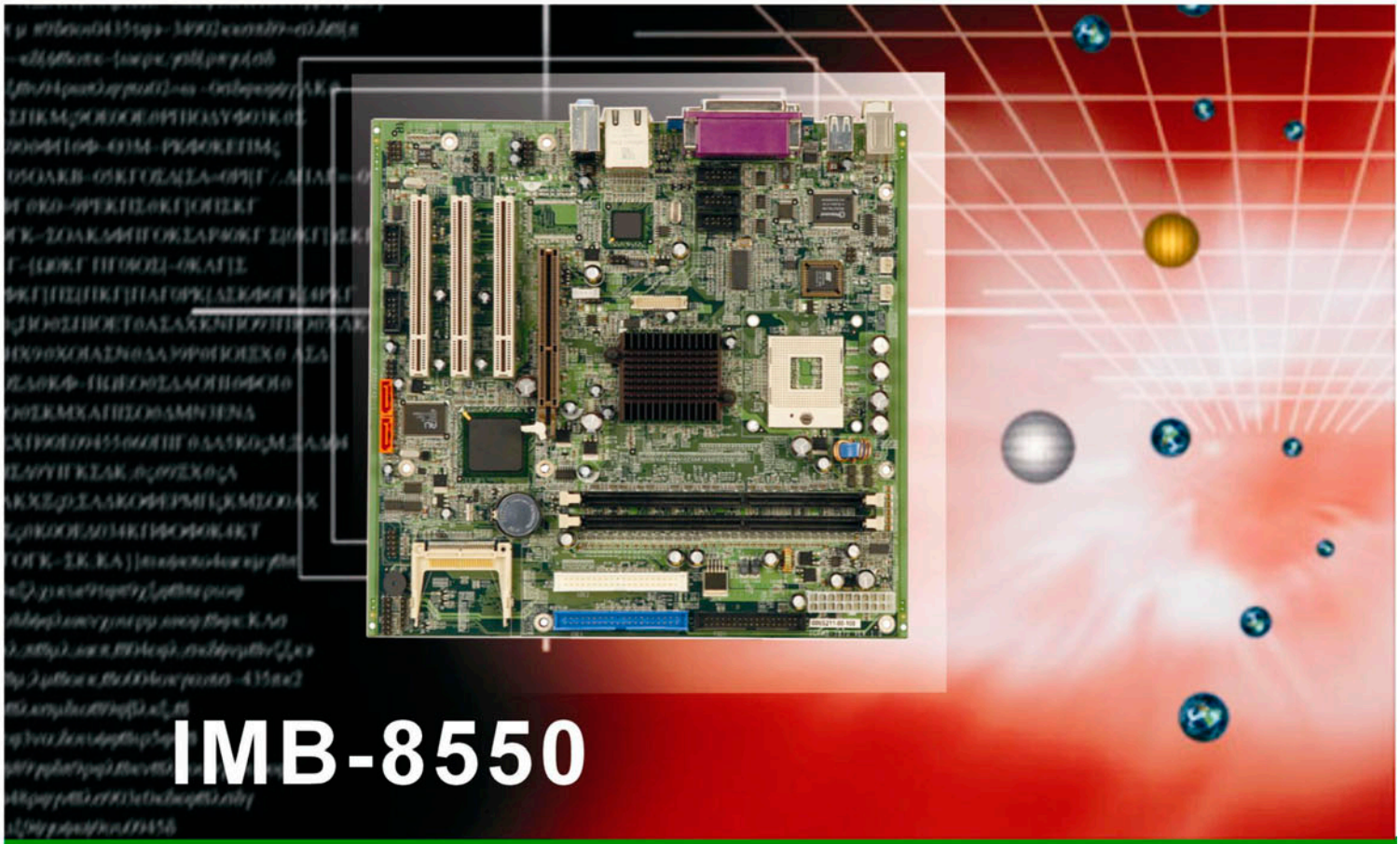
IEI Technology Corp.



IMB-8550

Micro-ATX Intel® Pentium® M Embedded Motherboard

User Manual

RoHS Lead Free

Rev. 1.0 January, 2006

Revision History

Title	IMB-8550 Micro-ATX Pentium M Embedded Motherboard User Manual	
Revision Number	**Description**	**Date of Issue**
1.0	**Initial release**	**February 2006**

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Safety Notice

Electrical shock hazards might occur while proceeding with the installation, repair and maintenance of this product. Therefore, the following precaution measures should be carefully observed:

1. All sorts of operations on this product must be carried out by certified technicians.
2. The chassis into which the CPU board and its associated backplane are installed should provide stable and sufficient power supply, and be properly grounded.
3. Power off the motherboard and unplug its power cord before handling.
4. Before connecting any signal cables, make sure that all power cords are disconnected.
5. Consult qualified technicians before adding an adapter or extension cord.
6. When handling the motherboard, avoid touching any metal leads or connectors.
7. Set your power supply to the correct voltage range.
8. Please verify that the power supply is switched off before unplugging the power supply connector from the motherboard.
9. Contact your local dealer if any item you received in the package appears to have been

damaged.

ESD Precautions

Observe all conventional anti-ESD methods while handling the CPU board. The use of a grounded wrist strap and an anti-static work pad is recommended. Avoid dust and debris or other static-accumulating materials in your work area.

Conventions Used in This Manual

Naming

From this point on and throughout the rest of this manual, the IMB-8550 is referred to as simply the “motherboard” or the “board.”

WARNING!

Warnings appear where overlooked details may cause damage to the equipment or result in personal injury. Warnings should be taken seriously. Warnings are easy to recognize. The word “warning” is written as “**WARNING**,” both capitalized and bold and is followed by text in italics. The italicized text is the warning message.

CAUTION!

Cautionary messages should also be heeded to help you reduce the chance of losing data or damaging the system. Cautions are easy to recognize. The word “caution” is written as “**CAUTION**,” both capitalized and bold and is followed by text in italics. The italicized text is the cautionary message.

NOTE:

These messages inform the reader of essential but non-critical information. These messages should be read carefully as any directions or instructions contained therein can help you avoid making mistakes. Notes are easy to recognize. The word “note” is written as “**NOTE**,” both capitalized and bold and is followed by text in italics. The italicized text is the cautionary message.

Lists

Bulleted Lists: Bulleted lists are statements of non-sequential facts that can be read in any order. Each statement is preceded by a round black dot “•.”

Numbered Lists: Numbered lists describe sequential steps you should follow in order.

Software and Firmware Updates

Please contact your system vendor or visit IEI website (www.iei.com.tw) for the latest software or firmware updates. ***NOTE*** that the BIOS version and associated drivers installed on your system should provide the complete functionality listed in the specification sheet/user's manual. We provide special revisions for various application purposes. Therefore, DO NOT upgrade your BIOS unless you fully understand what a firmware revision will do.

Problems that occur during the updating process may cause unrecoverable errors and system down time. Always consult technical personnel before proceeding with any BIOS upgrade.

Chapter

1

Introduction

Product Overview

The IMB-8550 Embedded Motherboard

The IMB-8550 is a highly-integrated embedded system board designed to support Pentium® M or Celeron® M processors, which was originally design for mobile PC architecture boosted by a dedicated stack manager, micro-ops fusion technology and Enhanced Intel SpeedStep technology. Combined with Intel® 855GME chipset and the ICH4 controller hub, the IMB-8550 delivers high performance through perfect integration of the latest technologies. The embedded board supports Pentium M CPUs with the speed up to 2GHz.

The motherboard comes with the connectivity to a variety of external interfaces including six (6) USB 2.0 ports, six (6) COM ports, two (2) SATA ports, one (1) CFII socket for compact size bootable device, and dual displays through the VGA/LVDS interface.

As a continuance to IEI's well-acclaimed line of industrial motherboards, the IMB distinguishes itself from users' products in the following aspects:

1. Tested and proved reliable through tests conducted in harsh environments with temperatures ranging from 0 to 60°C.
2. High-quality components to withstand punishing working conditions.
3. RoHS compliance.
4. Long-term support to protect your investment.
5. Customization service.
6. Flexible interface configuration to peripheral devices for continuous monitoring, wireless and simultaneous communications with storage or terminal devices.

The IMB-8550 provides the following for the connections to a wide variety of peripheral devices:

- One (1) GbE Ethernet port
- Six (6) USB 2.0 ports
- Six (6) COM ports
- Two (2) SATA ports
- Two (2) IDE ports
- One (1) CFII socket

- One (1) 30-pin LVDS LCD panel connector
- Intel Graphics embedded in the 855GME chipset through one (1) 15-pin VGA connector.
- Various interfaces for Infrared, LPT, floppy, PS/2 keyboard/mouse, Digital I/O, etc.

The IMB-8550 is built in accordance with Micro-ATX form factors. With interface connectors carefully aligned to the edges of PCB, airflow travel clear of obstructions through board surface and thus the chance of overheating is reduced. Carefully tuned using the IR Thermograph technology, reliability of operation is guaranteed.

The IMB-8550 features a significant improvement of CPU processing power and interface expandability. The motherboard also takes advantages from a sophisticated Windows CE OS system which features stable operation, real-time responsiveness, and cost-saving appliances. As the result, the integration of the board is ideal for GPS, Automation devices, transaction terminals, MMI, etc.

OSes tested and proved compliant include: DOS 6.22, Windows 2000, Windows XP, Windows CE, Red Hat 9.0, and SuSe 9.0. For a more updated list of supported OSes, please check on IEI website or contact our technical support.

IMB-8550 Board Overview

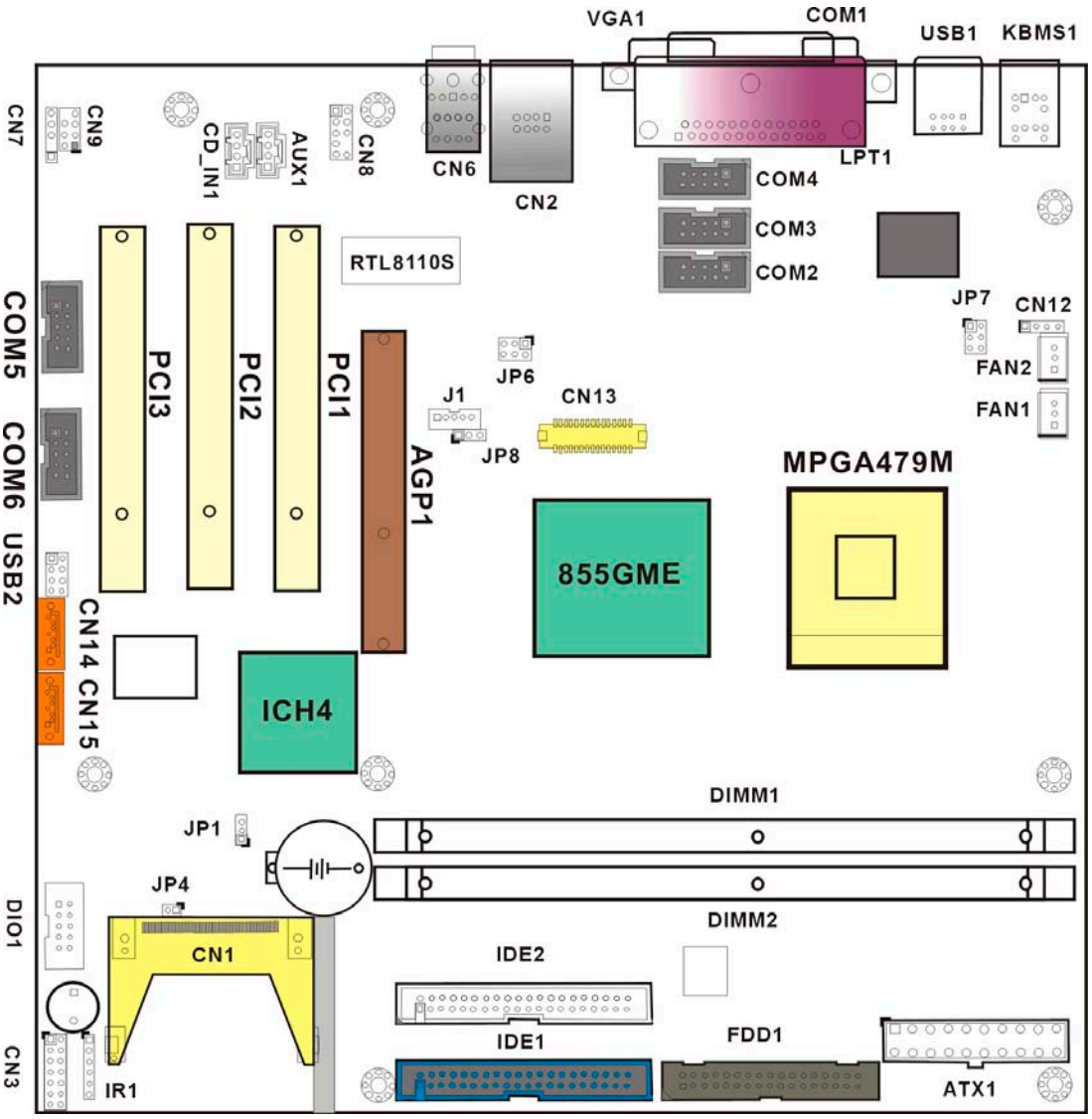

Figure 1-1 IMB-8550 Board Overview

NOTE:

There are no configuration jumpers or connectors on the soldering side.

Technical Specifications

CPU (mPGA479M)	● Supports Intel® Pentium® M Prescott/Celeron M socket 479 CPUs. ● Supports FSB (Front Side Bus) up to 400MHz. ● L1/L2 cache varies with CPU processor.
Chipset	● Northbridge: Intel® 855GME Chipset ● Southbridge: Intel® ICH4
Memory	● Supports 333/266/200 MHz unbuffered DDR with a maximum of two double-sided DIMMs for a total of 2GB of system memory ● 128Mbit, 256Mbit, and 512Mbit DDR device technology support
PCI Bus Interface	● Supports PCI Revision 2.2 Specification at 33 MHz ● 133 MB/sec maximum throughput ● Supports up to six master devices on PCI (3 implemented) ● One PCI REQ/GNT pair can be given higher arbitration priority (intended for external 1394 host controller) ● Support for 44-bit addressing on PCI using DAC protocol
IDE interface	● Up to 4 (four) PCI Enhanced IDE hard drives or CD-ROMs. The Ultra DMA 100 IDE can handle data transfer up to 100MB/s. Compatible with existing ATA IDE specifications with its best advantages, so there is no need to do any changes with users' current accessories. ● Supports Ultra ATA /100 / 66 / 33, BMIDE and PIO modes
Graphics	● Intel's Extreme Graphics 2 Technology32-bit 3D core at 133MHz ● APG 4X support ● Dual independent pipe display support: an embedded VGA and a LVDS interface Concurrent: different images and native display timings on each display device. Simultaneous: same images and native display timings on each display device. ● Dedicated Local Flat Panel (LFP) LVDS interface ● Internal Graphics Features

	Core frequency: Display core frequency of 133MHz Render core frequency of 133MHz Compliant with DVI Specification 1.0
Floppy disk drive interface	● Supports up to two floppy disk drives, 5.25”(360KB and 1.2MB) and/or 3.5” (720KB, 1.44MB, and 2.88MB)
Serial ports	● 6 (six) RS-232 ports with 16C550 UART (or compatible) with 16-byte FIFO buffer. Support up to 115.2Kbps. Ports can be individually configured to COM1 to COM6 respectively.
Peripherals	● 1 (one) parallel port supporting Normal/EPP/ECP mode - Provides one 26 Pin Printer port header. - Supports EPP and ECP. ● 1 (one) VGA port. ● 1 (one) LVDS via 20-pin connector, ● 6 (six) USB 2.0/1.1 ports (bracket x 4, pin header (2x5) x 2 via adapter cable) ● 6 (six) RS-232 COM ports (one D-SUB on the real panel) ● 2 (two) PS/2 keyboard / Mouse port. ● 2 (two) SATA -150 ports. ● 1 (one) IrDA header supports IrDAs version 1.0 SIR protocol with maximum baud rate up to 115.2K bps. ● 1 (one) Digital IO header: provides one 10Pin header for four GPI and four GPO. ● 1 (one) CFII Compact Flash socket ● 2 (two) IDE ports ● 1 (one) Floppy drive connector ● 1 (one) GbE Ethernet RJ-45 connector ● 1 (one) SPDIF output ● 2 (two) internal fan connectors

NOTE:

There is one I/O bracket included in kit.

Realtime Clock	● 256-byte battery-back CMOS RAM
Hardware Monitor	● System voltage detection ● CPU temperature detection ● CPU / System fan speed detection
Power Management	● Enhanced clock control, local and global monitoring support for 14 individual devices, and various low-power (suspend) states; e.g., Suspend-to-DRAM and Suspend-to-Disk. ● Hardware-based thermal management circuit. ● Software-independent entrance to low-power states. ● Compliant with Advanced Configuration and Power Interface (ACPI) Specification, Rev. 2.0.
IrDA port	● Supports Serial Infrared (SIR) and Amplitude Shift Keyed IR (ASKIR) interface
USB 2.0/1.1 port	● Supports six (6) USB 2.0/1.1 ports for future expansion
Serial ATA	● Supports Four independent serial ATA channels. Serial ATA generation 1 transfer rate of 3Gb/s.
Ethernet	● Realtek RTL8100S ● Triple-speed IEEE 802.3 compliant ● Media Access Controller (MAC) with a triple-speed Ethernet transceiver ● 32-bit PCI bus controller with embedded memory. ● State-of-the-art DSP technology and mixed-mode signal technology ● High-speed transmission over CAT 5 UTP or CAT 3 UTP (10Mbps only) cable. ● Crossover Detection & Auto-Correction, polarity correction, adaptive equalization, cross-talk cancellation, echo cancellation, timing recovery, and error correction.
I/O Controller	● ICH4
BIOS	● Use of licensed AMI BIOS

Operating temperature	● -10 to 70°C (*CPU needs Cooler & silicone heat sink paste)
Form Factor	● Micro-ATX
AC ’97 interface **(by Realtek ALC655)**	● AC-Link for Audio and Telephony Codecs ● Provides an auxiliary 10-pin Audio header ● AC ’97 implementation delivers 20-bit audio for enhanced sound quality and full surround sound capability ● Line IN, Line Out, MIC IN in phone jacks and CD IN on PCB header

Table 1-1 Technical Specifications

System Monitoring

The IMB-8550 embedded board is capable of self-monitoring various aspects of its operating status including:

- CPU, chipset, and battery voltage, +3.3V, +5V, and +12V
- RPM of cooling fans

  CPU and board temperatures (by the corresponding embedded sensors)

Package Contents

- 1 x IMB-8550 motherboard
- 1 x SATA power cable
- 2 x SATA cables
- 1 x Mini jumper pack
- 3 x RS-232 cable (2 x 2 kit; 1 x 1 kit)
- 2 x ATA-66/100 flat cable
- 1 x rear panel I/O bracket
- 1 x Driver and Utility CD
- 1 x QIG (Quick Installation Guide)

Optional Accessory Items

- CF-518 CPU Cooler kit
- 32200-000017-RS FDD cable

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Chapter

2

Functional Description

This chapter provides a functional description of the IMB-8550 motherboard designed for the integration with communications, transaction terminals, interactive clients, and industrial control applications. This chapter includes information about main processors, interface connectors, implementation options, and signal description.

2.1 CPU, Memory, and Intel Chipsets

CPU

The IMB-8550 comes with an mPGA479M socket for Intel Pentium® M or Celeron® M processors running at the speed up to 2.0GHz. The CPU applied requires active cooling by a heatsink and cooler. A cooling kit by IEI is available as a separately purchased item. Please refer to ***Chapter 3*** for details on the cooling kit.

Shown below are some of the key features of the Intel processors (taking Pentium M as an example):

- High performance and low power consumption.
- Enhanced Intel SpeedStep technology for low power consumption.
- Large L1/L2 caches; up to 2MB L2 for faster I/O turnarounds.
- Advanced branch prediction for faster program execution.
- Micro-op fusion for excellent load and store data manipulation.
- Intel 855GME chipset, on-chip graphics, and dual display.

The table below provides information on the Intel processors supported on the IMB-8550 motherboard.

Table 2-1 Supported CPUs

Mfg.	Model	Capacity/Speed	L2	Description
Intel	760	Pentium M 2.0GHz	2MB	FSB: 533MHz
Intel	745	Pentium M 1.8GHz	2MB	FSB: 400MHz
Intel	738	Pentium M 1.4GHz	2MB	FSB: 400MHz
Intel	370	Celeron M 1.5GHz	1MB	FSB: 400MHz

Memory

The IMB-8550 provides two (2) DDR SDRAM sockets without ECC support for building a large buffer size of up to 2GB (1GB x2). The memory is automatically identified. The memory speed can range from DDR-200, DDR-266, to DDR-333.

Intel 855GME Chipset

The Intel 855GME chipset is comprised of the following devices:

- Intel 855GME Graphics and Memory Controller Hub
- Intel ICH4 I/O Controller Hub

The north bridge 855GME controller hub provides processor and memory bus interfaces with an embedded graphics controller. The chipset provides high-bandwidth interfaces and integrated graphics support utilizing Intel Extreme Graphics 2 technology. The chipset also features a dramatic improvement on peripheral device connection offering three (3) USB host controllers with 480 Mbps of bandwidth, and thus enabling support for up to six (6) USB 2.0 ports. The chipset is especially ideal for embedded systems in terms of its support for multiple programmable configurations and Dual independent displays.

Block Diagram

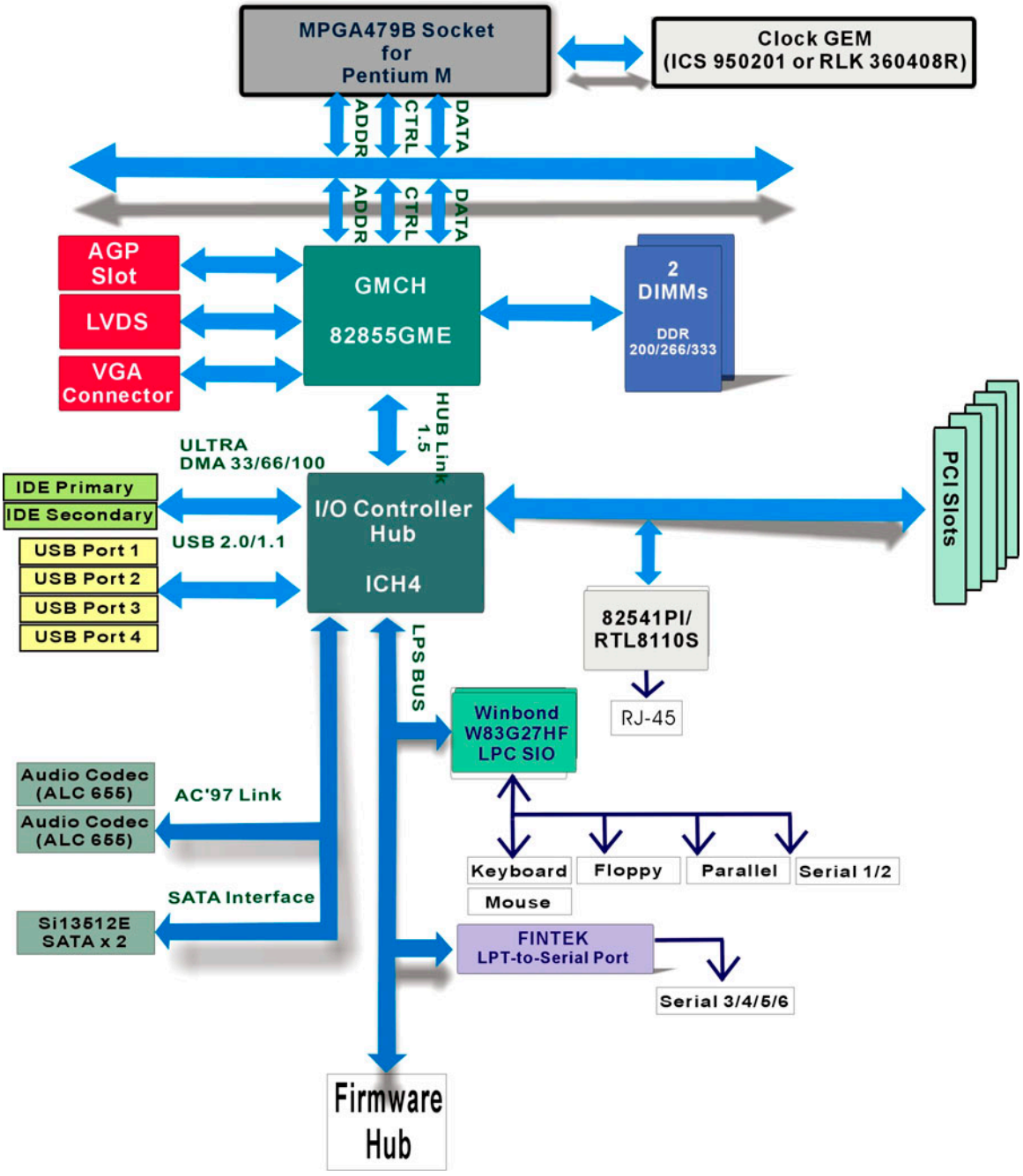

Figure 2-1 IMB-8550 System Block Diagram

Important Features

The key functionalities provided by the chipset and IEI's implementations can be summarized as follows:

Table 2-2 Important Features

■ Intel long term support product
■ Support Intel Pentium M and Celeron M processors with the Front System Bus speed at up to 400MHz (e.g., Pentium M 750)
■ Interface: Micro-ATX form factors with added external interfaces, AGP 4X graphics and PCI expansion slots
■ Low power consumption and high performance
■ Low Voltage Display Signaling (LVDS) and standard VGA provide a dual-display solution for a wide variety of applications; e.g., kiosks as customer interaction stations or medical equipment showing diagnostics and patient's records simultaneously.
■ High reliability operating within the -10-to-70°C wide temperature range
■ System Memory: DDR 200/266/333 modules, 2GB memory addressability.
■ Interface connectors aligned to the edges of PCB for ease of connectivity and the optimized airflow through board surface.
■ Flexible and increased number of interfaces. Benefits: ➢ Speedy communications among terminals through GbE Ethernet ➢ Capacity to communicate with diverse storage devices ➢ Efficiency in data processing and multi-stream MPEG2 demonstration ➢ Freedom of wireless communication
■ Six (6) PCI masters (3 PCI slots implemented) provides generous system expandability
■ Environmental friendly with RoHS compliance

- Hardware Monitor: Built-in to monitor CPU Vcore, VCC, CPU/System fan speed, and temperature detection functionalities.
- Compact Flash type II connectivity for applications without external storage.
- Independent DMA audio engines via Realtek ALC655.
- Ethernet: Realtek 8110S Gigabit Ethernet.

2.2 External Interfaces

For the locations of external interfaces, please refer to the diagram below:

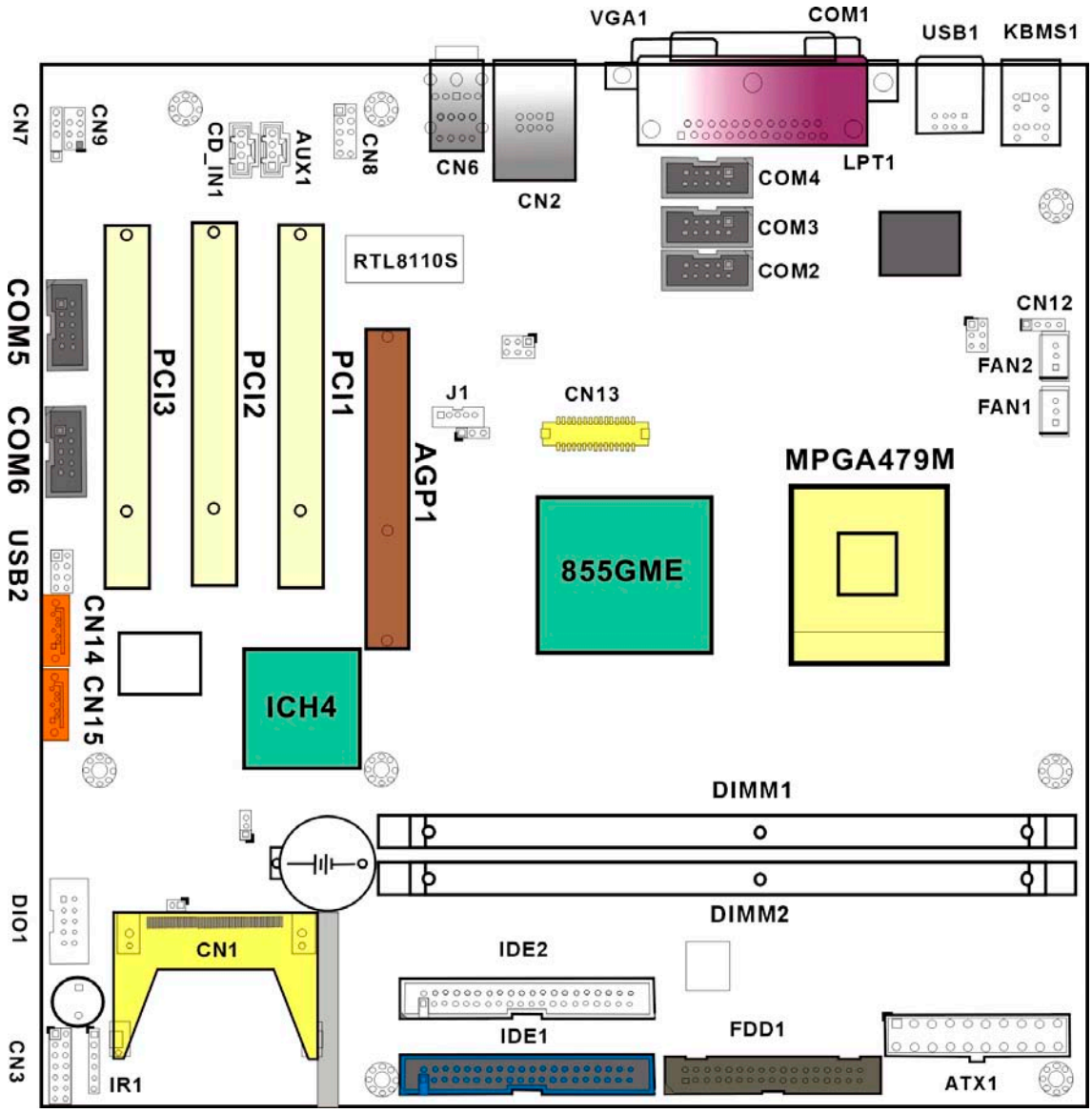

Figure 2-2 External Interface Locations

NOTE:

The configuration options through jumper settings will be discussed in ***Chapter 3: Installation.***

List of All Interface Connectors

Table 2-3 Interface Connectors

Connector	No.	Type
VGA	1	15-pin VGA
COM	6	1 in DB-9, others in 2x5 pin headers; (RS-232/RS-422/RS-485 configurable through jumpers)
USB	6	4 on the rear panel, 2 via adapter cable
KB/MS (PS/2)	2	PS/2 Keyboard/Mouse connector
LPT	1	25-pin D SUB parallel port
FAN1	1	3-pin header to CPU or chassis fan
FAN2	1	3-pin header to CPU or chassis fan
AUX1	1	4-pin header through an adapter cable to an optical drive
CD_IN	1	4-pin header through an adapter cable to audio source such as CD-ROM or DVD player
DIO1	1	2x5 pin digital I/O connector
IDE	2	ATA-100 40-pin connectors
FDD	1	34-pin floppy connector
IrDA	1	1 x 5 pin header for Infrared connection
J1	1	LCD backlight (Inverter control)
CN1	1	CF II Compact Flash socket
CN2	1	A combo connector assembly providing access to one GbE Ethernet (RJ-45) port and two USB ports.
CN3	1	14-pin pin header provides the connectivity to Power LED, Hard Disk Activity LED, Power switch, and the reset pins.
CN6	1	3 phone jacks for audio line_in, line_out, and mic_in connections
CN7	1	SPDIF input
CN8	1	Analog audio output
CN9	1	Digital audio output
CN12	1	Auxiliary RS-232 serial port
CN13	1	30-pin LVDS LCD panel connection
CN14	1	SATA disk drive port
CN15	1	SATA disk drive port

NOTE:

The interface description is divided into two sections, internal connectors mounted on the motherboard and the connectors interfaced through the board-edge rear panel.

2.2.1 Internal Connectors

1. COM Ports (COM2 to COM6)

The IMB-8550 offers two high speed NS16C550 compatible UART's with 16-byte Read/Receive FIFO serial ports.

Table 2-4 COM Port (Internal) Pinouts

PIN	DESCRIPTION	PIN	DESCRIPTION
1	DCD-	2	SIN
3	SOUT	4	DTR-
5	GND	6	DSR-
7	RTS-	8	CTS-
9	RI	10	GND

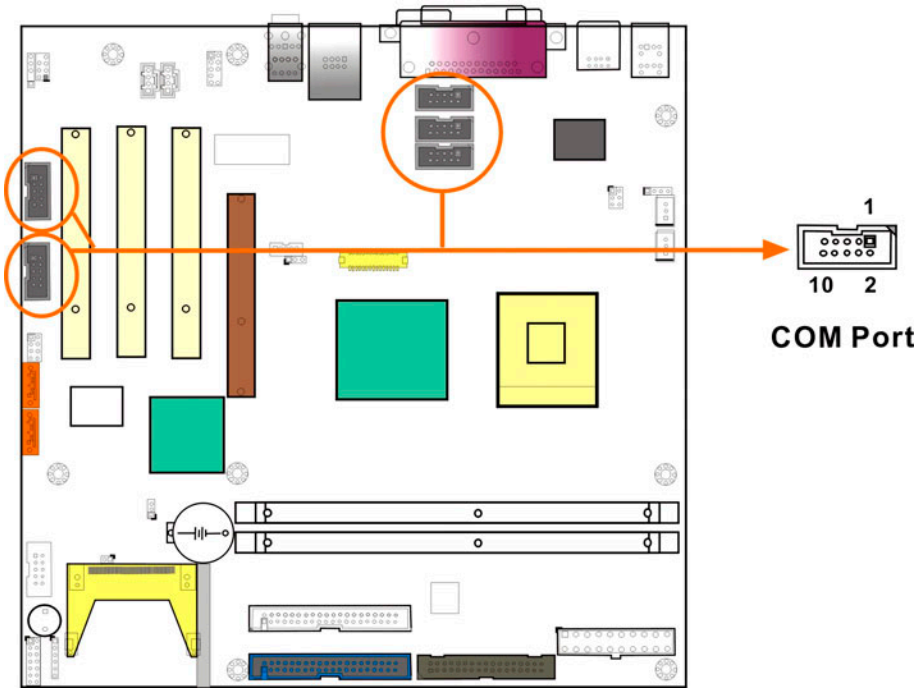

Figure 2-3 COM Port Locations

NOTE:

There is one D SUB COM port (COM1) on the rear panel. The rest of the COM ports are interfaced through the 2x5 pin headers located on the motherboard.

2. USB (Internal) Ports

This 2x4 pin connector provides the connectivity to additional two USB 2.0 ports. In addition to the four (4) USB ports on the rear panel, the internal USB ports are provided in one (1) 2x4 pin header.

