EAX-Q67

Intel® Q67 with Core™ i7/ i5 /i3 ATX Motherboard

User's Manual

3rd Ed – 27 October 2014

Part No: E2047AQ6702R

FCC Statement

THIS DEVICE COMPLIES WITH PART 15 FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:

(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE.

(2) 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 EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE IN WHICH CASE THE USER WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT HIS OWN EXPENSE.

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As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into body, or (b) support or sustain life and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

A Message to the Customer

Avalue Customer Services

Each and every Avalue's 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 Avalue device 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 Avalue has come to be known.

Your satisfaction is our primary concern. Here is a guide to Avalue'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 the user's manual first.

To receive the latest version of the user's manual; please visit our Web site at:
http://www.avalue.com.tw/

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 Avalue's products. In fact, most problems reported are minor and are able to be easily solved over the phone.

Contents

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.

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.

Safety Declaration

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.

About this guide

This user guide contains the information you need when installing and configuring the motherboard.

How this guide is organized

This manual contains the following parts:

- **Chapter 1: Product introduction**

  This chapter describes the features of the motherboard and the new technology it supports. This chapter also lists the hardware setup procedures that you have to perform when installing system components. It includes description of the jumpers and connectors on the motherboard.

- **Chapter 2: BIOS setup**

  This chapter tells how to change system settings through the BIOS Setup menus. Detailed descriptions of the BIOS parameters are also provided.

Where to find more information

Refer to the following sources for additional information and for product and software updates.

1. Technical Support

If a problem arises with your system and no solution can be obtained from the user's manual, please contact your place of purchase or local distributor. Alternatively, please try the following help resources for further guidance. Visit the Avalue Taiwan website:

http://www.avalue.com.tw

2. Optional documentation

Your product package may include optional documentation, such as warranty flyers, that may have been added by your dealer. These documents are not part of the standard package.

Conventions used in this guide

To make sure that you perform certain tasks properly, take note of the following symbols used throughout this manual.


DANGER/WARNING: Information to prevent injury to yourself when trying to complete a task.


CAUTION: Information to prevent damage to the components when trying to complete a task.


IMPORTANT: Instructions that you MUST follow to complete a task.


NOTE: Tips and additional information to help you complete a task.

Typography

Bold text	Indicates a menu or an item to select
Italics	Used to emphasize a word or a phrase
<Key>	Keys enclosed in the less-than and greater-than sign means that you must press the enclosed key Example: <Enter> means that you must press the Enter or Return key
<Key1>+<Key2>+<Key3>	If you must press two or more keys simultaneously, the key names are linked with a plus sign (+) Example: <Ctrl>+<Alt>+<D>
Command	Means that you must type the command exactly as shown, then supply the required item or value enclosed in brackets Example: At the DOS prompt, type the command line: **afudos /i[filename]** **afudos /iP5P800VM.ROM**

Packing List

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

- 1 x EAX-Q67 ATX Main board
- 1 x DVD-ROM contains OS drivers
- 2 x COM cable
- 2 x SATA cable
- 1 x I/O Shield

If any of the above items is damaged or missing, please contact your retailer.

Revision History

Revision	Revision History	Date
1st	First release version for PCB R10	December, 2011
2nd	Modified manual descriptions and jumper's setting	Aug, 2012
3rd	BIOS Setup update	October, 2014

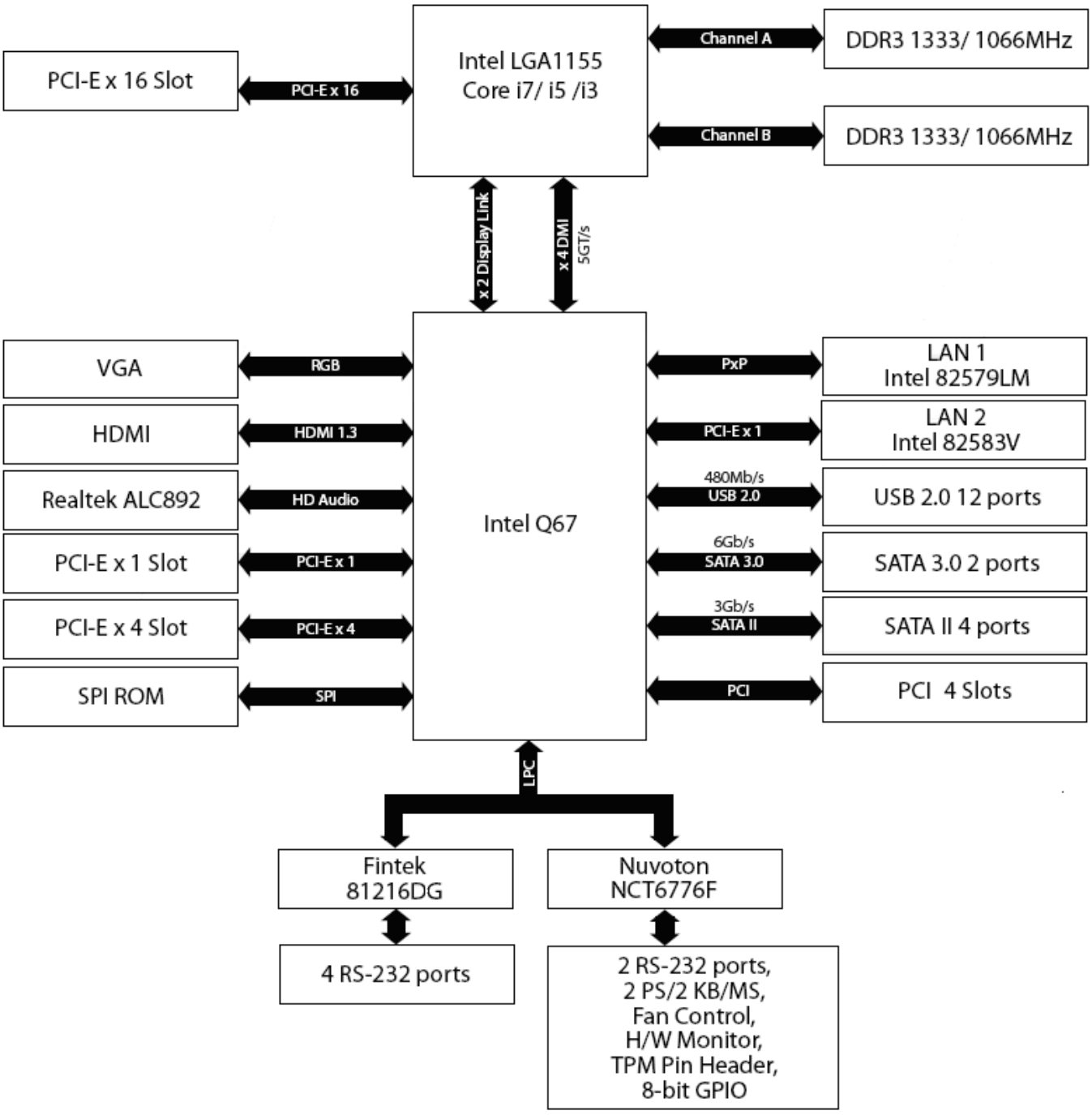
Specifications Summary

Specifications	
System	
CPU	Intel® LGA1155 Socket Supports 2nd /3rdGeneration Core™ i7/i5/i3, Pentium® and Celeron® Processors
BIOS	AMI 64Mbit SPI
System Chipset	Intel® Q67
I/O Chipset	Nuvoton NCT6776F
Memory	Four 240-pin UDIMM sockets support up to 16GB dual channel DDR3 1066/ 1333 SDRAM
Watchdog Timer	Reset: 1 to 255 sec/min per step
H/W Status Monitor	Monitoring temperature, voltage and cooling fan status. Auto throttling control when CPU overheats.
Expansion Slots	1 PCI-E x 16, 1 PCI-E x 4, 1 PCI-E x 1, 4 PCI
Power State	S1, S3, S4, S5
TPM	TPM1.2 (Optional)
RAID	RAID 0,1,5 and 10
Wake up on LAN or Ring	LAN (WOL) and Ring (WO)
Smart Fan Control	Yes
Smart Fan Control	Supports 3 modes (Silent/Optimal/Performance)
I/O	
MIO	6 COM RS-232, 2 SATA 3.0, 4 SATA II, 1 HDMI, 1 VGA, 2 LAN, 1 PS/2 Keyboard, 1 PS/2 Mouse
USB	12 USB 2.0 (4 Rear, 8 Internal)
GPIO	8-bit
Display	
Chipset	Intel® GMA HD 2000/ 3000 supports DirectX 10.1, OpenGL 3.0
Display Memory	Shared Memory, up to 1GB
Dual Display	VGA + HDMI
VGA	Onboard, supports max resolution 2048 x 1536 (@60Hz)
HDMI	Onboard HDMI 1.3, supports max resolution 1920 x 1080 (@60Hz)
Audio	
Audio Codec	Realtek ALC892, 5.1 Channel HD Audio
Audio Interface	Line-in, Line-out, Mic-in, S/PDIF, Front Audio Header
Ethernet	
LAN1	Intel 82579LM
LAN2	Intel 82583V
Back I/O Port	

Back Panel	1 x PS2 KB/MS 2 x COM Port 1 x VGA 1 x HDMI 2 x RJ45 port 4 x USB 2.0 1 x 3 Audio Jacks(Line-in/Line-Out/Mic in)
Internal I/O Connector	
Internal I/O	2 x SATAIII connectors , 4 x SATAII connectors 4 x USB connectors support additional 8 USB 2.0 ports 4 x COM header 1 x CPU Fan connector 1 x System Fan connector 1 x Chassis Intrusion header 1 x TPM header 1 x Front Audio connector 1 x Front panel header 1 x 8 Bit DIO connector 1 x PS2 Keyboard & mouse connector 1 x S/PDIF connector 1 x connector for AT/ATX Mode Select 1 x 22 pin ATX Power connector 1 x 2 x 2 pin 12V Power connector
Mechanical & Environmental	
Power Type	AT/ATX
Operating Temperature	0~60°C (32~140°F)
Operating Humidity	0%~90% relative humidity, non-condensing
Size (L x W)	12" x 9.6" (304.8mm x 243.84mm)
Weight	1.32lbs (0.6Kg)

* Specifications are subject to change without notice.

Block Diagram



This chapter describes the motherboard features and the new technologies it supports.

1 Product Introduction

Chapter 1 - Product Introduction

1.1 Product highlights

1.1.1 Product Overview

Supports latest Intel LGA 1155 CPU-socket interface processor, the 2nd Generation Intel® Core i3, i5, i7 desktop processors which are built on 32 nm technologies to provide smart performance and responsiveness on executing tasks, It combines the CPU and GPU to offer fantastic HD media and graphics, especially on 3D gaming experience. Doubles the bandwidth of your system memory up to 21GB/s and pumps up the system performance at lower power.

DMI (Direct Media Interface) architecture connects between the processor and chipset at 5.0GT/s which twice the speed of previous version. The exceptionally increased interconnect bit rate from 2.5GT/s up to 5.0GT/s would effectively eliminates the bottle neck of the system performance and brings the most terrific computing experience from the present to the future. Doubles the transfer speed of SATA 3G, running at speed up to 6.0Gb/s, and can connect with any other SATA 3.0Gb/s and 1.5Gb/s devices for backward compatibility.

Supports RAID 0(Striped disk array), RAID 1(Mirroring disk array), RAID 5(Block Interleaved Distributed Parity), RAID 10 (A Stripe of Mirrors). Provides users the performance and protection. Integrated 5.1-channel HD Audio CODEC delivering advanced multi-channel audio and bringing you the experience of home theater-quality sound. Delivers transfer speed ten times faster than conventional 10/ 100 Ethernet connections, supporting a high transfer rate up to Gigabit/s. Gigabit LAN is the networking standards for the future and is ideal for handing large amount of data such as video, audio, and voice.

Choose an environment-friendly, fully RoHS-compliant product as the foundation for keeping harmful substances out of our ecosystem.

1.1.2 Platform Features and Benefits

•Integrated Gfx (Intel® HD Graphics 3000/2000) with enhanced operating modes to enable excellent graphics performance in power and cost sensitive embedded applications
• DirectX® 10.1 & Open GL 3.0 let you enjoy awesome graphics performance, stunning 3D visual effect and dynamic interactivity
• Memory support, integrated low voltage DDR3 memory controller
• Operating system support:
  - Microsoft
  -WindRiver
  -Redhat

-Novell
-Green Hills
-QNX
-LinuxWorks

1.1.3 Key Architecture Features

• Supports Intel® LGA1155 Socket Supports 2nd / 3rd Generation Core™ i7/i5/i3, Pentium® and Celeron® Processors .
-32nm monolithic die
-Integrated Gfx (Intel® HD Graphics 3000/2000) & memory controller
-4 &2 Cores, up to 6MB LLC
-HW accelerated video CODECs
- Compatible with high speed DDR3-1333
-PCIe* (CPU): Gen 2.0, 5GT/s, up to 20 lanes (4 ctls)**
-TDP: 17W-45W (Low Power), 65W-95W (Scalable)
• Intel® Turbo Boost Technology
-More efficient power sharing between CPU and Graphics
• Intel® Hyper-Threading Technology
• Intel® Advanced Vector Extensions (Intel® AVX)
• Intel® AES-New Instructions
• Integrated Display Interfaces
- Dual Independent Display Support
- HDMI
- Analog VGA
• Intel® HD Graphics 3000/2000
- DirectX® 10.1
- Improved realism for DX 3D applications. Improved rendering.
- OpenGL 3.0
- Improved realism for OGL 3D based application
- UVD (Unified Video Decoder) 2.01
Hardware decode of most common HD codecs (MPEG-2, H.264/AVC MPEG-4 and VC-1)
- Supports ATI Hybrid CrossFireXTM Technology2
• Intel Quick Sync Video
- Enables faster and higher quality video editing, recording and sharing
• I/O
- PCI Express® x 16 Gen 2 5GT/s
- PCI Express® x 4Gen 2 5GT/s
- PCI Express® x 1Gen 2 5GT/s
- PCI 2.3 interface

- Six SATA ports (4 port of Gen 2.0 and 2 ports of Gen 3.0) support RAID 0,1, 5, 10
- Gigabit Ethernet Media Access Controller (GbE MAC)
  IPv4 and IPv6 Checksum Offload
- High Definition Audio
- USB: Gen 2.0, up to 12 ports
- SMBus 2.0
- LPC Bus
  Supports SPI devices
- Hardware Monitor
  Fan control, Voltage, Temp
  Watchdog timer

1.2 Before you Proceed

Take note of the following precautions before you install motherboard components or change any motherboard settings.

- Unplug the power cord from the wall socket before touching any component.
- Use a grounded wrist strap or touch a safely grounded object or a metal object, such as the power supply case, before handling components to avoid damaging them due to static electricity
- Hold components by the edges to avoid touching the ICs on them.
- Whenever you uninstall any component, place it on a grounded anti-static pad or in the bag that came with the component.
- Before you install or remove any component, ensure that the ATX power supply is switched off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the motherboard, peripherals, and/or components.

1.3 Motherboard Overview

Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it. Refer to the chassis documentation before installing the motherboard.

Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so can cause you physical injury and damage motherboard components.

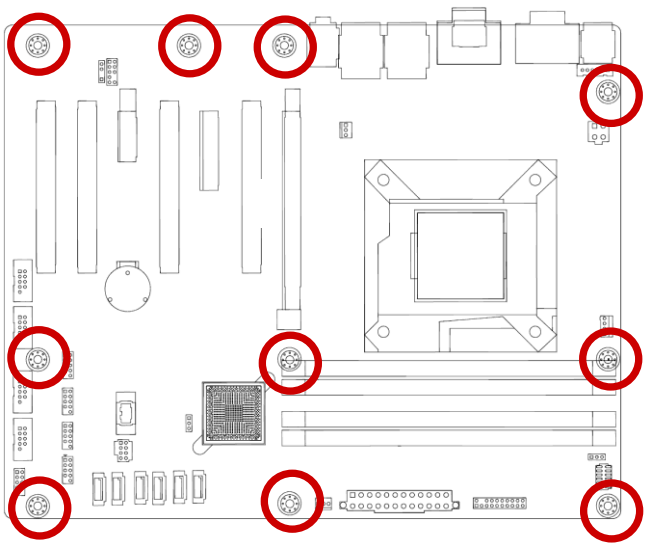
1.3.1 Placement Direction

When installing the motherboard, make sure that you place it into the chassis in the correct orientation. The edge with external ports goes to the rear part of the chassis as indicated in the image below.

1.3.2 Screw Holes

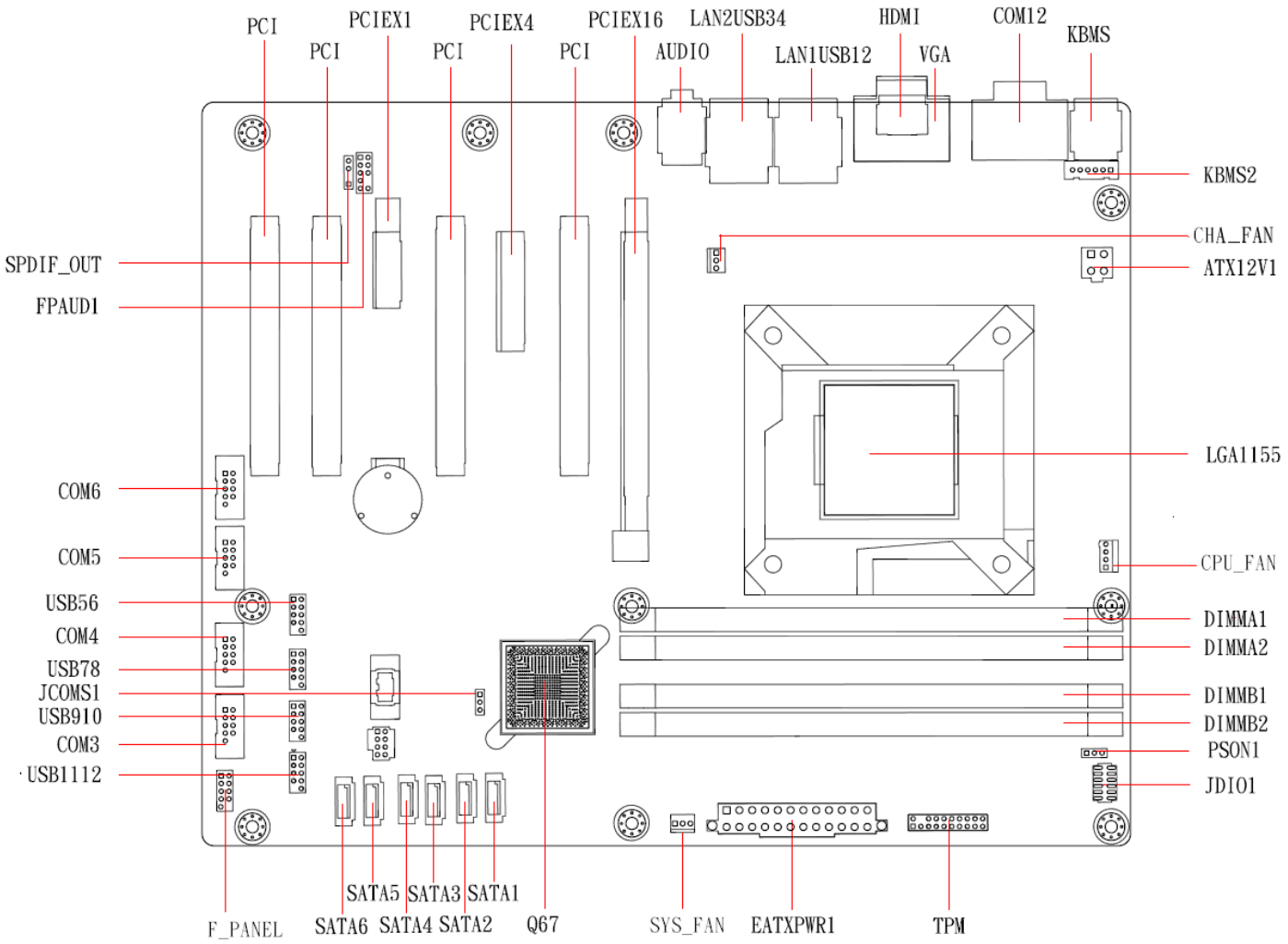
Place eight (8) screws into the holes indicated by circles to secure the motherboard to the chassis.

Do not over tighten the screws! Doing so can damage the motherboard.



Place this side towards the rear of the chassis.

1.3.3 Motherboard Layout



1.3.4 Layout Content List

Slots & socket		
Label	**Function**	**Note**
LGA1155	LGA1155 socket	
DIMMA1	240-pin DDR3 DIMM Slot A1	
DIMMA2	240-pin DDR3 DIMM Slot A2	
DIMMB1	240-pin DDR3 DIMM Slot B1	
DIMMB2	240-pin DDR3 DIMM Slot B2	
PCIEX16	PCI-e x16 Slot	
PCIEX4	PCI-e x 4 Slot	
PCIEX1	PCI-e x 1 Slot	
PCI	PCI Slot	

Jumpers		
Label	**Function**	**Note**
JCMOS1	Clear CMOS	3 x 1 header, pitch 2.54mm
PSON1	AT/ATX Mode Select	3 x 1 header, pitch 2.54mm
Rear Panel Connector		
Label	**Function**	**Note**
KBMS	PS/2 Keyboard and Mouse	6-pin Mini-Din
COM1	COM1 Connector	D-sub 9-pin, male
COM2	COM2 Connector	D-sub 9-pin, male
VGA1	VGA Port	D-sub 15-pin, female
HDMI1	HDMI Port	HDMI 1.3 19-pin
LAN1USB12	RJ-45 Ethernet Connector x 1 USB 2.0 Connector x 2	
LAN2USB34	RJ-45 Ethernet Connector x 1 USB 2.0 Connector x 2	
Audio1	Audio Line-In , Line-Out , Mic.-In	5.1 Channel Audio I/O (3 jacks)

1.3.5 Internal Connector

Internal Connector		
Label	**Function**	**Note**
CPU_FAN	CPU Fan Connector	4 x 1 wafer, pitch 2.54mm
SYS_FAN	System Fan Connector	3 x 1 wafer, pitch 2.54mm
CHA_FAN	Chassis Fan Connector	3 x 1 wafer, pitch 2.54mm
F_PANEL	Front Panel connector	5 x 2 header, pitch 2.54mm
EATXPWR1	ATX power connectors	12 x 2 header
ATX12V1	ATX 12V power connectors	2 x 2 header
COM3~ 6	Serial Port Connector * 4	5 x 2 header, pitch 2.54mm
JDIO1	Digital I/O Connector	6 x 2 header, pitch 2.54mm
FPAUD1	Audio Mic.-In & Line-Out Connector	5 x 2 header, pitch 2.54mm
KBMS2	PS2 Keyboard & mouse connector	5 x 2 header, pitch 2.54mm
SPDIF_OUT1	Digital Audio connector	4 x 1 header, pitch 2.54mm
TPM	TPM Connector	10 x 2 header, pitch 2.54mm
SATA1, 2	SATA3.0 Data Connector	7P Male connector
SATA3 ~ 6	SATA II Data Connector	7P Male connector
USB5/6 USB7/8 USB9/10 USB11/12	USB Connector * 8	5 x 2 header, pitch 2.54mm

1.4 Central Processing Unit (CPU)

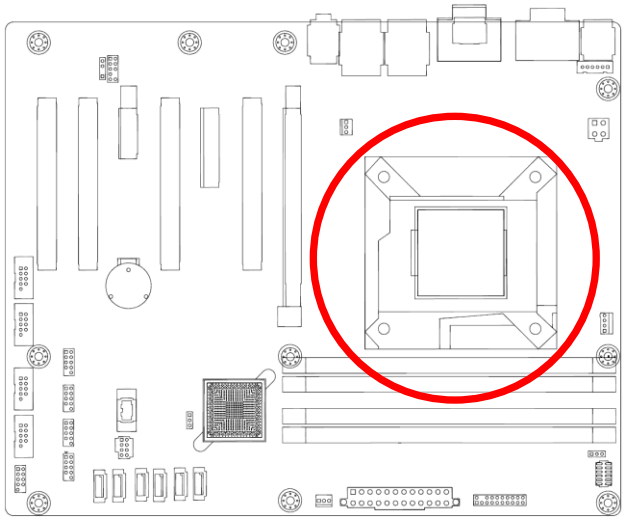
The motherboard comes with a surface mount LGA1155 socket designed for the Intel® Core™ i7/ i5/ i3 processor in the 1155-land package.

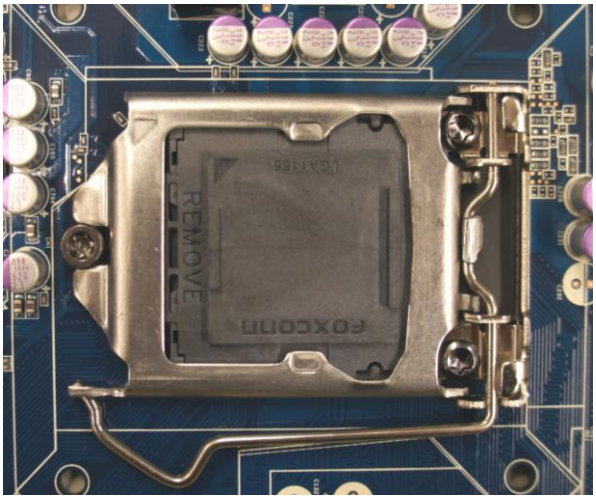
- Your boxed Intel® Core™ i7/ i5/ i3 LGA1155 processor package should come with installation instructions for the CPU, fan and heatsink assembly. If the instructions in this section do not match the CPU documentation, follow the latter.
- Upon purchase of the motherboard, make sure that the PnP cap is on the socket and the socket pins are not bent. Contact your retailer immediately if the PnP cap is missing, or if you see any damage to the PnP cap/socket pins/motherboard components. AVALUE will shoulder the cost of repair only if the damage is shipment/transit-related.
- Keep the cap after installing the motherboard. AVALUE will process Return Merchandise Authorization (RMA) requests only if the motherboard comes with the cap on the LGA1155 socket.
- The product warranty does not cover damage to the socket pins resulting from incorrect CPU installation/removal, or misplacement/loss/incorrect removal of the PnP cap.
- Install the CPU fan and heatsink assembly before you install motherboard to the chassis.

If you purchased a separate CPU heatsink and fan assembly, make sure that you have properly applied Thermal Interface Material to the CPU heatsink or CPU before you install the heatsink and fan assembly.

1.4.1 Installing the CPU

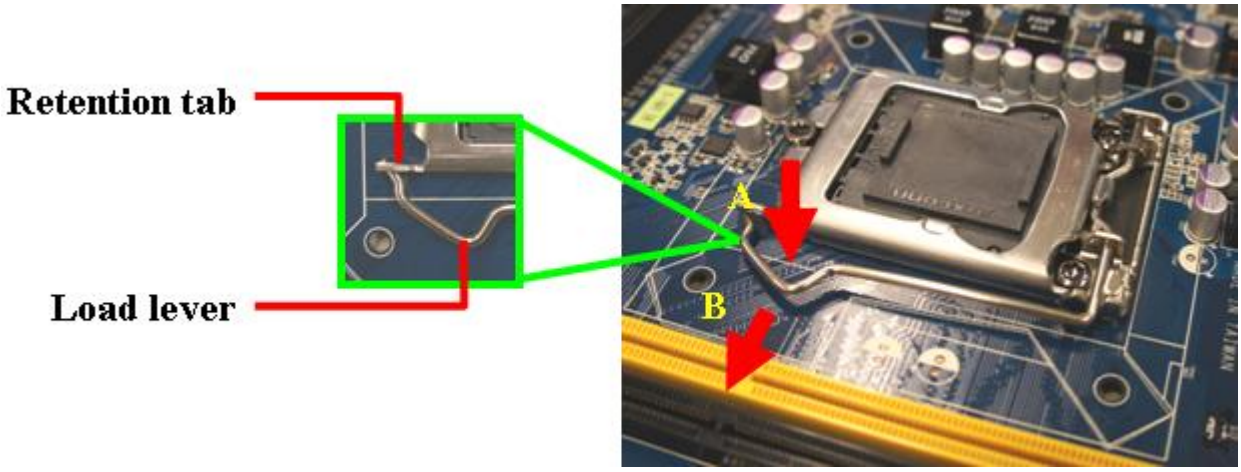
1. Locate the CPU socket on the motherboard.





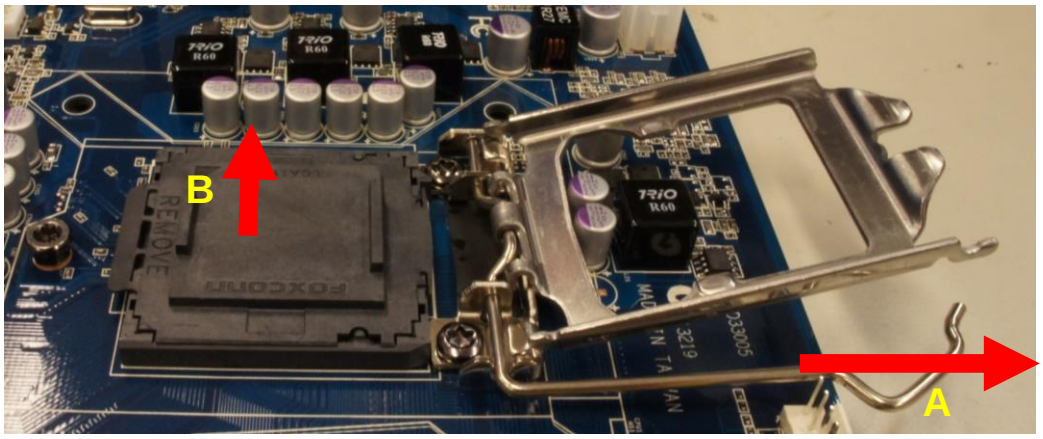
Before installing the CPU, make sure that the socket box is facing towards you and the load lever is on your left.

