

## **AIMB-554**

**Socket 479 Intel Core™ 2 Duo/Core™  
Duo/Core™ Solo Processor-based  
533/667 MHz FSB Micro ATX Motherboard  
with PCI-E/ 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:

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- This device must accept any interference received, including interference that may cause undesired operation

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not 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

**Table1.1: AIMB-554 Memory Tested for Compatibility**

<b>Table 1.1: AIMB-554 Memory Tested for Compatibility</b>					
<b>Brand</b>	<b>Size</b>	<b>Speed</b>	<b>Type</b>	<b>Part Number</b>	<b>Memory</b>
Apacer	1GB	DDR2 533	DDR2	78.01066.400	SAMSUNG K4T51083QB- ZKD5 (128x4)
UG	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 K4T56083QF- GCD5 (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	512MB	DDR2 533	DDR2	78.91G66.420	ELPIDA E5108AG-5C-E (64x8)
(RoHS)	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	256MB	DDR2 533	DDR2	TS32MLQ64V5M	infineon HYB18T512 160AF3.7 3VV21710 (32x16)

**Table 1.1: AIMB-554 Memory Tested for Compatibility**

<b>Brand</b>	<b>Size</b>	<b>Speed</b>	<b>Type</b>	<b>Part Number</b>	<b>Memory</b>
(RoHS)	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	TS64MLQ64V6J	Micron 5XB32D9DCL (64x8)
	1GB	DDR2 667	DDR2	TS128MLQ64V6J	SEC K4T51083QC ES (64x8)

## Network Feature Comparison

**Table 1.2: AIMB-554 comparison table**

<b>LAN/Model</b>	<b>AIMB-554G2</b>	<b>AIMB-554VG</b>
LAN1: Intel® 82573	Yes	Yes
LAN2: Intel® 82573	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.

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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-554 Socket 479 Intel Core™ 2 Duo/Core™ Duo/Core™ Solo Processor-based Industrial Micro-ATX Motherboard
- 1 AIMB-554 startup manual
- 1 CD with driver utility and manual
- 1 FDD cable P/N: 1700340640
- 1 Ultra ATA 66/100 HDD cable P/N: 1701400452
- 2 Serial ATA HDD data cable P/N: 1700071000
- 2 Serial ATA HDD power cable P/N: 1703150102
- 1 ATX 12V power converter cable P/N: 170304015K
- 1 COM port cable kit P/N: 1701090401
- 1 Heat sink and fan P/N: 1750000348
- 1 I/O port bracket P/N: 1960004027
- 1 jumper package P/N: 9689000068
- 1 warranty card P/N: 2190000902

If any of these items are missing or damaged, contact your distributor or sales representative immediately. We have carefully inspected the AIMB-554 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-554, 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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CHAPTER

**1**

## **General Information**

# Chapter 1 Hardware Configuration

## 1.1 Introduction

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The AIMB-554 is designed with the Intel® 945GM and the ICH7M-DH for industrial applications that require both high-performance computing and enhanced power management capabilities. The motherboard supports Intel Core™ 2 Duo/Core™ Duo/Core™ Solo Processor up to 2.16GHz with 533/667 MHz front side bus and DDRII 400/533/667 MHz memory up to 2 GB.

The AIMB-554 offers high-performance cost-saving integrated graphics, built on the Intel® 945GM chipset and features the unique Intel® Extreme Graphics architecture that maximizes VGA performance and shares system memory up to 224MB. Whenever higher graphics computing ability is required, the AIMB-554 also provides a mainstream PCIExpress x 16 expansion slots to interface add-on graphic cards. Better still, the AIMB-554 also provides incredible visual quality, versatile display options, 18-bit Dual Channel LVDS and a TV-out(NTSC/PAL) interface.

In addition to powerful computing capabilities, the AIMB-554 comes with advanced I/O enhancements. The AIMB-554 possess multiple high performance onboard I/O capabilities which include one PCI-Express x16 slot for VGA; one PCI-Express x4 slot; two 32-bit,33-MHz PCI slots; eight high-speed USB 2.0 ports; two Serial ATA ports supporting up to two devices with software Serial ATA RAID 0,1; AC-97 audio; two RS-232 ports; one parallel port; and a floppy disk interface. These powerful I/O capabilities ensure even more reliable data storage capabilities and suitable for work with high-speed I/O peripherals. When accompanied by Advantech's SNMP-1000 module, the intelligent SNMP/HTTP system manager, the AIMB-554 permits users to monitor and manage the system remotely. This is particularly crucial for mission-critical applications. The AIMB-554 also adopts Advantech's unique patented, "Sleep Mode Control Circuit," for AT Power Mode. With this thoughtful design, users need NOT clear the CMOS after the system enters the S3 mode.

With all these exceptional features and outstanding performance, AIMB-554 is simply the best, most advanced yet power saving platform for today and tomorrow's up-and-coming applications.

## 1.2 Features

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- **PCI Express architecture:** Designed with the Intel 945GM and ICH7M-DH PCI-Express chipset, the AIMB-554 has dual/single Gigabit LAN via PCI-E x1 bus, 1 PCI-E x16 slot and 1 PCI-E x4 slot.
- **High Performance I/O Capability:** Dual/single Gigabit LAN via PCI-E x1 bus, 2 PCI 32-bit/33MHz PCI slots, 2 SATA connectors and 8 USB 2.0 ports.
- **Standard ATX form factor with industrial features:** AIMB-554 provides industrial features like long product life, reliable operation under wide temperature range, watchdog timer, CMOS backup functions, etc.
- **Healthy status monitoring and remote management:** System voltage levels, fan speed, CPU temperature are monitored to ensure stable operation. The remote management interface allows the system to be managed through Ethernet when it is connected to the SNMP-1000 Remote HTTP/SNMP System Manager.
- **BIOS CMOS backup and restore:** When BIOS CMOS setup has been completed, data in the CMOS RAM is automatically backed up to the Flash ROM. This is particularly useful in harsh environments which may cause setup data loss such as battery failure. Upon such an error occurring, BIOS will check the data, and automatically restore the original data for booting.
- **Automatically power on after power failure:** It is often required to have an unattended system come back to operation when power resumes 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

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### 1.3.1 System

- **CPU:** Socket 479 Intel Core™ 2 Duo/Core™ Duo/Core™ Solo up to 2.16GHz 533/667 MHz FSB.
- **L2 Cache:** CPU has built-in 2MB or 4MB CPU full-speed L2 cache.
- **BIOS:** Award Flash BIOS (4Mb Flash Memory)
- **System Chipset:** Intel 945GM with ICH7M-DH
- **SATA/EIDE hard disk drive interface:** Two on-board SATA connectors with data transmission rate up to 150 MB/s, and supports up to two

devices with software Serial ATA RAID 0,1. One on-board IDE connector supporting up to two enhanced IDE devices. Supports PIO mode 4 (16.67MB/s data transfer rate) and ATA 33/66/100 (33/66/100MB/s data transfer rate.) BIOS enabled/disabled.

- **Floppy disk drive interface:** Supports one floppy disk drive, 5¼" (360 KB and 1.2 MB) or 3½" (720 KB, 1.44 MB). BIOS enable/disable

### 1.3.2 Memory

- **RAM:** Up to 2 GB in four 240-pin DIMM sockets. Supports dual-channel DDRII 400/533/667 SDRAM.

### 1.3.3 Input/Output

- **PCI Express slots:** 1 PCI-E x 16 expansion slot and 1 PCI-E x 4 expansion slot.
- **PCI Bus:** 2 PCI slots, 32-bit, 33 MHz PCI 2.2 compliant
- **Enhanced parallel port:** Configured to LPT1, LPT2, LPT3, or disabled. Standard DB-25 female connector provided. Supports EPP/SPP/ECP
- **Serial ports:** Two serial ports, one DB-9 (RS 232)connector and one on-board pin header (RS 232/422/485). Ports can be individually configured to COM1, COM2, or disabled
- **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 480Mbps.

### 1.3.4 Graphics

- **Controller:** Chipset integrated VGA controller
- **Display memory:** Dynamically shared system memory up to 224 MB.
- **CRT:** Up to 2048x1536 resolution, 400MHz RAMDAC
- **LVDS interface:** Support up to UXGA(1600X1200)
- **TV-Out:** NTSC/PAL.
- **PCI-Express X16 slot**

The AIMB-554 can provide a LVDS display, and you can use the relative accessories to install LVDS display as below:

- |                             |                      |
|-----------------------------|----------------------|
| • <b>15" 1024X768 Panel</b> | P/N: 1330000018      |
| • <b>Inverter</b>           | P/N:1250000007       |
| • <b>LCD cable</b>          | P/N: P-CBIV105204202 |
| • <b>Power cable</b>        | 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® 82573 (G2 version or VG version)

LAN 2: Intel® 82573 (G2 Version)

### 1.3.6 Industrial features

- **Watchdog timer:** Can generate a system reset or IRQ11. The watch-dog 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:** +3.3V, ±5 V, ±12 V
- **Power consumption:** Maximum: +5 V at 2.4A, +3.3V at 3A, +12V at 1.3A Intel Core Duo 2GHz (667 MHz FSB), 2 x 1GB 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

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Connectors on the AIMB-554 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: Jumpers**

Label	Function
J1	CMOS Clear
J2	Watchdog timer output selection
J12	AT, ATX mode selector
J13	COM2 RS232/422/485 selector
J16	LCD Power 3.3V/5V selector

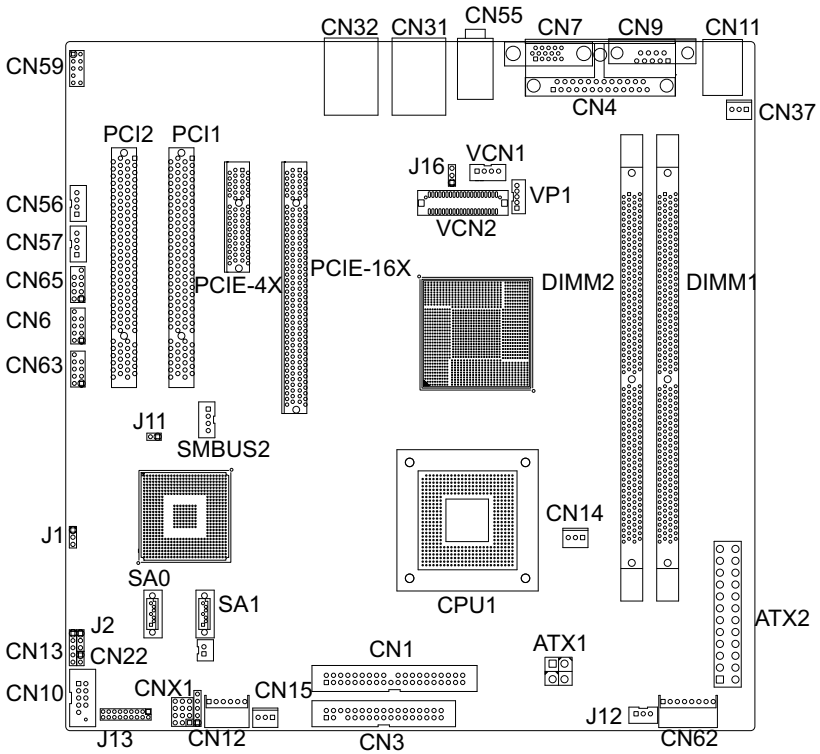
**Table 1.2: Connectors**

Label	Function
CN1	Primary IDE connector
CN3	Floppy drive connector
CN4	Parallel port, Parallel port x 1, supports SPP/EPP/ECP mode
CN6	USB 4,5 (to Front Panel)
CN7	VGA connector
CN9	Serial port: COM1; RS-232 (D-sub 9-pin connector)
CN10	Serial port: COM2; RS-232 (9-pin connector)
CN11	PS/2 keyboard / mouse connectors
CN12	External PS/2 keyboard / mouse connectors
CN13	Infrared connector
CN14	CPU FAN connector
CN15	System FAN connector
CN16	Power LED / keyboard lock connector
CN17	External speaker connector

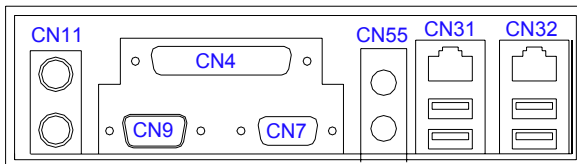
**Table 1.2: Connectors**

<b>Label</b>	<b>Function</b>
CN18	Reset connector
CN19	HDD LED connector
CN21	ATX soft power switch (PS_ON)
CN22	"HW Monitor Alarm Close: Enable OBS Alarm Open: Disable OBS Alarm
CN29	SNMP-1000 SM Bus connector
CN31	LAN1; USB ports 0, 1
CN32	LAN2; USB ports 2, 3
CN37	System FAN connector 2
CN55	Line Out, Mic IN connector
CN56	CD IN (Audio input from CD-ROM)
CN57	AUX-IN connector
CN59	Front Panel audio connector
CN62	Alarm board connector
CN63	USB ports 6, 7 (to Front Panel)
CN64	Caseopen Pin Header
CN65	Front LAN LED connector
SMBUS2	SMBus Extend connector
SA0	Serial ATA1
SA1	Serial ATA2
VCN1	TV-OUT connector
VCN2	LVDS connector
VP1	LCD Inverter Power connector
ATX1	ATX 12 V auxiliary power connector (for CPU)
ATX2	24-pin ATX power connector