Table 2-5 USB (Internal) Port Pinouts

PIN	DESCRIPTION	PIN	DESCRIPTION
1	PWR(+5V)	2	GND
3	USBPA-	4	USBPB+
5	USBPA+	6	USBPB-
7	GND	8	PWR(+5V)

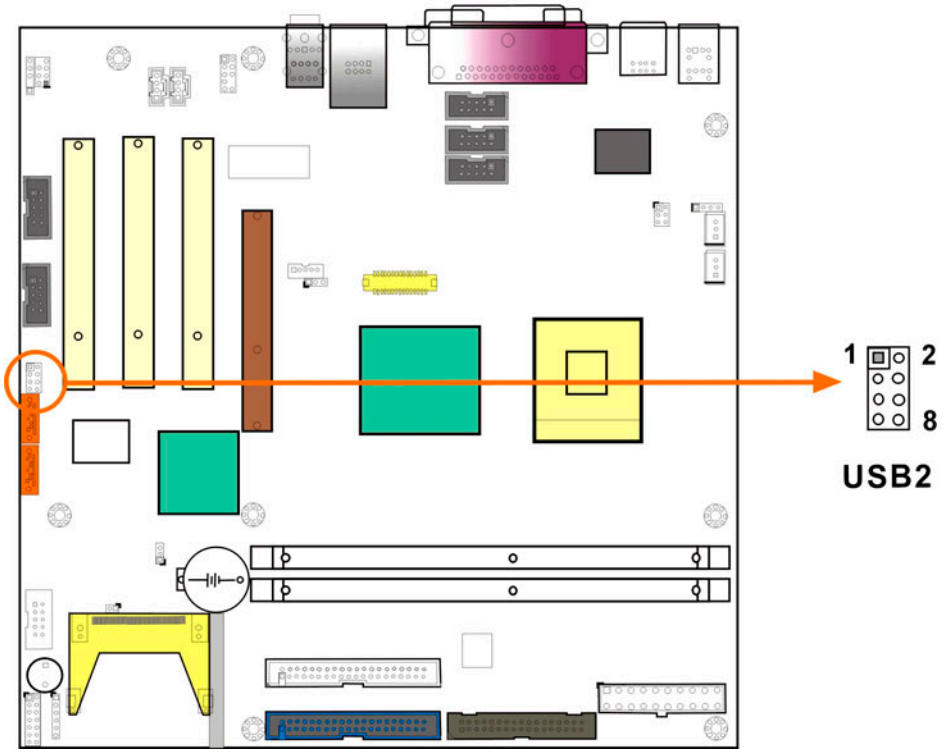

Figure 2-4 USB (Internal) Port

3. CN1: CFII Compact Flash Socket

The Compact Flash socket provides an alternative to hard disk drives in applications where hard disk drives may consume too much space and storage capacity is not a requirement. The CF card behaves like a Secondary IDE Master disk drive.

Table 2-6 CN1 CFII Socket Pinouts

PIN	DESCRIPTION	PIN	DESCRIPTION
1	GND	26	CD1
2	SDD3	27	SDD11
3	SDD4	28	SDD12
4	SDD5	29	SDD13
5	SDD6	30	SDD14
6	SDD7	31	SDD15
7	SDCS#1	32	SDCS#3
8	N/C	33	N/C
9	N/C	34	SDIOR#
10	N/C	35	SDIOW#
11	N/C	36	VCCCOM
12	N/C	37	IRQ15
13	N/C	38	VCCCOM
14	N/C	39	To JP 4, IDE Master/Slave control
15	N/C	40	N/C
16	N/C	41	IDERST#1
17	N/C	42	SIORDY
18	SDA2	43	SDREQ
19	SDA1	44	SDDACK#
20	SDA0	45	IDEACTS#
21	SDD0	46	CF2
22	SDD1	47	SDD8
23	SDD2	48	SDD9
24	N/C	49	SDD10
25	GND	50	GND

4. FAN1 and FAN2

Fan1: CPU fan connector

Fan2: Chassis fan connector

Table 2-7 FAN1 and FAN2 Pinouts

PIN	DESCRIPTION
1	GND
2	VCC
3	DETECT

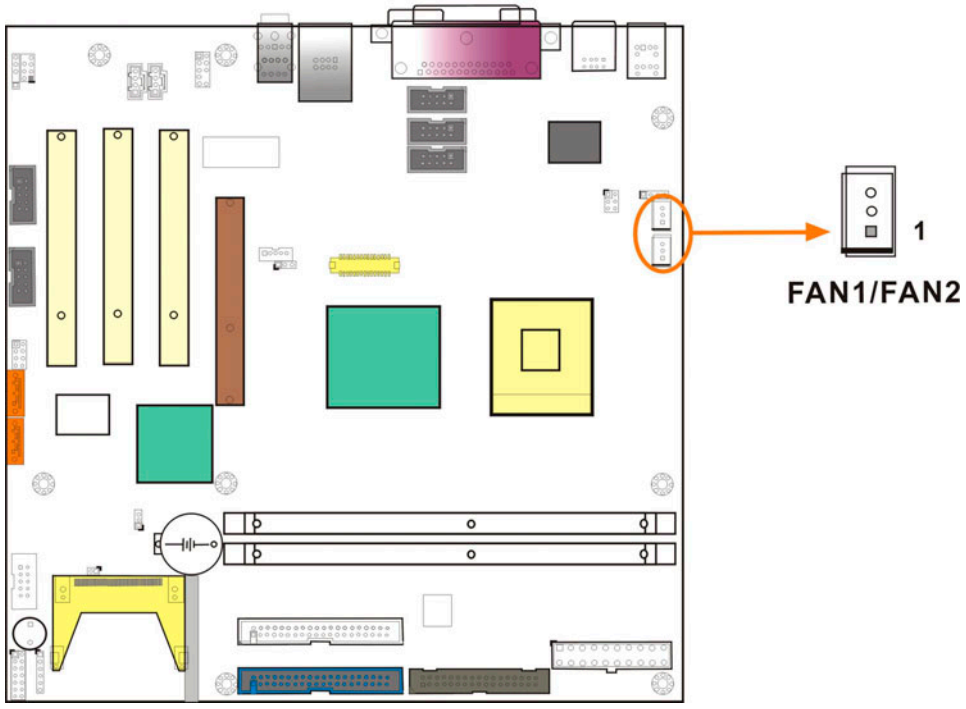

Figure 2-5 FAN1/FAN2 Connector

5. AUX1

This AUX port connects to the audio input of a CD-ROM or DVD optical drives.

Table 2-8 AUX1 Pinouts

PIN	DESCRIPTION
1	AUXL
2	GND
3	GND
4	AUXR

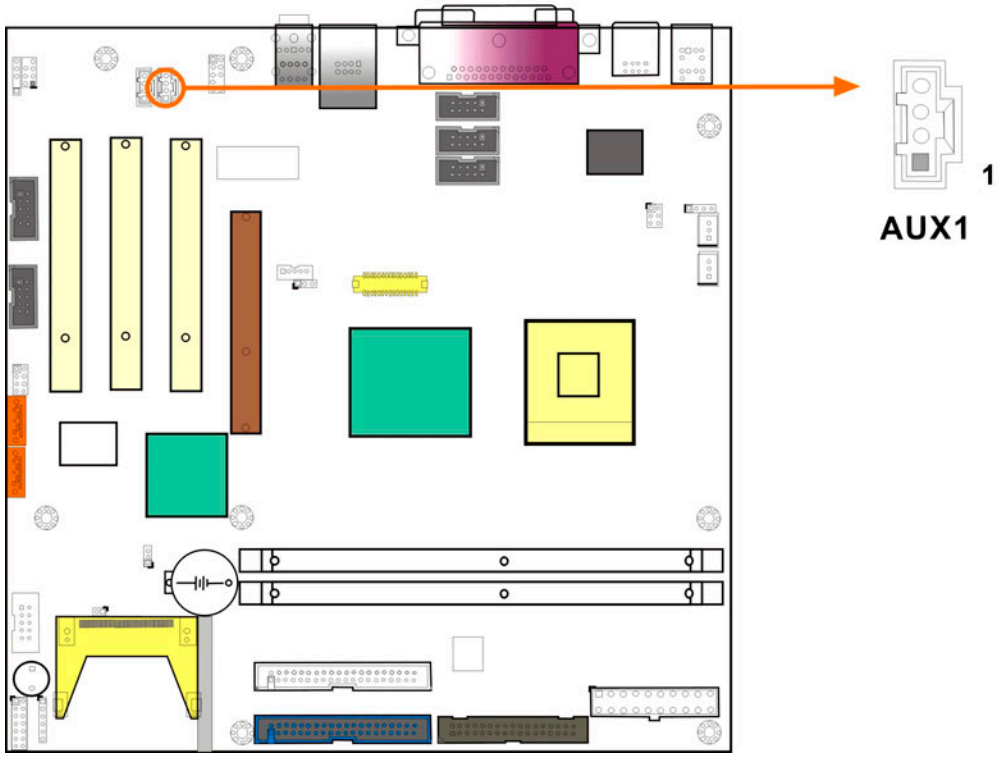

Figure 2-6 AUX1 Connector

6. CD_IN1

This ports connects to a CD-ROM or DVD drive's audio output.

Table 2-9 CD_IN1 Pinouts

PIN	DESCRIPTION
1	AUXL
2	GND
3	GND
4	AUXR

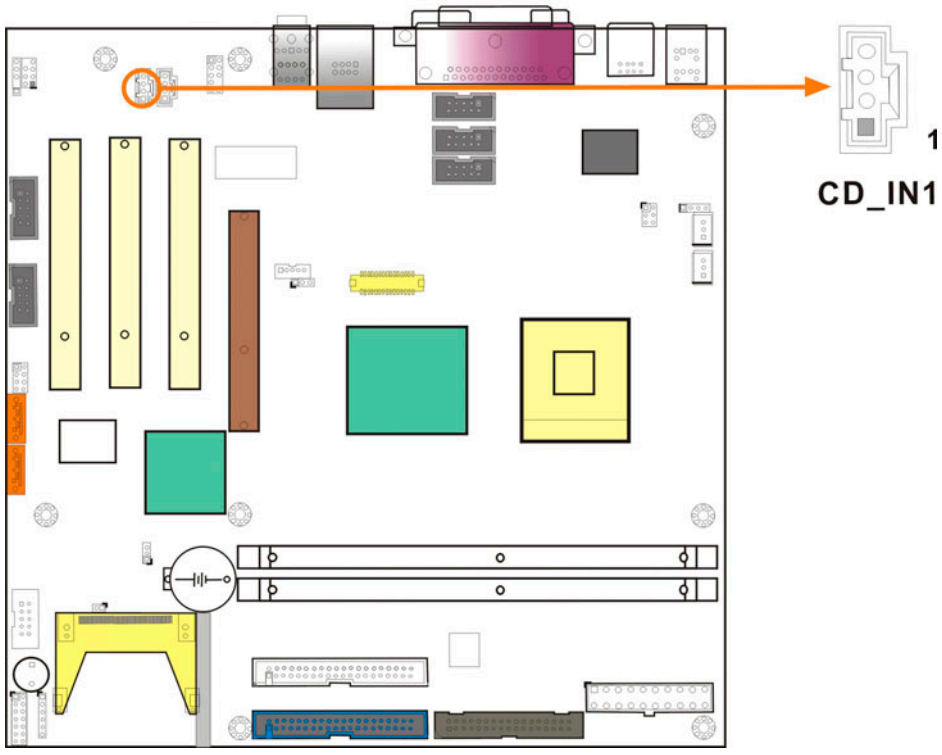

Figure 2-7 CD_IN1 Connector

7. CN3: System Panel Connector

This connector provides the connectivity to the system chassis front panel LEDs, a chassis speaker, a power switch, and a reset button.

Table 2-10 CN3 System Panel Connector Pinouts

PIN	DESCRIPTION	PIN	DESCRIPTION
1	+5V	2	SPEAKER+
3	N/C	4	N/C
5	GND	6	N/C
7	ATX PIN1	8	SPEAKER-
9	ATX PIN2	10	N/C
11	HDD LED+	12	RESET PIN1
13	HDD LED-	14	RESET PIN2

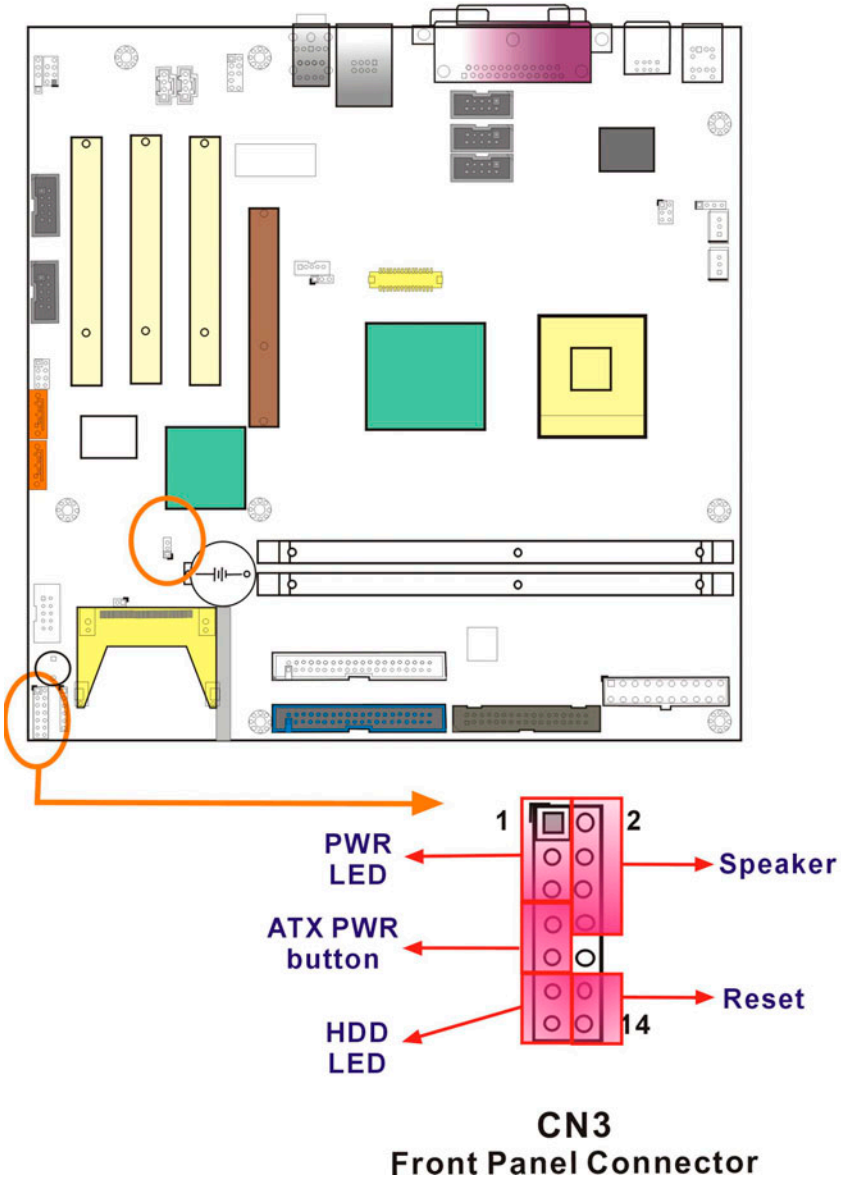

Figure 2-8 CN3 Front Panel Connector

8. DIO1 General Purpose I/O Header

This Digital I/O port is managed through a Winbond W83627HF LPC I/O chip. The first table below shows the DIO port pinouts. The second table displays the referential pin connection to the I/O chip.

Table 2-11 DIO1 Digital I/O Header Pinouts

PIN	DESCRIPTION	PIN	DESCRIPTION
1	GND	2	PWR(+5V)
3	XOUT0	4	XOUT1
5	XOUT2	6	XOUT3
7	XIN0	8	XIN1
9	XIN2	10	XIN3

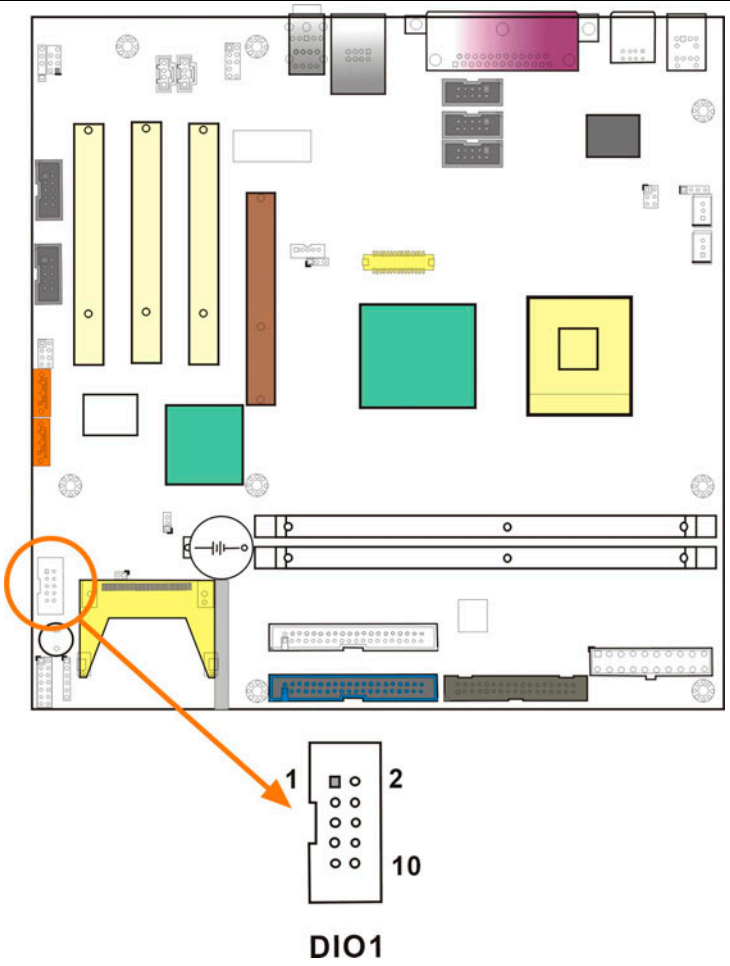

Figure 2-9 DIO1 Digital I/O Header

Table 2-12 DIO Port Pin Connection to W83627HF LPC I/O Chip

DIO Pins		W83627HF I/O Chip Pins		
PIN	**PIN NAME**	**PIN**	**PIN NAME**	**DESCRIPTION**
1	GND	-	-	-
2	PWR(+5V)	-	-	-
3	XOUT0	124	GPY2/P16/G14	General purpose I/O port 1 bit 4
4	XOUT1	123	GPY1/GP15	General purpose I/O port 1 bit 5
5	XOUT2	122	GPSB2/GP16	General purpose I/O port 1 bit 6
6	XOUT3	121	GPSA2/GP17	General purpose I/O port 1 bit 7
7	XIN0	125	GPX2/P15/G13	General purpose I/O port 1 bit 3
8	XIN1	126	GPX1/P14/G12	General purpose I/O port 1 bit 2
9	XIN2	127	GPSB1/P13/G11	General purpose I/O port 1 bit 1
10	XIN3	128	GPSA1/P12/G10	General purpose I/O port 1 bit 0

9. IDE Connectors (IDE1 & IDE2)

Two (2) IDE connectors provide the connectivity to up to four (4) IDE devices. If the Compact Flash module is configured to operate as the Secondary IDE master, the secondary IDE connector will then be disabled.

Table 2-13 IDE Connector Pinouts

PIN	DESCRIPTION	PIN	DESCRIPTION
1	RESET#	2	GND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	GND	20	(KEY)
21	DRQ	22	GND
23	IOW#	24	GND
25	IOR#	26	GND
27	CHRDY	28	GND
29	DACK	30	GND
31	INTERRUPT	32	N/C
33	SA1	34	P66DET
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GND

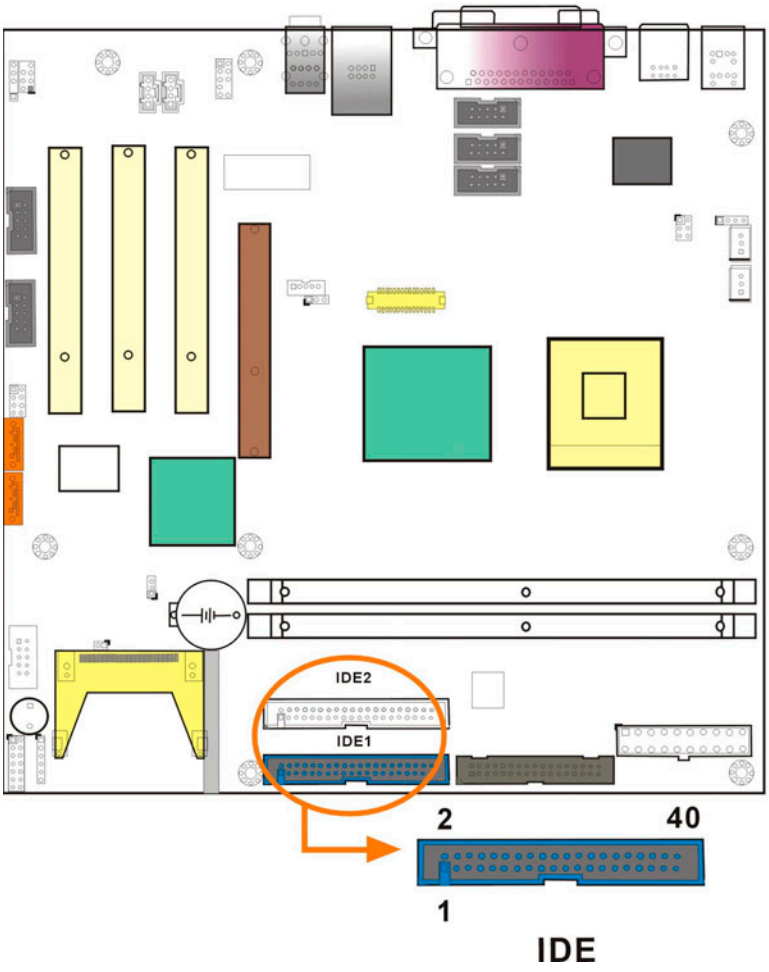

Figure 2-10 IDE Connectors

10. FDD1 (Floppy) Port

The FDD 1connector is used to connect a floppy cable while the other end of the cable connects to the FDD drive(s). The types of FDD drives supported are: 360KB, 720KB, 1.2MB, 1.44MB and 2.88MB. Please connect the red power connector wire to the pin1 position.

Table 2-14 FDD Port Pinouts

PIN	DESCRIPTION	PIN	DESCRIPTION
1	GND	2	RWC0-
3	GND	4	NC
5	NC	6	NC
7	GND	8	INDEX-
9	GND	10	MO-A
11	GND	12	DS-B
13	GND	14	DS-A
15	GND	16	MO-B
17	GND	18	DIR-
19	GND	20	STEP-
21	GND	22	WD-
23	GND	24	WGATE-
25	GND	26	TRK0-
27	GND	28	WP-
29	GND	30	RDATA-
31	GND	32	HEAD-
33	GND	34	DSKCHG-

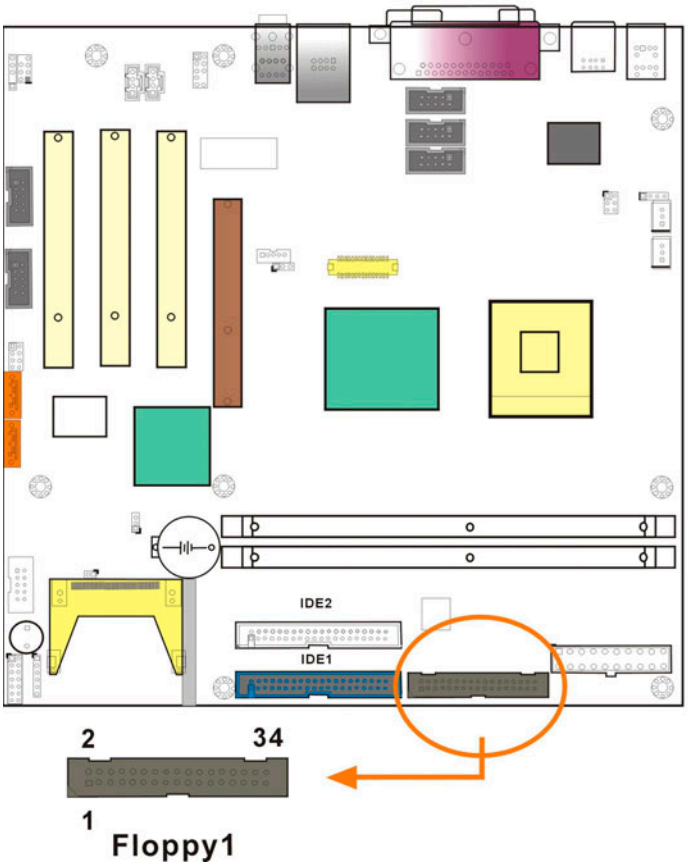

Figure 2-11 FDD1 Port

11. IR1 (IrDA Infrared) Interface Port

The IMB-8550 comes with an integrated IrDA port which supports either a Serial Infrared (SIR) or an Amplitude Shift Keyed IR(ASKIR) interface.

Table 2-15 IR1 IrDA Interface Port Pinouts

PIN	DESCRIPTION	PIN	DESCRIPTION
1	VCC1	2	N/C
3	IR-RX	4	GND
5	IR-TX	6	VCC2

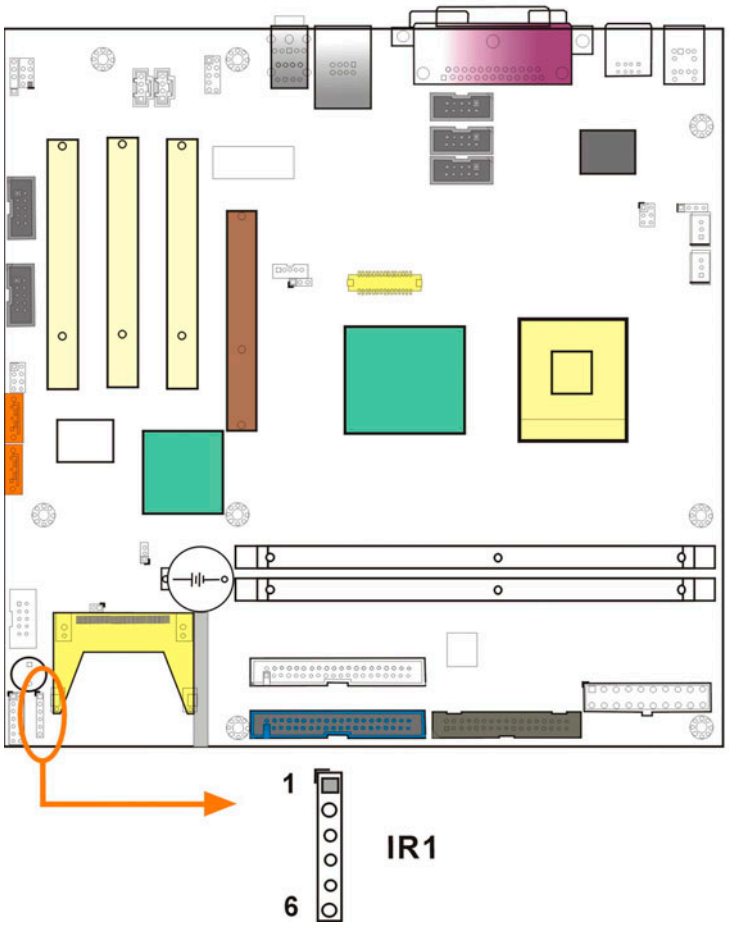

Figure 2-12 IR1 IrDA Interface Port

12. CN12

CN12 is an optional RS-232 mode serial port connector. An adapter cable is required.

Table 2-16 CN12 Pinouts

PIN	DESCRIPTION
1	TX3+
2	TX3-
3	RX3+
4	RX3-

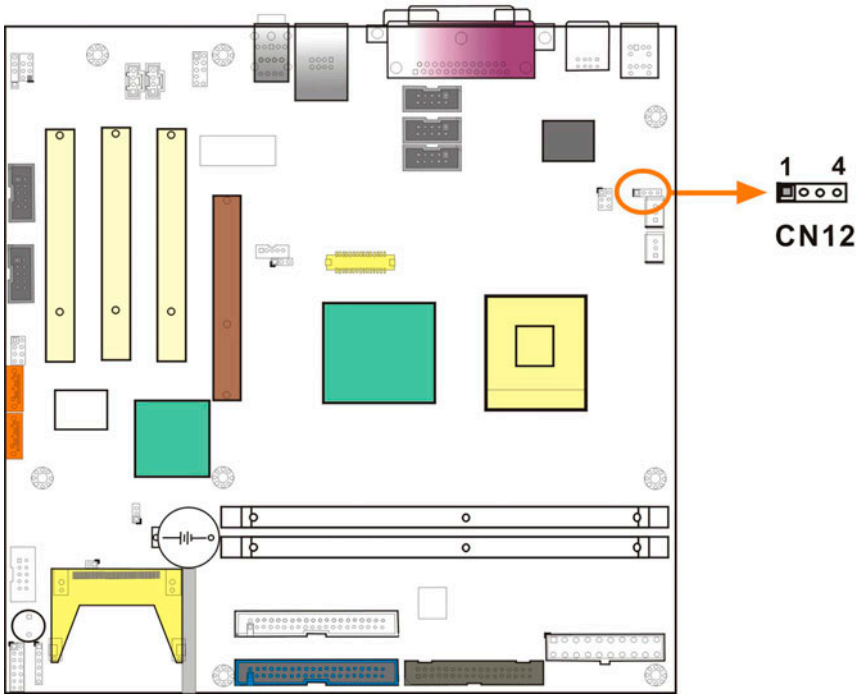

Figure 2-13 CN12 Serial Port Connector

13. CN13: LCD PANEL 18-/24-/36-/48-bit Single/Dual-channel Connector

2x15 pin header 1.25mm (DF13-30P-1.25V)

Table 2-17 LVDS Connector Pinouts

PIN	DESCRIPTION	PIN	DESCRIPTION
1	GND	2	GND
3	LVDS_Y0+	4	LVDS_Y0-
5	LVDS_Y1+	6	LVDS_Y1-
7	LVDS_Y2+	8	LVDS_Y2-+
9	LVDS_CLK+	10	LVDS_CLK-
11	LVDS_Y3+	12	LVDS_Y3-
13	GND	14	GND
15	LVDSB_Y0+	16	LVDSB_Y0-
17	LVDSB_Y1+	18	LVDSB_Y1-
19	LVDSB_Y2+	20	LVDSB_Y2-
21	LVDSB_CLK+	22	LVDSB_CLK-
23	LVDSB_Y3+	24	LVDSB_Y3-
25	GND	26	GND
27	PVDD	28	PVDD
29	PVDD	30	PVDD

NOTE:

For the inherent limitation by Intel chipset, currently the 24-bit and 48-bit IEGD (Intel Embedded Graphics Drivers) modes are not supported.

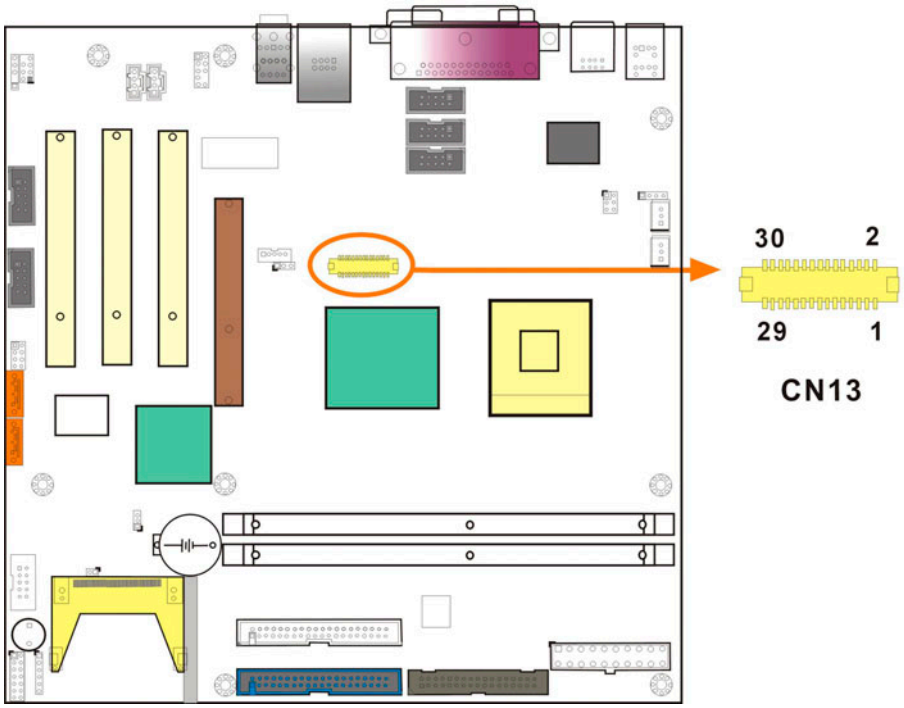

Figure 2-14 LVDS LCD Panel Connection Port

14. JP8: LCD Voltage 5V/3.3V Selector

For details on the JP8 selector, please refer to ***Chapter 3***. Please carefully select the correct voltage for an LCD panel. Damage will occur if the wrong voltage is selected.

15. J1: Inverter Control

This connector comes as a 1x5 pin Wafer 2mm connector. Pin 5 enables power on/off backlight during the power saving mode.

Table 2-18 J1 Inverter Connector Pinouts

PIN	DESCRIPTION	PIN	DESCRIPTION
1	VCC+5V	2	GND
3	VCC+12V	4	GND
5	LCD_BKLEN		

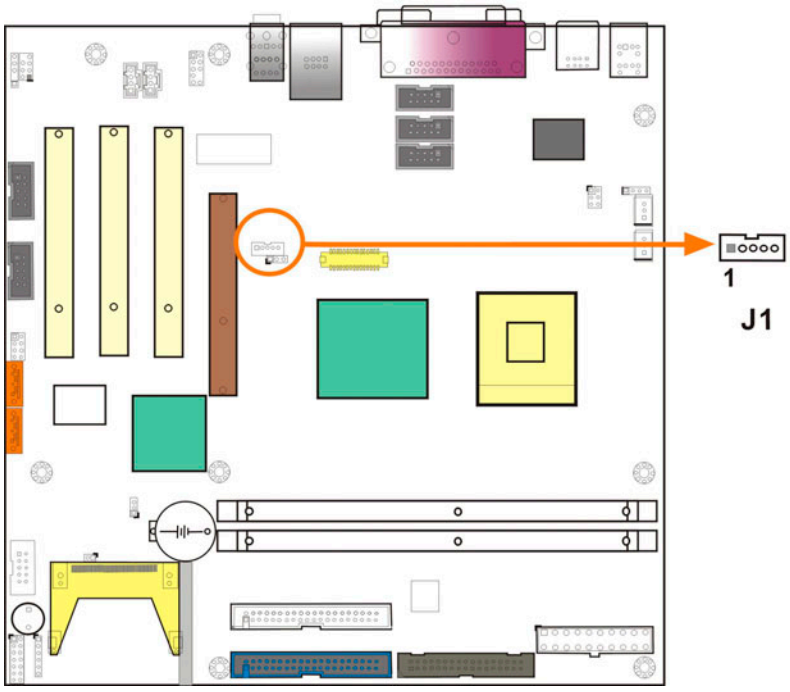

Figure 2-15 J1 Inverter Control

16. CN8: Analog Audio Output

CN8 is a 2x5 9-pin pin header for interfacing analog audio signals with external audio devices.

