missing keyboard and continue the boot.

14. **Memory Address Error at ...**

Indicates a memory address error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.

15. **Memory parity Error at ...**

Indicates a memory parity error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.

16. **MEMORY SIZE HAS CHANGED SINCE LAST BOOT**

Memory has been added or removed since the last boot. In EISA mode use Configuration Utility to reconfigure the memory configuration. In ISA mode enter Setup and enter the new memory size in the memory fields.

17. **Memory Verify Error at ...**

Indicates an error verifying a value already written to memory. Use the location along with your system's memory map to locate the bad chip.

18. **OFFENDING ADDRESS NOT FOUND**

This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem cannot be isolated.

19. **OFFENDING SEGMENT:**

This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem has been isolated.

## 20. PRESS A KEY TO REBOOT

This will be displayed at the bottom screen when an error occurs that requires you to reboot. Press any key and the system will reboot.

## 21. PRESS F1 TO DISABLE NMI, F2 TO REBOOT

When BIOS detects a Non-maskable Interrupt condition during boot, this will allow you to disable the NMI and continue to boot, or you can reboot the system with the NMI enabled.

## 22. RAM PARITY ERROR - CHECKING FOR SEGMENT ...

Indicates a parity error in Random Access Memory.

## 23. Should Be Empty But EISA Board Found
   PLEASE RUN EISA CONFIGURATION UTILITY

A valid board ID was found in a slot that was configured as having no board ID.

**Note:** When either of these errors appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

## 24. Should Have EISA Board But Not Found
   PLEASE RUN EISA CONFIGURATION UTILITY

The board installed is not responding to the ID request, or no board ID has been found in the indicated slot.

**Note:** When either of these errors appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

## 25. Slot Not Empty

Indicates that a slot designated as empty by the EISA Configuration Utility actually contains a board.

**Note:** When either of these errors appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

## 26. SYSTEM HALTED, (CTRL-ALT-DEL) TO REBOOT ...

Indicates the present boot attempt has been aborted and the system must be rebooted. Press and hold down the CTRL and ALT keys and press DEL.

**27. Wrong Board In Slot**

   **PLEASE RUN EISA CONFIGURATION UTILITY**

The board ID does not match the ID stored in the EISA non-volatile memory.

**Note:** When either of these errors appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

**28. FLOPPY DISK(S) fail (80) → Unable to reset floppy subsystem.**

**29. FLOPPY DISK(S) fail (40) → Floppy Type dismatch.**

**30. Hard Disk(s) fail (80)      → HDD reset failed.**

**31. Hard Disk(s) fail (40)      → HDD controller diagnostics failed.**

**32. Hard Disk(s) fail (20)      → HDD initialization error.**

**33. Hard Disk(s) fail (10)      → Unable to recalibrate fixed disk.**

**34. Hard Disk(s) fail (08)      → Sector Verify failed.**

**35. Keyboard is locked out - Unlock the key.**

BIOS detect the keyboard is locked. P17 of keyboard controller is pulled low.

**36. Keyboard error or no keyboard present.**

Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot.

**37. Manufacturing POST loop.**

System will repeat POST procedure infinitely while the P15 of keyboard controller is pull low. This is also used for M/B burn in test.

**38. BIOS ROM checksum error - System halted.**

The checksum of ROM address F0000H-FFFFFH is bad.

**39. Memory test fail.**

BIOS reports the memory test fail if the onboard memory is tested error.

## 40. POST Codes

Please take reference to Phoenix-Award website for the latest post codes.
http://www.phoenix.com/en/Customer+Services/BIOS/AwardBIOS/Award+Error+Codes.htm