2. Press the load lever with your thumb (A), then move it to the left (B) until it is released from the retention tab.

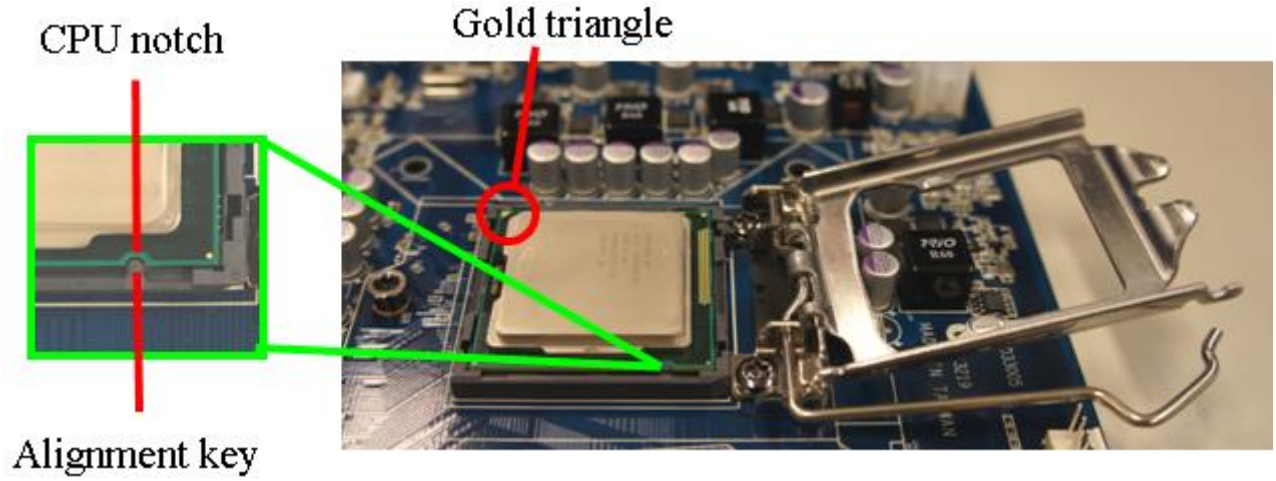


To prevent damage to the socket pins, do not remove the PnP cap unless you are installing a CPU.

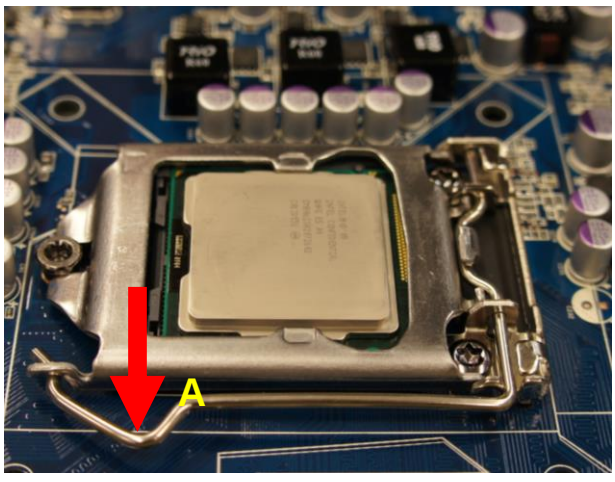
3. Lift the Load lever with your thumb and forefinger to around 180º angle (A), then pull the PnP cap from the CPU socket to remove (B).



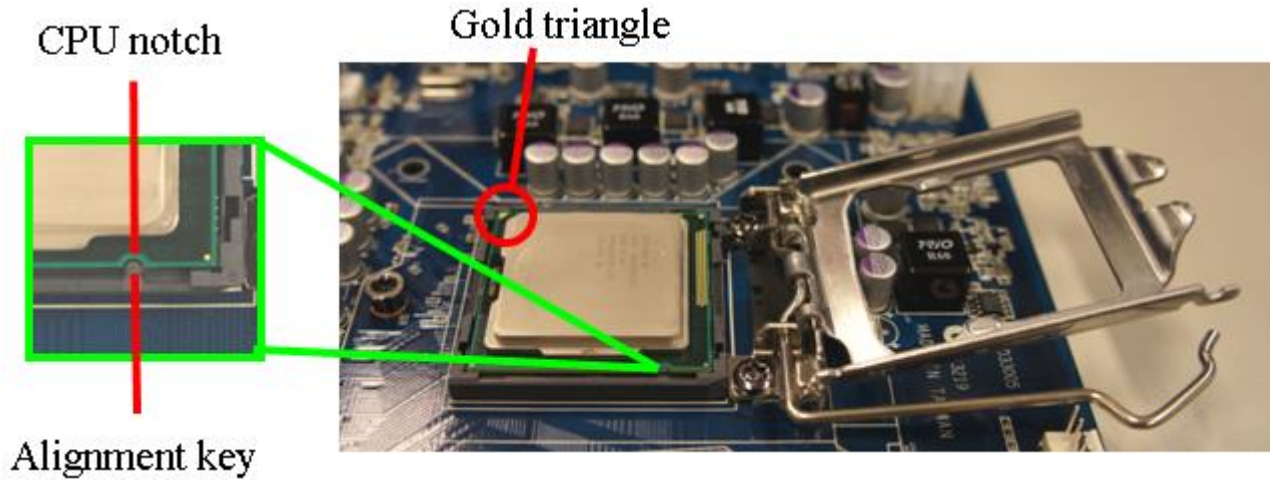
4. Position the CPU over the socket, making sure that the gold triangle is on the top-left corner of the socket then fit the socket alignment key into the CPU notch.



5. Pull back the load lever , then push the load lever (A) until it snaps into the retention tab.



The CPU fits in only one correct orientation. DO NOT force the CPU into the socket to prevent bending the connectors on the socket and damaging the CPU!



1.4.2 Installing the CPU Heatsink and Fan

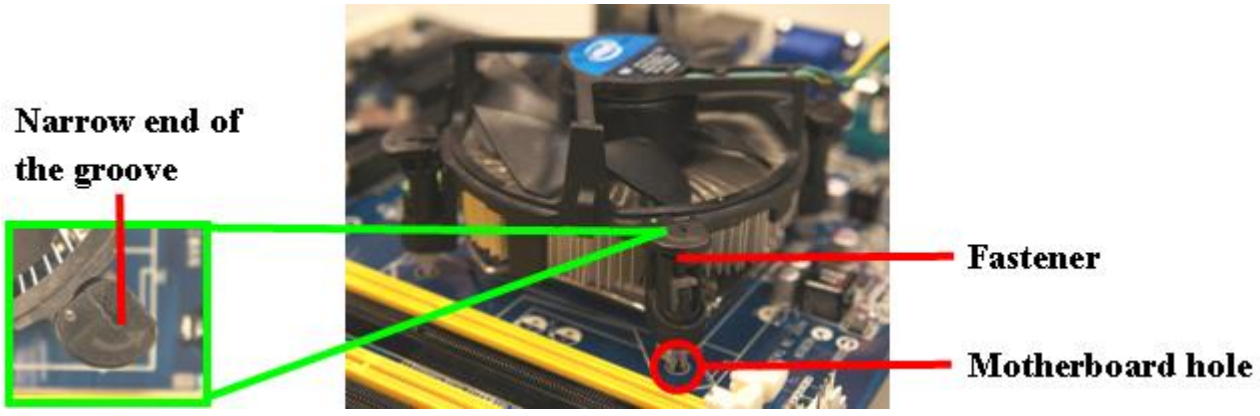
Intel® Core™ i7/ i5/ i3 LGA1155 processor requires a specially designed heatsink and fan assembly to ensure optimum thermal condition and performance.

- Install the motherboard to the chassis before you install the CPU fan and heatsink assembly.
- When you buy a boxed Intel® Core™ i7/ i5/ i3 LGA1155 processor, the package includes the CPU fan and heatsink assembly. If you buy a CPU separately, make sure that you use only Intel® certified multi-directional heatsink and fan.
- Your Intel® Core™ i7/ i5/ i3 LGA1155 processor LGA1155 heatsink and fan assembly comes in a push-pin design and requires no tool to install.

If you purchased a separate CPU heatsink and fan assembly, make sure that you have properly applied Thermal Interface Material to the CPU heatsink or CPU before you install the heatsink and fan assembly.

To install the CPU heatsink and fan:

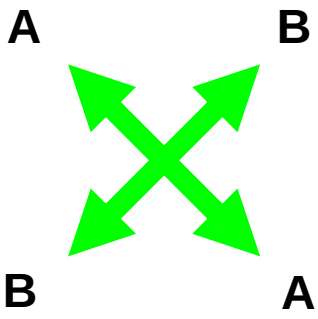
1. Place the heatsink on top of the installed CPU, making sure that the four fasteners match the holes on the motherboard.

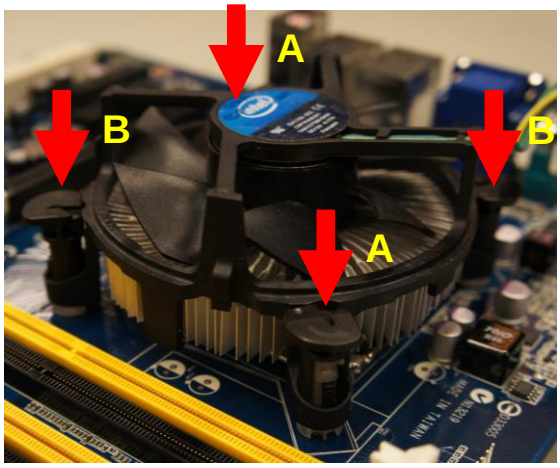


Orient the heatsink and fan assembly such that the CPU fan cable is closest to the CPU fan connector.

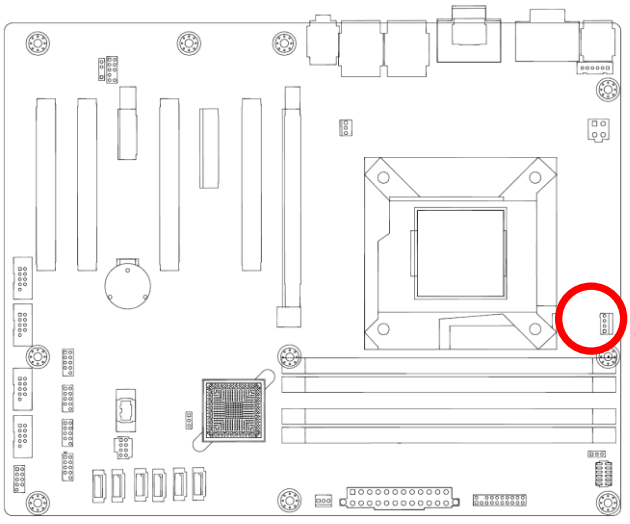
- Make sure each fastener is oriented as shown, with the narrow groove directed outward.

2. Push down two fasteners at a time in a diagonal sequence to secure the heatsink and fan assembly in place.



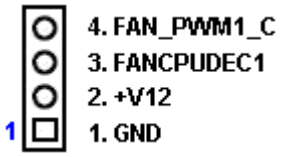


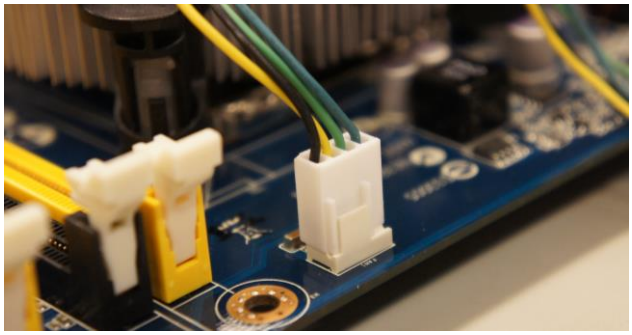
3. Connect the CPU fan cable to the connector on the motherboard labeled CPU_FAN.



CPU_FAN

CPU FAN





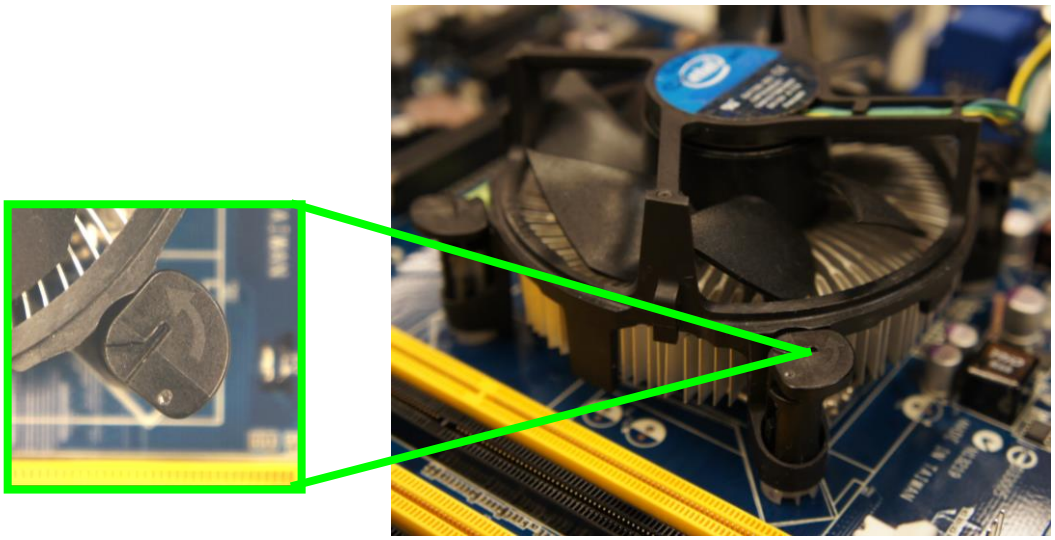
Do not forget to connect the fan cables to the fan connectors. Insufficient air flow inside the system may damage the motherboard components.

These are not jumpers! DO NOT place jumper caps on the fan connectors.

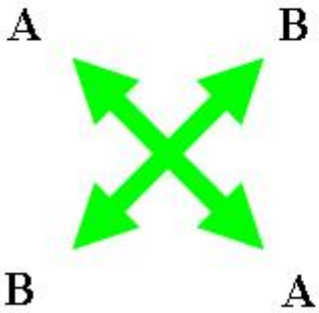
1.4.3 Uninstalling the CPU Heatsink and Fan

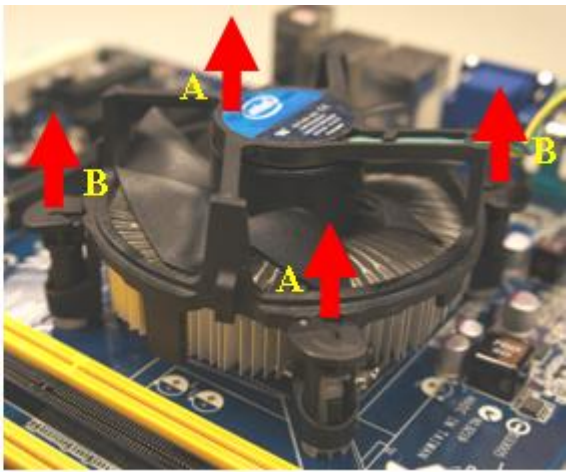
To uninstall the CPU heatsink and fan:

1. Disconnect the CPU fan cable from the connector on the motherboard.
2. Rotate each fastener counterclockwise

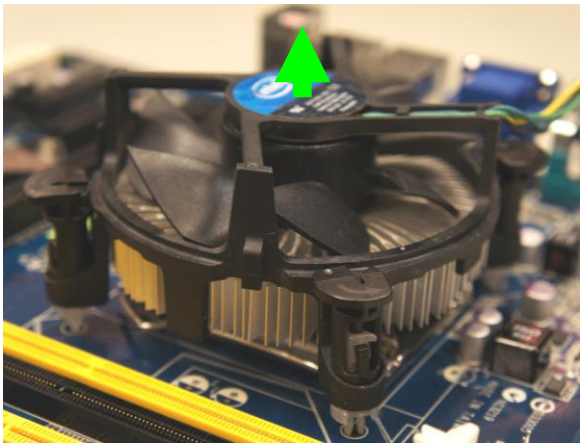


2. Pull up two fasteners at a time in a diagonal sequence to disengage the heatsink and fan assembly from the motherboard.





4. Carefully remove the heatsink and fan assembly from the motherboard.



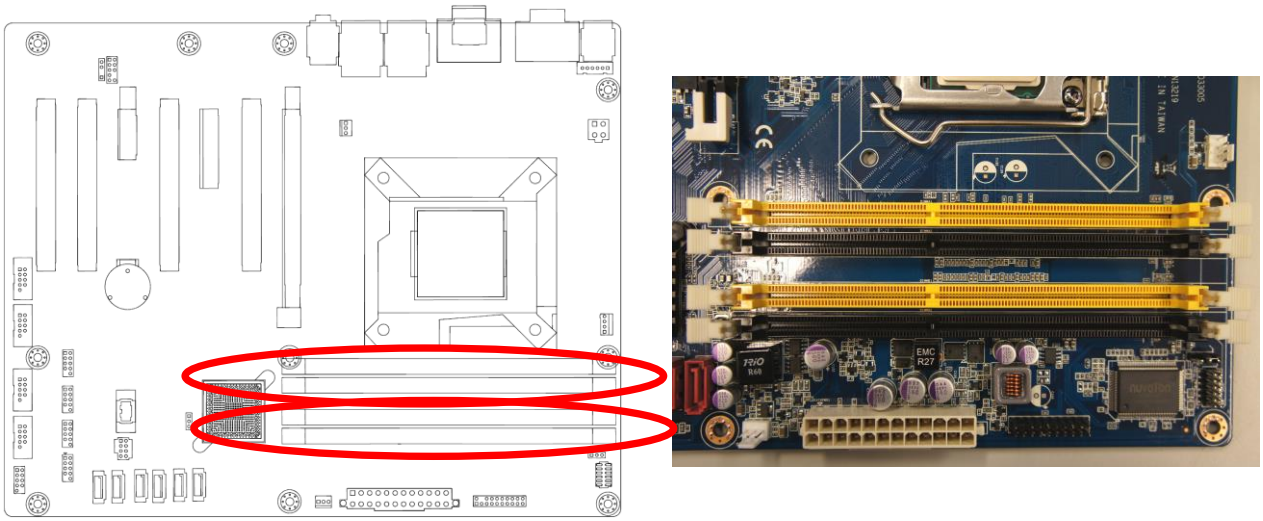
5. Rotate each fastener clockwise to ensure correct orientation when reinstalling.

1.5 System Memory

1.5.1 Overview

The motherboard comes with four 240-pin Double Data Rate 3 (DDR3) Dual Inline Memory Modules (DIMM) sockets.

A DDR3 module has the same physical dimensions as a DDR DIMM but has a 240-pin footprint compared to the 240-pin DDR2 DIMM. DDR3 DIMMs are notched differently to prevent installation on a DDR2 DIMM socket. The following figure illustrates the location of the sockets:



240-Pin DDR3 DIMM sockets

Channel	Socket
Channel A	DIMMA1
	DIMMA2
Channel B	DIMMB1
	DIMMB2

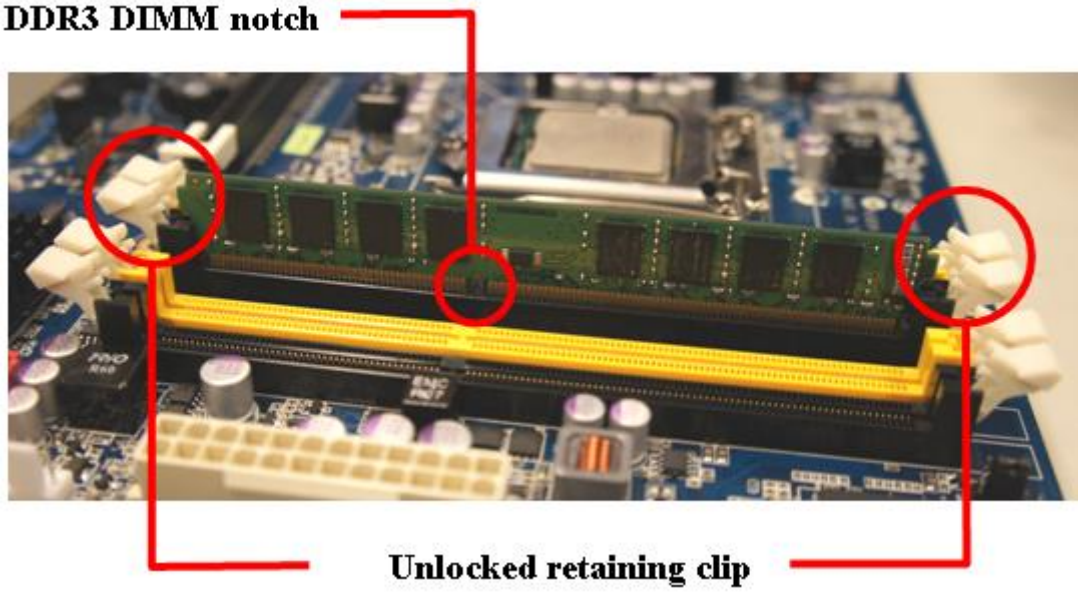
1.5.2 Memory Configurations

You may install 1 GB, 2 GB , and 4 GB unbuffered ECC or non-ECC DDR3 DIMMs into the DIMM sockets using the memory configurations in this section.

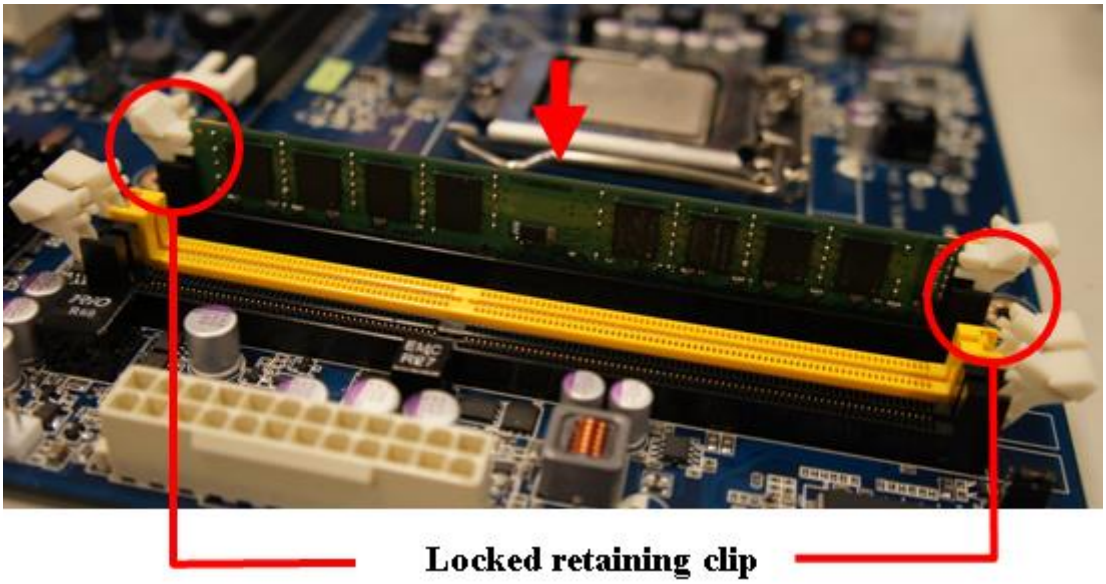
- IF you installed four 1GB memory modules, the system may detect less than 3GB of total memory because of address space allocation for other critical functions. This limitation applies to Windows XP 32-bit version operating system
- IF you install Windows XP 32-bit version operating system, we recommend that you install less than 3GB of total memory.
- For dual-channel configuration, the total size of memory module(s) installed per channel must be the same for better performance (DIMMA1 +DIMMA2=DIMMB1+DIMMB2).
- When using one DDR3 DIMM module, install into DIMMB1 slot only.
- When using two DDR3 DIMM modules, install into DIMMA1 and DIMMB1 slots only.
- Always install DIMMs with the same CAS latency. For optimum compatibility, it is recommended that you obtain memory modules from the same vendor. Refer to the memory Qualified Vendors List on the next page for details.
- Due to CPU limitation, DIMM modules with 128 Mb memory chips or double-sided x16 memory chips are not supported in this motherboard.

1.5.3 Installing a DIMM

1. Unlock a DIMM socket by pressing the retaining clips outward.
2. Align a DIMM on the socket such that the notch on the DIMM matches the break on the socket.



3. Firmly insert the DIMM into the socket until the retaining clips snap back in place and the DIMM is properly seated.

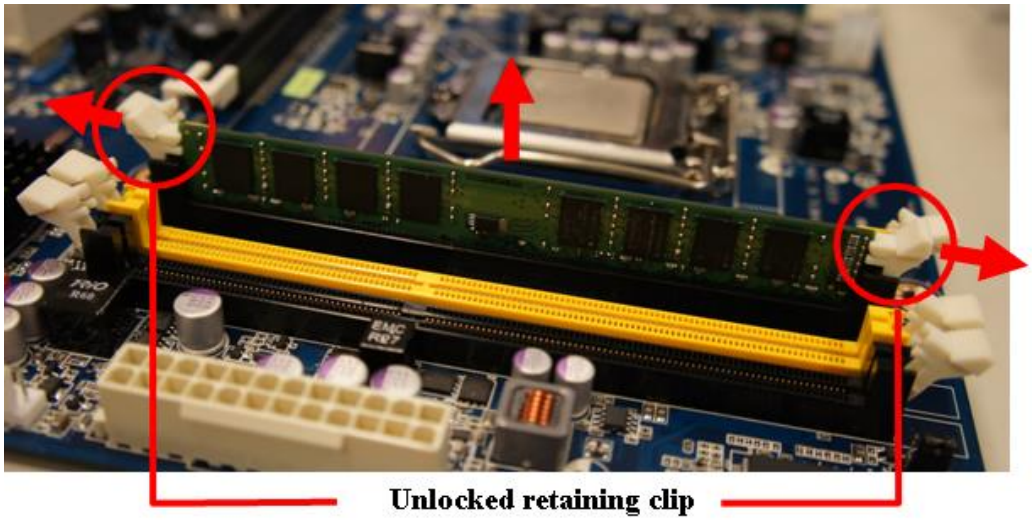


- A DDR3 DIMM is keyed with a notch so that it fits in only one direction. DO NOT force a DIMM into a socket to avoid damaging the DIMM.
- The DDR3 DIMM sockets do not support DDR DIMMs. DO NOT install DDR2 DIMMs to the DDR3 DIMM socket.

Make sure to unplug the power supply before adding or removing DIMMs or other system components. Failure to do so may cause severe damage to both the motherboard and the components.

1.5.4 Removing a DIMM

1. Simultaneously press the retaining clips downward to unlock the DIMM.
2. Remove the DIMM from the socket.



Support the DIMM lightly with your fingers when pressing the retaining clips. The DIMM might get damaged when it flips out with extra force.

1.6 Expansion Card

In the future, you may need to install expansion cards. The following sub-sections describe the slots and the expansion cards that they support.

Make sure to unplug the power cord before adding or removing expansion cards. Failure to do so may cause you physical injury and damage motherboard components.

1.6.1 Installing an Expansion Card

1. Before installing the expansion card, read the documentation that came with it and make the necessary hardware settings for the card.
2. Remove the system unit cover (if your motherboard is already installed in a chassis).
3. Remove the bracket opposite the slot that you intend to use. Keep the screw for later use.
4. Align the card connector with the slot and press firmly until the card is completely seated on the slot.
5. Secure the card to the chassis with the screw you removed earlier.
6. Replace the system cover.

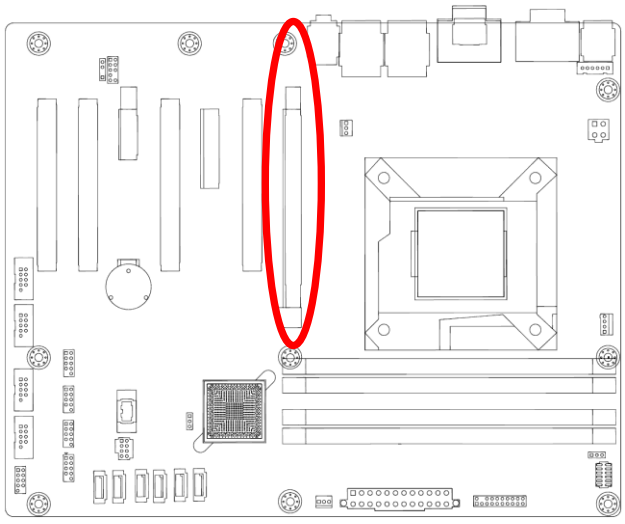
1.6.2 Configuring an Expansion Card

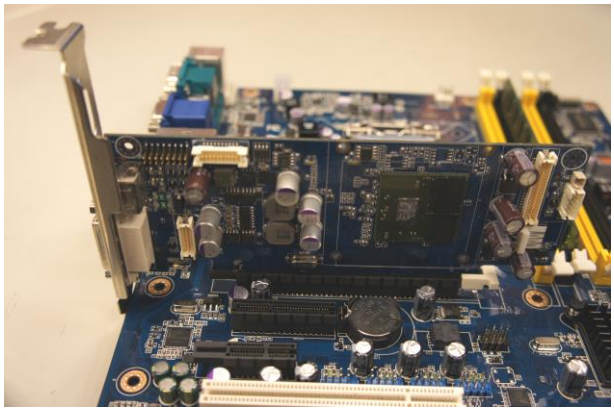
After installing the expansion card, configure it by adjusting the software settings.

1. Turn on the system and change the necessary BIOS settings, if any. See Chapter 2 for information on BIOS setup.
2. Assign an IRQ to the card if needed. Refer to the tables on the next page.
3. Install the software drivers for the expansion card.

1.6.3 PCI Express x16 slot

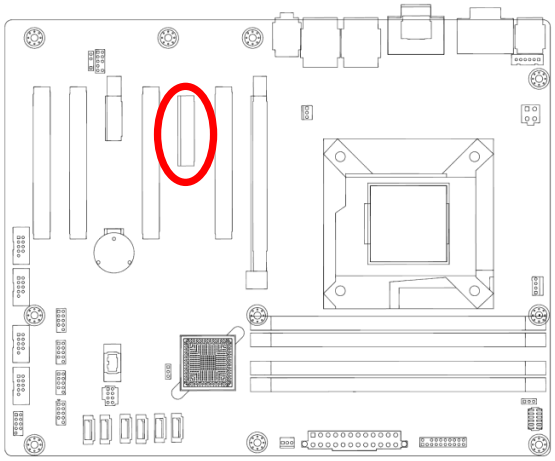
This motherboard supports one PCI Express x16 slot that complies with the PCI Express specifications. The following figure shows a graphics card installed on the PCI Express x16 slot.