Table 2-19 CN8 Audio Output Pinouts

PIN	DESCRIPTION	PIN	DESCRIPTION
1	RFMIC	2	GND
3	VREFOUT	4	VCC5
5	OUTR	6	ROUT
7	N/C	8	N/C
9	OUTL	10	LOUT

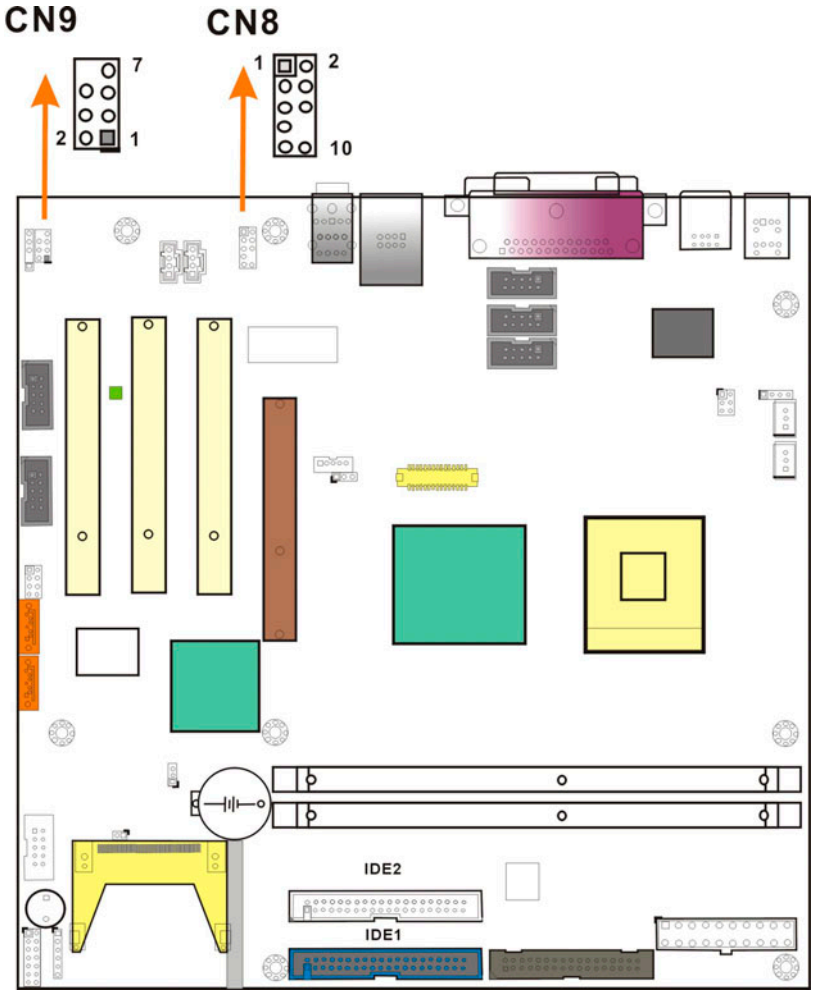

Figure 2-16 CN8 and CN9 Audio Output Locations

17. CN9: Digital Audio Output

CN8 is a 2x4 7-pin pin header for interfacing digital audio signals with external audio devices.

Table 2-20 CN9 Audio Output Pinouts

PIN	DESCRIPTION	PIN	DESCRIPTION
1	SUROUTL	2	CENOUT
3	GND	4	GND
5	SUROUTR	6	LFEOUT
7	GND	8	N/C (keyed)

Please refer to the previous page for its location.

18. CN7: SPDIF Input

CN7 is a 5-pin pin header for connecting an adapter cable for receiving SPDIF signals.

Table 2-21 CN7 SPDIF Input Pinouts

PIN	DESCRIPTION	PIN	DESCRIPTION
1	VCC5	2	N/C (keyed)
3	SPDIFOUT	4	GND
5	SPDIFIN		

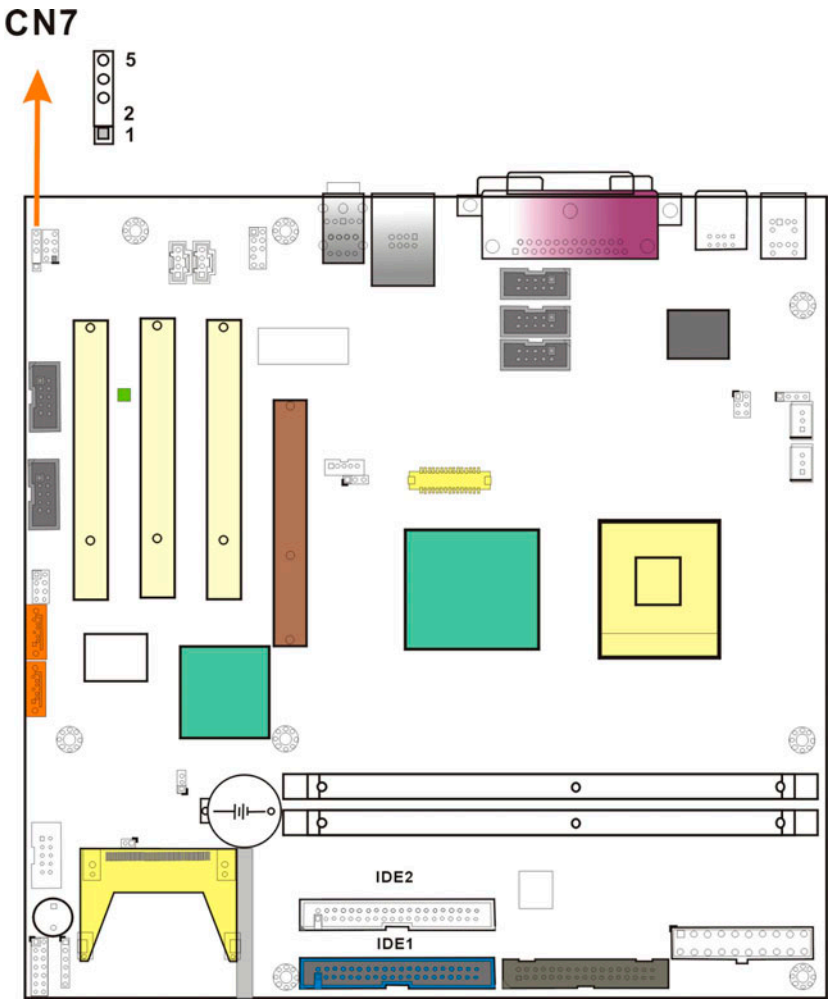

Figure 2-17 CN7 SPDIF Input

19. Serial ATA Ports (CN14 & CN15)

These two (2) connectors provide the connectivity to Serial ATA disk drives using the Serial ATA signal cables. These ports support serial ATA data transfer rate up to 150MB/s.

Table 2-22 Serial ATA Port Pinouts

PIN	DESCRIPTION	PIN	DESCRIPTION
1	GND	2	STXP
3	STXN	4	GND
5	SRXN	6	SRXP
7	GND		

CAUTION!

Your SATA hard drives may come with both a 4P power connector and a SATA power interface. Attach either the 4P connector or the included SATA power cable to your SATA hard drives. ***DO NOT*** attach both types of power connectors to your SATA hard drives all at the same time! Doing so will cause damage.

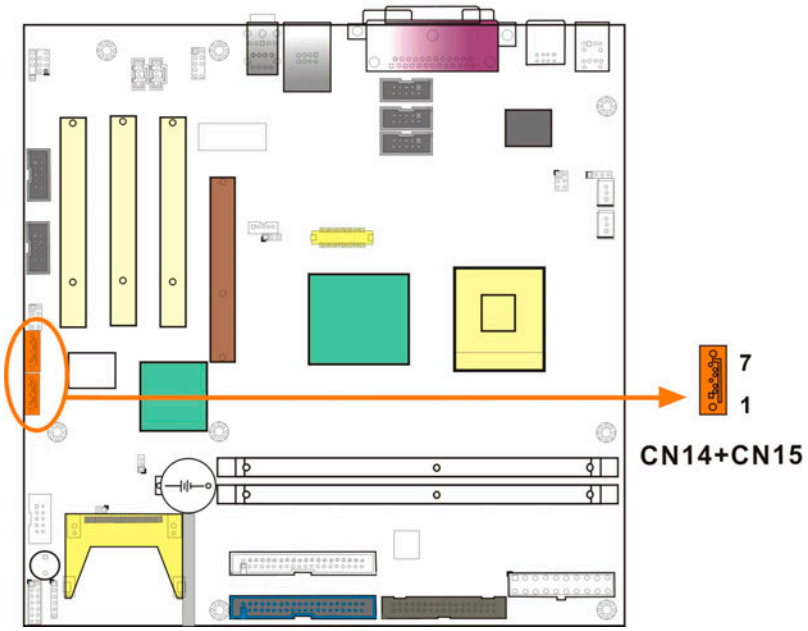

Figure 2-18 Serial ATA Port

NOTE:

1. The Serial ATA has its limitations with the operating systems. Serial ATA is supported by Windows 2000 SP4, Windows XP SP1, Windows 2003, or later versions.
2. Older OSes, such as Windows 98SE or ME, do not support Serial ATA interface.

2.2.2 Rear Panel Connectors

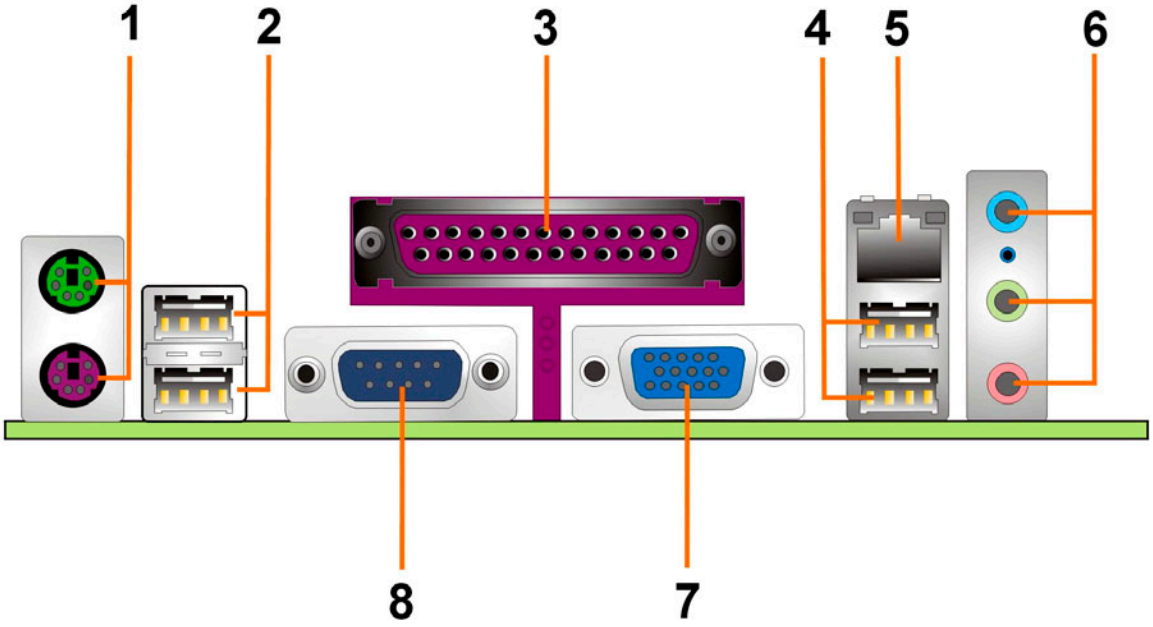

Figure 2-19 Rear Panel Connectors

1: PS/2 KB/MS Port.

This port connects a PS/2 mouse or keyboard.

Table 2-23 PS/2 Keyboard/Mouse Port Pinouts

PIN	DESCRIPTION	PIN	DESCRIPTION
1	KB Data	2	N/C
3	GND	4	+5V
5	Clock	6	N/C

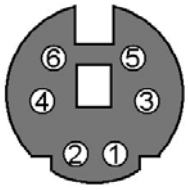

Figure 2-20 PS/2 Keyboard/Mouse Port

2 & 4: USB Ports

Table 2-24 USB Port Pinouts

PIN	DESCRIPTION	PIN	DESCRIPTION
1	+5V	2	DATA-
3	DATA+	4	GND

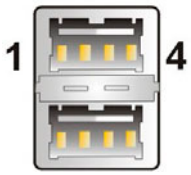

Figure 2-21 USB Port

3: Parallel Port

Table 2-25 Parallel Port Pinouts

PIN	DESCRIPTION	PIN	DESCRIPTION
1	RSTROBE	14	ALF#
2	RPD0	15	ERROR#
3	RPD1	16	PAR_INI#
4	RPD2	17	SLCTIN#
5	RPD3	18	GND
6	RPD4	19	GND
7	RPD5	20	GND
8	RPD6	21	GND
9	RPD7	22	GND
10	ACK#	23	GND
11	BUSY	24	GND
12	PE	25	GND
13	SLCT		

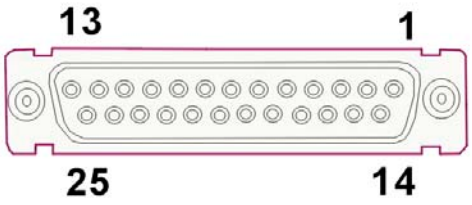

Figure 2-22 Parallel Port

5: GbE Ethernet LAN (RJ-45) Port

This port allows Gigabit connection to Local Area Network (LAN) through a network hub. Refer to the table below for the LAN port LED indication.

Table 2-26 Ethernet Port Pinouts

PIN	DESCRIPTION	PIN	DESCRIPTION
1	TXD+	8	GND
2	TXD-	9	GRN+
3	RXD+	10	GRN-
4	CT_TXD	11	YEL-
5	CT_RXD	12	YEL+
6	RXD-	13	S GND
7	N/C	14	S GND

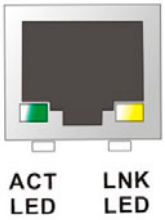

Figure 2-23 GbE Ethernet LAN (RJ-45) Port

LAN Port LED Indications

Table 2-27 LAN Port LED Indications

STATUS	DESCRIPTION	STATUS	DESCRIPTION
GREEN	Activity	YELLOW	Linked

6: Audio Phone Jacks

Line In port (Light Blue): This port connects a CD-ROM, DVD player, or other audio devices.

Line Out port (Lime): This port connects a headphone or a speaker. With multi-channel configurations, this port can also connect to front speakers.

Microphone (Pink): This port connects a microphone.

7: VGA Port

The standard 15-pin VGA connector connects to a CRT or LCD display monitor.

8: COM1 Serial Port

This is a D SUB serial port COM1.

2.3 Onboard LED

The LED1 lights up when power is supplied to the motherboard.

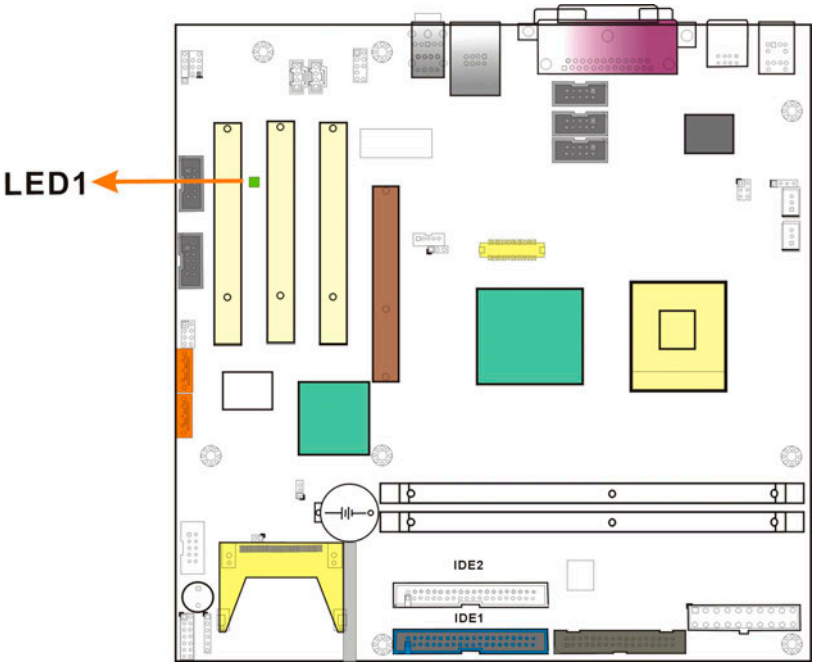

Figure 2-24 LED1 Location

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Chapter

3

Installation

3.1 Considerations Prior to Installation

Preparing Your Motherboard

The Motherboard contains numerous delicate electronic circuits and components, which can become damaged as a result of electrostatic discharge (ESD). Thus, prior to installation, please follow the instructions below:

1. Please turn off the computer and unplug its power cord.
2. When handling the motherboard, avoid touching any metal leads or connectors.
3. It is best to wear an electrostatic discharge (ESD) cuff when handling electronic components (CPU, RAM).
4. Prior to installing the electronic components, please have these items on top of an antistatic pad or within an electrostatic shielding container.
5. Please verify that the power supply is switched off before unplugging the power supply connector from the motherboard.

Installation Notices

1. Prior to installation, please do not remove the stickers on the PCB board. These stickers are required for warranty validation.
2. Prior to the installation of the Motherboard or any hardware, please first carefully read the information in the provided manual.
3. Before using the product, please verify that all cables and power connectors are connected.
4. To prevent damage to the PCB board, please do not allow screws to come in contact with the PCB circuit, connector pins, or its components.
5. Please make sure there are no leftover screws or metal components placed on the motherboard or within the computer casing.
6. Please do not place the computer system on an uneven surface.
7. Turning on the computer power during the installation process can lead to damage to system components as well as physical harm to the user.
8. If you are uncertain about any installation steps or have a problem related to the use of the product, please consult a certified computer technician.

WARNING!

Never run the motherboard without an appropriate heatsink and cooler that can be ordered from IEI Technology or purchased separately.

Unpacking Precautions

Some components on the IMB-8550 are very sensitive to static electric charges and can be damaged by a sudden rush of power. To protect it from unintended damage, be sure to follow these precautions:

- Ground yourself to remove any static charge before touching your IMB-8550 motherboard. You can do so by using a grounded wrist strap at all times or by frequently touching any conducting materials that is connected to the ground.
- Handle your motherboard by its edges. Do not touch IC chips, leads or circuitry if not necessary.
- Do not plug or unplug any connector or jumper while the power is on.
- Do not place a PCB on top of an anti-static bag. Only the inside of the bag is safe from static discharge.

3.2 Jumper Settings

NOTE:

A jumper is a metal bridge that is used to close an electrical circuit. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the ins to connect them. To CLOSE/SHORT a jumper means connecting the pins of the jumper with the plastic clip and to OPEN a jumper means removing the plastic clip from a jumper.

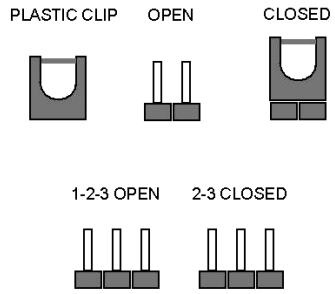

Figure 3-1 Jumper

JP1 (Clear CMOS)

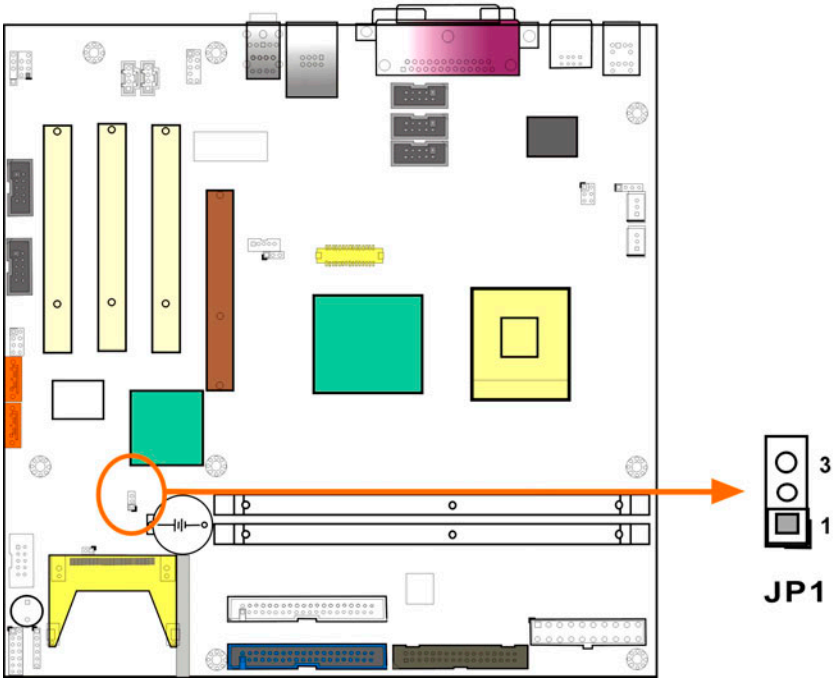

Figure 3-2 JP1 Jumper Location

In case the motherboard fails to boot due to user's improper BIOS setting, this jumper can be used to clear the CMOS data and reset the system BIOS information. To clear the CMOS contents, shunt pins 2 and 3 for a few seconds, and then reinstall the jumper clip back to pins 1 and 2.

If the "CMOS Settings Wrong" message displays during the boot up process, you may then try to correct the fault by pressing the F1 to enter the CMOS Setup menu. You may then enter the correct CMOS setting, Load Optimal Defaults, or Load Failsafe Defaults. Save your changes and exit the CMOS Setup menu.

JP1 Pin Configuration

Table 3-1 JP1 Pin Configuration

JP1	CLEAR CMOS
1-2 closed	Normal (default)
2-3 closed	CLEAR CMOS

CAUTION!

1. In normal condition, pins 1 and 2 must always stay in CLOSED condition.
2. Power must be turned OFF before clearing CMOS data.

JP4 (Compact Flash Master/Slave Setting)

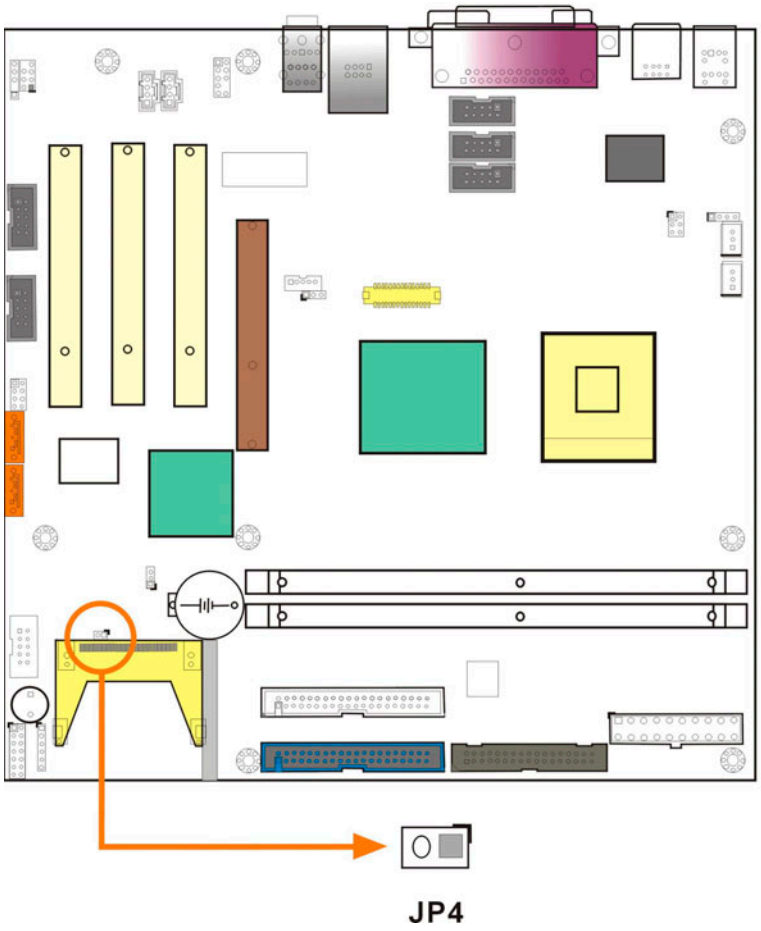

Figure 3-3 JP4: Compact Flash Master/Slave Setting

JP4 Pin Configuration

Table 3-2 JP4 Pin Configuration

JP4	CONFIGURATION
Closed	Enabling CF II as a Secondary IDE Master device
Open	CF II as a slave device

JP7 Serial Port Operating Mode Selection (RS-232/422/485 Converter)

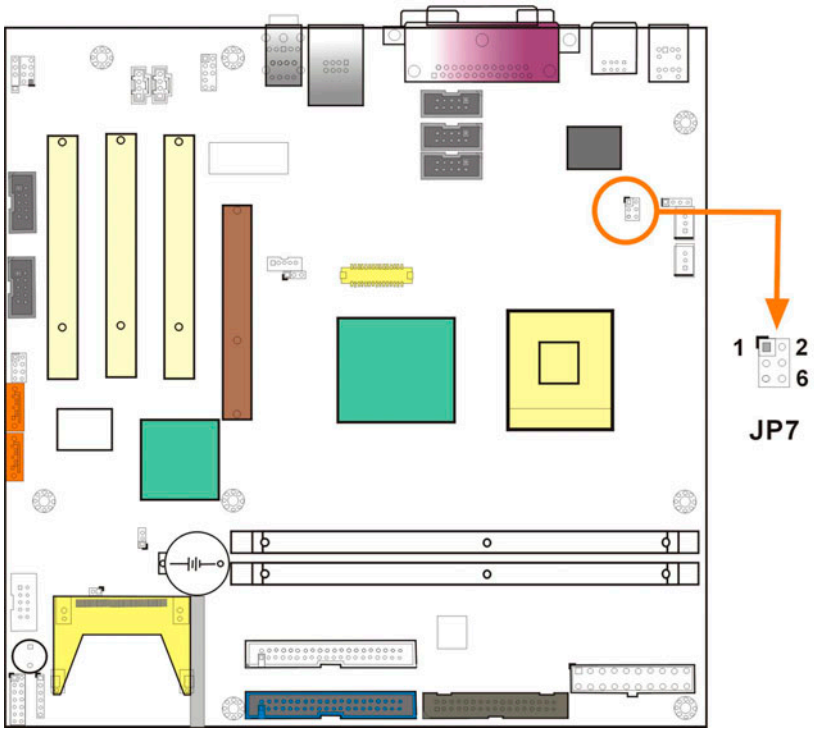

Figure 3-4 JP7 Jumper Location

JP7 Pin Configuration

Table 3-3 JP7 Pin Configuration

PIN COMBINATION	OPERATION MODE
1-3	RS-232
2-4 and 3-5	RS-422
3-5 and 4-6	RS-485

JP8 LCD Voltage Selector

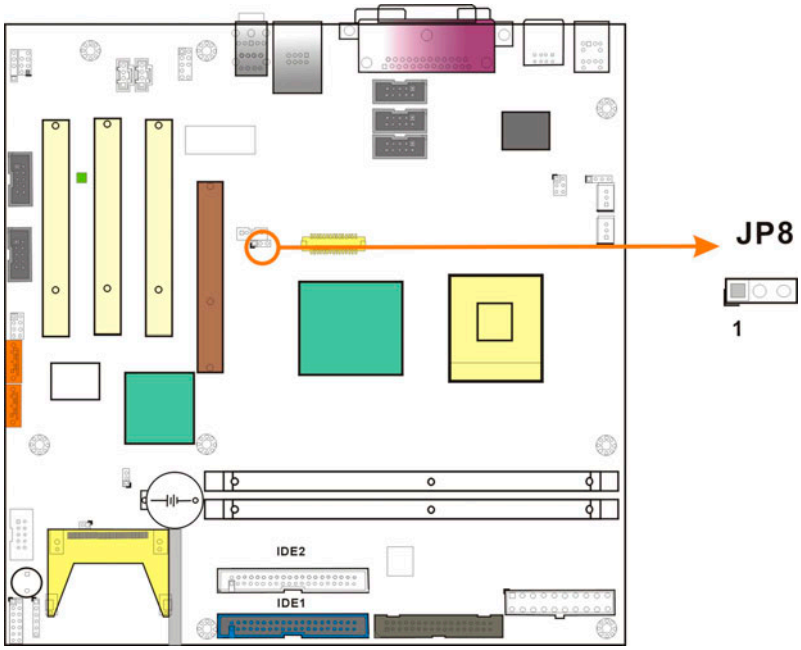

Figure 3-5 JP8 LCD Voltage Selector

WARNING!

Carefully select the voltage supplied to your LCD panel. With the wrong voltage setting, damage will occur to your LCD panel.

JP8 Pin Configuration

Table 3-4 JP8 Pin Configuration

PIN COMBINATION	OPERATION MODE
1-2	+5V
2-3	+3.3V

External Switches and Indicators

CN3 (PWR/HDD LED/SW/SPK/RST Pins)

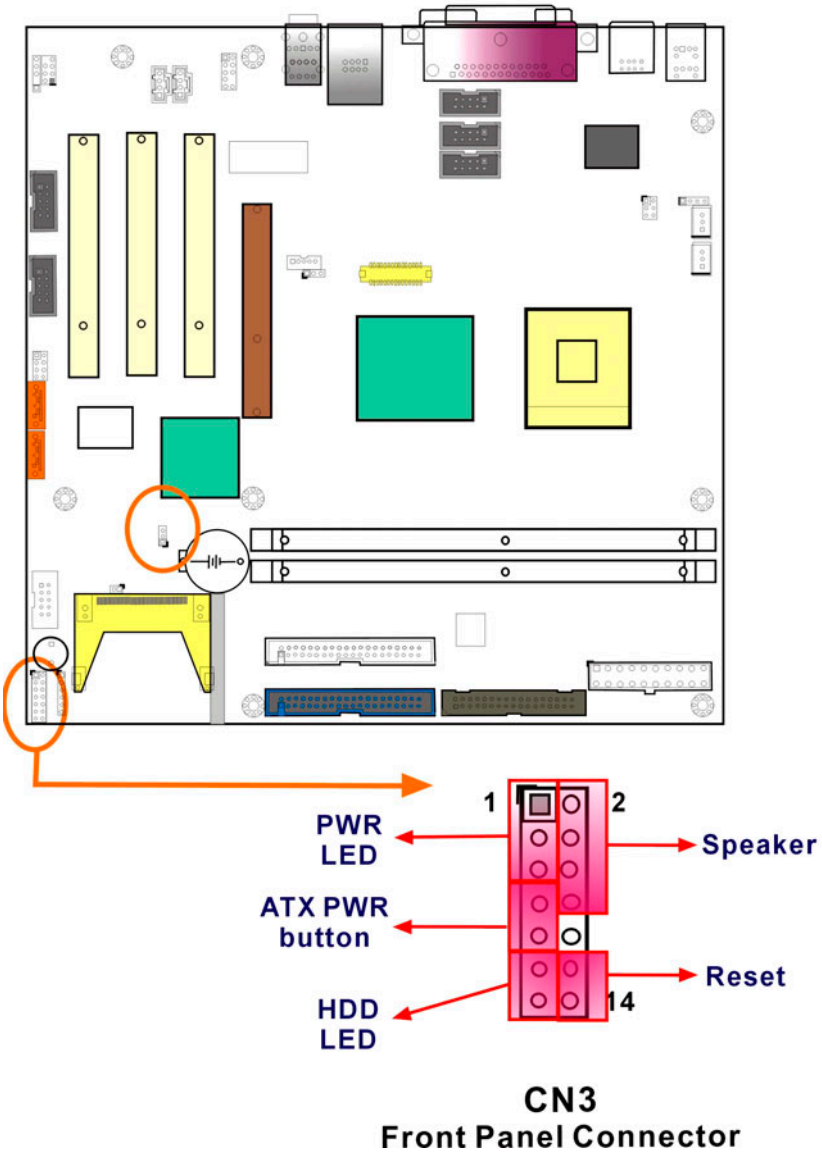

Figure 3-6 CN3 Connector Location

CN3 Pinouts

Table 3-5 CN3 Pinouts

PIN	DESCRIPTION	PIN	DESCRIPTION
1	+5V	2	SPEAKER+
3	N/C	4	N/C
5	GND	6	N/C
7	ATX PIN1	8	SPEAKER-
9	ATX PIN2	10	N/C
11	HDD LED+	12	RESET PIN1
13	HDD LED-	14	RESET PIN2

3.3 Installation

CPU Installation

WARNING!

1. Please note that the installation instructions described in this manual should be carefully followed in order to avoid damage to the board components.
2. Static-free installation environment: The IMB-8550 must be installed in a static-free environment to minimize the possibility of electrostatic discharge (ESD) damage. Use of an anti-static work pad or a grounded anti-static wrist strap is strongly recommended. To avoid damaging the board components due to static electricity, never place your board directly on a surface that is not static-free, e.g., a carpet.
3. Always hold components by the edges and do not touch the ICs and connector pins.
4. Do not remove a component from its anti-static bag before installation.
5. Before you proceed with the installation process, check the CPU surface and check for bent pins on the socket.
6. While installing the CPU, do not use force, serious damage to the CPU or CPU socket might occur.

To install Intel 479-pin CPU onto your motherboard, follow the steps below:

Step 1. Check if the retention screw on your CPU socket (mPGA479M) is turned to the unlock position. The CPU socket should arrive in the unlock condition; however, it is better you check the retention screw before you proceed with the rest of the procedure. The CPU installation process requires a flathead screwdriver to complete.

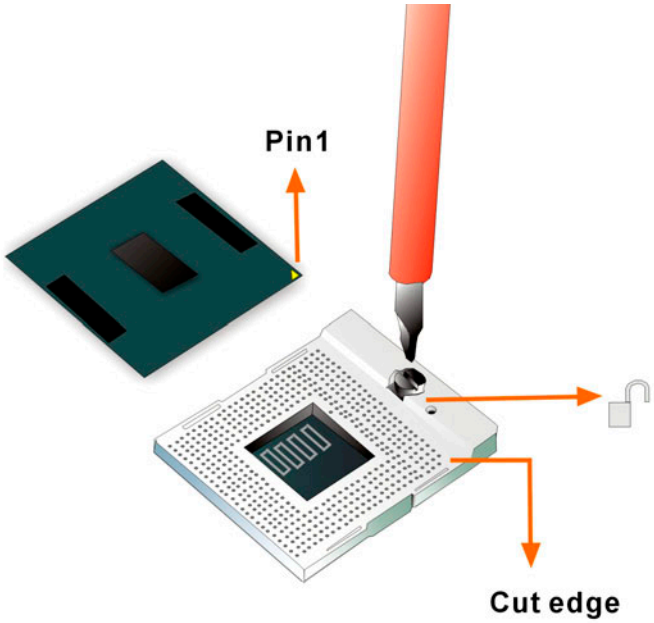

Figure 3-7 479-pin Socket

Step 2. Inspect the CPU socket for bent pins and make sure that the socket contacts are free of foreign material. Inspect socket contacts with one eye closed and from different angles. If debris should be found, remove them using the compressed air.

