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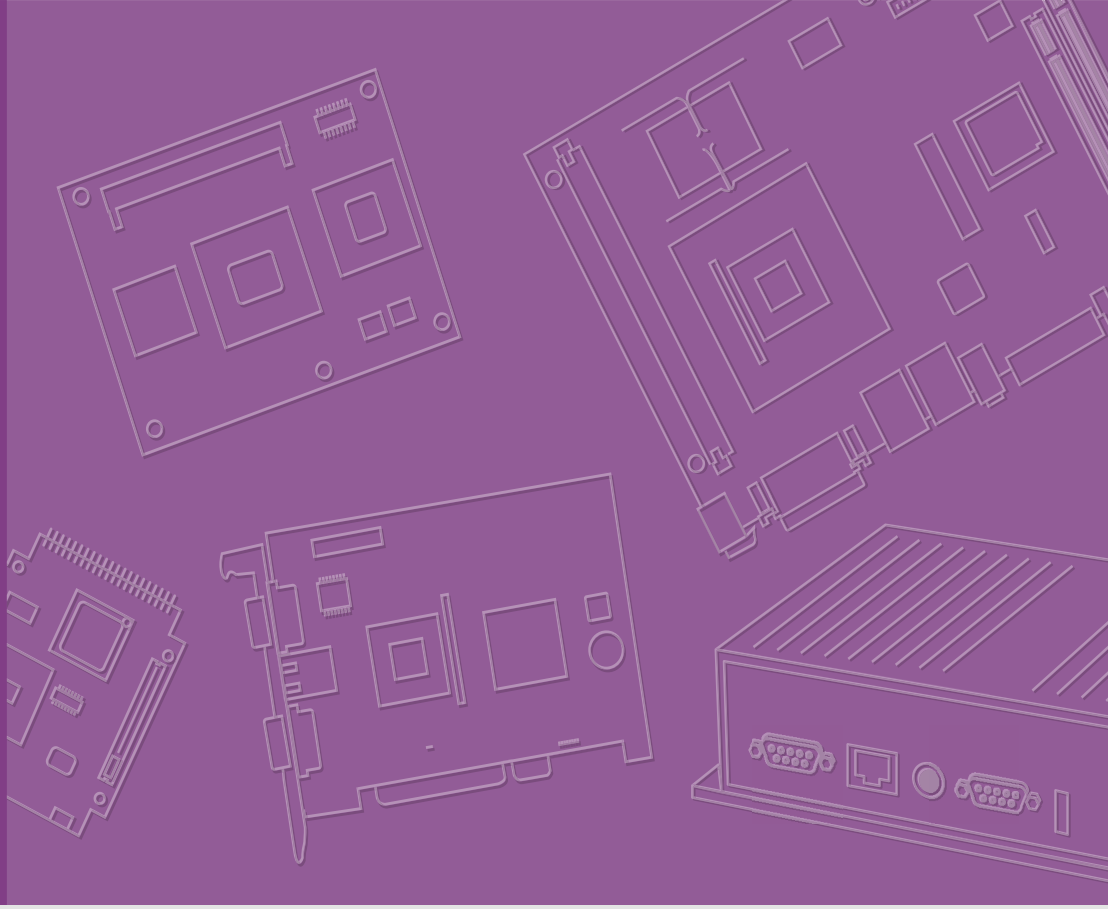

User Manual

AIMB-214

Intel® Atom™ N2600/D2550 1.6/ 1.8 GHz Mini-ITX with VGA/HDMI/ 2LVDS, 6 COMs, Dual LANs, 6 USBs, Mini PCIe

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Declaration of Conformity

FCC Class B

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

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

Memory Compatibility

AIMB-214 Memory Compatibility List

Brand	Size	Speed	Type	ECC	Vendor PN	Memory	Result
Transcend	1GB	DDR3 1066	SODIMM DDR3	N	TS128MSK64V1U	SEC K4B1G0846G-BCH9	PASS
Transcend	2GB	DDR3 1066	SODIMM DDR3	N	TS128MSK64V1U	SEC HCH9 K4B1G0846D (128x8)	PASS
Transcend	4GB	DDR3 1066	SODIMM DDR3	N	TS7KSN28420-1Y	HYNIX H5TQ2G83BFR (256x8)	PASS
Apacer	4GB	DDR3 1066	SODIMM DDR3	N	78.B2GC8.AF1	HYNIX H5TQ2G83BFR (256x8)	PASS
Transcend	1GB	DDR3 1333	SODIMM DDR3	N	TS128MSK64V3U	ELPIDA J1108BFBG-DJ-F	PASS
Transcend	2GB	DDR3 1333	SODIMM DDR3	N	TS256MSK64V3N	HYNIX H5TQ2G83CFR	PASS
Transcend	4GB	DDR3 1333	SODIMM DDR3	N	TS512MSK64V3N	HYNIX H5TQ2G83BFR (256x8)	PASS
Apacer	1GB	DDR3 1333	SODIMM DDR3	N	78.02GC6.AF0	HYNIX H5TQ1G83DFR-H9C	PASS
	1GB	DDR3 1333	SODIMM DDR3	N		HYNIX H5TQ1G83TFR-H9C	PASS
Apacer	2GB	DDR3 1333	SODIMM DDR3	N	78.A2GC9.4200C	ELPIDA J2108BCSE-DJ-F	PASS
Apacer	4GB	DDR3 1333	SODIMM DDR3	N	78.B2GC9.AF1	HYNIX H5TQ2G83BFR (256x8)	PASS
Apacer	4GB	DDR3 1333	SODIMM DDR3	N	78.B2GC9.4210C	ELPIDA J2108BCSE-DJ-F	PASS
DSL	4GB	DDR3 1333	SODIMM DDR3	N	D3SH56082XH15 AA	HYNIX H5TQ2G83BFR (256x8)	PASS
DSL	2GB	DDR3 1600	SODIMM DDR3	N	D3SS56081XH12 AA	SEC 113 HCK0 K4B2G0846C (256x8)	PASS
DSL	4GB	DDR3 1600	SODIMM DDR3	N	D3SS56082XH12 AA	SEC 113 HCK0 K4B2G0846C (256x8)	PASS
Transcend	2GB	DDR3 1600	SODIMM DDR3	N	TS256MSK64V6N	MICRON IVM77 D9PFJ	PASS
Transcend	4GB	DDR3 1600	SODIMM DDR3	N	TS512MSK64N6N	MICRON IRM72 D9PFJ	PASS

Ordering Information

Part Number	CPU	DC/SC	GbE	COM	LVDS	TPM
AIMB-214E-S6A2E	Atom D2550	DC1.86GHz	2	6	2,24-bit	Yes
AIMB-214U-S6A2E	Atom N2600	DC1.6GHz	2	6	2,24-bit	No

Product Warranty (1 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:

- 1x AIMB-214 Intel Atom N2600/D2550 Mini-ITX motherboard
- 2 x SATA HDD cable
- 2 x SATA Power cable
- 1 x Serial port cable(1 to 4)
- 1 x I/O port bracket
- 1 x Startup manual
- 1 x Driver CD
- 1 x Warranty card
- 1 x CPU cooler (for Atom D2550 only)

If any of these items are missing or damaged, contact your distributor or sales representative immediately. We have carefully inspected the AIMB-214 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-214, 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-214 is designed with the Intel® Atom™ N2600/N2800/D2550/D2700 and the NM10 for industrial applications that require both performance computing and enhanced power management capabilities. The motherboard has on board CPU Intel® Atom™ N2600/N2800/D2550/D2700 dual core 1.6/1.86/1.86/2.13 GHz and DDR3 1066MHz up to 2/4 GB.

The AIMB-214 has rich I/O connectivity with up to six USB 2.0 ports and six COM ports integrated in a standard 170 x 170 mm form factor. These motherboards also support dual display for LVDS, HDMI, embedded display port and VGA. AIMB-214 also comes with plenty of connectivity and expansion options. CompactFlash, PCI bus, six COM ports, eight USB ports, 8-bit GPIO, two SATA III 6 GB/s connectors, optional TPM security feature, mini SATA and Mini-PCIe expansion slots enable easy integration, while a dual Intel® chipset, 10/100/1000 Mbps Ethernet port is also available to deliver high speed networking.

AIMB-214 is powered by the newest Intel® Atom™ processors which are built on 32nm process technology. The thermal design power rating of the Intel N2600 single core architecture is only 3.5W, while with the dual core processor is only 8W, enabling future power reductions, smaller systems and performance improvements. This is the first Ultra Lower Power mini-ITX board in Advantech. All these features are packed into a space-saving, power-efficient, and cost-effective Mini-ITX form factor.

1.2 Features

- Supports Intel® Atom™ processor N2600 & D2550 dual core
- One 204-pin SODIMM up to 4 GB DDR3 1066 MHz SDRAM
- Supports 1 PCI and 1 Mini-PCIe expansion, 6 serial ports, 6 USB, and Cfast
- Lower total cost of ownership with DC12V support, and supports 24-bit LVDS
- Onboard TPM 1.2 support (optional)
- Supports embedded software APIs and Utilities

1.3 Specifications

1.3.1 System

- **CPU:** Intel® Atom™ N2600/D2550
- **BIOS:** Award SPI 16 Mbit BIOS
- **System chipset:** Intel® NM10
- **SATA hard disk drive interface:** Two on-board SATA connectors with data transmission rate up to 300 MB
- **CFast interface:** Supports compact flash Type II

1.3.2 Memory

- **RAM:** Up to 2 GB/ 4GB in 1 slot 204-pin SODIMM sockets. Supports single channel DDR3 1066 MHz SDRAM

1.3.3 Input/Output

- **PCI bus:** 1 PCI slot
- **Serial ports:** Six serial ports, one is RS-232/422/485 and five of RS-232 serial ports
- **Keyboard and PS/2 mouse connector:** Supports one standard PS/2 keyboard, one standard PS/2 mouse (On board 6-pin wafer box)
- **USB port:** Supports up to six USB 2.0 ports with transmission rate up to 480 Mbps, 2 on board pin header and 4 external ports)
- **GPIO connector:** 8-bit general purpose Input/Output

1.3.4 Graphics

- **Controller:** Embedded Gen3.5+ GFX Core, 480/640-MHz render clock frequency for N2600/D2550
- **Display memory:** Dynamically shared system memory up to 224 MB
- **VGA:** Supports resolutions up to SXGA 1920 x 1200 pixels, 32-bits, 60Hz refresh rate
- **LVDS:** Supports 2LVDS, LVDS1 is 24-bit dual channel up to 1920 x 1200; LVDS2 is 18/24-bit single channel up to 1400 x 900
- **HDMI:** Supports up to 1920 x 1200 @ 60 MHz

1.3.5 Ethernet LAN

- Supports dual 10/100/1000 Mbps Ethernet port (s) via PCI Express x1 bus which provides 500 MB/s data transmission rate
- **Controller:** LAN1: Intel 82583; LAN2: Intel 82574L/82583lv colay

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:** +12 V
- **Power consumption:**
  AIMB-214U sku +12 V @1.44 A
  AIMB-214D sku +12 V @1.77 A
  Measure of the maximum current values with system under minimum load
- **Board size:** 170 mm x 170 mm (6.69" x 6.69")
- **Board weight:** 0.365 kg

1.4 Jumpers and Connectors

Connectors on the AIMB-214 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: Connectors

Label	Function
FPAUD1	Front Panel audio connector
AUDIO1	Audio connector
CMOS1	CMOS clear (Default 1-2)
DIMM1	Memory connector channel
CFAST1	CFast Socket
COM3-6	Serial port: COM RS232
CPU_FAN1	CPU FAN connector(3-pin)
GPIO1	GPIO Header
DCIN1	DC IN
ATX12V1	ATX 12V connector
ATX_5V	PS_ON , 5VSB
LVDS1	LVDS1 connector (Internal)
INV1	LVDS1 Inverter Power
JVBR1	LVDS1 Brightness control selector for Analog or Digital (Default 1-2, Analog)
JLVDS1	LVDS1 voltage jumper (default 1-2, 3.3V)
JLVDS2	LVDS1 12V voltage jumper
VCON1	LVDS1 JEIDA/VESA jumper selection
LVDS2	LVDS2 connector (Internal)
INV2	LVDS2 Inverter Power
JVBR2	LVDS2 Brightness control selector for Analog or Digital (Default 1-2, Analog)
JLVDS3	LVDS2 voltage jumper (default 1-2, 3.3V)
JLVDS4	LVDS2 12V voltage jumper
VCON2	LVDS2 JEIDA/VESA jumper selection
JFP1+JFP2	Power switch/HDD LED/SMBus/speaker

Table 1.1: Connectors	
JFP3	Power LED and Keyboard lock
JSETCOM2	RS-232/422/485 Jumper setting
JSETCOM6	COM6 5V/12V Jumper setting
PCI1	PCI connector
KBMS1	PS/2 Keyboard and Mouse external connector
KBMS2	PS/2 Keyboard and Mouse internal connector
LAN1_USB12	LAN1 / USB port 1, 2
LAN2_USB34	LAN2 / USB port 3, 4
MINI_CARD	Mini PCI express connector
PCI	PCI slot
PSON1	AT(1-2) / ATX(2-3) (Default 2-3)
SATA1	Serial ATA data connector 1
SATA2	Serial ATA data connector 2
SATA3	Serial ATA data connector 3
SATA_PWR1	SATA POWER
SATA_PWR2	SATA POWER
SPI1	SPI connector
SPI_CN1	SPI flash update connector.
SPDIF_OUT1	Digital Audio connector
SYS_FAN1	System FAN connector(3-pin)
USB56	USB port 5, 6 (on board)
HDMI1	HDMI connector
VGA1	VGA connector
COM1	COM PORT CONNECTOR
COM2	COM PORT CONNECTOR
JOBS1+JWDT1	OBS Alarm and Watchdog Reset
BAT1	Battery holder

1.5 Board layout: Jumper and Connector Locations

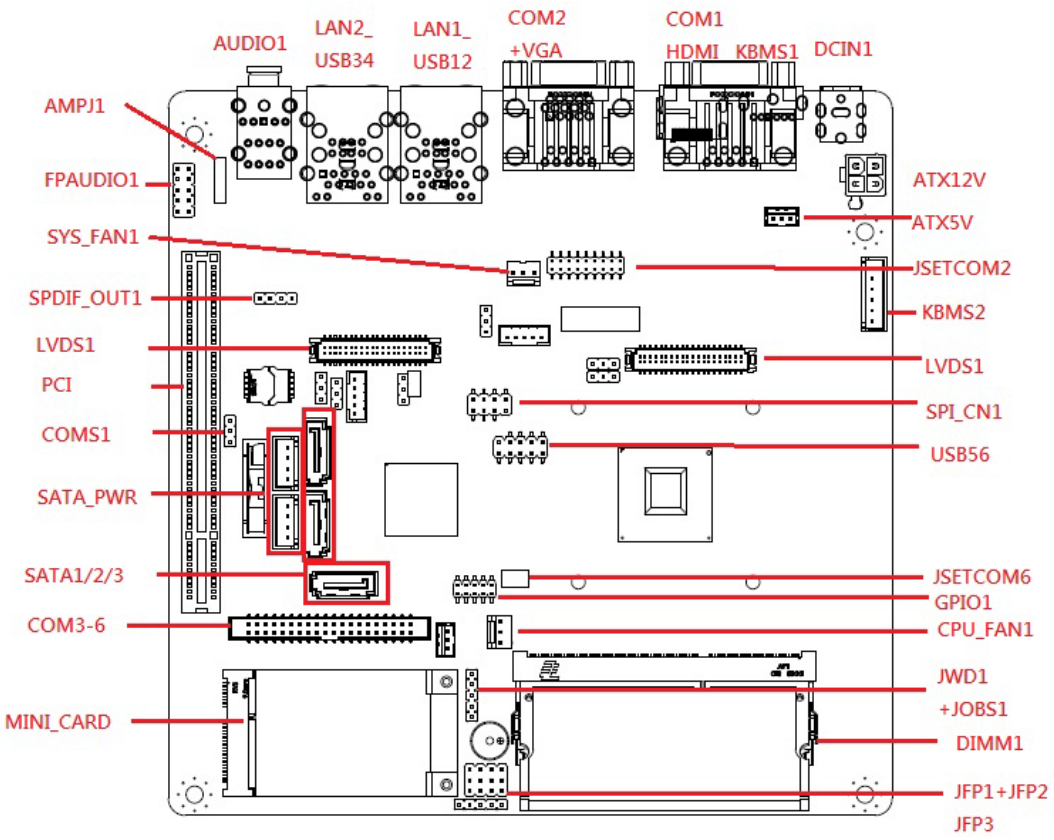


Figure 1.1 Jumper and Connector Location

Figure 1.2 I/O Connectors

1.6 AIMB-214 Board Diagram

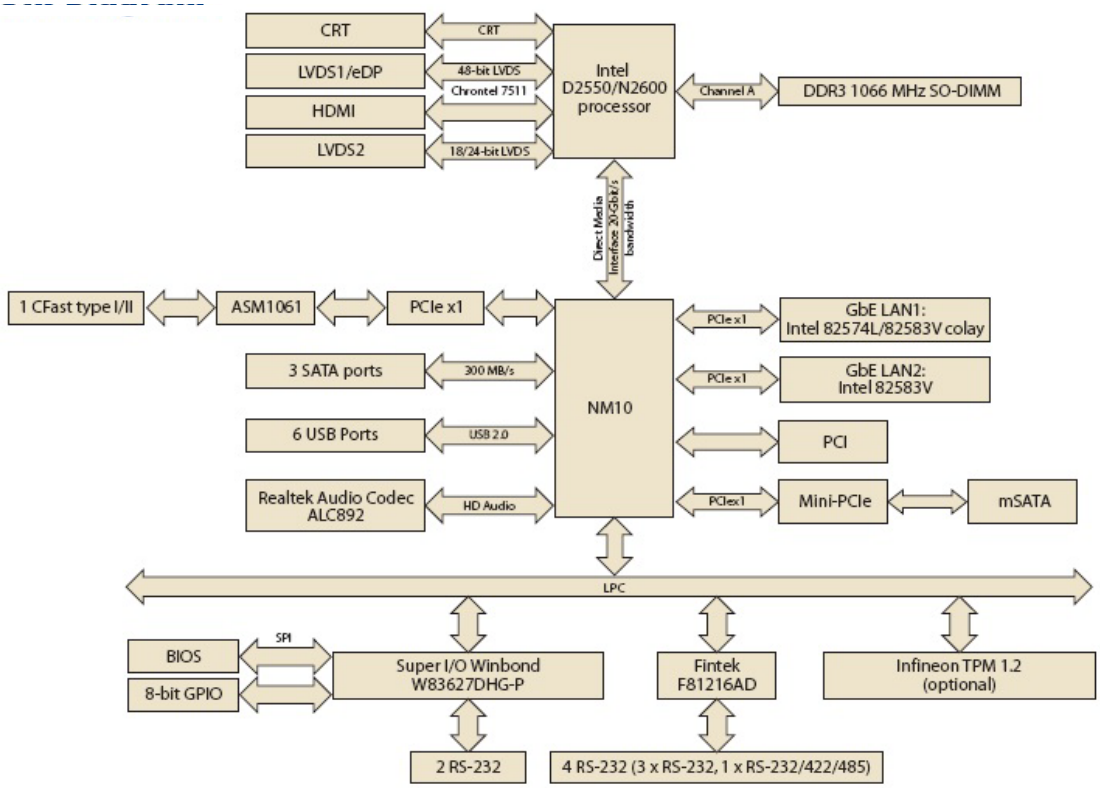


Figure 1.3 AIMB-214 Board Diagram

1.7 Safety Precautions

Warning! *Always completely disconnect the power cord from 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 electro-static 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.