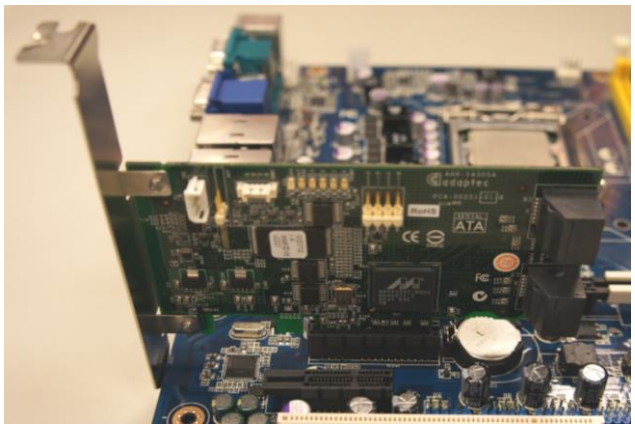




1.6.4 PCIeX4 Raid card

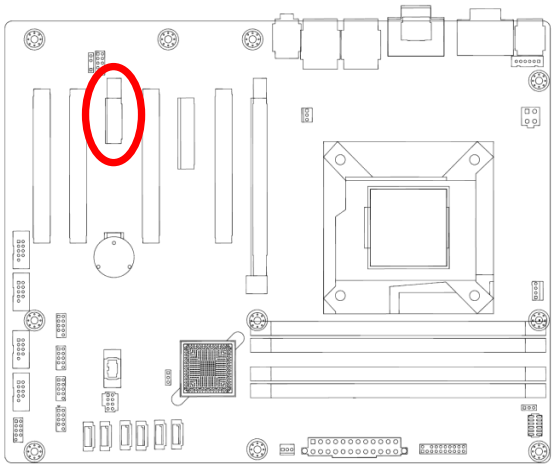
This motherboard supports one PCI Express x4 slot that complies with the PCI Express specifications. The following shows a RAID card installed on the PCI Express x 4 slot.

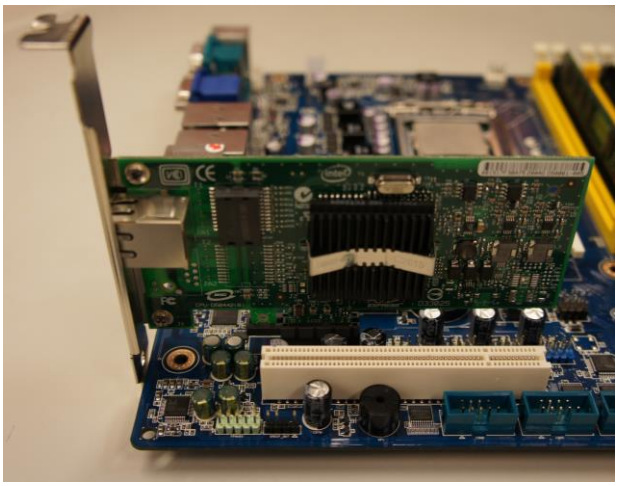




1.6.5 PCIeX1 LAN card

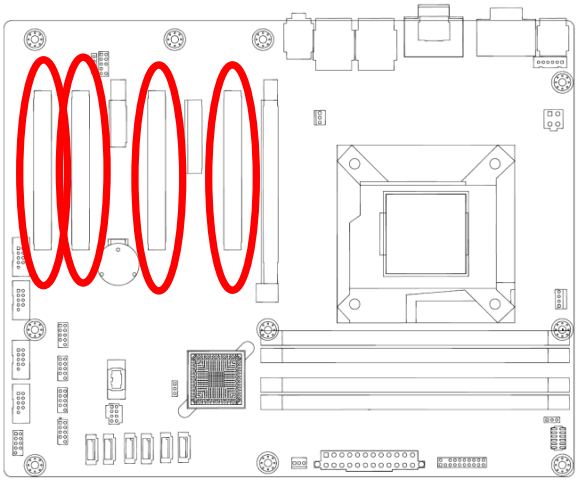
This motherboard supports one PCI Express x 1 slot that complies with the PCI Express specifications. The following figure shows a LAN card installed on the PCI Express x 1 slot.

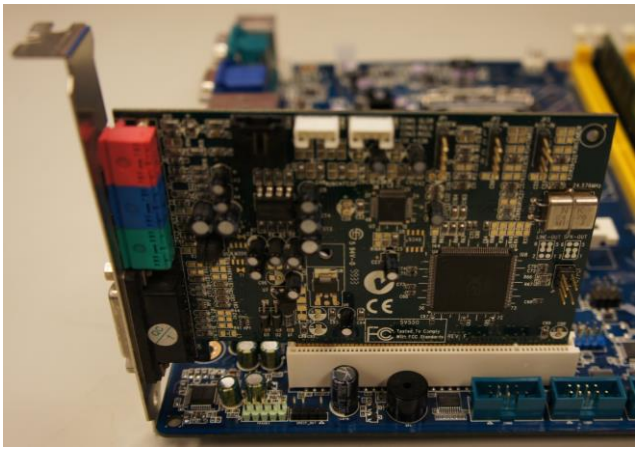




1.6.6 PCI slot

This motherboard supports 4 PCI slots that complies with the PCI specifications. The following figure shows a *audio* card installed on the PCI slot.





1.7 Jumpers

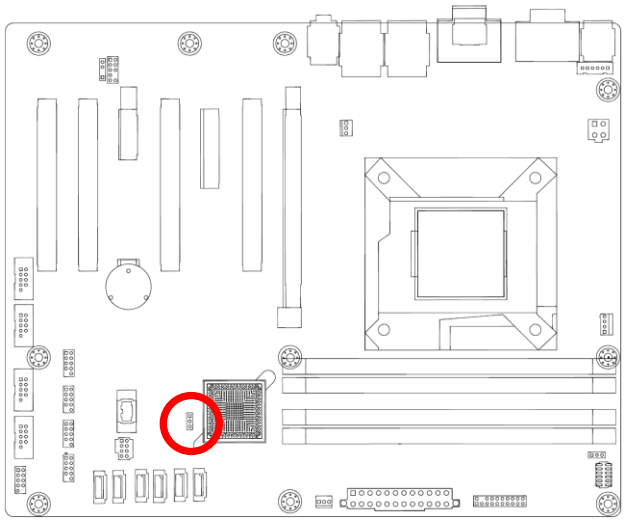
1.7.1 Clear CMOS (JCMOS1)

This jumper allows you to clear the Real Time Clock (RTC) RAM in CMOS. You can clear the CMOS memory of date, time, and system setup parameters by erasing the CMOS RTC RAM data. The onboard button cell battery powers the RAM data in CMOS, which includes system setup information such as system passwords.

To erase the RTC RAM:

1. Turn OFF the computer and unplug the power cord.
2. Remove the onboard battery.
3. Move the jumper cap from pins 1-2 (default) to pins 2-3. Keep the cap on pins 2-3 for about 5~10 seconds, then move the cap back to pins 1-2.
4. Re-install the battery.
5. Plug the power cord and turn ON the computer.
6. Hold down the <Del> key during the boot process and enter BIOS setup to re-enter data.
7.

Except when clearing the RTC RAM, never remove the cap on CLRTC jumper default position. Removing the cap will cause system boot failure!



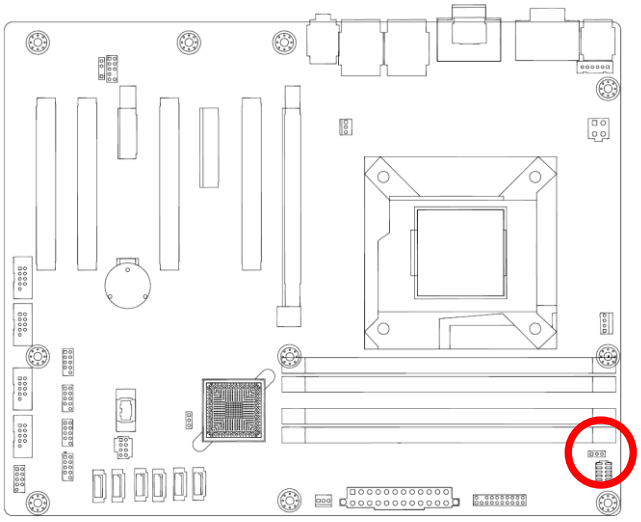
Normal (Default)

Clear CMOS

You do not need to clear the RTC when the system hangs due to overclocking. For system failure due to overclocking, use the C.P.R. (CPU Parameter Recall) feature. Shut down and reboot the system so the BIOS can automatically reset parameter settings to default values.

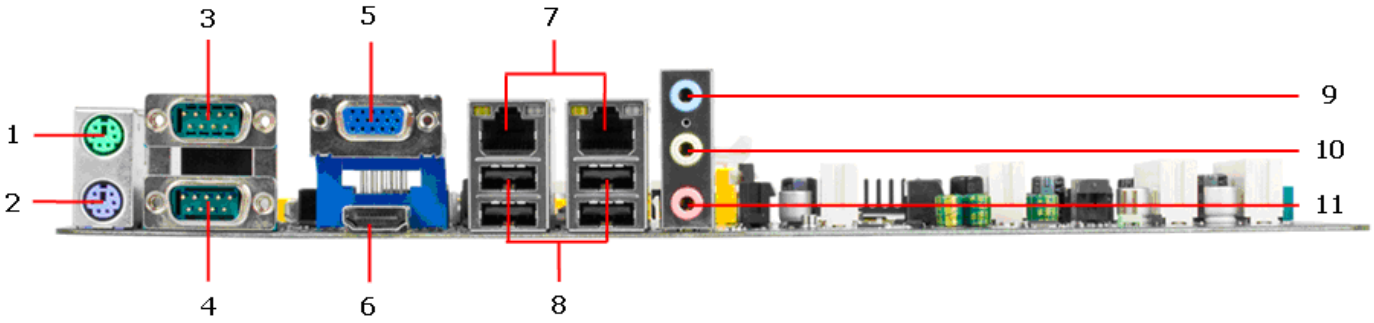
1.7.2 AT/ATX Power Mode Select (PSON1)

This jumper allows you to select ATX Mode or AT mode .



1.8 Connectors

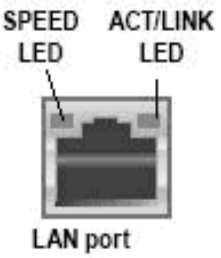
1.8.1 Rear panel connectors



1. **PS/2 mouse port (green).** This port is for a PS/2 mouse.
2. **PS/2 keyboard port (purple).** This port is for a PS/2 keyboard.
3. **Serial connector.** This 9-pin COM1 port is for serial devices.
4. **Serial connector.** This 9-pin COM2 port is for serial devices.
5. **VGA port.** This 15-pin VGA port connects to a VGA monitor.
6. **HDMI port.** This 19-pin HDMI 1.3 port connects to a HDMI monitor.
7. **LAN (RJ-45) port.** This port allows Gigabit connection to a Local Area Network (LAN) through a network hub. Refer to the table below for the LAN port LED indications.

LAN port LED indications

SPEED LED		ACT / LINK LED	
Status	Description	Status	Description
OFF	10Mbps connection	OFF	No link
Orange	100Mbps connection	Green	Link
Green	1Gbps connection	Blinking	Data activity



8. USB 2.0 ports 1 ~ 4. These four 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.

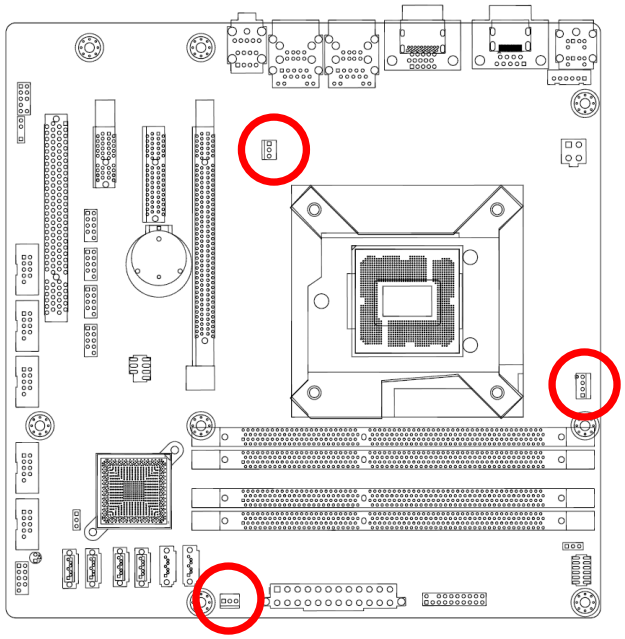
9. Line In port (light blue). This port connects a tape, CD, DVD player, or other audio sources.

10 Line Out port (lime). This port connects a headphone or a speaker.
In 4-channel, 6-channel, and 8-channel configuration, the function of this port becomes Front Speaker Out.

11. Microphone port (pink). This port connects a microphone.

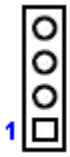
1.8.2 CPU and System fan connectors (CPU_FAN, SYS_FAN,CHA_FAN)

The fan connectors support cooling fans of 280mA (3.36 W max.) at 4800rpm or a total of 1A~2.22A (26.64W max.) at +12V. Connect the fan cables to the fan connectors on the motherboard, making sure that the black wire of each cable matches the ground pin of the connector.



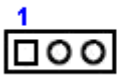
CPU_FAN

CPU FAN



SYS_FAN

System FAN



CHA_FAN

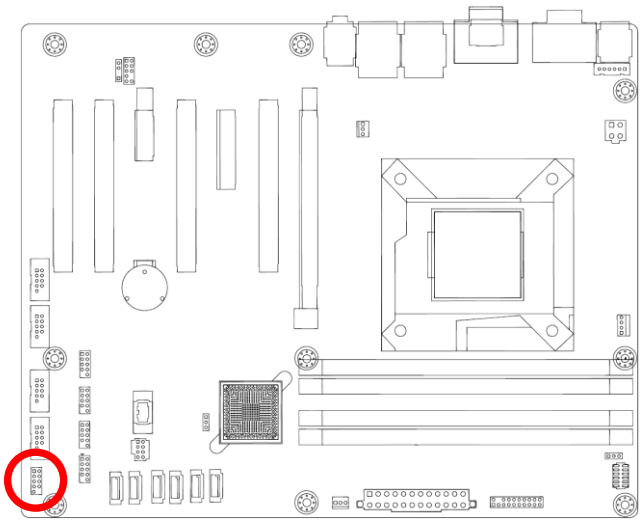
Chassis Fan

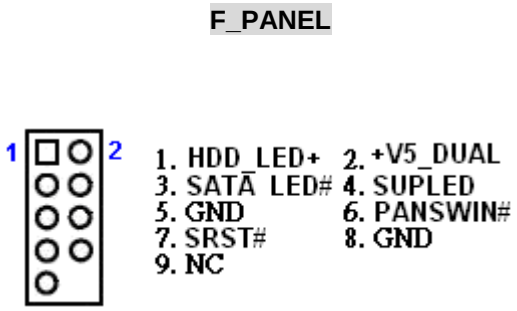
Do not forget to connect the fan cables to the fan connectors. Insufficient air flow inside the system may damage the motherboard components.

These are not jumpers! DO NOT place jumper caps on the fan connectors.

1.8.3 System Panel (F_PANEL)

This connector is for a chassis-mounted front panel I/O module that supports ,power on /reset switch and HDD / Power LED indicate.





- **ATX Power Button/Soft-off Button (Pin 6-8 PWRBT)**

  This 2-pin connector is for the system power button. Pressing the power button turns the system on or puts the system in sleep or soft-off mode depending on the BIOS settings. Pressing the power switch and holding it for more than four seconds while the system is ON turns the system OFF.

- **Reset Button (Pin 5-7 SYS_RST)**

  This 2-pin connector is for the chassis-mounted reset button for system reboot without turning off the system power.

- **Power LED (Pin 2-4 PWRLED)**

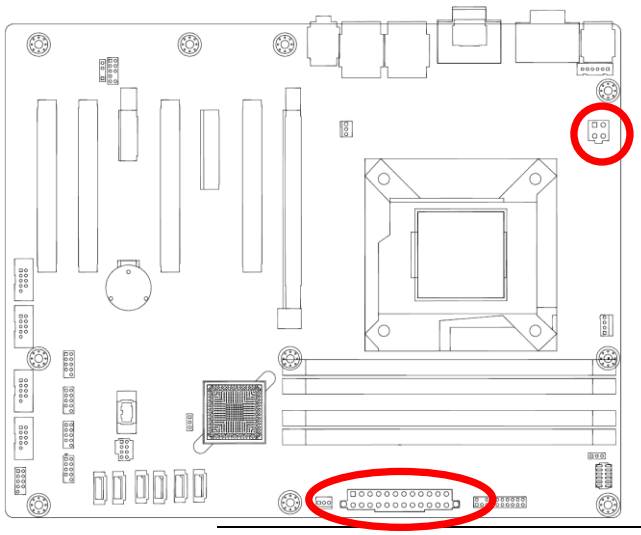
  This 2-pin connector is for the system power LED. Connect the chassis power LED cable to this connector. The system power LED lights up when you turn on the system power, and blinks when the system is in sleep mode.

- **Hard Disk Drive Activity LED (Pin 1-3 HDLED)**

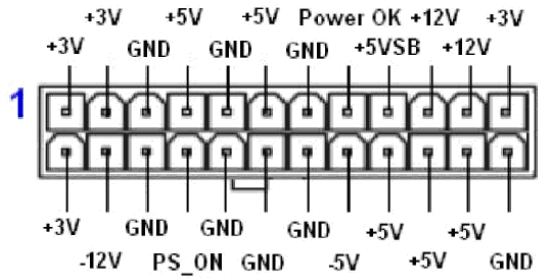
  This 2-pin connector is for the HDD Activity LED. Connect the HDD Activity LED cable to this connector. The IDE LED lights up or flashes when data is read from or written to the HDD.

1.8.4 ATX power connectors (EATXPWR1)

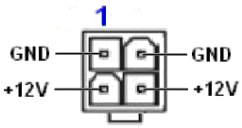
The connector is for ATX power supply plugs. The power supply plugs are designed to fit these connectors in only one orientation. Find the proper orientation and push down firmly until the connectors completely fit.



EATXPWR1



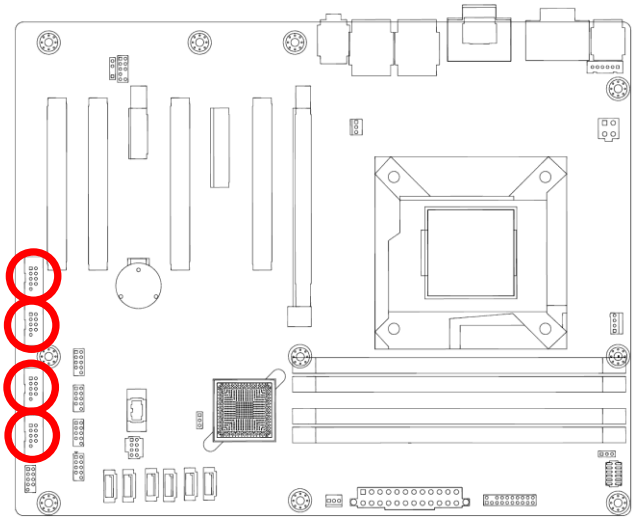
ATX12V1



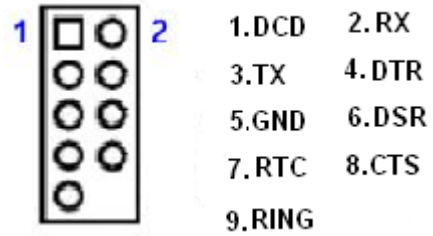
- Use of a PSU with a higher power output is recommended when configuring a system with more power-consuming devices. The system may become unstable or may not boot up if the power is inadequate.
- Make sure that your power supply unit (PSU) can provide at least the minimum power required by your system. See the table below for details.

1.8.5 Serial Port connectors (COM3, COM4, COM5, COM6)

This connector is for a serial (COM) port. Connect the serial port module cable to this connector, then install the module to a slot opening at the back of the system chassis.

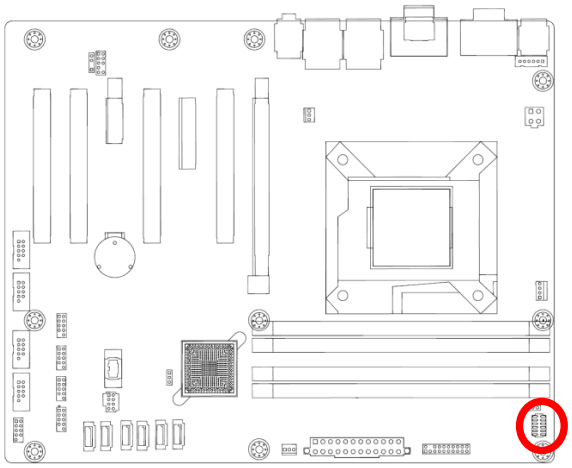


COM3 , COM4 , COM5 , COM6

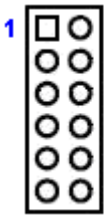


1.8.6 Digital IO Connector (JDIO1)

This connector is for 8-bit General purpose I/O function.



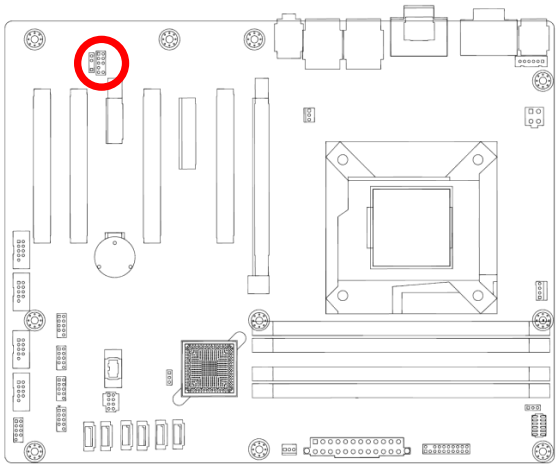
JDIO1



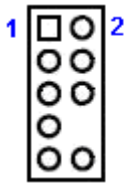
1. SIO_GPIO0	2. SIO_GPIO4
3. SIO_GPIO1	4. SIO_GPIO5
5. SIO_GPIO2	6. SIO_GPIO6
7. SIO_GPIO3	8. SIO_GPIO7
9. SMB_CLK_MAIN	10. SMB_DATA_MAIN
11. GND	12. +5V_DUAL

1.8.7 Audio Mic.-In & Line-Out Connector (FPAUD1)

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.



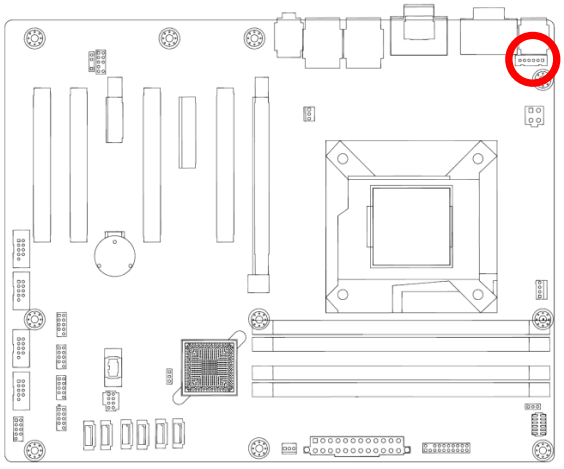
FPAUD1



1. MIC2_L	2. GND
3. MIC2_R	4. PCH_GPIO
5. LINE2_R	6. MIC2-JD
7. FRONT-IO-SENSE	8. NC
9. LIN2_L	10. LINE2-JD

1.8.8 Internal KB/MS connector (KBMS2)

This connector is for internal KB/MS.

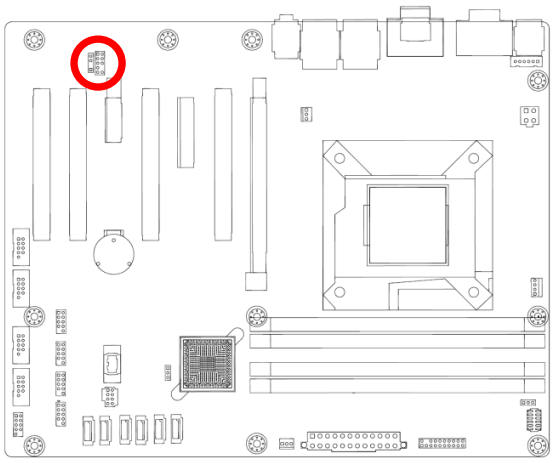


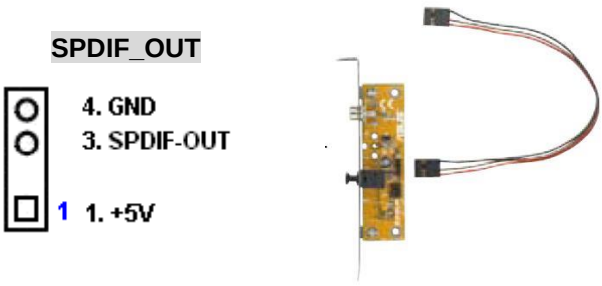
KBMS2

1. KB_A_CLK#
2. KB_A_DAT#
3. MS_A_DAT#
4. GND
5. KBMS1_VCC
6. MS_A_CLK#

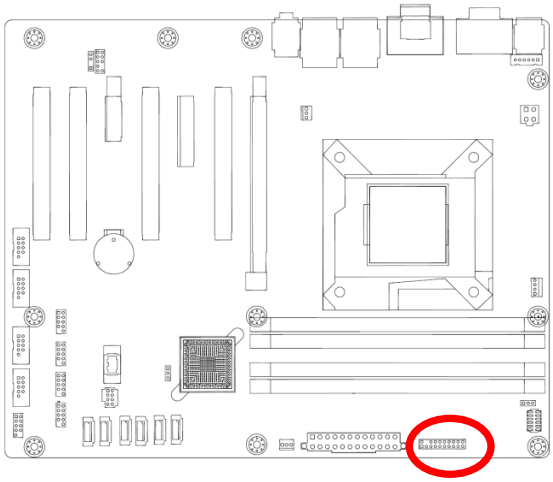
1.8.9 Digital Audio connector (SPDIF_OUT)

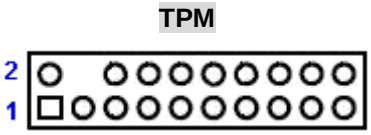
This connector is for the S/PDIF audio module to allow digital sound output. Connect one end of the S/PDIF audio cable to this connector and the other end to the S/PDIF module.





1.8.10 TPM Connector (TPM)

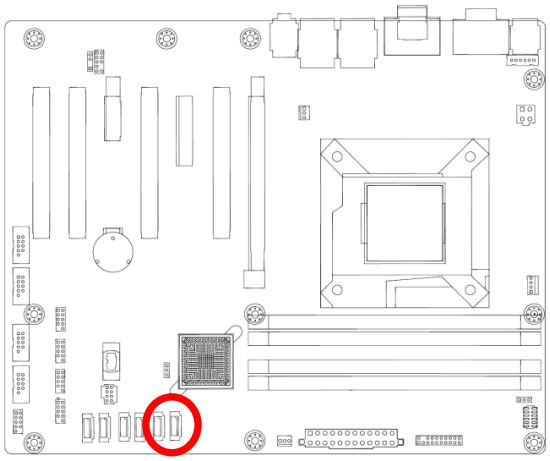


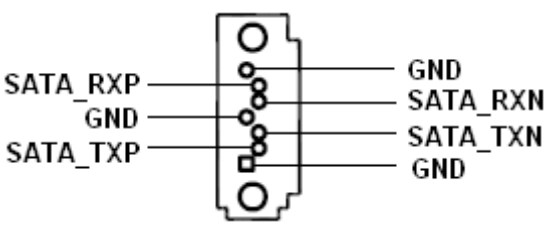


1.CLK33M_LPC	2.GND
3.LPC_FRAME#	4.NC
5.PLTRST_SIO#	6.NC
7.LPC_AD3	8.LPC_AD2
9.+V3.3	10.LPC_AD1
11.LPC_AD0	12.GND
13.NC	14.NC
15.+V3.3_DUAL	16.PCI_SERIRQ
17.GND	18.GND
19.LPCPD#	20.NC

1.8.11 Serial ATA 3.0 Connector (SATA1, SATA2)

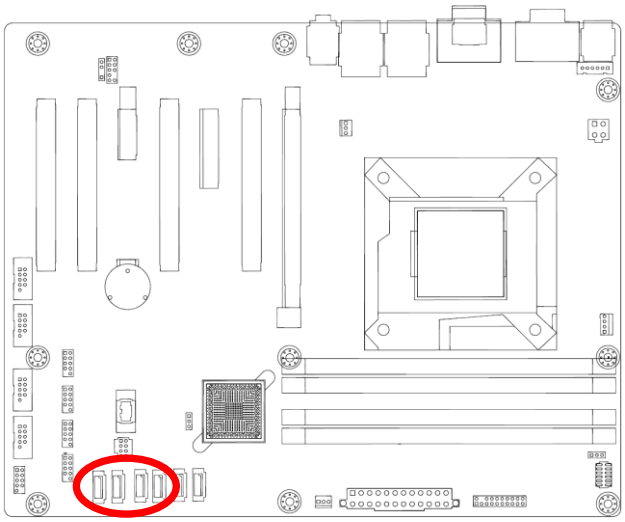
These connectors support SATA 3.0 and are for the Serial ATA signal cables for Serial ATA hard disk drives.



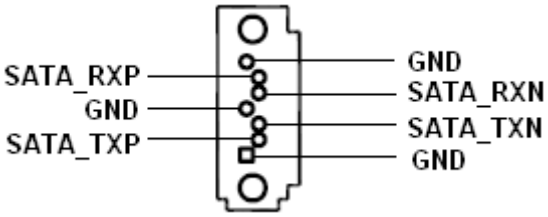


1.8.12 Serial ATA II Connector (SATA3 , SATA4 , SATA5, SATA6)

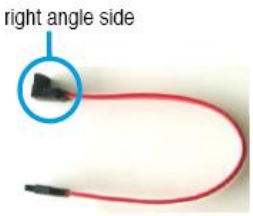
These connectors support SATA 2.0 and are for the Serial ATA signal cables for Serial ATA hard disk drives.



