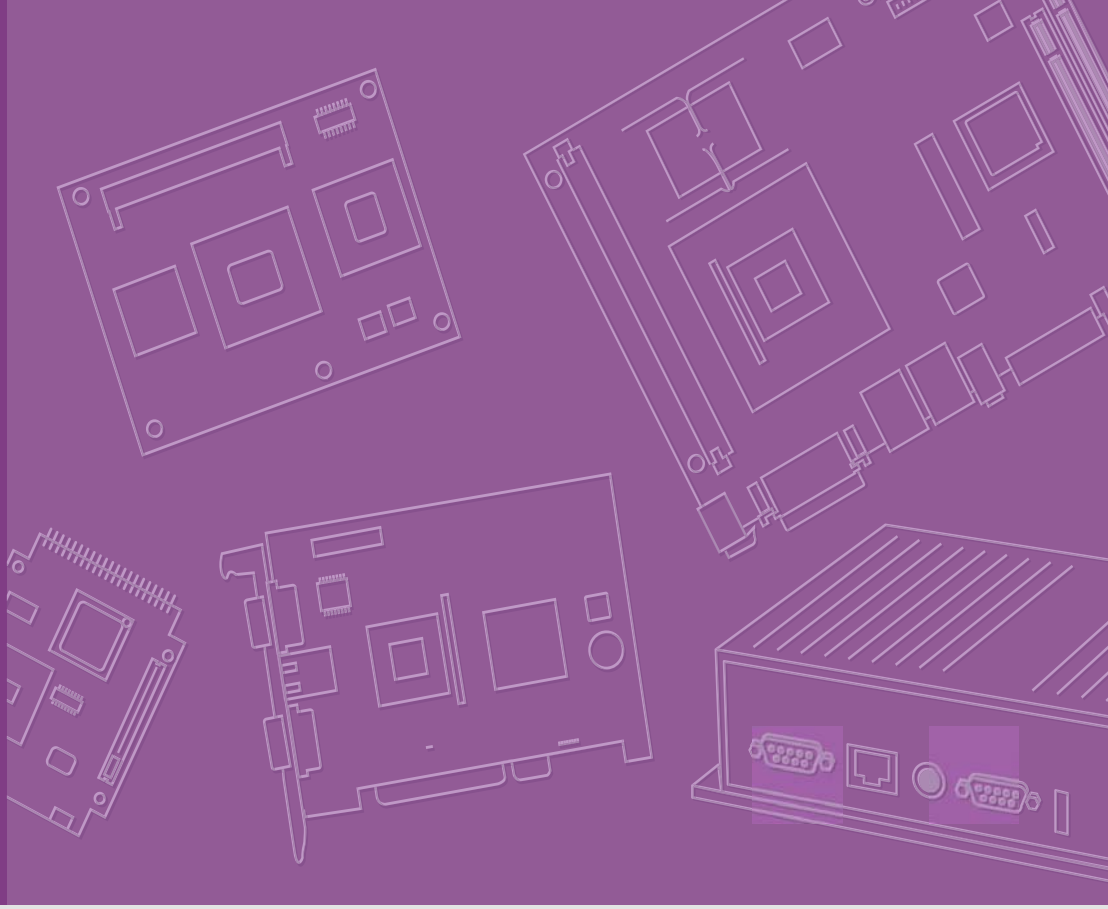

User Manual

AIMB-580

Intel® LGA1156 Core i7/i5/i3/ Pentium mATX Motherboard with Dual VGA/DVI/DDR3/4 COM/Dual LAN

Trusted ePlatform Services

ADVANTECH

Safety Information

Electrical safety

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.
- Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.
- Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit.
- Make sure that your power supply is set to the correct voltage in your area. If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your retailer.

Operation safety

- Before installing the motherboard and adding devices on it, carefully read all the manuals that came with the package.
- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.
- Place the product on a stable surface.
- If you encounter technical problems with the product, contact a qualified service technician or your retailer.

Caution! *The symbol of the crossed out wheeled bin indicates that the product (electrical and electronic equipment) should not be placed in municipal waste. Check local regulations for disposal of electronic products.*

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A Message to the Customer

Advantech Customer Services

Each and every Advantech product is built to the most exacting specifications to ensure reliable performance in the harsh and demanding conditions typical of industrial environments. Whether your new Advantech equipment is destined for the laboratory or the factory floor, you can be assured that your product will provide the reliability and ease of operation for which the name Advantech has come to be known.

Your satisfaction is our primary concern. Here is a guide to Advantech's customer services. To ensure you get the full benefit of our services, please follow the instructions below carefully.

Technical Support

We want you to get the maximum performance from your products. So if you run into technical difficulties, we are here to help. For the most frequently asked questions, you can easily find answers in your product documentation. These answers are normally a lot more detailed than the ones we can give over the phone.

So please consult this manual first. If you still cannot find the answer, gather all the information or questions that apply to your problem, and with the product close at hand, call your dealer. Our dealers are well trained and ready to give you the support you need to get the most from your Advantech products. In fact, most problems reported are minor and are able to be easily solved over the phone.

In addition, free technical support is available from Advantech engineers every business day. We are always ready to give advice on application requirements or specific information on the installation and operation of any of our products.

Declaration of Conformity

FCC

This device complies with the requirements in part 15 of the FCC rules:

Operation is subject to the following two conditions:

- This device may not cause harmful interference
- 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.*

CPU Compatibility

CPU family	SPEED	Core Stepping	sSpec	Power	Vcore	FSB
Quad Core (NO Integrated) Graphic Controller)	2.8G	B1 (ES)	Q3AL	95W	1.2 V	1333
Dual Core (Integrated Graphic Controller)	3.066G	C0 (ES)	Q2SB	79W/65W	1.2 V	1333
Dual Core (Integrated Graphic Controller)	2.8G	C0 (ES)	Q2T9	79W/65W	1.24 V	1333
Dual Core (Integrated Graphic Controller)	2.533G	C0 (ES)	Q2TM	79W/65W	1.2 V	1066
Quad Core i7 860 MP CPU (NO Integrated Graphic Controller)	2.8G	B0 (MP)	SLBLC	94W	1.2 V	1333
Quad Core i5 750 MP CPU (NO Integrated Graphic Controller)	2.66G	B1 (MP)	SLBJJ	95W	1.2 V	1333
Dual Core i3 540 (Integrated Graphic Controller)	3.066G	C2 (ES)	Q3GQ	79W/65W	1.2 V	1333
Dual Core i5 660 (Integrated Graphic Controller)	3.330G	C2 (ES)	Q3GP	79W/65W	1.24 V	1333

Memory Compatibility

Brand	Size	Speed	Type	ECC	Vendor PN	Advantech PN	Memory
Transcend	1GB	DDR3 1066	DDR3	N	TS128MLK64V1U/ TS2KNU28100-1S	96D3-1G1066N N-TR	SEC K4B1G0846D-HCF8(128x8)
	2GB	DDR3 1066	DDR3	N	TS256MLK64V1U/ TS5KNU28300-1S	96D3-2G1066N N-TR	SEC K4B1G0846D-HCF9(128x8)
Apacer	1GB	DDR3 1066	DDR3	N	78.01GC3.420	96D3-1G1066N N-AP	ELPIDA J1108BABG-AE-E
	2GB	DDR3 1066	DDR3	N	78.A1GC3.421	96D3-2G1066N N-AP	ELPIDA J1108BABG-AE-E
This model is with Elpida A die, not suggested to use. Elpida D die is suggested (ELPIDA EDJ1108BDBG-D J-F (128 x 8)							
Transcend	1GB	DDR3 1333	DDR3	N	TS128MLK64V3U		SEC 907 HCH9 K4B1G08460(128x8)
	2GB	DDR3 1333	DDR3	N	TS256MLK64V3U		SEC 907 HCH9 K4B1G08460(128x8)
Apacer	1GB	DDR3 1333	DDR3	N	78.A 1GC6.421		ELPIDA J1108BABG-DJ-E(128x8)
	2GB	DDR3 1333	DDR3	N	78.01GC6.420		ELPIDA J1108BABG-DJ-E (128x8)
This model is with Elpida A die, not suggested to use. Elpida D die is suggested (ELPIDA EDJ1108BDBG-D J-F (128 x 8)							
DSL	1GB	DDR3 1333	DDR3	N			ELPIDA J1108BABG-DJ-E (128x8)
	2GB	DDR3 1333	DDR3	N			ELPIDA J1108BABG-DJ-E (128x8)
This model is with Elpida A die, not suggested to use. Elpida D die is suggested (ELPIDA EDJ1108BDBG-D J-F (128 x 8)							
Transcend	1GB	DDR3 1066	DDR3	N	TS128MLK64V1U	96D3-1G1066N N-TR	SEC K4B1G0846D HCH9 ENJ038A3 (128x8)
Apacer	1GB	DDR3 1066	DDR3	N	78.01GC3.420	96D3-1G1066N N-AP	ELPIDA J1108BABG-DJ-E (128x8)
This model is with Elpida A die, not suggested to use. Elpida D die is suggested (ELPIDA EDJ1108BDBG-D J-F (128 x 8)							
Apacer	2GB	DDR3 1066	DDR3	N	78.A1GC3.421	96D3-2G1066N N-AP	ELPIDA J1108BABG-DJ-E 092109D1P (128x8)
This model is with Elpida A die, not suggested to use. Elpida D die is suggested (ELPIDA EDJ1108BDBG-D J-F (128 x 8)							
Transcend	1GB	DDR3 1333	Transcend	N		TS128MLK64V3U	Micron 9GF22 D9KPT (128x8)
Kingston	1GB	DDR3 1333	DDR3	N	KVR1333D3N9/1G		HYNIX H5TQ1G83BFR H9C928AK (128x8)

Kingston (256x8)	2GB	DDR3 1333	DDR3	N	TS128MLK64V3U	ELPIDA J1108BDBG-DJ-F 093309DLK20

Ordering Information

AIMB-580 Ordering Information						
Part Number	**On-board Processor**	**Chipset**	**Memory**	**LAN**	**COM**	**Display**
AIMB-580QG2-00A1E	N/A	Q57	DDR3 800/1066/1333	2	4	VGA/DVI

Product Warranty (2 years)

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

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

Because of Advantech's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

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

1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen 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 merchandise 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:

- LGA 1156 Core i7/i5/i3/Pentium Processor based Micro ATX with DDR3/PCIe/ Dual GbE LAN
- 1 x AIMB-580 startup manual
- 1 x CD with driver utility and manual
- 2 x COM port cable
- 2 x Serial ATA HDD data cable
- 2 x Serial ATA HDD power cable
- 1 x I/O port bracket
- 1 x warranty card

If any of these items are missing or damaged, contact your distributor or sales representative immediately. We have carefully inspected the AIMB-580 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-580, 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.

Contents

Chapter 1

General Information

1.1 Introduction

The AIMB-580 is designed with the Intel® Q57/3450 for industrial applications that require both performance computing and enhanced power management capabilities. The motherboard supports Intel Core i7 up to 2.93 GHz/Core i5 up to 2.66 GHz/Core i3 up to 3.06 GHz/Pentium up to 2.8 GHz processor up to 8 MB L2 cache and DDR3 800/1066/1333 up to 16 GB. A rich I/O connectivity of 4 serial ports, 10 USB 2.0, dual GbE LAN and 6 SATA ports.

1.2 Features

- **Performance Q57/3450 chipset:** Two chip solution that can support data transfer through DMI (Direct Media Interface) and FDI (Flexible Display Interface)
- **Rich I/O connectivity:** 4 serial ports, 10 USB 2.0, dual GbE LAN
- **Standard Micro ATX form factor with industrial feature:** The AIMB-580 is the most fully-featured Micro ATX motherboard with balanced expandability and performance.
- **Wide selection of storage devices:** SATA HDD, customers benefit from the flexibility of using the most suitable storage device.
- **Optimized integrated graphic solution:** Integrated Intel graphics supports versatile display options and 32-bit 3D graphics engine.

1.3 Specifications

1.3.1 System

- **CPU:** LGA1156 Core i7 up to 2.93 Ghz/Core i5 up to 2.66 Ghz/Core i3 up to 3.06 Ghz/Pentium up to 2.8 Ghz
- **BIOS:** AMI 64 Mbit SPI BIOS
- **System chipset:** Intel Q57/3450 chipset
- **SATA hard disk drive interface:** Six on-board SATA connectors with data transmission rates up to 300 MB.

1.3.2 Memory

- **RAM:** Up to 16 GB in 4 slots 240-pin sockets. Supports dual channel DDRIII 800/1066/1333 SDRAM
- **RAM:** The type of memory supported by the processor is dependent on the Intel 5 series chipset (Q57 for AIMB-580QG2-00A1E)/ Intel 3400 series chipset (3450 for AIMB-580WG2-00A1E)
  - Desktop Intel 5 series chipset platforms only support non-ECC unbuffered DIMMs and do not support any memory configuration that mixes non-ECC with ECC unbuffered DIMMs
  - Server Intel 3400 series chipset platforms support ECC unbuffered DIMMs. Workstation Intel 3400 Series Chipset platforms support ECC and non-ECC unbuffered DIMMs. Neither platforms support any memory configuration that mix non-ECC with ECC unbuffered DIMMs.
- **RAM:** For Dual -channel modes both channels must have at least one connector populated. For single-channel mode one or both may have the DIMM connector populated.

Note! *DIMMA1 connector must be always populated for any memory mode configuration.*

1.3.3 Input/Output

- **PCI bus:** 2 PCI slot
- **PCIe bus:** 1 PCIe x4 slot.
- **Enhanced parallel port:** Configured to LPT1 with 25 pin box header. Supports EPP/SPP/ECP.
- **FDD connector:** Supports 3.5" (720 KB, 1.44 MB) Floppy drives.
- **Serial ports:** Four serial ports, one of RS-232/422/485 and three of RS-232 serial ports.
- **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 ten USB 2.0 ports with transmission rate up to 480 Mbps, 6 onboard pin header and 4 external ports.
- **SATA2 Interface:** Six on-board serial ATA2 connectors with a data transmission rate of up to 300 MB/s supporting Advanced Host Controller Interface(AHCI) technology.

1.3.4 Graphics

- **Controller:** Only Core i5-600, Core i3-500 and Pentium CPUs with dual core are embedded with integrated graphics, Core i7, Core i5-700 with quad core are not embedded with integrated graphics.
- **Display memory:** 1 GB maximum shared memory with 2GB and above system memory installed.
- **CRT:** Up to 2048 x 1536 resolution, 400 MHz RAMDAC.
- **DVI interface:** Up to 1920 x 1200@ 60Hz refresh rate. If DVI is used, PCIe x 16 is automatically disabled.

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: Intel 82578DM (PHY) for LAN1, Intel 82583V for LAN2.

1.3.6 Industrial features

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

1.3.7 Mechanical and environmental specifications

- **Operating temperature:** 0 ~ 60° C (32 ~ 140° F, Depending on CPU).
- **Storage temperature:** -40 ~ 85° C (-40 ~ 185° F).
- **Humidity:** 5 ~ 95% non-condensing.
- **Power supply voltage:** +3.3 V, +5 V, +12 V, -12 V, 5 Vsb.
- **Power consumption:**

  Intel LGA1156 Core i5 3.33 GHz, 4MB L2 cache, 2GB DDR3 1333 MHz x 4 pc

  +5 V @ 4.17 A, +3.3 V @ 0.77 A, +12 V @ 0.01 A, 5 VSB @ 0.84 A, -12 V @ 0.13 A

  Measure the maximum current value which system under maximum load (CPU: Top speed, RAM & Graphic: Full loading)
- **Board size:** 244 mm x 244 mm (9.6" x 9.6").
- **Board weight:** 0.75 kg.

1.4 Jumpers and Connectors

Connectors on the AIMB-580 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
JSETCOM3	Serial port:RS232/RS422/RS485 jumper setting
JCMOS1	CMOS clear
PSON1	AT/ATX mode selector
JCASE1	Case open connector
JIR1/JWD1/JOBS	Jumper for Irda/Watchdog/OBS
JWE1	Jumper for BIOS update ME mode

Table 1.2: Connectors

Label	Function
JFP1	Power Switch / Reset connector
JFP2	External speaker / Sata HDD LED connector / SM Bus connector
JFP3 (Keyboard Lock and Power LED)	Power LED
	Suspend: Fast flash (ATX/AT)
	System On: ON (ATX/AT)
	System Off: OFF (AT)
	System Off: Slow flash (ATX)
DVI1	DVI connector
LANLED1	Front Panel LAN Indicator connector
FDD1	Floppy drive connector
LPT1	Parallel port
VGA1	VGA connector
COM1/2	Serial port: COM1/2, D-sub connector
COM3/4	Serial port: COM3/4, box header 2x 5 p
KBMS1	PS/2 keyboard and Mouse connector; cable length: 20 meter
LAN1_USB12/ LAN2_USB34	USB port 1, 2, 3, 4
	LAN1, LAN2
USB56/78/910	USB port 5, 6 /7, 8, 9, 10(on board)
AUDIO1	Line IN, Line Out, Mic IN connector
FPAUDIO1	Front panel audio connector (FP_AUDIO)
SPI_CN1	SPI flash card connector
SATA1~6	Serial ATA connector
ATX12V1	ATX 12V auxiliary power connector
EATXPWR1	ATX power connector
CPUFAN1	CPU FAN connector
SYSFAN1	System FAN power connector
SYSFAN2	System FAN power connector

Table 1.2: Connectors	
SPDIF OUT1	Digital audio connector 4 x 1 header pitch =2.54mm

1.5 Board layout: Jumper and Connector Locations

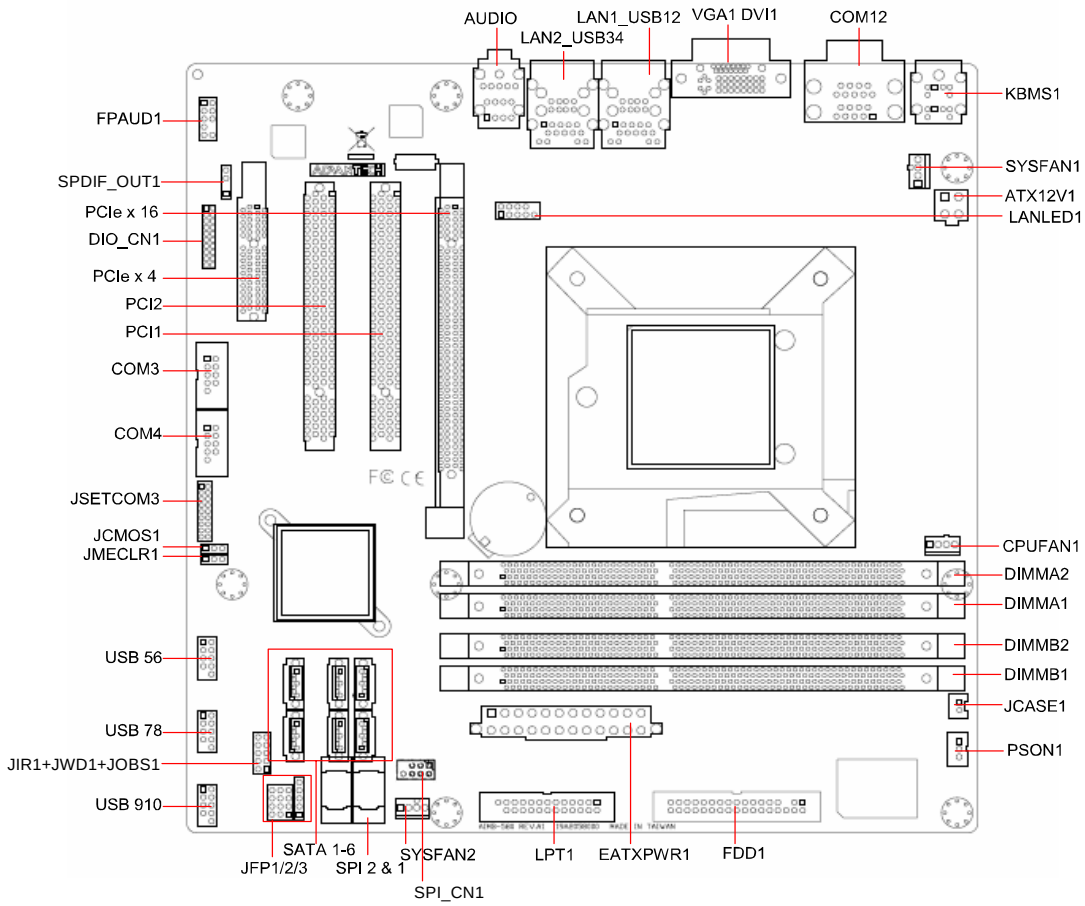


Figure 1.1 Jumper and Connector Location

Figure 1.2 I/O Connectors

1.6 AIMB-580 Block Diagram

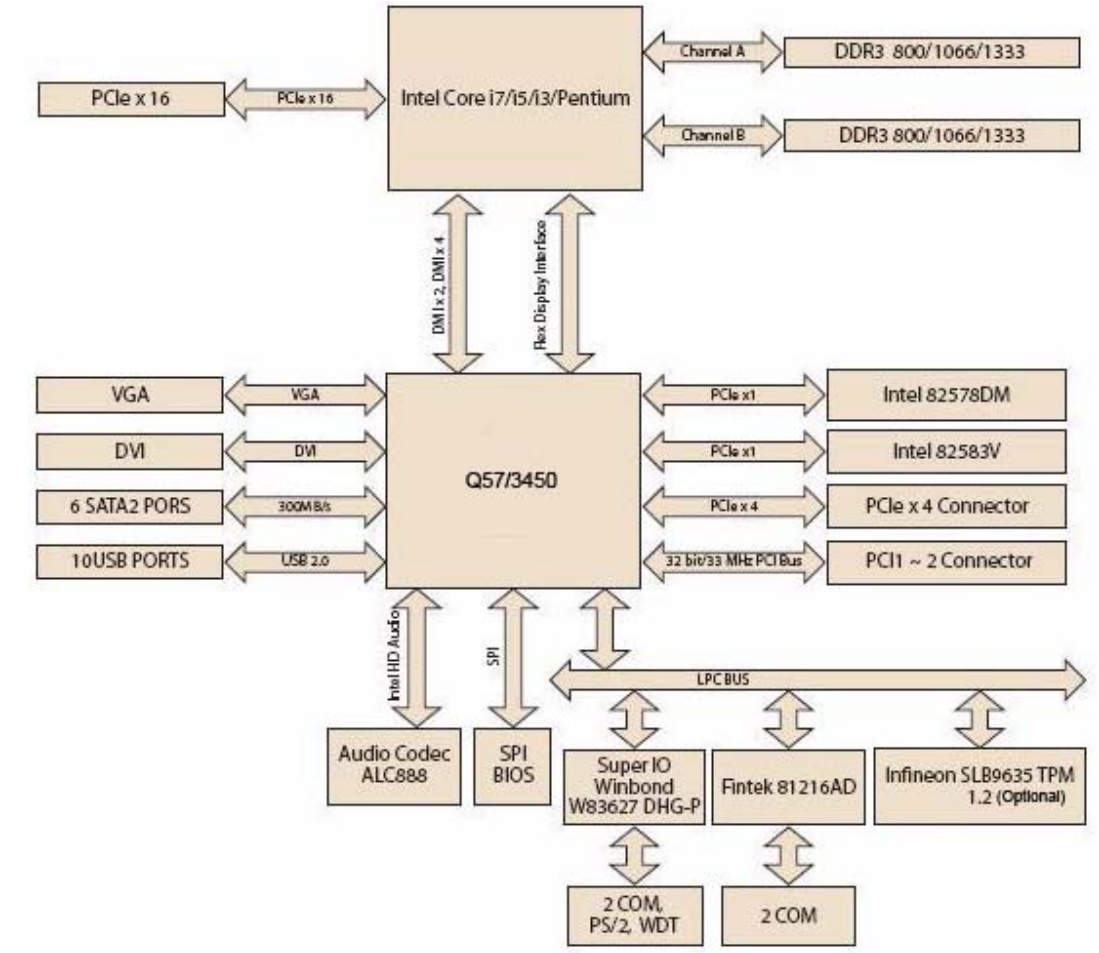


Figure 1.3 AIMB-580 Block Diagram

1.7 Safety Precautions

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

Caution! *Always ground yourself to remove any static charge before touching the motherboard. Modern electronic devices are very sensitive to electrostatic discharges. 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.

