ERX-Q77

Intel® Q77 with Core™ i7/ i5 /i3 Micro-ATX Motherboard

User's Manual

1st Ed – 27 November 2012

Part No. E2047XQ7700R

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.

Notice

This guide is designed for experienced users to setup the system within the shortest time. For detailed information, please always refer to the electronic user's manual.

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To receive the latest version of the user's manual; please visit our Web site at:
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Product Warranty

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

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Avalue, or which have been subject to misuse, abuse, accident or improper installation. Avalue assumes no liability under the terms of this warranty as a consequence of such events. Because of Avalue's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If any of Avalue's products is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time, and freight. Please consult your dealer for more details. If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU type and speed, Avalue's products model name, hardware & BIOS revision number, other hardware and software used, etc.) Note anything abnormal and list any on-screen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information available.
3. If your product is diagnosed as defective, obtain an RMA (return material authorization) number from your dealer. This allows us to process your good return more quickly.
4. Carefully pack the defective product, a complete Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Contents

1. Getting Started

1.1 Safety Precautions

Warning!

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

Caution!

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

1.2 Packing List

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

- 1 x ERX-Q77 Micro-ATX Main board
- 1 x CD-ROM contains OS drivers
- 1 x COM cable
- 2 x SATA cable (2 in 1 package)
- 1 x I/O Shield

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

1.3 Document Amendment History

Revision	Date	Comment
1st	November 2012	Initial Release

1.4 Manual Objectives

This manual describes in detail the Avalue Technology ERX-Q77 motherboard Board.

We have tried to include as much information as possible but we have not duplicated information that is provided in the standard IBM Technical References, unless it proved to be necessary to aid in the understanding of this board.

We strongly recommend that you study this manual carefully before attempting to interface with ERX-Q77 series or change the standard configurations. Whilst all the necessary information is available in this manual we would recommend that unless you are confident, you contact your supplier for guidance.

Please be aware that it is possible to create configurations within the CMOS RAM that make booting impossible. If this should happen, clear the CMOS settings, (see the description of the Jumper Settings for details).

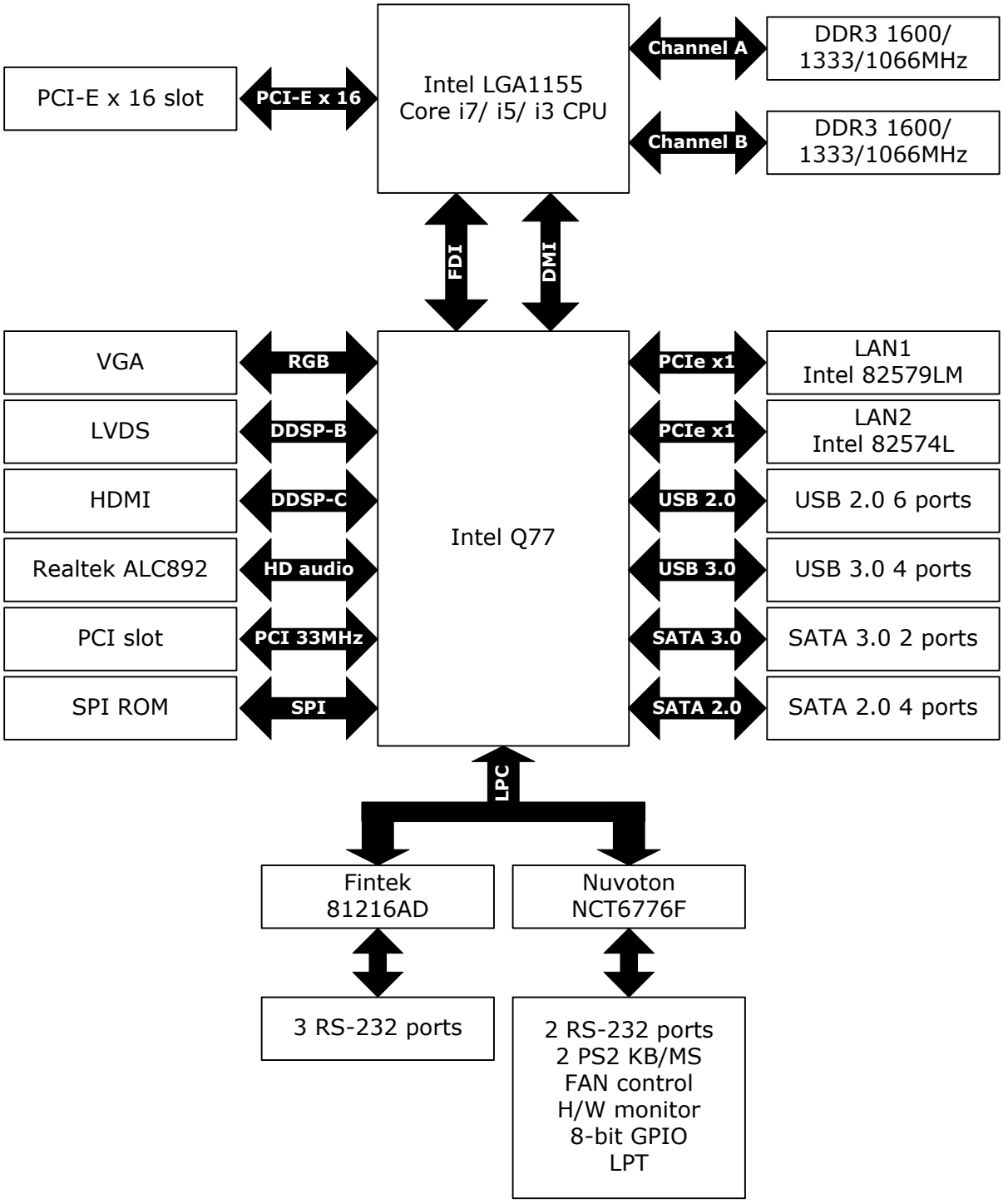
If you have any suggestions or find any errors concerning this manual and want to inform us of these, please contact our Customer Service department with the relevant details.

1.5 System Specifications

System	
CPU	Intel LGA1155 socket supports Intel Core i7/ i5/ i3 CPU
BIOS	AMI 64Mb SPI
System Chipset	Intel® Q77
I/O Chipset	Nuvoton NCT6776F + FINTEK F81216AD
Memory	Four 240-pin UDIMM sockets support up to 32GB dual channel DDR3 1066/ 1333/ 1600 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 2.0 3 PCI
Power State	S1, S3, S4, S5
Wake up on LAN or Ring	LAN (WOL)
Smart Fan Control	Yes
Display	
Chipset	Intel® GMA HD 4000/ 3000 supports DirectX 11, OpenGL 3.1, OpenCL 1.1
Display Memory	Shared Memory up to 512MB
Dual Display	VGA + LVDS, VGA + HDMI, HDMI + LVDS
VGA	Onboard, supports max resolution 2048 x 1536 (@60Hz)
HDMI	Onboard HDMI 1.3, supports max resolution 1920 x 1200 (@60Hz)
LVDS	Onboard, supports max resolution 1920 x 1200 (@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 82574L
Back I/O Port	
Back Panel	1 x PS2 KB/MS 1 x VGA 1 x HDMI 2 x COM port 2 x RJ45 port 4 x USB 3.0 1 x 3 Audio Jacks(Line-in/Line-Out/Mic in)
Internal I/O Connector	
Internal I/O	4 x SATAII connectors

	2 x SATAIII connectors 3 x USB connectors support additional 6 USB 2.0 ports 3 x COM header 1 x LVDS connector 1 x CPU Fan connector 1 x System Fan connector 1 x Chassis Intrusion header 1 x Front Audio connector 1 x Front panel header 1 x Printer port 1 x 8 Bit DIO connector 1 x SPDIF header 1 x Amplifier header 1 x 24-pin ATX Power connector 1 x 4-pin ATX 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)	9.6" x 9.6" (243.84 mm x 243.84 mm)
Weight	1.35 lbs = 0.61 Kg

1.6 Architecture Overview – Block Diagram



2. Hardware Configuration

2.1 Product Overview

Supports latest Intel LGA 1155 CPU-socket interface processor, the 3rd Generation Intel® Core i3, i5, i7 desktop processors which are built on 22/32 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 32GB/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 ECS product as the foundation for keeping harmful substances out of our ecosystem.

2.1.1 Platform Features and Benefits

•Integrated Gfx (Intel® HD Graphics 4000/3000) with enhanced operating modes to enable excellent graphics performance in power and cost sensitive embedded applications
• DirectX® 11 & Open CL 1.1 let you enjoy awesome graphics performance, stunning 3D visual effect and dynamic interactivity
• Memory support, integrated low voltage DDR3 memory controller
• Operating system support:
  - Window XP 32 bit / 64 bit
  - Window Vista 32 bit / 64 bit
  - Window 7 32 bit / 64 bit
  - Window 8 32 bit / 64 bit
  - Fedora Core 17 (32/64bit)
  - Ubuntu 12.04 x86 (04.30.2012)

- POS Ready 2009
- OpenSUSE 12.1 x86

2.1.2 Key Architecture Features

•Supports Intel LGA 1155 CPU, the 3nd Generation Intel® Core i3, i5, i7 desktop processors.
- 22/32nm monolithic die
- Integrated Gfx (Intel® HD Graphics 4000/3000) & memory controller
- 4 &2 Cores, up to 8MB cache
- HW accelerated video CODECs
- Compatible with high speed DDR3-1600
- TDP: 35W-95W

• 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
- LVDS
- Analog VGA

• Intel® HD Graphics 4000/3000
- DirectX® 11
  - Improved realism for DX 3D applications and rendering.
- OpenCL 1.1
  - 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 3 (8GT/s)
- PCI 2.3 interface x 3
- Six SATA ports (2 port of Gen 3.0 and 4 ports of Gen 2.0) support RAID 0,1, 5, 10
- Gigabit Ethernet Media Access Controller (GbE MAC)
  IPv4 and IPv6 Checksum Offload
- High Definition Audio
- USB: 3.0, up to 4 ports

- USB: 2.0, up to 6 ports
- SMBus 2.0
- LPC Bus
  Supports SPI devices
- Hardware Monitor
  Fan control (Voltage, Temp)
  Watchdog timer

• Power Management
- Support AT/ATX mode

- Advanced Configuration and Power Interface (ACPI) 3.0

2.2 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.

2.3 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.

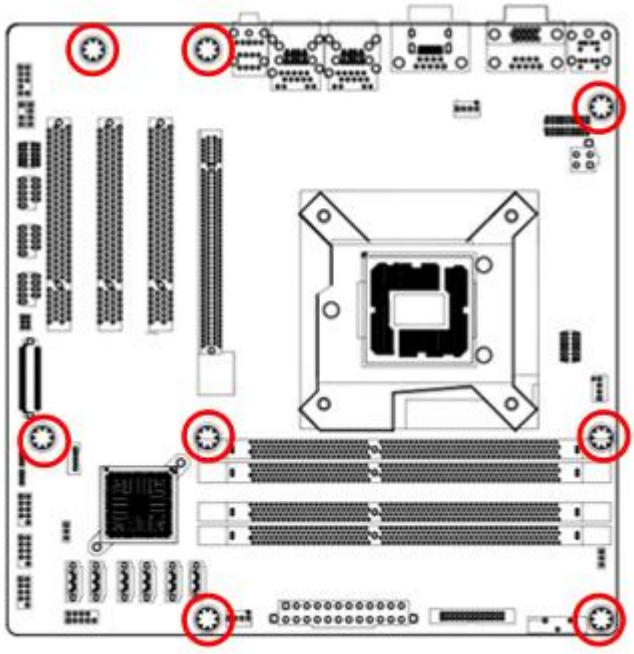
Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so can cause you physical injury and damage motherboard components.

2.3.1 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.

2.3.2 Screw Holes

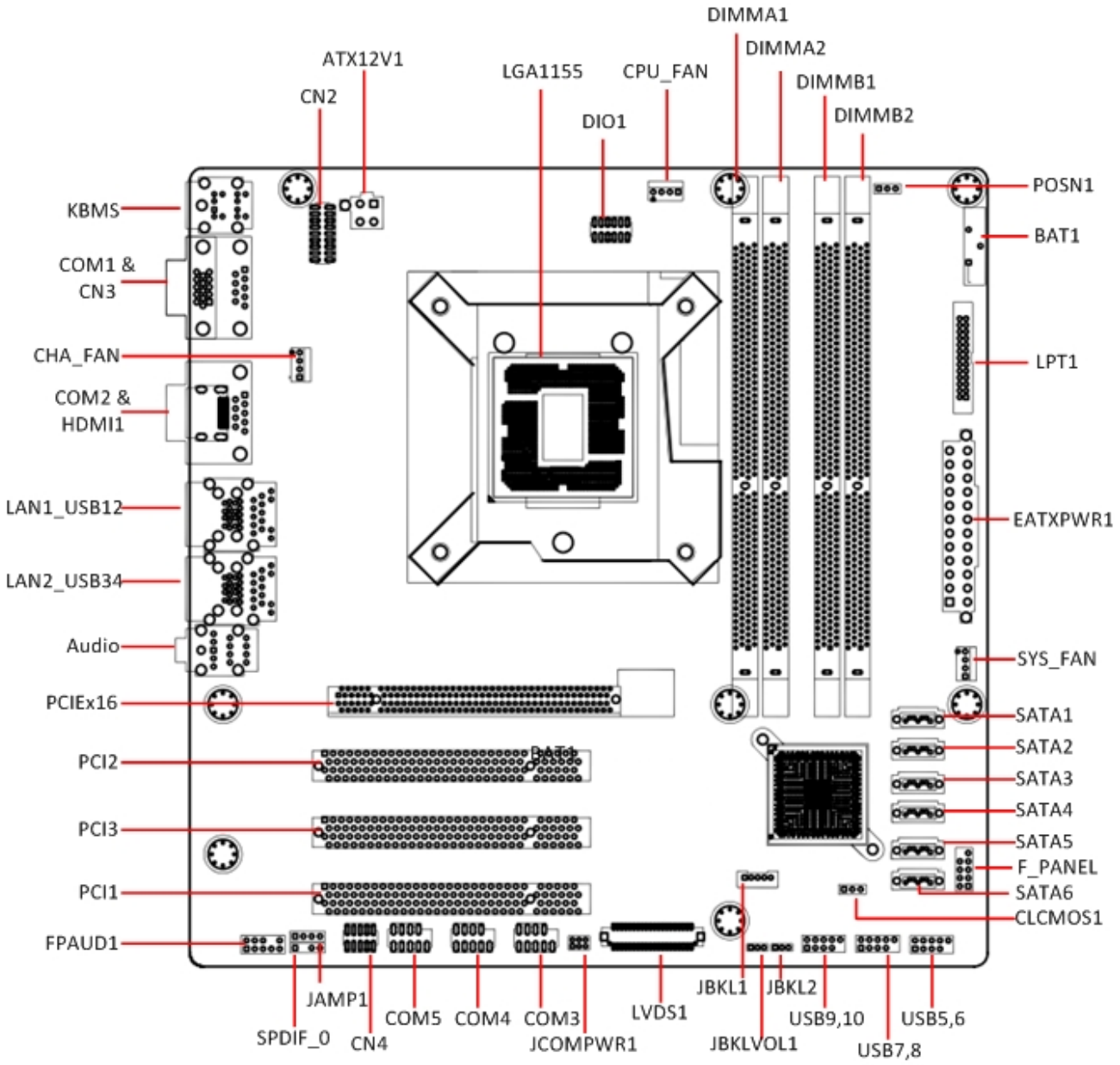
Place eight (8) screws into the holes indicated by circles to secure the motherboard to the chassis.



Place this side towards the rear of the chassis.

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

2.3.3 Motherboard Layout



2.4 Jumper and Connector List

Slots & socket			
Label	**Function**	**Note**	
LGA1155	LGA1155 socket		P23
DIMMA1	240-pin DDR3 DIMM Slot A1		P30
DIMMA2	240-pin DDR3 DIMM Slot A2		P30
DIMMB1	240-pin DDR3 DIMM Slot B1		P30
DIMMB2	240-pin DDR3 DIMM Slot B2		P30
PCIEX16	PCI-e x16 Slot		P36
PCI1~3	PCI Slot		P36

Jumpers			
Label	**Function**	**Note**	
CLCMOS1	Clear CMOS	3 x 1 header, pitch 2.54mm	P37
PSON1	AT/ATX Mode Select	3 x 1 header, pitch 2.54mm	P38
CN2	COM1 RS232/422/485 SETTING	9 x 2 header, pitch 2.00mm	P38
CN4	COM5 RS232/485 SETTING	5 x 2 header, pitch 2.00mm	P39
JCOMPWR1	COM3 POWER SETTING	3 x 2 header, pitch 2.00mm	P39
JBKLVOL1	LVDS Backlight power selection	3 x 1 header, pitch 2.00mm	P40
JBKL2	LVDS Backlight control mode	3 x 1 header, pitch 2.00mm	P40

Rear Panel Connector			
Label	**Function**	**Note**	
KBMS	PS/2 Keyboard and Mouse	6-pin Mini-Din	P41
COM1	COM1 Connector	D-sub 9-pin, male	P41
COM2	COM2 Connector	D-sub 9-pin, male	P41
CN3	VGA Port	D-sub 15-pin, female	P41
HDMI1	HDMI Port	HDMI 1.3 19-pin	P41
LAN1_USB12	RJ-45 Ethernet Connector x 1 USB 3.0 Connector x 2		P41~42
LAN2_USB34	RJ-45 Ethernet Connector x 1 USB 3.0 Connector x 2		P41~42
Audio	Audio Line-In , Line-Out , Mic.-In	5.1 Channel Audio I/O (3 jacks)	P42

2.4.1 Internal Connectors

Internal Connector			
Label	**Function**	**Note**	
CPU_FAN	CPU Fan Connector	4 x 1 wafer, pitch 2.54mm	P43
SYS_FAN	System Fan Connector	4 x 1 wafer, pitch 2.54mm	P43
CHA_FAN	Chassis Fan Connector	4 x 1 wafer, pitch 2.54mm	P43
F_PANEL	Intel Front Panel connector	5 x 2 header, pitch 2.54mm	P44
EATXPWR1	ATX power connectors	12 x 2 wafer	P45
ATX12V1	12V ATX power connectors	2 x 2 wafer	P45
COM3 ~ 5	Serial Port Connector	5 x 2 header, pitch 2.54mm	P46
DIO1	Digital I/O Connector	6 x 2 header, pitch 2.54mm	P46
FPAUD1	Audio Mic.-In & Line-Out Connector	5 x 2 header, pitch 2.54mm	P47
SPDIF_O	Digital Audio connector	4 x 1 header, pitch 2.54mm	P48
JAMP1	Amplifier Connector	4 x 1 header, pitch 2.54mm	P48
SATA1 ~ 6	SATA Data Connector * 6	7P Male connector	P49
USB5~10	USB Connector * 6	5 x 2 header, pitch 2.54mm	P50
LVDS1	LVDS Connector	20 x 2 wafer	P51
JBKL1	LVDS Inverter Power Connector	5 x 1 wafer, pitch 2.00mm	P51
LPT1	Print Port Connector	13 x 2 wafer, pitch 2.00mm	P52

2.5 Central Processing Unit (CPU)

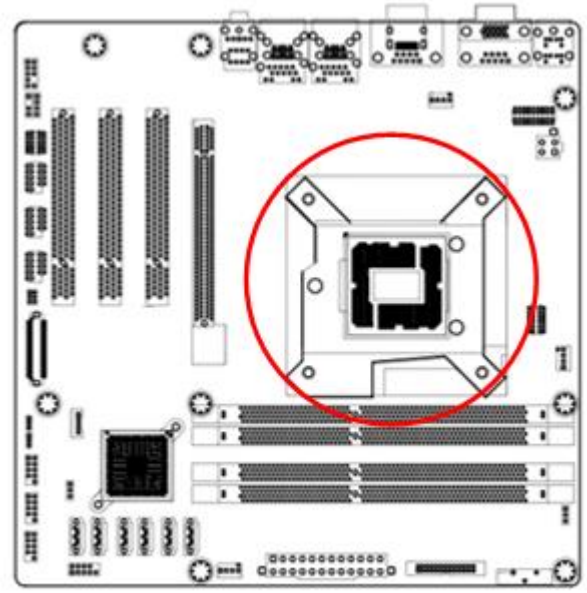
The motherboard comes with a surface mount LGA1155 socket designed for the Intel® Core™ i7/ i5/ i3 processor in the 1155-land package.

- 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. ADVANSUS will shoulder the cost of repair only if the damage is shipment/transit-related.
- Keep the cap after installing the motherboard. ADVANSUS 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.

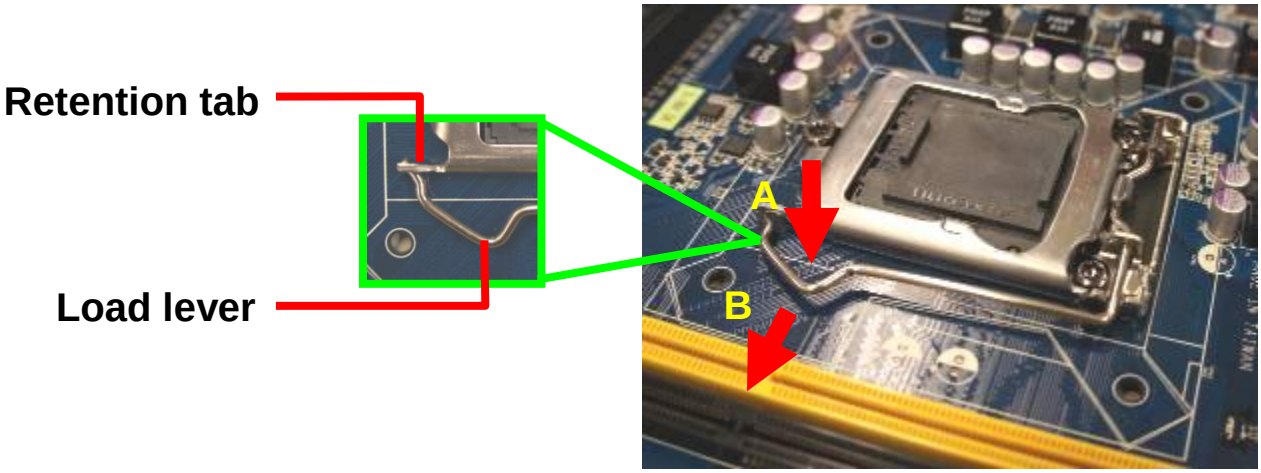
2.5.1 Installing the CPU

1 Locate the CPU socket on the motherboard.



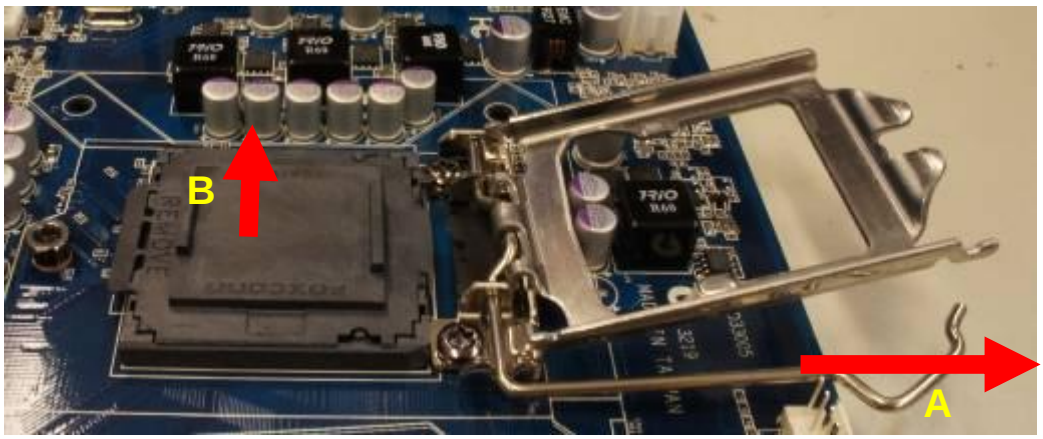
Before installing the CPU, make sure that the socket box is facing towards you and the load lever is on your left.

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

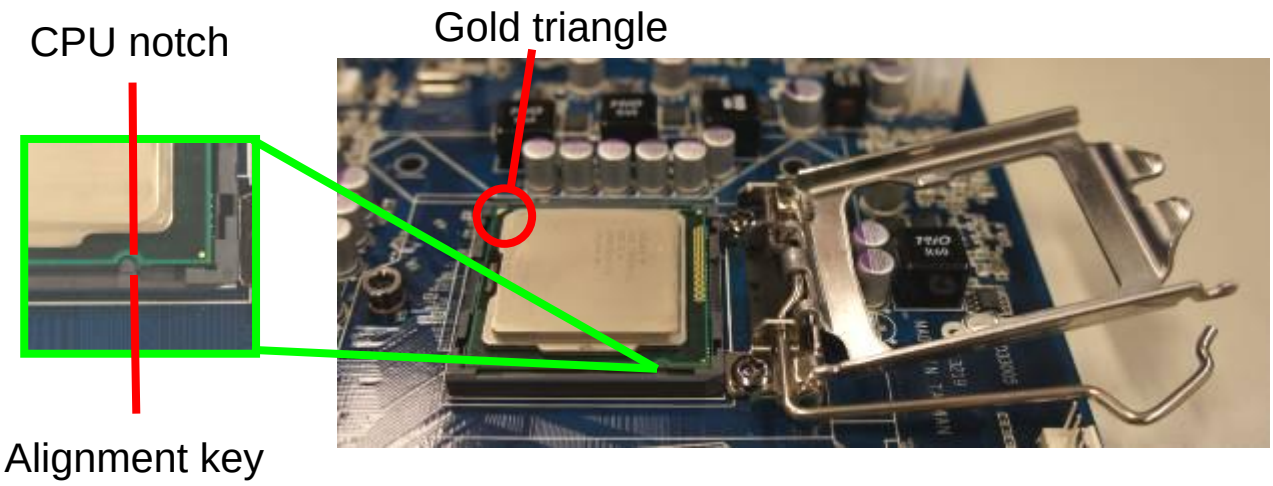


To prevent damage to the socket pins, do not remove the PnP cap unless you are installing a CPU.

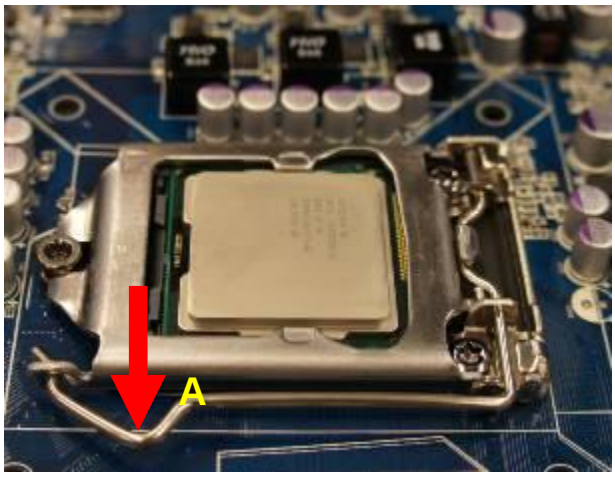
3. Lift the Load lever with your thumb and forefinger to around 180º angle (A), then pull the PnP cap from the CPU socket to remove (B).



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!

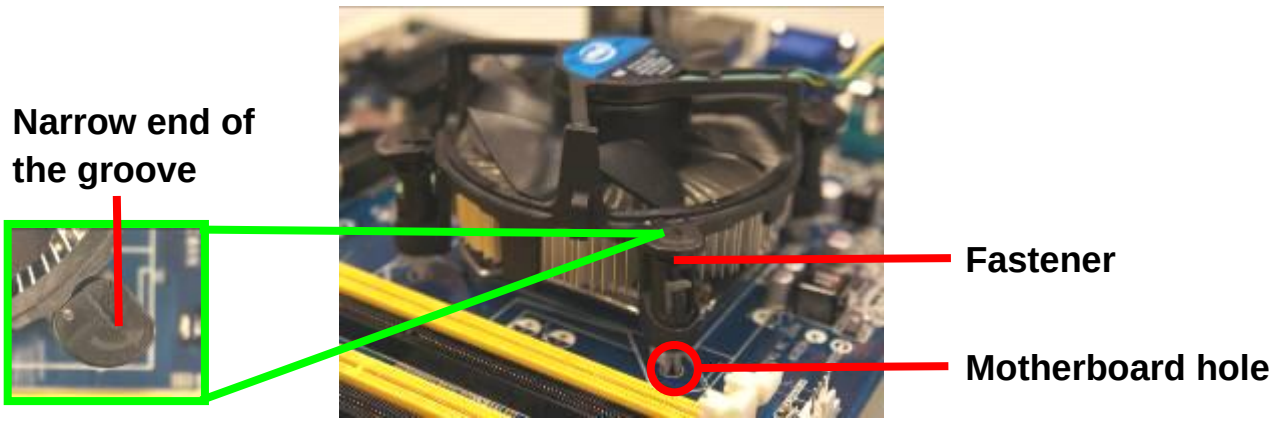
2.5.2 Installing the CPU Heatsink and Fan

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.

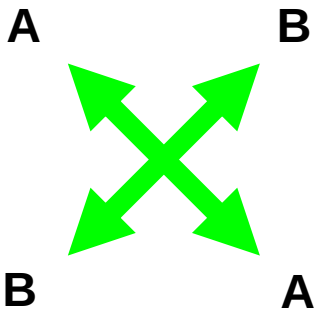
1. Place the heatsink on top of the installed CPU, making sure that the four fasteners match the holes on the motherboard.