SATA3、SATA4、SATA5、SATA6

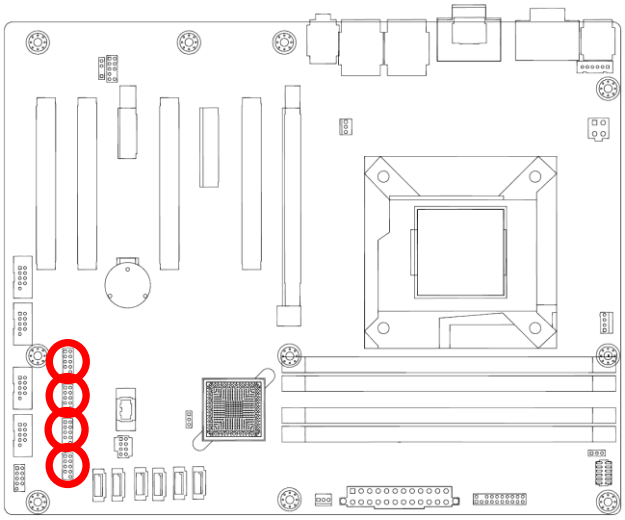


Connect the right-angle side of SATA signal cable to SATA device. Or you may connect the right-angle side of SATA cable to the onboard SATA port to avoid mechanical conflict with large graphics cards.



1.8.13 USB connectors (USB56, USB78, USB910, USB1112,)

These connectors are for USB 2.0 ports. Connect the optional USB module cable to any of these connectors, then install the module to a slot opening at the back of the system chassis. These USB connectors comply with USB 2.0 specification that supports up to 480 Mbps connection speed.



USB56, USB78, USB910, USB1112

	Never connect a **1394 cable** to the USB connectors. Doing so will damage the motherboard!
	The USB module is purchased separately.

This chapter tells how to change the system settings through the BIOS Setup menus. Detailed descriptions of the BIOS parameters are also provided.

2

Chapter 2 - BIOS Setup

2.1 BIOS Setup Program

This motherboard supports a programmable firmware chip that you can update using the provided utility. Use the BIOS Setup program when you are installing a motherboard, reconfiguring your system, or prompted to "Run Setup." This section explains how to configure your system using this utility.

Even if you are not prompted to use the Setup program, you can change the configuration of your computer in the future. For example, you can enable the security password feature or change the power management settings. This requires you to reconfigure your system using the BIOS Setup program so that the computer can recognize these changes and record them in the CMOS RAM of the firmware hub.

The firmware hub on the motherboard stores the Setup utility. When you start up the computer, the system provides you with the opportunity to run this program. Press <Del> during the Power-On-Self-Test (POST) to enter the Setup utility; otherwise, POST continues with its test routines.

If you wish to enter Setup after POST, restart the system by pressing <Ctrl+Alt+Delete>, or by pressing the reset button on the system chassis. You can also restart by turning the system off and then back on. Do this last option only if the first two failed.

The Setup program is designed to make it as easy to use as possible. Being a menu-driven program, it lets you scroll through the various sub-menus and make your selections from the available options using the navigation keys.

- The default BIOS settings for this motherboard apply for most conditions to ensure optimum performance. If the system becomes unstable after changing any BIOS settings, load the default settings to ensure system compatibility and stability. Select the **Load Optimized Defaults** from the BIOS menu screen.
- The BIOS setup screens shown in this section are for reference purposes only, and may not exactly match what you see on your screen.
- Visit the system builder's website to download the latest BIOS file for this motherboard

2.1.1 Legend Box

The keys in the legend bar allow you to navigate through the various setup menus

Key(s)	Function Description
← → ↓ ↑	Move
+ -	Value
Enter	Select
ESC	Exit
F1	General Help
F2	Previous Values
F3	Optimized Defaults
F4	Sace & Exit Setup

2.1.2 List Box

This box appears only in the opening screen. The box displays an initial list of configurable items in the menu you selected.

2.1.3 Sub-menu

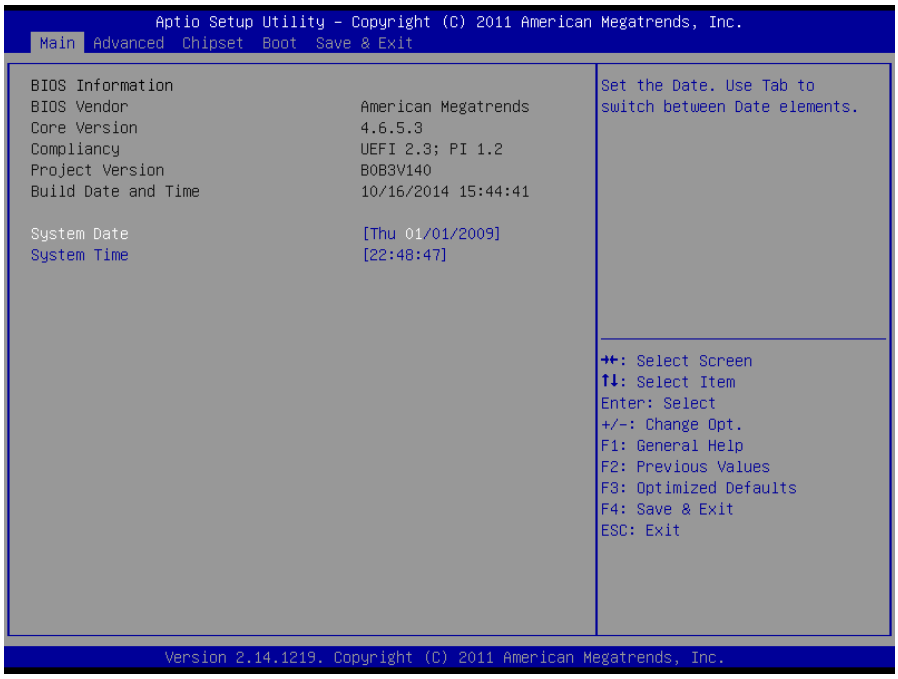
Note that a right pointer symbol  appears to the left of certain fields. This pointer indicates that you can display a sub-menu from this field. A sub-menu contains additional options for a field parameter. To display a sub-menu, move the highlight to the field and press <Enter>. The sub-menu appears. Use the legend keys to enter values and move from field to field within a sub-menu as you would within a menu. Use the <Esc> key to return to the main menu.

Take some time to familiarize yourself with the legend keys and their corresponding functions. Practice navigating through the various menus and submenus. If you accidentally make unwanted changes to any of the fields, press <F9> to load the optimal default values. While moving around through the Setup program, note that explanations appear in the Item Specific Help window located to the right of each menu. This window displays the help text for the currently highlighted field.

2.2 BIOS Menu Screen

2.2.1 Main Menu

This section allows you to record some basic hardware configurations in your computer and set the system clock.



2.2.1.1 System Date

Use the system date option to set the system date. Manually enter the day, month and year.

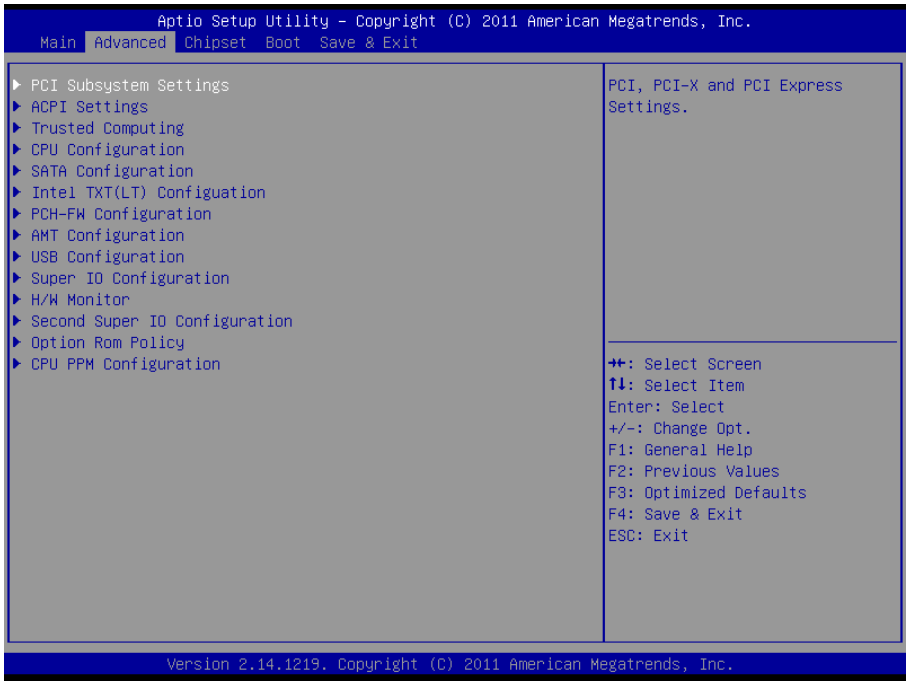
2.2.1.2 System Time

Use the system time option to set the system time. Manually enter the hours, minutes and seconds.

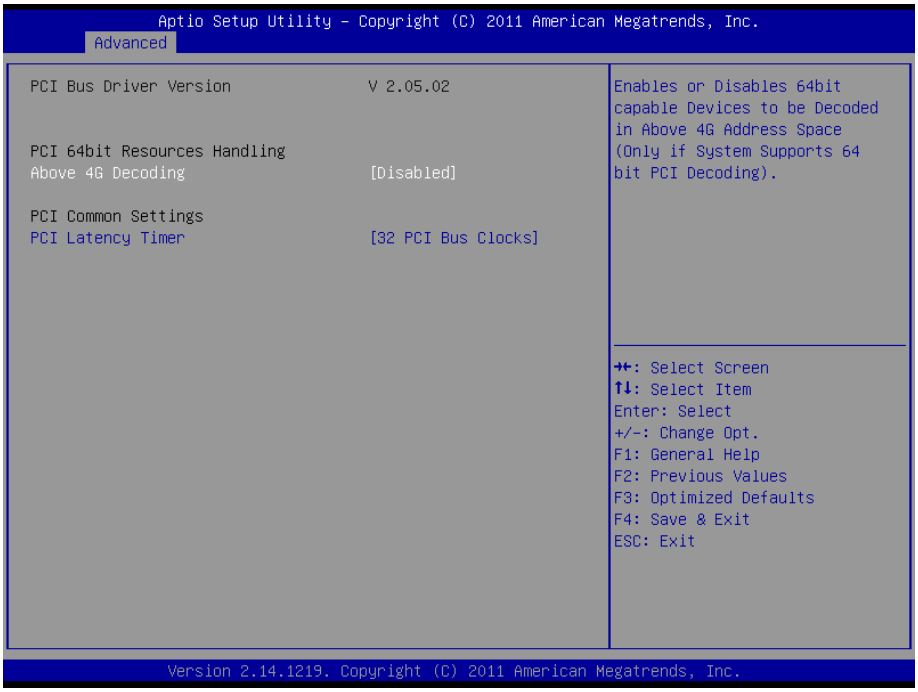
Note: The BIOS setup screens shown in this chapter are for reference purposes only, and may not exactly match what you see on your screen.
Visit the Avalue website (www.avalue.com.tw) to download the latest product and BIOS information.

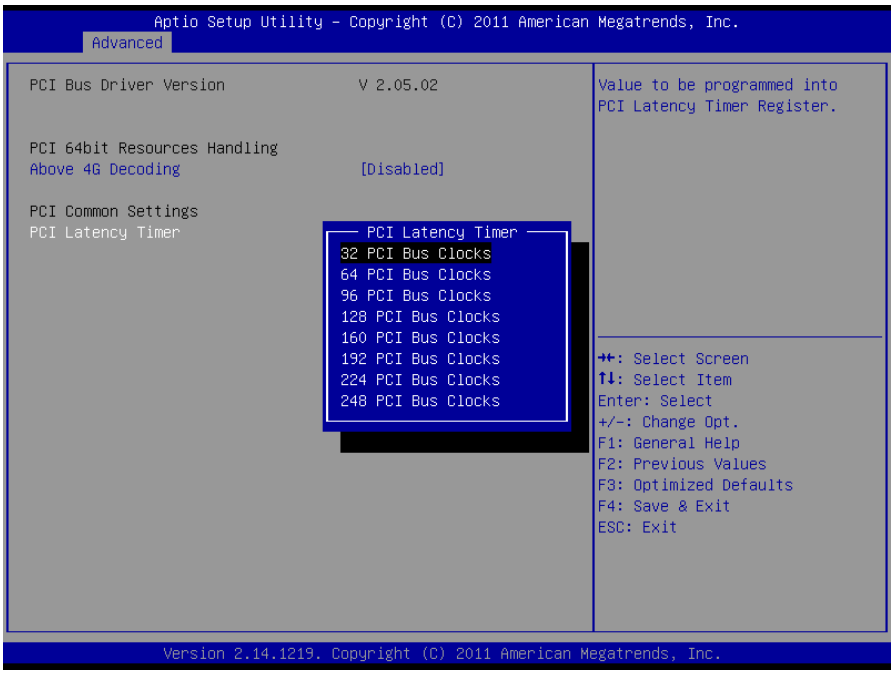
2.2.2 Advanced Menu

This section allows you to configure your CPU and other system devices for basic operation through the following sub-menus.



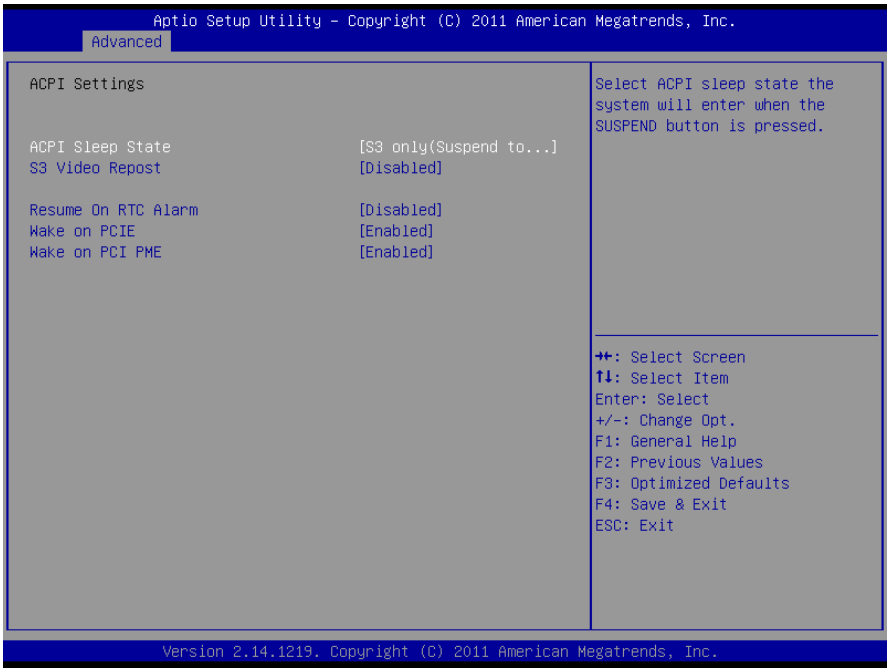
2.2.2.1 PCI Subsystem Settings

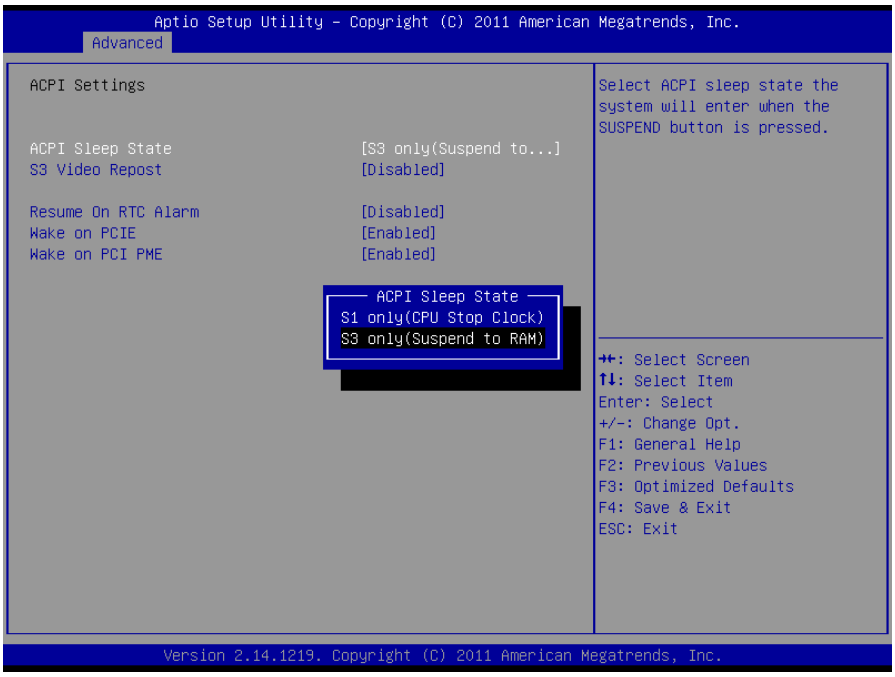


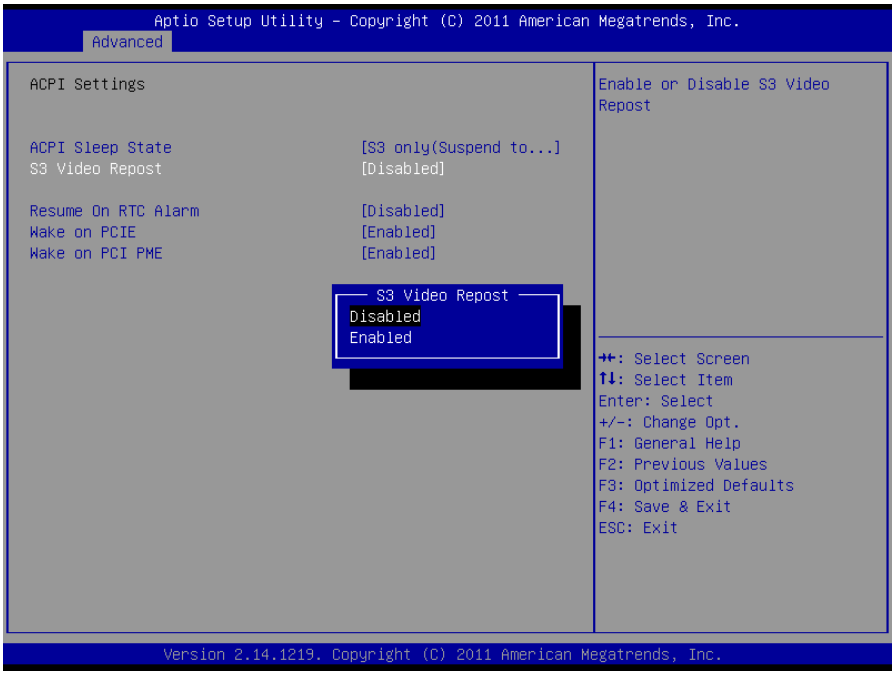


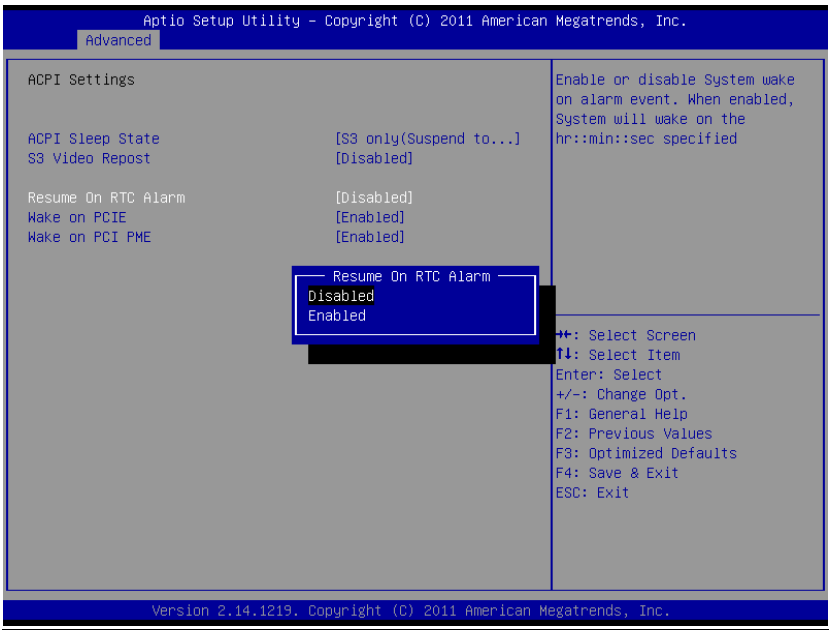
Item	Options	Description
Above 4G Decoding	Disabled**[Default]**, Enabled	Enables or Disables 64bit capable Devices to be Decoded in Above 4G Address Space (Only if System Supports 64 bit PCI Decoding).
PCI Latency Timer	32 PCI Bus Clocks**[Default]** 64 PCI Bus Clocks 96 PCI Bus Clocks 128 PCI Bus Clocks 160 PCI Bus Clocks 192 PCI Bus Clocks 224 PCI Bus Clocks 248 PCI Bus Clocks	Value to be programmed into PCI Latency Timer Register.

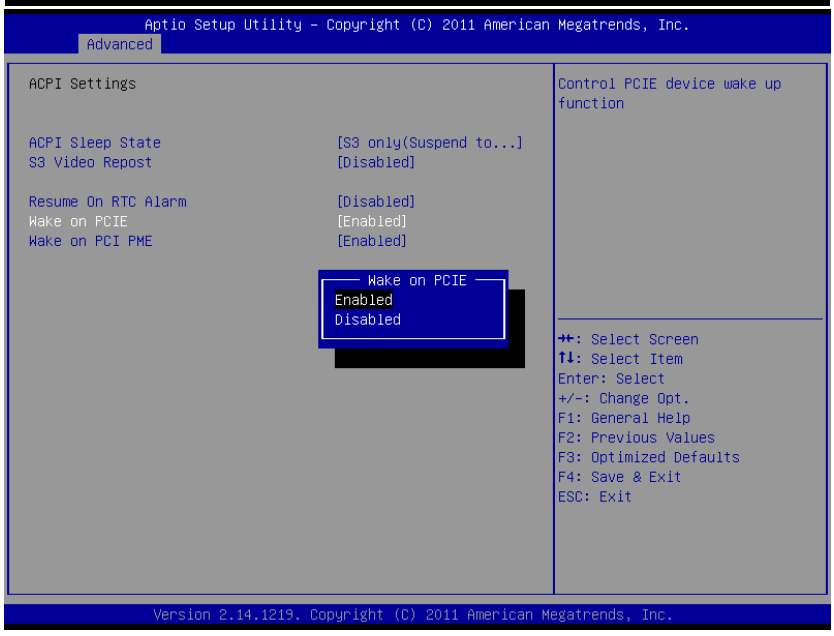
2.2.2.2 APCI Settings

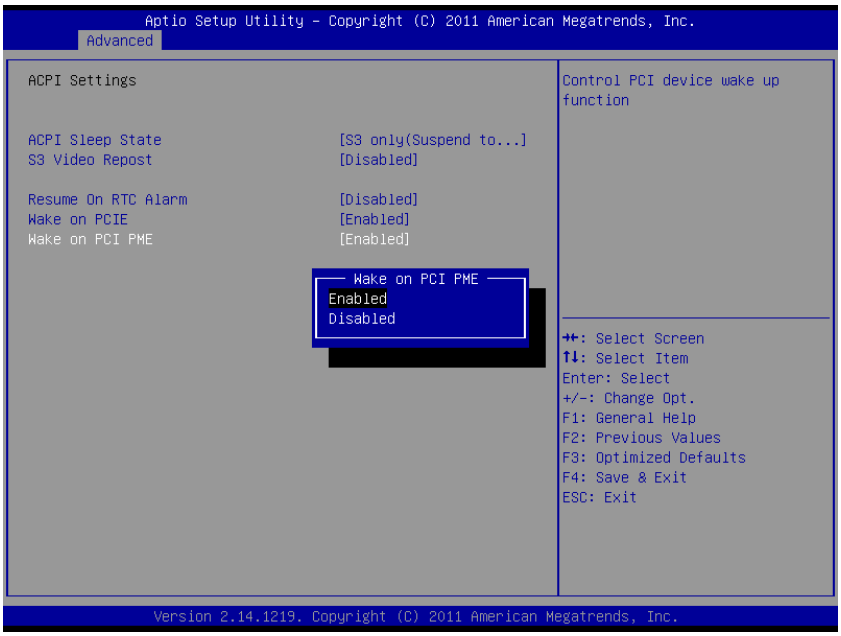



Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
ACPI Settings
ACPI Sleep State [S3 only(Suspend to...]
S3 Video Repost [Disabled]
Resume On RTC Alarm [Disabled]
Wake on PCIE [Enabled]
Wake on PCI PME [Enabled]
ACPI Sleep State
S1 only(CPU Stop Clock)
S3 only(Suspend to RAM)
Select ACPI sleep state the system will enter when the SUSPEND button is pressed.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
ACPI Settings
ACPI Sleep State [S3 only(Suspend to...]
S3 Video Repost [Disabled]
Resume On RTC Alarm [Disabled]
Wake on PCIE [Enabled]
Wake on PCI PME [Enabled]
S3 Video Repost
Disabled
Enabled
Enable or Disable S3 Video Repost
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

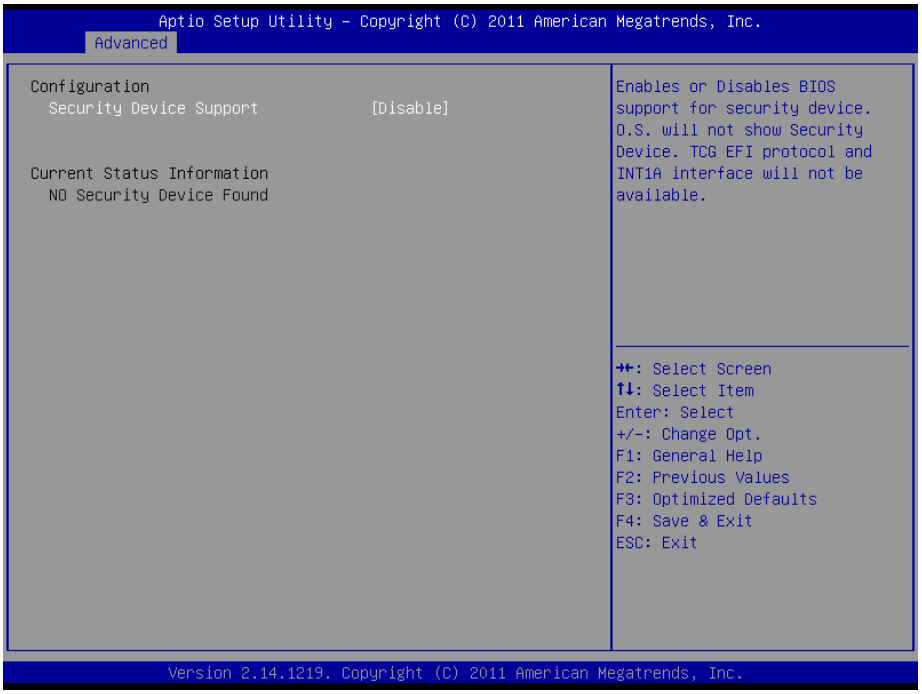

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
ACPI Settings
ACPI Sleep State [S3 only(Suspend to...]
S3 Video Repost [Disabled]
Resume On RTC Alarm [Disabled]
Wake on PCIE [Enabled]
Wake on PCI PME [Enabled]
Resume On RTC Alarm
Disabled
Enabled
Enable or disable System wake on alarm event. When enabled, System will wake on the hr::min::sec specified
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
ACPI Settings
ACPI Sleep State [S3 only(Suspend to...]
S3 Video Repost [Disabled]
Resume On RTC Alarm [Disabled]
Wake on PCIE [Enabled]
Wake on PCI PME [Enabled]
Wake on PCIE
Enabled
Disabled
Control PCIE device wake up function
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
ACPI Settings
ACPI Sleep State [S3 only(Suspend to...]
S3 Video Repost [Disabled]
Resume On RTC Alarm [Disabled]
Wake on PCIE [Enabled]
Wake on PCI PME [Enabled]
Wake on PCI PME
Enabled
Disabled
Control PCI device wake up function
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

Item	Options	Description
APCI Sleep State	S1 only(CPU Stop Clock) **[Default]** S3 only(Suspend to RAM)	Select ACPI sleep state the system will enter when the SUSPEND button is pressed.
S3 Video Repost	Disabled**[Default]** Enabled	Enable or Disable S3 Video Repost.
Resume On RTC Alarm	Disabled**[Default]** Enabled	Enable or disable System wake on alarm event. When enabled, System will wake on the hr::min::sec specified.
Wake on PCIE	Disabled Enabled**[Default]**	Control PCIE device wake up function.
Wake on PCI PME	Disabled Enabled**[Default]**	Control PCI device wake up function.