Step 3. **Orient the CPU so that the pin 1 mark matches the cut edge on the CPU socket and carefully place it on top of the socket. When properly placed, the socket should receive the CPU pins properly.**

Note the following when installing the CPU:

- Hold the CPU by the edges.
- Orient the CPU with the IHS (Integrated Heat Sink) side facing upward.
- Locate pin 1 mark on CPU.
- Carefully place the CPU into the socket with a gentle and vertical motion.

Step 4. Use a flathead screwdriver to rotate the retention screw to the locked position.

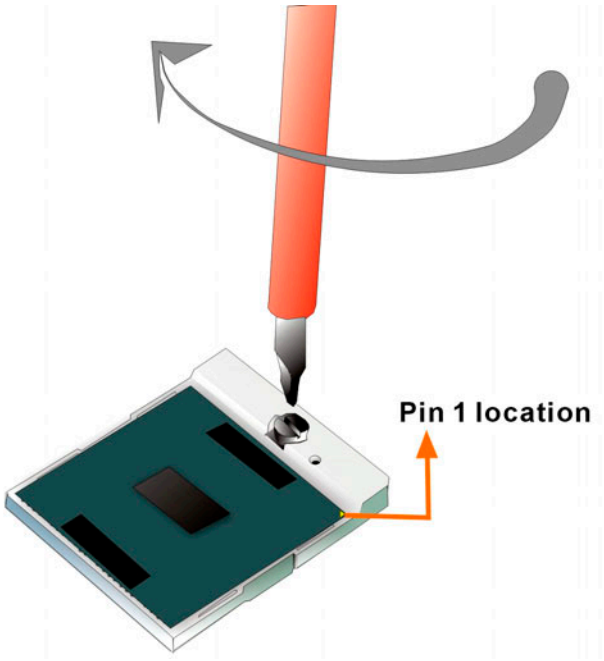

Figure 3-8 Securing CPU by Rotating the Retention Screw

Step 5. Now you have completed the CPU installation process. For details on installing the CPU heatsink and cooler, please refer to the next section.

Cooling Kit (CF-518) Installation

Figure 3-9 IEI CF-518 Cooling Kit

IEI provides a cooling kit designed for socket 479 CPU. The cooling kit is comprised of a CPU heatsink, and a cooling fan.

NOTE:

The CF-518 heatsink comes with a sprayed layer of thermal paste. Make sure you do not accidentally wipe away the thermal paste while unpacking or installing the heatsink. Thermal paste between the CPU and the heatsink is important for optimum heat dissipation.

Installation Steps:

Step 1. Place the heatsink onto the CPU. Make sure that the CPU cable can be properly routed when the heatsink is installed.

Step 2. Align the heatsink so that its four (4) threaded screw fasteners can pass through the through holes on PCB.

Step 3. From the other side of PCB, align the provided nut caps to the heatsink's screw threads that come through the PCB holes.

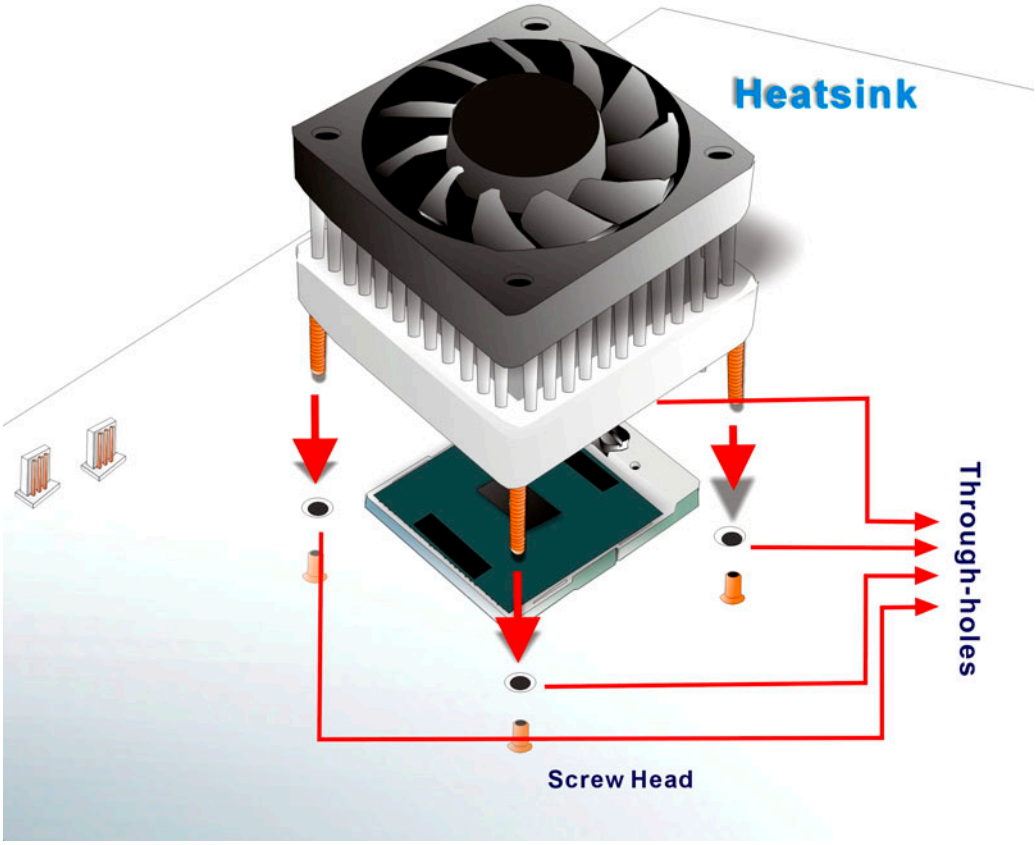

Figure 3-10 Securing Heatsink through the PCB through-holes

Step 4. Use a flathead screwdriver to tighten the four (4) fasteners on the heatsink. Tighten each nut caps a few turns at a time, and do not over-tighten the screws for that may cause damage to the PCB.

Step 5. Connect the fan cable on the cooler fan to the FAN1 CPU fan connector on the motherboard. Carefully route the cable and avoid heat generating chips and fan blades.

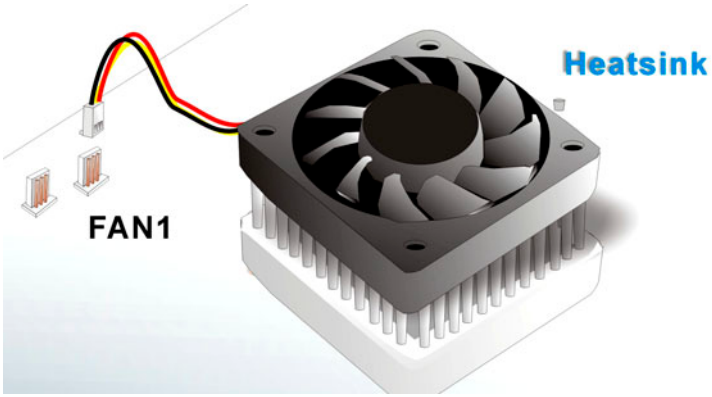

Figure 3-11 Connecting FAN1 Connector

Step 6. You are done with heatsink installation.

DIMM Installation

The IMB-8550 provides two (2) DIMM sockets for a maximum total memory module up to 2GB DDR SDRAM.

To install memory module, first make sure the two white clips on the DIMM socket are in the “open” position (the handles lean outward).

Verify the orientation of the module by checking the notch on the memory module. Slowly slide the DIMM module along the plastic guide on both ends of the socket, then press the DIMM module down into the socket, until you hear a “click” sound. This is when the two clips have automatically locked the module into the correct position of the DIMM socket. To remove the DIMM module, push both handles outward, and the memory module should be ejected by the mechanism in the socket.

Connections to the Peripherals

IEI provides the following cables to facilitate connections to your peripheral devices. For more information on the locations of the connectors, please refer to ***Chapter 2***. Cables not included in kit are user supplied items and should be separately purchased.

No.	Type
2	ATA 66/100 flat cable
2	SATA cables
1	SATA power cable
3	RS-232 cable (2 x 2 kit; 1 x 1 kit)
1	Rear panel I/O bracket

Table 3-6 Cables Included in Kit

IDE Disk Drive and CDROM Connector (IDE1 & IDE2)

The IMB-8550 provides two IDE channels which allow the connection to two Enhanced Integrated Device Electronics hard disk drives or CDROM. The IDE controller is attached to a PCI interface. The advanced IDE controller supports PIO mode 3, mode 4 and up to UDMA/100 in transfer speed.

Connecting Hard Disk Drives

IDE bus devices are daisy-chained using a standard 44-pin IDE cable. The connection is made by connecting one end of the cable to the IDE connectors. The connector has a keyed pin which prevents you from inserting the connector in a wrong direction. The read wire corresponds to pin 1 on the connector.

Plug the other end of the cable into the Enhanced IDE hard drive, with pin 1 on the cable corresponding to pin 1 on the hard drive.

Note that when connecting two IDE disk drives you will have to configure one as the master and the other slave. The configuration is done by setting the back-end jumpers on the disk drives.

Floppy Drive Connector (FDD1)

This connector provides access to two externally mounted floppy drives (3.5”-profile, 720 KB, 1.44 MB, and 2.88 MB types floppy drives.

Connecting the Floppy Drives

1. Make sure that the red wire of your floppy cable corresponds to pin one on the connector.
2. Attach the appropriate connector on the other end of the cable to the floppy drive(s). You can use only one connector in the set. The connection sequence determines which of the two connected floppy drives is drive A: and which is drive B.

Compact Flash Disk

When appropriately formatted, a compact Flash disk can serve as a bootable hard drive in applications where installation space is limited. The Compact Flash card occupies a secondary IDE channel. Configuration options can be found through the configuration jumpers and BIOS

configuration utility.

Parallel Port Connector (LPT1)

Parallel port connects to a printer. The IMB-8550 comes with a multi-mode (ECP/EPP/SPP) parallel port. The LPT1 parallel port interface features a traditional DB-25 connector. The parallel interface can be re-assigned to LPT2 or LPT3 through the BIOS configuration utility.

The default interrupt channel is IRQ7. Select ECP or EPP DMA mode using the BIOS configuration utility.

Audio Interface

Audio Connector (CN6)

AC'97 Audio signals are interfaced through the phone jacks combined into the CN6 connector. These signals include Microphone line-in, line-in stereo, and line-out stereo. In addition to the phone jacks, the IMB-8550 is also equipped with separate connectors for Analog/Digital outputs and SPDIF inputs.

COM Port Connectors (COM1 to COM6)

The IMB-8550 provides six (6) serial ports, and the serial port operation mode can be configured through an onboard jumper set (RS-232/422/485). The COM1 port is interfaced through one DB-9 connector and the rest of the COM ports are interfaced through individual 10-pin male headers. These serial ports facilitate the connection to serial devices or a communication network, e.g., terminal console.

LCD Panel Connection (VGA1 and CN13)

The APG SVGA interface on the IMB-8550 connects conventional CRT displays and flat panel displays including passive LCD and active LCD displays. There are two connectors onboard for display connections:

1. CRT VGA monitors
2. LVDS type LCD panels

One CRT display connector (VGA1) is provided as a 15-pin, female D-SUB to connect conventional CRT displays. Pin assignments can be found in ***Chapter 2 Functional Description***.

LVDS Connector (CN13):

The graphics display is powered by the north-bridge chipset that supports Dual-channel up to 48-bit or 36-bit (2 x 18-bit) LVDS LCD panel displays, either an 18-bit, 36-bit, or 48-bit LVDS can be connected to the CN13 LVDS 30-pin connector.

PCI Bus Interface

The main features include:

- Rev. 2.1 compliant implementation
- Integrated PCI arbitration interface
- Translation of PCI cycles to ISA bus master
- Translation of ISA initiated cycles to PCI
- Support for burst Read/Write from PCI master
- 33MHz PCI clock

Ethernet Connection (LAN Port on CN2)

The onboard 32-bit PCI-bus Ethernet interface is fully compliant with IEEE 802.3 1000Mbps standard, 100BaseT_TX, and 10BaseT applications (802.3, 802.3u, and 802.3ab). The 10/100/1000BaseT connector (LAN1) connections are made via the RJ-45 connector on the front edge.

USB Connection (USB1 and USB Ports on CN2)

The combo USB header (USB1) provides the connectivity of two (2) USB (Universal Serial Bus) ports. CN2 provides another two (2) USB ports. USB2 on the motherboard, an 8-pin header, provides the connectivity of another two (2) USB ports. The USB interface features complete Plug and Play, and hot attach/detach for up to 127 external devices, compliance with USB specification Rev. 2.0. An adapter 10-pin-to-USB cable is provided in kit. The USB interface is accessed through either through the USB connectors on the rear panel or the pin connector. The

adapter cable has one (1) 4x2-pin connector on one end and a standard USB connector on the other.

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Chapter

4

AMI BIOS Setup

Introduction

This chapter discusses AMI's Setup program built into the ROM BIOS. The Setup program allows users to modify the basic system configuration. This special information is then stored in battery-backed RAM so that it retains the Setup information when the power is turned off.

Starting Setup

The AMI BIOS 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 configuration. 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:

1. By pressing <Del> immediately after switching the system on, or
2. By pressing the <Del> key when the following message appears briefly at the bottom of the screen during the POST.

   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.

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.

Key	Function
Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item on the left hand side
Right arrow	Move to the item on the right hand side

Esc key	Main Menu – Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
Page Up key	Increase the numeric value or make changes
Page Dn key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 /F3 key	Change color from total 16 colors. F2 to select color forward.
F10 key	Save all the CMOS changes, only for Main Menu

Table 4-1 BIOS Function Keys

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.

If, after making and saving system changes with Setup, you discover that your computer no longer is able to boot, the AMI BIOS supports an override to the CMOS settings which reset 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 AMI 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.

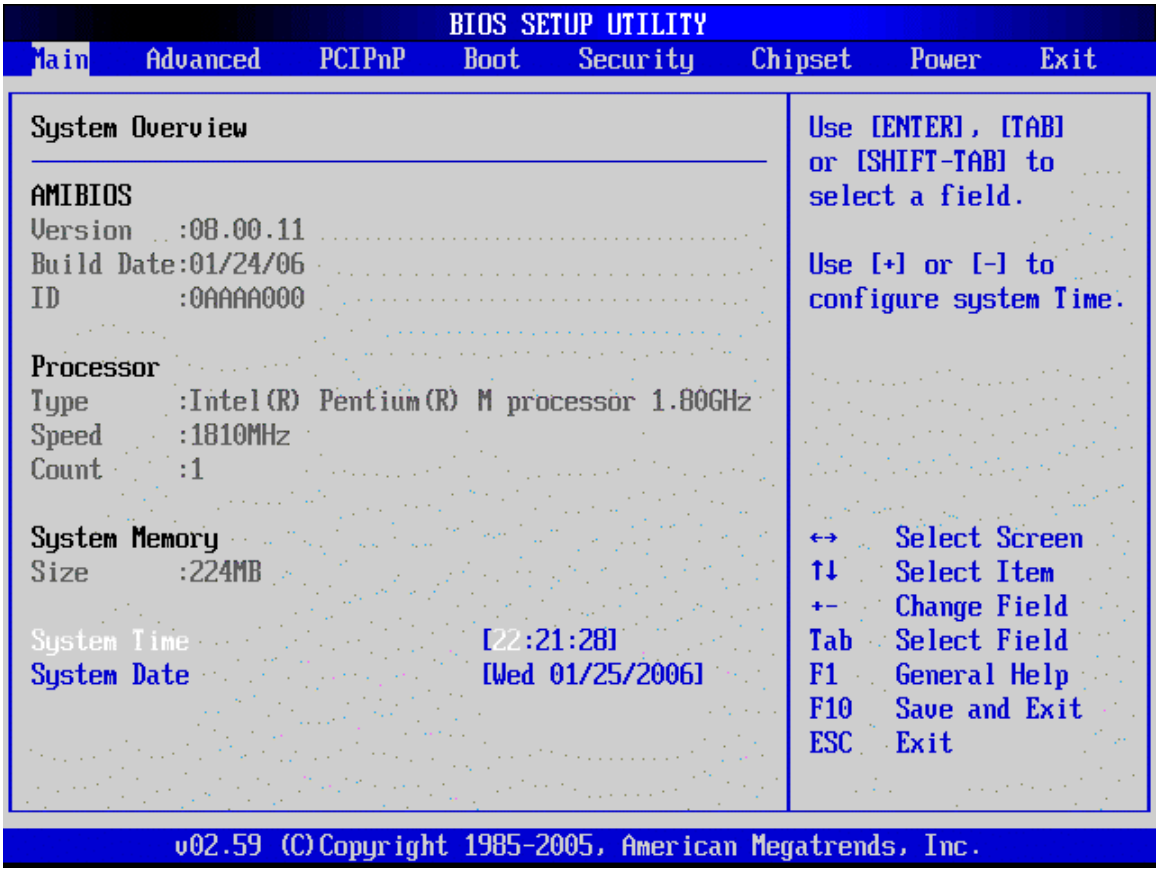
BIOS Menu Bar

The **menu bar** on top of the screen has the following main items:

Main	For changing the basic system configuration.
Advanced	For changing the advanced system settings.
PCIPnP	For changing the advanced PCI/PnP Settings
Boot	For changing the system boot configuration.
Security	Use this menu to set User and Supervisor Passwords.
Chipset	For changing the chipset setting.
Power	For changing the power management setting.
Exit	For selecting the exit options and loading default settings.

4.1 Main

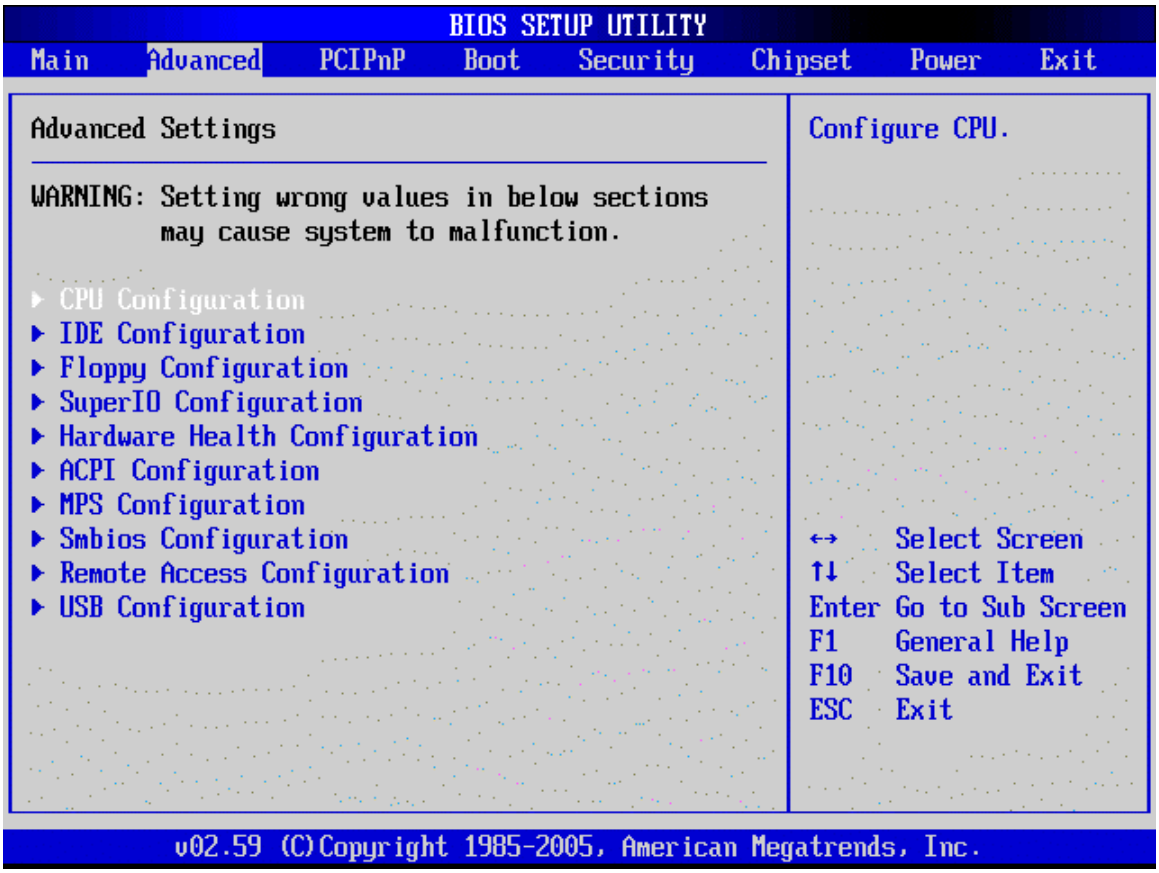
When you enter the BIOS Setup program, the Main menu screen appears giving you an overview of the basic system information.



AMI BIOS	This item displays the auto-detected BIOS information.
Processor	This item displays the auto-detected CPU specification.
System Memory	This item displays the auto-detected system memory.
System Time [xx:xx:xx]	This item allows you to set the system time.
System Date [Day xx/xx/xxxx]	This item allows you to set the system date.

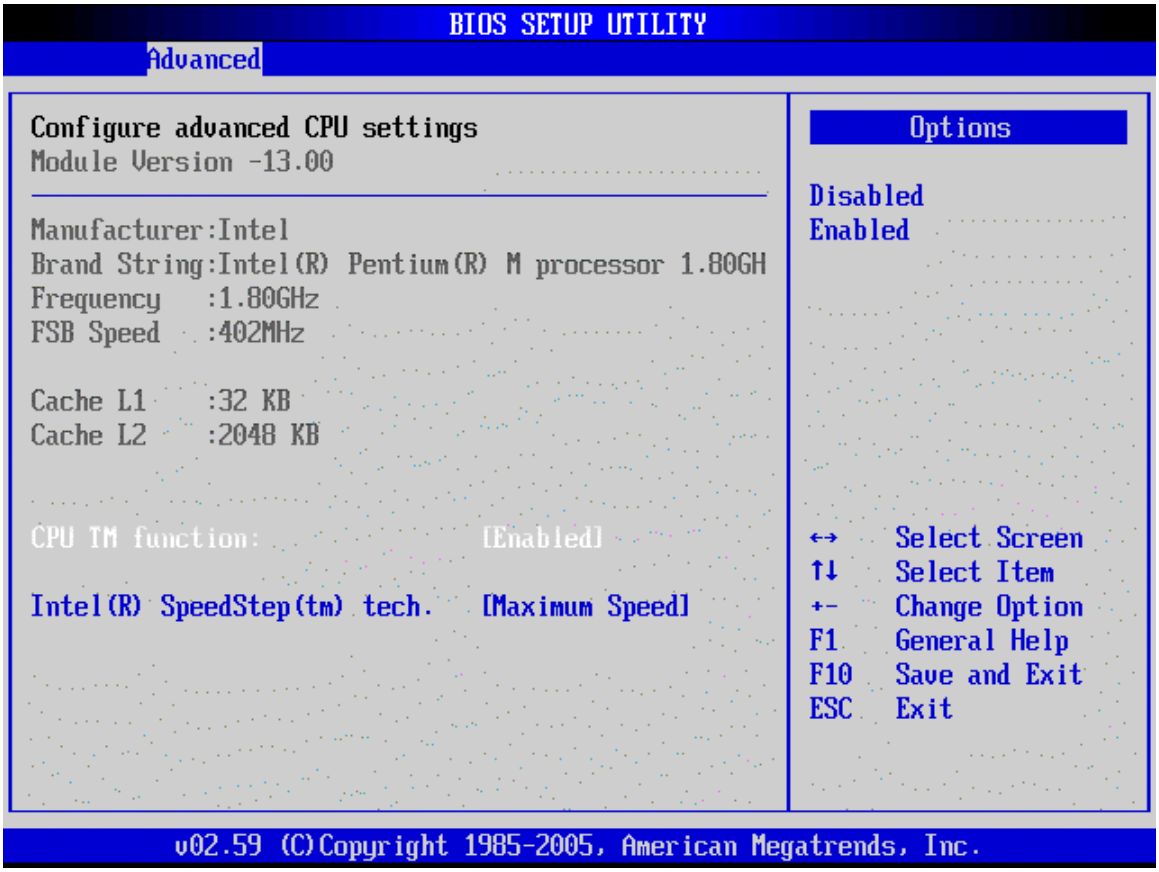
4.2 Advanced

The Advanced menu items allow you to change the settings for the CPU and other system devices.



CPU Configuration

This menu contains items shown in the CPU-related information window that are automatically detected by BIOS.



Max CPUID Value Limit

This item should be disabled for Windows XP.

Configuration options: [Disabled] [Enabled]

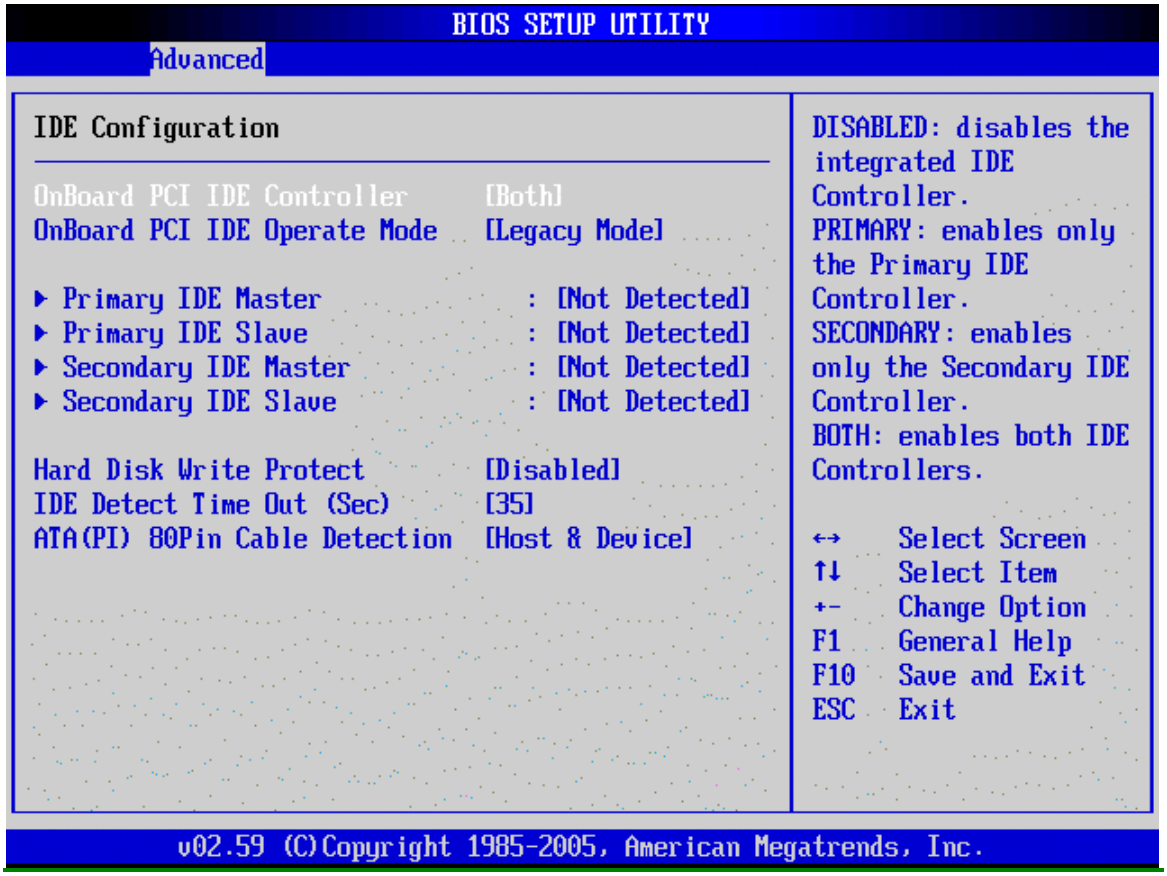
Intel SpeedStep™ Technology [Maximum Speed]

If set to “Automatic” here in the BIOS configuration utility, you can make use of the Power saving feature in your operating system. If set to “Maximum” or “Disabled,” the Enhanced Intel SpeedStep Technology (EIST) feature will be disabled in your OS. The EIST feature allows CPU to step down on its internal frequency when the workload is light.

Configuration options: [Maximum] [Disabled] [Automatic] [Minimum]

IDE Configuration

The items in this menu allow you to set or change the configurations for the IDE devices installed in the system. Select an item then press Enter if you wish to configure the item.



NOTE:

1. Due to the limitations by system BIOS integration, the SATA control (ALi M5283) drivers should be manually installed.
2. To enable Serial ATA drive connectivity, the SATA ROM option should also be enabled in the “Chipset” -> “Southbridge Configuration” menu.
3. The SATA drivers can be found in the Utility CD shipped with the motherboard. Please refer to ***Chapter 5*** for more information.

ATA/IDE Configuration [Disable/Combined/Enhanced]

Disabled: Disable this function.

Compatible: You can use up to 6 HDDs on the motherboard; 2 for SATA and the other for PATA

IDE disk drives.

Enhanced: The motherboard allows up to 6 HDDs to use. The Enhanced mode triggers one advanced option which allows you to configure your SATA drives into RAID volumes. The RAID configuration also requires Intel or ALi's (depending on the chipset applied) software utilities installed on your operating system.

When set to the Enhanced mode, a different option for SATA drives, "Configure SATA as," will appear. This option allows you to configure your disk drives into RAID volumes or make them behave like ordinary IDE disk drives.

NOTE:

1. There are ways to access Intel's or other chip provider's (e.g., ALi) proprietary RAID configuration utility such as pressing the Ctlr+I or Ctlr+A keys together during POST. The access may vary and it is recommended to refer to the chip provider's documentation for more information.
2. RAID configurations protect your data and increase access performance by spinning disk drives together. However, you should consider the drawbacks of using RAID. For example, RAID 0 boosts performance but does not provide protection to your data. With RAID 1, you can only use half of the capacity of your disk drives.

Legacy IDE Channels

Available options are: [SATA Only] [PATA Pri, SATA Sec] [SATA Pri, PATA Sec] [PATA Only]

Primary and Secondary, Third IDE 0/1

The values opposite the dimmed items (Device, Vendor, Size, LBA Mode, Block Mode, PIO Mode, Async DMA, Ultra DMA, and SMART monitoring) are auto-detected by BIOS and are not user-configurable. These items show N/A if no IDE device is installed in the system.

Type [Auto]

Selects the type of IDE drive. Setting to Auto allows automatic selection of the appropriate IDE device type. Select CDROM if you are specifically configuring a CD-ROM drive. Select ARMD (ATAPI Removable Media Device) if your device is either a ZIP, LS-120, or MO drive.

Configuration options: [Not Installed] [Auto] [CDROM] [ARMD].

LBA/Large Mode [Auto]

Enables or disables the LBA mode. Setting to Auto enables the LBA mode if the device supports this mode, and if the device was not previously formatted with LBA mode disabled.
Configuration options: [Disabled] [Auto]

Block (Multi-Sector Transfer) [Auto]

Enables or disables data multi-sectors transfers. When set to Auto, the data transfer from and to the device occurs multiple sectors at a time if the device supports multi-sector transfer feature. When set to Disabled, the data transfer from and to the device occurs one sector at a time.
Configuration options: [Disabled] [Auto]

PIO Mode [Auto]

Selects the PIO mode.
Configuration options: [Auto] [0] [1] [2] [3] [4]

DMA Mode [Auto]

Selects the DMA mode.
Configuration options: [Auto] [SWDMA0] [SWDMA1] [SWDMA2] [MWDMA0] [MWDMA1] [MWDMA2] [UDMA0] [UDMA1] [UDMA2] [UDMA3] [UDMA4] [UDMA5]

SMART Monitoring [Auto]

Sets the Smart Monitoring, Analysis, and Reporting Technology.
Configuration options: [Auto] [Disabled] [Enabled]

32Bit Data Transfer [Disabled]

Enables or disables 32-bit data transfer.
Configuration options:[Disabled] [Enabled]

Hard Disk Write Protect

This item allows you to disable/enable device write protection. This will be effective only if device is accessed through BIOS.
Configuration options: [Disabled] [Enabled]

IDE Detect Time Out (Sec)

This item allows you to select the timeout value for detecting ATA/ATAPI devices. Default is recommended unless particular cases occur, e.g., with a slow-initiating device.
Configuration options: [0] [5] [10] [15] [20] [25] [30] [35]

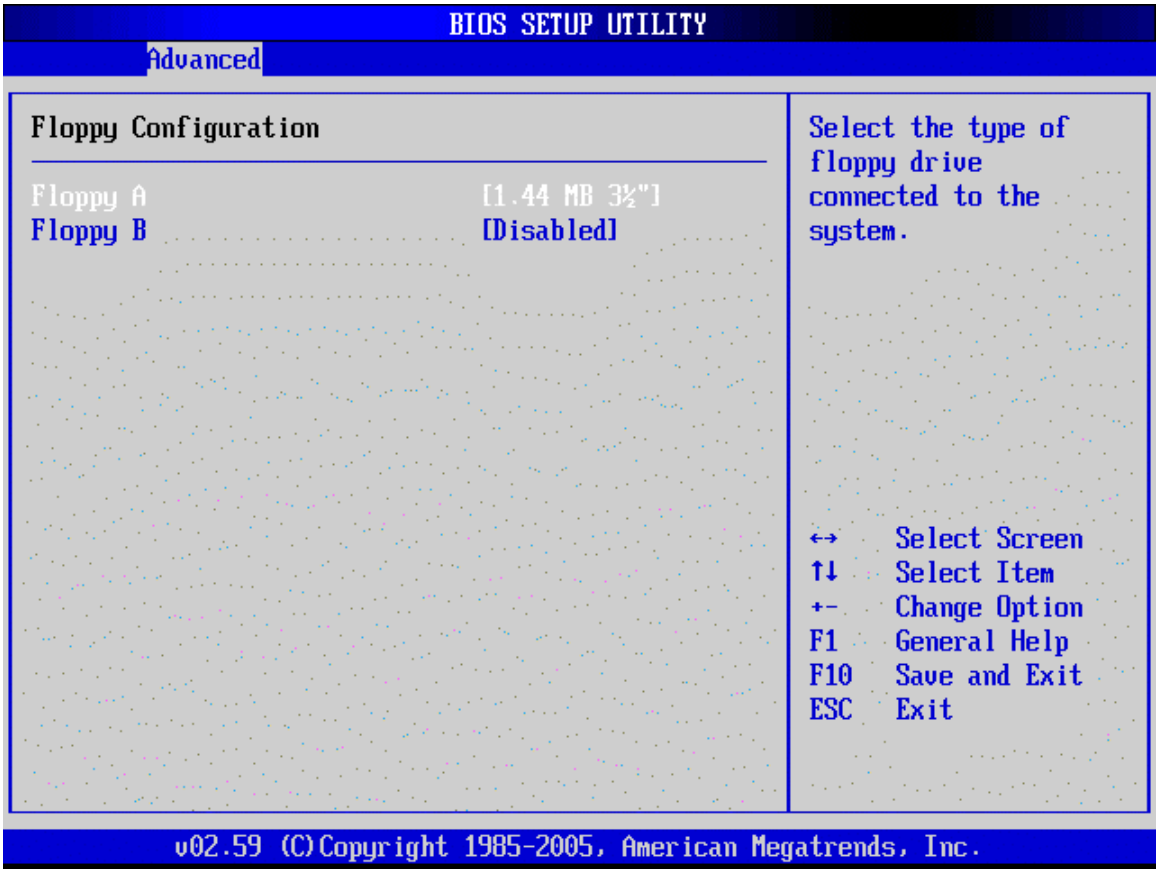
ATA(PI) 80Pin Cable Detection

This item allows you to select the mechanism for detecting 80-pin ATA(PI) cables.

