# EMX-QM77

**Intel® QM77 with Intel Core™ i7/ i5/ i3 Pentium/Celeron Mobile CPU Mini-ITX Motherboard**

# User's Manual

**2nd Ed – 31 January 2018**

Part No. E2047EMXQ01R

## 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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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 EMX-QM77 Mini-ITX Motherboard
- 1 x CD-ROM contains OS drivers/QIG/User's Manual
- 2 x COM cable (9-pin)
- 1 x SATA cable (2 in 1,7-pin)
- 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 | July 2012 | Initial Release |
| 2nd | January 2018 | Update Jumper settings and Connectors |

## 1.4 Manual Objectives

This manual describes in detail the Avalue Technology EMX-QM77 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 EMX-QM77 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

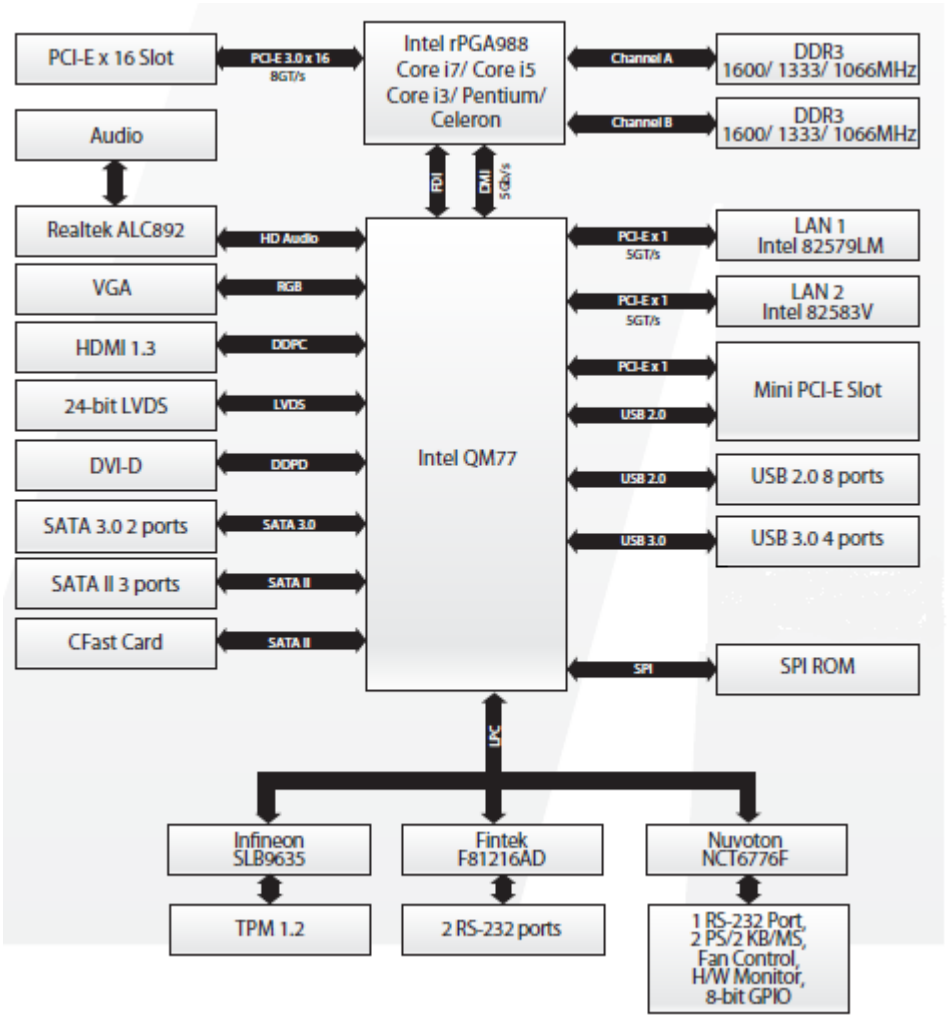
| | |
|---|---|
| **System** | |
| **CPU** | Intel Core i7/ i5/ i3 Pentium® / Celeron® Mobile CPU |
| **BIOS** | AMI 64Mb SPI ROM |
| **System Chipset** | Intel QM77 |
| **I/O Chipset** | Nuvoton NCT6776F |
| **Memory** | Two 204-pin SODIMM support up to 16GB dual channel DDR3 1600/ 1333 SDRAM, Non-ECC |
| **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 Gen. 3, 1 Mini PCI-E, 1 CFast |
| **Power State** | S1, S3, S4, S5 |
| **TPM** | TPM 1.2 by Infineon SLB9635 |
| **RAID** | RAID 0, 1, 5 and 10 |
| **Wake up / Boot on LAN** | LAN (WOL,PXE) |
| **Smart Fan Control** | Yes |
| **Display** | |
| **Chipset** | Intel GMA HD 4000 /2500 (22nm) , 3000/2000(32nm) |
| **Display Memory** | Shared Memory, up to 256MB |
| **Dual Display** | VGA + LVDS, VGA + HDMI, VGA + DVI, LVDS + HDMI, LVDS + DVI, HDMI + DVI |
| **VGA** | Onboard, supports max resolution 2048 x 1536 (@75Hz) |
| **LVDS** | Onboard 24-bit LVDS, supports max resolution 1920 x 1200 |
| **HDMI** | Onboard HDMI 1.3, supports max resolution 1920 x 1200 |
| **DVI** | Onboard DVI-D, supports max resolution 1920x1200 |
| **LVDS Backlight** | Yes |
| **Audio** | |
| **Audio Codec** | Realtek AL892, 5.1 Channel HD Audio |
| **Audio Interface** | Line-in, line-out, Mic-in, S/PDIF Out, Front Audio Header |
| **Ethernet** | |
| **LAN1** | Intel 82579LM GbE LAN supports iAMT 8.0 |
| **LAN2** | Intel 82583V GbE LAN |
| **Back Panel I/O Port** | |

| | |
|---|---|
| **Back Panel I/O Port** | 1 PS/2 Keyboard<br>1 PS/2 Mouse<br>1 VGA Port<br>1 HDMI Port<br>1 COM RS-232 Port<br>1 DVI Port<br>4 USB 3.0 Ports<br>2 LAN RJ45 Ports<br>1 Audio I/O(3 Jacks) |
| **Internal I/O Connector** | |
| **Internal I/O Connector** | 4 USB Connectors support 8 USB Ports,<br>2 COM RS-232 Connectors<br>5 SATA Connectors (2 SATA 3.0, 3 SATA II),<br>1 Front Audio Connector,<br>1 Front Panel , Connector,<br>1 CPU Fan Connector<br>1 System Fan Connector<br>1 S/PDIF Out Connector<br>1 Mini PCI-E Connector,<br>1 CFast Connector,<br>1 LVDS Connector,<br>1 LVDS Backlight Power Connector,<br>1 Keyboard Mouse Header<br>1GPIO Connector |
| **Mechanical & Environmental** | |
| **Power Requirement** | +12V (11A), +5V (21A), +3.3V (18A), -12V (0.3A), 5VSB (2.5A) |
| **Power Type** | ATX (supports AT Mode) |
| **Power Connector** | 1 20-pin ATX Power Connector,<br>1 4-pin ATX 12V Power Connector |
| **Operating Temperature** | 0°C to 60°C (32°F to 140°F) |
| **Operating Humidity** | 0% to 90% relative humidity, non-condensing |
| **Size (L x W)** | 6.69" x 6.69" (170 x 170mm) |
| **Weight** | 0.77 lbs (0.35 Kg) |

* Specifications are subject to change without notice.

## 1.6 Architecture Overview – Block Diagram

The following block diagram shows the architecture and main components of EMX-QM77.



# 2. Hardware Configuration

## 2.1 Product Overview

Supports latest Intel rPGA988 CPU-socket interface processor, the 3rd Generation Intel® Core i3, i5, i7, Pentium ,Celeron mobile 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 21GB/s and pumps up the system performance at lower power.

DMI (Direct Media Interface) architecture connects between the processor and chipset at 5.0Gb/s which twice the speed of previous version. The exceptionally increased interconnect bit rate from 2.5Gb/s up to 5.0Gb/s would effectively eliminates the bottle neck of the system performance and brings the most terrific computing experience from the present to the future.

There are 2 of 5 SATA ports running at speed up to 6.0Gb/s, and each port can connect with any other SATA 3.0Gb/s devices for backward compatibility. It supports RAID 0(Striped disk array), RAID 1(Mirroring disk array), RAID 5(Block Interleaved Distributed Parity), RAID 10 (A Stripe of Mirrors).

The MB also provides users the performance and protection. It is 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 Gigabit 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. Supports TPM 1.2.

### 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:
  - Windows XP 32 bit / 64 bit
  - Windows 7 32 bit / 64 bit
  - Fedora core Linux16 32bit / 64 bit
  -Red Hat Enterprise Linux 6.0 i386vg

### 2.1.2 Key Architecture Features

• Supports Intel rPGA988 CPU, the 3'rd Generation Intel® Core i3, i5, i7 Mobile 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
  - PCIe* (CPU): Gen 3.0, 8GT/s, **
  - TDP: 17W-45W
• 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
  - VGA
  - LVDS
  - HDMI
  - DVI
• Intel® HD Graphics 4000/3000
  - DirectX® 11
    - Improved realism for DX 3D applications. Improved 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
• TPM
  - Support TPM 1.2
• I/O
  - PCI Express® x 16 PCIE 3.0 8GT/s
  - Mini PCI Express® x 1Gen 2.5GT/s
  - CFast connector SATA II interface
  - Five SATA ports (2 port of SATA 3.0 and 3 ports of SATA II) 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 8 ports
- SMBus 2.0
- LPC Bus
  Supports SPI devices
- Hardware Monitor
  Fan control (Voltage, Temp)
  Watchdog timer

## 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.

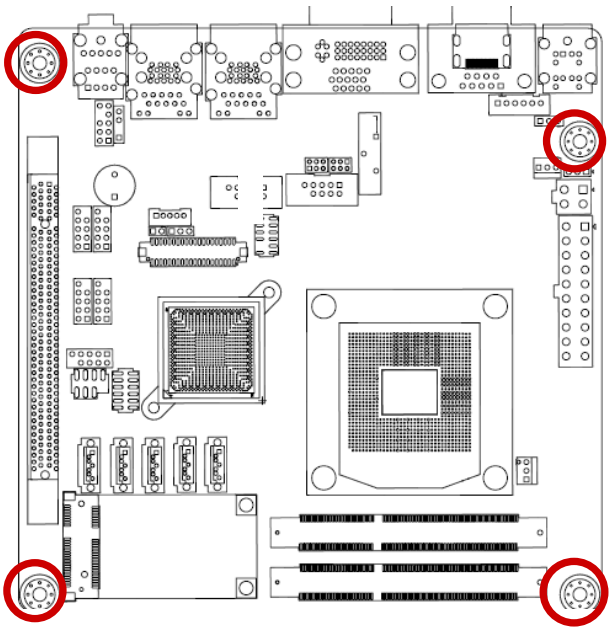
Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so can cause you physical injury and damage motherboard components.

### 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

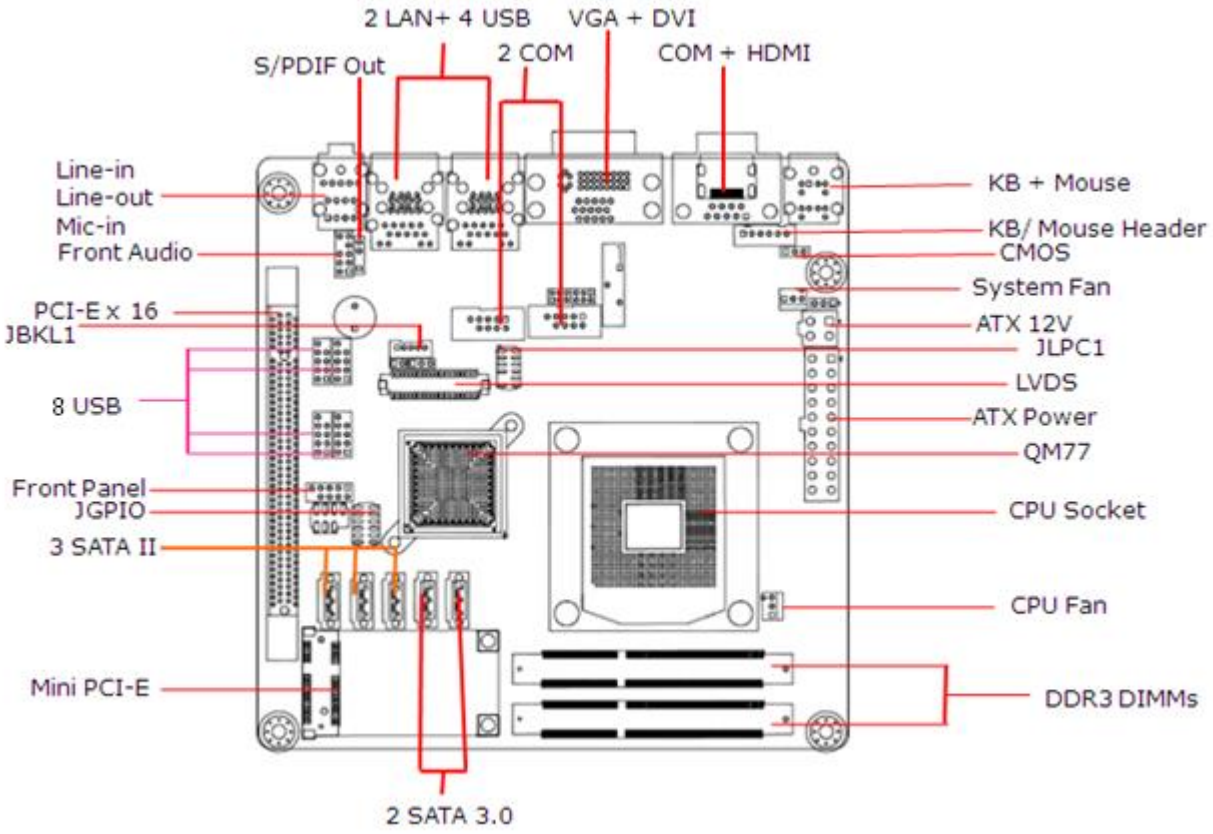
Place four (4) screws into the holes indicated by circles to secure the motherboard to the chassis.



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** |
| FCPGA988 | FCPGA988 socket | |
| DIMMA1 | 204-pin DDR3 SO-DIMM Slot A1 | |
| DIMMB1 | 204-pin DDR3 SO-DIMM Slot B1 | |
| PCIEX16 | PCI-e x16 Slot | |
| MINI-PCIE | MINI PCI-e Slot | |
| CFAST | Cfast Slot | Rear Side |

| Jumpers | | |
|---|---|---|
| **Label** | **Function** | **Note** |
| JCMOS1 | Clear CMOS | 3 x 1 header, pitch 2.54mm |
| JPSON | AT/ATX Mode Select | 3 x 1 header, pitch 2.54mm |
| JLVDS_BKL1 | BL Select | 3 x 1 header, pitch 2.54mm |
| JCOMPWR2<br>JCOMPWR3 | COM2 COM3<br>RI/+5V/+12V Select | 2 x 3 header, pitch 2.0 mm |

| Rear Panel Connector | | |
|---|---|---|
| **Label** | **Function** | **Note** |
| KBMS | PS/2 Keyboard and Mouse | 6-pin Mini-Din |
| COM1 | COM1 Connector | D-sub 9-pin, male |
| DVI (DVI/VGA 2 in 1 Conn) | DVI Port | 29-pin DVI-D port |
| VGA1(DVI/VGA 2 in 1 Conn) | VGA Port | D-sub 15-pin, female |
| HDMI1 | HDMI Port | HDMI 1.3 19-pin |
| LAN1USB12 | RJ-45 Ethernet Connector x 1<br>USB 2.0 Connector x 2 | |
| LAN2USB34 | RJ-45 Ethernet Connector x 1<br>USB 2.0 Connector x 2 | |
| Audio1 | Audio Line-In , Line-Out , Mic.-In | 5.1 Channel Audio I/O (3 jacks) |

### 2.4.1 Internal Connectors

| Internal Connector | | |
|---|---|---|
| **Label** | **Function** | **Note** |
| CPU_FAN | CPU Fan Connector | 3 x 1 wafer, pitch 2.54mm |
| SYS_FAN1 | System Fan Connector | 3 x 1 wafer, pitch 2.54mm |
| COM2 ~ 3 | Serial Port Connector * 2 | 5x 2 header, pitch 2.54mm |
| JGPIO | GPIO Connector | 6 x 2 header, pitch 2.54mm |
| F_PANEL | Intel Front Panel Connector | 5 x 2 header, pitch 2.54mm |
| ATXPWR | ATX power Connectors | 10 x 2 header |
| FPAUD1 | Audio Mic.-In & Line-Out Connector | 5 x 2 header, pitch 2.54mm |
| LVDS | 24-bit LVDS Connector | 2 x 20 connector |
| JBKL | LCD Inverter Connector | 1 x 5 connector |
| SPDIF_OUT | S/PDIF Connector | 1 x 4 header |
| SATA1 ~ 5 | SATA Data Connector * 5 | 7P Male connector |
| ATX12V | ATX Power Connector | 2x2 pin power connector |
| USB56<br>USB78<br>USB910<br>USB1112 | USB Connector * 8 | 5 x 2 header, pitch 2.54mm |

## 2.5 Central Processing Unit (CPU)

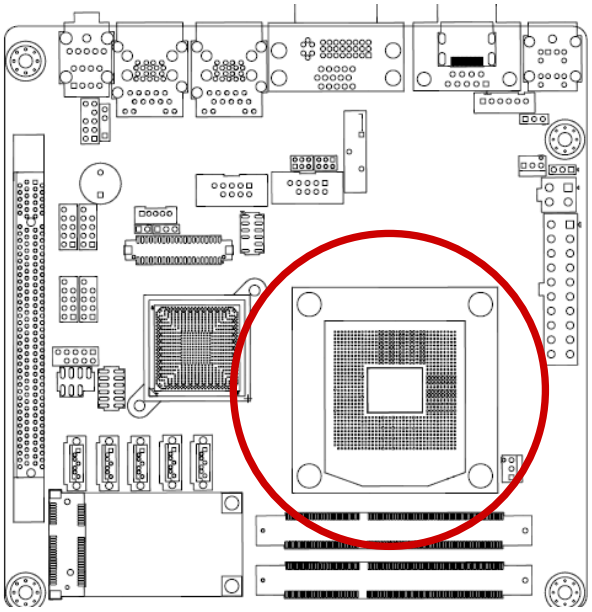
The motherboard comes with a surface mount FCPGA988 socket designed for the Intel® Core™ i7/ i5/ i3 processor in the 988-land package.

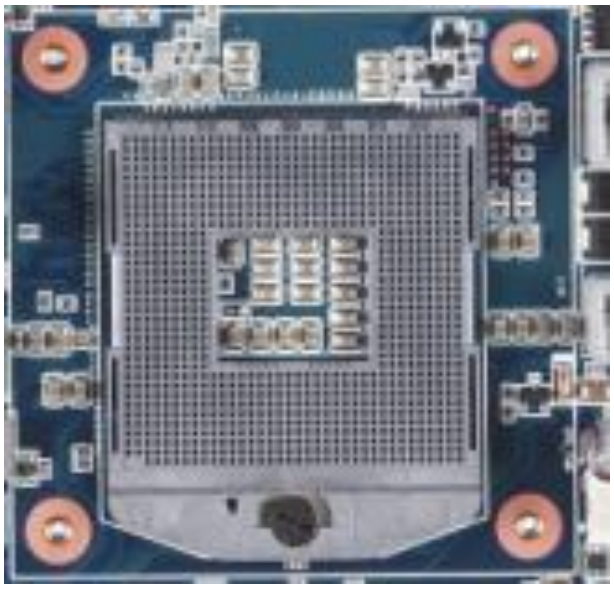
- Your boxed Intel® Core™ i7/ i5/ i3 Mobile processor package should come with installation instructions for the CPU, fan and heatsink assembly. If the instructions in this section do not match the CPU documentation, follow the latter.
- Upon purchase of the motherboard, make sure that the PnP cap is 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 FCPGA988 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

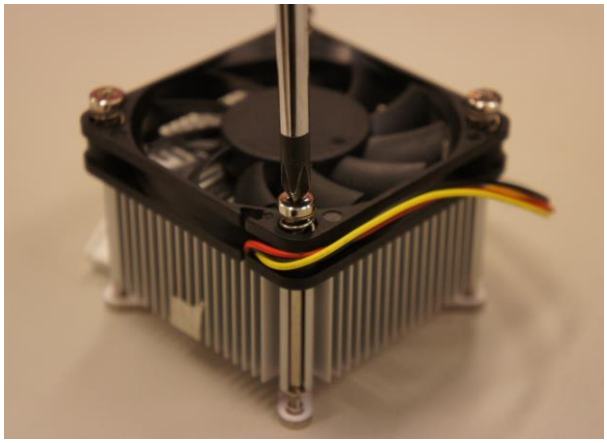
### *2.5.1.1 Locate the CPU socket on the motherboard.*

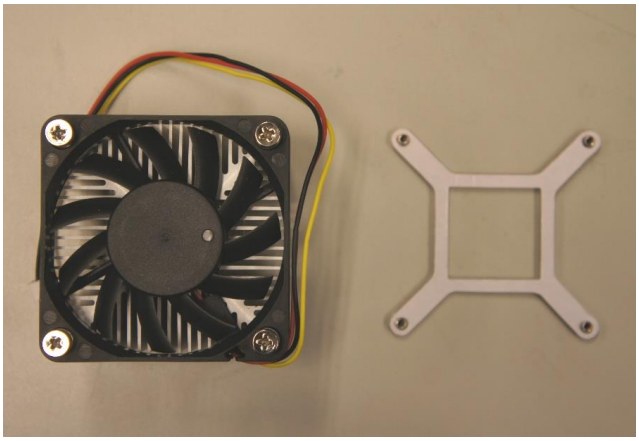




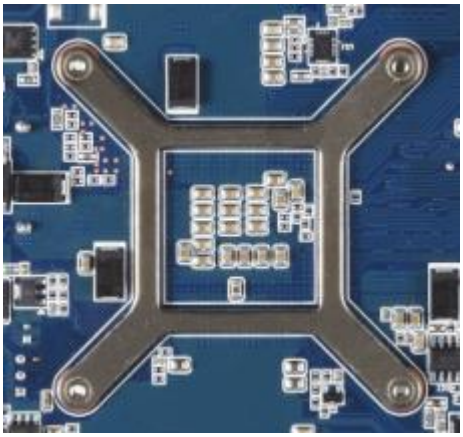
Before installing the CPU, make sure that the socket box is facing towards you and the load lever is on your left.

### *2.5.1.2 Separate CPU cooler and its base first by screw drawer*

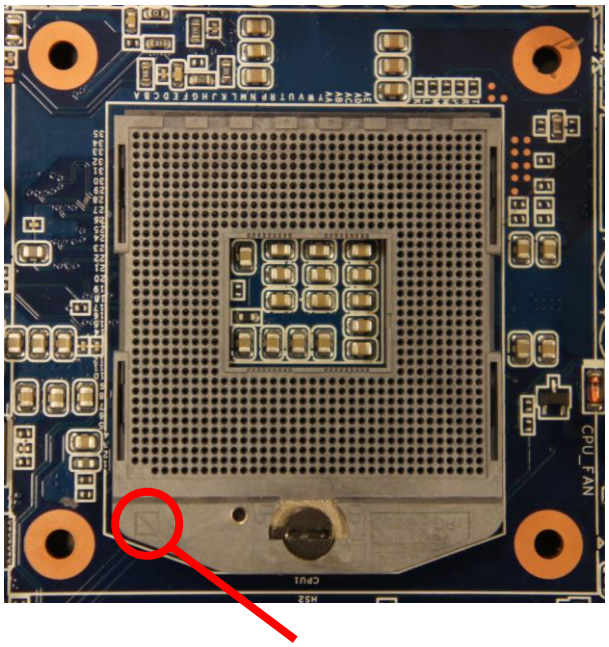




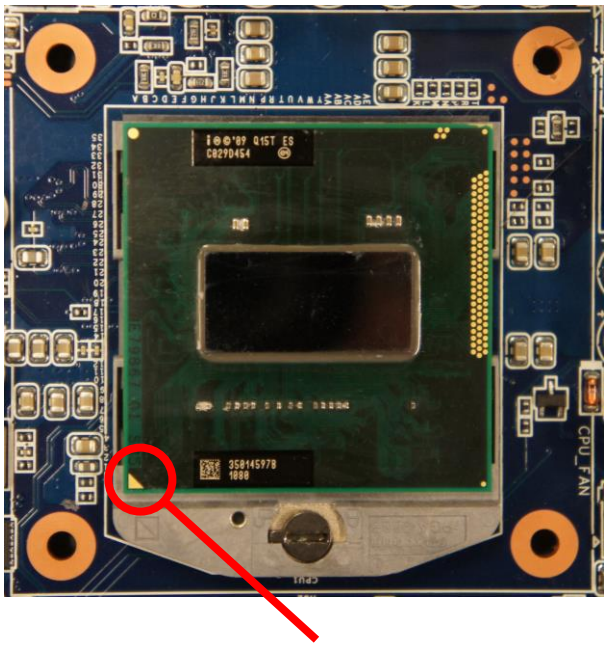
**1.** Assemble the CPU FAN retention module



**2.** Position the CPU over the socket, making sure that the gold triangle is the same side as CPU Socket triangle

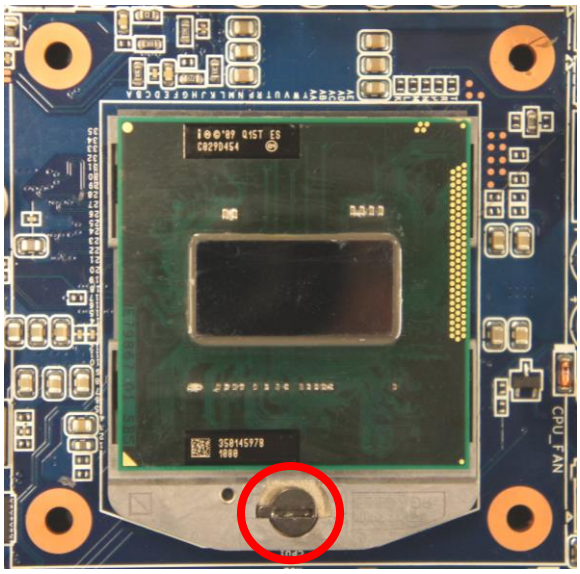


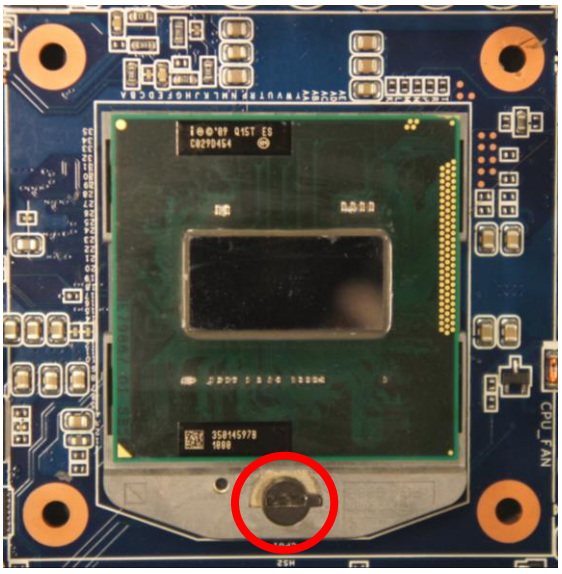

CPU Socket triangle

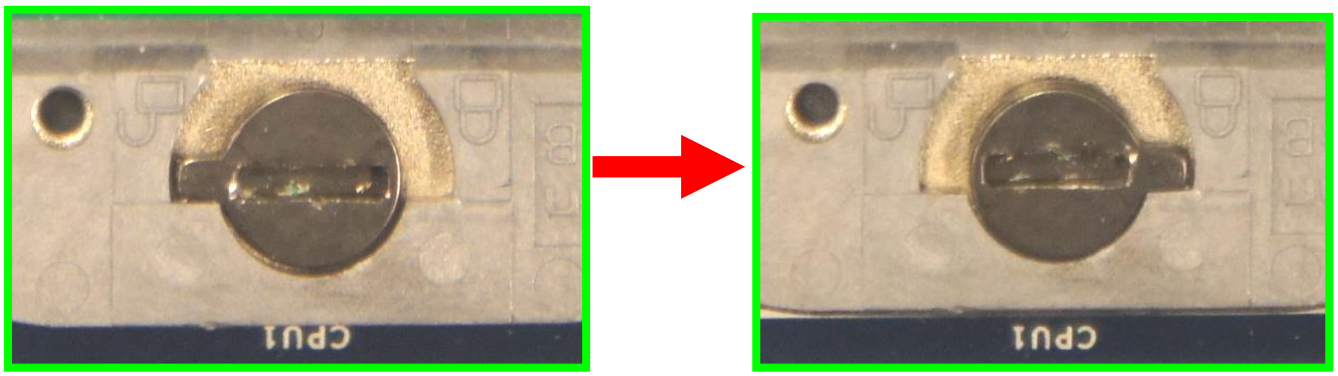



Gold triangle

**3.** turn the CPU lock clockwise to lock CPU



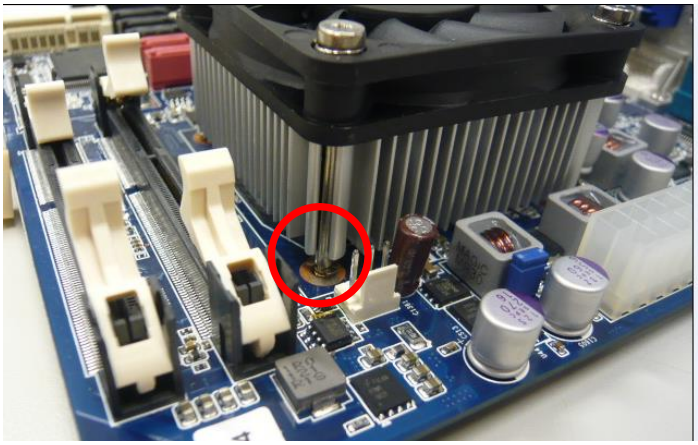

The CPU fits in only one correct orientation. DO NOT force the CPU into the socket to prevent bending the connectors on the socket and damaging the CPU!