### 40.1 Normal POST Code



**Note:** EISA POST codes are typically output to port address 300h. ISA POST codes are output to port address 80h.

| Code (hex) | Name | Description |
| --- | --- | --- |
| C0 | Turn Off Chipset and CPU test | OEM Specific-Cache control cache<br>Processor Status (1FLAGS) Verification. Tests the following processor status flags: Carry, zero, sign, overflow, the BIOS sets each flag, verifies They are set, then turns each flag off and verifies it is off.<br>Read/Write/Verify all CPU registers except SS, SP, and BP with data pattern FF and 00. RAM must be periodically refreshed to keep the memory from decaying. This function ensures that the memory refresh function is working properly. |
| C1 | Memory Presence | First block memory detect OEM Specific-Test to size on-board memory. Early chip set initialization Memory presence test OEM chip set routines clear low 64K of memory Test first 64K memory. |
| C2 | Early Memory Initialization | OEM Specific- Board Initialization |
| C3 | Extend Memory DRAM select | OEM Specific- Turn on extended memory Initialization Cyrix CPU initialization, Cache initialization |
| C4 | Special Display Handling | OEM Specific- Display/Video Switch handling so that switch handling display switch errors never occurs |
| C5 | Early Shadow | OEM specific- Early shadow enable for fast boot |
| C6 | Cache presence test | External cache size detection |
| CF | CMOS Check | CMOS checkup |
| B0 | Spurious | If interrupt occurs in protected mode. |
| B1 | Unclaimed NMI | If unmasked NMI occurs, display Press F1 to disable NMI, F2 reboot. |
| BF | Program Chip Set | To program chipset from defaults values |
| E1-EF | Setup Pages | E1- Page 1, E2 - Page 2, etc. |
| 1 | Force load Default to chipset | Chipset defaults program |
| 2 | Reserved | |

| Code (hex) | Name | Description |
|---|---|---|
| 3 | Early Superio Init | Early Initialized the super IO |
| 4 | Reserved | |
| 5 | Blank video | Reset Video controller |
| 6 | Reserved | |
| 7 | Init KBC | Keyboard controller init |
| 8 | KB test | Test the Keyboard |
| 9 | Reserved | |
| A | Mouse Init | Initialized the mouse |
| B | Onboard Audio init | Onboard audio controller initialize if exist |
| C | Reserved | |
| D | Reserved | |
| E | CheckSum Check | Check the intergraty of the ROM, BIOS and message |
| F | Reserved | |
| 10 | Auto detec EEPROM | Check Flash type and copy flash write/erase routines to 0F000h segments |
| 11 | Reserved | |
| 12 | Cmos Check | Check Cmos Circuitry and reset CMOS |
| 13 | Reserved | |
| 14 | Chipset Default load | Program the chipset registers with CMOS values |
| 15 | Reserved | |
| 16 | Clock Init | Init onboard clock generator |
| 17 | Reserved | |
| 18 | Identify the CPU | Check the CPU ID and init L1/L2 cache |
| 19 | Reserved | |
| 1A | Reserved | |
| 1B | Setup Interrupt Vector Table | Initialize first 120 interrupt vectors with SPURIOUS_INT_HDLR and initialize INT 00h-1Fh according to INT_TBL |
| 1C | Reserved | |
| 1D | Early PM Init | First step initialize if single CPU onboard |
| 1E | Reserved | |
| 1F | Re-initial KB | Re-init KB |
| 20 | Reserved | |
| 21 | HPM init | If support HPM, HPM get initialized here |
| 22 | Reserved | |
| 23 | Test CMOS Interface and battery Status | Verifies CMOS is working correctly, detects bad battery. If failed, load CMOS defaults and load into chipset |
| 24 | Reserved | |