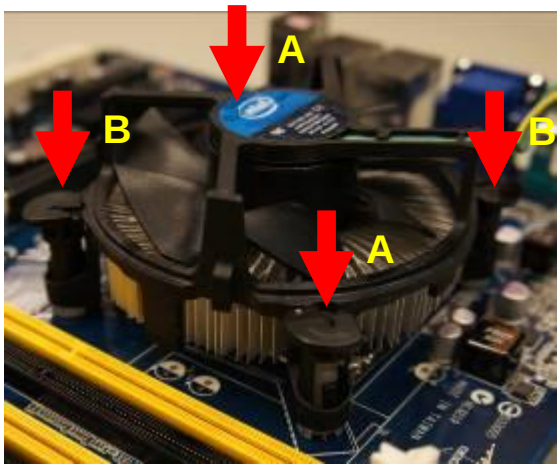


Orient the heatsink and fan assembly such that the CPU fan cable is closest to the CPU fan connector.

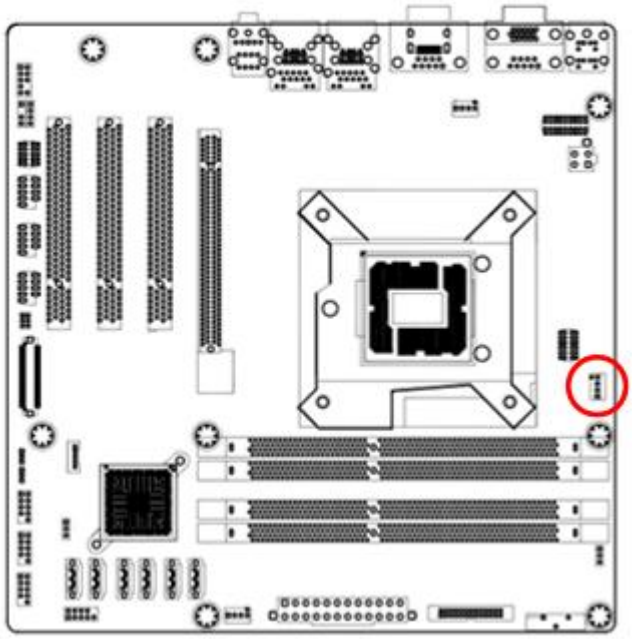
- Make sure each fastener is oriented as shown, with the narrow groove directed outward.

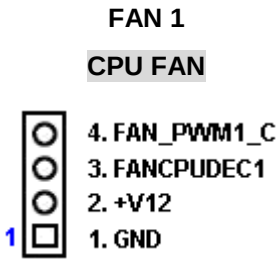
2. Push down two fasteners at a time in a diagonal sequence to secure the heatsink and fan assembly in place.

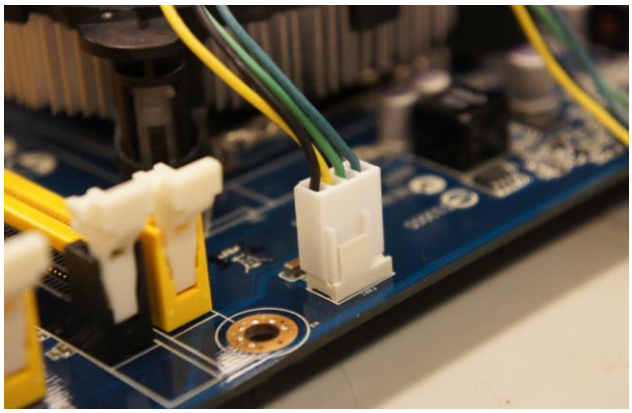




3. Connect the CPU fan cable to the connector on the motherboard labeled CPU_FAN.







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

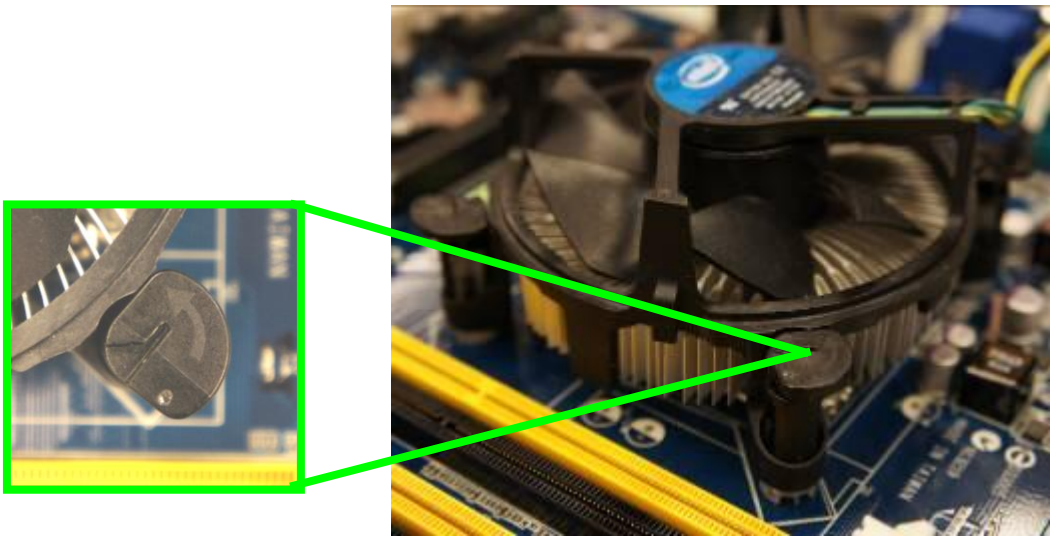
These are not jumpers! DO NOT place jumper caps on the fan connectors.

2.5.3 Uninstalling the CPU Heatsink and Fan

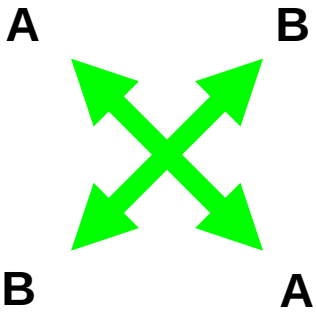
To uninstall the CPU heatsink and fan:

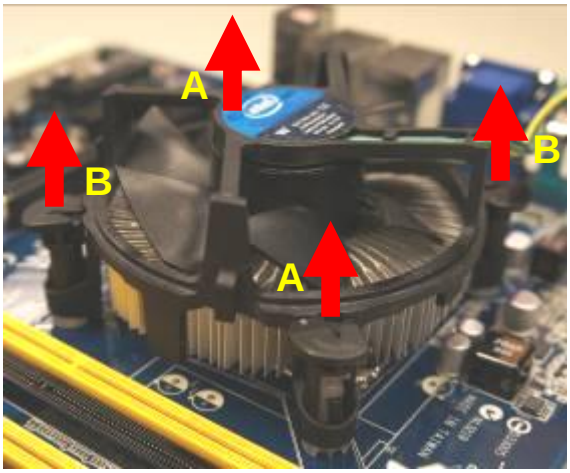
1. Disconnect the CPU fan cable from the connector on the motherboard.

2. Rotate each fastener counterclockwise



3. 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.

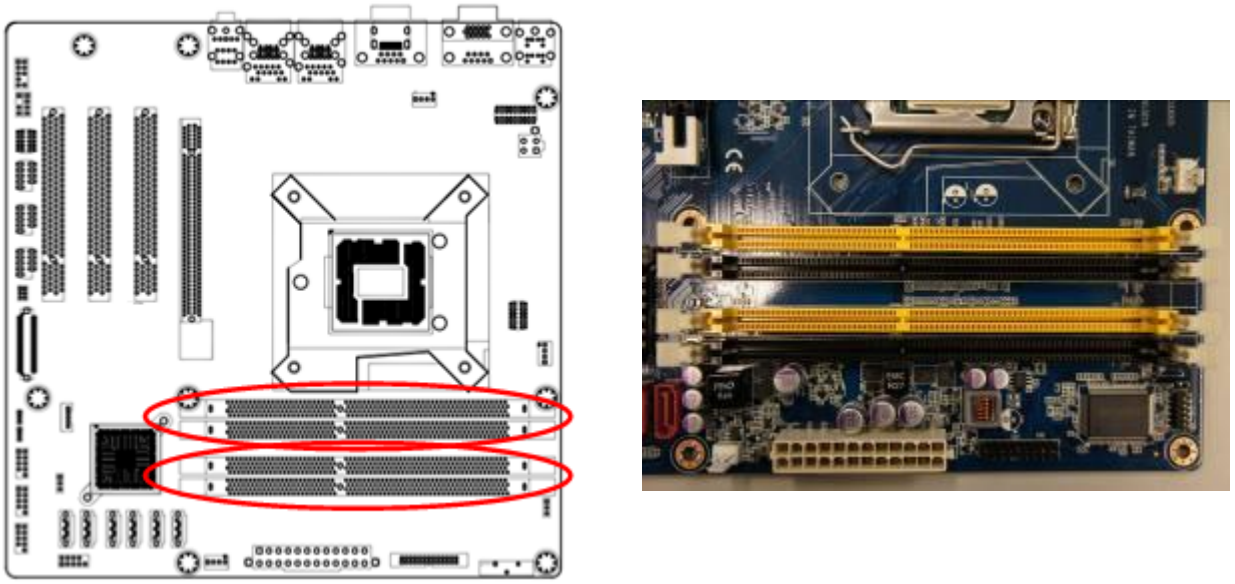
5. Rotate each fastener clockwise to ensure correct orientation when reinstalling.

2.6 System Memory

2.6.1 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

2.6.2 Memory Configurations

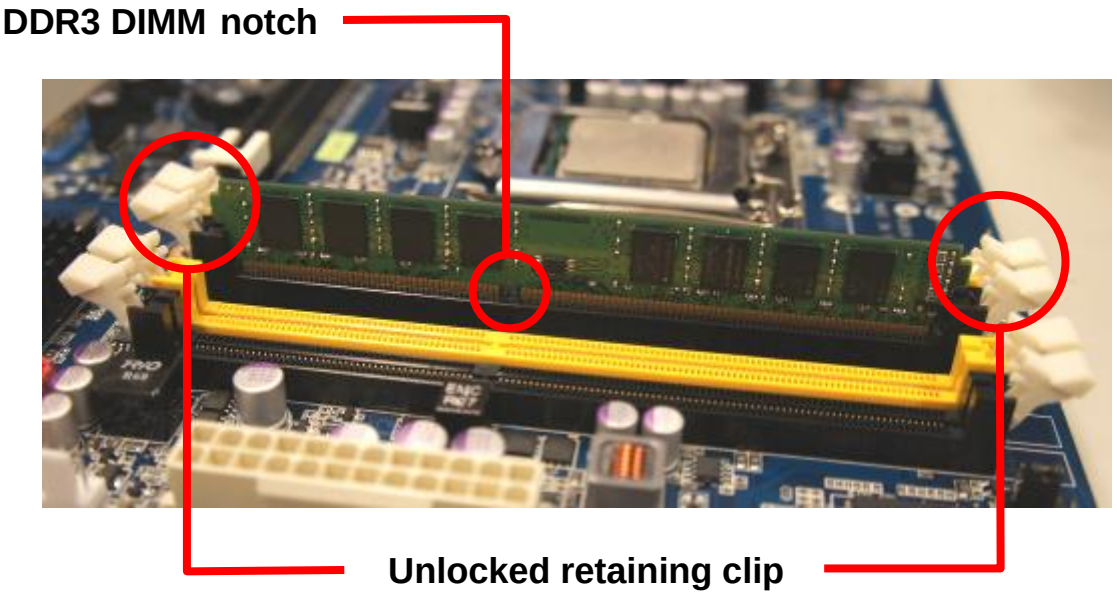
You may install 1 GB, 2 GB , and 4 GB unbuffered ECC or non-ECC DDR3 DIMMs into the DIMM sockets using the memory configurations in this section.

- 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 since it does not support PAE (Physical Address Extension) mode.
- 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.

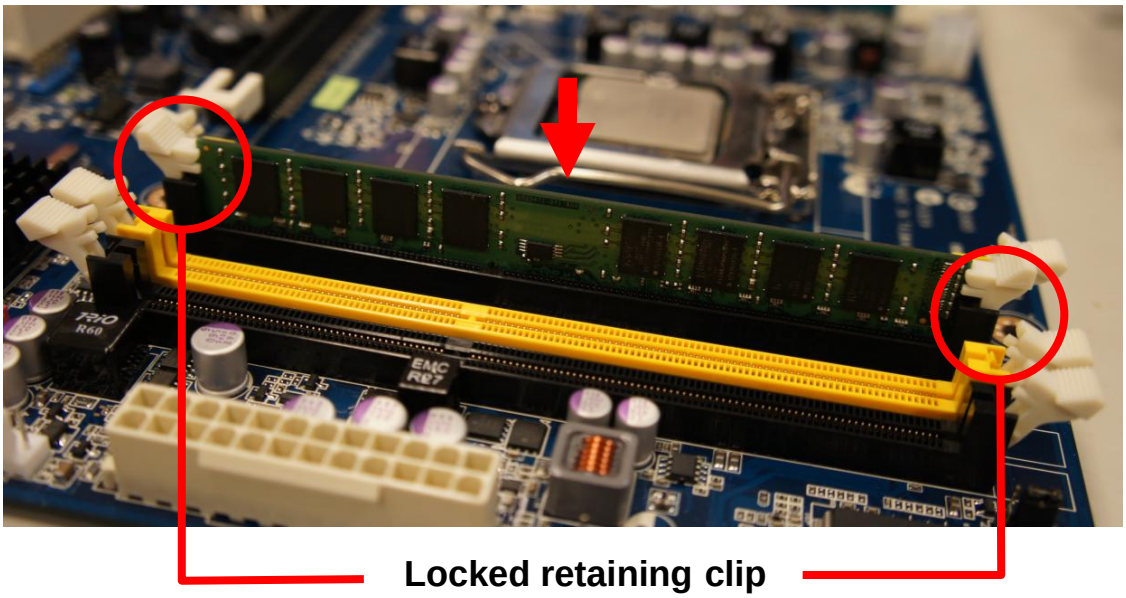
2.6.3 Installing a SO-DIMM

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.



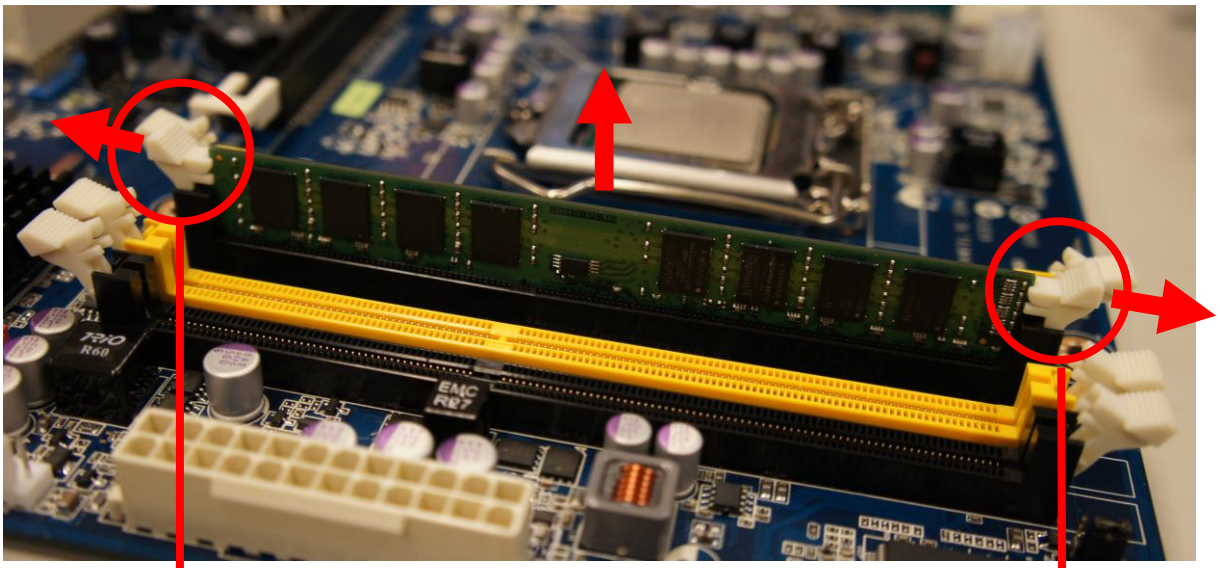
- A DDR3 DIMM is keyed with a notch so that it fits in only one direction. DO NOT force a DIMM into a socket to avoid damaging the DIMM.
- The DDR3 DIMM sockets do not support DDR DIMMs. DO NOT install DDR2 DIMMs to the DDR3 DIMM socket.

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. Unlock a DIMM socket by pulling 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.

2.6.4 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.

2.7 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.

2.7.1 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.

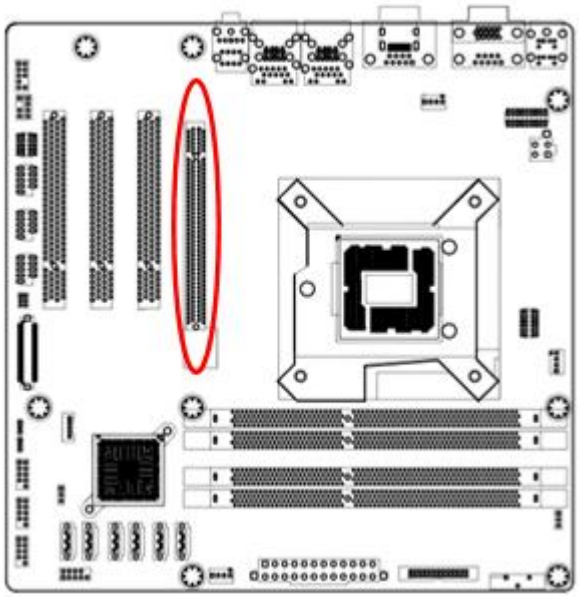
2.7.2 Configuring an Expansion Card

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.

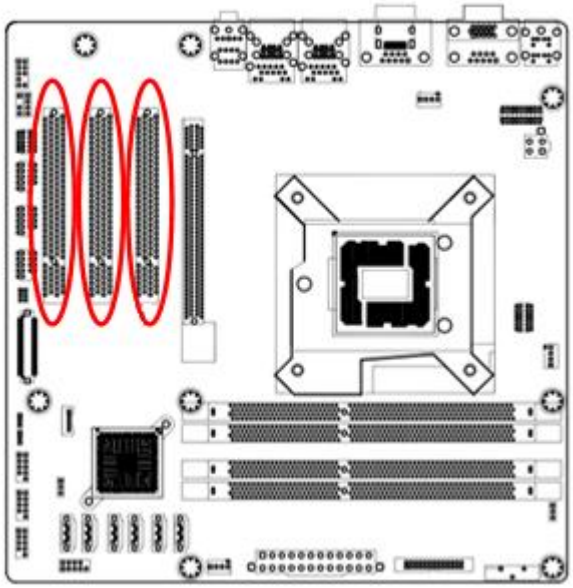
2.7.3 PCI Express x16 slot

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.



2.7.4 PCI slot

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



2.8 Jumper settings and Connectors

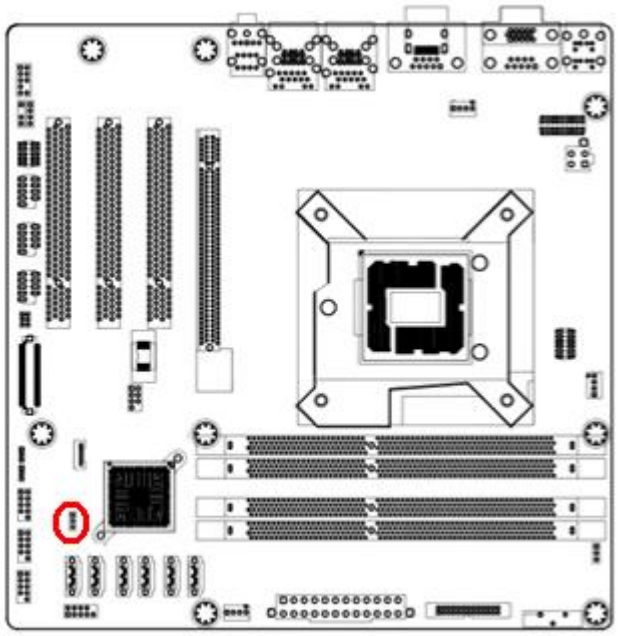
2.8.1 Clear CMOS (CLCMOS1)

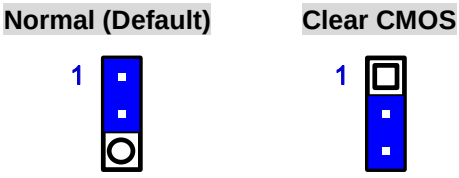
This jumper allows you to clear the Real Time Clock (RTC) RAM in CMOS. You can clear the CMOS memory of date, time, and system setup parameters by erasing the CMOS RTC RAM data. The onboard button cell battery powers the RAM data in CMOS, which includes system setup information such as system passwords.

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.

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

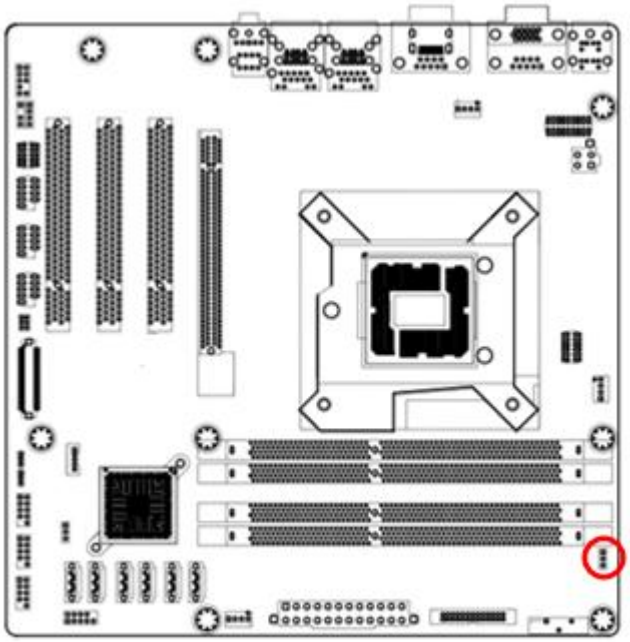




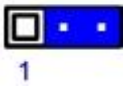
You do not need to clear the RTC when the system hangs due to overclocking. For system failure due to overclocking, use the C.P.R. (CPU Parameter Recall) feature. Shut down and reboot the system so the BIOS can automatically reset parameter settings to default values.

2.8.2 AT/ATX Power Mode Select (PSON1)

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



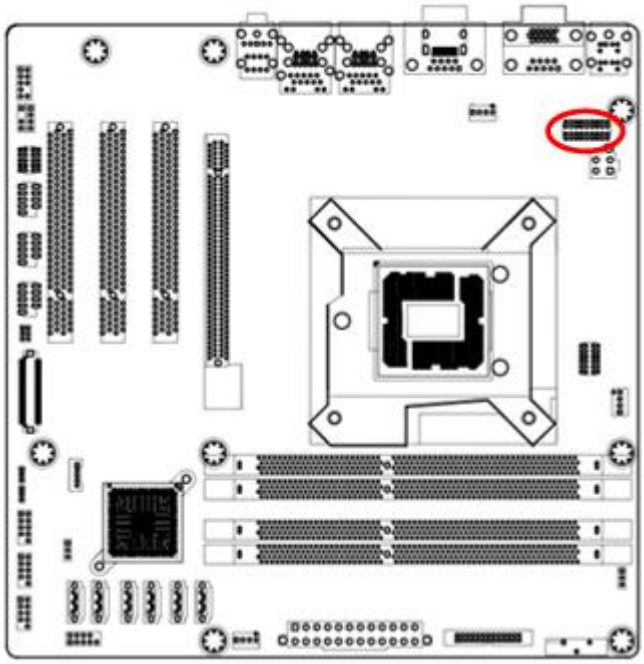
ATX MODE (Default)



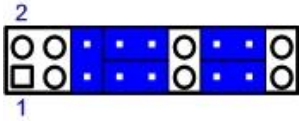
AT MODE

2.8.3 COM1 RS232/422/485 SETTING (CN2)

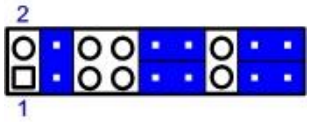
This jumper allows you to select COM1 to support RS232/422/485



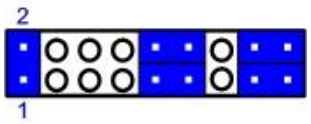
RS232 (Default)



RS422

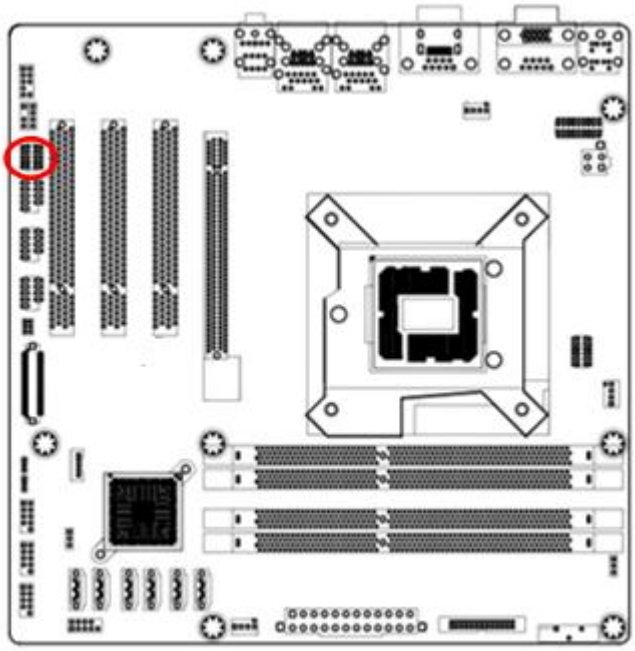


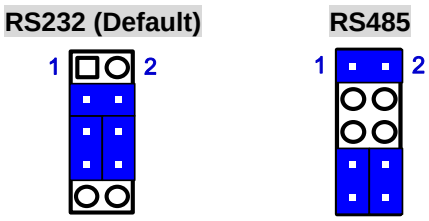
RS485



2.8.4 COM5 RS232/485 SETTING (CN4)

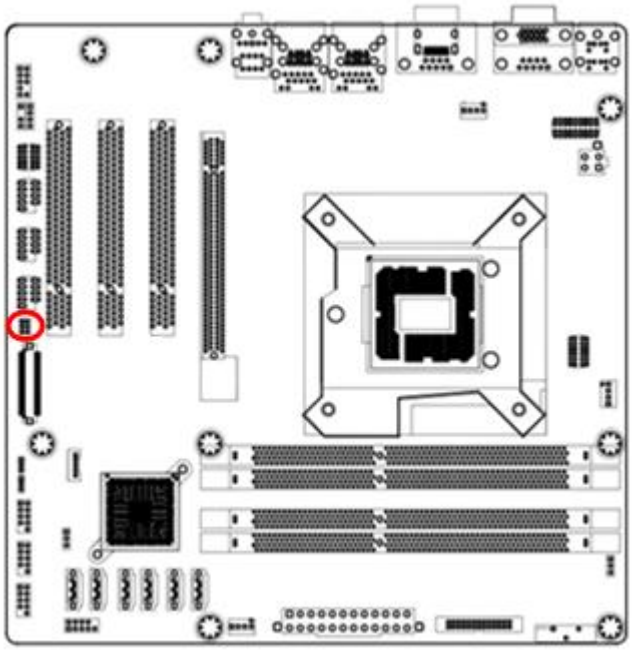
This jumper allows you to select COM5 to support RS232/485

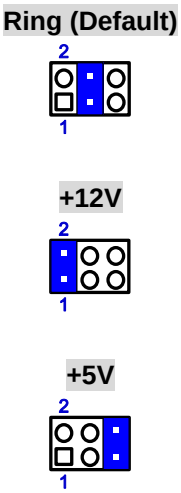




2.8.5 COM3 POWER SETTING (JCOMPWR1)

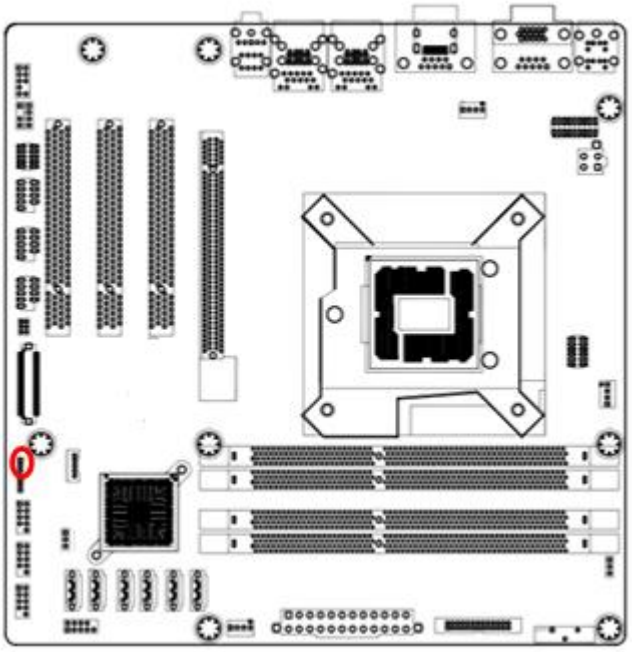
This jumper allows you to select COM3 to support Ring/+12V/+5V

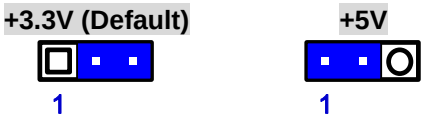




2.8.6 LVDS Backlight power selection (JBKLVOL1)

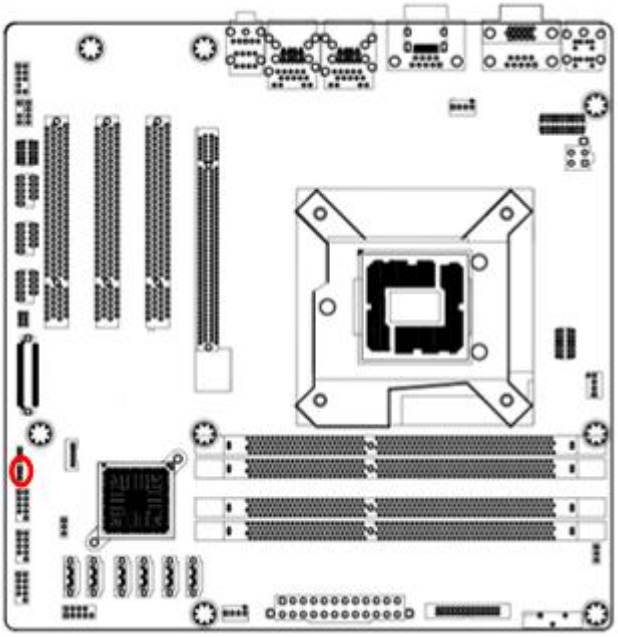
This jumper allows you to select LVDS backlight power type +3.3V / +5V

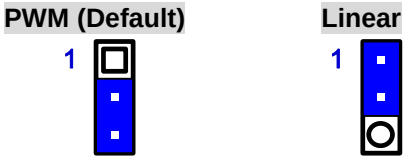




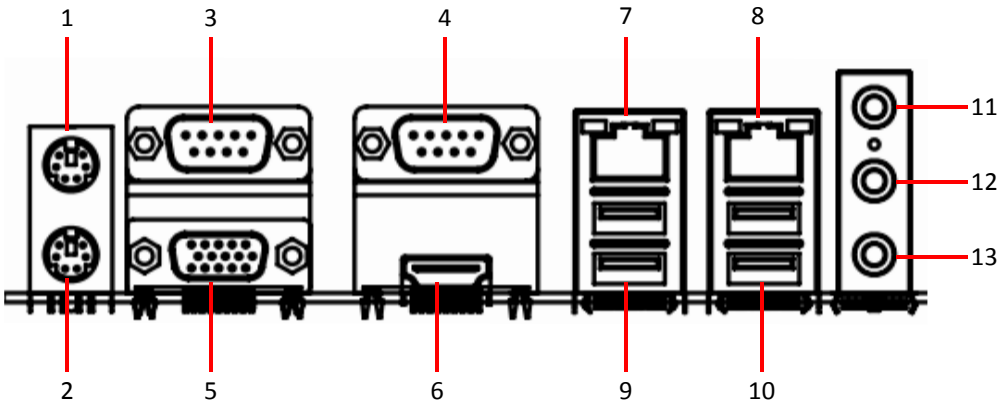
2.8.7 LVDS Backlight control mode (JBKL2)

This jumper allows you to select LVDS backlight control mode





2.8.8 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 & 4. Serial connector. This 9-pin COM1 & COM2 port is for serial devices.

