AIMB-556

Socket 478 Intel® Core™ 2 Duo / Core Solo Processor-based 533/800 MHz FSB Micro ATX Motherboard with PCIe / DDR2 / Dual GbE LAN

User Manual

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FCC

This device complies with the requirements in part 15 of the FCC rules: Operation is subject to the following two conditions:

• This device may not cause harmful interference

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This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this device in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense. The user is advised that any equipment changes or modifications not expressly approved by the party responsible for compliance would void the compliance to FCC regulations and therefore, the user's authority to operate the equipment.

Caution!   *There is a danger of a new battery exploding if it is incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.*

Memory Compatibility

Table 1.1: AIMB-556 Memory Tested for Compatibility					
Brand	**Size**	**Speed**	**Type**	**Part Number**	**Memory**
Apacer	1GB	DDR2 533	DDR2	78.01066.400	SAMSUNG K4T51083QB-ZKD5 (128x4)
YG	512MB	DDR2 400	DDR2	UG64T6400K8DU-4AM	Micron 4WB42 D9CHL (64x8)
	1GB	DDR2 400	DDR2	UG12T6400L8DU-4AM	ELPIDA E5108AB-5C-E (64x8)
Transcend	256MB	DDR2 533	DDR2	TS32MLQ64V5F	SAMSUNG 443 K4T56083QFGCD5 (32x8)
	512MB	DDR2 533	DDR2	TS64MLQ64V5J	ELPIDA E5108AB-5C-E (64x8)
	1GB	DDR2 533	DDR2	TS128MLQ64V5J	ELPIDA E5108AB-5C-E (64x8)
DSL	512MB	DDR2 533	DDR2	NA	Infineon HYB18T512 800AF37 FSS43331 (64x8)
	1GB	DDR2 533	DDR2	NA	ELPIDA E5108AE-5C-E (64x8)
Apacer (RoHS)	512MB	DDR2 533	DDR2	78.91G66.420	ELPIDA E5108AG-5C-E (64x8)
	1GB	DDR2 533	DDR2	78.01G66.420	ELPIDA E5108AG-5C-E (64x8)
	1GB	DDR2 667	DDR2	78.01G92.420	ELPIDA E5108AG-6E-E (64x8)
Transcend (RoHS)	256MB	DDR2 533	DDR2	TS32MLQ64V5M	Iinfineon HYB18T512 160AF3.73VV21710 (32x16)
	512MB	DDR2 533	DDR2	TS64MLQ64V5J	SEC K4T51083QC (64X8)
	1GB	DDR2 533	DDR2	TS128MLQ64V5J	SEC K4T51083QC (64X8)
	512MB	DDR2 667	DDR2	TS64MLQ64V6J	SEC K4T51083QC ES(64x8)
	512MB	DDR2 667	DDR2	TS128MLQ64V6J	Micron 5XB32D9DCL (64x8)
	1GB	DDR2 667	DDR2	TS128MLQ64V6J	SEC K4T51083QC ES(64x8)

Network Feature Comparison

Table 1.2: AIMB-556 comparison table		
LAN/Model	**AIMB-556G2**	**AIMB-556VG**
LAN1: Intel 82566MM	Yes	Yes
LAN2: Intel 82573L	Yes	No

Product warranty

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

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which have been subject to misuse, abuse, accident or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, type of PC, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any on-screen messages you get when the problem occurs.

2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.

3. If your product is diagnosed as defective, obtain an RMA (return material authorization) number from your dealer. This allows us to process your return more quickly.

4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.

5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Initial Inspection

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

- AIMB-556 Socket 478 Intel Core 2 Duo / Core Solo Processor-based Industrial Micro-ATX Motherboard
- 1 AIMB-556 startup manual   P/N: 2002055610
- 1 CD with utility   P/N: 2066000E11
- 1 FDD cable   P/N: 1700340640
- 1 Ultra ATA 66/100 HDD cable   P/N: 1701400452
- 2 Serial ATA HDD data cable   P/N: 1700003194
- 2 Serial ATA HDD power cable   P/N: 1703150102
- 1 COM port cable kit   P/N: 1701092300
- 1 I/O port bracket   P/N: 1962015680
- 1 jumper package   P/N: 9689000068
- 1 warranty card   P/N: 2190000902
- CPU cooler   P/N: 1750000348

If any of these items are missing or damaged, contact your distributor or sales representative immediately. We have carefully inspected the AIMB-556 mechanically and electrically before shipment. It should be free of marks and scratches and in perfect working order upon receipt. As you unpack the AIMB-556, check it for signs of shipping damage. (For example, damaged box, scratches, dents, etc.) If it is damaged or it fails to meet the specifications, notify our service department or your local sales representative immediately. Also notify the carrier. Retain the shipping carton and packing material for inspection by the carrier. After inspection, we will make arrangements to repair or replace the unit.

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Hardware Configuration

Chapter 1 Hardware Configuration

1.1 Introduction

The AIMB-556 is designed with the Intel GME965 and the ICH8M for industrial applications that require both high-performance computing and enhanced power management capabilities. The motherboard supports Intel Core 2 Duo / Core Solo Processors up to 2.6 GHz with 533/800 MHz front side bus and DDR2 400/533/667 MHz memory up to 4 GB.

AIMB-556 offers high-performance cost-saving integrated graphics, built on the Intel GME965 chipset. The Intel Extreme Graphics architecture maximizes VGA performance and shares up to 256 MB of system memory. The AIMB-556 also provides a mainstream PCI Express x16 expansion slot to enable higher graphics computing ability with add-on graphics cards. Better still, the AIMB-556 also provides incredible visual quality, versatile display options, 24-bit Dual Channel LVDS and a TV-out (NTSC/PAL) interface.

In addition to powerful computing capabilities, the AIMB-556 comes with advanced I/O enhancements. The AIMB-556 possesses multiple high performance onboard I/O capabilities which include one PCI Express x16 slot; one PCI-Express x4 slot; two 32-bit, 33-MHz PCI slots; eight high-speed USB 2.0 ports; three Serial ATA ports; HD audio; four RS-232 ports; one parallel port; and a floppy disk interface. These powerful I/O capabilities enable even more reliable data storage and high-speed I/O peripherals. The AIMB-556 also adopts Advantech's unique patented, "Sleep Mode Control Circuit," for AT Power Mode. With this thoughtful design, users need NOT clear the CMOS memory after the system enters the S3 mode.

With exceptional features and outstanding performance, AIMB-556 is simply the most advanced power saving platform for today's and tomorrow's up-and-coming applications.

1.2 Features

- **PCI Express architecture:** Designed with the Intel GME965 and ICH8M PCI Express chipset, the AIMB-556 has single or dual PCIe x1 Gigabit LAN ports, 1 PCIe x16 slot and 1 PCIe x4 slot.

- **High Performance I/O Capability:** Single or dual PCIe x1 Gigabit LAN ports, 2 PCI 32-bit/33 MHz PCI slots, 3 SATA connectors and 8 USB 2.0 ports.

- **Standard ATX form factor with industrial features:** AIMB-556 provides industrial features like long product life, reliable operation under a wide temperature range, watchdog timer and CMOS backup functions.

- **Health status monitoring and remote management:** System voltage levels, fan speed and CPU temperature are monitored to ensure stable operation.

- **Automatic power on after power failure:** It is often required to have an unattended system come back to operation after a power failure. Advantech's industrial motherboard allows users to set the system to power on automatically without pushing the power on button.

1.3 Specifications

1.3.1 System
- **CPU:** Socket 478 Intel Core 2 Duo / Core Solo up to 2.6 GHz; Intel Core 2 Duo 533/800 MHz FSB.

- **L2 Cache:** CPU has built-in 2 MB or 4 MB CPU and full-speed L2 cache.

- **BIOS:** AMI SPI BIOS (16 Mb SPI)

- **System Chipset:** Intel GME965 with ICH8M

- **SATA/EIDE hard disk drive interface:** Three onboard SATA connectors with data transmission rates of up to 300 MB/s support up to two devices. One onboard IDE connector supports up to two enhanced IDE devices. The IDE interface supports PIO mode 4 (16.67 MB/s data transfer rate) and ATA 33/66/100 (33/66/100 MB/s data transfer rate) These interfaces can be enabled/disabled in the BIOS.

- **Floppy disk drive interface:** Supports one floppy disk drive, 5¼" (360 KB and 1.2 MB) or 3½" (720 KB, 1.44 MB). These interfaces can be enabled/disabled in the BIOS.

1.3.2 Memory
- **RAM:** Up to 4 GB in four 240-pin DIMM sockets. Supports dual-channel DDR2 400/533/667 SDRAM.

1.3.3 Input/Output
- **PCI Express slots:** 1 PCIe x16 expansion slot and 1 PCIe x4 expansion slot.

- **PCI Bus:** 2 PCI slots, 32-bit, 33 MHz PCI 2.2 compliant

- **Enhanced parallel port:** This EPP/SPP/ECP port can be configured to LPT1, LPT2, LPT3 or disabled. A standard DB-25 female connector provided.

- **Serial ports:** Four serial ports, one DB-9 (RS-232) connector and one onboard pin header (RS-232/422/485).

- **Keyboard and PS/2 mouse connector:** Two 6-pin mini-DIN connectors are located on the mounting bracket for easy connection to a PS/2 keyboard and mouse.

- **USB port:** Supports up to eight USB 2.0 ports with transmission rate up to 480 Mbps.

1.3.4 Graphics

- **Controller:** Chipset integrated VGA controller

- **Display memory:** Dynamically shared system memory up to 224 MB

- **CRT:** Up to 2048 x 1536 resolution, 400 MHz RAMDAC

- **LVDS interface:** Support up to UXGA (1600 x 1200)

- **TV-Out:** NTSC/PAL.

- **PCI Express x16 slot**

The AIMB-556 can drive an LVDS display, and you can use the following accessories to connect an LVDS display:

- **15" 1024 x 768 panel**: P/N: 1330000018

- **Inverter**: P/N: 1250000007

- **LCD cable**: P/N: P-CBIV105204202

- **Power cable**: P/N: P-CBLC320140501

1.3.5 Ethernet LAN

- Supporting single/dual 10/100/1000Base-T Ethernet port(s) via PCI Express x1 bus which provides 500 MB/s data transmission rate.

- **Controller:**
  LAN 1: Intel 82566MM (G2 version or VG version)
  LAN 2: Intel 82573L (G2 Version)

1.3.6 Industrial features

- **Watchdog timer:** Can generate a system reset or IRQ11. The watchdog timer is programmable, with each unit equal to one second or one minute (255 levels)

1.3.7 Mechanical and environmental specifications

- **Operating temperature:** 0 ~ 60° C (32 ~ 140° F, Depending on CPU)

- **Storage temperature:** -20 ~ 70° C (-4 ~ 158° F)

- **Humidity:** 20 ~ 95% non-condensing

- **Power supply voltage:** +3.3 V, +5 V, ±12 V

- **Power consumption:** Maximum: +5 V at 2.4 A, +3.3V at 3 A, +12 V at 1.3 A Intel Core 2 Duo 2 GHz (800 MHz FSB), 2 x 1 GB DDR2 667 SDRAM)

- **Board size:** 244 x 244 mm (9.6" x 9.6")

- **Board weight:** 0.7 kg (1.68 lb)

1.4 Jumpers and Connectors

Connectors on the AIMB-556 motherboard link it to external devices such as hard disk drives and a keyboard. In addition, the board has a number of jumpers used to configure your system for your application.

The tables below list the function of each of the board jumpers and connectors. Later sections in this chapter give instructions on setting jumpers. Chapter 2 gives instructions for connecting external devices to your motherboard.

Table 1.1: Jumper list	
Label	**Function**
CMOS1	CMOS
JWDT1	Watchdog Reset
PSON1	AT (1-2) / ATX (2-3)
JSETCOM2	COM2 RS-232/422/485 Jumper Setting
J16	LCD Power 3.3 V / 5 V selector

Table 1.2: Connector/Jumper list

Label	Function
CMOS1	CMOS clear (Default 1-2)
JWDT1	Watchdog Reset
IDE1	Primary IDE connector (one channel)
FDD1	FDD connector
LPT1	Parallel port, Parallel port x 1, supports SPP/EPP/ECP mode
LAN1_USB12	LAN1 / USB port 1, 2
LAN2_USB34	LAN2 / USB port 3, 4
VGA1	VGA connector
VGA2	TV-Out connector
J16	LCD power 3.3 V / 5 V selection Default (1-2)
LVDS1	LVDS connector
VP1	LVDS Inverter Power
COM1	Serial port: COM1; RS-232
COM2	Serial port: COM2; RS-232 (9-pin connector)
COM3	Serial port: COM3; RS-232
COM4	Serial port: COM4; RS-232
CN2	GPIO Header
JSETCOM2	COM2 RS-232/422/485 Jumper Setting
KBMS1	PS/2 Keyboard and Mouse connector
JIR1	Infrared connector
JFP3 (Keyboard Lock and Power LED)	Power LED
	Suspend: Fast flash (ATX/AT)
	System On: ON (ATX/AT)
	System Off: OFF (AT)
	System Off: Slow flash (ATX)
JFP2	External speaker / SATA HDD LED connector
JFP1	Power Switch / Reset connector
JCASE1	Case Open
PSON1	AT(1-2) / ATX(2-3)
CN22	HW monitor
	Close: Enable OBS Alarm
	Open: Disable OBS Alarm

Table 1.2: Connector/Jumper list

Label	Function
CPUFAN1	CPU FAN connector (3-pin)
SYSFAN1	System FAN connector (3-pin)
CHAFAN2	Chassis FAN connector (3-pin)
LANLED1	LAN1/2 LED extension connector
AUDIO1	Audio connector
CN1	CD_IN Connector
HD1	HD Audio Front Panel Pin Header
USB56	USB port 5, 6
USB78	USB port 7, 8
SA1	Serial ATA1
SA2	Serial ATA2
SA3	Serial ATA3
ATX1	ATX 12 V auxiliary power connector (for CPU)
ATX2	ATX 24-pin main power connector (for System)
PCIE-16X1	PCIE x16 Slot 1
PCIEX-4X1	PCIE x4 Slot 1
PCIE_SW1	PCIE x4 Slot 1 via 1 x PCIE_4 (ON)
	PCIE x4 Slot 1 via 4 x PCIE_1 (1-2)
SPI_CN1	SPI flash update connector
SPI_CS_CN1	SPI flash selection default (1-2), 1-2: SPI1 (U17) 2-3: SPI2 (U47)
PCI1	PCI Slot 1
PCI2	PCI Slot 2
BAT1	Battery Connector
SP1	Buzzer
CPU1	CPU Socket
DIMMA1	Memory connector channel A
DIMMB1	Memory connector channel B

1.5 Board Layout: Jumper and Connector Locations
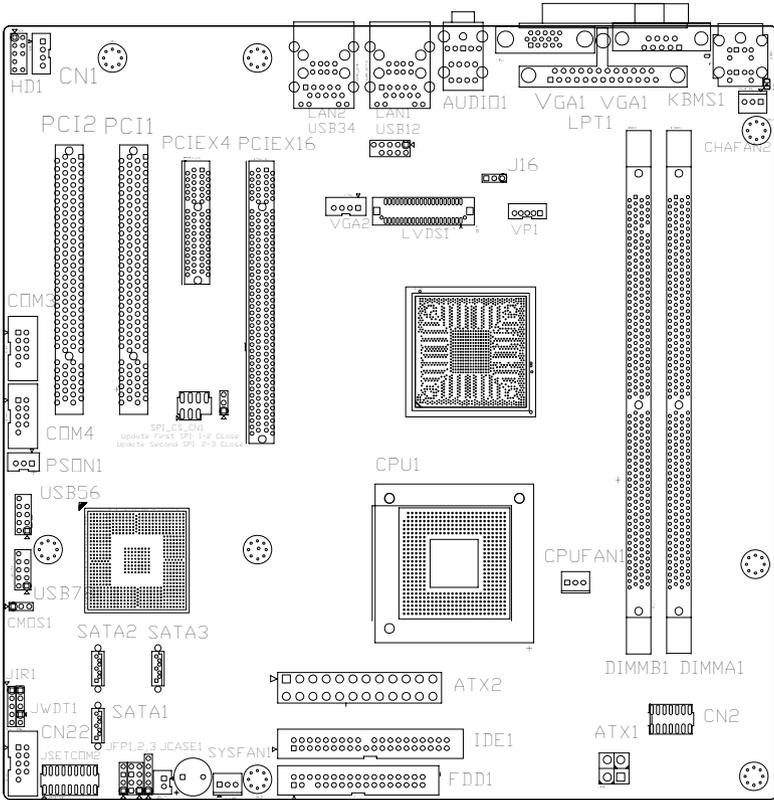
Figure 1.1: Jumper and connector locations
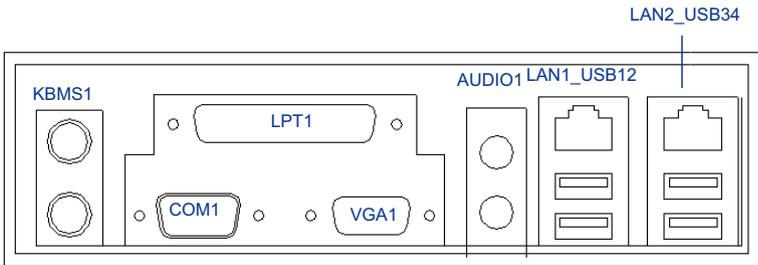
Figure 1.2: I/O connectors

1.6 AIMB-556 Block Diagram
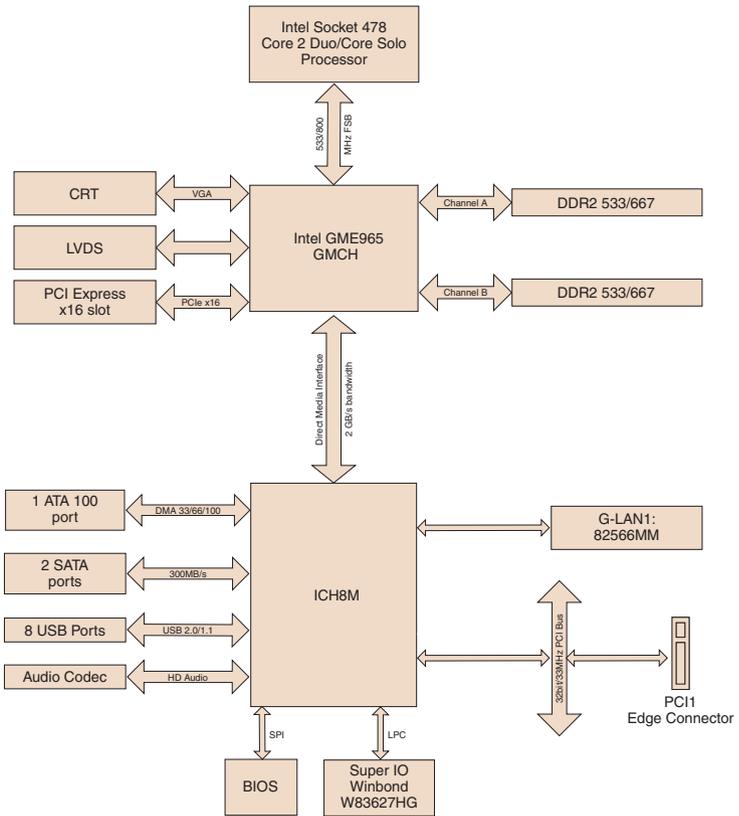
Figure 1.3: AIMB-556 Block Diagram

1.7 Safety Precautions

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

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

Caution!   *The computer is provided with a battery-powered Real-time Clock. There is a danger of explosion if battery is incorrectly replaced. Replace only with same or equivalent type recommended by the manufacturer. Discard used batteries according to manufacturer's instructions.*

Caution!   *There is a danger of a new battery exploding if it is incorrectly installed. Do not attempt to recharge, force open or heat the battery. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.*

1.8 Jumper Settings

This section provides instructions on how to configure your motherboard by setting the jumpers. It also includes the motherboard's default settings and your options for each jumper.