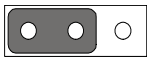
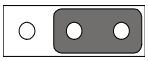
1.8.1 How to set jumpers

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 (CMOS1)

The AIMB-580 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: CMOS1

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

1.8.3 Chassis instruction connector (JCASE1)

The AIMB-580 motherboard contains a jumper that offer a chassis open sensor. The buzzer on the motherboad beeps when the case is opened.

1.8.4 ATX/AT mode selector (PSON1)

Table 1.4: ATX/AT mode selector (PSON1)

Function	Jumper Setting
AT mode	1-2 closed
*ATX mode	2-3 closed
*default setting	

1.8.5 COM3 RS 232/422/485 mode selector (JSETCOM3)

Users can use JSETCOM3 to select among RS 232/422/485 modes for COM3. The default setting is RS 232.

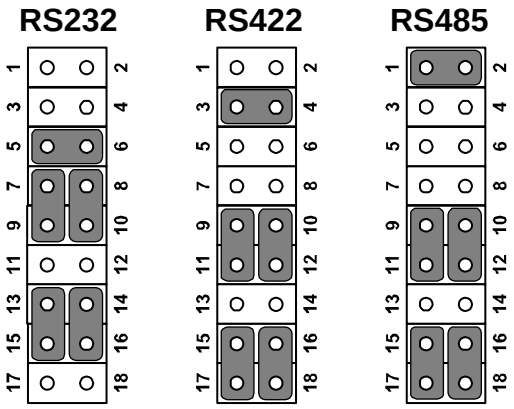


Table 1.5: COM3 RS 232/422/485 mode selector (JSETCOM3)

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
RS-485	(1-2) + (9-11) + (10-12) + (15-17) + (16-18) closed
*: Default	

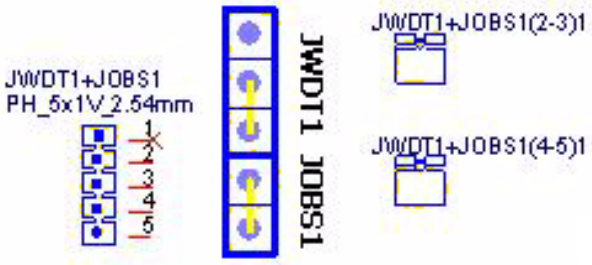
1.8.6 Irda/Watchdog/OBS connector(JIR1/JWD1/JOBS)

JIR1/JWD1/JOBS is the jumper for Irda/Watchdog/OBS connector to set watchdog function.

Table 1.6: Irda/Watchdog/OBS jumper selector

Function	Jumper Setting
JIR1	Jumper for Irda
JWD1+JOBS1	Watchdog Timer Output
Watchdog to Reset	(2-3) pin closed *
Error Beep	(4-5)pin closed *

* refers to default.



1.8.7 BIOS update ME mode selector(JWE1)

JWE1 is the jumper for user to select update BIOS freely without lock protection when using ADVSPI or with lock protection.

Table 1.7: BIOS update ME mode selector

Function	Jumper Setting	BIOS protect	Master Region Access Control	Update tool	ME version	ME function after updated	Setting	JWE1 PWR working status
1.*Production mode	(1-2) pin closed	None	FF	ADVSPI	updated	Link/ remote contol	default	AC on/ stdby
2.		Lock Read:0B Write:0A	ADVSPI	no updated	Link/ remote contol	OEM request	AC on/ stdby	
3. Manufacture mode	(2-3) pin closed	None	FF	ADVSPI	updated	None	None	None

* refers to default.

1. * In default production mode, there's no lock protection for BIOS. The Master Region Access Control setting is FF, users can update complete BIOS with ADVSPI tool. The function is same as Manufacture mode. BIOS ME(Management Engine) function keeps link and remote control. The jumper can be set under AC off PWR status, can not set under standby PWR status.
2. In prodution mode with lock protection for BIOS, the Master Region Access Control setting is Read:0B, Write:0A. Users can not update BIOS ME firmware freely. BIOS ME(Management Engine) function keeps link and remote control. This setting is only for OEM project request. The jumper can be set under AC off PWR status, can not set under standby PWR status.
3. In manufacture mode, BIOS has no lock protection function. The Master Region Access Control setting is FF, users can update complete BIOS with ADVSPI tool. However, the BIOS ME function no keep link and remote control after bios been updated.

1.9 System Memory

The AIMB-580 has four sockets for 240-pin DDR3.

All these sockets use 1.8V unbuffered double data rate synchronous DRAMs (DDR3 SDRAM). They are available in capacities of 1024 MB. The sockets can be filled in any combination with DIMMs of any size, giving a total memory size between 1 GB and 4 GB. AIMB-580 with Q57 PCH does not support ECC, with 3450 PCH support ECC (error checking and correction).

1.10 Rules for Populating Memory Slots

In all modes, the frequency of system memory is the lowest frequency of all memory modules placed in the system, as determined through the SPD registers on the memory modules. The system memory controller supports one or two DIMM connectors per channel. For dual-channel modes both channels must have at least one DIMM connector populated and for single-channel mode only a single-channel may have one or both DIMM connectors populated.

Note! *DIMMA1 must always be populated within any memory configuration. DIMMA1 is the furthest DIMM within a channel and is identified by the CS#[1:0], ODT[1:0], and CKE[1:0] signals.*

1.11 Memory Installation Procedures

To install SDRAM, first make sure the two handles of the socket are in the “open” position. i.e. The handles lean outward. Slowly slide the module along the plastic guides on both ends of the socket. Then press the 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 socket. To remove the memory module, just push both handles outward, and the memory module will be ejected by the mechanism in the socket.

1.12 Cache Memory

The AIMB-580 supports a CPU with one of the following built-in full speed L2 caches:

- 8 MB for Intel Core i7 CPU
- 8 MB for Intel Core i5-700 CPU
- 4 MB for Intel Core i5-600 CPU
- 4 MB for Intel Core i3 CPU
- 3 MB for Intel Pentium CPU

The built-in second-level cache in the processor yields much higher performance than conventional external cache memories.

1.13 Processor Installation

The AIMB-580 is designed for LGA1156, Intel Core i7/Core i5/Core i3/Pentium processor.

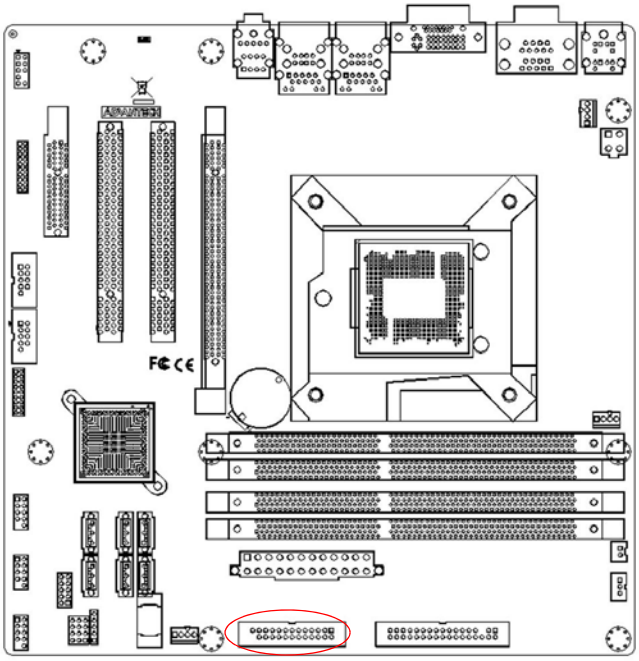
Chapter 2

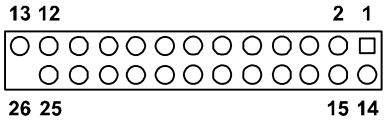
Connecting Peripherals

2.1 Introduction

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

2.2 Parallel Port (LPT1)





LPT1

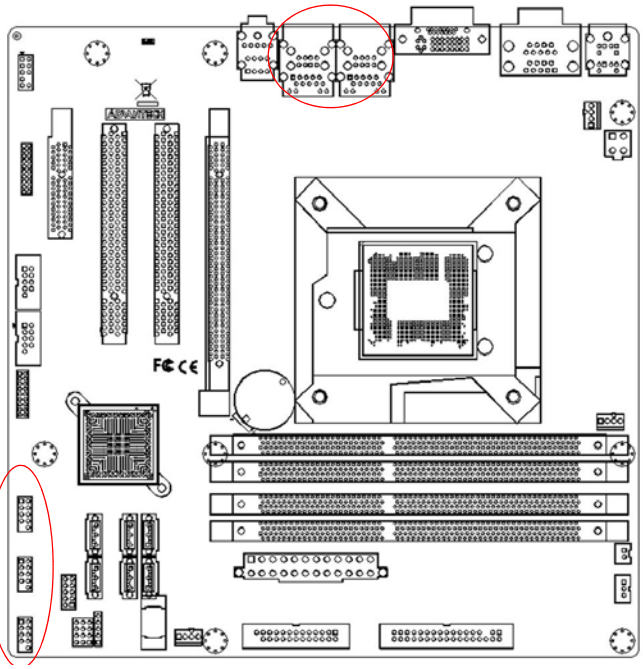
The parallel port is normally used to connect the motherboard to a printer. The AIMB-580 includes an onboard parallel port, accessed through a 25-pin flat-cable connector, LPT1.

Note! *Parallel cable is not enclosed in the box as a standard accessory. If you need, the order part number is 1700008809.*

2.3 USB Ports (USB12/LAN2_USB34/USB56/USB78/ USB910)

The AIMB-580 provides up to eight ports of USB (Universal Serial Bus). The USB interface complies with USB Specification Rev. 2.0 supporting transmission rates up to 480 Mbps and is fuse protected. The USB interface can be disabled in the system BIOS setup.

The AIMB-580 is equipped with one high-performance 1000 Mbps Ethernet LAN. They are supported by all major network operating systems. The RJ-45 jacks on the rear plate provide 1000Base-T operation.



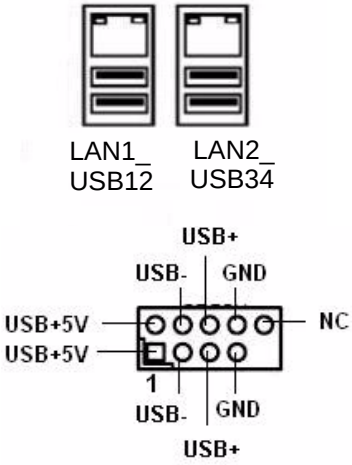
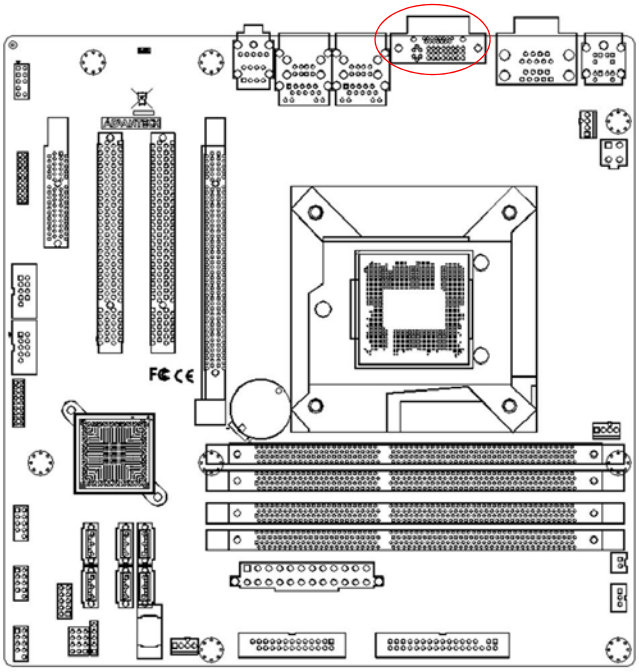
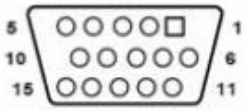


Table 2.1: LAN LED Indicator(RJ-45)

LAN Mode	Lan Indicator	
LAN1 indicator	LED1 (Right)	off for mal-link ; Link (On) / Active (Flash)
	LED2 (Left)	100 Mbps (On) / 10 Mbps (Off)
	LED2 (Left)	1000 Mbps (On)
LAN2 indicator	LED1 (Right)	off for mal-link ; Link (On) / Active (Flash)
	LED2 (Left)	100 Mbps (On) / 10 Mbps (Off)
	LED2 (Left)	1000 Mbps (On)

2.4 VGA Connector (VGA1)

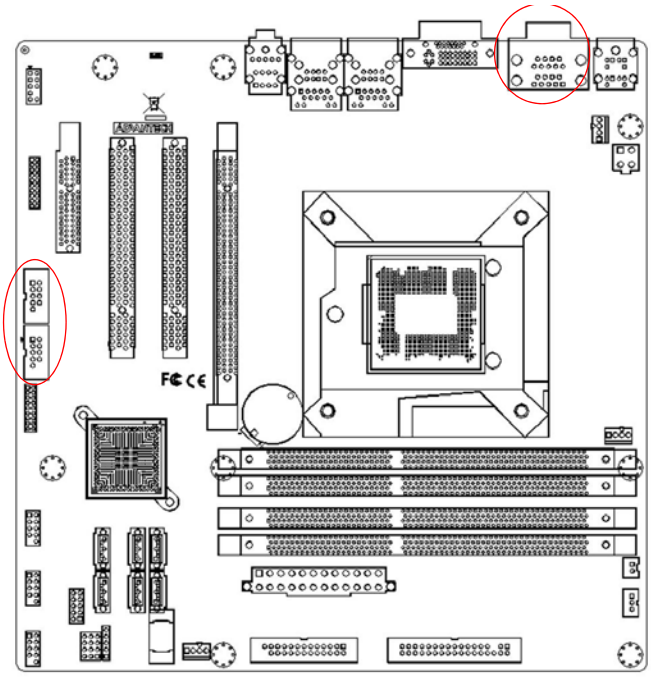


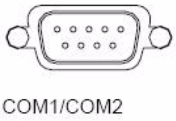


VGA1

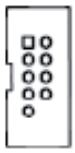
The AIMB-580 includes a VGA interface that can drive conventional CRT displays. VGA1 is a standard 15-pin D-SUB connector commonly used for VGA. Pin assignments for CRT connector VGA1 are detailed in Appendix B.

2.5 Serial Ports (COM3/ COM4)





COM1/COM2



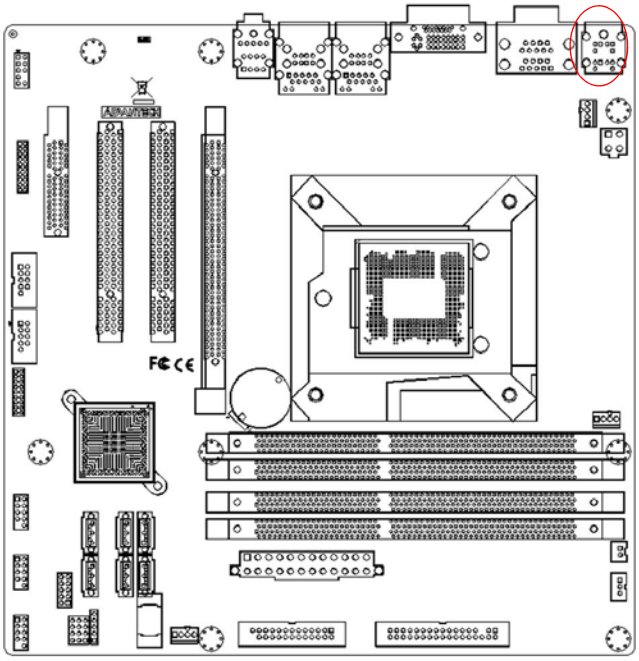
COM3/COM4

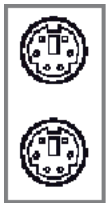
AIMB-580 supports four serial ports, three RS-232, and one RS-232/422/485 COM3. The user can use JSETCOM3 to select among RS-232/422/485 modes for COM3. These ports can connect to serial devices, such as a mouse or a printer, or to a communications network.

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.

2.6 PS/2 Keyboard and Mouse Connector (KBMS1)

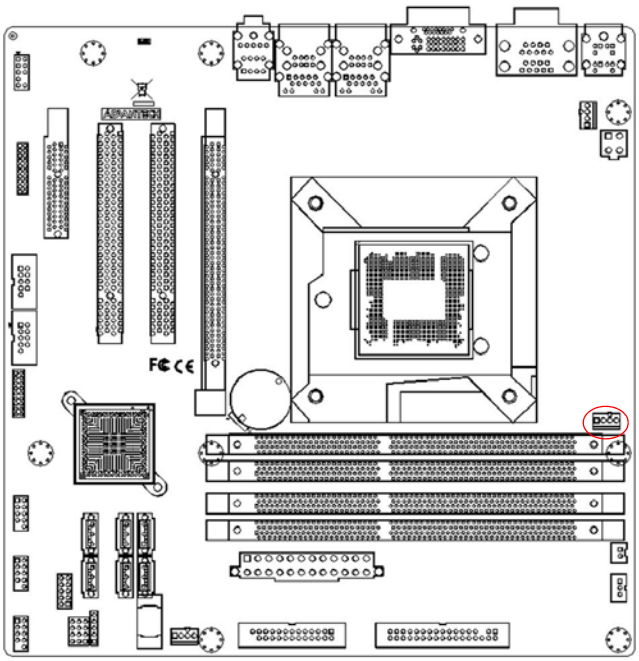


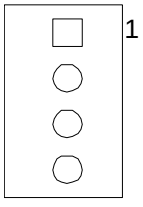


KBMS1

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

2.7 CPU Fan Connector (CPU_FAN1)

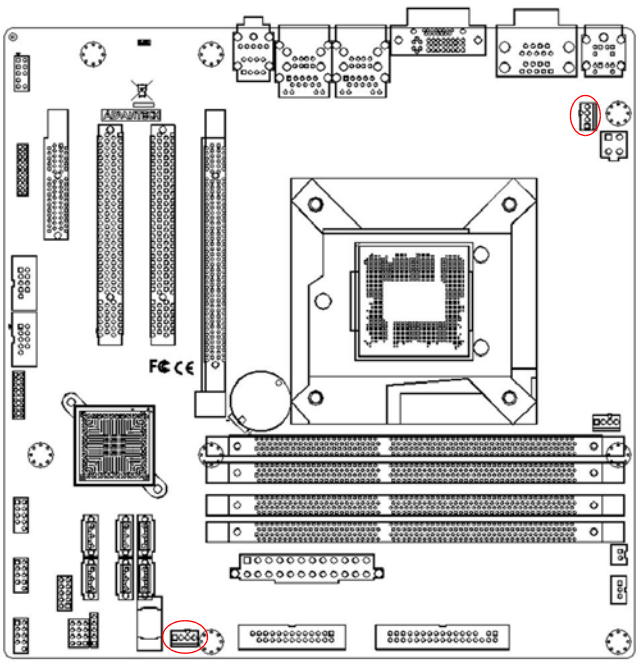


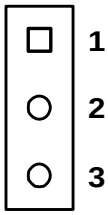


CPU_FAN1

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

2.8 System FAN Connector (SYS_FAN1/2)





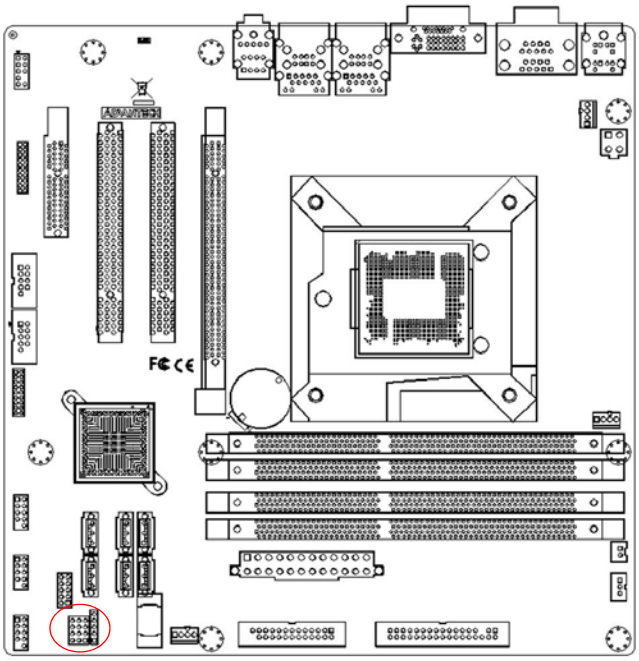
SYS_FAN1/2

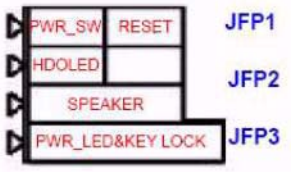
If a fan is used, this connector supports cooling fans of 500 mA (6 W) or less.