5. VGA port. This 15-pin VGA port connects to a VGA monitor.

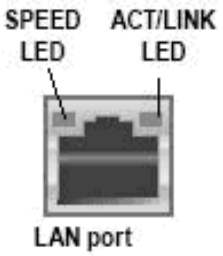
6. HDMI port. This 19-pin HDMI 1.3 port connects to a HDMI monitor.

7 & 8. 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

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



9 & 10. USB 3.0 ports 1 ~ 4. These four 4-pin Universal Serial Bus (USB) ports are available for connecting USB 3.0 devices.

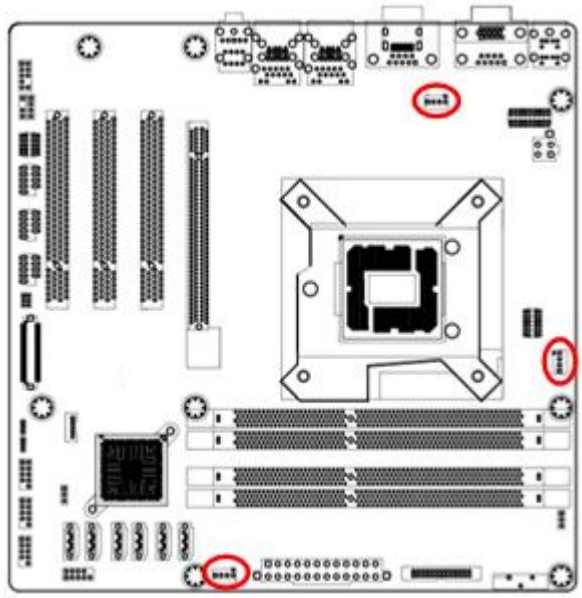
11. Line In port (light blue). This port connects a tape, CD, DVD player, or other audio sources.

12. 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.

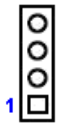
13. Microphone port (pink). This port connects a microphone.

2.8.9 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.

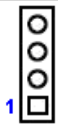


CPU_FAN



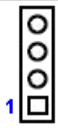
4. FAN_PWM1_C
3. FANCPUDEC1
2. +V12
1. GND

SYS_FAN



4. FAN_PWM2_C
3. FANCPUDEC2
2. +V12
1. GND

CHA_FAN



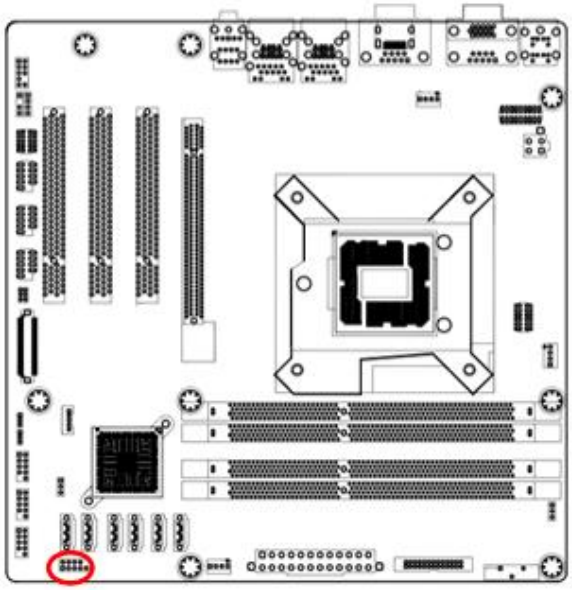
4. FAN_PWM3_C
3. FANCPUDEC3
2. +V12
1. GND

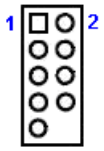
Do not forget to connect the fan cables to the fan connectors. Insufficient air flow inside the system may damage the motherboard components.

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

2.8.10 System Panel (F_PANEL)

This connector is for a chassis-mounted front panel audio I/O module that supports either HD Audio or legacy AC'97 audio standard.



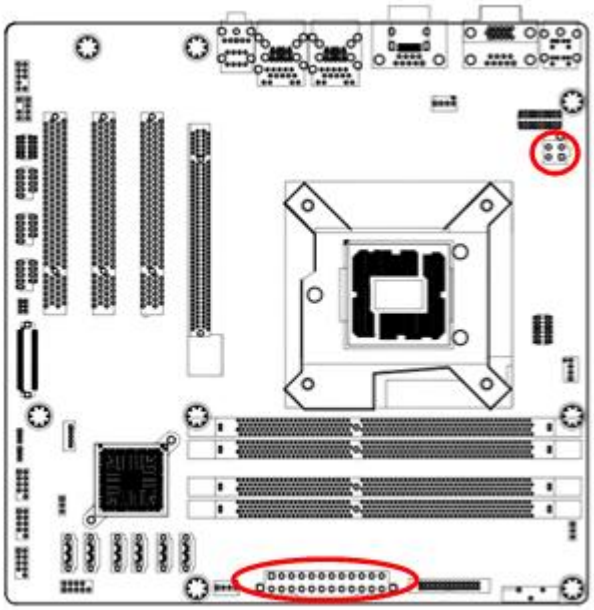


1. HDD_LED+	2. +V5_DUAL
3. SATA_LED#	4. SUPLED1
5. GND	6. PANSWIN#
7. SRST#	8. GND
9. NC	

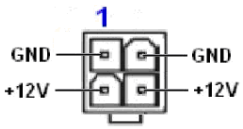
- **ATX Power Button/Soft-off Button (Pin 6-8)**
  This 2-pin connector is for the system power button. Pressing the power button turns the system on or puts the system in sleep or soft-off mode depending on the BIOS settings. Pressing the power switch and holding it for more than four seconds while the system is ON turns the system OFF.
- **Reset Button (Pin 5-7)**
  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)**
  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)**
  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.

2.8.11 ATX power connectors (EATXPWR1 & ATX12V1)

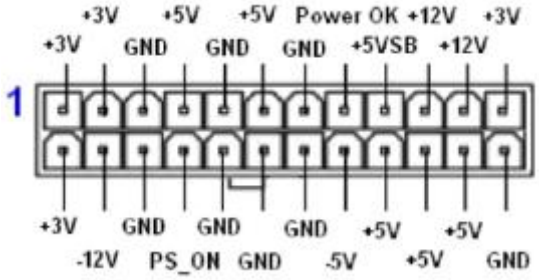
The connector is for ATX power supply plugs. The power supply plugs are designed to fit these connectors in only one orientation. Find the proper orientation and push down firmly until the connectors completely fit.



ATX12V1



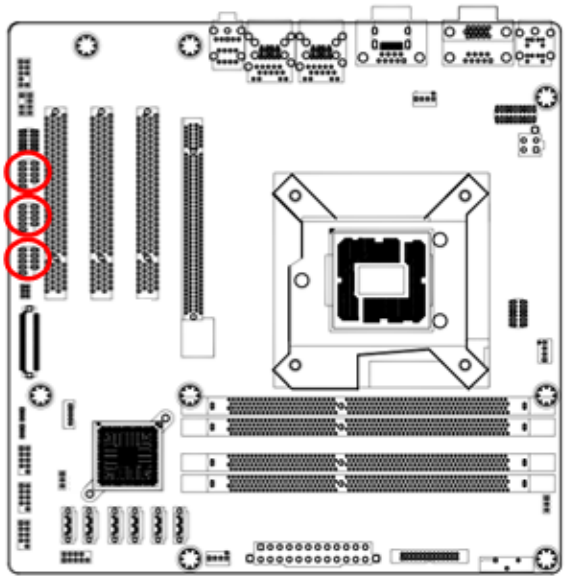
EATXPWR1



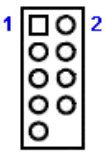
- Use of a PSU with a higher power output is recommended when configuring a system with more power-consuming devices. The system may become unstable or may not boot up if the power is inadequate.
- Make sure that your power supply unit (PSU) can provide at least the minimum power required by your system.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

2.8.12 Serial Port connectors (COM3, COM4, COM5)

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.

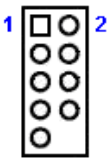


COM3



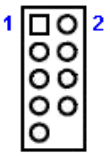
1. COM_C-DCD3#	2. COM_C-RXD3
3. COM_C-TXD3	4. COM_C-DTR3#
5. GND	6. COM_C-DSR3#
7. COM_C-RTS3#	8. COM_C-CTS3#
9. RI3xPOWERxJMP	

COM4



1. COM_C-DCD4#	2. COM_C-RXD4
3. COM_C-TXD4	4. COM_C-DTR4#
5. GND	6. COM_C-DSR4#
7. COM_C-RTS4#	8. COM_C-CTS4#
9. COM_C-RI4#	

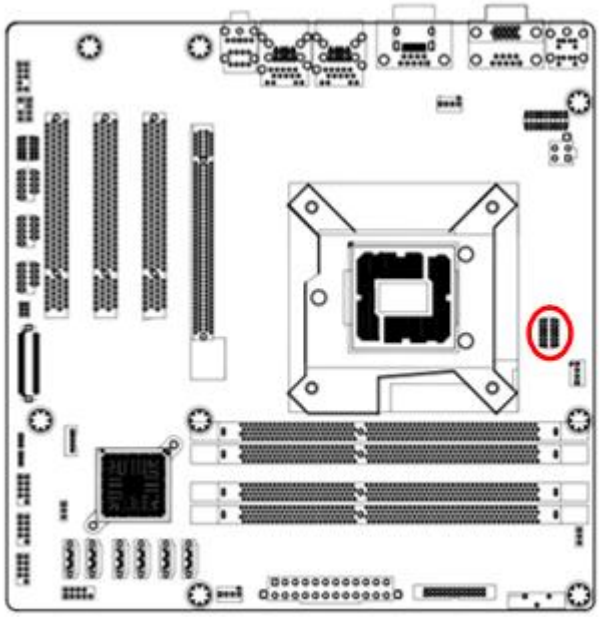
COM5



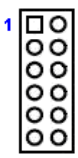
1. COM_C-DCD5#	2. COM_C-RXD5
3. COM_C-TXD5	4. COM_C-DTR5#
5. GND	6. COM_C-DSR5#
7. COM_C-RTS5#	8. COM_C-CTS5#
9. COM_C-RI5#	

2.8.13 Digital IO Connector (DIO1)

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



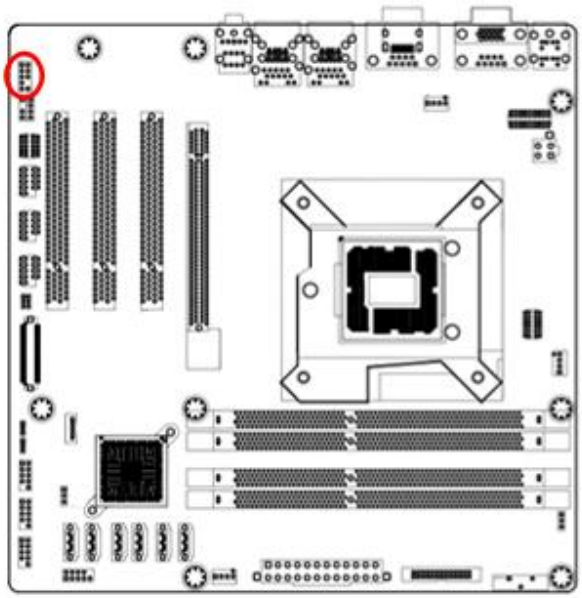
DIO1

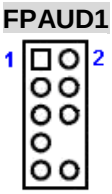


1. DIO_GP0	2. DIO_GP4
3. DIO_GP1	4. DIO_GP5
5. DIO_GP2	6. DIO_GP6
7. DIO_GP3	8. DIO_GP7
9. SMB_CLK_RESUME	10. SMB_DATA_RESUME
11. GND	12. +V5_DUAL

2.8.14 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. Connect one end of the front panel audio I/O module cable to this connector.



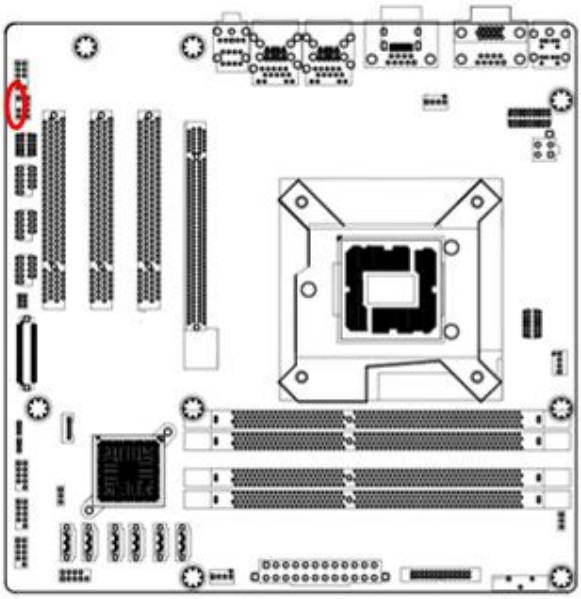


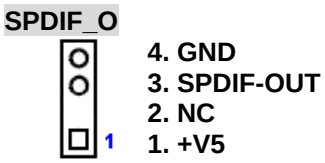
1. MIC2L	2. GND
3. MIC2R	4. PCH_GPIO34
5. LINE2R	6. MIC2-JD
7. FRONT-IO-SENSE_C	8. NC
9. LINE2L	10. LINE2-JD

- For motherboards with the optional HD Audio feature, we recommend that you connect a high-definition front panel audio module to this connector to avail of the motherboard's high-definition audio capability

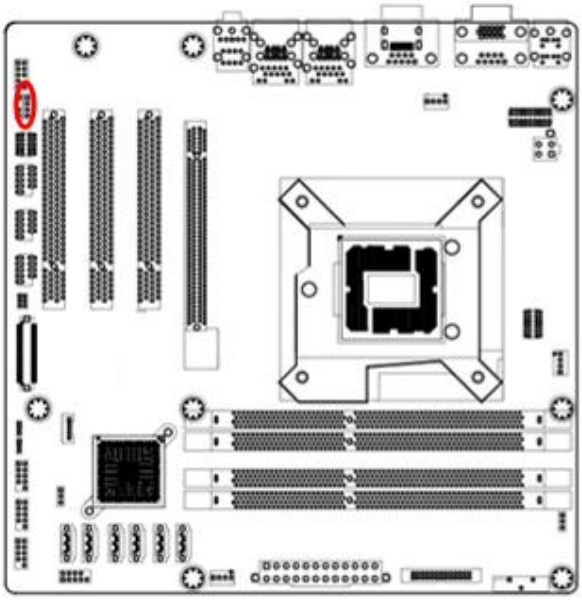
2.8.15 Digital Audio connector (SPDIF_O)

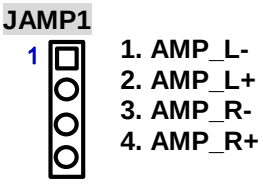
This connector is for the S/PDIF audio module to allow digital sound output. Connect one end of the S/PDIF audio cable to this connector and the other end to the S/PDIF module.





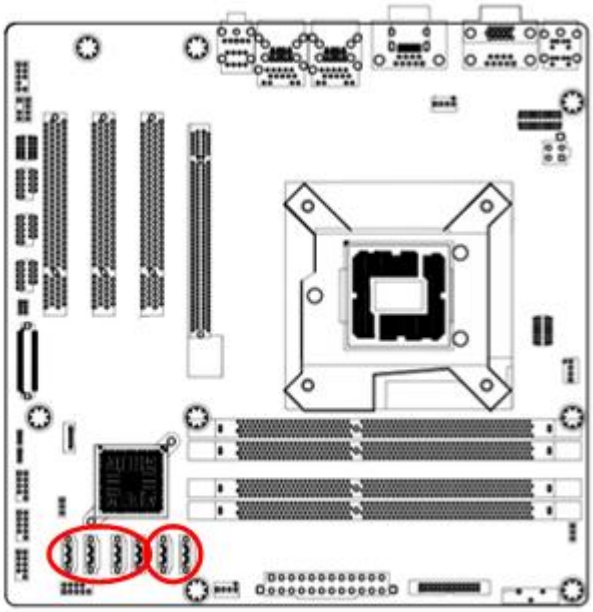
2.8.16 Amplifier Connector (JAMP1)

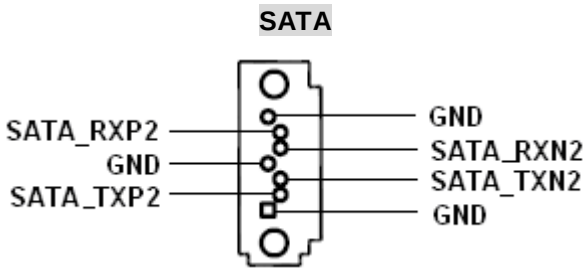




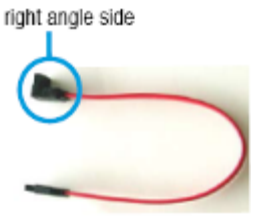
2.8.17 Serial ATA Connector (SATA1~2, SATA3~6)

SATA 1~2 support SATA 2.0 and SATA 3~6 support SATA 3.0. These connectors are for the Serial ATA signal cables for Serial ATA hard disk drives.



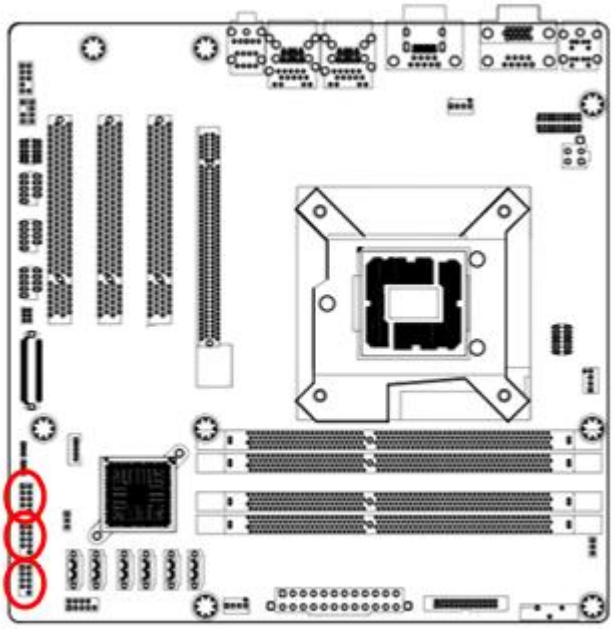


Connect the right-angle side of SATA signal cable to SATA device. Or you may connect the right-angle side of SATA cable to the onboard SATA port to avoid mechanical conflict with large graphics cards.

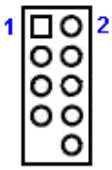


2.8.18 USB connectors (USB56, USB78, USB910)

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



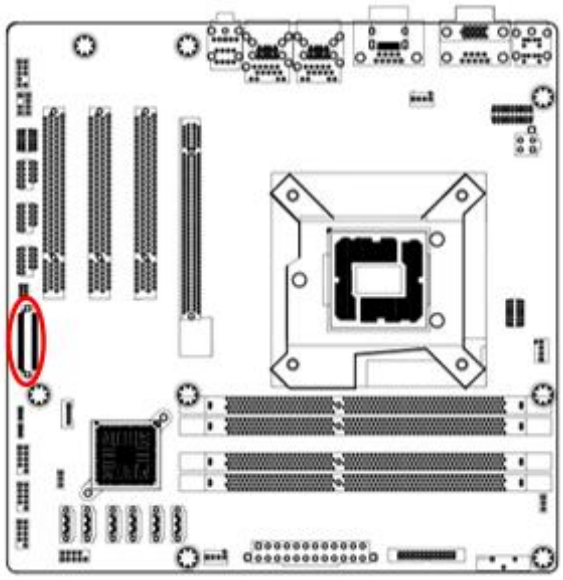
1. USB +5V	**2. USB +5V**
3. USB-	**4. USB-**
5. USB+	**6. USB+**
7. GND	**8. GND**
	10. NC

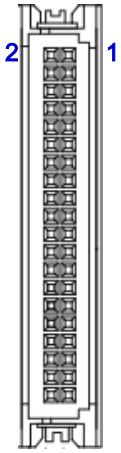
- Never connect a **1394 cable** to the USB connectors. Doing so will damage the motherboard!

The USB module is purchased separately.

2.8.19 LVDS Connector (LVDS1)

The connector is for 24-bit dual channel LVDS panel.

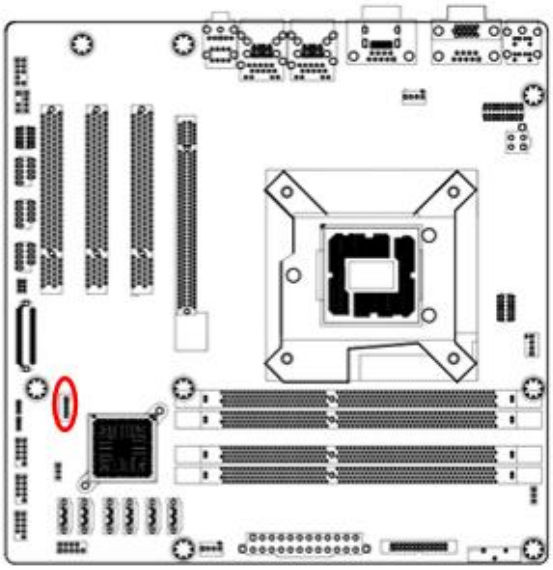




2. VDD_+5V	1. VDD_+3V
4. VDD_+5V	3. VDD_+3V
6. DDC_DATA	5. DDC_CLK
8. GND	7. GND
10. LVDS_A0+	9. LVDS_A1+
12. LVDS_A0-	11. LVDS_A1-
14. GND	13. GND
16. LVDS_A2+	15. LVDS_A3+
18. LVDS_A2-	17. LVDS_A3-
20. GND	19. GND
22. LVDS_B0+	21. LVDS_B1+
24. LVDS_B0-	23. LVDS_B1-
26. GND	25. GND
28. LVDS_B2+	27. LVDS_B3+
30. LVDS_B2-	29. LVDS_B3-
32. GND	31. GND
34. LVDS_A_CLK+	33. LVDS_B_CLK+
36. LVDS_A_CLK-	35. LVDS_B_CLK-
38. GND	37. GND
40. VDD_+12V	39. VDD_+12V

2.8.20 LCD Inverter Connector (JBKL1)

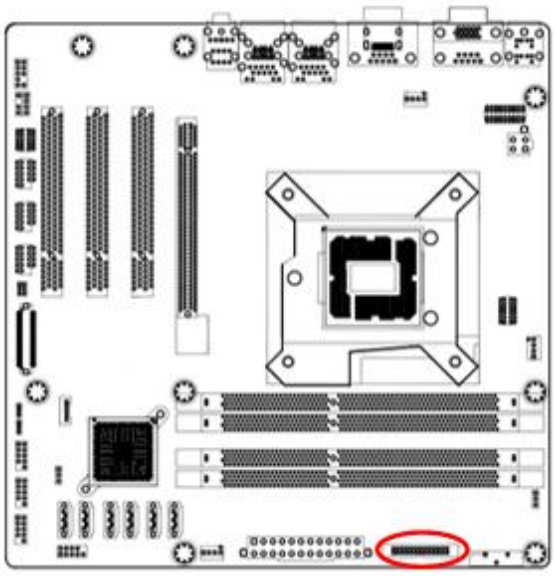
The connector is for the control of internal LVDS brightness.

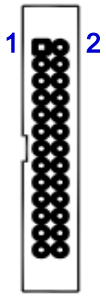


1. +12V
2. GND
3. BL_EN
4. Backlight
5. +5V

2.8.21 LPT Port Connector (LPT1)

This connector is for print port.





1. LPT_STB#	2. LPT_AFD#
3. LPT_PD0	4. LPT_ERR#
5. LPT_PD1	6. LPT_INIT#
7. LPT_PD2	8. LPT_SLIN#
9. LPT_PD3	10. GND
11. LPT_PD4	12. GND
13. LPT_PD5	14. GND
15. LPT_PD6	16. GND
17. LPT_PD7	18. GND
19. LPT_ACK#	20. GND
21. LPT_BUSY	22. GND
23. LPT_PE	24. GND
25. LPT_SLCT	26. NC

3. BIOS Setup

3.1 Introduction

The BIOS setup program allows users to modify the basic system configuration. In this following chapter will describe how to access the BIOS setup program and the configuration options that may be changed.

3.2 Starting Setup

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

3.3 Using Setup

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

Key(s)	Function Description
→←	Select Screen
↑↓	Select Item
Enter	Select
+ -	Change Opt.
F1	General Help
F2	Previous Values
F3	Optimal Defaults
F4	Save and Exit
ESC	Exit

3.3.1 List Box

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

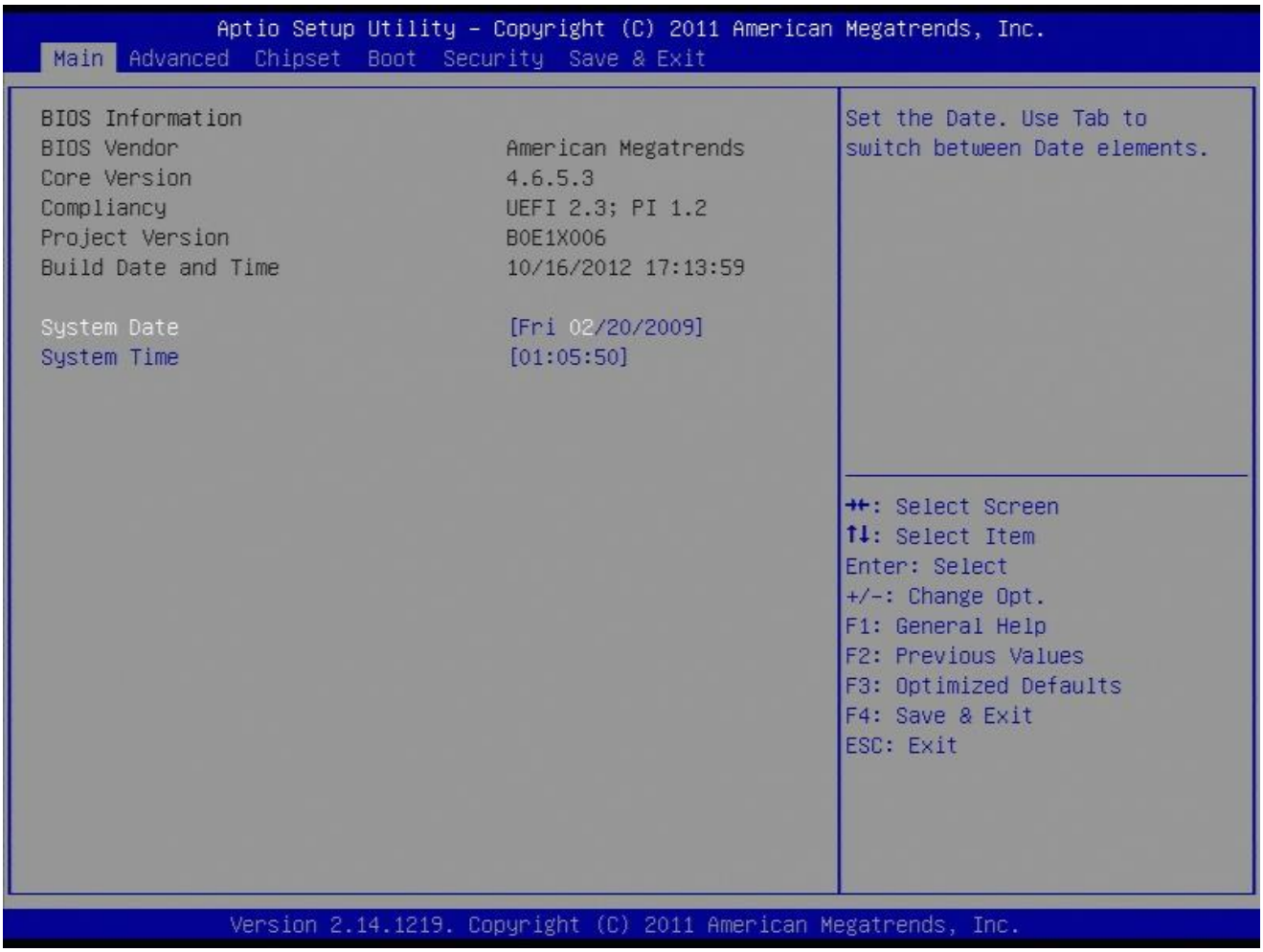
3.3.2 Sub-menu

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.