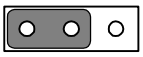
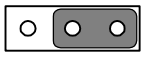
1.8.1 How to Set Jumpers

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-214 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 1.2: CMOS1

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

* Default

1.8.3 COM2 RS 232/422/485 Mode Selector (JSETCOM2)

Users can use JSETCOM2 to select among RS 232/422/485 modes for COM2. The default setting is RS 232.

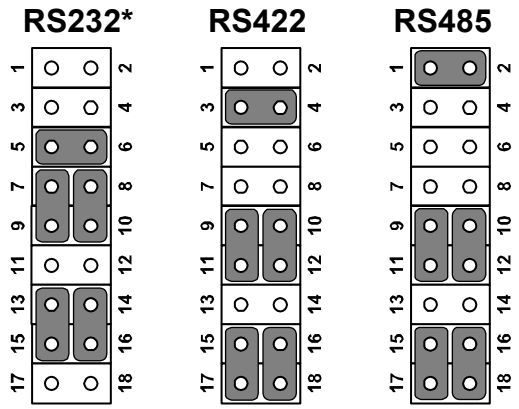


Table 1.3: COM2 RS 232/422/485 Mode Selector (JSETCOM2)

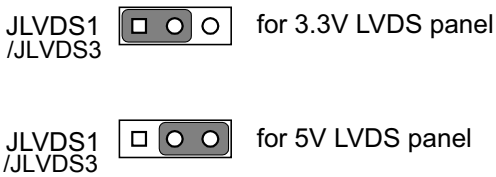
Function	Jumper Setting
*RS232	(5-6) + (7-9) + (8-10) + (13-15) + (14-16) closed
RS422	(3-4) + (9-11) + (10-12) + (15-17) + (16-18) closed
RS-485	(1-2) + (9-11) + (10-12) + (15-17) + (16-18) closed
*: Default	

1.8.4 JLVDS1 and JLVDS3: LCD Power 3.3 V/5 V Selector

Table 1.4: JLVDS1 and JLVDS3: LCD Power 3.3 V/5 V Selector

Closed Pins	Result
JLVDS1/JLVDS3	
1-2*	For 3.3 V LVDS Panel
2-3	For 5 V LVDS Panel

*Default



1.8.5 PSON1: ATX, AT Mode Selector

Table 1.5: PSON1: ATX, AT Mode Selector

Closed Pins	Result
1-2	AT Mode
2-3*	ATX Mode

*Default

AT Mode
1-2 closed

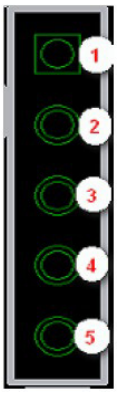
ATX Mode
2-3 closed

1.8.6 JWDT1+JOBS1: Watchdog Reset and OBS Alarm

Table 1.6: JWDT1+JOBS1: Watchdog Reset and OBS Alarm

Closed Pins	Result
2-3*	Watchdog reset
4-5*	OBS alarm

*Default



Chapter 2

Connecting Peripherals

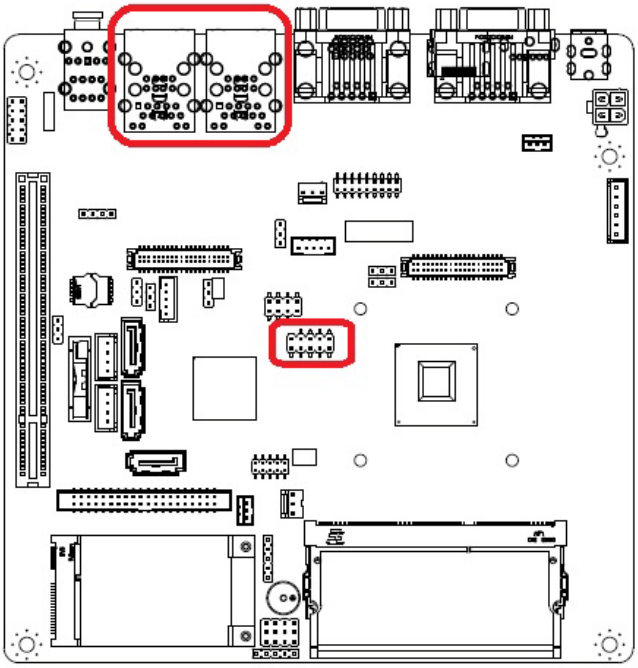
2.1 Introduction

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 USB Ports (LAN1_USB12/LAN2_USB34/USB56)

The AIMB-214 provides up to six USB ports. The USB interface complies with USB Specification Rev. 2.0 supporting transmission rate up to 480 Mbps and is fuse protected. The USB interface can be disabled in the system BIOS setup.

The AIMB-214 is equipped with two high-performance 1000 Mbps Ethernet LAN adapters, both of which are supported by all major network operating systems. The RJ-45 jacks on the rear panel provide for convenient LAN connection.



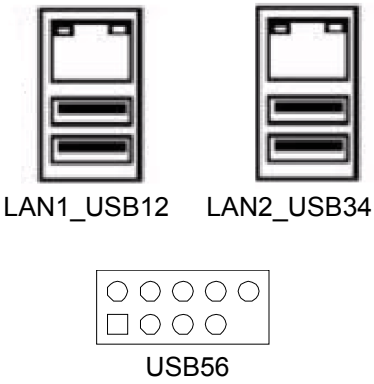
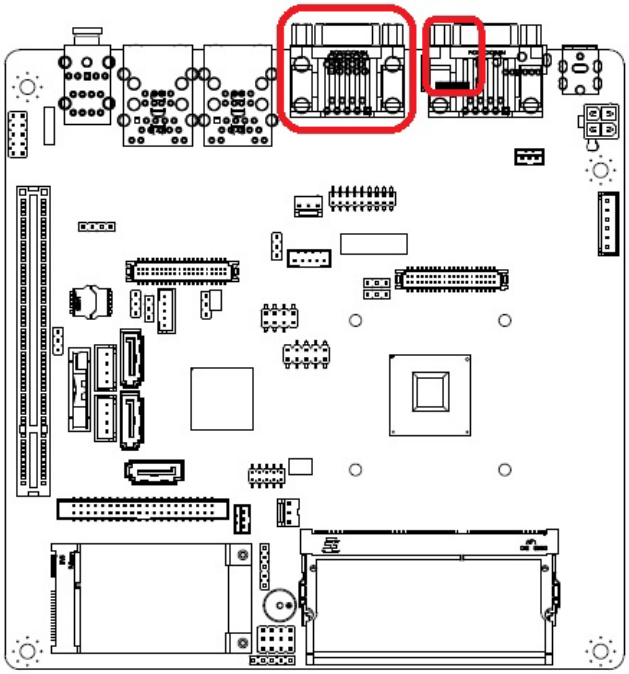
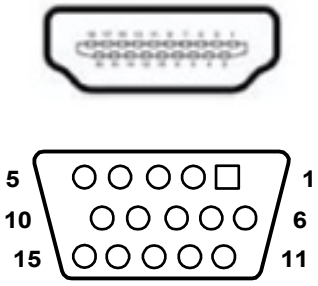


Table 2.1: LAN LED Indicator

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

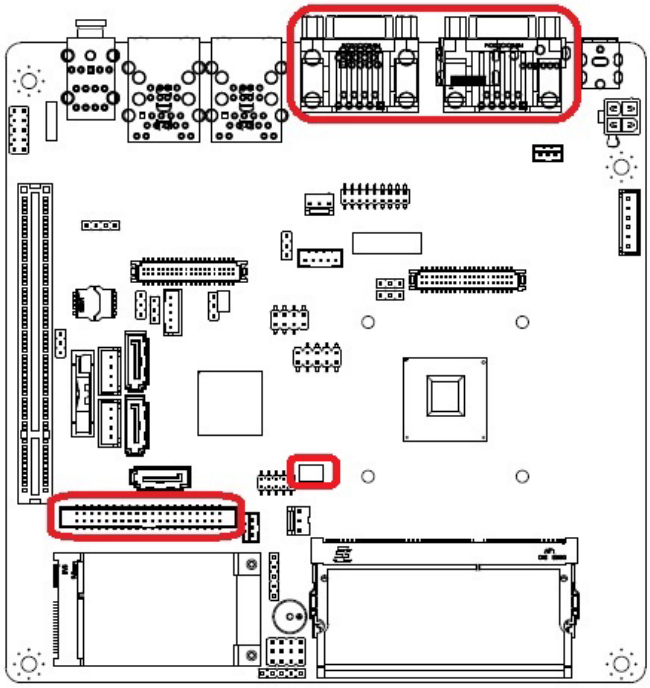
2.3 VGA/HDMI Connector (VGA1/HDMI1)

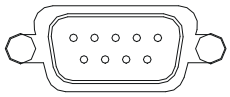




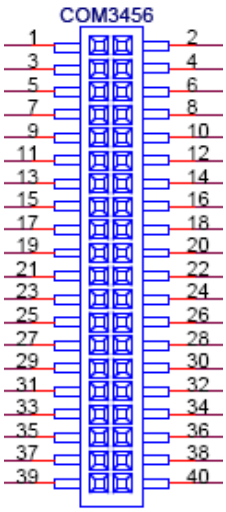
The AIMB-214 includes VGA and HDMI interface that can drive conventional VGA and HDMI displays. VGA1 is a standard 15-pin D-SUB connector commonly used for VGA. HDMI is HDMI connector for HDMI signals output. Pin assignments for VGA are detailed in Appendix B.

2.4 Serial Ports (COM1~COM6)





COM12

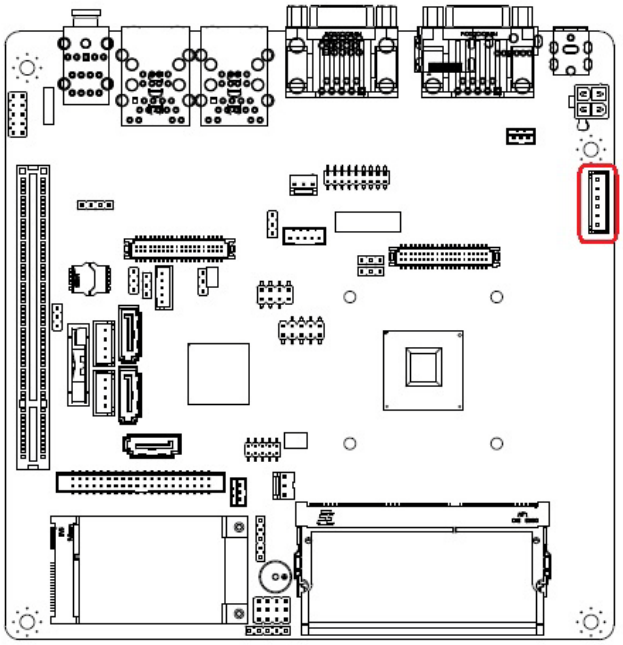


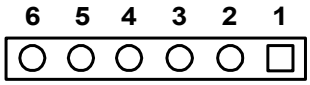
AIMB-214 supports six serial ports. 1 of RS-232/422/485 is for COM3 and COM6; 5 of RS-232 are for COM1, COM2, COM4, COM5 and COM6. The user can use JSETCOM2 to select among RS 232/422/485 modes for COM2. These ports can connect to serial devices, such as a mouse or a printer, or to a communications network.

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

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

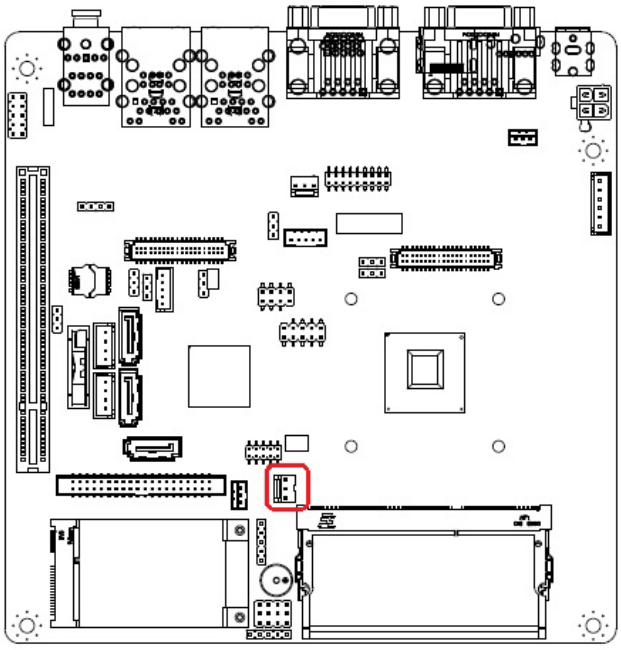
2.5 PS/2 Keyboard and Mouse Connector (KBMS1)

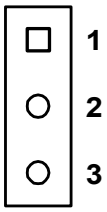




On board 6-pin wafer box connector, supports one standard PS/2 keyboard, one standard PS/2 mouse.

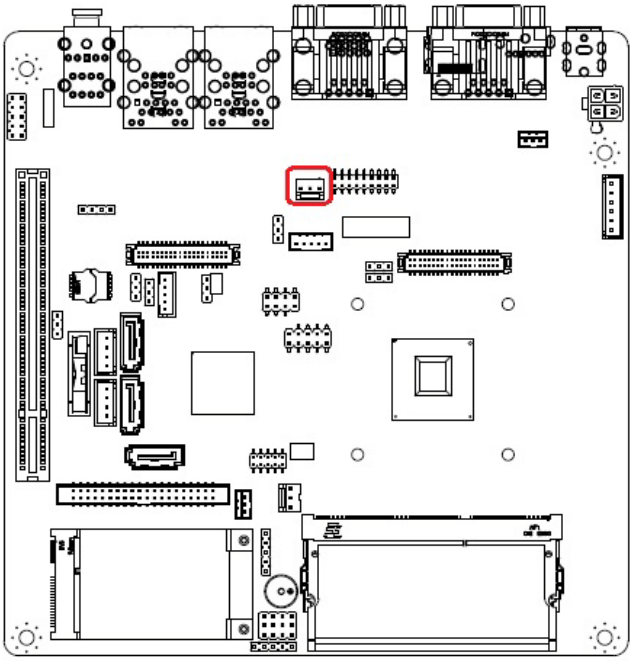
2.6 CPU Fan Connector (CPU_FAN1)

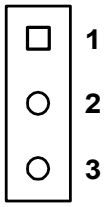




If a fan is used, this connector supports cooling fans of 500 mA (6 W) or less.

2.7 System FAN Connector (SYSFAN1)

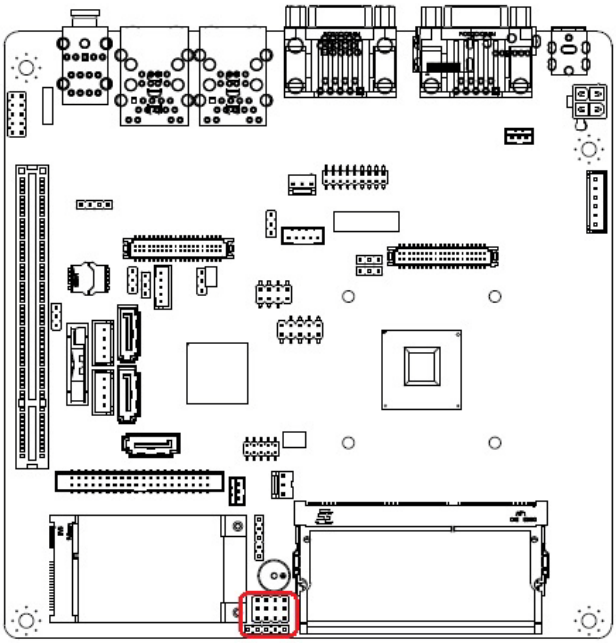




If a fan is used, this connector supports cooling fans of 500 mA (6 W) or less.

2.8 Front Panel Connectors (JFP3/JFP1+JFP2)

There are several external switches to monitor and control the AIMB-214.



JFP1 & JFP2

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

JFP3

5	4	3	2	1

SPEAKER	
SM_BUS	HDDLED
RESET	PWRSW
PWRLED & KEYLOCK	

2.8.1 ATX soft power switch (JFP1+JFP2/ PWR_SW)

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+JFP2/ PWR_SW)), for convenient power on and off.

2.8.2 Reset (JFP1+JFP2/ RESET)

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

2.8.3 HDD LED (JFP1+JFP2/ HDDLED)

You can connect an LED to connector (JFP2/HDDLED) to indicate when the HDD is active.

2.8.4 External speaker (JFP1+JFP2/ SPEAKER)

((JFP1+JFP2/ SPEAKER)) is a 4-pin connector for an external speaker. If there is no external speaker, the AIMB-214 provides an onboard buzzer as an alternative. To enable the buzzer, set pins 7-10 as closed.

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

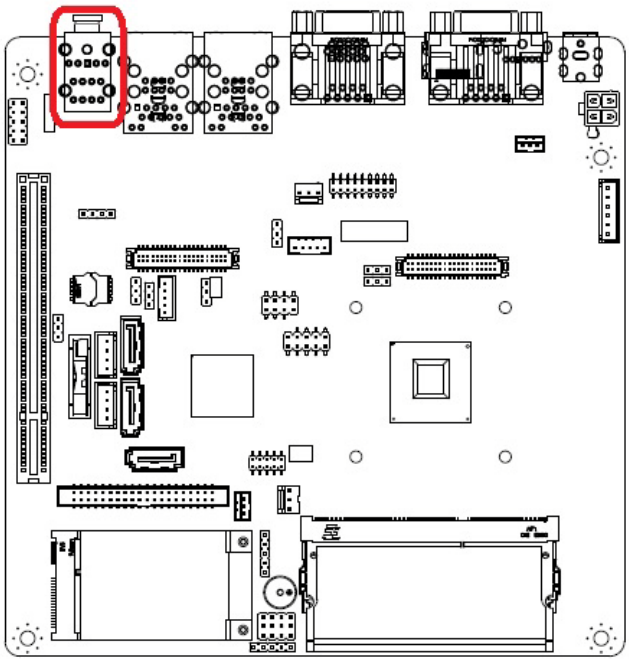
(JFP3 / PWR_LED & KEY LOCK) is a 5-pin connector for the power on LED and Key Lock function. Refer to Appendix B for detailed information on the pin assignments. The Power LED cable should be connected to pin 1-3. The key lock button cable should be connected to pin 4-5.