2.9 Front Panel Connectors (JFP1/2/3)

There are several external switches to monitor and control the AIMB-580.

JFP1+JFP2 are for Front panel (HDD LED/SNMP SMBus/Speaker pin header/ Power switch). JFP3 is for Power LED and Keyboard lock timer.





JFP1 & JFP2

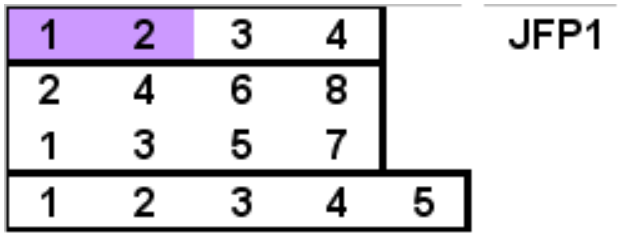
3	6	9	12	
2	5	8	11	
1	4	7	10	

JFP3

1	2	3	4	5

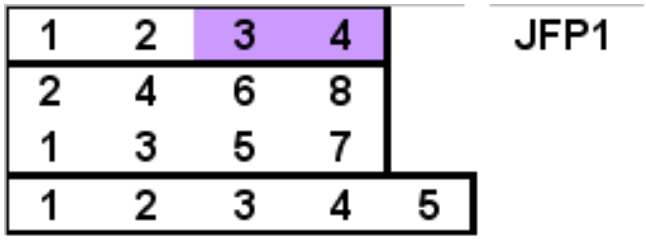
2.9.1 ATX Soft Power Switch (JFP1)

If your computer case is equipped with an ATX power supply, you should connect the power on/off button on your computer case to JFP1 PIN1, 2. This connection enables you to turn your computer on and off.



2.9.2 Reset Connector (JFP1)

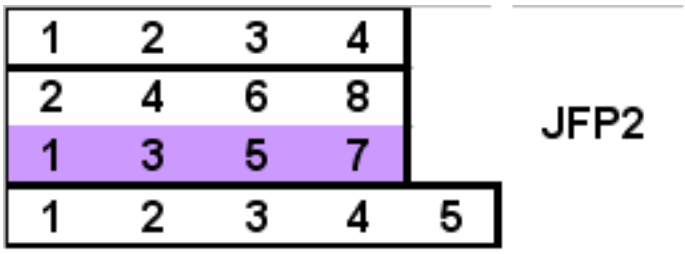
Many computer cases offer the convenience of a reset button. Connect the wire from the reset button.



JFP1	
pin.1	#PWR_SW
pin.2	GND
pin.3	#RST_SW
pin.4	GND

2.9.3 External Speaker (JFP2)

JFP2 is a 4-pin connector for an external speaker. If there is no external speaker, the AIMB-566 provides an onboard buzzer as an alternative. To enable the buzzer, set pins 5-7 as closed.



2.9.4 HDD LED Connector (JFP2)

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

2.9.5 SM Bus Connector (JFP2 PIN6,8)

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.

JFP2 PIN6,8 can be connected to CN19 of SNMP-1000. Please be careful about the pin assignments, pin 6 must be connected to pin 1 and pin 8 to pin 2 on both ends of cable.

JFP2			
pin.1	BUZZER+	pin.2	HDD_LED+
pin.3	NC	pin.4	HDD_LED-
pin.5	MB_BEEP+	pin.6	SM_DAT
pin.7	BUZZER-	pin.8	SM_CLK

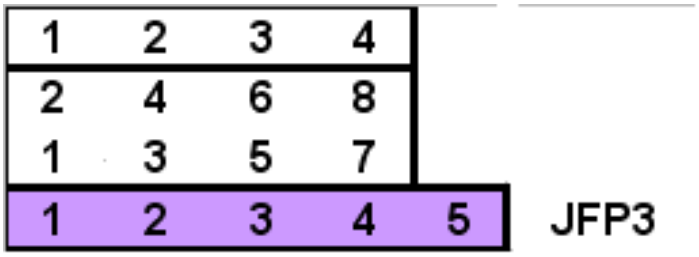
2.9.6 Power LED and keyboard lock connector (JFP3 / PWR_LED&KEY LOCK)

(JFP3 / PWR_LED&KEY LOCK) is a 5-pin connector for the power on LED and Key Lock function. The Power LED cable should be connected to pin 1-3. The key lock button cable should be connected to pin 4-5.

There are 3 modes for the power supply connection. The first is “ATX power mode”, system is on/off by a tentative power button. The second is “AT Power Mode”, system is on/off by the switch of the Power supply. The third is another “AT Power Mode” which is using the front panel power switch. The power LED status is indicated as following table:

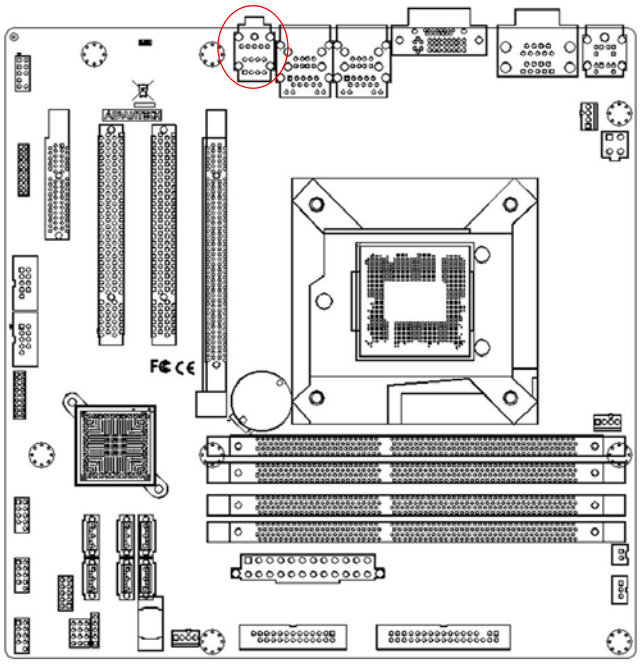
Table 2.2: ATX power supply LED status (No support for AT power)

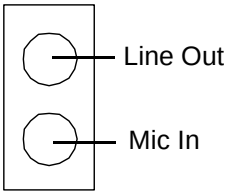
Power Mode	LED (ATX Power Mode) (On/Off by tentative button)	LED (AT Power Mode) (On/Off by switching power supply)	LED (AT Power Mode) (On/Off by front panel switch)
PSON1 (On Back plane) Jumper Setting	2-3 pin closed	1-2 pin closed	Connect 1-2 pin cable with switch
System On	On	On	On
System Status	Fast flashes	Fast flashes	Fast flashes
System Off	Slow flashes	Off	Off



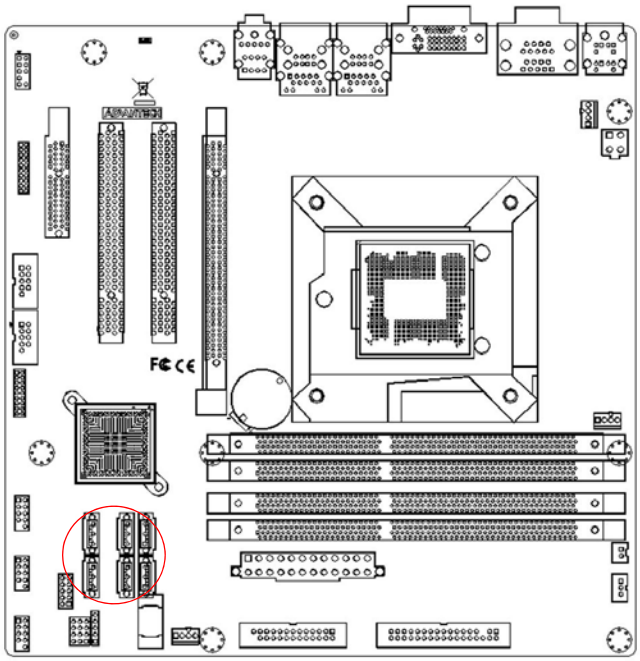
JFP3	
pin.1	PWR_LED+
pin.2	NC
pin.3	GND
pin.4	#KB_LOCK
pin.5	GND

2.10 Line Out, Mic In Connector (AUDIO1)





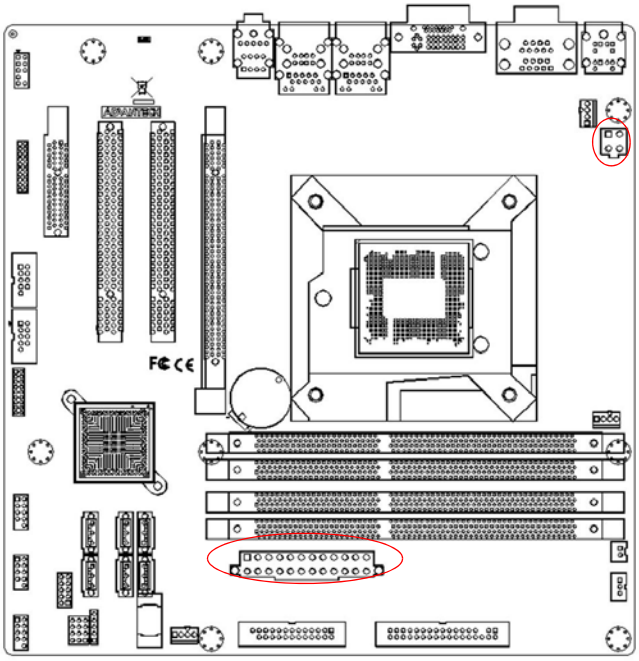
2.11 Serial ATA Interface (SATA 1/2/3/4/5/6)

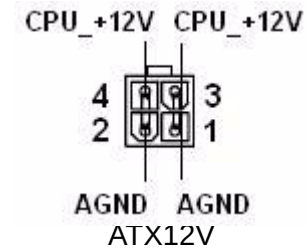


AIMB-580 features two high performance serial ATA interface (up to 300 MB/s) which eases cabling to hard drives with thin and long cables.

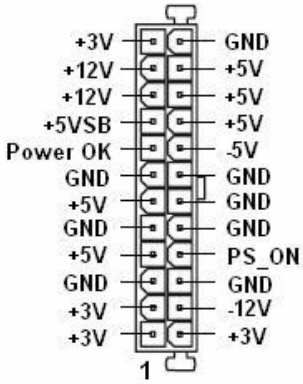
2.12 ATX Power Connector (ATX12V1, EATXPWR1)

These connectors are for ATX power supply plugs. The power supply plugs are designed to fit these connectors in only one orientation. Find the proper orientation and push down firmly until the connectors completely fit.





ATX12V

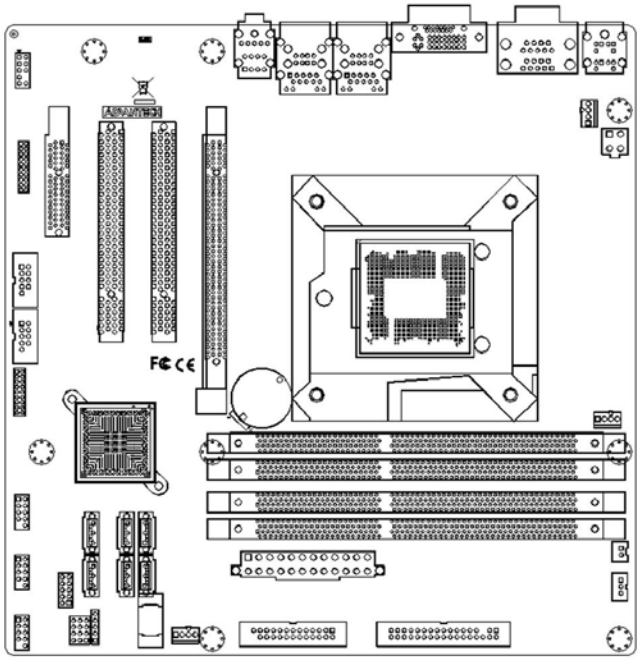


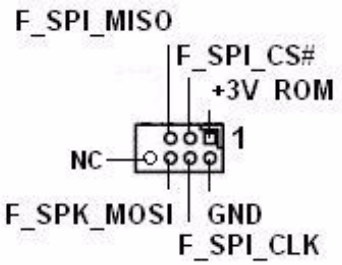
EATXPWR1

Note!

1. *Make sure that your ATX 12V power supply can provide 8A on the +12V lead and at least 1A on the +5-volt standby lead (+5VSB). The minimum recommended wattage is 230W, or 300W for a fully configured system. The system can become unstable and might experience difficulty powering up if the power supply is inadequate.*
2. *You must install a PSU with a higher power rating if you intend to install additional devices.*

2.13 SPI Flash Connector (SPI_CN1)

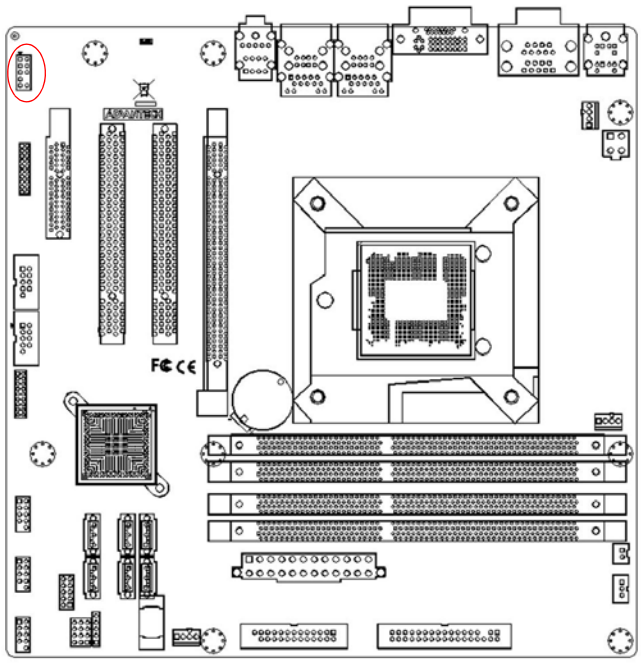


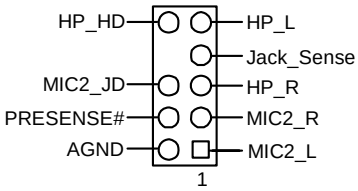


SPI flash card pin header which can be used to flash the BIOS. Users can use ADVSPI flash tool or SPI programmer to flash BIOS. For more dtail please contact AE or PM for support.

2.14 Front Panel Audio Connector (FPAUDIO1)

This connector is for a chassis_mounted front panel audio I/O module that supports either HD Audio or legacy AC'97 (optional) audio standard. Connect one end of the front panel audio I/O module cable to this connector.

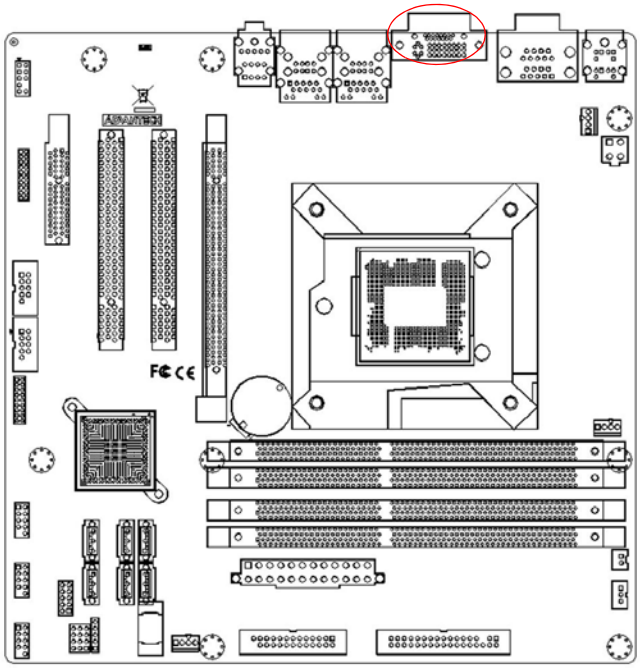


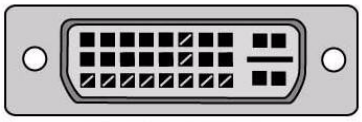


Note! *For motherboards with the optional HD Audio feature, we recommend that you connect a high-definition front panel audio module to this connector to achieve the motherboards high definition audio capability.*

2.15 DVI connector(DVI1)

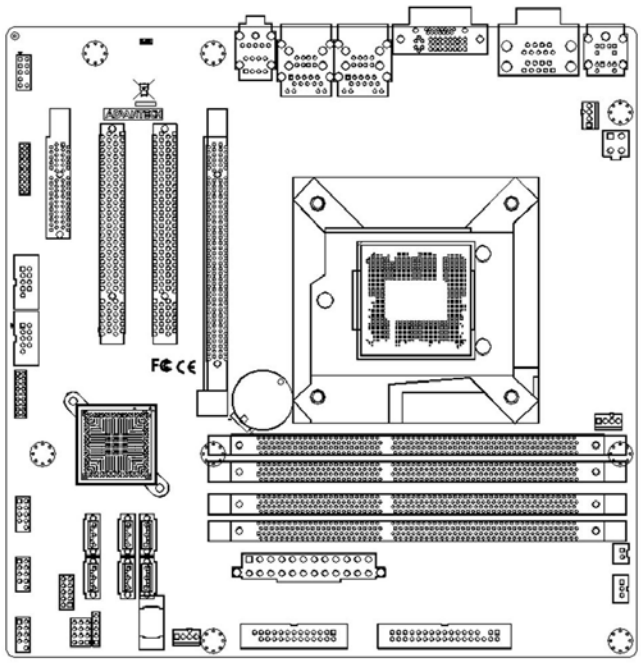
DVI1 is the connector provide video interface standard designed to maximize the visual quality of digital display devices such as flat panel LCD computer displays and digital projectors. It is designed for carrying uncompressed digital video data to a display. which is a DVI-D output.

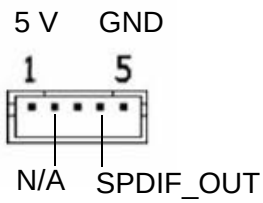




2.16 Digital Audio Connector(SPDIF_OUT1)

This connector is for the S/PDIF audio module to allow digital sound output. Connect one end of the S/PDIF audio cable to this connector and the other end to the S/PDIF module.

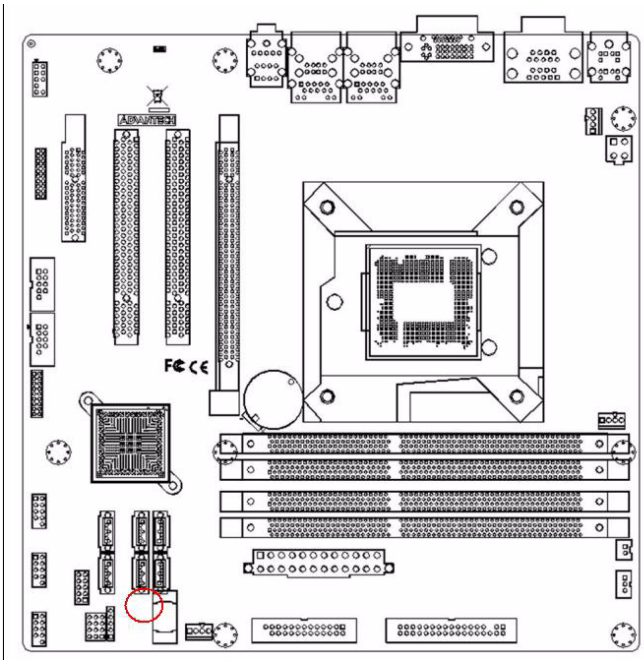


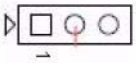


Note! *The S/PDIF out module is purchased separately.*

2.17 BIOS ME update mode connector(JWE1)

There are several mode for BIOS ME update in AIMB-580. The connector serves lock protection for users to secure BIOS be flashed safely.





Chapter 3

BIOS Operation

3.1 Introduction

AMI BIOS has been integrated into many motherboards, and has been very popular for over a decade. People sometimes refer to the AMI BIOS setup menu as BIOS, BIOS setup or CMOS setup.

With the AMI BIOS Setup program, you can modify BIOS settings and control the special features of your computer. The Setup program uses a number of menus for making changes and turning special features on or off. This chapter describes the basic navigation of the AIMB-580 setup screens.

3.2 BIOS Setup

The AIMB-580 Series system has build-in AMI BIOS with a CMOS SETUP utility which allows user to configure required settings or to activate certain system features.