### 2.5.2 Installing the CPU Heatsink and Fan

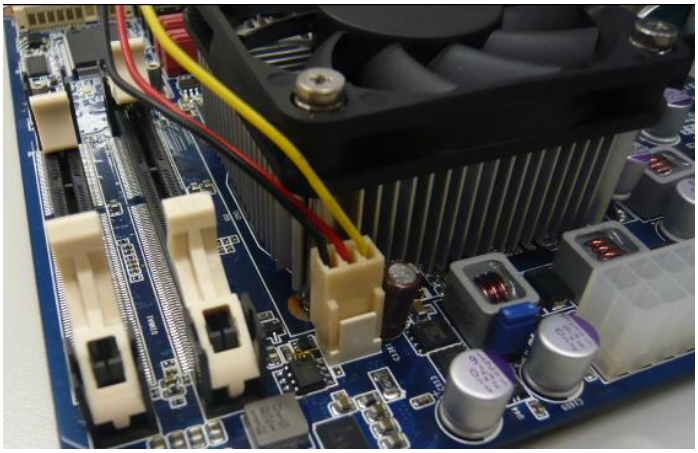
**1.** Place the heatsink base on the relative bottom of motherboard

**2.** Place the heatsink assembly on the top of the CPU, making sure that the four fasteners match the holes on the motherboard.

**3.** Screw tightly the four fasteners.



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



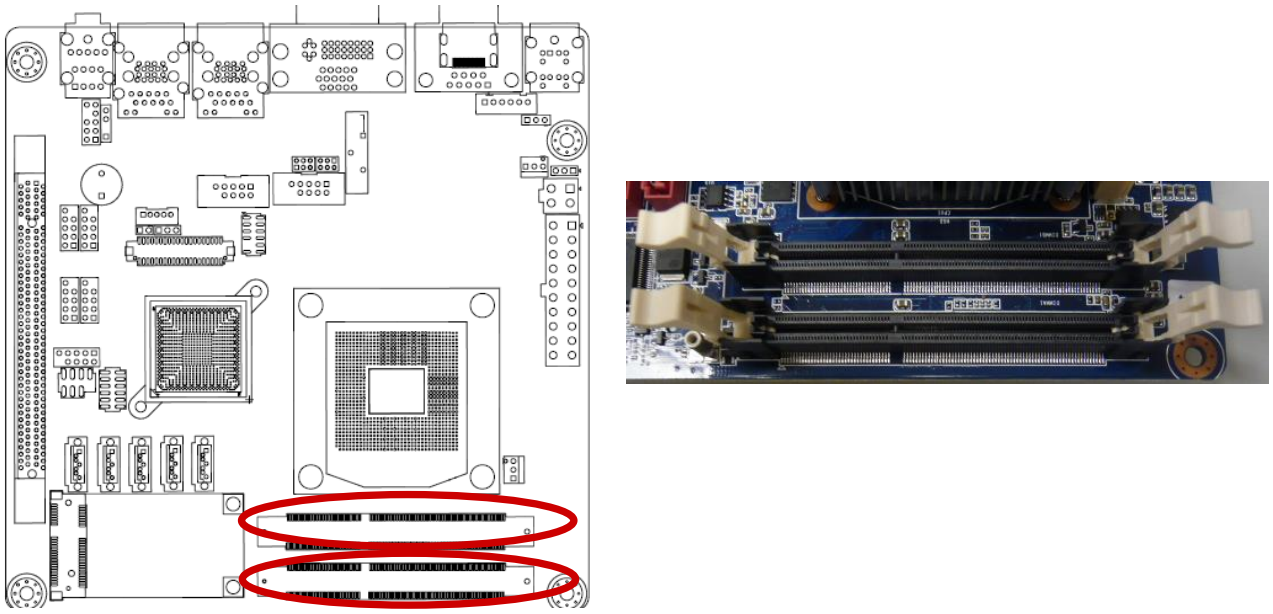
Do not forget to connect the CPU fan connector! Hardware monitoring errors can occur if you fail to plug this connector.

## 2.6 System Memory

### 2.6.1 Overview

The motherboard comes with four 204-pin Double Data Rate 3 (DDR3) Small Outline Dual Inline Memory Modules (SO-DIMM) sockets.

A DDR3 module has the same physical dimensions as a DDR SO-DIMM but has a 204-pin footprint compared to the 204-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:



204-pin DDR3 DIMM sockets

| Channel | Socket |
|---|---|
| Channel A | DIMMA1 |
| Channel B | DIMMB1 |

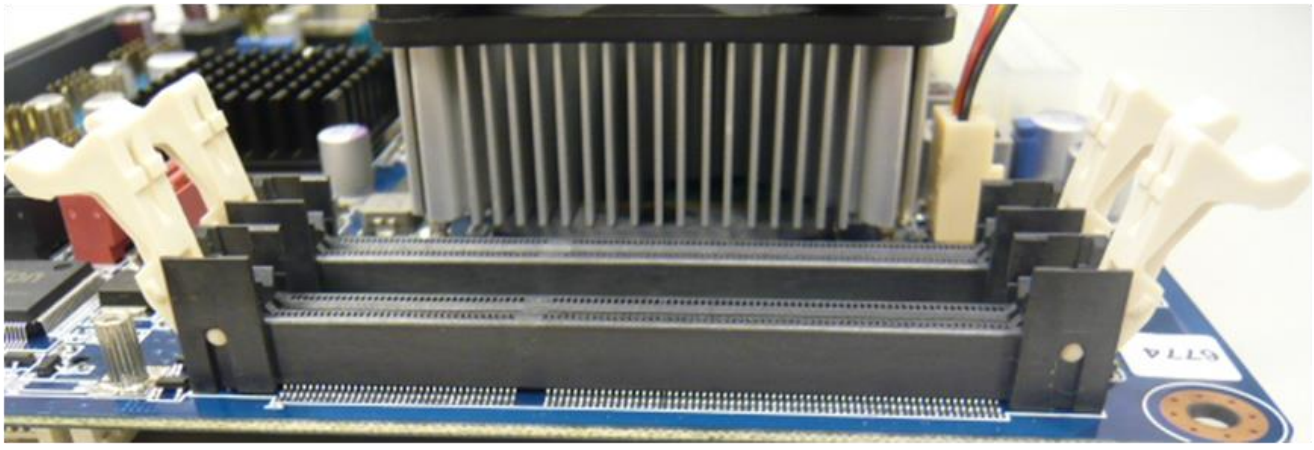
### 2.6.2 Memory Configurations

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

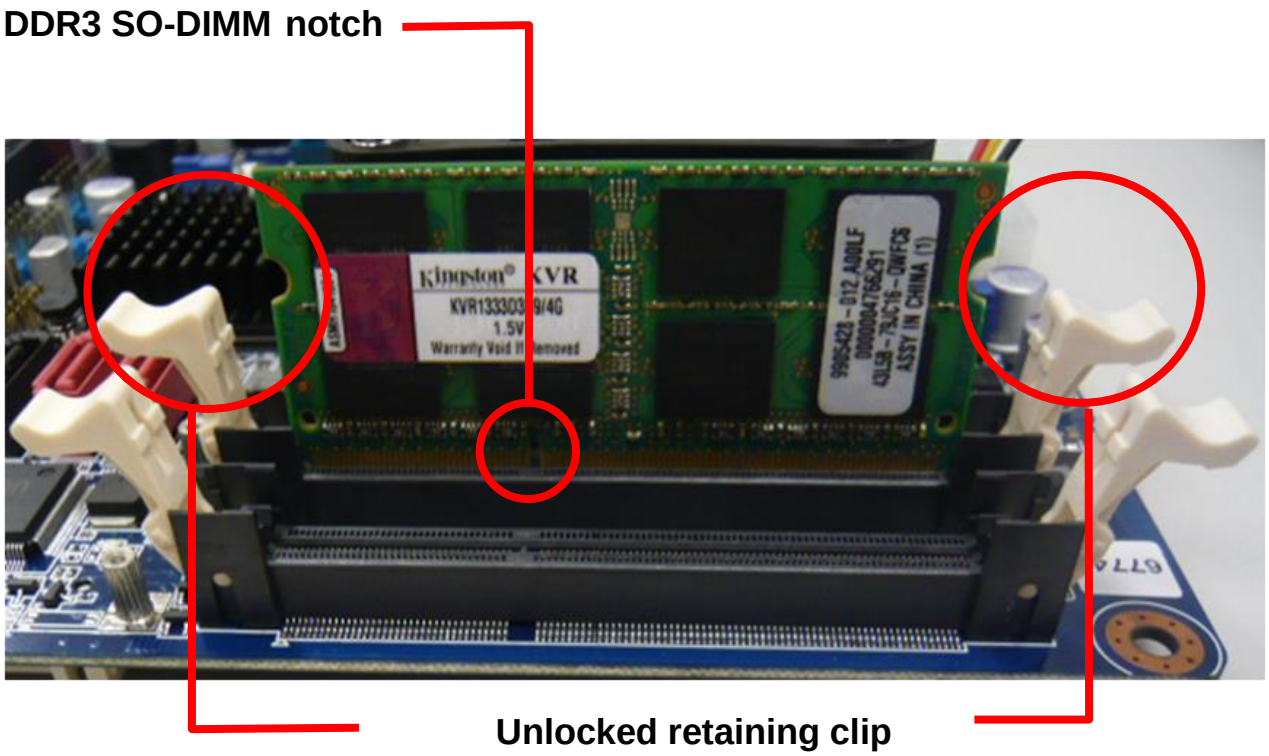
- IF you installed four 1GB memory modules, the system may detect less than 3GB of total memory because of address space allocation for other critical functions. This limitation applies to Windows XP 32-bit version operating system since it does not support PAE (Physical Address Extension) mode.
- IF 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=DIMMB1).
- 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

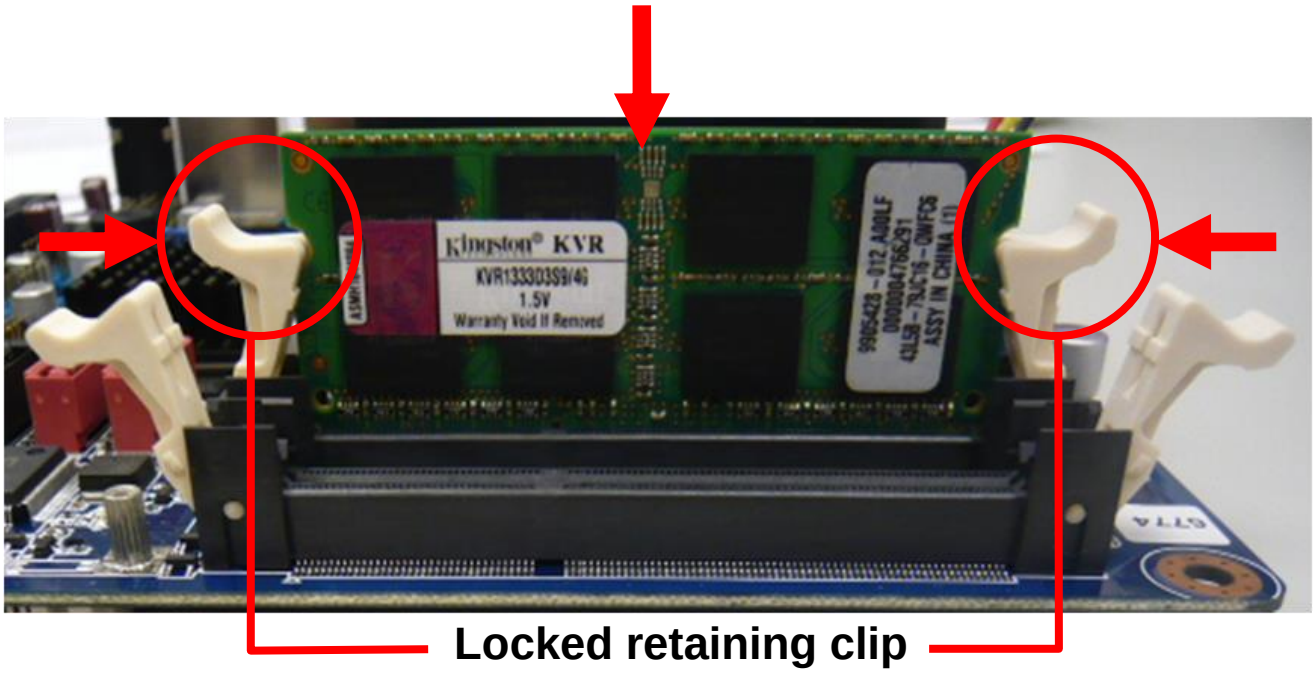
**1.** Unlock a DIMM socket by pressing the retaining clips outward.



2. Align a SO-DIMM on the socket such that the notch on the SO-DIMM matches the break on the socket.




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

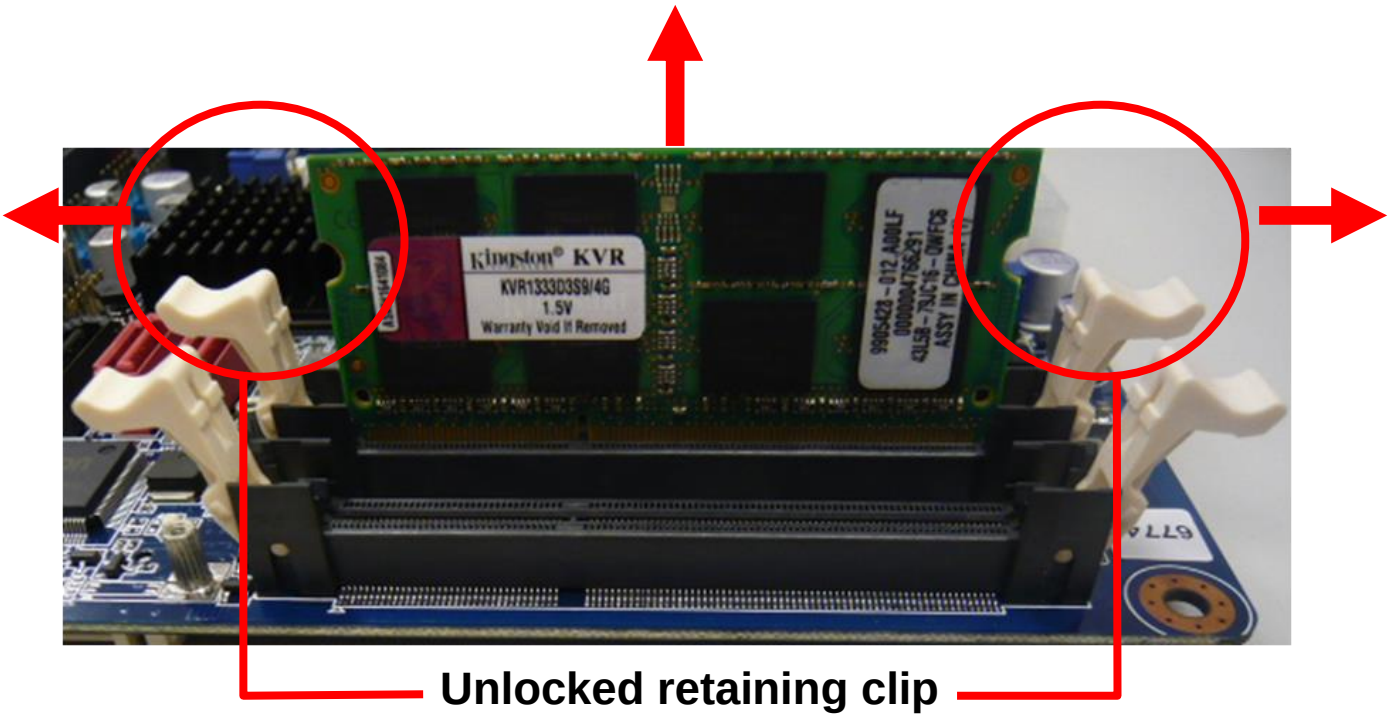

Kingston® KVR
KVR1333D3S9/4G
1.5V
Warranty Void If Removed
Locked retaining clip

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

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

### 2.6.4 Removing a SO-DIMM

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




Support the SO-DIMM lightly with your fingers when pressing the retaining clips. The SO-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.

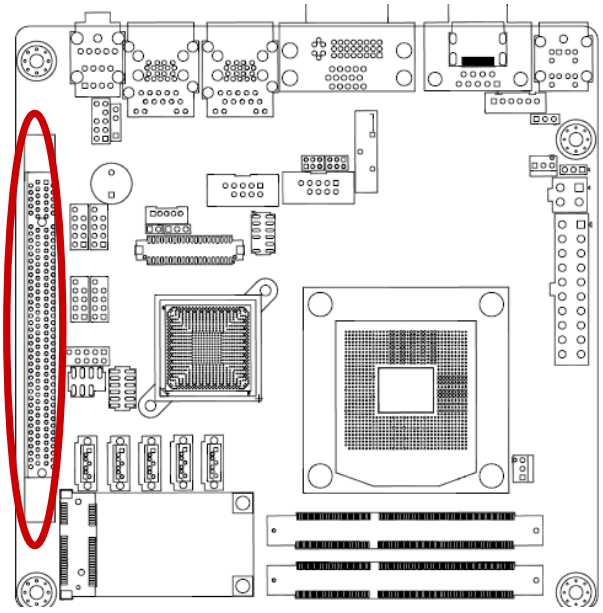
### 2.7.2 Configuring an Expansion Card

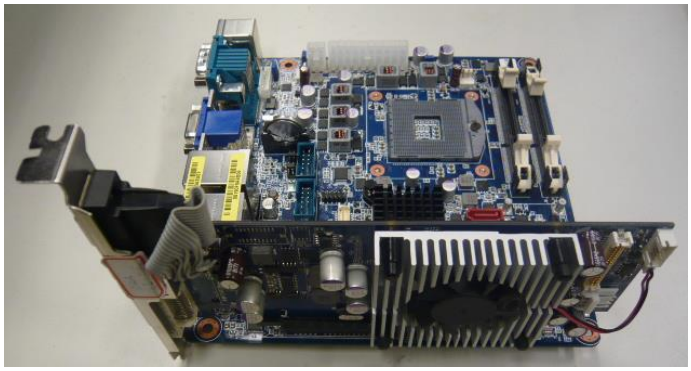
After installing the expansion card, configure it by adjusting the software settings.

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

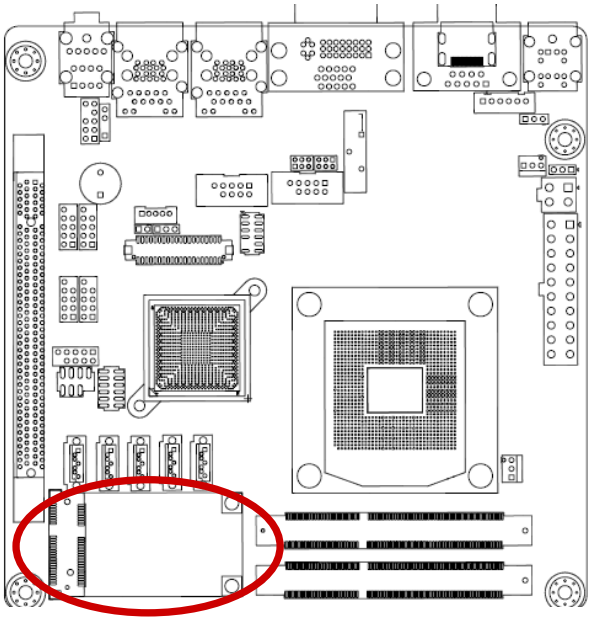
This motherboard supports one PCI Express x16. The following figure shows a graphics card installed on the PCI Express x16 slot.

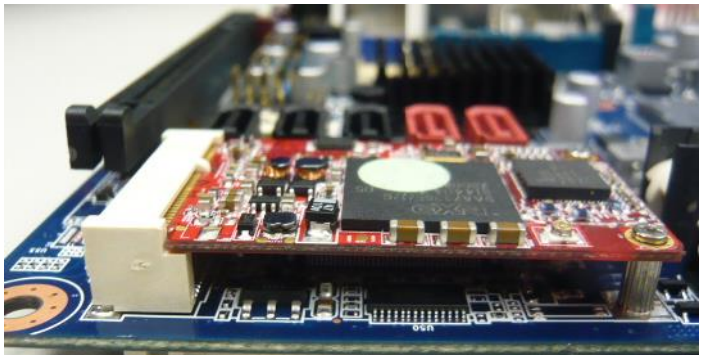




### 2.7.4 MINI PCI Express

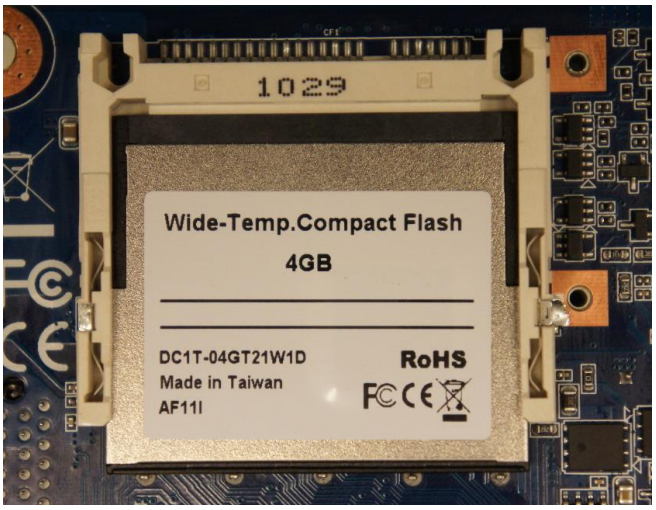
This motherboard supports one MINI PCI Express. The following figure shows a Decode card installed on the MINI PCI Express slot.





### 2.7.5 CFast Card

This motherboard supports one CFast Card connector and its location is on button side of MB. The following figure shows a CFast Card installed on the CFast Card connector..



## 2.8 Jumper settings and Connectors

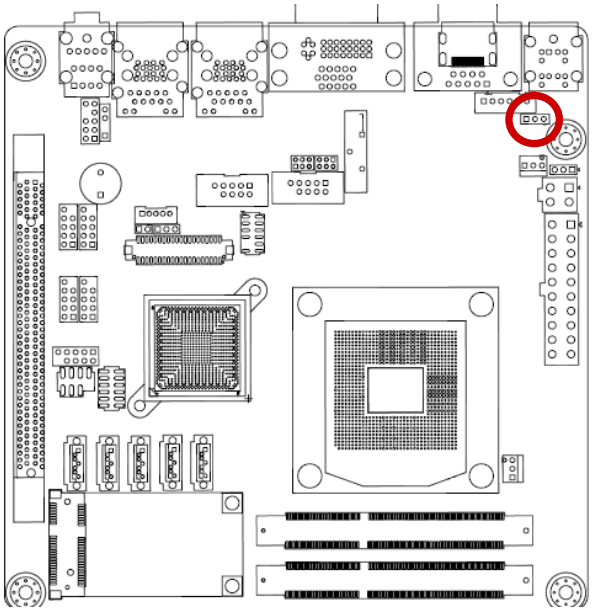
### 2.8.1 Clear CMOS (JCMOS1)

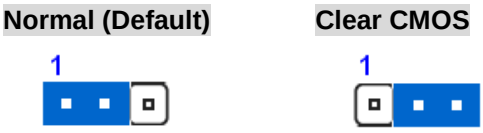
This jumper allows you to clear the Real Time Clock (RTC) RAM in CMOS. You can clear the CMOS memory of date, time, and system setup parameters by erasing the CMOS RTC RAM data. The onboard button cell battery powers the RAM data in CMOS, which includes system setup information such as system passwords.

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.

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



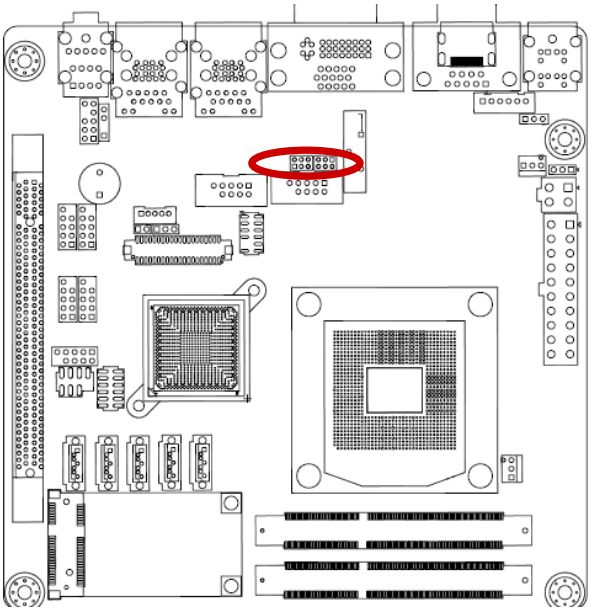


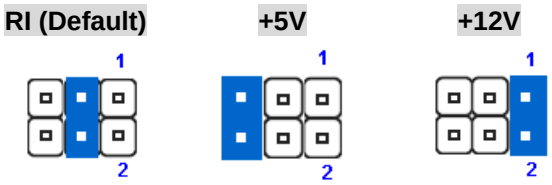

You do not need to clear the RTC when the system hangs due to overclocking. For system failure due to overclocking, use the C.P.R. (CPU Parameter Recall) feature. Shut down and reboot the system so

the BIOS can automatically reset parameter settings to default values.

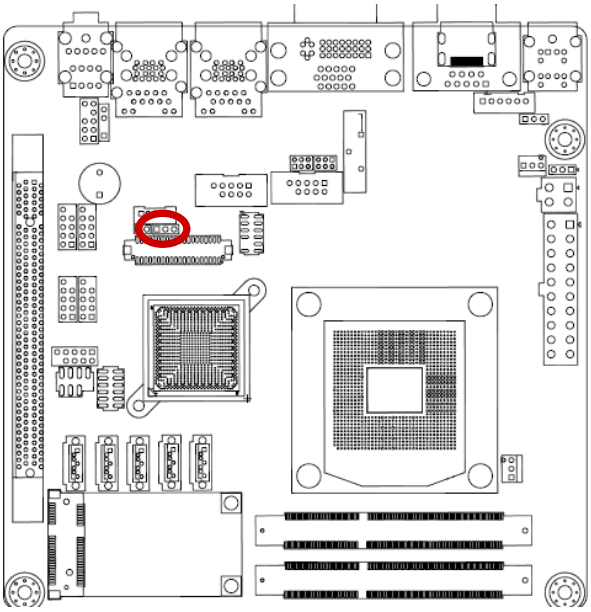
### 2.8.2 COM2, COM3, RI/+5V/+12V Select (JCOMPWR2 JCOMPWR3 )

This jumper allows you to select the power mode of COM PORTATX Mode or AT mode






### 2.8.3 LVDS Back Light power selection (JLVDS_BKL1)

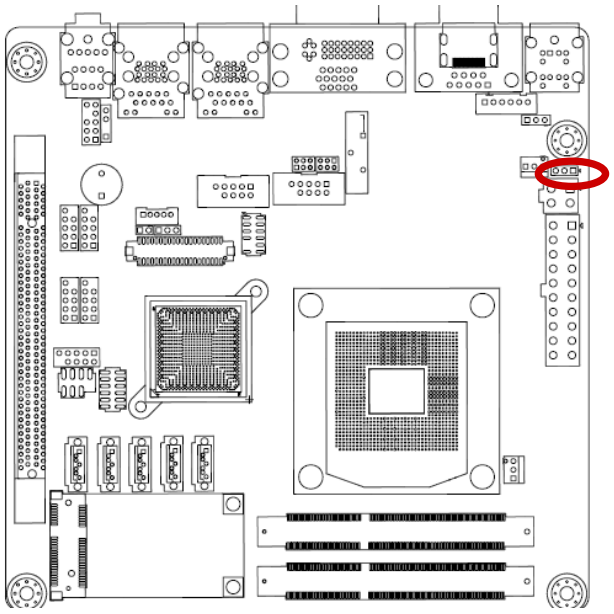


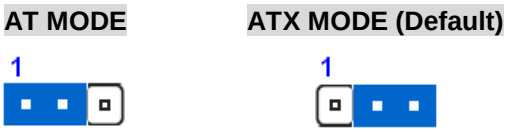

**Function:**

Voltage Level shift select for Bright control@LVDS

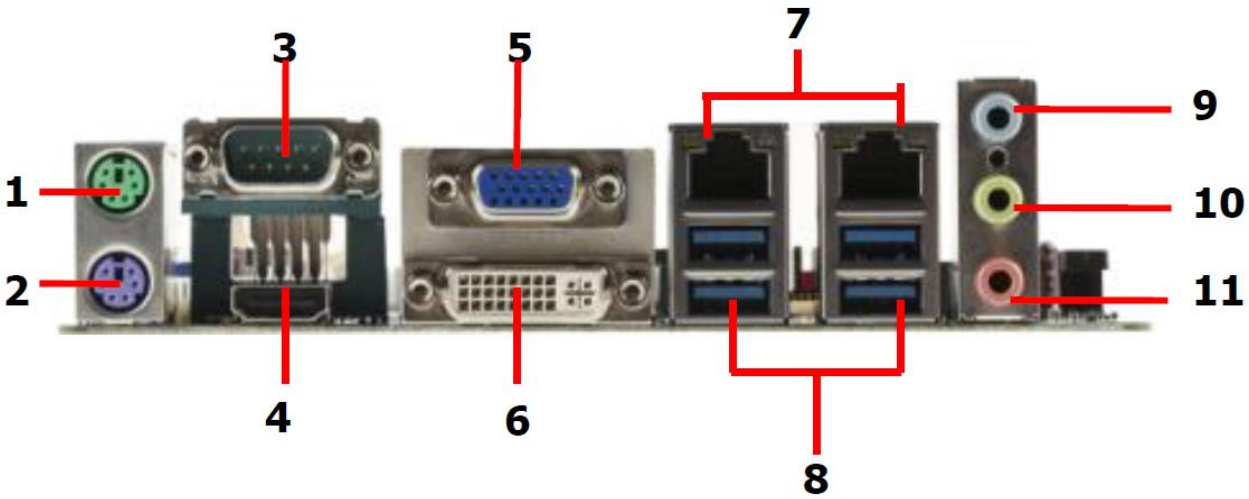
### 2.8.4 AT/ATX Power Mode Select (JPSON)

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





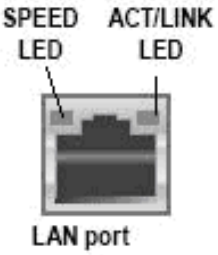

### 2.8.5 Rear panel connectors




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. **HDMI port.** This 19-pin HDMI 1.3 port connects to a HDMI monitor.
5. **VGA port.** This 15-pin VGA port connects to a VGA monitor.
6. **DVI-D port** This 29-pin DVI-D port connect is for a DVI 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 |



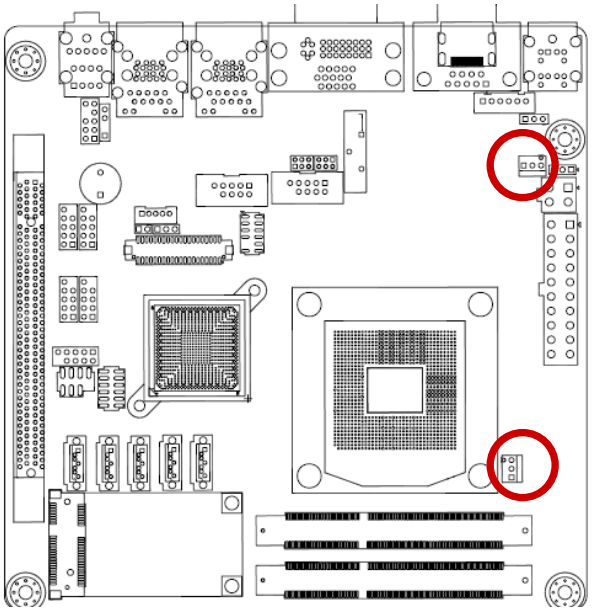

**8. USB 3.0 ports 1 ~ 4.** These four 4-pin Universal Serial Bus (USB) ports are available for connecting USB 3.0 devices.