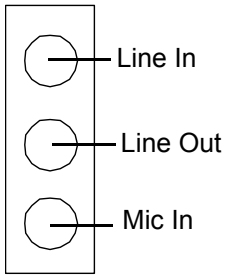
There are 3 modes for the power supply connection. The first is “ATX power mode”; the system turns on/off by a momentary power button. The second is “AT Power Mode”; the system turns on/off via the power supply switch. The third is another “AT Power Mode” which makes use of the front panel power switch. The power LED status is indicated in the following table:

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

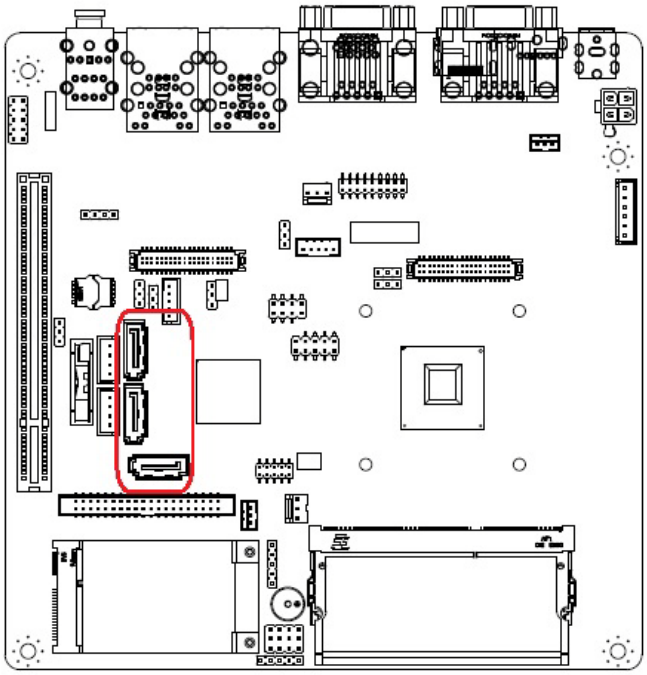
Power mode	LED (ATX Power Mode) (On/off by momentary button)	LED (AT power Mode) (On/off by switching power supply)	LED (AT power Mode) (On/off by front panel switch)
PSON1 (on back plane) jumper setting	Pins 2-3 closed	Pins 1-2 closed	Connect pins 1 & 2 to panel switch via cable
System On	On	On	On
System Suspend	Fast flashes	Fast flashes	Fast flashes
System Off	Slow flashes	Off	Off

2.9 Line In, Line Out, Mic In Connector (AUDIO1)



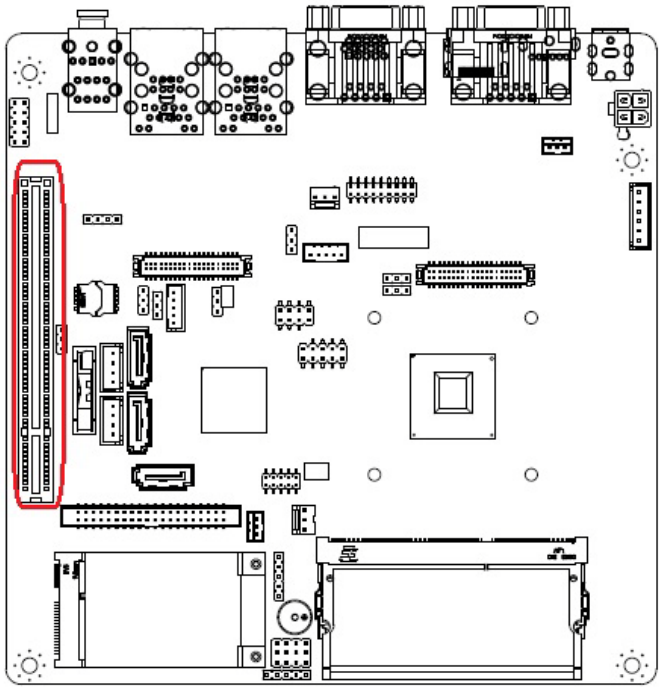


2.10 Serial ATA Interface (SATA1/2/3)



AIMB-214 features a high performance Serial ATA interface (up to 300 MB/s) which eases cabling to hard drives with long, thin cables.

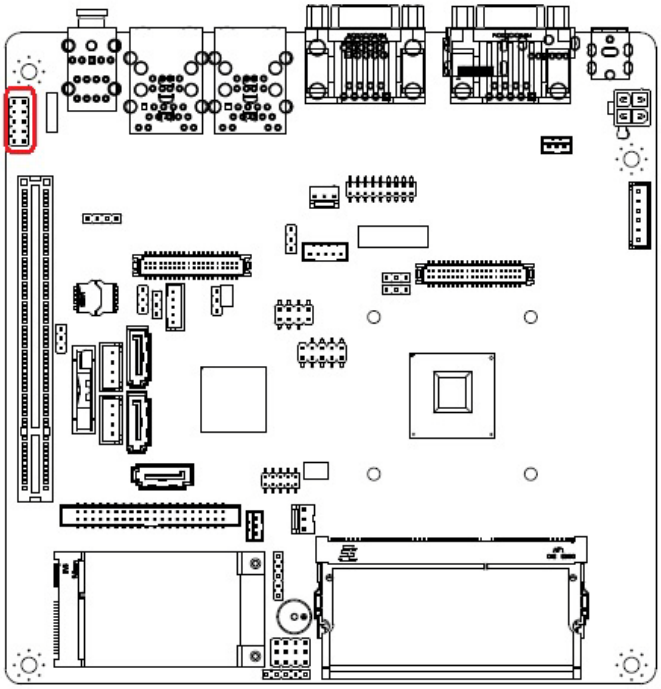
2.11 PCI

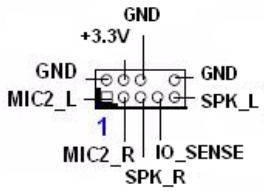


The AIMB-214 provides 1 x PCI slot.

2.12 Front Panel Audio Connector (FPAUDIO1)

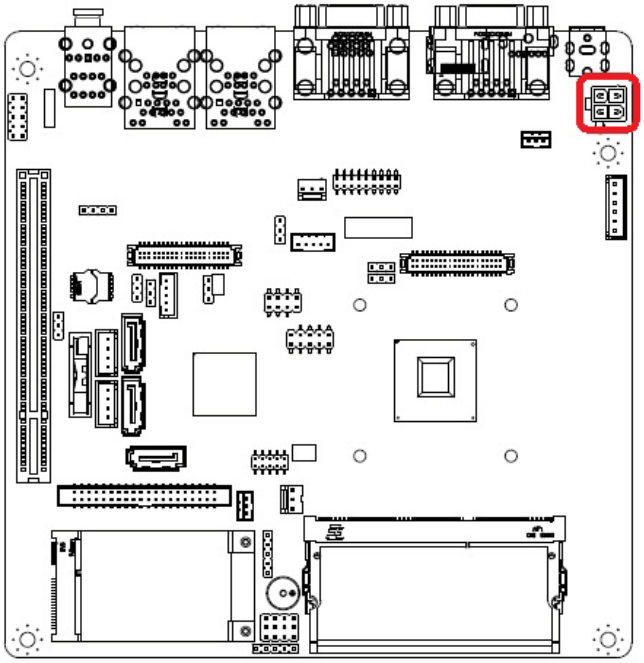
This connector is for a chassis-mounted front panel audio I/O module that supports either HD Audio or legacy AC'97 (optional) audio standard. Connect this connector-with the front panel audio I/O module cable.





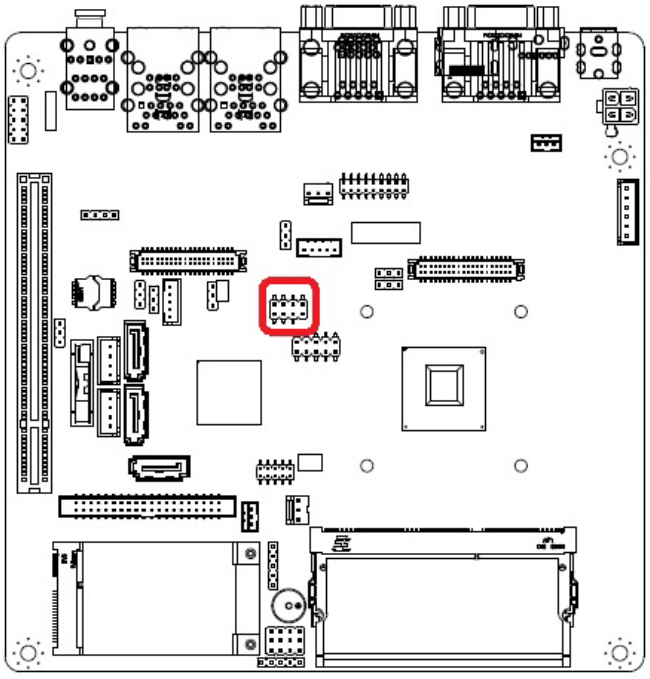
2.13 ATX 12V Power Connector (ATX12V1)

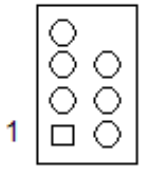
This connector is for an ATX Micro-Fit power supply. The plugs from the power supply are designed to fit these connectors in only one direction. Determine the proper orientation and push down firmly until the connectors mate completely.



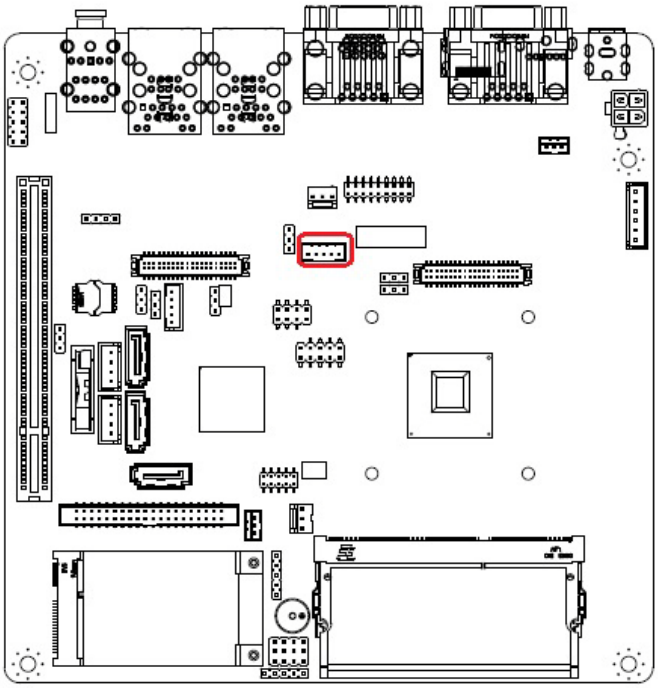
2.14 SPI Flash connector(SPI_CN1)

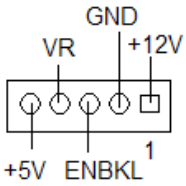
The SPI flash card pin header may be used to flash BIOS if the AIMB-214 cannot power on.





2.15 LCD Inverter Connector (INV1/INV2)

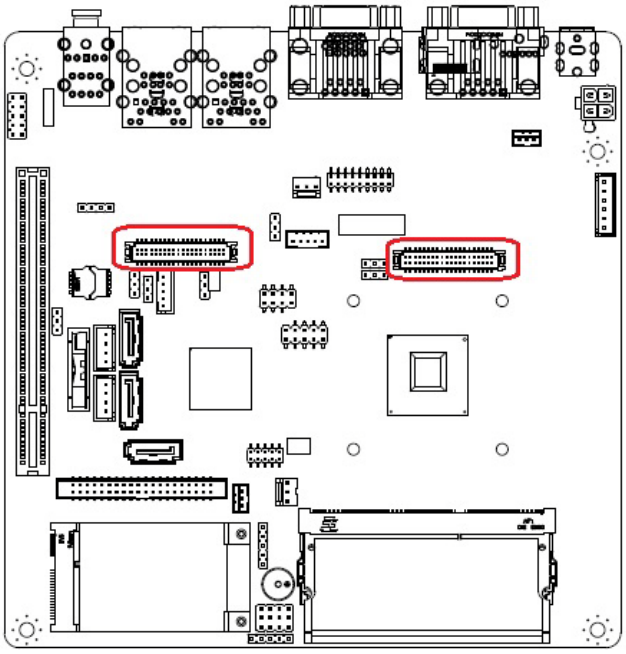


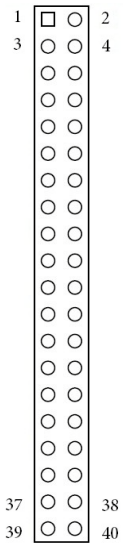


Note! ■ **Signal Description**

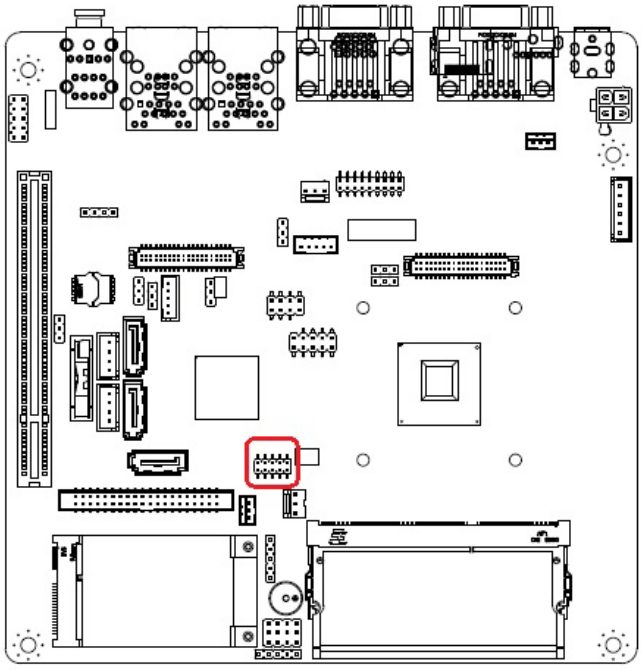
Signal	***Signal Description***
VR	*Vadj=0.75 V* *(Recommended: 4.7 KΩ, >1/16 W)*
ENBKL	*LCD backlight ON/OFF control signal*

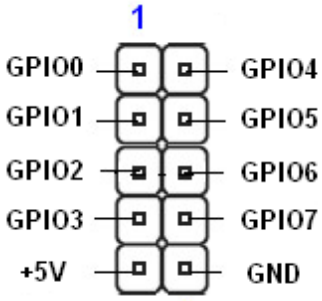
2.16 LVDS Connector (LVDS1/LVDS2)





2.17 General purpose I/O Connector (GPIO1)





Chapter 3

BIOS Operation

3.1 Introduction

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-214 setup screens.

3.2 BIOS Setup

The AIMB-214 Series system has AMI BIOS built in, with a CMOS SETUP utility that allows users to configure required settings or to activate certain system features.

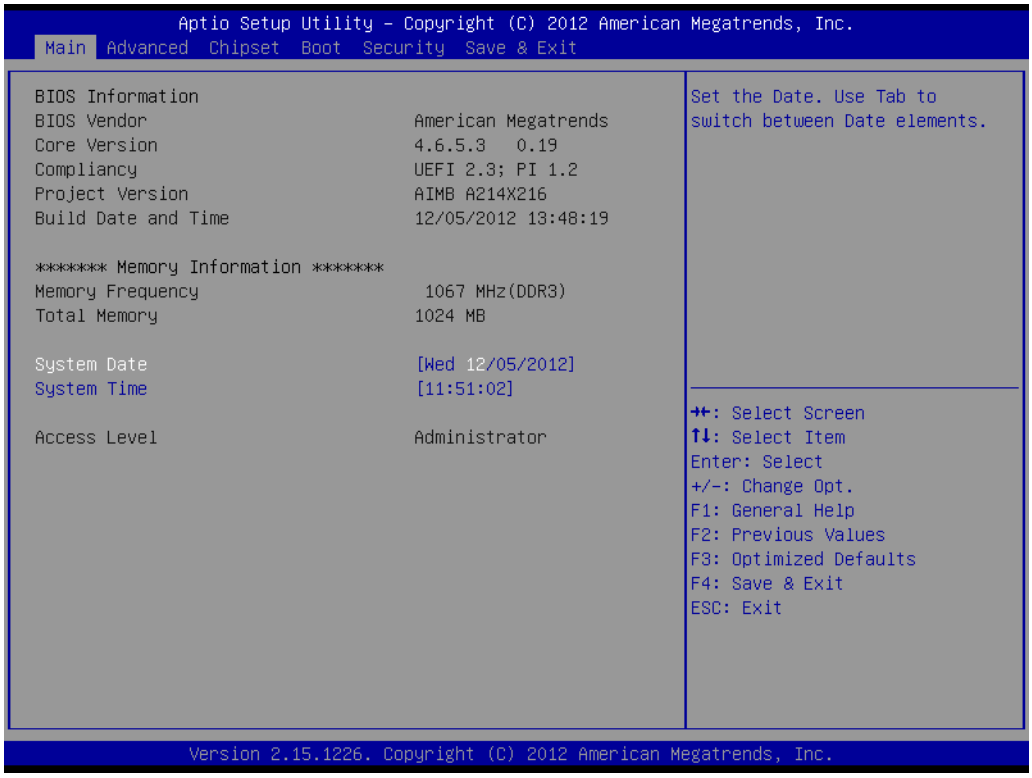
The CMOS SETUP saves the configuration in the CMOS RAM of the motherboard. When the power is turned off, the battery on the board supplies the necessary power to preserve the CMOS RAM.

When the power is turned on, press the <Del> button during the BIOS POST (Power-On Self Test) to access 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 Defaults
<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.