Configuration options: [Host & Device] [Host] [Device]

Floppy Configuration

Sets the type of floppy drive installed.
Configuration options: [Disabled][360KB, 5.25 in.][1.2MB, 5.25 in.][720KB, 3.5 in.] [1.44MB, 3.5 in.] [2.88MB, 3.5in.]



Super IO Configuration

On Board Floppy Controller [Enabled]

Allows you to enable or disable the floppy disk controller.
Configuration options: [Disabled] [Enabled]

Floppy Drive Swap [Disabled]

Allows you to designate a floppy drive letter as A or B without making a change to its physical connection.
Configuration options: [Disabled] [Enabled]

Serial Port1 Address [3F8/IRQ4]

Allows you to select the Serial Port1 base address.
Configuration options: [Disabled] [3F8/IRQ4] [3E8/IRQ4] [2E8/IRQ3]

Serial Port2 Address [2F8/IRQ3]

Allows you to select the Serial Port2 base address.
Configuration options: [Disabled] [2F8/IRQ3] [3E8/IRQ4] [2E8/IRQ3]

Parallel Port Address [378]

Allows you to select the Parallel Port base addresses.
Configuration options: [Disabled] [378] [278] [3BC]

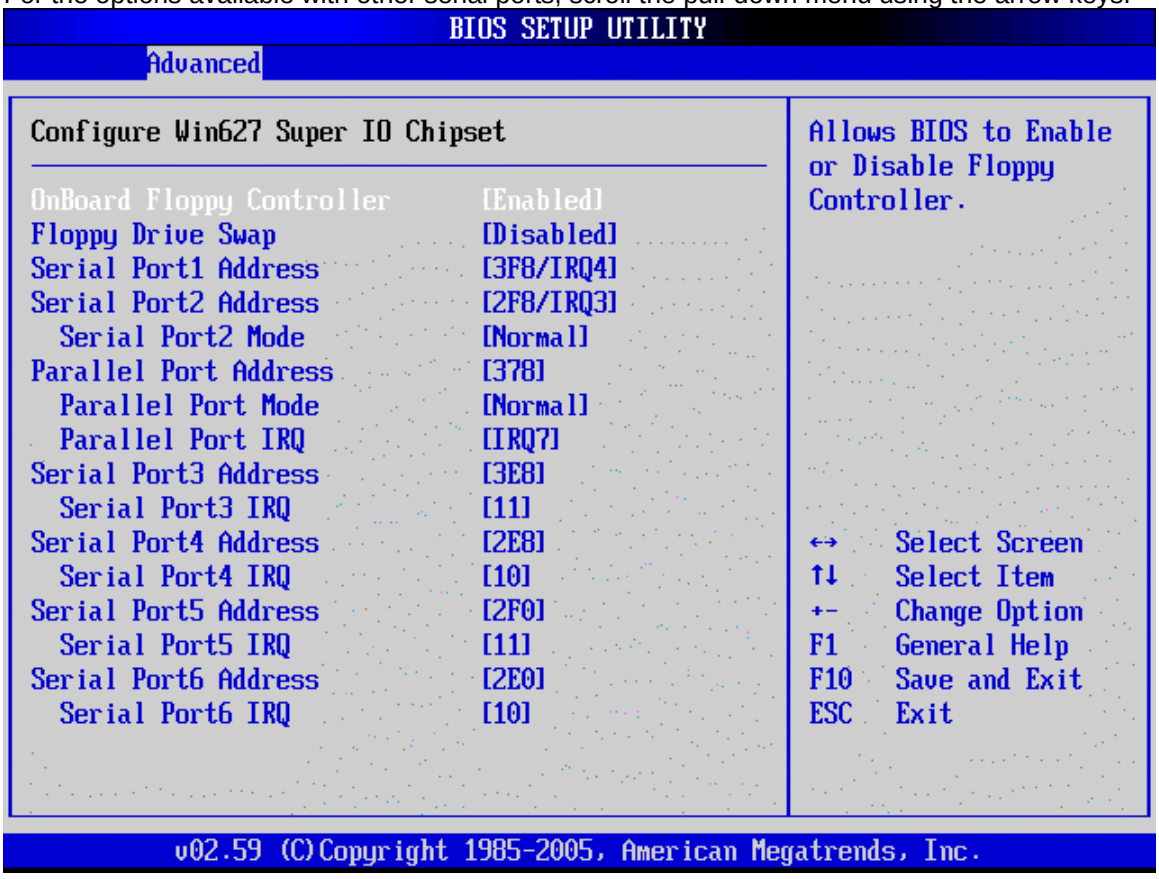
Parallel Port Mode [Normal]

Allows you to select the Parallel Port mode.
Configuration options: [Normal] [Bi-directional] [EPP] [ECP] [ECP & EPP]

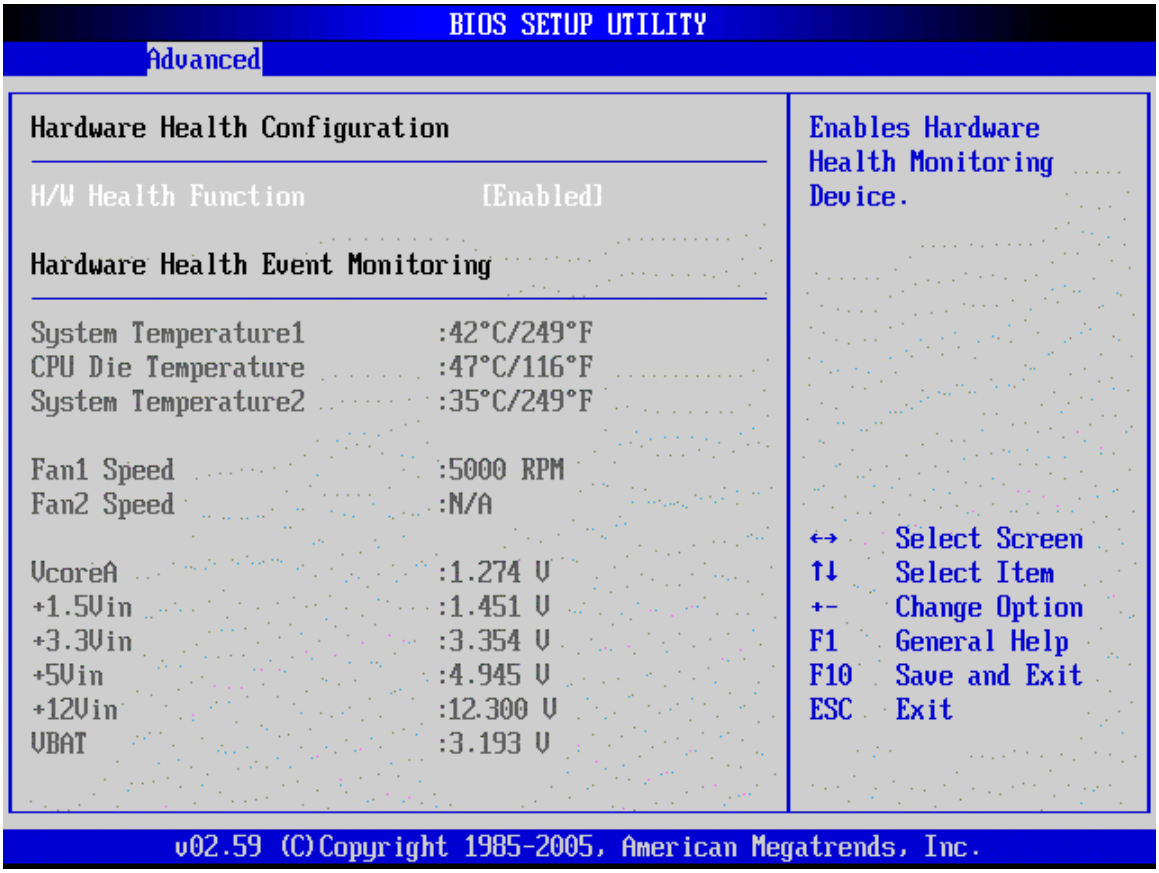
Parallel Port IRQ [IRQ7]

Configuration options: [IRQ5] [IRQ7]

For the options available with other serial ports, scroll the pull-down menu using the arrow keys.



Hardware Health Configuration



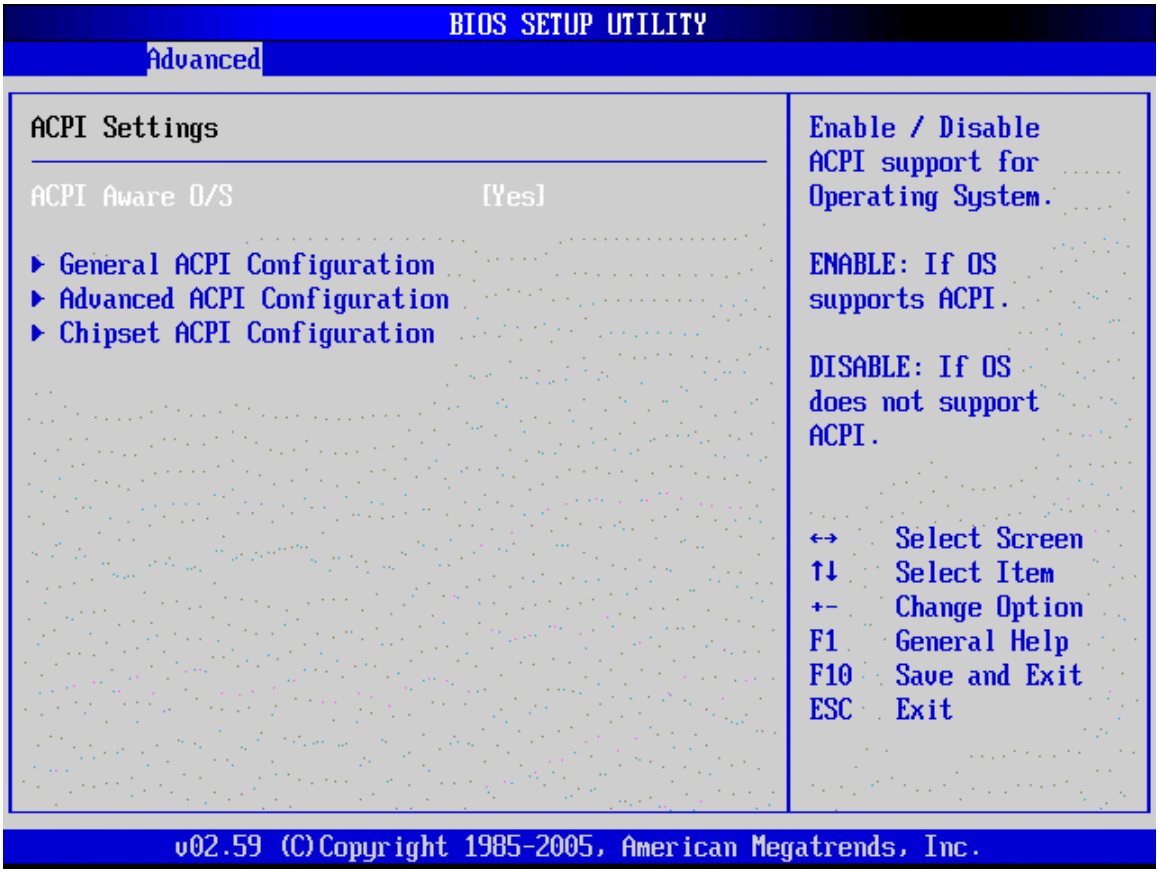
H/W Health Function

The only configurable option here allows you to enable or disable the hardware health monitoring function.

Available options are: [Disabled] [Enabled]

ACPI Configuration

Allows you to change the settings for the Advanced Configuration and Power Interface (ACPI) and Power Management (APM). Select an item then press Enter to display the configuration options.



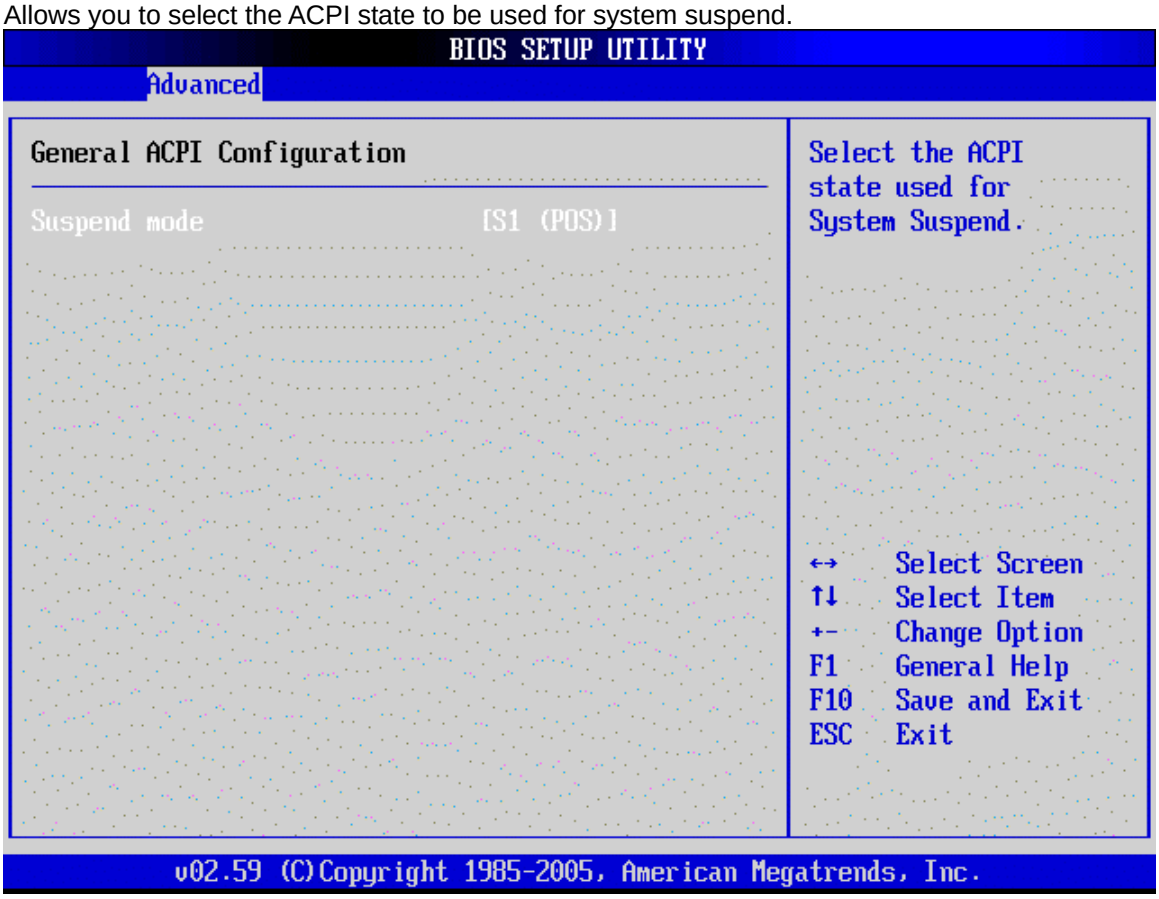
ACPI Aware O/S

The configuration of this option depends on whether your OS complies with the ACPI standard. Default is Yes and is the Fail-safe option. Windows 98, Windows 2000, and Windows XP all complies with ACPI.

Configuration options: [Yes] [No]

General ACPI (Advanced Configuration and Power Interface) Configuration

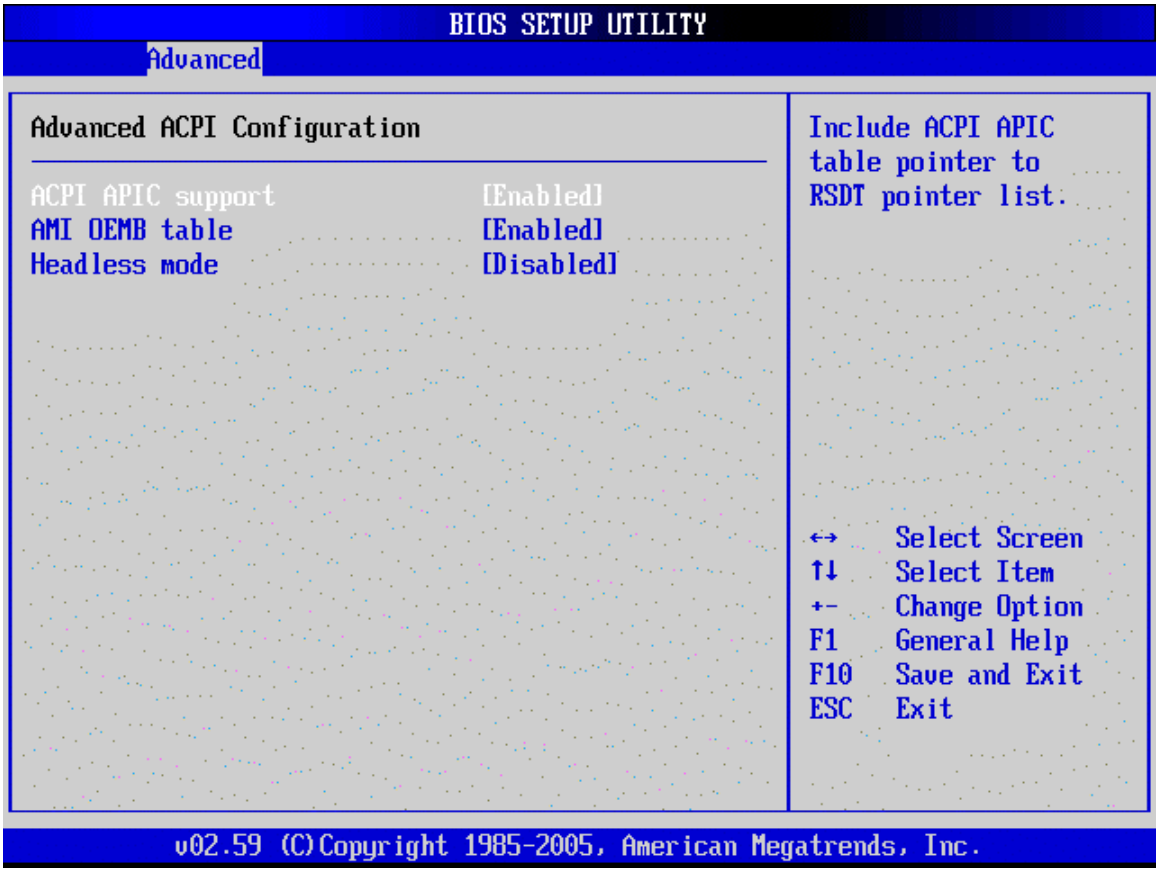
Allows you to select the ACPI state to be used for system suspend.



Suspend Mode:

Configuration options: [S1 (POS)]

Advanced ACPI Configuration



Use this section to configure additional ACPI options.

ACPI APIC support

Includes ACPI APIC table pointer to RSDT pointer list.

Configuration options: [Enabled] [Disabled]

AMI OEMB table

Includes OEMB table pointer to R(X)SDT pointer lists

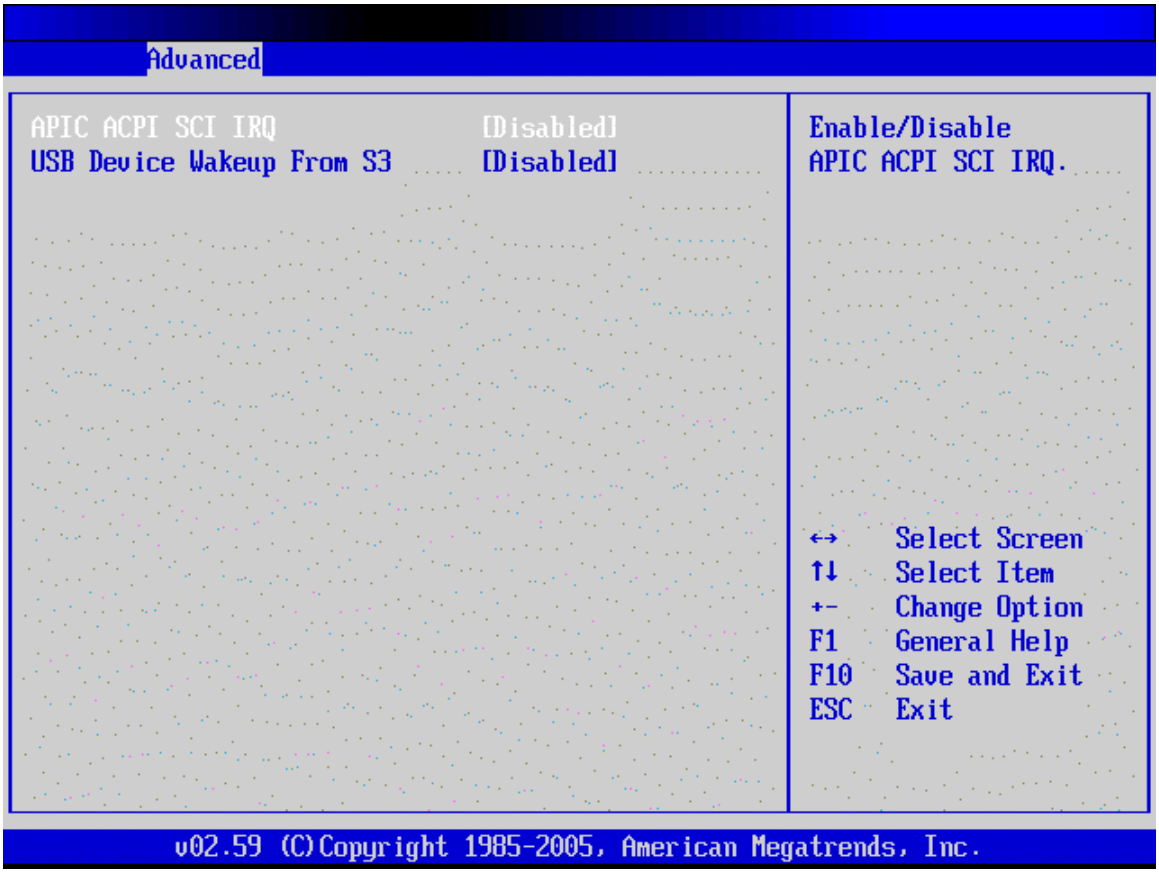
Configuration options: [Enabled] [Disabled]

Headless mode

Enables or disables headless operation mode through ACPI.

Configuration options: [Enabled] [Disabled]

Chipset ACPI Configuration



Use this section to configure Chipset ACPI related configuration options.

APIC ACIP SCI IRQ

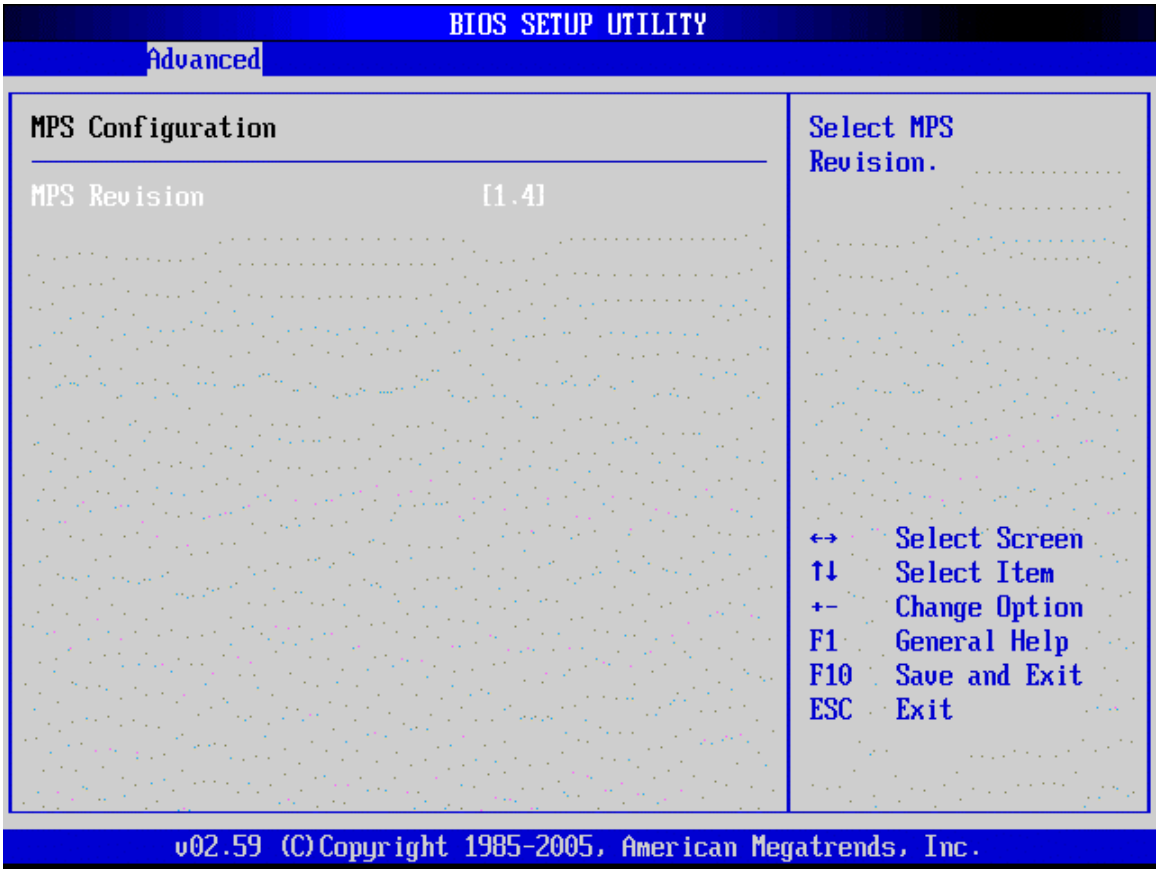
Configuration options: [Enabled] [Disabled]

USB Device Wakeup From S3

Configures the system wakeup by USB devices from the S3 sleep mode (no power to CPU, DRAM in slow refresh, power supply in reduced power mode). Specific power supply current capability is required.

Configuration options: [Enabled] [Disabled]

MPS Configuration

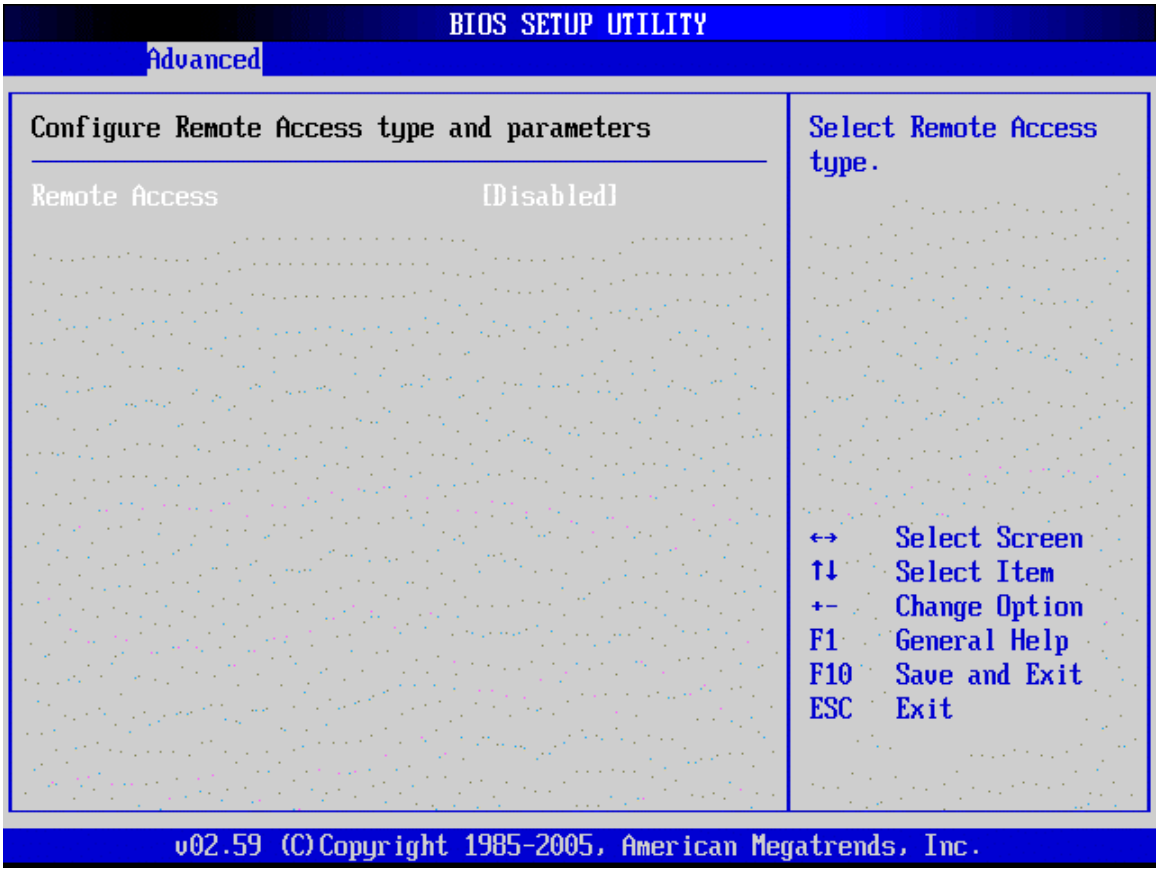


Configure the Multi-Processor table

MPS Revision [1.4]

Configuration options: [1.1] [1.4]

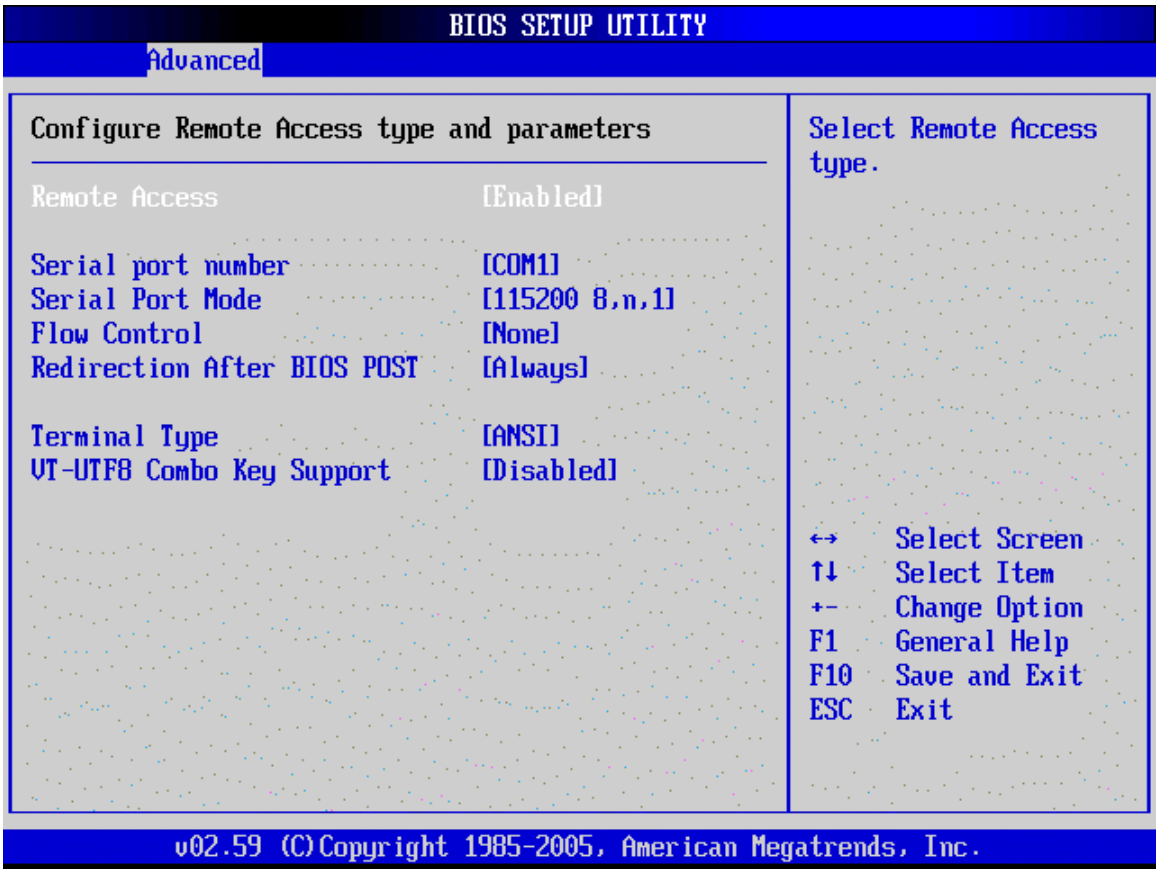
Remote Access Configuration



Configure the Remote Access type and parameters. This is an AMIBIOS feature which allows a remote host running a terminal program to display and configure BIOS settings. The following configuration options (as shown on the next page) will only appear when Remote Access is set to Enabled.

Remote Access [Disabled]

Configuration options: [Disabled] [Enabled]



Serial Port Number [COM1]

Selects the serial port number through which the system can be remotely accessed. Please make sure the selected COM port is enabled through the Super I/O configuration menu.

Configuration options: [COM1] [COM2]

Serial Port Mode [115200 8,n,1]

Select the serial port baud rate (transmitted bits per second) through which the console redirection is made.

Configuration options: [115200 8,n,1] [57600 8,n,1] [38400 8,n,1] [19200 8,n,1] [09600 8,n,1]

NOTE:

Identical baud rate setting must be set to the host (a management computer running a terminal software) and slave (the IMB-8550 system being remotely accessed)

Flow Control [None]

Selects the way of flow control.

Configuration options: [Disabled] [Hardware] [Software]

Redirection After BIOS POST [Always]

Selects the redirection after BIOS POST.

Configuration options: [Disabled] [Boot Loader] [Always]

Terminal Type [ANSI]

Select the terminal type.