# 1.5 Board Layout: Jumper and Connector Locations



*Figure 1.1: Jumper and Connector locations*



*Figure 1.2: I/O Connectors*



## 1.6 AIMB-554 Block Diagram

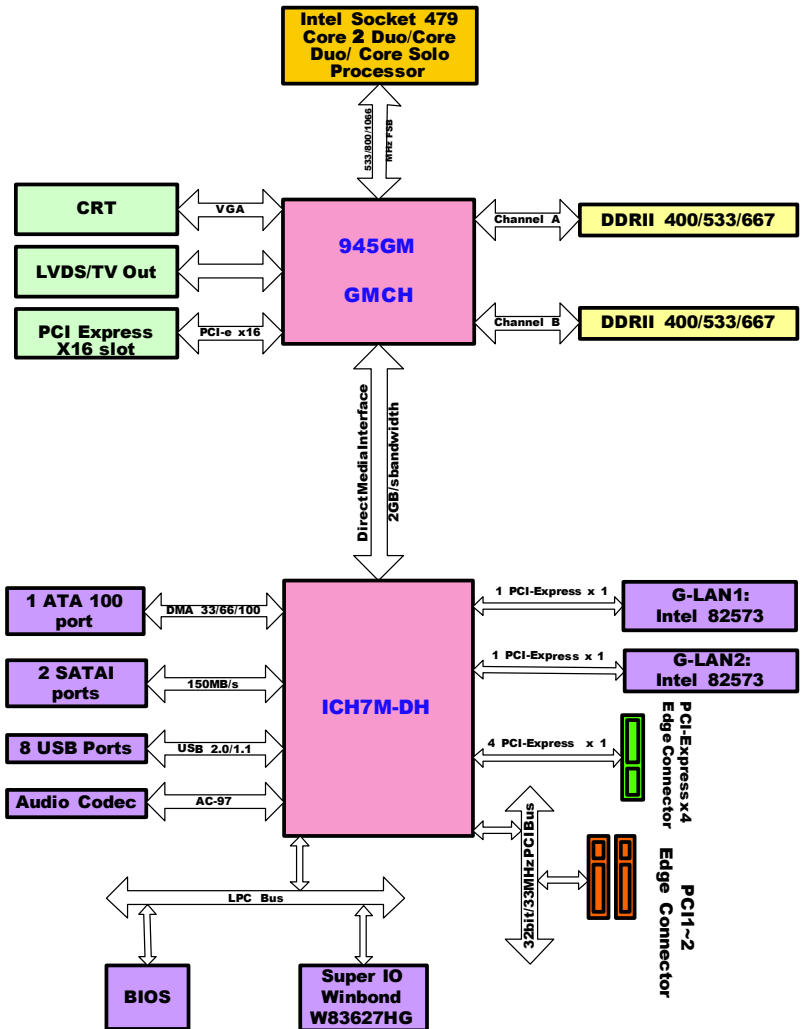


Figure 1.3: AIMB-554 Block Diagram

## 1.7 Safety Precautions

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**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 circuit. 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 motherboards'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 (J1)

The AIMB-554 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 (J1)**

Function	Jumper Setting
* Keep CMOS data	 1-2 closed
Clear CMOS data	 2-3 closed
* default setting	

### 1.8.3 Watchdog timer output (J2)

The AIMB-554 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-554 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 (J2)**

Function	Jumper Setting
IRQ11	1  1-2 closed
* Reset	1  2-3 closed

\*default setting

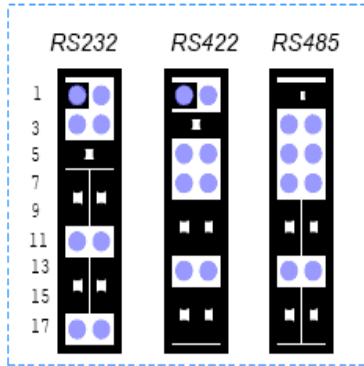
*Note:* The interrupt output of the watchdog timer is a low level signal. It will be held low until the watchdog timer is reset.

**Table 1.5: ATX/AT Mode selector (J12)**

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 (J13)

Users can use J13 to select among RS 232/422/485 modes for COM2 (CN10). The default setting is RS 232.



**Table 1.6: COM2 RS 232/422/485 mode selector (J13)**

Function	Jumper Setting
RS232	(5-6) + (7-9) + (8-10) + (13-15) + (14-16) closed
RS422	(3-4) + (9-11) + (10-12) + (15-17) + (16-18) closed
RS485	(1-2) + (9-11) + (10-12) + (15-17) + (16-18) closed

## 1.9 System Memory

---

The AIMB-554 has two sockets for 240-pin memory modules (DIMMs). All these sockets use 1.8 V unbuffered double data rate synchronous DRAMs (DDR SDRAM). They are available in capacities of 256, 512 and 1024 MB. The sockets can be filled in any combination with DIMMs of any size, giving a total memory size between 256 MB and 2GB.

### 1.9.1 CPU FSB and memory speed

The AIMB-554 can accept DDR2 SDRAM memory chips without parity. Also note: The AIMB-554 accepts DDR2 400/533/667MHz SDRAM, and DDR2 SDRAM. The AIMB-554 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-554 supports built-in 2MB or 4MB cache memory.

## 1.12 Processor Installation

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*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. Locate the processor socket 479.

The AIMB-554 is designed for Intel Core™ 2 Duo/Core™ Duo/Core™ Solo (socket 479) up to 2.16 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 of heat sink should face to location of capacitors to avoid contacting with capacitors.

## 1.13 PCI Bus Routing Table

---

**Table 1.7: PCI Bus Routing Table**

Slot #	Address	INT Key
PCI Slot	ID SEL	PCI Interrupt
PCI1	AD31	INT B, C, D, A
PCI2	AD30	INT C, D, A, B





CHAPTER  
**2**

**Connecting  
Peripherals**

# Chapter 2 Connecting Peripherals

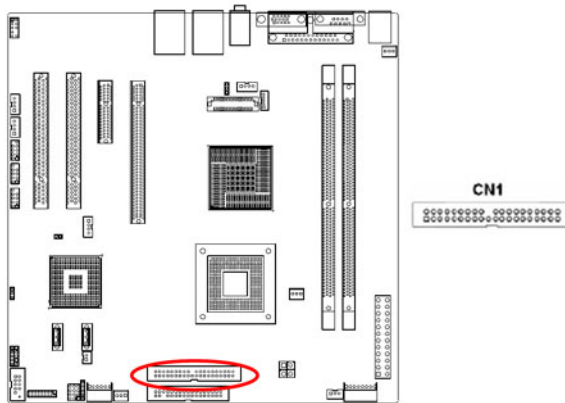
## 2.1 Introduction

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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 or have a packed chassis, you may need to partially remove the card to make all the connections.

## 2.2 Primary (CN1) IDE Connector

---



You can attach up to four IDE (Integrated Drive Electronics) drives to the AIMB-554's built-in controller. The primary (CN1) 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 CN1 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.

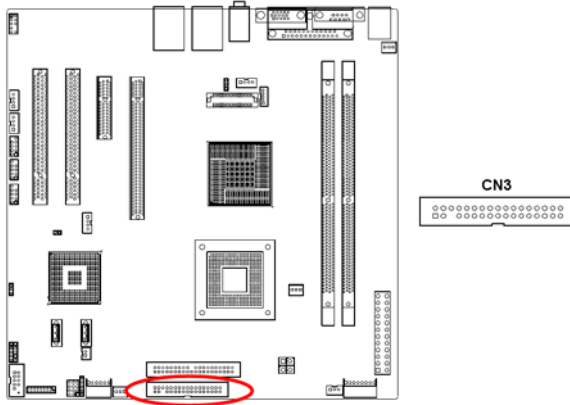
Unlike floppy drives, IDE hard drives can connect in either position on the cable. If you install two drives to a single connector, you will need to set one as the master and the other as the slave. You do this by setting the jumpers on the drives. If you use just one drive on the connector, you should 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 (CN3)

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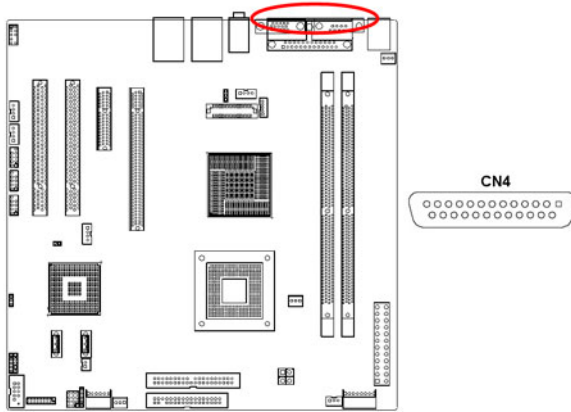


You can attach up to two floppy disk drives to the AIMB-554's onboard controller. You can use 3.5" (720 KB, 1.44 MB) drives.

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 (CN4)

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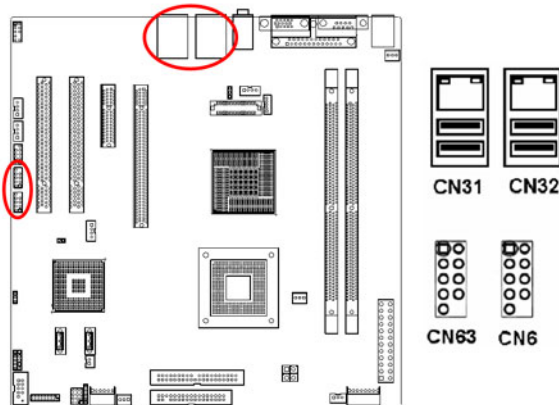


The parallel port is normally used to connect the motherboard to a printer. The AIMB-554 includes an onboard parallel port, accessed through a 26-pin flat-cable connector, CN4.

## 2.5 USB Ports (CN6, CN63, CN31, CN32)

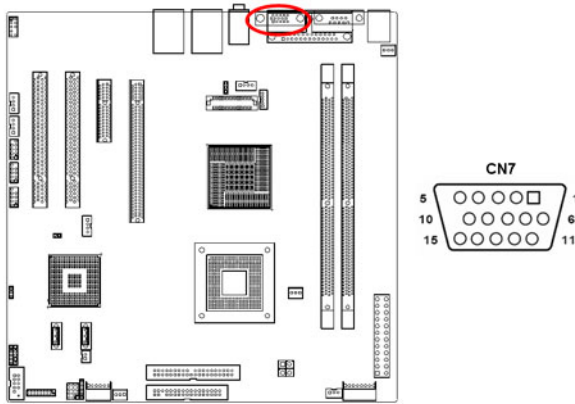
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The AIMB-554 provides up to eight ports of USB (Universal Serial Bus) interface which gives complete Plug & Play and hot swapping for up to 127 external devices. The USB interface complies with USB Specification Rev. 2.0 supporting transmission rate up to 480 Mbps and is fuse protected. The USB interface can be disabled in the system BIOS setup.



## 2.6 VGA Connector (CN7)

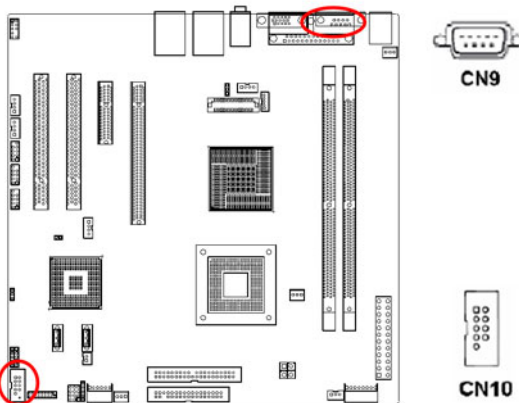
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The AIMB-554 includes a VGA interface that can drive conventional CRT displays. CN7 is a standard 15-pin D-SUB connector commonly used for VGA. Pin assignments for CRT connector CN7 are detailed in Appendix B.

## 2.7 Serial Ports (COM1:CN9; COM2:CN10)

---



The AIMB-554 offers one serial port and one onboard connector, CN9 as COM1 (RS 232), CN10 as COM2. The user can use J13 to select among RS 232/422/485 modes for CN10 (COM2). These ports can connect to

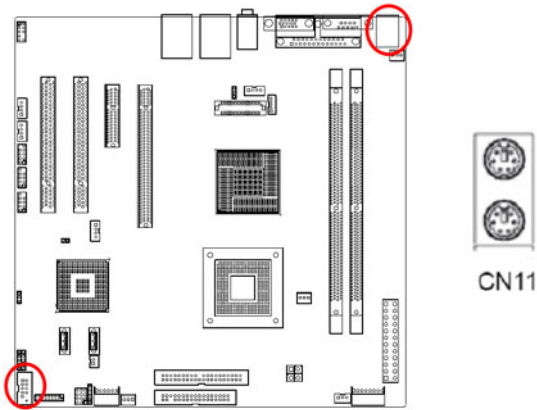
serial devices, such as a mouse or a printer, or to a communications network.

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 (CN11)

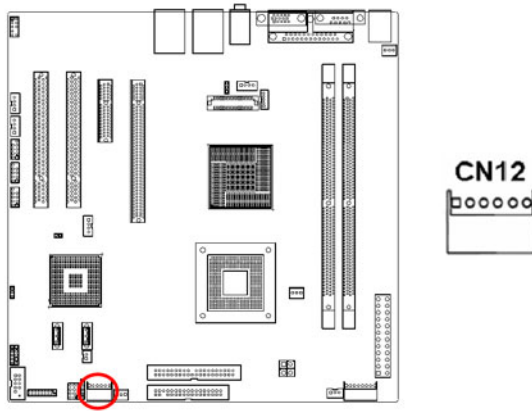
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Two 6-pin mini-DIN connectors (CN11) on the motherboard provide connection to a PS/2 keyboard and a PS/2 mouse, respectively.

## 2.9 External Keyboard & Mouse (CN12)

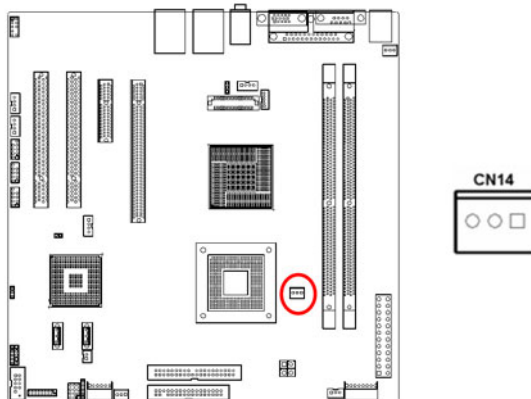
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In addition to the PS/2 mouse/keyboard connector on the AIMB-554's rear plate, there is also an extra onboard external keyboard and mouse connector. This gives system integrators greater flexibility in designing their systems.