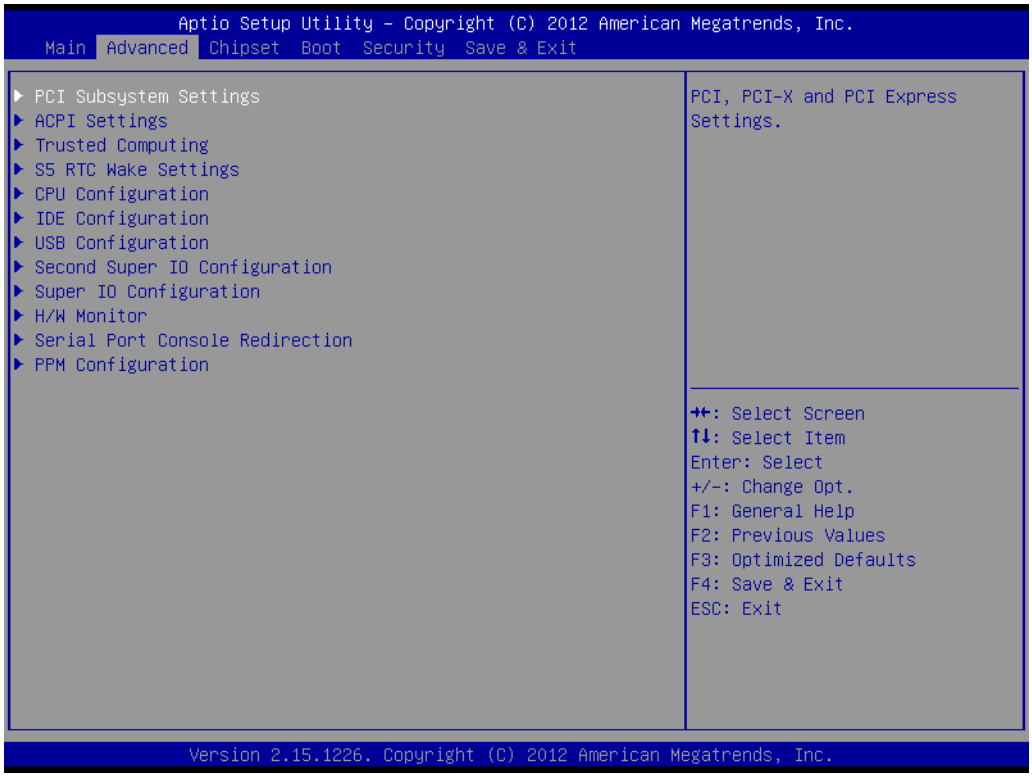
Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it.

3.2.1.1 System time / System date

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

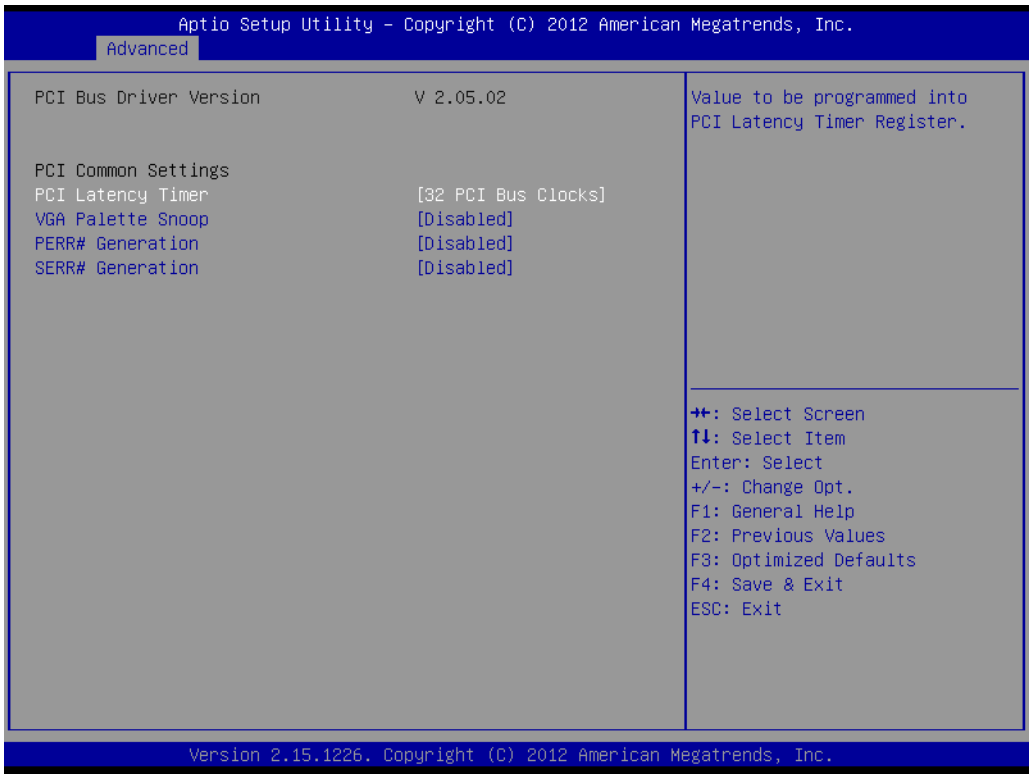
3.2.2 Advanced BIOS Features

Select the Advanced tab from the AIMB-214 setup screen to enter the Advanced BIOS Setup screen. You can select any of the items in the left frame of the screen, such as CPU Configuration, to go to the sub menu for that item. You can display an Advanced BIOS Setup option by highlighting it using the <Arrow> keys. All Advanced BIOS Setup options are described in this section. The Advanced BIOS Setup screen is shown below. The sub menus are described on the following pages.



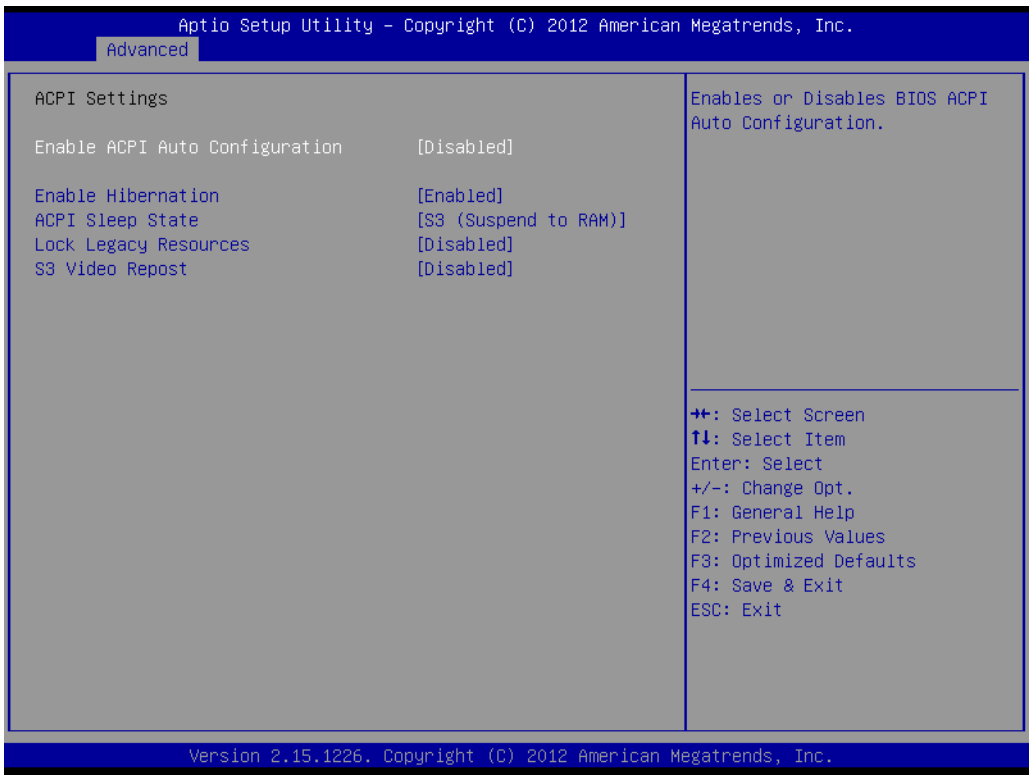
- **Launch PXE OpROM**
  You can also disable or enable the legacy OpROM for PXE / Storage.

3.2.2.1 PCI Subsystem Settings



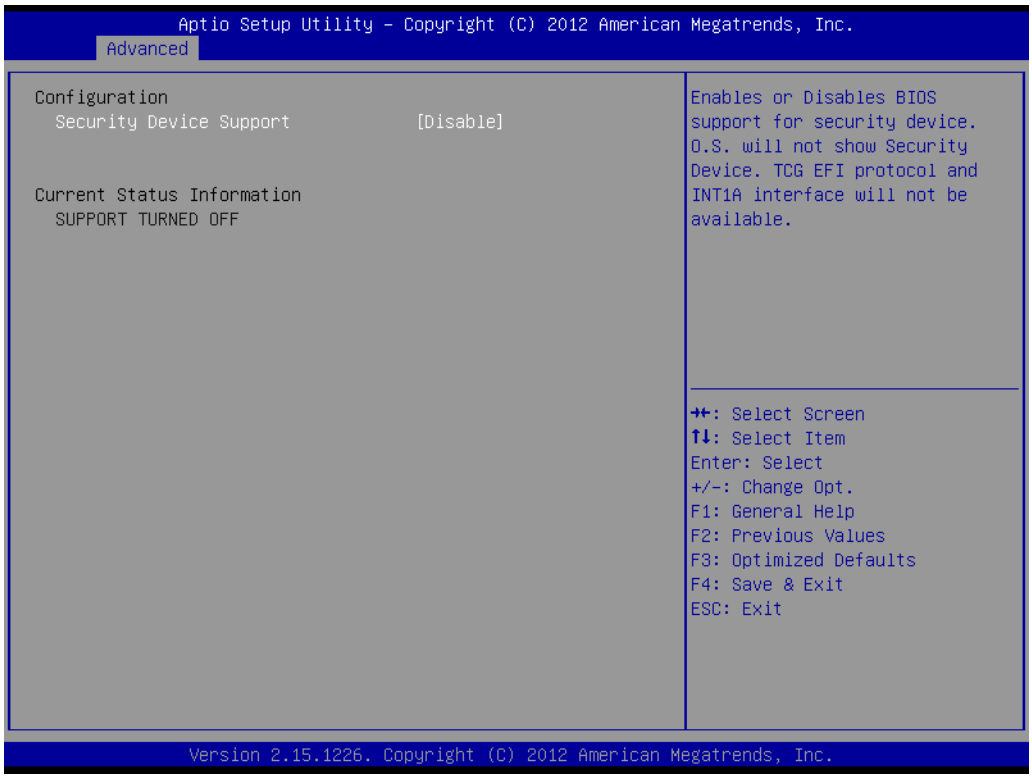
- **PCI Latency Timer**
  PCI operation delay to ensure the stability of the action between the device and the host.
- **VGA Palette Snoop**
  This item allows you to enable or disable PCI cards that do not contain their own VGA color palette to examine the video cards palette and mimic it.
- **PERR# Generation**
  This item allows you to enable or disable PCI device to generation PERR#.
- **SERR# Generation**
  This item allows you to enable or disable PCI device to generation SERR#.

3.2.2.2 ACPI Setting



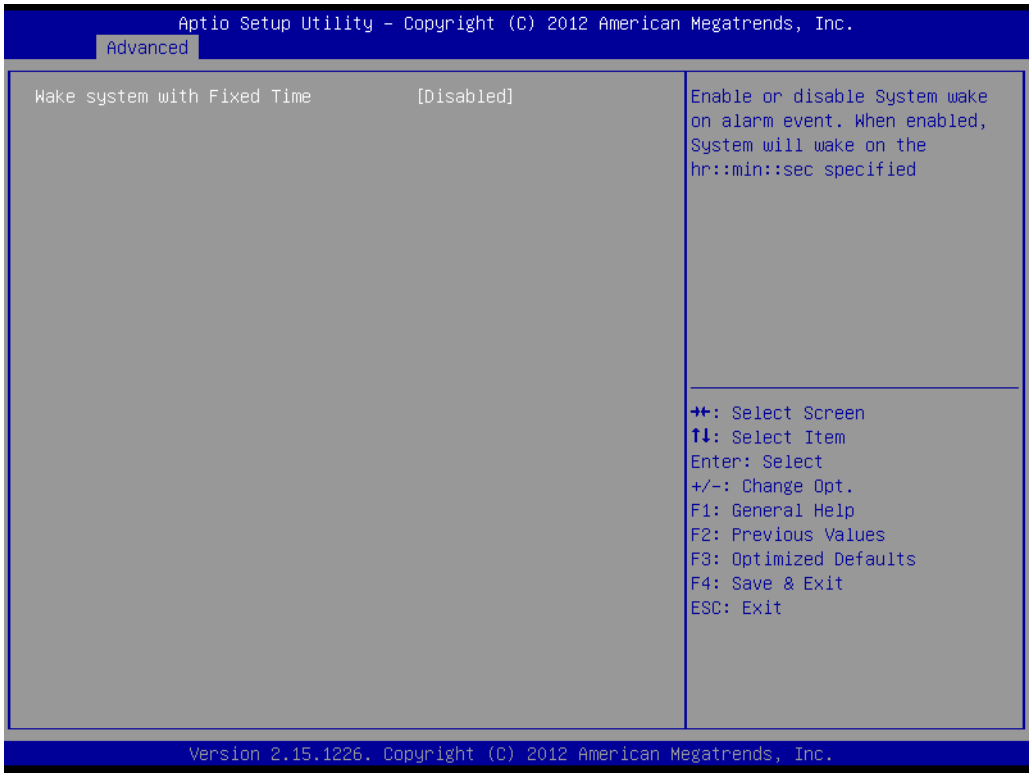
- **Enable ACPI Auto Configuration**
  This item allows users to enable or disable BIOS ACPI auto configuration.
- **Enable Hibernation**
  Enable or disable Intel processor Hibernation function.
- **ACPI Sleep State**
  This item allow user to select ACPI sleep state.
- **Lock Legacy Resources**
  This item allows users to lock legacy devices' resources.
- **S3 Video Report**
  Enable or disable video repost.

3.2.2.3 Trusted Computing



- **Security Device Support**
  Disable/Enable BIOS to support for security devices.

3.2.2.4 Wake System

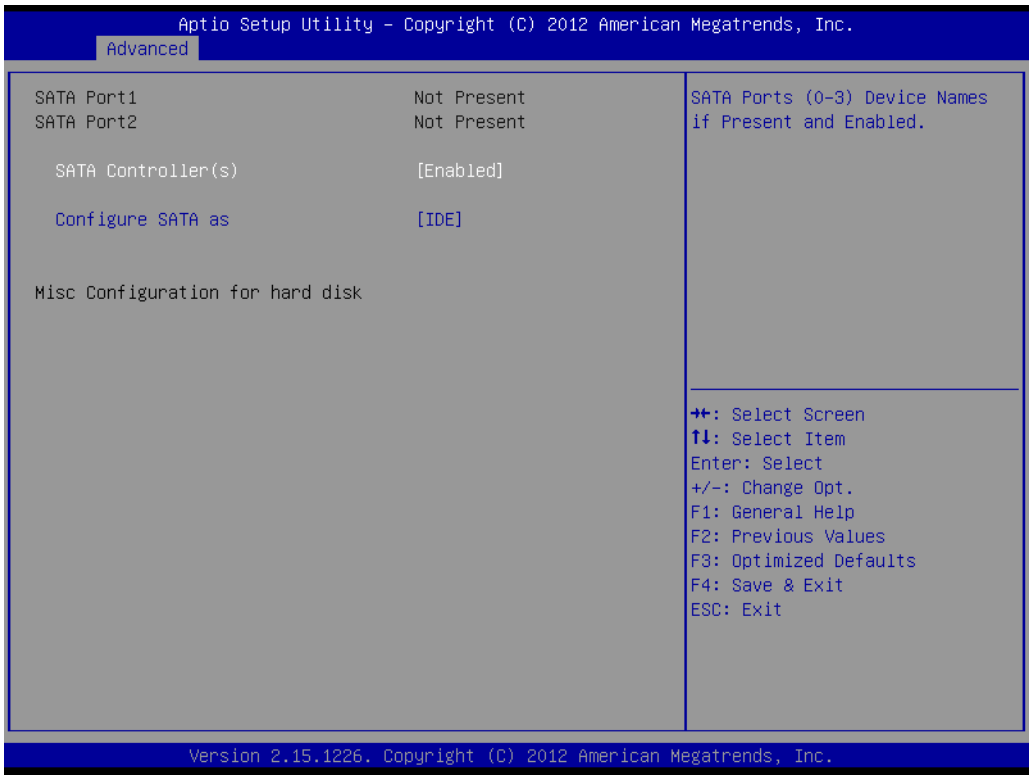


- **Wake system with Fixed Time**
  Disable/Enable system wake on alarm event.