## AIMB-240 Series

| Code (hex) | Name | Description |
| --- | --- | --- |
| 25 | Reserved | |
| 26 | Reserved | |
| 27 | KBC final Init | Final Initial KBC and setup BIOS data area |
| 28 | Reserved | |
| 29 | Initialize Video Interface | Read CMOS location 14h to find out type of video in use. Detect and Initialize Video Adapter. |
| 2A | Reserved | |
| 2B | Reserved | |
| 2C | Reserved | |
| 2D | Video memory test | Test video memory, write sign-on message to screen. Setup shadow RAM - Enable shadow according to Setup. |
| 2E | Reserved | |
| 2F | Reserved | |
| 30 | Reserved | |
| 31 | Reserved | |
| 32 | Reserved | |
| 33 | PS2 Mouse setup | Setup PS2 Mouse and reset KB |
| 34 | Reserved | |
| 35 | Test DMA Controller 0 | Test DMA Controller 0 |
| 36 | Reserved | |
| 37 | Test DMA Controller 1 | Test DMA Controller 1 |
| 38 | Reserved | |
| 39 | Test DMA Page Registers | Test DMA Page Registers. |
| 3A | Reserved | |
| 3B | Reserved | |
| 3C | Test Timer Counter 2 | Test 8254 Timer 0 Counter 2. |
| 3D | Reserved | |
| 3E | Test 8259-1 Mask Bits | Verify 8259 Channel 1 masked interrupts by alternately turning off and on the interrupt lines. |
| 3F | Reserved | |
| 40 | Test 8259-2 Mask Bits | Verify 8259 Channel 2 masked interrupts by alternately turning off and on the interrupt lines. |
| 41 | Reserved | |
| 42 | Reserved | |

| Code (hex) | Name | Description |
|---|---|---|
| 43 | Test Stuck 8259's Interrupt Bits | Turn off interrupts then verify no interrupt mask register is on. |
| | Test 8259 Interrupt Functionality | Force an interrupt and verify the interrupt occurred. |
| 44 | Reserved | |
| 45 | Reserved | |
| 46 | Reserved | |
| 47 | Set EISA Mode | If EISA non-volatile memory checksum is good, execute EISA initialization. If not, execute ISA tests an clear EISA mode flag. |
| 48 | Reserved | |
| 49 | Size Base and Extended Memory | Size base memory from 256K to 640K and extended memory above 1MB. |
| 4A | Reserved | |
| 4B | Reserved | |
| 4C | Reserved | |
| 4D | Reserved | |
| 4E | Test Base and Extended Memory | Test base memory from 256K to 640K and extended memory above 1MB using various patterns. NOTE: This test is skipped in EISA mode and can be skipped with ESC key in ISA mode. |
| 4F | Reserved | |
| 50 | USB init | Initialize USB controller |
| 51 | Reserved | |
| 52 | Memory Test | Test all memory of memory above 1MB using Virtual 8086 mode, page mode and clear the memory |
| 53 | Reserved | |
| 54 | Reserved | |
| 55 | CPU display | Detect CPU speed and display CPU vendor specific version string and turn on all necessary CPU features |
| 56 | Reserved | |
| 57 | PnP Init | Display PnP logo and PnP early init |
| 58 | Reserved | |
| 59 | Setup Virus Protect | Setup virus protect according to Setup |
| 5A | Reserved | |
| 5B | Awdflash Load | If required, will auto load Awdflash.exe in POST |
| 5C | Reserved | |
| 5D | Onboard I/O Init | Initializing onboard superIO |

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| Code (hex) | Name | Description |
| --- | --- | --- |
| 5E | Reserved | |
| 5F | Reserved | |
| 60 | Setup enable | Display setup message and enable setup functions |
| 61 | Reserved | |
| 62 | Reserved | |
| 63 | Initialize & Install Mouse | Detect if mouse is present, initialize mouse, install interrupt vectors. |
| 64 | Reserved | |
| 65 | PS2 Mouse special | Special treatment to PS2 Mouse port |
| 66 | Reserved | |
| 67 | ACPI init | ACPI sub-system initializing |
| 68 | Reserved | |
| 69 | Setup Cache Controller | Initialize cache controller. |
| 6A | Reserved | |
| 6B | Setup Entering | Enter setup check and auto- configuration check up |
| 6C | Reserved | |
| 6D | Initialize Floppy Drive & Controller | Initialize floppy disk drive controller and any drives. |
| 6E | Reserved | |
| 6F | FDD install | Install FDD and setup BIOS data area parameters |
| 70 | Reserved | |
| 71 | Reserved | |
| 72 | Reserved | |
| 73 | Initialize Hard Drive & Controller | Initialize hard drive controller and any drives. |
| 74 | Reserved | |
| 75 | Install HDD | IDE device detection and install |
| 76 | Reserved | |
| 77 | Detect & Initialize Serial/Parallel Port | Initialize any serial and parallel ports (also game port). |
| 78 | Reserved | |
| 79 | Reserved | |
| 7A | Detect & Initialize Math Coprocessor | Initialize math coprocessor. |
| 7B | Reserved | |
| 7C | HDD Check for Write protection | HDD check out |