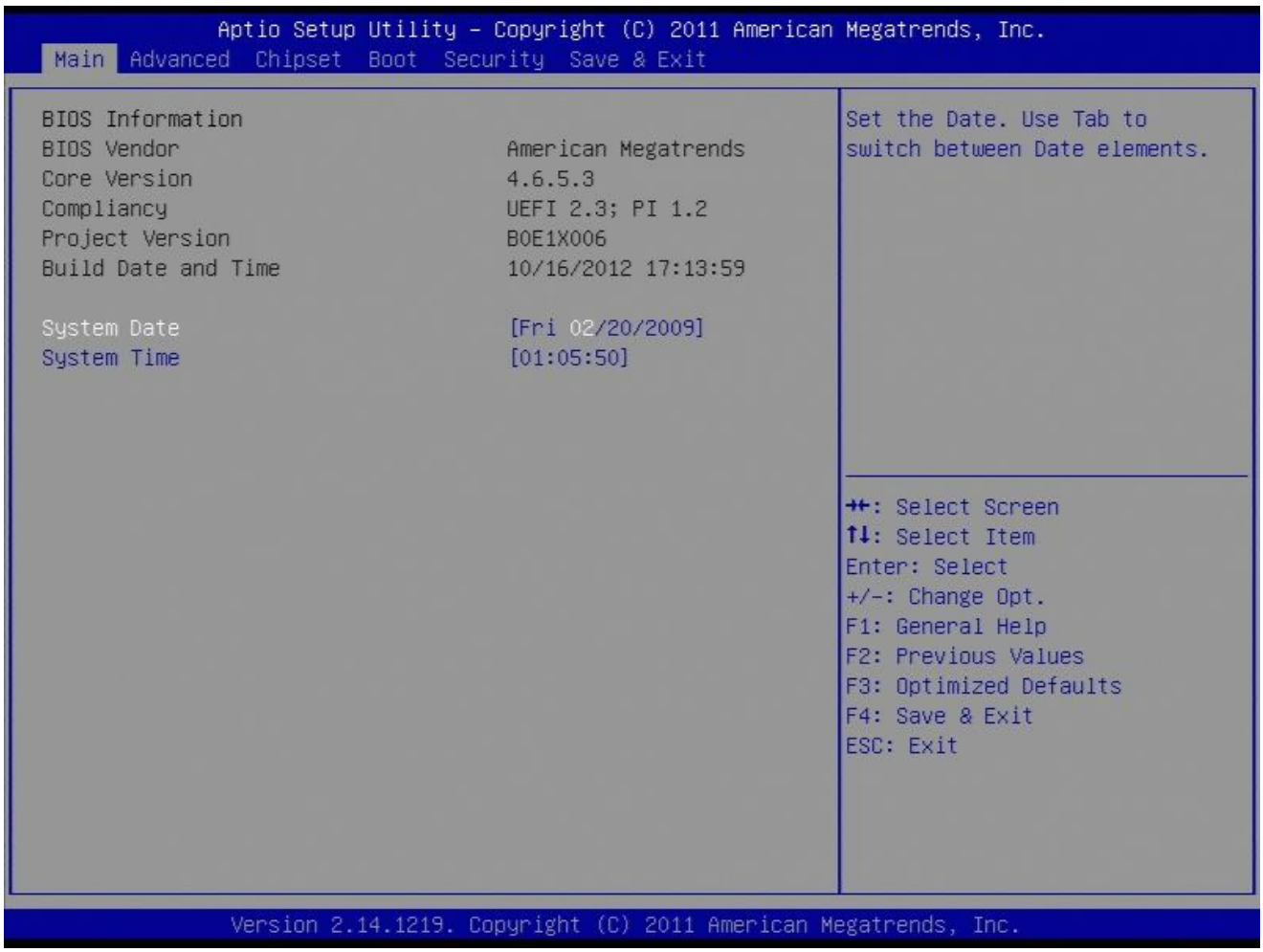
3.4 BIOS setup

When you enter the BIOS, the following screen appears. The BIOS menu screen displays the items that allow you to make changes to the system configuration. To access the menu items, press the up/down/right/left arrow key on the keyboard until the desired item is highlighted, then press [Enter] to open the specific menu.



3.4.1 Main Setup

This menu gives you an overview of the general system specifications. The BIOS automatically detects the items in this menu. Use this menu for basic system configurations, such as time, date etc.



BIOS Information

Displays the auto-detected BIOS information.

- **System Date**

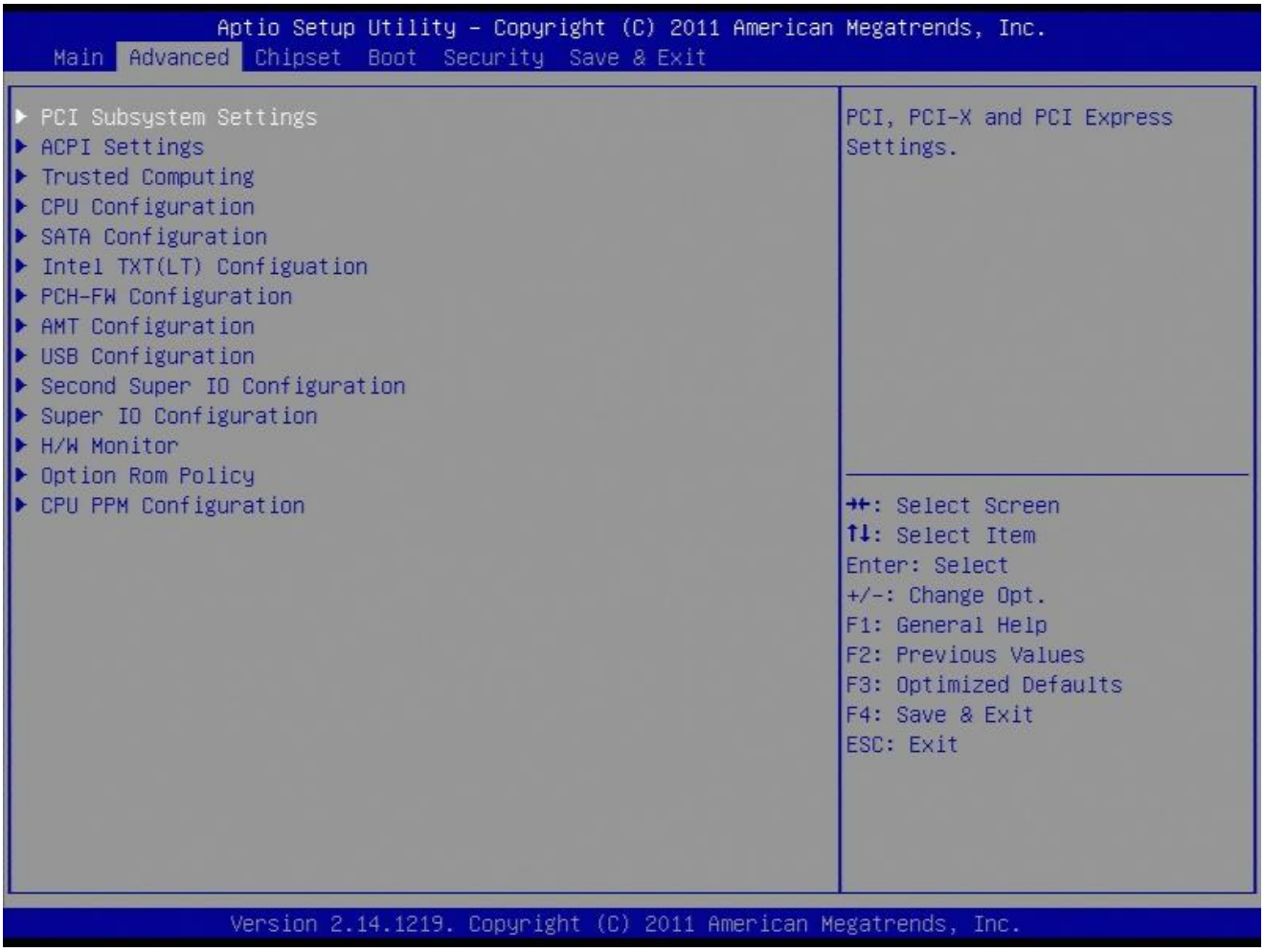
The date format is <Date>,<Month>,<Day>,<Year>.

- **System Time**

The time format is <Hour>,<Minute>,<Second>.

3.4.2 Advanced BIOS Setup

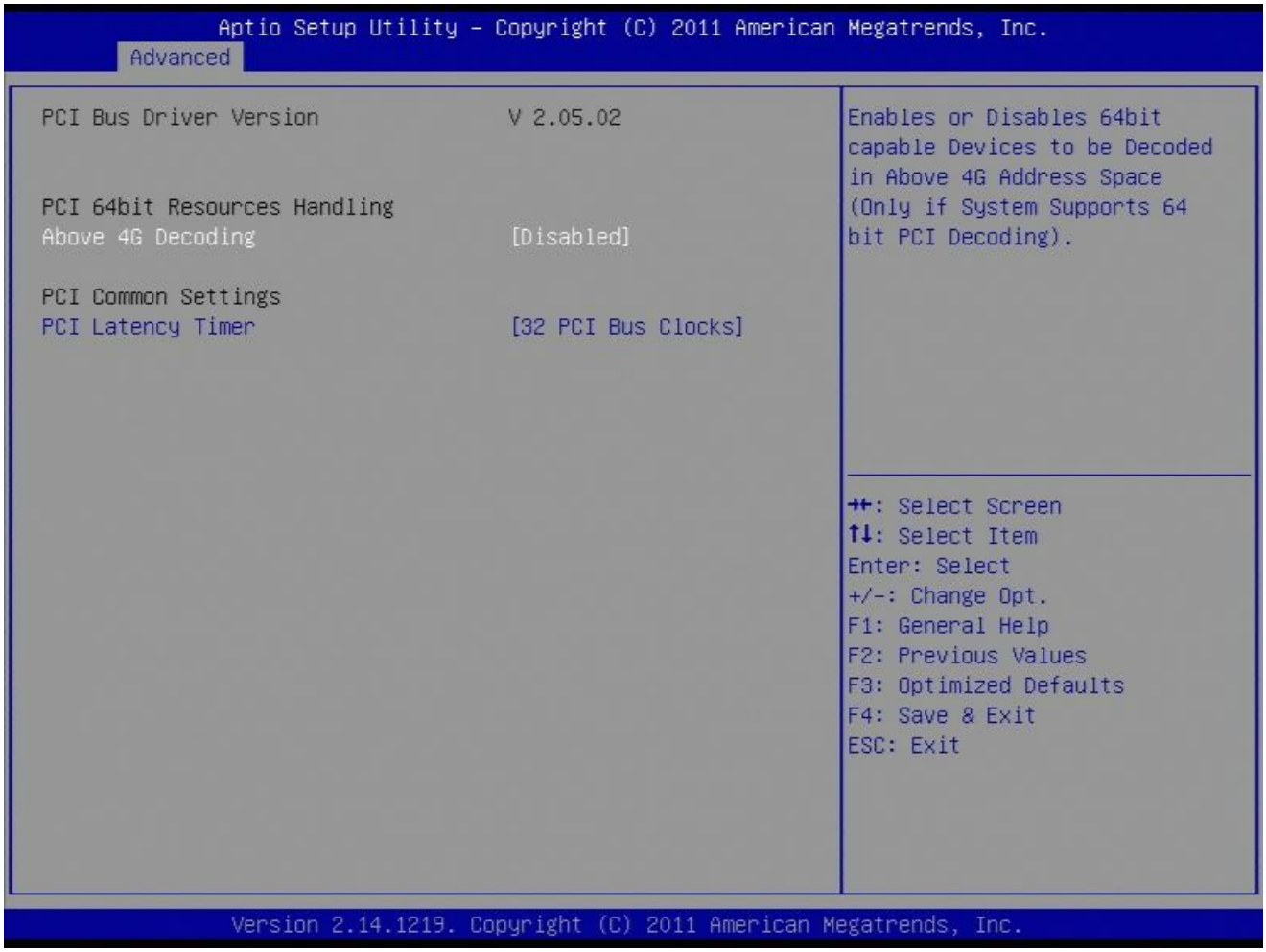
Select the Advanced tab from the setup screen to enter the Advanced BIOS Setup screen. You can select any of the items in the left frame of the screen, such as Chipset configuration, to go to the sub menu for that item. You can display an Advanced BIOS Setup option by highlighting it using the <Arrow>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



Take caution when changing the settings of the Advanced menu items. Incorrect field values can cause the system to malfunction.

3.4.3 PCI Subsystem Setting

PCI, PCI-X and PCI Express Settings.



PCI Bus Driver Version

Displays the information of PCI Bus Driver Version

.

PCI 64bit Resources Handling

- **Above 4G Decoding [Disabled]**

Enables or disables 64bit capable devices to decoded in above 4G address space (Only if system supports 64bit PCI decoding)

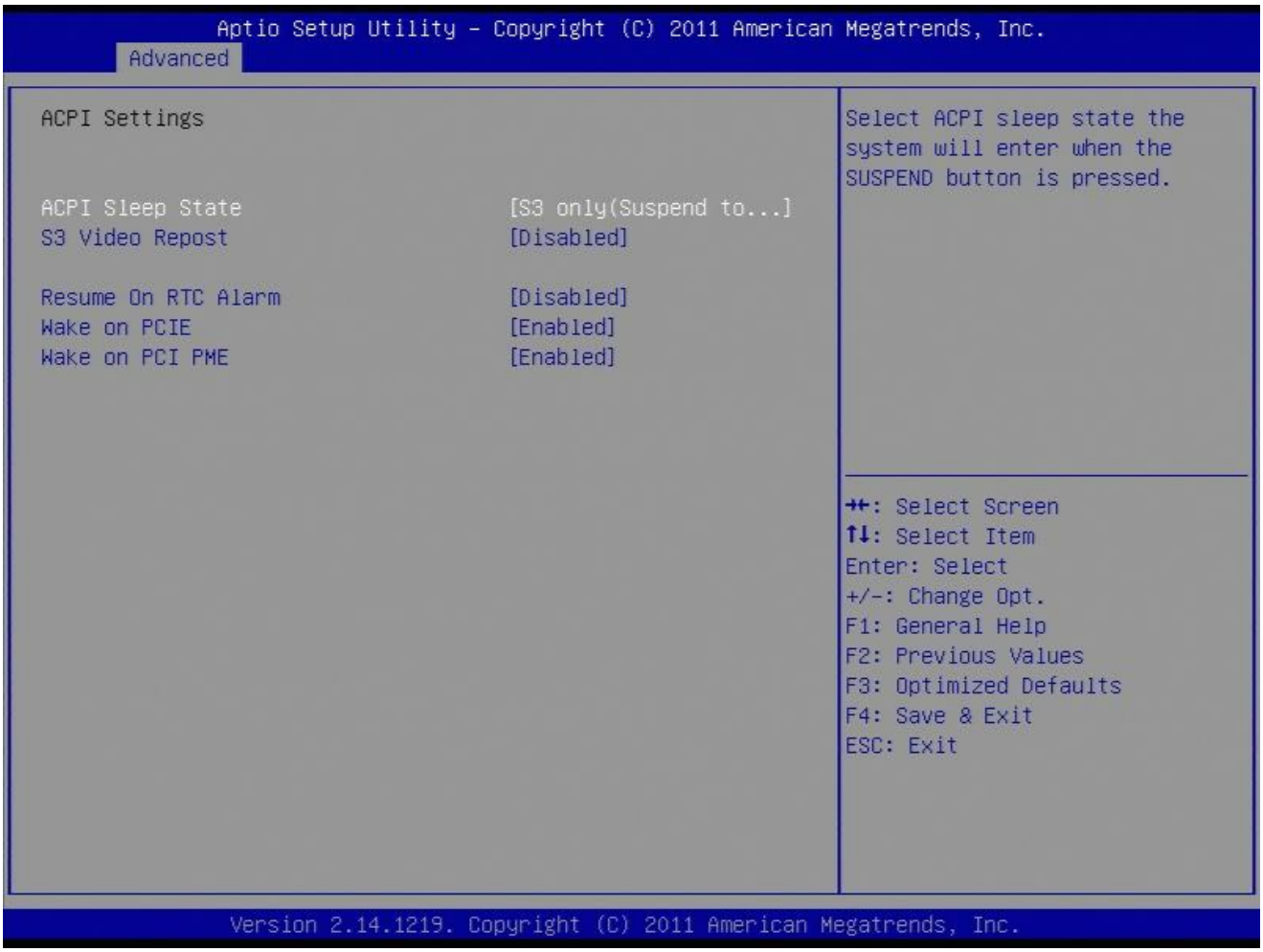
PCI Common Settings

- **PCI Latency Timer [32 PCI Bus Clocks]**

Allows the PCI Latency Timer to be adjusted. This option sets the latency of all PCI devices on the PCI bus.

Configuration options: [32 PCI Bus Clocks] [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]

3.4.4 ACPI Settings



- **ACPI Sleep State [S3 only (Suspend to RAM)]**

Select the highest ACPI sleep state the system will enter the SUSPEND button is press.
Configuration options: [S1 only(CPU Stop Clock)] [S3 only(suspend to RAM)]

- **S3 Video Repost [Disabled]**

Enable or disable S3 video repost
Configuration options: [Disabled] [Enabled]

- **Resume On RTC Alarm [Disabled]**

Enable or disable system wake on alarm even. When enabled, system will wake upon the hr/min/sec specified.
Configuration options: [Disabled] [Enabled]

- **Wake on PCIE [Enabled]**

Control PCIE device wake up function.
Configuration options: [Disabled] [Enabled]

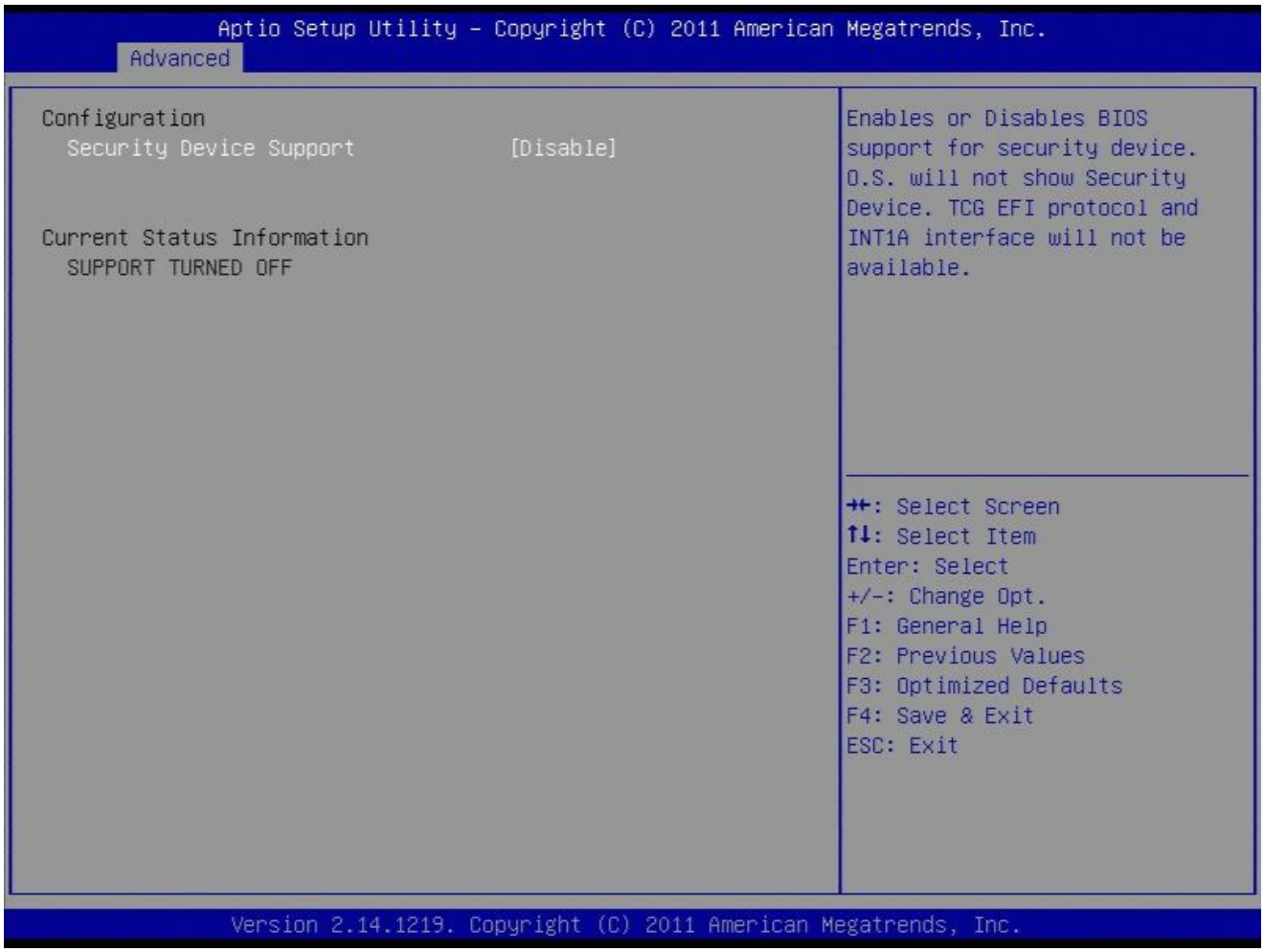
- **Wake on PCI PME [Enabled]**

Control PCI device wake up function.

Configuration options: [Disabled] [Enabled]

3.4.5 Trusted computing

Trusted computing (TPM) settings.



Configuration

- **Security Device Support [Disable]**

Enable or disable TPM support.

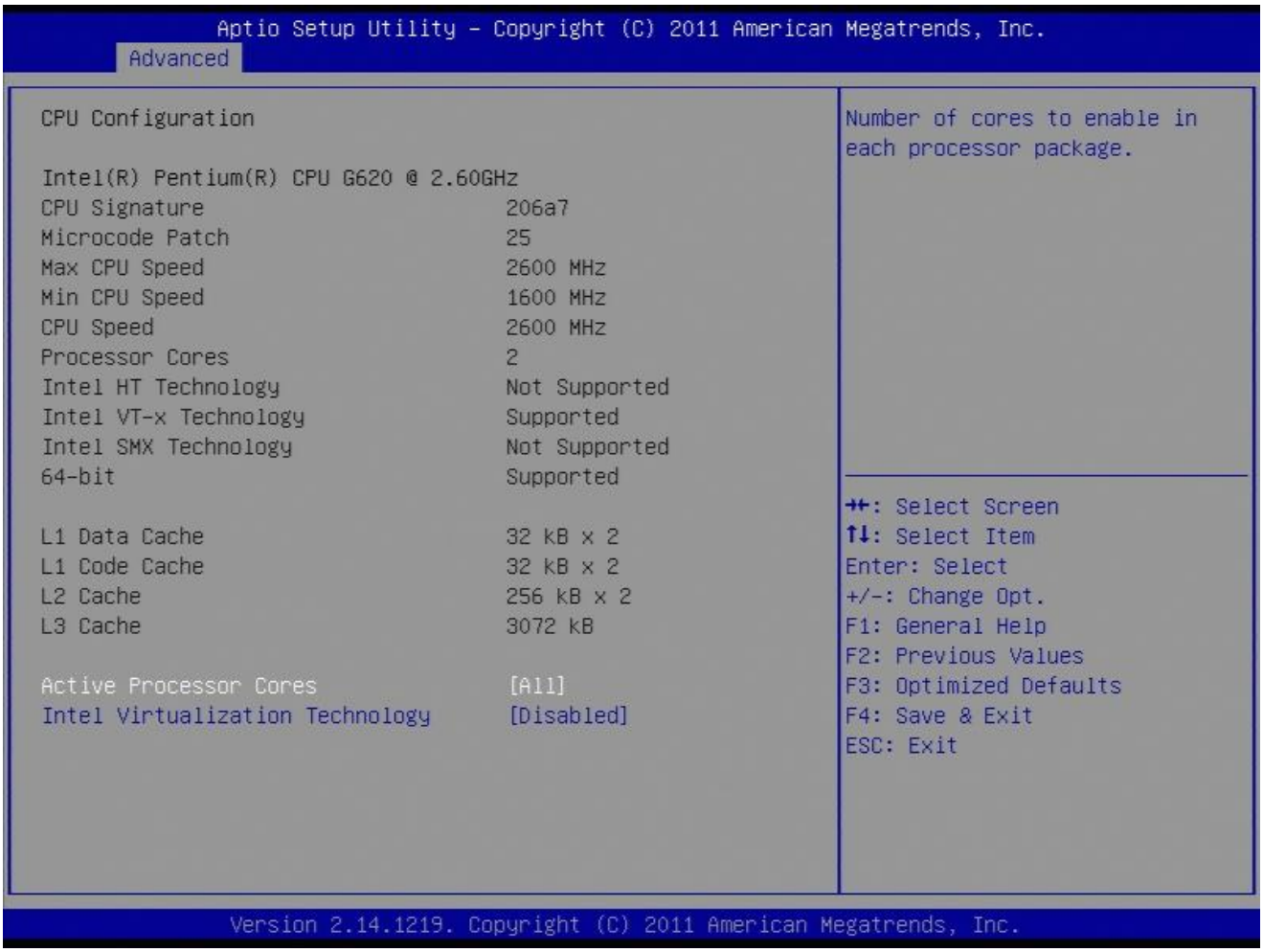
Configuration options: [Disable] [Enable]

Current TPM Status Information

Displays the TPM status information.

3.4.6 CPU configuration

CPU Configuration Parameter.



CPU configuration

Displays the CPU information

- **Active Processor Cores [All]**

Select the numbers of cores in each processor package.

Configuration options: [All] [1] [2] [3] [4] [5] [6] [7]

It depends on each CPU type.

- **Limit CPUID Maximum [Disable]**

Disable for Windos XP.