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

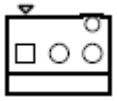
**10 Line Out port (Green).** This port connects a headphone or a speaker.
In 4-channel, 6-channel, and 8-channel configuration, the function of this port becomes Front Speaker Out.

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

### 2.8.6 CPU and System fan connectors (CPU_FAN1, SYS_FAN1)

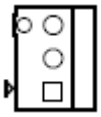


**SYS_FAN1**



1.GND
2.SYSFAN1_VCC(PWM)
3.SYSFAN1_IO

**CPU_FAN**

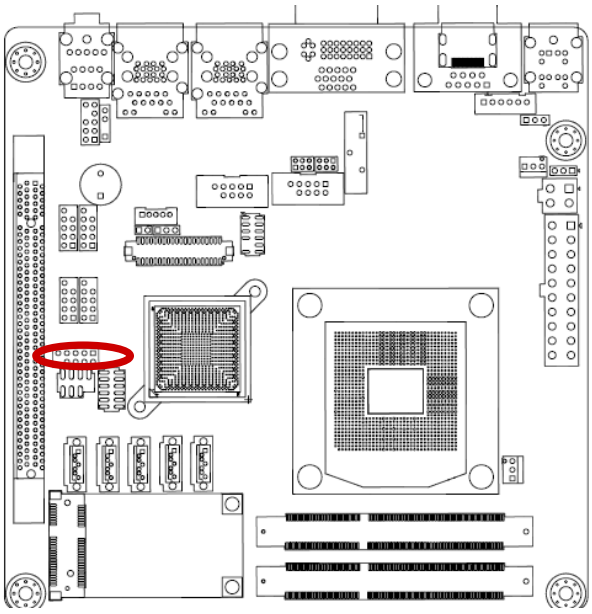


1.GND
2.CPUFAN1_VCC(PWM)
3.CPUFAN1_IO

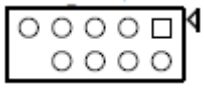
Do not forget to connect the fan cables to the fan connectors. Insufficient air flow inside the system may damage the motherboard components. These are not jumpers! DO NOT place jumper caps on the fan connectors.

### 2.8.7 System Panel (F_PANEL)

This connector is for a chassis-mounted front panel. The functions are as following.



F_PANEL



| | |
|---|---|
| 1.HDDLED+ | 2.POWERLED+ |
| 3.HDDLED- | 4.POWERLED- |
| 5.GND | 6.PWSWITCH |
| 7.RESET | 8.GND |
| 9.NC | |

- **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)**

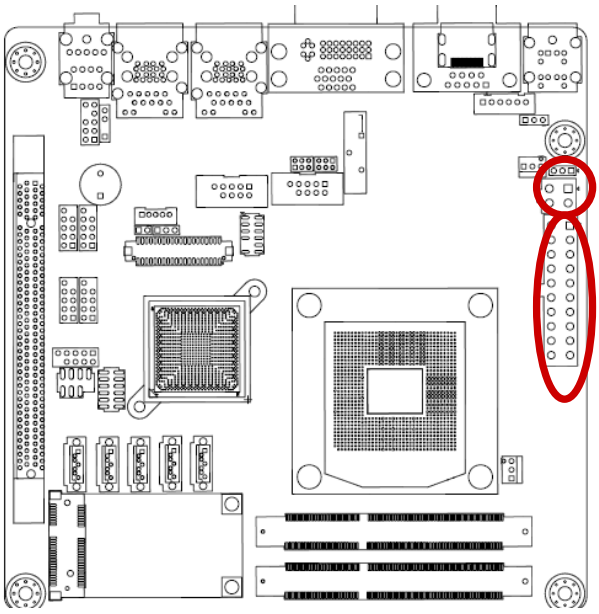
  This 2-pin connector is for the system power LED. Connect the chassis power LED cable to this connector. The system power LED lights up when you turn on the system power, and blinks when the system is in sleep mode.

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

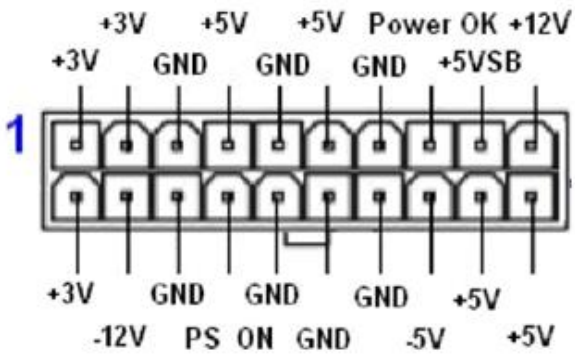
  This 2-pin connector is for the HDD Activity LED. Connect the HDD Activity LED cable to this connector. The IDE LED lights up or flashes when data is read from or written to the HDD.

### 2.8.8 ATX power connectors (ATXPWR, ATX12V1)

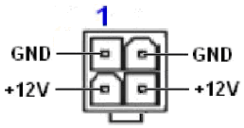
The connector is for ATX power supply plugs. The power supply plugs are designed to fit these connectors in only one orientation. Find the proper orientation and push down firmly until the connectors completely fit.



**ATXPWR1**

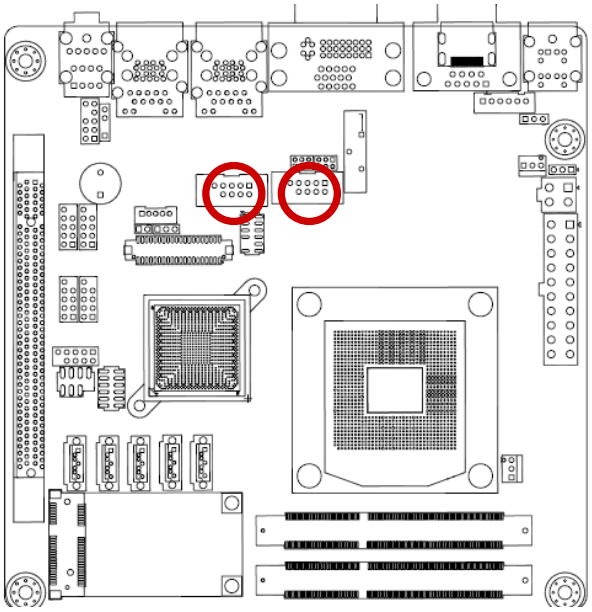



**ATX12V1**

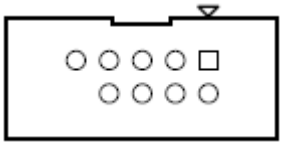


### 2.8.9 Serial Port connectors (COM2, COM3)

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.



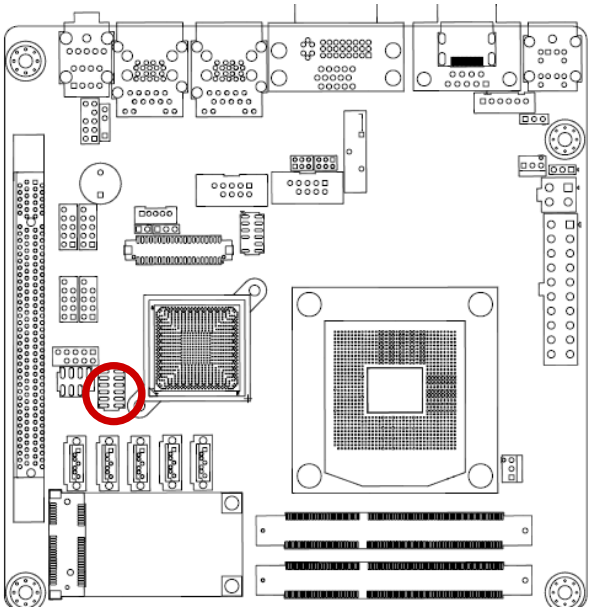
**COM2 , COM3**



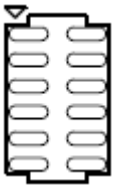
1.DCD 6.DSR
2.RXD 7.RTS
3.TXD 8.CTS
4.DTR 9.RI/PWR
5.GND

### 2.8.10 GPIO Connector (JGPIO)

This connector is for GPIO function.



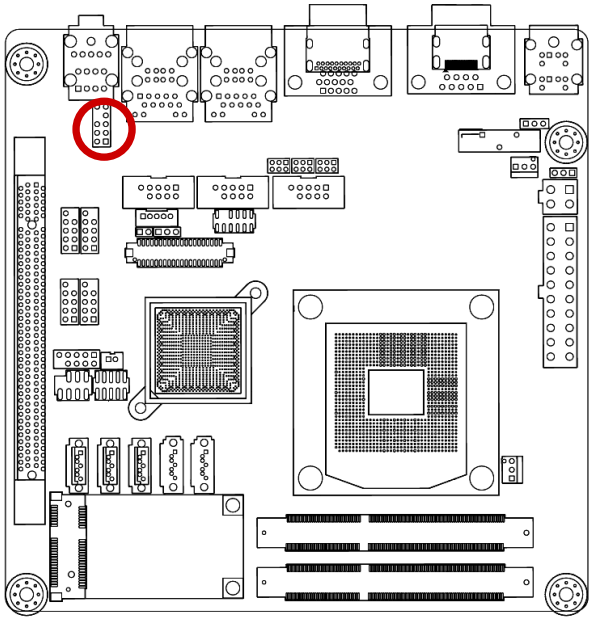
**JGPIO**



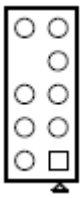
| | |
|---|---|
| 1.SIO_GPIO0 | 2.SIO_GPIO4 |
| 3.SIO_GPIO1 | 4.SIO_GPIO5 |
| 5.SIO_GPIO2 | 6.SIO_GPIO6 |
| 7.SIO_GPIO3 | 8.SIO_GPIO7 |
| 9.SMB_CLK_RESUME | 10.SMB_DAT_RESUME |
| 11.GND | 12.VCC GPIO |

## 2.8.11 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.



FPAUD1



| | |
|---|---|
| 10.LINE_JD | 9.LIN2_L |
| 8.NC | 7.FIO_SENSE |
| 6.MIC2_JD | 5.LIN2_R |
| 4.PRESENSE | 3.MIC2_R |
| 2.GND | 1.MIC2_L |

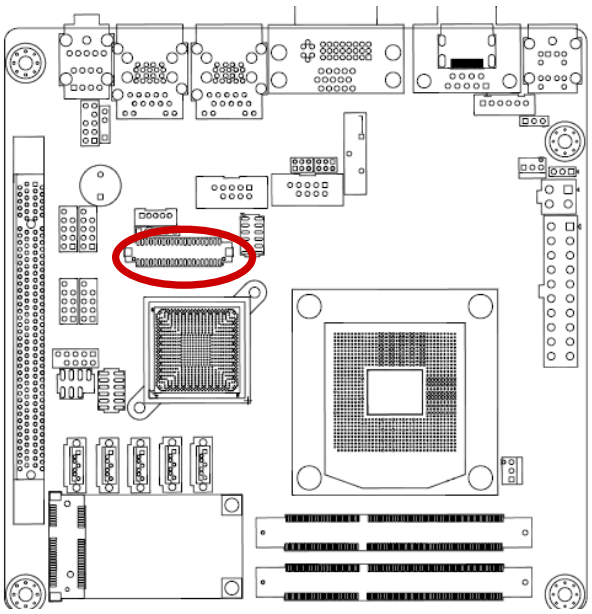
### *2.8.11.1 Signal Description – Audio connector (FPAUD1)*

| Signal | Signal Description |
|---|---|
| Line_JD | Jack detection for Line |
| MIC2_JD | Jack detection for MIC |
| FIO_SENSE | Jack detection for FIO |

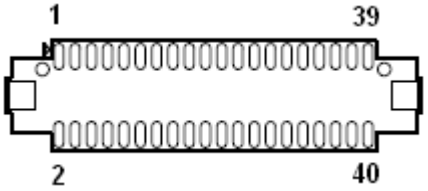
| | |
|---|---|
|  | For motherboards with the optional HD Audio feature, we recommend that you connect a high-definition front panel audio module to this connector to avail of the motherboard's high‑definition audio capability. |

## 2.8.12 LVDS Connector (LVDS1)

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



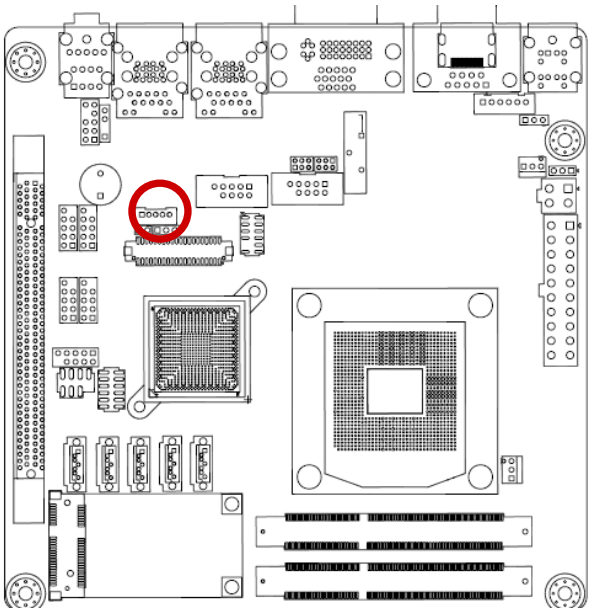
**LVDS1**



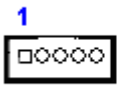

| | |
|---|---|
| 39.VDD(+12V) | 40.VDD(+12V) |
| 37.GND | 38.GND |
| 35.LVDS_B_CK- | 36.LVDS_A_CK- |
| 33.LVDS_B_CK+ | 34.LVDS_A_CK+ |
| 31.GND | 32.GND |
| 29.LVDS_B3- | 30.LVDS_B2- |
| 27.LVDS_B3+ | 28.LVDS_B2+ |
| 25.GND | 26.GND |
| 23.LVDS_B1- | 24.LVDS_B0- |
| 21.LVDS_B1+ | 22.LVDS_B0+ |
| 19.GND | 20.GND |
| 17.LVDS_A3- | 18.LVDS_A2- |
| 15.LVDS_A3+ | 16.LVDS_A2+ |
| 13.GND | 14.GND |
| 11.LVDS_A1- | 12.LVDS_A0- |
| 9.LVDS_A1+ | 10.LVDS_A0+ |
| 7.GND | 8.GND |
| 5.I2C_CLK | 6.I2C_DATA |
| 3.VDD(+3.3V) | 4.VDD(+5V) |
| 1.VDD(+3.3V) | 2.VDD(+5V) |

## 2.8.13 LCD Inverter Connector (JBKL)

The connector is for the control of internal LVDS brightness.

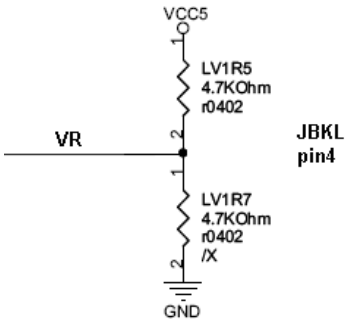


JLVDS_JBKL



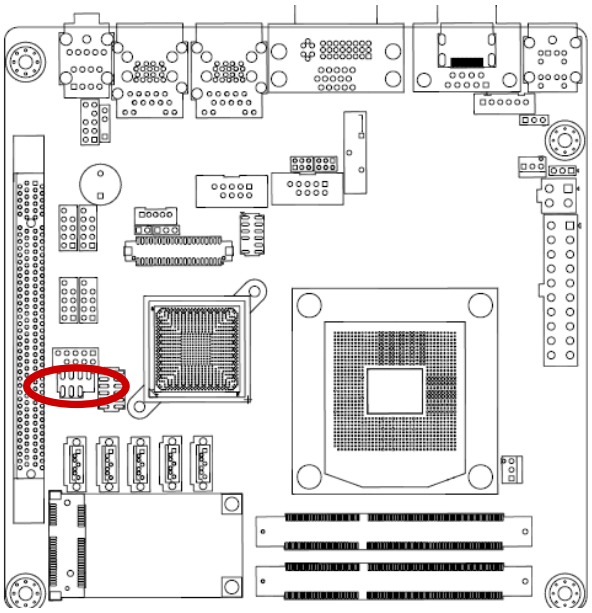

1. +12V
2. GND
3. ENBKL
4. VR
5. +5V

- **Signal Description**

| Signal | Signal Description |
|---|---|
| VR | For inverter with adjustable Backlight function, it is possible to control the LCD brightness through the **VR** signal.<br>  <br><br>Vadj=0.75V ~ 4.25V<br>(Recommended: 4.7KΩ, > 1/16W) |
| ENBKL | LCD backlight ON/OFF control signal |

## 2.8.14 SPI Connector (JPI_CN1)

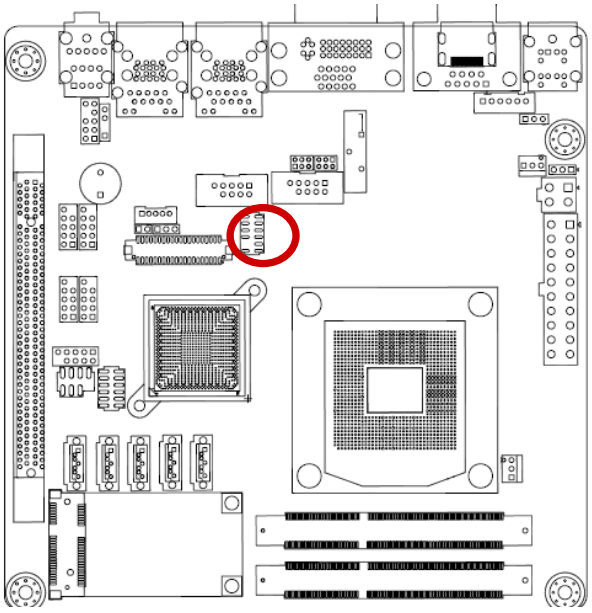
Is a point-to-point interface standard, which allows network equipment designers to develop an array of next-generation multi-service switches and routers to support multi-service traffic with aggregate bandwidths up to OC-192 (10 Gb/s) and beyond, enabling them to dramatically increase system performance.



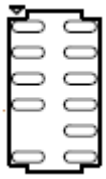
**SPI_CN1**

| | |
|---|---|
| 1.+3.3V | 2.GND |
| 3.SP1_CS# | 4.SPI_CLK |
| 5.SPI_MISO | 6.SPI_MOSI |
| 7.NC | 8.NC |

## 2.8.15 LPC Connector (JLPC)



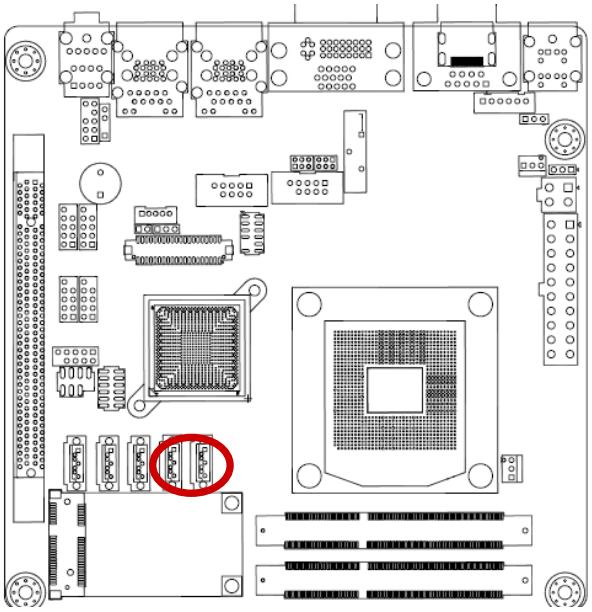
**JLPC**

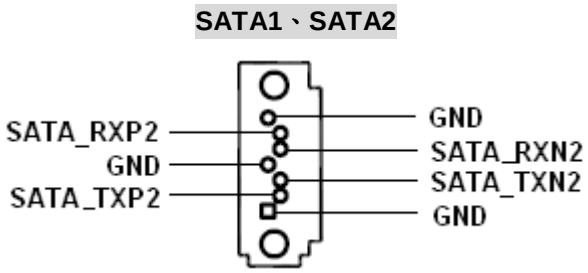


| | |
|---|---|
| 1.NC | 2.+3.3 |
| 3.LPC_AD3 | 4.PRST_SIO# |
| 5.LPC_AD1 | 6.LPC_AD2 |
| 7.LPC_FRAME# | 8.LPC_AD0 |
| 9. | 10.GND |
| 11.CLK33M_LPC | 12.GND |

### 2.8.16 Serial ATA 3 Connector (SATA1, SATA2)

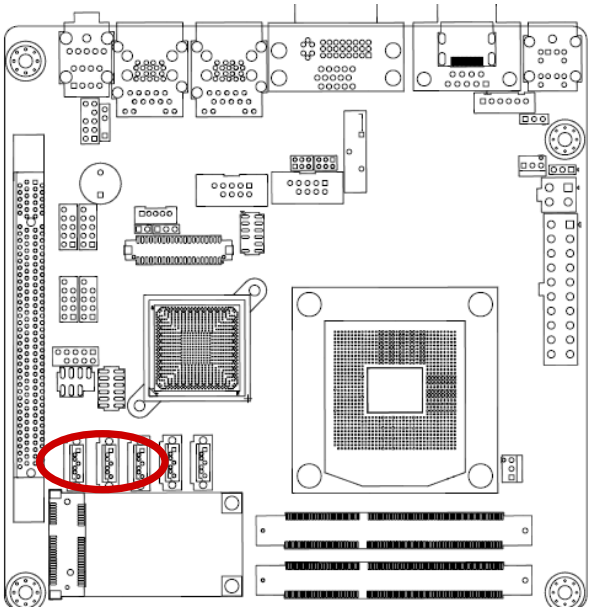
These connectors support SATA 3.0 and are for the Serial ATA signal cables for Serial ATA hard disk drives.

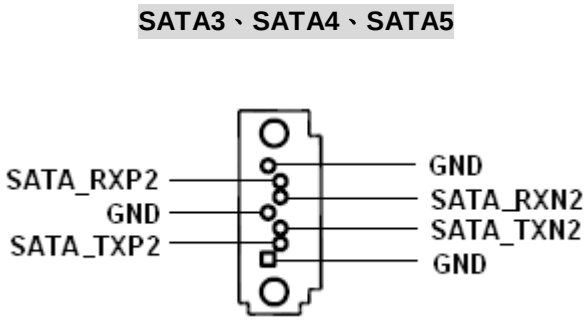




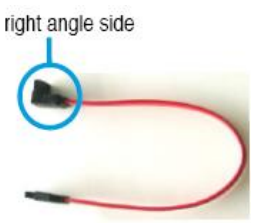

### 2.8.17 Serial ATA II Connector (SATA3 , SATA4 , SATA5)

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



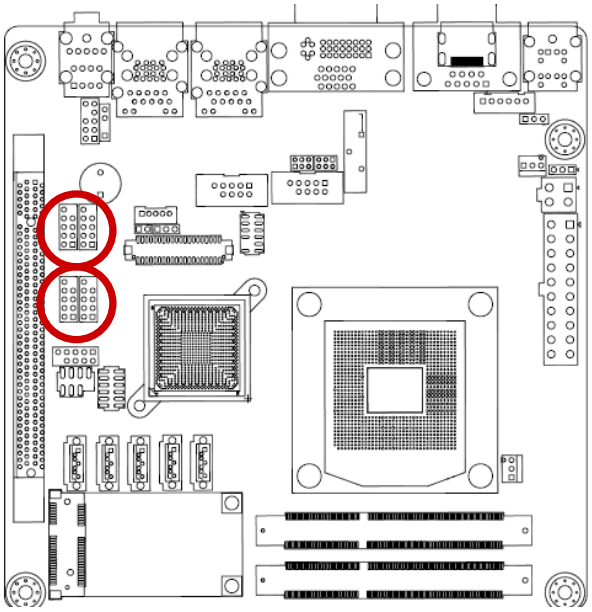



Connect the right-angle side of SATA signal cable to SATA device. Or you may connect the right-angle side of SATA cable to the onboard SATA port to avoid mechanical conflict with large graphics cards.

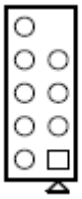


## 2.8.18 USB connectors (USB56, USB78, USB910, USB1112,)

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**



| | |
|---|---|
| 9.NC | |
| 8.GND | 7.GND |
| 6.USB+ | 5.USB+ |
| 4.USB- | 3.USB- |
| 2.USB+5V | 1.USB+5V |

# 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 |
| + - | Change Option / Field/ Value |
| Enter | Go to Sub Screen |
| PGDN | Next Page |
| PGUP | Previous Page |
| HOME | Go to Top of Screen |
| END | Go to Bottom of Screen |
| F1 | General Help |
| F2 | Previous Value |
| F3 | Optimized Default |
| F4 | Save & Exit Setup |
| 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.

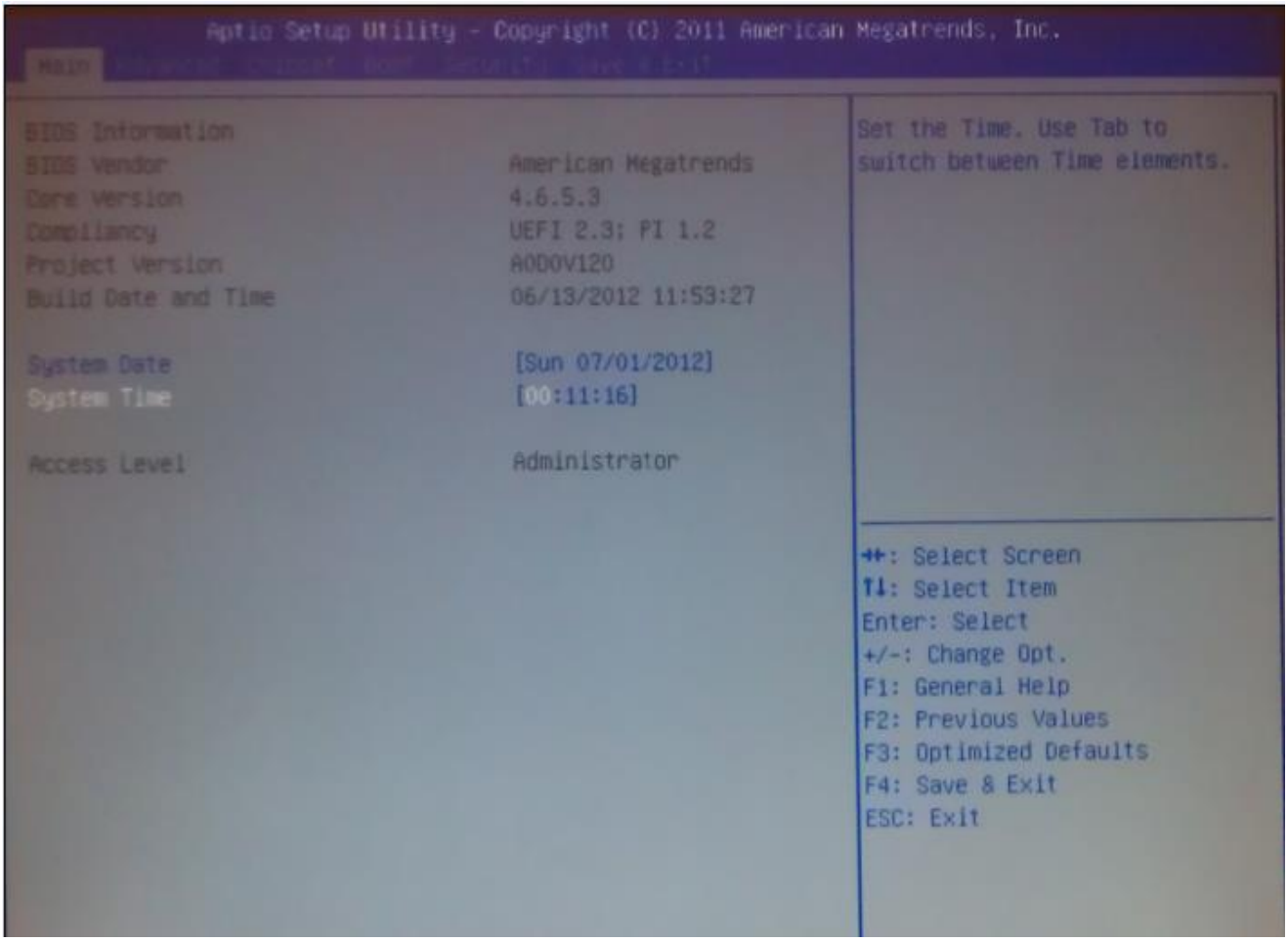
### 3.3.2 Sub-menu

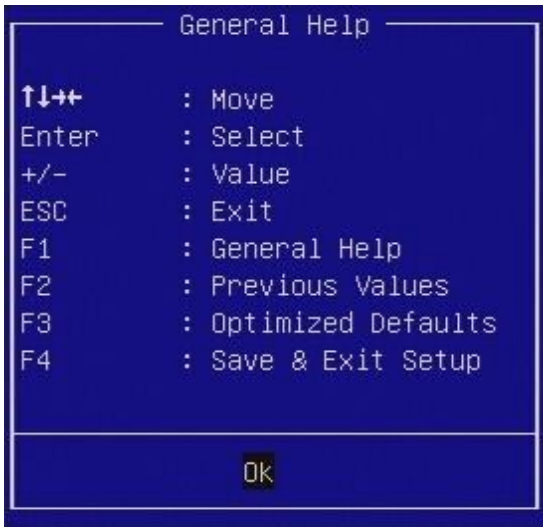
Note that a right pointer symbol  appears to the left of certain fields. This pointer indicates that you can display a sub-menu from this field. A sub-menu contains additional options for a field parameter. To display a sub-menu, move the highlight to the field and press <Enter>. The sub-menu appears. 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

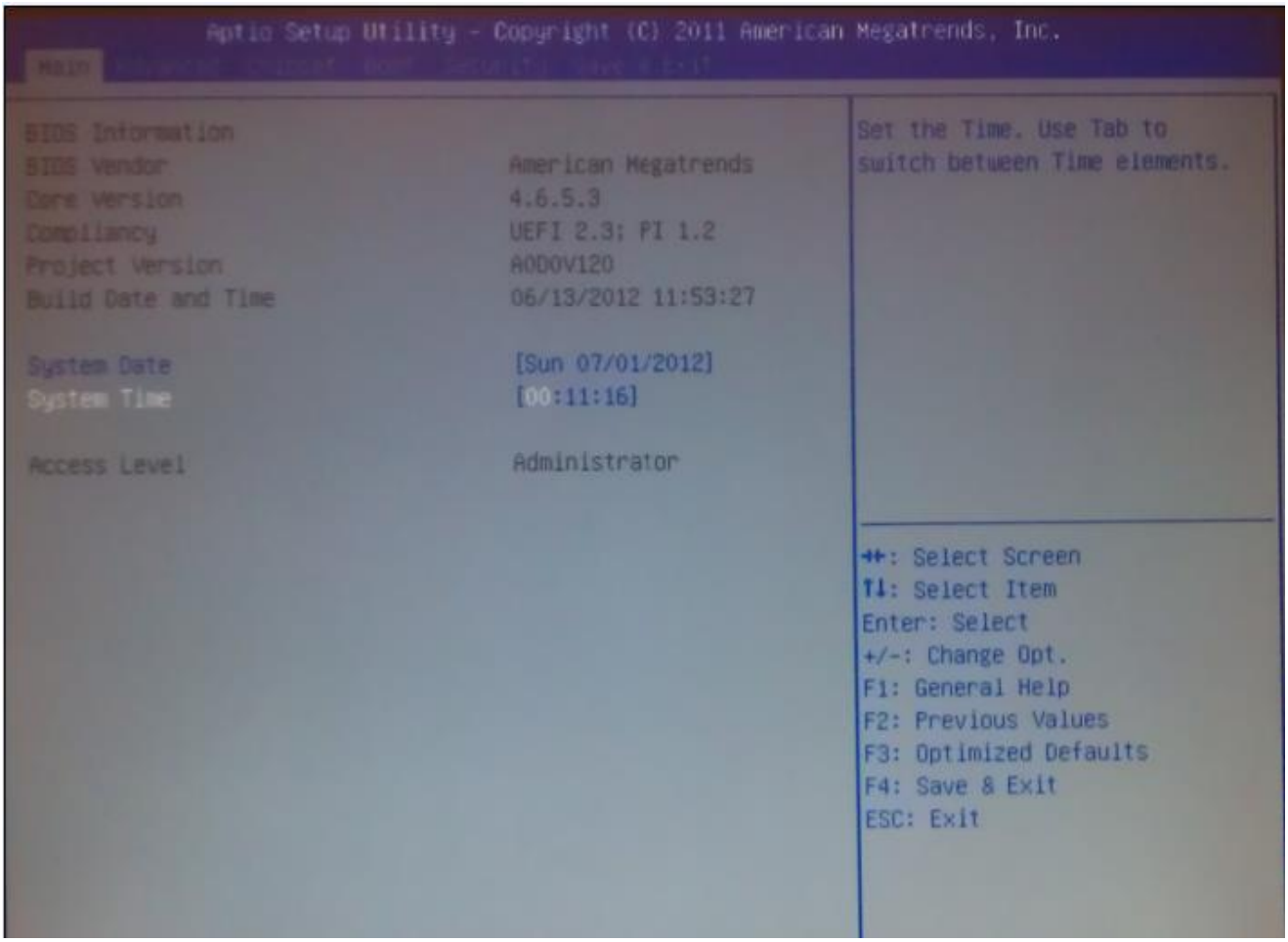
When you enter the BIOS, the following screen appears. The BIOS menu screen displays the items that allow you to make changes to the system configuration. To access the menu items, press the up/down/right/left arrow key on the keyboard until the desired item is highlighted, then press [Enter] to open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



### 3.4.1 Main Menu

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**

Display the auto-detected BIOS information.