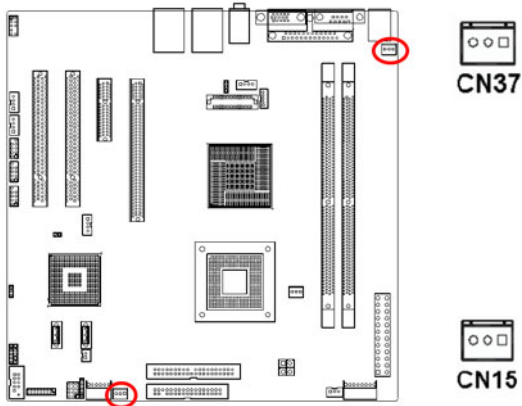
## 2.10 CPU Fan Connector (CN14)

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If fan is used, this connector supports cooling fans of 500 mA (6W) or less.

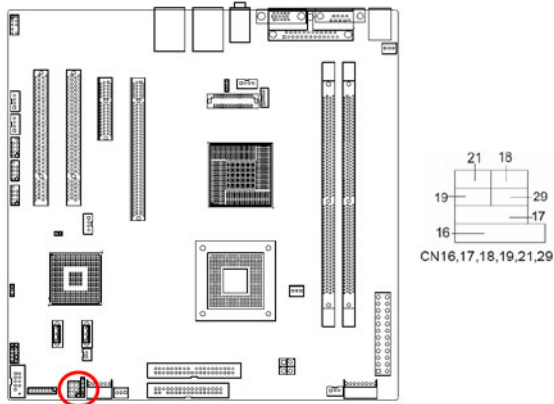
## 2.11 System FAN Connector (CN15 and CN37)



If fan is used, this connector supports cooling fans of 500 mA (6W) or less.

## 2.12 Front Panel Connectors (CN16, 17, 18, 19, 21&29)

There are several external switches to monitor and control the AIMB-554.





### 2.12.1 Power LED and Keyboard Lock (CN16)

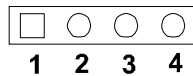
CN16 is a 5-pin connector for the power LED. Refer to Appendix B for detailed information on the pin assignments. If a PS/2 or ATX power supply is used, the system's power LED status will be as indicated below:

**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

### 2.12.2 External Speaker (CN17)

CN17 is a 4-pin connector for an external speaker. If there is no external speaker, the AIMB-554 provides an onboard buzzer as an alternative. To enable the buzzer, set pins 3-4 as closed.



### 2.12.3 Reset Connector (CN18)

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



### 2.12.4 HDD LED Connector (CN19)

You can connect an LED to connector CN19 to indicate when the HDD is active.



### 2.12.5 ATX Soft Power Switch (CN21)

If your computer case is equipped with an ATX power supply, you should connect the power on/off button on your computer case to CN21. This connection enables you to turn your computer on and off.

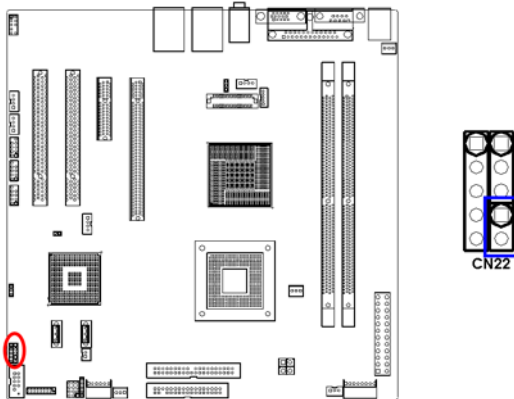
### 2.12.6 SM Bus Connector (CN29)

This connector is reserved for Advantech's SNMP-1000 HTTP/SNMP Remote System Manager. The SNMP-1000 allows users to monitor the internal voltages, temperature and fans from a remote computer through an Ethernet network.

CN29 can be connected to CN19 of SNMP-1000. Please be careful about the pin assignments, pin 1 must be connected to pin 1 and pin 2 to pin 2 on both ends of cable.

## 2.13 H/W Monitor Alarm (CN22)

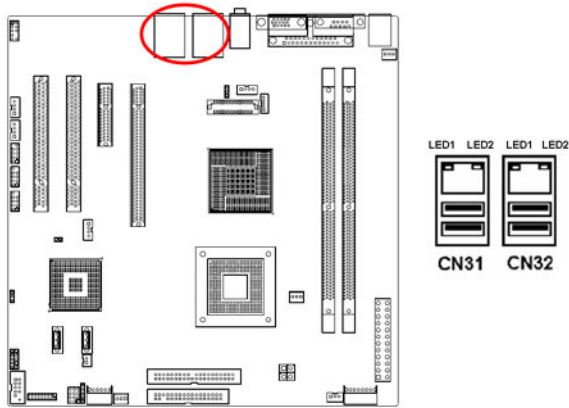
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Close: Enable OBS Alarm

Open: Disable OBS Alarm

## 2.14 USB and LAN ports (CN31 and CN32)



The AIMB-554 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 support transmission rate up to 480 Mbps and is fuse-protected. The USB interface can be disabled in the system BIOS setup.

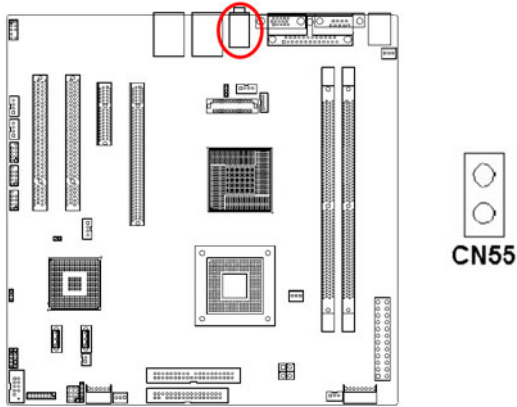
The AIMB-554 is equipped with one or two high-performance 1000 Mbps Ethernet LANs. They are supported by all major network operating systems. The RJ-45 jacks on the rear plate provide convenient or 1000 Base-T operation.

**Table 2.2: LAN LED indicator**

Lan mode	Lan Indicator
1Gbps Link on	LED1 Green on
100Mbps Link on	LED1 Orange on
Active	LED2 Green flash

## 2.15 Line Out, Mic In Connector (CN55)

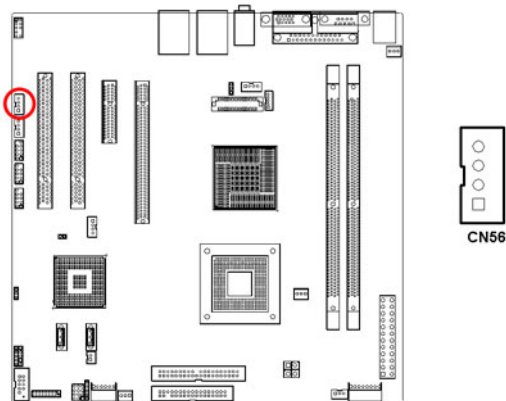
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The Line Out is to output the audio signal to external audio device, like speakers or headphones. The Mic In is for the audio signal input via microphones.

## 2.16 Audio Input from CD-ROM (CD IN; CN56)

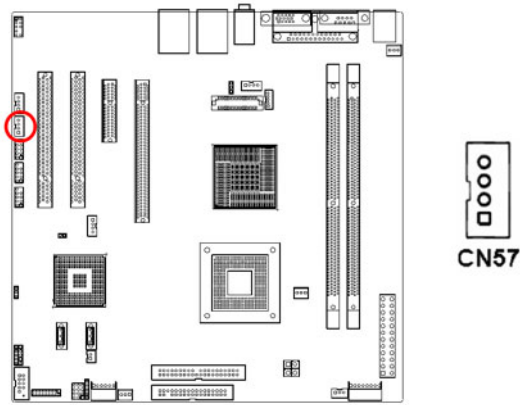
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CD IN is connected the CD-ROM audio output.

## 2.17 Aux Line-In Connector (AUX IN; CN57)

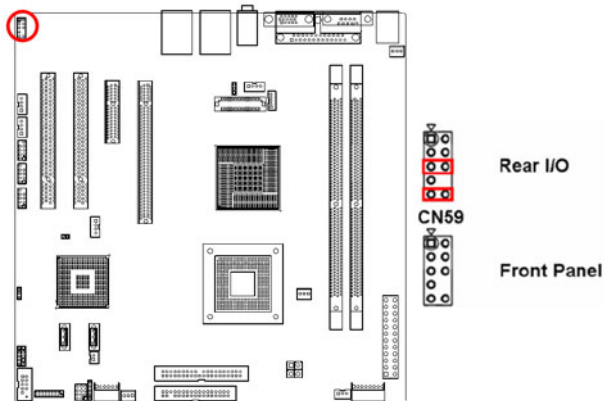
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The connector is for audio devices with a Line-in connector.

## 2.18 Front Panel Audio Connector (FP AUDIO; CN59)

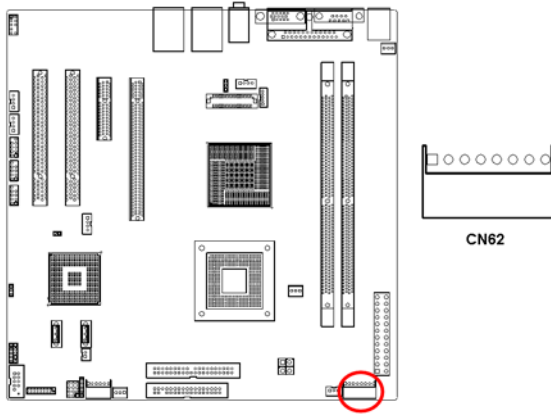
---



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

## 2.19 8-pin Alarm Board Connector (CN62)

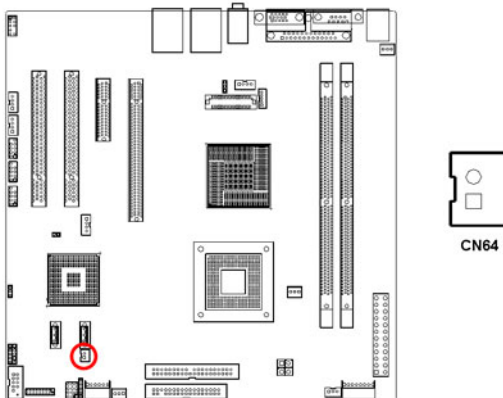
---



The 8-pin alarm board connector is for Advantech chassis with alarm board, which gives warnings if the power supply or fan fails; if the chassis overheats; or if the backplane malfunctions.

## 2.20 Case Open Connector (CN64)

---

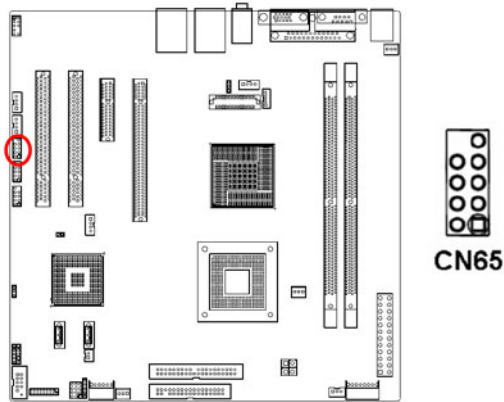


The 2-pin case open connector is for chassis with a case open sensor. While opening the case, the buzzer on motherboard will ring.

## 2.21 Front Panel LAN Indicator Connector

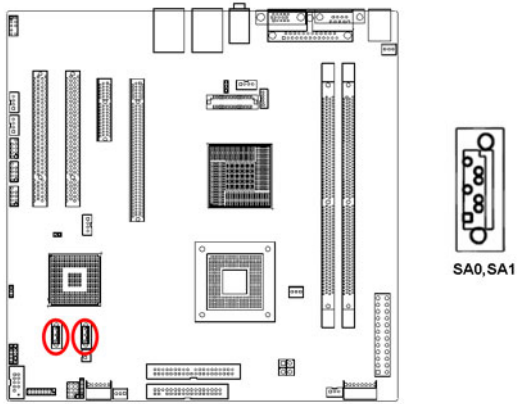
**Table 2.3: Front Panel LAN Indicator Connector**

LAN Mode	Indicator
G-LAN Link ON	Green ON
G-LAN Active	Green Flash
G-LAN Link Off	Green OFF



## 2.22 Serial ATA Interface (SA0, SA1)

---

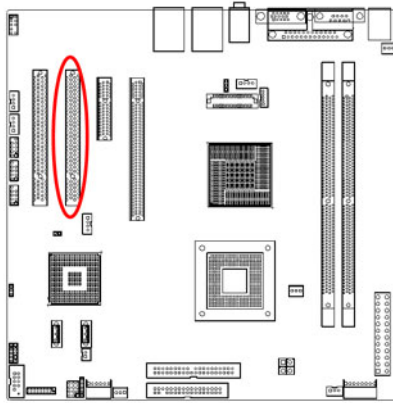


In addition to the EIDE interface (up to two devices), the AIMB-554 features a high performance serial ATA interface (up to 150 MB/s) which eases cabling to hard drives with thin and long cables.



## 2.23 PCI Slots (PCI 1 ~ PCI 2)

---

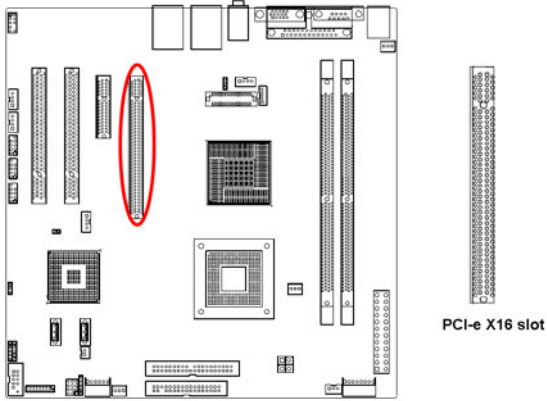


The AIMB-554 provides 2 32-bit / 33 MHz PCI slots.

**Note:** *64-bit PCI or PCI-X expansion cards installed in the PCI 1 slots 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 PCI2.*

## 2.24 PCI-Express x 16 Expansion Slot

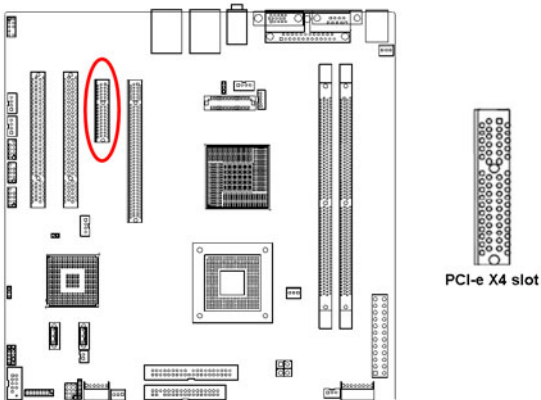
---



AIMB-554 provides a PCI-Express x 16 slot for users to install add-on VGA cards when their applications require high graphics performance.