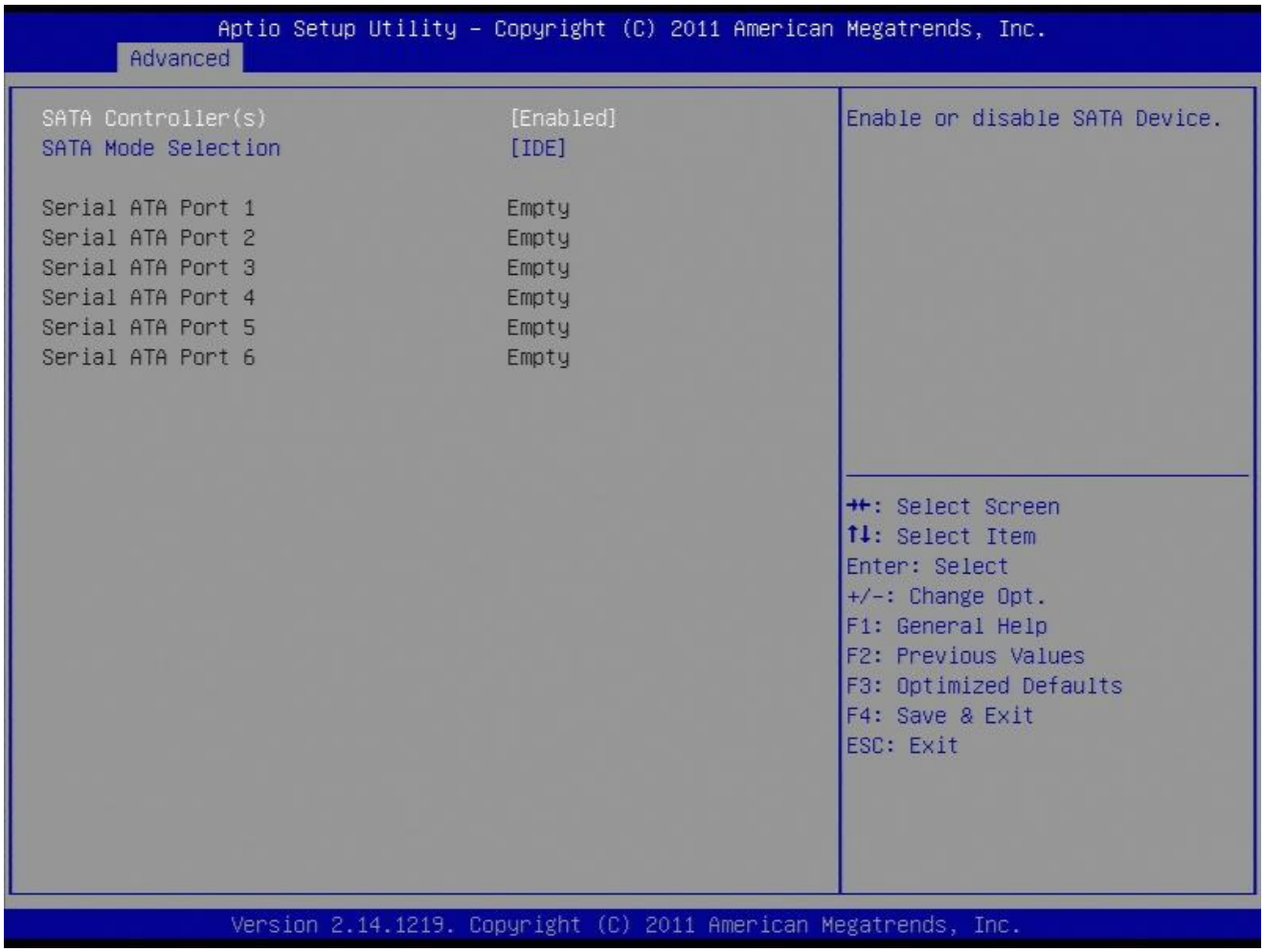
Configuration options: [Disabled] [Enabled]

- **Intel Virtualization Technology [Disabled]**

When enable, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

Configuration options: [Disabled] [Enabled]

3.4.7 SATA Configuration



- **SATA Controller(s) [Enabled]**

Enable or disable SATA device(s)

Configuration options: [Disabled] [Enabled]

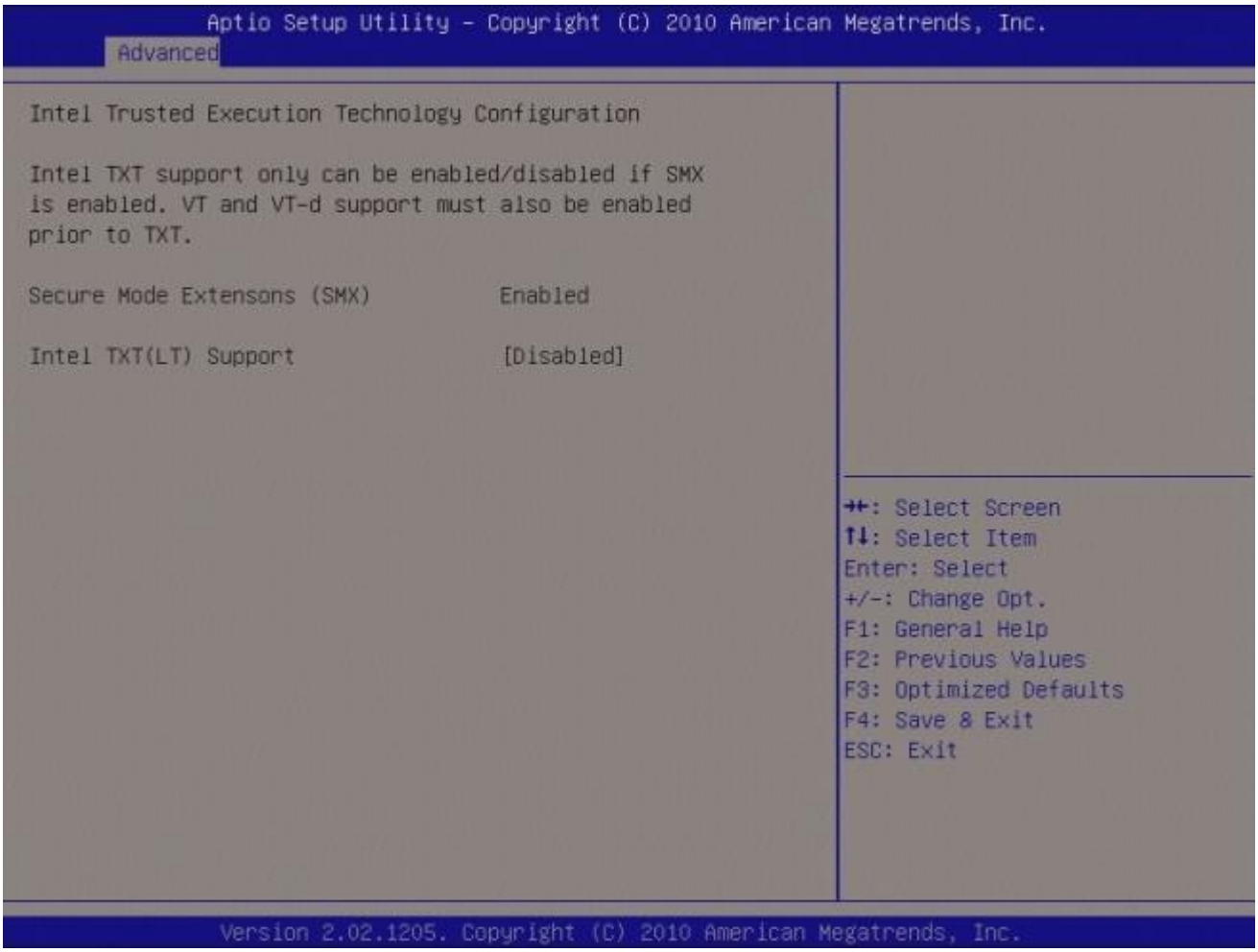
- **SATA Mode Selection [IDE]**

Support IDE, AHCI or RAID mode

Configuration options: [IDE][AHCI][RAID]

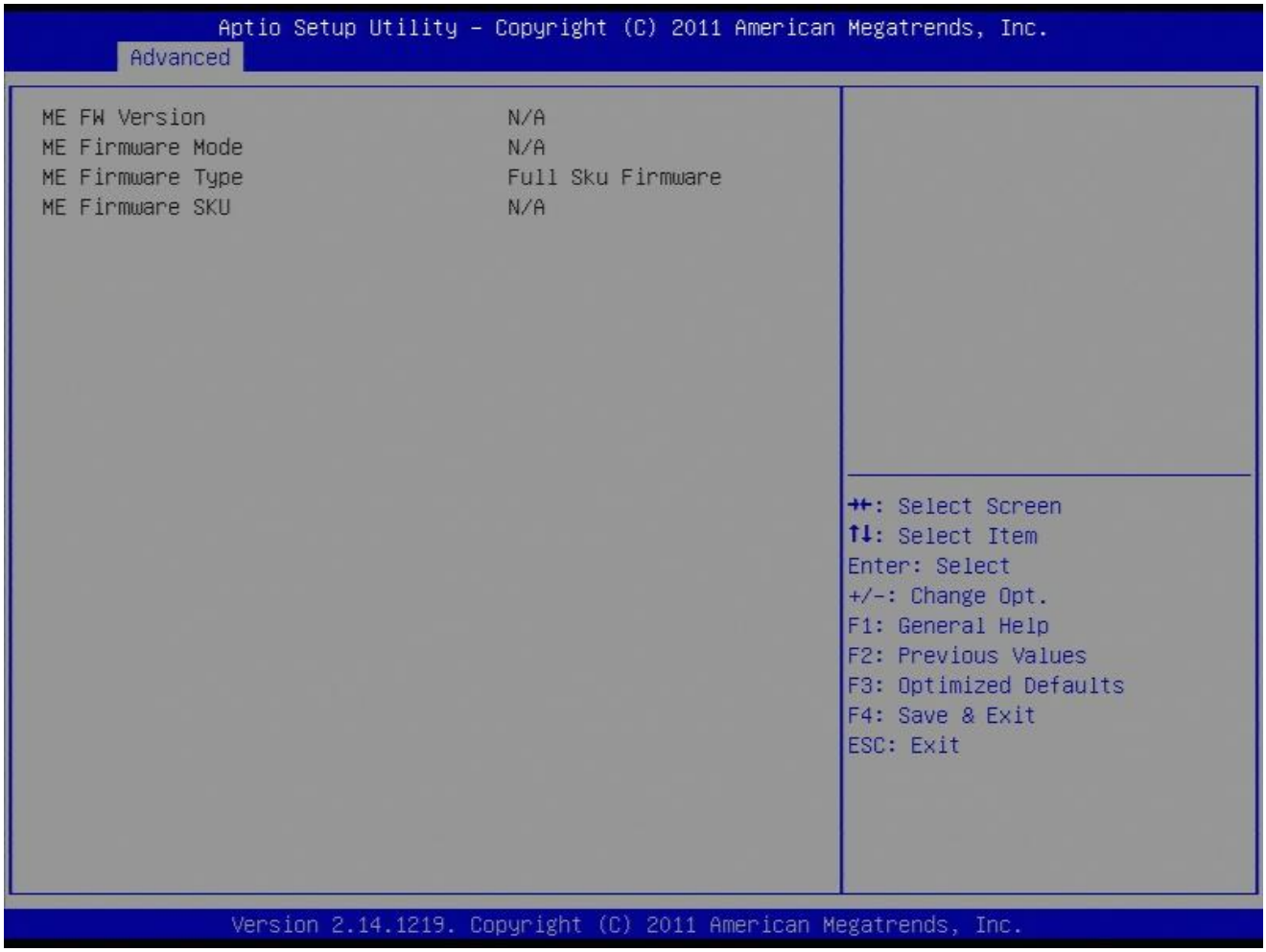
3.4.8 Intel TXT(LT) Configuration

Display Intel Trusted Execution Technology configuration.



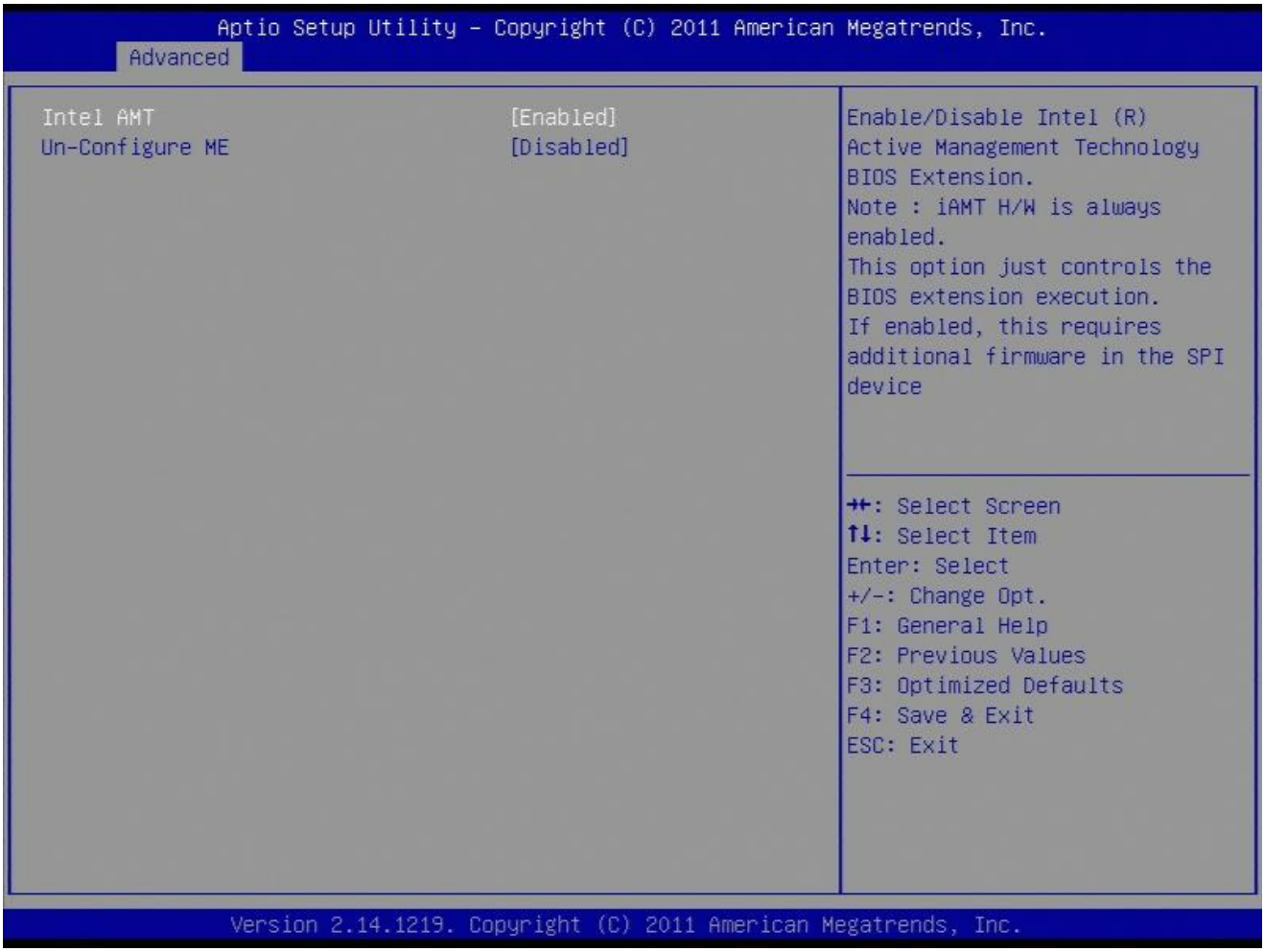
3.4.9 PCH-FW Configuration

Display management engine technology configuration.



3.4.10 AMT Configuration

AMT Parameters



- **Intel AMT [Enable]**

Enable or disable Intel active management technology BIOS extension

Configuration options: [Disabled] [Enabled]

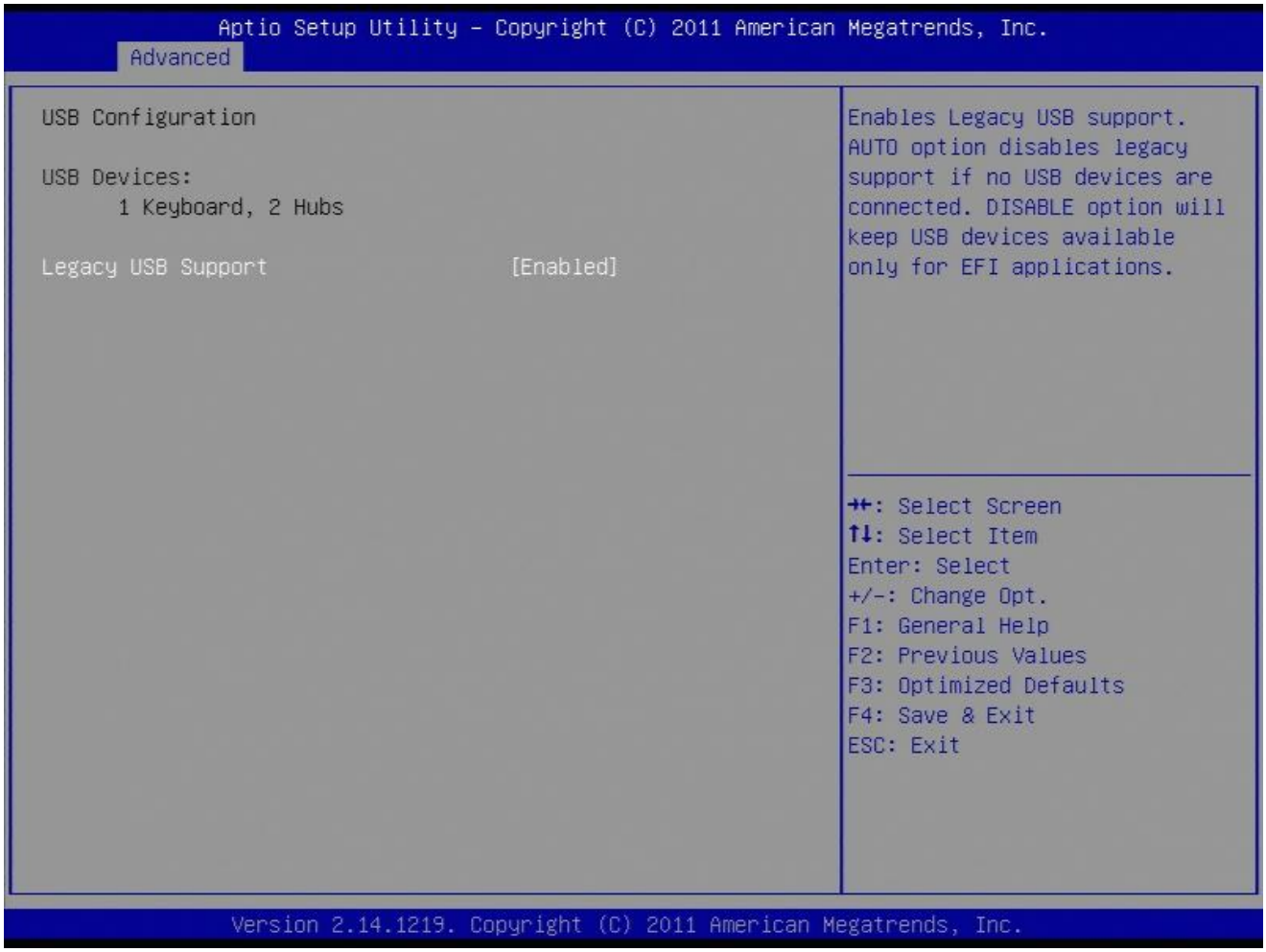
- **Un-configure ME [Disabled]**

Perform AMT/ME un-configure without password operation.

Configuration options: [Disabled] [Enabled]

3.4.11 USB Configuration

USB Configuration Parameters



USB Configuration

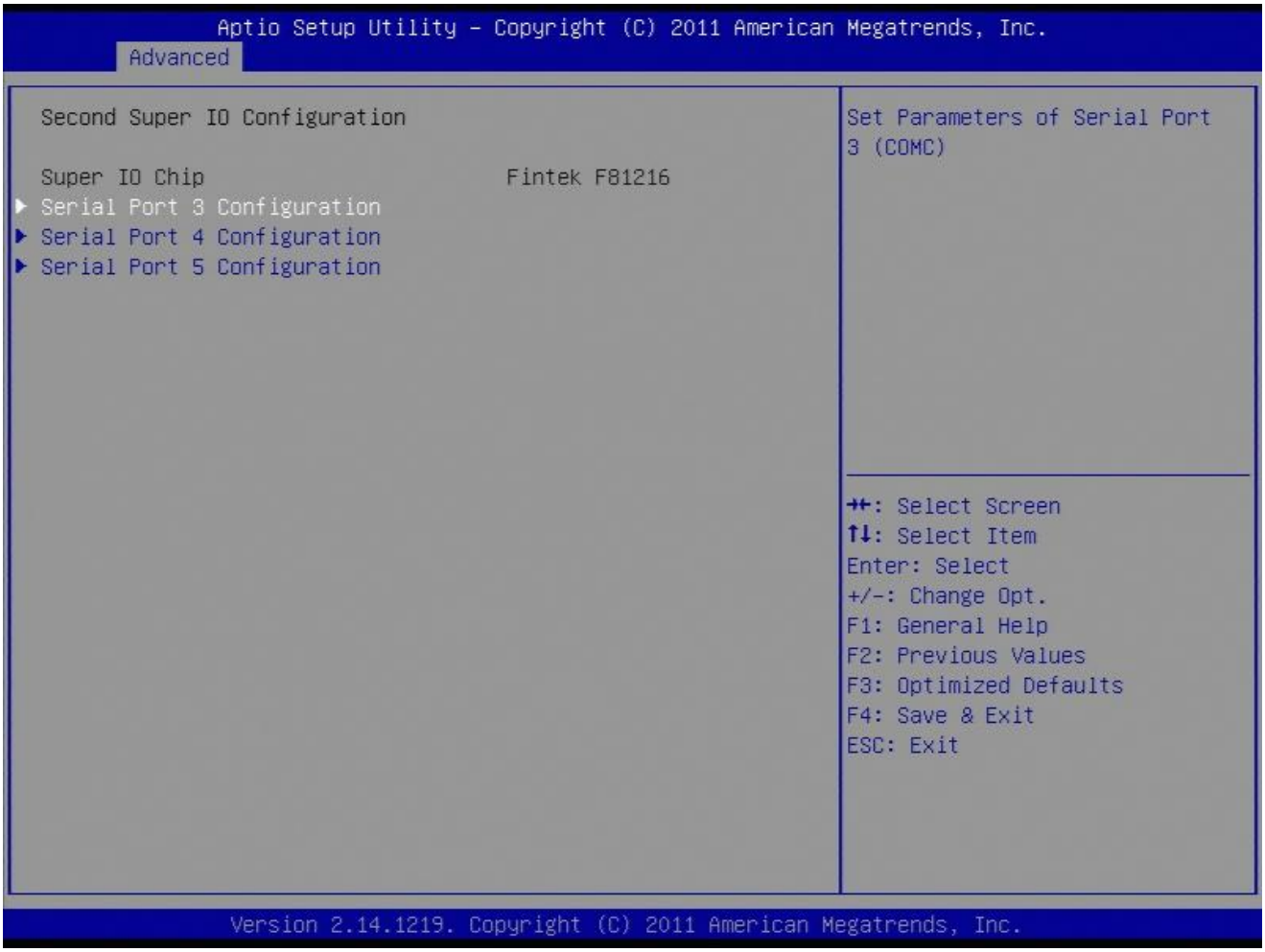
Display how many devices are connected.

- **Legacy USB Support [Enabled]**

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.
Configuration options: [Enabled] [Disabled][Auto]

3.4.12 Second Super IO Configuration

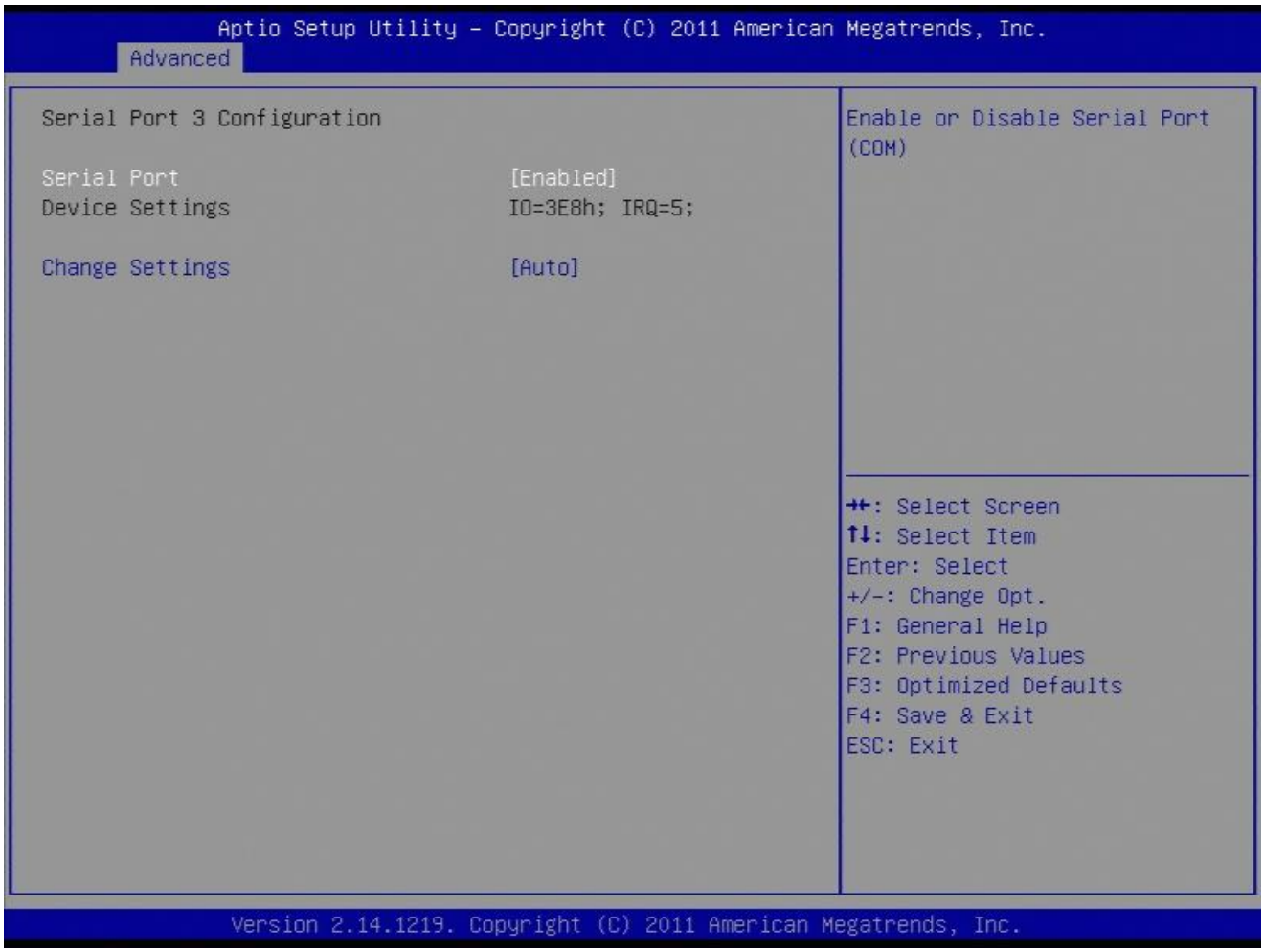
Second Super IO Chip Parameters.



