MX1900J

Intel® Bay Trail-D Celeron J1900 SoC
Mini iTX Motherboard

User's Manual

Edition 1.00 – Oct, 2014

FCC Statement

THIS DEVICE SUPPORTS 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 INSTATLLED 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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Product Warranty

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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 BCM, or which have been subject to misuse, abuse, accident or improper installation. BCM assumes no liability under the terms of this warranty as a consequence of such events. Because of BCM high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If any of BCM 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, BCM 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.

Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Manual Objectives

This manual describes in detail the BCM MX1900J Main board.

We strongly recommend that you study this manual carefully before attempting to interface with MX1900J 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.

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 mainboard. 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.

Document Amendment History

Revision	Date	Comment
1st (1.00)	Oct, 2014	Initial Release

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Mainboard Specifications

Model	MX1900J
Processor	Intel® Celeron® J1900 Processor onboard 2 GHz (Intel® Bay Trail-D Platform)
Chipset	SoC
Memory	2 x 204Pin SODIMM sockets supports DDR3L memory module (1.35V ONLY) 1333 MHz up to 8GB (4GB maximum/slot)
Display	Intel® Integrated Graphic Engine
Maximum Resolution	VGA: 1920x1200 LVDS: 1920x1200 DP: 2560x1600
SATA	2 x SATA II connectors
Expansion Slots	1x Full Size Mini-PCIe with mSATA Support (Shared one channel with SATA connector (SATA2)
	1 x Half Size Mini-PCIe
USB	4 x USB 2.0 ports (4 @ 2x Headers)
	4 x USB 3.0 ports (4 @ Rear I/O)
TPM	1 x TPM 1.2 Security Device (Infineon® TPM Chip 9635)
Super I/O Controller	Nuvoton® NCT6776F
Serial Ports	1 x RS232 ports (1 x header)
LPT	1 x LPT header
Watch Dog Timer	1sec ~ 255 min timer
HW Monitor	Yes
Audio	Realtek® ALC892
	HD Audio Codec with auto jack sensing
LAN	Intel® i211-AT PCIe Gigabit LAN
	1 x 10/100/1000 LAN
	Intel® i211-AT PCIe Gigabit LAN
	1 x 10/100/1000 LAN
DIO	8 Bit
BIOS	AMI® BIOS
	AMI BIOS with 32Mb SPI ROM
Onboard I/O Headers	
SATA	2 x Std. SATAII Connectors

USB	**2 x USB2.0 Headers (4 ports on headers)**
RS232	**1 x Headers**
LPT	**1 x Header**
Front Audio	**1 x Header**
Amplifier	**1 x Header**
Front Panel	**1 x Header**
Fan Header	**2 x Headers (4-pins)**
LVDS	**1 x Header**
Inverter Connection Port	**1 x Header**
Onboard Jumpers	
COM Port Ring-In/ Power Select	**1 x Headers provides Selection of “Ring-In”, or “12V” or “5V” on COM port**
AT/ATX Select	**1 x Header**
Clear CMOS	**1 x Header**
Back I/O Panel	
VGA	**1 x DB 15 Connector**
DP (DisplayPort)	**1 x DP Connector**
USB3.0	**4x Stack up USB Connector**
LAN and USB	**2 x RJ45 Connector**
Audio	**1 x Line-Out**
	1 x Mic-In
Power	**1 x DC 12V Connector**
Power & Connector	
	1 x 4 pin ATX Connector (AC)
	1 x DC 12V Connector
Form Factor	
	uATX 9.6” x 9.6”

Chapter 1: System Setup

This chapter describes the mainboard features and the new technologies it supports

1.1 Welcome!

The mainboard delivers a host of new features and latest technologies, making it another line of BCM long life mainboards! Before you start installing the mainboard, and hardware devices on it, check the items in your package with the list below.

If any of the items listed below is damaged of missing, please contact with your vendor.

1.2 Packing Contents

- **Mainboard**
  - **1 x MX1900J**

- **Cable**
  - **1 x SATA Power Cable**

- **Accessories**
  - **1 x MX1900J I/O Shield**

1.3 Product Highlights

1.3.1 Product Overview

MX1900J is equipped with quad-core Intel® Celeron® desktop J1900 processor (formerly codenamed BayTrail-D) with speeds of 2.0 GHz delivering outstanding computing, graphical and media performance in a compact and economically efficient form factor. The J1900 technology is a 22nm, leading-edge, and low-power system-on-a chip (SoC) solution designed based on the 4th generation Intel® Atom™ E3800 (formerly codenamed Bay Trail-I) platform.

1.3.2 Platform Features and Benefits

• Memory support, integrated low voltage DDR3L memory controller

• Operating system support:

- Microsoft Win7/ Win8/ Win8.1
- Linux (Kernel 12.04 or later)

1.3.3 Key Architecture Features

• Supports Intel quad-core Intel® Celeron® Desktop J1900 processor

- 22nm monolithic die
- Integrated Intel's 7th generation (Gen 7) graphics and media encode/decode engine
- TDP: 10W

• Integrated Display Interfaces

- Display Port
- Analog VGA
- LVDS

• I/O

- PCI Express® Gen 2
- 2 SATAII ports
- High Definition Audio
- USB: Gen 2.0, 4 ports
- Hardware Monitor
- Watchdog timer

• Trusted Platform Module (TPM) Support

By combining the onboard TPM 1.2 with TPM security software (provided by the third party), it will enhance the security level of the system.

• PRECAUTION: When TPM is enabled and utilized through TPM software, there is possibility that the encrypted data will not be accessible, or recoverable if one of the following situations occurred:

1. Lost of TPM password.

2. System or board failure, or being replaced.

3. Hard Drive failure.

1.4 Before you proceed

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

- **Unplug the power cord from the wall socket before touching any component inside the system.**
- **Use a grounded wrist strap or touch a safely grounded object or to 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 antistatic pad or in the bag that came with the component.**
- **Before you install or remove any component, ensure that the 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 mainboard, peripherals, and/or components.**

1.5 Mainboard Overview

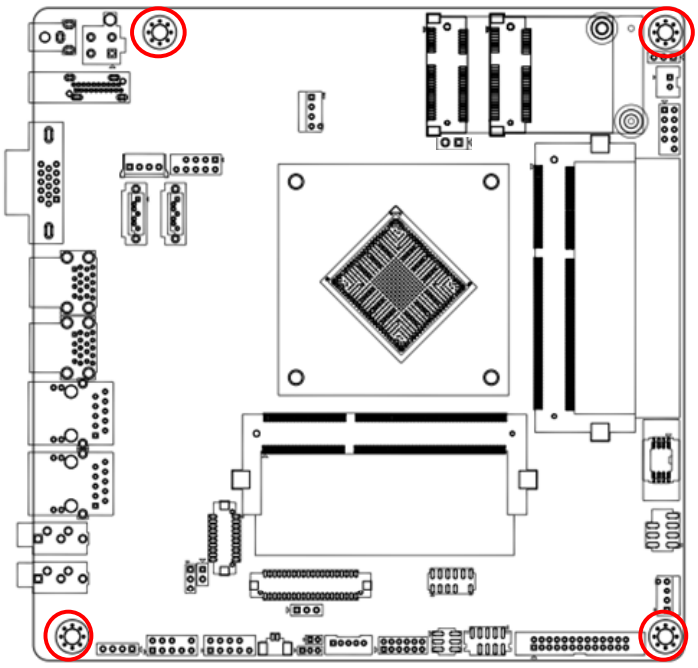
Before you install the mainboard, study the configuration of your chassis to ensure that the mainboard fits into it.

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

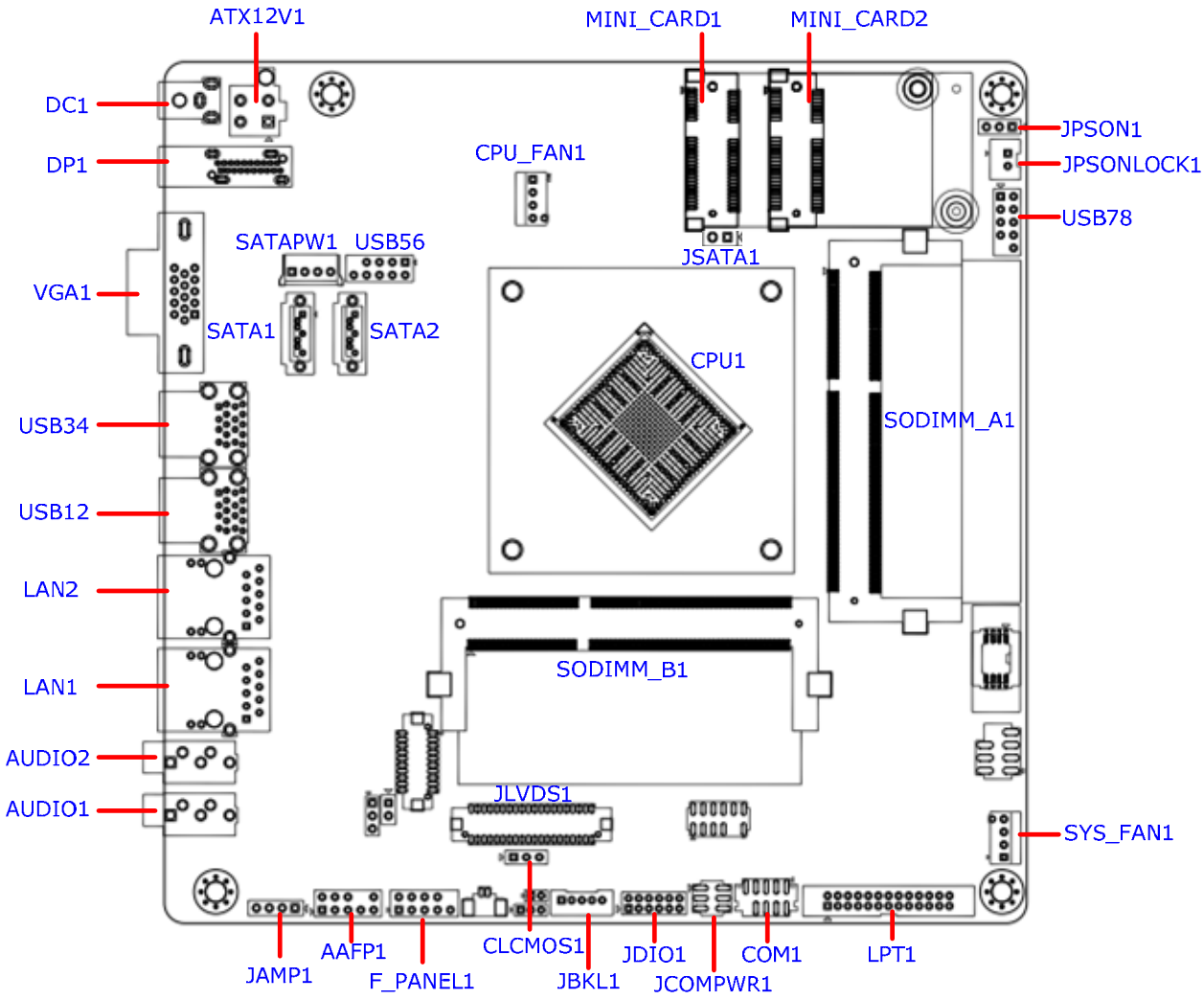
1.5.1 Mounting Holes

Place the screws into the mounting holes indicated by red squares to secure the mainboard to the chassis.

Do not over-tighten the screws! Doing so may damage the mainboard.