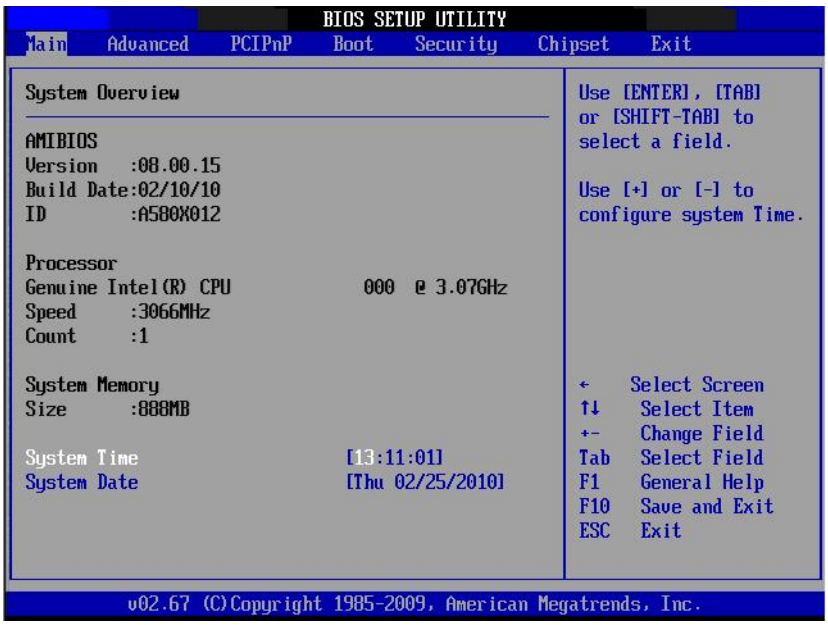
The CMOS SETUP saves the configuration in the CMOS RAM of the motherboard. When the power is turned off, the battery on the board supplies the necessary power to the CMOS RAM.

When the power is turned on, press the <Del> button during the BIOS POST (Power-On Self Test) will take you to the CMOS SETUP screen.

Control Keys	
< ↑ >< ↓ >< ← >< → >	Move to select item
<Enter>	Select Item
<Esc>	Main Menu - Quit and not save changes into CMOS Sub Menu - Exit current page and return to Main Menu
<Page Up/+>	Increase the numeric value or make changes
<Page Down/->	Decrease the numeric value or make changes
<F1>	General help, for Setup Sub Menu
<F2>	Item Help
<F5>	Load Previous Values
<F7>	Load Setup Default
<F10>	Save all CMOS changes

3.2.1 Main Menu

Press <Del> to enter AMI BIOS CMOS Setup Utility, the Main Menu will appear on the screen. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.



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

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

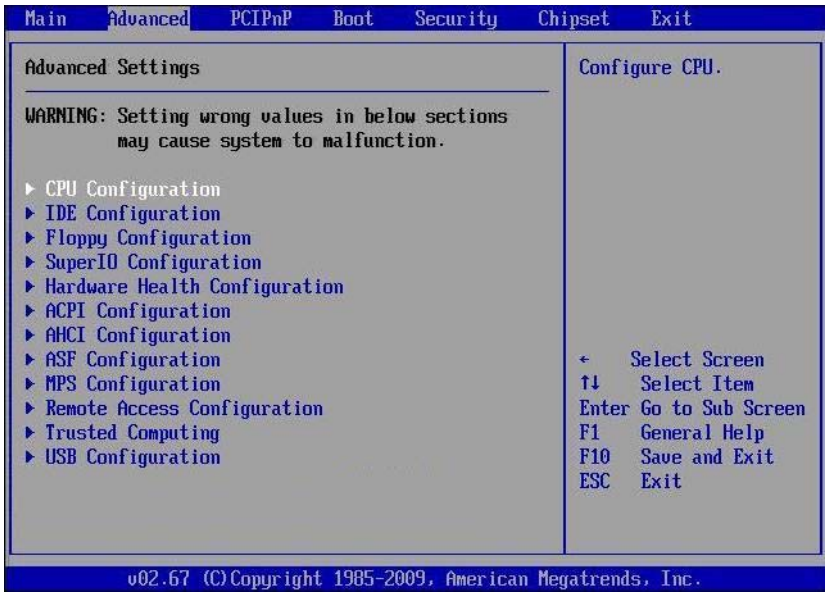
- **System time / System date**

  Use this option to change the system time and date. Highlight System Time or System Date using the <Arrow> keys. Enter new values through the keyboard.

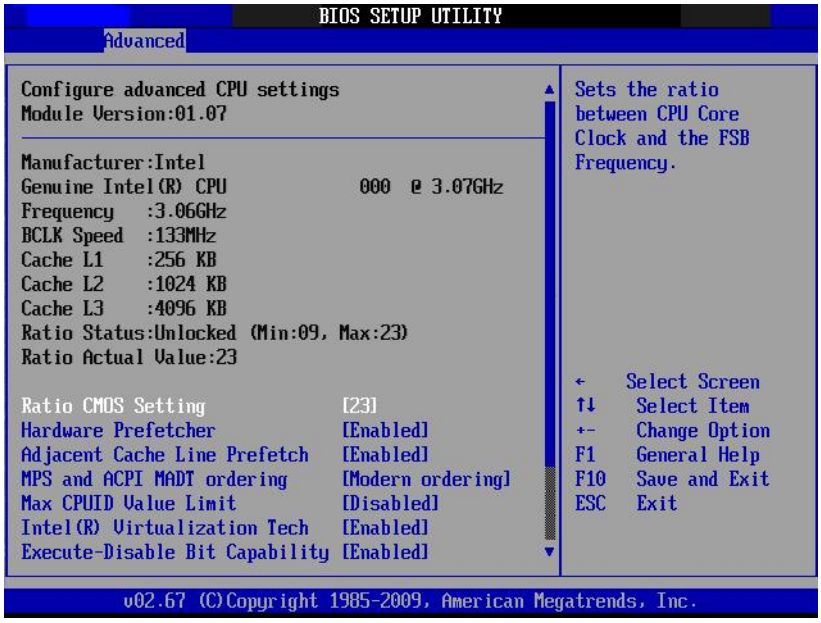
  Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in MM/DD/YY format. The time must be entered in HH:MM:SS format.

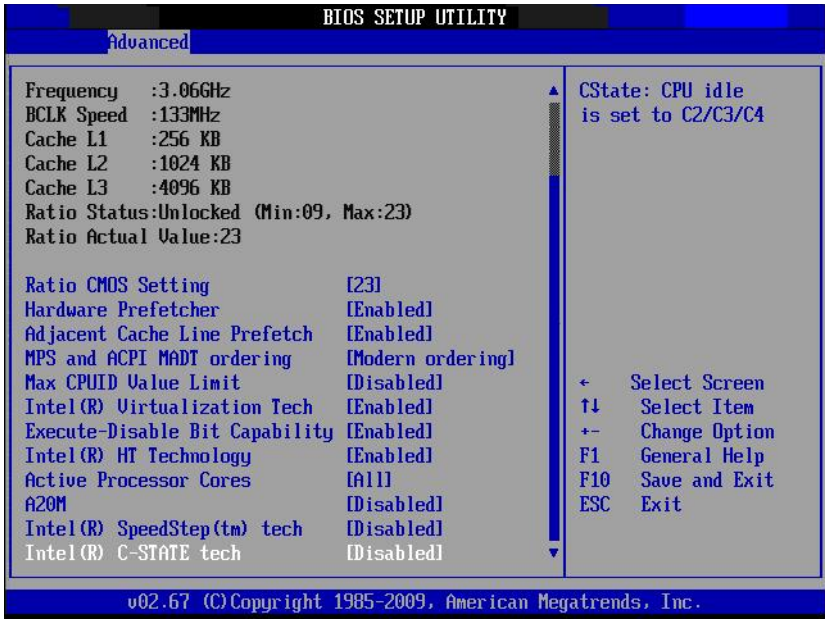
3.2.2 Advanced BIOS Features

AIMB-580 setup screen to enter the Advanced BIOS Setup screen. You can select any of the items in the left frame of the screen, such as CPU Configuration, to go to the sub menu for that item. You can display an Advanced BIOS Setup option by high-lighting it using the <Arrow> keys. All Advanced BIOS Setup options are described in this section. The Advanced BIOS Setup screen is shown below. The sub menus are described on the following pages.



3.2.3 CPU Configuration





- **Ratio CMOS Setting**

  Allows you to set the ratio between the CPU Core Clock and the BCLK Frequency. The valid value ranges vary according to your CPU model.

- **Hardware Prefectcher**

  The processor fetches data and instructions from the memory into the cache that are likely to be required in the near future. This reduces the latency associated with memory reads.

- **Adjacent Cache Line Prefetch**

  The processor fetches the currently requested cache line, as well as the subsequent cache line. This reduces the cache latency by making the next cache line immediately available if the processor requires it as well.

- **MPS and ACPI MADI ordering**

  MADT refers to Multiple APIC Description Table.

- **Max CPUID Value Limit**

  This item allows you to limit CPUID maximum value.

- **Intel® Virtualization Tech**

  Intel Virtualization Technology (Intel VT) is a set of hardware enhancements to Intel server and client platforms that provide software-based virtualization solutions. Intel VT allows a platform to run multiple operating systems and applications in independent partitions, allowing one computer system can function as multiple virtual systems.

- **Execute-Disable Bit Capability**

  This item allows you to enable or disable the No-Execution page protection technology.

- **Hyper Threading Technology**

  This item allows you to enable or disable Intel Hyper Threading technology.

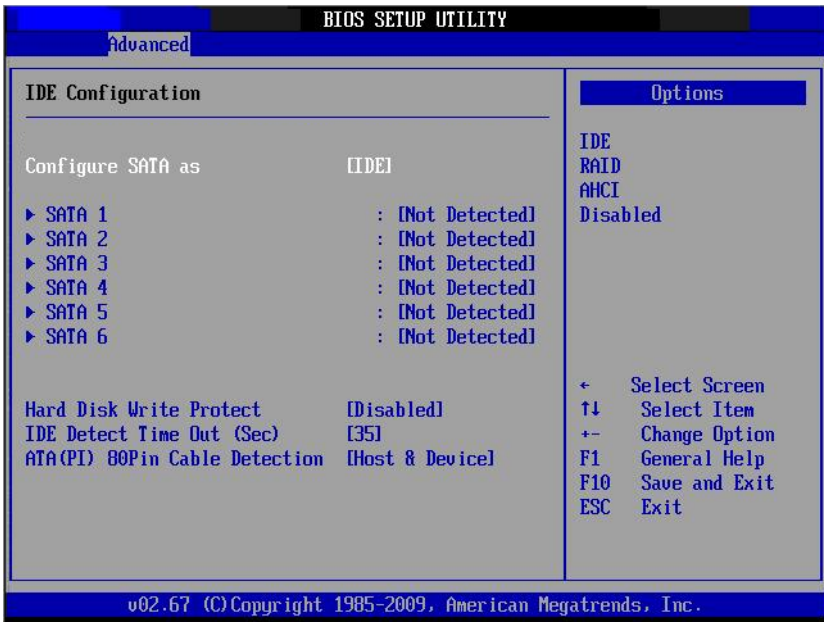
- **Intel® SpeedStepTM tech**

  When set to disabled, the CPU runs at its default speed, when set to enabled, the CPU speed is controlled by the operating system.

- **Intel® C-STATE tech**

  This item allows the CPU to save more power under idle mode.

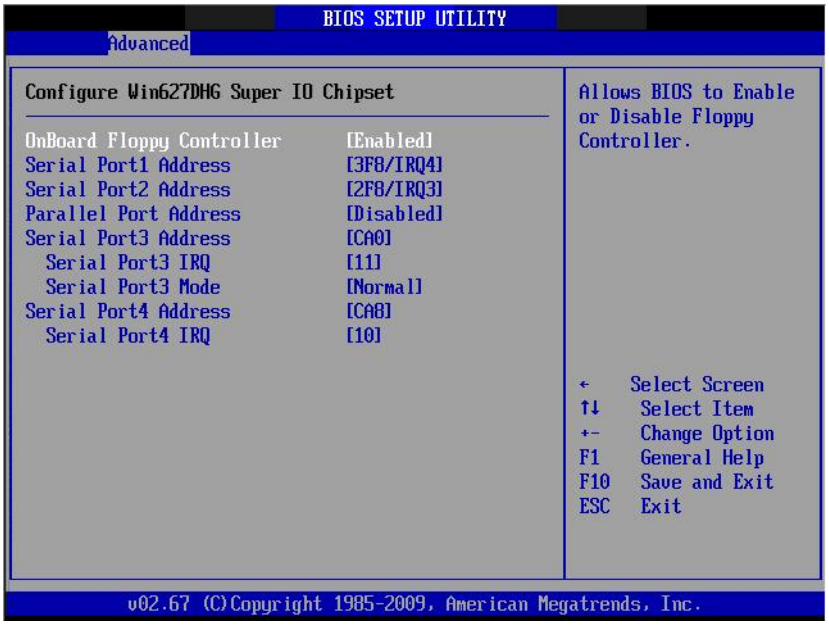
3.2.4 IDE/SATA Configuration



- **ATA/IDE Configuration**
  This can be configured as Disabled, Compatible or Enhanced.
- **Configure SATA as**
  This can be configured as IDE or AHCI.
- **SATA1/SATA2/SATA3/SATA4/SATA5/SATA6**
  While entering setup, the BIOS automatically detects the presence of SATA devices. This displays the status of SATA device auto-detection.
- **Hard Disk Write Protect**
  Disable/Enable device write protection. This will be effective only if device is accessed through BIOS.
- **IDE Detect Time Out (Sec)**
  This item allows you to select the time out value for detecting ATA/ATAPI device(s).
- **AHCI Configuration**
  AHCI is a new interface specification that allows the SATA controller driver to support advanced features. While entering setup, BIOS auto detects the presence of AHCI devices. This displays the status of auto detection of AHCI devices.

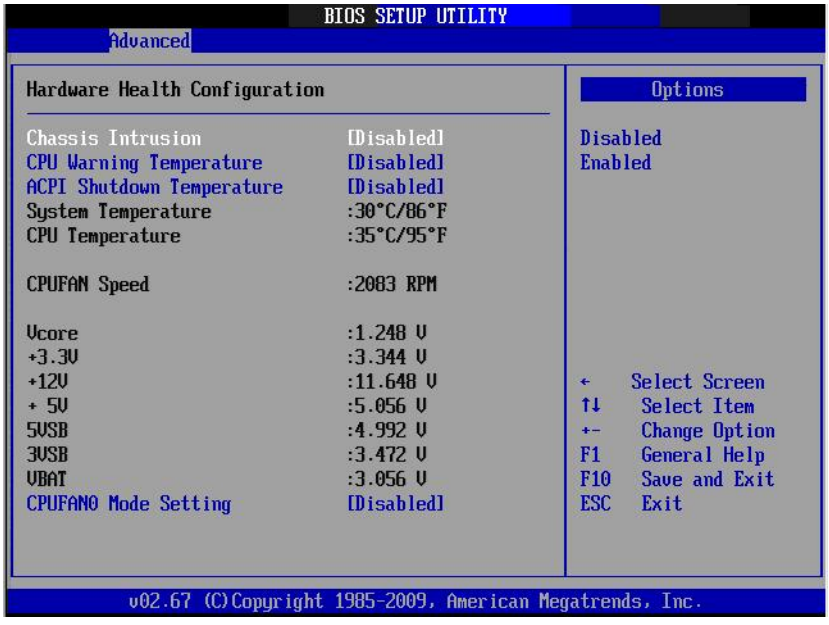
3.2.5 Super IO Configuration

This item enables users to set the Super IO device status, including enabling of COMs.



- **Serial Port Address**

3.2.6 Hardware Health Configuration



- **Chassis Intrusion**

  To show warning message beep sound when case been opened.

- **CPU warning temperature**

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

- **ACPI Shut Down Temperature**

  This potion allows user to set the CPU temperature at which the system will automatically shut down to prevent CPU overheat damage.

- **System Temperature**

  The onboard hardware monitor automatically detects and displays the system temperatures.

- **CPU Temperature**

  The onboard hardware monitor automatically detects and displays the CPU temperatures.

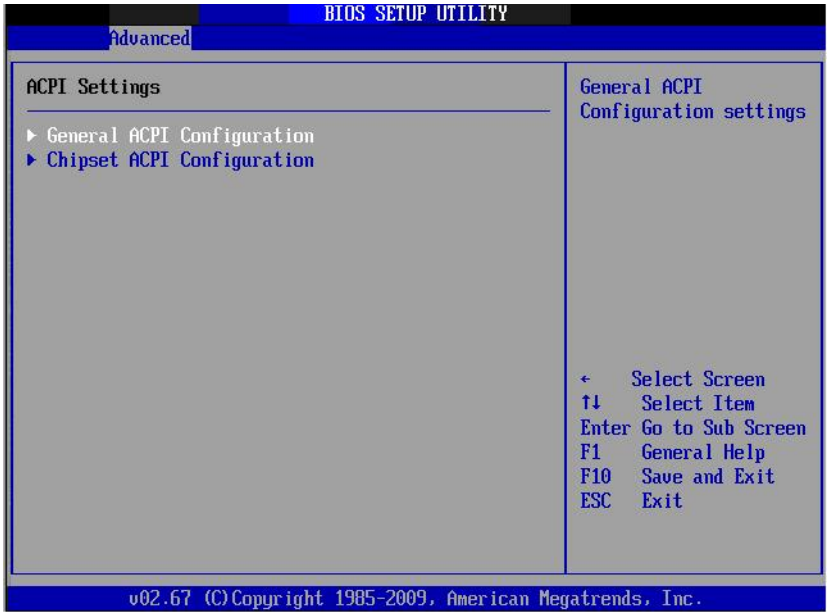
- **CPUFAN Speed**

  To show CPU FAN speed [xxxxRPM].

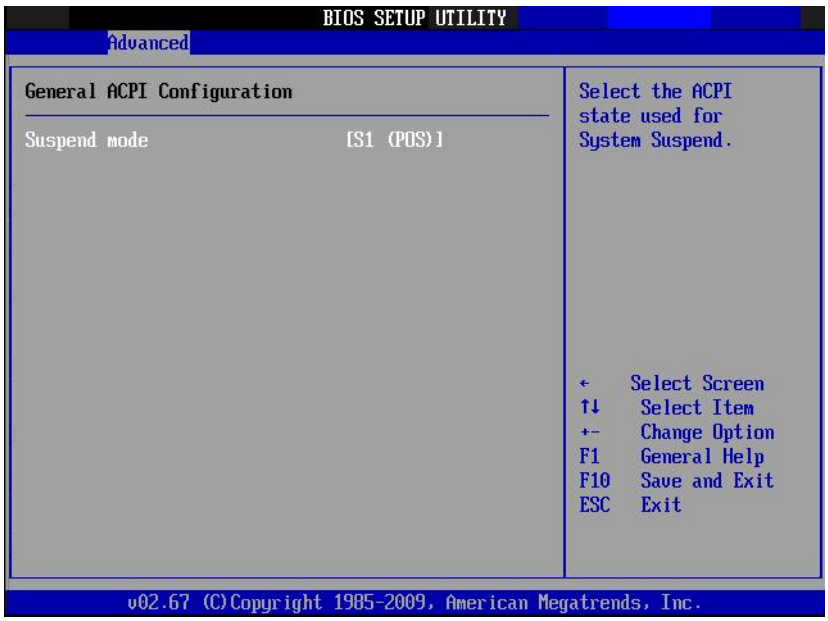
- **CPUFAN0 Mode Setting**

  To enable or disable the Smart fan control feature.

3.2.7 ACPI Setting



3.2.8 General ACPI Setting



- **Suspend mode**

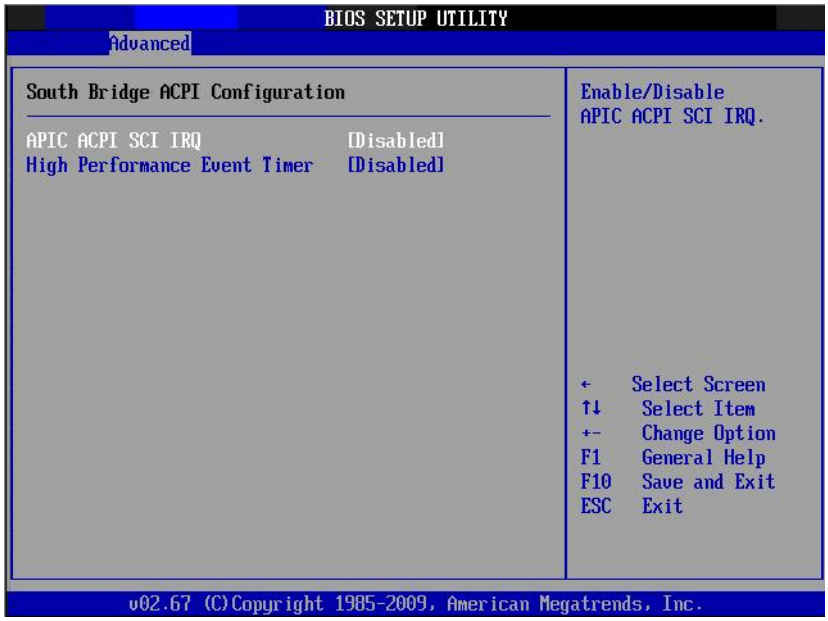
  Allows you to select the Advanced Configuration and Power Interface(ACPI) state to be used for system suspend.

  [Auto] The system automatically configures the ACPI suspend mode.

  [S1(POS) only] Sets the ACPI suspend mode to S1/POS(Power On Suspend).