Super IO Configuration

Super IO Chip [Fintek F81216]

3.4.12.1 Serial Port 3 configuration



- **Serial Port [Enabled]**

Enable or disable serial port

Configuration options: [Enabled] [Disabled]

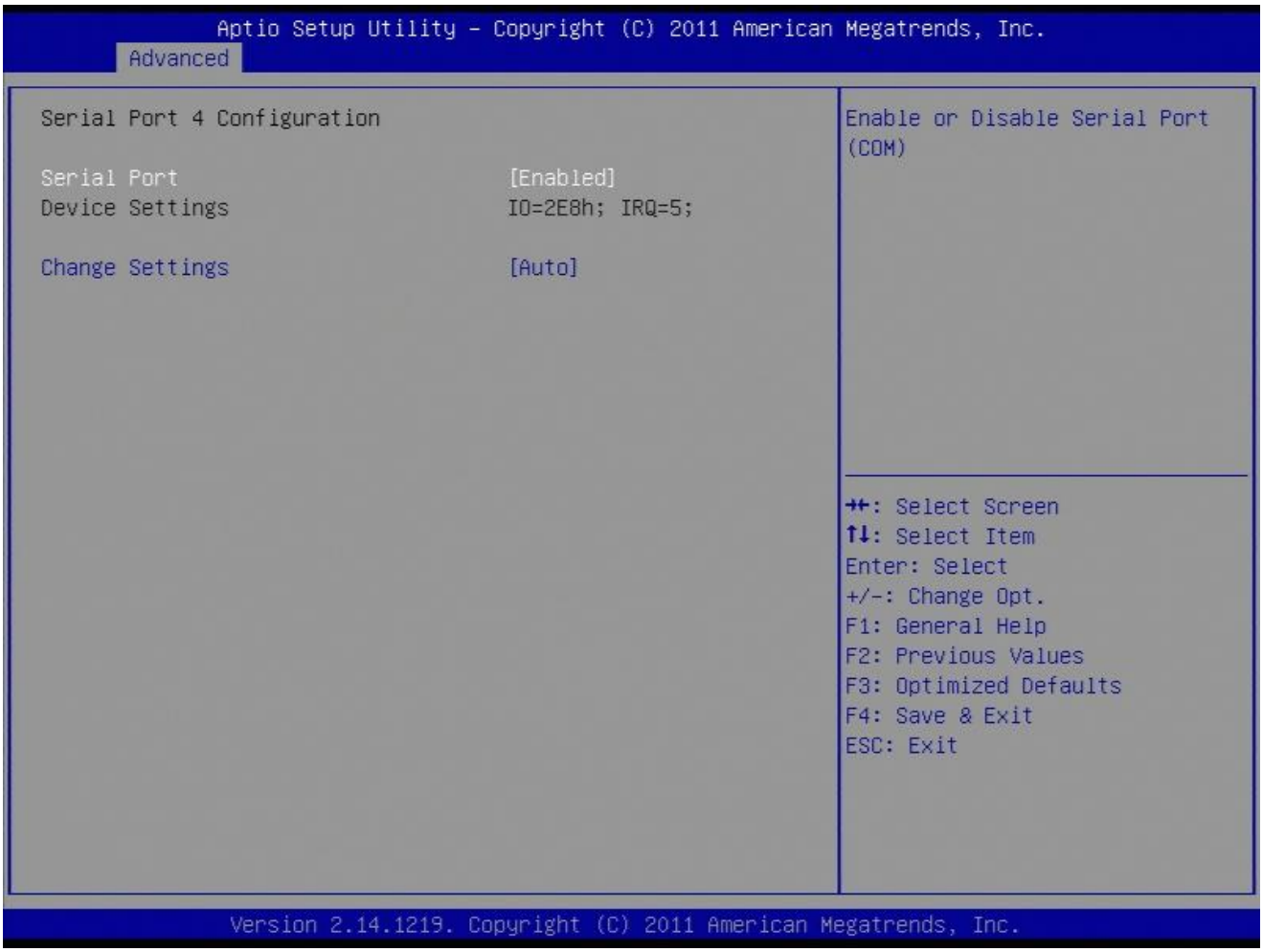
Device Settings [IO=3E8h; IRQ=5]

- **Change Settings [Auto]**

Select an optimal setting for Super IO device

Configuration options: [Auto] [IO=3E8h; IRQ=5] [IO=3F8h; IRQ=5, 10] [IO=2F8h; IRQ=5, 10] [IO=3E8h; IRQ=5, 10] [IO=2E8h; IRQ=5, 10]

3.4.12.2 Serial Port 4 configuration



- **Serial Port [Enabled]**

Enable or disable serial port

Configuration options: [Enabled] [Disabled]

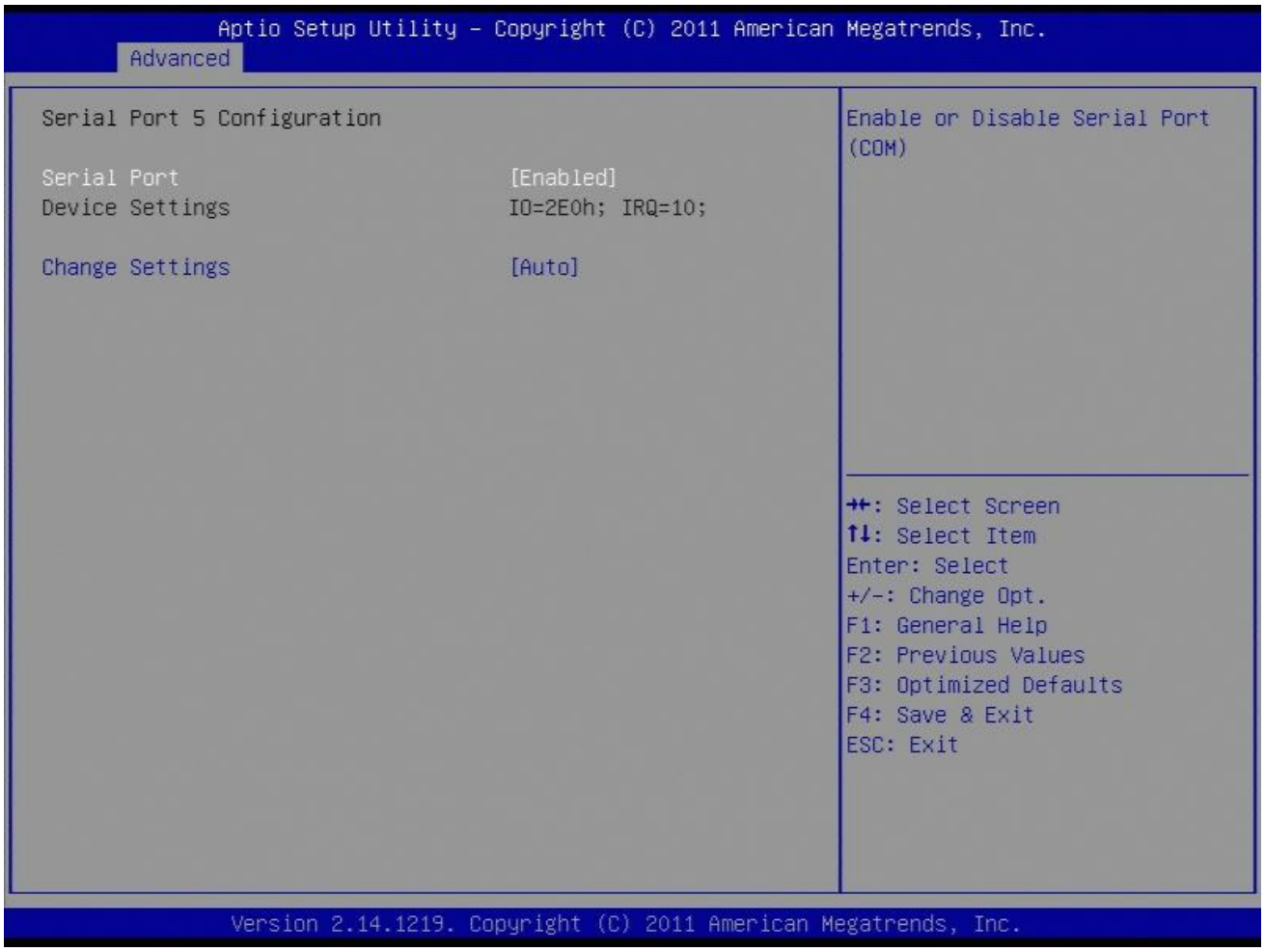
Device Settings [IO=2E8h; IRQ=5]

- **Change Settings [Auto]**

Select an optimal setting for Super IO device

Configuration options: [Auto] [IO=2E8h; IRQ=5] [IO=3F8h; IRQ=5, 10] [IO=2F8h; IRQ=5, 10] [IO=3E8h; IRQ=5, 10] [IO=2E8h; IRQ=5, 10]

3.4.12.3 Serial Port 5 configuration



- **Serial Port [Enabled]**

Enable or disable serial port

Configuration options: [Enabled] [Disabled]

Device Settings [IO=2E0h; IRQ=10]

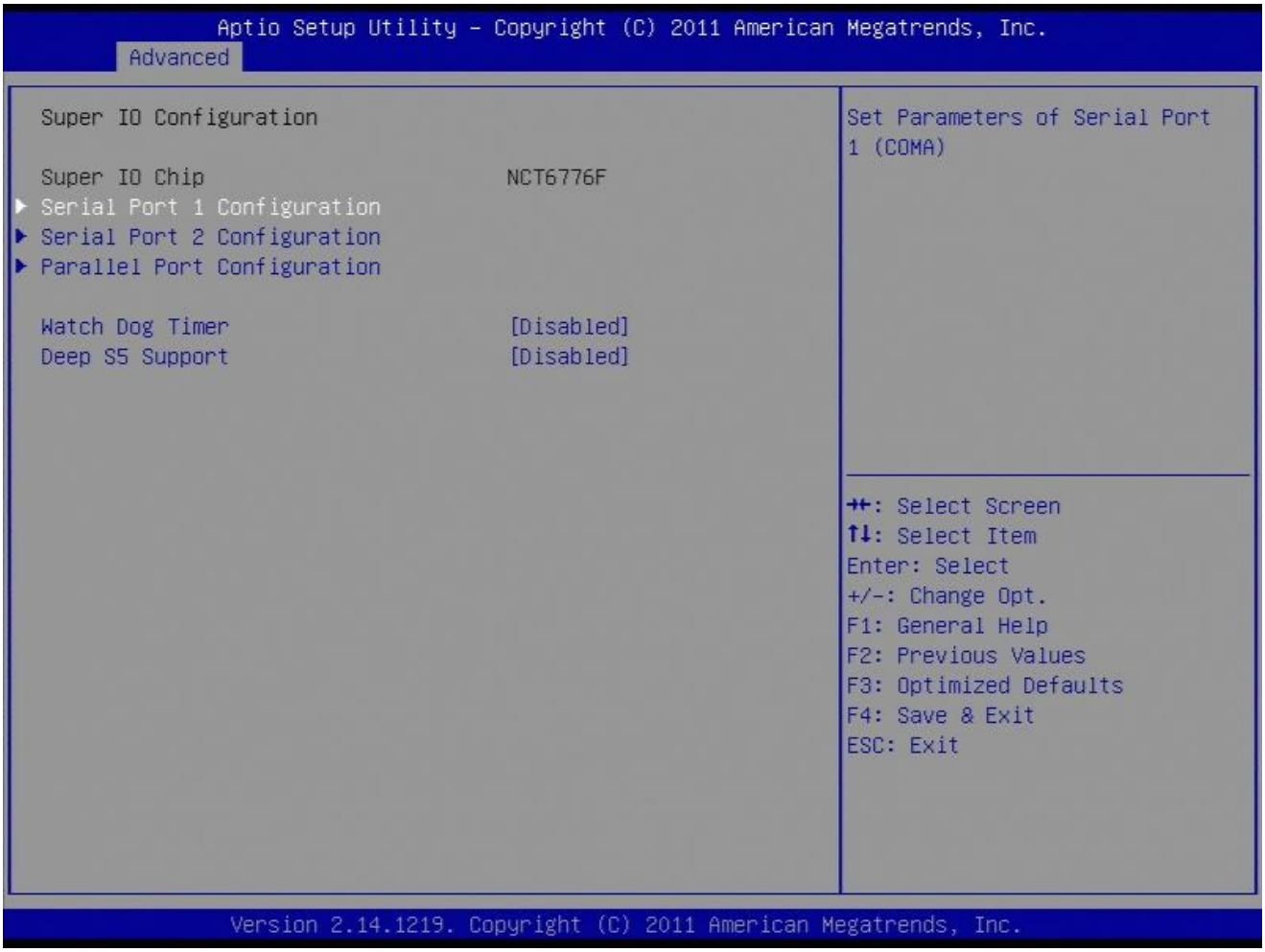
- **Change Settings [Auto]**

Select an optimal setting for Super IO device

Configuration options: [Auto] [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]

3.4.13 Super IO Configuration

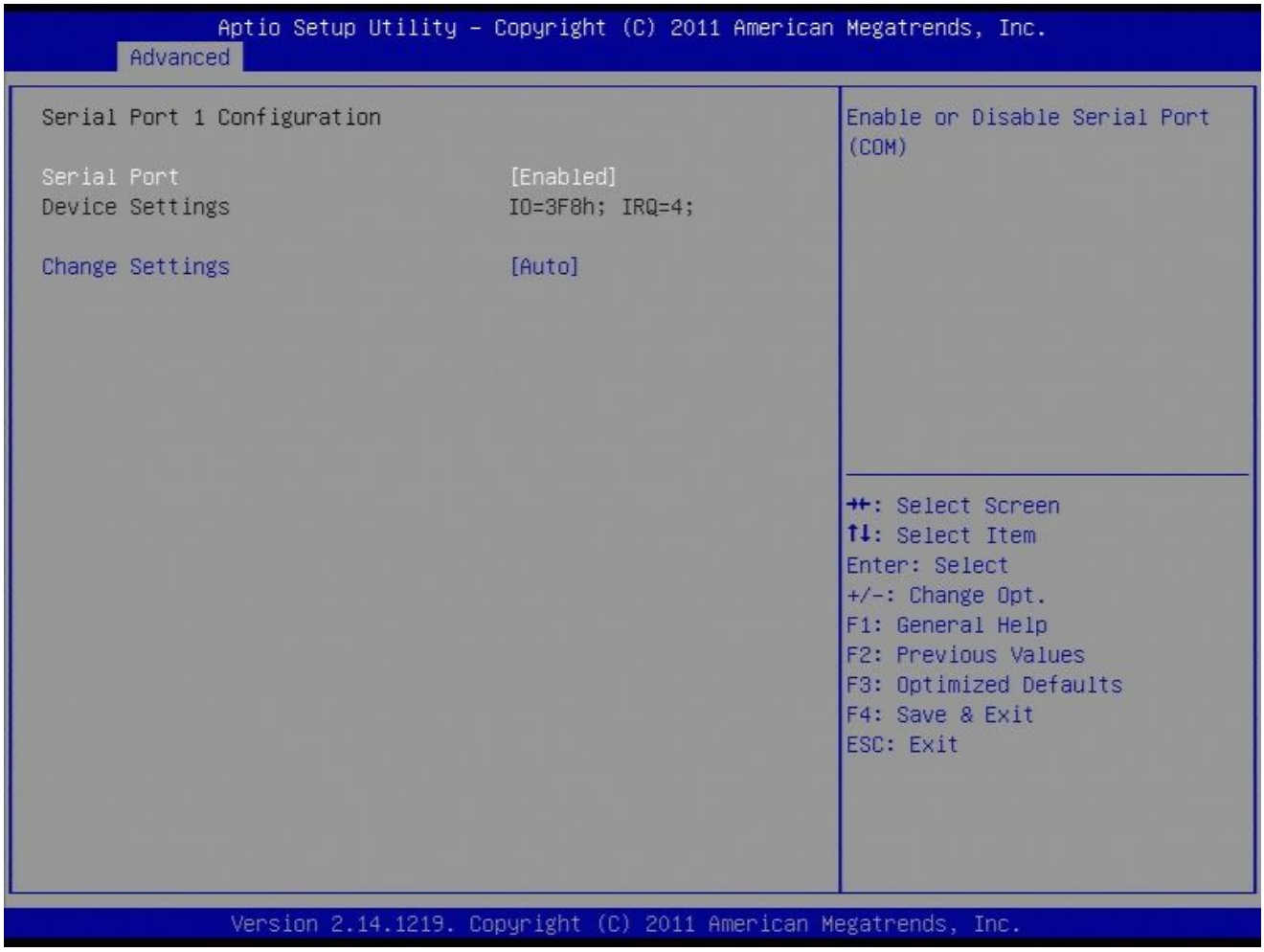
System Super IO Chip Parameters.



Super IO Configuration

Super IO Chip [NCT6776F]

3.4.13.1 Serial Port 1 configuration



- **Serial Port [Enabled]**

Enable or disable serial port

Configuration options: [Enabled] [Disabled]

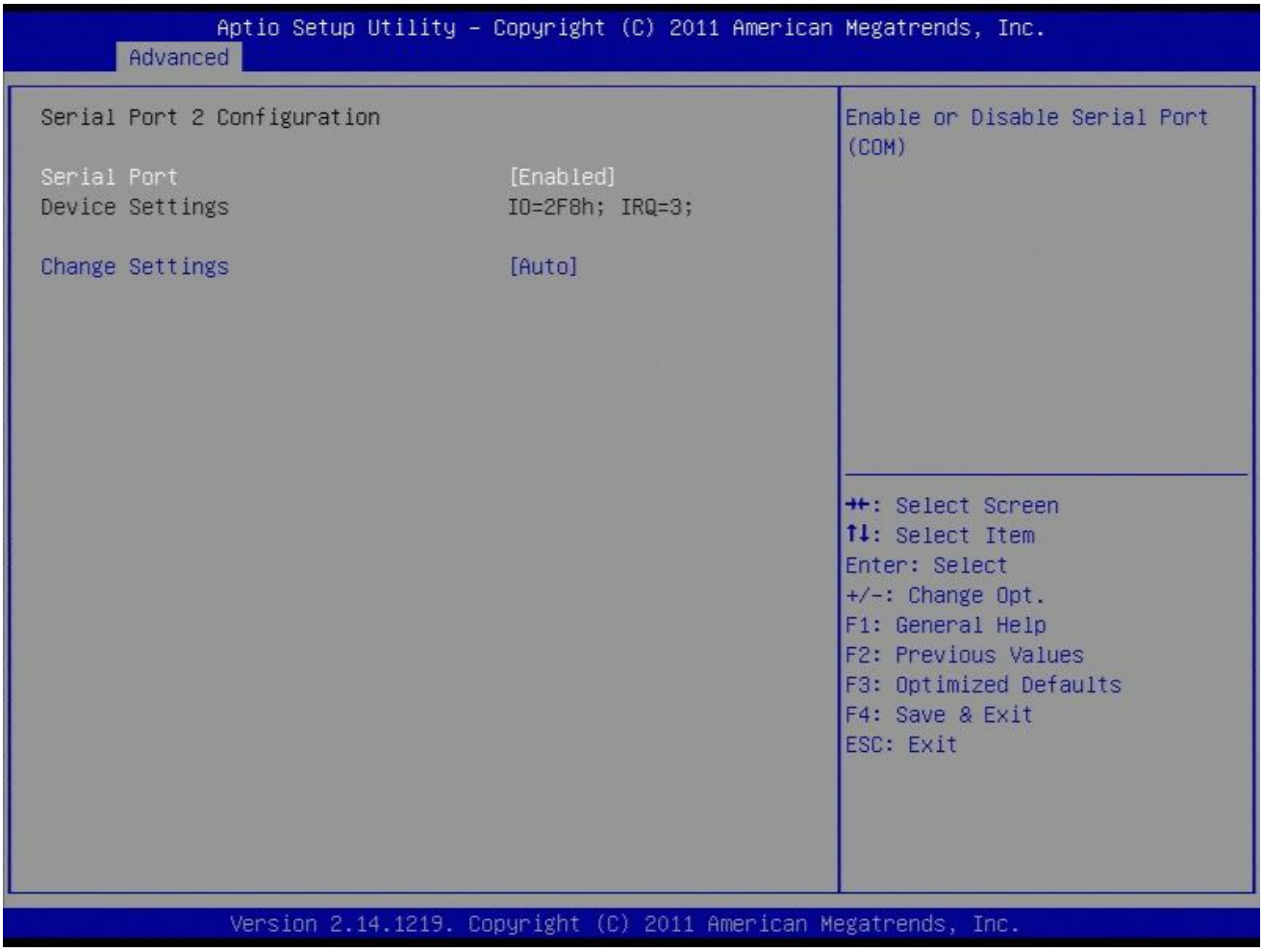
Device Settings [IO=3F8h; IRQ=4]

- **Change Settings [Auto]**

Select an optimal setting for Super IO device

Configuration options: [Auto] [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]

3.4.13.2 Serial Port 2 configuration



- **Serial Port [Enabled]**

Enable or disable serial port

Configuration options: [Enabled] [Disabled]

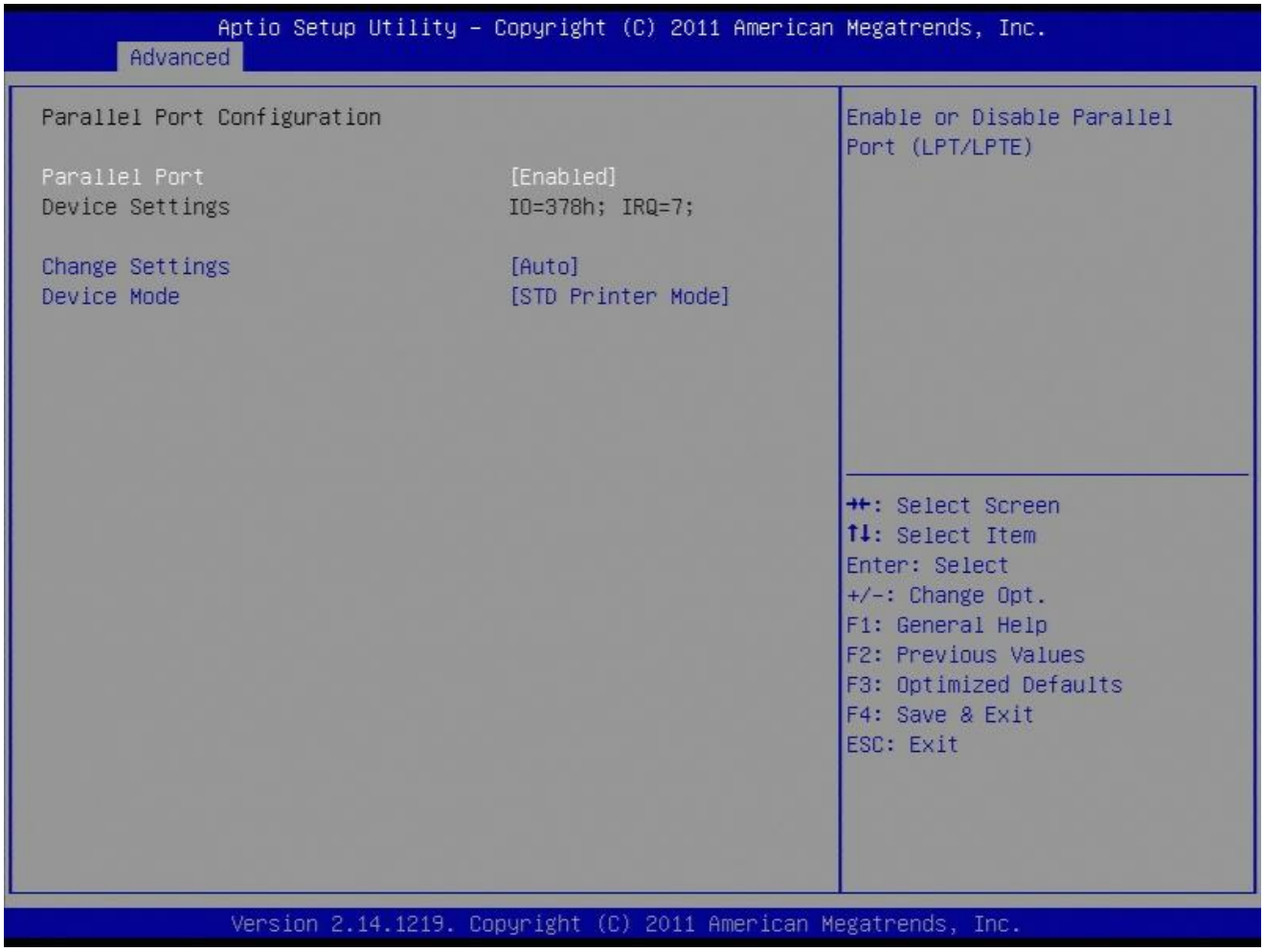
Device Settings [IO=2F8h; IRQ=3]

- **Change Settings [Auto]**

Select an optimal setting for Super IO device

Configuration options: [Auto] [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]

3.4.13.3 Parallel Port configuration



- **Parallel Port [Enabled]**

Enable or disable parallel port (LPT/LPTE)
Configuration options: [Enabled] [Disabled]

Device Settings [IO=378h; IRQ=7]

- **Change Settings [Auto]**

Select an optimal setting for Super IO device
Configuration options: [Auto] [IO=378h; IRQ=7] [IO=378h; IRQ=5, 6, 7, 9, 10, 11, 12] [IO=278h; IRQ=5, 6, 7, 9, 10, 11, 12] [IO=3BCh; IRQ=5, 6, 7, 9, 10, 11, 12]

- **Device Mode [STD Printer Mode]**

Change the printer port mode
Configuration options: [STD Printer Mode] [SPP Mode] [EPP-1.9 and SPP Mode] [EPP-1.7 and SPP Mode] [ECP Mode] [ECP and EPP 1.9 Mode] [ECP and EPP 1.7 Mode]

- **Watch Dog Timer [Disabled]**

Enable or disable Watch Dog Timer Function

Configuration options: [Disabled] [Enabled]

- **Deep S5 Support [Disabled]**

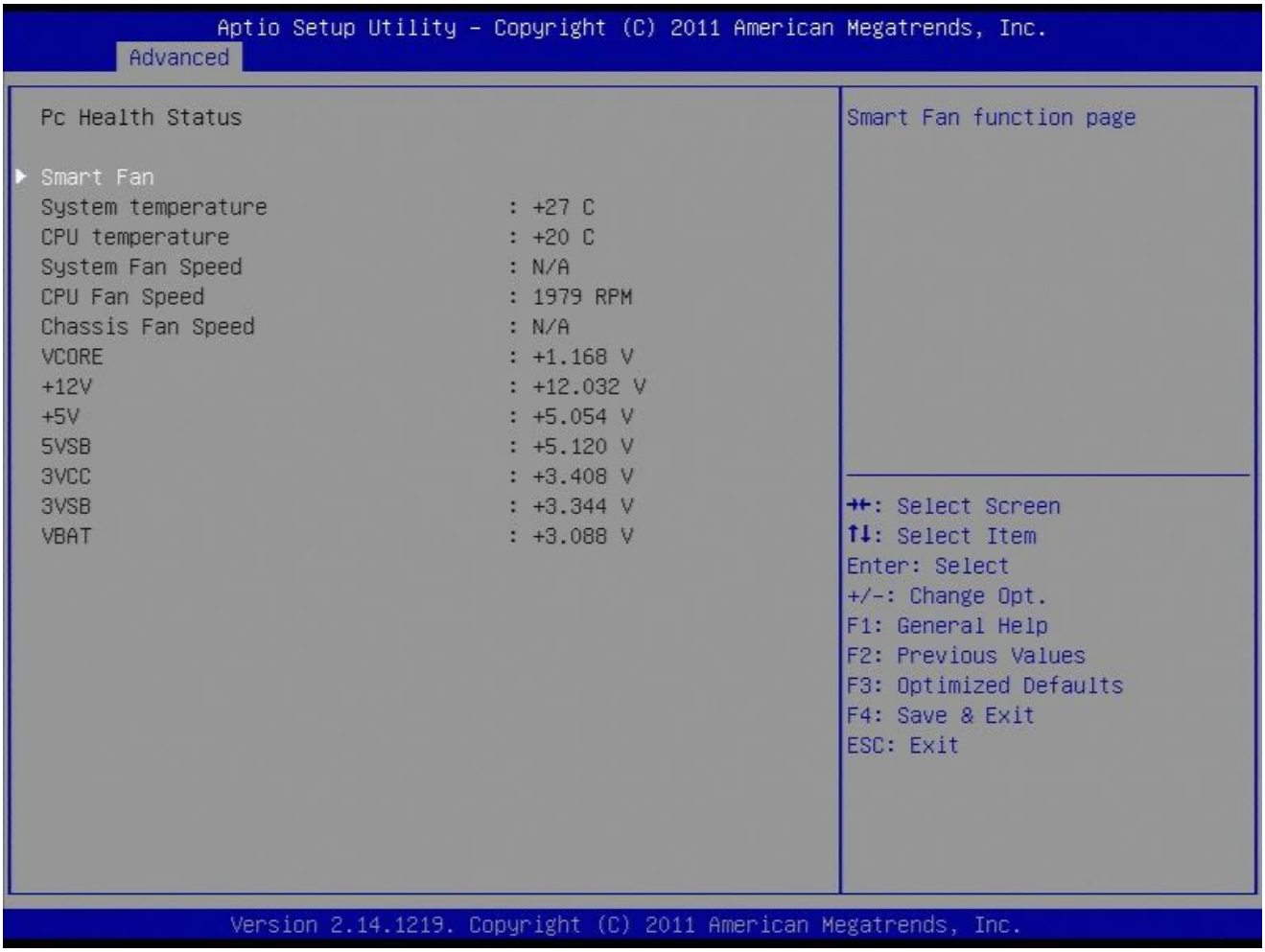
Enable or disable Deep S5 support EuP

Configuration options: [Disabled] [Enabled]