1.5.2 Mainboard Layout



1.5.3 Layout Content List

• 1.5.3.1 Slots

Label	Function	Note	Page
SODIMM_A1	240-pin DDR3L SODIMM slot A1	1. If there is only one memory module being installed in the system, install it on this slot.	20
SODIMM_B1	240-pin DDR3L SODIMM slot B1		20
MINI_CARD1	Mini PCIe Slot for FULL size card		39
MINI_CARD2	Mini PCIe Slot for HALF size card		39

• 1.5.3.2 Internal Jumpers

Label	Function	Note	Page
CLCMOS1	Clear CMOS	3 x 1 header, pitch 2.54mm	36
JPSON1	AT/ATX Power Select	3 x 1 header, pitch 2.54mm	35
JCOMPWR1	COM1 RI/ +5V/ +12V Select	3 x 2 header, pitch 2.00mm	37
JSATA1	mSATA mode Select	2 x 1 header, pitch 2.00mm	37

• 1.5.3.3 Internal Headers

Label	Function	Note	Page
ATX12V1	DC Power Connector	2 x 2 header	24
CPU_FAN1	CPU Fan Connector	4 x 1 wafer, Pitch 2.54mm	29
SYS_FAN1	System Fan Connector	4 x 1 wafer, Pitch 2.54mm	
SATA1, SATA2,	Serial ATA Connectors 1~2	7-pin header	27
COM1	Serial Port 1	5 x 2 header, pitch 2.00mm	31
LPT1	Parallel Port Connector	13 x 2 header, pitch 2.00mm	32
USB56 USB78	USB2.0 Connector	5 x 2 header, pitch 2.54mm	31
F_PANEL	System Panel Connector	5 x 2 header, pitch 2.54mm	32
AAFP1	Front Panel Audio Connector	4 x 1 header, pitch 2.54mm	30
JAMP1	Amplifier Connector	4 x 1 header, pitch 2.54mm	30

JDIO1	Digital I/O Connector	6 x 2 header, pitch 2.00mm	34
JLVDS1	LVDS Panel Connector	20 x 2 header, 1.25mm pitch wire to board connector (WTB)	33
JBKL1	Panel Backlight Connector	5 x 1 header, pitch 2.00mm	33
JPSONLOCK1	PSON Connector	2 x 1 header	34

• 1.5.3.4 Back Panel Connectors

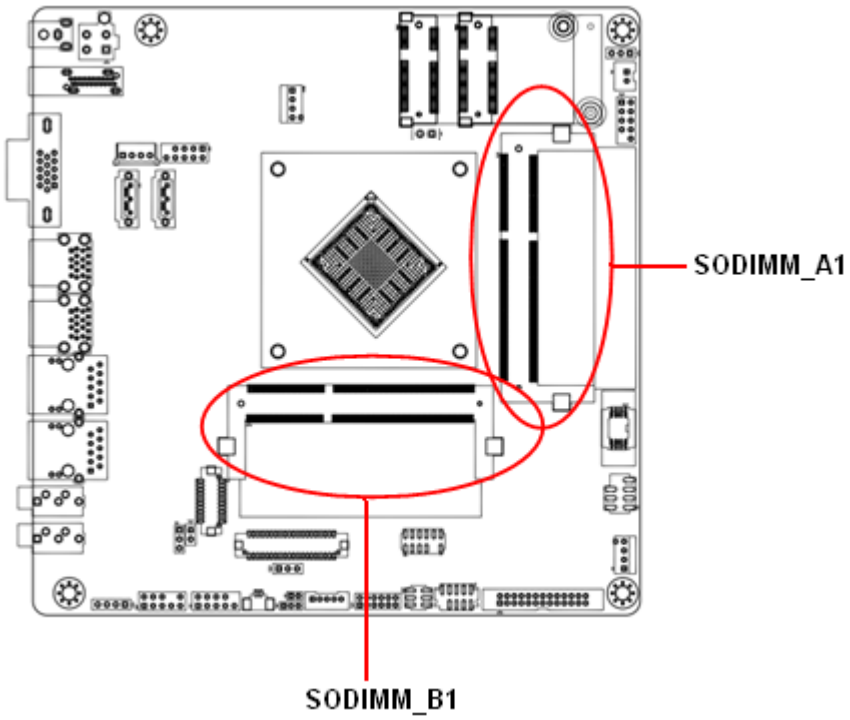
Label	Function	Note	Page
DC1	DC Adapter Connector	DC 12V	25
DP1	Display Port		
VGA1	VGA Connector x 1 DVI Connector x 1	D-sub 15-pins, female	25
USB12	USB3.0 Connectors x 2		25
USB34	USB3.0 Connectors x 2		25
LAN1	Gigabit LAN RJ-45 Connector x 1		25, 26
LAN2	Gigabit LAN RJ-45 Connector x 1		25
AUDIO1	Microphone Port		26
AUDIO2	Line-out Port		26

1.6 System Memory

1.6.1 Overview

The mainboard comes with two 204-pin Double Data Rate 3 Low voltage (DDR3L) Dual Inline Memory Modules (SODIMM) sockets.

A DDR3L module has the same physical dimensions as a DDR SODIMM but has a 204-pin footprint compared to the 240-pin DDR2 DIMM. DDR3L SODIMMs are notched differently to prevent installation on a DDR2 SODIMM socket. The following figure illustrates the location of the sockets:



Channel	Socket
Channel A	SODIMM_A1
Channel B	SODIMM_B1

1.6.2 Memory Configurations

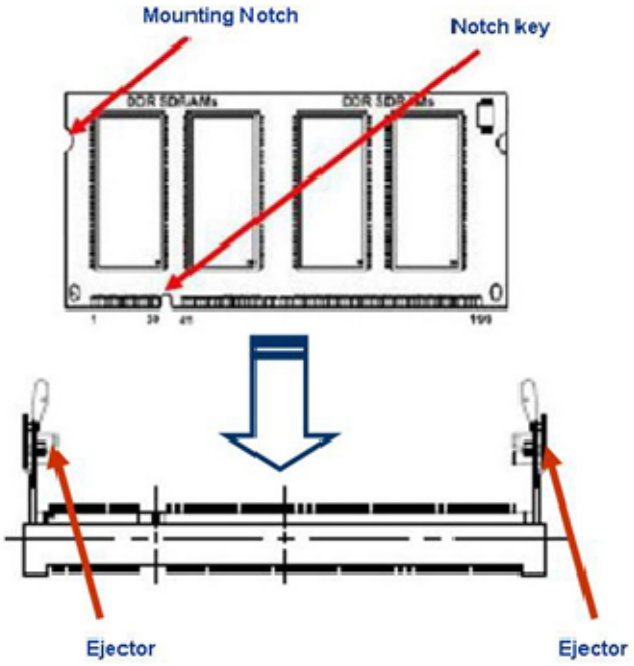
You may ONLY install 1GB, 2GB, or 4GB DDR3**L**-1333MHz (PC3-10600); Non-ECC, Un-buffered **1.35V DDR3L** memory modules on this board (4GB maximum for each slot). **MX1900J does not support** DDR/ DDR2**/** DDR3 SODIMM modules**, DO NOT install DDR/ DDR2/ DDR3 SODIMM modules on this board**.

- **When there is only one DDR3L memory module to be installed, install it on "SODIMM_A1" slot ONLY.**
- **In dual-channel configurations, install only identical (same type, same size) DDR3L memory modules; one installed at socket "SODIMM_A1", the other installed at socket "SODIMM_B1".**
- **Always install DIMMs with the same CAS latency. For optimum compatibility, it is recommended that you obtain the exact same model (and same batch) of memory modules from the same vendor.**

1.6.3 Installing the DDR3L SODIMM

Make sure to unplug the power supply before adding or removing SODIMMs or other peripherals from the system. Failure to do so may cause severe damage to both the mainboard and the peripherals.

1. Locate the SODIMM socket onboard.
2. Hold two edges of the SODIMM module carefully, and keep away of touching its connectors.
3. Align the notch key on the SODIMM module with the rib on the slot.
4. Firmly press the SODIMM module into the socket which will be snapped into the mounting notch automatically. Do not force the SODIMM module in with extra force as the SODIMM module can only fits in one direction.

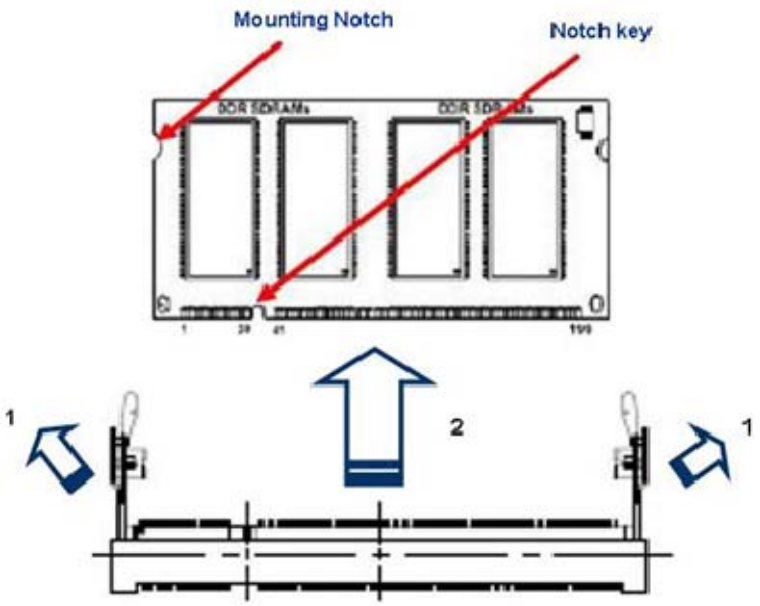


1. **A DDR3L memory module is keyed with a notch so that it fits in only one direction.**
2. **DO NOT force the memory module into the socket in order to avoid damaging the memory module and the slot.**
3. **DDR3L memory modules are not interchangeable with DDR or DDR2, or DDR3.**
4. **DDR3L standard IS NOT backward compatible. You shall only install the DDR3L memory modules on this mainboard.**

1.6.4 Removing the DDR3L SODIMM

Follow these steps to remove a SODIMM.

1. Press the two ejector tables on the slot outward simultaneously
2. Remove the SODIMM module from the socket.

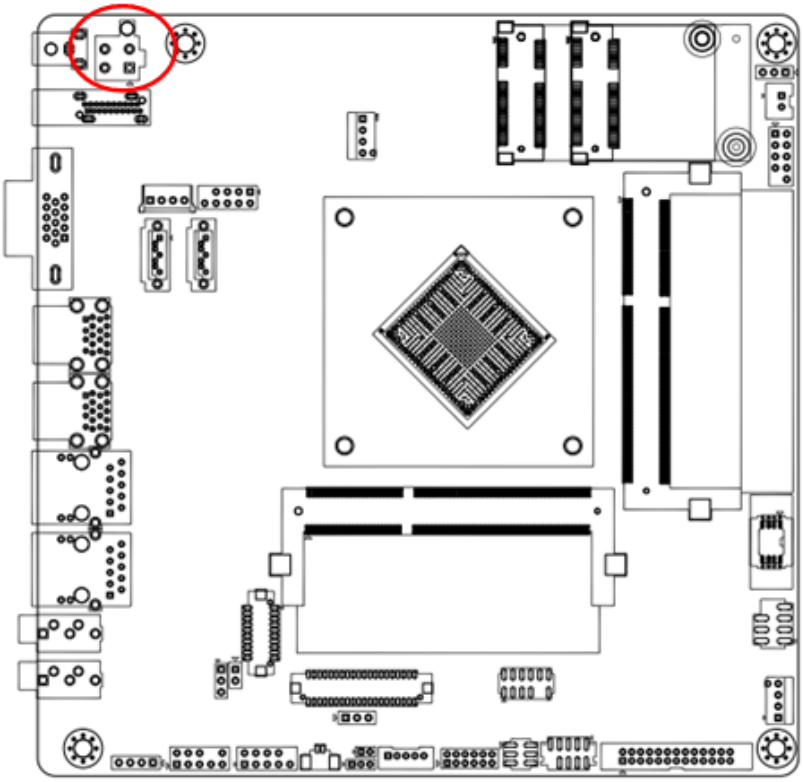


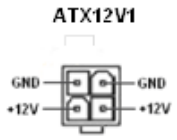
Hold the SODIMM module gently when pressing the ejector tabs. The SODIMM might get damaged when it flips out with extra force.

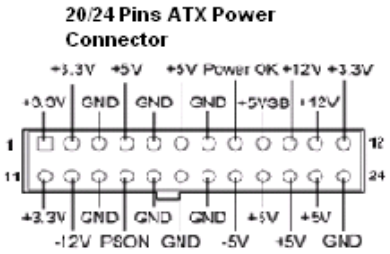
1.7 Power Supply

1.7.1 12V DC-In Power Connector: ATX12V1

This connector is for ATX power supply plug (ATX12V1), The power supply plug is designed to fit the connector in only one orientation. Find the proper orientation and push down firmly until the connector is completely fit. In order to power on MX1900J through this connector, the signal "PSON" must be connected with the "GND" signal on the 20/24 pin ATX power connector.







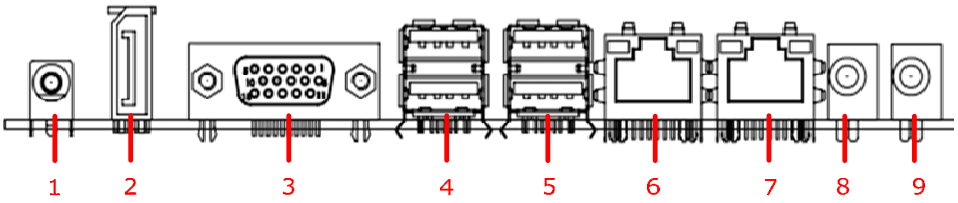
1. **It is recommended that you use a ATX power supply unit (PSU) that complies with ATX 12V specification 2.0 (or later version) and provides a minimum power of 300W.**
2. **Use of a PSU with a higher power output is recommended when configuring a system with more power-consuming devices. The system may become unstable or may not boot if the power supply is inadequate.**
3. **The MX1900J board can be power on EITHER through:**

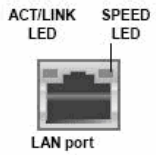
   A. Use 4-pin ATX power connector from ATX power supply and connect it to "ATX12V1" header.

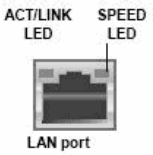
   B. Use an AC power adapter and connect it to "DC1" connector on the rear I/O of MX1900J board (AC Power Adapter Output: 12.0V/5.0A).