3.2.2.5 CPU Configuration

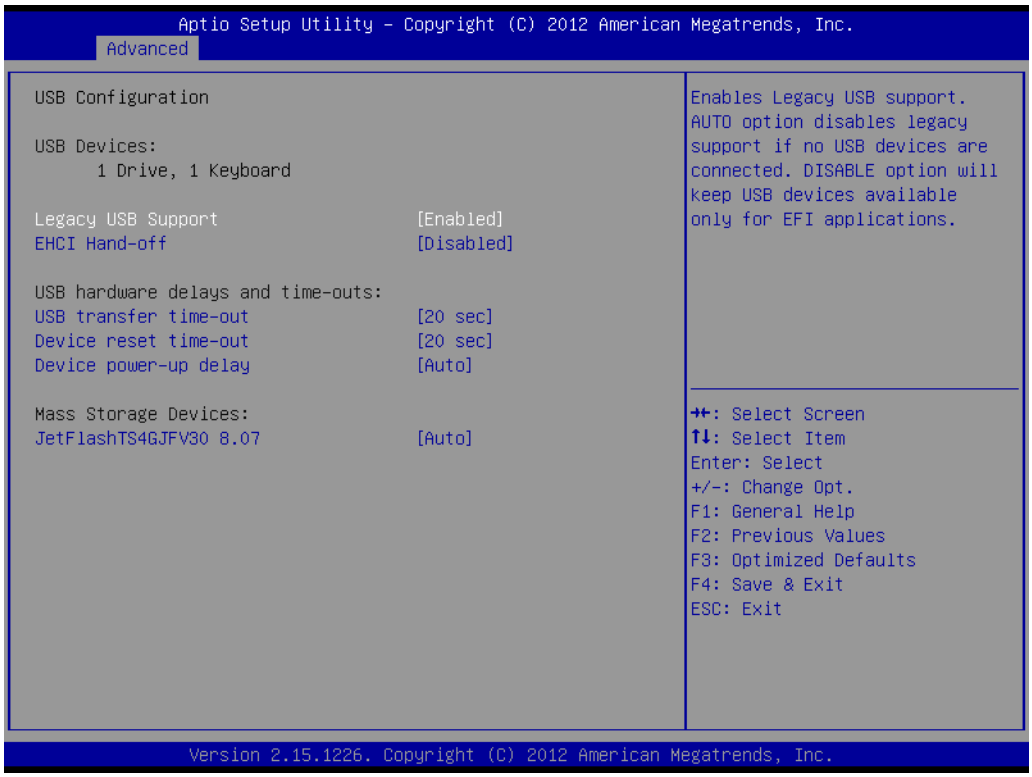
- **Hyper-Treading**
  This item allows users to enable or disable Intel Hyper Threading technology.
- **Execute Disable Bit**
  This item allows users to enable or disable the No-Execution page protection.
- **Limit CPUID Maximum**
  This item allows you to limit CPUID maximum value

3.2.2.6 SATA Configuration



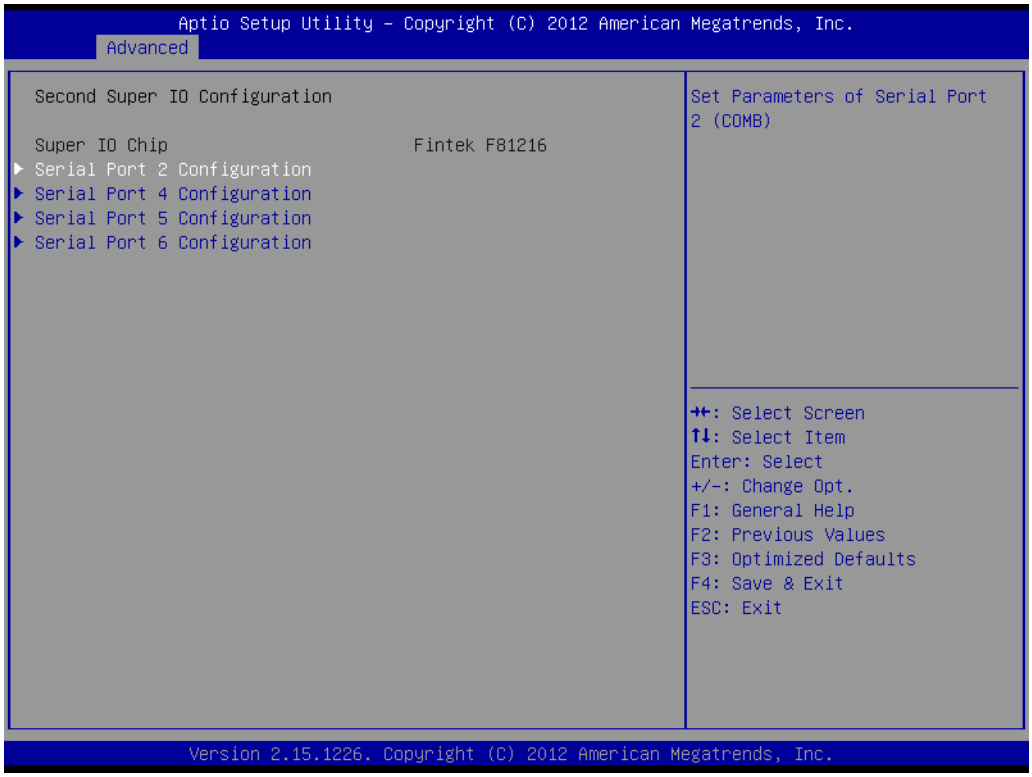
- **SATA Controller(s)|**
  This item allows users to enable or disable the SATA controller(s)
- **Configure SATA as**
  This item allows users to select mode of SATA controller(s)

3.2.2.7 USB configuration



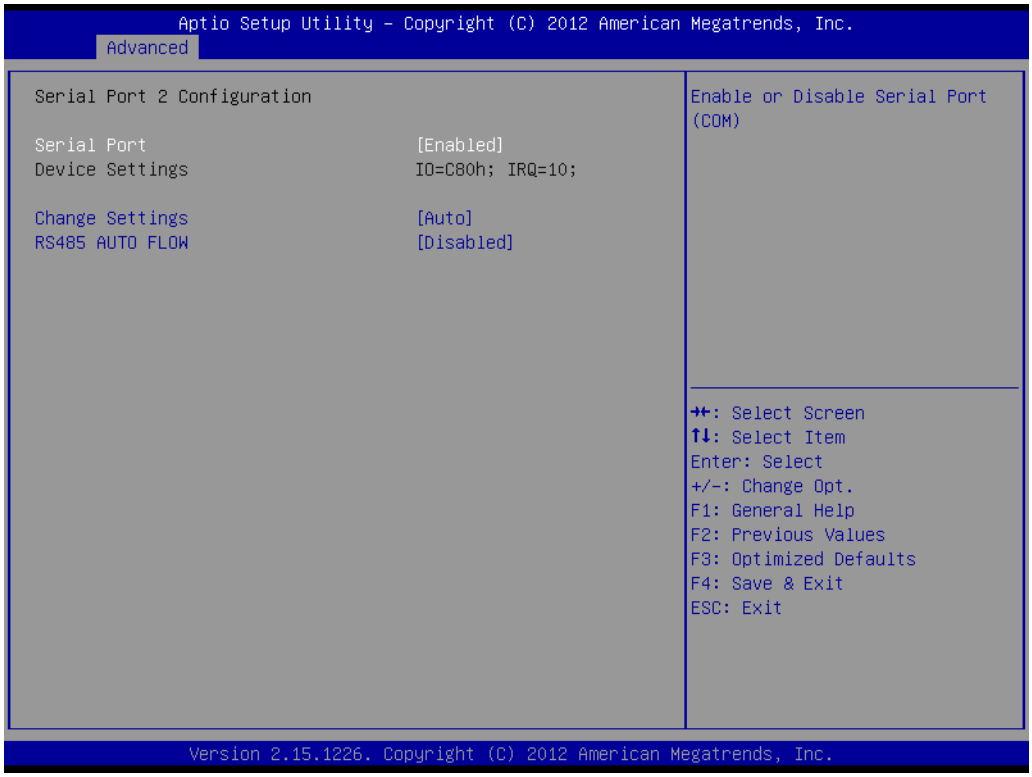
- **Legacy USB support**
  Enables support for legacy USB. Auto option disables legacy support if no USB devices are connected.
- **EHCI Hand-off**
  This is a workaround for OS without EHCI hands-off support. The EHCI ownership change should claim by EHCI driver.
- **USB transfer time-out**
  Time-out value for control, bulk, and interrupt transfers.
- **Device reset time-out**
  USB mass storage device starts unit command time-out.
- **Device power-up delay**
  Maximum time the device will take before it properly report itself to the host controller.

3.2.2.8 Second Super IO Configuration



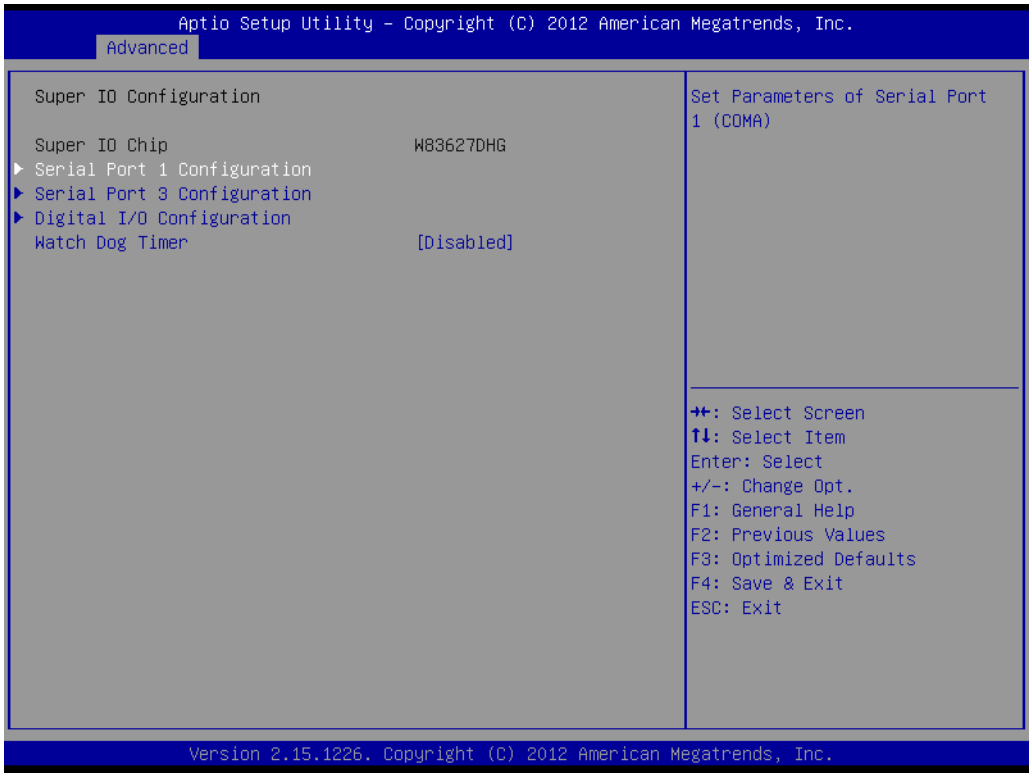
- **Serial Port Configuration**
  These items allow users to configure serial port 0, 2, 4, 5, 6.
  Serial port 2 (COM3) support auto flow control function.

3.2.2.9 Serial Port 2~6 Configuration



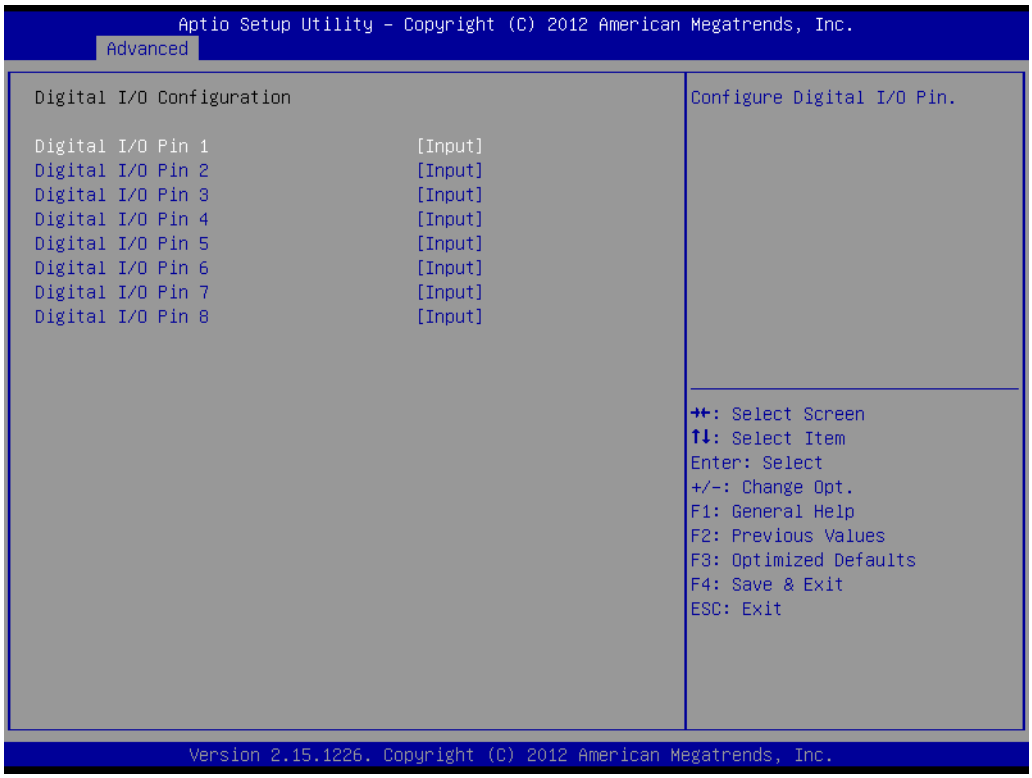
- **Serial Port**
  These items allow users to enable or disable serial port 2(COM3).
- **Change Settings**
  These items allow users to change the serial port2 (COM3) setting.
- **RS485 AUTO FLOW**
  These items allow users to enable or disable RS485 auto flow control function of serial port 2 (COM3).

3.2.2.10 Super IO Configuration



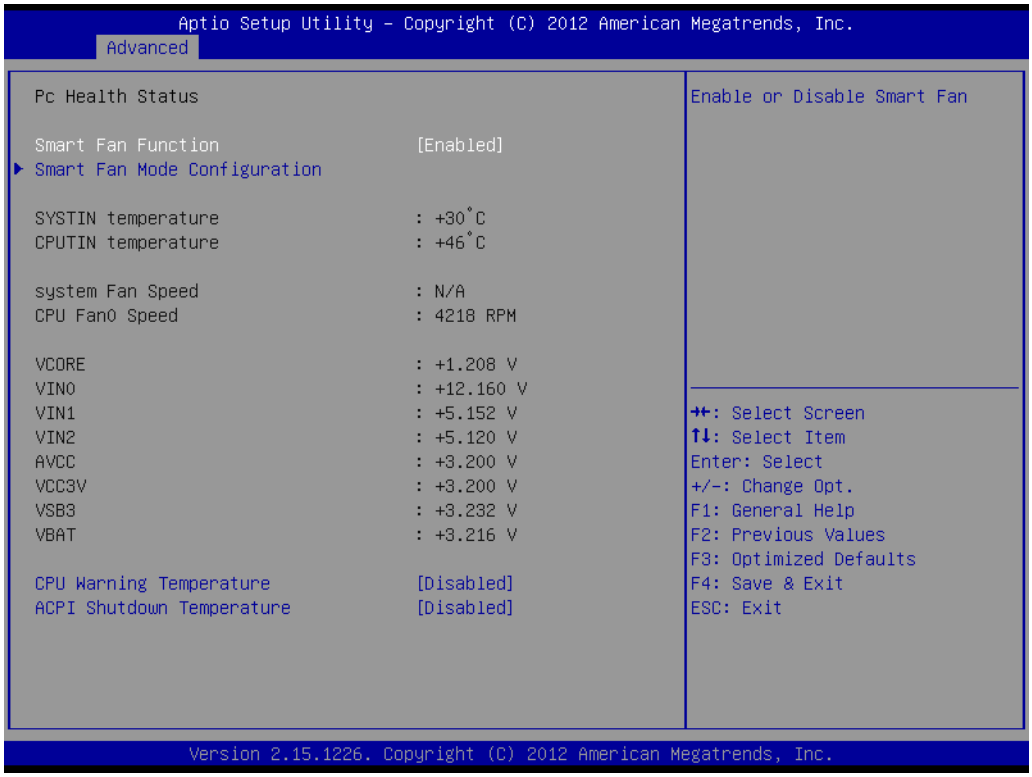
- **Serial Port 1,3**
  These items allow users to set parameters of serial ports 1.
- **Watchdog mode**
  These items allow users to select watch dog mode.

3.2.2.11 Digital IO Configuration



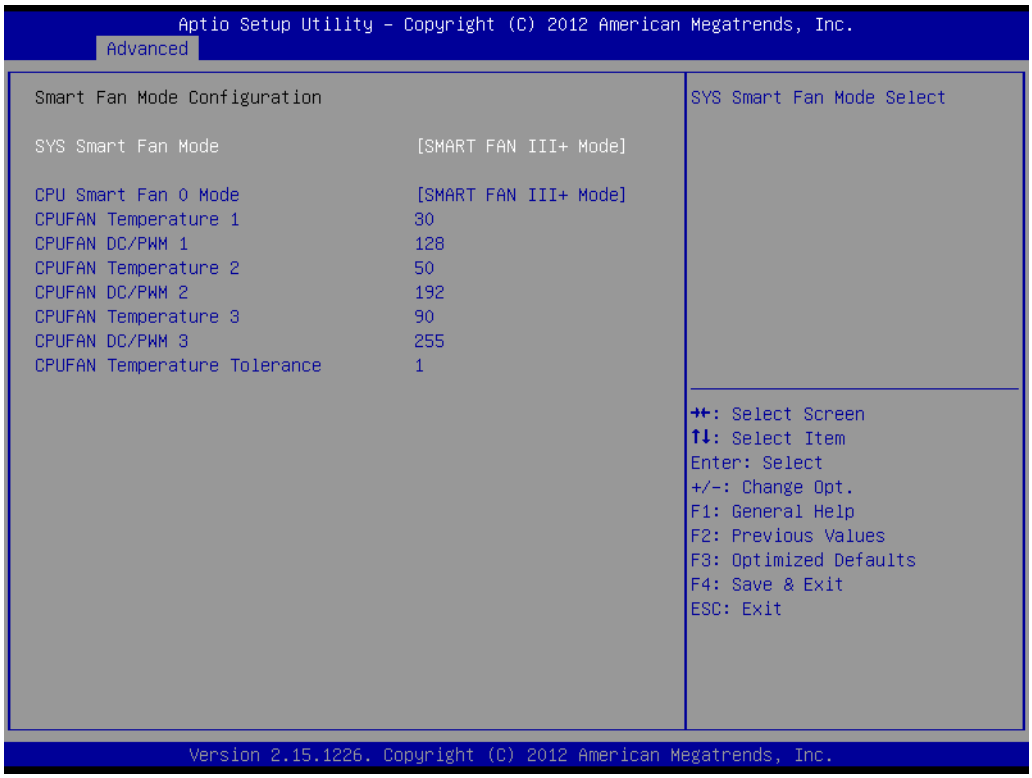
- **Digital I/O pin 1~8**
  These items allow users to set GPIO input or output.

3.2.2.12 PC Health Status



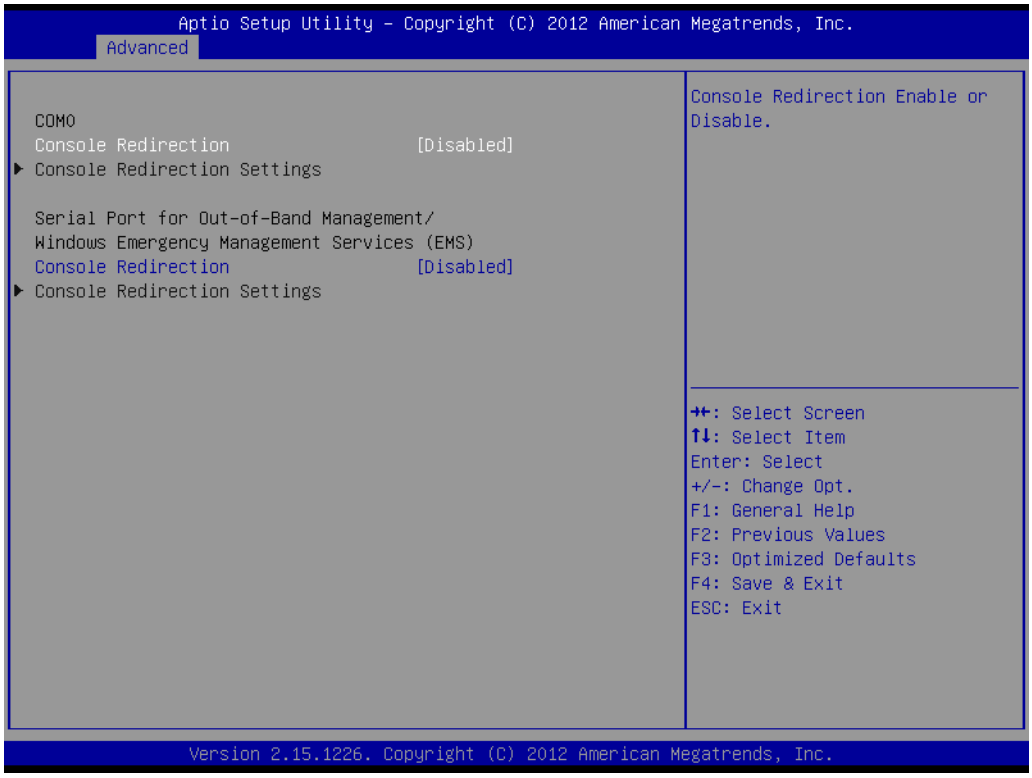
- **Smart Fan Function**
  This item displays all CPU/system temperature, fan speed, power management status.
- **CPU Warning Temperature**
  These items allow users to enable or disable CPU warning temperature function.
- **ACPI Shutdown Temperature**
  These items allow users to enable or disable ACPI shutdown temperature function.