## 2.25 PCI-Express x 4 Expansion Slot

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AIMB-554 provides a PCI-Express x 4 slot for users to install add-on cards

## 2.26 Connecting to SNMP-1000 Remote Manager

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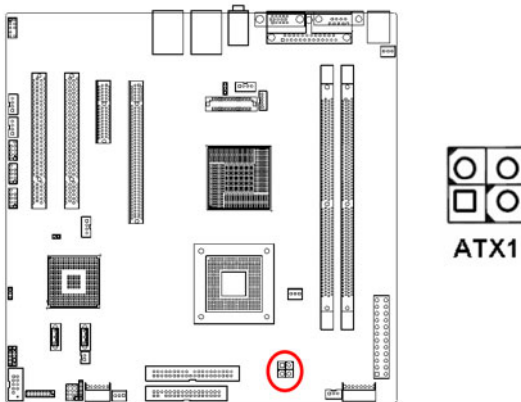
Use the 6-pin to 8-pin cable to connect the motherboard to SNMP-1000. This cable comes with the SNMP-1000.



## 2.27 Auxiliary 4-pin power connector (ATX1)

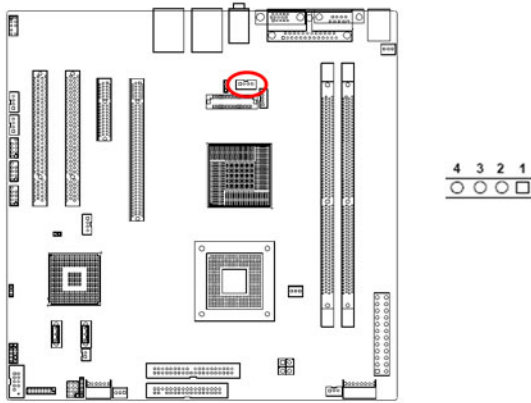
---

To ensure the enough power is supplied to the motherboard, one auxiliary 4 pin power connector is available on the AIMB-554. ATX1 must be used to provide sufficient 12 V power to ensure the stable operation of the system.



## 2.28 TV-out connector VCN1

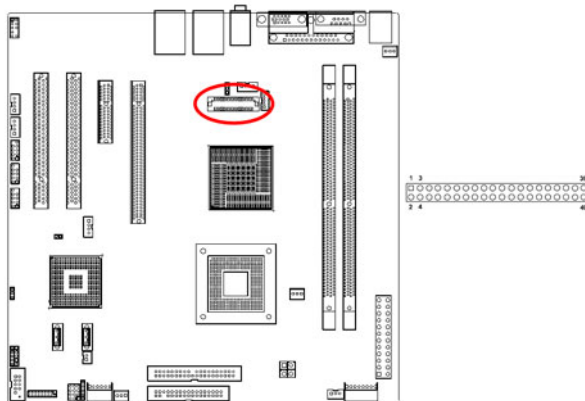
---



The AIMB-554 provide a TV-out interface, VCN1, which is an 4 pin connector. User can Video Cable (p/n:1700002331) for providing S or AV terminal. Please be aware of S and AV terminal can not use at the same time, it will cause unstable situation.

## 2.29 LVDS connector VCN2

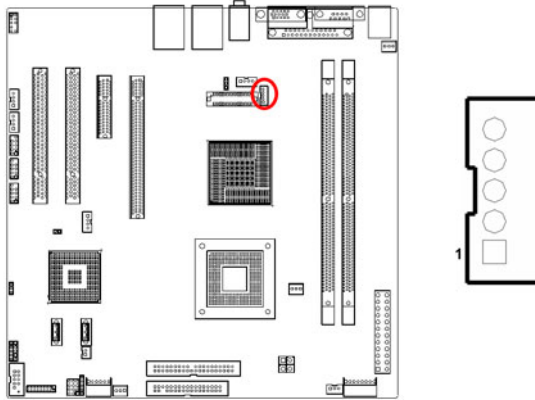
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The AIMB-554 provide a LVDS interface supports 18 bits LCD panels. Pin assignments for LVDS connector VCN2 are detailed in Appendix B

## 2.30 LCD Inverter Power connector (VP1)

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VP1 is connected to Inverter which can provide power to LCD Panel.

The AIMB-554 can provide a LVDS display, and you can use the relative accessories to install LVDS display as below.

- **15" 1024X768 Panel** P/N: 1330000018
- **Inverter** P/N: 1250000007
- **LCD cable** P/N: P-CBIV105204202
- **Power cable** P/N: P-CBLC320140501



CHAPTER  
**3**

## **Award BIOS Setup**

# Chapter 3 Award BIOS Setup

## 3.1 Introduction

---

Award'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 memory (CMOS RAM) so that it retains the setup information when the power is turned off.

### 3.1.1 CMOS RAM Auto-backup and Restore

The CMOS RAM is powered by an onboard button cell battery. When you finish BIOS setup, the data in CMOS RAM will be automatically backed up to Flash ROM. If operation in harsh industrial environments causes a soft error, BIOS will recheck the data in CMOS RAM and automatically restore the original data in Flash ROM to CMOS RAM for booting.

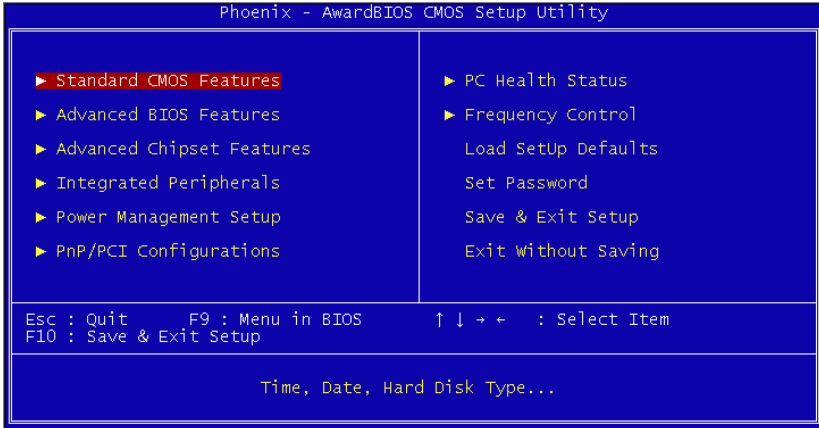
*Note: If you intend to change the CMOS setting without restoring the previous backup, you have to click on "DEL" within two seconds of the "CMOS checksum error..." display screen message appearing. Then enter the "Setup" screen to modify the data. If the "CMOS checksum error..." message appears again and again, please check to see if you need to replace the battery in your system.*



## 3.2 Entering Setup

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Turn on the computer and press <Del> to enter the BIOS setup.



*Figure 3.1: Award BIOS Setup initial screen*

## 3.3 Standard CMOS Setup

---

### 3.3.1 Date

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

### 3.3.2 Time

The time format is <hour> <minute> <second>, based on the 24-hour clock.

### 3.3.3 IDE channel 0/1 Master/Slave

- **IDE HDD Auto-Detection:** Press “Enter” to select this option for automatic device detection.
- **IDE Device Setup:**
  - Auto:** Automatically detects IDE devices during POST
  - None:** Select this when no IDE device is used. The system will skip the auto-detection step to make system start up faster.
  - Manual:** User can manually input the correct settings.
- **Access Mode:** The options are CHS/LBA/Large/Auto
- **Capacity:** Capacity of currently installed hard disk.
- **Cylinder:** Number of cylinders

- **Head:** Number of heads
- **Precomp:** Write precomp
- **Landing Zone:** Landing zone
- **Sector:** Number of sectors

### 3.3.4 Drive A / Drive B

This category identifies the types of floppy disk drives installed in the system. The options are: None/360K, 5.25"/1.2M, 5.25"/720K, 3.5"/1.44M, 3.5"/2.88M, 3.5".

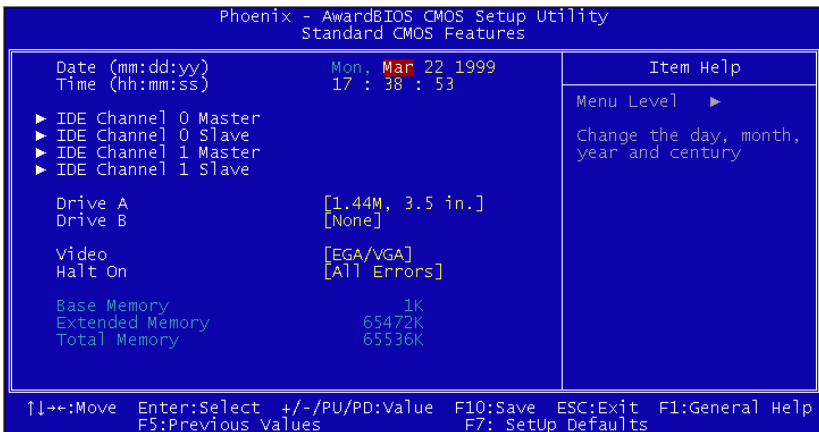
### 3.3.5 Halt On

This category determines whether system start-up will halt or not when an error is detected during power up.

The options are: No Errors/All Errors/All, But Keyboard/All, But Diskette/All, But Disk/Key

### 3.3.6 Memory

This category displays base memory, extended memory, and total memory detected during POST (Power On Self Test).



*Figure 3.2: Standard CMOS Features Screen*

### 3.4 Advanced BIOS Features

The “Advanced BIOS Features” screen appears when choosing the “Advanced BIOS Features” item from the “Initial Setup Screen” menu. It allows the user to configure the AIMB-554 according to his particular requirements. Below are some major items that are provided in the Advanced BIOS Features screen. A quick booting function is provided for your convenience. Simply enable the Quick Booting item to save yourself valuable time.

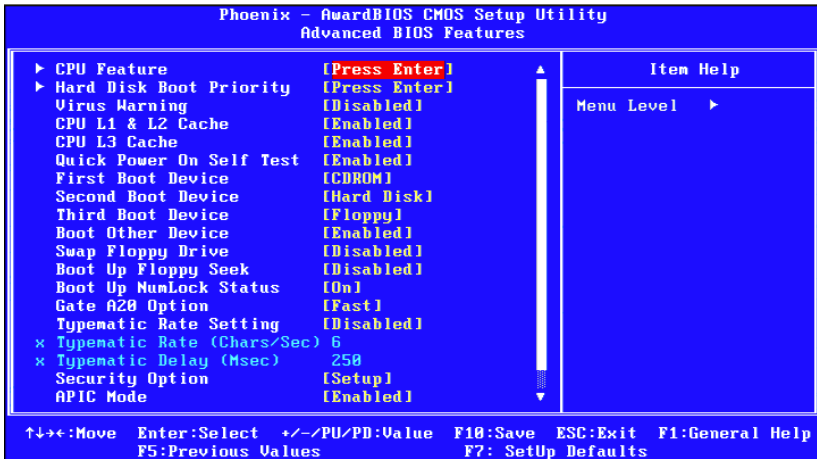


Figure 3.3: Advanced BIOS features screen (1)

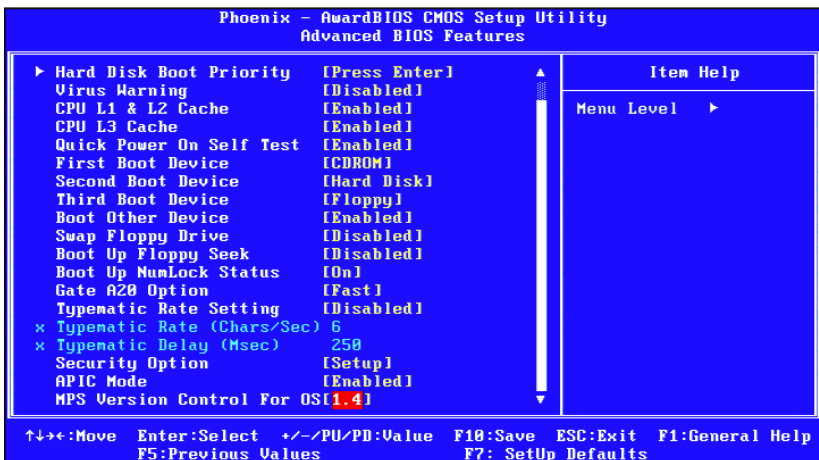


Figure 3.4: Advanced BIOS features screen (2)

### **3.4.1 CPU Features**

#### **Delay Prior to thermal**

This feature controls the activation of the Thermal Monitor's automatic mode. It allows you to determine when the Pentium 4's Thermal Monitor should be activated in automatic mode after the system boots. For example, with the default value of 16 Minutes, the BIOS activates the Thermal Monitor in automatic mode 16 minutes after the system starts booting up. The choices are 4 Min, 8 Min, 16 Min, and 32 Min.

#### **Limit CPUID MaxVal**

Set Limit CPUID MaxVal to 3. This should be disabled for WinXP.

#### **Execute Disable Bit**

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

### **3.4.2 Hard Disk Boot Priority**

Set hard disk boot device priority.

### **3.4.3 Virus Warning**

Enables or disables the virus warning.

### **3.4.4 CPU L1, L2 & L3 Cache**

Enabling this feature speeds up memory access. The commands are "Enabled" or "Disabled."

### **3.4.5 Quick Power On Self Test**

This allows the system to skip certain tests to speed up the boot-up procedure.

### **3.4.6 First/Second/Third Boot Device**

The BIOS tries to load the OS from the devices in the sequence set here. The options are: "Floppy", "LS120", "CDROM", "Hard Disk", "ZIP100", "USB-FDD", "USB-ZIP", "USBCDROM", "LAN1", "LAN2" and "Disabled".

### **3.4.7 Boot Other Device**

Use this to boot another device. The options are "Enabled" and "Disabled".