- **System Date**

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

- **System Time**

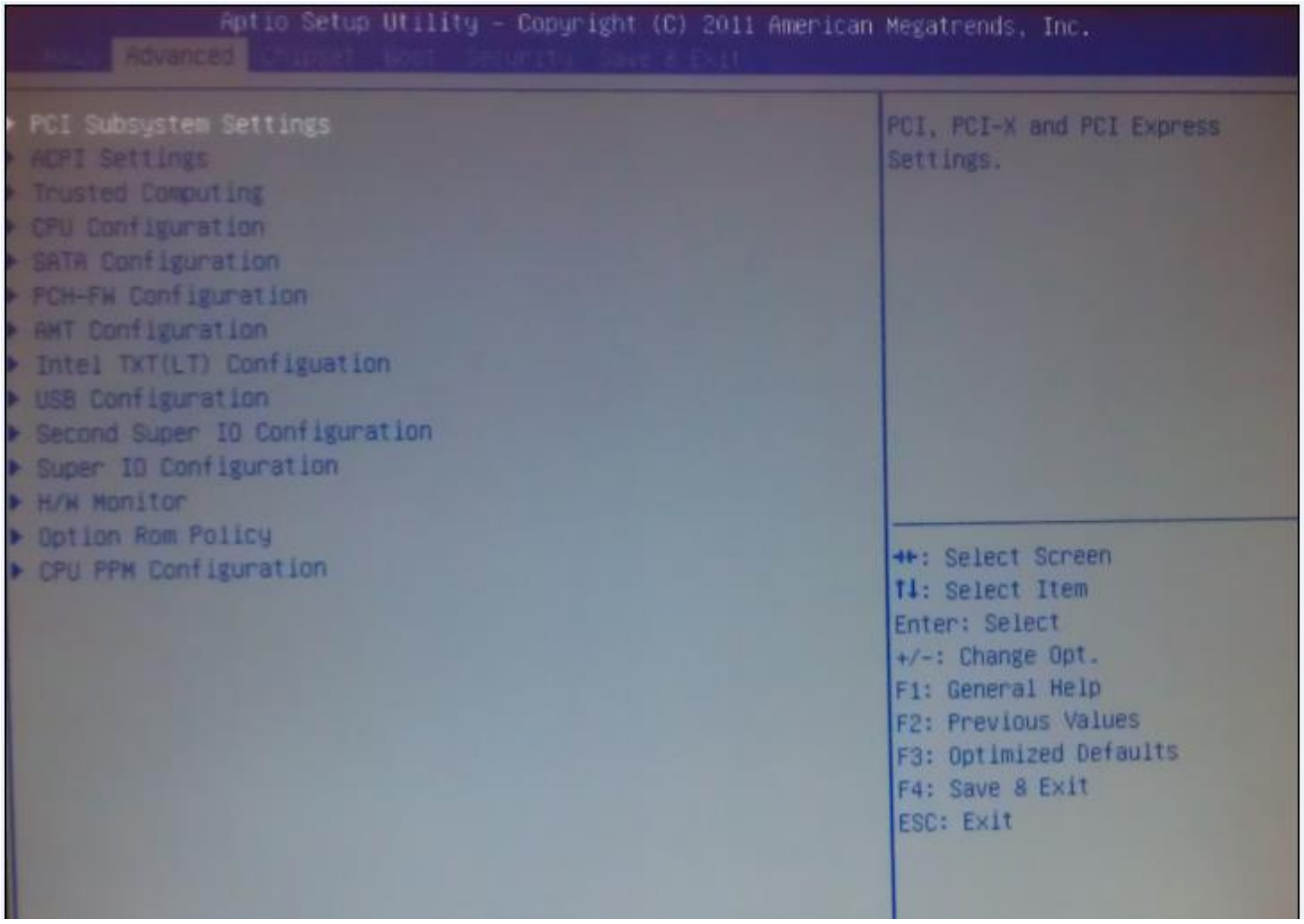
The time format is <Hour>,<Minute>,<Second>.

- **Access Level**

Displays access information.

### 3.4.2 Advanced BIOS Setup

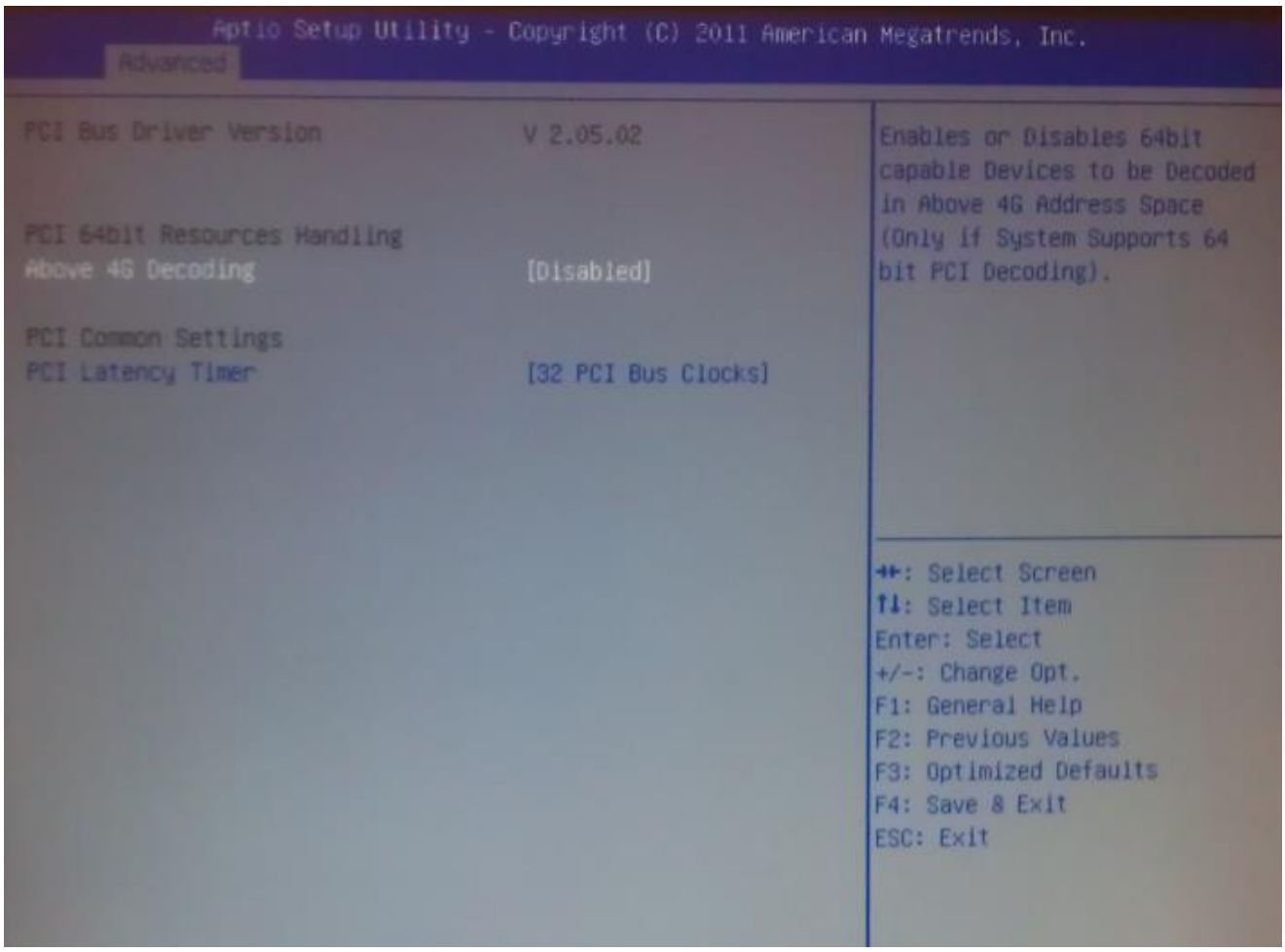
Select the Advanced tab from the setup screen to enter the Advanced BIOS Setup screen. You can select any of the items in the left frame of the screen, such as Chipset configuration, to go to the sub menu for that item. You can display an Advanced BIOS Setup option by highlighting it using the <Arrow> 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

The PCI PnP menu items allow you to change the advanced settings for PCI/PnP devices. The menu includes setting IRQ and DMA channel resources for either PCI/PnP or legacy ISA devices, and setting the memory size block for legacy ISA devices.




- **PCI Bus Driver Version**

Displays the information of PCI Bus Driver Version

.

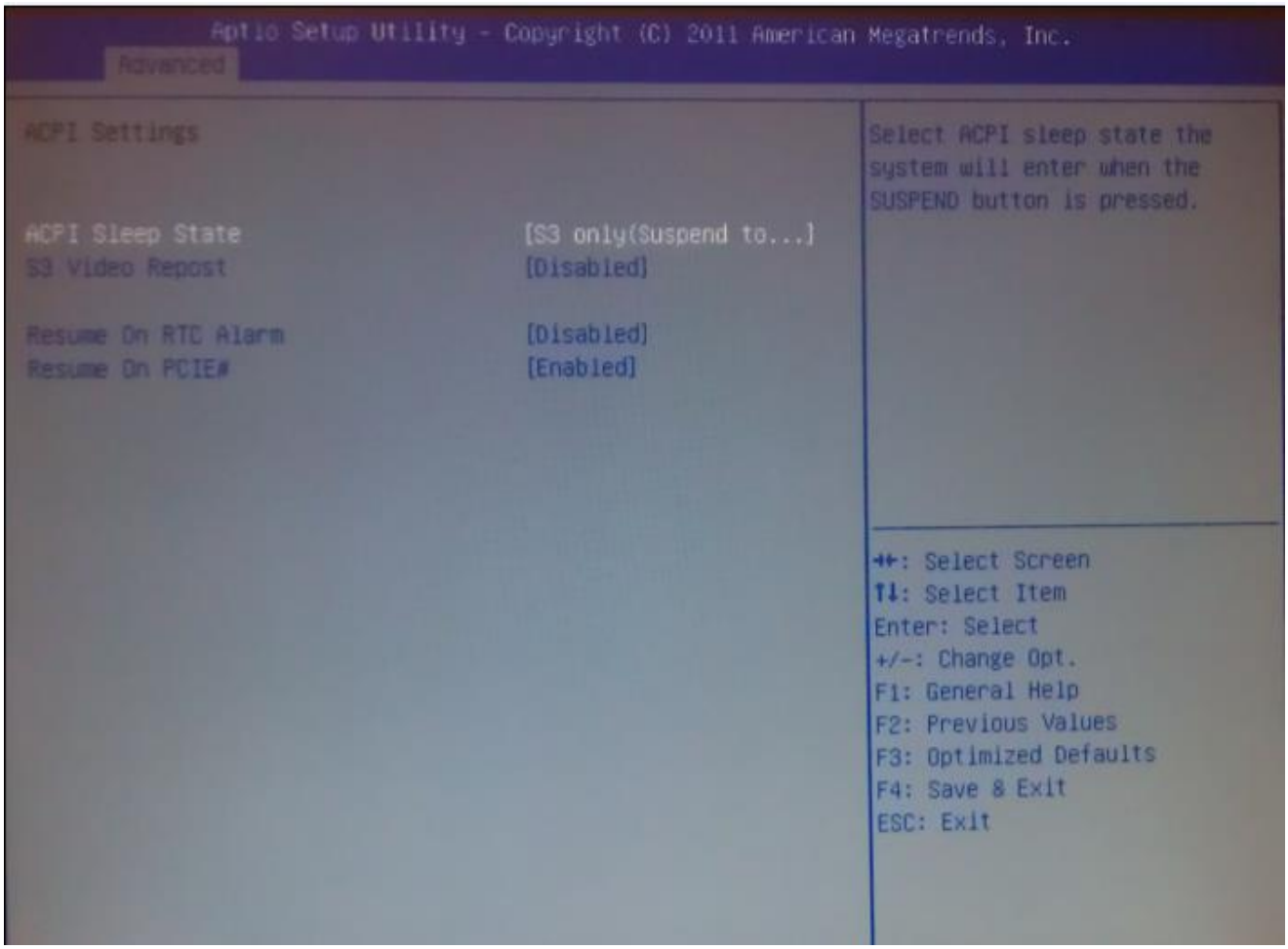
**PCI Common Settings**

- **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 (suspend to RAM)]**

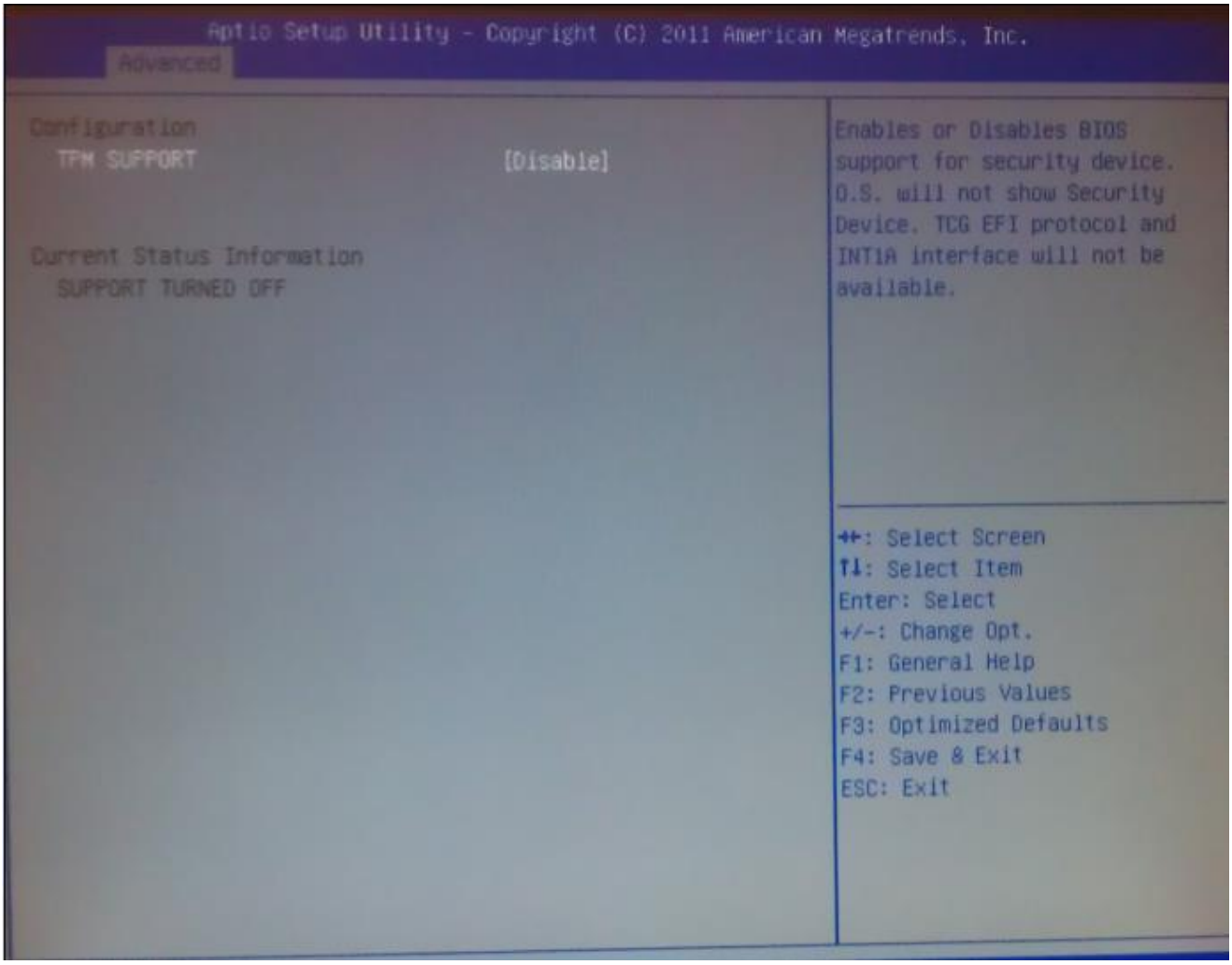
Select the highest ACPI sleep state the system will enter the SUSPEND button is press.
Configuration options: [Suspend Disable][S1 (CPU Stop Clock)] [S3 (suspend to RAM )]

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

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

### 3.4.5 Trusted computing

Trusted computing (TPM) settings.




**TPM configuration**

- **TPM SUPPORT [Disabled]**

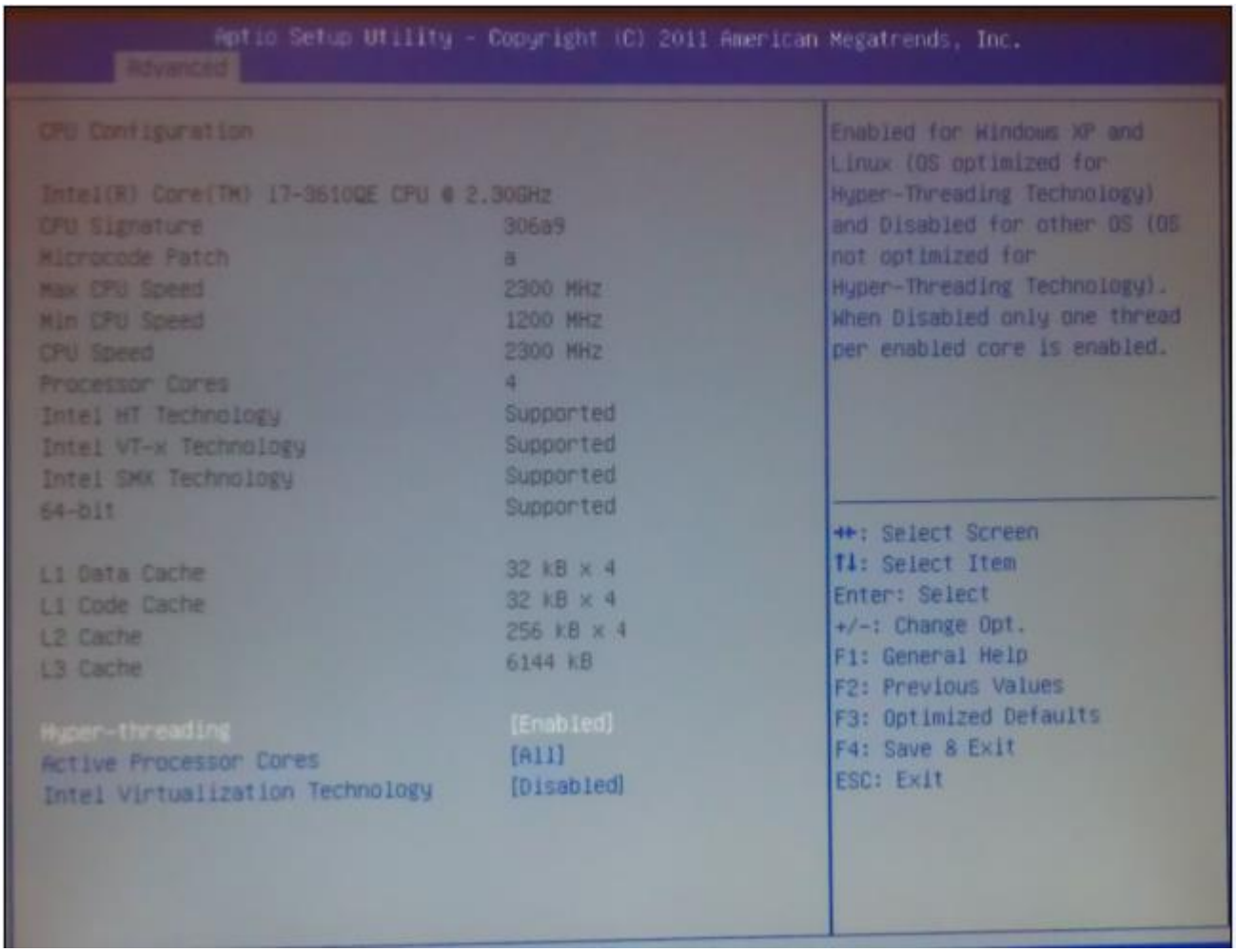
Enable or disable TPM support.

Configuration options: [Disabled] [Enabled]

- **Current TPM Status Information**

Support TURNED OFF.

### 3.4.6 CPU configuration




- **CPU configuration**

Displays the CPU information

- **Hyper-threading [Enabled]**

Enable or disable Hyper-threading support.

Configuration options: [Disabled] [Enabled]

- **Active Processor Cores [All]**

Select the numbers of cores in each processor package.

Configuration options: [All] [1] [2] [3]

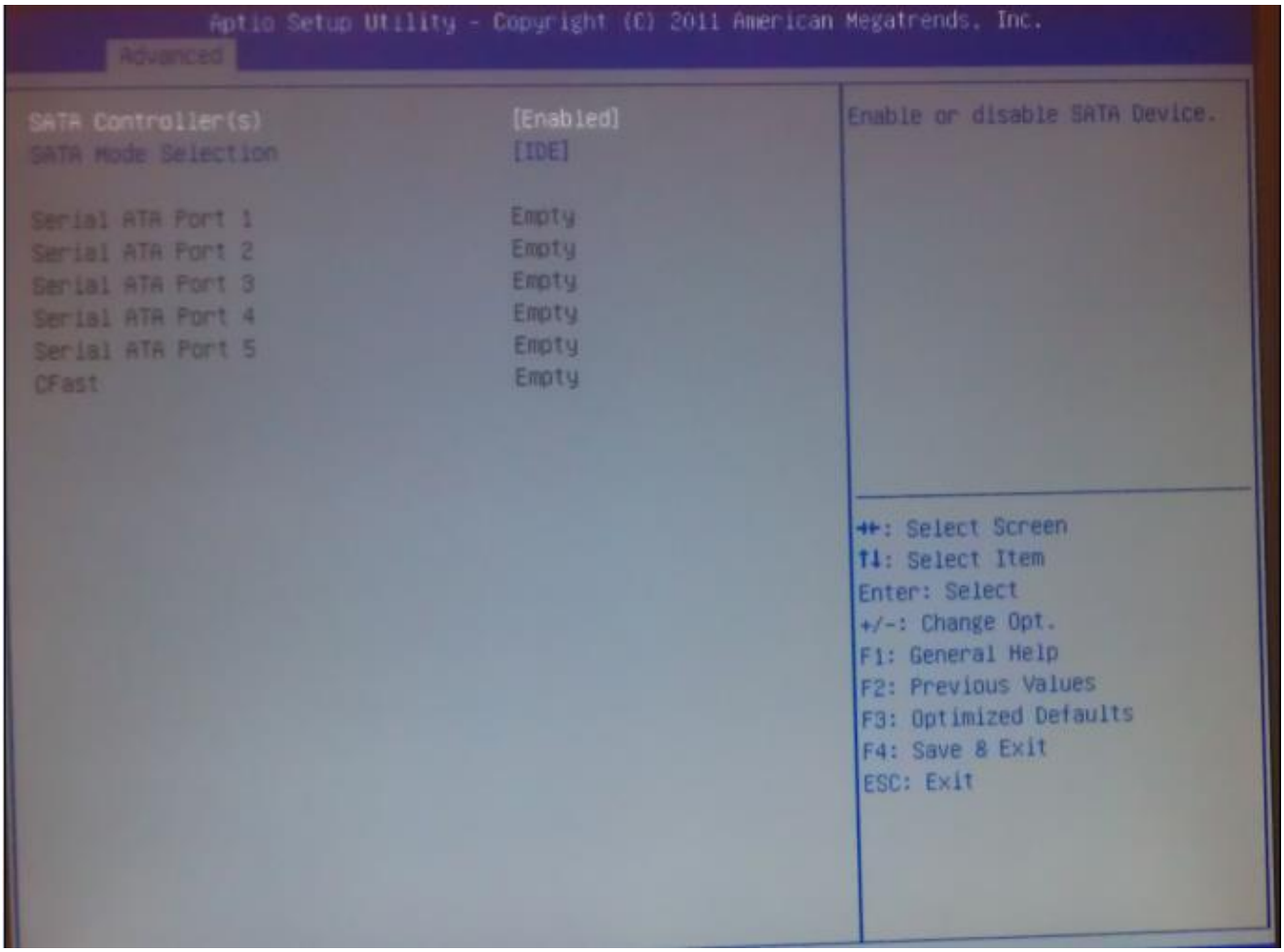
It depends on each CPU type.