3.2.2.13 Smart Fan Mode Configuration



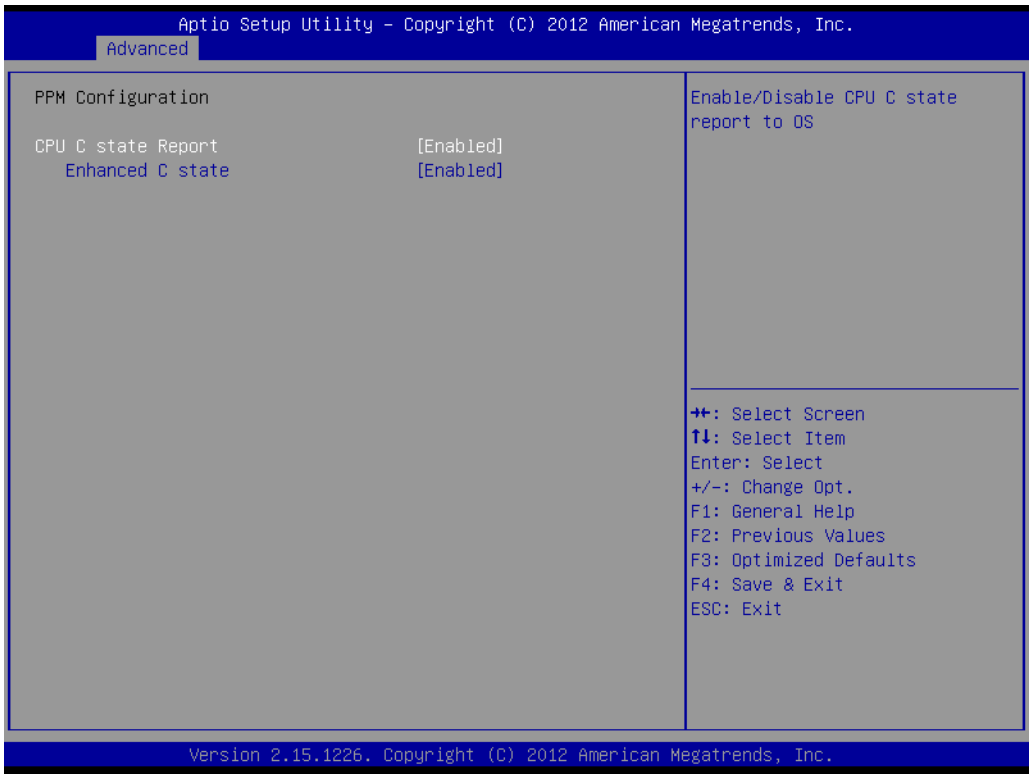
- **CPU Fan Mode**
  To adjust CPU smart fan.
- **System Smart Fan**
  To adjust System Smart Fan.

3.2.2.14 Console Redirection



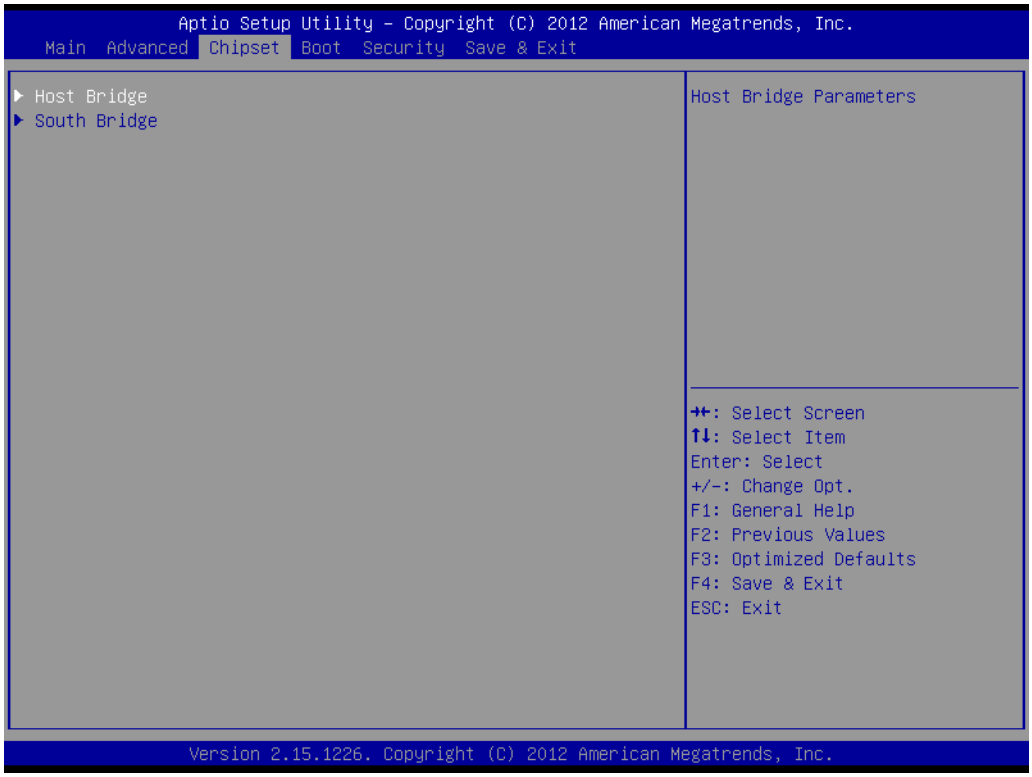
- **Console Redirection**
  This item allows users to enable or disable the console redirection function.

3.2.2.15 PPM Configuration



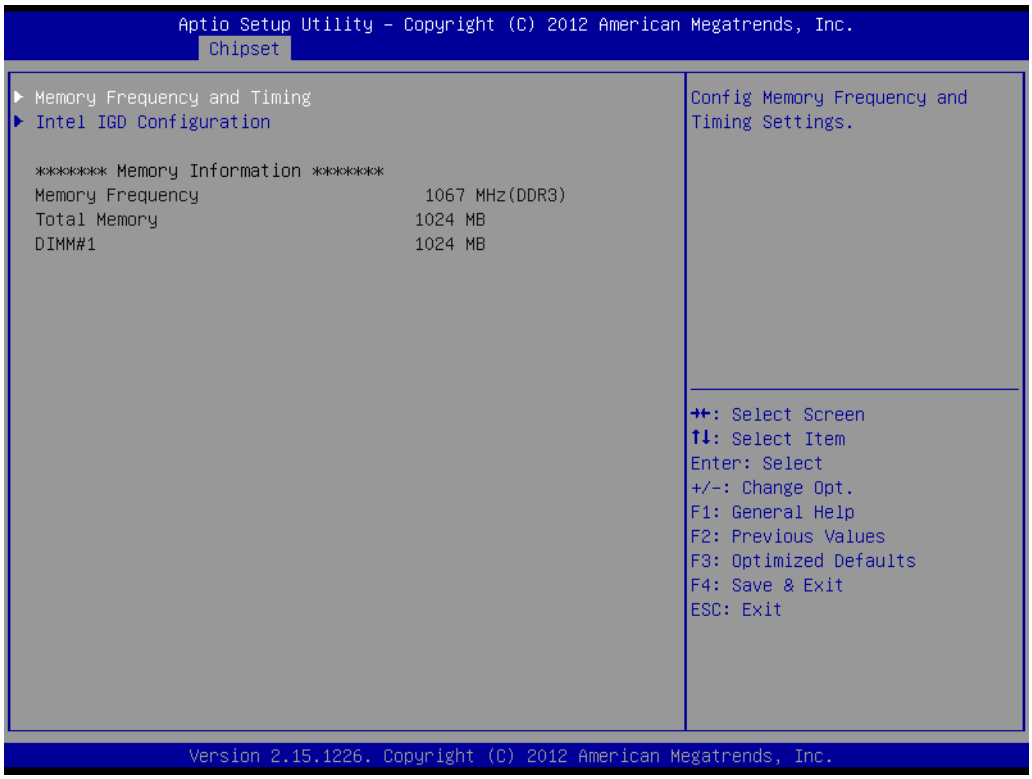
- **CPU C state report**
  This item allows users to enable or disable CPU C state report to OS.
- **Enhanced C state report**
  This item allows users to enable or disable Enhanced CPU C state.

3.2.3 Chipset



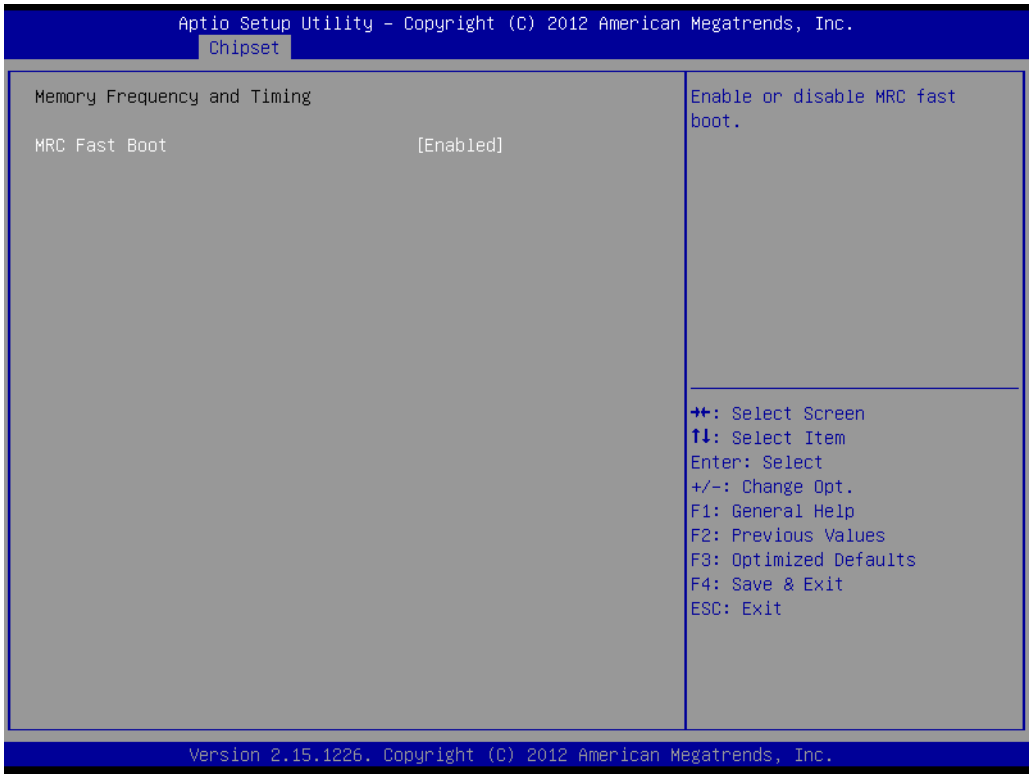
- **Host Bridge**
  Detail of North Bridge items.
- **South Bridge**
  Details of South bridge items.

3.2.3.1 Host Bridge / Intel IEGD Configuration



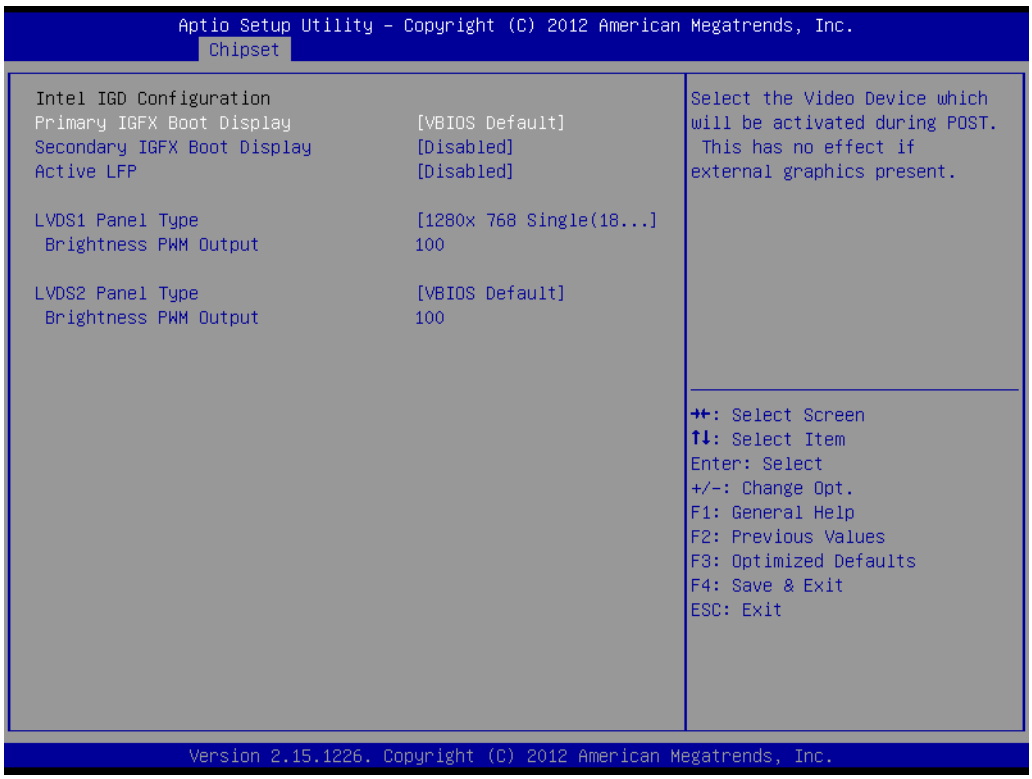
- **Memory Information**
  Memory Frequency and timing setting information.

3.2.3.2 Memory Frequency and Timing



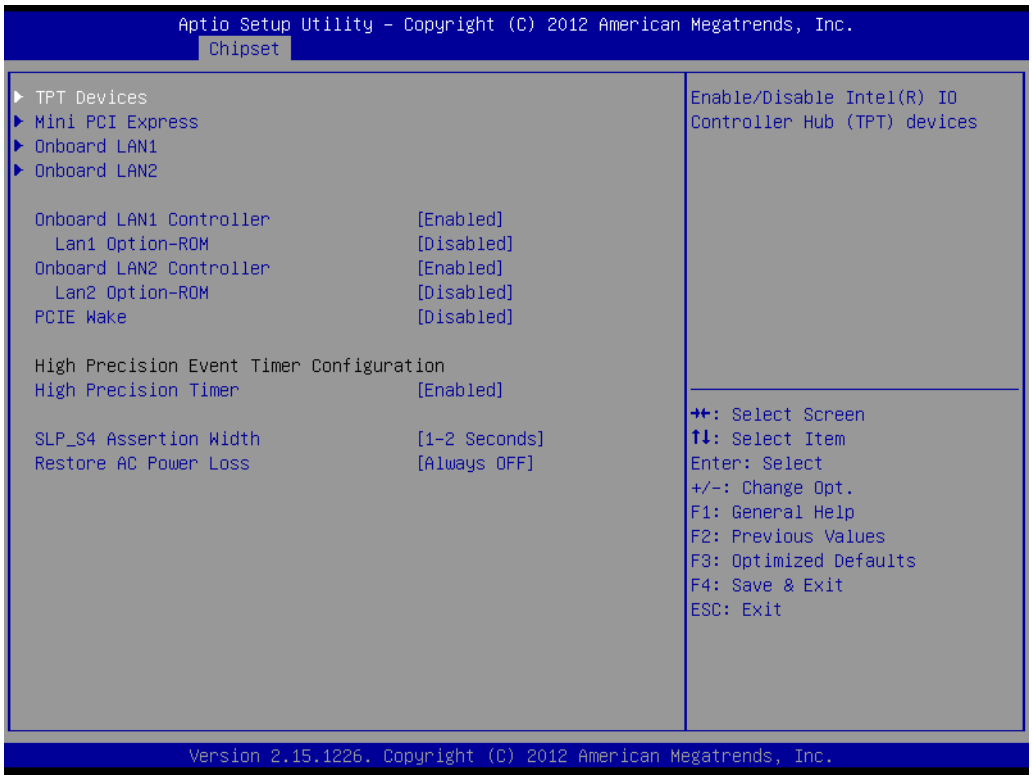
- **MRC Fast Boot**
  This item allows users to enable or disable MRC fast boot function.

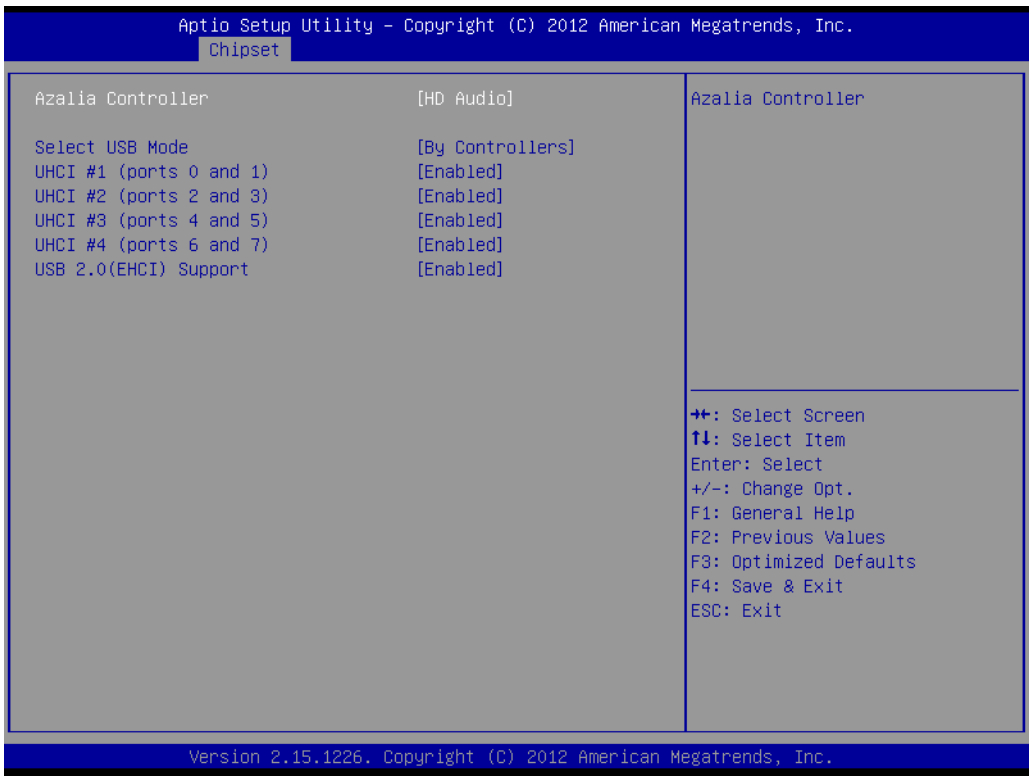
3.2.3.3 Intel IGD Configuration



- **Primary IGFX Boot Display**
  This item allows users to select the video device which will be activated during POST.
- **Secondary IGFX Boot Display**
  This item allows users to select which output device will be secondary during POST.
- **Active LFP**
  This item allows users to select the active LFP configuration.
- **LVDS1 panel type**
  This item allows users to change the LVDS1 panel resolution.
- **LVDS2 panel type**
  This item allows users to change the LVDS1 panel resolution.