1.8 Back Panel

1.8.1 Back Panel Connectors



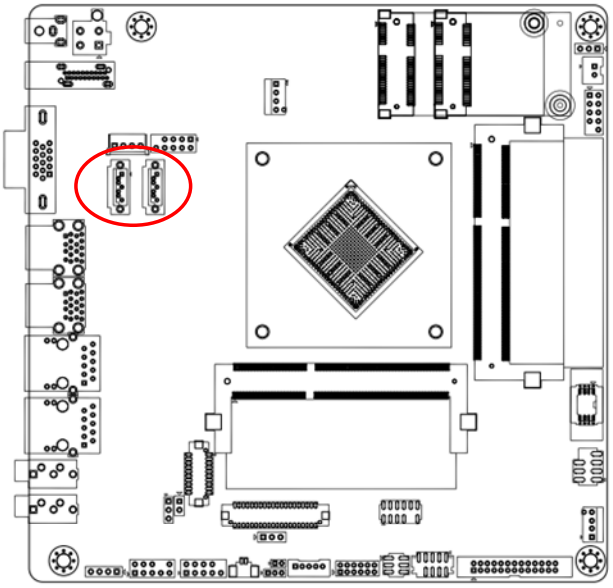
<table>
<tr><th>Item</th><th>Name</th><th>Function</th><th>Description</th></tr>
<tr><td>1</td><td>DC1</td><td>AC Power Adapter Connector</td><td>The port is for an AC power adapter (DC Output 12.0V/5.0A).</td></tr>
<tr><td>2</td><td>DP1</td><td>Display Port</td><td>The display port Connector</td></tr>
<tr><td>3</td><td>VGA1</td><td>VGA Video Port</td><td>The VGA15-pin Connector.</td></tr>
<tr><td>4</td><td>USB34</td><td>USB 3.0 Connectors</td><td>These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 3.0 devices.</td></tr>
<tr><td>5</td><td>USB12</td><td>USB 3.0 Connectors</td><td>These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 3.0 devices.</td></tr>
<tr><td>6.</td><td>LAN2.</td><td>Gigabit LAN (RJ-45) Connectors
  </td><td>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.
<table>
<tr><td colspan="2">ACT/Link LED</td><td colspan="2">Speed LED</td></tr>
<tr><td>Status</td><td>Description</td><td>Status</td><td>Description</td></tr>
<tr><td>OFF</td><td>No link</td><td>OFF</td><td>10Mbps connection</td></tr>
<tr><td>Orange</td><td>Linked</td><td>Green</td><td>100Mbps connection</td></tr>
<tr><td>Blinking</td><td>Data activity</td><td>Orange</td><td>1Gbps connection</td></tr>
</table></td></tr>
<tr><td>7</td><td>LAN1</td><td>Gigabit LAN (RJ-45) Connectors</td><td>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.
<table>
<tr><td>ACT/Link LED</td><td>Speed LED</td></tr>
</table></td></tr>
</table>

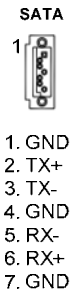
<table>
<tr>
<td></td>
<td></td>
<td> 
</td>
<td>
<table>
<tr><td>Status</td><td>Description</td><td>Status</td><td>Description</td></tr>
<tr><td>OFF</td><td>No link</td><td>OFF</td><td>10Mbps connection</td></tr>
<tr><td>Orange</td><td>Linked</td><td>Green</td><td>100Mbps connection</td></tr>
<tr><td>Blinking</td><td>Data activity</td><td>Orange</td><td>1Gbps connection</td></tr>
</table>
</td>
</tr>
<tr><td>8</td><td>AUDIO2</td><td>Microphone port (Pink)</td><td>This port connects a microphone.</td></tr>
<tr><td>9</td><td>AUDIO1</td><td>Line-out port (Lime)</td><td>This port connects a headphone or a speaker.</td></tr>
</table>

1.9 Connectors/ Headers

1.9.1 Serial ATA 2.0 Connectors: SATA1, SATA2

SATA ports “SATA1” and “SATA2” support SATA2.0 standard.

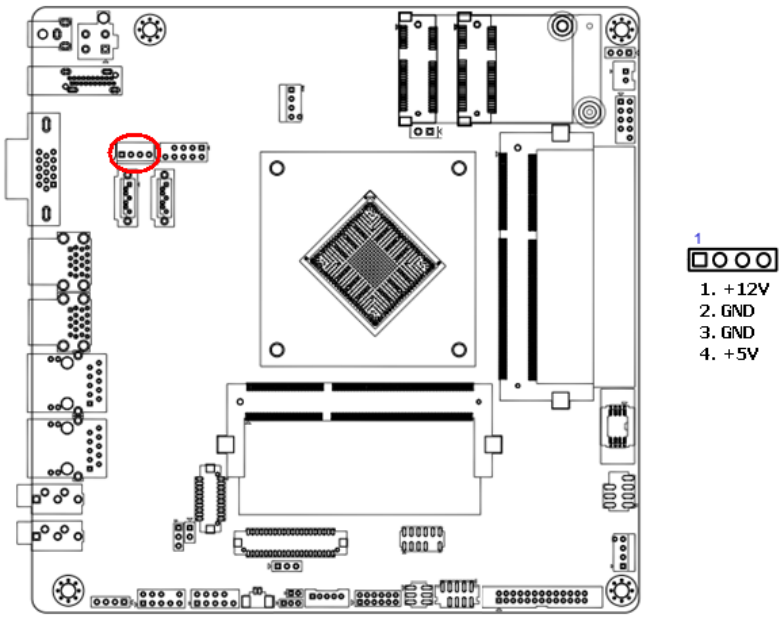




1. **Due to “SATA2” and “MINI_CARD1 (mSATA) are sharing the same SATA channel, only either one of them can be used. Please DO NOT install devices to these two headers at the same time.**
2. **Please do not fold the Serial ATA cable into 90-degree angle. Otherwise, data loss may occur during data transmission.**

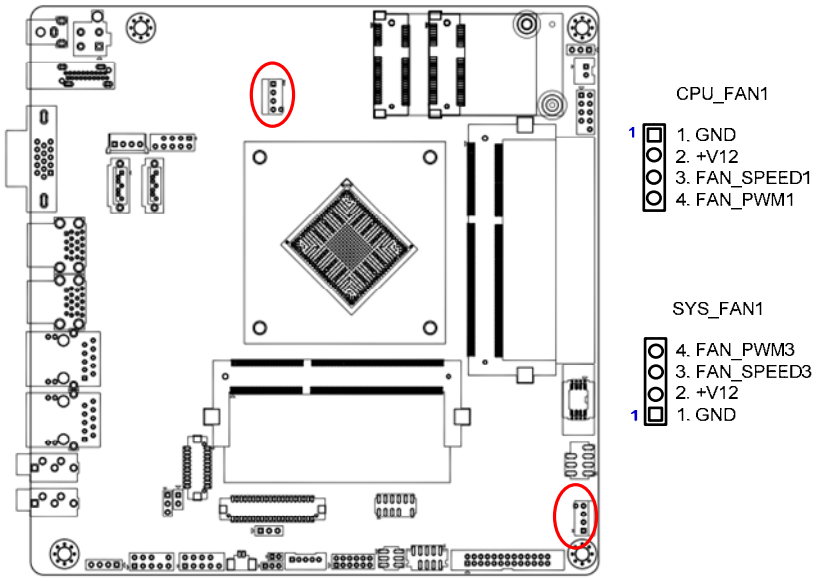
1.9.2 Serial ATA Power Connector: SATAPW1

This connector provides power connection to SATA device.



1.9.3 CPU & System Fan Connectors: CPU_FAN1, SYS_FAN1

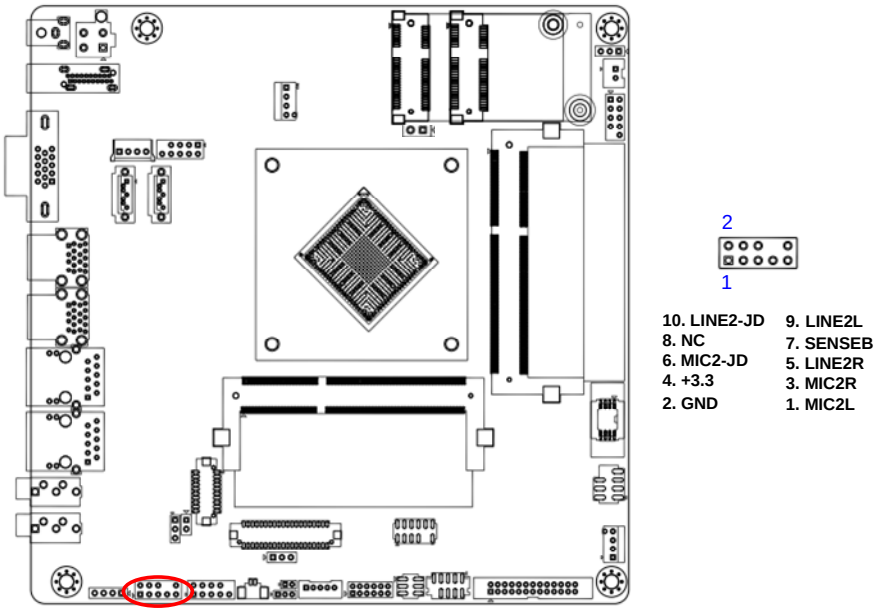
The fan power connectors support system cooling fan with +12V. When connecting the wire to these fan connectors, please note that the red wire is designated as “Power” and should be connected to “+12V” pin; the black wire is designated as “Ground” and should be connected to “GND”. In order to take the advantage of System Hardware Monitor and Smartfan feature, be sure to use the fan which is specifically designed with speed sensor.



In order for MX1900J board to function properly, it is recommended to maintain air flow around MX1900J with ambient temperature not to exceed 33.4°C.

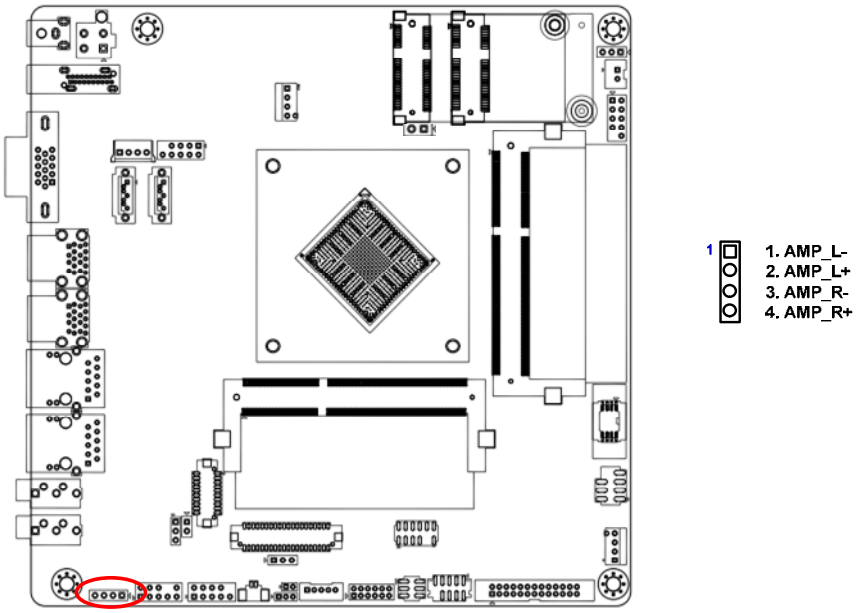
1.9.4 Front Panel Audio Connector: AAFP1

This connector is prepared for a chassis-mounted front panel audio I/O module that supports HD Audio standard. Connect one end of the front panel audio I/O module cable to this connector.

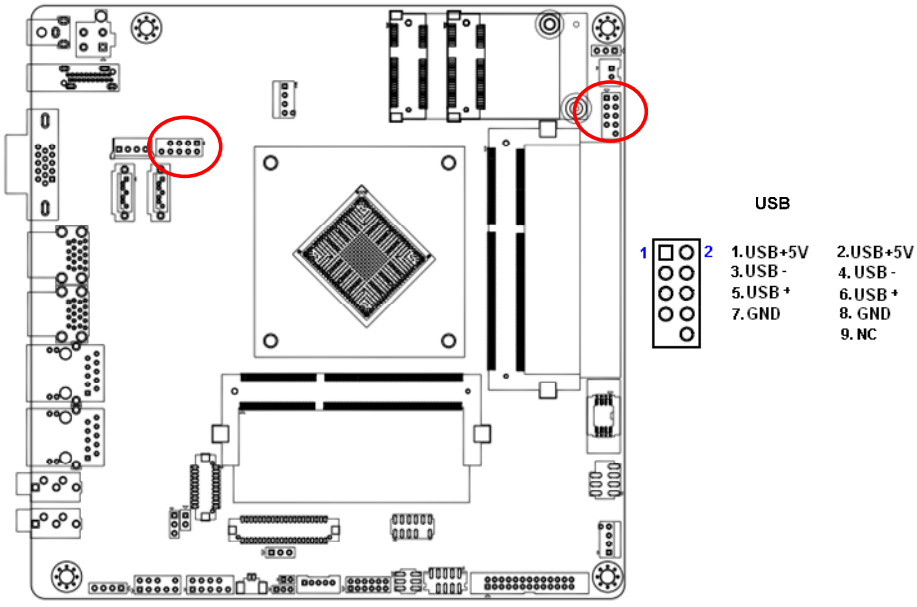


1.9.5 Amplifier Connector: JAMP1

This header provided amplified audio signals to external speakers (2-channels). The dB level can be adjusted under BIOS.