1.8.1 How to set jumpers

You can configure your motherboard to match the needs of your application by setting the jumpers. A jumper is a metal bridge that closes an electrical circuit. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To "close" (or turn ON) a jumper, you connect the pins with the clip. To "open" (or turn OFF) a jumper, you remove the clip. Sometimes a jumper consists of a set of three pins, labeled 1, 2 and 3. In this case you connect either pins 1 and 2, or 2 and 3. A pair of needle-nose pliers may be useful when setting jumpers.

1.8.2 CMOS clear (CMOS1)

The AIMB-556 motherboard contains a jumper that can erase CMOS data and reset the system BIOS information. Normally this jumper should be set with pins 1-2 closed. If you want to reset the CMOS data, set J1 to 2-3 closed for just a few seconds, and then move the jumper back to 1-2 closed. This procedure will reset the CMOS to its default setting.

Table 1.3: CMOS (CMOS1)	
Function	**Jumper Setting**
* Keep CMOS data	1-2 closed
Clear CMOS data	2-3 closed
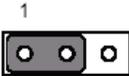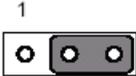
* default setting

1.8.3 Watchdog timer output (JWDT1)

The AIMB-556 contains a watchdog timer that will reset the CPU or send a signal to IRQ11 in the event the CPU stops processing. This feature means the AIMB-764 will recover from a software failure or an EMI problem. The J2 jumper settings control the outcome of what the computer will do in the event the watchdog timer is tripped.

Table 1.4: Watchdog timer output (JWDT1)	
Function	**Jumper Setting**
IRQ11	1 ⊙ ⊙ ○ 1-2 closed
* Reset	1 ○ ⊙ ⊙ 2-3 closed
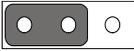
*default setting

> *Note:*   *The interrupt output of the watchdog timer is a low level signal. It will be held low until the watchdog timer is reset.*

Table 1.5: ATX/AT Mode selector (PSON1)	
Function	**Jumper Setting**
AT Mode	1 ⊙ ⊙ ○ 1-2 closed
ATX Mode	1 ○ ⊙ ⊙ 2-3 closed

1.8.4 COM2 RS-232/422/485 mode selector (JESTCOM2)

Users can use JESTCOM2 to select among RS-232/422/485 modes for COM2. The default setting is RS-232.
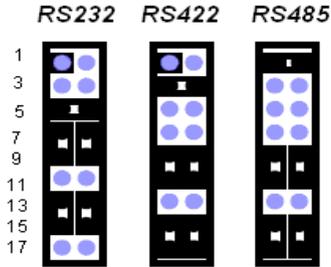
Figure 1.4: COM2 RS-232/422/485 Jumper setting

Table 1.6: COM2 RS-232/422/485 mode selector	
Function	**Jumper Setting**
RS-232	(5-6) + (7-9) + (8-10) + (13-15) + (14-16) closed
RS-422	(3-4) + (9-11) + (10-12) + (15-17) + (16-18) closed
RS-485	(1-2) + (9-11) + (10-12) + (15-17) + (16-18) closed

1.9 System Memory

The AIMB-556 has four sockets for 240-pin dual inline memory modules (DIMMs) in two memory channels.

All these sockets use 1.8 V unbuffered double data rate synchronous DRAMs (DDR SDRAM). They are available in capacities of 256 MB, 512 MB, 1024 MB and 2 GB. The sockets can be filled in any combination with DIMMs of any size, giving a total memory size between 256 MB and 4 GB.

1.9.1 CPU FSB and memory speed

The AIMB-556 can accept DDR2 SDRAM memory chips without parity. Also note that the AIMB-556 accepts DDR2 400/533/667 MHz SDRAM, and DDR2 SDRAM. The AIMB-556 does NOT support ECC (error checking and correction).

1.10 Memory Installation Procedures

To install DIMMs, first make sure the two handles of the DIMM socket are in the "open" position. i.e. the handles lean outward. Slowly slide the DIMM module along the plastic guides on both ends of the socket. Then press the DIMM module right down into the socket, until you hear a click. This is when the two handles have automatically locked the memory module into the correct position of the DIMM socket. To remove the memory module, just push both handles outward, and the memory module will be ejected by the mechanism in the socket.

1.11 Cache Memory

The CPU that AIMB-556 supports built-in 2 MB or 4 MB cache memory.

1.12 Processor Installation

> **Warning!** *Without a fan or heat sink, the CPU will over-heat and cause damage to both the CPU and the single board computer. To install a CPU, first turn off your system.*

The AIMB-556 is designed for Intel Core 2 Duo / Core Solo (socket 478) up to 2.6 GHz. Follow these steps to install the processor:

1. Turn the screw to loosen the processor socket.

2. Align the triangular marking on the processor with the small arrow on the corner of the socket.

3. Turn the screw to its original position.

4. Install the heat sink on the CPU. The concave part of the heat sink should face the capacitors to avoid contact with the capacitors.

1.13 PCI Bus Routing Table

Table 1.7: PCI Bus Routing Table		
Slot#	**Adress**	**INT key**
PCI Slot	ID SEL	PCI Interrupt
PCI1	AD31	INT B, C, D, A
PCI2	AD30	INT C, D, A, B

Connecting Peripherals

Chapter 2 Connecting Peripherals

2.1 Introduction

You can access most of the connectors from the top of the board as it is being installed in the chassis. If you have a number of cards installed, you may need to partially remove the card to make all the connections.

2.2 Primary (IDE1) IDE Connector
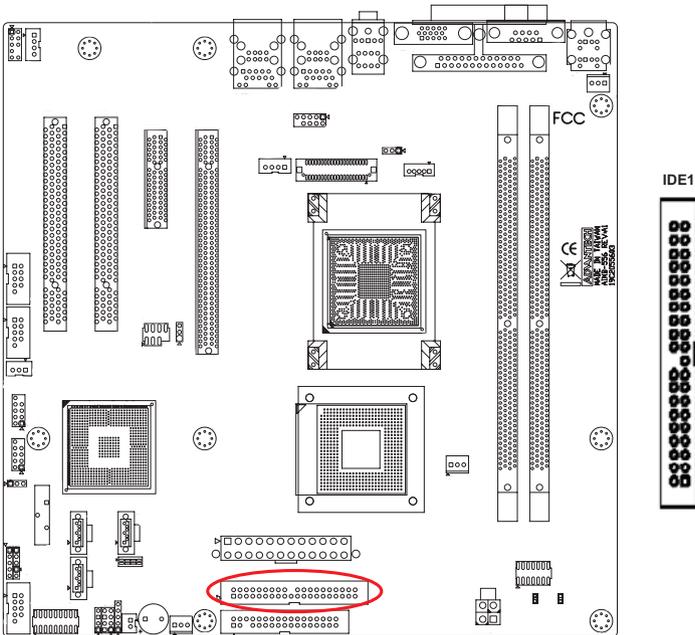
You can attach up to four IDE (Integrated Drive Electronics) drives to the AIMB-556's built-in controller. The primary (IDE1) connector can each accommodate two drives.

Wire number 1 on the cable is red or blue and the other wires are gray. Connect one end to connector IDE1 on the motherboard. Make sure that the red/blue wire corresponds to pin 1 on the connector (in the upper right hand corner). See Chapter 1 for help finding the connector.

Unlike floppy drives, IDE hard drives can connect in either position on the cable. If you install two drives to a single connector, you will need to set one as the master and the other as the slave. You do this by setting the jumpers on the drives. If you use just one drive on the connector, you should set the drive as the master. See the documentation that came with your drive for more information.

Connect the first hard drive to the other end of the cable. Wire 1 on the cable should also connect to pin 1 on the hard drive connector, which is labeled on the drive circuit board. Check the documentation that came with the drive for more information.

2.3 Floppy Drive Connector (FDD1)
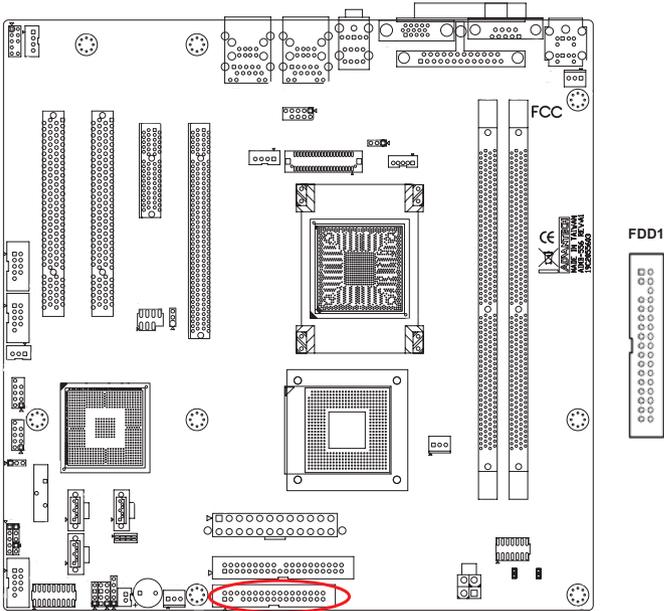
You can attach up to two floppy disk drives to the AIMB-556's onboard controller. You can use 3.5" (720 KB, 1.44 MB) drives.

The motherboard comes with a 34-pin daisy-chain drive connector cable. On one end of the cable is a 34-pin flat-cable connector. On the other end are two sets of 34-pin flat-cable connector (usually used for 3.5" drives). The set on the end (after the twist in the cable) connects to the A: floppy drive. The set in the middle connects to the B: floppy drive.

2.4 Parallel Port (LPT1)
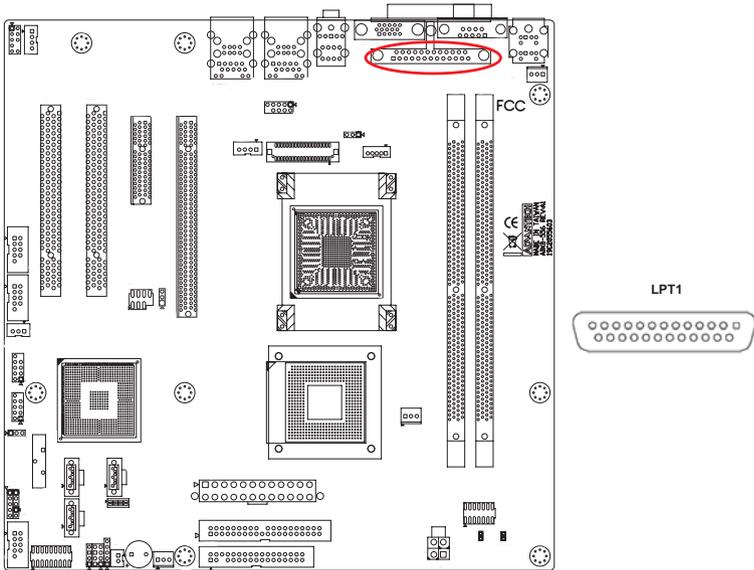
The parallel port is normally used to connect the motherboard to a printer. The AIMB-556 includes an onboard parallel port, accessed through a 26-pin flat-cable connector, LPT1.

2.5 USB Ports (LAN1_USB12, LAN2_USB34, USB56 & USB78)

The AIMB-556 provides up to eight USB (Universal Serial Bus) ports with complete Plug & Play and hot swap support for up to 127 external devices. These USB ports comply with USB Specification Rev. 2.0, support transmission rates up to 480 Mbps and are fuse protected. The USB interface can be disabled in the system BIOS setup.
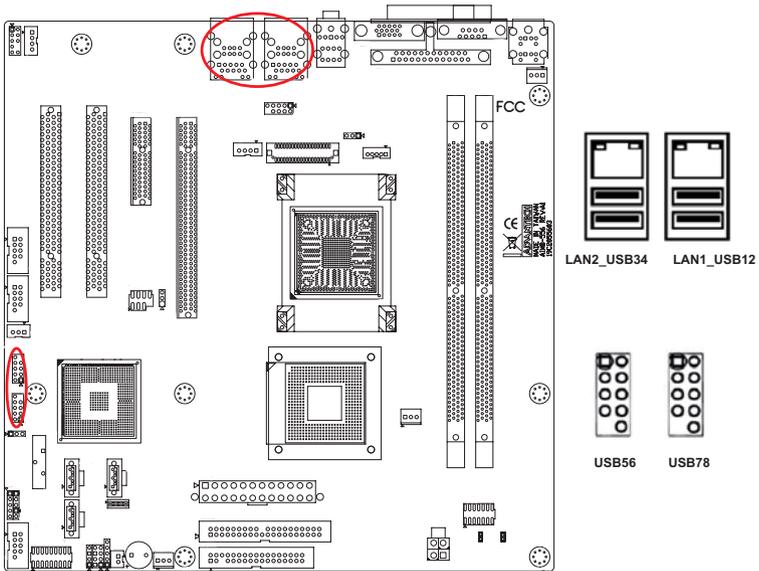
2.6 VGA Connector (VGA1)
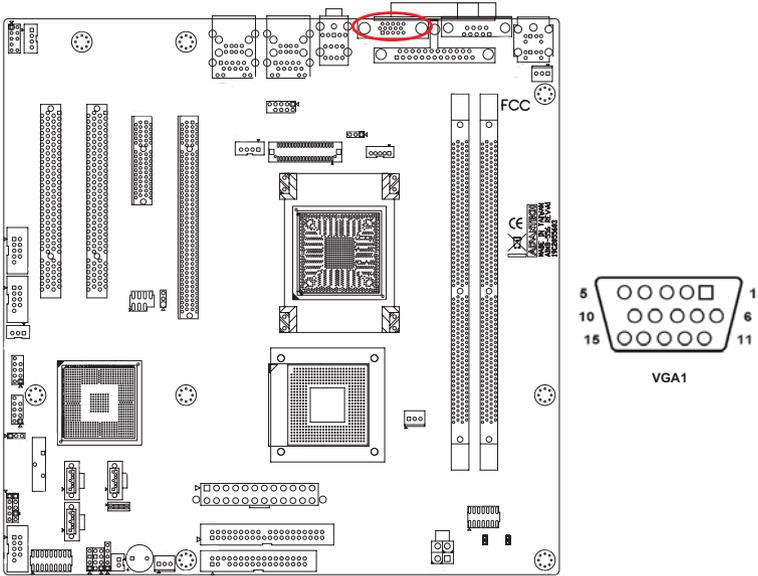
The AIMB-556 includes a VGA interface that can drive conventional CRT displays. VGA1 is a standard 15-pin D-SUB connector commonly used for VGA. Pin assignments for VGA1 are detailed in Appendix B.

2.7 Serial Ports (COM1, COM2, COM3 & COM4)
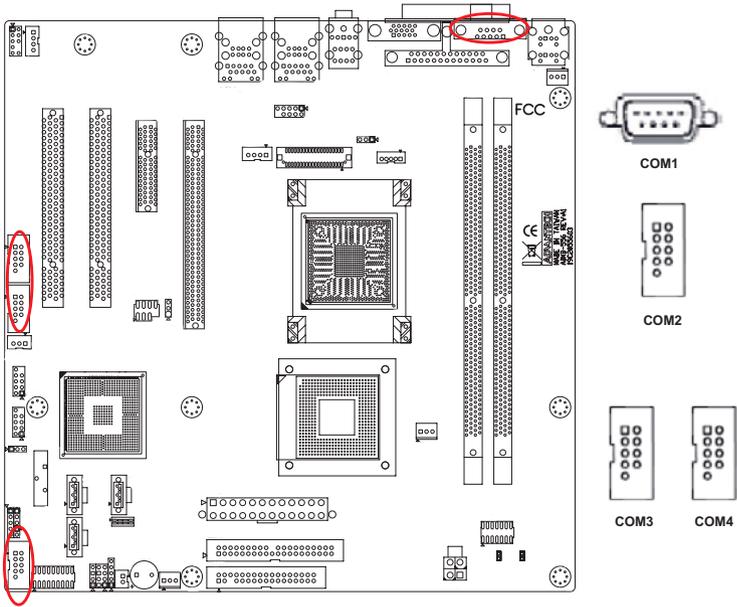
The AIMB-556 offers three serial ports and one onboard connector. The user can use JSETCOM2 to select among RS-232/422/485 modes for COM2. These ports can connect to serial devices, such as a mouse or a printer, or to a communications network.

The IRQ and address ranges for both ports are fixed. However, if you want to disable the port or change these parameters later, you can do this in the system BIOS setup.

Different devices implement the RS-232/422/485 standards in different ways. If you are having problems with a serial device, be sure to check the pin assignments for the connector.

2.8 PS/2 Keyboard and Mouse Connector (KBMS1)
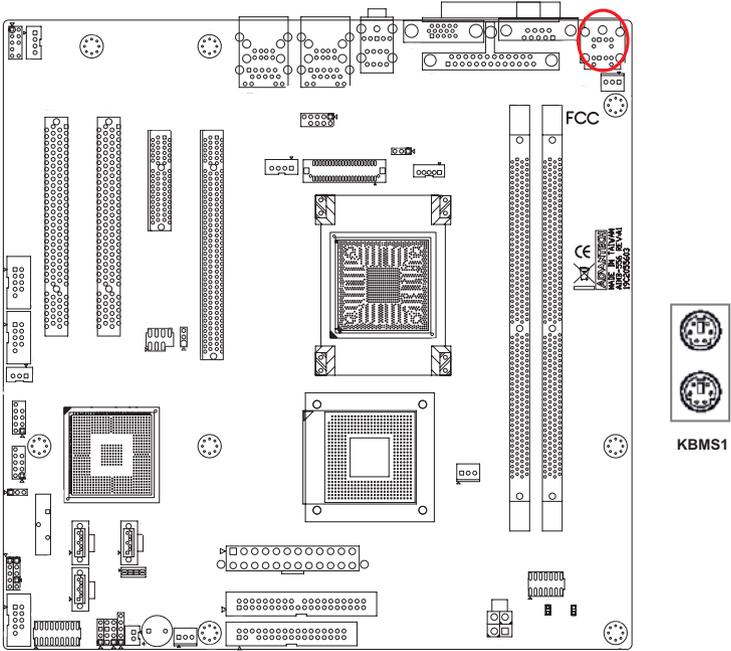
Two 6-pin mini-DIN connectors (KBMS1) on the motherboard provide connection to a PS/2 keyboard and a PS/2 mouse, respectively.

2.9 CPU Fan Connector (CPUFAN1)
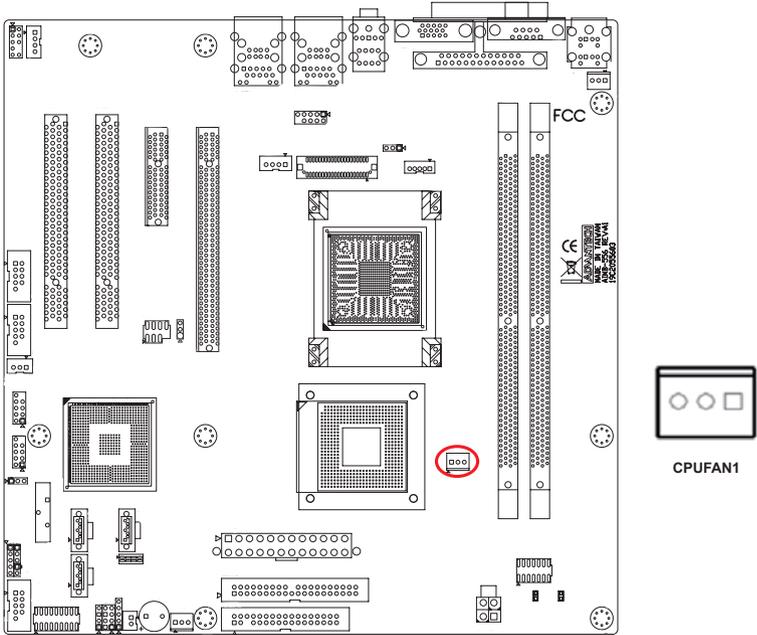
This connector supports cooling fans of 500 mA (6 W) or less.