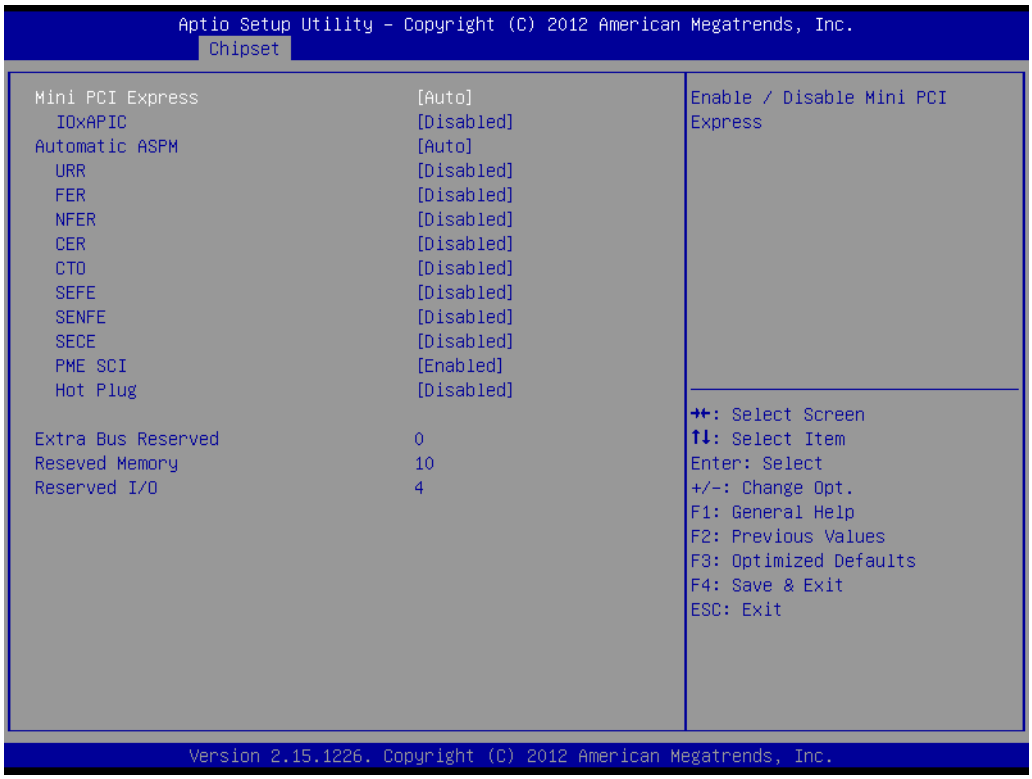
3.2.3.4 SB Configuration





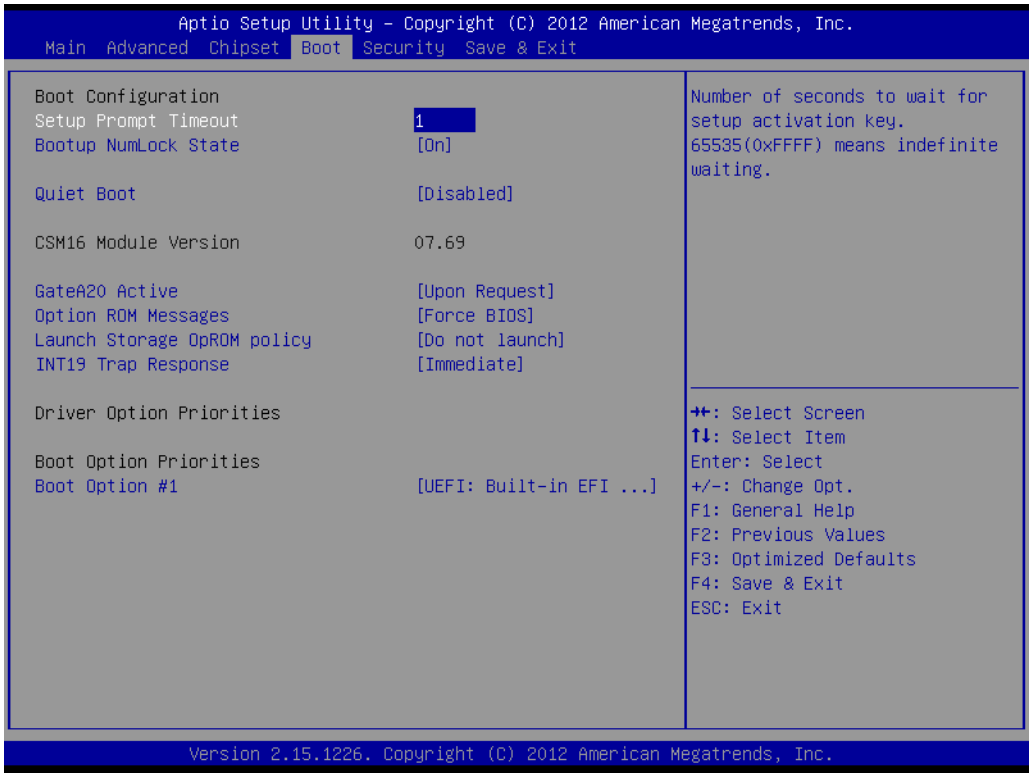
- **Azalia Configuration**
  Enable or disable SB azalia controller.
- **Select USB mode**
  Select USB mode by controllers or ports.

3.2.3.5 PCI Express Port



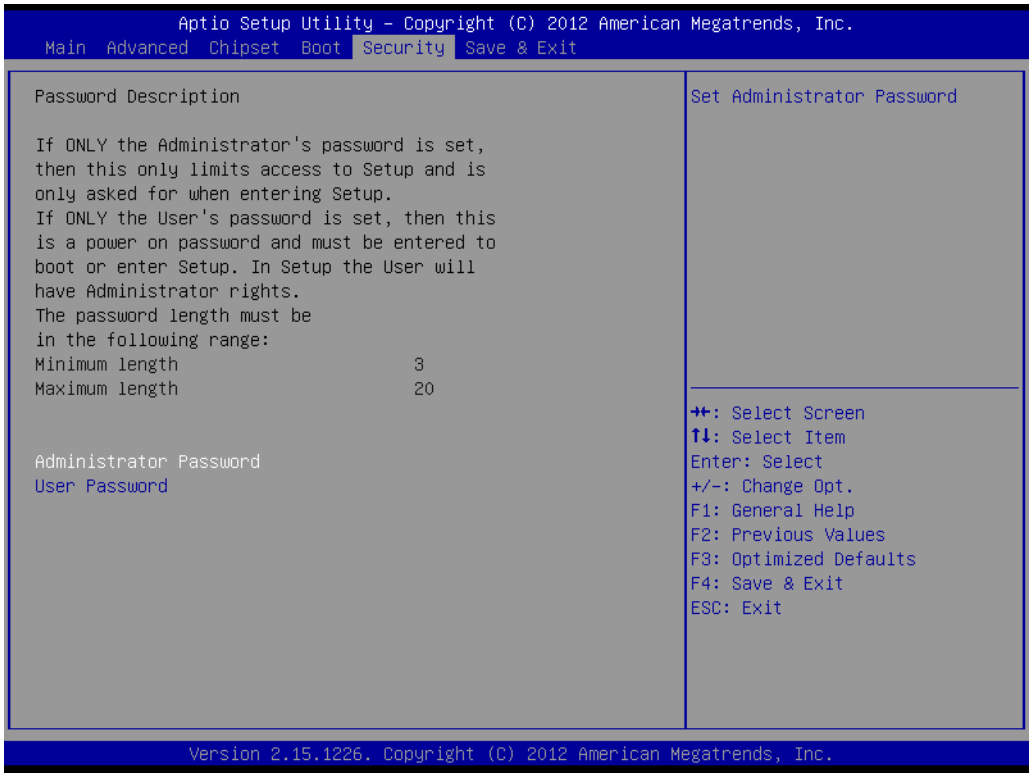
- **Mini PCI Express port**
  Enable or disable Mini PCI Express port.
- **Automatic ASPM**
  This item enables or disables control of active state power management on both NB and SB side of DMI link.

3.2.4 Boot



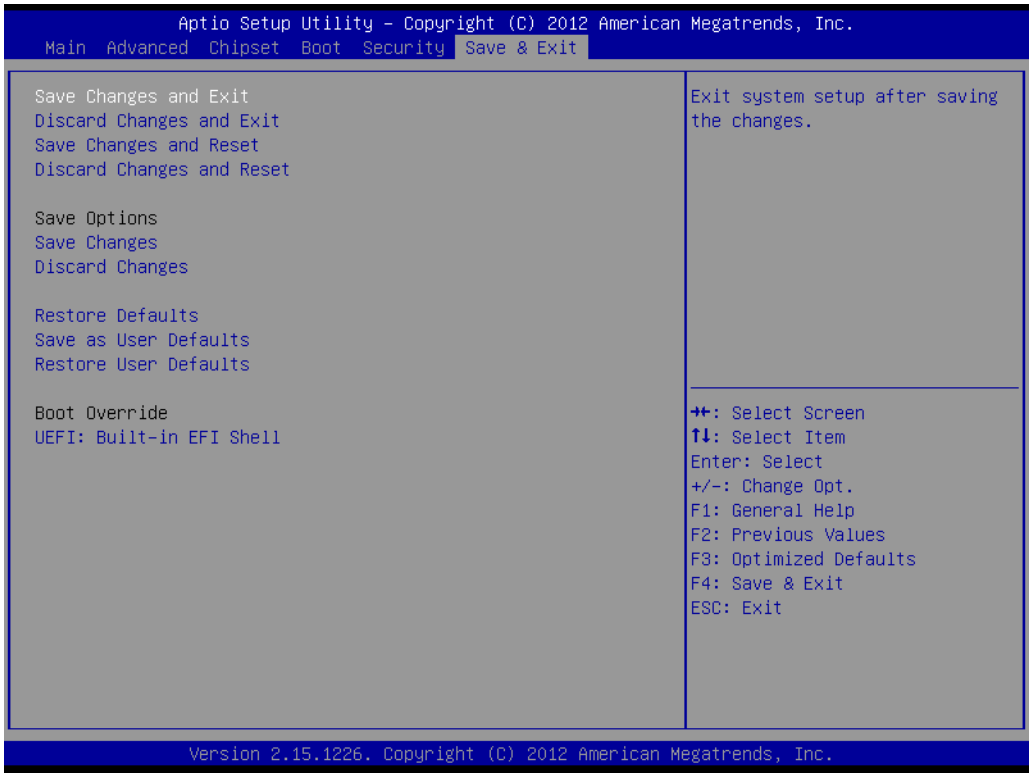
- **Setup Prompt Timeout**
  This item allows you to change number of seconds to wait for setup activation key.
- **Bootup NumLock State**
  Select the Power-on state for Numlock.
- **Quiet Boot**
  If this option is set to disabled, the BIOS display normal POST messages. If enabled, an OEM logo is shown instead of POST messages.
- **GateA20 Active**
  This item allows you to select upon request or always.
- **Option ROM Messages**
  Sets display mode for option ROM.
- **Interrupt 19 Capture**
  This item allows option ROMs to trap interrupt 19.
- **Boot Option Priorities**
  Sets the system boot order.

3.2.5 Security



Select Security Setup from the AIMB-214 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 Administrator / User Password.

3.2.6 Save & Exit



- **Save Changes and Exit**
  This item allows you to exit system setup after saving changes.
- **Discard Changes and Exit**
  This item allows you to exit system setup without saving any changes.
- **Save Changes and Reset**
  This item allows you to reset the system after saving the changes.
- **Restore Defaults**
  This item allows you to restore/load default values for all the options.

Chapter 4

Software Introduction & Service

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.

4.2.1 Software API

4.2.1.1 Control

GPIO

General Purpose Input/Output is a flexible parallel interface that allows a variety of custom connections. Allows users to monitor the level of signal input or set the output status to switch on/off the device. Our API also provide Programmable GPIO, which allows developers to dynamically set the GPIO input or output status.

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 Display

Brightness Control

The Brightness Control API allows a developer to access embedded devices and easily control brightness.

Backlight

The Backlight API allows a developer to control the backlight (screen) on/off in embedded devices.

4.2.1.3 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.

4.2.1.4 Power Saving

CPU Speed

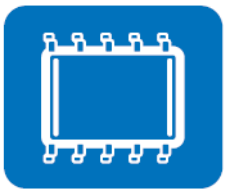
Makes use of Intel SpeedStep technology to save power consumption. The system will automatically adjust the CPU speed depending on the system loading.

System Throttling

Refers to a series of methods for reducing power consumption in computers by lowering the clock frequency. This API allows the user to adjust the clock from 87.5% to 12.5%.

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 easy to be copied! Embedded Security ID utility which provides reliable security functions for customers to secure their application data within embedded BIOS.

Monitoring

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

Flash Lock

Flash Lock is a mechanism to bind the Board and CF card (SQFlash) together. User can "Lock" SQFlash via Flash Lock function and "Unlock" by BIOS while booting. A locked SQFlash cannot be read by any card reader or boot from other platforms without a BIOS with "Unlock" feature.

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-214 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
- IDE Ultra ATA 100/66/33 and Serial ATA interface support
- USB 1.1/2.0 support (USB 2.0 driver needs to be installed separately for Win98)
- Identification of Intel® chipset components in the Device Manager
- Integrates superior video features. These include filtered sealing of 720 pixel DVD content, and MPEG-2 motion compensation for software DVD

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

- *Windows 7*

Chapter 6

VGA Setup

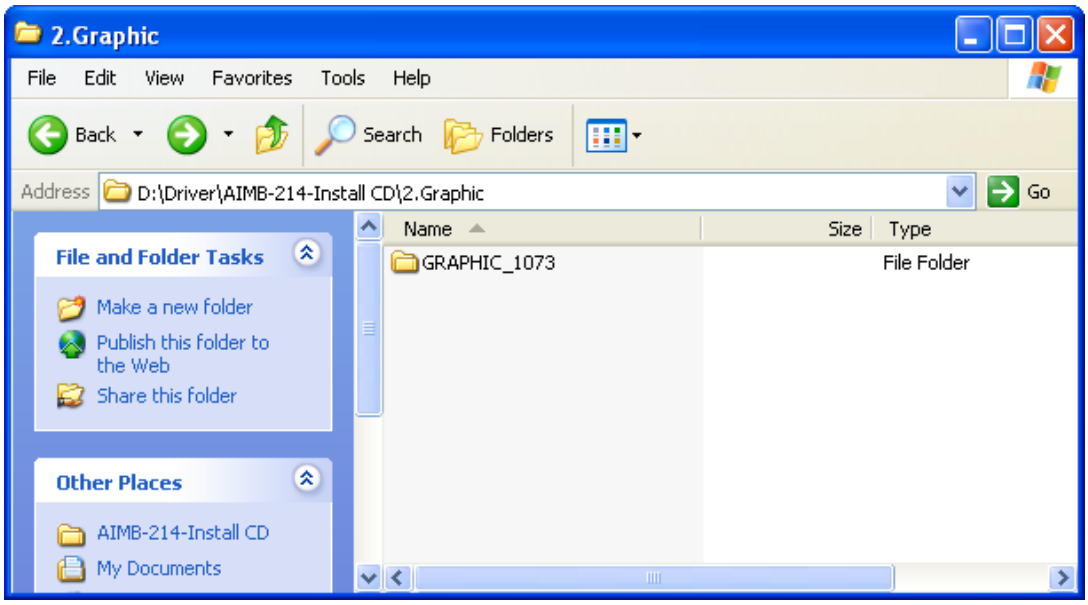
6.1 Introduction

To benefit from the Intel® Atom N2600/N2800/D2550/D2700 integrated graphics controller, you need to install the graphic driver.

6.2 Windows 7

Note! *Before installing this driver, make sure the CSI utility has been installed in your system. See Chapter 5 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 "Graphic" folder and click "setup.exe" to complete the installation of the drivers for Windows 7, Windows Vista, Windows XP.



Chapter 7

LAN Configuration

7.1 Introduction

The AIMB-214 has dual Gigabit Ethernet LANs via dedicated PCI Express x1 lanes (Intel 82583V(LAN1)) and 82574L (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 Mbps transceiver
- 10/100/1000 Mbps triple-speed MAC
- High-speed RISC core with 24-KB cache
- On-chip voltage regulation
- Wake-on-LAN (WOL) support
- PCI Express X1 host interface

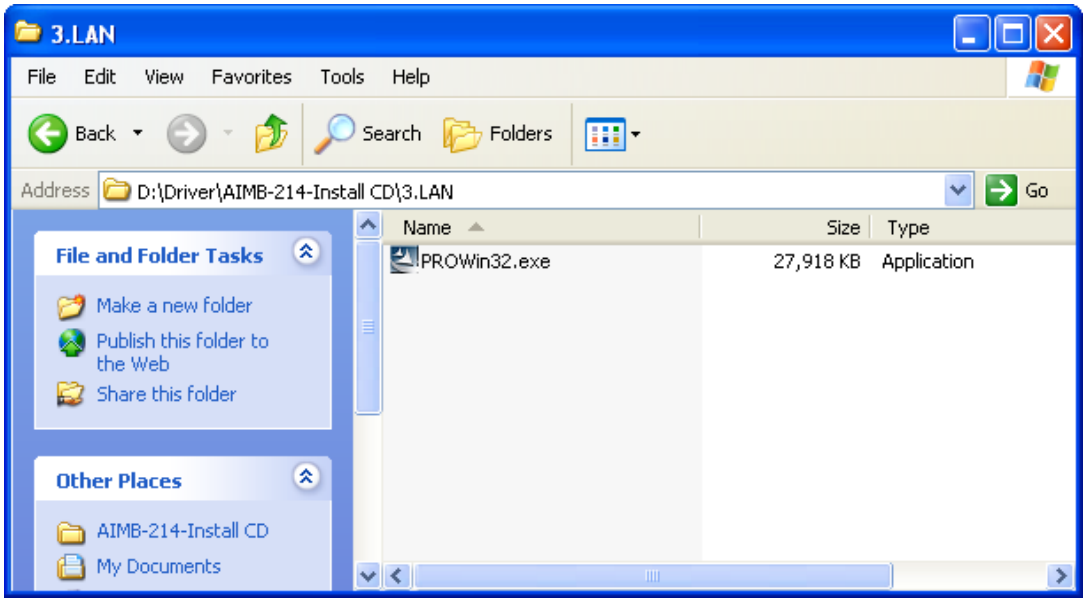
7.3 Installation

Note! *Before installing the LAN drivers, make sure the CSI utility has been installed on your system. See Chapter 5 for information on installing the CSI utility.*

The AIMB-214's Intel 82583V(LAN1) and 82574L (LAN2) Gigabit integrated controllers support all major network operating systems. However, the installation procedure varies from system to system. Please find and use the section that provides the driver setup procedure for the operating system you are using.