### **3.4.8 Swap Floppy Drive**

If the system has two floppy drives, choose "Enabled" to assign physical drive B to logical drive A and vice-versa. The commands are "Enabled" or "Disabled".

### 3.4.9 Boot Up Floppy Seek

Selection of the command “Disabled” will speed the boot up. Selection of “Enabled” searches disk drives during boot up.

### 3.4.10 Boot Up NumLock Status

Sets the boot up status Num Lock. The options are “On” and “Off”.

### 3.4.11 Gate A20 Option

“Normal”: A pin in the keyboard controller controls GateA20. Fast (Default) lets chipset control GateA20.

### 3.4.12 Typematic Rate Setting

The typematic rate is the rate key strokes repeat as determined by the keyboard controller. The commands are “Enabled” or “Disabled”. Enabling allows the typematic rate and delay to be selected.

### 3.4.13 Typematic Rate (Chars/Sec)

The BIOS accepts the following input values (characters/second) for typematic rate: 6, 8, 10, 12, 15, 20, 24, and 30.

### 3.4.14 Typematic Delay (msec)

Typematic delay is the time interval between the appearances of two consecutive characters, when the key is continuously depressed. The input values for this category are: 250, 500, 750, and 1000 (ms).

### 3.4.15 Security Option

This category determines whether the password is required when the system boots up or only when entering setup. The options are:

- **System:** The system will not boot, and access to Setup will be also denied unless the correct password is entered at the prompt.
- **Setup:** The system will boot, but access to Setup will be denied unless the correct password is entered at the prompt.

*Note: To disable security, select PASSWORD SETTING in the main menu. Then, you will be asked to enter a password. Simply press <Enter> to disable security. When security is disabled, the system will boot and you can enter Setup freely.*

### 3.4.16 APIC Mode

This setting allows you to enable the APIC mode. The choices are “Disabled” or “Enabled.”

### 3.4.17 MPS Version Control For OS

This specifies the version of the Multiprocessor Specification (MPS) to be used. Version 1.4 has extended configuration tables to improve support for multiple PCI bus configurations and provide future expandability - use this for NT, and possibly Linux. It is also required for a secondary PCI bus to work without the need for a bridge. Leave it as 1.1 for older server Operating Systems.

## 3.5 Advanced Chipset Features

By choosing the “Advanced Chipset Features” option from the “Initial Setup Screen” menu, the screen below will be displayed. This sample screen contains the manufacturer’s default values for the AIMB-554, as shown in Figure 3-4:

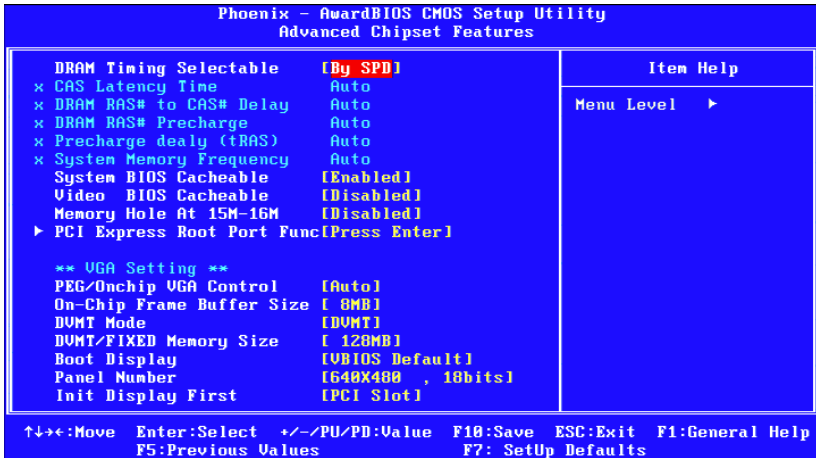


Figure 3.5: Advanced chipset features screen

**Note:** DRAM default timings have been carefully chosen and should ONLY be changed if data is being lost. Please first contact technical support.

### 3.5.1 DRAM Timing Selectable

This item allows you to control the DRAM speed. The selections are “Manual” or “By SPD”.

### **3.5.2 CAS Latency Time**

When DRAM Timing Selectable is set to [Manual], this field is adjustable. This controls the CAS latency, which determines the time interval between SDRAM starting a read command and receiving it. The options are [3T], [4T], [5T], and [Auto].

### **3.5.3 DRAM RAS# to CAS# Delay**

When DRAM Timing selectable is set to [Manual], this field is adjustable. When DRAM is refreshed, the rows and columns are addressed separately. This setup item allows user to determine the timing of the transition from RAS (row address strobe) to CAS (column address strobe). The less the clock cycles are, the faster the DRAM speed is. Setting options are [2T] to [5T], and [Auto].

### **3.5.4 DRAM RAS# Precharge**

When the DRAM Timing Selectable is set to [Manual], this field is adjustable. This setting controls the number of cycles for Row Address Strobe (RAS) to be allowed to precharge. If no sufficient time is allowed for the RAS to accumulate its charge before DRAM refresh, refreshing may be incomplete and DRAM may fail to retain data. This item applies only when synchronous DRAM is installed in the system. Setting options are [2T] to [5T], and [Auto].

### **3.5.5 Precharge Delay (t RAS)**

This item allows you to select the value in this field, depending on whether the board has paged DRAMs or EDO (extended data output) DRAMs. The choices are: "4" to "15" and "Auto".

### **3.5.6 System Memory Frequency**

To adjust the frequency of memory. The choices are: "533MHz", "667MHz" and "Auto".

### **3.5.7 System BIOS Cacheable**

Selecting "Enabled" allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes data to this memory area, a system error may occur. The Choices are "Enabled", and "Disabled".

### **3.5.8 Video BIOS Cacheable**

Selecting "Enabled" allows caching of the video BIOS, resulting in better system performance. However, if any program writes to this memory area, a system error may occur. The choices are "Enabled", and "Disabled".

### **3.5.9 Memory Hole At 15M-16M**

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

### **3.5.10 PCI-Express Root Port Func**

#### **PCI Express Port 1/2/3/4**

The default setting is “Auto.” The choices are “Enabled,” “Disabled,” and “Auto.”

#### **PCI-E Compliancy Mode**

This allows the user to select the PCI-E compliant mode. The options are [v1.0], and [v1.0a].

### **3.5.11 PEG / Onchip VGA Control**

Use this field to select PEG or Onchip VGA. The default is AUTO.

### **3.5.12 PEG Force X1**

Use this field to select the PEG Force X1. The default is disabled.

### **3.5.13 On-Chip Video Memory Size**

Use this field to select the On-Chip Frame Buffer Size, Fixed Memory Size and DVMT Memory Size. The total graphics memory can be up to 128 MB.

### **3.5.14 On-Chip Frame Buffer Size**

The On-Chip Frame Buffer Size can be set to 1 MB or 8 MB. This memory is shared with the system memory.

### **3.5.15 DVMT Mode**

Displays the active system memory mode.

### **3.5.16 DVMT / FIXED Memory Size**

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

### **3.5.17 Boot Display**

Choose the boot display device. The default setting is "Auto" The choices are “VBIOS Default”, “CRT”, “LFP” and “LFP+CRT”.

### **3.5.18 Panel Number**

These fields allow you to select the LCD Panel type. The default values for these ports are:



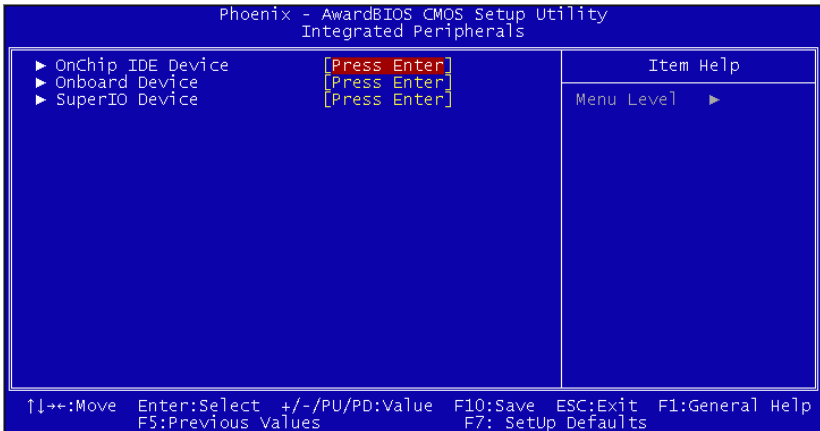
- 640x480, 18bit SC
- 800x600, 18bit SC
- 1024x768, 18bit SC
- 1028x1024, 18bit DC

### 3.5.19 Init Display First

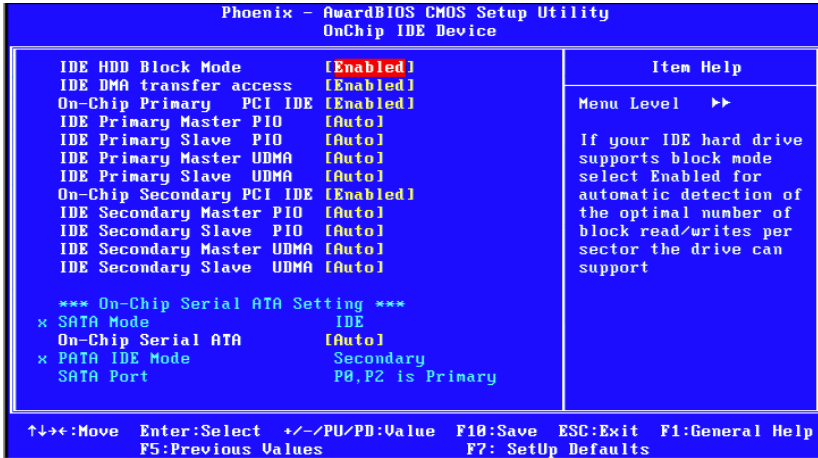
Choose the first display interface to initiate while booting. The choice is “PCI Slot” or “Onboard”.

## 3.6 Integrated Peripherals

---



*Figure 3.6: Integrated peripherals*



*Figure 3.7: On-Chip IDE Device*

### 3.6.1 IDE HDD Block Mode

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

### 3.6.2 IDE DMA Transfer Access

Use this field to enable or disable IDE DMA transfer access.

### 3.6.3 On-Chip Primary / Secondary IDE Device

IDE Primary Master/Slave PIO/UDMA Mode (Auto). The channel has both a master and a slave, making four IDE devices possible. Because two IDE devices may have a different Mode timing (0, 1, 2, 3, 4), it is necessary for these to be independent. The default setting “Auto” will allow auto detection to ensure optimal performance.

### 3.6.4 SATA Mode

The setting choices for the SATA Mode are IDE, RAID and AHCI Mode. Select [IDE] if you want to have SATA function as IDE. Select [AHCI] for Advanced Host Controller Interface (AHCI) feature, with improved SATA performance and native command queuing. Select [RAID] to use SATA for RAID.

**Note:** *Please refer to the PDF-format Intel(R) Matrix Storage Technology Quickstartguide and Intel(R) Matrix Storage Manager User's Manual in this CD (in the MANUAL folder) to know the necessary steps to build and configure your RAID 0, 1 system using Intel(R) Matrix Storage Technology and Matrix Storage Manager.*

### 3.6.5 On-Chip Serial ATA

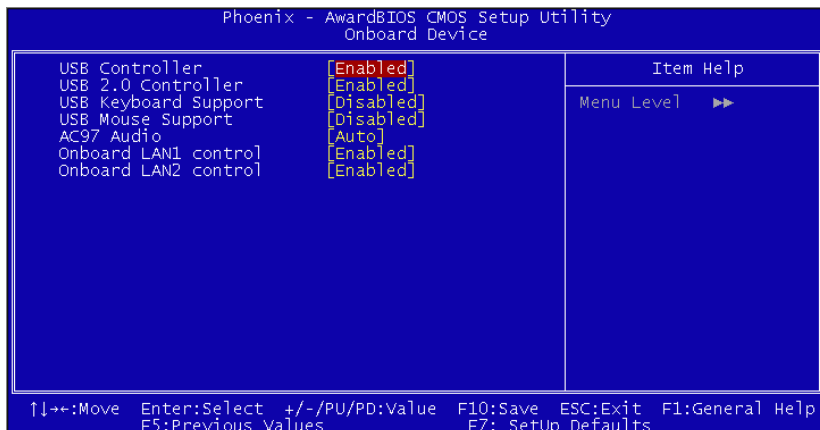
Choose the status of serial ATA. The default setting is “Auto” which lets the system arrange all parallel and serial ATA resources automatically. The “Disabled” setting disables the SATA controller. The “Combined Mode” combines PATA and SATA, and maximum of 2 IDE drives in each channel. The “Enhanced Mode” enables both SATA and PATA, and a maximum of 6 IDE drives are supported. The “SATA Only” setting means SATA is operating in legacy mode.

### 3.6.6 PATA IDE Mode

This item shows the parallel ATA channel. It is Secondary.

### 3.6.7 SATA Port

The PATA IDE mode must to be set to Secondary and SATA will display “P0, P2 is Primary”. It means SATA0 and SATA2 act as Primary Channel. We have one configuration with this setting by spec. and can't swap the channel.



**Figure 3.8: Onboard Device**

### 3.6.8 USB Controller

Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have USB peripherals. The choices are “Enabled” and “Disabled”.

### 3.6.9 USB 2.0 Controller

This entry is to disable/enable the USB 2.0 controller only. The BIOS itself may/may not have high-speed USB support. If the BIOS has high speed USB support built in, the support will automatically turn on when a high speed device is attached. The choices are “Enabled” or “Disabled”.

### 3.6.10 USB Keyboard / Mouse Support

Select Enabled if you plan to use an USB keyboard. The choices are “Enabled” and “Disabled”.

### 3.6.11 AC97 Audio

Select “Disable” if you do not want to use AC-97 audio. Options are “Auto”, and “Disabled”.

### 3.6.12 Onboard LAN1 Control

Options are “Enabled” and “Disabled”. Select “Disabled” if you don’t want to use onboard LAN controller1.

### 3.6.13 Onboard LAN2 Control

Options are “Enabled” and “Disabled”. Select Disabled if you don’t want to use the onboard LAN controller2.

Note: Correct sequence of onboard Lan controllers(Lan1 & Lan2) shows in the "Onboard Device" BIOS view.