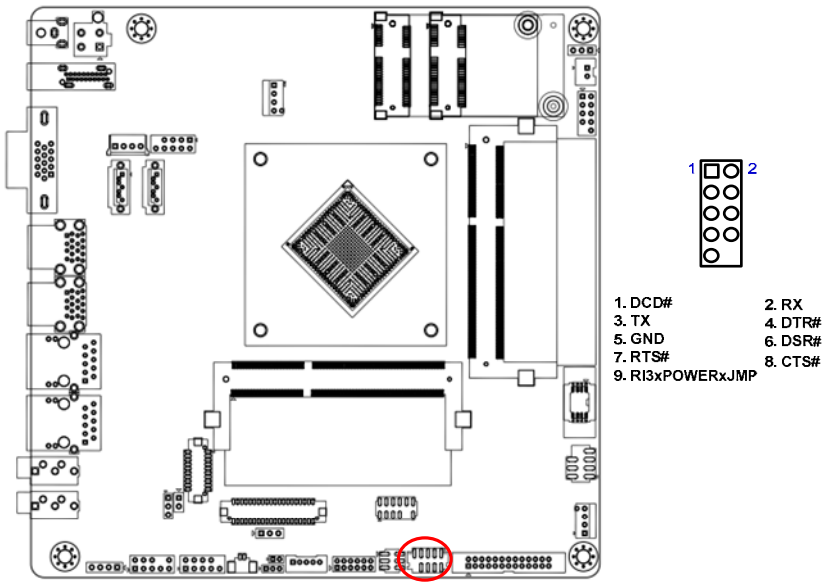


1.9.6 Front USB2.0 Headers: USB56, USB78

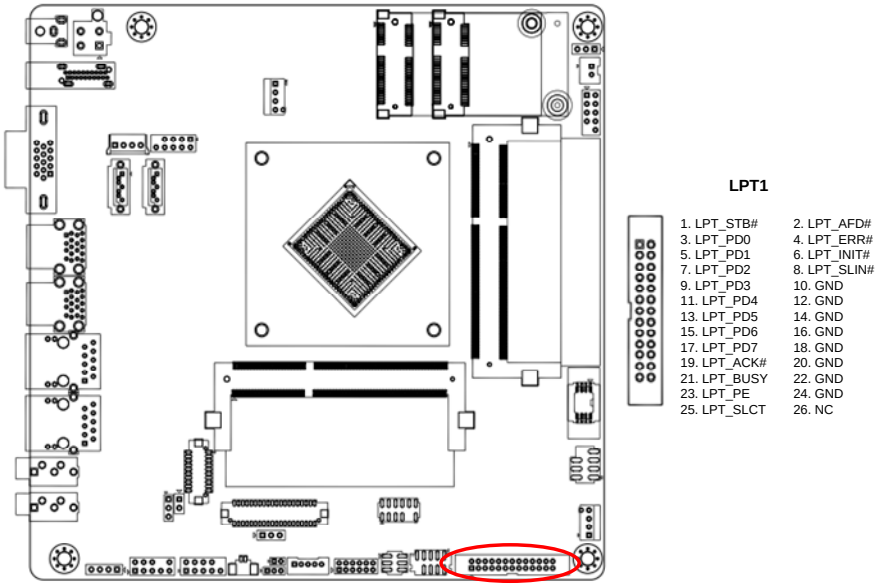


Be sure the pins of VCC and GND signals are connected to the USB2.0 headers correctly. Otherwise, it may cause damage to the USB port and/or the connected USB device.

1.9.7 Serial Port Connector: COM1

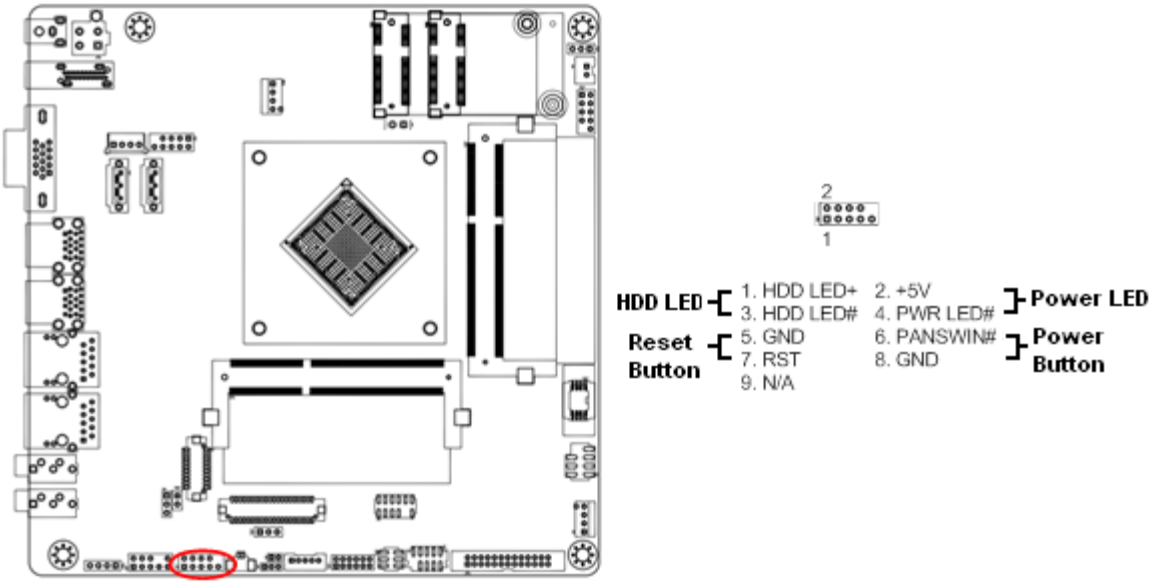


1.9.8 LPT Port Connector: LPT1

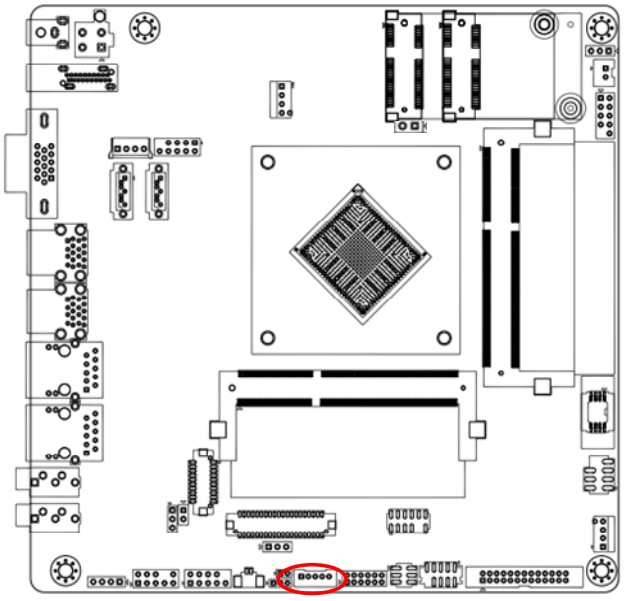


1.9.9 Front Panel Connectors: F_PANEL1

These connectors are for electrical connections to the front panel switches and LEDs. The “F_PANEL1” connector is compliant with Intel® Front Panel I/O Connectivity Design Guide.

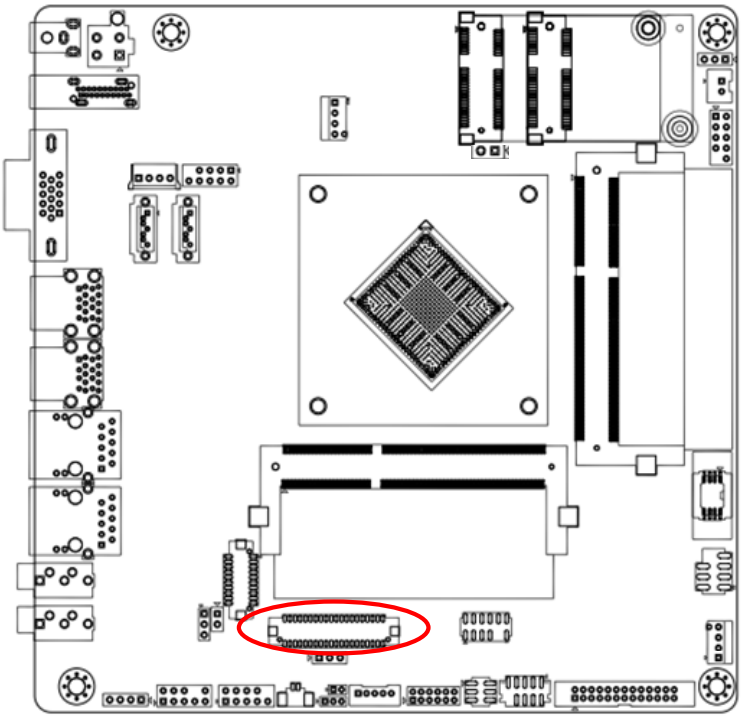


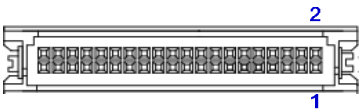
1.9.10 Panel Inverter Connection Port: JBKL1



1. +12V_BL
2. GND
3. BL_EN
4. BRIGHT1
5. +5V_BL

1.9.11 LVDS Header: JLVDS1

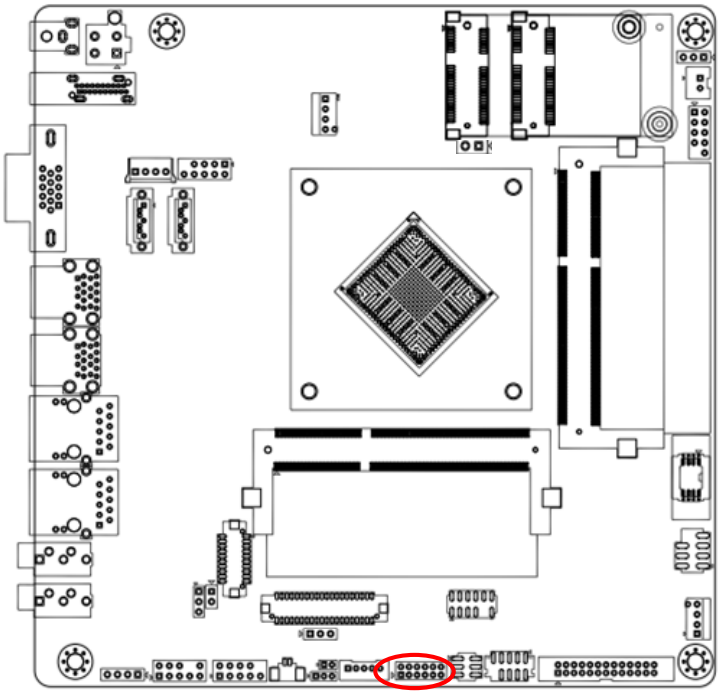




39. VDD_+12V	40. VDD_+12V
37. GND	38. GND
35. LVDS_B_CLK-	36. LVDS_A_CLK-
33. LVDS_B_CLK+	34. LVDS_A_CLK+
31. GND	32. GND
29. LVDS_B3-	30. LVDS_B2-
27. LVDS_B3+	28. LVDS_B2+
25. GND	26. GND
23. LVDS_B1-	24. LVDS_B0-
21. LVDS_B1+	22. LVDS_B0+
19. GND	20. GND
17. LVDS_A3-	18. LVDS_A2-
15. LVDS_A3+	16.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

1.9.12 Digital I/O Connector: JDIO1

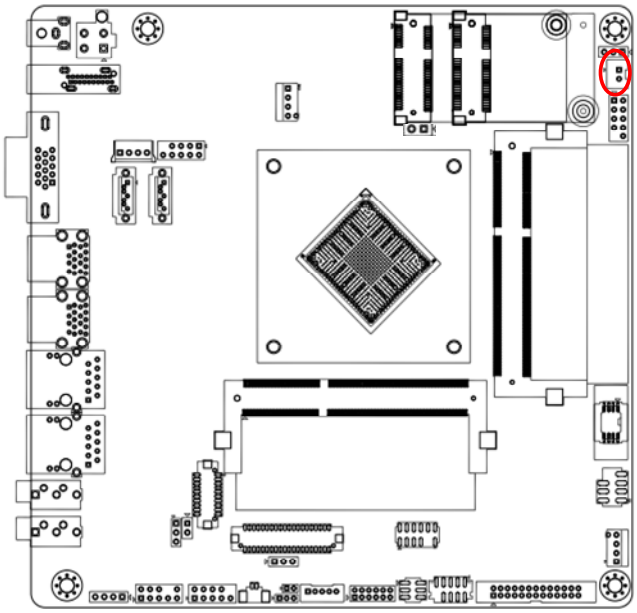
This header provides 8-bit general purpose I/O (GPIO) connections to external device. Customer can write their own monitoring program to monitor the status of external device connected with this header.



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_DATA_ RESUME
11. GND	12. +5Vsb

1.9.13 The Header: JPSONLOCK1

This header is reserved for factory internal use only.

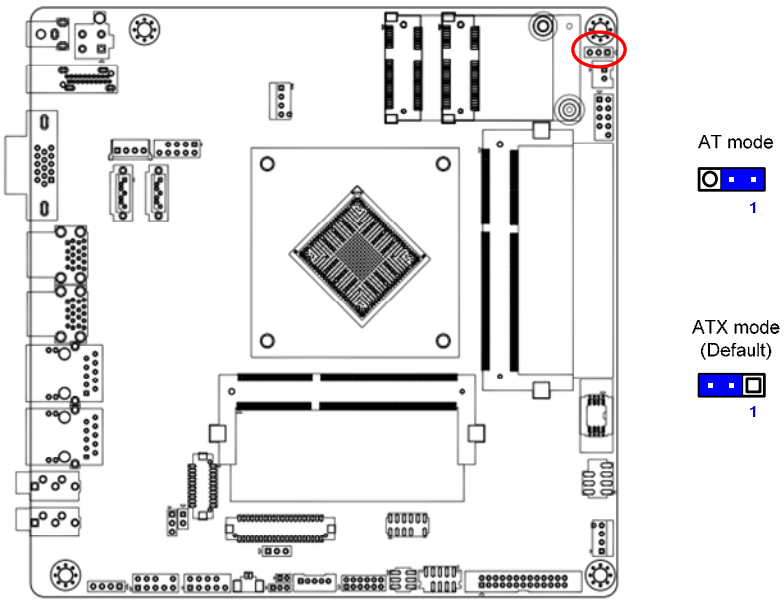


1. GND
2. SIO_PSON#

1.10 Jumpers

1.10.1 ATX/AT Mode Selection: JPSON1

This header provides the option to boot the system in the form of ATX mode (default) or AT mode. When the system is set in AT mode, the system power on/off will be controlled directly by the power switchon power supply. And some of the power saving modes will not function as ATX mode provided.