Configuration options: [ANSI] [VT100] [VT-UTF8]

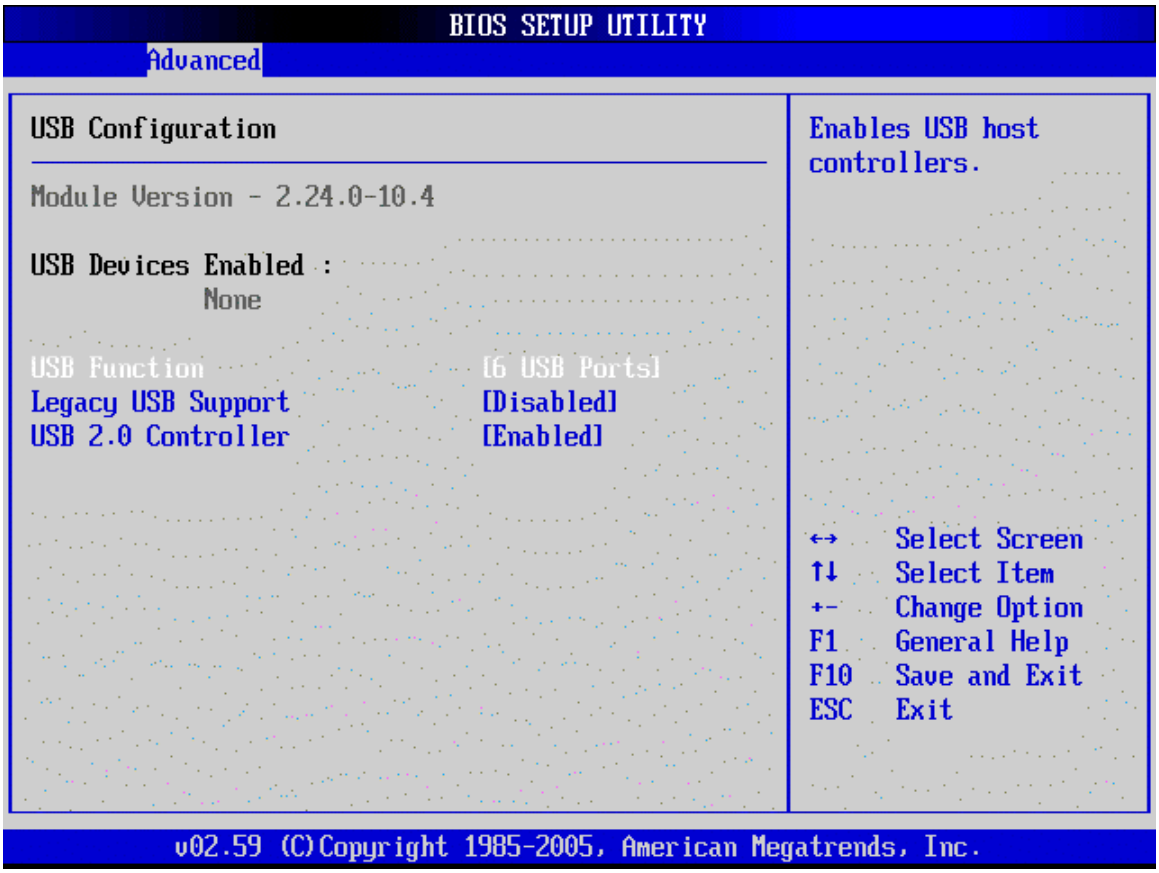
VT-UTF8 Combo Key Support [Disabled]

Selects the VT-UTF8 key combinations for VT100 or ANSI terminals.

Configuration options: [Disabled] [Enabled]

USB Configuration

The items in this menu allow you to change the USB-related features.
Select an item then press Enter to display the configuration options.



USB Function [6 USB Ports]

Allows you to set the number of USB ports to activate.

Configuration options: [Disabled] [2 USB Ports] [4 USB Ports] [6 USB Ports]

USB 2.0 Controller [Enabled]

Allows you to enable or disable the USB 2.0 controller.
Configuration options: [Disabled] [Enabled]

Legacy USB Support [Enable]

Enable support for legacy USB.

Configuration options: [Auto] [Disabled] [Enabled]

USB2.0 Controller Mode [Hi Speed]

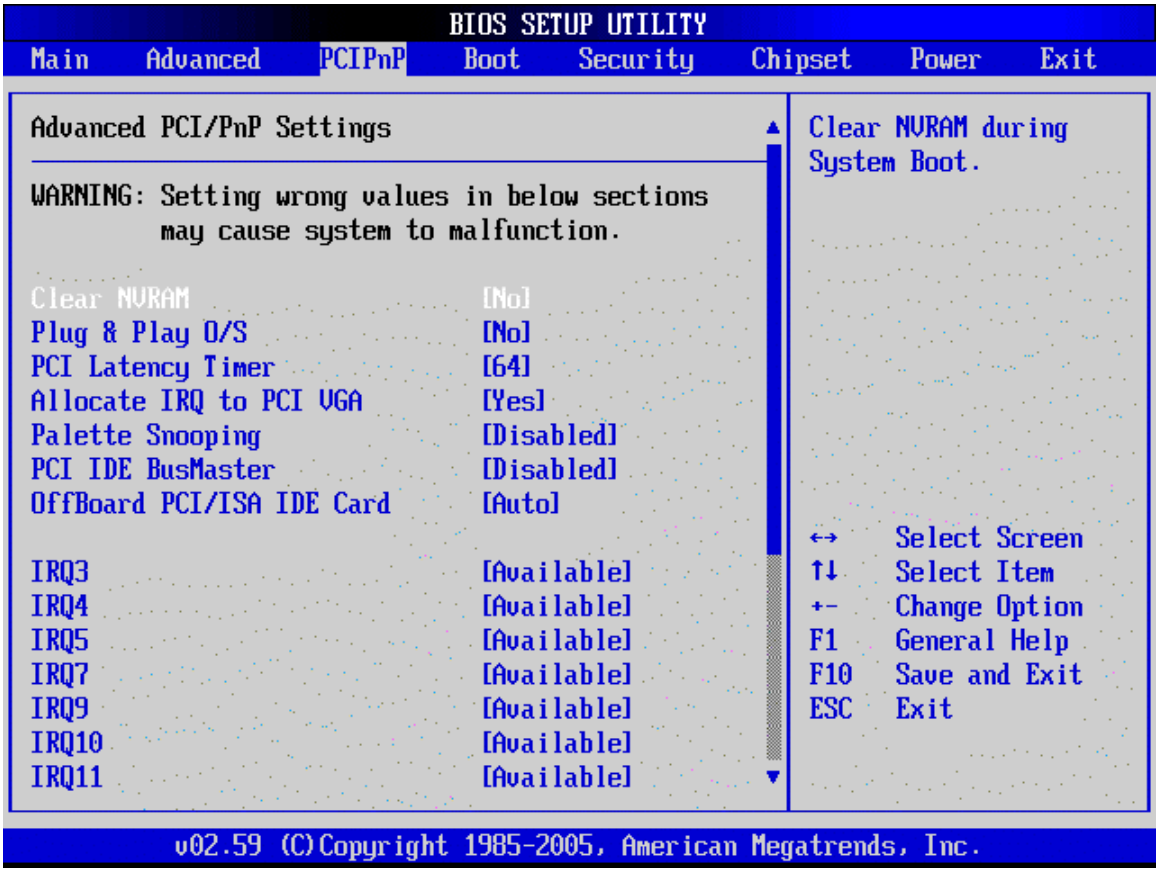
This item configures the mode of USB 2.0 controller. It won't appear if USB 2.0 controller is disabled. This item configures the USB 2.0 controller in HiSpeed (480Mbps) or FullSpeed (12Mbps)

BIOS EHCI Hand-Off [Enabled] [Disabled]

This is a workaround for OSes without EHCI hand-off support. The EHCI ownership change should claim by EHCI driver.

PCIPnP

The PCIPnP menu items allow you to change the advanced PCI/PnP options. Select an item then press Enter to display the sub-menu.



Clear NVRAM

Clear NVRAM during system boot

Clear NVRAM [No]

Configuration options: [No] [Yes]

Plug & Play O/S

NO: lets the BIOS configure all the devices in the system.

YES: lets the operating system configure Plug and Play (PnP) devices not required for boot if your system has a Plug and Play operating system.

Plug & Play O/S [No]

Configuration options: [No] [Yes]

PCI Latency Timer

Value in units of PCI clocks for PCI device latency timer register

PCI Latency Timer [64]

Configuration options: [32] [64] [96] [128] [160] [192] [224] [248]

Allocate IRQ to PCI VGA

NO: Does not assign IRQ to PCI VGA card even if card requests an IRQ

YES: Assigns IRQ to PCI VGA card if card requests IRQ

Allocate IRQ to PCI VGA [Yes]

Configuration options: [No] [Yes]

Palette Snooping

Enabled: informs the PCI devices that an ISA graphics device is installed in the system so the card will function correctly.

Palette Snooping [Disabled]

Configuration options: [Disabled] [Enabled]

PCI IDE BusMaster

Enabled: BIOS uses PCI busmastering for reading/writing to IDE drives.

PCI IDE BusMaster [Disabled]

Configuration options: [Disabled] [Enabled]

OffBoard PCI/ISA IDE Card

Some PCI IDE cards may require this to be set to the PCI slot number that is holding the card.

OffBoard PCI/ISA IDE Card [Auto]

Configuration options: [Auto] [PCI Slot1] [PCI Slot2] [PCI Slot3] [PCI Slot4] [PCI Slot5] [PCI Slot6]

IRQ#

Available: Specified IRQ is available to be used by PCI/PnP devices.

Reserved: Specified IRQ is reserved for use by Legacy ISA devices.

IRQ [Available]

Configuration options: [Available] [Reserved]

DMA Channel#

Available: Specified DMA is available to be used by PCI/PnP devices.

Reserved: Specified DMA is reserved for use by Legacy ISA devices.

DMA [Available]

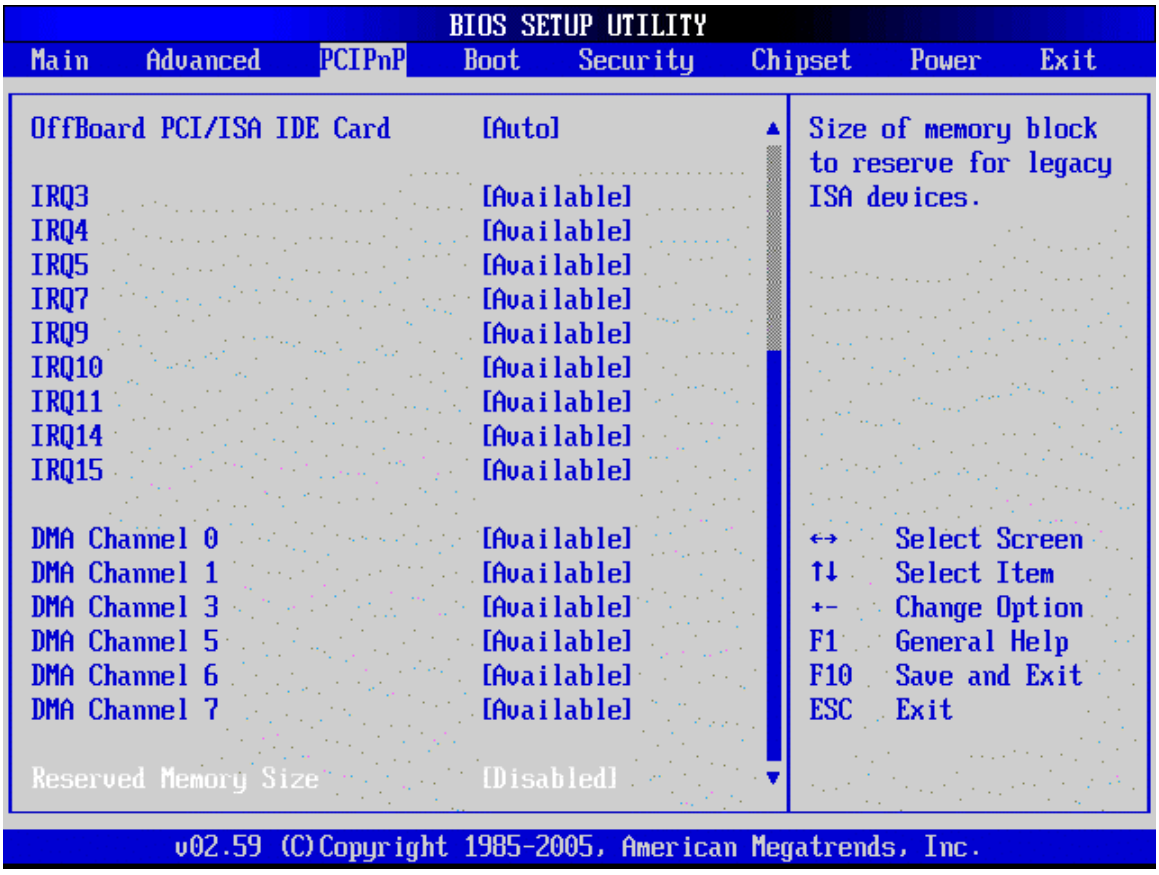
Configuration options: [Available] [Reserved]

Reserved Memory Size

Size of memory block to reserve for legacy ISA devices

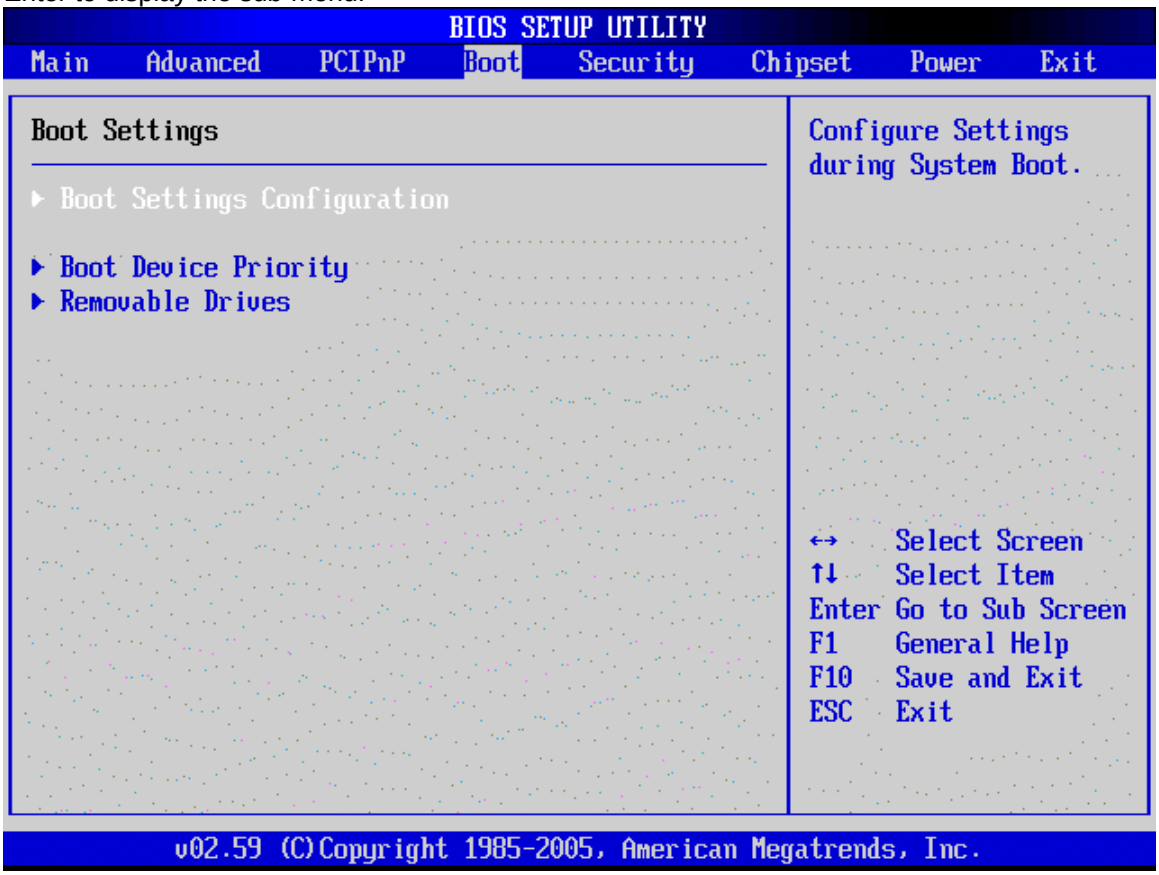
Reserved Memory Size [Disabled]

Configuration options: [Disabled] [16K] [32K] [64K]

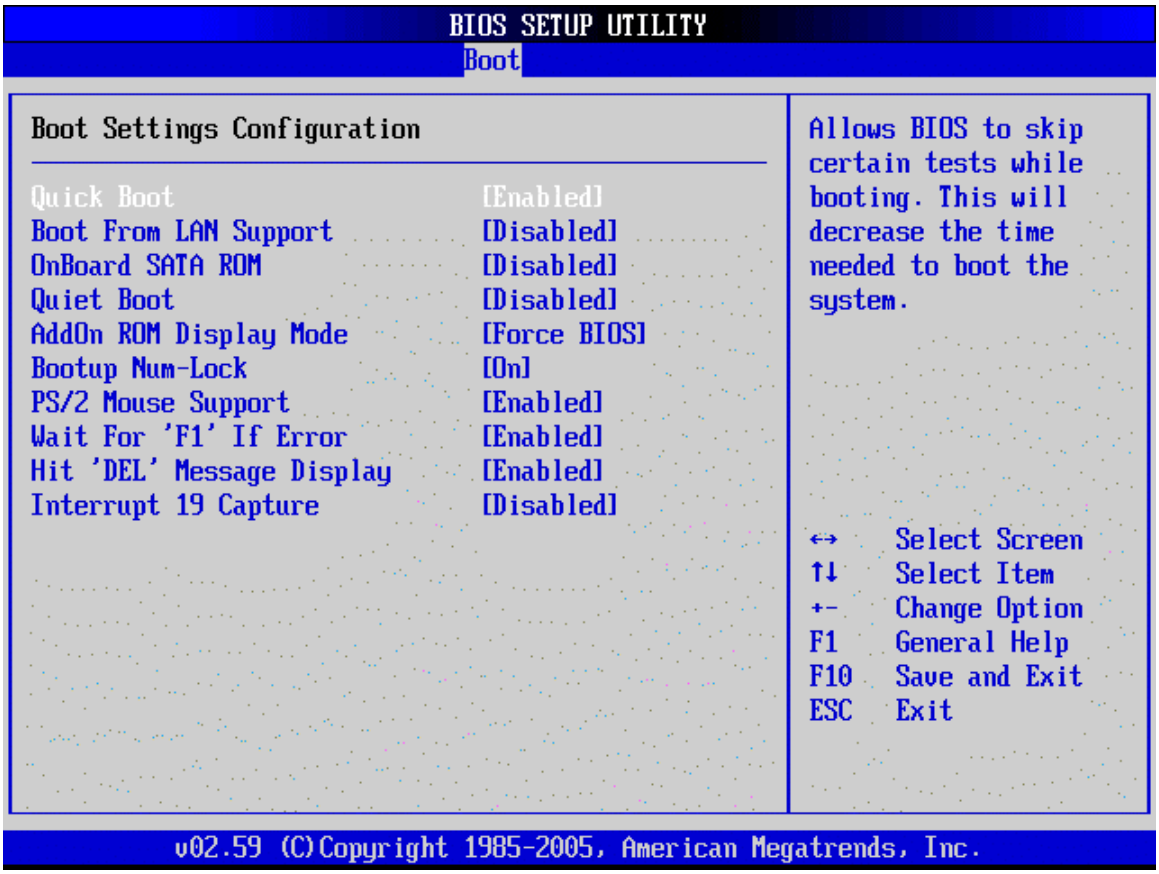


Boot

The Boot menu items allow you to change the system boot options. Select an item then press Enter to display the sub-menu.



Boot Settings Configuration



Quick Boot [Enabled]

Enabling this item allows BIOS to skip some power on self tests (POST) while booting to decrease the time needed to boot the system. When set to [Disabled], BIOS performs all the POST items.
Configuration options: [Disabled] [Enabled]

Boot From LAN Support [Enabled]

Disable/Enable Boot from LAN support
Configuration options: [Disabled] [Enabled]

OnBoard SATA ROM [Disabled]

This allows you to enable or disable the onboard SATA connectivity.
Configuration options: [Disabled] [Enabled]

Quiet Boot [Disabled]

This allows you to enable or disable the full screen logo display feature.
Configuration options: [Disabled] [Enabled]

AddOn ROM Display Mode [Force BIOS]

Sets the display mode for option ROM.
Configuration options: [Force BIOS] [Keep Current]

Bootup Num-Lock [On]

Allows you to select the power-on state for the NumLock.
Configuration options: [Off] [On]

PS/2 Mouse Support [Enabled]

Select support for PS/2 mouse.
Configuration options: [Disabled] [Enabled]

Wait For 'F1' If Error [Enabled]

Wait for F1 key to be pressed if error occurs.
Configuration options: [Disabled] [Enabled]

Hit 'DEL' Message Display [Enabled]

Displays "Press DEL to run Setup" in POST.
Configuration options: [Disabled] [Enabled]

Interrupt 19 Capture [Enabled]

Enabled: Allows option ROMs to trap interrupt 19.
Configuration options: [Disabled] [Enabled]

Boot Device Priority

1st Boot Device [HDD: xxx-xxxxx]

Specifies the boot sequence from the available devices. A device enclosed in parenthesis has been disabled in the corresponding type menu. Press Enter on the 1st Boot Device to display a selection window. Use the arrow keys to scroll the menu and select a device you wish to choose as the first boot device by pressing Enter again. Use the same method to select other devices in the boot sequence.
Configuration options: displayed in a pull-down list.

Hard Disk Drives

1st Drive [HDD: xxx-xxxxx]

Specifies the boot sequence from the available devices.
Configuration options: displayed in a pull-down list.

Removable Drives

1st Drive [FLOPPY: xxx-xxxxx]

Specifies the boot sequence from the available devices.

Configuration options: displayed in a pull-down list.

CD/DVD Drives

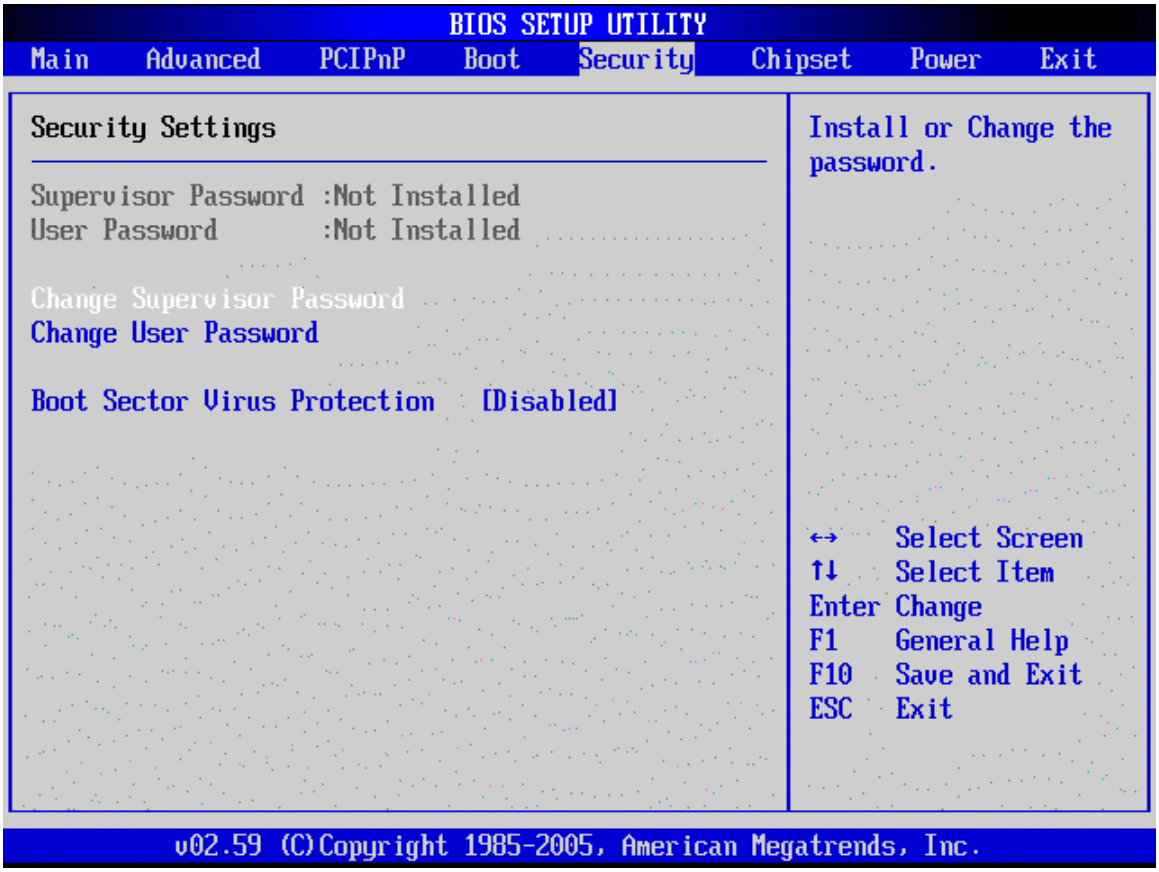
1st Drive [CD/DVD: xxx-xxxxx]

Specifies the boot sequence from the available devices.

Configuration options: displayed in a pull-down list.

Security

The Security menu items allow you to change the system security settings.
Select an item then press Enter to display the configuration options.



Change Supervisor Password

Select this item to set or change the supervisor password. The Supervisor Password item on top of the screen shows the default Not Installed. After you have set a password, this item shows Installed.

Change User Password

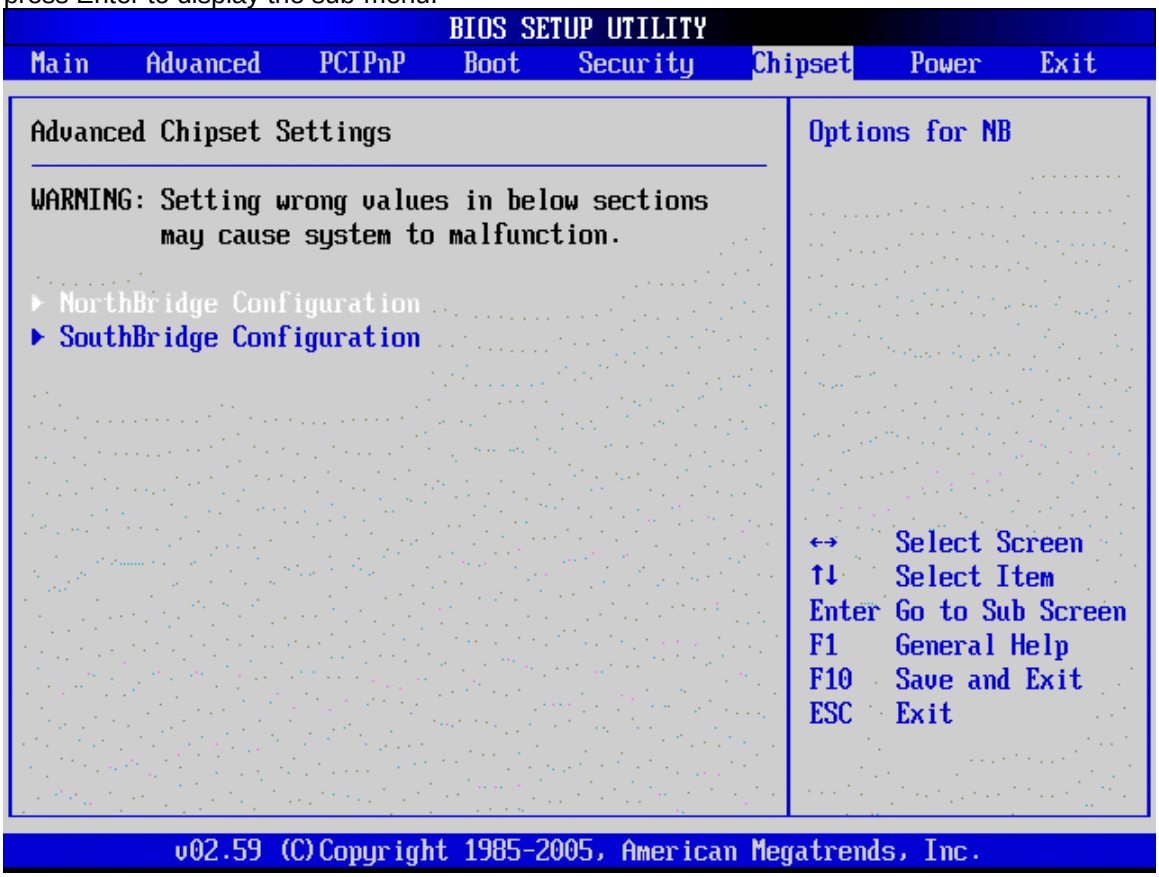
Select this item to set or change the user password. The User Password item on top of the screen shows the default Not Installed. After you have set a password, this item shows Installed.

Boot Sector Virus Protection [Disabled]

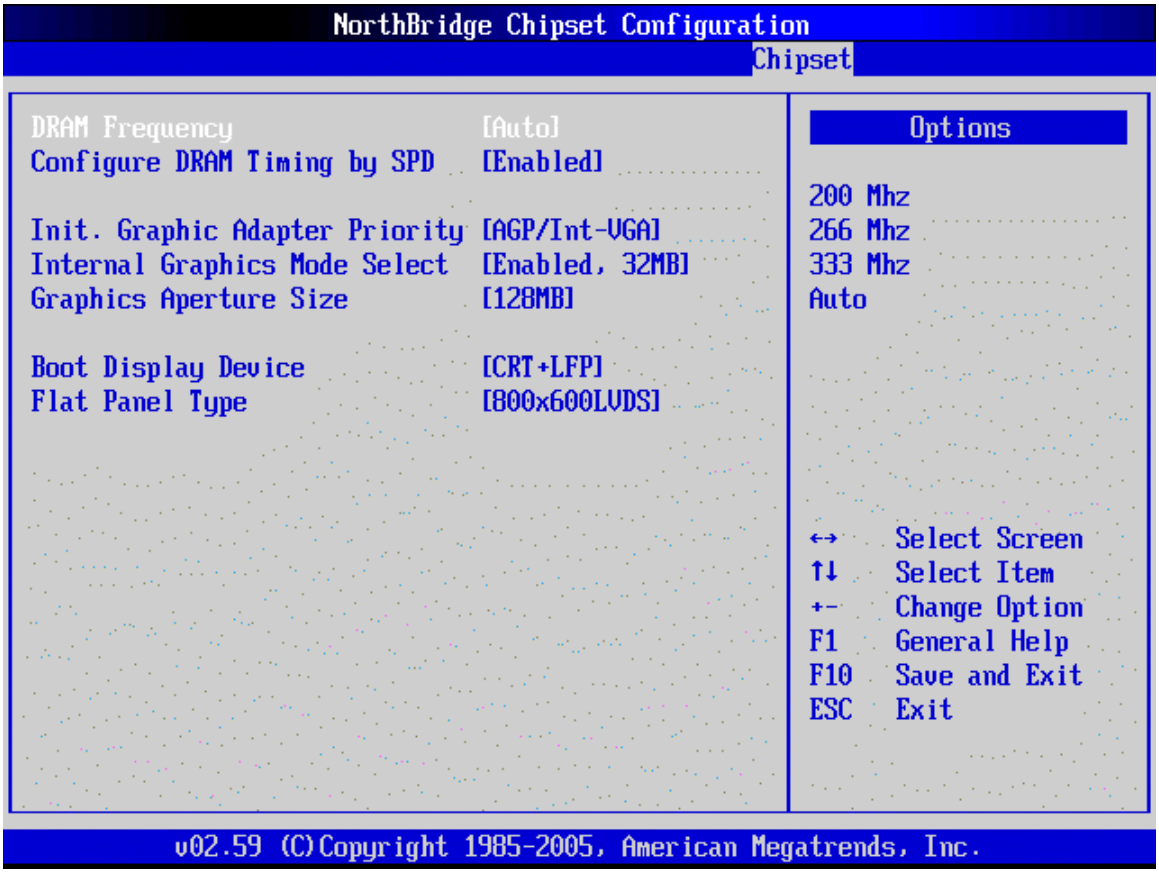
Allows you to enable or disable the boot sector virus protection.
Configuration options: [Disabled] [Enabled]

Chipset

The Chipset menu items allow you to change the advanced chipset settings. Select an item then press Enter to display the sub-menu.



North Bridge Configuration



Configure DRAM Timing by SPD [Enabled]

When this item is enabled, the DRAM timing parameters are set according to the DRAM SPD (Serial Presence Detect). When disabled, you can manually set the DRAM timing parameters through the DRAM sub-items.
Configuration options: [Disabled] [Enabled]

Initiate Graphic Adapter Priority [AGP/Int-VGA]

Allows selection of the graphics controller to use as primary boot device.
Configuration options: [Internal VGA] [AGP/Int-VGA] [AGP/PCI [PCI/AGP] [PCI/Int-VGA]

Graphics Aperture Size [128MB]

Allows selection of the graphics aperture size.
Configuration options: [64MB] [128MB] [256MB]

Internal Graphics Mode Select [Enable, 32MB]

Select the amount of system memory used by the internal graphics device.
Configuration options: [Disabled] [Enable, 1MB] [Enable, 4MB] [Enable, 8MB] [Enable, 16MB] [Enable, 32MB]

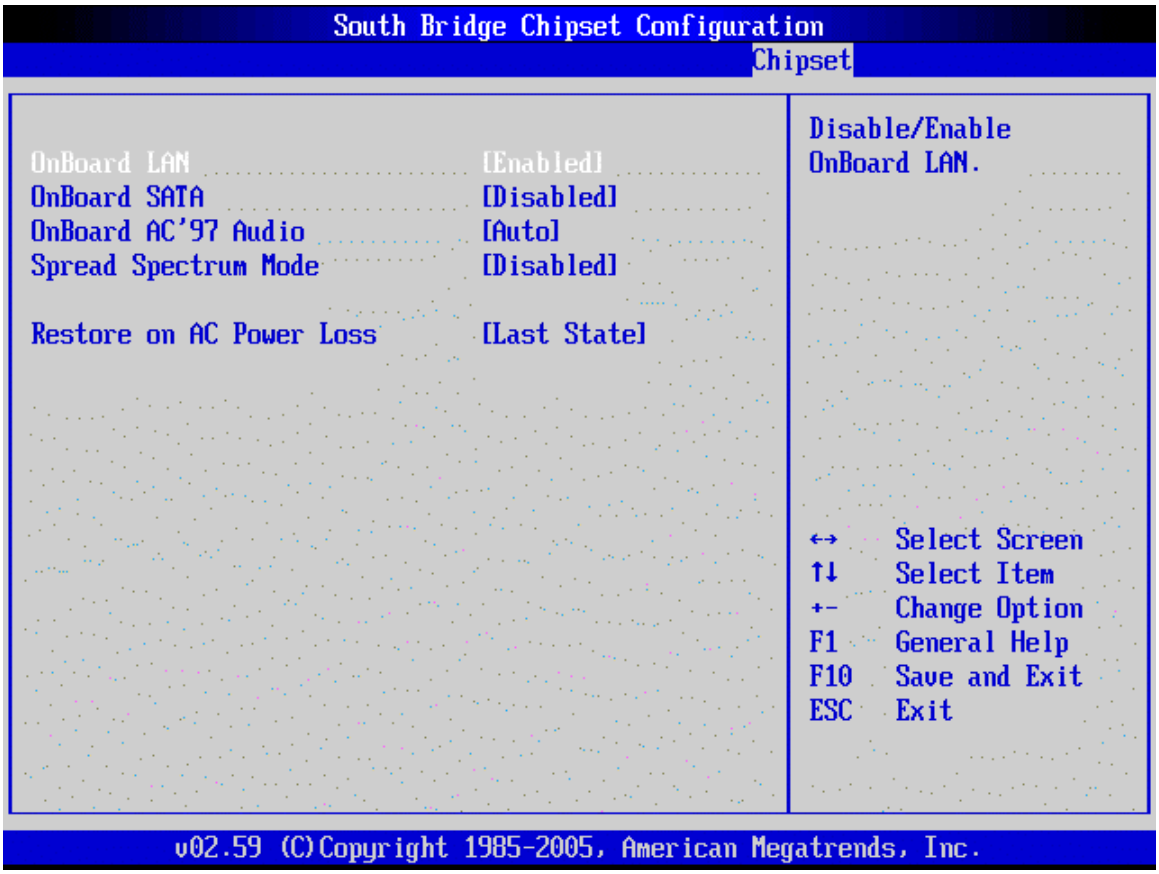
Boot Display Device [CRT+LFP]

Allows you to select a boot display device at the system initialization process.
Configuration options: [CRT+LFP] [CRT] [LFP]

Flat Panel Type [800x600LVDS]

Allows you to select the display resolution of the LCD panel connected through the CN13 interface.
Configuration options: [640x480LVDS] [800x600LVDS] 1024x76824bits] [1280x1024LVDS] [1400x1050LVDS] [1024x768LVDS 18bits] [1600x1200LVDS] [1280x1024 48bits] [800x60024bits] [800x60018bits] [1024x768 36bits]

South Bridge Chipset Configuration



Onboard LAN Controller [Enabled]

Enable or Disable the onboard LAN.
Configuration options: [Disabled] [Enabled]

Onboard SATA [Disabled]

Enable or Disable the onboard SATA ports.