2.10 System FAN Connector (SYSFAN1 & CHAFAN2)
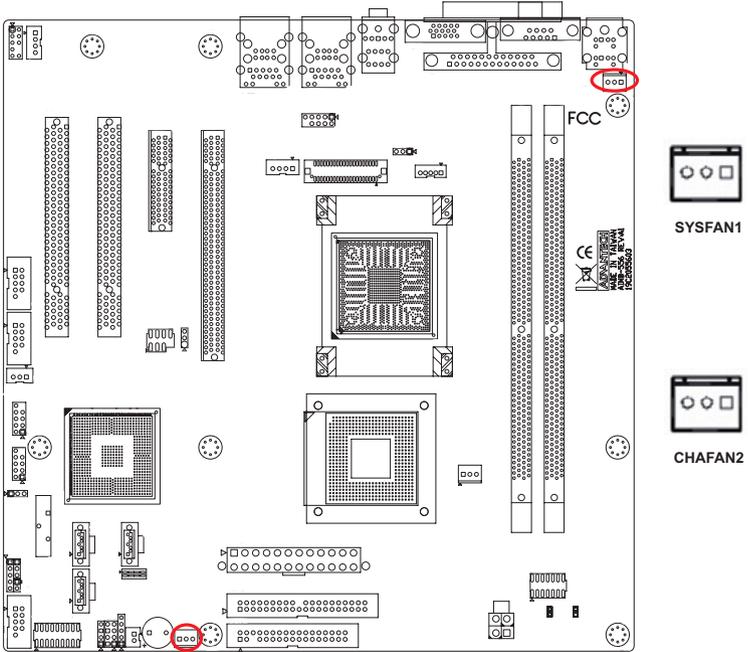
This connector supports cooling fans of 500 mA (6 W) or less.

2.11 Front Panel Connectors (JFP1, JFP2 & JFP3)

There are several external switches to monitor and control the AIMB-556.
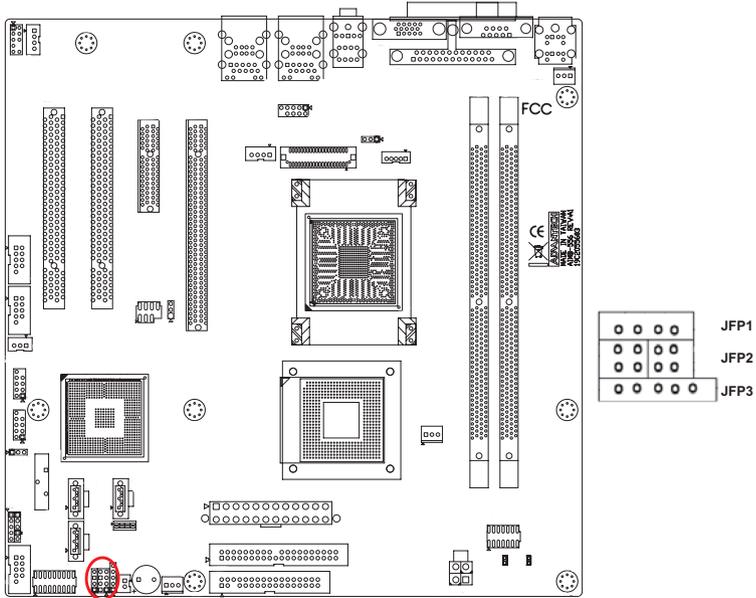
2.11.1 Power LED and Keyboard Lock (JFP3)

JFP3 is a 5-pin connector for the power LED. Refer to Appendix B for detailed information on the pin assignments. If a PS/2 or ATX power supply is used, the system's power LED status will be as indicated below:

Table 2.1: PS/2 or ATX power supply LED status

Power mode	LED (PS/2 power)	LED (ATX power)
System On	On	On
System Suspend	Fast flashes	Fast flashes
System Off	Off	Slow flashes

2.11.2 External Speaker (JFP2)

JFP2 is a 4-pin connector for an external speaker. The AIMB-556 pro-
vides an onboard buzzer as an alternative to an external speaker. To
enable the buzzer, set pins 5 and 7 as closed.

```
□ ○ ○ ○
1  3  5  7
```

2.11.3 Reset Connector (JFP1)

Many computer cases offer the convenience of a reset button. Connect the
wire from the reset button.

```
□ 3
○ 4
```

2.11.4 HDD LED Connector (JFP2)

You can connect an LED to connector JFP2 to indicate when the HDD is
active.

```
□ 2
○ 4
```

2.11.5 ATX Soft Power Switch (JFP1)

If your computer case is equipped with an ATX power supply, you should
connect the power on/off button on your computer case to JFP1. This
connection enables you to turn your computer on and off.

```
□ 1
○ 2
```

2.12 H/W Monitor Alarm (CN22)

CN22
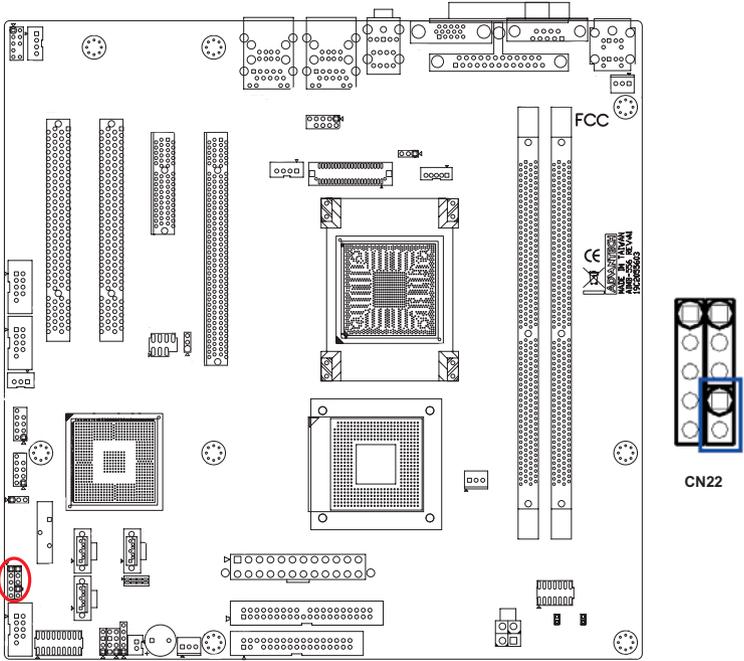
Close: Enable OBS Alarm

Open: Disable OBS Alarm

2.13 USB and LAN ports (LAN1_USB12 & LAN2_USB34)
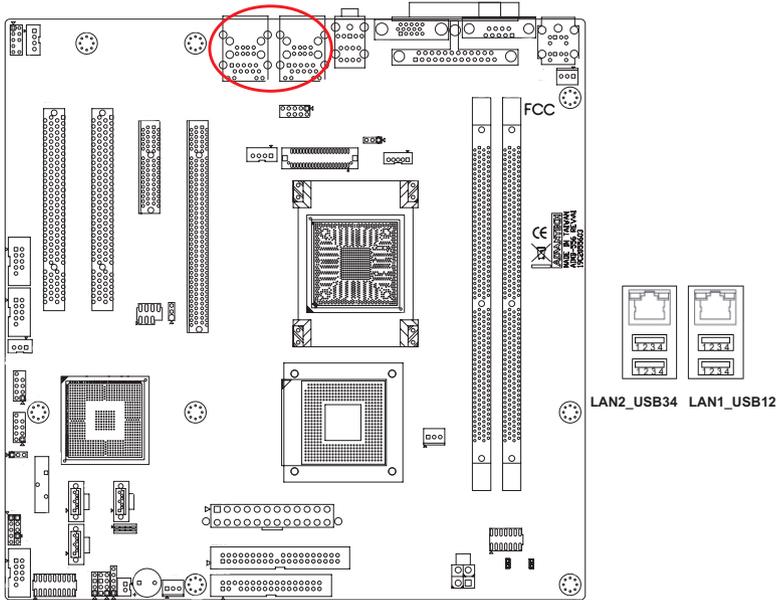
The AIMB-556 provides up to eight USB (Universal Serial Bus) ports, which gives complete Plug & Play and hot swapping for up to 127 external devices. The USB interface complies with USB Specification Rev. 2.0, supports transmission rates up to 480 Mbps and is fuse-protected. The USB interface can be disabled in the system BIOS setup.

The AIMB-556 is equipped with one or two high-performance 1000 Mbps Ethernet LANs. They are supported by all major network operating systems. The RJ-45 jacks on the rear plate provide convenient connectivity.

Table 2.2: LAN LED indicator	
Lan mode	**Lan Indicator**
1 Gbps Link on	LED1 Green on
100 Mbps Link on	LED1 Orange on
Active	LED2 Green flash

2.14 Line Out, Mic In Connector (AUDIO1)
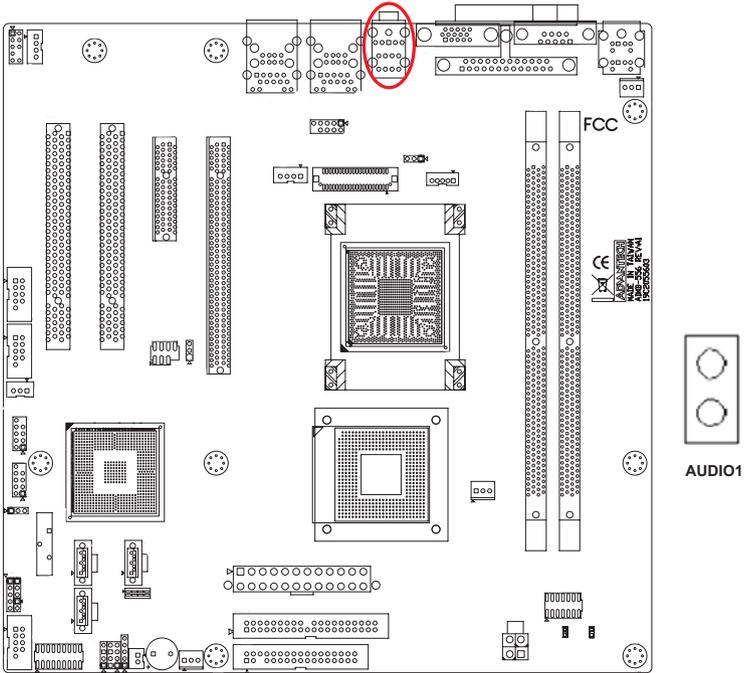
Line Out outputs the audio signal to external audio devices, like speakers or headphones. The Mic In is for the audio input via microphones.

2.15 Audio Input from CD-ROM (CD IN; CN1)
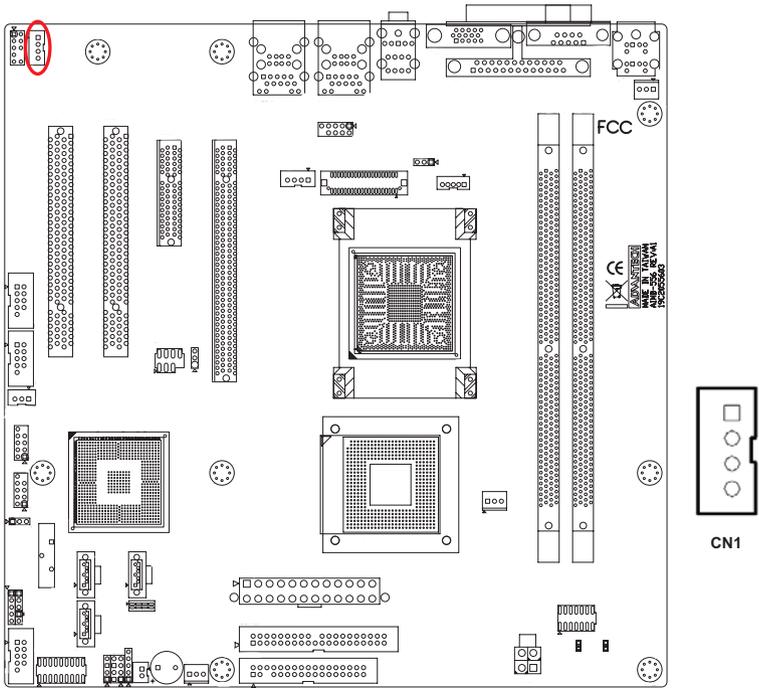
CD IN is connected the CD-ROM audio output.

2.16 Front Panel Audio Connector (FP AUDIO; HD1)

Front Panel

HD1
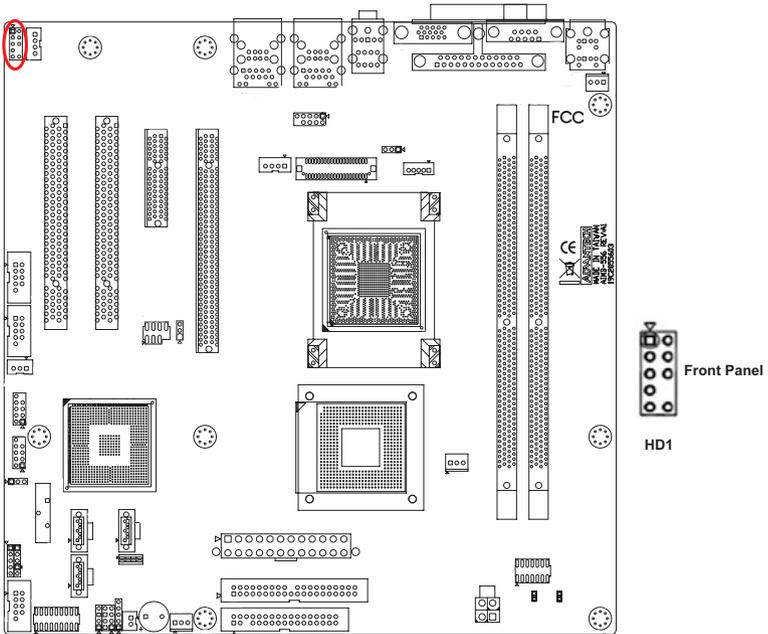
FPAUDIO is a front panel audio connector compliant with the Intel Front Panel I/O Connectivity Design Guide. To direct the audio signal output to the rear audio ports, the 5 and 6 pins and the 9 and 10 pins must be shorted by jumper to activate the rear panel audio function.

2.17 Case Open Connector (JCASE1)
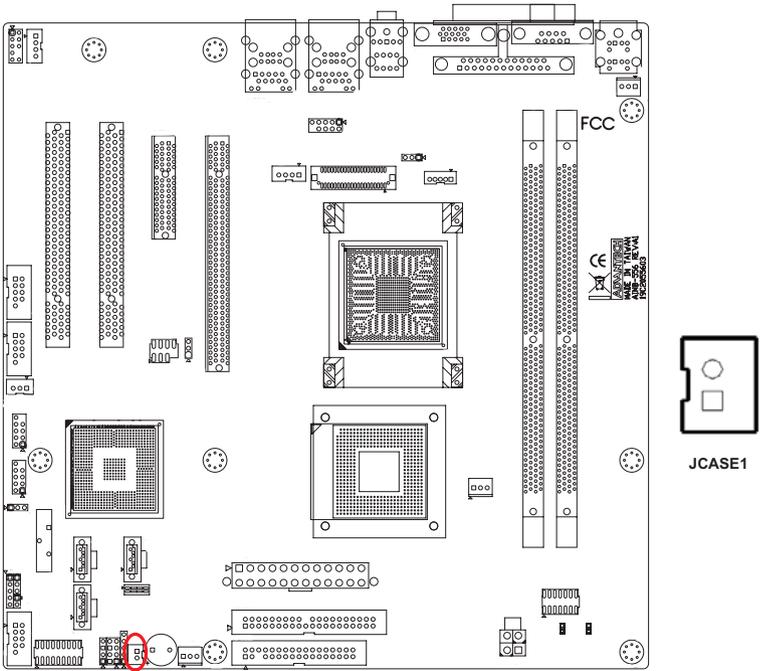
The 2-pin case open connector is for chassis with a case open sensor. While opening the case, the buzzer on motherboard will beep.

2.18 Front Panel LAN Indicator Connector (LANLED1)

Table 2.3: Front Panel LAN Indicator Connector	
LAN Mode	**Indicator**
G-LAN Link ON	Green ON
G-LAN Active	Green Flash
G-LAN Link Off	Green OFF

LANLED1
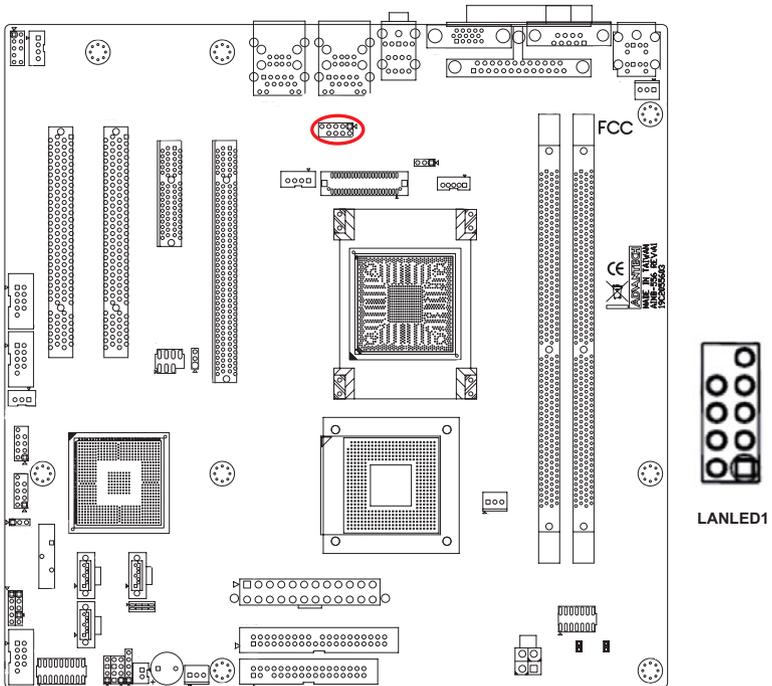
2.19 Serial ATA Interface (SA1, SA2 & SA3)

SATA1-SATA3
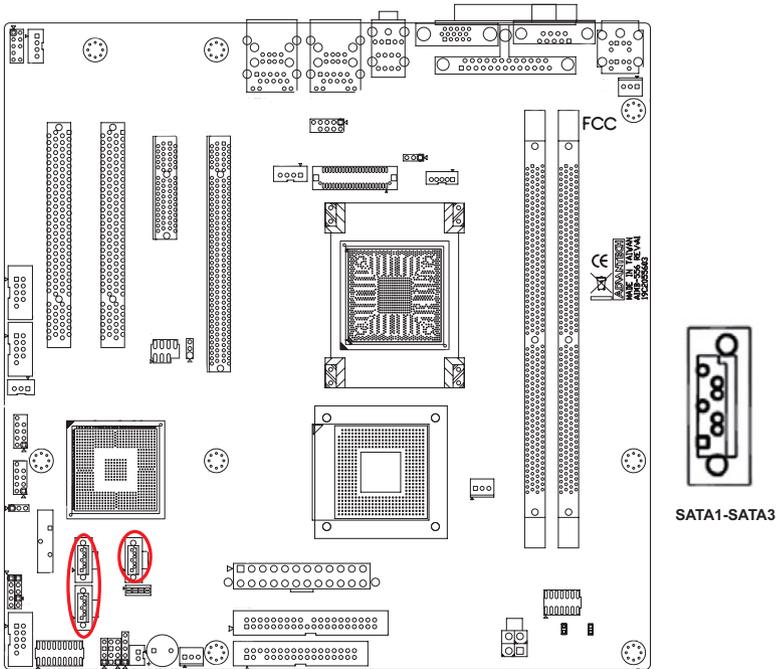
In addition to the EIDE interface (up to two devices), the AIMB-556 features a high performance serial ATA interface (up to 300 MB/s) which eases cabling to hard drives with thin and long cables.

2.20 PCI Slots (PCI 1 ~ PCI 2)
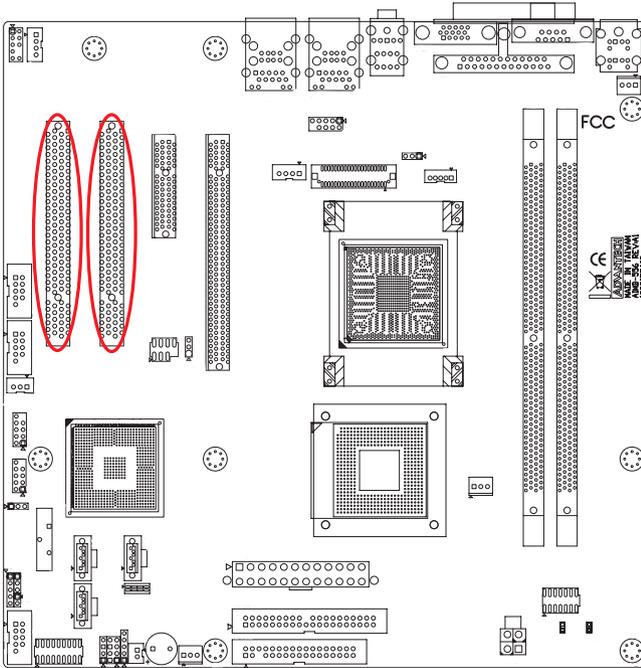
The AIMB-556 provides two 32-bit / 33 MHz PCI slots.