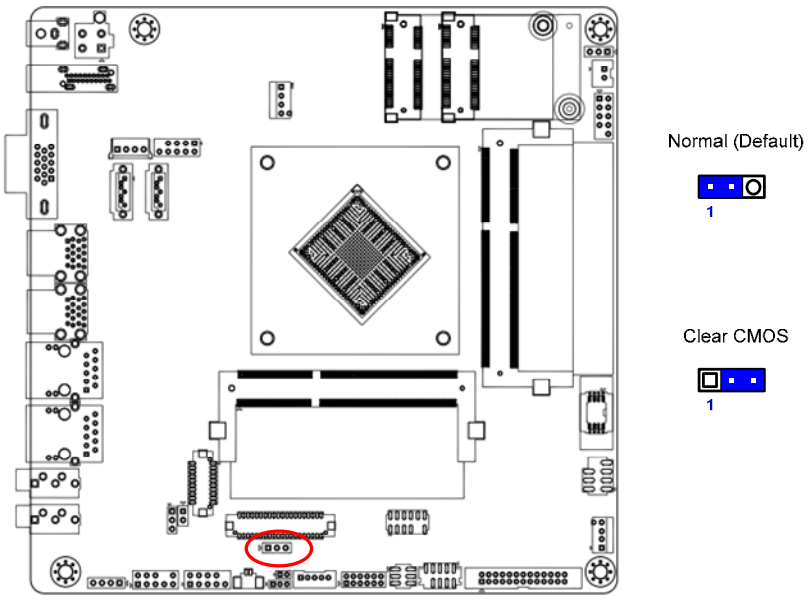


1.10.2 Clear CMOS Jumper: CLCMOS1

There is a CMOS RAM onboard that has the power supplied from an external battery to maintain the registry settings of system configuration.

For normal state (default), the jumper is set on pin location 1 and 2.

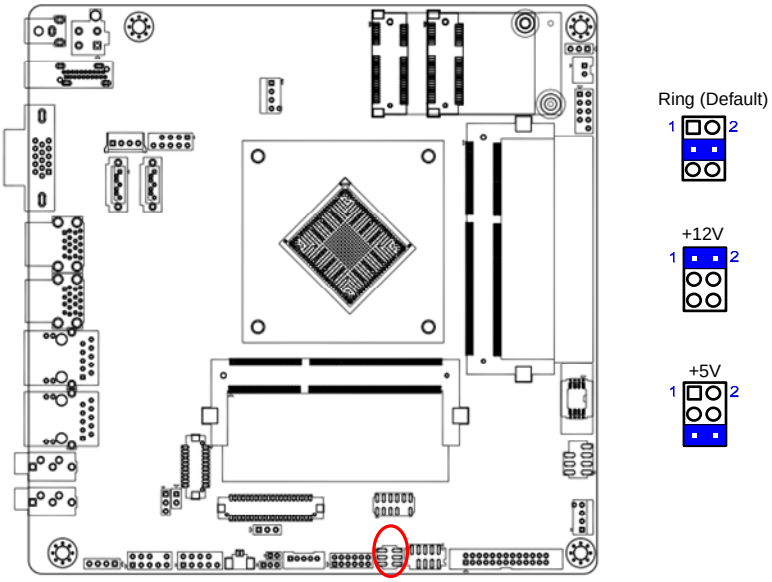
To clear the CMOS, disconnect all power connections to MX1900J first, then set the CLCMOS1 jumper to pin location 2 and 3 for at least 30 seconds while the system is off.



1. You can clear CMOS by shorting pin 2-3 for at least 30 seconds (while the system is OFF), then place the jumper back to pin 1-2 for normal operation.

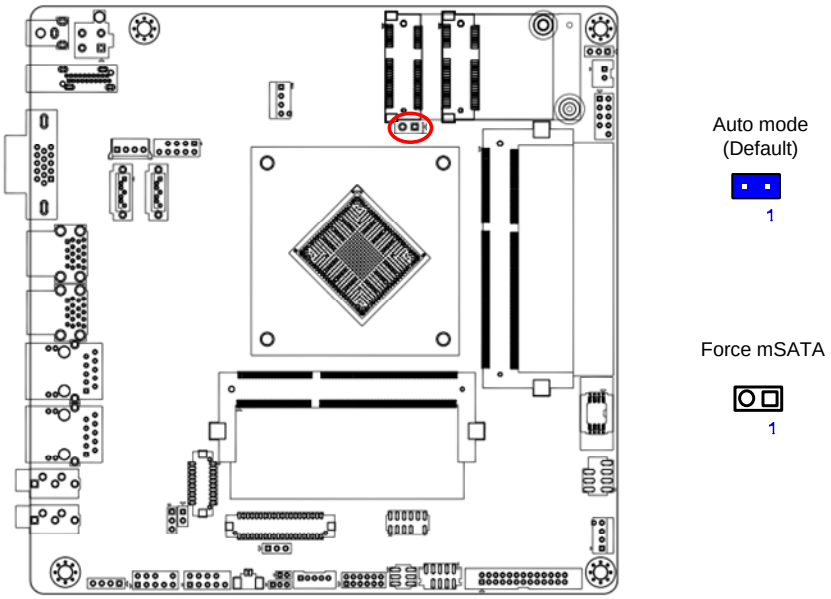
2. Avoid clearing the CMOS while the system is ON; this may damage the mainboard.

1.10.3 COM1 Ring-In/ +12V/ +5V Select: JCOMPWR1



1.10.4 mSATA Mode Select: JSATA1

Remove this jumper only when there is trouble for BIOS to detect the installed mSATA device on connector "MINI_CARD1".



1.11 The Expansion Slots

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

Make sure to unplug the power cord before adding or removing expansion cards. Fail to do so may cause injury and damage mainrboard

1.11.1 Installation of Expansion Card

To install an expansion Card:

1. Before install the expansion card, read the documentation that came with it and make the necessary hardware setting for the card.
2. Remove the chassis cover (if the mainboard is installed in a chassis).
3. Remove the expansion slot bracket from the chassis on the slot that you intend to use. Keep the screw for later use.
4. Align the card connector with the slot and press it firmly until the card is completely seated on the slot.
5. Secure the card to the chassis with the screw that have been removed earlier (in step 3).
6. Place the chassis cover back on.

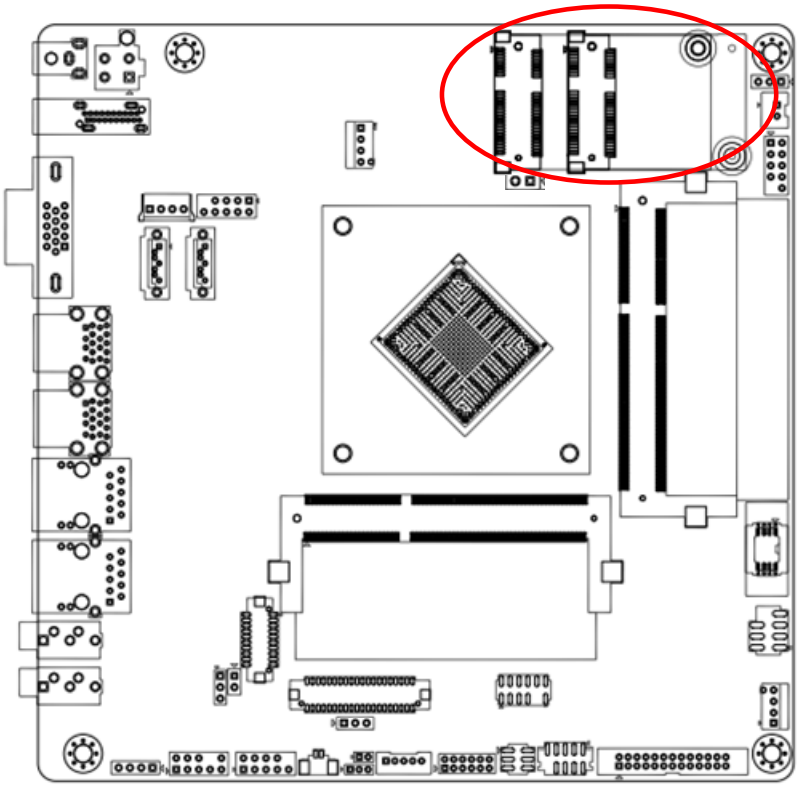
1.11.2 Setup An Expansion Card

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

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

1.11.3 Mini PCI Express Slot: MINI_CARD1, MINI_CARD2

The mini PCI express slot supports Mini cards for Wifi, Bluetooth, COM, USB modules, and other cards that comply with the mini card rev. 1.2 specifications.



For example, the full size mSATA card that can be installed on a miniPCI express slot “MINI_CARD1”.

The half size wifi card can be installed on the miniPCI express slot “MINI_CARD2”.

1. **Due to the “SATA2” port is sharing the same SATA channel with miniPCI slot “MINI_CARD1”, only either one of them can be use. DO NOT use the “SATA2” port and “MINI_CARD1” slot at the same time.**
2. **When adding or removing expansion cards, make sure the system power is OFF.**
3. **After the card is installed on the system, make the adjustments under system BIOS if necessary, then install the card driver provided by the card vendor under system OS.**
4. **When using PCI cards on shared slots, ensure that the card driver support “Share IRQ” or the PCI cards do not need IRQ assignments. Otherwise, conflicts will arise between the two PCI groups; marking the system unstable and the card inoperable.**

Chapter 2: Starting Up the System

2.1 Starting Up Your System

1. After all connections are made, close your computer case cover.
2. Be sure all the switches are off, and check that the power supply input voltage is set to the local voltage, usually in-put voltage is 220V~240V or 110V~120V depending on your country's voltage used.
3. Connect the power supply cord into the power supply located on the back of your system case according to your system user's manual.
4. Turn on your peripheral in following order:
   a. Your monitor.
   b. Other external peripheral (Printer, Scanner, External Modem etc…)
   c. Your system power. For ATX power supplies, you need to turn on the power supply and press the ATX power switch on the front side of the case.
5. The power LED on the front panel of the system case will light. The LED on the monitor may light up or switch between orange and green after the system is on. If it complies with green standards or if it is has a power standby feature. The system will then run power-on test. While the test are running, the BIOS will alarm beeps or additional message will appear on the screen.

   If you do not see any thing within 30 seconds from the time you turn on the power. The system may have failed on power-on test. Recheck your jumper settings and connections or call your retailer for assistance.

Beep	**Meaning**
One short beep when displaying logo	No error during POST
Long beeps in an endless loop	No DRAM install or detected
One long beep followed by three short beeps	Video card not found or video card memory bad
High frequency beeps when system is working	CPU overheated System running at a lower frequency

6. During power-on, press <Del> key to enter BIOS setup. Follow the instructions in BIOS SETUP.
7. If you wish to boot from a different bootable device other than the default arrangement under the BIOS, you may press <F11> key during the system power-on (post); a menu with all detected bootable devices which are attached to the system will be displayed. Then you may select the desired first bootable device from this menu.

8. **Power off your computer:** You must first exit or shut down your operating system before switch off the power switch. If you use Windows Operating Systems, click **“Start”** button, click **“Shut down”** and then click **“Shut down the computer”** The power supply should turn off after windows shut down.

Chapter 3: BIOS Setup

3.1 BIOS Flash Related Procedure

1. **After the BIOS is flashed, shut down the system.**
2. **Disconnect all power connections from power supply to the mainboard.**
3. **Clear the CMOS (For at least 30 seconds).**
4. **Reconnect all power connections from power supply to the mainboard.**
5. **When the system is booting at first time after the new BIOS is flashed, it is recommended to enter the BIOS; load the option "Load Optimized Defaults", and then "Save and Exit Setup".**

IF ANY OF THE ABOVE STEPS IS NOT FOLLOWED, IT MAY CAUSE THE FLASHED BIOS NOT FUNCTION PROPERLY.

3.2 Introducing BIOS

The BIOS is a program located on a Flash Memory on the motherboard. This program is a bridge between motherboard and operating system. When you start the computer, the BIOS program gains control. The BIOS first operates an auto-diagnostic test called POST (power on self test) for all the necessary hardware, it detects the entire hardware device and configures the parameters of the hardware synchronization. Only when these tasks are completed done it gives up control of the computer to operating system (OS). Since the BIOS is the only channel for hardware and software to communicate, it is the key factor for system stability, and in ensuring that your system performance as its best.

In the BIOS Setup main menu of Figure 3-1, you can see several options. We will explain these options step by step in the following pages of this chapter, but let us first see a short description of the function keys you may use here:

- Press <Esc> to quit the BIOS Setup.
- Press ↑↓←→ (up, down, left, right) to choose, in the main menu, the option you want to confirm or to modify.
- Press <F10> when you have completed the setup of BIOS parameters to save these parameters and to exit the BIOS Setup menu.
- Press Page Up/Page Down or +/– keys when you want to modify the BIOS parameters for the active option.