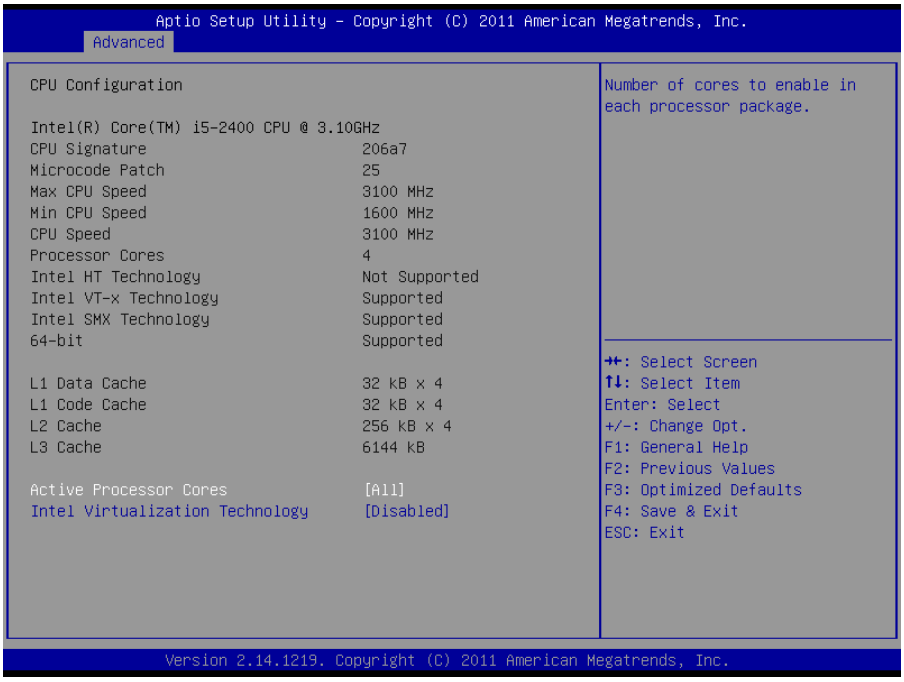
2.2.2.3 Trusted Computing

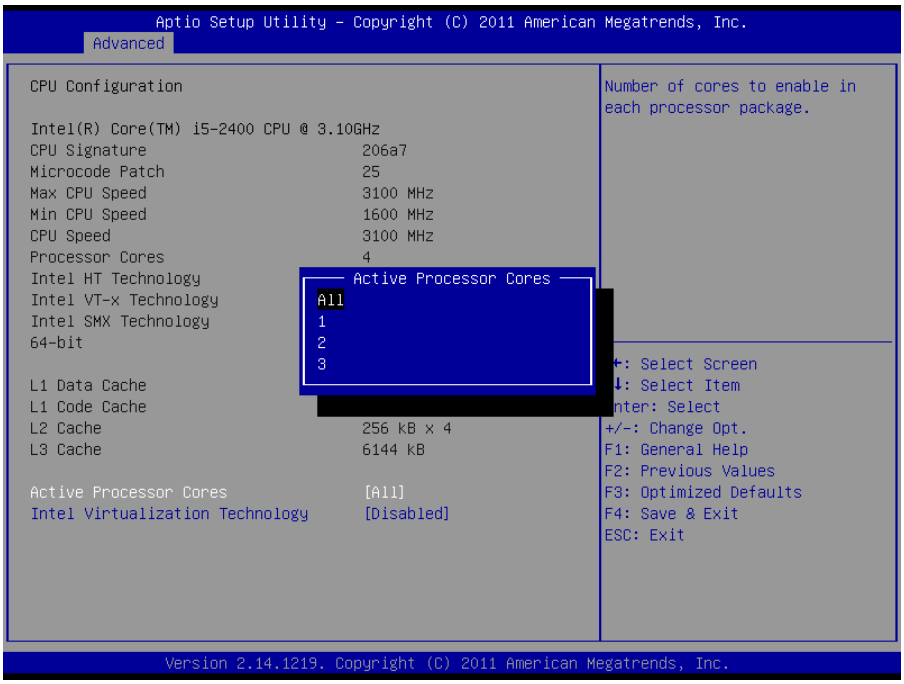


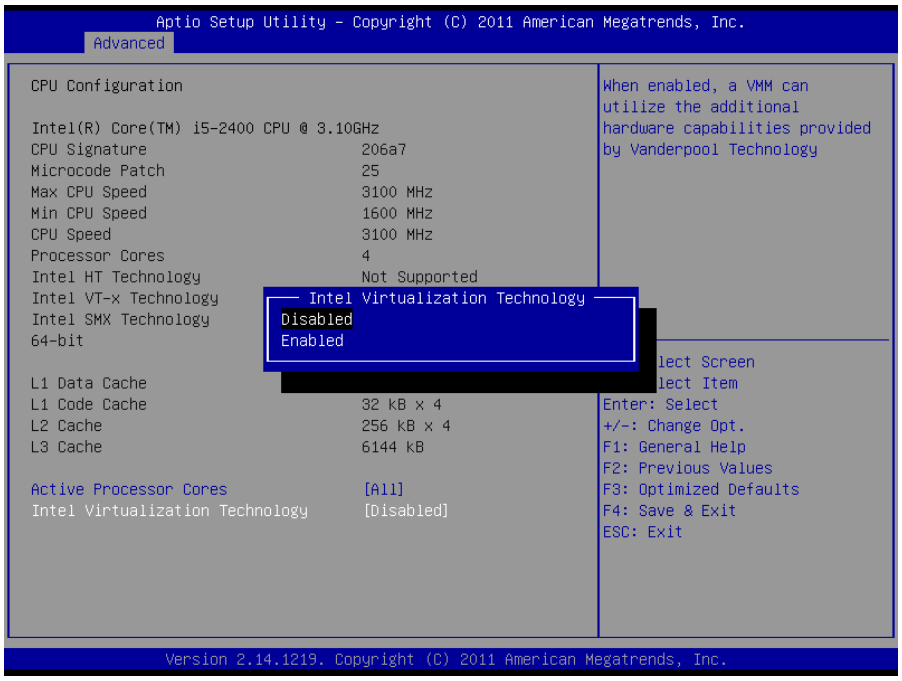
Item	Options	Description
Security Device Support	Disabled**[Default]**, Enabled	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

2.2.2.4 CPU Configuration

Use the CPU configuration menu to view detailed CPU specification and configure the CPU.



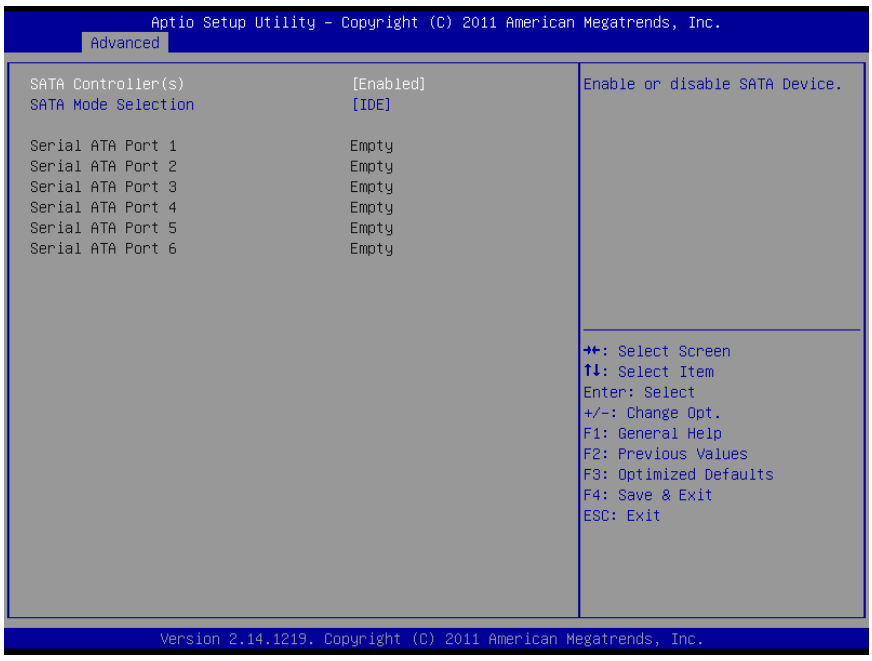


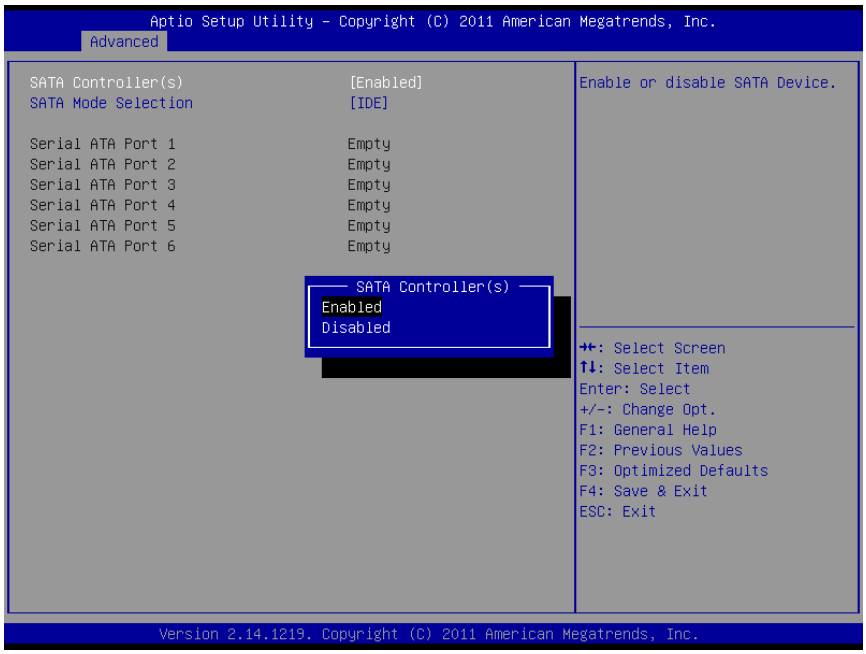


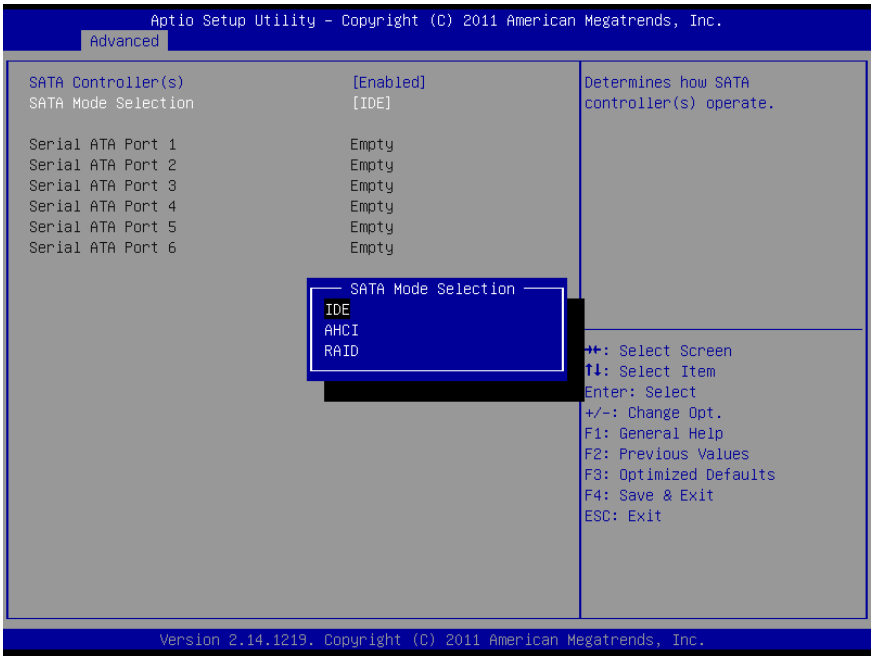
Item	Options	Description
Active Processor Cores	All**[Default]**, 1 2 3	Number of cores to enable in each processor package.
Intel Virtualization Technology	Disabled, Enabled**[Default]**	When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

2.2.2.5 SATA Configuration

It allows you to select the operation mode for SATA controller.

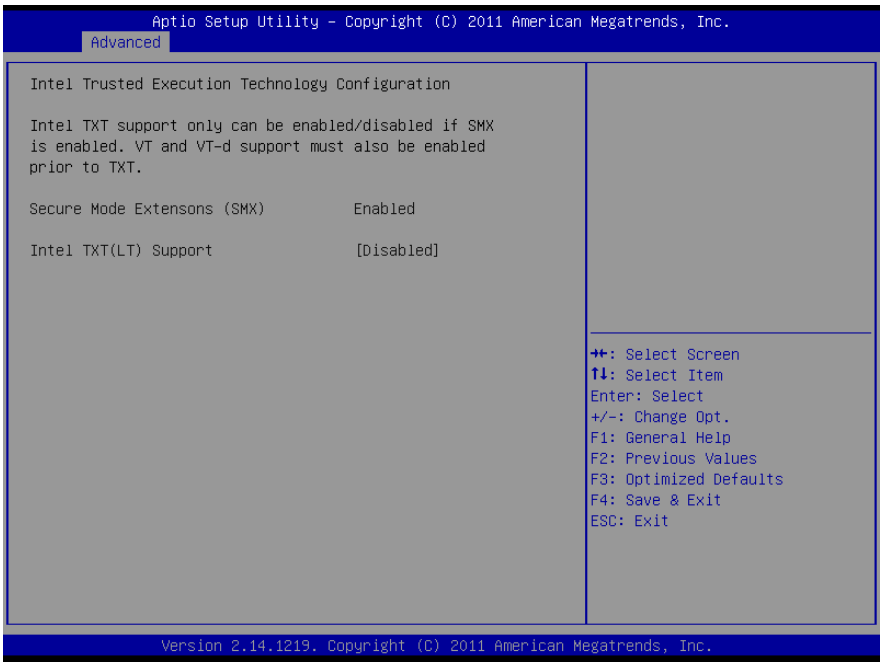




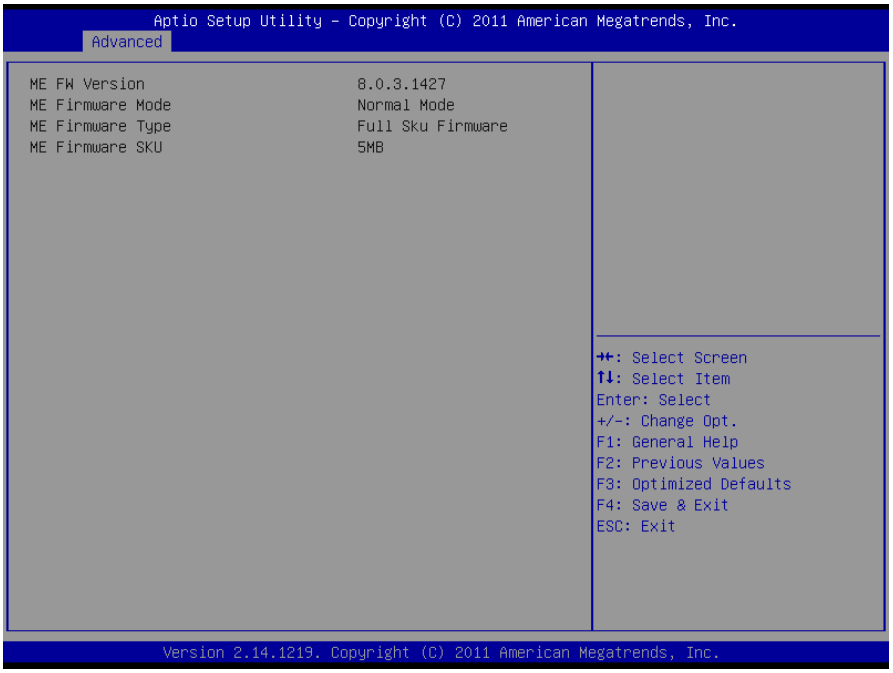


Item	Options	Description
SATA Controller(s)	Enabled**[Default]** Disabled	Enable or disable SATA Device.
SATA Mode Selection	IDE**[Default]** AHCI RAID	Determines how SATA controller(s) operate.

2.2.2.6 Intel TXT (LT) Configuration

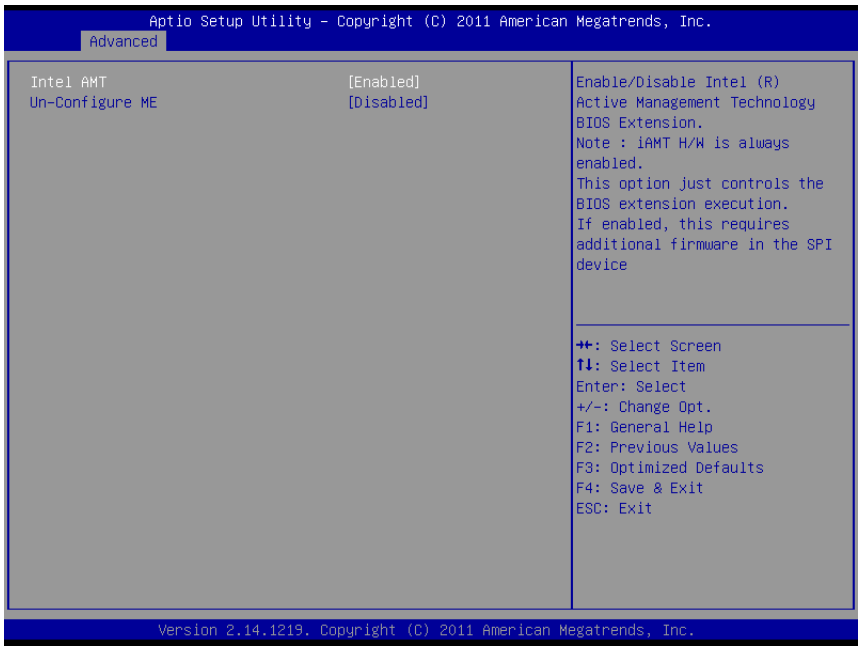


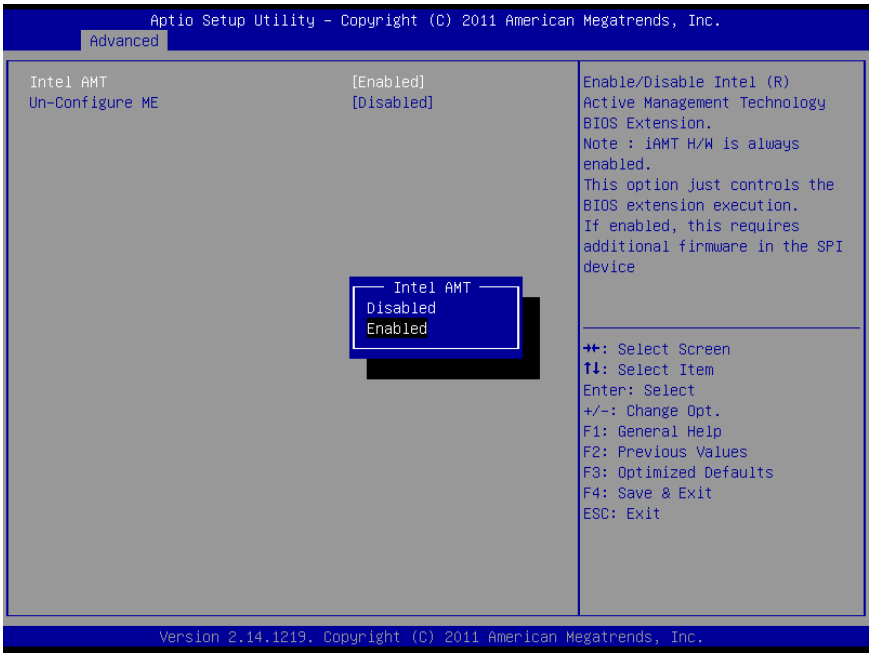
2.2.2.7 PCH-FW Configuration

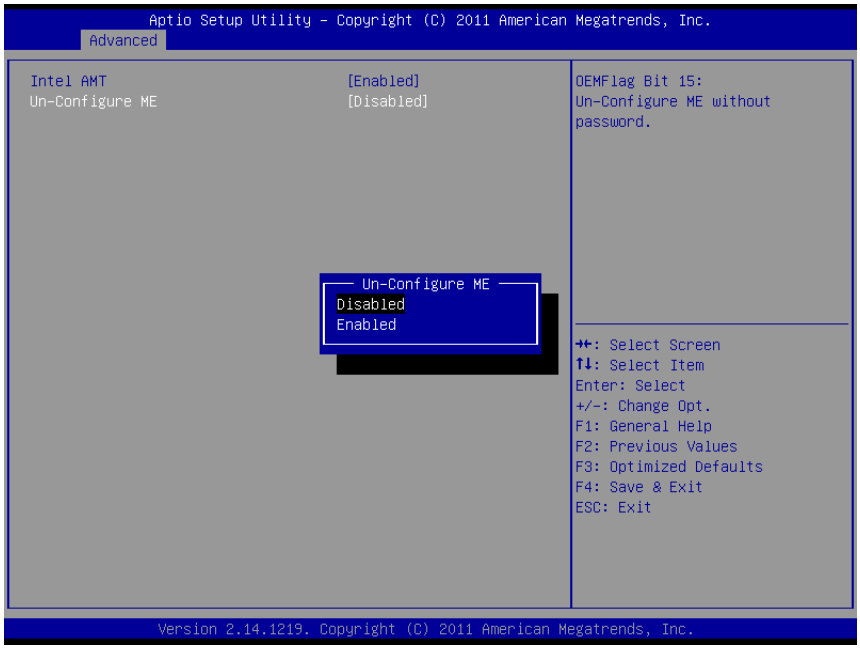


2.2.2.8 AMT Configuration

Intel AMT allows hardware-based remote management, security, power-management, and remote-configuration features.



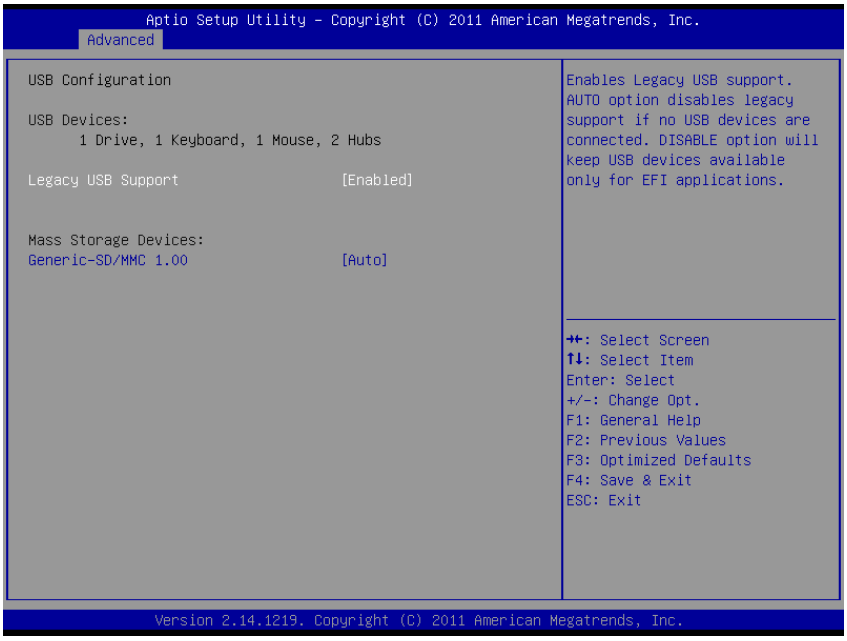


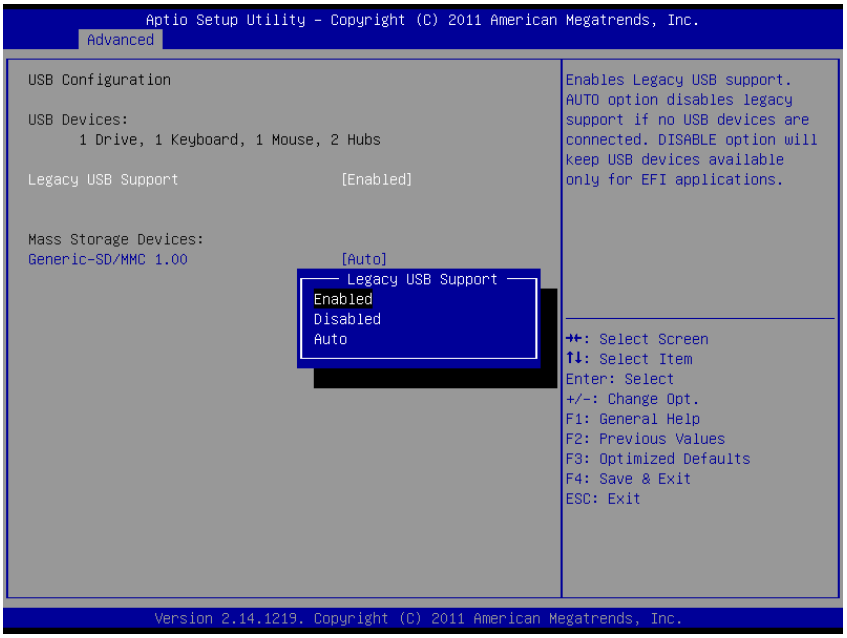


Item	Options	Description
Intel AMT	Enabled**[Default]** Disabled	Enable/Disable Intel ® Active Management Technology BIOS Extension. Note: iAMT H/W is always enabled. This option just controls the BIOS extension execution. If enabled, this requires additional firmware in the SPI device
Un-Configure ME	Enabled Disabled**[Default]**	OEMFlag Bit 15: Un-Configure ME without password.

2.2.2.9 USB Configuration

The USB Configuration menu helps read USB information and configures USB settings.

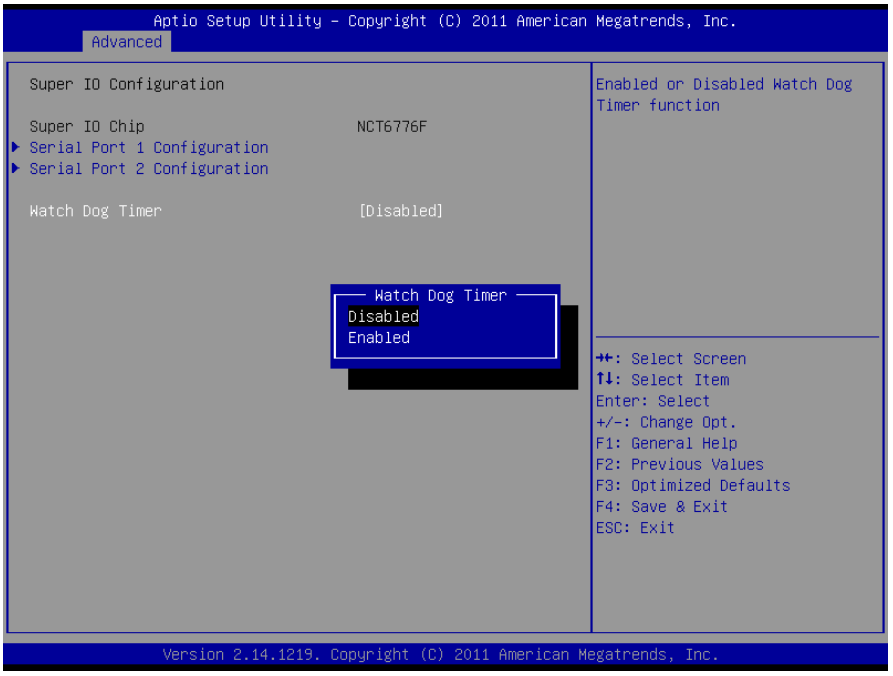




Item	Options	Description
Legacy USB Support	Enabled**[Default]** Disabled Auto	Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
Generic-SD/MMC 1.00	Auto**[Default]** Floppy Forced FDD Hard Disk CD-ROM	Mass storage device emulation type. 'AUTO' enumerates devices according to their media format. Optical drives are emulated as 'CDROM', drives with no media will be emulated according to a drive type.

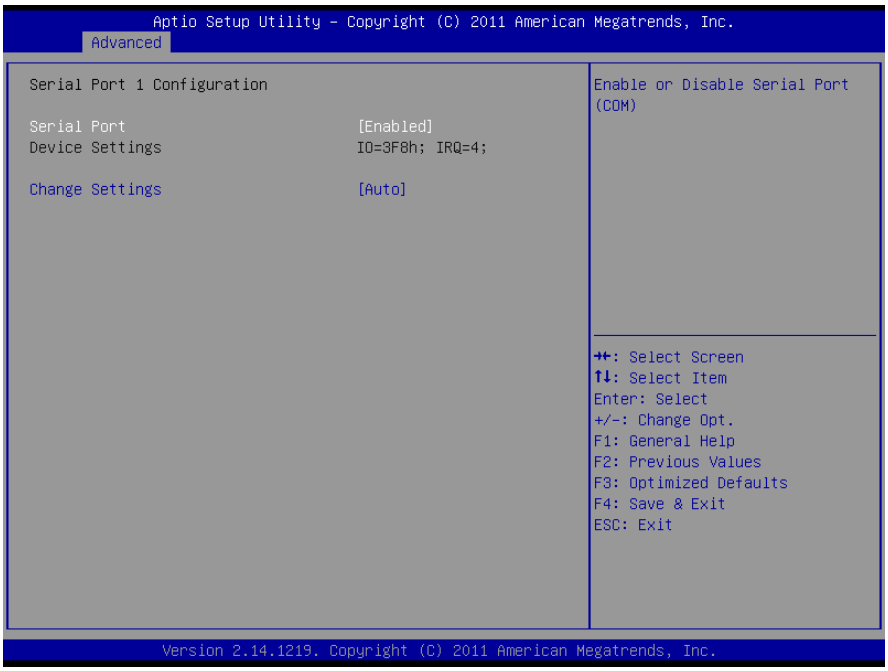
2.2.2.10 Super IO Configuration

You can use this item to set up or change the Super IO configuration for serial ports. Please refer to 2.2.2.10.1 and 2.2.2.10.2 for more information.



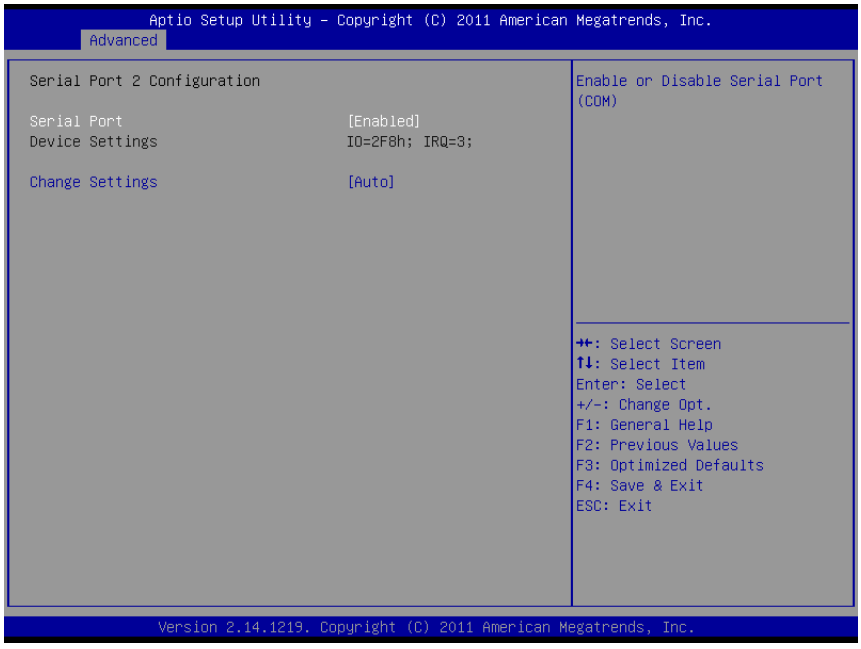
Item	Options	Description
Watch Dog Timer	Disabled **[Default]** Enabled	Enables or Disabled Watch Dog Timer function.