Note: *64-bit PCI or PCI-X expansion cards installed in the*
             PCI 1 slot will not fit because of the south bridge heat
             sink. If you want to use 64-bit PCI or PCI-X expansion
             cards, please install them in the PCI 2.

2.21 PCI Express x16 Expansion Slot (PCIEx16_1)

PCIEx16_1
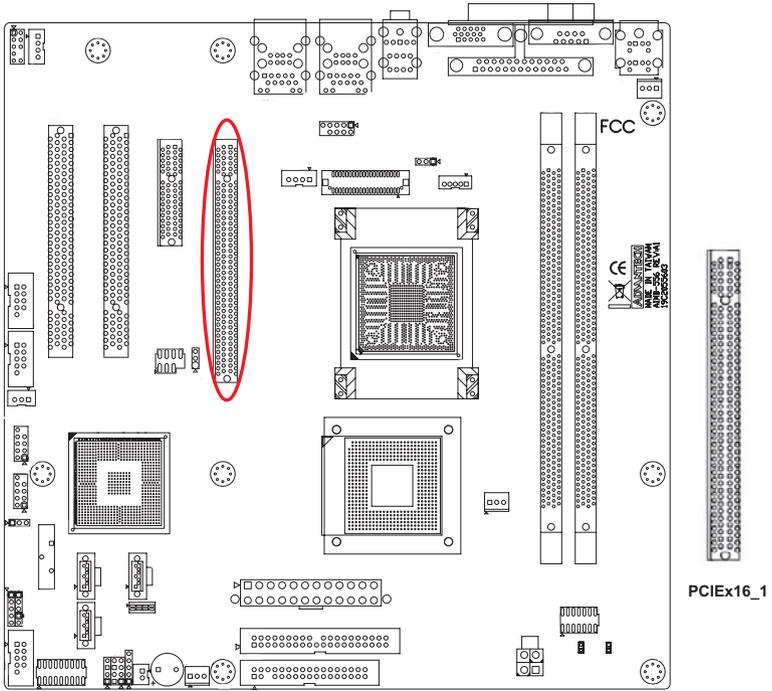
AIMB-556 provides a PCI Express x16 slot for users to install add-on VGA cards when their applications require high graphics performance.

2.22 PCI Express x4 Expansion Slot (PCIEx4_1)

PCIEx4_1
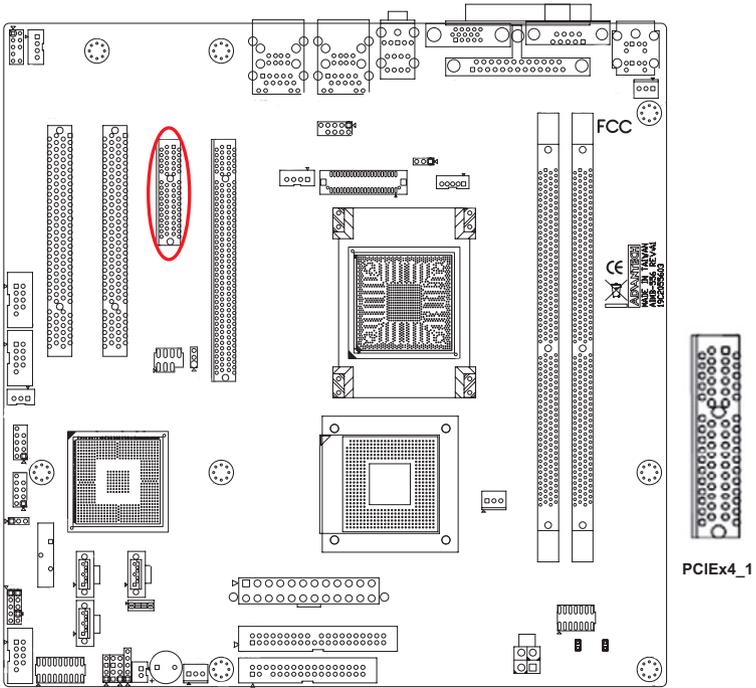
AIMB-556 provides a PCI Express x4 slot for users to install add-on cards.

2.23 Auxiliary 4-pin power connector (ATX1)

To ensure enough power is supplied to the motherboard, one auxiliary 4-pin power connector is available on the AIMB-556. ATX1 must be used to provide sufficient 12 V power to ensure stable operation of the system.

ATX1
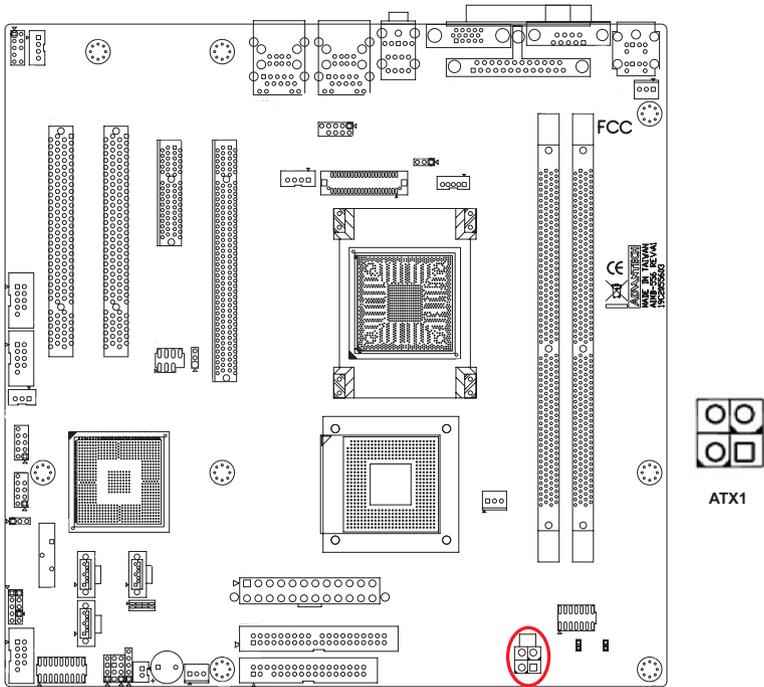
2.24 TV-out connector (VGA2)


```
4   3   2   1
O   O   O   □

VGA2
```
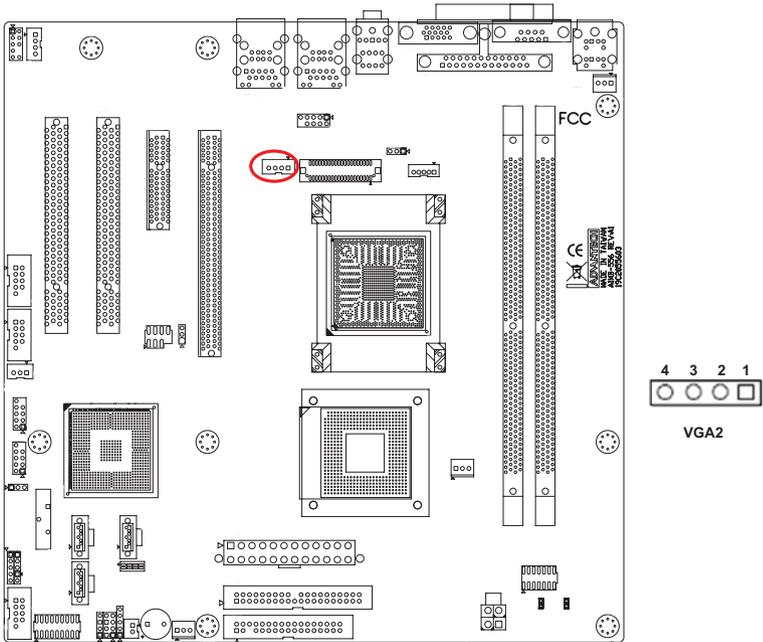
The AIMB-556 provides a TV-out interface, VGA2, which is an 4-pin connector. A video cable (p/n:1700002331) that enables an S-Video or Composite Video display to be connected is avilable.

Note: *Please don't connect S-Video and Composite Video displays at the same time.*

2.25 LVDS connector (LVDS1)


```
1 3                                39
□○○○○○○○○○○○○○○○○○○○○
○○○○○○○○○○○○○○○○○○○○
2 4                                40
        LVDS1
```
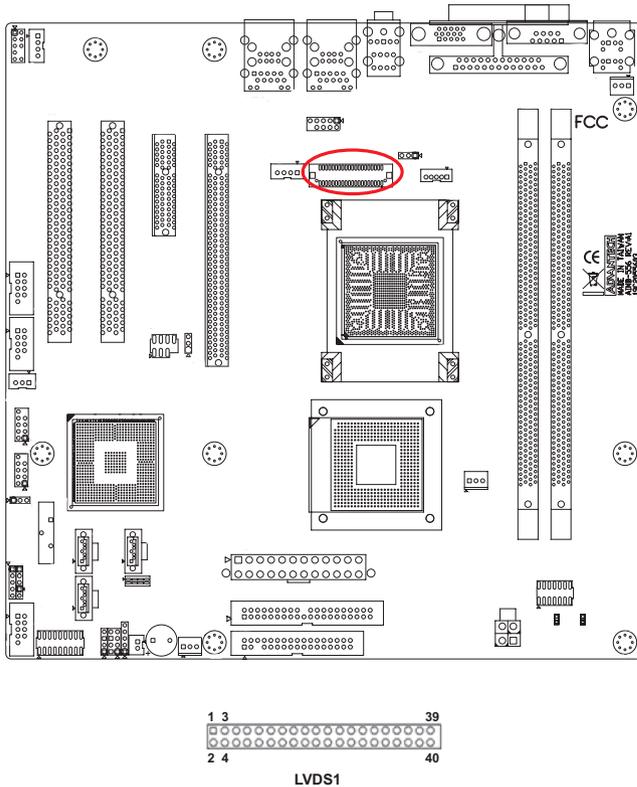
The AIMB-556 provides an LVDS interface that supports 24-bit LCD panels. Pin assignments for the LVDS connector are detailed in Appendix B.

2.26 LCD inverter power connector (VP1)
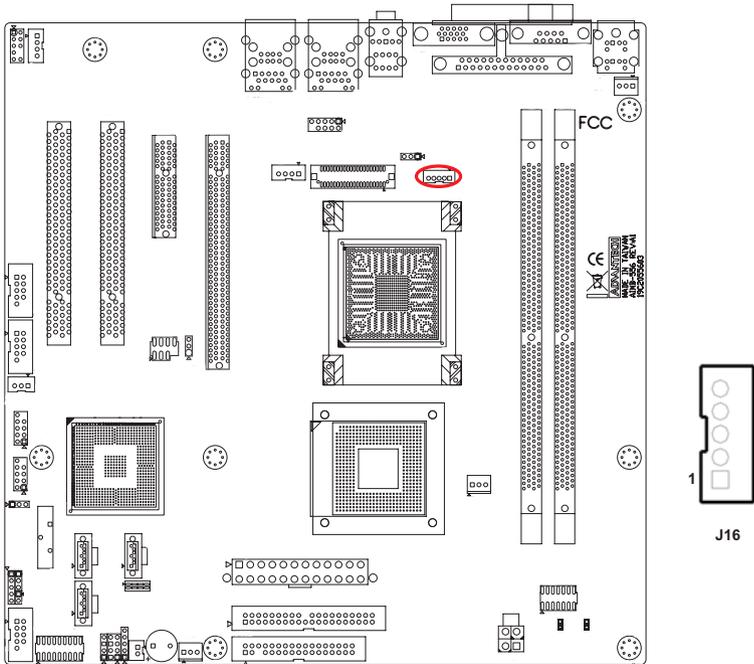
VP1 is connected to an inverter that can provide power to an LCD panel. The AIMB-556 can drive an LVDS display, and you can install an LVDS display with the following accessories.

15" 1024 x 768 panel	P/N: 1330000018
Inverter	P/N: 1250000007
LCD cable	P/N: P-CBIV105204202
Power cable	P/N: P-CBLC320140501

AMI BIOS Setup

Chapter 3 AMI BIOS Setup

AMIBIOS has been integrated into many motherboards for over a decade. In the past, people often referred to the AMIBIOS setup menu as BIOS, BIOS setup or CMOS setup.

With the AMIBIOS Setup program, you can modify BIOS settings and control the special features of your computer. The Setup program uses a number of menus for making changes and turning the special features on or off. This chapter describes the basic navigation of the AIMB-556 setup screens.
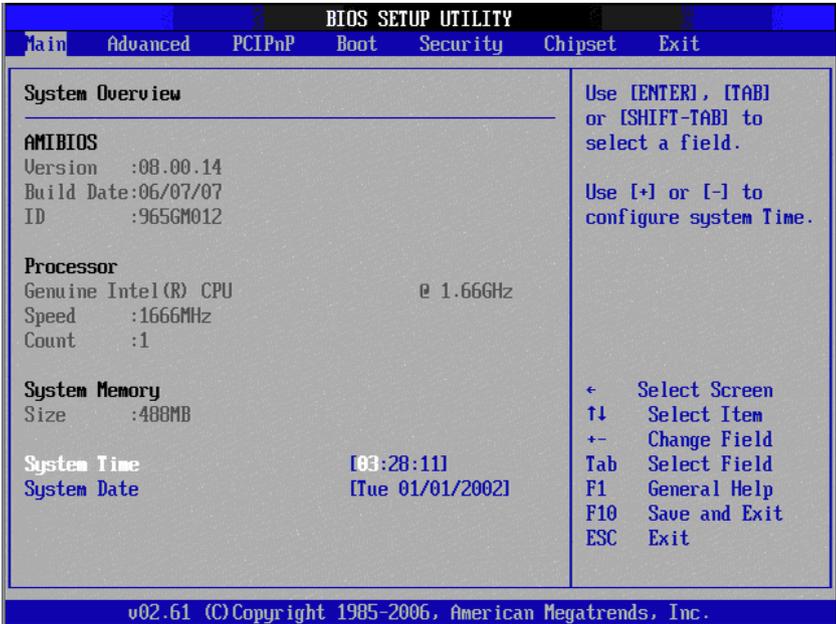
Figure 3.1: Setup program initial screen

AMI's BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed up CMOS so it retains the Setup information when the power is turned off.

3.1 Entering Setup

Turn on the computer and check for the "patch" code. If there is a number assigned to the patch code, it means that the BIOS supports your CPU. If there is no number assigned to the patch code, please contact an Advantech application engineer to obtain an up-to-date patch code file. This will ensure that your CPU's system status is valid. After ensuring that you have a number assigned to the patch code, press <DEL> and you will immediately be allowed to enter Setup.
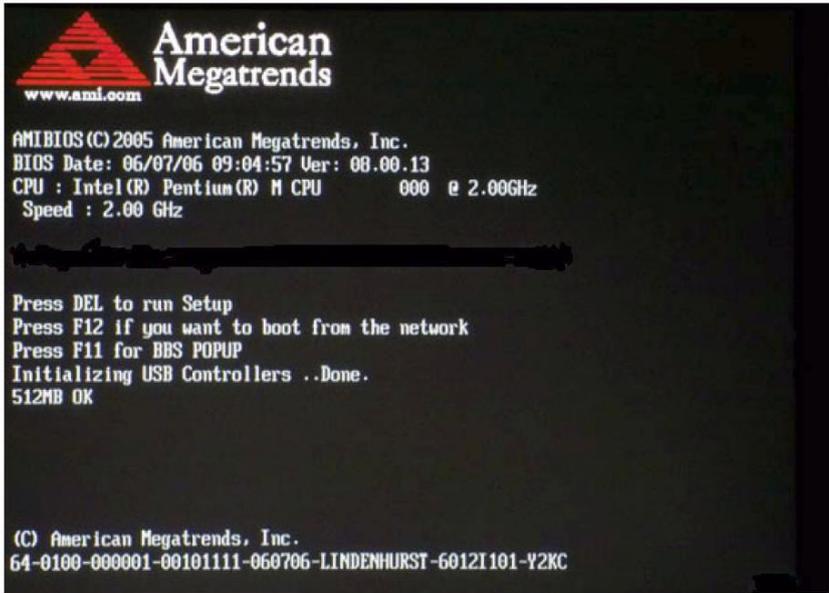
Figure 3.2: Press Del to run Setup

3.2 Main Setup

When you first enter the BIOS Setup Utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab. There are two Main Setup options. They are described in this section. The Main BIOS Setup screen is shown below.
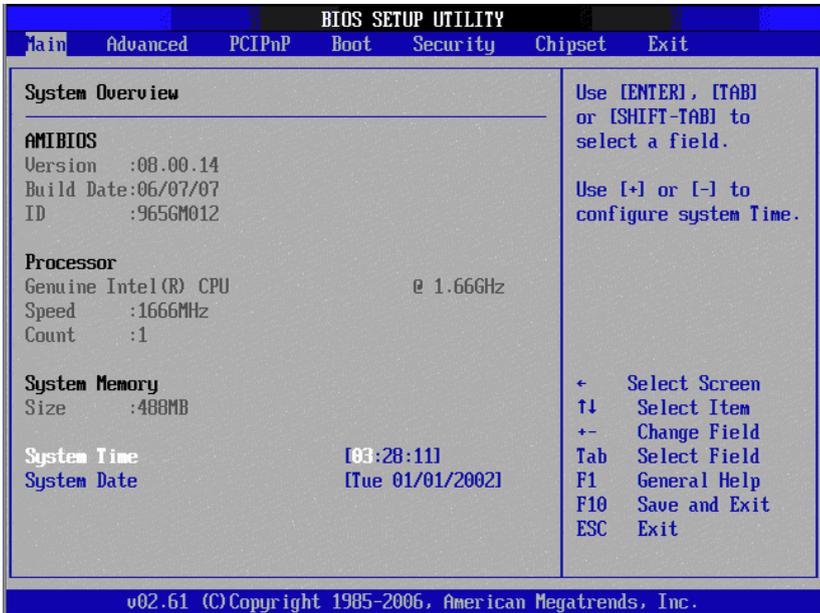
Figure 3.3: Main setup screen

The Main BIOS setup screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured; options in blue can be. The right frame displays the key legend.

Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it.

3.2.1 System time / System date

Use this option to change the system time and date. Highlight System Time or System Date using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in MM/DD/YY format. The time must be entered in HH:MM:SS format.