**Note:** *DRAM default timings have been carefully chosen and should ONLY be changed if data is being lost. Please first contact technical support.*

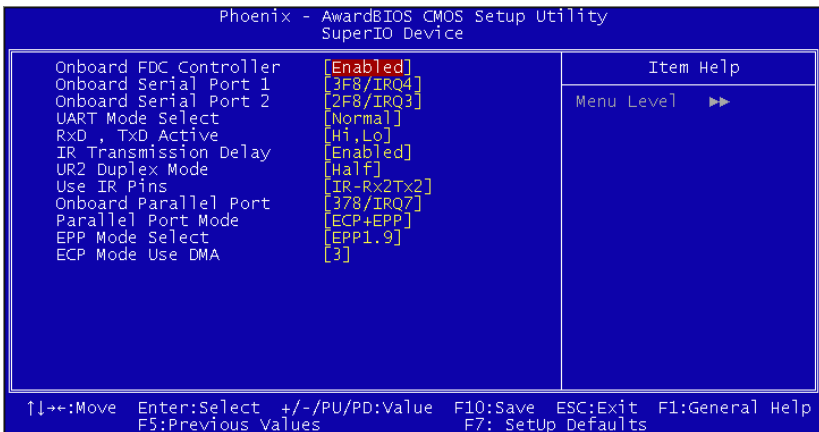


Figure 3.9: Super I/O Device

### 3.6.14 Onboard FDC Controller

When enabled, this field allows you to connect your floppy disk drives to the onboard floppy disk drive connector instead of a separate controller card. If you want to use a different controller card to connect the floppy disk drives, set this field to Disabled.

### 3.6.15 Onboard Serial Port 1

The settings are “3F8/IRQ4”, “2F8/IRQ3”, “3E8/IRQ4”, “2E8/IRQ3”, and “Disabled” for the on-board serial connector.

### 3.6.16 Onboard Serial Port 2

The settings are “3F8/IRQ4”, “2F8/IRQ3”, “3E8/IRQ4”, “2E8/IRQ3”, and “Disabled” for the on-board serial connector.

### **3.6.17 UART Mode Select**

This item allows you to select UART mode. The choices: “IrDA”, “ASKIR”, and “Normal”.

### **3.6.18 RxD, TxD Active**

This item allows you to determine the active level of the RxD and TxD serial lines. The Choices: “Hi, Hi”, “Lo, Lo”, “Lo, Hi”, and “Hi, Lo”.

### **3.6.19 IR Transmission Delay**

This item allows you to enable/disable IR transmission delay. The choices are “Enabled” and “Disabled”.

### **3.6.20 UR2 Duplex Mode**

This item allows you to select the IR half/full duplex function. The choices are “Half” and “Full”.

### **3.6.21 Use IR Pins**

The choices are “RxD2, TxD2” and “IR-Rx2Tx2”.

### **3.6.22 Onboard Parallel Port**

This field sets the address of the on-board parallel port connector. You can select “378/IRQ7”, “278/IRQ5”, “3BC/IRQ7”, or “Disabled”. If you install an I/O card with a parallel port, make sure there is no conflict in the address assignments. The single board computer can support up to three parallel ports.

### **3.6.23 Parallel Port Mode**

This field allows you to set the operation mode of the parallel port. The setting “Normal” allows normal speed operation, but in one direction only. “EPP” allows bidirectional parallel port operation at maximum speed. “ECP” allows the parallel port to operate in bidirectional mode and at a speed faster than the maximum data transfer rate. “ECP + EPP” allows normal speed operation in a two-way mode.

### **3.6.24 EPP Mode Select**

This field allows you to select EPP port type 1.7 or 1.9. The choices are “EPP1.9” and “EPP1.7”.

### **3.6.25 ECP Mode Use DMA**

This selection is available only if you select “ECP” or “ECP + EPP” in the Parallel Port Mode field. In ECP Mode, you can select DMA channel 1 or DMA channel 3. Leave this field on the default setting.

## 3.7 Power Management Setup

The power management setup controls the single board computer's “green” features to save power. The following screen shows the manufacturer’s defaults.

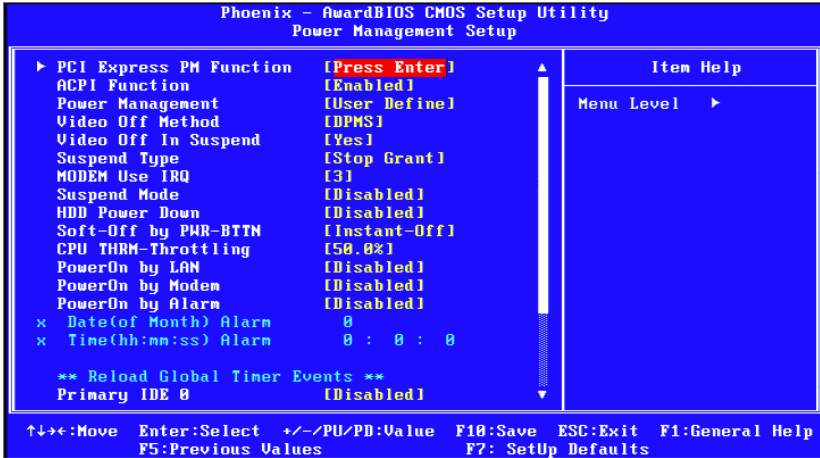


Figure 3.10: Power management setup screen (1)

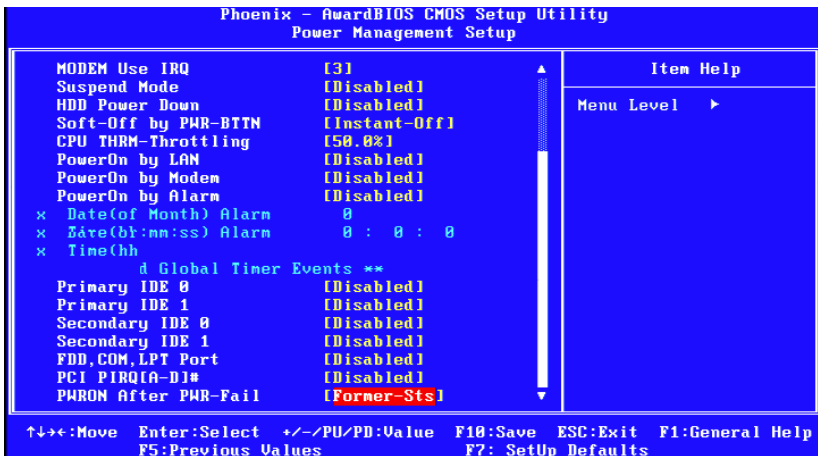


Figure 3.11: Power management setup screen (2)

### 3.7.1 PCI Express PM Function

This allow you to control Power On by onboard LAN chip feature.

### 3.7.2 ACPI Function

The choices are: “Enabled” and “Disabled”.Power Management

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

- HDD Power Down
- Suspend Mode

There are three selections for Power Management, and they have fixed mode settings.

**Table 3.1: Power Saving**

<b>Saving Mode</b>	<b>Function</b>
Min Saving	Minimum power management., Suspend Mode = 1 hr., and HDD Power Down = 15 min.
Max Saving	Maximum power management., Suspend Mode = 1 min., and HDD Power Down = 1 min.
User Defined (Default)	Allows you to set each mode individually. When not disabled, each of the ranges are from 1 min. to 1 hr. except for HDD Power Down which ranges from 1 min. to 15 min., and disabled.

### 3.7.3 Video Off Method

Use this to select the method to turn off the video. The choices are “Blank Screen”, “V/H SYNC+ Blank”, and “DPMS”.

### 3.7.4 Video Off In Suspend

When the system is in suspend mode, the video will turn off. The choices are “No” and “Yes”.

### 3.7.5 Suspend Type

The choices are “Stop Grant” and “PwrOn Suspend”.

### 3.7.6 Modem Use IRQ

This determines the IRQ that the MODEM can use. The choices are “3”, “4”, “5”, “7”, “9”, “10”, “11”, and “NA”.

### 3.7.7 Suspend Mode

Please refer to 3.7.3

### 3.7.8 HDD Power Down

Please refer to 3.7.3



### **3.7.9 Soft-Off by PWR-BTTN**

If you choose “Instant-Off”, then pushing the ATX soft power switch button once will switch the system to “system off” power mode. You can choose “Delay 4 sec”. If you do, then pushing the button for more than 4 seconds will turn off the system, whereas pushing the button momentarily (for less than 4 seconds) will switch the system to “suspend” mode.

### **3.7.10 PowerOn by LAN**

This item allows you to power on the system by LAN. The choices are “Enabled” and “Disabled”.

### **3.7.11 CPU THRM-Throttling**

This option controls the CPU speed as a percentage of regular power. the choices are 87.5%, 75%, 62.5%, 50%, 37.5%, 25% .12% and 12.5%.

### **3.7.12 PowerOn by Modem**

To enabled or disable the function to power on the system via a Modem connection from a remote host. The choice “Enabled” and “Disabled”.

### **3.7.13 PowerOn by Alarm**

The choices are “Enabled” and “Disabled”. Fields that follow below indicate date of current month and time of alarm settings, if enabled.

### **3.7.14 Primary IDE 0 (1) and Secondary IDE 0 (1)**

When Enabled, the system will resume from suspend mode if Primary IDE 0 (1) or Secondary IDE 0 (1) becomes active. The choices are “Enabled” and “Disabled”.

### **3.7.15 FDD, COM, LPT PORT**

When Enabled, the system will resume from suspend mode if the FDD, interface, COM port, or LPT port is active. The choices are “Enabled” and “Disabled”.

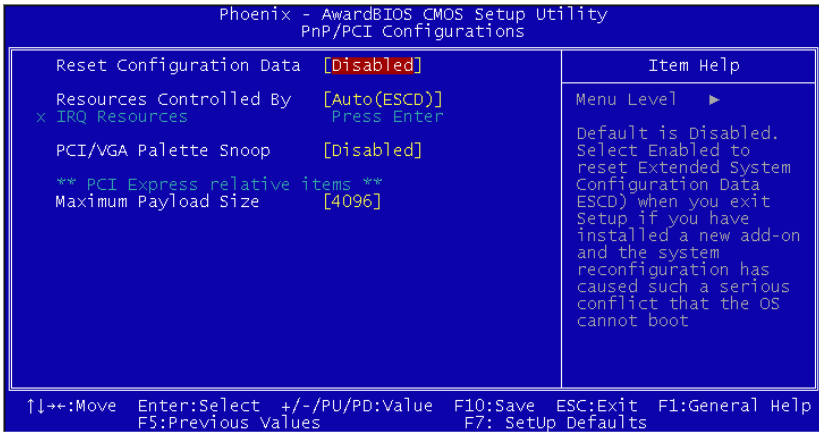
### **3.7.16 PCI PIRQ [A-D]#**

When Enabled, the system resumes from suspend mode if an interrupt occurs. The choices are “Enabled” and “Disabled”.

### **3.7.17 PWRON After PWR-Fail**

Use this to set up the system after power failure. The “Off” setting keeps the system powered off after power failure, the “On” setting boots up the system after failure, and the “Former-Sts” returns the system to the status before power failure.

## 3.8 PnP/PCI Configurations



*Figure 3.12: PnP/PCI configurations screen*

### 3.8.1 Reset Configuration Data

The default is Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) if you have installed a new add-on card, and system configuration is in such a state that the OS cannot boot.

### 3.8.2 Resources Controlled By

The commands here are “Auto(ESCD)” or “Manual”. Choosing “Manual” requires you to choose resources from the following sub-menu. “Auto(ESCD)” automatically configures all of the boot and Plug and Play devices, but you must be using Windows 95 or above.

### 3.8.3 PCI / VGA Palette Snoop

This is set to “Disabled” by default.

### 3.8.4 Maximum Payload Size

This allows you to set the maximum TLP payload size for PCI Express devices. The options are [128 bytes], [256 bytes], [512 bytes], [1024 bytes], [2048 bytes], and [4096 bytes].

## 3.9 PC Health Status

Phoenix - AwardBIOS CMOS Setup Utility PC Health Status		Item Help
Case Open Warning	[Disabled]	
CPU Warning Temperature	[Disabled]	
Current SYSTEM Temperature	36°C / 96°F	
Current CPU Temperature	32°C / 89°F	
CPU FAN SPEED	6490 RPM	
SYSTEM FAN1 SPEED	0 RPM	
SYSTEM FAN2 SPEED	0 RPM	
Vcore	1.24 V	
+1.5V	1.56 V	
+3.3V	3.39 V	
+5V	5.13 V	
+12V	12.28 V	
-12V	-11.62 V	
-5V	-4.94 V	
VBAT(V)	3.32 V	
5VSB(V)	5.06 V	
ACPI Shutdown Temp.	[Disabled]	

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

Figure 3.13: PC Health Status Screen

### 3.9.1 Case Open Warning

Enable this to detect if the case is open or closed.

### 3.9.2 CPU Warning Temperature

This item will prevent the CPU from overheating. The choices are “Disabled”, “60C/140F”, “63C/145F”, “66C/151F”, “70C/158F”, “75C/167F”, “80C/176F”, “85C/185F”, “90C/194F”, and “95C/205F”.

### 3.9.3 Current System Temperature

This shows you the current temperature of system.

### 3.9.4 Current CPU Temperature

This shows the current CPU temperature.

### 3.9.5 CPU FAN Speed

This shows the current CPU FAN operating speed.

### 3.9.6 System FAN 1 / 2 Speed

This shows the current System FAN operating speed.

### 3.9.7 VCORE and Other Voltages

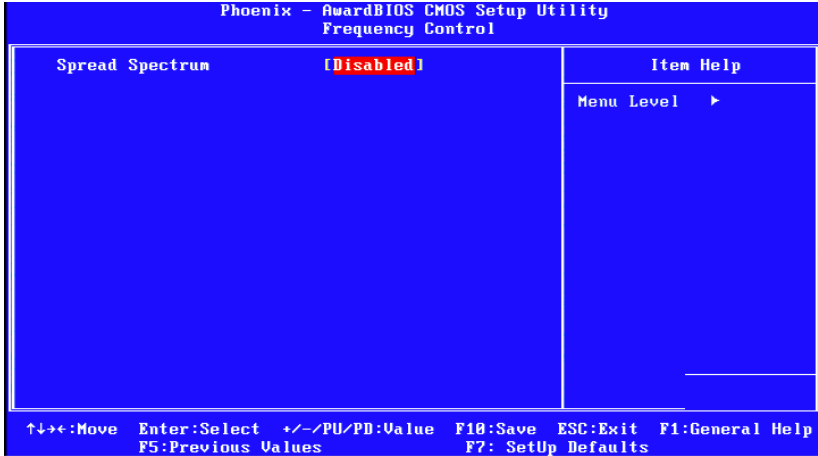
This shows the voltage of VCORE, +1.5V, +3.3, +5V, +12V, -12V, -5V, VBAT(V), and 5VSB(V).