2.2.2.10.1 Serial Port 1 Configuration



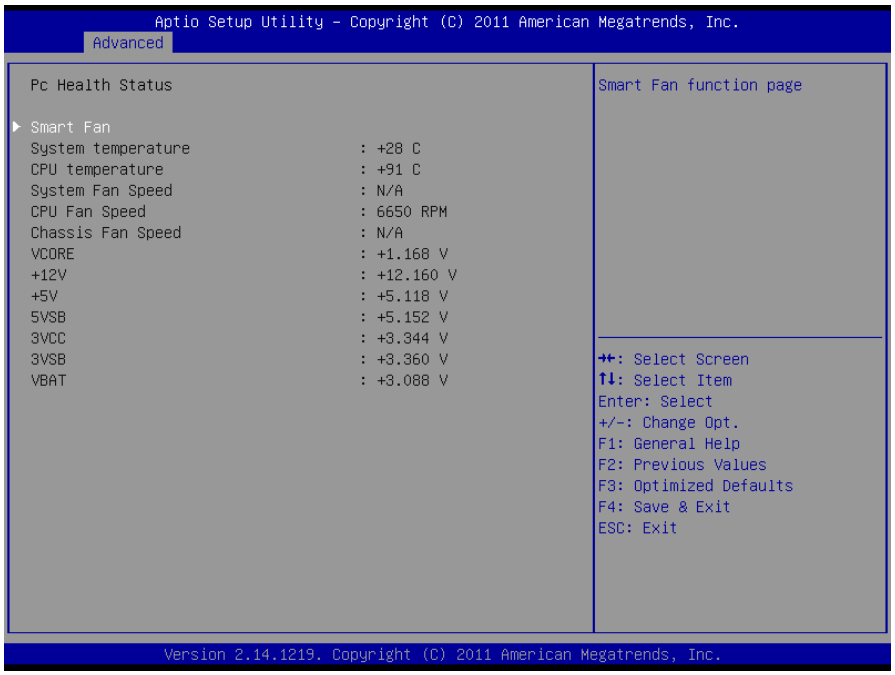
Item	Option	Description
Serial Port	Enabled**[Default]**, Disabled	Enable or Disable Serial Port (COM).
Change Settings	Auto**[Default]** IO=3F8h; IRQ=4, IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12; IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;	Select an optimal setting for Super IO device.

2.2.2.10.2 Serial Port 2 Configuration

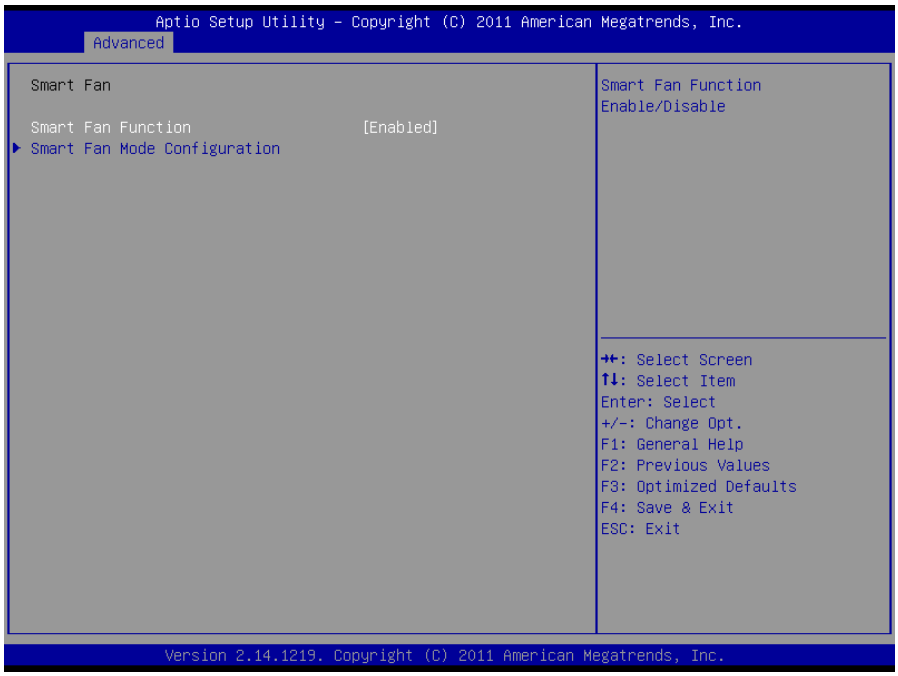


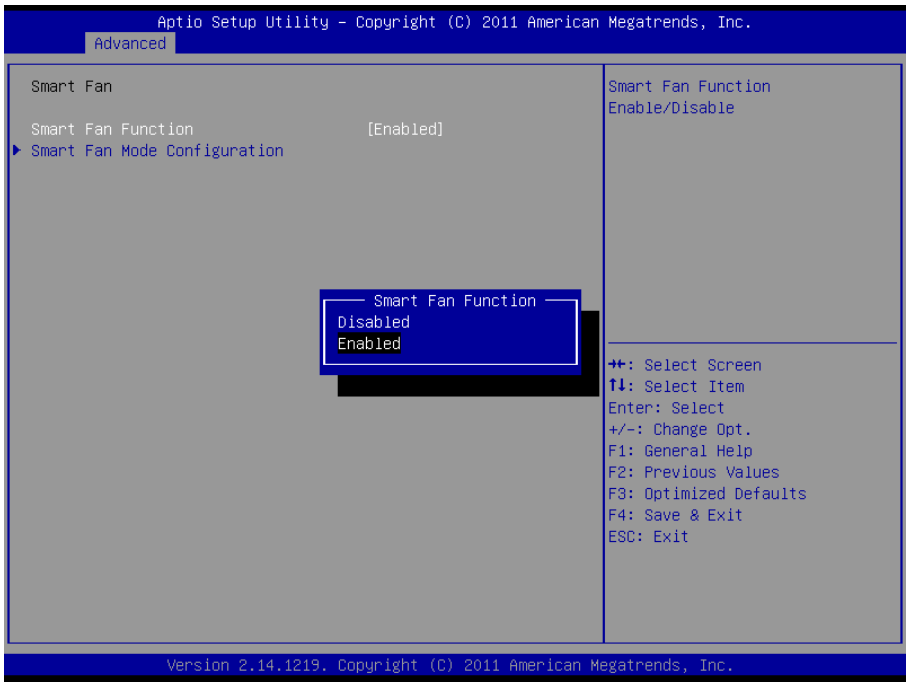
Item	Option	Description
Serial Port	Enabled**[Default]**, Disabled	Enable or Disable Serial Port (COM).
Change Settings	Auto**[Default]** IO=2F8h; IRQ=3 IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12; IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;	Select an optimal setting for super IO device.

2.2.2.11 H/W Monitor



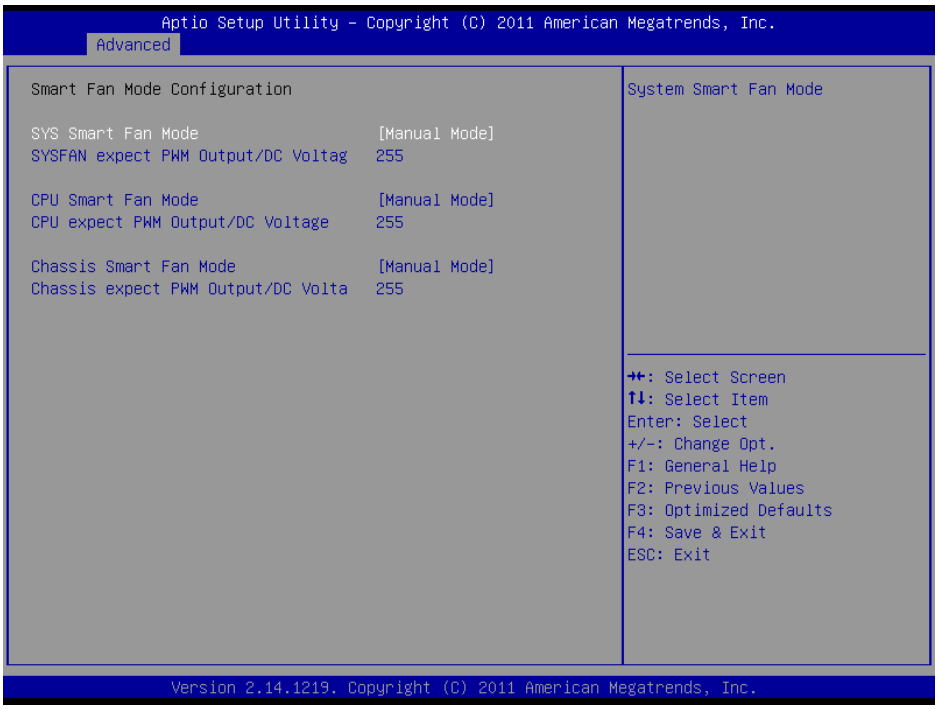
2.2.2.11.1 Smart Fan





Item	Option	Description
Smart Fan Function	Enabled**[Default]**, Disabled	Smart Fan Function Enable/Disable.

2.2.2.11.1.1 Smart Fan Mode Configuration

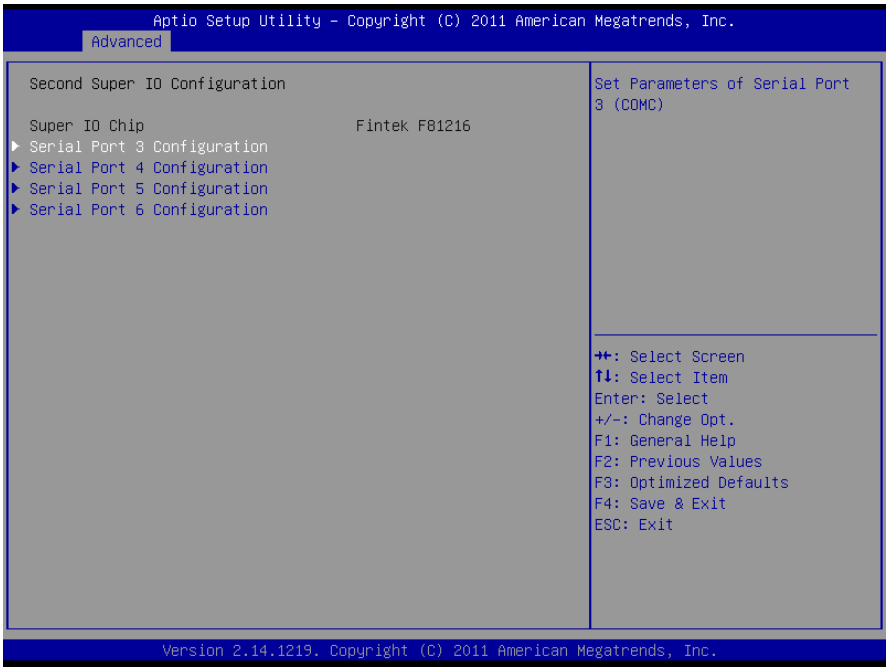


Item	Option	Description
SYS Smart Fan Mode	Manual Mode**[Default]**, Thermal Cruise Mode	SYS Smart Fan Mode.

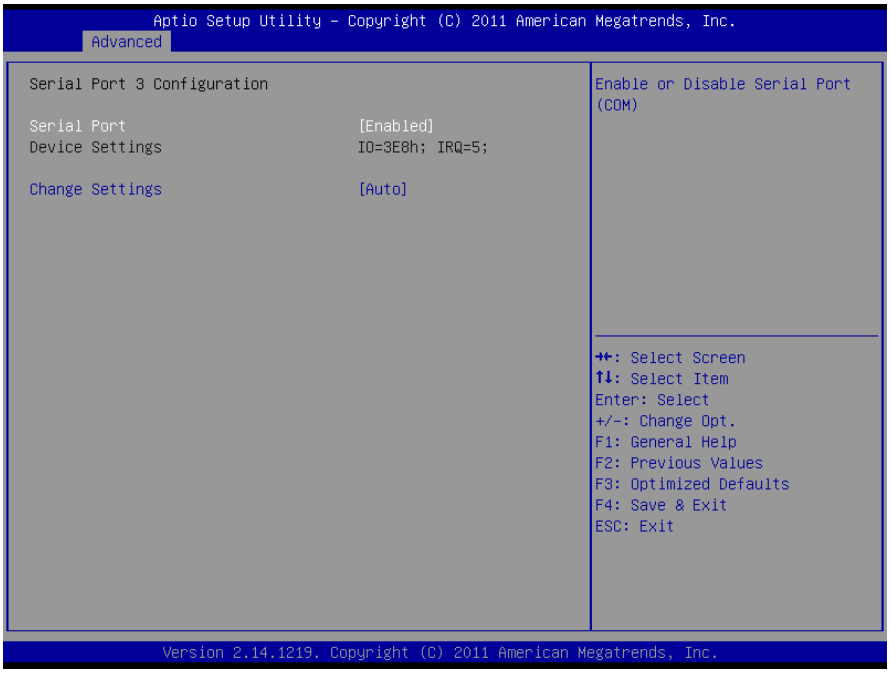
SYSFAN expect PWM Output/DC Voltag	0-255	System FAN expect PWM Output/DC Voltage.
CPU Smart Fan Mode	Manual Mode**[Default]**, Thermal Cruise Mode	CPU Smart Fan Mode.
CPU expect PWM Output/DC Voltage	0-255	CPU expect PWM Output/DC Voltage.
Chassis Smart Fan Mode	Manual Mode**[Default]**, Thermal Cruise Mode	Chassis Smart Fan Mode.
Chassis expect PWM Output/DC Voltage	0-255	Chassis expect PWM Output/DC Voltage.

2.2.2.12 Second Super IO Configuration

You can use this item to set up or change the Super IO configuration for serial ports. Please refer to 2.2.2.12.1, 2.2.2.12.2, 2.2.2.12.3 and 2.2.2.12.4 for more information.

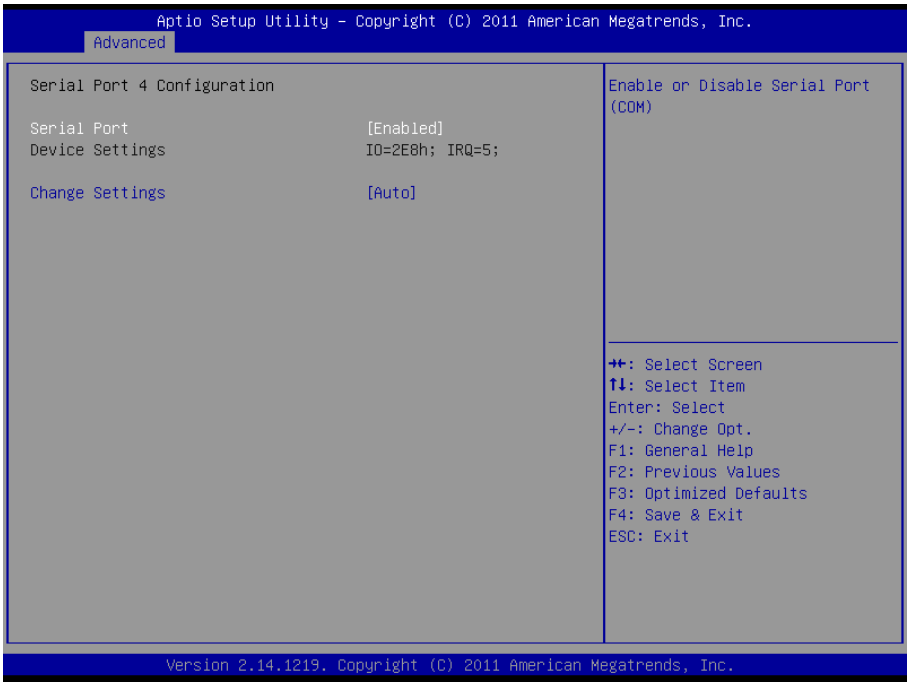


2.2.2.12.1 Serial Port 3 Configuration



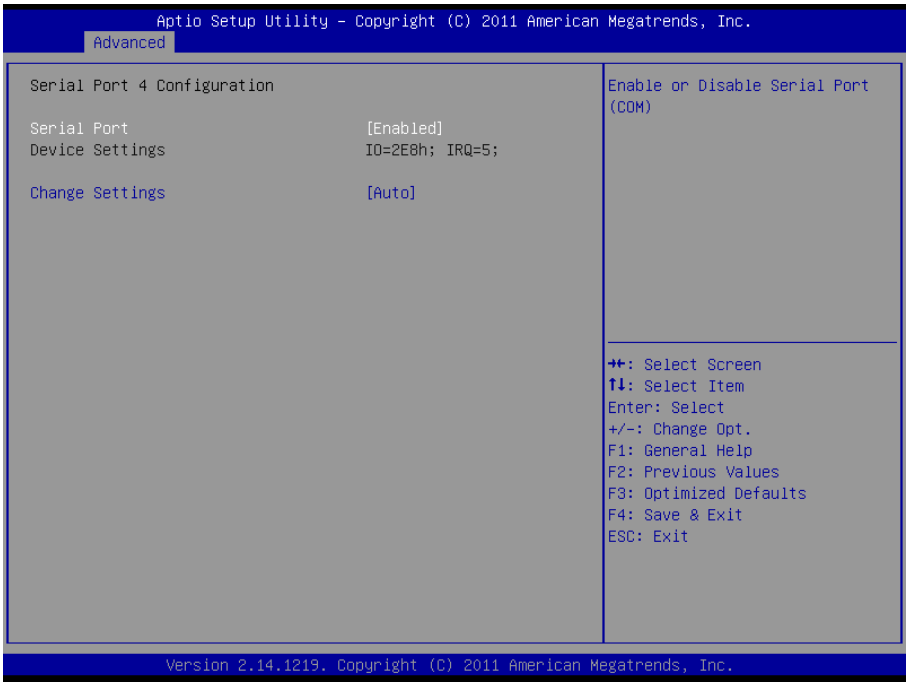
Item	Option	Description
Serial Port	Enabled**[Default]**, Disabled	Enable or Disable Serial Port (COM).
Change Settings	Auto**[Default]** IO=3E8h; IRQ=5, IO=3F8h; IRQ=5,10; IO=2F8h; IRQ=5,10; IO=3E8h; IRQ=5,10; IO=2E8h; IRQ=5,10;	Select an optimal setting for Super IO device.

2.2.2.12.2 Serial Port 4 Configuration



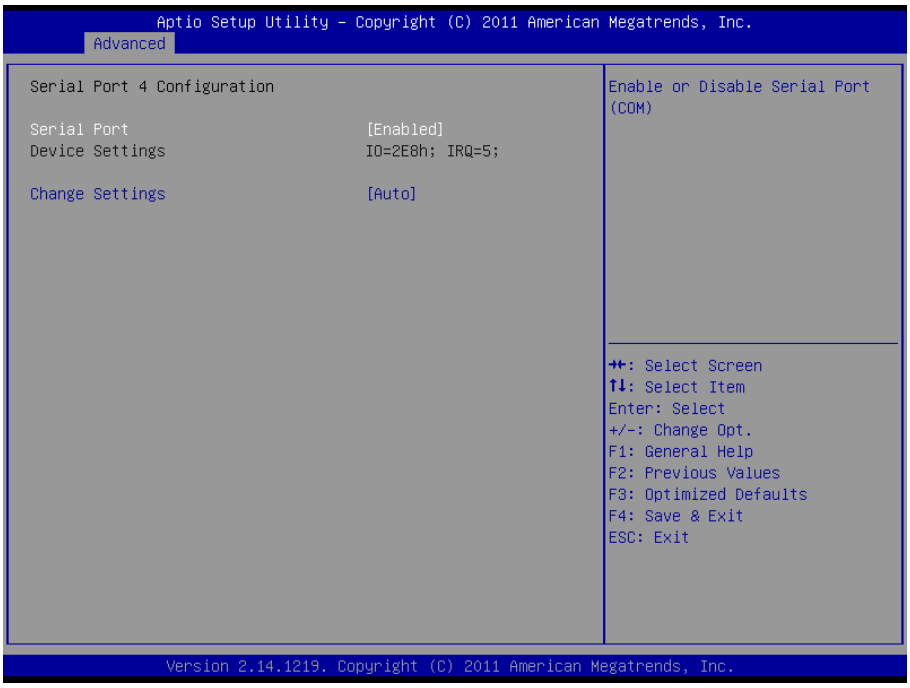
Item	Option	Description
Serial Port	Enabled**[Default]**, Disabled	Enable or Disable Serial Port (COM).
Change Settings	Auto**[Default]** IO=2E8h; IRQ=5, IO=3F8h; IRQ=5,10; IO=2F8h; IRQ=5,10; IO=3E8h; IRQ=5,10; IO=2E8h; IRQ=5,10;	Select an optimal setting for super IO device.

2.2.2.12.3 Serial Port 5 Configuration



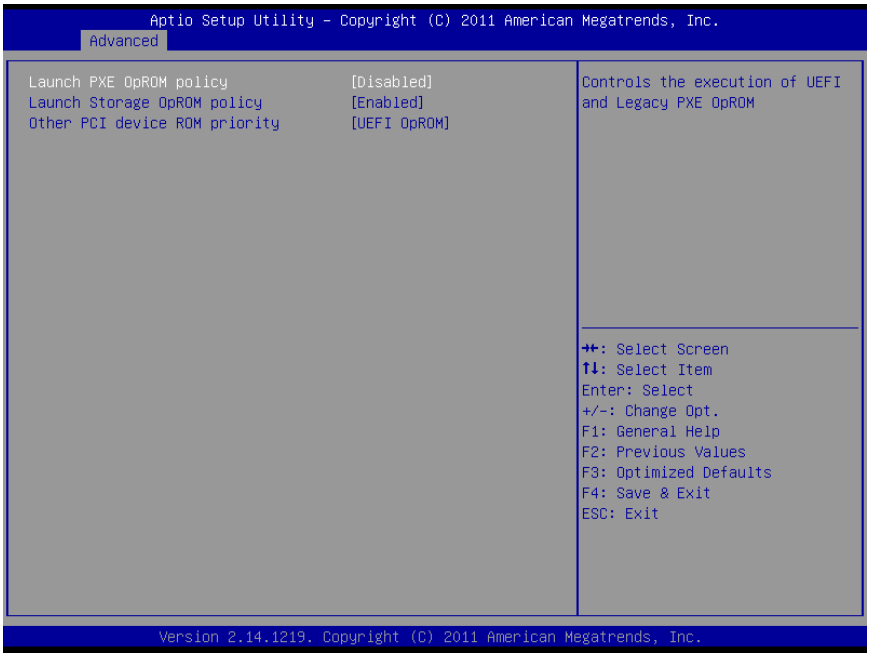
Item	Option	Description
Serial Port	Enabled**[Default]**, Disabled	Enable or Disable Serial Port (COM).
Change Settings	Auto**[Default]** IO=2E0h; IRQ=10, IO=3F8h; IRQ=5,10; IO=2F8h; IRQ=5,10; IO=3E8h; IRQ=5,10; IO=2E8h; IRQ=5,10; IO=2E0h; IRQ=5,10; IO=2F0h; IRQ=5,10;	Select an optimal setting for super IO device.

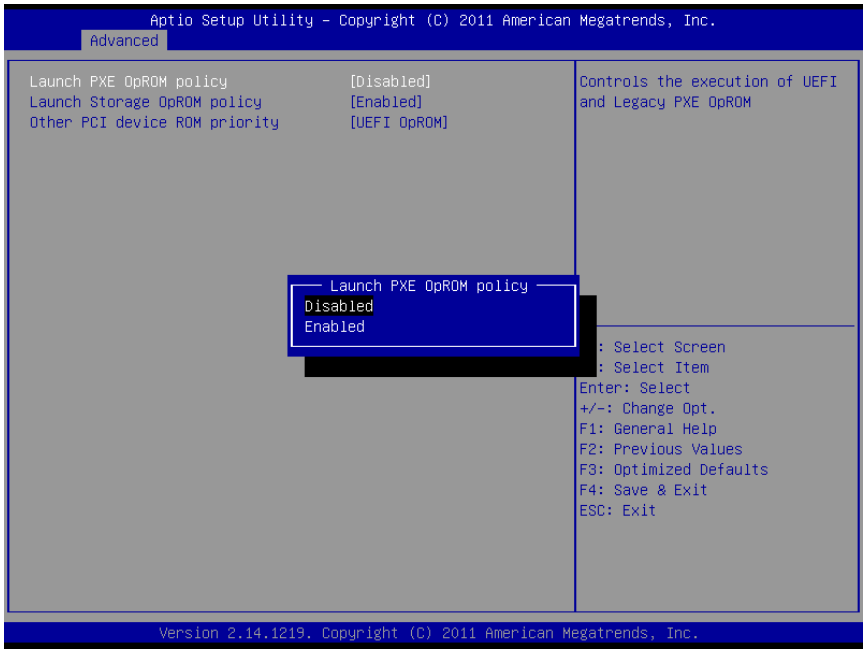
2.2.2.12.4 Serial Port 6 Configuration

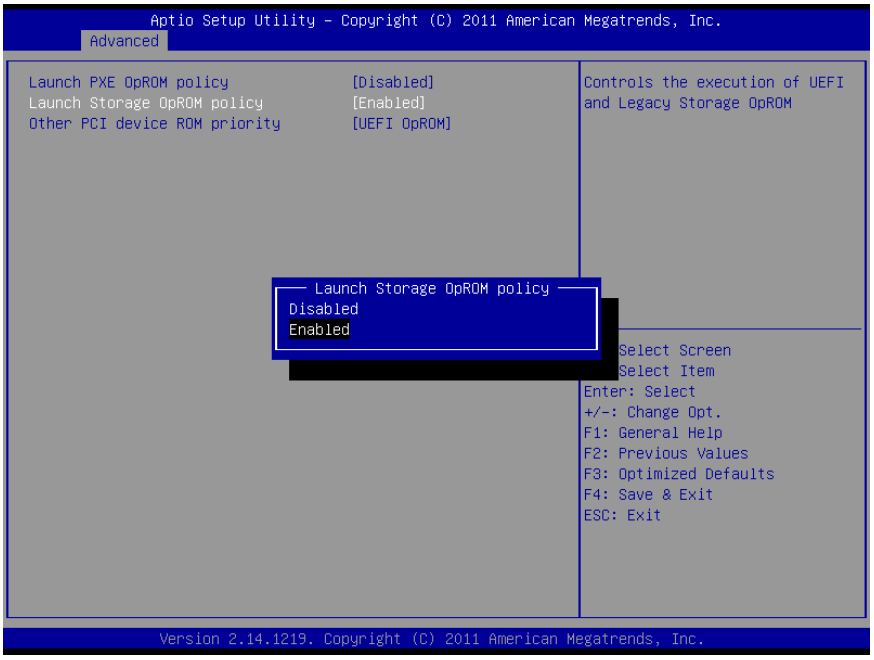


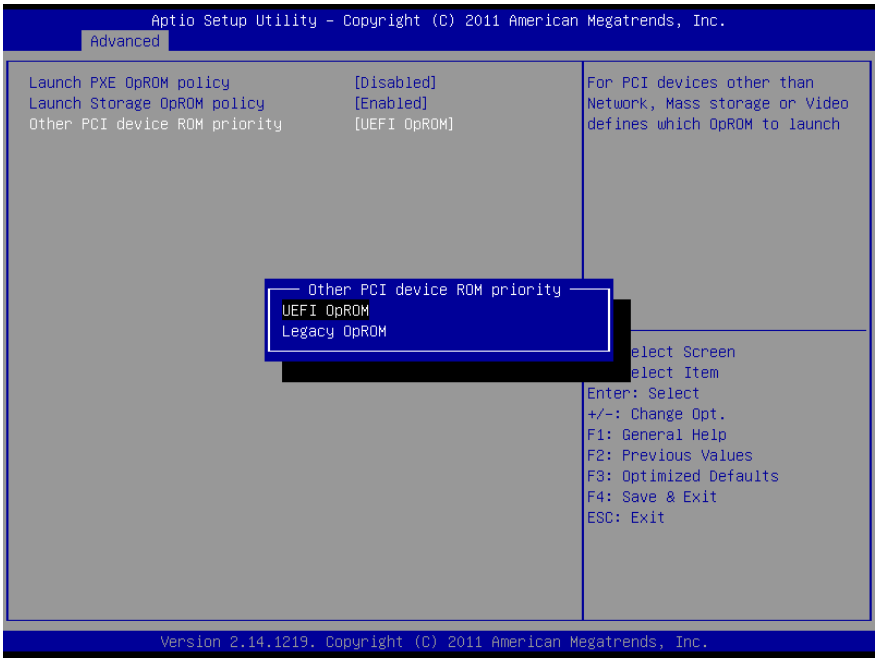
Item	Option	Description
Serial Port	Enabled**[Default]**, Disabled	Enable or Disable Serial Port (COM).
Change Settings	Auto**[Default]** IO=2F0h; IRQ=10, IO=3F8h; IRQ=5,10; IO=2F8h; IRQ=5,10; IO=3E8h; IRQ=5,10; IO=2E8h; IRQ=5,10; IO=2E0h; IRQ=5,10; IO=2F0h; IRQ=5,10;	Select an optimal setting for super IO device.