- **Intel Virtualization Technology [Disable]**

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

Configuration options: [Disabled] [Enabled]

### 3.4.7 SATA Configuration




- **SATA Mode [IDE Mode]**

Support IDE, AHCI or RAID mode

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

- **Serial-ATA Controller 0 [Compatible]**

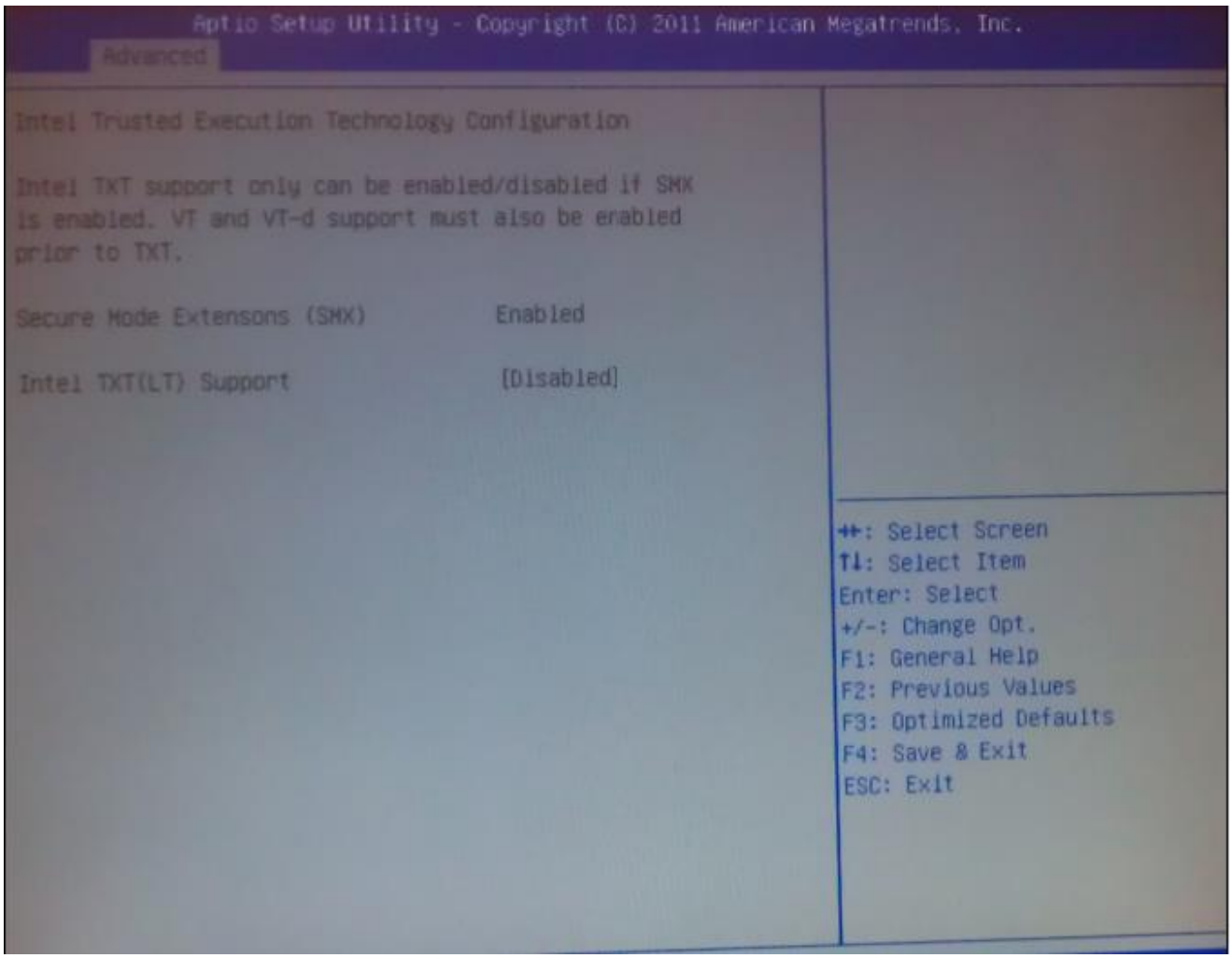
Enabled/Disabled Serial-ATA Controller 0

- **Serial-ATA Controller 1 [Enhanced]**

Enabled/Disabled Serial-ATA Controller 1

### 3.4.8 Intel TXT(LT) Configuration

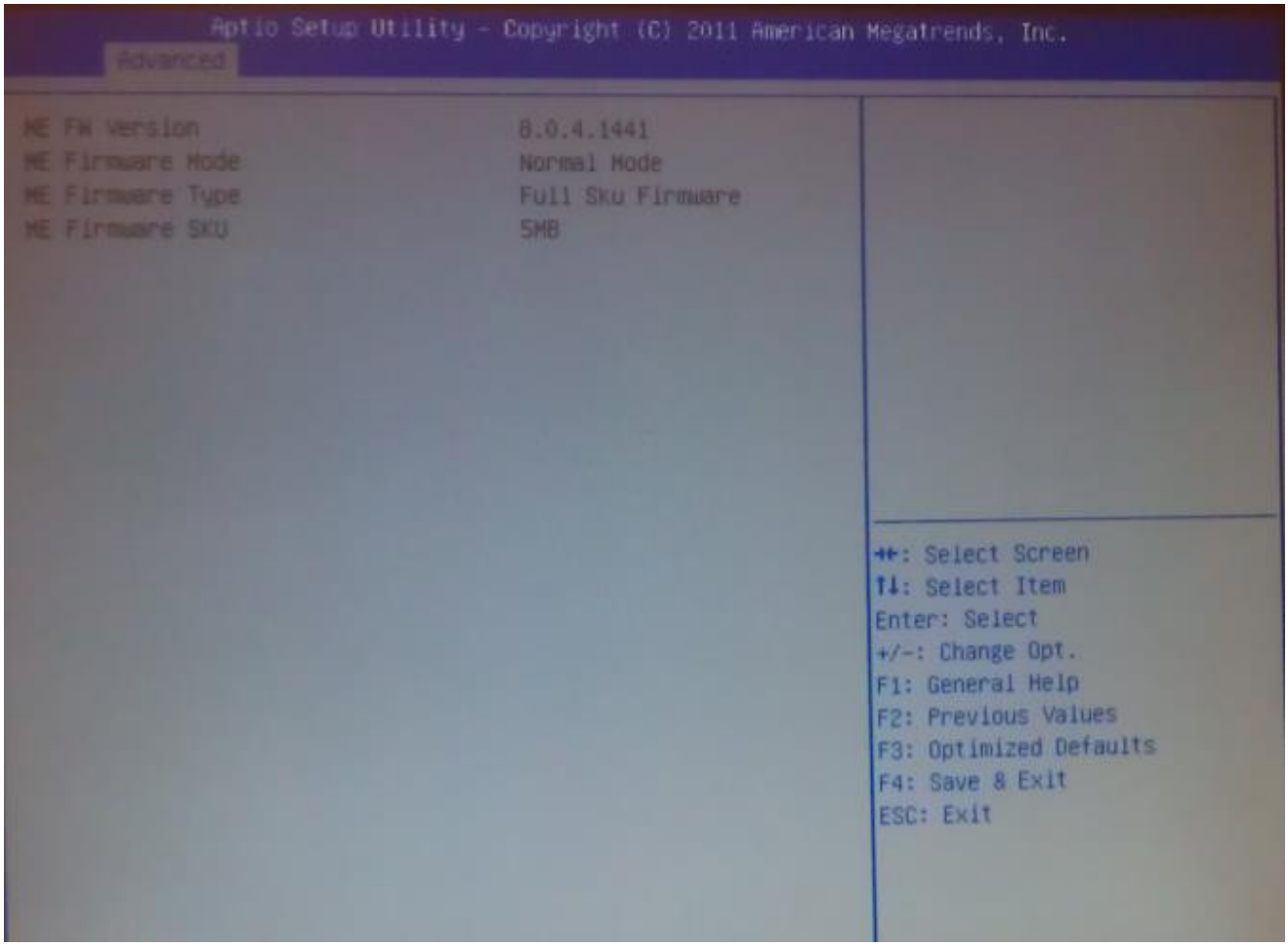
Display Intel Trusted Execution Technology configuration.



### 3.4.9 PCH-FW Configuration

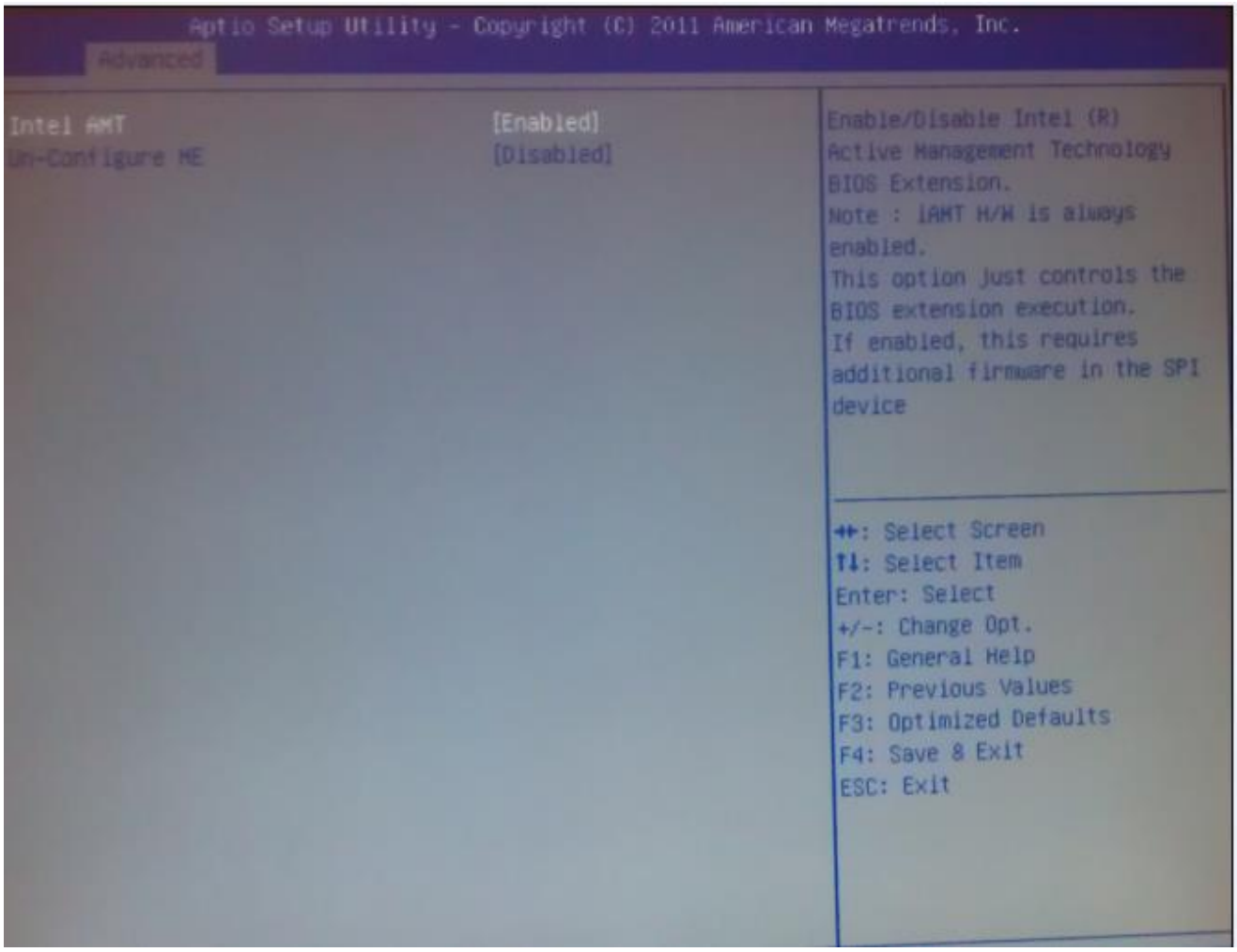
Configuration Management Engine Technology Parameter

- **Display ME Firmware Information**



### 3.4.10 AMT Configuration

Configuration AMT Parameters




- **Intel AMT [Enable]**

Enabled/Disabled AMT

Configuration options: [Disabled] [Enabled]

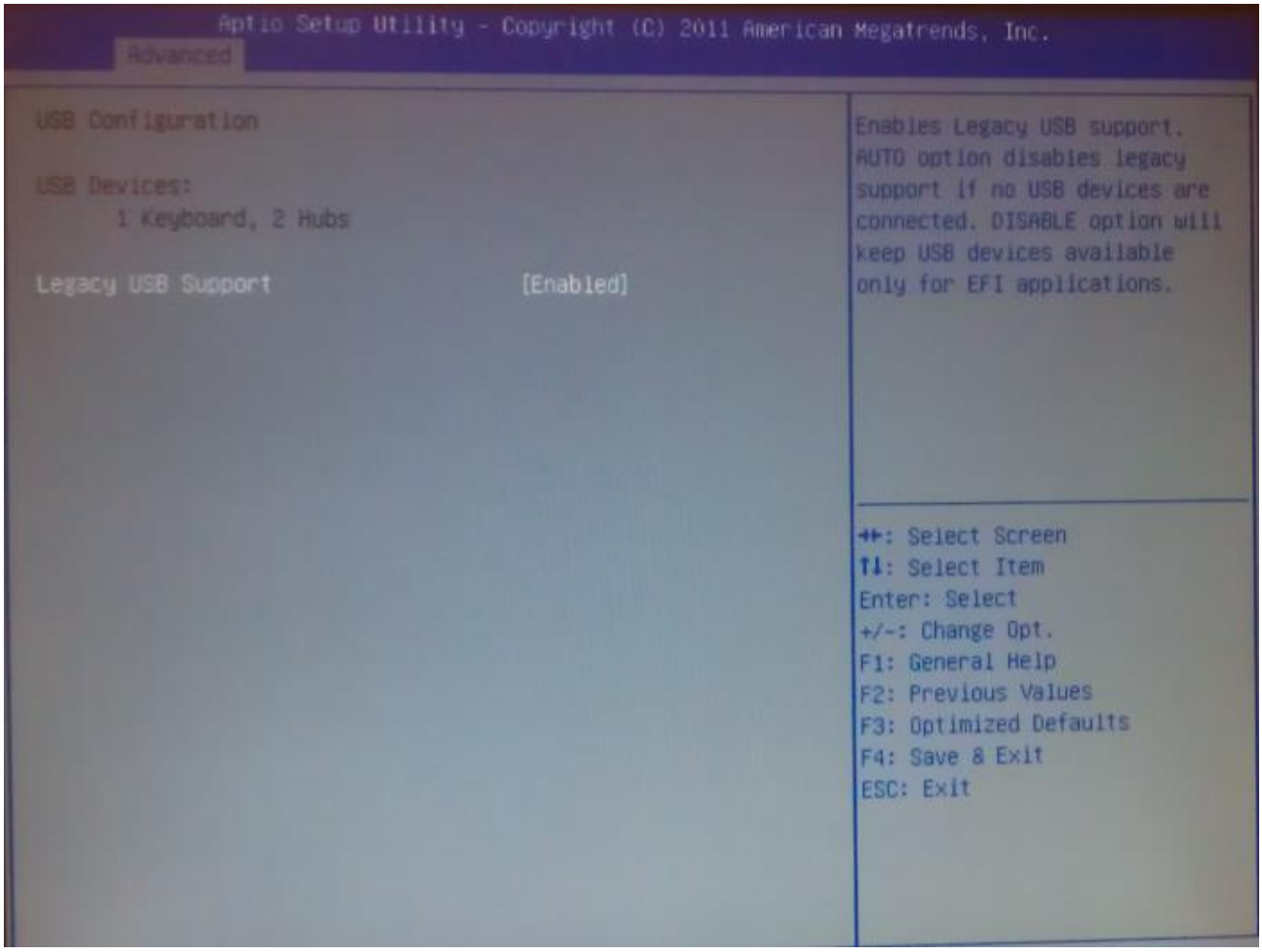
- **Un-configure ME [Disable]**

Un-configure ME without password.

Configuration options: [Disabled] [Enabled]

### 3.4.11 USB Configuration

USB Configuration Parameters




- **USB Device**

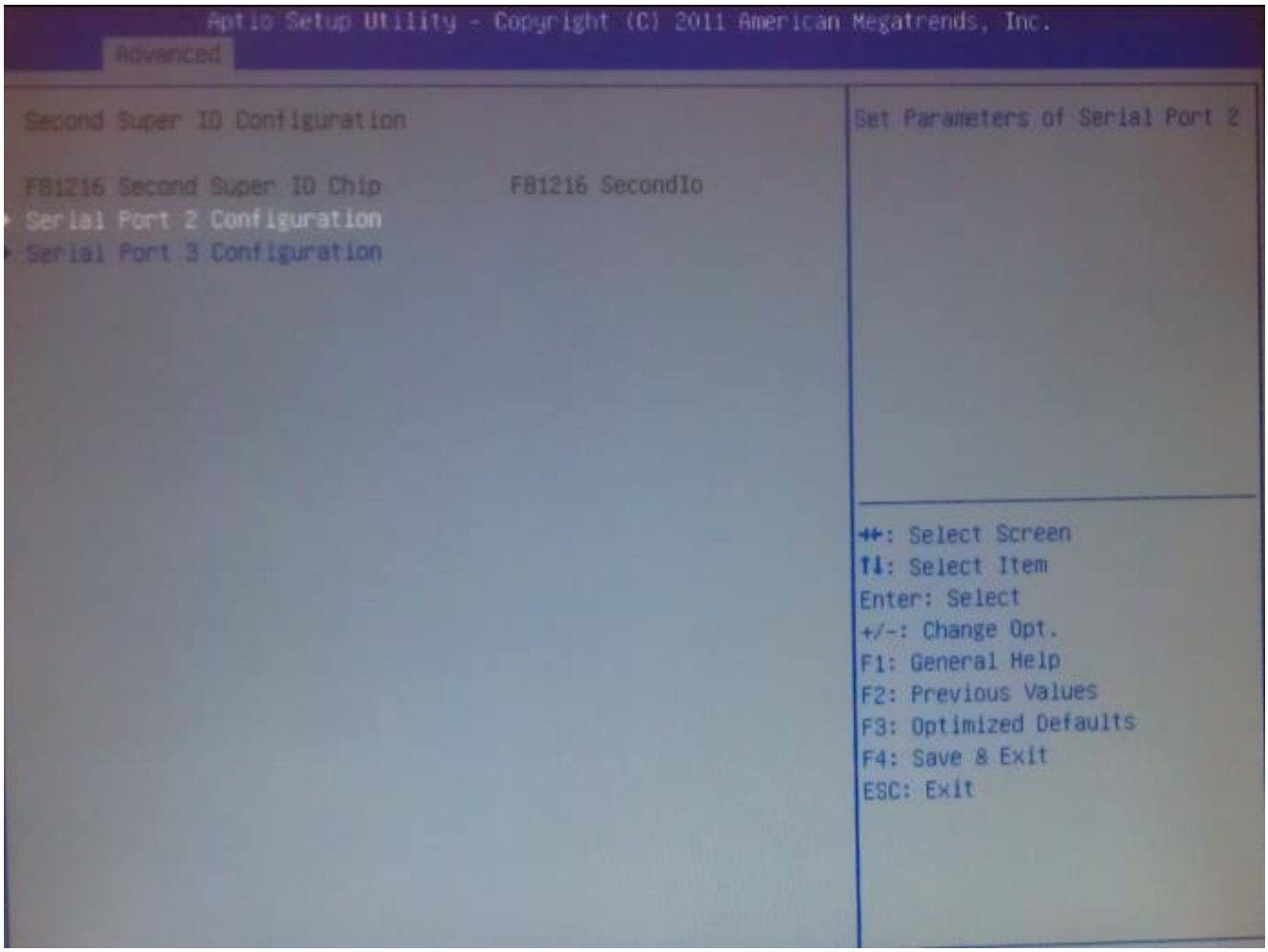
Display how many devices are connected.

- **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 Super IO Configuration

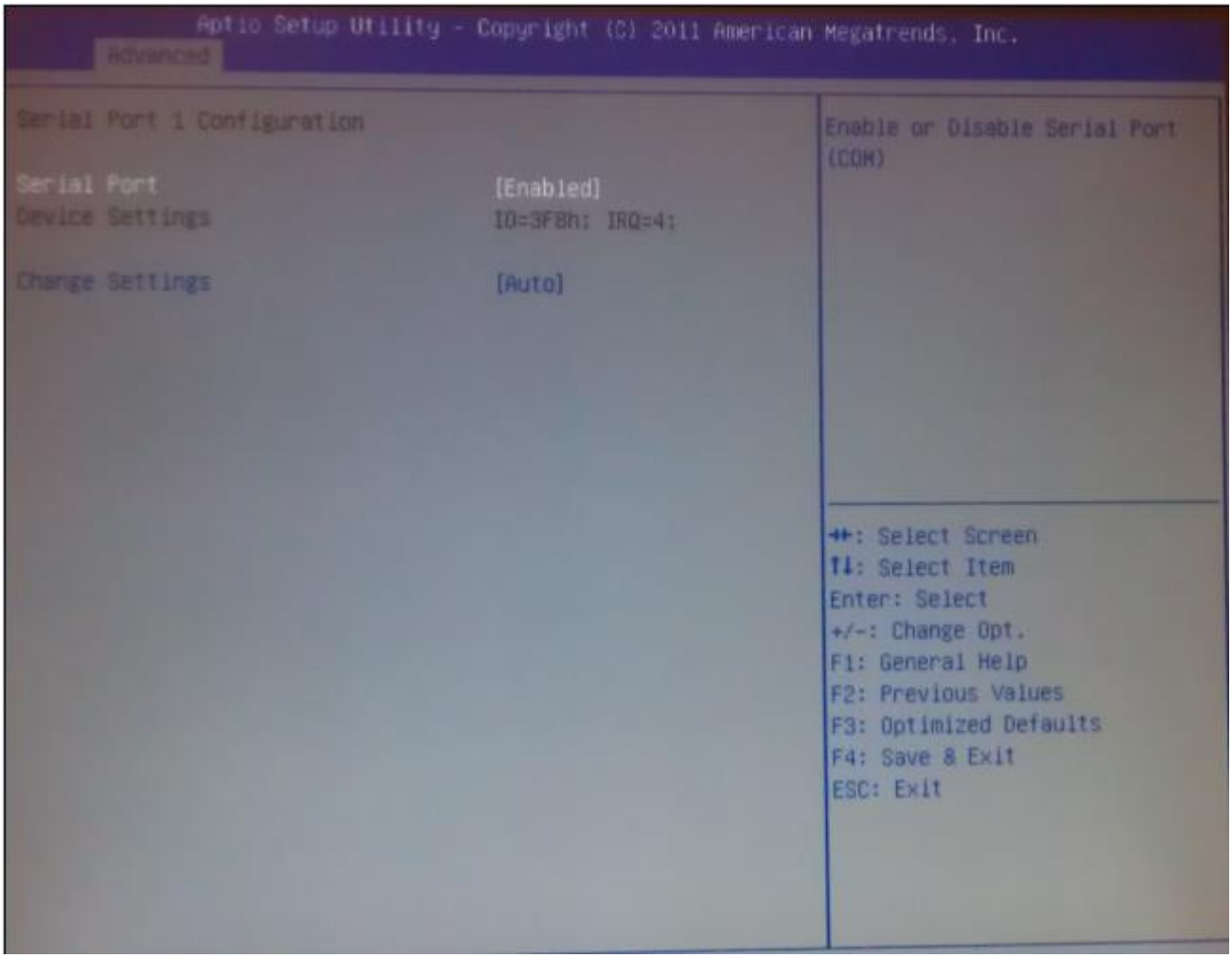
System Super IO Chip Parameters.




**Super IO Configuration**
**Super IO Chip [NCT6776F]**

### *3.4.12.1 Serial Port 1 configuration*

Set Parameters of Serial Port 1 (COM1)




## Serial Port 1 Configuration

- **Serial Port [Enable]**

Enable or Disable Serial Port.

Configuration options: [Disabled] [Enabled]

- **Device Setting [IO=3F8h; IRQ=4]**

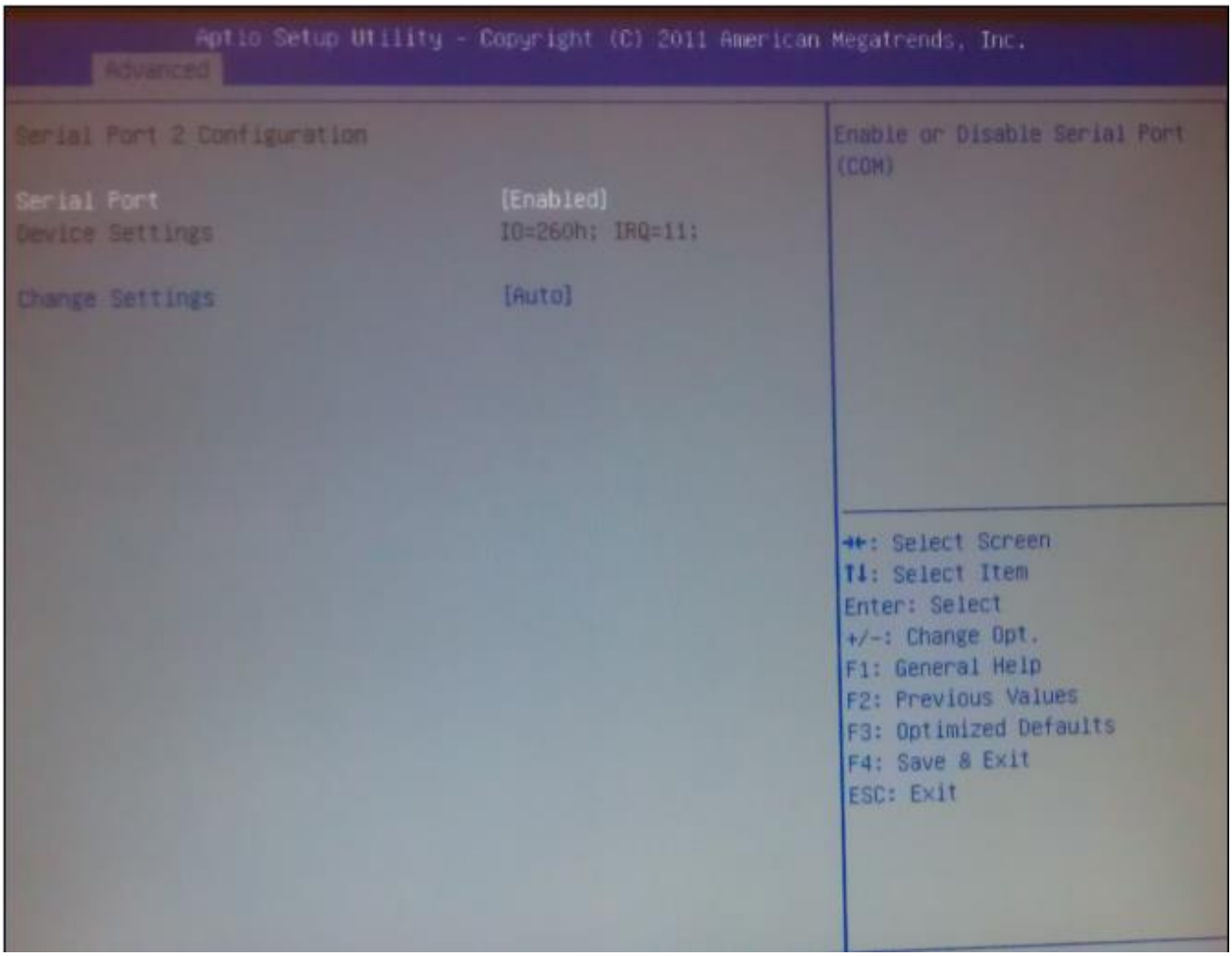
- **Change Setting[Auto]**

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]

### *3.4.12.2 Serial Port 2 configuration*

Set Parameters of Serial Port 2 (COM2)




## Serial Port 2 Configuration

- **Serial Port [Enable]**

Enable or Disable Serial Port.

Configuration options: [Disabled] [Enabled]

- **Device Setting [IO=260h; IRQ=11]**

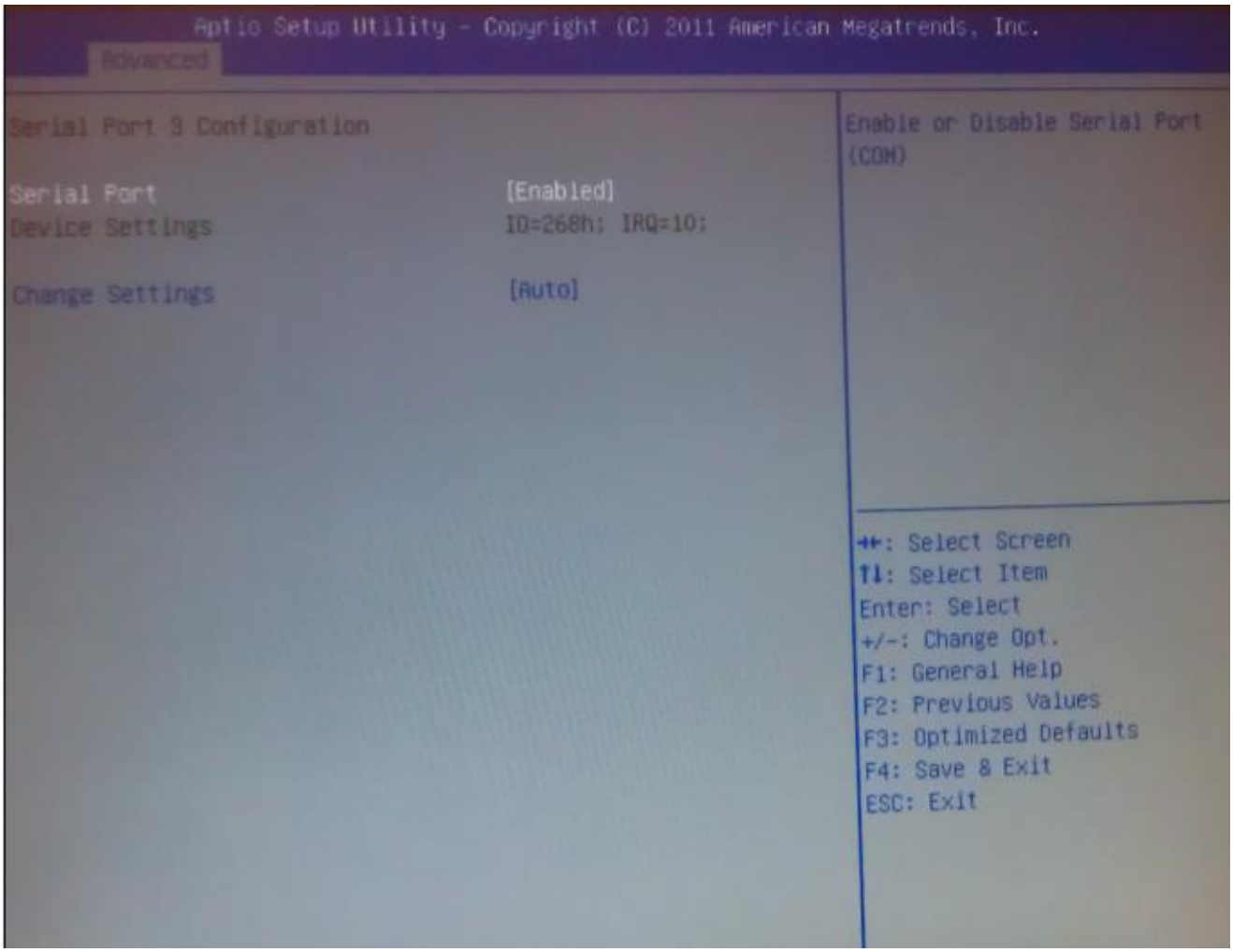
- **Change Setting[Auto]**

Select an optimal setting for Super IO device.

Configuration options: [Auto] [IO=C80h; IRQ=5] [IO=C80h; IRQ=5, 7, 9. 10, 11] [IO=C88h; IRQ=5, 7, 9. 10, 11] [IO=C90h; IRQ=5, 7, 9. 10, 11] [IO=C98h; IRQ=5, 7, 9. 10, 11]

### *3.4.12.3 Serial Port 3 configuration*

Set Parameters of Serial Port 3 (COM3)




**Serial Port 3 Configuration**

- **Serial Port [Enable]**

Enable or Disable Serial Port.