3.3 Entering BIOS Setup Menu

Power on the computer and by pressing <DEL> immediately allows you to enter BIOS Setup Menu.

If you are not able to enter the BIOS menu but you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the “RESET” button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt> and <Delete> keys.

The items under each BIOS category described in this chapter are under continuous update for better system performance. Therefore, the description may be slightly different from the latest BIOS and should be held for reference only.

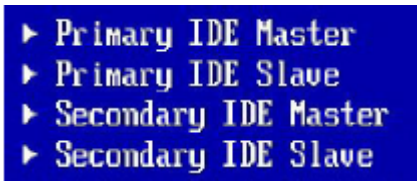
3.4 Getting Help

Main Menu

The main menu lists the setup functions you can make changes to. You can use the arrow keys to select the item. The on-line description of the highlighted setup function is displayed at the bottom of the screen.

Sub- Menu

If you find a right pointer symbol (as shown in the picture below) appears to the left of certain fields that means a sub-menu can be launched from this field. A sub-menu contains additional options for a field parameter. You can use arrow keys to highlight the field and press <Enter> to call up the sub-menu. Then you can use the control keys to enter values and move from field to field within a sub-menu. If you want to return to the main menu, just press the <ESC>.

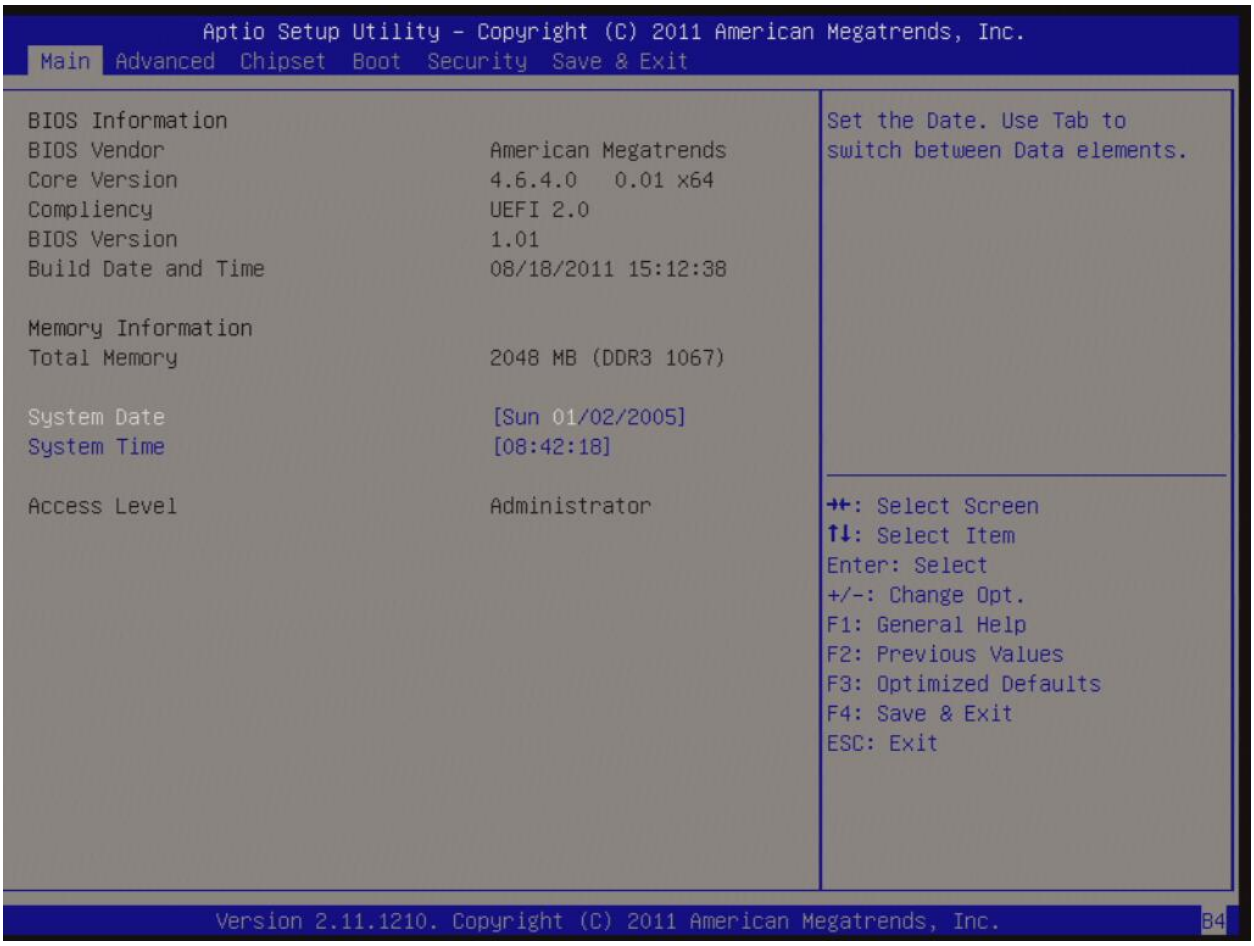


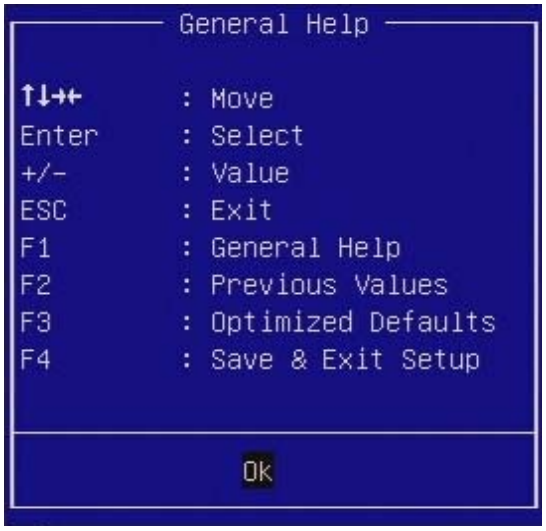
General Help <F1>

The BIOS setup program provides a General Help screen. You can call up this screen from any menu by simply pressing <F1>. The Help screen lists the appropriate keys to use and the possible selections for the highlighted item. Press <Esc> to exit the Help screen.

3.5 BIOS Menu Screen

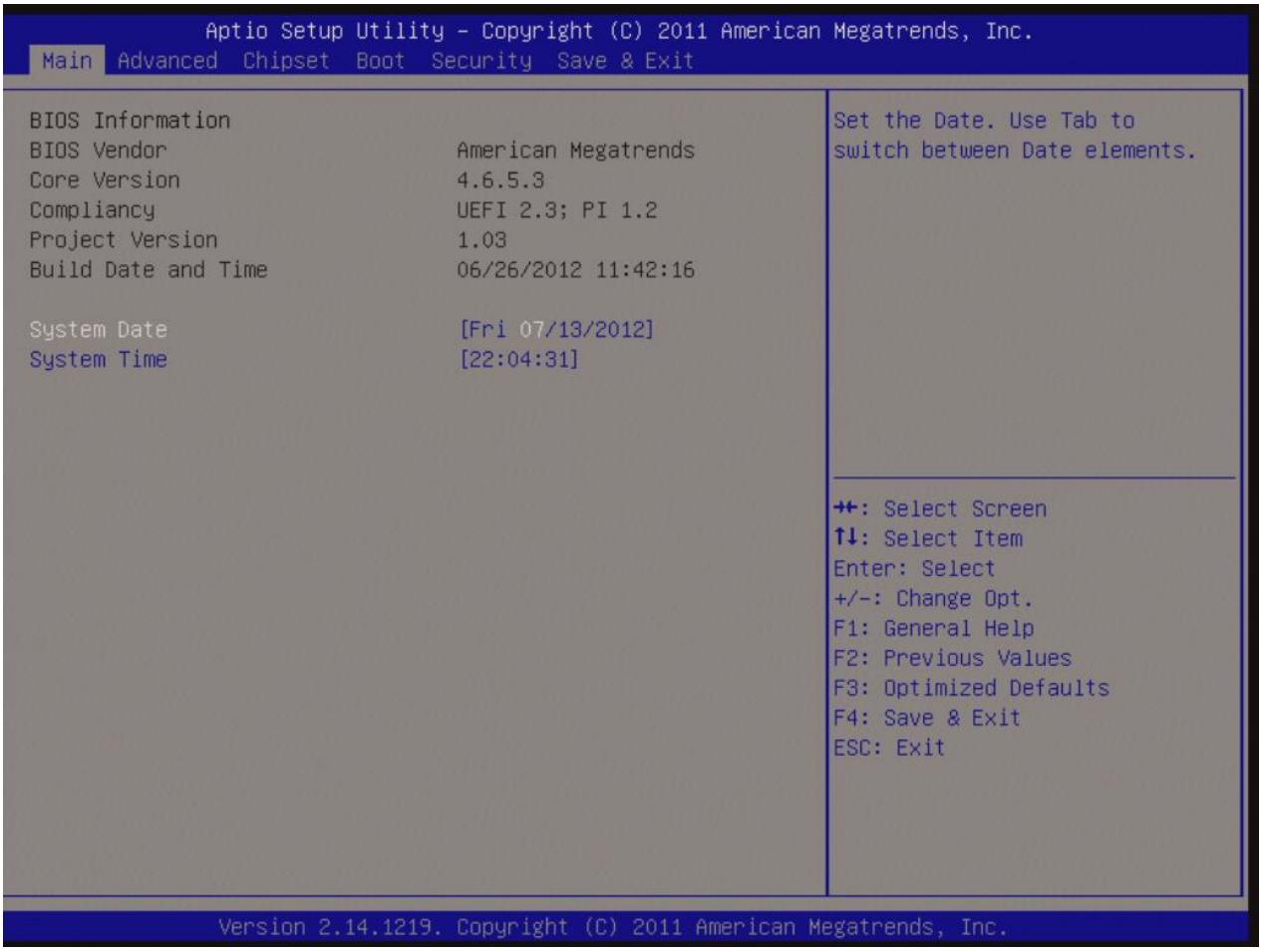
When entering the BIOS, the following screen appears. The BIOS menu screen displays the items that allow user to make changes to the system configuration. To access the menu items, press the up/down/right/left arrow key on the keyboard until the desired item is highlighted, then press [Enter] to access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





3.6 Main Menu

This menu gives user an overview of the general system specifications, such as time, date etc.



• BIOS Information

Displays the auto-detected BIOS information.

• System Date

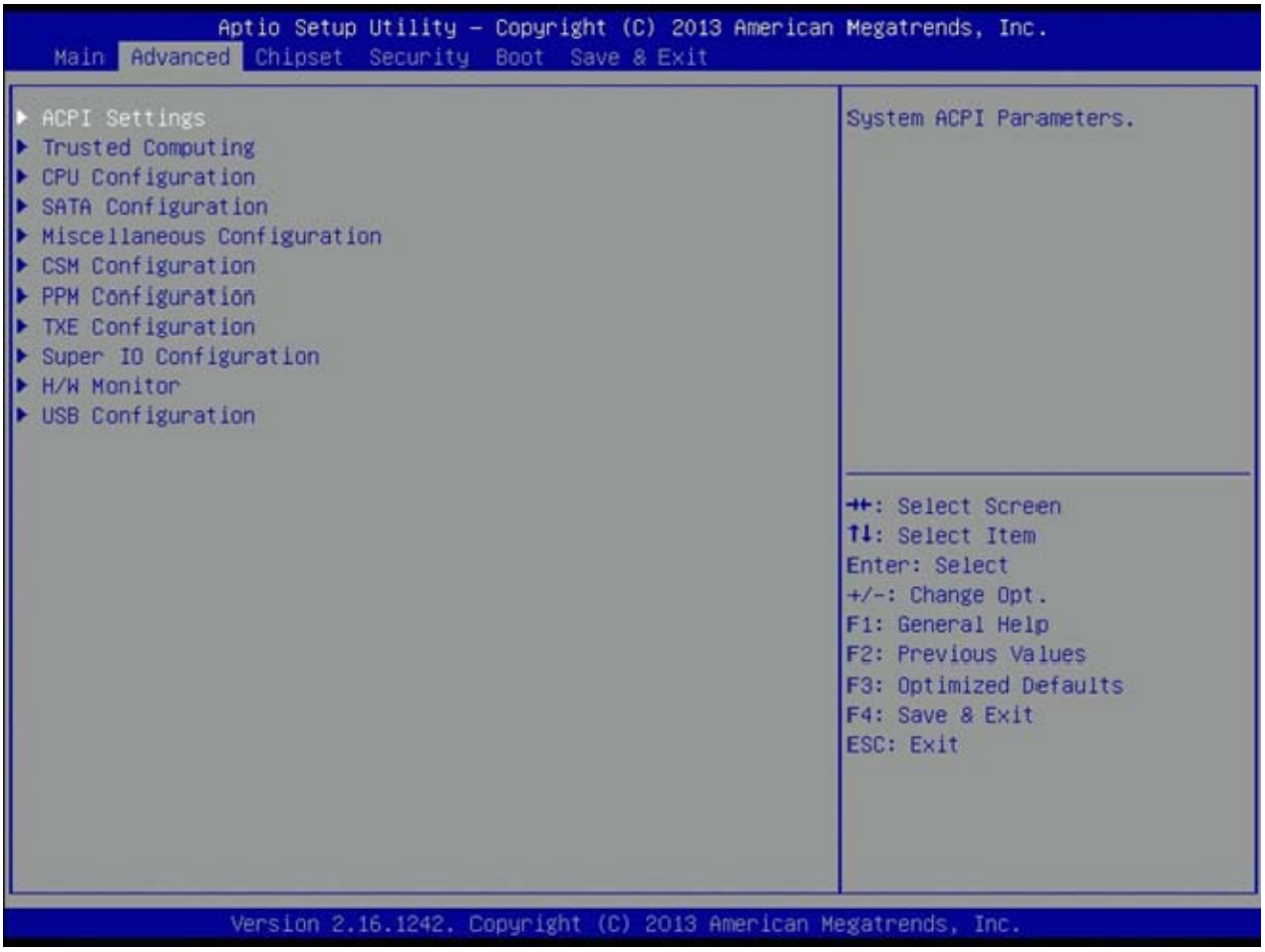
The date format is <Date>,<Month>,<Day>,<Year>.