2.2.2.13 CSM parameters



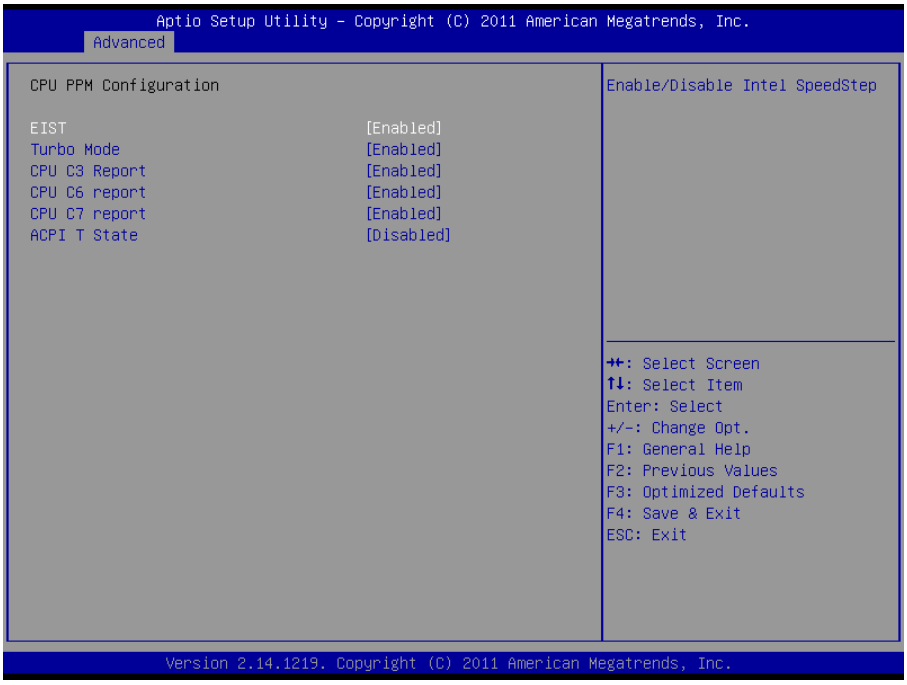


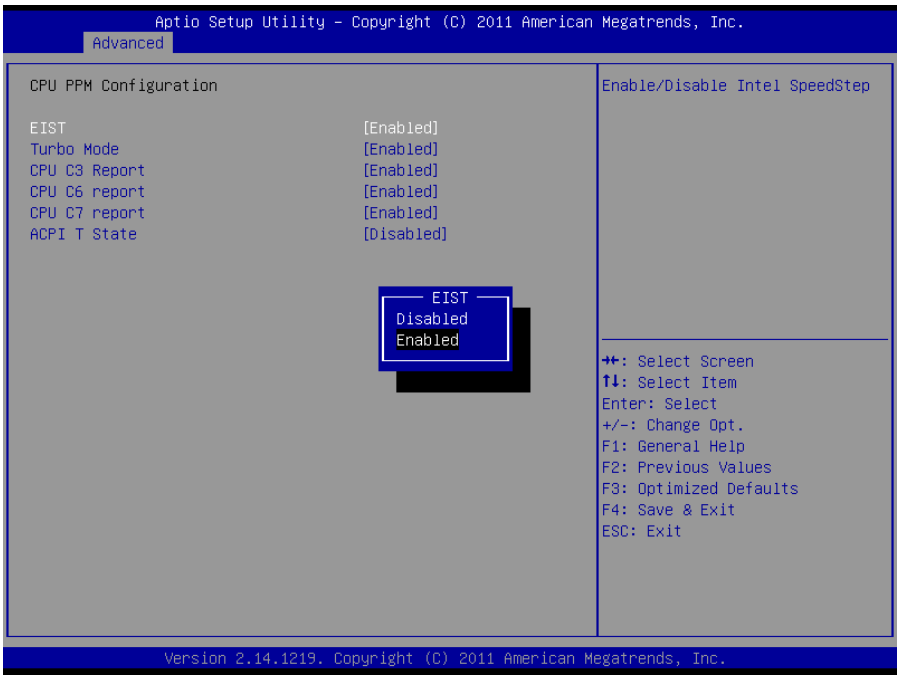


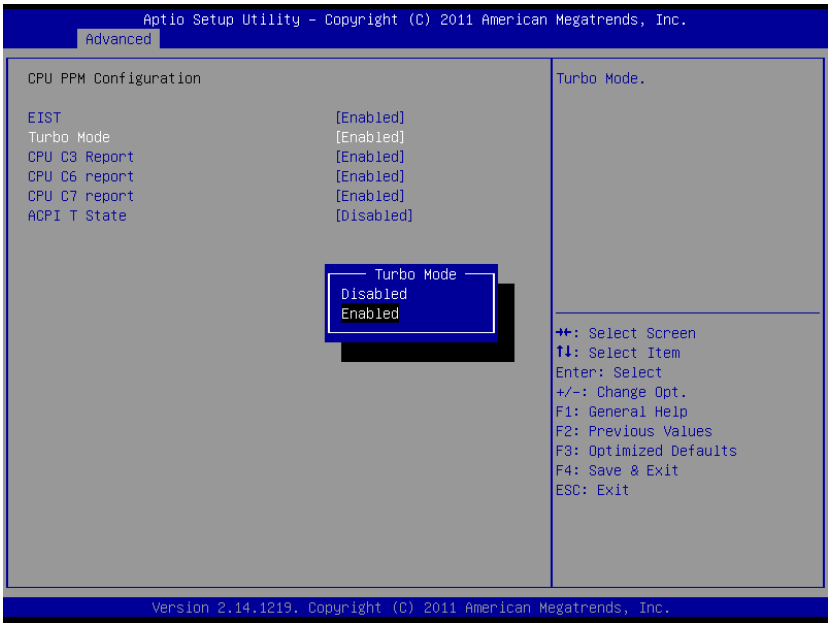


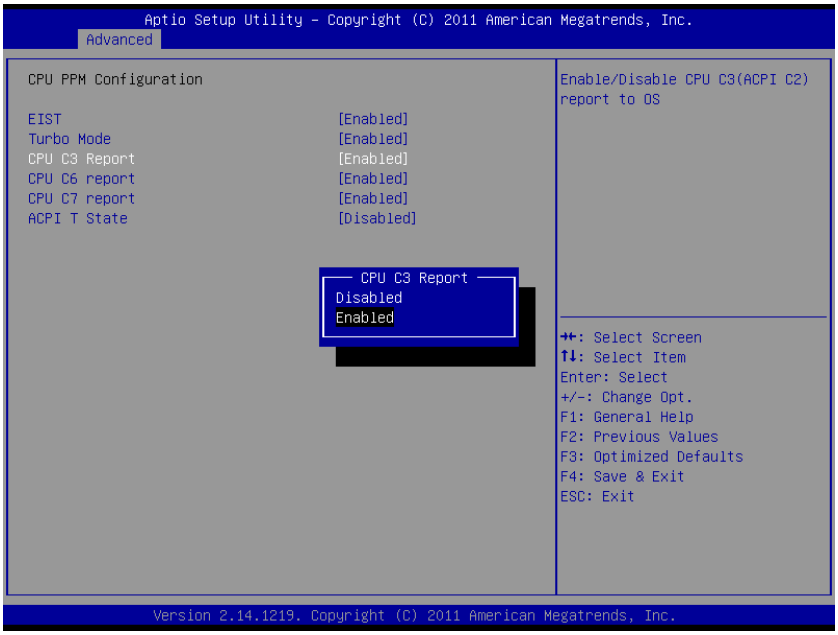
Item	Options	Description
Launch PXE OpROM policy	Disabled**[Default]** Enabled	Controls the execution of UEFI and Legacy PXE OpROM.
Launch Storage OpROM policy	Disabled Enabled**[Default]**	Controls the execution of UEFI and Legacy Storage OpROM.
Other PCI device ROM priority	UEFI OpROM**[Default]** Legacy OpROM	For PCI devices other than Network, Mass storage or Video defines which OpROM to launch.

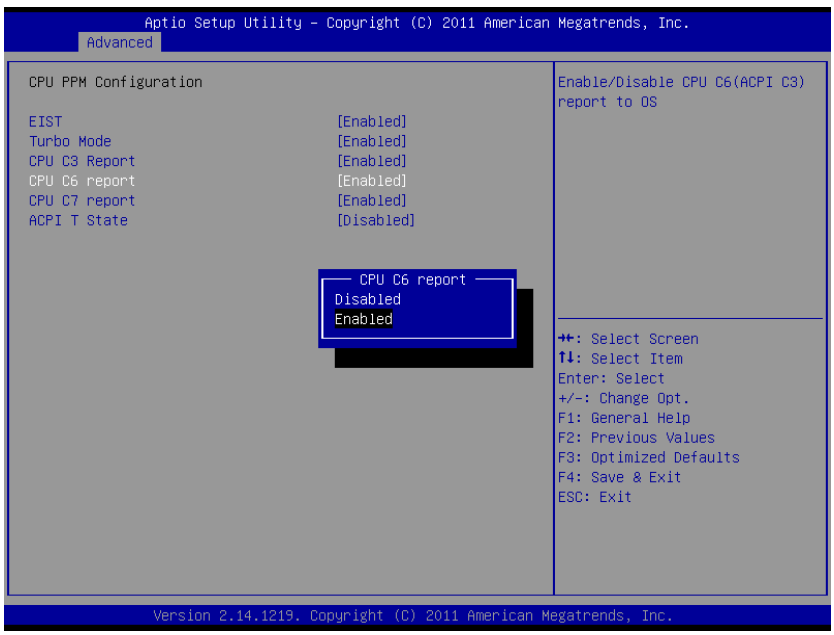
2.2.2.14 CPU PPM Configuration

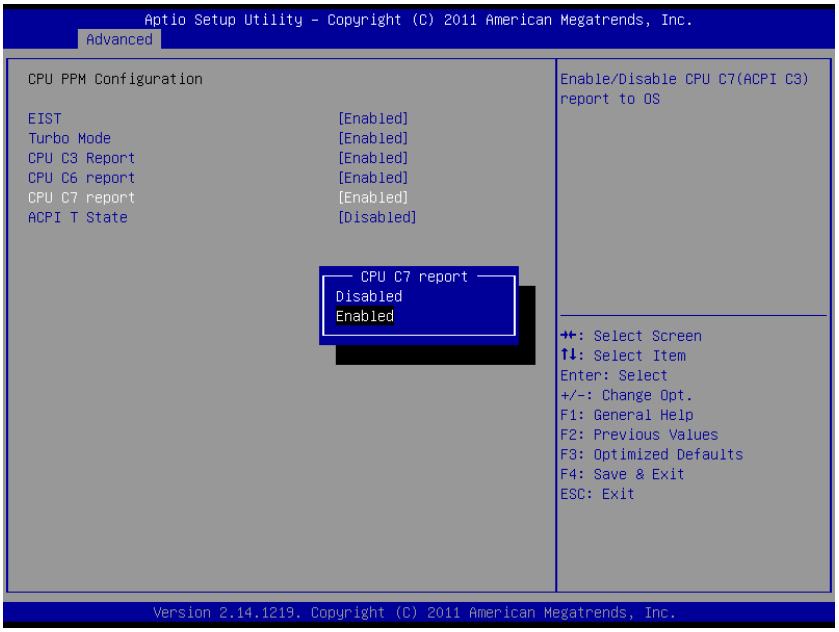


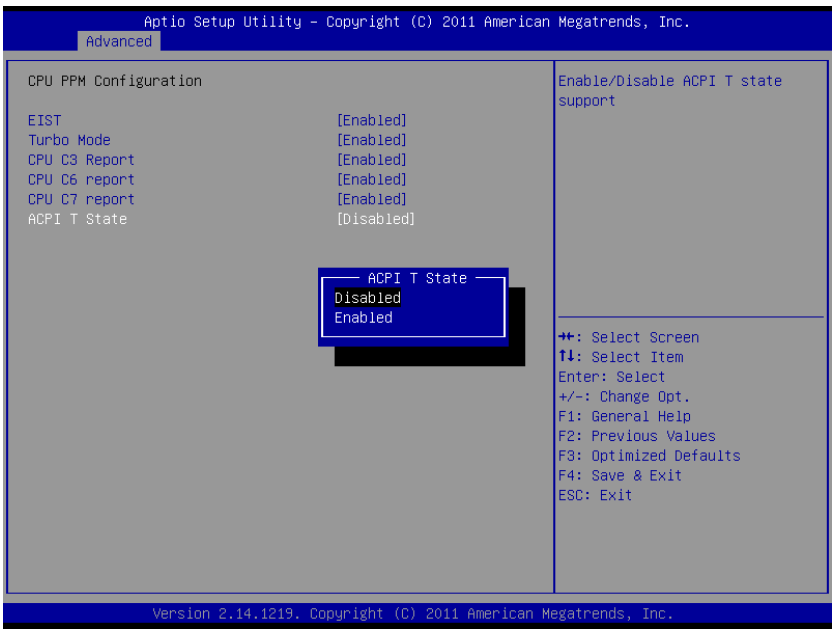



Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
CPU PPM Configuration
EIST [Enabled]
Turbo Mode [Enabled]
CPU C3 Report [Enabled]
CPU C6 report [Enabled]
CPU C7 report [Enabled]
ACPI T State [Disabled]
Turbo Mode
Disabled
Enabled
Turbo Mode.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
CPU PPM Configuration
EIST [Enabled]
Turbo Mode [Enabled]
CPU C3 Report [Enabled]
CPU C6 report [Enabled]
CPU C7 report [Enabled]
ACPI T State [Disabled]
CPU C3 Report
Disabled
Enabled
Enable/Disable CPU C3(ACPI C2) report to OS
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
CPU PPM Configuration
EIST [Enabled]
Turbo Mode [Enabled]
CPU C3 Report [Enabled]
CPU C6 report [Enabled]
CPU C7 report [Enabled]
ACPI T State [Disabled]
CPU C6 report
Disabled
Enabled
Enable/Disable CPU C6(ACPI C3) report to OS
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

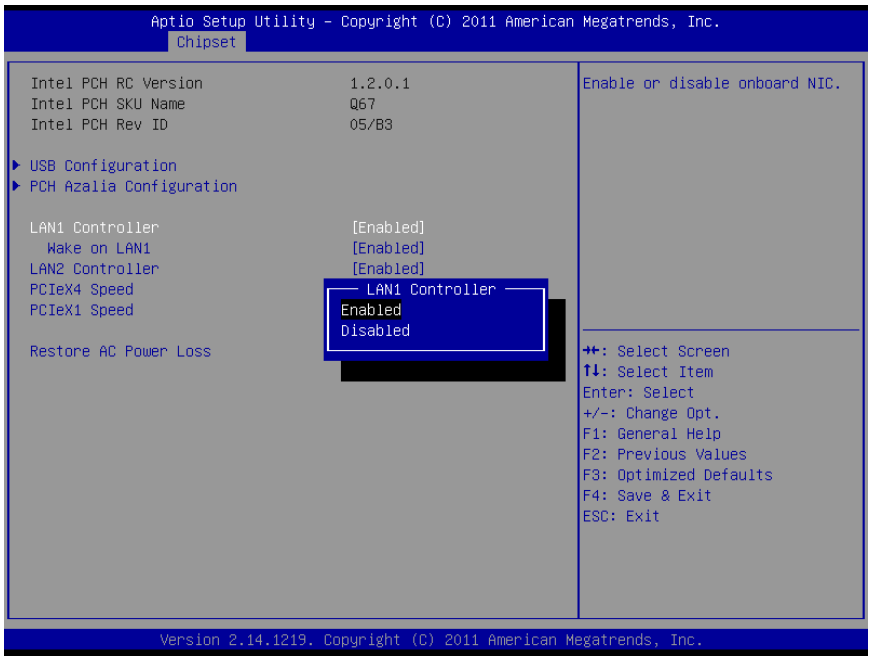


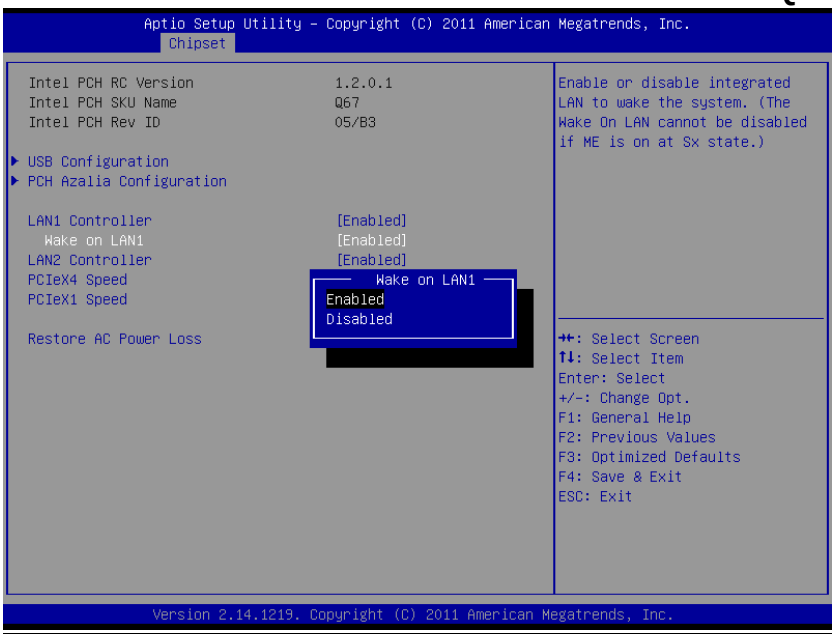


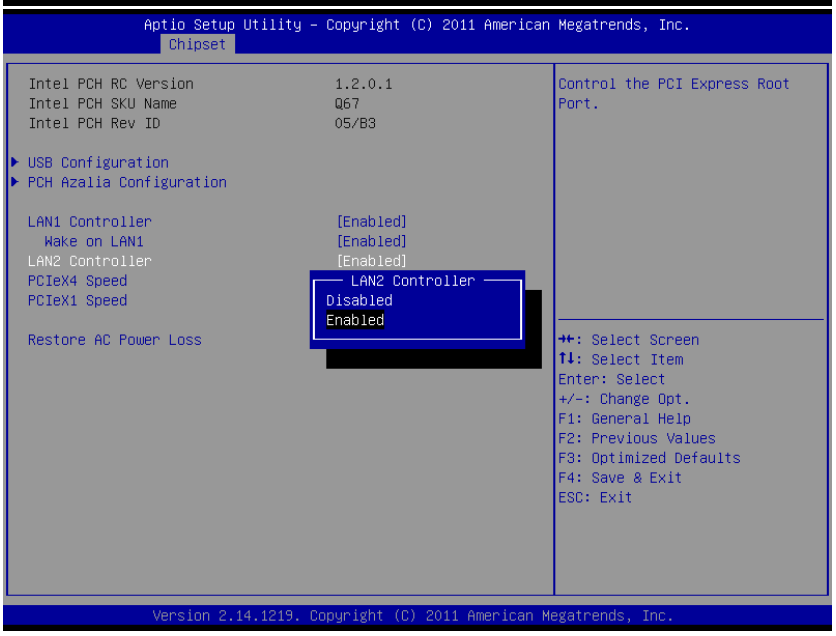
Item	Options	Description
EIST	Disabled Enabled**[Default]**	Enable/Disable Intel SpeedStep.
Turbo Mode	Disabled Enabled**[Default]**	Turbo Mode.
CPU C3/6/7 Report	Disabled Enabled**[Default]**	Enable/Disable CPU C3(ACPI C2)/ C6(ACPI C3)/ C7(ACPI C3) report to OS.
ACPI T State	Disabled**[Default]** Enabled	Enable/Disable ACPI T state support.

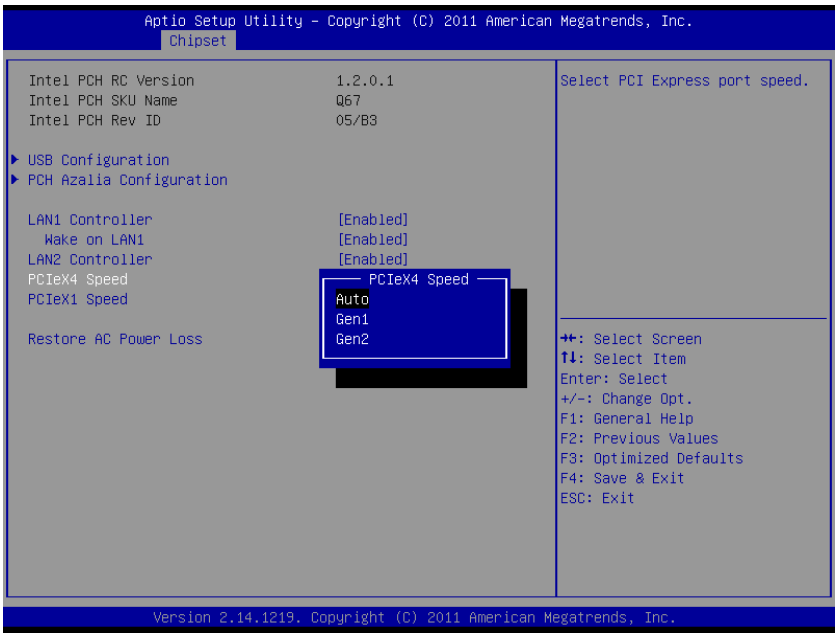
2.2.3 Chipset

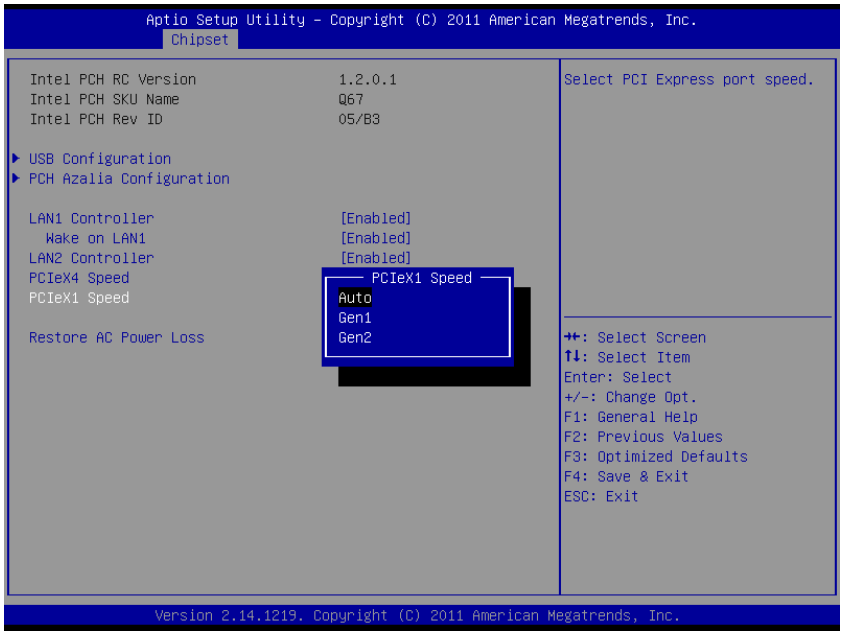
2.2.3.1 PCH-IO Configuration

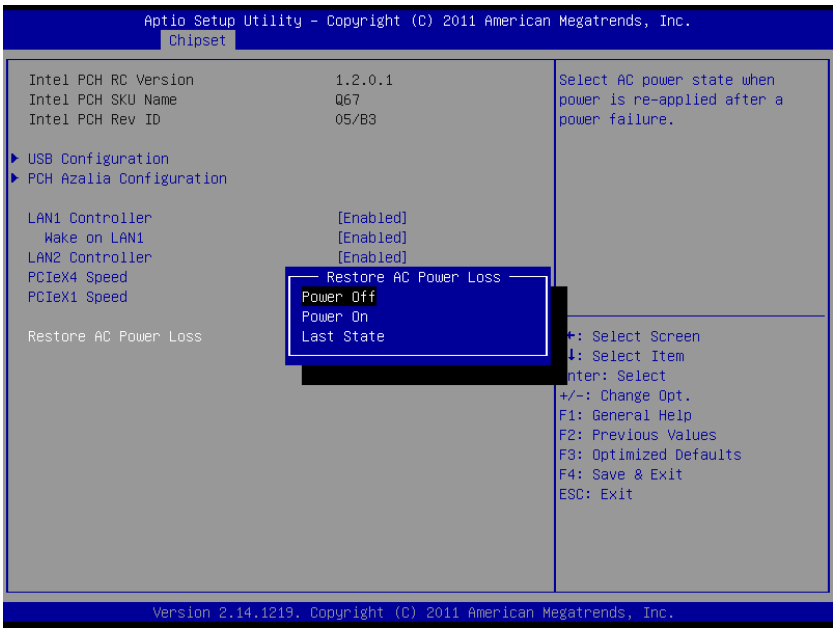



Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Chipset
Intel PCH RC Version 1.2.0.1
Intel PCH SKU Name Q67
Intel PCH Rev ID 05/B3
USB Configuration
PCH Azalia Configuration
LAN1 Controller [Enabled]
Wake on LAN1 [Enabled]
LAN2 Controller [Enabled]
PCIeX4 Speed
PCIeX1 Speed
Restore AC Power Loss
Wake on LAN1
Enabled
Disabled
Enable or disable integrated LAN to wake the system. (The Wake On LAN cannot be disabled if ME is on at Sx state.)
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Chipset
Intel PCH RC Version 1.2.0.1
Intel PCH SKU Name Q67
Intel PCH Rev ID 05/B3
USB Configuration
PCH Azalia Configuration
LAN1 Controller [Enabled]
Wake on LAN1 [Enabled]
LAN2 Controller [Enabled]
PCIeX4 Speed
PCIeX1 Speed
Restore AC Power Loss
LAN2 Controller
Disabled
Enabled
Control the PCI Express Root Port.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Chipset
Intel PCH RC Version 1.2.0.1
Intel PCH SKU Name Q67
Intel PCH Rev ID 05/B3
USB Configuration
PCH Azalia Configuration
LAN1 Controller [Enabled]
Wake on LAN1 [Enabled]
LAN2 Controller [Enabled]
PCIeX4 Speed
PCIeX1 Speed
Restore AC Power Loss
PCIeX4 Speed
Auto
Gen1
Gen2
Select PCI Express port speed.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.



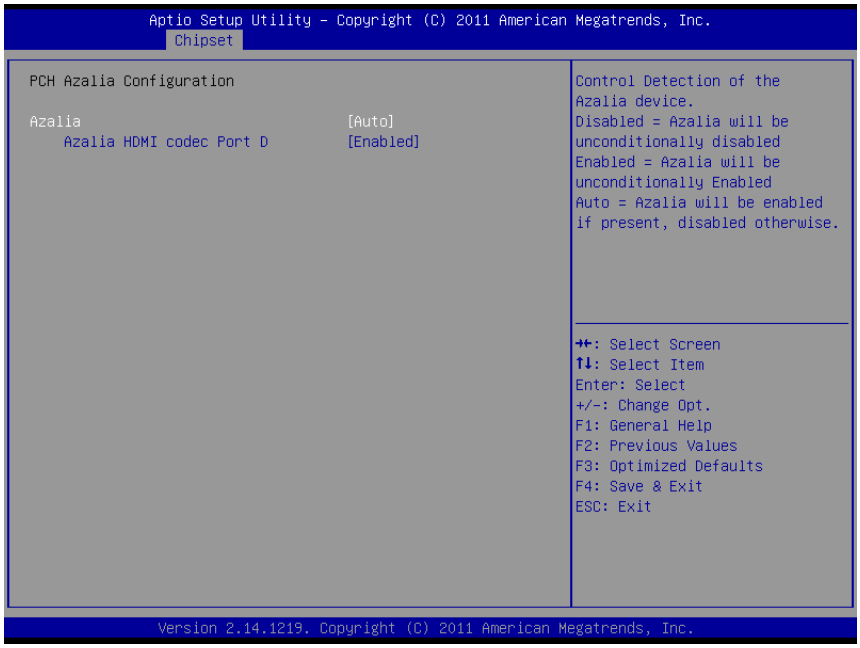


Item	Options	Description
LAN1 Controller	Disabled Enabled**[Default]**	Enable or disable onboard NIC.
Wake on LAN1	Disabled Enabled**[Default]**	Enable or disable integrated LAN to wake the system. (The Wake On LAN cannot be disabled if ME is on at Sx state.)
LAN2 Controller	Disabled Enabled**[Default]**	Control the PCI Express Root Port.
PCIeX4/1 Speed	Auto**[Default]** Gen1 Gen2	Select PCI Express port speed.
Restore AC Power Loss	Power Off**[Default]** Power On Last State	Select AC power state when power is re-applied after a power failure.

2.2.3.1.1 USB Configuration

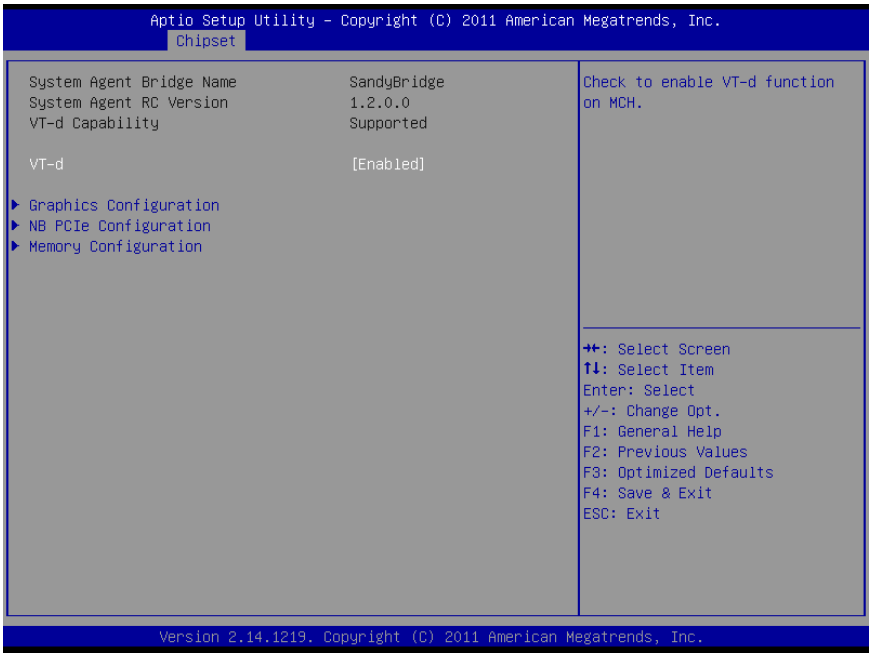
Item	Option	Description
EHCI1/2	Enabled**[Default]**, Disabled	Control the USB EHCI (USB2.0) functions. One EHCI controller must always be enabled.
USB Ports Per-Port Disable Control	Enabled Disabled**[Default]**,	Control each of the USB ports (0~13) disabling.