3.3 Advanced BIOS Features Setup

Select the Advanced tab from the AIMB-556 setup screen to enter the Advanced BIOS Setup screen. You can select any of the items in the left frame of the screen, such as CPU Configuration, to go to the sub menu for that item. You can display an Advanced BIOS Setup option by highlighting it using the <Arrow> keys. All Advanced BIOS Setup options are described in this section. The Advanced BIOS Setup screens is shown below. The sub menus are described on the following pages.

```
                          BIOS SETUP UTILITY
  Main    Advanced    PCIPnP    Boot    Security    Chipset    Exit

  Advanced Settings                                    Configure CPU.

  WARNING: Setting wrong values in below sections
           may cause system to malfunction.

  ▶ CPU Configuration
  ▶ IDE Configuration
  ▶ SuperIO Configuration
  ▶ Hardware Health Configuration
  ▶ APM Configuration
  ▶ Remote Access Configuration

                                                  ←    Select Screen
                                                  ↑↓   Select Item
                                                  Enter Go to Sub Screen
                                                  F1   General Help
                                                  F10  Save and Exit
                                                  ESC  Exit

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```

Figure 3.4: Advanced BIOS features setup screen

3.3.1 CPU Configuration
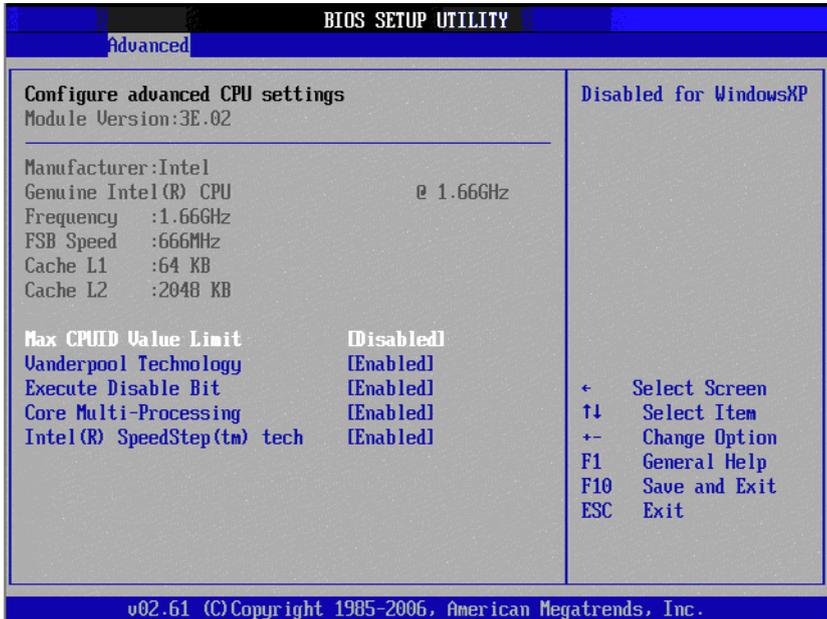
Figure 3.5: CPU Configuration Setting

Max CPUID Value Limit

This is disabled for Windows XP.

Vanderpool Technology

This feature is used to enable or disable the Intel Virtualization Technology (IVT) extension, which also goes by the development code name of Vanderpool. It allows multiple operating systems to run simultaneously on the same system. It does this by creating virtual machines, each running its own x86 operating system.

Execute Disable Bit

This item specifies the Execute Disable Bit Feature. The settings are Enabled and Disabled. The Optimal and Fail-Safe default setting is Enabled. If Disabled is selected, the BIOS forces the XD feature flag to always return to 0.

Core Multi-Processing

When this option disabled, BIOS disables one execution core.

Inter(R) speedstep(tm) tech

Intel SpeedStep Technology centralizes the control mechanism in the processor, eliminating the need for coordination with the chipset during the frequency/voltage configuration. This option is used to enable/disable the GV3 bit.

3.3.2 IDE Configuration

```
                    BIOS SETUP UTILITY
     Advanced

 IDE Configuration                                      Options

 ATA/IDE Configuration       [Enhanced]         Disabled
   Configure SATA as         [IDE]             Compatible
                                               Enhanced
 ▶ Primary IDE Master        : [Not Detected]
 ▶ Primary IDE Slave         : [Not Detected]
 ▶ Secondary IDE Master      : [Not Detected]
 ▶ Secondary IDE Slave       : [Not Detected]
 ▶ Third IDE Master          : [Not Detected]
 ▶ Third IDE Slave           : [Not Detected]
 ▶ Fourth IDE Master         : [Not Detected]
 ▶ Fourth IDE Slave          : [Not Detected]    ←    Select Screen
                                                ↑↓    Select Item
                                                +-    Change Option
 ▶ AHCI Configuration                           F1    General Help
                                                F10   Save and Exit
                                                ESC   Exit


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```

Figure 3.6: IDE Configuration

ATA/IDE Configuration

This can be configured as Disabled, Compatible or Enhanced.

Configure SATA as

This can be configured as IDE, RAID or AHCI. RAID will be activated by the ICH8M-E only.

Primary IDE Master

While entering setup, the BIOS automatically detects the presence of IDE devices. This displays the status of IDE device auto-detection.

Primary IDE Slave

While entering setup, the BIOS automatically detects the presence of IDE devices. This displays the status of IDE device auto-detection.

Secondary/Third/Fourth IDE Master

While entering setup, the BIOS automatically detects the presence of IDE devices. This displays the status of IDE device auto-detection.

Secondary/Third/Fourth IDE Slave

While entering setup, the BIOS automatically detects the presence of IDE devices. This displays the status of IDE device auto-detection.

AHCI Configuration

AHCI is a new interface specification that allows the SATA controller driver to support advanced features. While entering setup, BIOS auto detects the presence of AHCI devices. This displays the status of auto detection of AHCI devices.

3.3.3 Super I/O Configuration
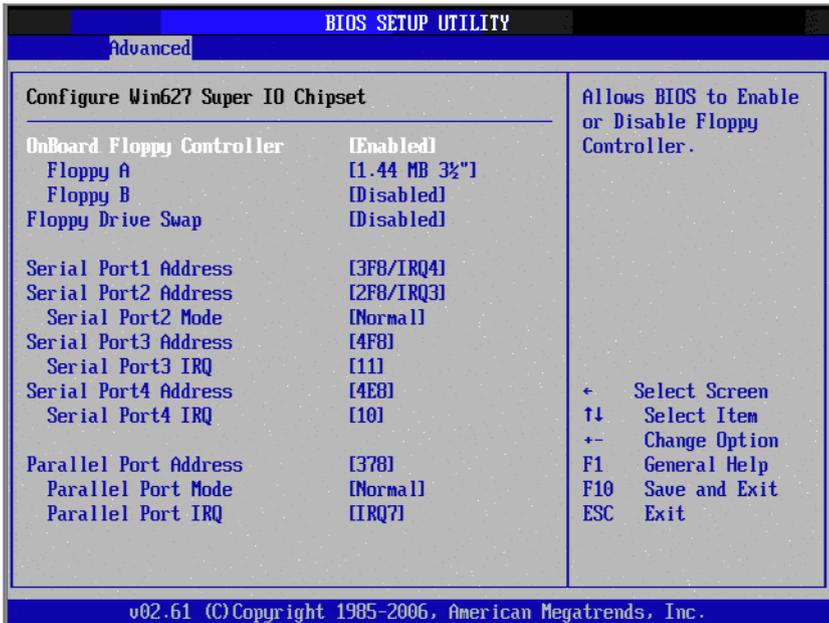
Figure 3.7: Super I/O Configuration

OnBoard Floppy Controller

This option allows the BIOS to Enable or Disable the floppy controller.

Floppy A

Select the type of floppy drive connected to the system. We suggest you disable the floppy while installing Windows Vista without a floppy drive.

Floppy B

Select the type of floppy drive connected to the system.

Serial Port1 Address

This option configures serial port 1 base addresses.

Serial Port2 Address

This option configures serial port 2 base addresses.

Serial port2 Mode

This option configures serial port 2 mode.

Serial Port 3/4 Address

This option configures serial port 3/4 base addresses.

Serial Port 3/4 IRQ

This option configures serial port 3/4 base IRQ.

Parallel Port Address

This configures parallel port base addresses. The following options are also available:

• Parallel Port Mode

• Parallel Port IRQ

3.3.4 Hardware health function

```
                    BIOS SETUP UTILITY
     Advanced

Hardware Health Configuration                    Enables Hardware
                                                 Health Monitoring
H/W Health Function          [Enabled]           Device.
Chassis Intrusion            [Disabled]

Hardware Health Event Monitoring

System Temperature           :32°C/89°F
CPU Temperature              :32°C/89°F

Fan1 Speed                   :6026 RPM

VcoreA                       :0.967 V
+3.3Vin                      :3.451 V           ←    Select Screen
+5Vin                        :5.197 V           ↑↓   Select Item
+12Vin                       :12.220 V          +-   Change Option
+5VSB                        :5.189 V           F1   General Help
VBAT                         :3.370 V           F10  Save and Exit
                                                ESC  Exit
CPU Warning Temperature      [Disabled]

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```

Figure 3.8: Hardware health configuration.

Hardware health function

Enable/Disable the onboard hardware monitor controller. If this option is enabled, the BIOS and OBS utility can get the system board's health information from hardware monitor controller.

Chassis Intrusion

Enable/Disable the Chassis Intrusion monitoring function. When the case is opened, the buzzer beeps.

Hardware health event monitoring

When the Hardware Health Function is enabled, the BIOS will display hardware health information.

CPU warning temperature

Use this to set the CPU warning temperature threshold. When the system reaches the warning temperature, the buzzer will beep.

3.3.5 APM Configuration

```
                        BIOS SETUP UTILITY
       Advanced

 APM Configuration                                  Enable or disable
 ─────────────────────────────────────────          APM.
 Power Management/APM            [Enabled]
 Video Power Down Mode           [Suspend]
 Hard Disk Power Down Mode       [Suspend]
 Suspend Time Out                [Disabled]
 Throttle Slow Clock Ratio       [50%]
 Keyboard & PS/2 Mouse           [MONITOR]

 Power Button Mode               [On/Off]

 Advanced Resume Event Controls
   Resume On Ring                [Disabled]        ←     Select Screen
   Resume On LAN                 [Disabled]        ↑↓    Select Item
   Resume On RTC Alarm           [Disabled]        +-    Change Option
                                                   F1    General Help
                                                   F10   Save and Exit
                                                   ESC   Exit


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```

Figure 3.9: APM Configuration

Power Management/APM

Enable or disable APM.

Video Power Down Mode

Set the Video Power Down mode to the Suspend or Standby mode.

Hard Disk Power Down Mode

Set Power Down Hard Disk mode to Suspend or Standby mode.

Suspend Time Out

Enter Suspend after the specified time.

Throttle Slow Clock Ratio

Select the duty cycle in throttle mode.

Keyboard & PS/2 Mouse

When you set this to Monitor, you can monitor the PS/2 keyboard and mouse ports.

Power Button Mode

Power on, off or enter suspend mode when the power button is pressed. The following options are also available.

- Resume On Ring: Disable/Enable RI wake event.
- Resume On LAN: Disable/Enable LAN PME wake event.
- Resume On RTC Alarm: Disable/Enable RTC wake event.
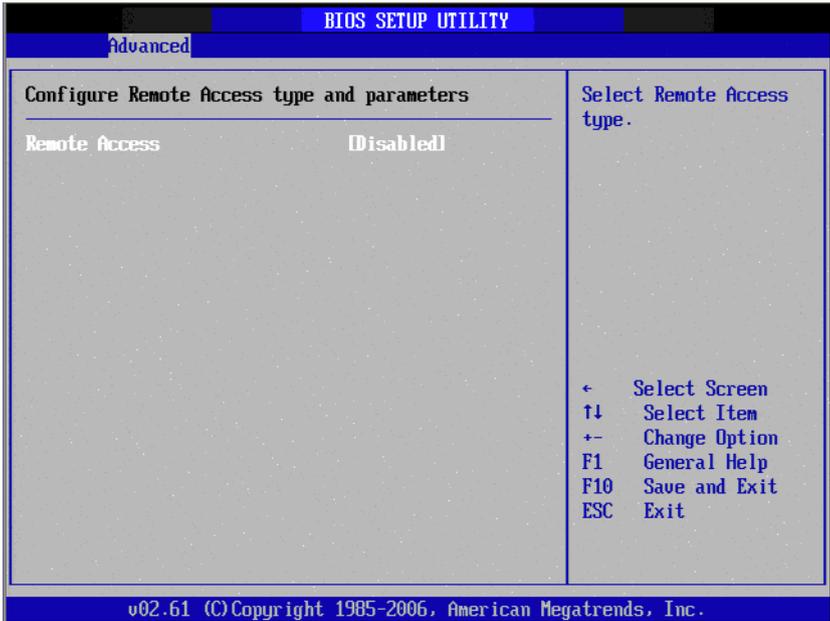
Figure 3.10: Configure Remote Access type and parameters

Remote Access

You can disable or enable the BIOS remote access feature here. This function is used to redirect the console from the serial port. The Optimal and Fail-Safe default setting is Disabled.

3.4 PCI/PNP Setup

Select the PCI/PnP tab from the AIMB-556 setup screen to enter the Plug and Play BIOS Setup screen. You can display a Plug and Play BIOS Setup option by highlighting it using the <Arrow> keys. All Plug and Play BIOS Setup options are described in this section. The Plug and Play BIOS Setup screen is shown below.

```
                         BIOS SETUP UTILITY
  Main    Advanced   PCIPnP    Boot    Security   Chipset     Exit

  Advanced PCI/PnP Settings                        ▲   Clear NVRAM during
                                                       System Boot.
  WARNING: Setting wrong values in below sections
           may cause system to malfunction.

  Clear NVRAM                    [No]
  Plug & Play O/S                [No]
  PCI Latency Timer              [64]
  Allocate IRQ to PCI VGA        [Yes]
  Palette Snooping               [Disabled]
  PCI IDE BusMaster              [Enabled]
  OffBoard PCI/ISA IDE Card      [Auto]
                                                       ←    Select Screen
  IRQ3                           [Available]           ↑↓   Select Item
  IRQ4                           [Available]           +-   Change Option
  IRQ5                           [Available]           F1   General Help
  IRQ7                           [Available]           F10  Save and Exit
  IRQ9                           [Available]           ESC  Exit
  IRQ10                          [Available]
  IRQ11                          [Available]       ▼

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```

Figure 3.11: PCI/PNP Setup (top)

```
                         BIOS SETUP UTILITY
  Main    Advanced    PCIPnP    Boot    Security    Chipset    Exit

  OffBoard PCI/ISA IDE Card      [Auto]          ▲   Available: Specified
                                                     IRQ is available to be
  IRQ3                           [Available]         used by PCI/PnP
  IRQ4                           [Available]         devices.
  IRQ5                           [Available]         Reserved: Specified
  IRQ7                           [Available]         IRQ is reserved for
  IRQ9                           [Available]         use by Legacy ISA
  IRQ10                          [Available]         devices.
  IRQ11                          [Available]
  IRQ14                          [Available]
  IRQ15                          [Available]

  DMA Channel 0                  [Available]      ←    Select Screen
  DMA Channel 1                  [Available]      ↑↓   Select Item
  DMA Channel 3                  [Available]      +-   Change Option
  DMA Channel 5                  [Available]      F1   General Help
  DMA Channel 6                  [Available]      F10  Save and Exit
  DMA Channel 7                  [Available]      ESC  Exit

  Reserved Memory Size           [Disabled]       ▼

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```

Figure 3.12: PCI/PNP Setup (bottom)

3.4.1 Clear NVRAM
Set this value to force the BIOS to clear the Non-Volatile Random Access
Memory (NVRAM). The Optimal and Fail-Safe default setting is No.

3.4.2 Plug and Play O/S
Set this value to allow the system to modify the settings for Plug and Play
operating system support. The Optimal and Fail-Safe default setting is
No.

3.4.3 PCI Latency Timer
Use this to adjust the PCI Latency Timer. This option sets the latency of
all PCI devices on the PCI bus. The Optimal and Fail-Safe default setting
is 64.

3.4.4 Allocate IRQ to PCI VGA
Set this value to allow or stop the system from giving the VGA adapter
card an interrupt address. The Optimal and Fail-Safe default setting is
Yes.

3.4.5 Palette Snooping

Set this value to allow the system to modify the Palette Snooping settings. The Optimal and Fail-Safe default setting is Disabled.

3.4.6 PCI IDE BusMaster

Set this value to allow or prevent the use of PCI IDE Busmastering. The Optimal and Fail-Safe default setting is Disabled.

3.4.7 Off Board PCI/ISA IDE Card

Set this value to allow an add-on PCI/ISA IDE card to be selected. The Optimal and Fail-Safe default setting is Auto.

3.4.8 IRQ

IRQ[3,4,5,7,9,10,11,14,15]:

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

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

DMA Channel [0,1,3,5,6,7]:

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

- **Reserved**: Specified DMA is reserved for use by legacy ISA devices.

- **Reserved Memory Size**: Size of memory block to reserve for legacy ISA devices.

3.5 Boot Setup Utility
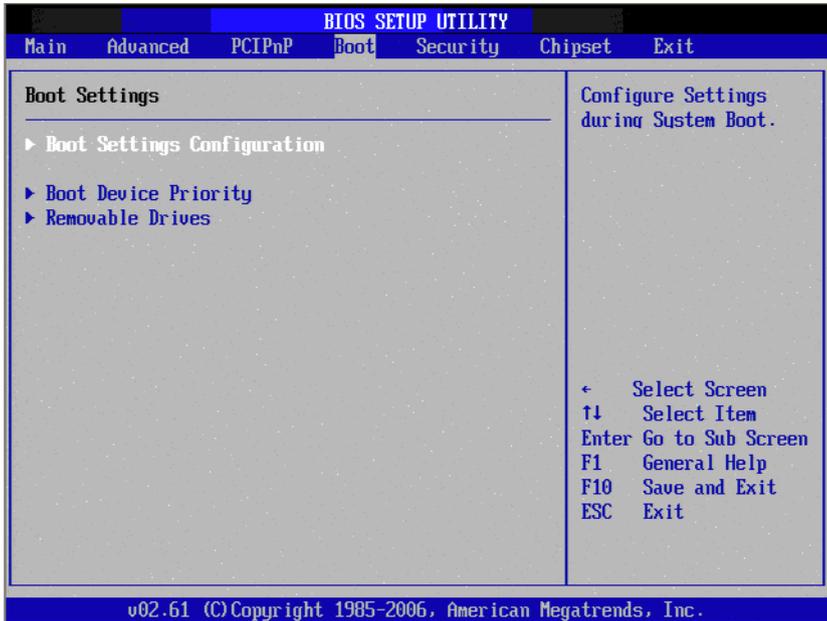
Figure 3.13: Boot Setup Utility
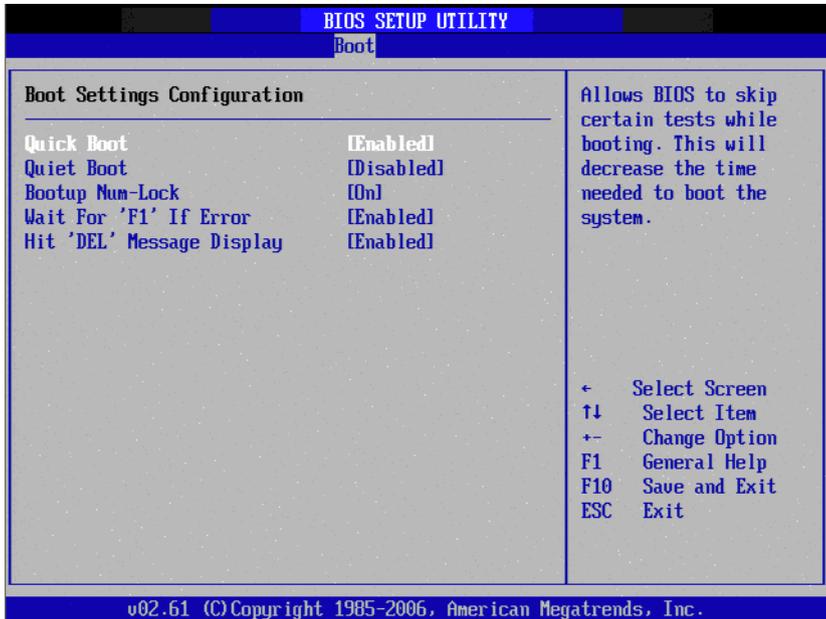
Figure 3.14: Boot Setting Configuration

The following options are available:

- **Quick Boot**: Allows the BIOS to skip certain tests while booting. This will decrease the time needed to boot the system.

- **Quiet Boot**: If this option is set to Disabled, the BIOS displays normal POST messages. If Enabled, an OEM Logo is shown instead of POST messages.

- **Bootup Num-Lock**: Select the Power-on state for Numlock.

- **Wait For 'F1' If Error**: Wait for the F1 key to be pressed if an error occurs.

- **Hit 'DEL' Message Display**: Displays "Press DEL to run Setup" in POST.