Configuration options: [Disabled] [Enabled]

- **Device Setting [IO=268h; IRQ=10]**

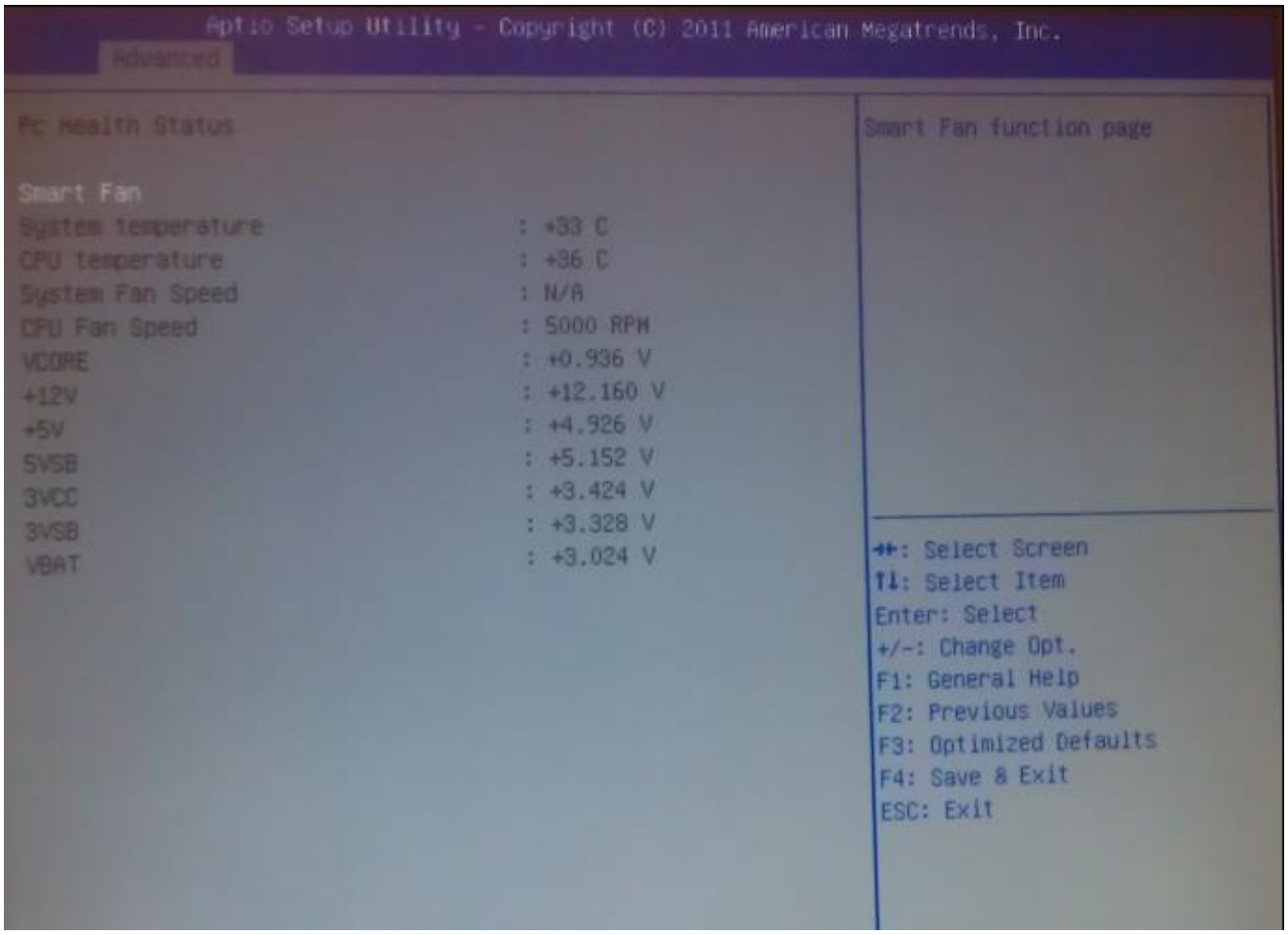
- **Change Setting[Auto]**

Select an optimal setting for Super IO device.

Configuration options: [Auto] [IO=C88h; IRQ=5] [IO=C80h; IRQ=5, 7, 9. 10, 11] [IO=C88h; IRQ=5, 7, 9. 10, 11] [IO=C90h; IRQ=5, 7, 9. 10, 11] [IO=C98h; IRQ=5, 7, 9. 10, 11]

### 3.4.13 Smart Fan Mode Configuration

Smart Fan Mode configuration




- **System Fan Mode [Manual Mode]**

Select system Fan mode

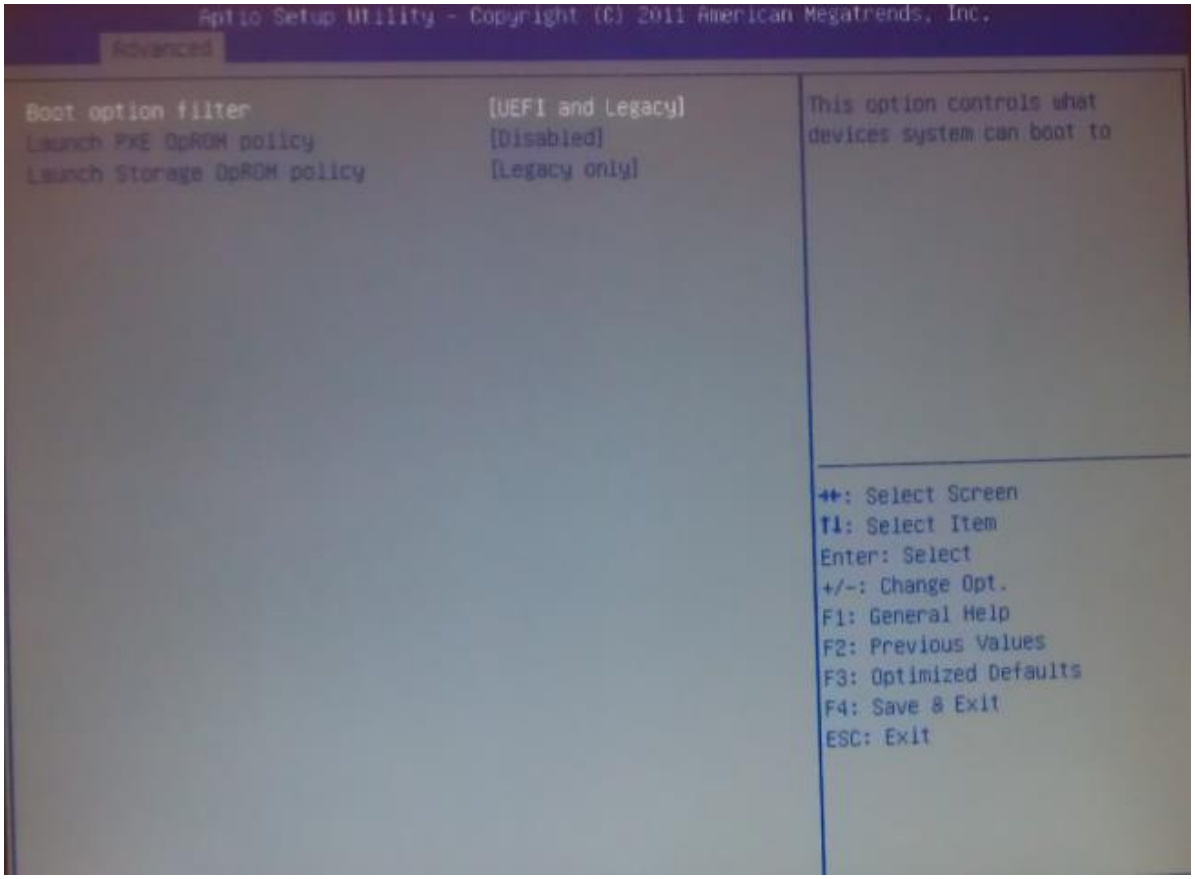
Configuration options: [Manual Mode] [SNART FAN IV Mode]

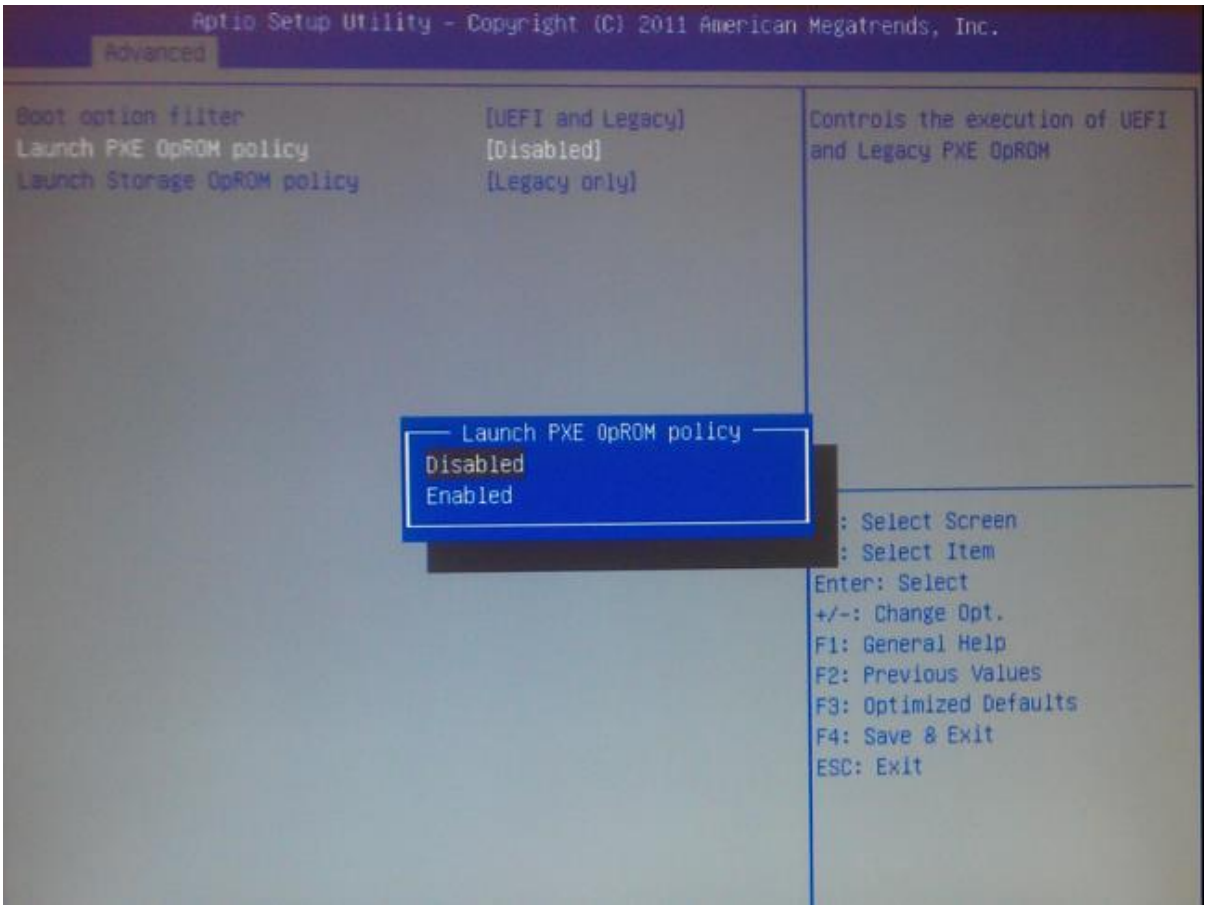
- **CPU Fan Mode [Manual Mode]**

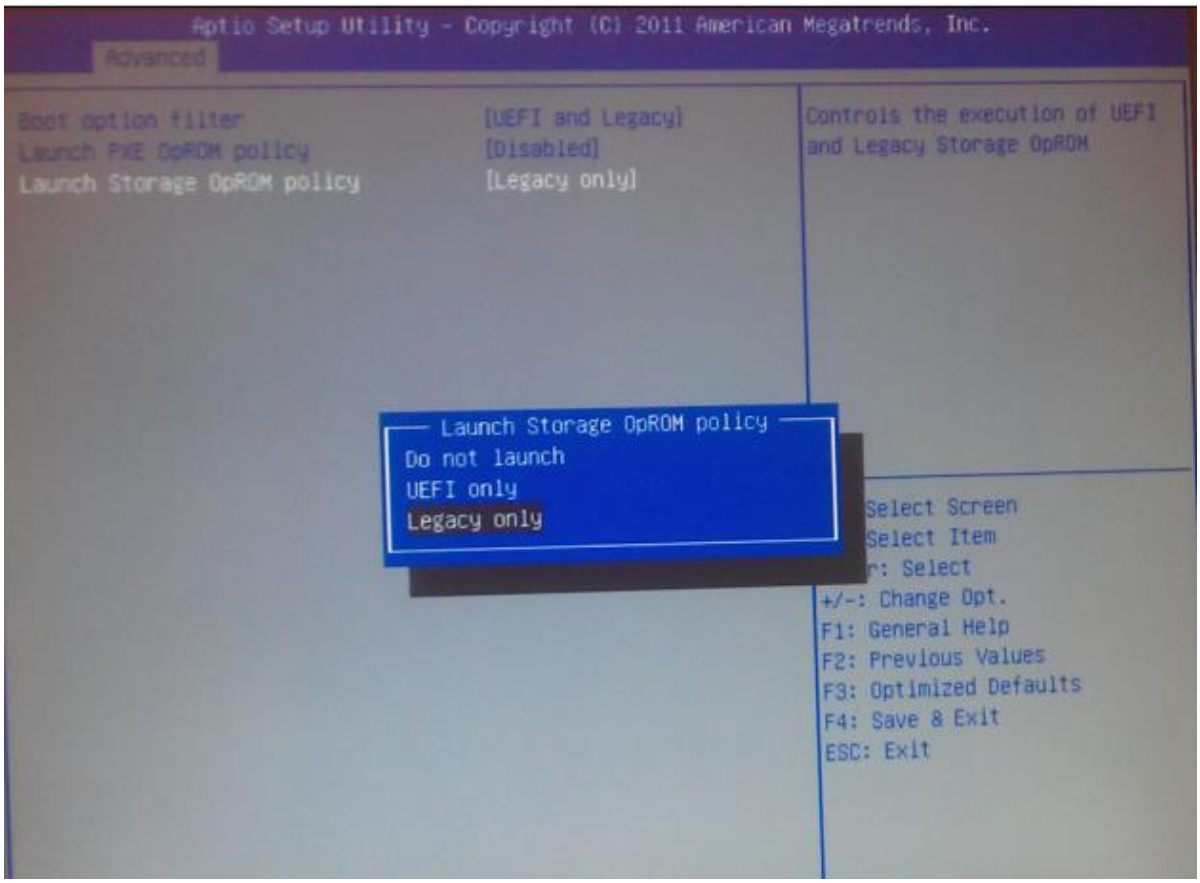
Select CPU Fan mode

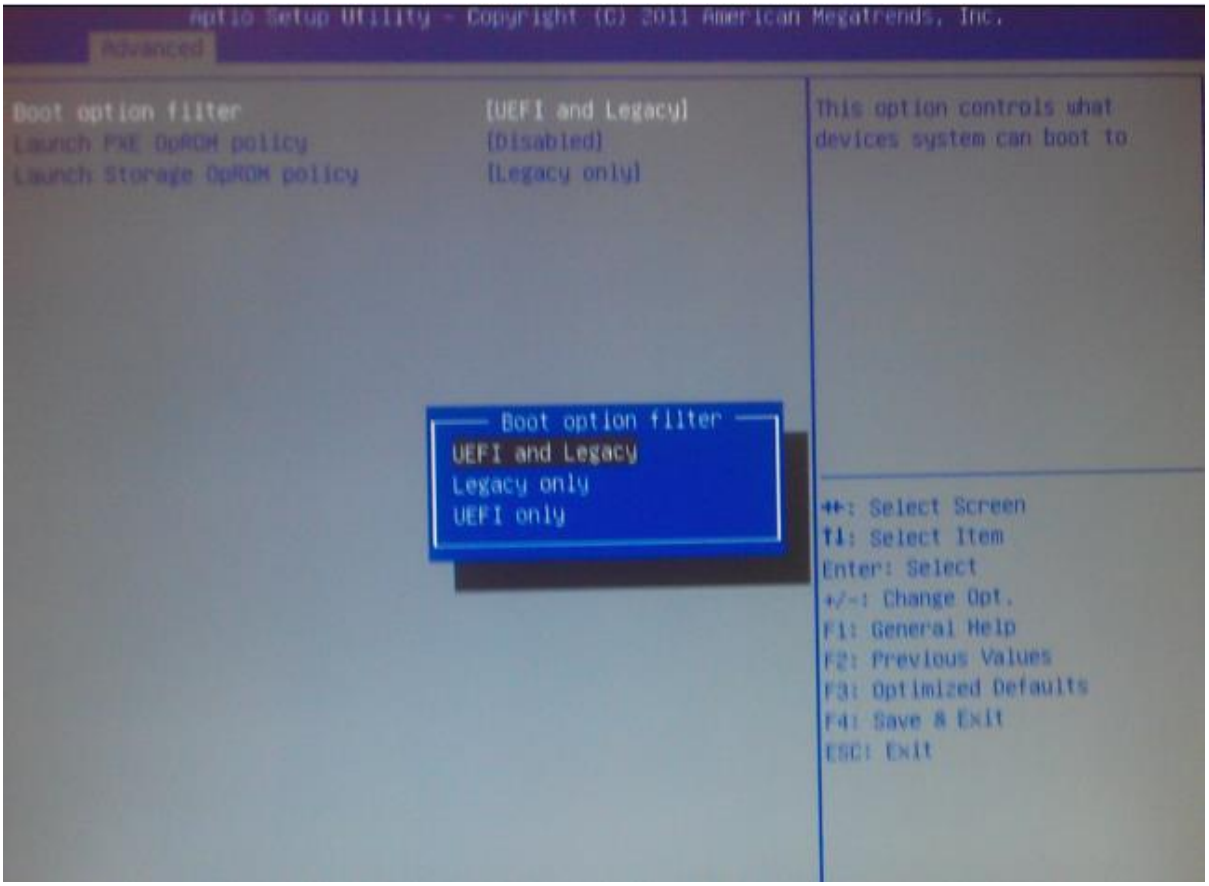
Configuration options: [Manual Mode] [SNART FAN IV Mode]

### 3.4.14 Option ROM Policy

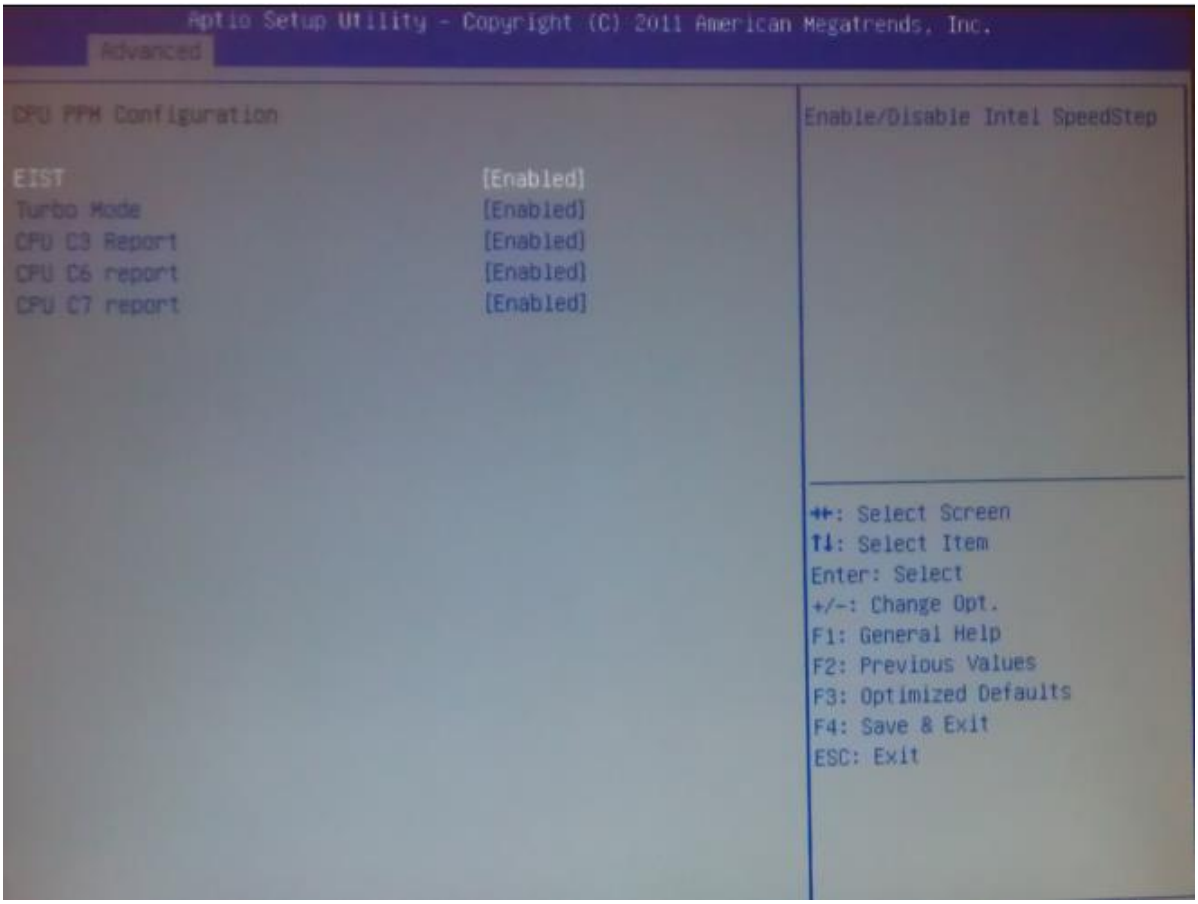



Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
Boot option filter [UEFI and Legacy]
Launch PXE OpROM policy [Disabled]
Launch Storage OpROM policy [Legacy only]
Controls the execution of UEFI and Legacy PXE OpROM
Launch PXE OpROM policy
Disabled
Enabled
: Select Screen
: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
Boot option filter [UEFI and Legacy]
Launch PXE OpROM policy [Disabled]
Launch Storage OpROM policy [Legacy only]
Controls the execution of UEFI and Legacy Storage OpROM
Launch Storage OpROM policy
Do not launch
UEFI only
Legacy only
Select Screen
Select Item
r: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
Boot option filter [UEFI and Legacy]
Launch PXE OpROM policy [Disabled]
Launch Storage OpROM policy [Legacy only]
This option controls what devices system can boot to
Boot option filter
UEFI and Legacy
Legacy only
UEFI only
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

### 3.4.15 CPU PPM Configuration




- **EIST [Enable]**

Enable or Disable Intel Speedstep.
Configuration options: [Disabled] [Enabled]

- **Turbo Mode [Enable]**

Enable or Disable Intel Turbo Mode.
Configuration options: [Disabled] [Enabled]

- **CPU C3 Report[Enable]**

Enable or Disable CPU C3 report to SO.
Configuration options: [Disabled] [Enabled]

- **CPU C6 Report[Enable]**

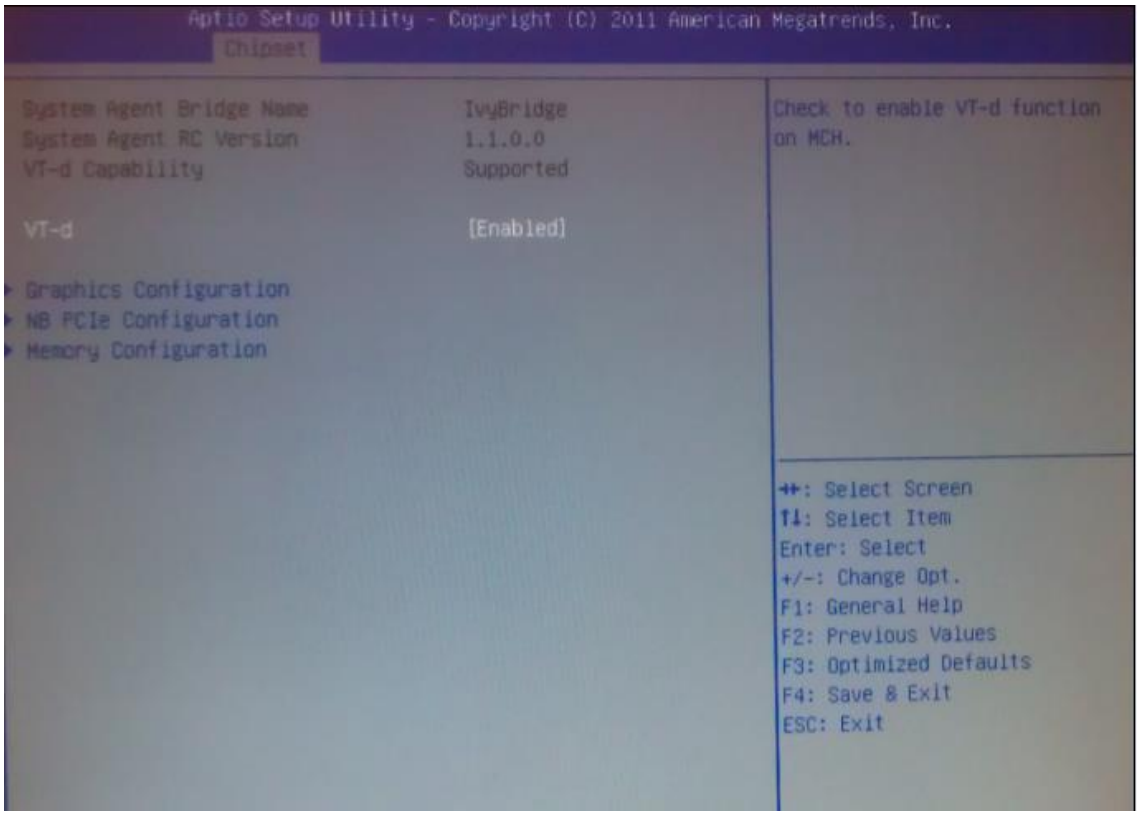
Enable or Disable CPU C6 report to SO.
Configuration options: [Disabled] [Enabled]

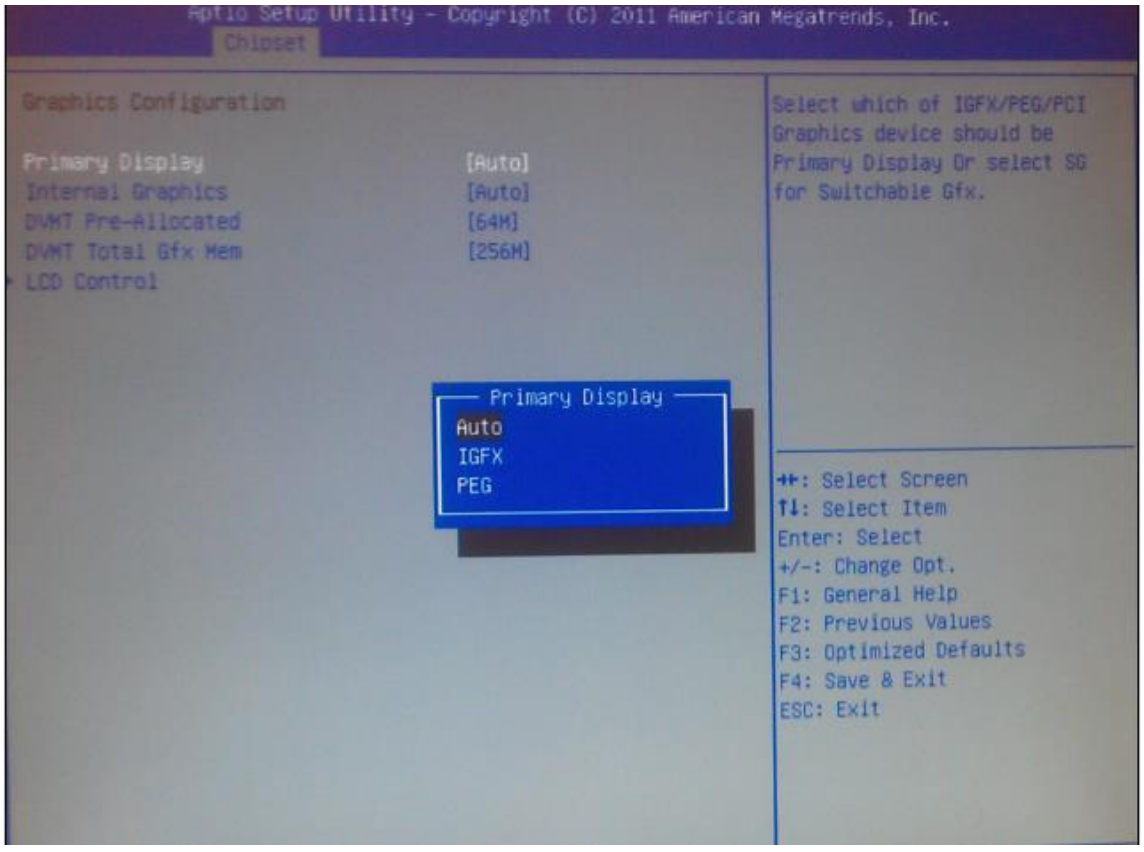
- **CPU C7 Report[Enable]**

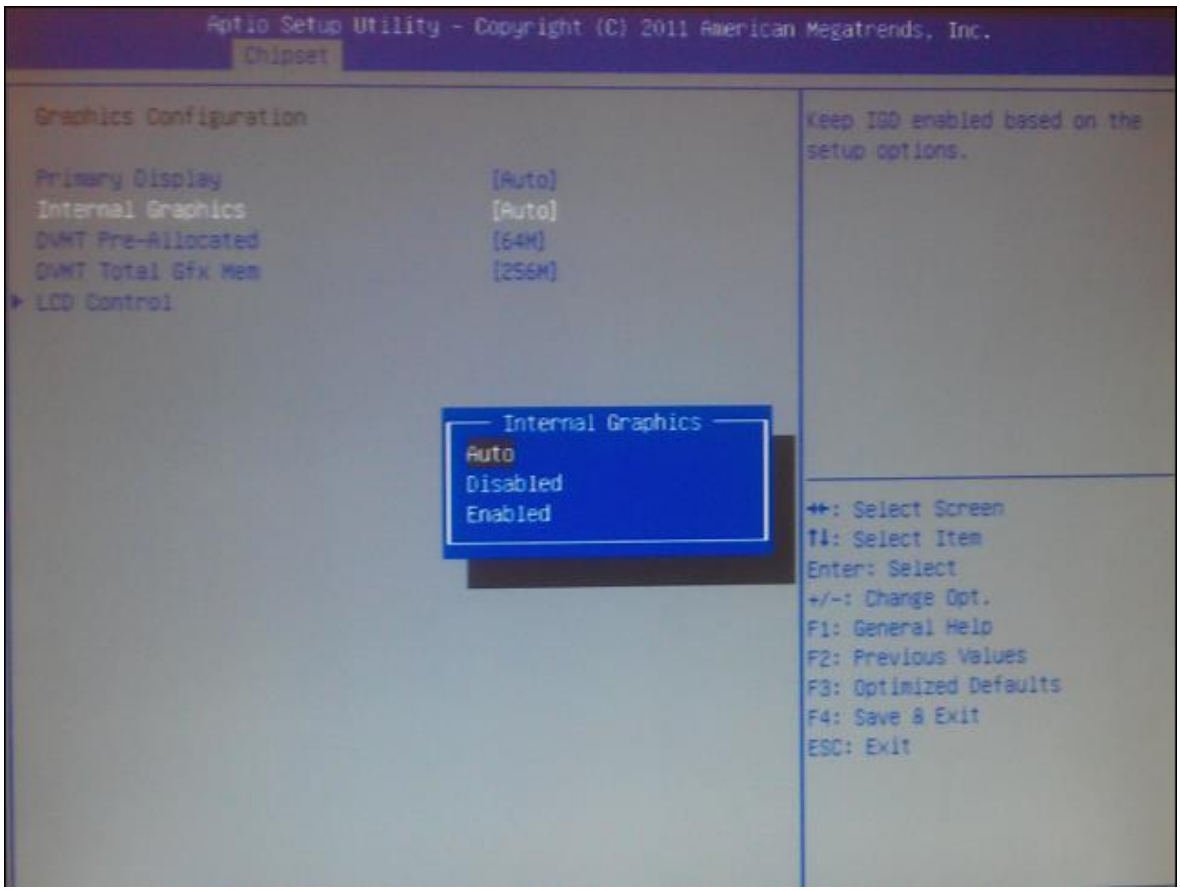
Enable or Disable CPU C7 report to SO.
Configuration options: [Disabled] [Enabled]

## 3.4.16 Chipset

### *3.4.16.1 System Agent (SA) Configuration*






- **System Agent RC version**

Display System Agent RC information.