  [S3 only] Sets the ACPI suspend mode to S3/STR(Suspend to RAM)

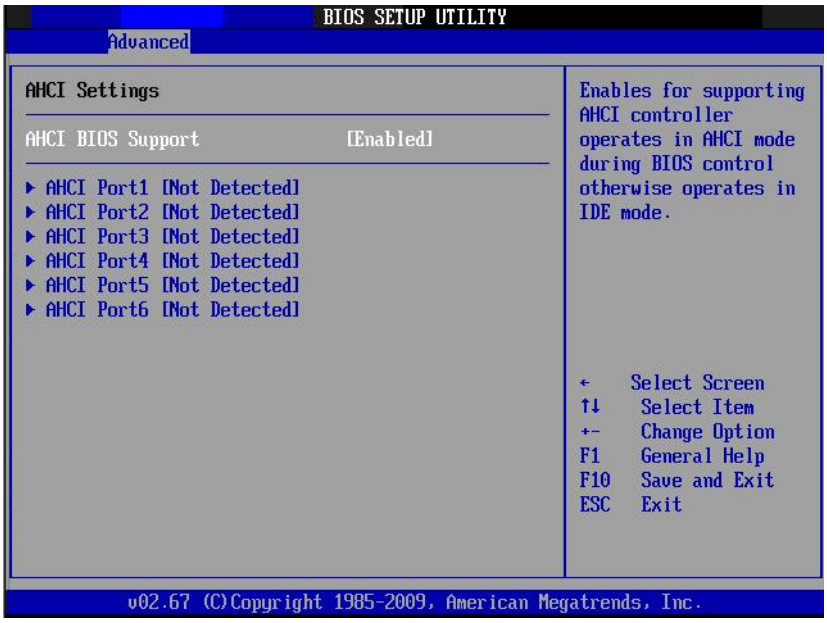
3.2.9 Chipset ACPI Configuration



- **APIC ACPI SCI IRQ**
  Enable/Disable APIC ACPI SCI IRQ.
- **High Performance Event Timer**
  Enable/Disable High performance Event timer.

3.2.10 AHCI Configuration

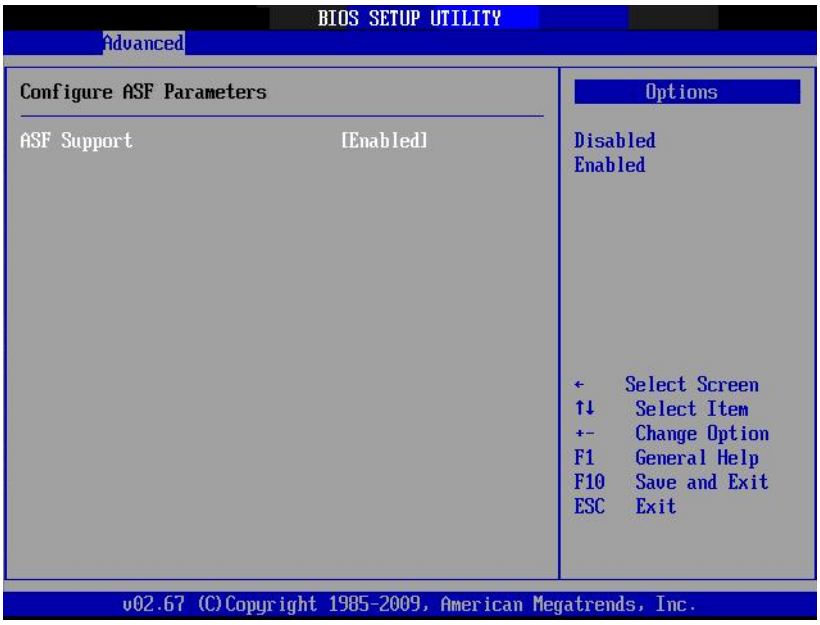
The AHCI appears only when you set the item Configure SATA as from the submenu of SATA Configuration to [AHCI].



- **SATA Port 1-6**
  Displays the status of auto-detection of SATA devices.
  [Auto] Allows automatic selection of the device type connected to the system.
  [Not installed] Selects this option if no SATA devices are installed.

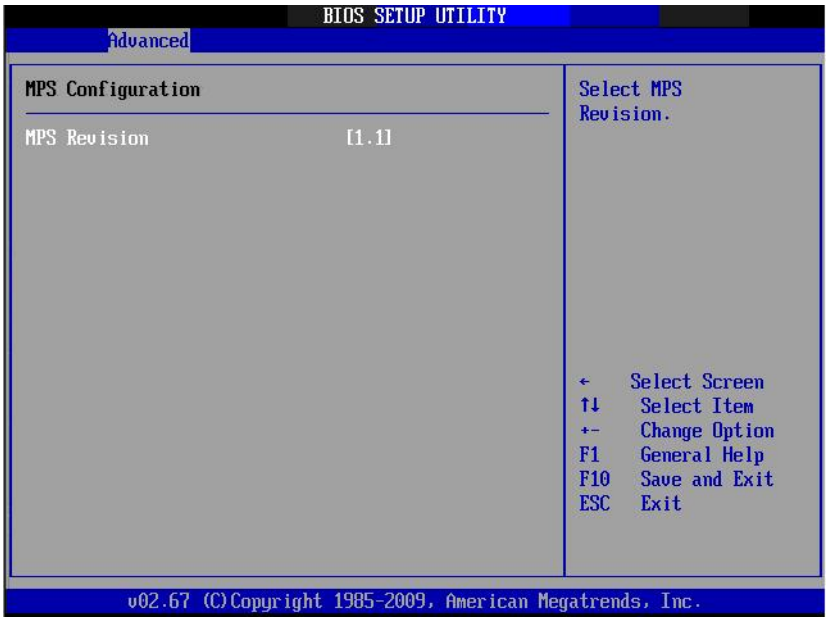
3.2.11 ASF Configuration

ASF (Alert Standard Format) provides standards-based alerting and remote control. Both the alerting and remote control capabilities of ASF are hardware-based and local to the networking solution on managed systems. This allows these solutions CPU and OS independence, providing a persistent connection with the management console.



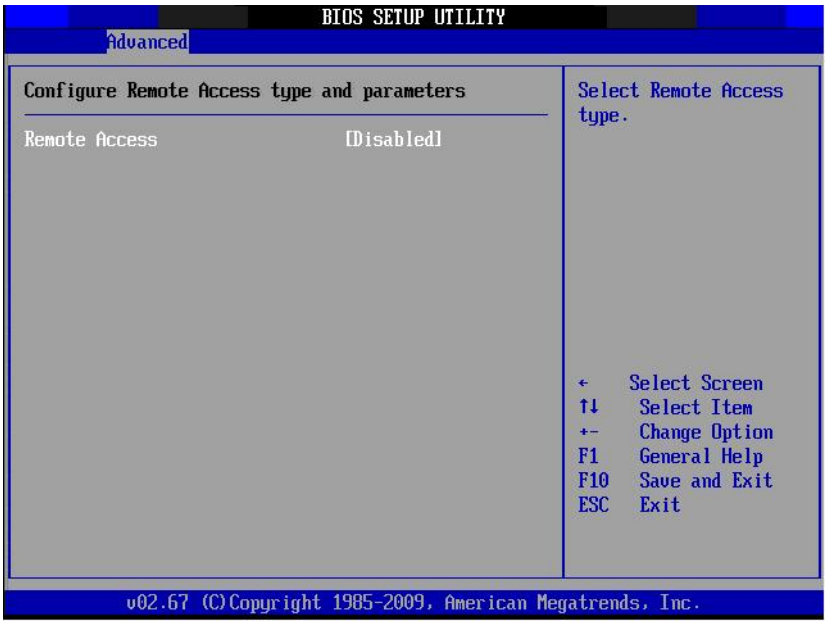
3.2.12 MPS Configuration

This feature is only applicable to multiprocessor motherboards as it specifies the version of the Multi-Processor Specification (MPS) that the motherboard will use. The MPS is a specification by which PC manufacturers design and build Intel architecture systems with two or more processors.



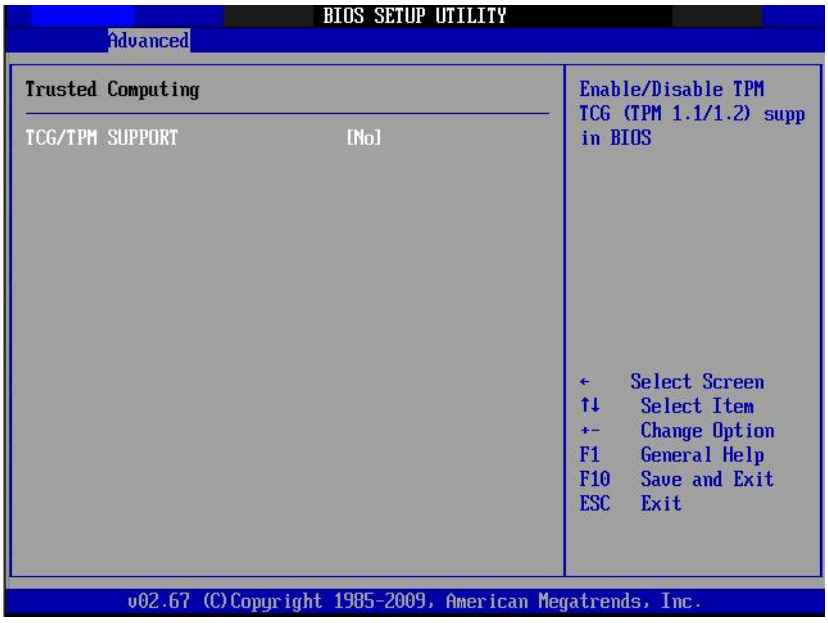
3.2.13 Remote Access Configuration

The configurations of remote access control while using Intel AMT(Activate Management Technology), includes remote boot, reboot with boot options, Serial over LAN, IDE redirection.

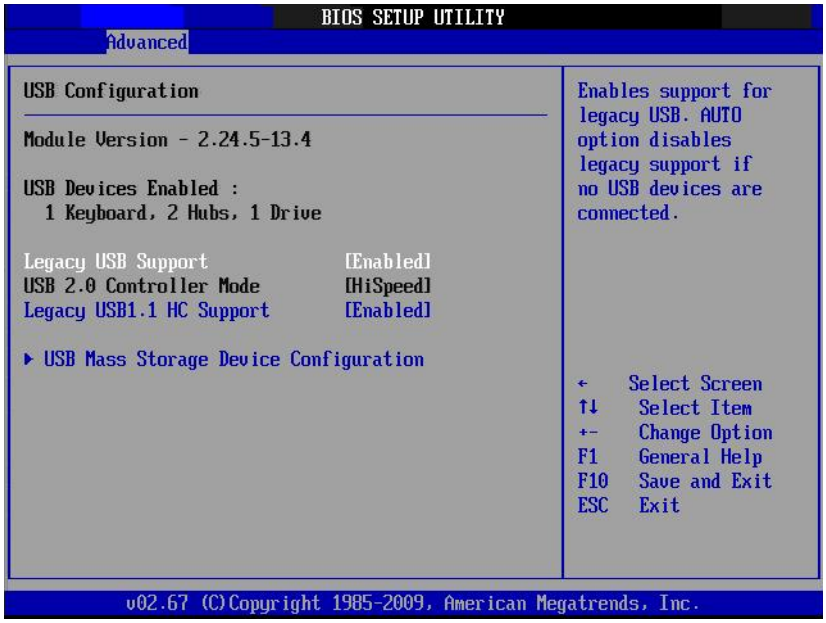


3.2.14 Trusted Computing Configuration

To enable/disable TPM/TCG(TPM1.1/1.2) setup in BIOS. TCG(Trusted Computing Group) standards today are based on a special purpose security chip, placed in a PC, called a Trusted Platform Module (TPM). TPM(Trusted Platform Module) is a secure key generator and key cache management component, enables protected storage of encryption keys and authentication credentials for enhanced security capabilities.



3.2.15 USB Configuration



- **Legacy USB Support**

  Enables support for legacy USB. Auto option disables legacy support if no USB devices are connected.

- **USB 2.0 Controller Mode**

  This item allows you to select HiSpeed (480 Mbps) or FullSpeed (12 Mpbs).

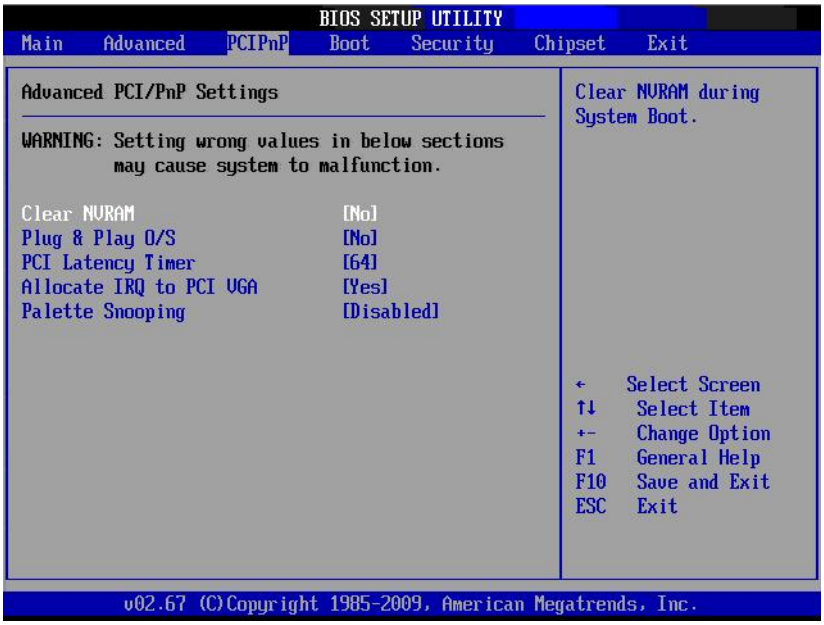
- **Legacy USB1.1 HC Support**

  Allows the system to detect the presence of USB devices at startup. If detected. The USB controller legacy mode is enabled. If no USB device is detected. the legacy USB support is disabled.

- **USB Mass Storage Device Configuration**

3.2.16 Advanced PCI/PnP Setting

Select the PCI/PnP tab from the AIMB-580 setup screen to enter the Plug and Play BIOS Setup screen. You can display a Plug and Play BIOS Setup option by highlighting it using the <Arrow> keys. All Plug and Play BIOS Setup options are described in this section. The Plug and Play BIOS Setup screen is shown below.



- **Clear NVRAM**

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

- **Plug & Play O/S**

  When set to No, BIOS configures all the devices in the system. When set to Yes and if you install a Plug and Play operating system, the OS configures all Plug and Play devices not required for bootup.

- **PCI Latency Timer**

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

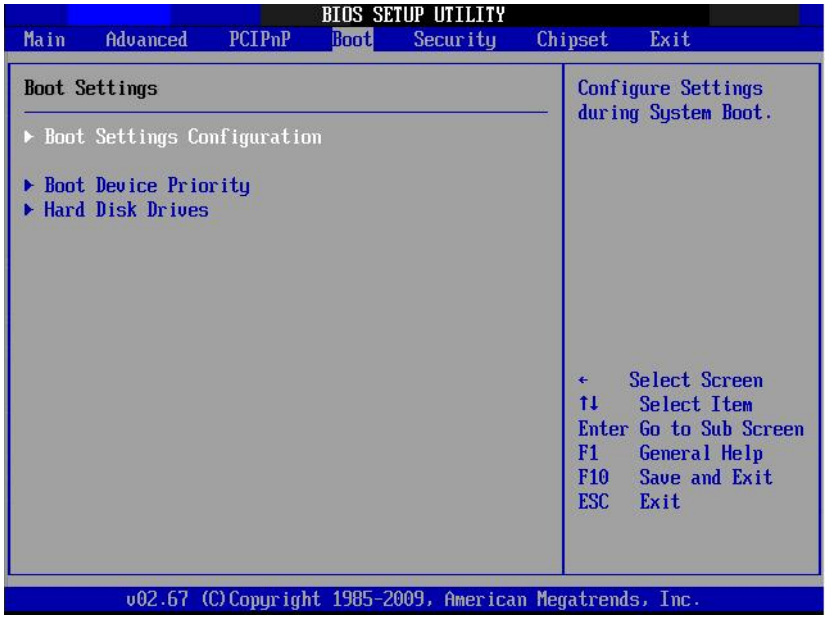
- **Allocate IRQ to PCI VGA**

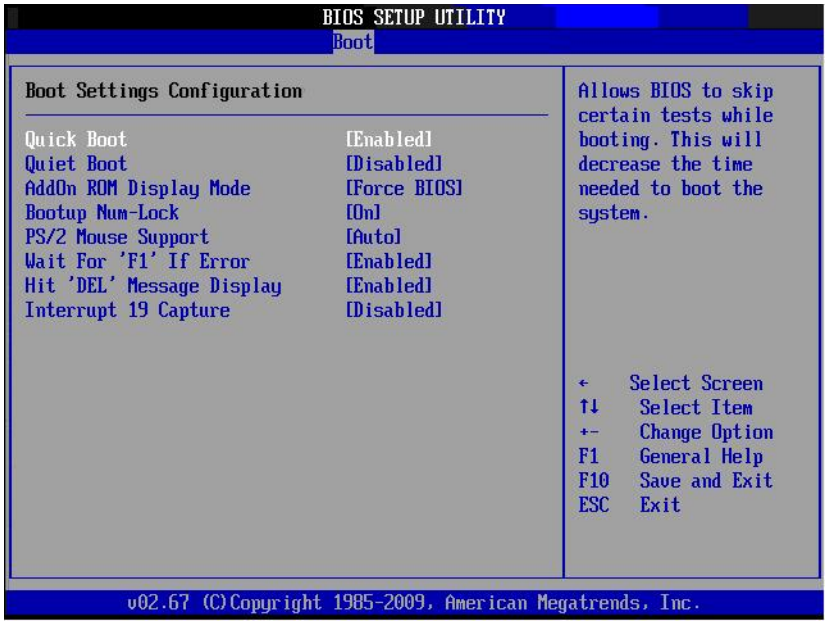
  When set to Yes, will assign IRQ to PCI VGA card if card requests IRQ. When set to No will not assign IRQ to PCI VGA card even if card requests an IRQ.

- **Palette Snooping**

  This item is designed to solve problems caused by some non-standard VGA card.

3.2.17 Boot Setting

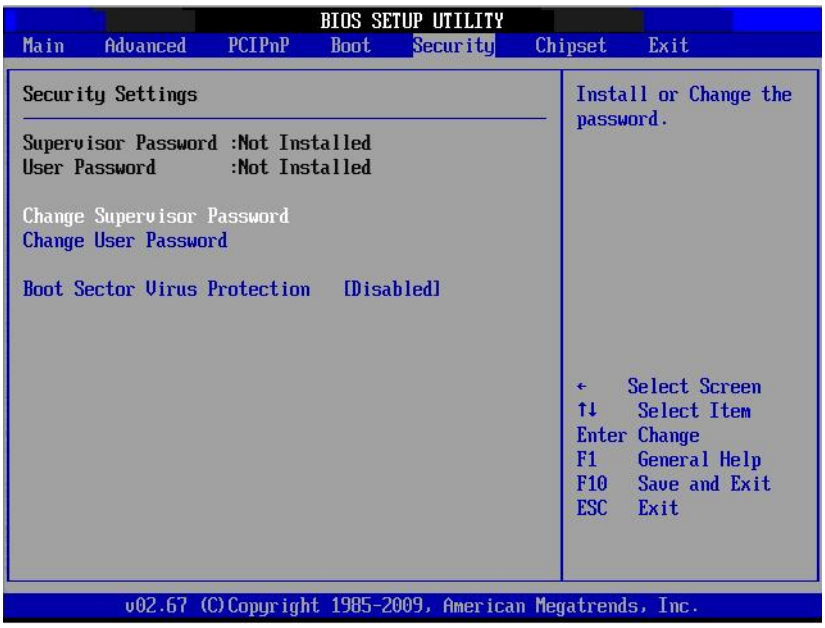




- **Quick Boot**
  This item allows BIOS to skip certain tests while booting. This will decrease the time needed to boot the system.
- **Quiet Boot**
  If this option is set to Disabled, the BIOS displays normal POST messages. If Enabled, an OEM Logo is shown instead of POST messages.
- **AddOn ROM Display Mode**
  Set display mode for option ROM.
- **Bootup Num-Lock**
  Select the Power-on state for Numlock.
- **PS/2 Mouse Support**
  Select support for PS/2 Mouse.

- **Wait For .F1. If Error**
  Wait for the F1 key to be pressed if an error occurs.
- **Hit .DEL. Message Display**
  Displays .Press DEL to run Setup. in POST.
- **Interrupt 19 Capture**
  This item allows option ROMs to trap interrupt 19.
- **Bootsafe Function**
  This item allows you to enable or disable bootsafe function.