3.6 Security Setup
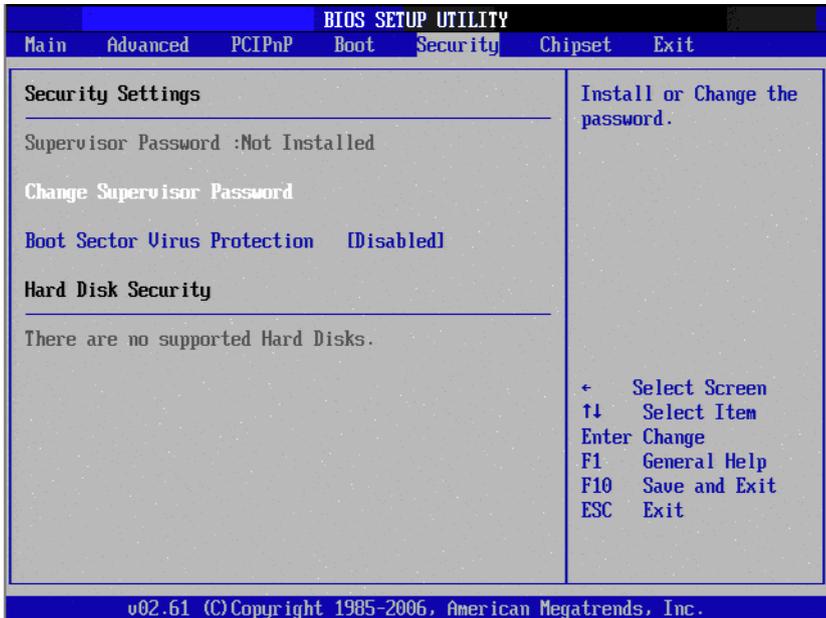
Figure 3.15: Password Configuration

Select Security Setup from the AIMB-556 Setup main BIOS setup menu. All Security Setup options, such as password protection and virus protection are described in this section. To access the sub menu for the following items, select the item and press <Enter>:

- **Change Supervisor Password**
- **Boot sector Virus protection**: The boot sector virus protection will warn if any program tries to write to the boot sector.

3.7 Advanced Chipset Settings
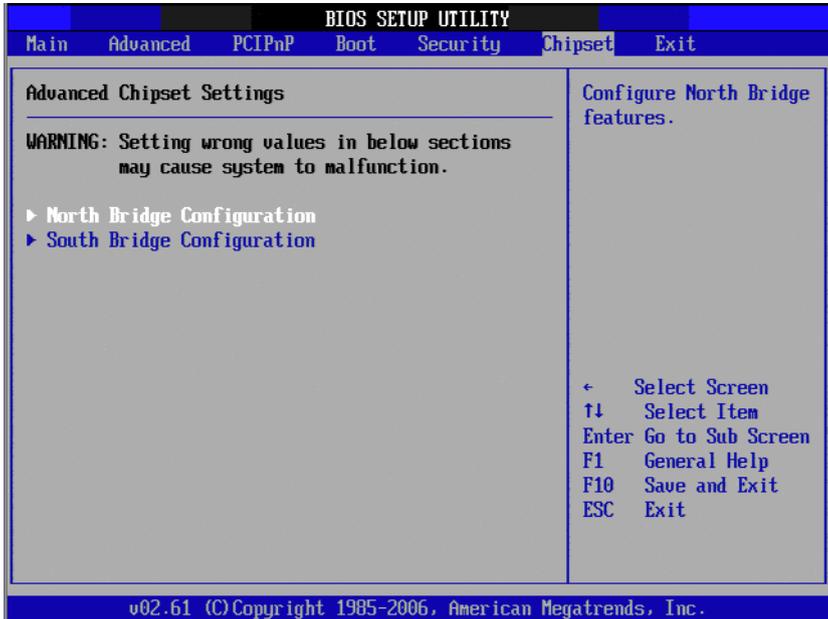
Figure 3.16: Advanced Chipset Settings

```
                        BIOS SETUP UTILITY
                                          Chipset

 North Bridge Chipset Configuration                Select which graphics
                                                   controller to use as
 Boots Graphic Adapter Priority [PEG/PCI]          the primary boot
 Internal Graphics Mode Select  [Enabled, 8MB]     device.

 PEG Port Configuration
   PEG Port                       [Auto]
   PEG Force x1                   [Disabled]

 ▶ Video Function Configuration

                                              ←    Select Screen
                                              ↑↓   Select Item
                                              +-   Change Option
                                              F1   General Help
                                              F10  Save and Exit
                                              ESC  Exit


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```

Figure 3.17: North Bridge Configuration

The following options are available:

- **Boots Graphic Adapter Priority**: Select which graphics controller to use as the primary boot device.

- **Internal Graphics Mode Select**: Select the amount of system memory used by the Internal graphics device.

- **PEG Port**: Auto or Disabled.

- **PEG Force x1**: Enabled or Disabled.
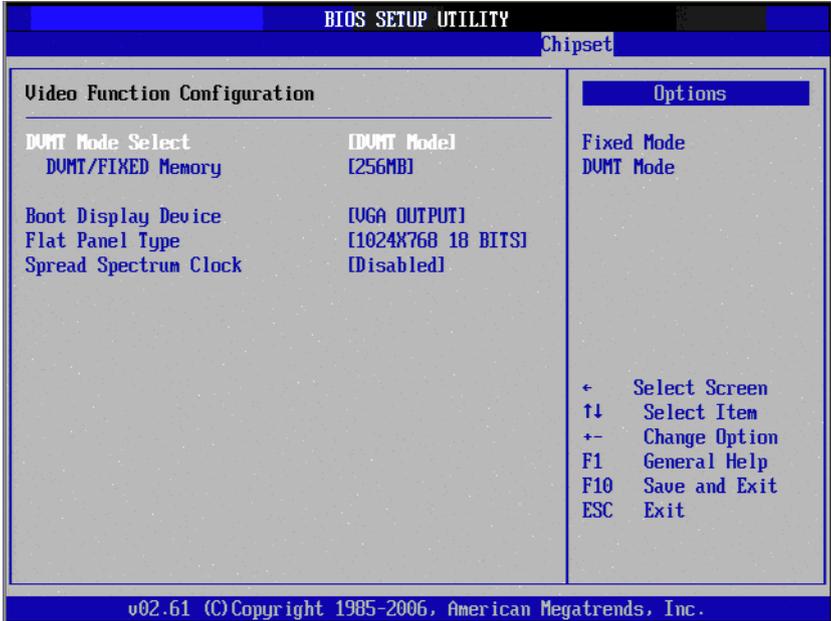
Figure 3.18: Video function configuration

DVMT model select

Displays the active system memory mode.

DVMT / FIXED Memory

Specify the amount of DVMT / FIXED system memory to allocate for video memory.

Boot display device

Select boot display device at post stage.

Flat panel type

Select panel resolution

Spread spectrum clock

Enable/Disable spread spectrum

```
                          BIOS SETUP UTILITY
                                              Chipset

  South Bridge Chipset Configuration                    Options

  USB Functions              [8 USB Ports]     Disabled
  USB 2.0 Controller         [Enabled]         2 USB Ports
  GbE Controller             [Enabled]         4 USB Ports
    GbE LAN Boot             [Disabled]        6 USB Ports
  LAN2 Controller            [Enabled]         8 USB Ports
  HDA Controller             [Enabled]
  SMBUS Controller           [Enabled]




                                             ←    Select Screen
                                             ↑↓   Select Item
                                             +-   Change Option
                                             F1   General Help
                                             F10  Save and Exit
                                             ESC  Exit


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```

Figure 3.19: South Bridge Configuration

The following options are available:

- **USB Functions**: Disabled, 2 USB Ports, 4 USB Ports, 6 USB Ports or 8 USB Ports.

- **USB 2.0 Controller**: Enables or disables the USB 2.0 controller.

- **GbE Controller**: Enables or disables the GbE controller.

- **GbE LAN boot**: Enables or disables GbE LAN boot.

- **LAN2 Controller**: Enables or disables the LAN2 controller.

- **HDA Controller**: Enables or disables the HDA controller.

- **SMBUS Controller**: Enables or disables the SMBUS controller.

3.8 Exit Option
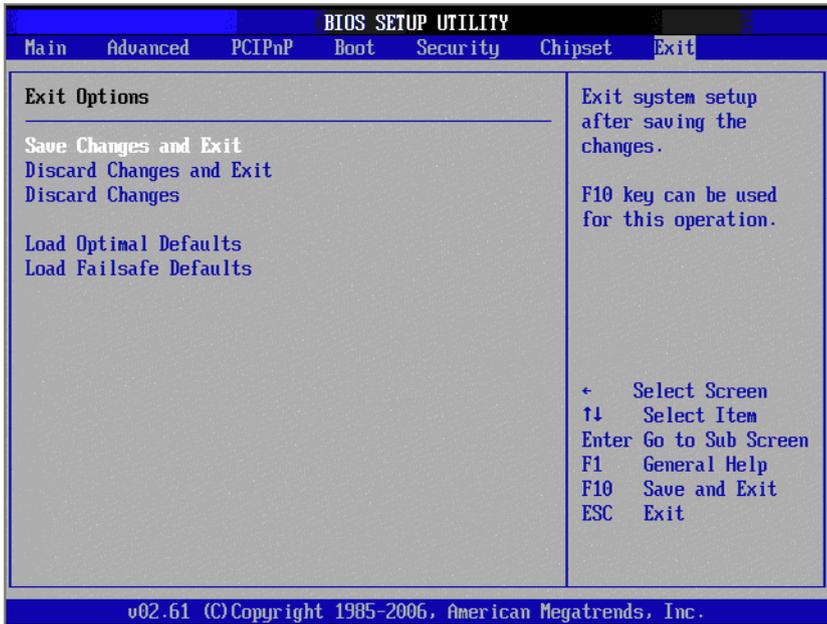
Figure 3.20: Exit Option

3.8.1 Save Changes and Exit

When you have completed system configuration, select this option to save your changes, exit BIOS setup and reboot the computer so the new system configuration parameters can take effect.

1. Select Exit Saving Changes from the Exit menu and press <Enter>. The following message appears:
    Save Configuration Changes and Exit Now?
    [Ok] [Cancel]

2. Select Ok or cancel.

3.8.2 Discard Changes and Exit

Select this option to quit Setup without making any permanent changes to the system configuration.

1.   Select Exit Discarding Changes from the Exit menu and press <Enter>. The following message appears:
     Discard Changes and Exit Setup Now?
     [Ok] [Cancel]

2.   Select Ok to discard changes and exit.
     Discard Changes

3.   Select Discard Changes from the Exit menu and press <Enter>.

3.8.3 Load Optimal Defaults

The AIMB-556 automatically configures all setup items to optimal settings when you select this option. Optimal Defaults are designed for maximum system performance, but may not work best for all computer applications. In particular, do not use the Optimal Defaults if your computer is experiencing system configuration problems. Select Load Optimal Defaults from the Exit menu and press <Enter>.

3.8.4 Load Fail-Safe Defaults

The AIMB-556 automatically configures all setup options to fail-safe settings when you select this option. Fail-Safe Defaults are designed for maximum system stability, but not maximum performance. Select Fail-Safe Defaults if your computer is experiencing system configuration problems.

1.   Select Load Fail-Safe Defaults from the Exit menu and press <Enter>. The following message appears:
     Load Fail-Safe Defaults?
     [OK] [Cancel]

2.   Select OK to load Fail-Safe defaults.

Chipset Software
Installation Utility

Chapter 4 Chipset Software Install Utility

4.1 Before you begin

To facilitate the installation of the enhanced display drivers and utility software, read the instructions in this chapter carefully. The drivers for the AIMB-556 are located on the software installation CD. The auto-run function of the driver CD will guide and link you to the utilities and drivers under a Windows system. The Intel Chipset Software Installation Utility is not required on systems running Windows NT 4.0. Updates are provided via Service Packs from Microsoft.

> *Note:*   *The files on the software installation CD are compressed. Do not attempt to install the drivers by copying the files manually. You must use the supplied setup program to install the drivers.*

Before you begin, it is important to note that most display drivers need to have the relevant software application already installed in the system prior to installing the enhanced display drivers. In addition, many of the installation procedures assume that you are familiar with both the relevant software applications and operating system commands. Review the relevant operating system commands and the pertinent sections of your application software's user manual before performing the installation.

4.2 Introduction

The Intel Chipset Software Installation (CSI) utility installs the Windows INF files that outline to the operating system how the chipset components will be configured. This is needed for the proper functioning of the following features:

• Core PCI PnP services

• IDE Ultra ATA 100/66/33 and Serial ATA interface support

• USB 1.1/2.0 support (USB 2.0 driver needs to be installed separately for Win98)

• Identification of Intel chipset components in the Device Manager

• Integrates superior video features. These include filtered sealing of 720 pixel DVD content, and MPEG-2 motion compensation for software DVD playback.

> **Note:** This utility has to be installed before installing any other drivers. It is used for the following operating systems:
>
> • Windows 2000
>
> • Windows XP
>
> • Windows Vista

4.3 Windows XP Driver Setup

1. Insert the driver CD into your system's CD-ROM drive. In a few seconds, the software installation main menu appears. Move the mouse cursor over the "Install" button under the "INF Driver" heading. A message pops up telling you to install the INF Drvier before other device drivers, as shown in the following figure. Click on this button. To take Windows XP as example.

2. Click "Next" when you see the following message.
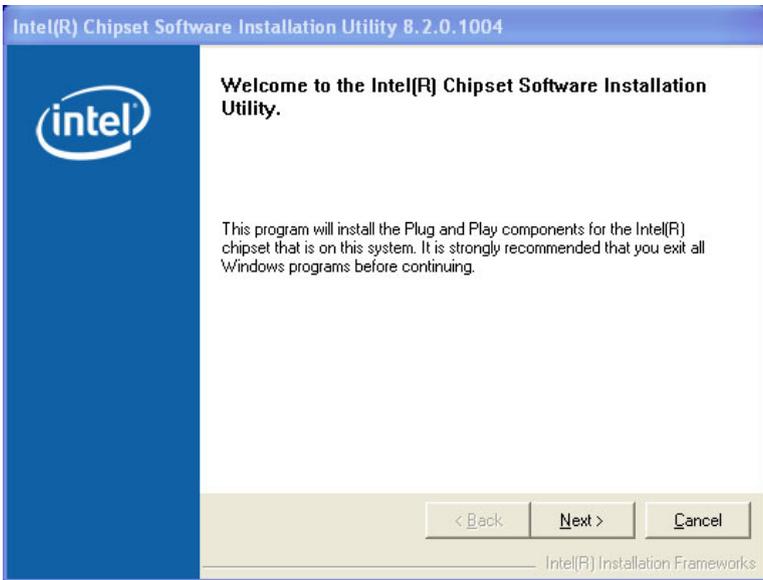
3. Click "Next" when you see the following message.
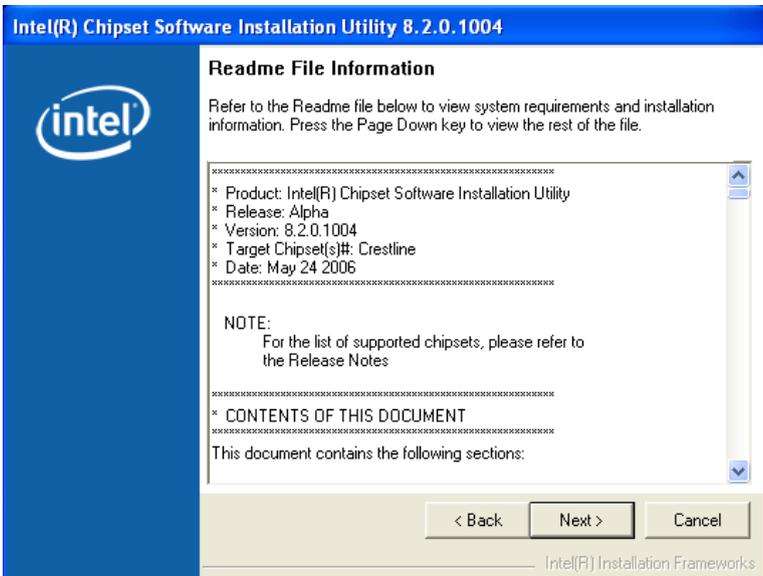
4.   When the following message appears, click "Finish" to complete the installation and restart Windows.
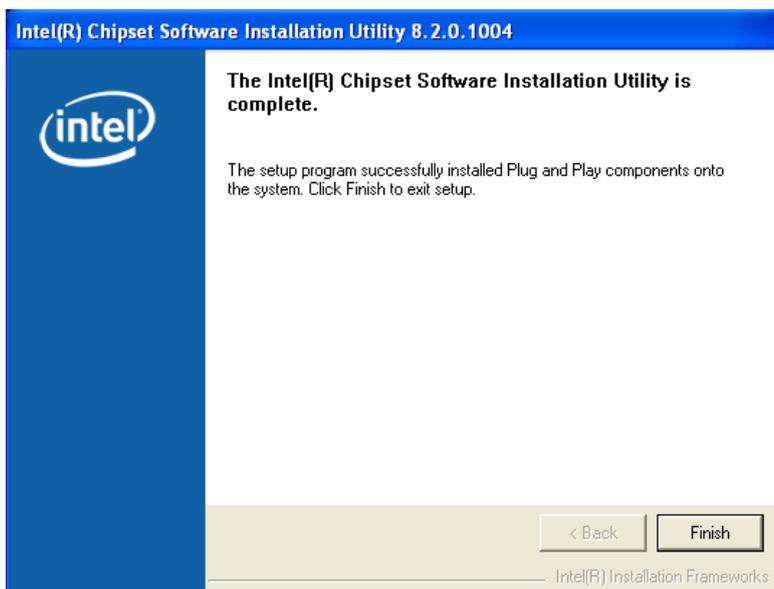
VGA Setup

Chapter 5 VGA Setup

5.1 Introduction

The Intel GME965 integrated graphics controller provides an analog display port, an LVDS interface and a TV-out interface. You need to install the VGA driver to enable the function.

The Intel GME965 integrated graphics controller includes the following features.

- **Intel Graphics Media Accelerator X3100**: Incorporating the latest Microsoft DirectX 10 support capabilities, the Intel Graphics Media Accelerator X3100 allows software developers to create lifelike environments and characters. Dual independent display, enhanced display modes for widescreen flat panels, and optimized 3D support deliver an intense and realistic visual experience without requiring a separate graphics card.

- **Intel Dynamic Video Memory Technology (DVMT3.0)**: AIMB-556 handles diverse applications by providing the maximum availability of system memory for general computer use, while supplying additional graphics memory when a 3D-intensive application requests it. The amount of video memory is dependent upon the amount of pre-allocated memory set for your system plus the amount of memory allocated by Dynamic Video Memory Technology (DVMT).

- **LVDS Interface**: The AIMB-556 provides a 24-bit dual channel LVDS interface that supports up to WUXGA (1600 x 1200) panel resolution.

- **TV-Out**: The AIMB-556 supports PAL and NTSC TV systems.

5.2 Windows XP Driver Setup

> ***Note:*** *Before installing this driver, make sure the INF Driver has been installed on your system. See Chapter 4 for information on installing the INF Driver.*

Insert the driver CD into your system's CD-ROM drive. In a few seconds, the software installation main menu appears, as shown in the following figure.

The following installation procedure is for Windows XP.

1. Click "Next" to continue the installation.
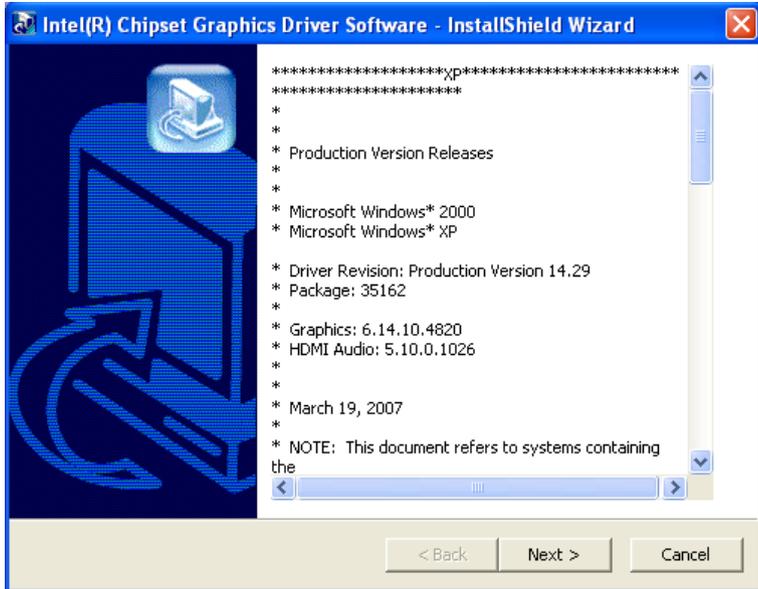
2. You will see a welcome window. Click "Yes" to continue the installation.