- **VT-d [Disable]**

Set VT-d Enable or Disable

Configuration options: [Disabled] [Enabled]

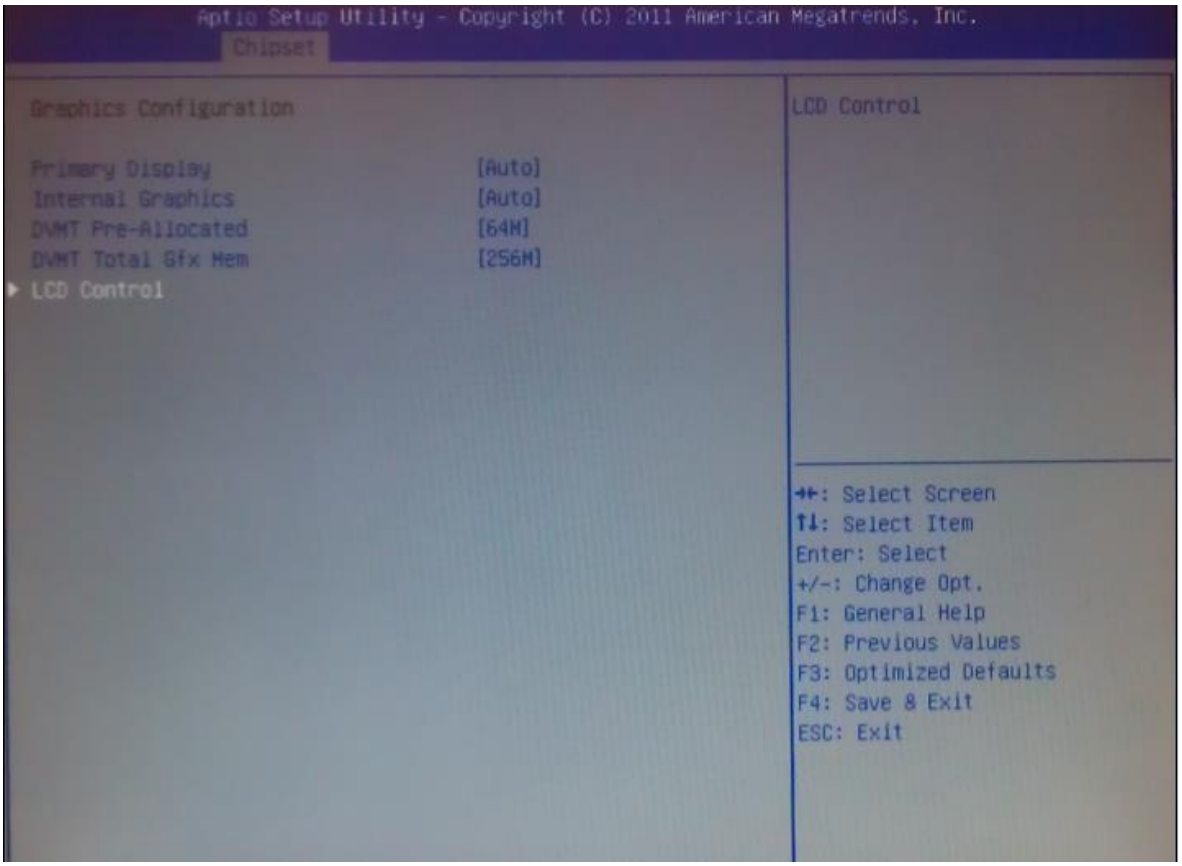
- **Primary Display [Auto]**

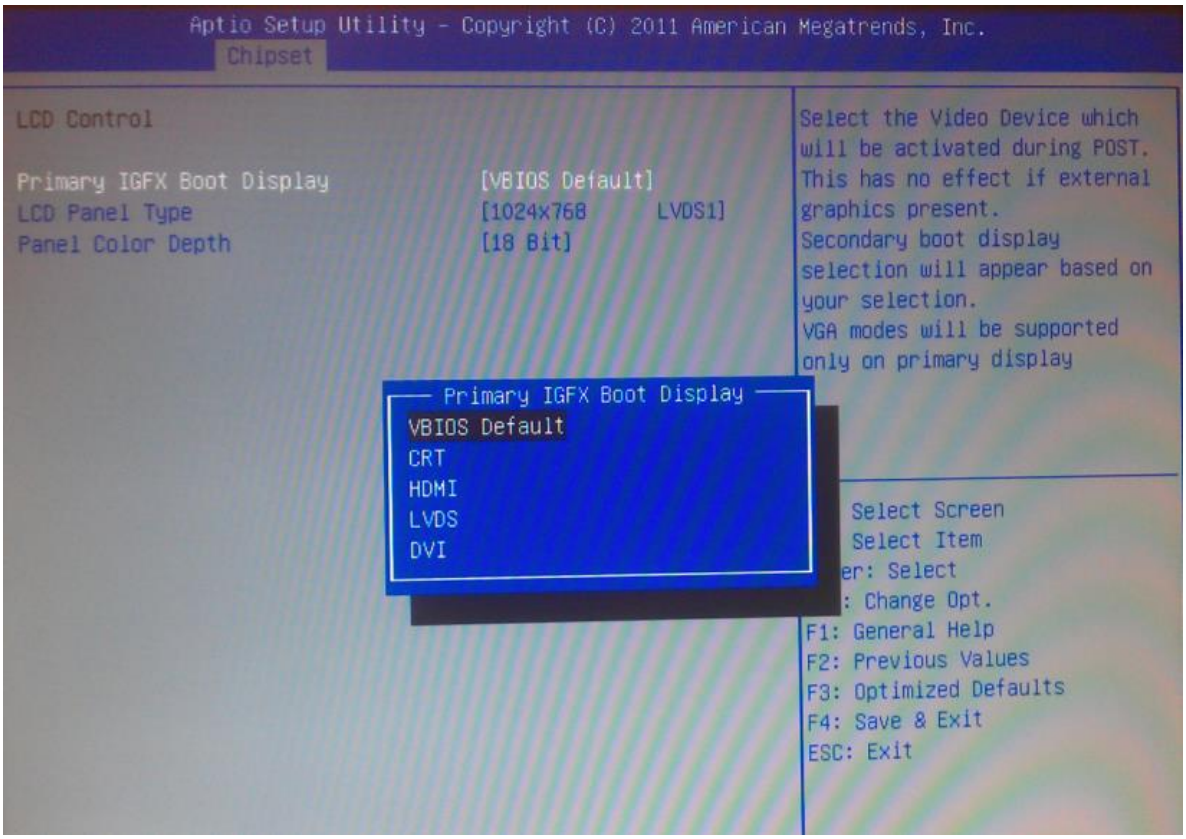
Select primary Display

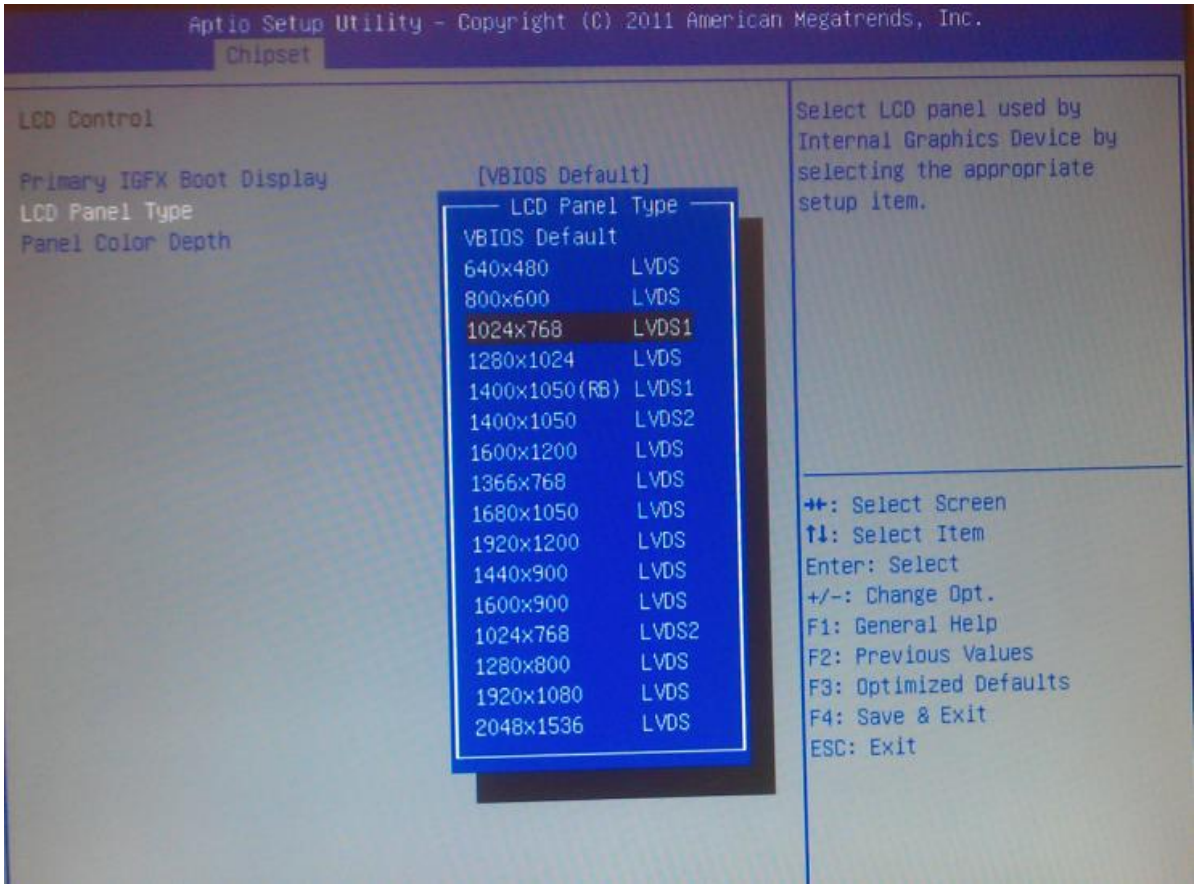
Configuration options: [Auto] [IGFX] [PEG] [PCI]

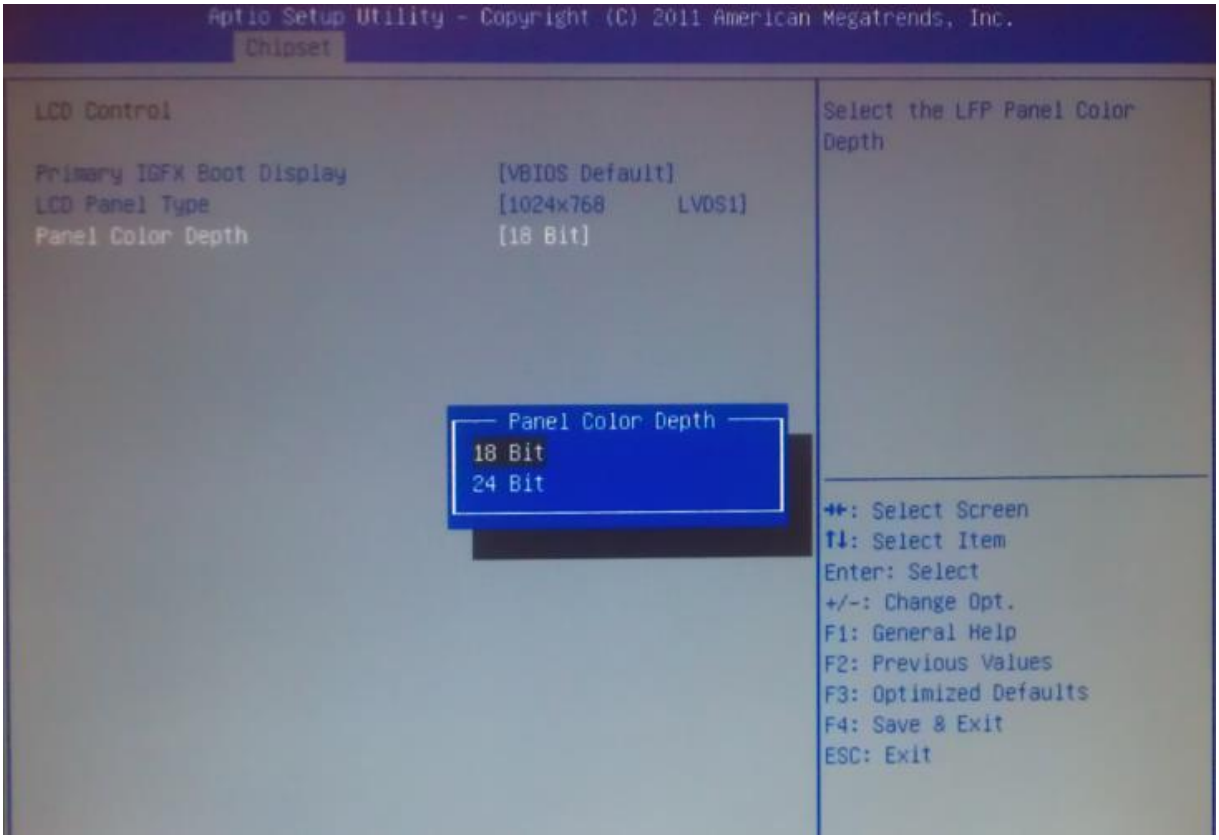
### 3.4.16.1.1 LCD Control

LCD Control




Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Chipset
LCD Control
Primary IGFX Boot Display
LCD Panel Type
Panel Color Depth
[VBIOS Default]
LCD Panel Type
VBIOS Default
640x480 LVDS
800x600 LVDS
1024x768 LVDS1
1280x1024 LVDS
1400x1050(RB) LVDS1
1400x1050 LVDS2
1600x1200 LVDS
1366x768 LVDS
1680x1050 LVDS
1920x1200 LVDS
1440x900 LVDS
1600x900 LVDS
1024x768 LVDS2
1280x800 LVDS
1920x1080 LVDS
2048x1536 LVDS
Select LCD panel used by Internal Graphics Device by selecting the appropriate setup item.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit


Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Chipset
LCD Control
Primary IGFX Boot Display [VBIOS Default]
LCD Panel Type [1024x768 LVDS1]
Panel Color Depth [18 Bit]
Panel Color Depth
18 Bit
24 Bit
Select the LFP Panel Color Depth
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

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

Select the display port which be activated during POST. This has no effect if external graphics present.
Configuration options: [VBIOS Default] [CRT] [HDMI] [LVDS] [DVI]

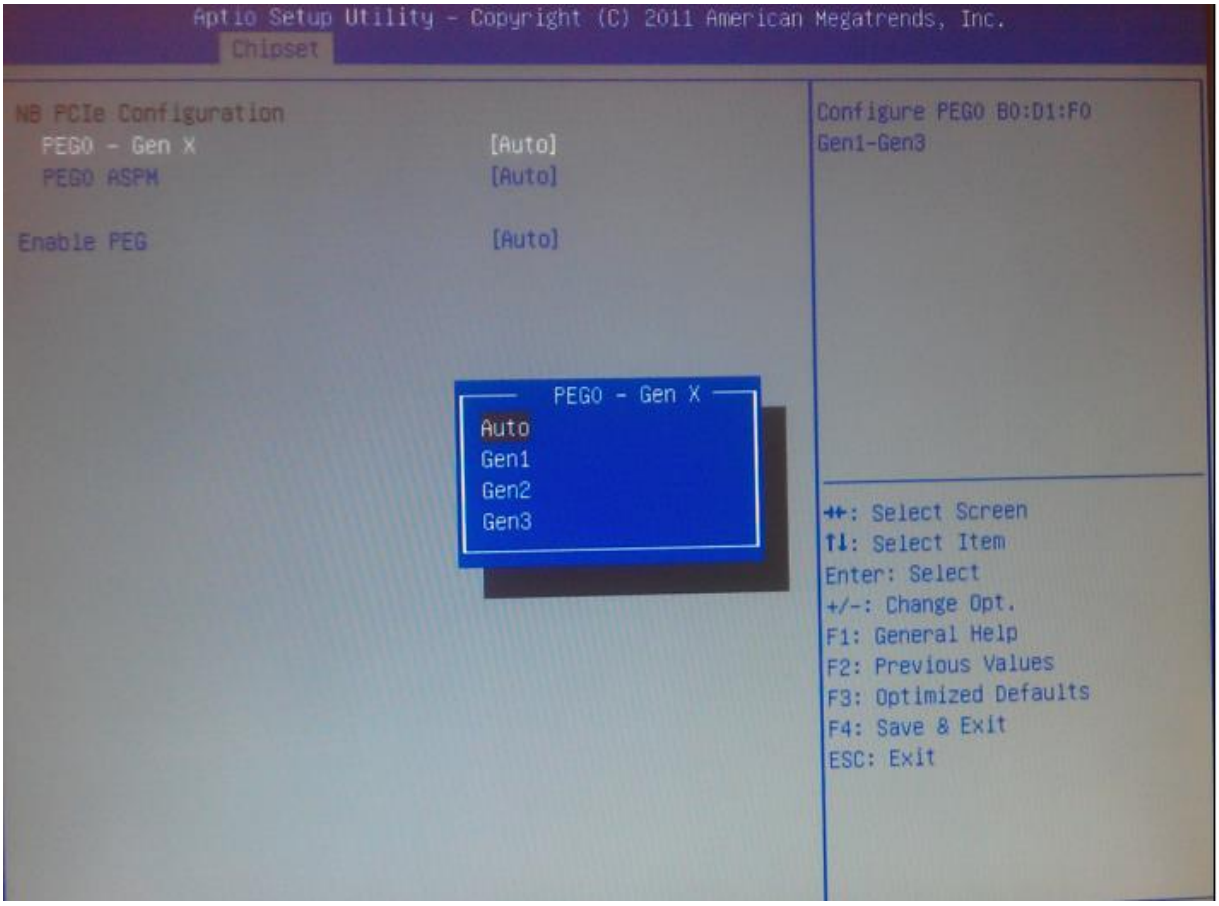
- **LCD Panel Type [ 1024x768 LVDS1]**

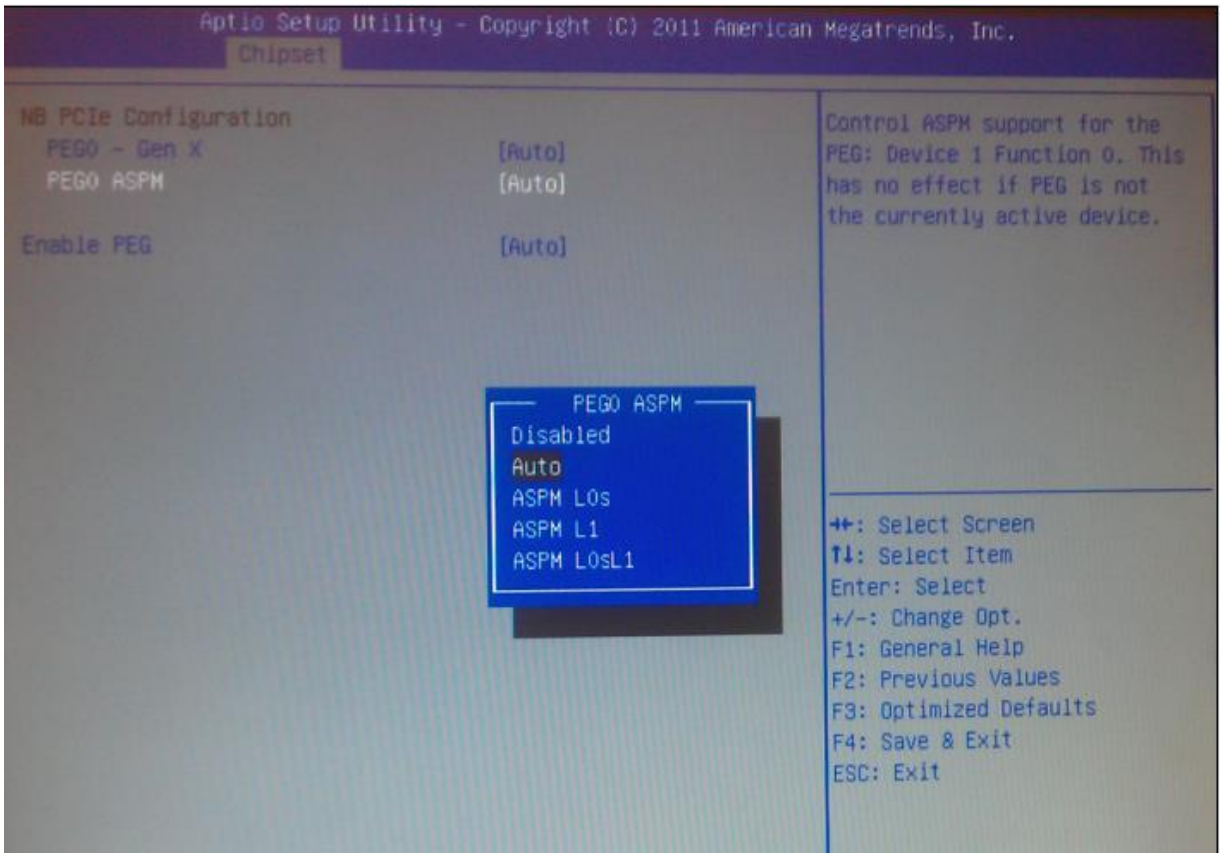
Select LCD panel type for LVDS port
Configuration options: [640x480] [800x600] [1024x768] [1280x1024] [1400x1050] [1600x1200] [1680x1050] [1600x900] [1280x800] [1280x600] [2048x1536] [1366x768]

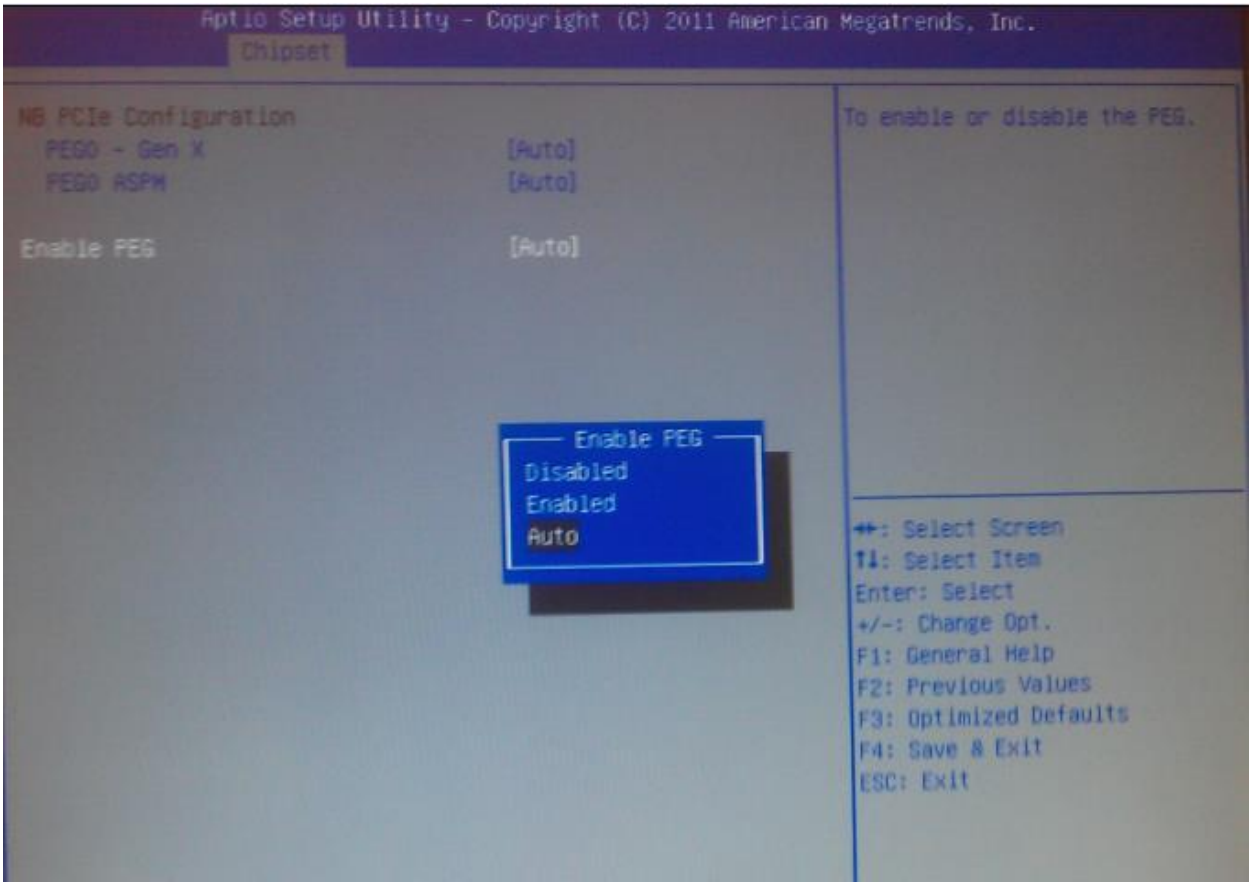
- **Panel Color Depth[18 Bit]**

Select the LFP panel color depth
Configuration options: [18 Bit] [24 Bit]

### 3.4.16.1.2 NB PCIe Configuration






- **PEG0 – Gen X**

Configure PEG0 B0 :D1 :F0 Gen1-Gen2

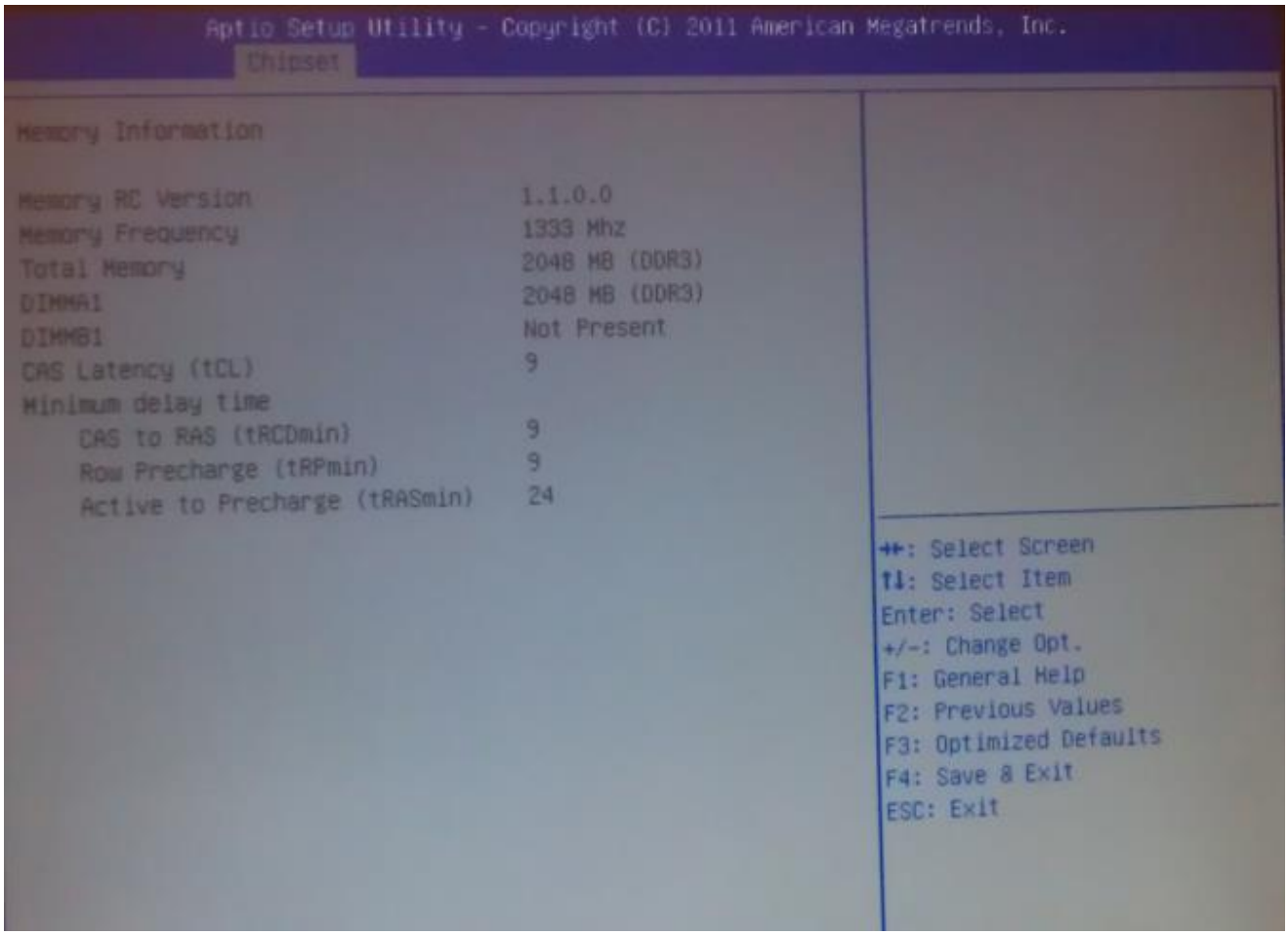
Configuration options: [Auto] [Gen1] [Gen2] [Gen3]

- **PEG ASPM[ASPM L0sL1]**

Control ASPM support for the PEG device.