| Code (hex) | Name | Description |
|---|---|---|
| 7D | Reserved | |
| 7E | Reserved | |
| 7F | POST error check | Check POST error and display them and ask for user intervention |
| 80 | Reserved | |
| 81 | Reserved | |
| 82 | Security Check | Ask password security (optional). |
| 83 | Write CMOS | Write all CMOS values back to RAM and clear screen. |
| 84 | Pre-boot Enable | Enable parity checker. Enable NMI, Enable cache before boot. |
| 85 | Initialize Option ROMs | Initialize any option ROMs present from C8000h to EFFFFh. NOTE: When FSCAN option is enabled, ROMs initialize from C8000h to F7FFFh. |
| 86 | Reserved | |
| 87 | Reserved | |
| 88 | Reserved | |
| 89 | Reserved | |
| 8A | Reserved | |
| 8B | Reserved | |
| 8C | Reserved | |
| 8D | Reserved | |
| 8E | Reserved | |
| 8F | Reserved | |
| 90 | Reserved | |
| 91 | Reserved | |
| 92 | Reserved | |
| 93 | Boot Medium detection | Read and store boot partition head and cylinders values in RAM |
| 94 | Final Init | Final init for last micro details before boot |
| 95 | Special KBC patch | Set system speed for boot. Setup NumLock status according to Setup |
| 96 | Boot Attempt | Set low stack Boot via INT 19h. |
| FF | Boot | |

## 40.2 Quick POST Codes

| Code (hex) | Name | Description |
|---|---|---|
| 65 | Init onboard device | Early Initialized the super IO. Reset Video controller. Keyboard controller init<br>Test the Keyboard Initialized the mouse Onboard audio controller initialize if exist. Check the intergraty of the ROM, BIOS and message Check Flash type and copy flash write/erase routines to 0F000h segments Check Cmos Circuitry and reset CMOS Program the chipset registers with CMOS values Init onboard clock generator |
| 66 | Early Sytem setup | Check the CPU ID and init L1/L2 cache. Initialize first 120 interrupt vectors with SPURIOUS_INT_HDLR and 10 initialize INT 00h-1Fh according to INT_TBL First step initialize if single CPU onboard. Re-init KB If support HPM, HPM get initialized here. |
| 67 | KBC and CMOS Init | Verifies CMOS is working correctly, detects bad battery. If failed, load CMOS defaults and load into chipset. Final Initial KBC and setup BIOS data area. |
| 68 | Video Init | Read CMOS location 14h to find out type of video in use. Detect and Initialize Video Adapter. Test video memory, write sign-on message to screen. Setup shadow RAM - Enable shadow according to Setup. |
| 69 | 8259 Init | Init 8259 channel 1 and mask IRQ 9 |
| 6A | Memory test | Quick Memory Test |
| 6B | CPU Detect and IO init | CPU vendor specific version string and turn on all necessary CPU features Display PnP logo and PnP early init Setup virus protect according to Setup. If required, will auto load Awdflash.exe in POST Initializing onboard superIO |
| 6C | Reserved | |
| 6D | Reserved | |
| 6E | Reserved | |
| 6F | Reserved | |
| 70 | Setup Init | Display setup message and enable setup functions Detect if mouse is present, initialize mouse, install interrupt vectors. Special treatment to PS2 Mouse port ACPI sub-system initializing |
| 71 | Setup Cache Controller | Initialize cache controller. |