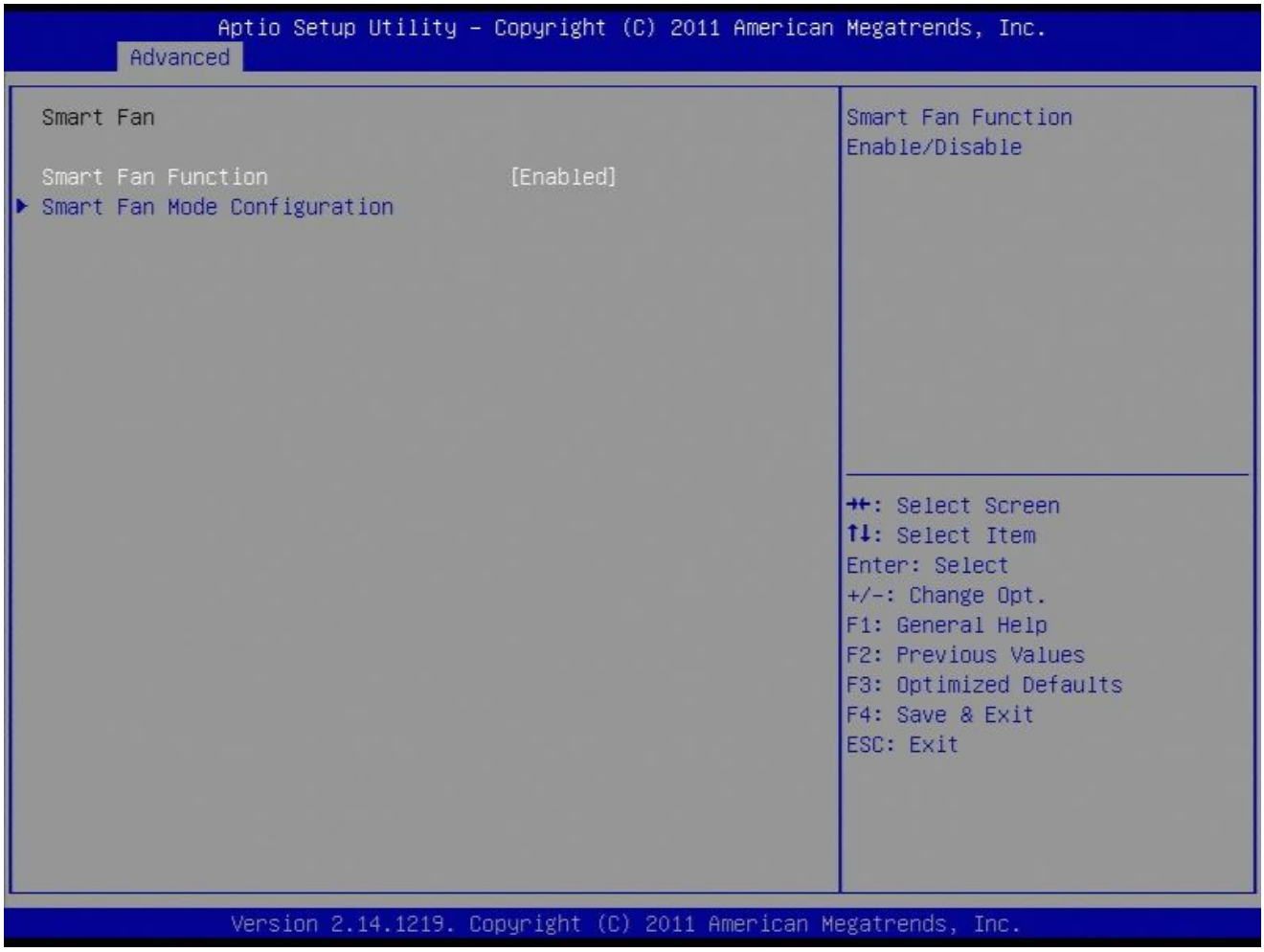
3.4.14 Hardware Monitor

PC Health Status

Display system health status



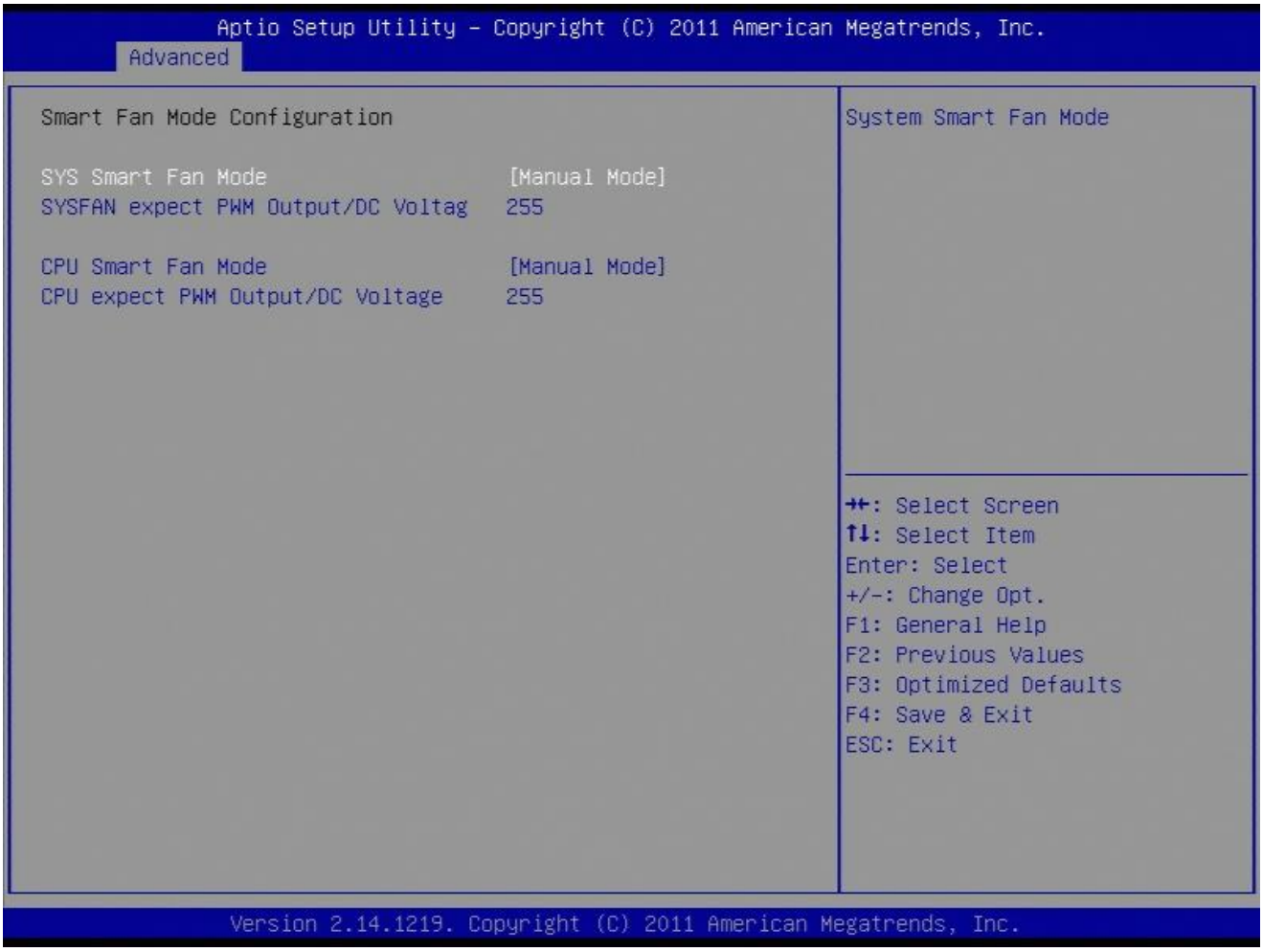
3.4.14.1 Smart Fan



- **Smart Fan Function [Enable]**

Enable or disable smart fan function

3.4.14.1.1 Smart Fan Mode Configuration



- **SYS Smart Fan Mode [Manual Mode]**

Set system smart fan mode

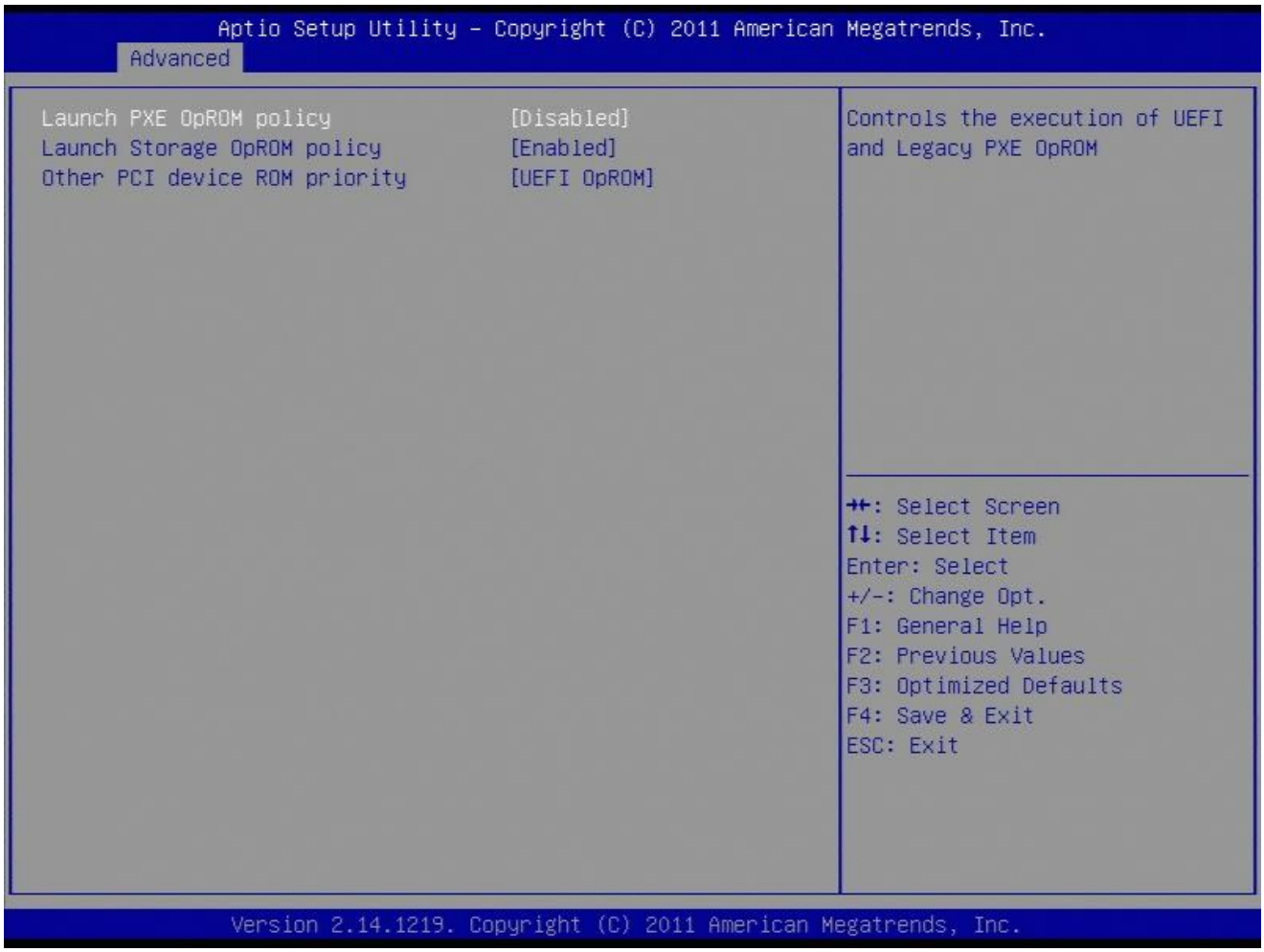
Configuration options: [Manual Mode] [Thermal Cruise Mode]

- **CPU Smart Fan Mode [Manual Mode]**

Set CPU smart fan mode

Configuration options: [Manual Mode] [Thermal Cruise Mode]

3.4.15 Option Rom Policy



- **Launch PXE OpROM policy [Disabled]**

Controls the execution of UEFI and Legacy PXE OpROM
Configuration options: [Disabled] [Enabled]

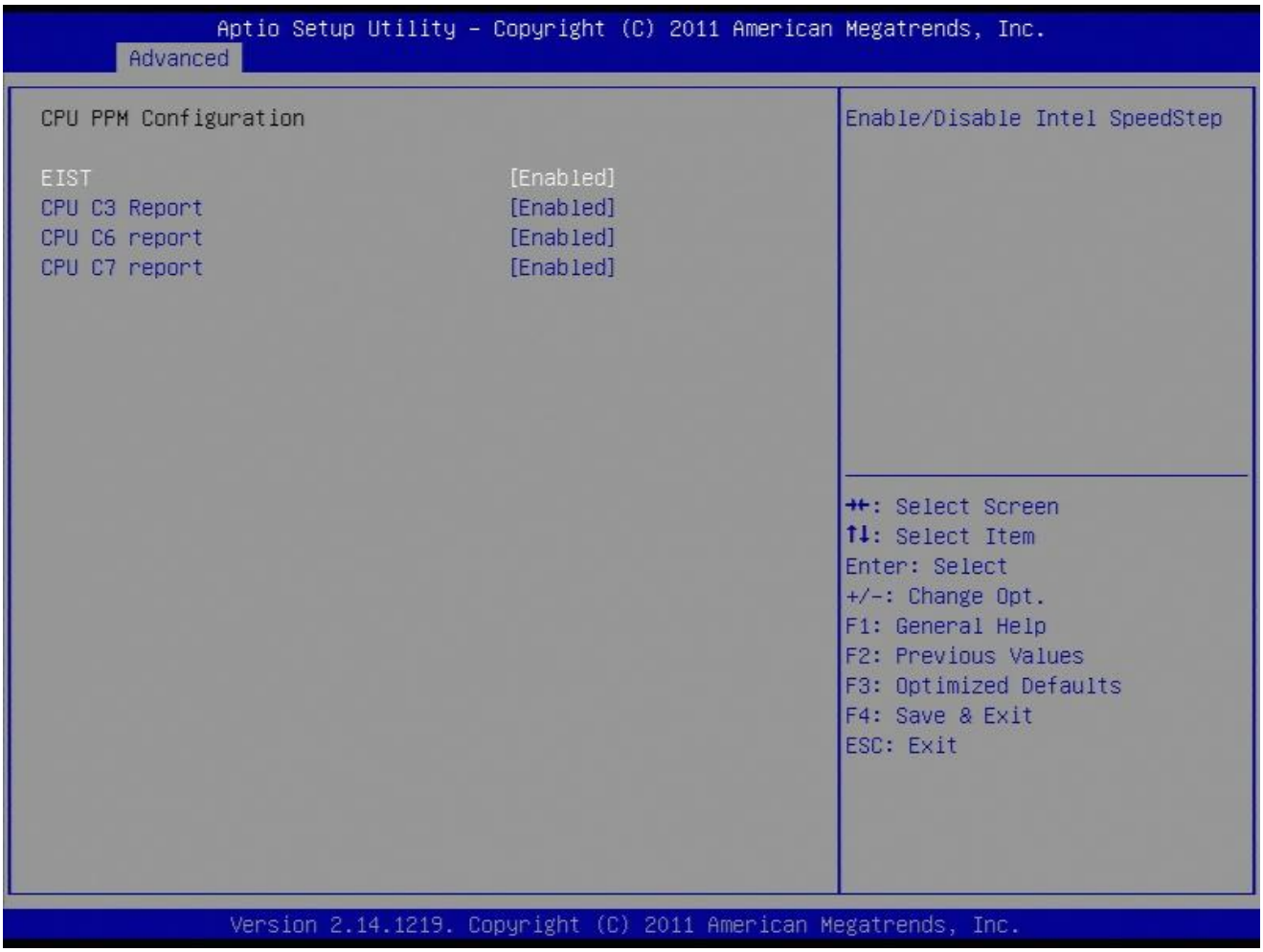
- **Launch Storage OpROM policy [Enabled]**

Controls the execution of UEFI and Legacy storage OpROM
Configuration options: [Disabled] [Enabled]

- **Other PCI device ROM priority [UEFI OpROM]**

For PCI devices other than Network, mass storage or video defines which OpROM to launch
Configuration options: [UEFI OpROM] [Legacy OpROM]

3.4.16 CPU PPM Configuration



- **EIST [Enabled]**

Enabled or disabled Intel SpeedStep
Configuration options: [Disabled] [Enabled]

- **CPU C3 Report [Enabled]**

Enabled or disabled CPU C3 (ACPI C2) report to OS
Configuration options: [Disabled] [Enabled]

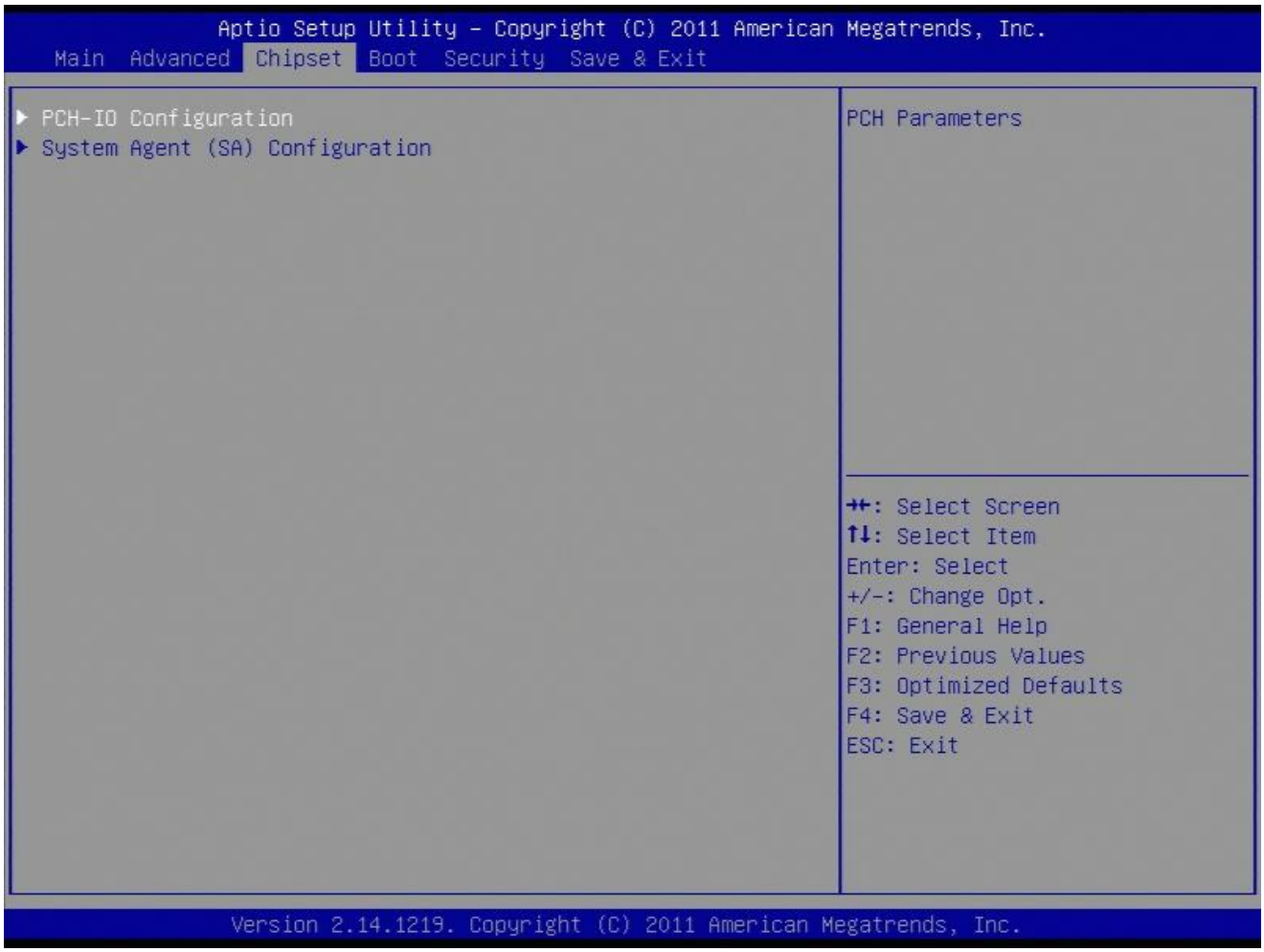
- **CPU C6 Report [Enabled]**

Enabled or disabled CPU C6 (ACPI C3) report to OS
Configuration options: [Disabled] [Enabled]

- **CPU C7 Report [Enabled]**

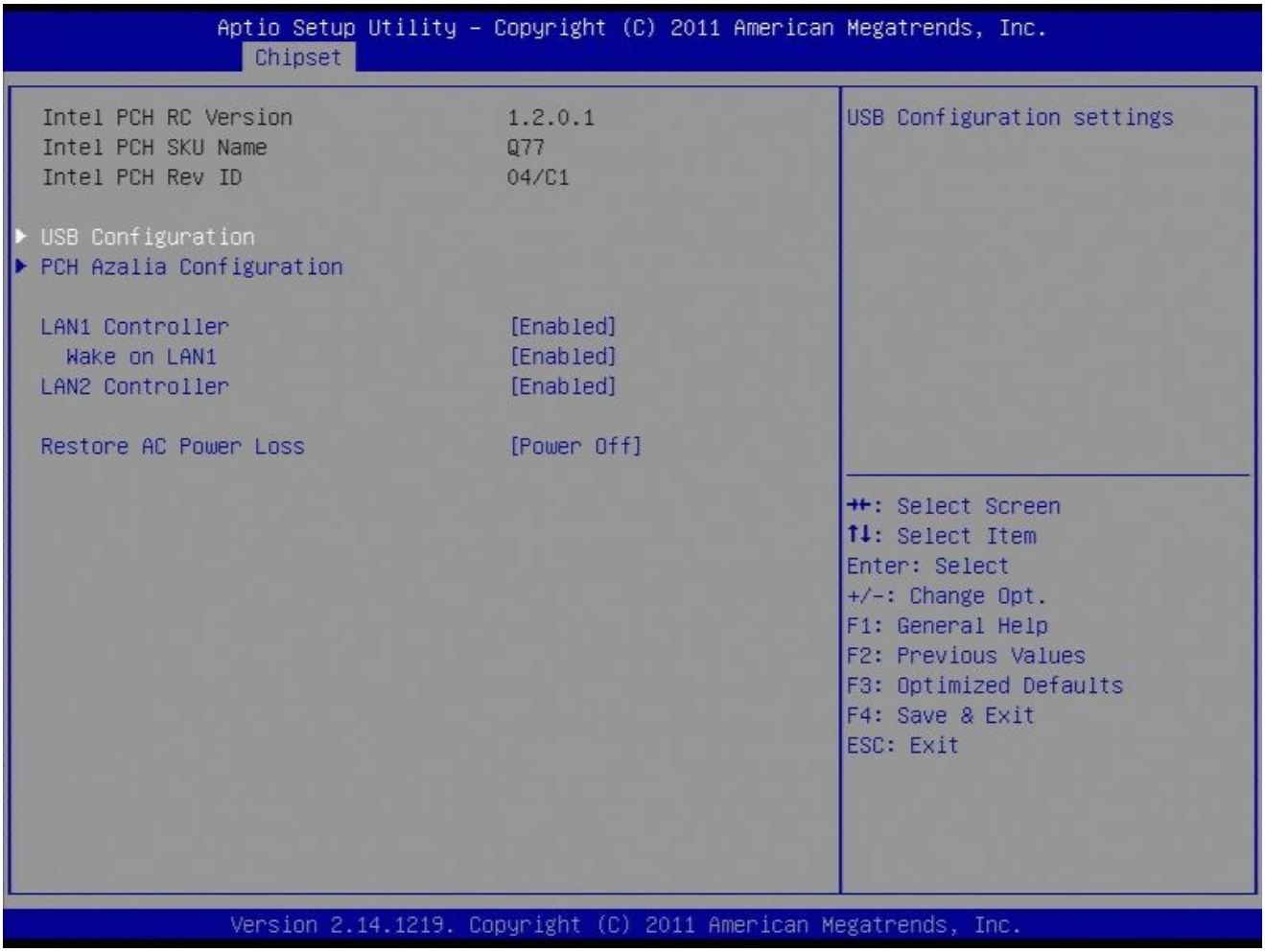
Enabled or disabled CPU C7 (ACPI C3) report to OS
Configuration options: [Disabled] [Enabled]

3.4.17 Chipset

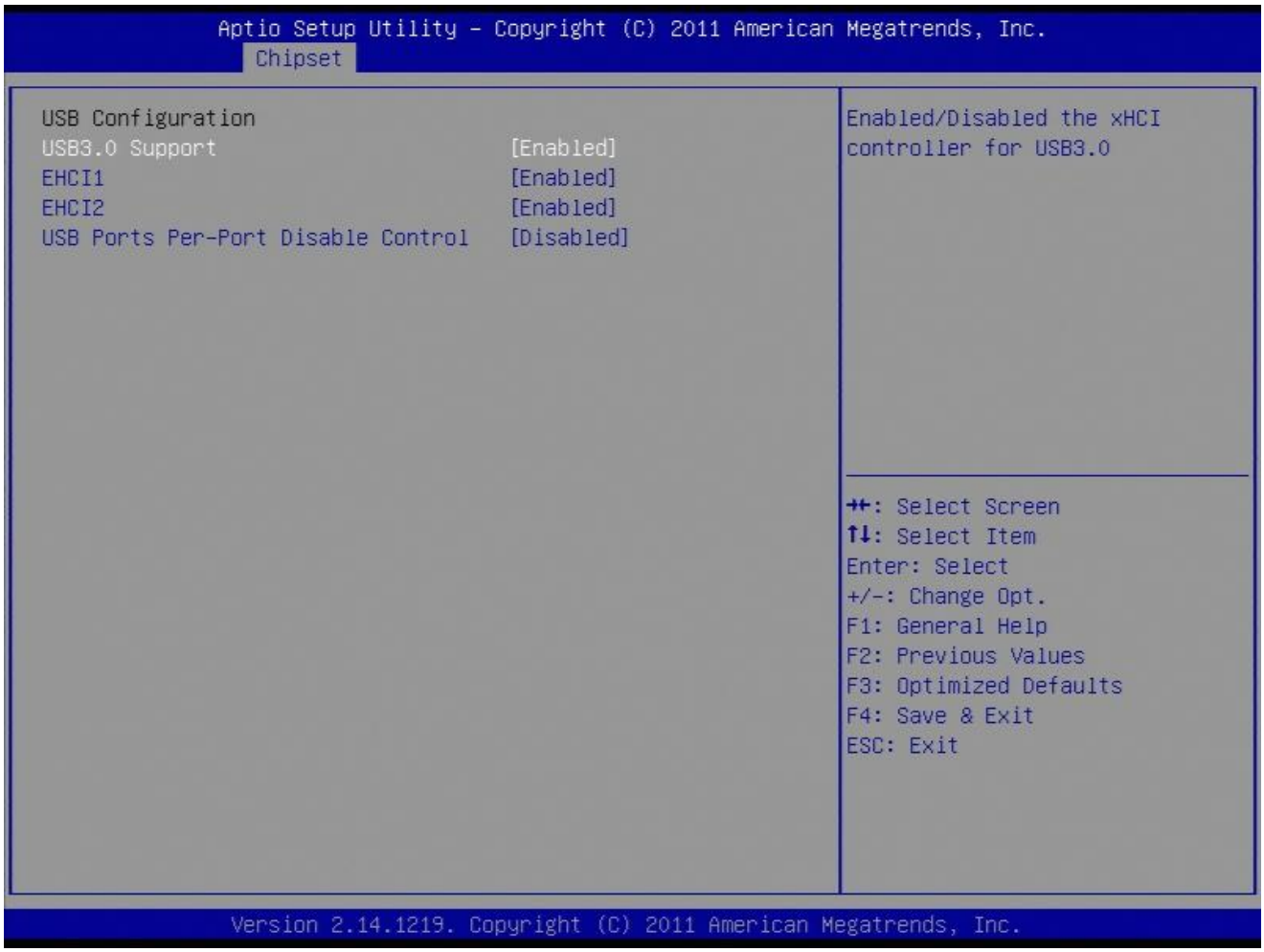


3.4.18 PCH-IO Configuration

Display PCH information



3.4.18.1 USB Configuration



- **USB3.0 Support [Enabled]**

Enable or disable the xHCI controller for USB3.0
Configuration options: [Disabled] [Enabled]

- **EHCI1 [Enabled]**

Control the USB EHCI (USB 2.0) functions. One EHCI controller must always be enabled.
Configuration options: [Disabled] [Enabled]

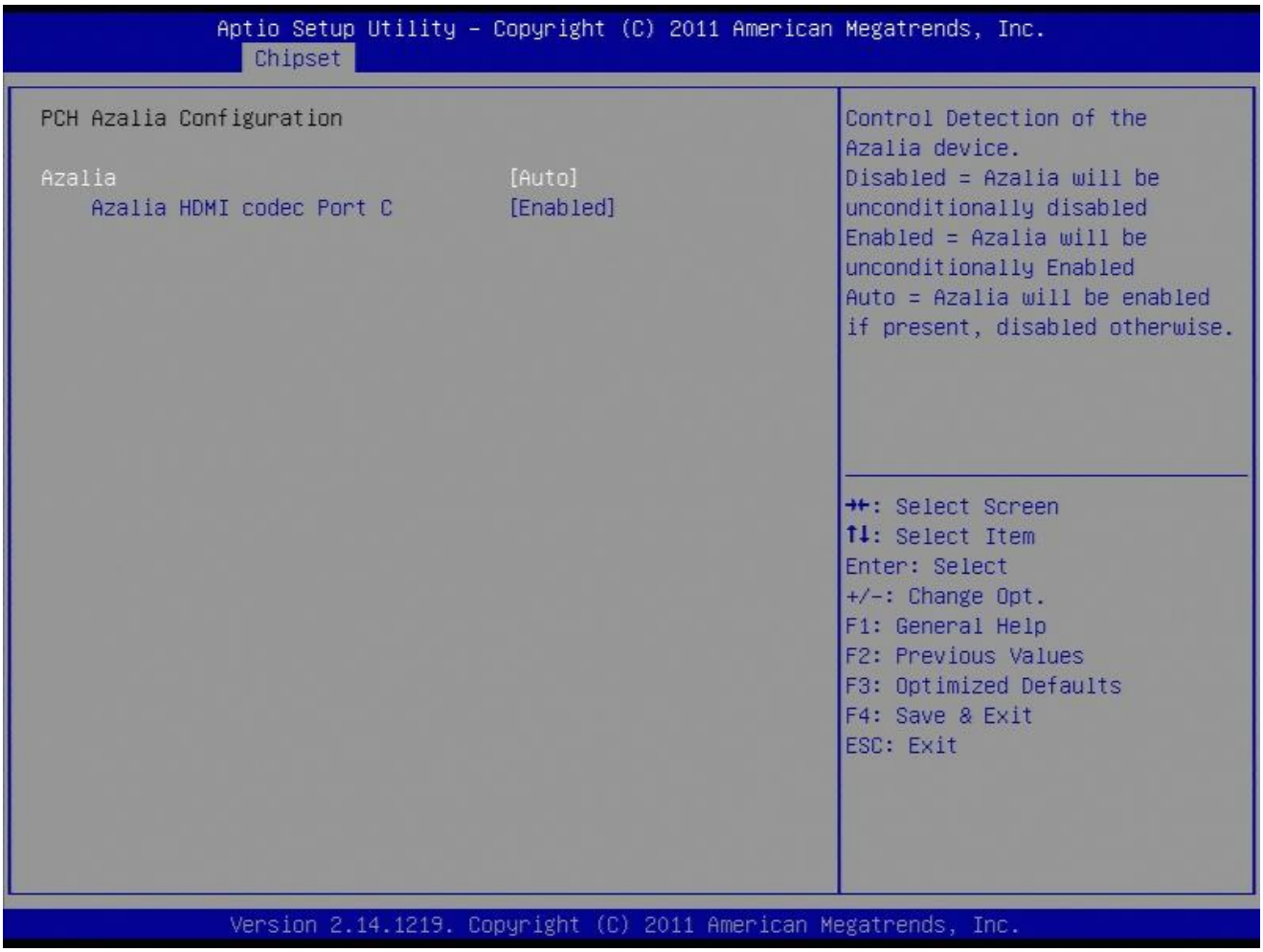
- **EHCI2 [Enabled]**

Control the USB EHCI (USB 2.0) functions. One EHCI controller must always be enabled.
Configuration options: [Disabled] [Enabled]

- **USB Ports Per-Port Disable Control [Disabled]**

Control each of the USB ports (0~13) disabling
Configuration options: [Disabled] [Enabled]

3.4.18.2 PCH Azalia Configuration



- **Azalia [Auto]**

Control detection of the Azalia device

Configuration options: [Disabled] [Enabled] [Auto]