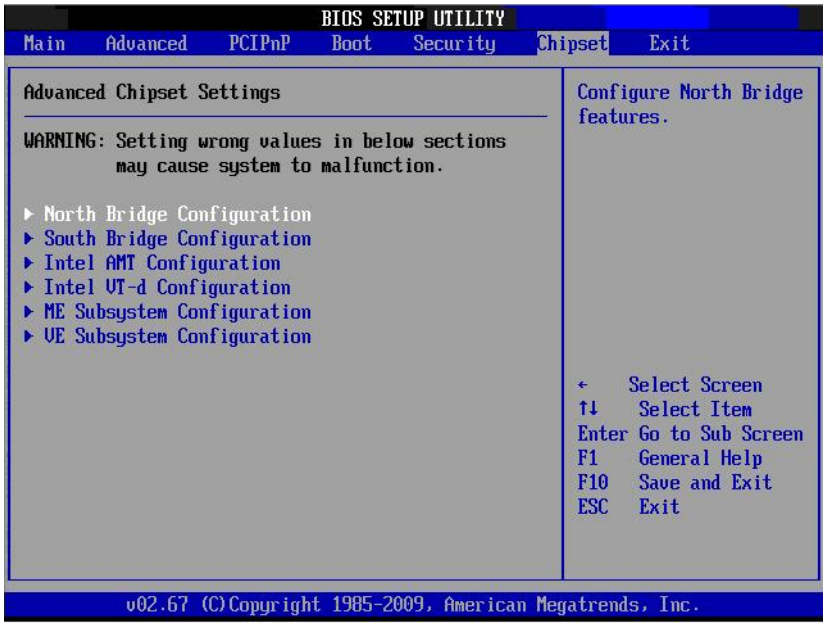
3.2.18 Security Setting



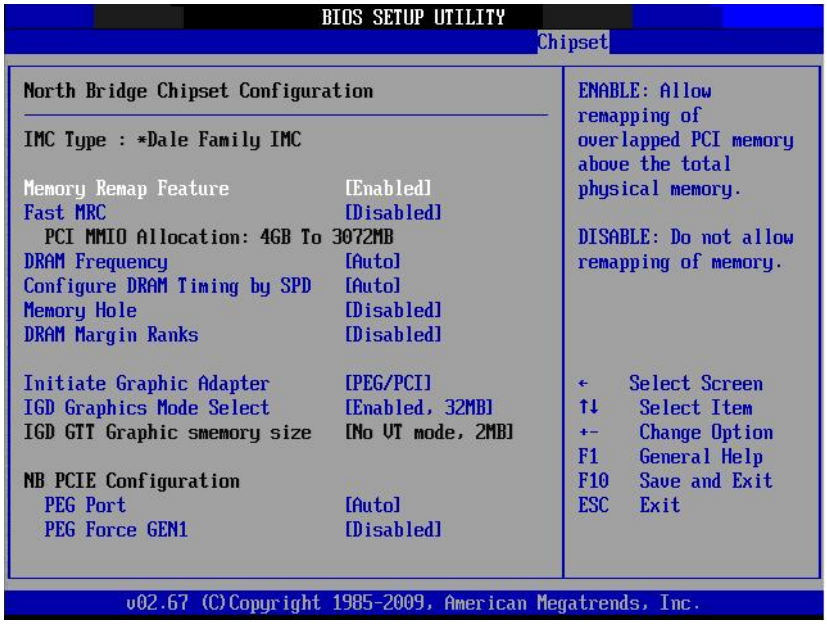
Select Security Setup from the PCM-9562 Setup main BIOS setup menu. All Security Setup options, such as password protection and virus protection are described in this section. To access the sub menu for the following items, select the item and press <Enter>:

- **Change Supervisor / User Password**
  Provides for either installing or changing the password.
- **Boot sector Virus protection**
  The boot sector virus protection will warn if any program tries to write to the boot sector.

3.2.19 Advanced Chipset Settings

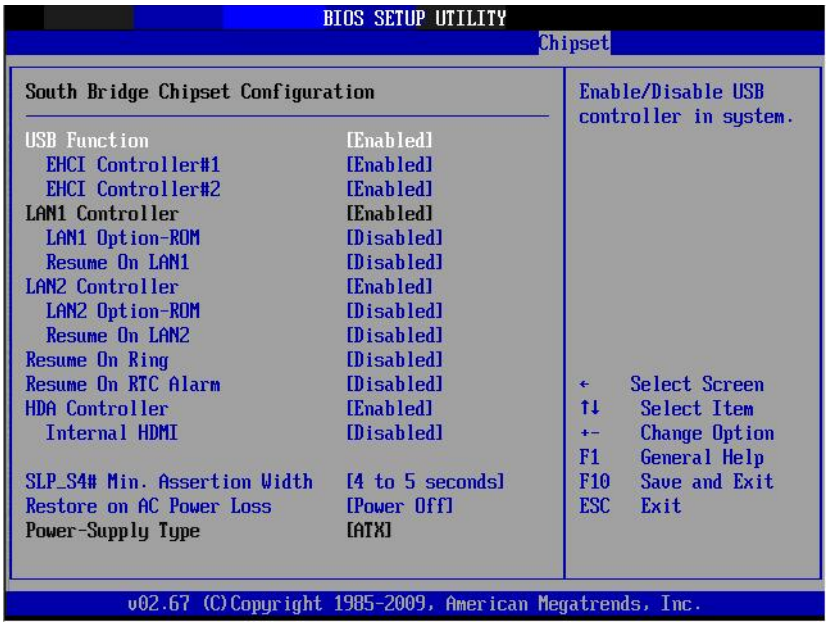


3.2.20 North bridge Chipset Configuration



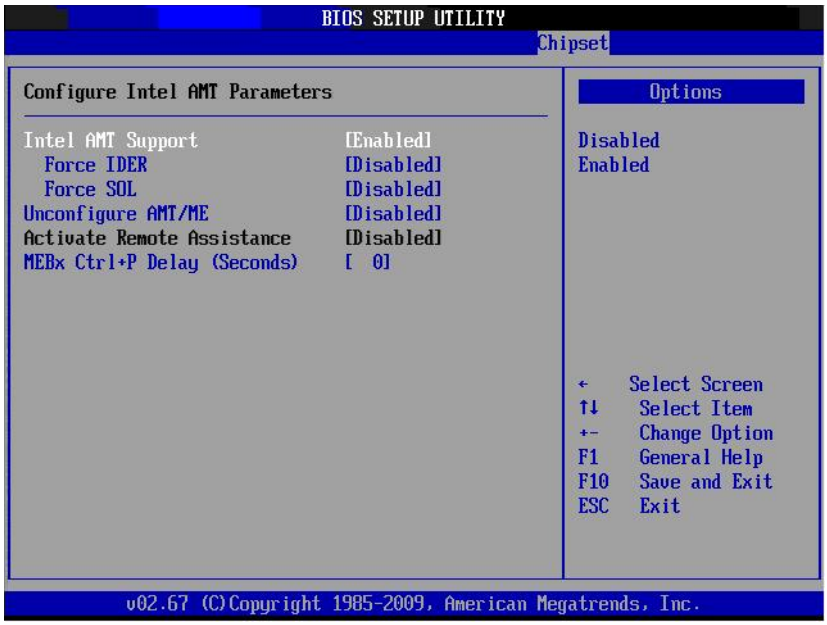
- **DRAM Frequency**
  This item allows you to manually change DRAM frequency.
- **Configure DRAM Timing by SPD**
  This item allows you to enable or disabledetect by DRAM SPD.
- **Initiate Graphic Adapter**
  This item allows you to select which graphics controller to use as the primary boot device.
- **Internal Graphics Mode Select**
  Select the amount of system memory used by the Internal graphics device.

3.2.21 Sourth Bridge Chipset Configuration



- **USB Functions**
  Select: Disabled, 2 USB Ports, 4 USB Ports, 6 USB Ports or 8 USB Ports.
- **USB 2.0 Controller**
  Enables or disables the USB 2.0 controller.
- **LAN1 GbE controller**
  Enables or disables the GbE controller.
- **LAN1 Option-ROM**
  Enables or disables GbE LAN boot.
- **Resume on LAN1**
  Enables or disables GbE LAN wake up from S5 function.
- **LAN2 GbE controller**
  Enables or disables the GbE controller.
- **LAN2 Option-ROM**
  Enables or disables GbE LAN boot.
- **Resume on LAN2**
  Enables or disables GbE LAN wake up from S5 function.
- **HDA Controller**
  Enables or disables the HDA controller.
- **SMBUS Controller**
  Enables or disables the SMBUS controller.
- **SLP_S4# Min. Assertion Width**
  This item allows you to set a delay of a set number of seconds.

3.2.22 Intel AMT Configuration



- **Intel AMT Support**

  Intel Active Management Technology (AMT) is hardware-based technology for remotely managing and securing PCs out-of-band.[1][2][3][4][5] Currently, Intel AMT is available in desktop PCs with Intel Core 2 processor with vPro technology and available in laptop PCs with Centrino or Centrino 2 platform with vPro technology.

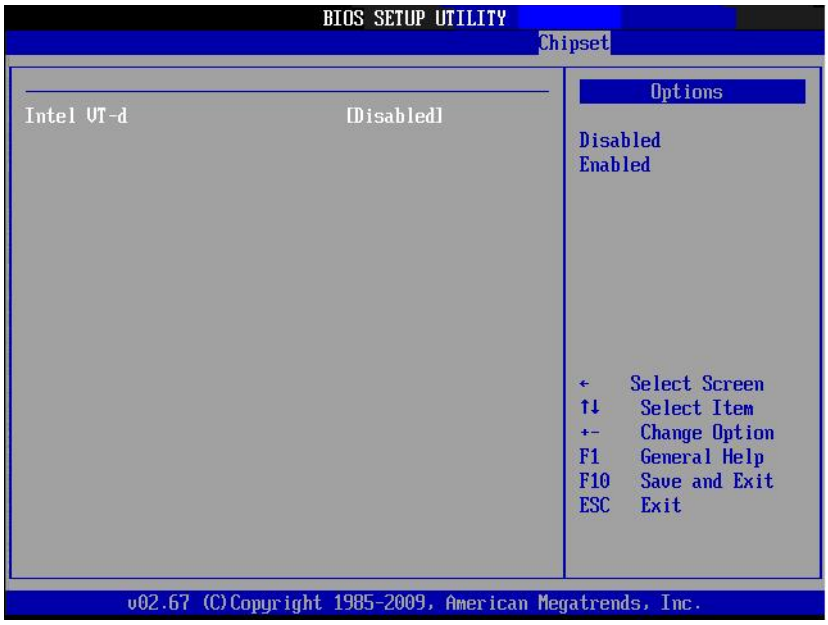
- **Unconfigure ANT/ME**

  Unconfigure AMT/ME setting.

- **Activate Remote Assistance**

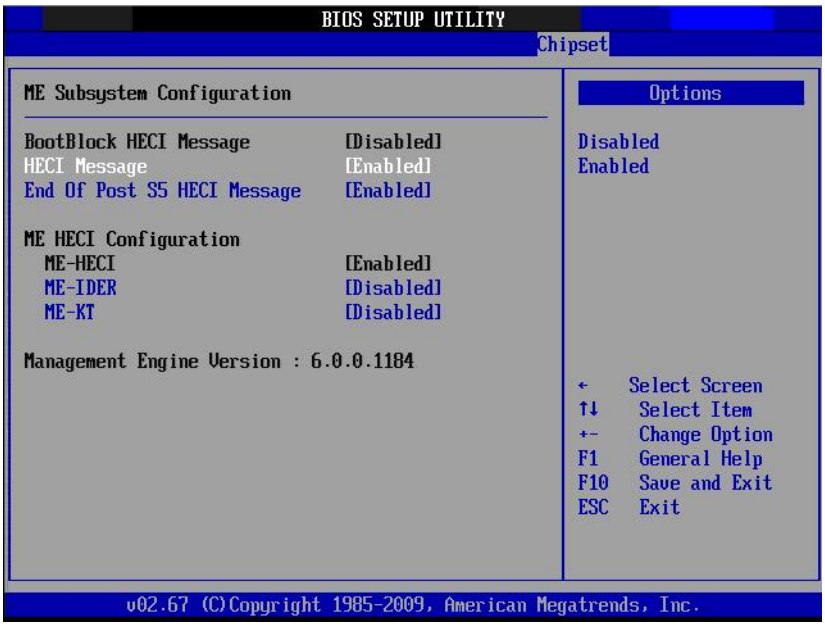
  This item is to activate the remote console when using iAMT function.

3.2.23 Intel VT-d Configuration



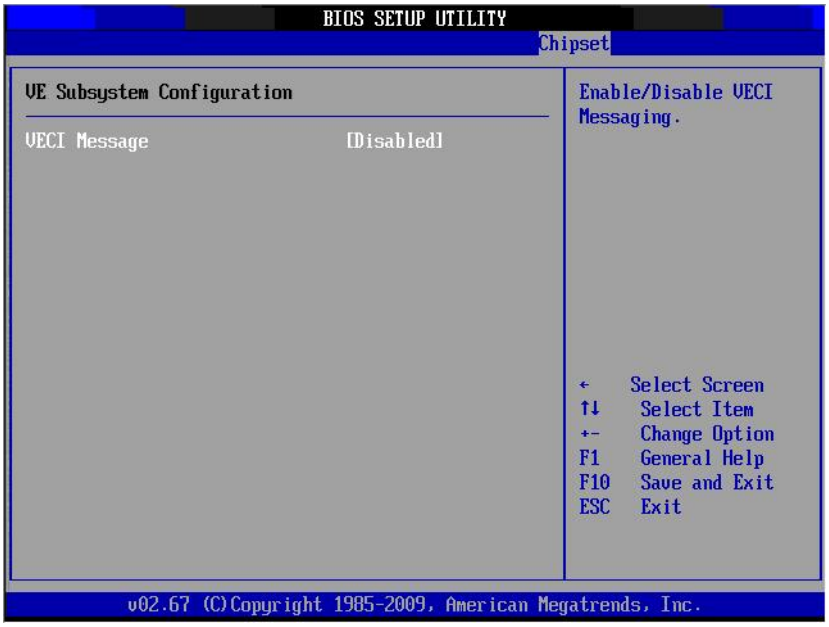
- **Intel VT-d Configuration**
  To support Intel chipset virtualization technology for directed I/O.

3.2.24 ME Subsystem Configuration



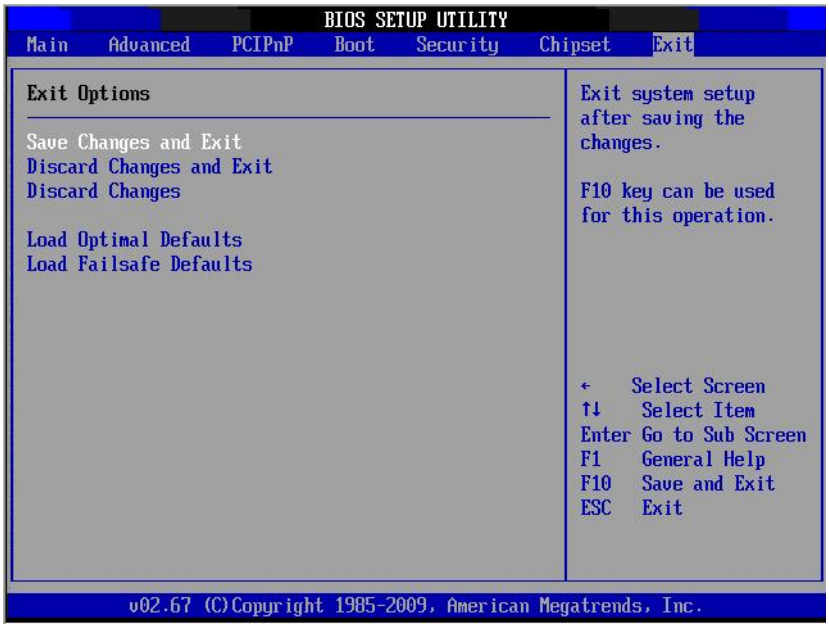
- **Intel ME Subsystem Configuration**
  This item includes ME-IDER(to boot up from server side instead of client side), ME-HECI (remove from BIOS), ME-KT(BIOS check).

3.2.25 VE Subsystem Configuration



- **Intel VE Subsystem Configuration**
  VE refers to Intel Virtualization Engine. Access to the PBA area is permitted via the VE by using the VE Command Interface (VECI), or via the Intel ME by using the Intel AT-d Host Command Interface (DHCI); which uses HECI. The VE can ensure that access requests outside the PBA ranges are prevented given that PBA code executes on the host processor.

3.2.26 Exit Option



- **Save Changes and Exit**

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

  1. Select Save Changes and Exit from the Exit menu and press <Enter>. The following message appears:

     Save Configuration Changes and Exit Now?

     [Ok] [Cancel]

  2. Select Ok or Cancel.

- **Discard Changes and Exit**

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

  1. Select Save Changes and Exit from the Exit menu and press <Enter>. The following message appears:

     Save Configuration Changes and Exit Now?

     [Ok] [Cancel]

  2. Select Ok to discard changes and exit.

- **Discard Changes**

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

- **Load Optimal Defaults**

  The AIMB-580 automatically configures all setup items to optimal settings when you select this option. Optimal Defaults are designed for maximum system performance, but may not work best for all computer applications. In particular, do not use the Optimal.

  Defaults if your computer is experiencing system configuration problems. Select Load Optimal Defaults from the Exit menu and press <Enter>.

- **Load Failsafe Defaults**

  The AIMB-580 automatically configures all setup options to failsafe settings when you select this option. Failsafe Defaults are designed for maximum system stability, but not maximum performance. Select Failsafe Defaults if your computer is experiencing system configuration problems.

  1. Select Save Changes and Exit from the Exit menu and press <Enter>. The following message appears:

     Save Configuration Changes and Exit Now?

     [Ok] [Cancel]

  2. Select OK to load Failsafe defaults.

Chapter 4

Software Introduction and Services

4.1 Introduction

The mission of Advantech Embedded Software Services is to "Enhance quality of life with Advantech platforms and Microsoft® Windows® embedded technology." We enable Windows® Embedded software products on Advantech platforms to more effectively support the embedded computing community. Customers are freed from the hassle of dealing with multiple vendors (hardware suppliers, system integrators, embedded OS distributors) for projects. Our goal is to make Windows Embedded Software solutions easily and widely available to the embedded computing community.

4.2 Value-Added Software Services

Software API: An interface that defines the ways by which an application program may request services from libraries and/or operating systems. Provides not only the underlying drivers required but also a rich set of user-friendly, intelligent and integrated interfaces, which speeds development, enhances security and offers add-on value for Advantech platforms. It plays the role of catalyst between developer and solution, and makes Advantech embedded platforms easier and simpler to adopt and operate with customer applications.

You can download the API in Advantech support website.

4.2.1 Software API

4.2.1.1 Control

SMBus

SMBus is the System Management Bus defined by Intel Corporation in 1995. It is used in personal computers and servers for low-speed system management communications. The SMBus API allows a developer to interface a embedded system environment and transfer serial messages using the SMBus protocols, allowing multiple simultaneous device control.

4.2.1.2 Monitor

Watchdog

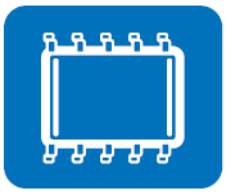
A watchdog timer (WDT) is a device that performs a specific operation after a certain period of time if something goes wrong and the system does not recover on its own. A watchdog timer can be programmed to perform a warm boot (restarting the system) after a certain number of seconds.

Hardware Monitor

The Hardware Monitor (HWM) API is a system health supervision API that inspects certain condition indexes, such as fan speed, temperature and voltage.

4.2.2 Software Utility

BIOS Flash



The BIOS Flash utility allows customers to update the flash ROM BIOS version, or use it to back up current BIOS by copying it from the flash chip to a file on customers' disk. The BIOS Flash utility also provides a command line version and an API for fast implementation into customized applications.

Embedded Security ID

The embedded application is the most important property of a system integrator. It contains valuable intellectual property, design knowledge and innovation, but it is easily copied! Embedded Security ID utility provides reliable security functions for customers to secure their application data within embedded BIOS.

Monitoring

The Monitoring utility is for customer to monitor the systems health, like voltage, CPU and system temperature and fan speed. These items are important to a device, if critical errors occur and are not solved immediately, permanent damage may be caused.

eSOS

The eSOS is a small OS stored in BIOS ROM. It will boot up in case of a main OS crash. It will diagnose the hardware status, and then send an e-mail to the designated administrator. The eSOS also provide for remote connection via Telnet server and FTP server so the administrator can attempt to rescue the system. Note: This function requires BIOS customization.

Chapter 5

Chipset Software Installation Utility

5.1 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-580 are located on the software installation CD. The driver in the folder of the driver CD will guide and link you to the utilities and drivers under a Windows system. 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.