Configuration options: [Disabled] [Enabled]

Onboard AC'97 Audio [Auto]

Specify whether to disable or enable the onboard AC'97 audio for your system.
Configuration options: [Auto] [Disabled]

Restore on AC Power Loss [Last State]

When set to Power Off, the system goes into off state after an AC power loss. When set to Power On, the system goes on after an AC power loss.
When set to Last State, the system goes into either off or on state
Whatever was the system state before the AC power loss.
Configuration options: [Power Off] [Power On] [Last State]

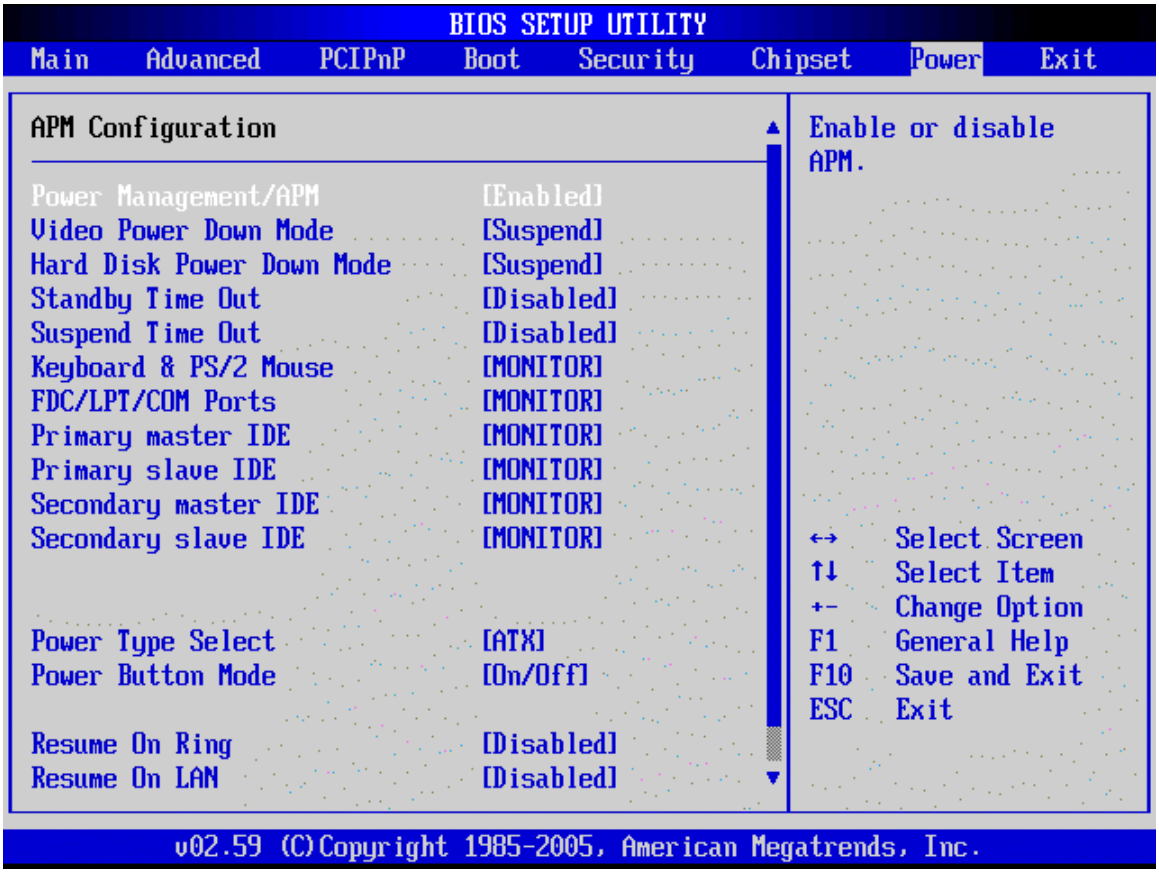
Spread Spectrum Configuration

Allows you to enable or disable the clock generator spread spectrum.
Configuration options: [Enabled] [Disabled]

Restore on AC Power Loss [Last State]

When set to Power Off, the system goes into off state after an AC power loss. When set to Power On, the system goes on after an AC power loss.
When set to Last State, the system goes into either off or on state whatever was the system state before the AC power loss.
Configuration options: [Power Off] [Power On] [Last State]

Power Management - APM Configuration



Power Management/APM [Enabled]

Allows you to enable or disable the Advanced Power Management (APM) feature. Configuration options: [Disabled] [Enabled]

Video Power Down Mode [Disabled]

Allows the system to power down video in Suspend or Standby mode.
Configuration options: [Disabled] [Suspend]

Hard Disk Power Down Mode [Disabled]

Allows the system to power down hard disk in Suspend or Standby Mode.
Configuration options: [Disabled] [Suspend]

Standby Time Out [Disabled]

Allows the system to enter a standby state in the specified time.
Configuration options: [Disabled] [1 Min] [2 Min] [4 Min] [8 Min] [10 Min] [20 Min] [30 Min] [40 Min] [50 Min] [60 Min]

Suspend Time Out [Disabled]

Allows the system to suspend the operation of certain components in the specified time.
Configuration options: [Disabled] [1 Min] [2 Min] [4 Min] [8 Min] [10 Min] [20 Min] [30 Min] [40 Min] [50 Min] [60 Min]

Keyboard & PS/2 Mouse [Monitor]

Allows the system to monitor KBC Ports 60/6.
Configuration options: [Disabled] [Monitor]

FDC/LPT/COM Ports [Monitor]

Allows the system to monitor FDC/LPT/COM port activities.
Configuration options: [Disabled] [Monitor]

Primary Master IDE [Monitor]

Allows the system to monitor Primary Master IDE activities.
Configuration options: [Disabled] [Monitor]

Primary Slave IDE [Monitor]

Allows the system to monitor Primary Slave IDE activities.
Configuration options: [Disabled] [Monitor]

Secondary Master IDE [Monitor]

Allows the system to monitor Secondary Master IDE activities.
Configuration options: [Disabled] [Monitor]

Secondary Slave IDE [Monitor]

Allows the system to monitor Secondary Slave IDE activities.
Configuration options: [Disabled] [Monitor]

Power Button Mode [On/Off]

Allows the system to go into On/Off mode or suspend mode when the power button is pressed.
Configuration options: [On/Off] [Suspend]

Advanced Resume Event Controls

Resume On Ring [Disabled]

Allows you to enable or disable RI to generate a wake event.
Configuration options: [Disabled] [Enabled]

Resume On LAN [Disabled]

Allows you to enable or disable LAN GPI to generate a wake event.

Configuration options: [Disabled] [Enabled]

Resume On PME# [Disabled]

Allows you to enable or disable PCI PME# to generate a wake event.
Configuration options: [Disabled] [Enabled]

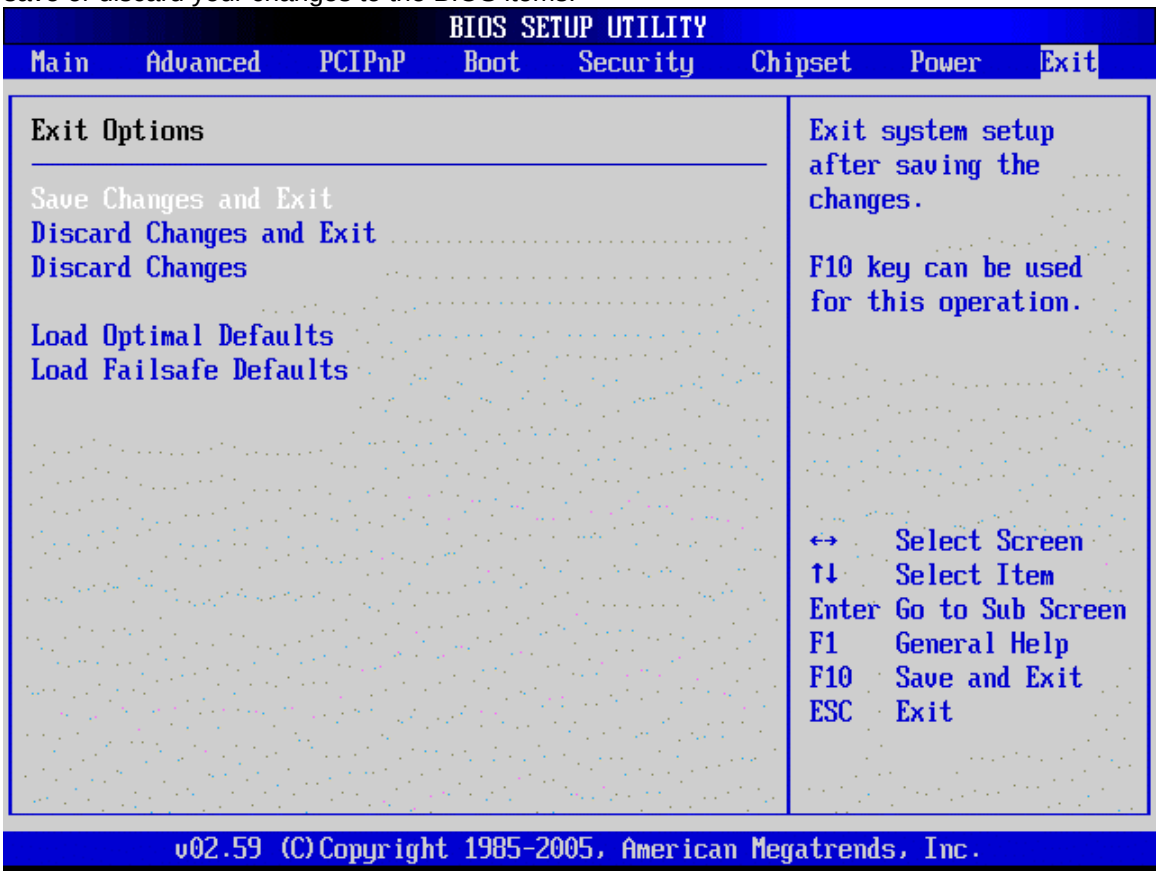
Resume On RTC Alarm [Disabled]

Allows you to enable or disable RTC to generate a wake event. When this item is set to Enabled, the items RTC Alarm Date, RTC Alarm Hour, RTC Alarm Minute, and RTC Alarm Second appear with set values.

Configuration options: [Disabled] [Enabled]

Exit

The Exit menu items allow you to load the optimal or failsafe default values for the BIOS items, and save or discard your changes to the BIOS items.



Save Changes and Exit

Once you are finished making your selections, choose this option from the Exit menu to ensure the values you selected are saved to the CMOS RAM. The CMOS RAM is sustained by an onboard backup battery and stays on even when the PC is turned off. When you select this option, a confirmation window appears.
Select [Yes] to save changes and exit.

Discard Changes and Exit

Select this option only if you do not want to save the changes that you made to the Setup program. If you made changes to fields other than system date, system time, and password, the BIOS asks for a confirmation before exiting.

Discard Changes

This option allows you to discard the selections you made and restore the previously saved values. After selecting this option, a confirmation appears. Select [Yes] to discard any changes and load the previously saved values.

Load Optimal Defaults

This option allows you to load optimal default values for each of the parameters on the Setup menus. **F9 key can be used for this operation.**

Load Failsafe Defaults

This option allows you to load failsafe default values for each of the parameters on the Setup menus. **F8 key can be used for this operation.**

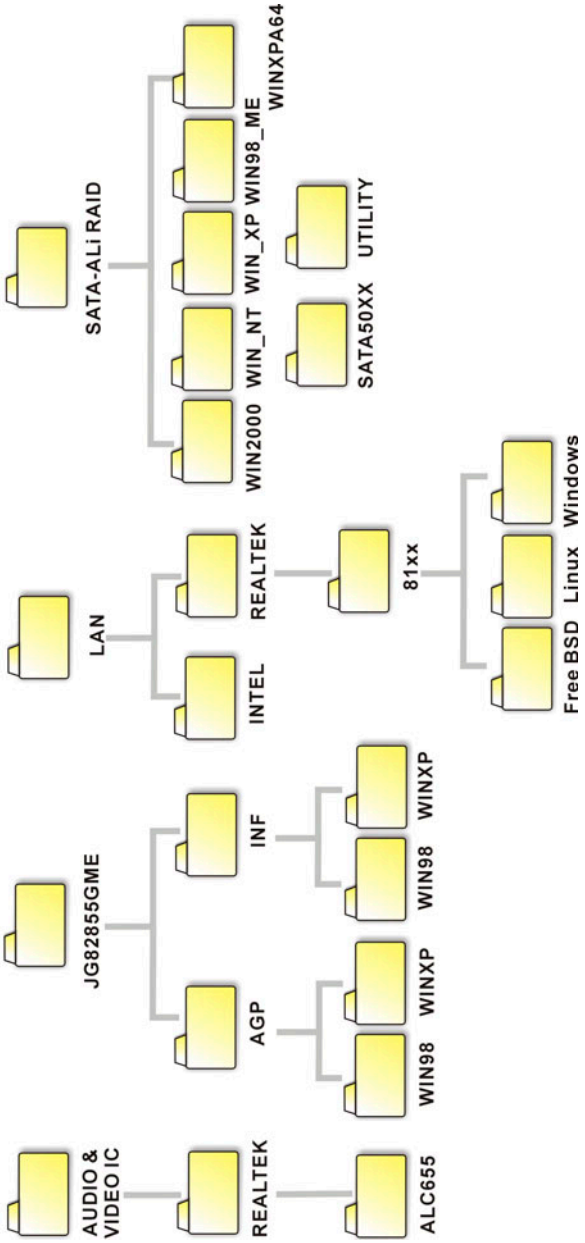
Chapter

5

Software Drivers

5.1 Folder Structure

The motherboard comes with drivers and utilities that facilitate system features. Shown below is the folder structure of the utility CD that came with the IMB-8550 motherboard. You can easily locate an installation program using the men-driven and browser-based features of the product Utility CD.



NOTE:

The contents of the CD may vary throughout the life cycle of the product and are subject to change without prior notice. You may visit IEI's website or contact technical support for the latest updates.

The drivers included support the following devices or configurations: the onboard AC'97 audio chip, the Northbridge Intel chipset, Ethernet controller, and the ALi® SATA RAID controller chip/RAID configuration.

NOTE:

The ALi RAID configuration utility is accessed through a proprietary utility after BIOS and before OS is load. The ALi folder contains drivers, system files, and a detailed readme that provides necessary information.

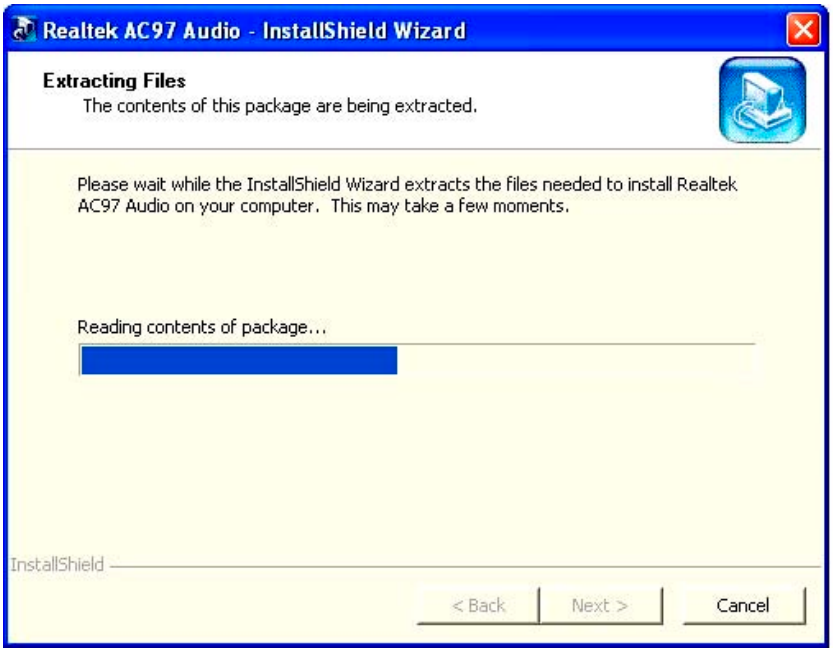
5.2 Driver Installation

5.2.1 AUDIO IC

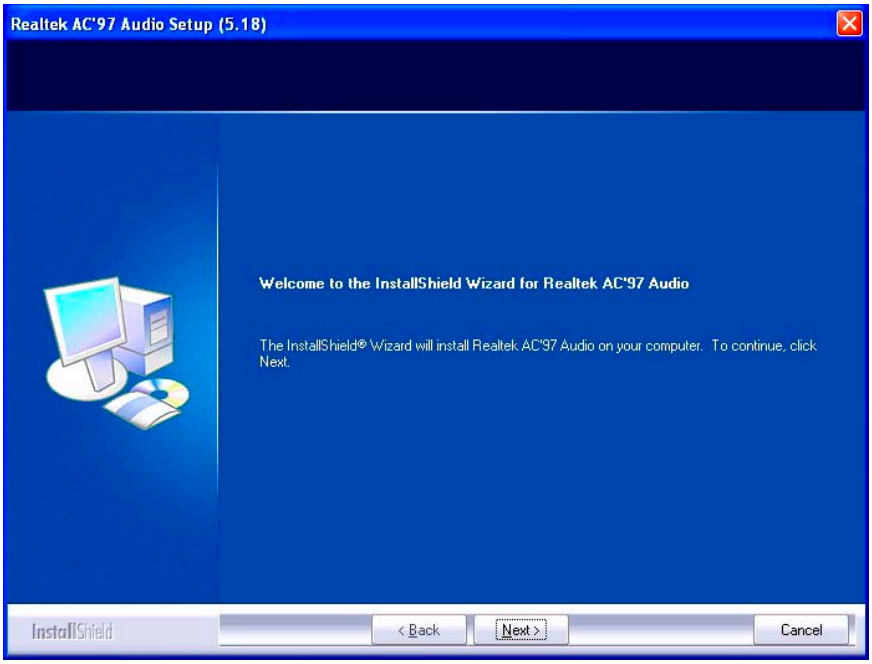
This folder contains the installation programs for Realtek's AC'97 audio functions and configuration utility, which allows you to configure the functionalities provided by the onboard Realteck audio chip.

To install the utility, locate and run the "WDM_A380" installation program under the "REALTEK" -> "AC655" sub-folder. An installation wizard will guide your through the rest of the installation steps.

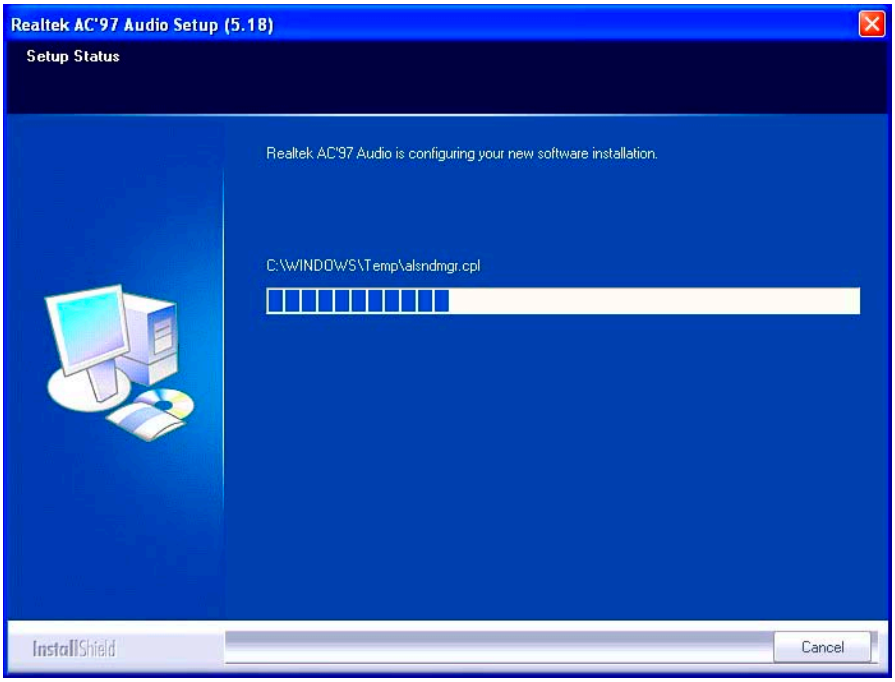
The A3.64 folder contains the installation program for Realtek Media Player, which is an optional feature and will not be discussed in the following discussions.



When the InstallShield is loaded, click on the Next button to proceed.

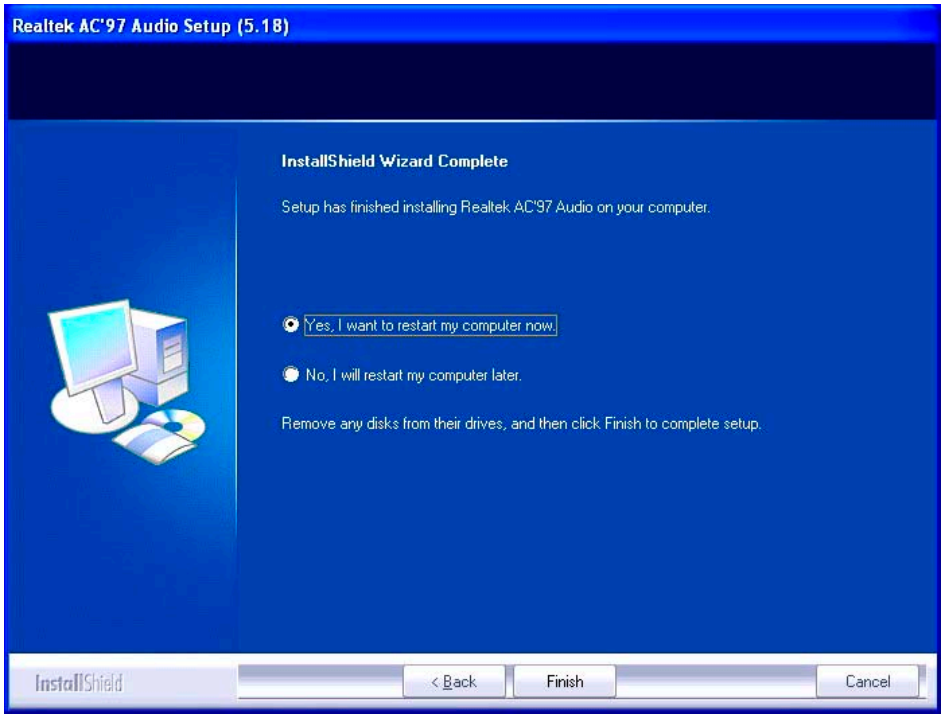


The installation program will then start to configure software installation.

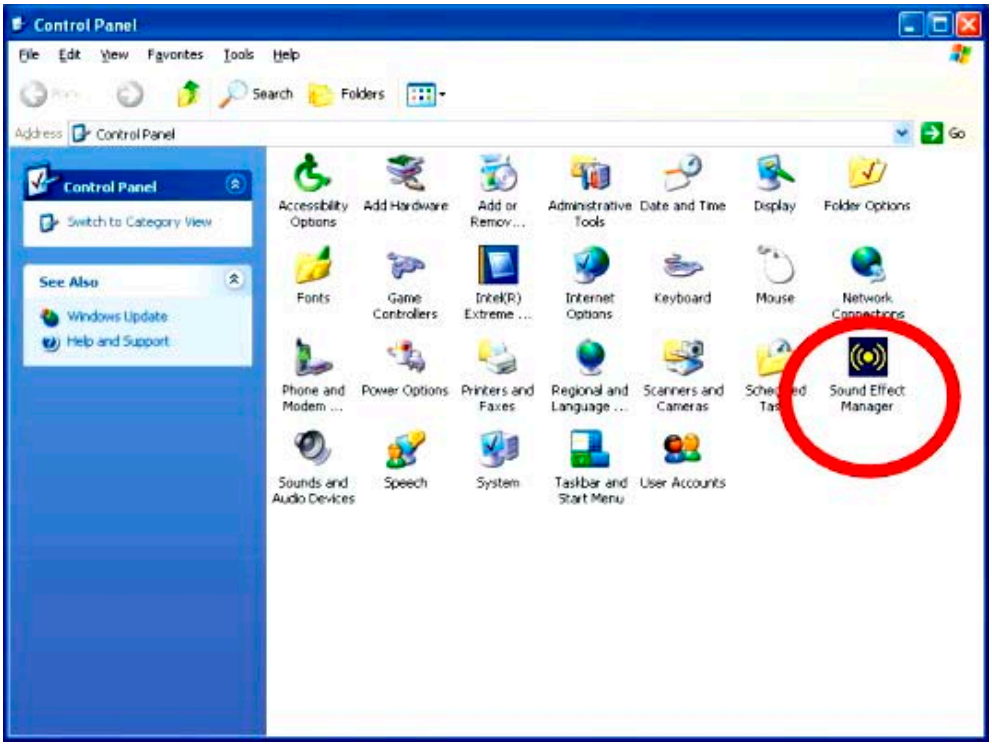


When prompted by the Windows Logo Testing message, click “Continue Anyway” to proceed.

Upon the completion of the installation process, you will be prompted with a request to reboot your system.



After reboot, you should be able to find the sound effect configuration utility in Windows Control Panel; and if peripheral speakers have been properly connected, hear the sound effects.



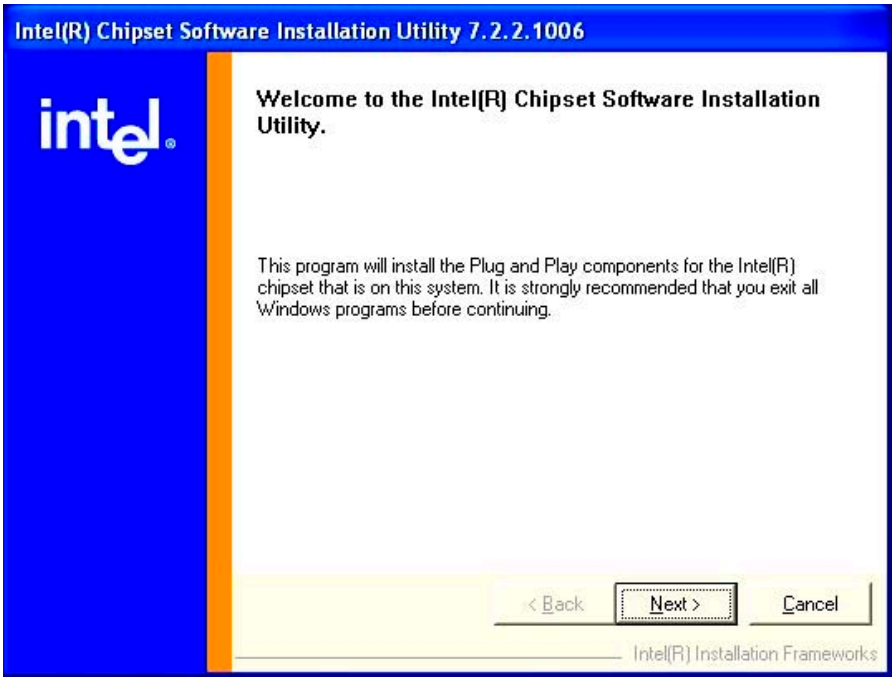
5.2.2 JG82855GME (Intel Chipset)

This folder contains two sub-folders used for Intel chipset and the embedded AGP controller drivers.

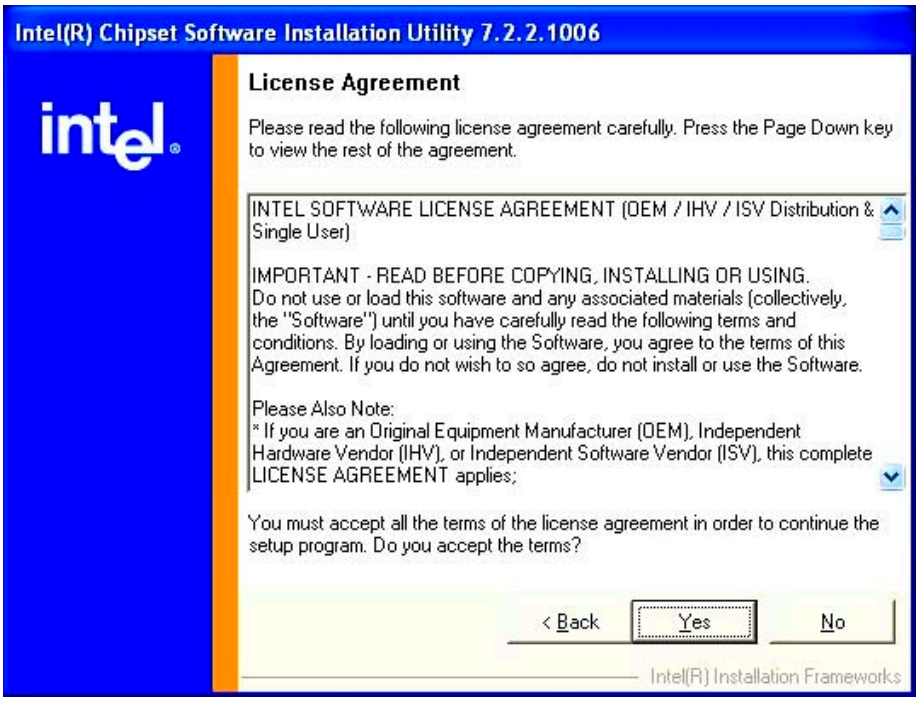
Intel Chipset INF Update Program

This sub-folder provides an execution file that installs the Intel chipset INF update program. This driver enables Plug and Play INF support for the Intel chipset components. The driver then can be used to configure the chipset components. Installing the up-to-date chipset INF guarantees the optimal system performance and avoids compatibility issues.

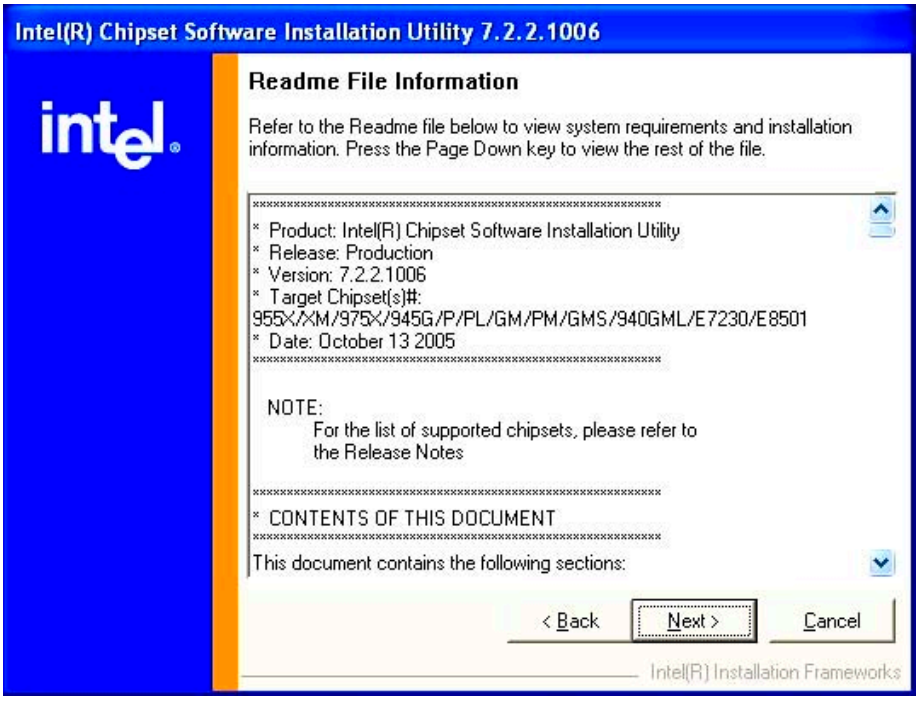
To install the driver, select and open the specific OS sub-folder, e.g., XP, under the “INF” folder. Double-click the “infinst_auto1” execution file to start the installation process.
Click Next on the Welcome message prompt.



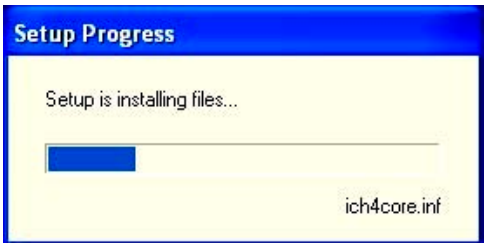
Read the License Agreement and then click on Yes to proceed.