2.2.3.1.2 PCH Azalia Configuration



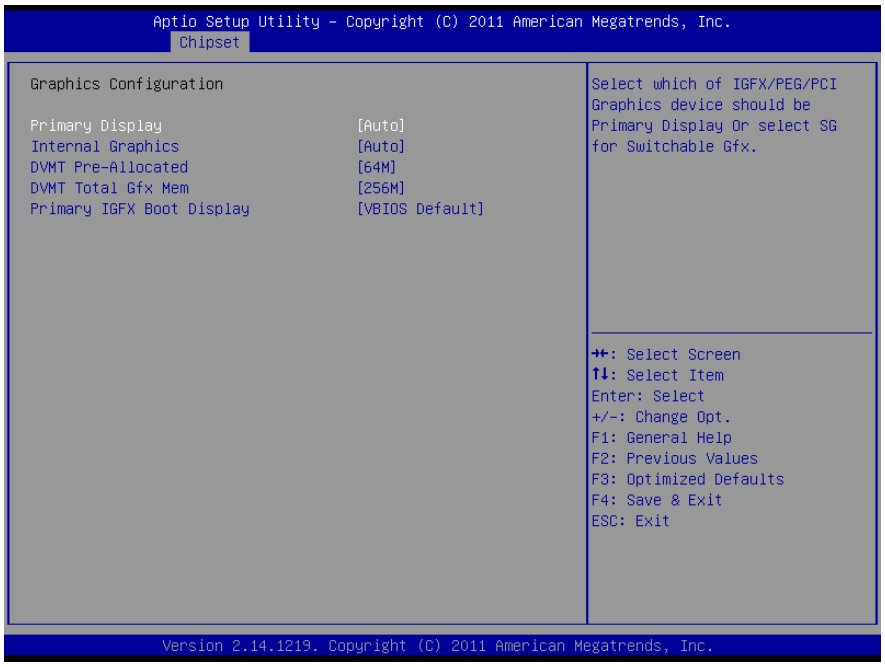
Item	Option	Description
Azalia	Disabled Enabled Auto**[Default]**	Control Detection of the Azalia device. Disabled = Azalia will be unconditionally disabled. Enabled = Azalia will be unconditionally Enabled. Auto = Azalia will be enabled if present, disabled otherwise.
Azalia HDMI codec Port D	Disabled Enabled**[Default]**,	Enable or disable internal HDMI codec Port for Azalia.

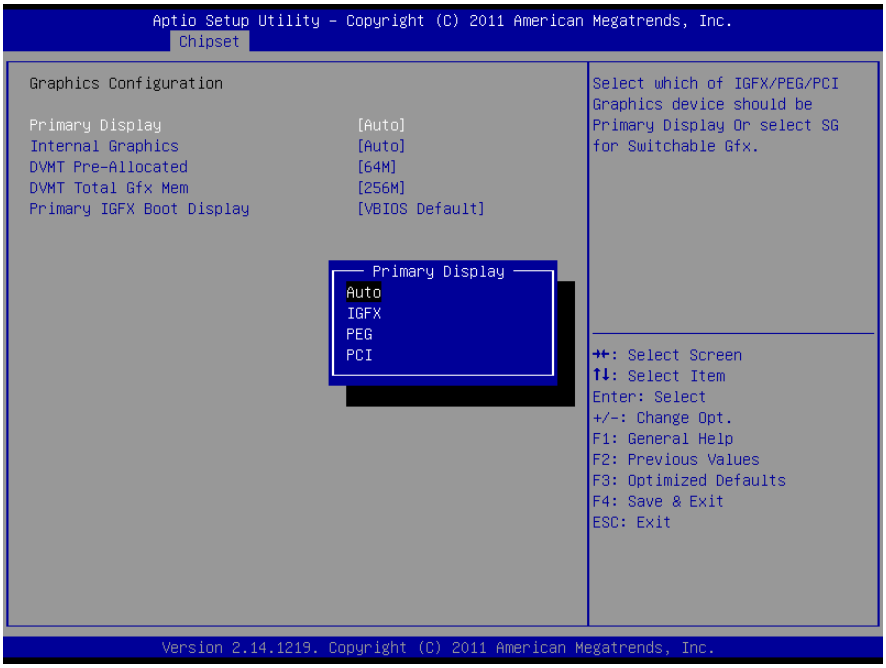
2.2.3.2 System Agent (SA) Configuration

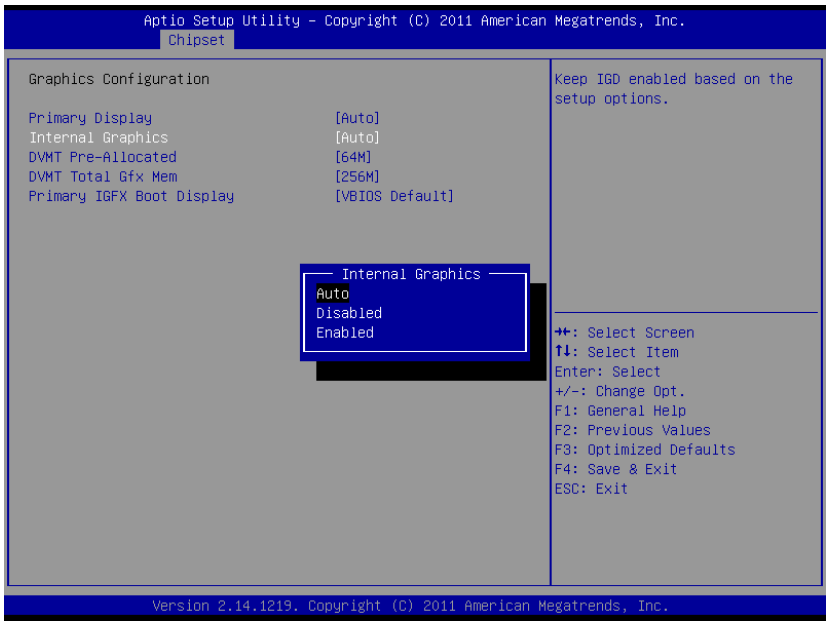


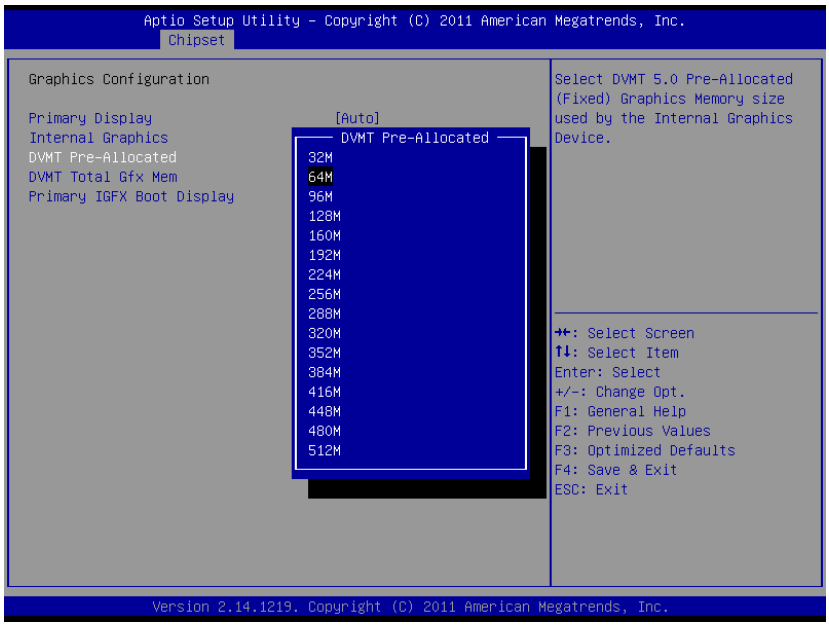
Item	Option	Description
VT-d	Disabled Enabled**[Default]**,	Check to enable VT-d function on MCH.

2.2.3.2.1 Graphics Configuration






Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Chipset
Graphics Configuration
Primary Display [Auto]
Internal Graphics [Auto]
DVMT Pre-Allocated [64M]
DVMT Total Gfx Mem [256M]
Primary IGFX Boot Display [VBIOS Default]
Internal Graphics
Auto
Disabled
Enabled
Keep IGD enabled based on the setup options.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Chipset
Graphics Configuration
Primary Display [Auto]
Internal Graphics
DVMT Pre-Allocated
DVMT Total Gfx Mem
Primary IGFX Boot Display
DVMT Pre-Allocated
32M
64M
96M
128M
160M
192M
224M
256M
288M
320M
352M
384M
416M
448M
480M
512M
Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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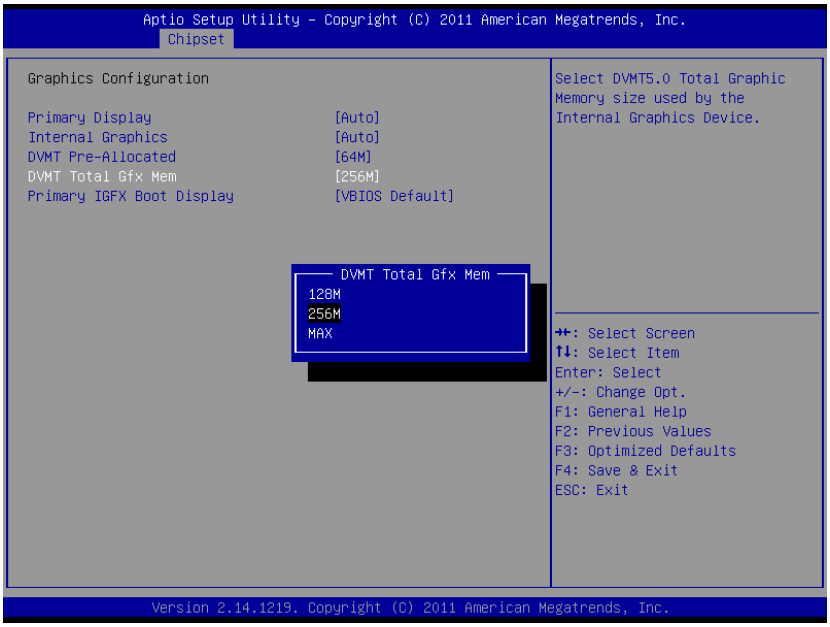
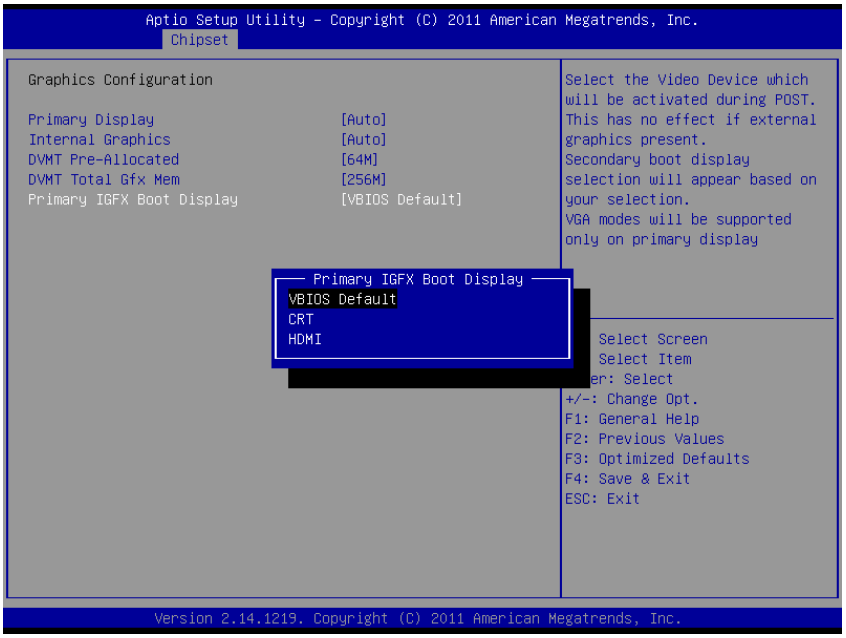
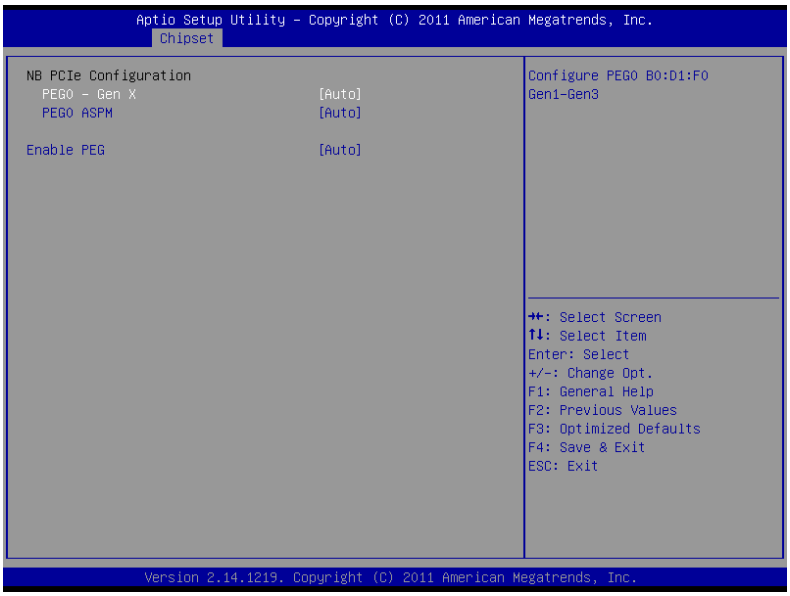
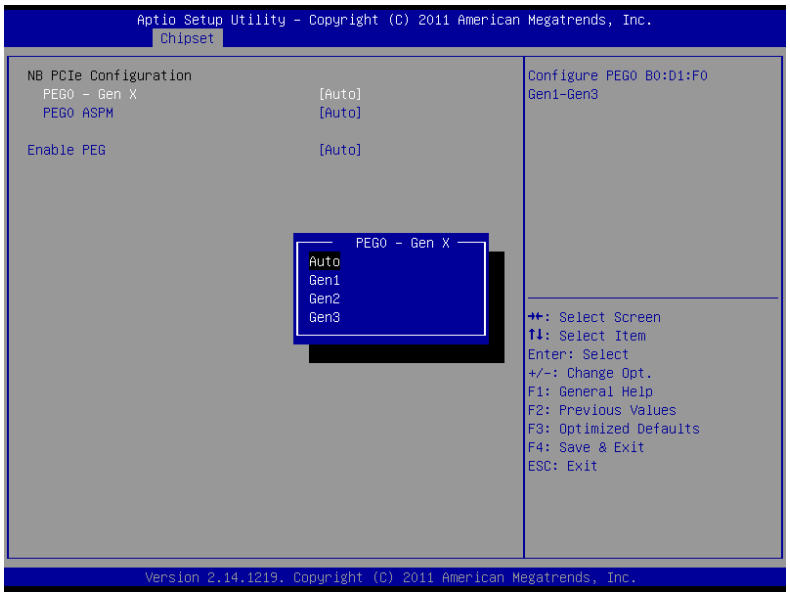

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Chipset
Graphics Configuration
Primary Display [Auto]
Internal Graphics [Auto]
DVMT Pre-Allocated [64M]
DVMT Total Gfx Mem [256M]
Primary IGFX Boot Display [VBIOS Default]
DVMT Total Gfx Mem
128M
256M
MAX
Select DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

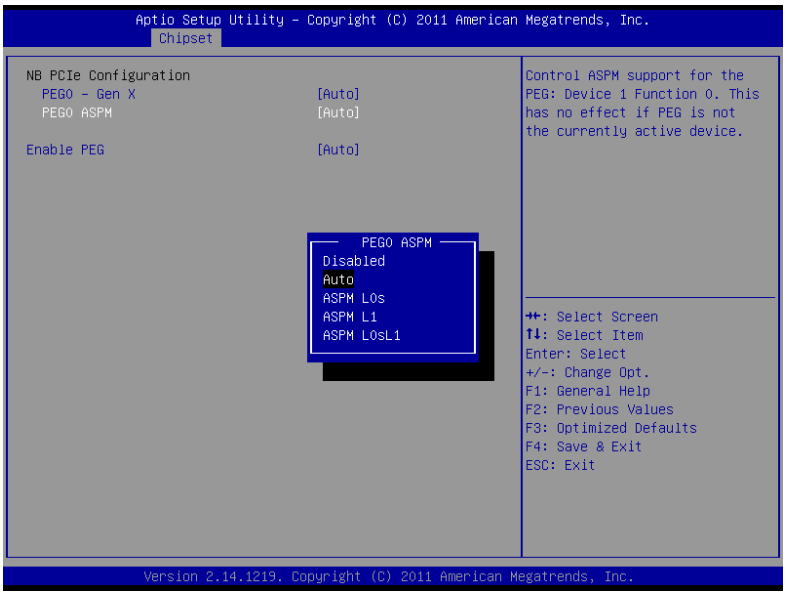


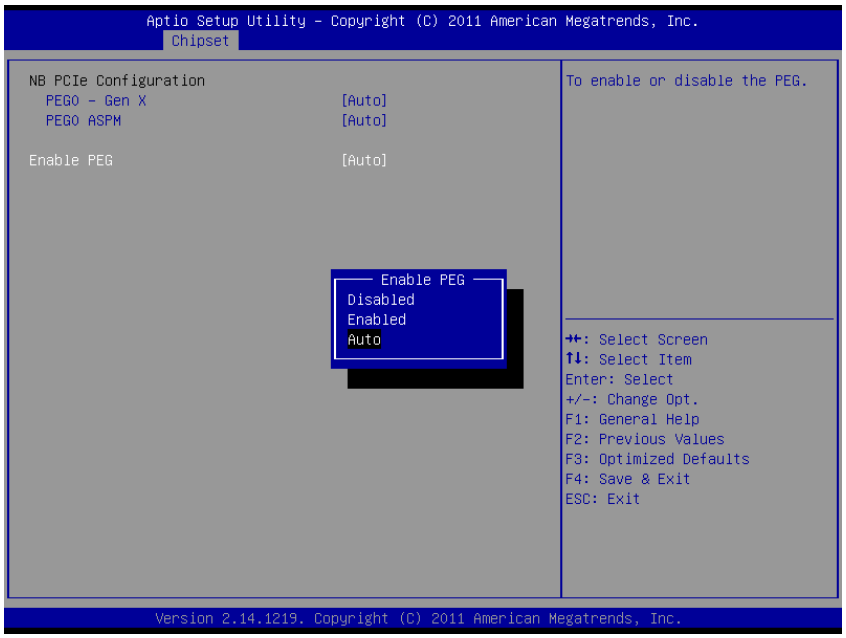
Item	Option	Description
Primary Display	Auto**[Default]**, IGFX PEG PCI	Select which of IGFX/PEG/PCI Graphics device should be Primary Display Or select SG for Switchable Gfx.
Internal Graphics	Auto**[Default]** Disabled Enabled	Keep IGD enabled based on the setup options.
DVMT Pre-Allocated	64M**[Default]**/96M/128M/160M/ 192M/224M/256M/288M/320M	Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.
DVMT Total Gfx Mem	128M 256M**[Default]** MAX	Select DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device.
Primary IGFX Boot Display	VBIOS Default**[Default]** CRT HDMI	Select the Video Device which will be activated during POST. This has no effect if external graphics present. Secondary boot display selection will appear based on your selection. VGA modes will be supported only on primary display.

2.2.3.2.2 NB PCIe Configuration



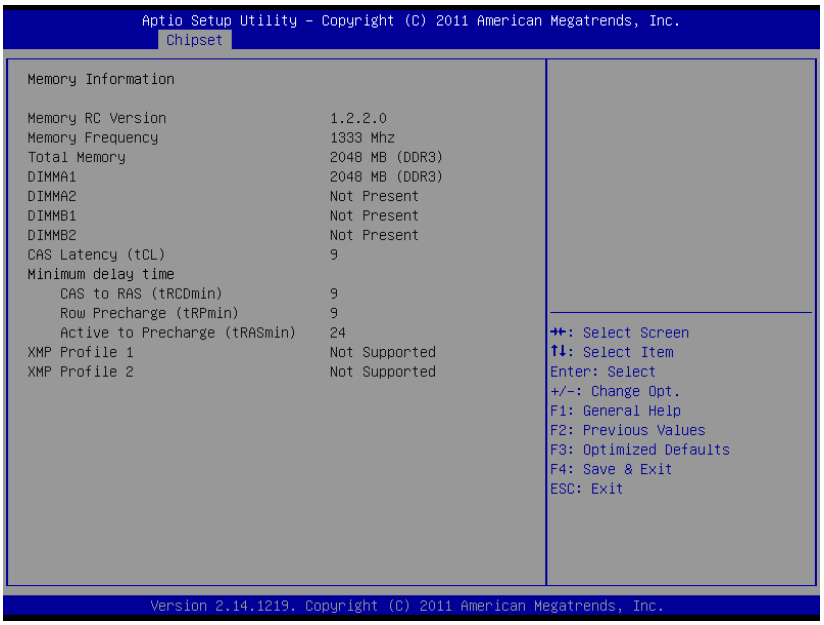




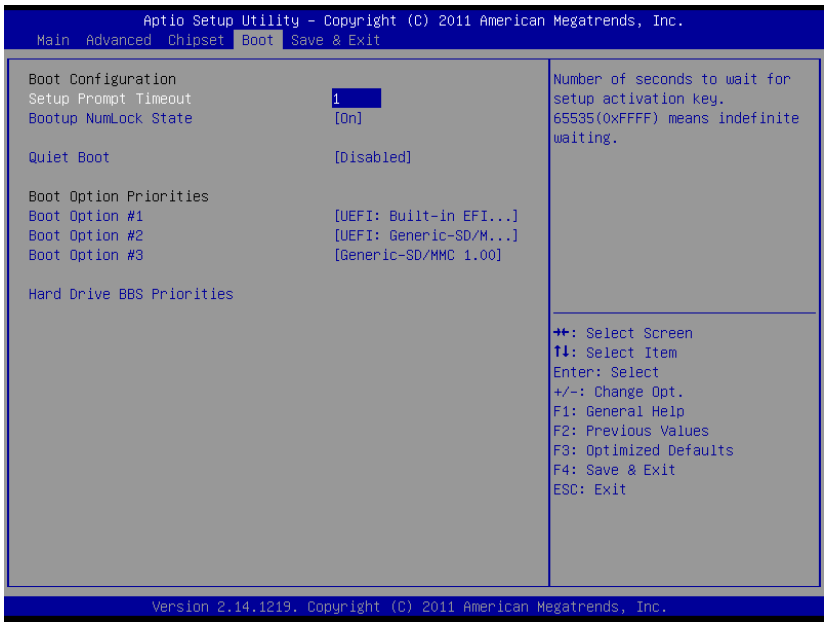


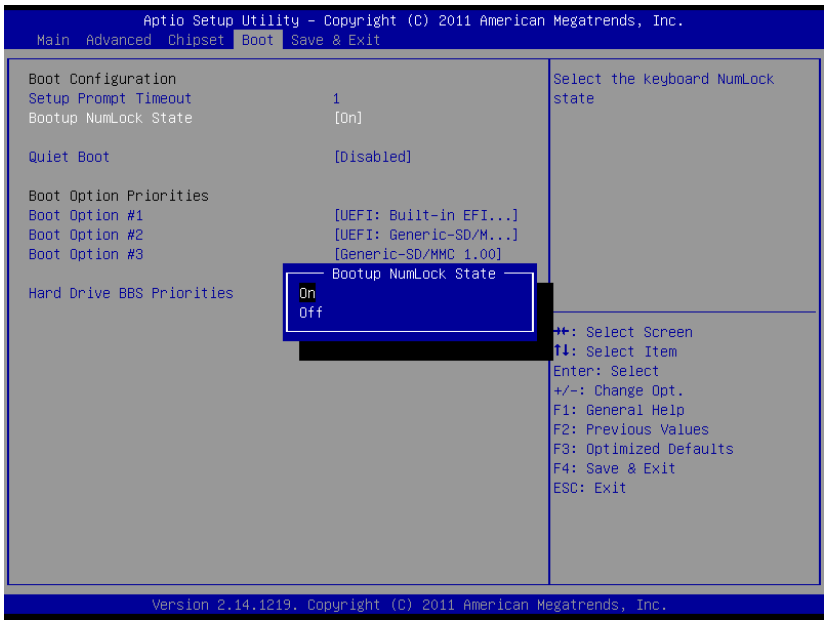
Item	Option	Description
PEG0 – Gen X	Auto**[Default]** Gen1 Gen2 Gen3	Configure PEG0 B0:D1:F0 Gen1-Gen3.
PEG0 ASPM	Disabled**[Default]** Auto ASPM L0s ASPM L1 ASPM L0sL1	Control ASPM support for the PEG: Device 1 Function 0. This has no effect if PEG is not the currently active device.
Enable PEG	Disabled Enabled Auto**[Default]**	To enable or disable the PEG.

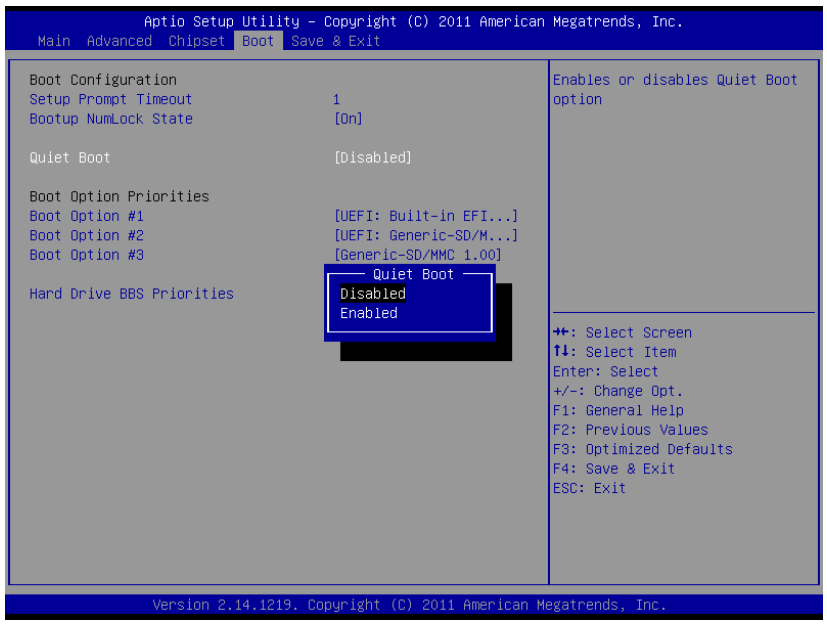
2.2.3.2.3 Memory Configuration



2.2.4 Boot


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Save & Exit
Boot Configuration
Setup Prompt Timeout 1
Bootup NumLock State [On]
Quiet Boot [Disabled]
Boot Option Priorities
Boot Option #1 [UEFI: Built-in EFI...]
Boot Option #2 [UEFI: Generic-SD/M...]
Boot Option #3 [Generic-SD/MMC 1.00]
Hard Drive BBS Priorities
Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Save & Exit
Boot Configuration
Setup Prompt Timeout 1
Bootup NumLock State [On]
Quiet Boot [Disabled]
Boot Option Priorities
Boot Option #1 [UEFI: Built-in EFI...]
Boot Option #2 [UEFI: Generic-SD/M...]
Boot Option #3 [Generic-SD/MMC 1.00]
Hard Drive BBS Priorities
Bootup NumLock State
On
Off
Select the keyboard NumLock state
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Main Advanced Chipset Boot Save & Exit
Boot Configuration
Setup Prompt Timeout 1
Bootup NumLock State [On]
Quiet Boot [Disabled]
Boot Option Priorities
Boot Option #1 [UEFI: Built-in EFI...]
Boot Option #2 [UEFI: Generic-SD/M...]
Boot Option #3 [Generic-SD/MMC 1.00]
Hard Drive BBS Priorities
Quiet Boot
Disabled
Enabled
Enables or disables Quiet Boot option
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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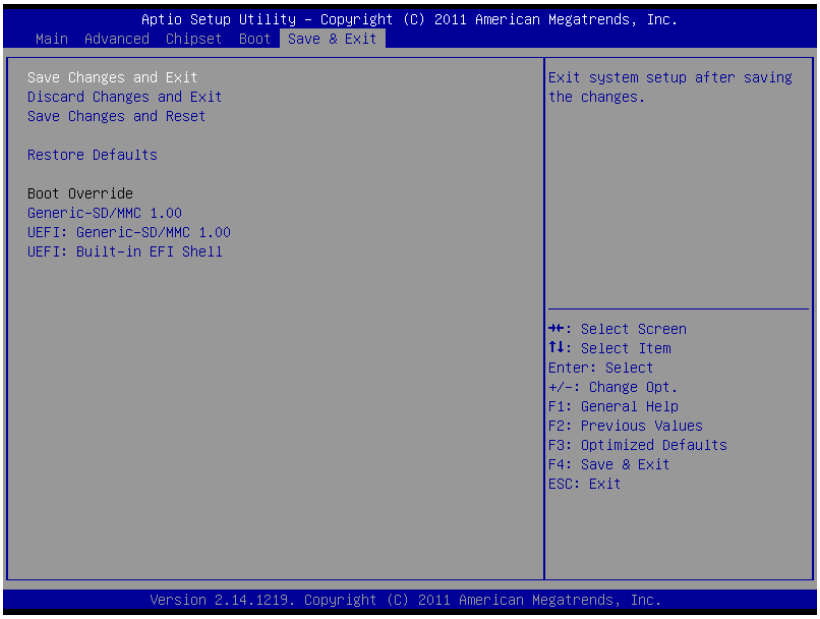
Item	Option	Description
Setup Prompt Timeout	1 ~ 65535	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
Bootup NumLock State	On Off**[Default]**	Select the Keyboard NumLock state
Quiet Boot	Disabled Enabled**[Default]**	Enables or disables Quiet Boot option
Boot Option #1/2/3	Set the system boot order.	

2.2.5 Save and exit



2.2.5.1 Save Changes and Exit

Exit system setup after saving the changes.

2.2.5.2 Discard Changes and Exit

Exit system setup without saving any changes.
ESC key can be used for this operation.

2.2.5.3 Save Changes and Reset

Reset the system after saving the changes.

2.2.5.4 Restore Defaults

This option restores all BIOS settings to the factory default. This option is useful if the controller exhibits unpredictable behavior due to an incorrect or inappropriate B