5.2 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:

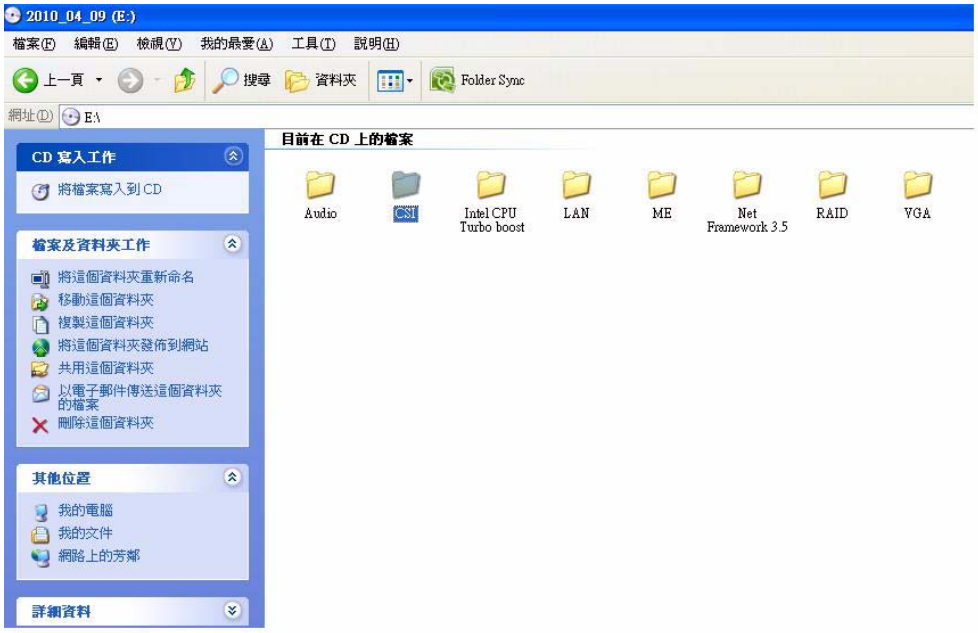
- Core PCI PnP services
- Serial ATA interface support
- USB 1.1/2.0 support (USB 2.0 driver needs to be installed separately for Win98)
- Identification of Intel® chipset components in the Device Manager

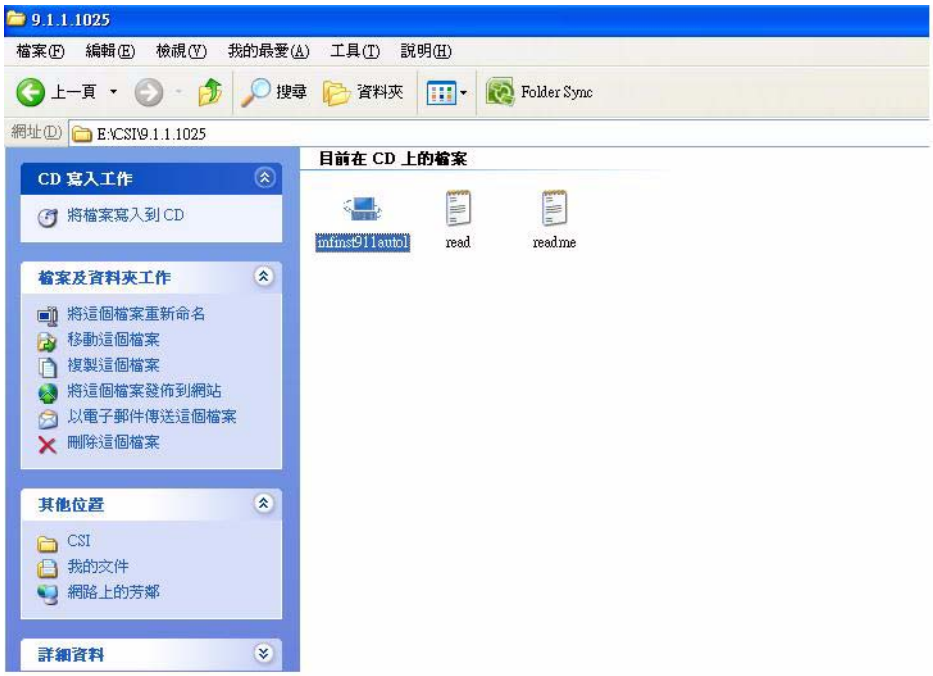
Note! *This utility is used for the following versions of Windows, and it has to be installed before installing all the other drivers:*

- *Windows 7 (32-bit)*
- *Windows 7 (64-bit)*
- *Windows XP professional edition (32-bit)*
- *Windows XP professional edition (64-bit)*
- *Windows XPe*

5.3 Windows XP/Windows 7 Driver Setup

1. Insert the driver CD into your system's CD-ROM drive. You can see the driver folder items. Navigate to the "INF" folder and click "setup.exe" to complete the installation of the driver.





Chapter 6

VGA Setup

6.1 Introduction

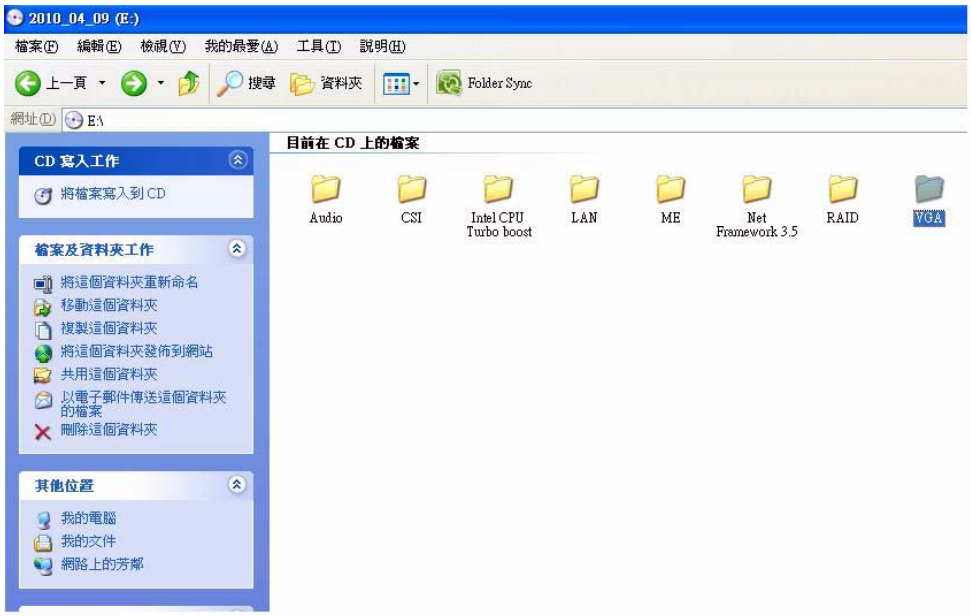
The Intel Core i5-600, Core i3-500 and Pentium CPUs with dual core are embedded with an integrated graphics controller. You need to install the VGA driver to enable the function.

- Optimized integrated graphic solution: With Intel Graphics Flexible, it supports versatile display options and 32-bit 3D graphics engine. Dual independent display, enhanced display modes for widescreen flat panels for extend, twin, and clone dual display mode, and optimized 3D support deliver an intensive and realistic visual experience. Only Core i5-600, Core i3-500 and Pentium CPUs are embedded with integrated graphics, , Core i7, Core i5-700 are not embedded with integrated graphics that require a separate graphic card.

6.2 Windows 7/ Windows XP

Note! *Before installing this driver, make sure the CSI utility has been installed in your system. See Chapter 6 for information on installing the CSI utility.*

Insert the driver CD into your system's CD-ROM drive. You can see the driver folders items. Navigate to the "VGA" folder and click "setup.exe" to complete the installation of the drivers for Windows 7, XP, XPe.




VGA
檔案(F) 編輯(E) 檢視(V) 我的最愛(A) 工具(T) 說明(H)
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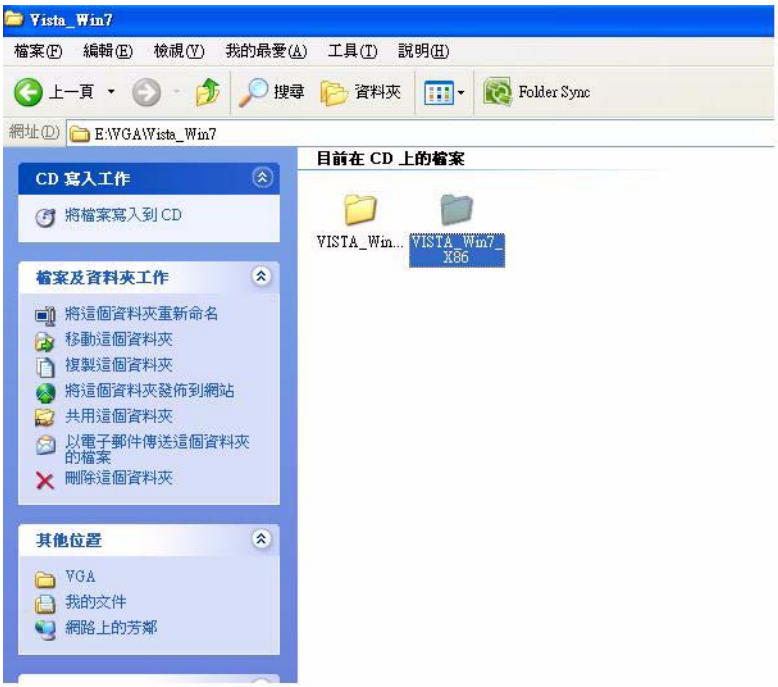
網址(D) E:\VGA
CD 寫入工作
將檔案寫入到 CD
檔案及資料夾工作
將這個資料夾重新命名
移動這個資料夾
複製這個資料夾
將這個資料夾發佈到網站
共用這個資料夾
以電子郵件傳送這個資料夾的檔案
刪除這個資料夾
其他位置
2010_04_09 (E:)
我的文件
網路上的芳鄰
詳細資料
目前在 CD 上的檔案
Vista_Win7
XP VGA


Vista_Win7
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CD 寫入工作
將檔案寫入到 CD
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將這個資料夾重新命名
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共用這個資料夾
以電子郵件傳送這個資料夾的檔案
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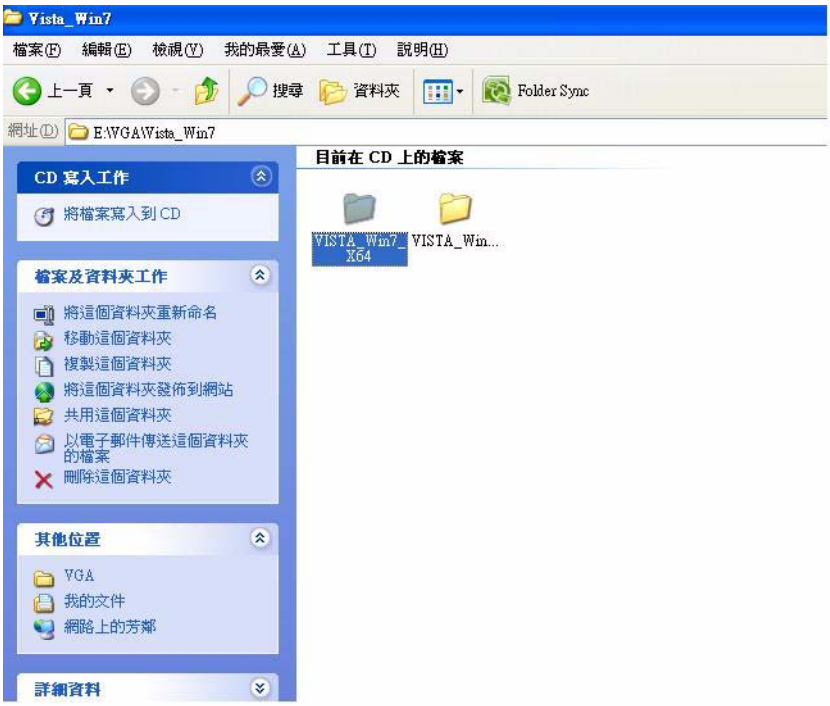
VISTA_Win...
VISTA_Win7_X86


Vista_Win7
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將這個資料夾重新命名
移動這個資料夾
複製這個資料夾
將這個資料夾發佈到網站
共用這個資料夾
以電子郵件傳送這個資料夾的檔案
刪除這個資料夾
其他位置
VGA
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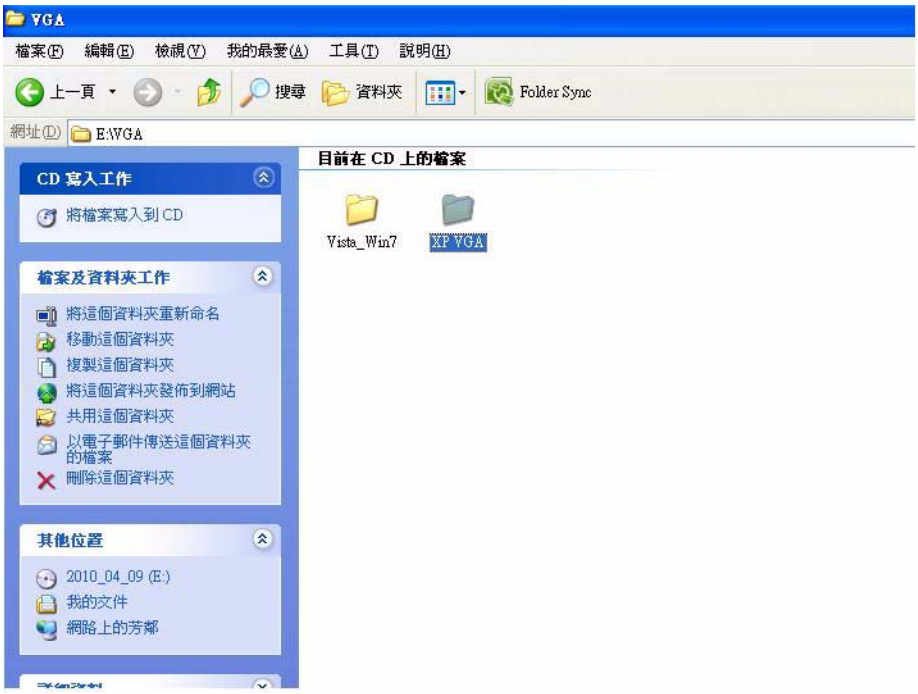
網路上的芳鄰
詳細資料
目前在 CD 上的檔案
VISTA_Win7_X64
VISTA_Win...


VGA
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檔案及資料夾工作
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移動這個資料夾
複製這個資料夾
將這個資料夾發佈到網站
共用這個資料夾
以電子郵件傳送這個資料夾的檔案
刪除這個資料夾
其他位置
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網路上的芳鄰
目前在 CD 上的檔案
Vista_Win7
XP_VGA


XP VGA
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網址(D) E:\VGA\XP VGA
CD 寫入工作
將檔案寫入到 CD
檔案及資料夾工作
將這個資料夾重新命名
移動這個資料夾
複製這個資料夾
將這個資料夾發佈到網站
共用這個資料夾
以電子郵件傳送這個資料夾的檔案
刪除這個資料夾
其他位置
VGA
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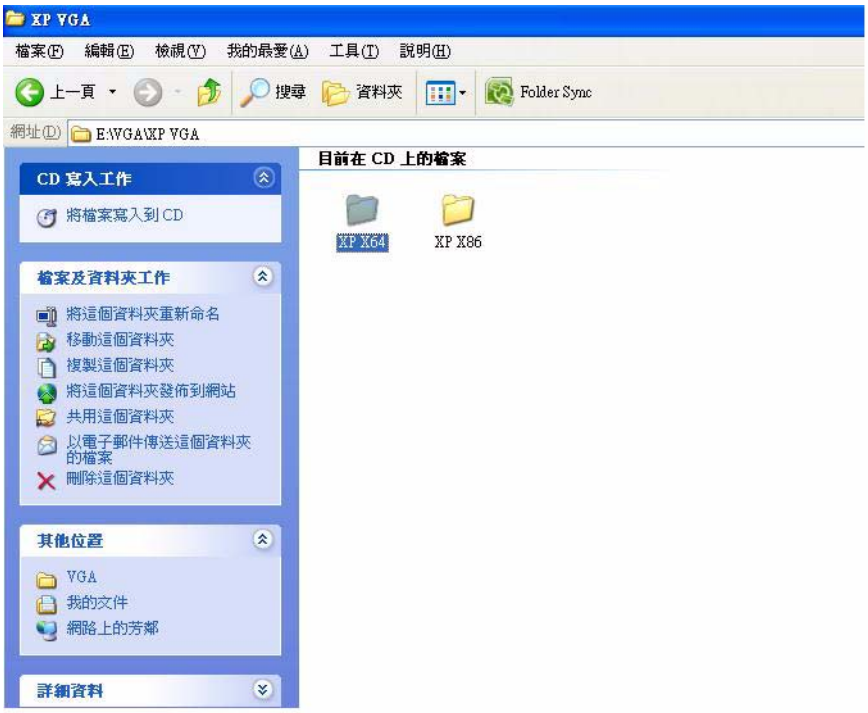
網路上的芳鄰
詳細資料
目前在 CD 上的檔案
XP X64
XP X86


XP VGA
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上一頁 搜尋 資料夾 Folder Sync
網址(D) E:\VGA\XP VGA
CD 寫入工作
將檔案寫入到 CD
檔案及資料夾工作
將這個資料夾重新命名
移動這個資料夾
複製這個資料夾
將這個資料夾發佈到網站
共用這個資料夾
以電子郵件傳送這個資料夾的檔案
刪除這個資料夾
其他位置
VGA
我的文件
網路上的芳鄰
詳細資料
目前在 CD 上的檔案
XP X64
XP X86

Chapter 7

LAN Configuration

7.1 Introduction

The AIMB-580 has dual Gigabit Ethernet LANs via dedicated PCI Express x1 lanes (Intel 82578DM (LAN1) and 82583V (LAN2)) that offer bandwidth of up to 500 MB/sec, eliminating the bottleneck of network data flow and incorporating Gigabit Ethernet at 1000 Mbps.

7.2 Features

- Integrated 10/100/1000 BASE-T transceiver
- 10/100/1000 BASE-T triple-speed MAC
- On-chip voltage regulation
- Wake-on-LAN (WOL) support
- PCI Express X1 host interface

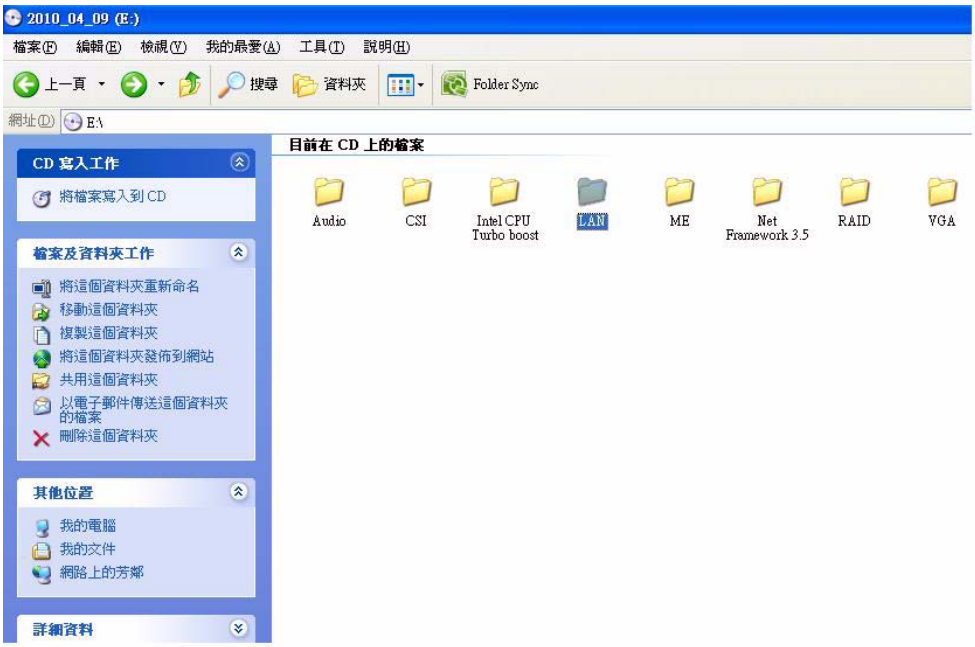
7.3 Installation

Note! *Before installing the LAN drivers, make sure the CSI utility has been installed on your system. See Chapter 7 for information on installing the CSI utility.*

The AIMB-580 Intel 82578DM and 82583V Gigabit integrated controller supports all major network operating systems. However, the installation procedure varies with different operating systems. Please find and use the section that provides the driver setup procedure for the operating system you are using.

7.4 Windows XP/ Windows 7 Setup(Intel 82578DM and 82583V)

Insert the driver CD into your system's CD-ROM drive. Select the Drv_LAN folder then navigate to the directory for your OS.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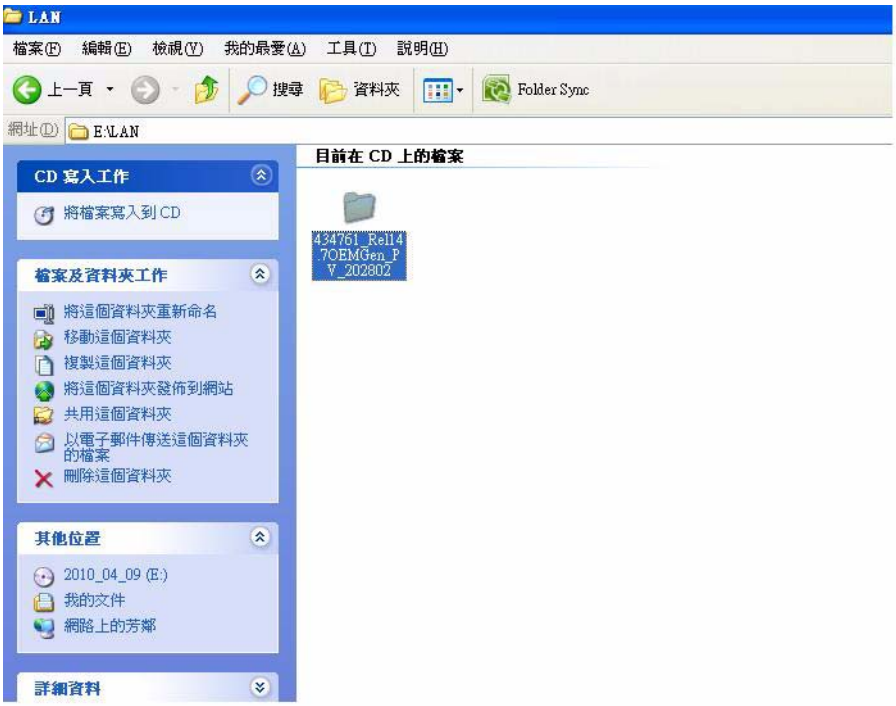
將檔案寫入到 CD
檔案及資料夾工作
將這個資料夾重新命名
移動這個資料夾
複製這個資料夾
將這個資料夾發佈到網站
共用這個資料夾
以電子郵件傳送這個資料夾的檔案
刪除這個資料夾
其他位置
我的電腦
我的文件
網路上的芳鄰
詳細資料
目前在 CD 上的檔案
Audio
CSI
Intel CPU Turbo boost
LAN
ME
Net Framework 3.5
RAID
VGA