| Code (hex) | Name | Description |
|---|---|---|
| 72 | Install FDD | Enter setup check and auto11 configuration check up Initialize floppy disk drive controller and any drives. Install FDD and setup BIOS data area parameters |
| 73 | Install FDD | Initialize hard drive controller and any drives. IDE device detection and install Initialize any serial and parallel ports (also game port). |
| 74 | Detect & Initialize Math Coprocessor | Initialize math coprocessor. |
| 75 | HDD Check for Write protection | HDD check out |
| 76 | Reserved | |
| 77 | Display POST error | Check POST error and display them and ask for user intervention Ask password security (optional). |
| 78 | CMOS and Option ROM Init | Write all CMOS values back to RAM and clear screen. Enable parity checker Enable NMI, Enable cache before boot. Initialize any option ROMs present from C8000h to EFFFFh. NOTE: When FSCAN option is enabled, ROMs initialize from C8000h to F7FFFh. |
| 79 | Reserved | |
| 7A | Reserved | |
| 7B | Reserved | |
| 7C | Reserved | |
| 7D | Boot Medium detection | Read and store boot partition head and cylinders values in RAM |
| 7E | Final Init | Final init for last micro details before boot |
| 7F | Special KBC patch | Set system speed for boot. Setup NumLock status according to Setup. |
| 80 | Boot Attempt | Set low stack Boot via INT 19h. |
| FF | Boot | |

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## 40.3S4 POST Codes

| Code (hex) | Name | Description |
|---|---|---|
| 5A | Early Chipset Init | Early Initialized the super IO. Reset Video controller. Keyboard controller init. Test the Keyboard Initilized the mouse |
| 5B | Cmos Check | Check Cmos Circuitry and reset CMOS |
| 5C | Chipset default Prog | Program the chipset registers with CMOS values. Init onboard clock generator |
| 5D | Identify the CPU | Check the CPU ID and init L1/L2 cache Initialize first 120 interrupt vectors with SPURIOUS_INT_HDLR and INT 00h-1Fh according to INT_TBL. First step initialize if single CPU Onboard. Re-init KB If support HPM, HPM get initialized Here. |
| 5E | Setup Interrupt Vector Table | Initialize first 120 interrupt vectors with SPURIOUS_INT_HDLR and INT 00h-1Fh according to INT_TBL. First step initialize if single CPU Onboard. Re-init KB If support HPM, HPM get initialized here. |
| 5F | Test CMOS Interface and Battery status | Verifies CMOS is working correctly, detects bad battery. If failed, load CMOS defaults and load into chipset. |
| 60 | KBC final Init | Final Initial KBC and setup BIOS data area |
| 61 | Initialize Video Interface | Read CMOS location 14h to find out type of video in use. Detect and Initialize Video Adapter. |
| 62 | Video memory test | Test video memory, write sign-on Test video memory, write sign-on message to screen. Setup shadow RAM - Enable shadow according to Setup. |
| 63 | Setup PS2 mouse and test DMA | Setup PS2 Mouse and reset KB Test DMA channel 0 |
| 64 | Test 8259 | Test 8259 channel 1 and mask IRQ 9 |
| 65 | Init Boot Device | Detect if mouse is present, initialize mouse, install interrupt vectors. Special treatment to PS2 Mouse port ACPI sub-system initializing Initialize cache controller. |
| 66 | Install Boot Devices | Enter setup check and auto-configuration check up Initialize floppy disk drive controller and any drives. Install FDD and setup BIOS data area Parameters Initialize hard drive controller and any drives. IDE device detection and install |
| 67 | Cache Init | Cache init and USB init |
| 68 | PM init | PM initialization |
| 69 | PM final Init and issue SMI | Final init Before resume |
| FF | Full on | |

## 40.4 BootBlock POST Codes

| Code (hex) | Name | Description |
|---|---|---|
| 1 | Base memory test | Clear base memory area (0000:0000--9000:ffffh) |
| 5 | KB init | Initialized  KBC |
| 12 | Install interrupt vectors | Install int. vector (0-77), and initialized 00-1fh to their proper place |
| 0D | Init Video | Video initializing |
| 41 | Init FDD | Scan floppy and media capacity for onboard superIO |
| FF | Boot | Load boot sector |