• System Time

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

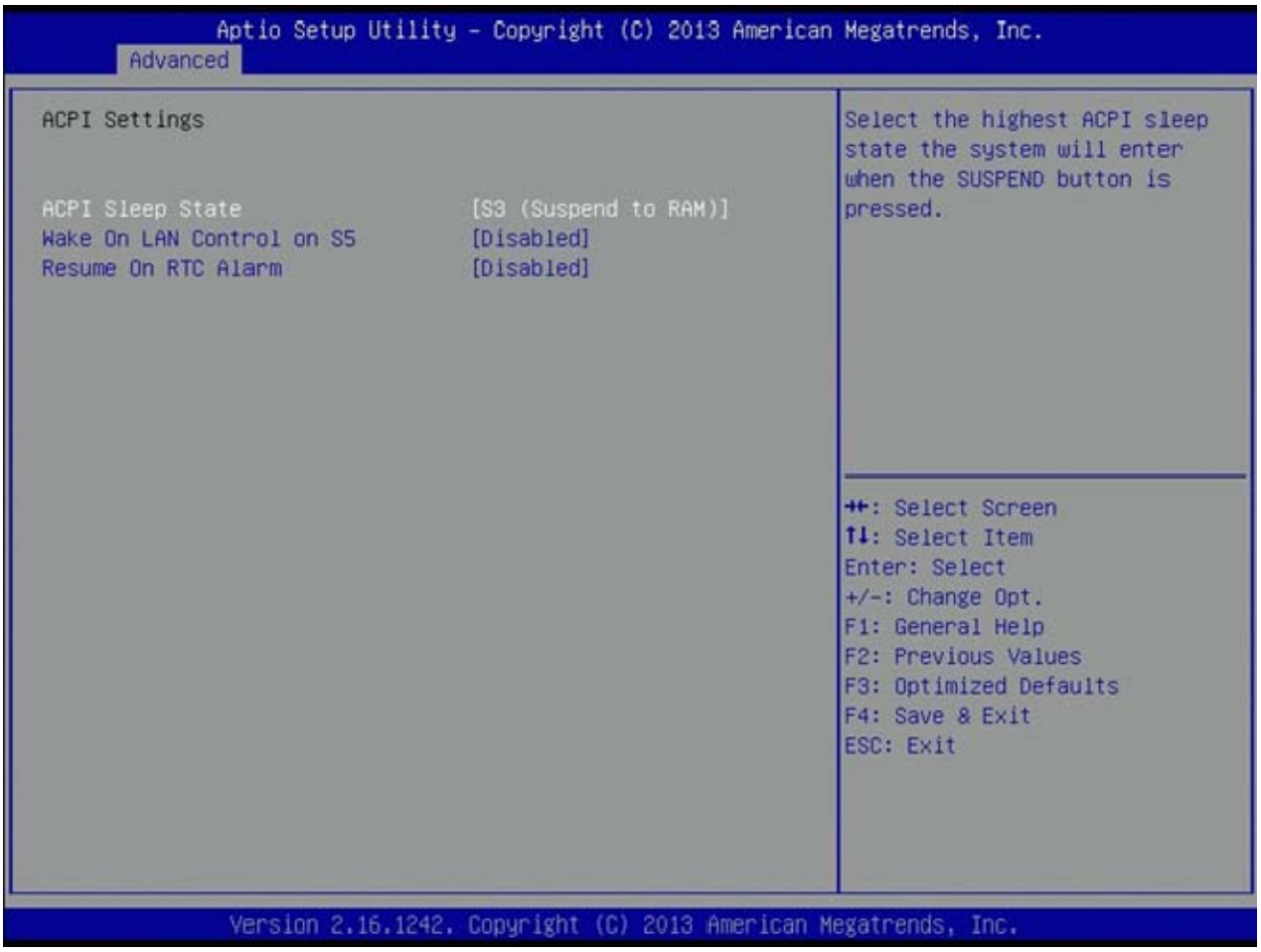
3.7 Advanced Menu

Select the “Advanced” tab from the BIOS menu screen to enter the Advanced BIOS Setup screen.



NOTE: Take caution when change the settings of the Advanced menu items. Incorrect field values can cause the system not to function properly.

3.7.1 ACPI Settings



• ACPI Sleep State [S3 (suspend to RAM)]

Select the highest ACPI sleep state the system will enter when the system entered suspend state.

Configuration options: [Suspend Disabled], [S3 (suspend to RAM)]

• Wake On LAN Control on S5 [Disable]

Enable /Disable WOL function under ACPI S5 State.

Configuration options: [Disabled], [Enabled]

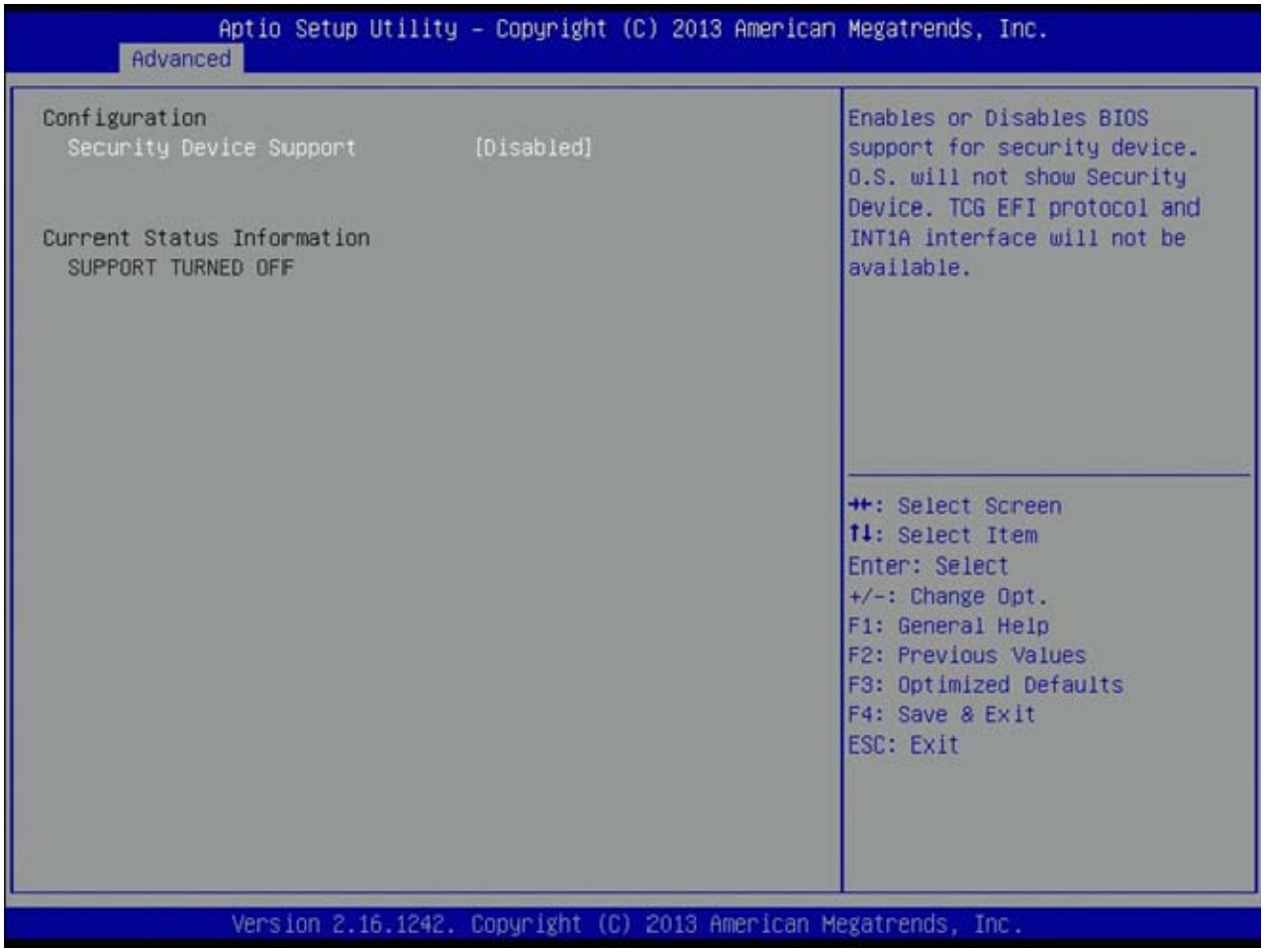
• Resume On RTC Alarm [Disabled]

Enable or disable system wake on alarm event. When enabled, system will wake upon the hr/min/sec specified.

Configuration options: [Disabled], [Enabled]

3.7.2 Trusted Computing

Trusted computing (TPM) settings.



• Security Deice Support [Disabled]

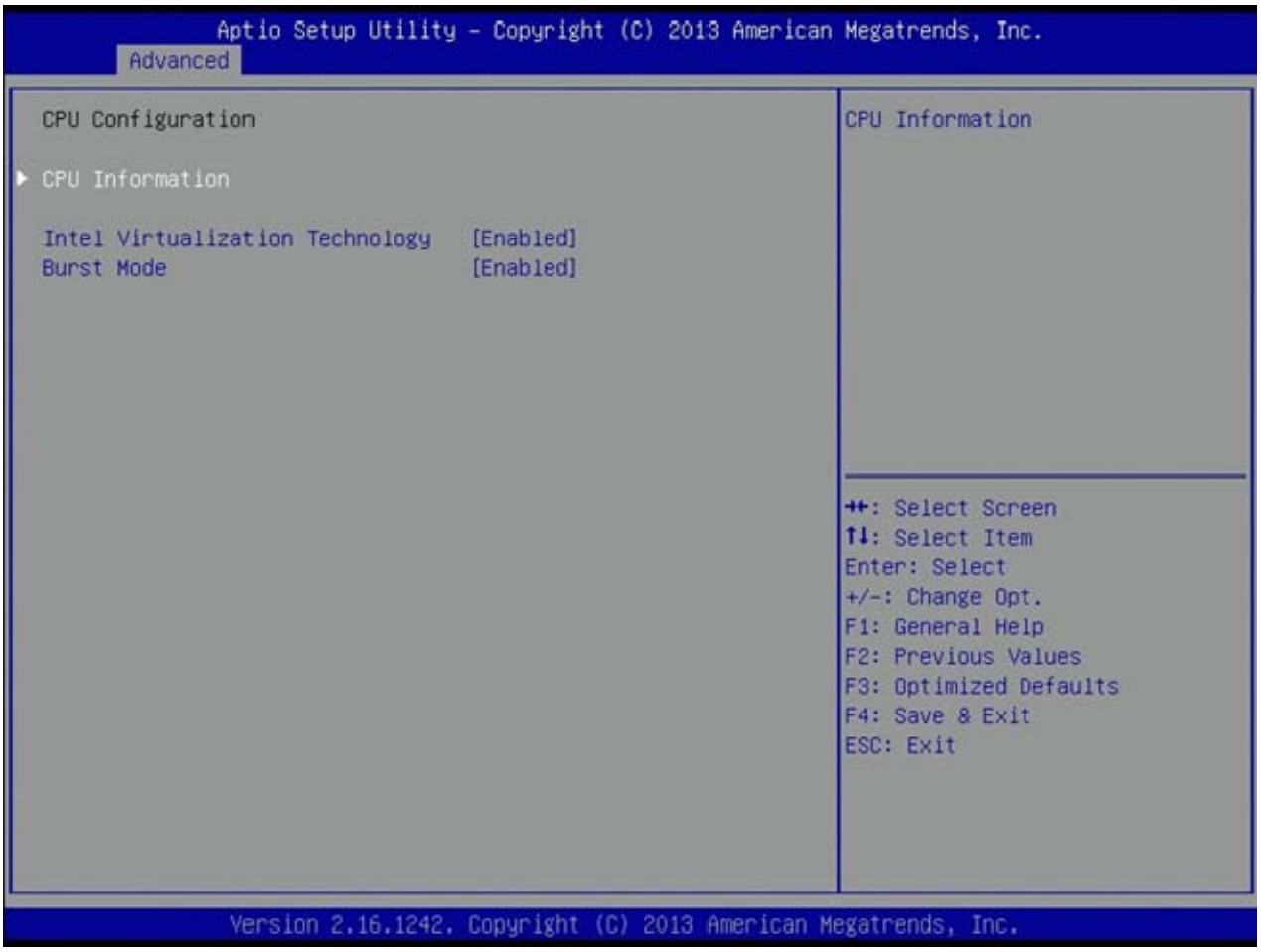
Enable or disable TPM support.