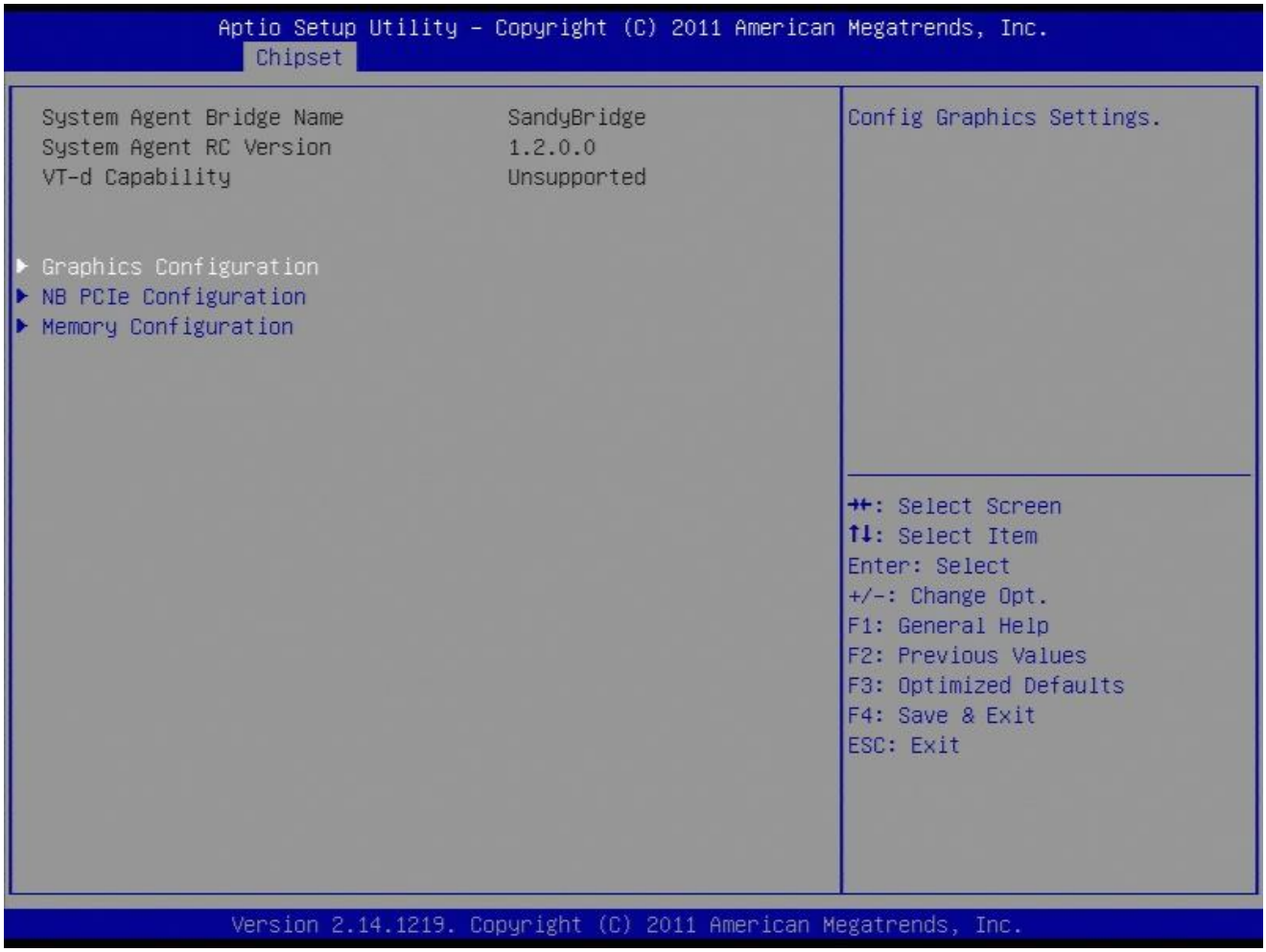
- **Azalia HDMI codec Port C [Enabled]**

Enable or disable internal HDMI codec port for Azalia

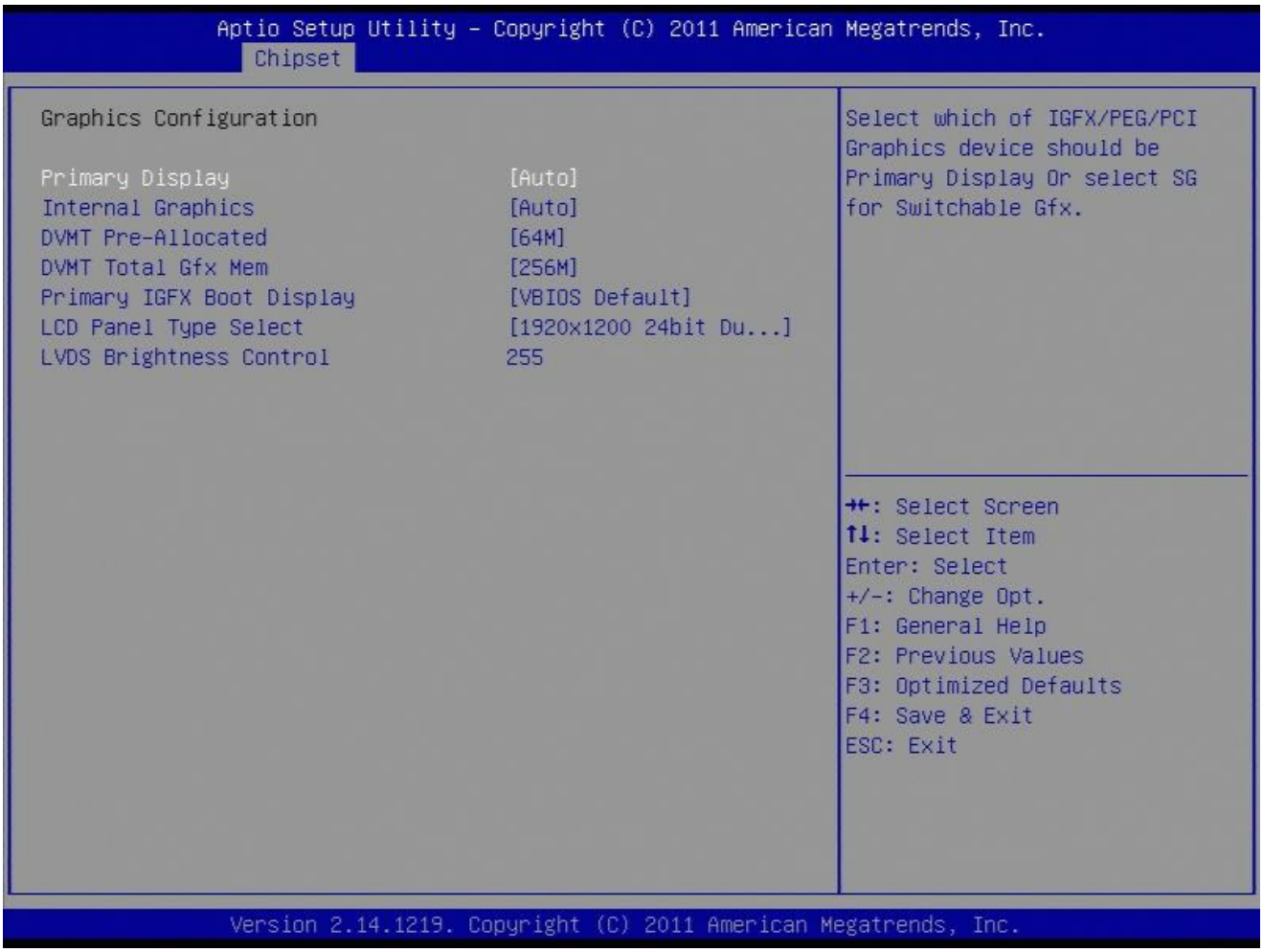
Configuration options: [Disabled] [Enabled]

3.4.19 System Agent (SA) Configuration

Display system agent information



3.4.19.1 Graphics Configuration



- **Primary Display [Auto]**

Select which of IGFX/PEG/PCI Graphics device should be primary display or select SG for switchable Gfx

Configuration options: [Auto] [IGFX] [PEG] [PCI]

- **Internal Graphics [Auto]**

Set internal graphics

Configuration options: [Auto] [Disabled] [Enabled]

- **DVMT Pre-Allocated [64M]**

Select DVMT 5.0 pre-allocated (fixed) graphics memory size used by internal graphics device

Configuration options: [32M] [64M] [96M] [128M] [160M] [192M] [224M] [256M] [288M] [320M] [352M] [384M] [416M] [448M] [480M] [512M]

- **DVMT Total Graphic Mem [256M]**

Select DVMT 5.0 total graphic memory size used by internal graphics device
Configuration options: [128M] [256M] [MAX]

- **Primary IGFX Boot Display [VBIOS Default]**

Select the video device which will be activated during POST
Configuration options: [VBIOS Default] [CRT] [HDMI] [LVDS]

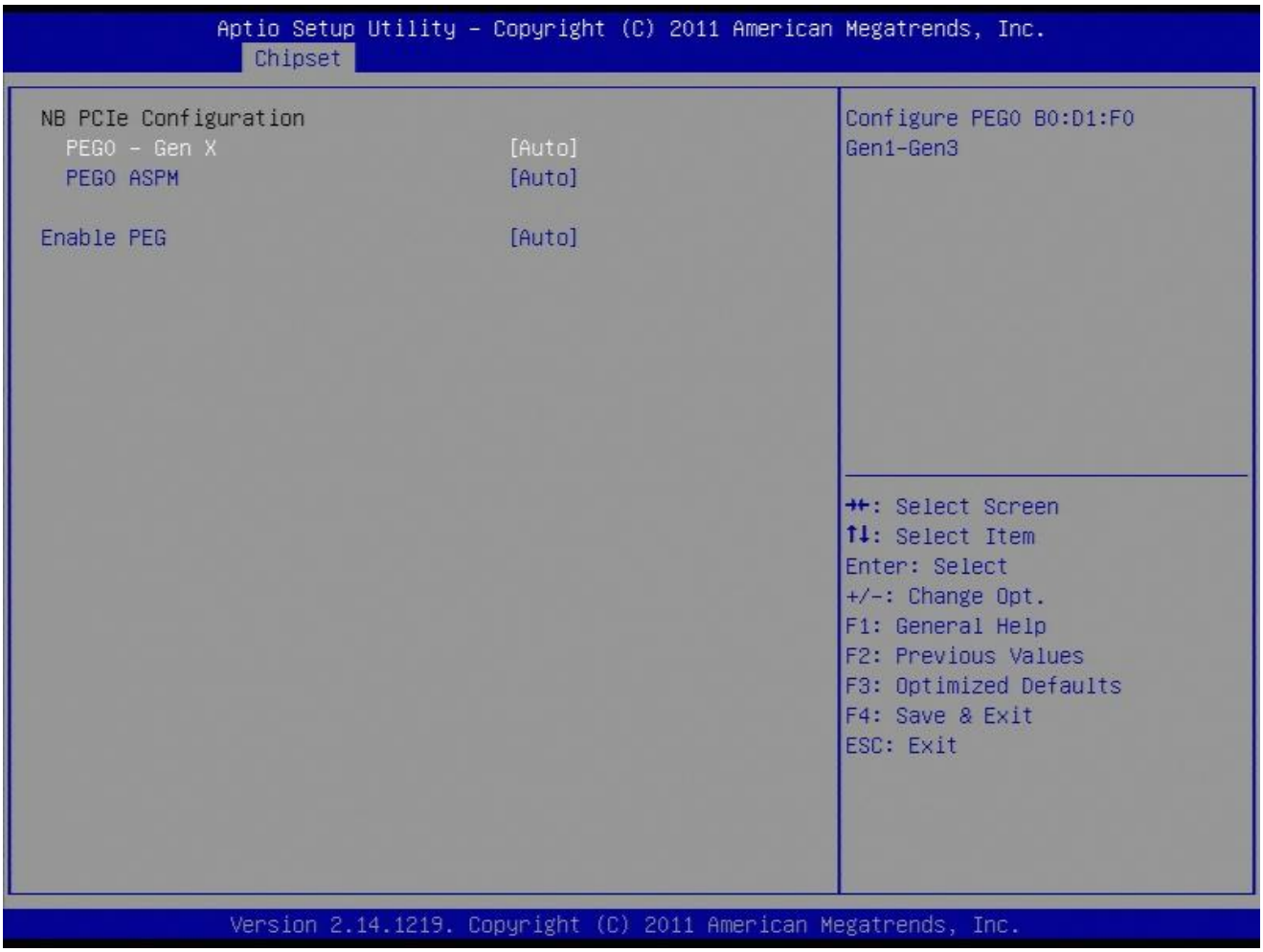
- **LCD Panel Type Select [1920x1200 24bit Dual Channel]**

Set LCD panel used by selecting the appropriate setup item
Configuration options: [800x600 18bit Single Channel] [1024x768 18bit Single Channel] [1024x768 24bit Single Channel] [1280x768 18bit Single Channel] [1280x800 18bit Single Channel] [1280x960 18bit Single Channel] [1280x1024 24bit Dual Channel] [1366x768 18bit Single Channel] [1366x768 24bit Single Channel] [1440x900 24bit Dual Channel] [1400x1050 24bit Dual Channel] [1600x900 24bit Dual Channel] [1680x1050 24bit Dual Channel] [1600x1200 24bit Dual Channel] [1920x1080 24bit Dual Channel] [1920x1200 24bit Dual Channel]

- **LVDS Brightness Control [255]**

Set LVDS brightness. The range is from 0 to 255

3.4.19.2 NB PCIe Configuration



- **PEG0 – Gen X [Auto]**

Set PEG0 B0:D1:F0 Gen1 – Gen3

Configuration options: [Auto] [Gen1] [Gen2] [Gen3]

- **PEG0 ASPM [Auto]**

Control ASPM support for the PEG: Device 1 Function 0. This has no effect if PEG is not the currently active device.

Configuration options: [Disabled] [Auto] [ASPM L0s] [ASPM L1] [ASPM L0sL1]

- **Enable PEG [Auto]**

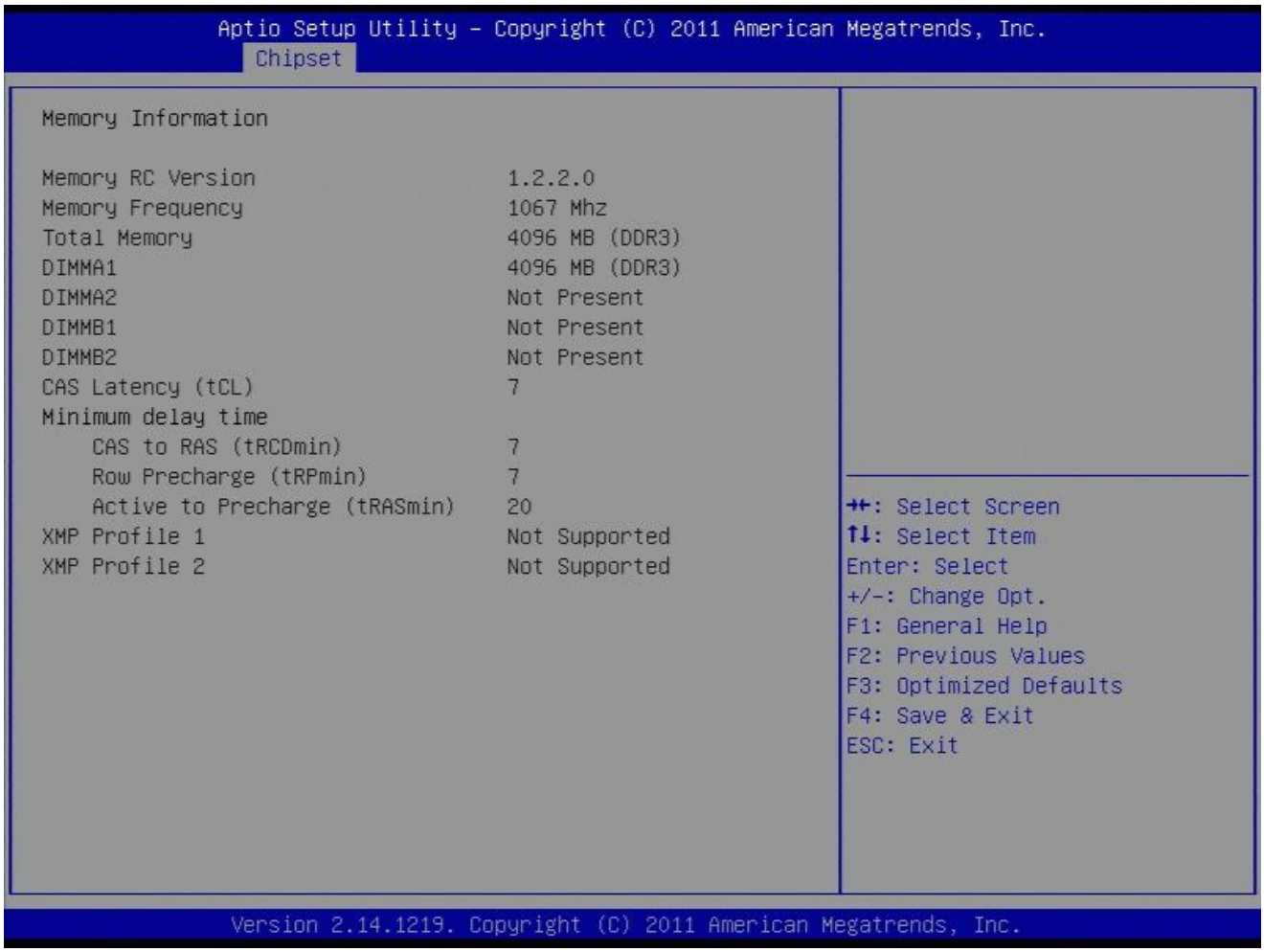
Enabled or disabled PEG

Configuration options: [Disabled] [Enabled] [Auto]

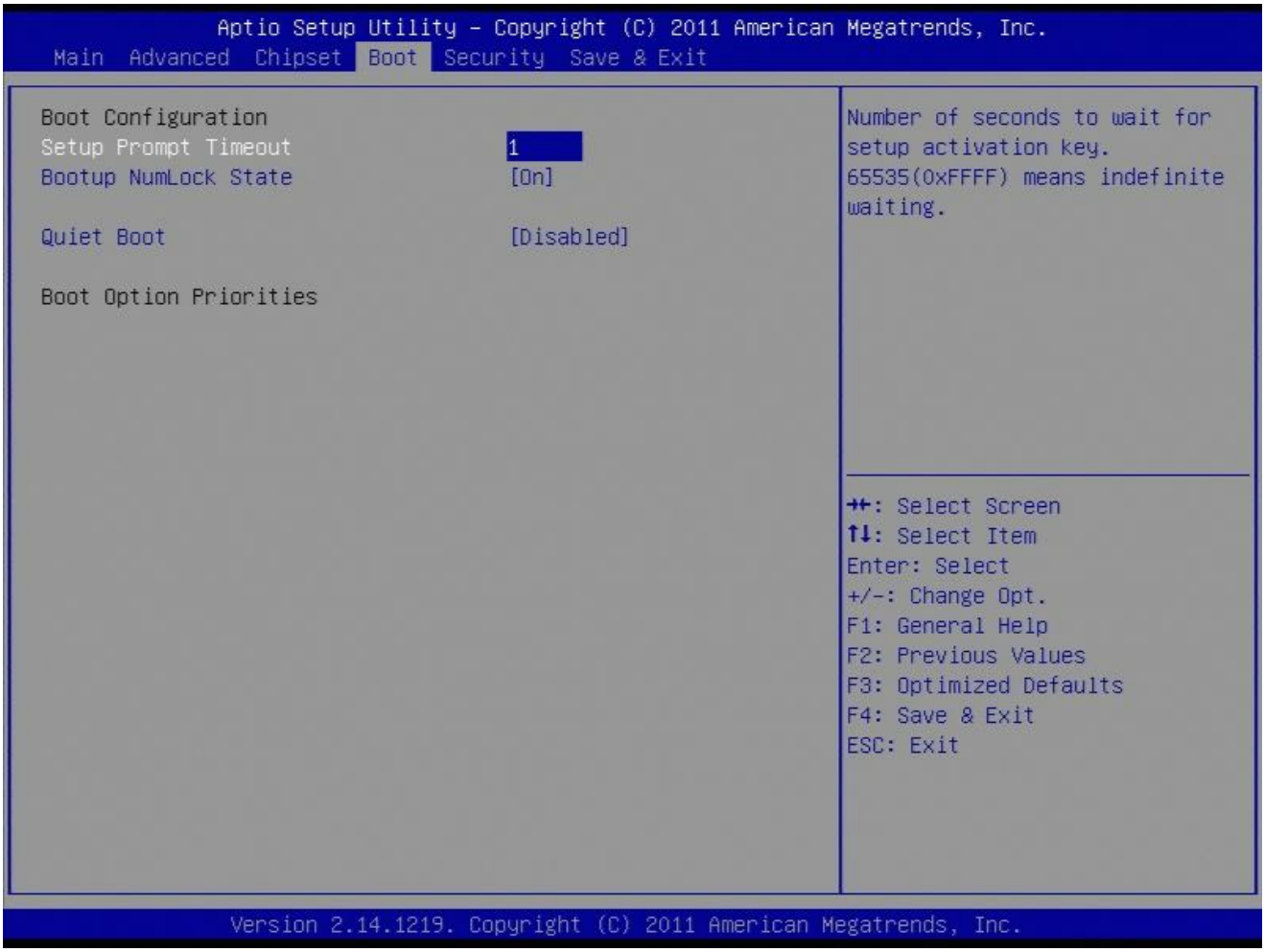
3.4.19.3 Memory Configuration

Memory Information

Display Memory Information



3.4.20 Boot



- **Setup Prompt Timeout [1]**

Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.

- **Bootup NumLock State [On]**

Select the keyboard NumLock state

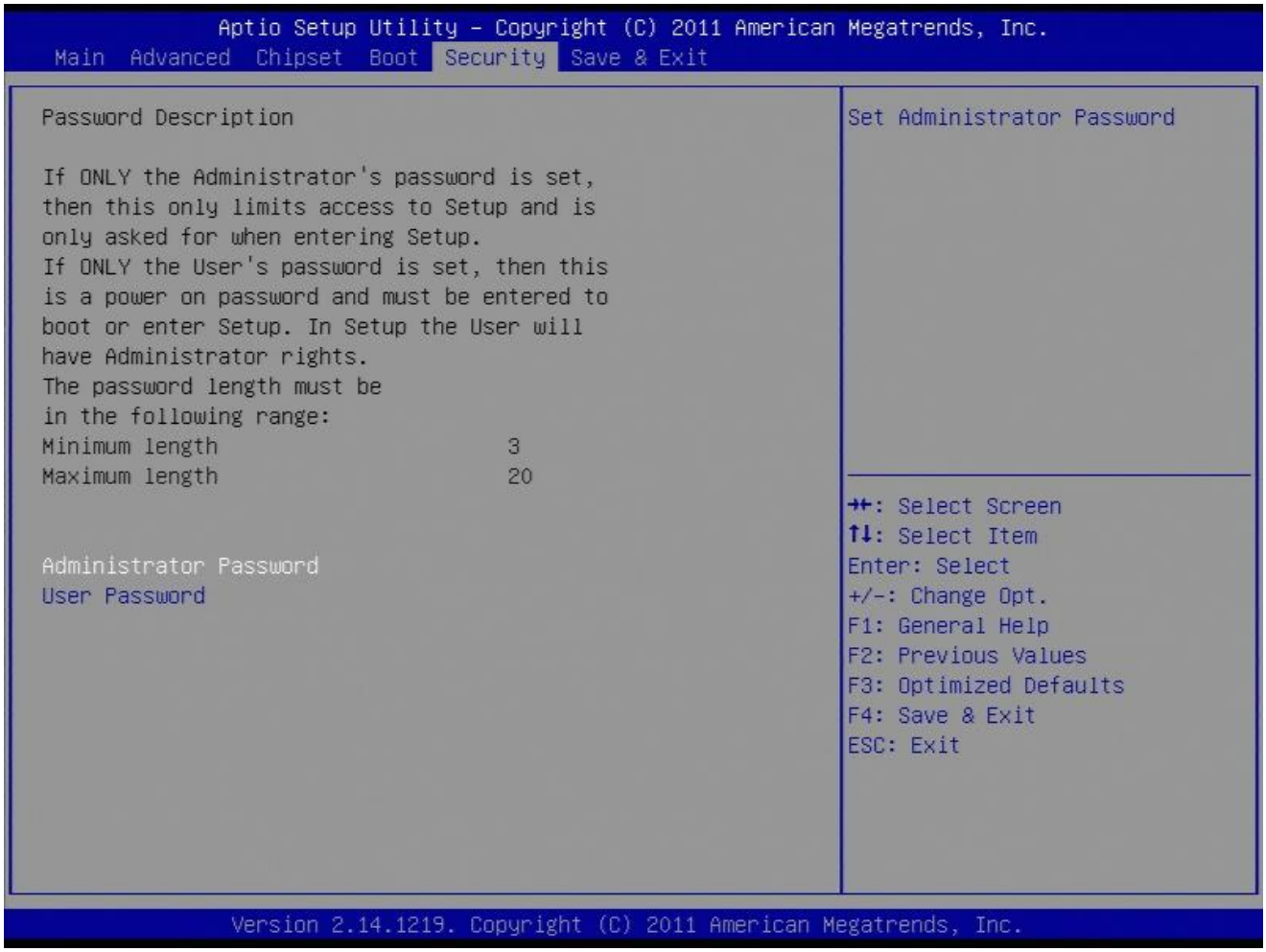
Configuration options: [On] [Off]

- **Quick Boot [Disable]**

Enable or disable Quiet Boot option

Configuration options: [Disabled] [Enabled]

3.4.21 Security



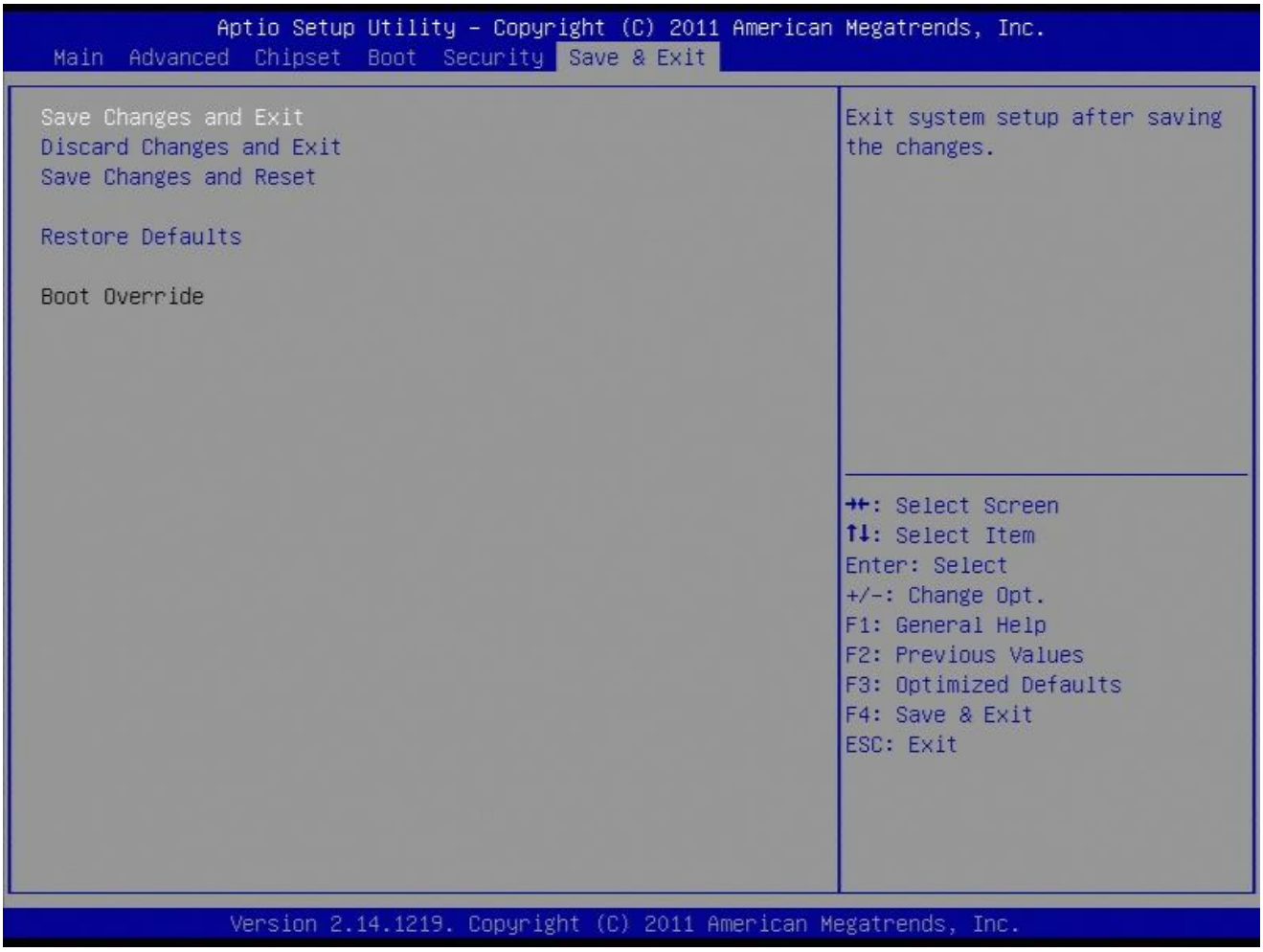
- **Administrator Password**

Set setup Administrator Password

- **User Password**

Set User Password

3.4.22 Save & Exit



- **Save changes and Exit**

Exit system setup after saving the changes.

- **Discard changes and Exit**

Exit system setup without saving the changes.

- **Save changes and Reset**

Reset the system after saving the changes.

- **Restore Defaults**

Restore/Load default values for all the setup option.