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

### 3.4.17 Memory Configuration

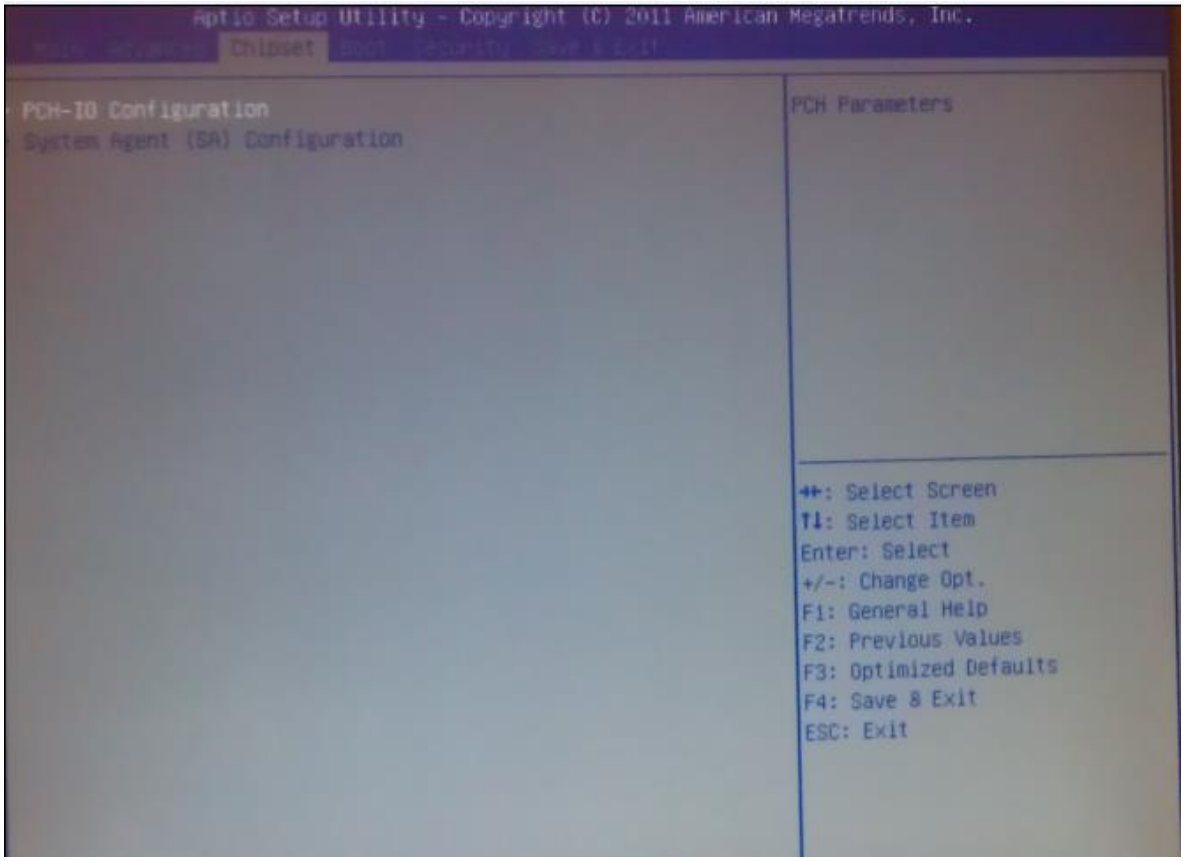


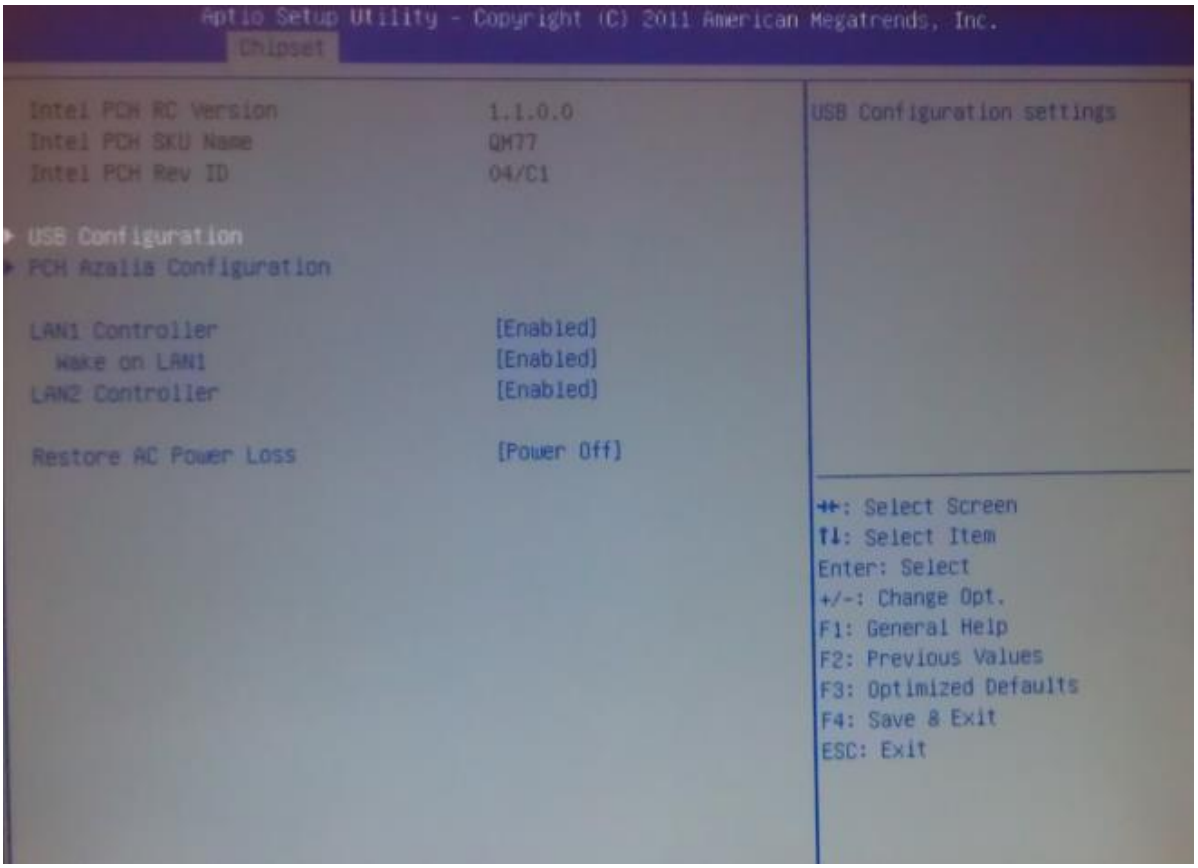

- **Memory Configuration**

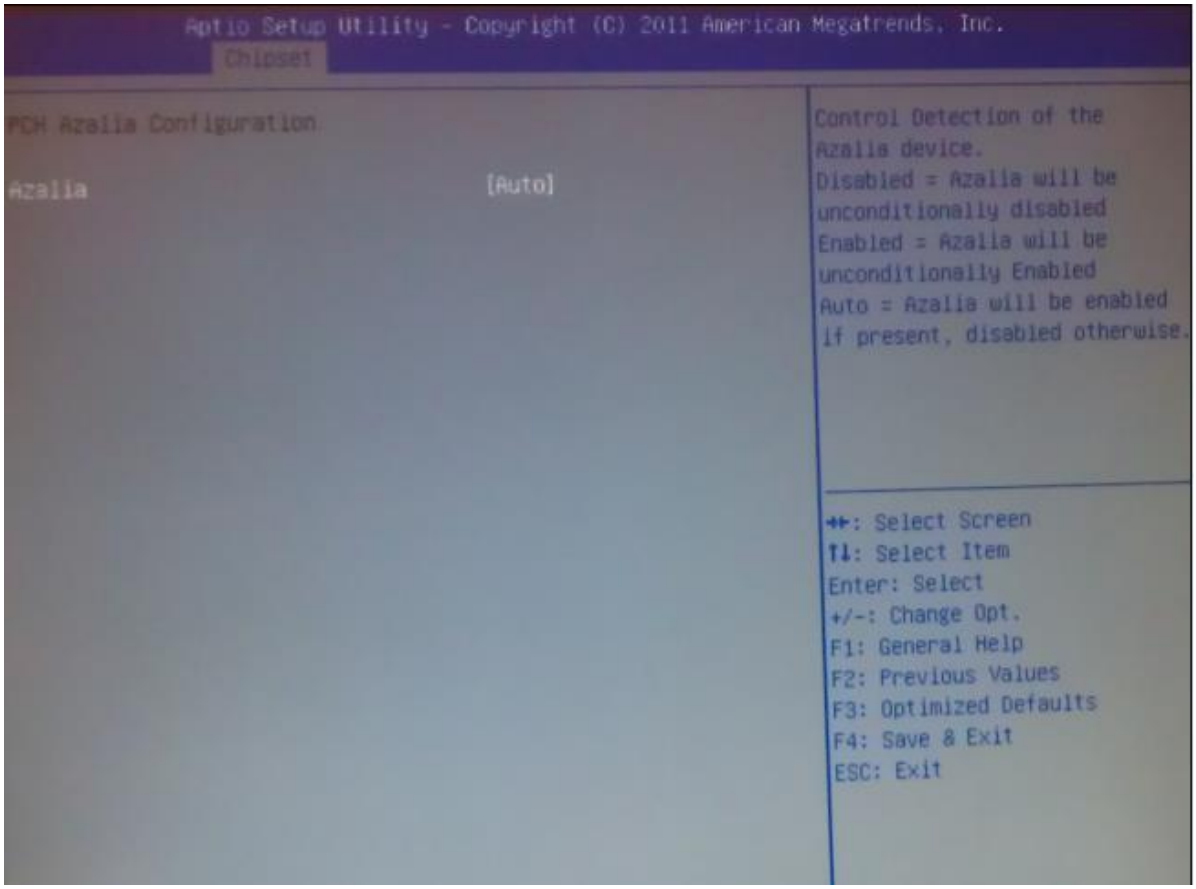
Display system memory information

### 3.4.18 PCH-IO Configuration

PCH Parameters






- **LAN1 Controller [Enable]**

Enable/Disable LAN1 Controller

Configuration options: [Disabled] [Enabled]

- **Wake on LAN1[Enable]**

Configuration options: [Disabled] [Enabled]

- **LAN2 Controller [Enable]**

Enable/Disable LAN1 Controller

Configuration options: [Disabled] [Enabled]

- **Wake on LAN2 from S5 [Disable]**

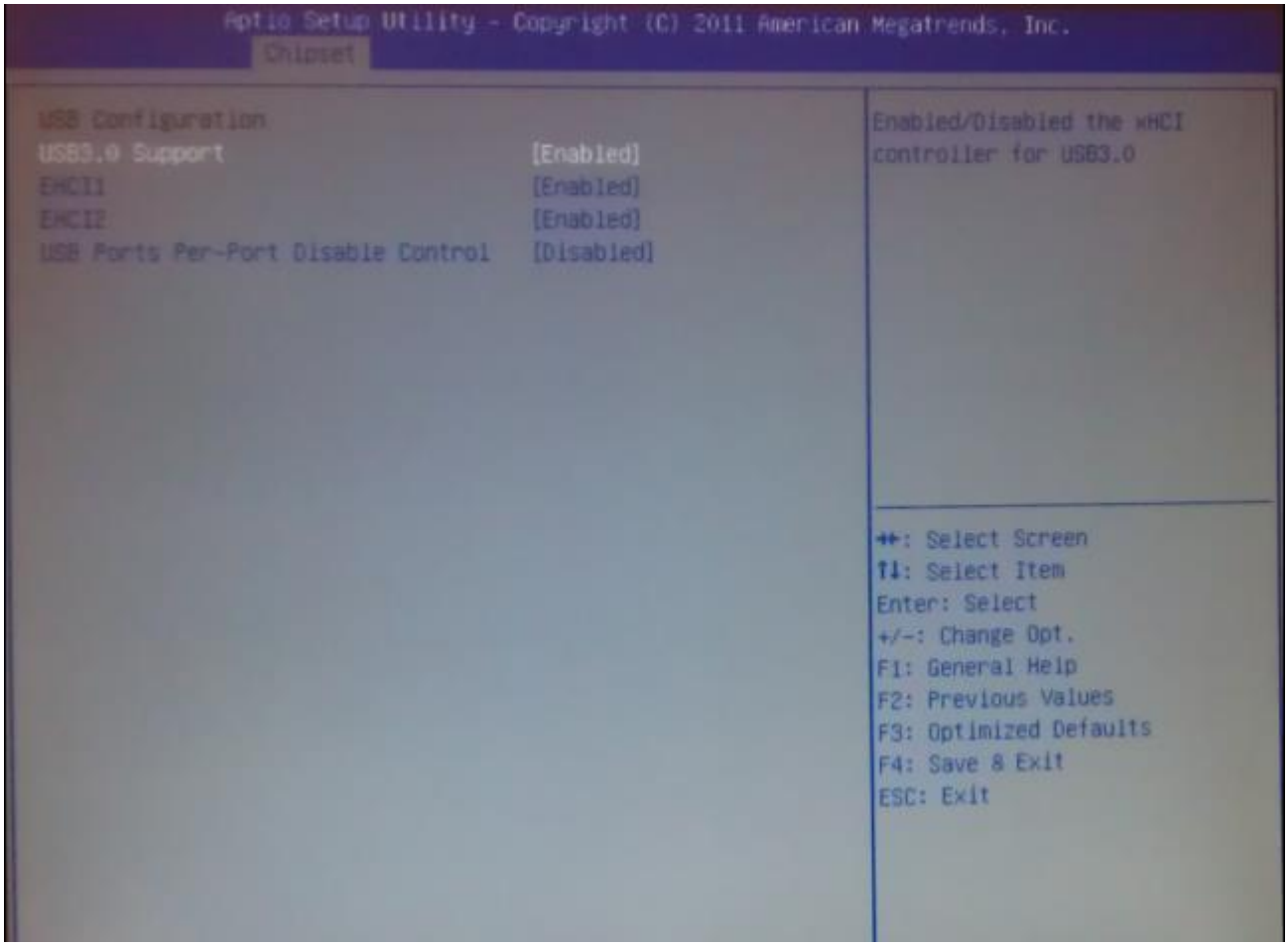
Configuration options: [Disabled] [Enabled]

- **Azalia[auto]**

Enable/Disable Azalia HD Audio

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

### 3.4.19 USB Configuration




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

Enable/Disable USB 3.0(xHCI) support
Configuration options: [Disabled] [Enabled]

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

Enable/Disable USB ports(0~13) disabling
Configuration options: [Disabled] [Enabled]

- **EHCI1 [Enabled]**

Enable/Disable USB 2.0(EHCI) support
Configuration options: [Disabled] [Enabled]

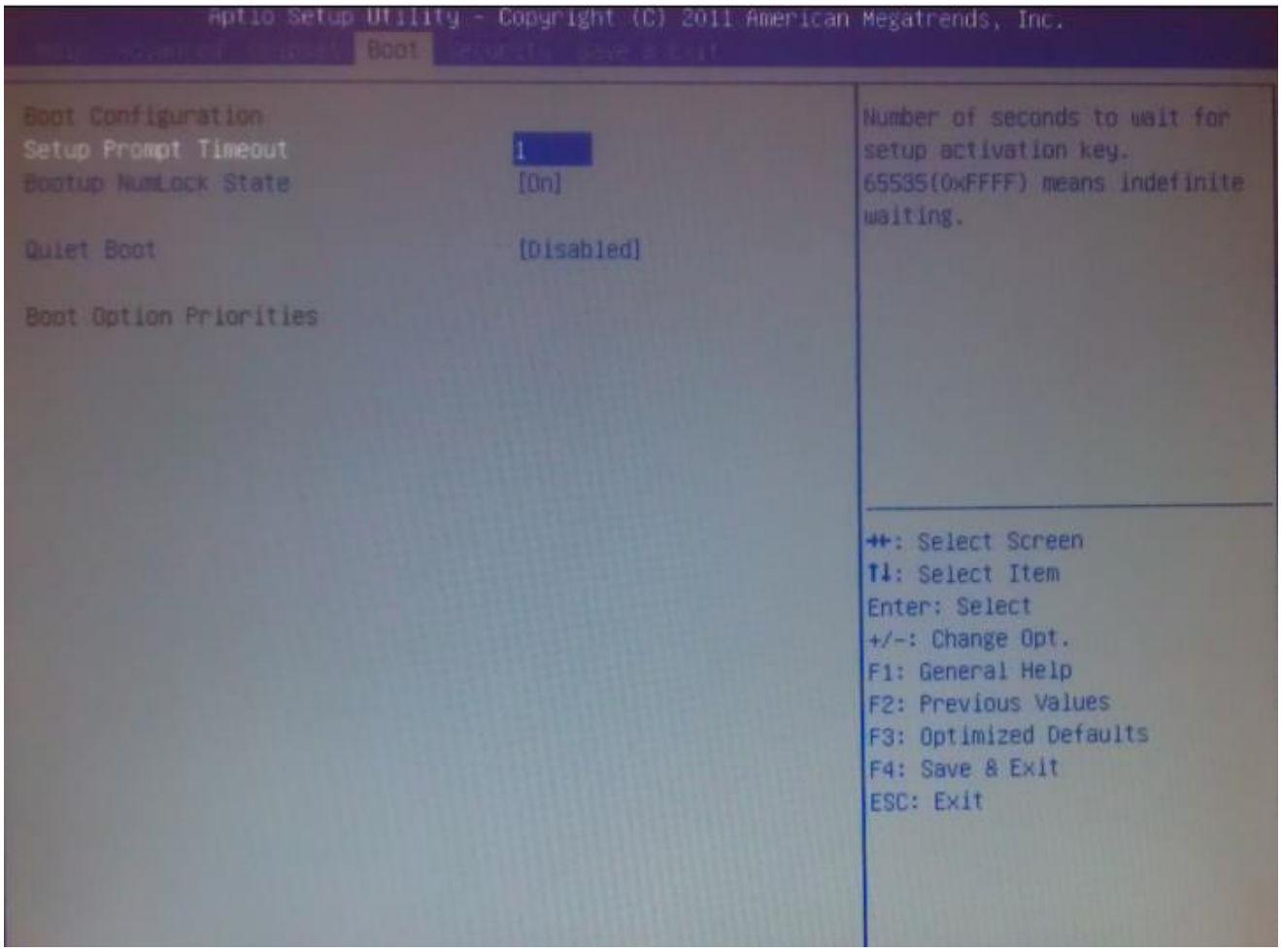
- **EHCI2 [Enabled]**

Enable/Disable USB 2.0(EHCI) support
Configuration options: [Disabled] [Enabled]

Enable or disable Extended synchronization
Configuration options: [Disabled] [Enabled]

### 3.4.20 Boot

Boot Configuration




- **Setup Prompt Timeout [1]**

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

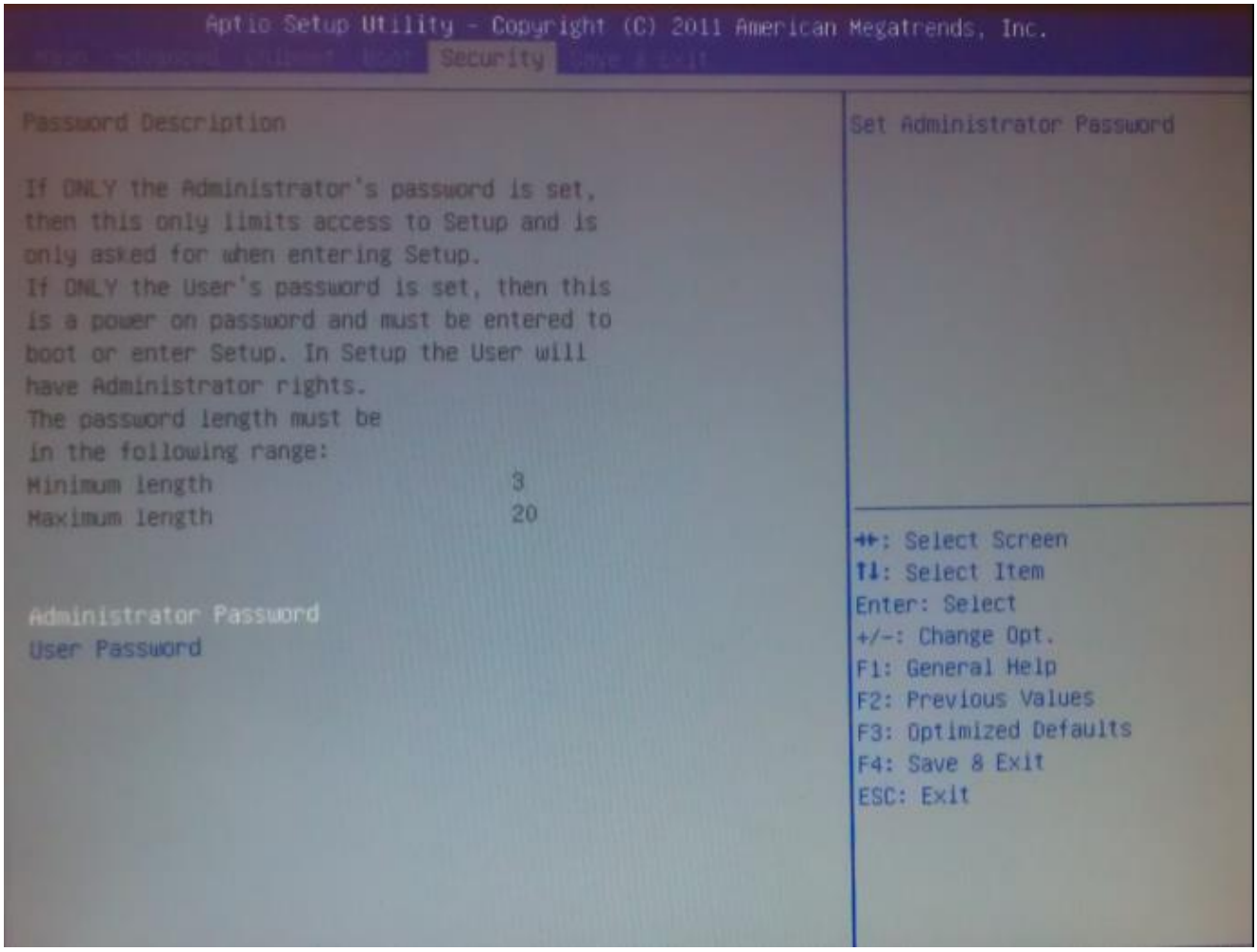
- **Bootup NumLock State [On]**

Select the keyboard NumLock state
Configuration options: [On] [Off]

- **Quick Boot [Disable]**

Configuration options: [Disable] [Enable]

### 3.4.21 Security



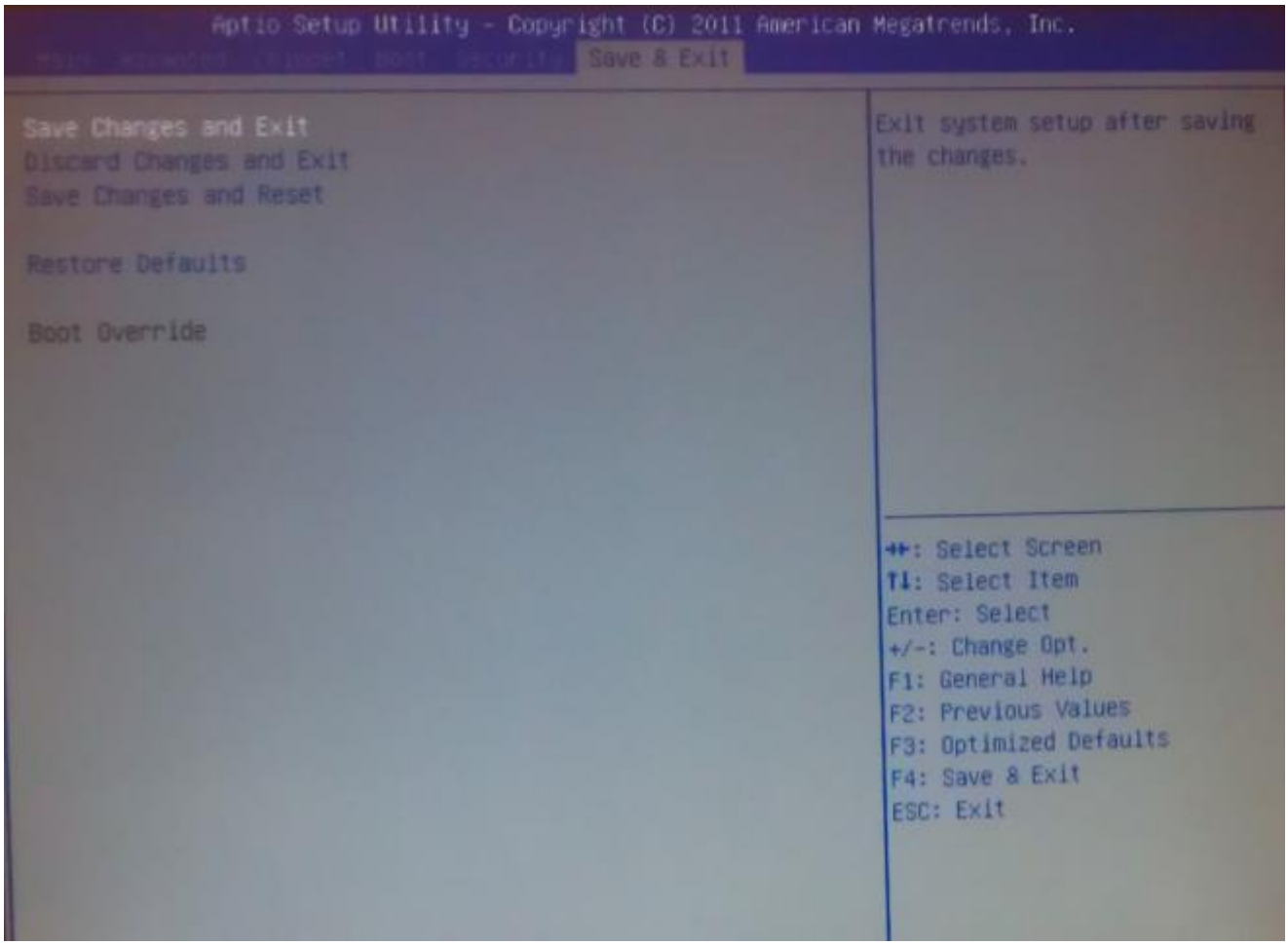

- **Administrator Password**

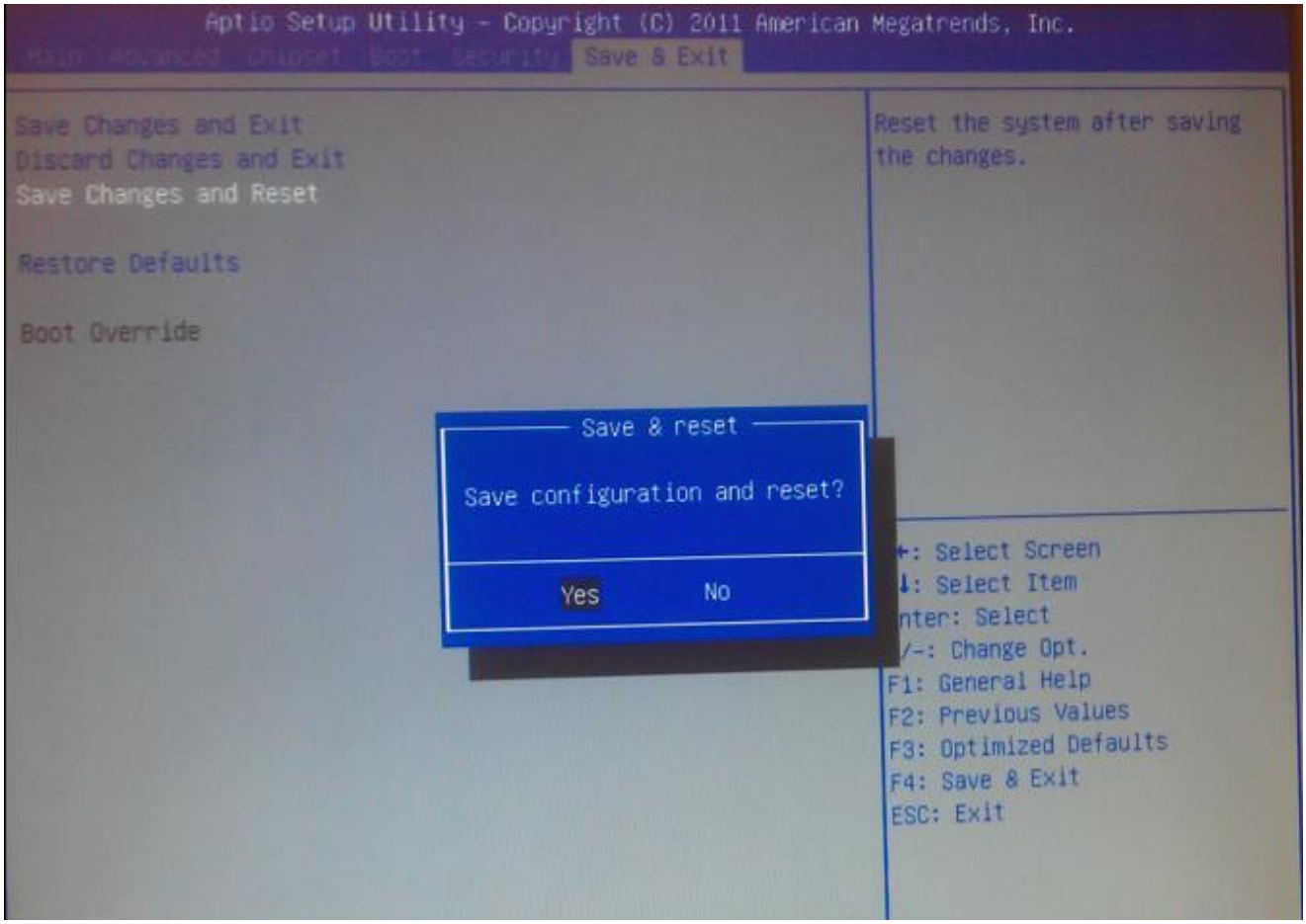
Set setup Administrator Password

- **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.