LAN
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上一頁 搜尋 資料夾 Folder Sync
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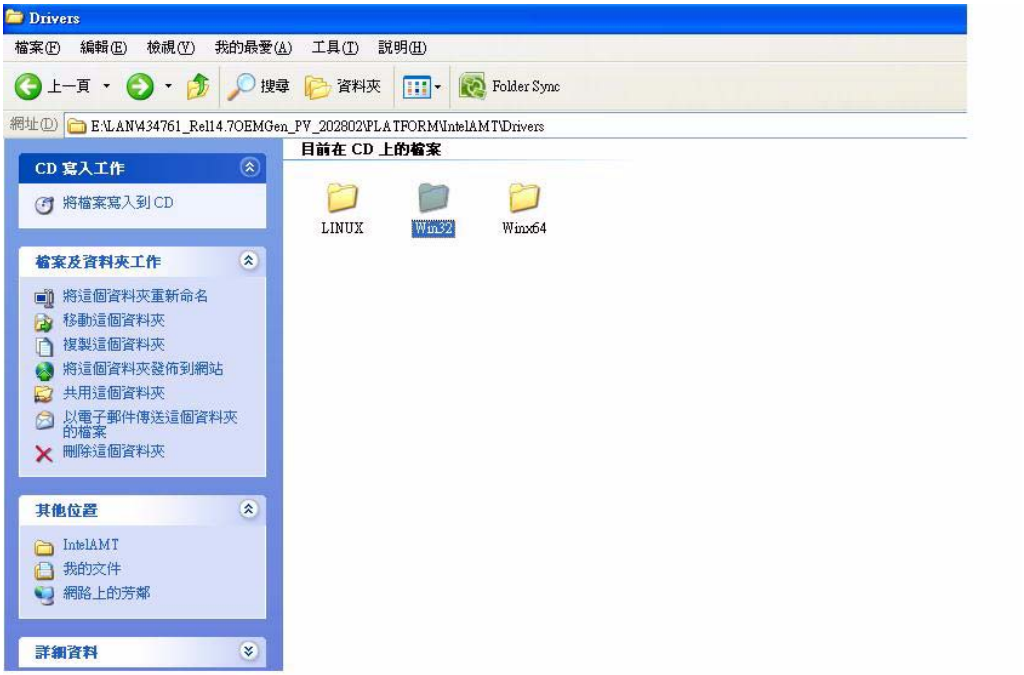
CD 寫入工作
將檔案寫入到 CD
檔案及資料夾工作
將這個資料夾重新命名
移動這個資料夾
複製這個資料夾
將這個資料夾發佈到網站
共用這個資料夾
以電子郵件傳送這個資料夾的檔案
刪除這個資料夾
其他位置
2010_04_09 (E:)
我的文件
網路上的芳鄰
詳細資料
目前在 CD 上的檔案
434761_Rel14.70EMGen_PV_202802


Drivers
檔案(F) 編輯(E) 檢視(V) 我的最愛(A) 工具(T) 說明(H)
上一頁 搜尋 資料夾 Folder Sync
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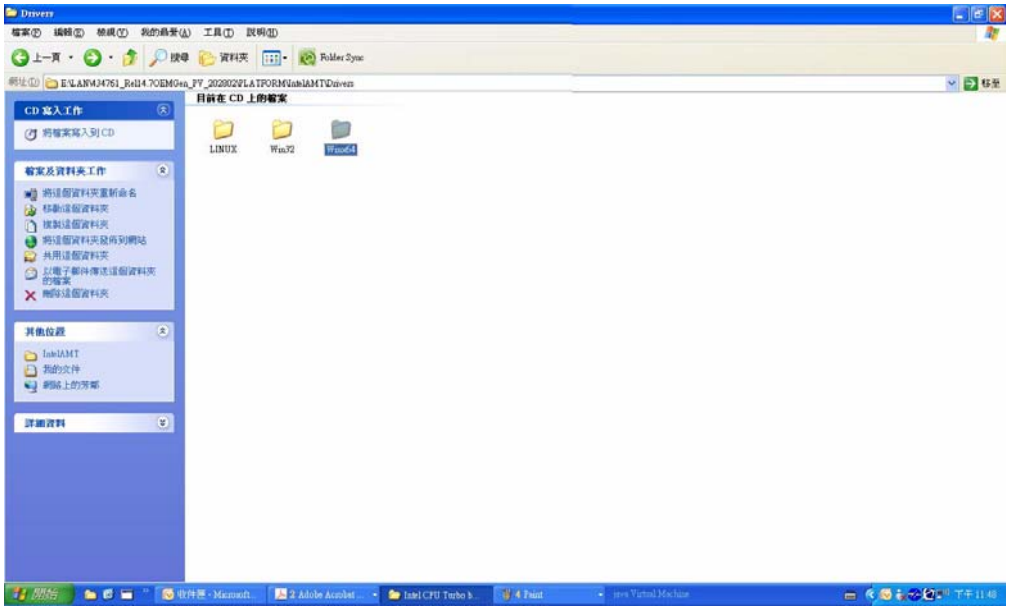
CD 寫入工作
將檔案寫入到 CD
檔案及資料夾工作
將這個資料夾重新命名
移動這個資料夾
複製這個資料夾
將這個資料夾發佈到網站
共用這個資料夾
以電子郵件傳送這個資料夾的檔案
刪除這個資料夾
其他位置
IntelAMT
我的文件
網路上的芳鄰
詳細資料
目前在 CD 上的檔案
LINUX
Win32
Winx64



Chapter 8

Turbo Boost Configuration

8.1 Introduction

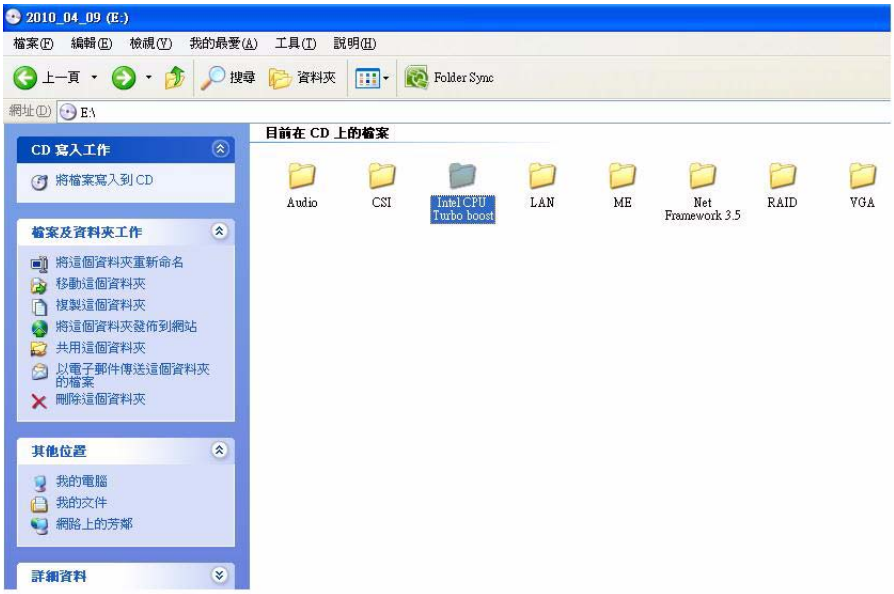
The Intel Core i5-600, Core i3-500 and Pentium CPUs with dual core support turbo boost function. Intel Turbo Boost is a technology implemented by Intel in their Core i5 and Core i7 CPUs, which allows CPU performance to be dynamically increased on demand.[1] It is activated when the operating system requests the highest performance state of the processor. You need to install the Turbo Boost driver to enable the function.

8.2 Installation

Note! *Before installing this driver, make sure the CSI utility has been installed in your system. See Chapter 8 for information on installing the CSI utility.*

Insert the driver CD into your system's CD-ROM drive. You can see the driver folders items. Navigate to the "Turbo Boost" folder and click "setup.exe" to complete the installation of the drivers for Windows XP.

8.3 Windows 7




Intel CPU Turbo boost
檔案(F) 編輯(E) 檢視(V) 我的最愛(A) 工具(T) 說明(H)
上一頁
搜尋
資料夾
Folder Sync
網址(D) E:\Intel CPU Turbo boost
CD 寫入工作
將檔案寫入到 CD
檔案及資料夾工作
將這個檔案重新命名
移動這個檔案
複製這個檔案
將這個檔案發佈到網站
以電子郵件傳送這個檔案
刪除這個檔案
其他位置
2010_04_09 (E:)
我的文件
網路上的芳鄰
目前在 CD 上的檔案
TurboBoost Monitor R...
TurboBoost Monitor S...
TurboBoostSetup

Appendix A

Programming the Watchdog Timer

A.1 Programming the Watchdog Timer

The AIMB-580'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 into the super I/O controller W83627DHG-P. It provides the following user-programmable functions:

- Can be enabled and disabled by user 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 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).

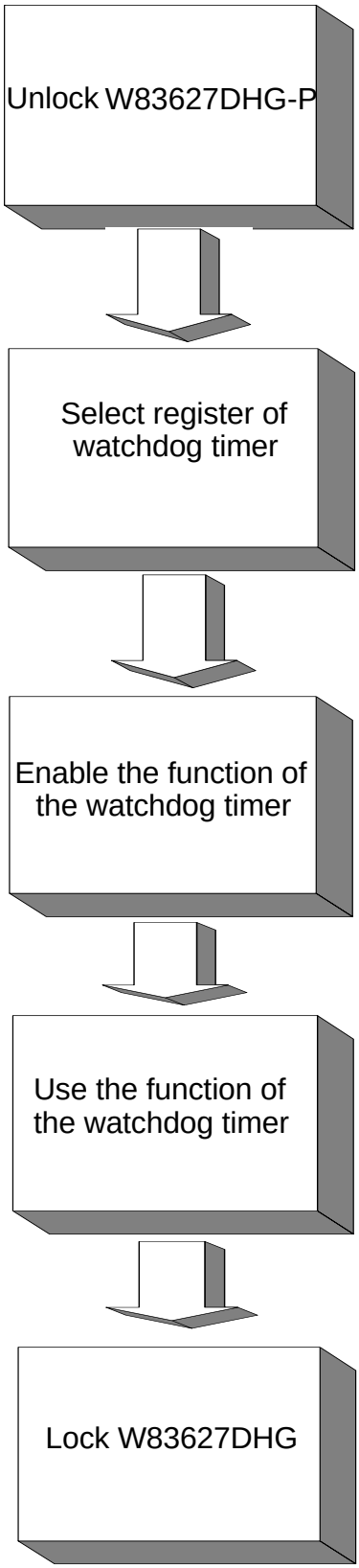

Unlock W83627DHG-P
Select register of watchdog timer
Enable the function of the watchdog timer
Use the function of the watchdog timer
Lock W83627DHG

Table A.1: Watchdog Timer Registers

Address of register (2E)	Attribute	
Read/Write	Value (2F) & description	
87 (hex)	-----	Write this address to I/O address port 2E (hex) twice to unlock the W83627DHG.
07 (hex)	write	Write 08 (hex) to select register of watchdog timer.
30 (hex)	write	Write 01 (hex) to enable the function of the watch-dog 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 inter-rupt or reset signal. Writing a new value to this reg-ister can reset the timer to count with the new value.
F7 (hex)	read/write	Bit 7:Write 1 to enable mouse to reset the timer, 0 to disable[default]. Bit 6: Write 1 to enable key-board to reset the timer, 0 to disable.[default] Bit 5: Write 1 to generate a timeout signal immedi-ately and automatically return to 0. [default=0] Bit 4: Read status of watchdog timer, 1 means timer is “timeout”.
AA (hex)	-----	Write this address to I/O port 2E (hex) to lock the watchdog timer 2.

A.1.3 Example Program

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

```
;--------------------------------------------------------
Mov dx,2eh ; Unlock W83627DHG
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

B.1 Parallel Port (LPT1)

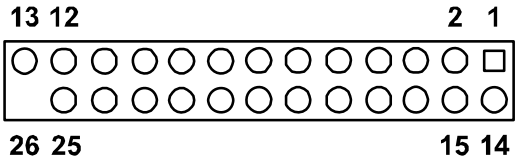


Table B.1: Parallel Port (LPT1)

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

* Low activity

B.2 USB Header (USB5/6/7/8/9/10)

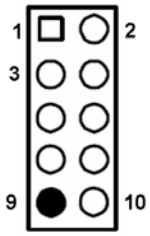


Table B.2: USB Header (USB5/6/7/8/9/10)

Pin	Signal	Pin	Signal
1	VCC5	2	VCC5
3	D-	4	D-
5	D+	6	D+
7	GND	8	GND
9	Key	10	GND

B.3 VGA Connector (VGA1)

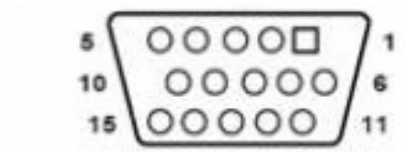


Table B.3: VGA Connector (VGA1)

Pin	Signal	Pin	Signal
1	RED	9	CRT_VCCIN
2	VGA_G	10	GND
3	VGA_B	11	N/C
4	N/C	12	V_SDAT
5	GND	13	H-SYNC
6	GND	14	V-SYNC
7	GND	15	V_SCLK
8	GND		

B.4 RS-232 Interface (COM3/COM4)

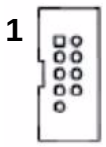


Table B.4: RS-232 Interface (COM3/COM4)

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

B.5 RS-232/422/485 Setting Interface (JETCOM3)

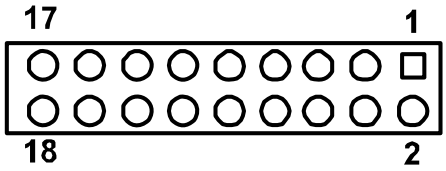


Table B.5: RS-232/422/485 Setting Interface (JETCOM3)			
Pin	**Signal**	**Pin**	**Signal**
1	R_SINA	2	RXD485_1
3	R_SINA	4	RXD422_1
5	R_SINA	6	RXD232_1
7	DCDA	8	SOUTA
9	COM1_DCD#	10	COM1_SOUT
11	COM1_TXD485N	12	COM1_RXD485P
13	SINA	14	DTRA
15	COM1_SIN	16	COM1_DTR#
17	COM1_TXD485P	18	COM1_RXD485N

B.6 SPI_CN1: SPI fresh card pin connector

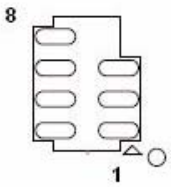


Table B.6: SPI_CN1:SPI fresh card pin connector			
Pin	**Signal**	**Pin**	**Signal**
1	VCC3	2	GND
3	CS	4	CLK
5	DO	6	DI
7	NC	8	NC

B.7 PS/2 Keyboard and Mouse Connector (KBMS1)

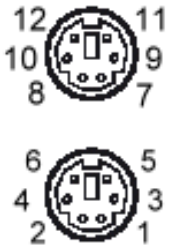


Table B.7: PS/2 Keyboard and Mouse Connector (KBMS1)

Pin	Signal
1	KB DATA
2	N/C
3	GND
4	KB VCC
5	KB CLK
6	N/C
7	M_DATA
8	N/C
9	GND
10	M_VCC
11	M_CLK
12	N/C

B.8 CPU Fan Power Connector (CPU_FAN1)

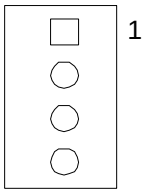


Table B.8: CPU Fan Power Connector (CPU_FAN1)

Pin	Signal
1	GND
2	+12 V
3	DETECT
4	PWM

B.9 System Fan Power Connector (SYS_FAN1/ SYS_FAN2)

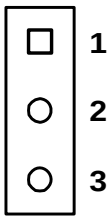
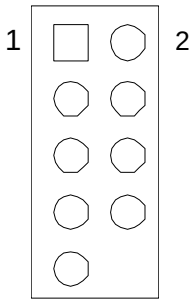


Table B.9: System Fan Power Connector (SYSFAN1/SYSFAN2)

Pin	Signal
1	GND
2	+12 V
3	DETECT

B.10 Front Panel Connectors (JFP1)



B.10.1 Power/Sleep LED (JFP1)

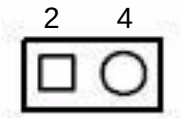


Table B.10: Power/Sleep LED (JFP1)

Pin	Signal
2	LED power (+5 V)
4	LED power (+5 V)

B.10.2 Reset Connector (JFP1)

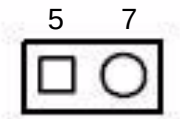


Table B.11: Reset Connector (JFP1)	
Pin	**Signal**
5	RESET
7	GND

B.10.3 HDD LED Connector (JFP1)

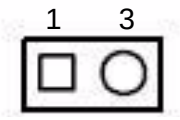


Table B.12: HDD LED Connector (JFP1)	
Pin	**Signal**
1	HDD LED+
3	HDD LED-

B.10.4 ATX Soft Power Switch (JFP1)

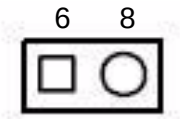


Table B.13: ATX Soft Power Switch (JFP1)	
Pin	**Signal**
6	5 VSB
8	PWR-BTN

B.11 ATX1 12 V Auxiliary Power Connector (ATX12V1)

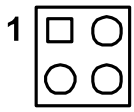


Table B.14: ATX1 12 V Auxiliary Power Connector (ATX12V1)

Pin	Signal
1	GND
2	GND
3	+12 V
4	+12 V

B.12 ATX Power Connector (EATXPWR1)

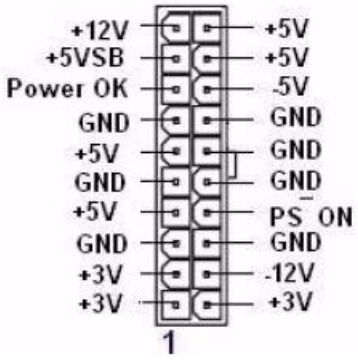


Table B.15: ATX Power Connector (ATX2)

Pin	Signal	Pin	Signal
1	+3.3 V	2	+3.3 V
3	GND	4	+5 V
5	GND	6	+5 V
7	GND	8	POK
9	5 VSB	10	12 V
11	12 V	12	3.3 V
13	3.3 V	14	-12 V
15	GND	16	PSON
17	GND	18	GND
19	GND	20	-5 V
21	+5 V	22	+5 V
23	+5 V	24	GND

B.13 USB/LAN ports (LAN2_USB12/LAN1_USB34)

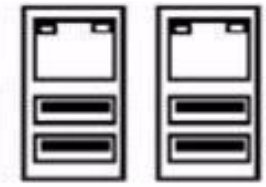


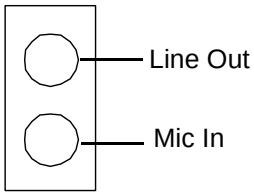
Table B.16: USB Port

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

Table B.17: Ethernet 10/100/1000Base-T RJ-45 Port

Pin	Signal	Pin	Signal
1	LAN1LED	2	LAN2LED
3	+3.3V_LAN	4	+3.3V_LAN
5	LAN1LED	6	LAN2LED
7	LAN1LED	8	LAN2LED
9	+3.3V_LAN		

B.14 Line Out, Mic In Connector (AUDIO1)



B.15 Serial ATA0 (SATA1-6)

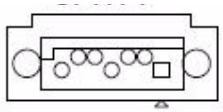


Table B.18: Serial ATA0 (SATA1-6)

Pin	Signal	Pin	Signal
1	GND	2	TX+
3	TX-	4	GND
5	RX-	6	RX+
7	GND	8	

B.16 AT/ATX Mode (PSON1)

Table B.19: AT/ATX Mode (PSON1)

Pin	Signal	Pin	Signal
1	#PSON_SIO (to super IO)	2	#PSON (to power supply)
3	GND		

AT	1-2 (short)
ATX	2-3 (short)*

* refers to default

B.17 FPAUDIO1(Front Panel Audio Connector)

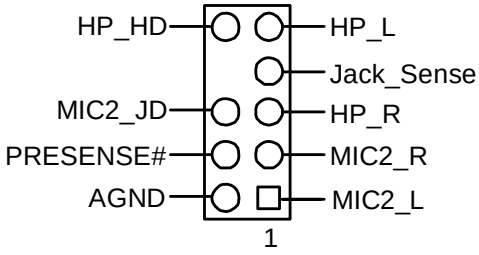


Table B.20: Front Panel Audio Connector (FPAUDIO1)

Pin	Signal
1	MIC2_L
2	AGND
3	MIC2_R
4	PRESENSE
5	LIN2_R
6	GND
7	FIO_JD
8	N/A
9	LIN2_L
10	GND

B.18 SPDIF_OUT1 (Digital Audio Connector)

Table B.21: Digital Audio Connector(SPDIF_OUT1)

Pin	Signal
1	5 V
2	N/A
3	SPDIFO
4	GND

B.19 JCMOS1(CMOS clear Connector)

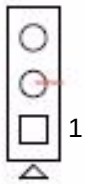


Table B.22: CMOS Clear Connector(CMOS1)	
Pin	**Signal**
1	NC
2	Reset
3	GND

1-2 pin(short)*

*default setting

B.20 JWE1 (BIOS update ME mode connector)

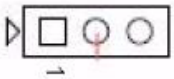


Table B.23: BIOS update ME Connector(JWE1)	
Pin	**Signal**
1	NC
2	+V3.3DUAL
3	GND

1-2 pin closed* (default setting)

B.21 System I/O Ports

Table B.24: System I/O Ports	
Addr. range (Hex)	**Device**
000-01F	Interrupt controller 1, master

Table B.24: System I/O Ports	
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
290-297	On-board hardware monitor
2F8-2FF	Serial port 2
Serial port 2	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.22 JCASE1(Open Case Connector)

Table B.25: Case Open Connector(JCASE1)	
Pin	Signal
1	CASEOP#
2	GND

B.23 DMA Channel Assignments

Table B.26: DMA Channel Assignments	
Channel	**Function**
0	Available
1	Available

Table B.26: DMA Channel Assignments	
2	Floppy disk (8-bit transfer)
3	Available
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available

B.24 Interrupt Assignments

Table B.27: 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	Serial communication port 3/4
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	Available
15	IRQ6	Diskette controller (FDC)
16	IRQ7	Parallel port 1 (print port)

B.25 1st MB Memory Map

Table B.28: 1st MB Memory Map	
Addr. range (Hex)	**Device**
E0000h - FFFFFh	BIOS
CC000h - DFFFFh	Unused
C0000h - CBFFFh	VGA BIOS

Table B.28: 1st MB Memory Map	
A0000h - BFFFFh	Video Memory
00000h - 9FFFFh	Base memory

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