7.4 Windows 7 Driver Setup (Intel 82574L/82583v)

Insert the driver CD into your system's CD-ROM drive. Select the LAN folder then navigate to the directory for your OS.



Appendix A

Programming the Watchdog Timer

A.1 Programming the Watchdog Timer

The AIMB-214'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).

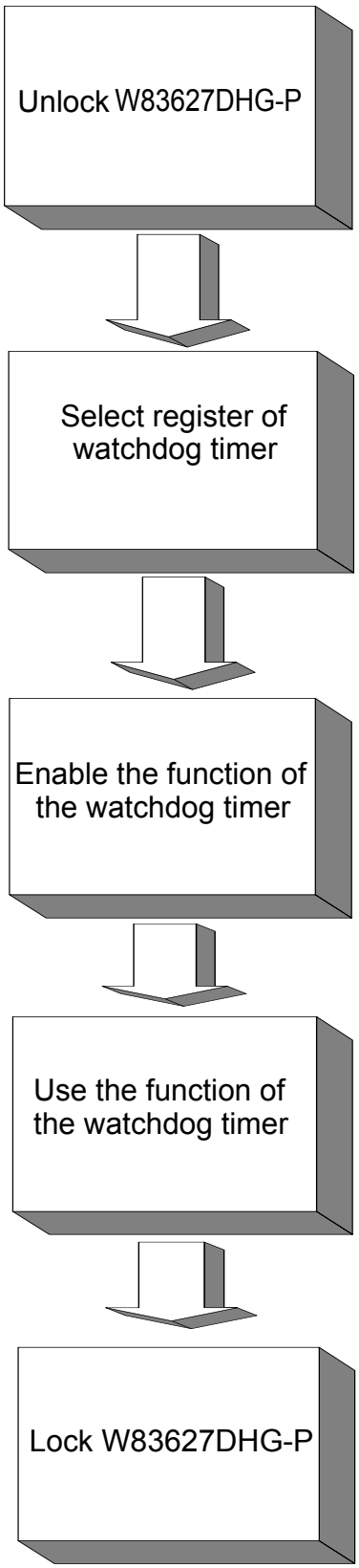

Unlock W83627DHG-P
Select register of watchdog timer
Enable the function of the watchdog timer
Use the function of the watchdog timer
Lock W83627DHG-P

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-P.
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 watch-dog timer waits for strobe before generating an interrupt or reset signal. Writing a new value to this register can reset the timer to count with the new value.
F7 (hex)	read/write	Bit 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-P
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 W83627DHG-P
Mov al,0aah
Out dx,al
```

2. Enable watchdog timer and set 5 minutes as timeout interval

```
;------------------------------------------------------
Mov dx,2eh ; Unlock W83627DHG-P
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 W83627DHG-P
Mov al,0aah
Out dx,al
```

3. Enable watchdog timer to be reset by mouse

```
;------------------------------------------------------------
Mov dx,2eh ; Unlock W83627DHG-P
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 W83627DHG-P
Mov al,0aah
Out dx,al
```

4. Enable watchdog timer to be reset by keyboard

```
;--------------------------------------------------------
Mov dx,2eh ; Unlock W83627DHG-P
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 W83627DHG-P
Mov al,0aah
Out dx,al
```

5. Generate a time-out signal without timer counting

```
;--------------------------------------------------------
Mov dx,2eh ; Unlock W83627DHG-P
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 W83627DHG-P
Mov al,0aah
Out dx,al
```

Appendix B

I/O Pin Assignments

B.1 USB Header (USB56)

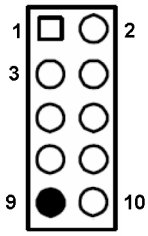


Table B.1: USB Header (USB56)

Pin	Signal	Pin	Signal
1	USB0_VCC5	2	USB1_VCC5
3	USB0_D-	4	USB1_D-
5	USB0_D+	6	USB1_D+
7	GND	8	GND
9	Key	10	GND

B.2 VGA Connector (VGA1)

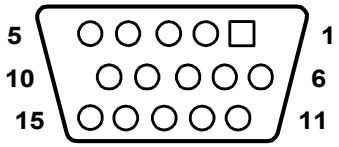


Table B.2: VGA Connector (VGA1)

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

B.3 RS-232 Interface (COM2/4/5/6)

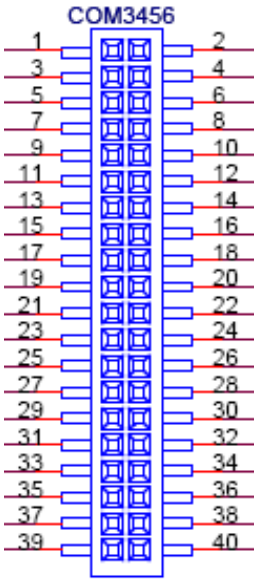


Table B.3: RS-232 Interface (COM2/4/5/6)

Pin	Signal	Pin	Signal
1	DCD_3	2	DSR_3
3	RXD_3	4	RTS_3
5	TXD_3	6	CTS_3
7	DTR_3	8	RRI_3
9	GND_3	10	GND_3
11	DCD_4	12	DSR_4
13	RXD_4	14	RTS_4
15	TXD_4	16	CTS_4
17	DTR_4	18	RRI_4
19	GND_4	20	GND_4
21	DCD_5	22	DSR_5
23	RXD_5	24	RTS_5
25	TXD_5	26	CTS_5
27	DTR_5	28	RRI_5
29	GND_5	30	GND_5
31	DCD_6	32	DSR_6
33	RXD_6	34	RTS_6
35	TXD_6	36	CTS_6
37	DTR_6	38	RRI_6
39	GND_6	40	GND_6

B.4 RS-232/422/485 Setting Interface (JSETCOM2)

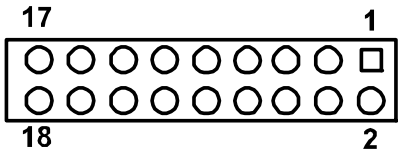


Table B.4: RS-232/422/485 Setting Interface (JSETCOM2)			
Pin	**Signal**	**Pin**	**Signal**
1	UART3_RXD	2	RXD485
3	UART3_RXD	4	RXD422
5	UART3_RXD	6	RXD232
7	DDCD2#	8	TTXD2
9	JDDCD2#	10	JTTXD2
11	TXD485#	12	RXD485P
13	RRXD2	14	DDTR2#
15	JRRXD2	16	JDDTR2#
17	TXD485P	18	RXD485#

B.5 SPI_CN1: SPI Fresh Card Pin Connector

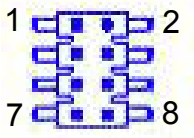


Table B.5: SPI_CN1:SPI Fresh Card Pin Connector			
Pin	**Signal**	**Pin**	**Signal**
1	SPI_CS#	2	SPI_SO
3	SPI_WP0#	4	GND
5	SPI_MOSI	6	SPI_CLK
7	SPI_HOLD0#	8	+V3.3M_SPI

B.6 PS/2 Keyboard and Mouse Connector (KBMS2)

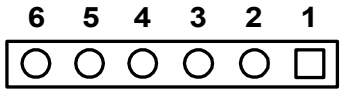


Table B.6: PS/2 Keyboard and Mouse Connector (KBMS2)	
Pin	**Signal**
1	O_KB_CLK_L
2	O_KB_DATA_L
3	O_MS_DATA_L
4	GND
5	+PS2VCC
6	O_MS_CLK_L

B.7 CPU Fan Power Connector (CPU_FAN1)

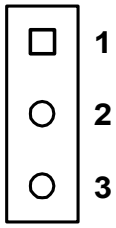


Table B.7: CPU Fan Power Connector (CPU_FAN1)	
Pin	**Signal**
1	GND
2	+12 V
3	DETECT

B.8 System Fan Power Connector (SYS_FAN1)

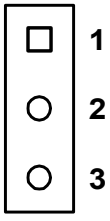


Table B.8: System Fan Power Connector (SYS_FAN1)	
Pin	**Signal**
1	GND
2	+12 V
3	DETECT

B.9 Power LED & Keyboard Lock Connector (JFP3)

You can use an LED to indicate when the single board computer is on. Pin 1 of JFP3 supplies the LED's power, and Pin 3 is the ground.

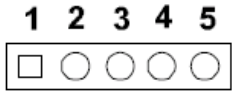


Table B.9: Power LED & Keyboard Lock Connector (JFP3)

Pin	Function
1	LED power
2	NC
3	GND
4	KEYLOCK#
5	GND

B.10 Power switch/HDD LED/SMBus/Speaker (JFP1+JFP2)

The single board computer has its own buzzer. You can also connect it to the external speaker on your computer chassis.

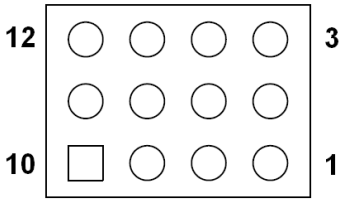


Table B.10: Power Switch/HDD LED/SMBus/Speaker (JFP1+JFP2)

Pin	Signal	Pin	Signal
1	+5V	2	HDLED+
3	FRP_PANSWIN#	4	SPK_CN17P2
5	HDD_LED-	6	GND(R1160:100OHM)
7	SPK_CN17P4	8	SMBDATA_R
9	FRP_RST#	10	SPK_CN17P3
11	SMBCLK_R	12	GND

B.11 USB/LAN ports (LAN1_USB12/LAN2_USB34)

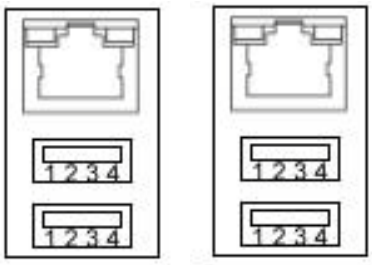
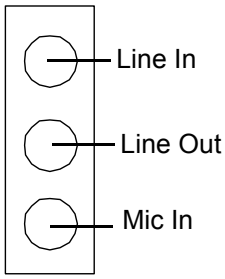


Table B.11: USB Port			
Pin	**Signal**	**Pin**	**Signal**
1	VCC	3	Data0+
2	Data0-	4	GND

Table B.12: Ethernet 10/100 Mbps RJ-45 Port			
Pin	**Signal**	**Pin**	**Signal**
1	XMT+	5	N/C
2	XMT-	6	RCV-
3	RCV+	7	N/C
4	N/C	8	N/C

B.12 Line In, Line Out, Mic In Connector (AUDIO1)



B.13 Serial ATA0/1 (SATA1/2/3)

Table B.13: Serial ATA 0/1 (SATA1/2/3)			
Pin	**Signal**	**Pin**	**Signal**
1	GND	2	SATA_TXP1_C
3	SATA_TXN1_C	4	GND
5	SATA_RXN1_C	6	SATA_RXP1_C
7	GND	8	

B.14 AT/ATX Mode (PSON1)

Table B.14: AT/ATX Mode (PSON1)			
Pin	**Signal**	**Pin**	**Signal**
1	VCCATX	2	VCCATX
3	GND		

B.15 Front Panel Audio connector (FPAUDIO1)

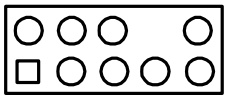


Table B.15: Front Panel Audio connector (FPAUDIO1)			
Pin	**Signal**	**Pin**	**Signal**
1	MIC2-L_R	2	AGND
3	MIC2-L_R	4	MIC2-R_R
5	N62807151	6	LINE2-R_R
7	MIC2-JD	8	FRONT-IO-SENSE
9	LINE2-L_R	10	LINE2-JD

B.16 GPIO Pin Header (GPIO1)

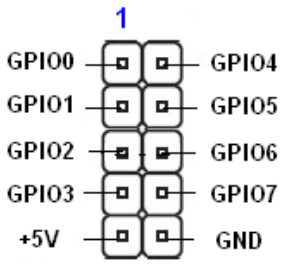


Table B.16: GPIO Pin Header (GPIO1)			
Pin	**Signal**	**Pin**	**Signal**
1	GPIO0	2	GPIO4
3	GPIO1	4	GPIO5
5	GPIO2	6	GPIO6
7	GPIO3	8	GPIO7
9	+5V	10	GND

B.17 LVDS Connector: LVDS

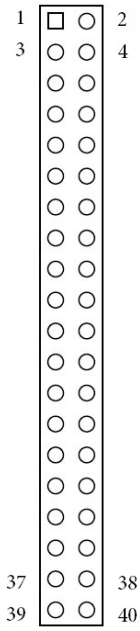
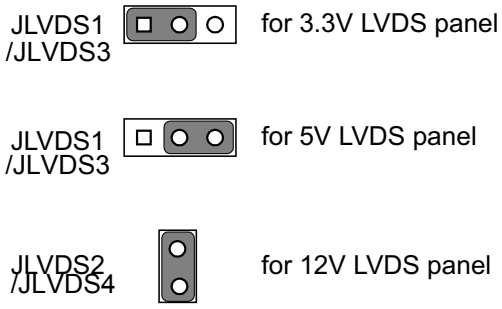


Table B.17: LVDS1 Connector (LVDS1)

Pin	Signal	Pin	Signal
1	VDDSAFE	2	VDDSAFE
3	GND	4	GND
5	VDDSAFE	6	VDDSAFE
7	LVDS_L0_N	8	LVDS_U0_N
9	LVDS_L0_P	10	LVDS_U0_P
11	GND	12	GND
13	LVDS_L1_N	14	LVDS_U1_N
15	LVDS_L1_P	16	LVDS_U1_P
17	GND	18	GND
19	LVDS_L2_N	20	LVDS_U2_N
21	LVDS_L2_P	22	LVDS_U2_P
23	GND	24	GND
25	LVDS_CLKL_N	26	LVDS_CLKU_N
27	LVDS_CLKL_P	28	LVDS_CLKU_P
29	GND	30	GND
31	LVDS_CH7511_DDC_CLK	32	LVDS_CH7511_DDC_DATA
33	GND	34	GND
35	LVDS_L3_N	36	LVDS_U3_N
37	LVDS_L3_P	38	LVDS_U3_P
39	N22140709	40	VCON

B.18 LVDS Power Jumper (JLVDS1 and JLVDS2/ JLVDS3 and JLVDS4)



* default setting

Table B.18: LVDS Power Jumper

Pin	Signal
1	VCC3
2	VCC_LCD
3	VCC

B.19 LVDS Inverter (INV1/INV2)

Table B.19: LVDS Inverter (INV1/INV2)

Pin	Signal
1	+12V
2	GND
3	BL_EN
4	BL_CLT
5	+5V

B.20 ATX 12 V Connector (ATX12V_1)

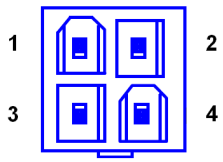


Table B.20: ATX 12 V Connector (ATX12V_1)

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

B.21 VCON1

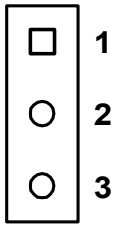


Table B.21: VCON1

Pin	Signal	Pin	Signal
1	+3P3V	2	VCON
3	GND		
Default: 2-3			

B.22 VCON2

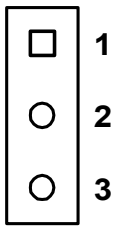


Table B.22: VCON2

Pin	Signal	Pin	Signal
1	+3P3V	2	VCON1
3	GND		
Default: 2-3			

B.23 JSETCOM2

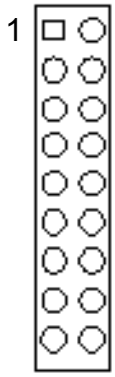


Table B.23: JSETCOM2

Pin	Signal	Pin	Signal
1	UART3_RXD	2	RXD485
3	UART3_RXD	4	RXD422
5	UART3_RXD	6	RXD232
7	DDCD2#	8	TTXD2
9	JDDCD2#	10	JTTXD2
11	TXD485#	12	RXD485P
13	RRXD2	14	DDTR2#
15	JRRXD2	16	JDDTR2#
17	TXD485P	18	RXD485#

B.24 JSETCOM6

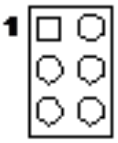


Table B.24: JSETCOM6

Pin	Signal	Pin	Signal
1	+12V	2	RI6xPOWERxJMP
3	COM6_RI#	4	RI6xPOWERxJMP
5	+5V	6	RI6xPOWERxJMP
Default: 3-4			

B.25 JVBR1

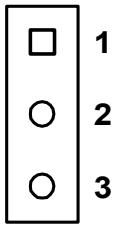


Table B.25: JVBR1

Pin	Signal	Pin	Signal
1	BL_CLT	2	GND
3	NC		
Default:1-2			

B.26 JVBR2

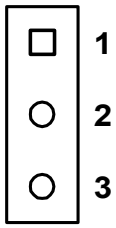


Table B.26: JVBR2

Pin	Signal	Pin	Signal
1	BL_CLT1	2	GND
3			
Default:1-2			

B.27 SPDIF_OUT1

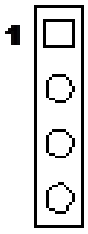


Table B.27: SPDIF_OUT1

Pin	Signal	Pin	Signal
1	+5VA_CODEC	2	
3	SPDIF_O	4	GND

B.28 ATX_5V Connector

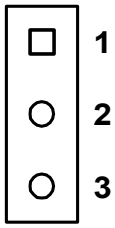


Table B.28: ATX_5V Connector

Pin	Signal	Pin	Signal
1	+5VSB_IN	2	GND
3	PS_ON#		

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