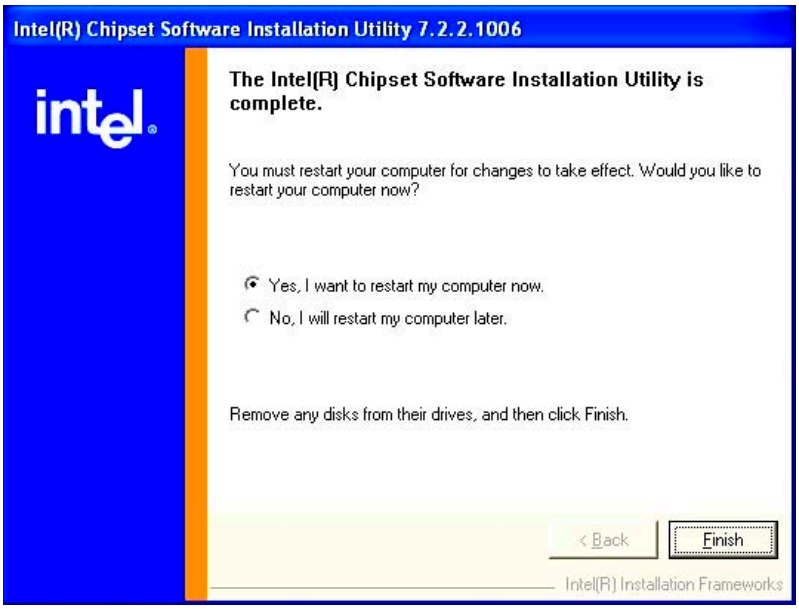
The License Agreement is followed by the readme message. You may scroll the txt contents using your mouse pointer. Click on Next to proceed.



When setup starts, progress will be indicated.



Upon the completion of software installation, you will be prompted to select when to reboot for the installation change to take effect. Select an option by clicking the check circle and click Finish to end the installation process.

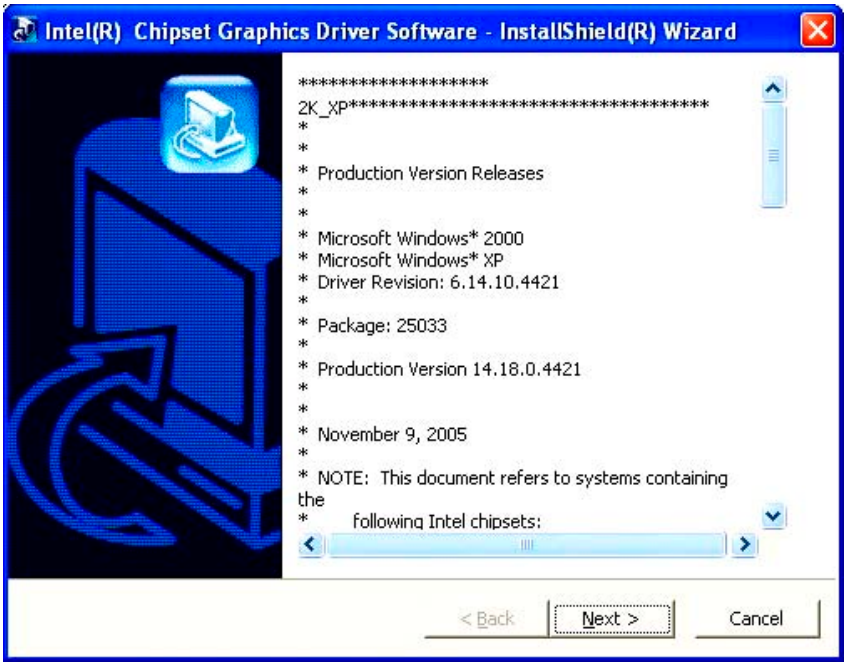


Intel AGP Driver

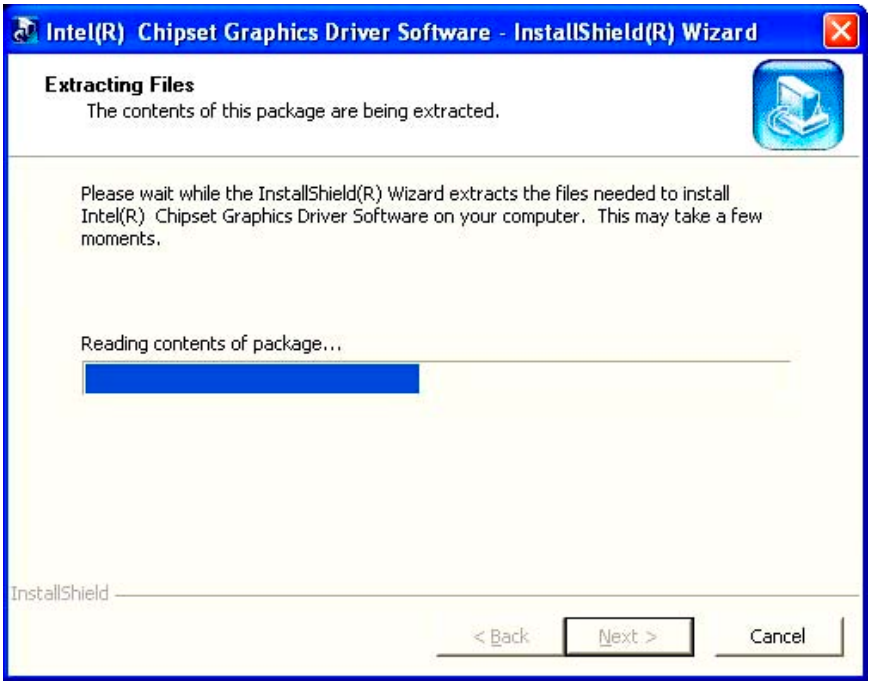
This sub-folder provides an execution file that installs the Intel graphics controller driver. The driver then can be used to configure the graphic display.

To install the driver, select and open the specific OS sub-folder, e.g., WinXP, under the "JG82855GME" -> "AGP" folder. Double-click the "win2k_xp1418" execution file to start the installation process.

Once the installation wizard is started, a readme message will be displayed. Scroll the contents using the scroll bar on the right of the message screen.

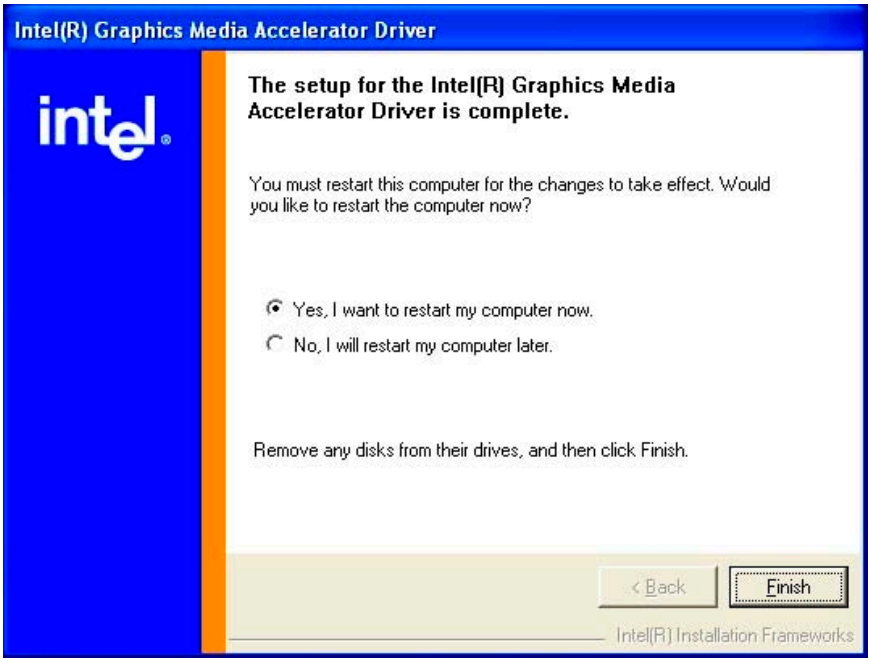


The progress indicator then appears showing the installation wizard has started extracting package contents.



When the welcome message prompts, click on Next to proceed.

The installation completes within seconds. Select when to reboot for the installation change to take effect. Select an option by clicking the check circle and click Finish to end the installation process.

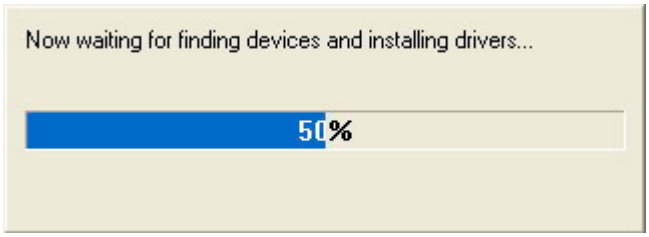


LAN Driver

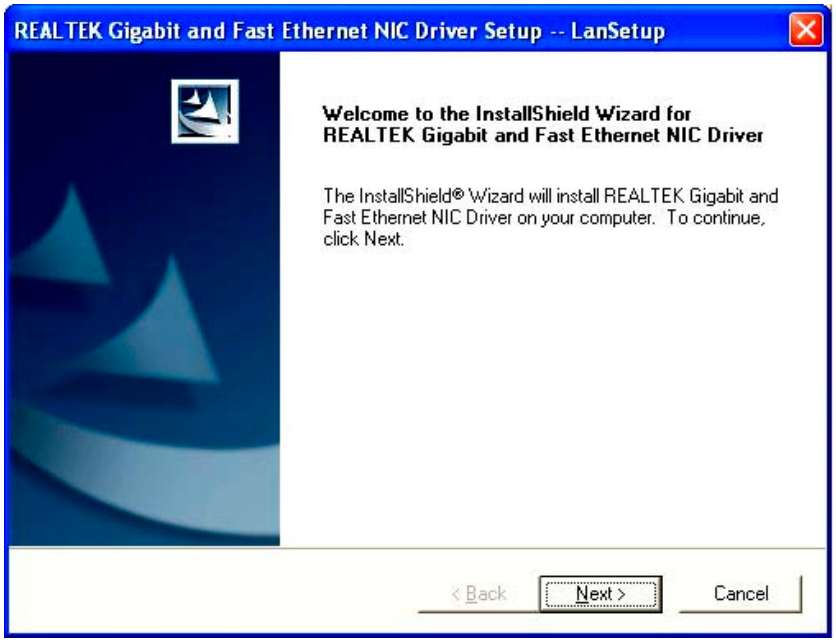
This sub-folder provides an execution file that installs the Intel or Realtek Ethernet controller driver. The driver enables Gigabit Ethernet network connection.

To install the driver, select and open the Realtek sub-folder, the 81xx sub-folder, the WINDOWS sub-folder (e.g., WinXP), and then doub-click the Setup program.

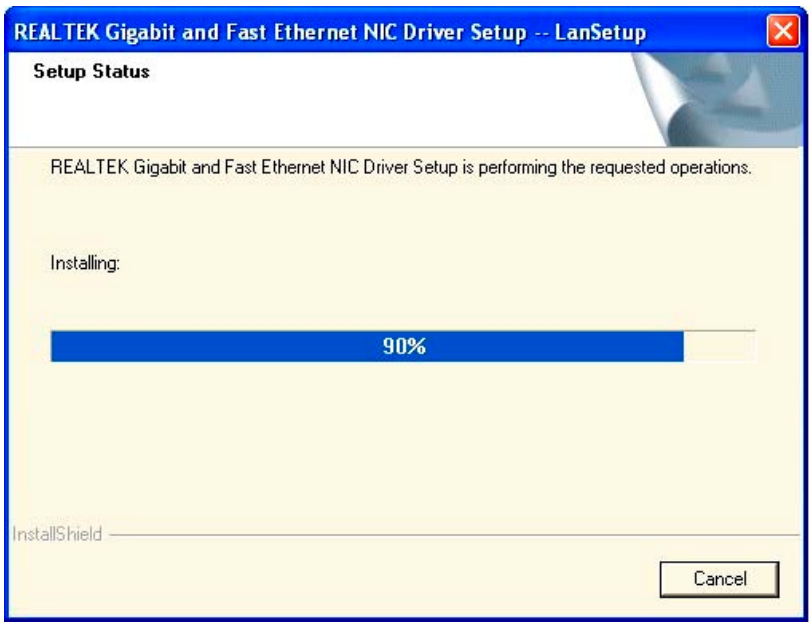
The initialization progress will be indicated.



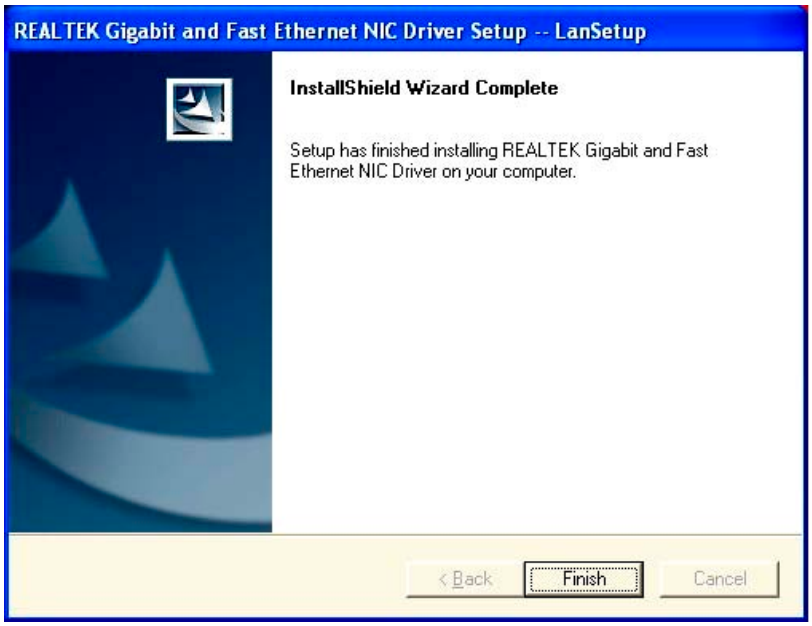
Once the installation wizard is ready, you will be prompted by a welcome message. Click Next to proceed.



The installation progress is indicated.



The completion of the process requires you to click on the Finish button.



Select when to reboot for the installation change to take effect. Select an option by clicking the desired check circle and click Finish to end the installation process.

SATA-ALiRAID Driver

CAUTION!

Because of the inherent limitations by Intel's ICH4 chipset, the ALi M5283 SATA and RAID controller is implemented as a device that requires you to provide device driver during the Windows installation process. To successfully install the device driver, please carefully read the following instructions.

The ALi driver is especially required if SATA drives are the only hard disk drives in your IMB-8550 system. Otherwise the Windows installation program may fail to locate your hard drives whether you configure your SATA disk drives into RAID volumes or use them as individual disk drives.

The system BIOS can identify SATA disk drives, but cannot control their operation. The separately installed driver therefore is necessary.

ALi SATA Controller Driver Installation Steps

- During Windows XP Installation

Step 1. Enable SATA ROM using the BIOS configuration utility. The SATA ROM option is provided in the Southbridge chipset menu. The process has been detailed in ***Chapter 4***.

Step 2. Locate the ALi installation driver folder within the Utility CD that came with your motherboard.

Step 3. Copy files under a sub-directory named “SATA50XX” (taking Windows XP installation as the example) to the root directory of floppy diskette (labeled driver diskette). The file names are listed below:

- disk1
- 5283096D.bin
- txtsetup.oem

Also copy the OS option directory “win98_me”, “win_nt”, or “win_xp”, and related driver files in each directory.

Step 4. Boot from Windows installation CD-ROM (this requires you to set CD-ROM as the 1st Boot Device), when the Windows XP Setup blue screen appears and prompts users to Press F6 if you need to install third-party SCSI or RAID driver, please press the F6 key.

Step 5. The setup program will continue, later when the setup program prompts users to specify additional adapters, please press the S key.

Step 6. Then the setup program will prompt user to insert the driver diskette. Please insert the driver diskette your prepared previously, and then press ENTER to continue.

Step 7. The follow-up window will list out the installation choices, please select ALi SATA/RAID Controller for Windows XP and press ENTER to continue.

Step 8. The follow-up window will list out the devices to be installed, in which selected ALi controller(s) should be included.

Step 9. Repeat **step 5**, but select ALi ATA/RAID Controller at **step 7**. If both controllers are installed, go to next step.

Step 10. If users want to install other devices, please operate at this time. If all devices have been successfully installed, please go to next step.

Step 11. Press Enter to continue Windows XP setup.

Installation Steps under Existing Windows XP

After Windows XP is started, Windows system will automatically find the newly installed adapter and prompt user to install its driver. Please follow these steps to install the driver:

Step1. When the Found New Hardware Wizard windows appear(Mass Storage Controller), select Install from a list or specify location(Advanced) and click Next to continue.

Step 2. In the follow-up window, please select "Don't search, I will choose the driver to install", then click Next to continue.

Step 3. In the follow-up window, please select SCSI and RAID controllers, and then click Next to continue.

Step 4. In the follow-up window, click Have Disk..., then insert the driver diskette and type in the driver location: e.g., a CD-ROM, then click OK to continue.

Step 5. In the follow-up window, select ALi SATA/RAID Controller, then click Next to continue.

Step 6. Confirm the follow-up windows and click the Finish button to continue.

Step 7. Please "confirm" the Digital Signature Not Found window when it appears, when finished, please restart the computer.

Step 8. Repeat step 1, but select ALi ATA/RAID Controller at step 4.

Appendix

A

Watchdog Timer

NOTE:

The following discussion applies to DOS environment. It is recommended you contact IEI support or visit our website for specific drivers for more sophisticated operating systems, e.g., Windows and Linux.

The Watchdog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that cause the CPU to crash. This condition may have occurred by external EMI or a software bug. When the CPU stops working correctly, Watchdog Timer will either perform a hardware reset (cold boot) or a Non-Maskable Interrupt (NMI) to bring the system back to a known state.

A BIOS function call (INT 15H) is used to control the Watchdog Timer:

INT 15H:

AH – 6FH Sub-function:	
AL – 2:	Sets the Watchdog Timer's period.
BL:	Time-out value (Its unit-second is dependent on the item "Watchdog Timer unit select" in CMOS setup).

Table A-1 AH-6FH Sub-function

You have to call sub-function 2 to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer will start counting down. While the timer value reaches zero, the system will reset. To ensure that this reset condition does not occur, calling sub-function 2 must periodically refresh the Watchdog Timer. However, the Watchdog timer will be disabled if you set the time-out value to be zero.

A tolerance of at least 10% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time-consuming.

NOTE:

When exiting a program it is necessary to disable the Watchdog Timer, otherwise the system will reset.

Example program:

```
; INITIAL TIMER PERIOD COUNTER
;
W_LOOP:

        MOV     AX, 6F02H       ;setting the time-out value
        MOV     BL, 30              ;time-out value is 48 seconds
        INT      15H
 ;
; ADD YOUR APPLICATION PROGRAM HERE
;
        CMP      EXIT_AP, 1         ;is your application over?
        JNE       W_LOOP        ;No, restart your application

        MOV     AX, 6F02H       ;disable Watchdog Timer
        MOV     BL, 0           ;
        INT      15H
;
; EXIT ;
```

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Appendix

B

Address Mapping

B.1 IO Address Map

I/O address Range	Description
000-01F	DMA Controller
020-021	Interrupt Controller
040-043	System time
060-06F	Keyboard Controller
070-07F	System CMOS/Real time Clock
080-09F	DMA Controller
0A0-0A1	Interrupt Controller
0C0-0DF	DMA Controller
0F0-0FF	Numeric data processor
1F0-1F7	Primary IDE Channel
2F8-2FF	Serial Port 2 (COM2)
378-37F	Parallel Printer Port 1 (LPT1)
3B0-3BB	Intel(R) 82915 Graphics Controller
3C0-3DF	Intel(R) 82915 Graphics Controller
3F6-3F6	Primary IDE Channel
3F7-3F7	Standard floppy disk controller
3F8-3FF	Serial Port 1 (COM1)
3E8h	Serial Port 3 (COM3)
2E8h	Serial Port 4 (COM4)
2F0	Serial Port 5 (COM5)
2E0	Serial Port 6 (COM6)

Table B-1 IO Address Map

B.2 1st MB Memory Address Map

Memory address	Description
00000-9FFFF	System memory
A0000-BFFFF	VGA buffer
F0000-FFFFF	System BIOS
1000000-	Extend BIOS

Table B-2 1st MB Memory Address Map

B.3 IRQ Mapping Table

IRQ0	System Timer	IRQ8	RTC clock
IRQ1	Keyboard	IRQ9	Available/ACPI
IRQ2	Available	IRQ10	COM4/COM6
IRQ3	COM2	IRQ11	COM3/COM5
IRQ4	COM1	IRQ12	PS/2 mouse
IRQ5	SMBus Controller	IRQ13	FPU
IRQ6	FDC	IRQ14	Primary IDE
IRQ7	Available	IRQ15	Secondary IDE

Table B-3 IRQ Mapping Table

B.4 DMA Channel Assignments

Channel	Function
0	Available
1	Available
2	Floppy disk (8-bit transfer)
3	Available
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available

Table B-4 DMA Channel Assignments

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Appendix

C

ALi® RAID for SATA

1. Introduction

The ALi M5283 is a highly integrated disk drive controller that is capable of managing Parallel-ATA and Serial-ATA interface hard disk drives. The ALi controller supports PATA UDMA transfer mode up to mode 6 and SATA 1.0 disk drives. The ALi M5283 also comes with cost-effective RAID functionalities that can be used to increase data read/write speed and to provide protection to data by distributing mirrored duplicates of data onto two disk drives (RAID1).

CAUTION!

You must properly configure the associated BIOS settings before the Ctlr+A key combination can take effect. Please refer to ***Chapter 4 AMI BIOS Setup,*** the discussions of the associated configurations for more details. SATA disk drive support must be initiated under the following two BIOS sub-menus.

1. **Boot -> Onboard SATA ROM**
2. **Chipset -> Southbridge Chipset Configuration**

You will not be able to access the ALi configuration utility unless you have properly initiated the SATA disk drive support in the AMI BIOS configuration utility.

2. Features and Benefits

- Supports RAID levels 0, 1, and JBOD
- Supports the connectivity to two disk drives
- The supported Operating Systems include: Windows 98/Me, Windows 2000, and Windows XP
- Windows-based software for RAID management

3. Accessing the ALi RAID Utility

If the SATA ROM configuration options in system BIOS have been properly configured, the RAID BIOS version and disk drive information should appear after system POST screen.

The BIOS disk drive information should look like the following:

ALi RAID BIOS V1.XX
(c) ALi Corporation 2005, All Rights Reserved.
Identifying IDE drives…

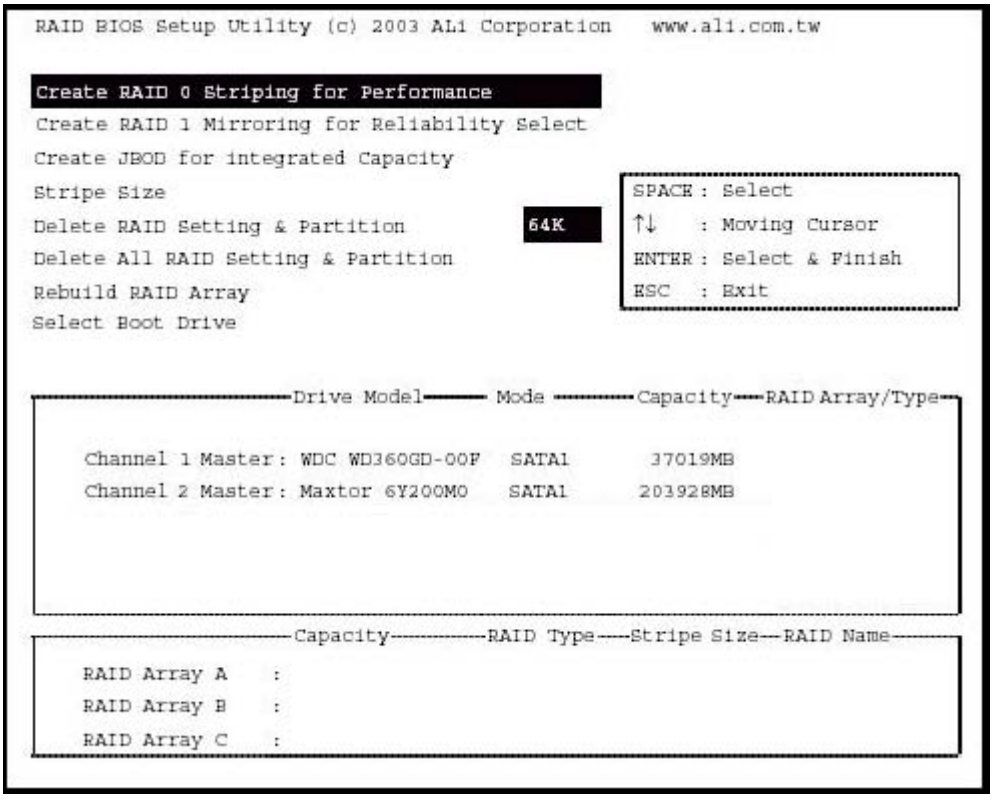
Channel 1 Master: Maxtor xxxxxx
Channel 2 Master: Maxtor xxxxxx

Press Ctrl-A to enter ALi RAID BIOS setup utility

To enter the RAID configuration utility, press ‘Ctrl’ and ‘A’ keys simultaneously.

1. RAID BIOS Setup Menu:

The Serial ATA RAID volume may be configured using the RAID Configuration utility stored within the ALi RAID controller ROM. The BIOS configuration screen is divided into three major functional areas: Main Functional Menu, Drive Selection Menu, and a list for the configured RAID arrays.



2. RAID Options:

2.1 Create RAID0 Striping for Performance

Step 1. To create a RAID0 array, use your arrow keys to highlight and press Enter to activate this item. An 'S' flashing character will appear at the Drive Selection Menu where you can choose the member drives to be included in the RAID0 array.

Step 2. Use the Space key to select members of the RAID0 RAID configuration. The flashing cursor should change to a lower case 's' character once any of the connected disk drives has been selected. Follow the same method to select another member drive.

Step 3. You should then be prompted by a “Create RAID0(Y/N)” confirm box.

Step 4. Press Y and then some necessary information will be written to the selected disk drives.

WARNING!

All data previously stored on the member drives of a RAID configuration will be destroyed during the RAID initialization process. If you use “used” drives to create a RAID array, make you have moved or backed up your data before creating a RAID array out of these disk drives.

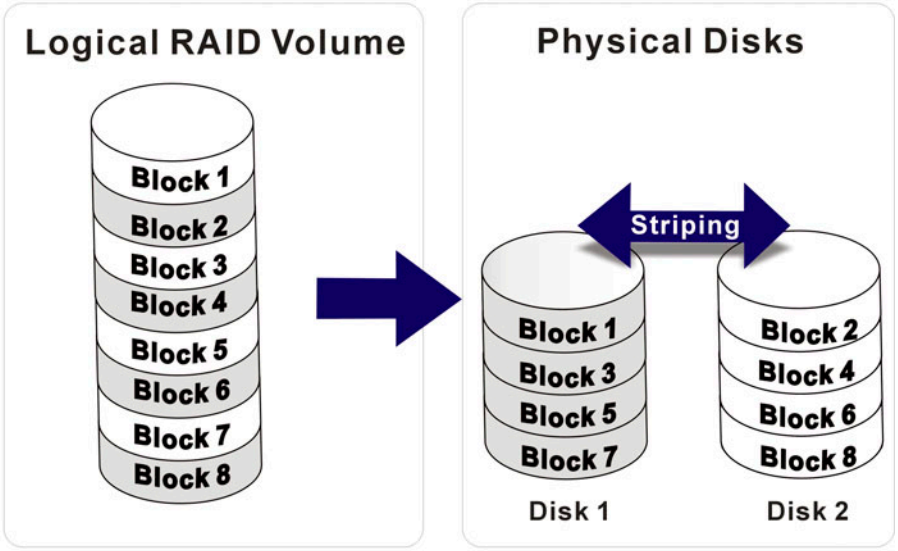
Step 5. Next you will be prompted to enter a nickname for the created array. Upper and lower case alphabetic, numeric, space, and underscore characters are all applicable for naming an array.

Step 6. Once an array is successfully created, it will be listed in the list of the configured arrays.

NOTE:

1. To reduce the chance of losing data, ALi imposed certain limitations on the RAID configuration options. For example, Parallel-ATA drives connected on the same IDE channel cannot be selected as the members of a RAID0 array. Mixing Parallel- and Serial-ATA disk drives in a RAID0 array should also be avoided.

2. Always use disk drives of the same capacity to create a RAID array. The excessive capacity of a larger disk drive cannot be utilized because data stripes are equally distributed across all members of a RAID array. The operational concept is diagrammed below.



2.2 Create RAID1 Mirroring for Reliability

Step 1. To create a RAID1 array, use your arrow keys to highlight and press Enter to activate this item. An 'M' flashing character will appear at the Drive Selection Menu where you can choose the member drives to be included in the RAID1 array.

Step 2. Use the Space key to select members of the RAID1 RAID configuration. The flashing cursor should change to a lower case 'm' character once any of the connected disk drives has been selected. Follow the same method to select another member drive.

Step 3. You should then be prompted by a "Create RAID1(Y/N)" confirm box.

Step 4. Press Y and then some necessary information will be written to the selected disk drives.

WARNING!

All data previously stored on the member drives of a RAID configuration will be destroyed during the RAID initialization process. If you use "used" drives to create a RAID array, make you have moved or backed up your data before creating a RAID array out of these disk drives.

Step 5. Next you will be prompted to provide a nickname for the created array. Upper and lower case alphabetic, numeric, space, and underscore characters are all applicable for naming an array.

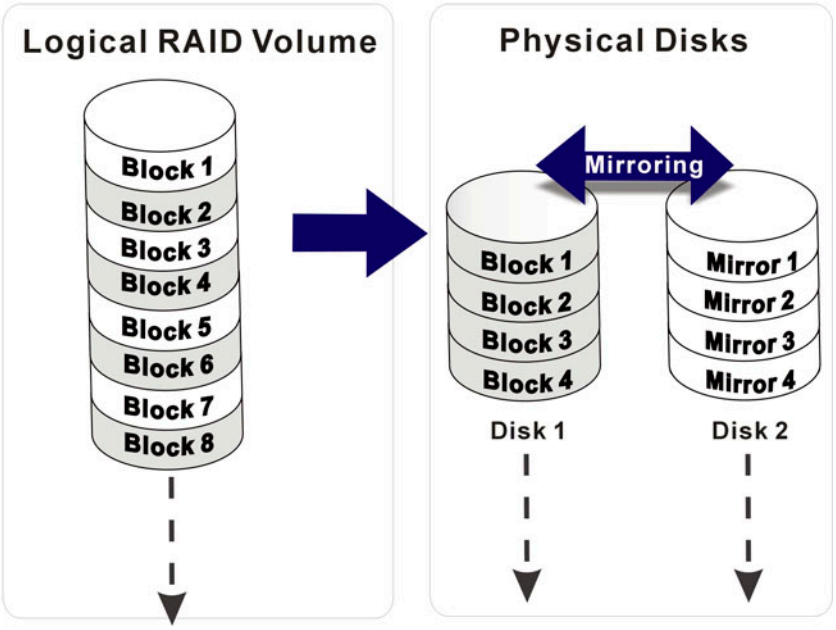
Step 6. Once an array is successfully created, it will be listed in the list of the configured arrays.

Step 7. Lastly a prompt will require you to proceed with drive copy. The Source and Destination drives will be indicated as "M" and "m" in the Drive Selection Menu.

NOTE:

1. To reduce the chance of losing data, ALi imposed limitations on the RAID configuration options. For example, Parallel-ATA drives connected on the same IDE channel cannot be selected as the members of a RAID1 array. Mixing Parallel- and Serial-ATA disk drives in a RAID1 array should also be avoided.

2. Always use disk drives of the same capacity to create a RAID array. The excessive capacity of a larger disk drive cannot be utilized because data mirrors are equally distributed across corresponding members of drive pairs within a RAID array. The operational concept is diagrammed below.



2.3 Create JBOD for Integrated Capacity

Step 1. JBOD stands for “Just a Bunch of Drives.” JBOD provides neither performance gains nor data redundancy. To create a JBOD array, use your arrow keys to highlight and press Enter to activate this item. A ‘J’

flashing character will appear at the Drive Selection Menu where you can choose the member drives to be included in the JBOD.

Step 2. Use the Space key to select members of the JBOD configuration. The flashing cursor should change to a lower case 'j' character once any of the connected disk drives has been selected. Follow the same method to select another member drive. The maximum number of member drives in a JBOD is four and the minimum is two.

Step 3. You should then be prompted by a "Create RAID1(Y/N)" confirm box.

Step 4. Press Y and then some necessary information will be written to the selected disk drives.

WARNING!

All data previously stored on the member drives of a RAID configuration will be destroyed during the RAID initialization process. If you use "used" drives to create a RAID array, make you have moved or backed up your data before creating a RAID array out of these disk drives.

Step 5. Next you will be prompted to provide a nickname for the created array. Upper and lower case alphabetic, numeric, space, and underscore characters are all applicable for naming an array.

Step 6. Once an array is successfully created, it will be listed in the list of the configured arrays.

NOTE:

To reduce the chance of losing data, ALi imposed limitations on the RAID configuration options. For example, Parallel-ATA drives connected on the same IDE channel cannot be selected as the members of a RAID1 array. Mixing Parallel- and Serial-ATA disk drives in a RAID1 array should also be avoided.

2.4 Stripe Size

The change to stripe size takes effect on RAID0 arrays. Configurable options are: 64K (default), 32K, 16K, 8K, and 4K. If you can be certain that your I/Os to the hard drives are small and randomly occurred, you can select a small stripe size. If your I/Os are mostly large and come in sequential orders, e.g., A/V playback and editing applications, choose a larger stripe size.

The default value, 64K, should be appropriate for most applications.

2.5 Delete RAID Setting & Partition

Step 1. To delete an existing RAID configuration, use your arrow keys to highlight and press Enter to activate this item. An 'E' flashing character will appear at the Drive Selection Menu where you can choose the member drives to be removed from an existing configuration.

Step 2. You should then be prompted by "Data on RAID drives will be erased (Y/N)?".

Step 3. Press Y and then the RAID configuration will be invalidated.

WARNING!

If you delete a RAID configuration, all data previously stored on the member drives of the RAID configuration will be destroyed.

2.6 Delete All RAID Setting & Partition

Step 1. To delete all existing RAID configurations, use your arrow keys to highlight and press Enter to activate this item.

Step 2. You should then be prompted by “Data on RAID drives will be erased (Y/N)?”.

Step 3. Press Y and then all existing RAID configurations will be invalidated.

WARNING!

If you delete a RAID configuration, all data previously stored on the member drives of the RAID configuration will be destroyed.

2.7 Rebuild RAID Array

This function allows you to rebuild a RAID array if a member of a RAID configuration should fail. Neither RAID0 nor JBOD provides data redundancy. Therefore, this option only applies to RAID1 arrays. This item takes effect when a member of a RAID1 configuration has failed.

Step 1. To delete all existing RAID configurations, use your arrow keys to highlight and press Enter to activate this item.

Step 2. An “R” flashing character should appear at the list of existing arrays.

Step 3. The source and destination drives will be displayed.

Step 4. Press Y to begin the rebuild process.

Step 5. During the rebuild process, the rebuild progress will be indicated by a status bar. Rebuild consumes considerable system resources and the time required for rebuilding a RAID array may vary depending on the size of stored data, disk drive capacity, and drive performance.

2.8 Select Boot Drive

Step 1. To select a Boot drive, use your arrow keys to highlight and press Enter to activate this item.

Step 2. An “A” flashing character should appear at the Drive Selection Menu.

Step 3. Press Enter or the Space key to finish the configuration.

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