### 3.9.8 ACPI Shutdown Temperature

The system will shut down automatically when the CPU temperature is over the selected setting. This function can prevent CPU damage caused by overheating.

## 3.10 Frequency / Voltage Control

---



*Figure 3.14: Spread Spectrum Control screen*

### 3.10.1 Spread Spectrum

This setting allows you to reduce EMI by modulating the signals the CPU generates so that the spikes are reduced to flatter curves. This is achieved by varying the frequency slightly so that the signal does not use any particular frequency for more than a moment. The choices are “Disabled” and “Enabled”.

## 3.11 Password Setting

---

Follow these steps to change the password.

1. Choose the “Set Password” option from the “Initial Setup Screen” menu and press <Enter>. The screen displays the following message:

**Please Enter Your Password**

2. Press <Enter>.
3. If the CMOS is good and this option has been used to change the default password, the user is asked for the password stored in the CMOS. The screen displays the following message:

**Please Confirm Your Password**

4. Type the current password and press <Enter>.
5. After pressing <Enter> (ROM password) or the current password (user-defined), you can change the password stored in the CMOS. The password must be no longer than eight (8) characters.

Remember, to enable the password setting feature, you must first select either “Setup” or “System” from the “Advanced BIOS Features” menu.

## 3.12 Save & Exit Setup

---

If you select this and press <Enter>, the values entered in the setup utilities will be recorded in the CMOS memory of the chipset. The processor will check this every time you turn your system on and compare this to what it finds as it checks the system. This record is required for the system to operate.

## 3.13 Exit Without Saving

---

Selecting this option and pressing <Enter> lets you exit the setup program without recording any new values or changing old ones.



CHAPTER **4**

**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-554 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 any 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

**Note:** *This utility is used for the following versions of Windows system, and it has to be installed before installing all the other drivers:*

- Windows 2000
- Windows XP

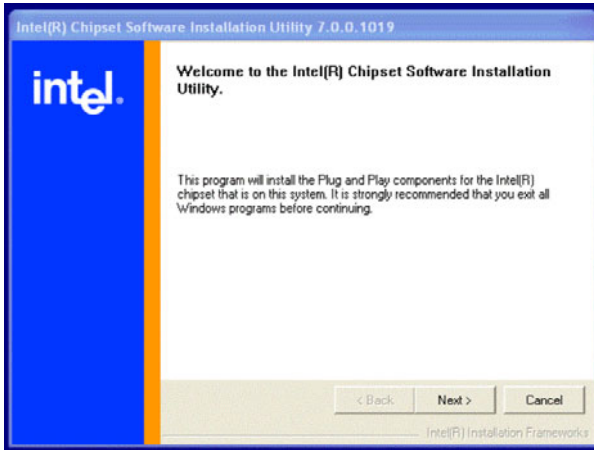
### 4.3 Windows XP Driver Setup

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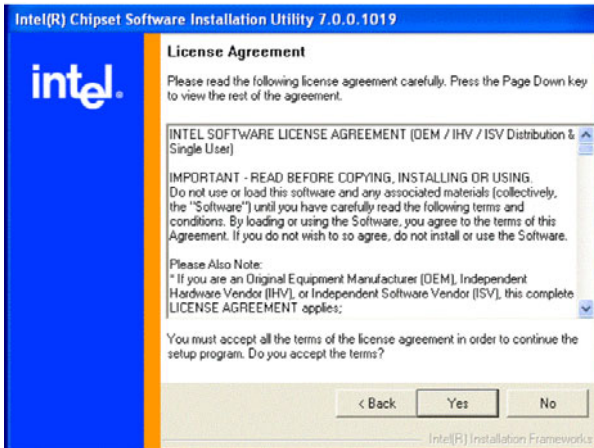
1. Insert the driver CD into your system's CD-ROM drive. In a few seconds, the software installation main menu appears. Move the mouse cursor over the “Auto” button under the “CSI UTILITY” heading. A message pops up telling you to install the CSI utility before other device drivers, as shown in the following figure. Click on this button. To take Windows XP as example.
- 2.



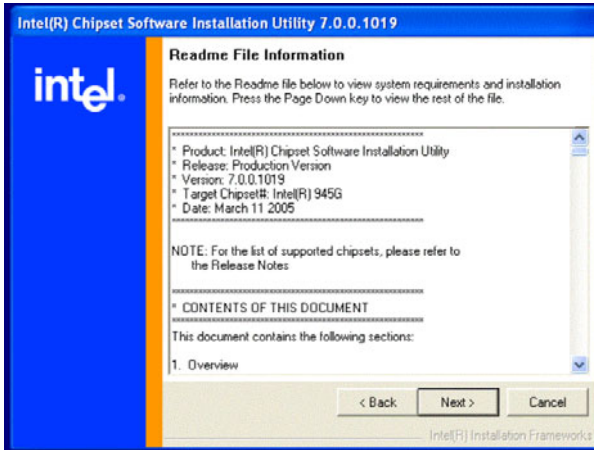
3. Click “Next” when you see the following message.



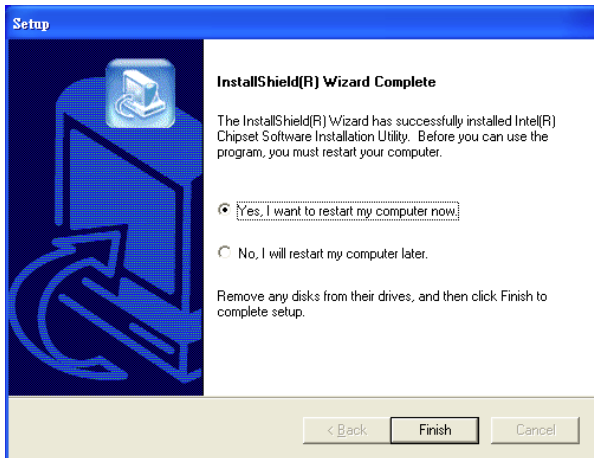
4. Click “Yes” when you see the following message.



5. Click “Next” when you see the following message.



6. When the following message appears, click “Finish” to complete the installation and restart Windows.





CHAPTER  
**5**

**VGA Setup**

# Chapter 5 VGA Setup

## 5.1 Introduction

---

The Intel 945GM integrated graphics controller provides an analog display port, LVDS and TV-out interface. You need to install the VGA driver to enable the function.

The Intel 945GM integrated graphics controller includes the following features.

- **Intel Graphics Media Accelerator 950:** Incorporating the latest Microsoft\* DirectX\*9 support capabilities, it 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-554 handles diverse applications by providing the maximum availability of system memory for general computer usage, 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 something called Dynamic Video Memory Technology (DVMT).
- **LVDS Interface:** AIMB-554 provide 18-bit dual channel LVDS interface supporting up to WUXGA(1600X1200) panel resolution.
- **TV-Out:** AIMB-554 Supports PAL/ NTSC TV systems

## 5.2 Windows XP Driver Setup

---

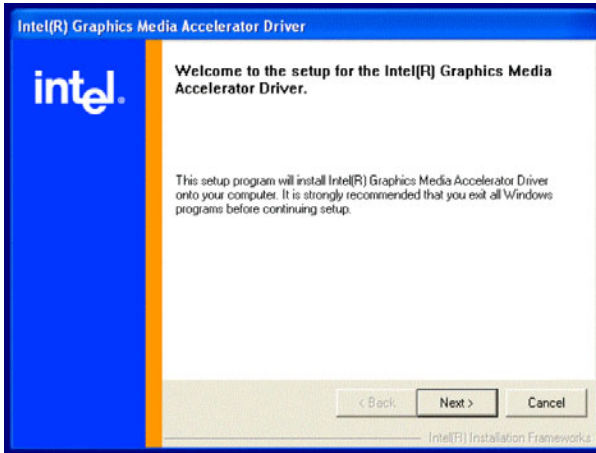
**Note:** Before installing this driver, make sure the CSI utility has been installed in your system. See Chapter 4 for information on installing the CSI utility.

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. For other operating systems, please do a manual installation.

1. Click “Next” to continue the installation.

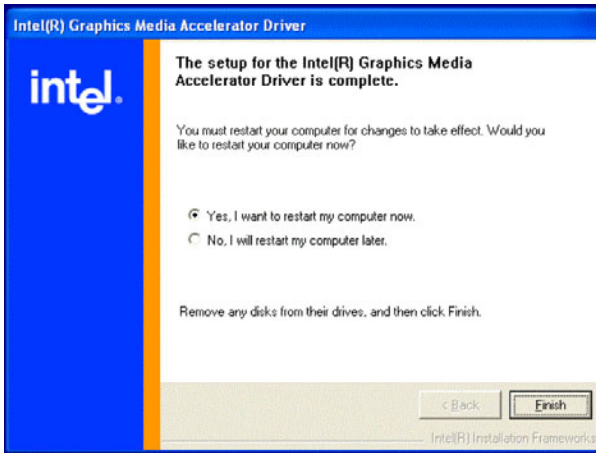


2. You will see a welcome window. Please click “Yes” to continue the installation.





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





CHAPTER  
**6**

**Onboard Security  
Setup**

# Chapter 6 Onboard Security Setup

## 6.1 Introduction

---

The AIMB-554'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-554 can monitor five sets of positive system voltages, two sets of system negative voltages, CPU cooling 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.

The negative system voltage sets which can be monitored include:

- Main voltage: -5 V, -12 V.

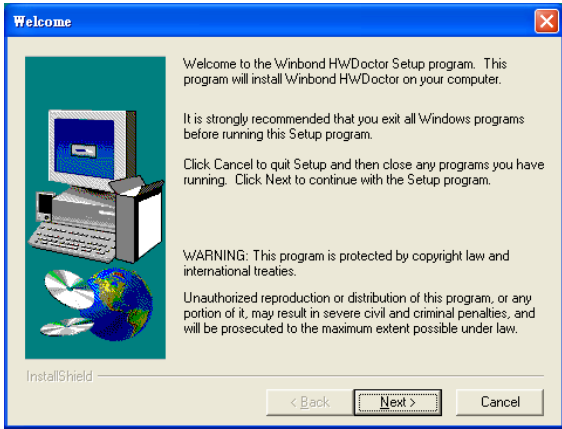
## 6.2 Windows XP Driver Setup

---

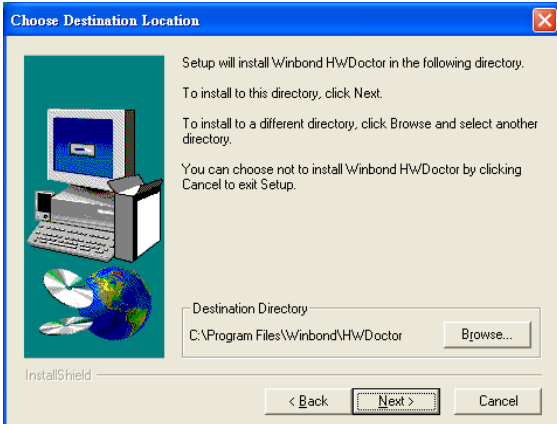
1. Insert the driver CD into your system's CD-ROM drive. In a few seconds, the software installation main menu appears, as shown in the following figure. Click on the “Install” button under the “OB DRIVERS” heading.



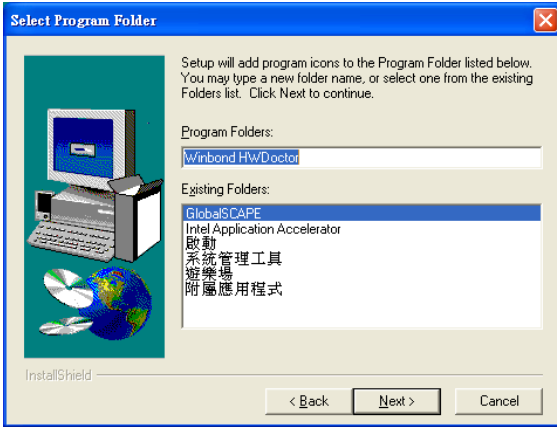
2. Click “Next” when you see the following message.



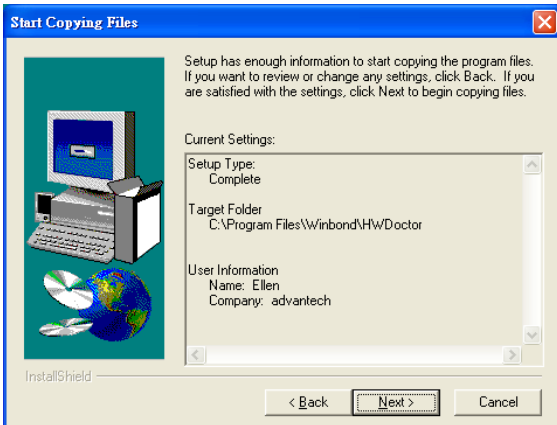
3. Click “Next” when you see the following message.



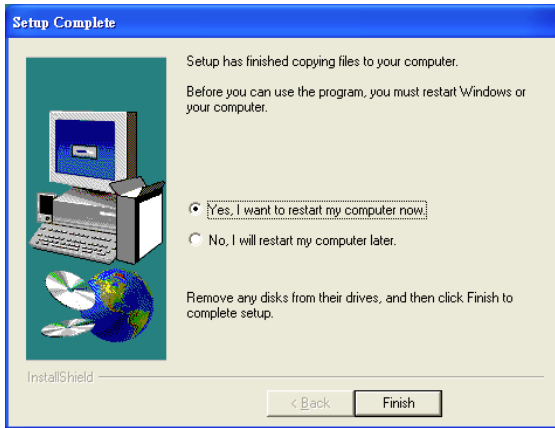
4. Click “Next” when you see the following message.