3.   Click "Finish" to complete the installation and restart the computer now or later.

Intel(R) Graphics Media Accelerator Driver

The setup of the Intel(R) Graphics Media Accelerator Driver is complete.

You must restart this computer for the changes to take effect. Would you like to restart the computer now?

⦿ Yes, I want to restart this computer now.

○ No, I will restart this computer later.

Click Finish, then remove any installation media from the drives.

Finish

Intel(R) Installation Framework

***Notice:** For the **first** bootup after installation of a VGA driver for Windows Vista 32- or 64-bit OS, there may be around 30 to 60 seconds with black screen while the VGA output is detected. Subsequent bootups do not experience this delay.*

Onboard Security Setup

Chapter 6 Onboard Security Setup

6.1 Introduction

The AIMB-556's hardware monitor is based on the Winbond W83627HG chip. Onboard security (OBS) functions monitor key hardware to help you maintain system stability and durability. The AIMB-556 can monitor five sets of positive system voltages, two sets of system negative voltages, CPU fan speed and CPU temperature. The positive system voltage sets that can be monitored include:

- **CPU core voltage**: 1.3 ~ 3.3 V, according to Intel specifications
- **Transmission voltage from CPU to chipset**: typically 1.8 V
- **Chipset voltage**: typically 3.3 V
- **Main voltage**: +5 V, +12 V

6.2 Windows XP Driver Setup

1. Insert the driver CD into your system's CD-ROM drive. In a few seconds, the software installation main menu appears, as shown in the following figure. Click on the "Install" button under the "OBS Drivers" heading.

2.   Click "Next" when you see the following message.
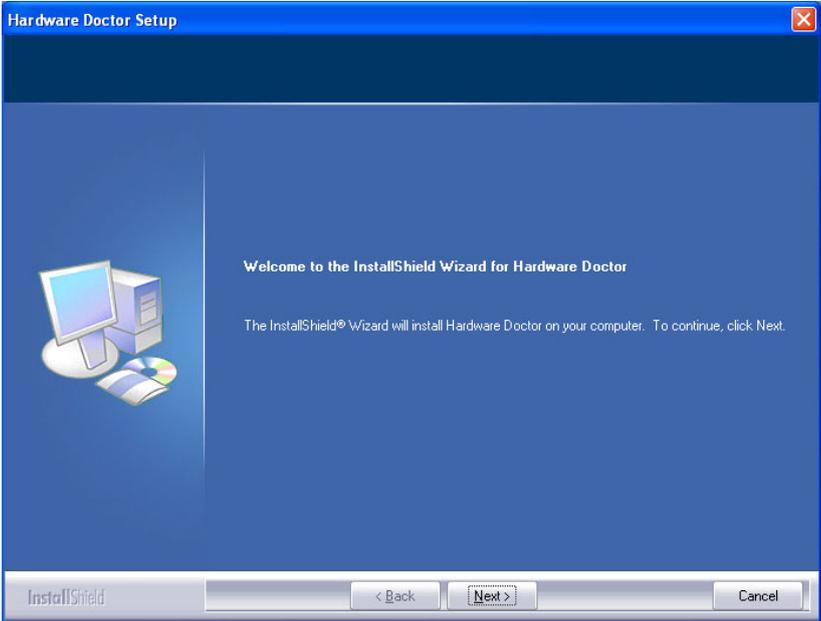
3.   Click "Next" when you see the following message.
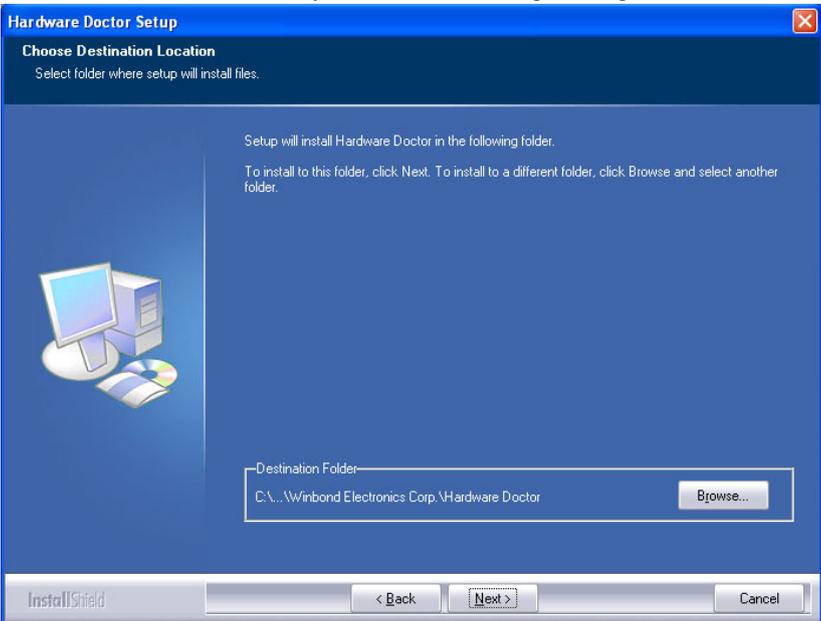
4. Click "Next" when you see the following message.
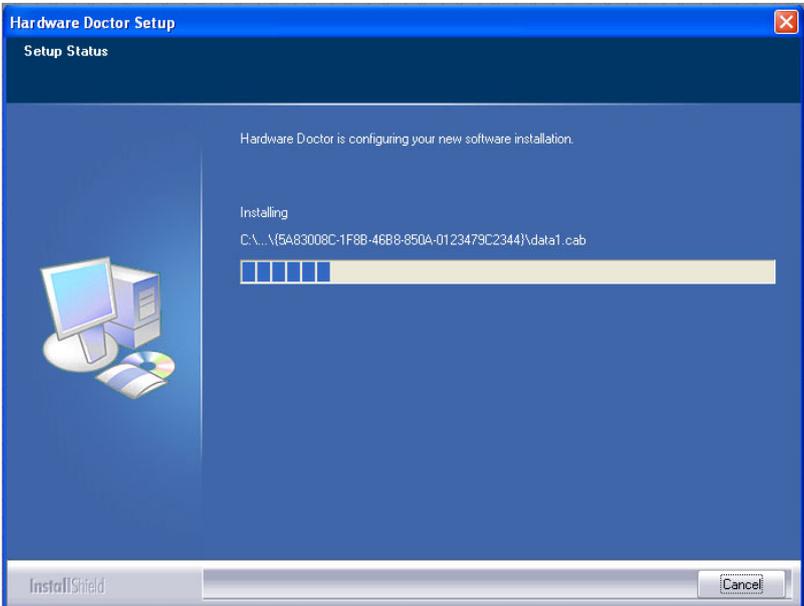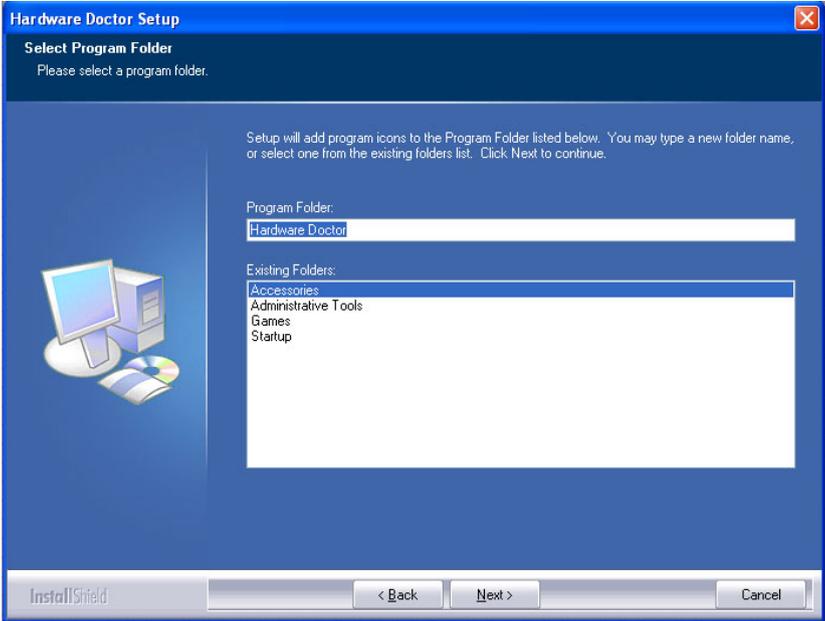
5.   Click "Finish" when you see the following message.
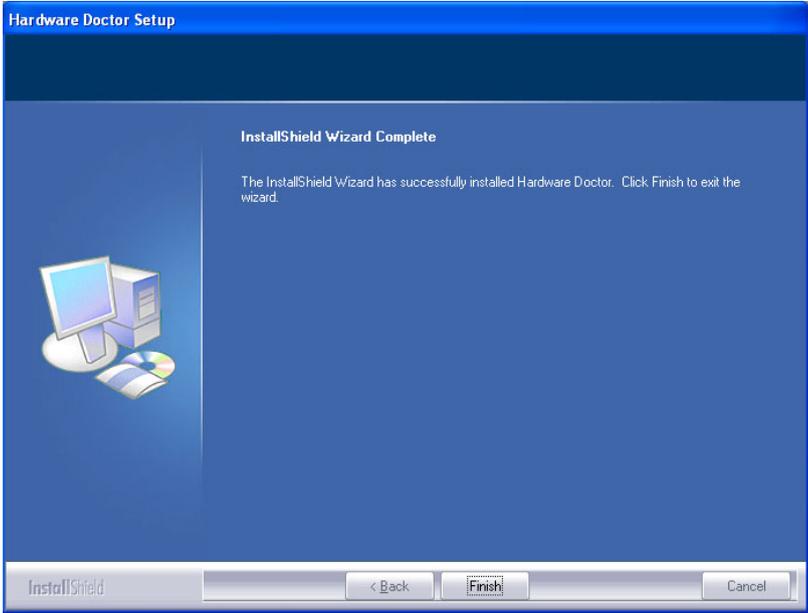
6.   Click "Finish" when you see the following message.
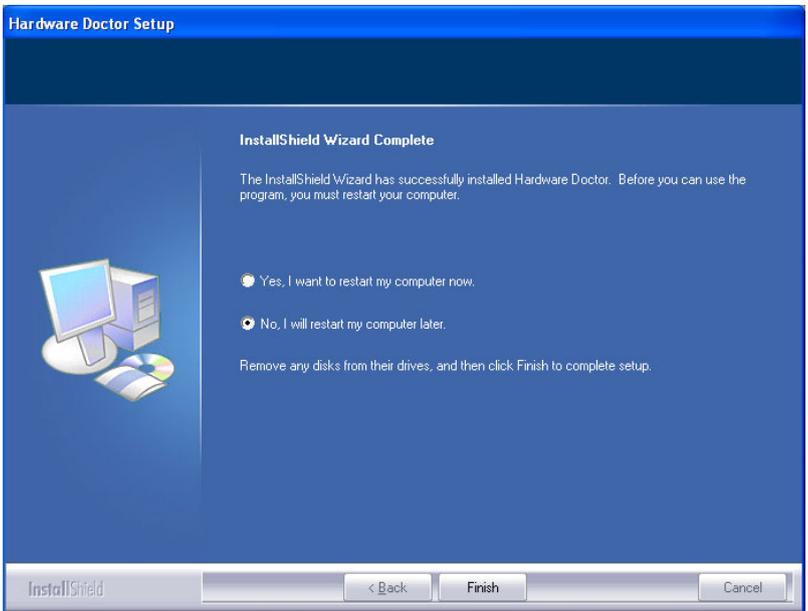
6.3 Using the OBS Hardware Doctor Utility

After completing the setup, all the OBS functions are permanently enabled. When a monitored reading exceeds safe limits, a warning message will be displayed and an error beep will sound to attract your attention.

OBS Hardware Doctor will show an icon on the right side of the bottom window bar. This icon is the "Terminate and Stay Resident" (TSR) icon. It will permanently remain in the bottom window bar, and will activate warning signals when triggered by the onboard security system.

You can view or change values for various OBS settings by following these steps.

From the Windows desktop, click on "Start" and select "Programs", select "Winbond HWDoctor" and click "HWDOCTOR". It is recommended that you load the default values for all the OBS settings. However, if desired, you can establish new conditions for voltage, fan speed, and temperature.

LAN Configuration

Chapter 7 LAN Configuration

7.1 Introduction

The AIMB-556 has a single/dual Gigabit Ethernet LAN with a dedicated PCI Express x1 connection (Intel 82573) that offers bandwidth of up to 500 MB/sec. This eliminates network data flow bottlenecks for Gigabit Ethernet.

7.2 Features

- 10/100/100Base-T Ethernet Controller
- 10/100/1000Base-T triple-speed MAC
- High-speed RISC core with 24-KB cache
- On-chip voltage regulation
- Wake-on-LAN (WOL) support
- PCI Express x1 host interface

7.3 Installation

> *Note:* *Before installing the LAN drivers, make sure the INF Driver has been installed on your system. See Chapter 4 for information on installing the INF Driver.*

The AIMB-556 Gigabit integrated controller supports all major network operating systems. However, the installation procedure varies with different operating systems. In the following sections, refer to the one that provides the driver setup procedure for the operating system you are using.

> *Note:* *The correct sequence of onboard LAN controllers (Lan1 & Lan2) is shown in the "Onboard Device" BIOS view.*

7.4 Win XP Driver Setup

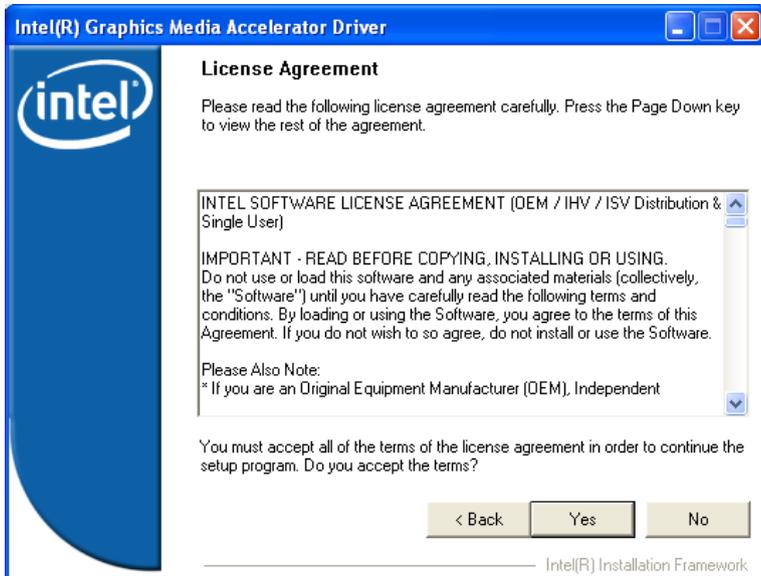1. Insert the driver CD into your system's CD-ROM drive. In a few seconds, the software installation main menu appears, as shown in the following figure. Under LAN drivers, click the button that is labelled with your operating system.

2. Select "I accept the terms in the license agreement" and click "Next" to continue.

3. Click "Next" to continue.
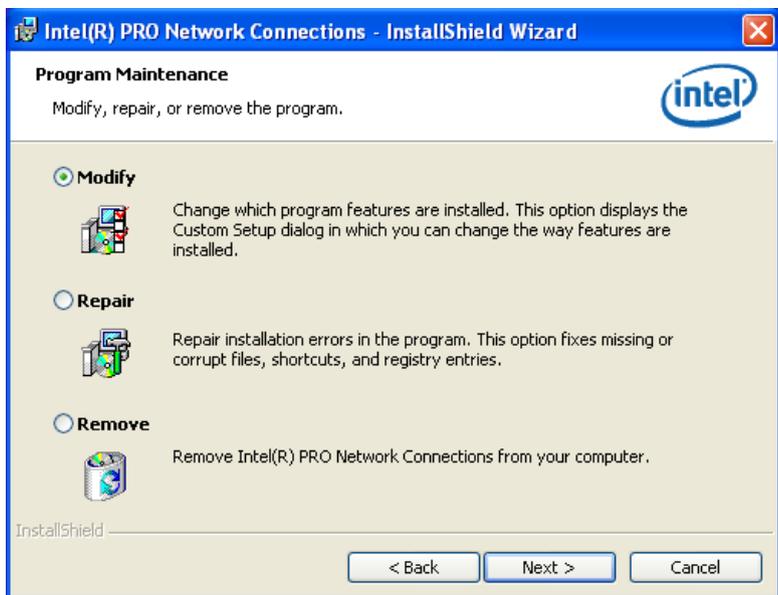
4. Click "Install Software" to start the installation procedure.

5. The driver will be installed automatically and the LAN function will be enabled after the installation.

A

Programming the
Watchdog Timer
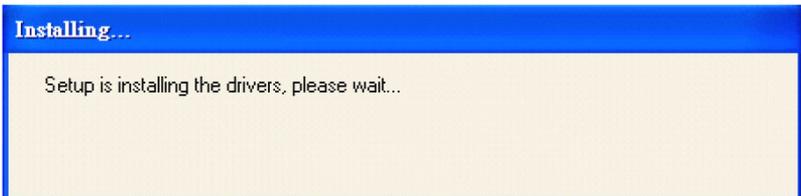
Appendix A Programming the Watchdog Timer

A.1 Introduction

The AIMB-556's watchdog timer can be used to monitor system software operation and take corrective action if the software fails to function within the programmed period. This section describes the operation of the watchdog timer and how to program it.

A.1.1 Watchdog timer overview

The watchdog timer is built in to the W83627HG super I/O controller. It provides the following user programmable functions:

- Can be enabled and disabled by user's program
- Timer can be set from 1 to 255 seconds or 1 to 255 minutes
- Generates an interrupt or reset signal if the software fails to reset the timer before time-out

A.1.2 Programming the Watchdog Timer

The I/O port address of the watchdog timer is 2E (hex) and 2F (hex). 2E (hex) is the address port. 2F (hex) is the data port. You must first write an address value into address port 2E (hex), then write/read data to/from the assigned register through data port 2F (hex).

```
┌─────────────────────┐
│                     │
│   Unlock W83627HG   │
│                     │
└─────────────────────┘
          │
          ▼
┌─────────────────────┐
│                     │
│  Select register of │
│   watchdog timer    │
│                     │
└─────────────────────┘
          │
          ▼
┌─────────────────────┐
│                     │
│ Enable the function of│
│  the watchdog timer │
│                     │
└─────────────────────┘
          │
          ▼
┌─────────────────────┐
│                     │
│  Use the function of│
│  the watchdog timer │
│                     │
└─────────────────────┘
          │
          ▼
┌─────────────────────┐
│                     │
│   Lock W83627HG     │
│                     │
└─────────────────────┘
```
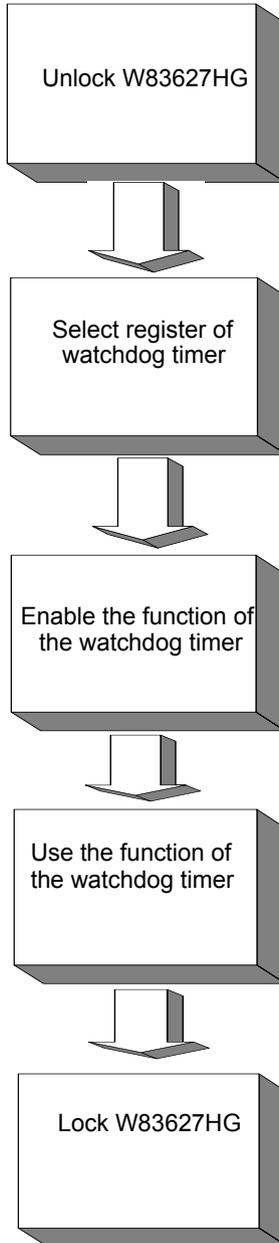
Table A.1: Watchdog timer registers

Address of register (2E)	Attribute Read/ Write	Value (2F)& description
87 (hex)	-----	Write this address to I/O address port 2E (hex) twice to unlock the W83627HG
07 (hex)	write	Write 08 (hex) to select register of watchdog timer.
30 (hex)	write	Write 01 (hex) to enable the function of the watchdog timer. Disabled is set as default.
F5 (hex)	write	Set seconds or minutes as units for the timer. Write 0 to bit 3: set second as counting unit. [default]. Write 1 to bit 3: set minutes as counting unit
F6 (hex)	write	0: stop timer [default] 01~FF (hex): The amount of the count, in seconds or minutes, depends on the value set in register F5 (hex). This number decides how long the watchdog timer waits for strobe before generating an interrupt or reset signal. Writing a new value to this register can reset the timer to count with the new value.
F7 (hex)	read/write	Bit 6: Write 1 to enable keyboard to reset the timer, 0 to disable.[default] Bit 5: Write 1 to generate a timeout signal immediately and automatically return to 0. [default=0] Bit 4: Read status of watchdog timer, 1 means timer is "timeout".
AA (hex)	-----	Write this address to I/O port 2E (hex) to lock the watchdog timer 2.