5. Click “Next” to continue.



6. Click “Finish” when you see the following message.



## 6.3 Using the OBS Hardware Doctor Utility

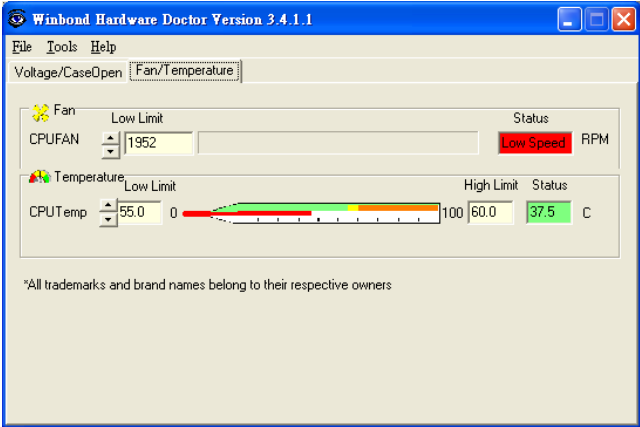
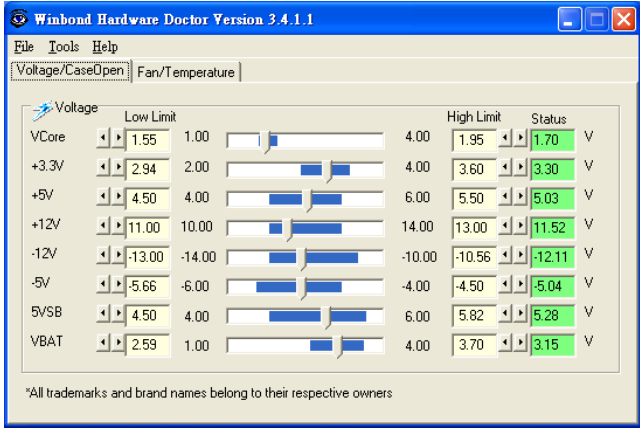
---

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 desktop of Windows, click on “Start” and select “Programs”, select “Winbond HWDdoctor” 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.





CHAPTER  
**7**

# LAN Configuration

# Chapter 7 LAN Configuration

## 7.1 Introduction

---

The AIMB-554 has a single/dual Gigabit Ethernet LAN via dedicated PCI Express x 1 bus (Intel® 82573), which offers bandwidth of up to 500 MB/sec, eliminating the bottleneck of network data flow and incorporating Gigabit Ethernet to operate at 1000 Mbps.

## 7.2 Features

---

- Integrated 10/100/100 BASE-T transceiver
- 10/100/1000 BASE-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 CSI utility has been installed on your system. See Chapter 4 for information on installing the CSI utility.*

The AIMB-554 Intel 82573 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:** *Correct sequence of onboard Lan controllers(Lan1 & Lan2) shows in the "Onboard Device" BIOS view.*

## 7.4 Win XP Driver Setup (Intel 82573)

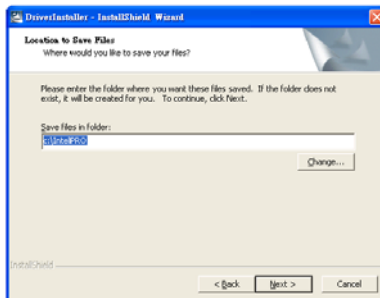
1. Insert the driver CD into your system's CD-ROM drive. In a few seconds, the software installation main menu appears, as shown in the following figure. Under the "LAN Drivers" heading, click on the "Manual" to open file manager, then click "SETUP.EXE" to run the installation procedure.



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



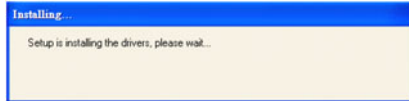
3. Click "Next" to continue.



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.



Appendix

# A

## **Programming the Watchdog Timer**

# Appendix A Watchdog Timer

## A.1 Programming the Watchdog Timer

---

The AIMB-554'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 super I/O controller W83627HG. It provides the following functions for user programming:

- 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 resets signal if the software fails to reset the timer before time-out

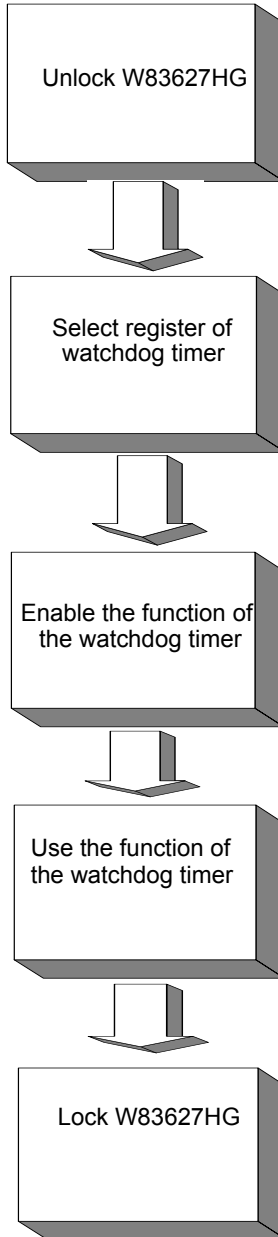
### A.1.2 Reset/Interrupt selection

The J2 jumper is used to select reset or interrupt (IRQ 11) in the event the watchdog timer is tripped. See Chapter 1 for detailed jumper settings.

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

### A.1.3 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 assign the address of register by writing an address value into address port 2E (hex), then write/read data to/from the assigned register through data port 2F (hex).



**Table A.1: Watchdog timer registers**

<b>Address of register (2E)</b>	<b>Attribute</b>	
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.1.4 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

```

```

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
;-----
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

```

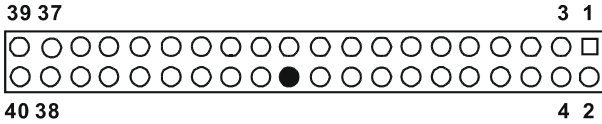
Appendix

# B

## I/O Pin Assignments

# Appendix B Pin Assignments

## B.1 IDE Hard Drive Connector (CN1)



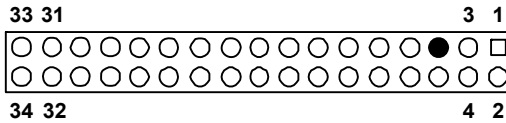
**Table B.1: IDE hard drive connector (CN1)**

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	CSEL
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 (CN3)



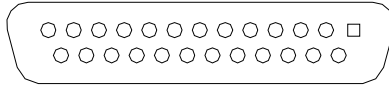
**Table B.2: Floppy drive connector (CN3)**

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 (CN4)

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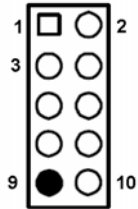
**Table B.3: Parallel Port (CN4)**

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 (CN6/CN63)

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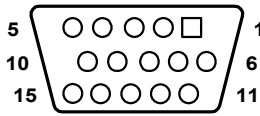


**Table B.4: USB Header (CN6/CN63)**

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 (CN7)

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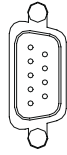


**Table B.5: VGA Connector (CN7)**

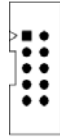
Pin	Signal	Pin	Signal
1	RED	9	VCC
2	GREEN	10	GND
3	BLUE	11	N/C
4	N/C	12	SDT
5	GND	13	H-SYNC
6	GND	14	V-SYNC
7	GND	15	SCK

## B.6 RS-232 Interface (CN9/10)

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CN9

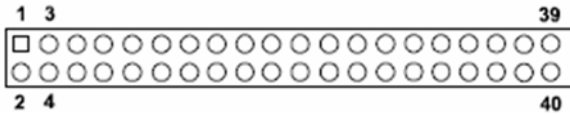


CN10

**Table B.6: RS-232 Interface (CN9/10)**

Pin	Signal
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

## B.7 LVDS Connector



**Table B.7: VCN2 LVDS connector**

Pin	signal	pin	signal	pin	signal	pin	signal
1	VDDS AFE	11	GND	21	OD2+	31	DDC_ CLK
2	VDDS AFE	12	GND	22	OD2+	32	DDC_ DAT
3	GND	13	OD1-	23	GND	33	GND
4	GND	14	OD1-	24	GND	34	GND
5	VDDS AFE	15	OD1+	25	OCK-	35	OD3-
6	VDDS AFE	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.8 LCD Inverter Power connector

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**Table B.8: VPI**

pin	signal
1	+12V
2	GND
3	L_BKLTEN
4	VBR
5	+5V

## B.9 PS/2 Keyboard and Mouse Connector (CN11)

---

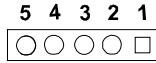


**Table B.9: Keyboard and Mouse Connector (CN11)**

Pin	Signal
1	KB DATA
2	N/C
3	GND
4	KB VCC
5	KB CLK
6	N/C

## B.10 External Keyboard Connector (CN12)

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**Table B.10: External Keyboard Connector (CN12)**

Pin	Signal
1	CLK
2	DATA
3	NC
4	GND
5	VCC

## B.11 Infrared (IR) connector (CN13)

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**Table B.11: Infrared Connector (CN13)**

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



## B.12 CPU/System Fan Power Connector (CN14/15/37)

---

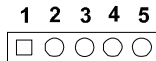


**Table B.12: Fan Power Connector (CN14/15/37)**

Pin	Signal
1	GND
2	+12V
3	DETECT

## B.13 Power LED and Keyboard Lock (CN16)

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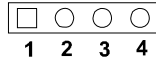


**Table B.13: Power LED and Keyboard Lock (CN16)**

Pin	Function
1	LED power (+5 V)
2	NC
3	GND
4	NC
5	GND

## B.14 External Speaker Connector (CN17)

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**Table B.14: External Speaker Connector (CN17)**

Pin	Function
1	Buzzer
2	NC
3	Buzzer
4	Speaker out

## B.15 Reset Connector (CN18)

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**Table B.15: Reset Connector (CN18)**

Pin	Signal
1	RESET
2	GND

## B.16 HDD LED Connector (CN19)

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**Table B.16: HDD LED Connector (CN19)**

Pin	Signal
1	VCC (LED+)
2	IDE LED (LED-)

## B.17 ATX Soft Power Switch (CN21)

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**Table B.17: ATX Soft Power Switch (CN21)**

Pin	Signal
1	5VSB
2	PWR-BTN

## B.18 H/W Monitor Alarm (CN22)

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**Table B.18: H/W Monitor Alarm (CN22)**

Pin	Signal
1	Enable OBS alarm
2	Disable OBS alarm

## B.19 SM Bus Connector (CN29)

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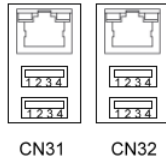


**Table B.19: SM Bus Connector (CN 29)**

Pin	Signal
1	SMB_DATA
2	SMB_CLK

## B.20 USB/LAN ports (CN31 and CN32)

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**Table B.20: USB Port**

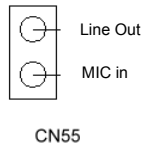
Pin	Signal	Pin	Signal
1	VCC	3	Data0+
2	Data0-	4	GND

**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 (CN55)

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## B.22 Audio Input from CD-ROM (CD IN; CN56)

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CN56

**Table B.22: Audio Input from CD-ROM**

Pin	Signal	Pin	Signal
1	CD_L	3	GND
2	GND	4	CD_R

## B.23 Aux Line-In Connector (CN57)

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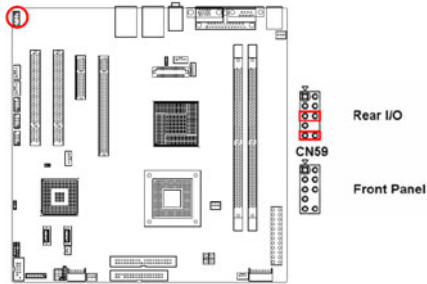


CN57

**Table B.23: Aux Line-In Connector (CN57)**

Pin	Signal	Pin	Signal
1	AUX_L	3	GND
2	GND	4	AUX_R

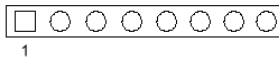
## B.24 Front Panel Audio Connector (FP AUDIO; CN59)



**Table B.24: Audio Connector (FP AUDIO; CN59)**

Pin	Signal	Pin	Signal
1	MIC	6	LOUT_RR
2	GND	7	NC
3	MIC_BIAS	8	NC
4	VCC	9	LOUT_L
5	LOUT_R	10	LOUT_LL

## B.25 8-pin Alarm Board Connector (CN62)



CN62

**Table B.25: 8-pin Alarm Board Connector (CN62)**

Pin	Signal	Pin	Signal
1	5VSB	5	VCC
2	GND	6	VCC3
3	GND	7	-12V
4	-5V	8	+12V

## B.26 Case Open Connector (CN64)

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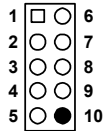


**Table B.26: Case Open Connector (CN64)**

Pin	Signal
1	CASEOP
2	GND

## B.27 Front Panel LAN LED Connector (CN65)

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**Table B.27: LAN LED Connector (CN65)**

Pin	Signal	Pin	Signal
1	LAN1_LINK	2	LAN2_LINK
3	LAN1_ACT	4	LAN2_ACT
5	LAN1_LINK1000	6	LAN2_LINK1000
7	LAN1_LINK100	8	LAN2_LINK100
9	3VDUAL	10	N/C



## B.28 System I/O Ports

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**Table B.28: 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.29 DMA Channel Assignments

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**Table B.29: DMA channel assignments**

<b>Channel</b>	<b>Function</b>
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.30 Interrupt Assignments

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**Table B.30: 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.31 1st MB Memory Map

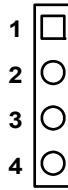
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**Table B.31: 1st MB memory map**

Addr. range (Hex)	Device
E0000h - FFFFFh	BIOS
CC000h - DFFFFh	Unused
C0000h - CBFFFh	VGA BIOS
A0000h - BFFFFh	Video Memory
00000h - 9FFFFh	Base memory

## B.32 SMBUS

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**Table B.32: SMBUS2**

pin	signal
1	5V
2	SMB CLOCK
3	SMB DATA
4	GND