A.1.3 Example Program

1. Enable watchdog timer and set 10 sec. as timeout interval

```
;---------------------------------------------------------
Mov dx,2eh          ; Unlock W83627HG
Mov al,87h
Out dx,al
Out dx,al
;---------------------------------------------------------
Mov al,07h          ; Select registers of watchdog timer
Out   dx,al
Inc   dx
Mov   al,08h
Out   dx,al
;---------------------------------------------------------
Dec dx              ; Enable the function of watchdog timer
Mov   al,30h
Out   dx,al
Inc   dx
Mov   al,01h
Out   dx,al
;---------------------------------------------------------
Dec dx              ; Set second as counting unit
Mov   al,0f5h
Out   dx,al
Inc   dx
In    al,dx
And al,not 08h
Out   dx,al
;---------------------------------------------------------
Dec dx              ; Set timeout interval as 10 seconds and start counting
Mov   al,0f6h
Out   dx,al
```

```
Inc    dx
Mov  al,10
Out   dx,al
;---------------------------------------------------------
Dec dx                 ; lock W83627HG
Mov  al,0aah
Out   dx,al
2.     Enable watchdog timer and set 5 minutes as timeout interval
;---------------------------------------------------------
Mov dx,2eh             ; unlock W83627HG
Mov al,87h
Out dx,al
Out dx,al
;---------------------------------------------------------
Mov al,07h             ; Select registers of watchdog timer
Out   dx,al
Inc    dx
Mov  al,08h
Out   dx,al
;---------------------------------------------------------
Dec dx                 ; Enable the function of watchdog timer
Mov  al,30h
Out   dx,al
Inc    dx
Mov  al,01h
Out   dx,al
;---------------------------------------------------------
Dec dx                 ; Set minute as counting unit
Mov  al,0f5h
Out   dx,al
Inc    dx
```

```
In    al,dx
Or  al,08h
Out   dx,al
;----------------------------------------------------------
Dec dx              ; Set timeout interval as 5 minutes and start counting
Mov al,0f6h
Out   dx,al
Inc    dx
Mov al,5
Out   dx,al
;----------------------------------------------------------
Dec dx              ; lock W83627HG
Mov  al,0aah
Out   dx,al
```
3.   Enable watchdog timer to be reset by mouse
```
;----------------------------------------------------------
Mov dx,2eh          ; unlock W83627HG
Mov al,87h
Out dx,al
Out dx,al
;----------------------------------------------------------
Mov al,07h          ; Select registers of watchdog timer
Out   dx,al
Inc    dx
Mov  al,08h
Out   dx,al
;----------------------------------------------------------
Dec dx              ; Enable the function of watchdog timer
Mov  al,30h
Out   dx,al
Inc    dx
```

```
Mov  al,01h
Out  dx,al
;--------------------------------------------------------
Dec dx              ; Enable watchdog timer to be reset by mouse
Mov  al,0f7h
Out  dx,al
Inc    dx
In     al,dx
Or   al,80h
Out  dx,al
;--------------------------------------------------------
Dec dx              ; lock W83627HG
Mov  al,0aah
Out  dx,al
4.     Enable watchdog timer to be reset by keyboard
;--------------------------------------------------------
Mov dx,2eh         ; unlock W83627HG
Mov al,87h
Out dx,al
Out dx,al
;--------------------------------------------------------
Mov al,07h         ; Select registers of watchdog timer
Out  dx,al
Inc   dx
Mov  al,08h
Out  dx,al
;--------------------------------------------------------
Dec dx              ; Enable the function of watchdog timer
Mov  al,30h
Out  dx,al
Inc   dx
```

```asm
Mov  al,01h
Out  dx,al
;-------------------------------------------------------
Dec dx                ; Enable watchdog timer to be strobed reset by keyboard
Mov  al,0f7h
Out  dx,al
Inc   dx
In    al,dx
Or   al,40h
Out  dx,al
;-------------------------------------------------------
Dec dx                ; lock W83627HG
Mov  al,0aah
Out  dx,al
```

5.   Generate a time-out signal without timer counting

```asm
;-------------------------------------------------------
Mov dx,2eh        ; unlock W83627HG
Mov al,87h
Out dx,al
Out dx,al
;-------------------------------------------------------
Mov al,07h         ; Select registers of watchdog timer
Out  dx,al
Inc   dx
Mov  al,08h
Out  dx,al
;-------------------------------------------------------
Dec dx              ; Enable the function of watchdog timer
Mov  al,30h
Out  dx,al
Inc   dx
```

```
    Mov  al,01h
    Out  dx,al
;---------------------------------------------------------
Dec dx                 ; Generate a time-out signal
    Mov  al,0f7h
    Out  dx,al         ;Write 1 to bit 5 of F7 register
    Inc  dx
    In   al,dx
    Or   al,20h
    Out  dx,al
;---------------------------------------------------------
Dec dx                 ; lock W83627HG
    Mov  al,0aah
    Out  dx,al
```

I/O Pin Assignments

Appendix B Pin Assignments

B.1 IDE Hard Drive Connector (IDE1)

```
39 37                                          3  1
┌─────────────────────────────────────────────────┐
│ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ □ │
│ ○ ○ ○ ○ ○ ○ ○ ● ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ │
└─────────────────────────────────────────────────┘
40 38                                          4  2
```
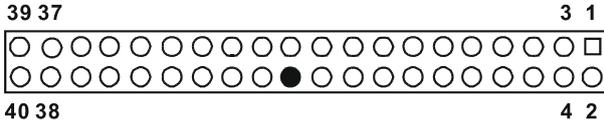
Table B.1: IDE hard drive connector (IDE1)			
Pin	**Signal**	**Pin**	**Signal**
1	IDE RESET*	2	GND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	SIGNAL GND	20	N/C
21	DISK DMA REQUEST	22	GND
23	IO WRITE	24	GND
25	IO READ	26	GND
27	IO CHANNEL READY	28	GND
29	HDACKO*	30	GND
31	IRQ14	32	IDSC16-
33	ADDR 1	34	PDIAG
35	ADDR 0	36	ADDR 2
37	HARD DISK SELECT 0*	38	HARD DISK SELECT 1*
39	IDE ACTIVE*	40	GND

* low activity

B.2 Floppy Drive Connector (FDD1)

```
33 31                                    3  1
┌─────────────────────────────────────────┐
│ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ● ○ □ │
│ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ │
└─────────────────────────────────────────┘
34 32                                    4  2
```
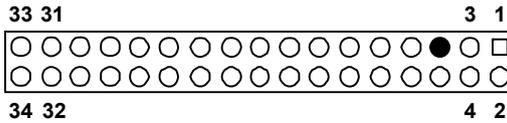
Table B.2: Floppy drive connector (FDD1)			
Pin	Signal	Pin	Signal
1	GND	2	FDHDIN*
3	GND	4	N/C
5	N/C	6	FDEDIN*
7	GND	8	INDEX*
9	GND	10	MOTOR 0*
11	GND	12	DRIVE SELECT 1*
13	GND	14	DRIVE SELECT 0*
15	GND	16	MOTOR 1*
17	GND	18	DIRECTION*
19	GND	20	STEP*
21	GND	22	WRITE DATA*
23	GND	24	WRITE GATE*
25	GND	26	TRACK 0*
27	GND	28	WRITE PROTECT*
29	GND	30	READ DATA*
31	GND	32	HEAD SELECT*
33	GND	34	DISK CHANGE*

* low activity

B.3 Parallel Port (LPT1)
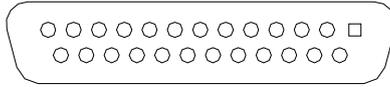
Table B.3: Parallel Port (LPT1)			
Pin	Signal	Pin	Signal
1	STROBE*	14	AUTOFD*
2	D0	15	ERR
3	D1	16	INIT*
4	D2	17	SLCTINI*
5	D3	18	GND
6	D4	19	GND
7	D5	20	GND
8	D6	21	GND
9	D7	22	GND
10	ACK*	23	GND
11	BUSY	24	GND
12	PE	25	GND
13	SLCT	26	N/C

* low activity

B.4 USB Header (USB56/USB78)
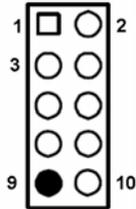
Table B.4: USB Header (USB56/USB78)			
Pin	Signal	Pin	Signal
1	USB0_VCC5	6	USB1_D+
2	USB1_VCC5	7	GND
3	USB0_D-	8	GND
4	USB1_D-	9	Key
5	USB0_D+	10	GND

B.5 VGA Connector (VGA1)
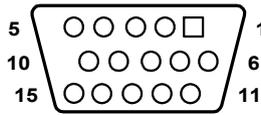
Table B.5: VGA Connector (VGA1)			
Pin	**Signal**	**Pin**	**Signal**
1	RED	9	VCC
2	GREEN	10	GND
3	BLUE	11	N/C
4	N/C	12	SDT
5	GND	13	H-SYNC
6	GND	14	V-SYNC
7	GND	15	SCK

B.6 TV-out connector (VGA2)

Table B.6: TV-out connector (VGA2)	
Pin	**Signal**
1	TV_R
2	TV_G
3	TV_B
4	GND

B.7 RS-232 Interface (COM1)
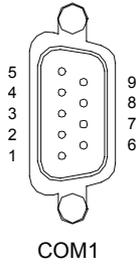
COM1

Table B.7: RS-232 Interface (COM1)	
Pin	**Signal**
1	DCD
2	SIN
3	SOUT
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

B.8 RS-232/422/485 Interface (COM2)

```
      ┌──────┐
    1 │ □  ○ │ 2
    3 │ ○  ○ │ 4
    5 │ ○  ○ │ 6
    7 │ ○  ○ │ 8
    9 │ ○    │
      └──────┘
```
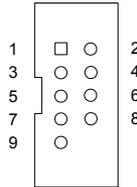
COM2

Table B.8: RS-232 Interface (COM2)	
Pin	**Signal**
1	DCD
2	DSR
3	SIN
4	RTS
5	SOUT
6	CTS
7	DTR
8	RI
9	GND

B.9 RS-232 Interface (COM3/COM4)
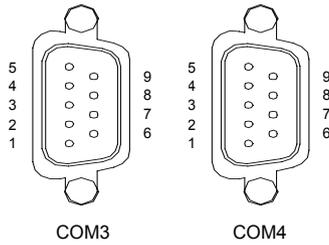
COM3   COM4

Table B.9: RS-232 Interface (COM3/COM4)	
Pin	**Signal**
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI
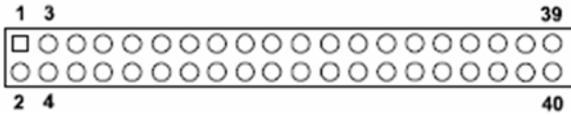
B.10 LVDS Connector (LVDS1)

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
*Table B.10: LVDS connector (LVDS1)*							
1	VDDSAFE	11	GND	21	OD2+	31	DDC_CLK
2	VDDSAFE	12	GND	22	OD2+	32	DDC_DAT
3	GND	13	OD1-	23	GND	33	GND
4	GND	14	OD1-	24	GND	34	GND
5	VDDSAFE	15	OD1+	25	OCK-	35	OD3-
6	VDDSAFE	16	OD1+	26	OCK-	36	OD3-
7	OD0-	17	GND	27	OCK+	37	OD3+
8	OD0-	18	GND	28	OCK+	38	OD3+
9	OD0+	19	OD2-	29	GND	39	HPLG
10	OD0+	20	OD2-	30	GND	40	VCON

B.11 LCD Inverter Power connector (VP1)

Table B.11: VP 1	
Pin	Signal
1	+12V
2	GND
3	L_BKLTEN
4	VBR
5	+5V

B.12 PS/2 Keyboard and Mouse Connector (KBMS1)

Table B.12: Keyboard & Mouse Connector (KBMS1)	
Pin	Signal
1	KB DATA
2	N/C
3	GND
4	KB VCC
5	KB CLK
6	N/C
7	Mouse DATA

Table B.12: Keyboard & Mouse Connector (KBMS1)	
8	NC
9	GND
10	Mouse VCC
11	Mouse CLK
12	NC

B.13 Infrared (IR) connector (JIR1)

Table B.13: Infrared Connector (JIR1)

Pin	Signal
1	VCC
2	N/C
3	IRRX
4	GND
5	IRTX

B.14 CPU/System Fan Power Connector (CPUFAN1/ SYSFAN1/SYSFAN2)

Table B.14: Fan Power Connector (CPUFAN1/SYSFAN1/ SYSFAN2)

Pin	Signal
1	GND
2	+12V
3	DETECT

B.15 Power LED and Keyboard Lock (JFP3)

1 2 3 4 5

□ ○ ○ ○ ○
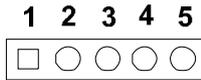
Table B.15: Power LED and Keyboard Lock (JFP3)	
Pin	**Function**
1	LED power (+5 V)
2	NC
3	GND
4	Key lock
5	GND

B.16 External Speaker Connector (JFP2)

```
8 | ◯ ◯ | 7
6 | ◯ ◯ | 5
4 | ◯ ◯ | 3
2 | ◯ ▢ | 1
```
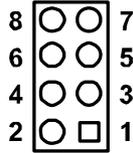
Table B.16: External Speaker LED connector (JFP2)	
Pin	Function
1	Speaker out
2	HDD(LED+)
3	NC
4	HDD(LED-)
5	Buzzer
6	NC
7	Buzzer
8	NC

B.17 Reset Connector (JFP1)

```
▢ | 3
◯ | 4
```

Table B.17: Reset Connector (JFP1)	
Pin	Signal
3	RESET
4	GND

B.18 ATX Soft Power Switch (JFP1)

Table B.18: ATX Soft Power Switch (JFP3)	
Pin	**Signal**
1	5VSB
2	PWR-BTN

B.19 H/W Monitor Alarm (CN22)
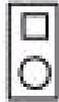
Table B.19: H/W Monitor Alarm (CN22)	
Pin	**Signal**
1	Enable OBS alarm
2	Disable OBS alarm

B.20 USB/LAN ports (LAN1_USB12 and LAN2_USB34)
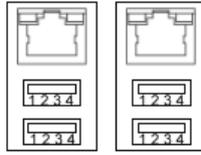
LAN1_USB12 LAN2_USB34

Table B.20: USB Port			
Pin	**Signal**	**Pin**	**Signal**
1	VCC	3	Data0+
2	Data0-	4	GND

Table B.21: Ethernet 10/100Base-T RJ-45 port			
Pin	**Signal**	**Pin**	**Signal**
1	XMT+	5	N/C
2	XMT-	6	RCV-
3	RCV+	7	N/C
4	N/C	8	N/C

B.21 Line Out, Mic IN Connector (AUDIO1)

Line Out

MIC in
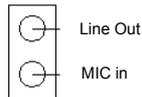
AUDIO1

B.22 Audio Input from CD-ROM (CD IN; CN1)

CN56

Table B.22: Audio Input from CD-ROM			
Pin	Signal	Pin	Signal
1	CD_L	3	CD-REF
2	CD-REF	4	CD_R

B.23 Front Panel Audio Connector (FP AUDIO; HD1)
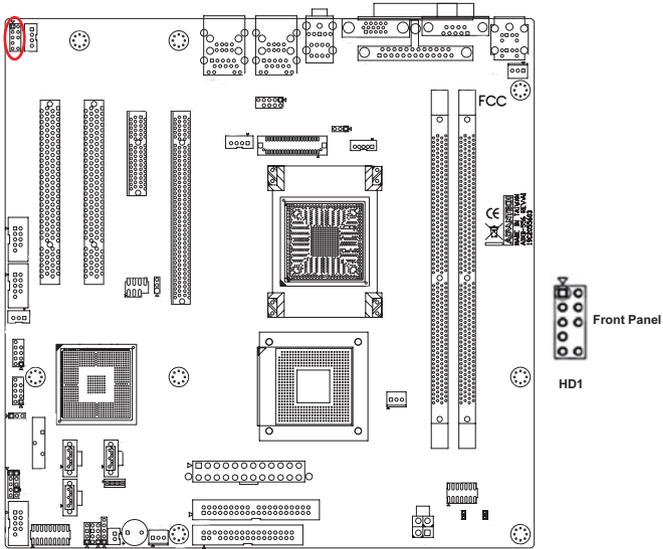
Table B.23: Audio Connector (FP AUDIO; HD1)

Pin	Signal	Pin	Signal
1	MIC_L	6	GND
2	GND	7	Front-IO-Sense
3	MIC_R	8	NC
4	VCC3	9	SPK_L
5	SPK_R	10	GND

B.24 Case Open Connector (JCASE1)

Table B.24: Case Open Connector (JCASE)	
Pin	Signal
1	CASEOP
2	GND

B.25 Front Panel LAN LED Connector (LANLED1)
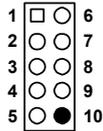
Table B.25: LAN LED Connector (LANLED1)			
Pin	Signal	Pin	Signal
1	LAN1_ACT	2	LAN2_ACT
3	3VDUAL	4	3VDUAL
5	LAN1_LINK1000	6	LAN2_LINK1000
7	LAN1_LINK100	8	LAN2_LINK100
9	3VDUAL	10	N/C

B.26 System I/O Ports

Table B.26: System I/O ports	
Addr. range (Hex)	**Device**
000-01F	DMA controller
020-021	Interrupt controller 1, master
022-023	Chipset address
040-05F	8254 timer
060-06F	8042 (keyboard controller)
070-07F	Real-time clock, non-maskable interrupt (NMI) mask
080-09F	DMA page register
0A0-0BF	Interrupt controller 2
0C0-0DF	DMA controller
0F0	Clear math co-processor
0F1	Reset math co-processor
0F8-0FF	Math co-processor
1F0-1F8	Fixed disk
200-207	Game I/O
278-27F	Parallel printer port 2 (LPT3)
290-297	On-board hardware monitor
2F8-2FF	Serial port 2
300-31F	Prototype card
360-36F	Reserved
378-37F	Parallel printer port 1 (LPT2)
380-38F	SDLC, bisynchronous 2
3A0-3AF	Bisynchronous 1
3B0-3BF	Monochrome display and printer adapter (LPT1)
3C0-3CF	Reserved
3D0-3DF	Color/graphics monitor adapter
3F0-3F7	Diskette controller
3F8-3FF	Serial port 1

B.27 DMA Channel Assignments

Table B.27: 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

B.28 Interrupt Assignments

Table B.28: Interrupt assignments		
Priority	**Interrupt#**	**Interrupt source**
1	NMI	Parity error detected
2	IRQ0	Interval timer
3	IRQ1	Keyboard
-	IRQ2	Interrupt from controller 2 (cascade)
4	IRQ8	Real-time clock
5	IRQ9	Cascaded to INT 0A (IRQ 2)
6	IRQ10	Available
7	IRQ11	Available
8	IRQ12	PS/2 mouse
9	IRQ13	INT from co-processor
10	IRQ14	Primary IDE Channel
11	IRQ15	Secondary IDE Channel
12	IRQ3	Serial communication port 2
13	IRQ4	Serial communication port 1
14	IRQ5	Parallel port 2
15	IRQ6	Diskette controller (FDC)
16	IRQ7	Parallel port 1 (print port)

B.29 1st MB Memory Map

Table B.29: 1st MB memory map	
Addr. range (Hex)	**Device**
E0000h - FFFFFh	BIOS
CC000h - DFFFFh	Unused
C0000h - CBFFFh	VGA BIOS
A0000h - BFFFFh	Video Memory
00000h - 9FFFFh	Base memory