Configuration options: [Disabled], [Enabled]

• Current Status Information

Displays the TPM status information [SUPPORT TURNED OFF]

3.7.3 CPU Configuration



• CPU configuration

Displays the CPU information

• Intel Virtualization Technology [Enabled]

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

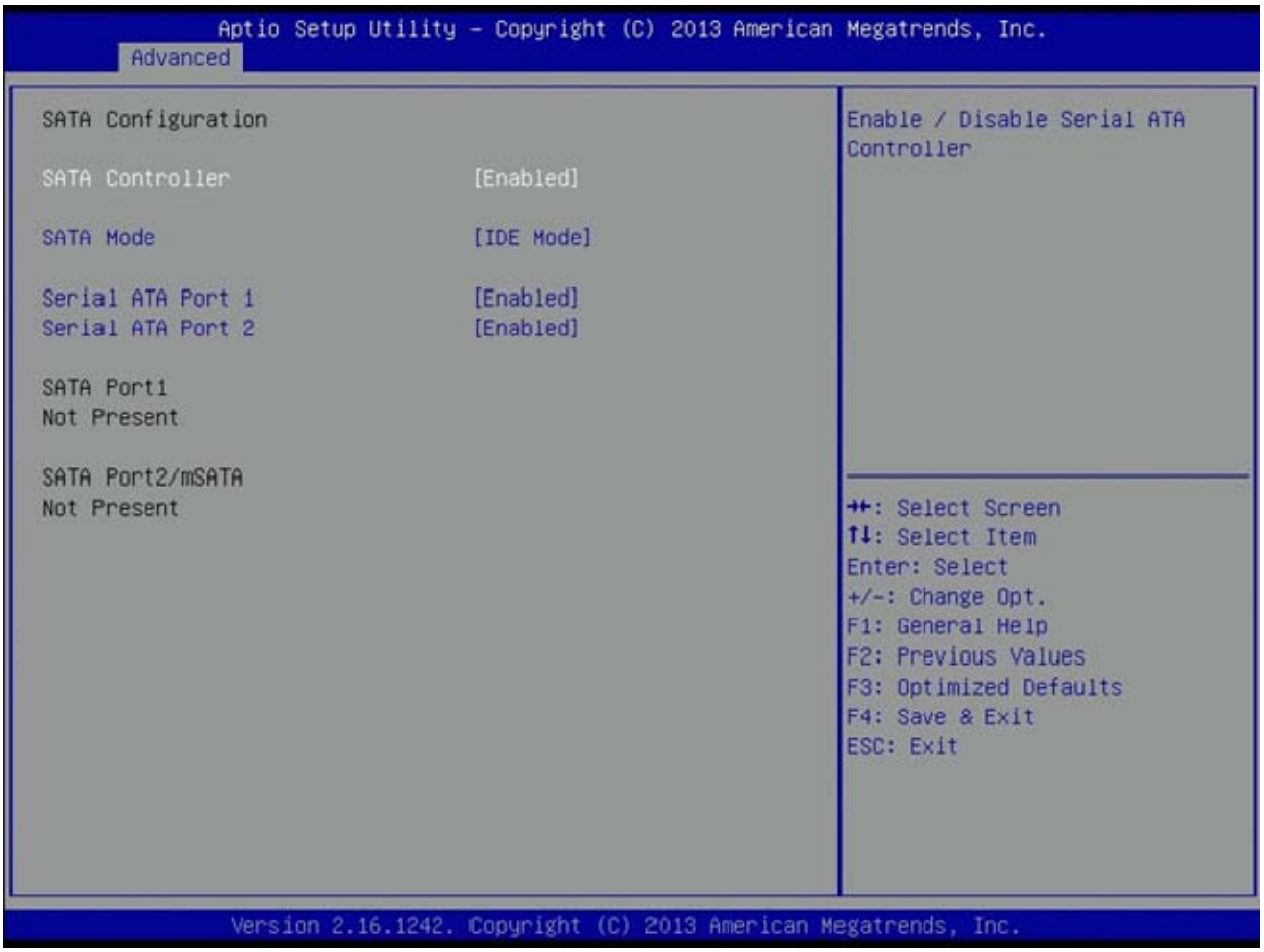
Configuration options: [Disabled], [Enabled]

• Burst Mode [Enabled]

Enable/ Disable Intel® Burt Mode.

Configuration options: [Disabled], [Enabled]

3.7.4 SATA Configuration



• SATA Controller(s) [Enabled]

Enable/ Disable Serial ATA Controller.

Configuration options: [Disabled], [Enabled]

• SATA Mode [IDE Mode]

Support IDE, AHCI modes

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

• Serial ATA Port 1 [Enabled]

Enable/ Disable Serial ATA Port 1

Configuration options: [Disabled], [Enabled]

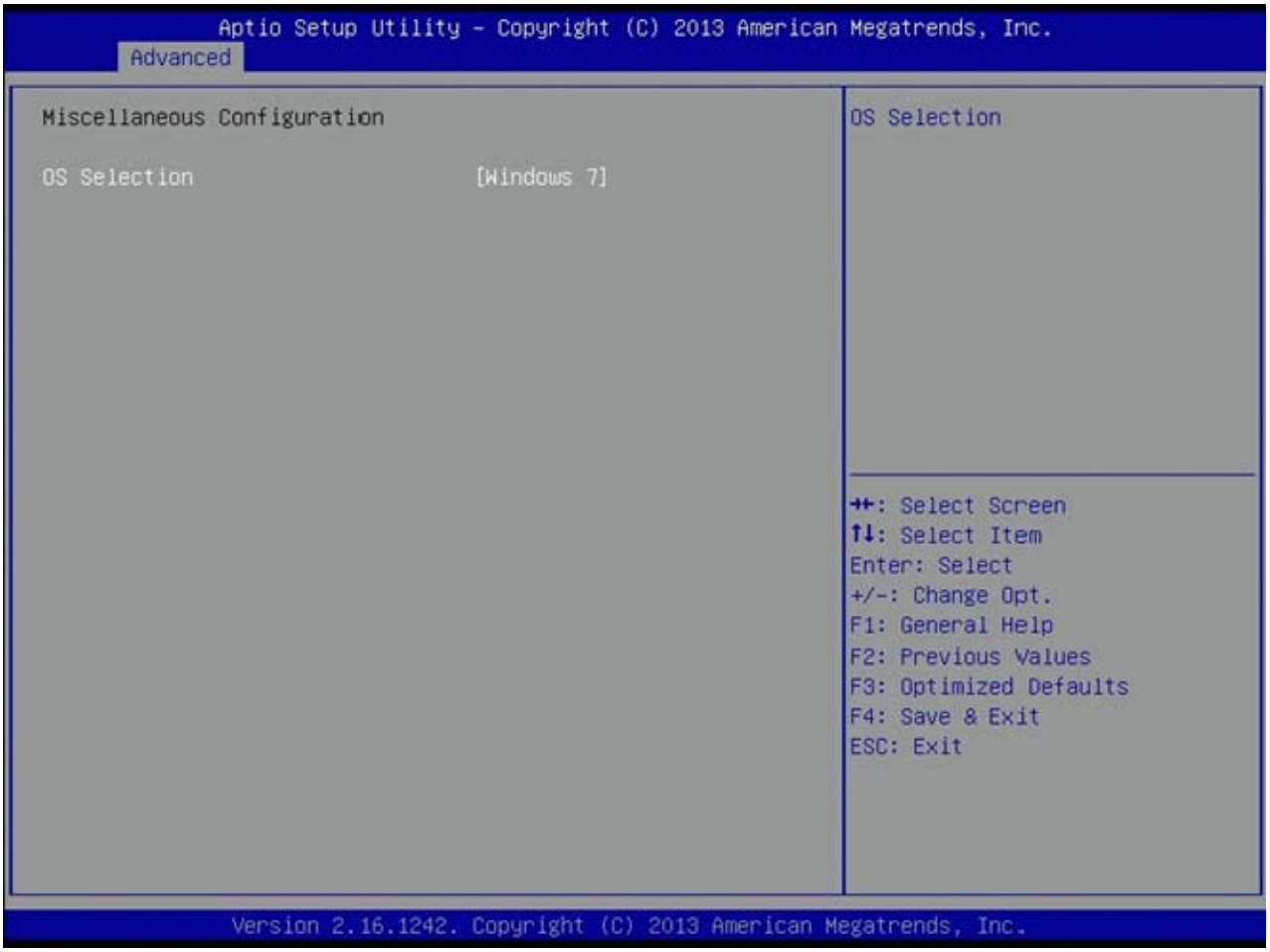
• **Serial ATA Port 1 [Enabled]**

Enable/ Disable Serial ATA Port 1

Configuration options: [Disabled], [Enabled]

3.7.5 Miscellaneous Configuration

Set the optimized BIOS settings by selecting the intended to be installed Windows OS.

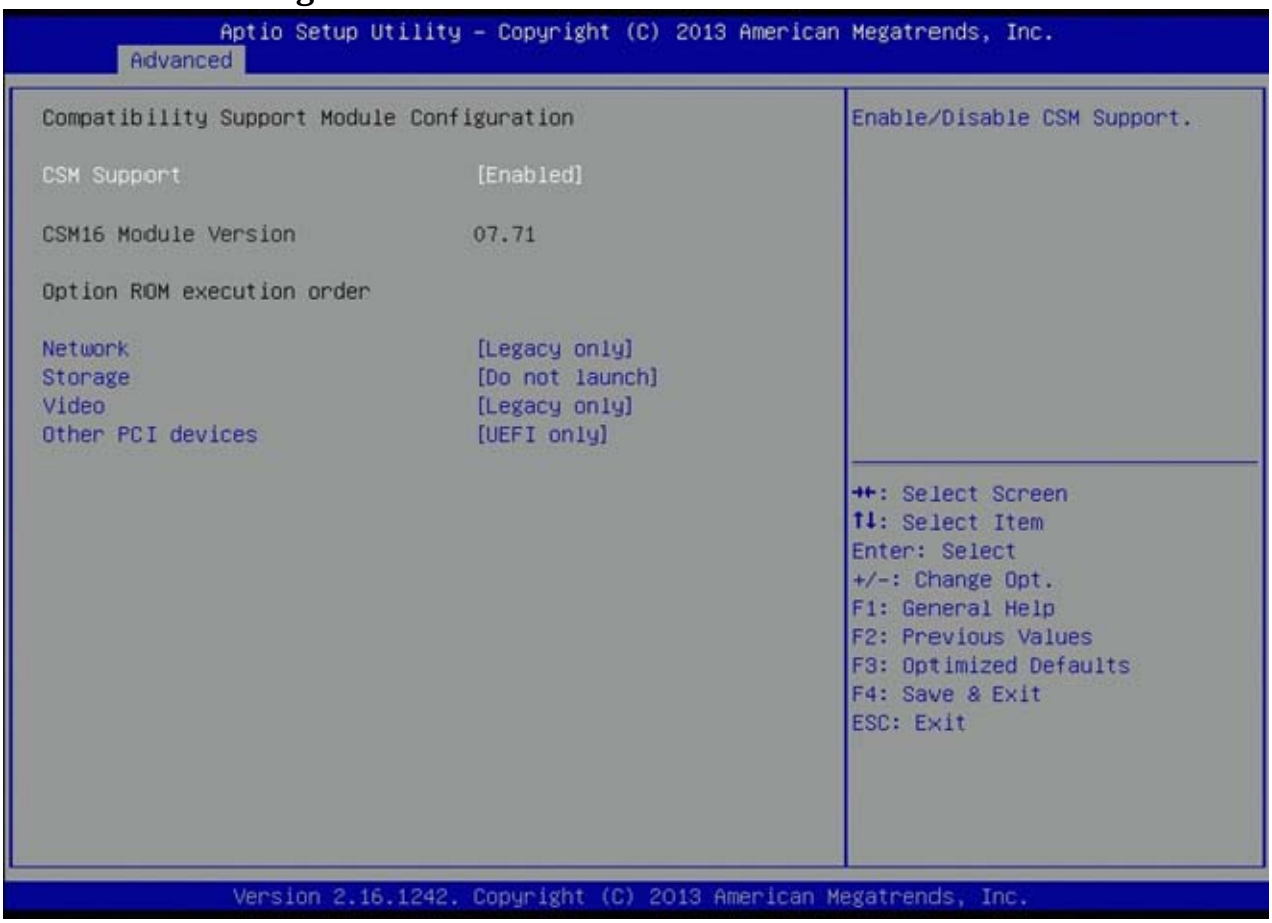


• OS Selection [Windows 7]

Optimized BIOS Setting for Windows 8.x or Windows 7.

Configuration options : [Windows 8.X], [Windows 7]

3.7.6 CSM Configuration



• CSMSupport [Enabled]

Enable/ Disable Compatibility Support Module Configuration.

Configuration options: [Disabled], [Enabled]

• Network [Legacy only]

Controls the execution of UEFI or Legacy PXE OpROM.

Configuration options: [Legacy only], [UEFI only], [Do not launch]

• Storage [Do not launch]

Controls the execution of UEFI or Legacy Storage OpROM

Configuration option: [Legacy only], [UEFI only], [Do not launch]

• Video [Legacy only]

Controls the execution of UEFI or Legacy Video OpROM

Configuration option: [Legacy only], [UEFI only], [Do not launch]

• **Other PCI devices [UEFI only]**

Determines OpROM execution policy for devices other than Network, Storage, or Video

Configuration option: [Legacy only], [UEFI only]

3.7.7 PPM Configuration

• CPU C State Report [Enabled]

Enable/ Disable CPU C state report to OS.

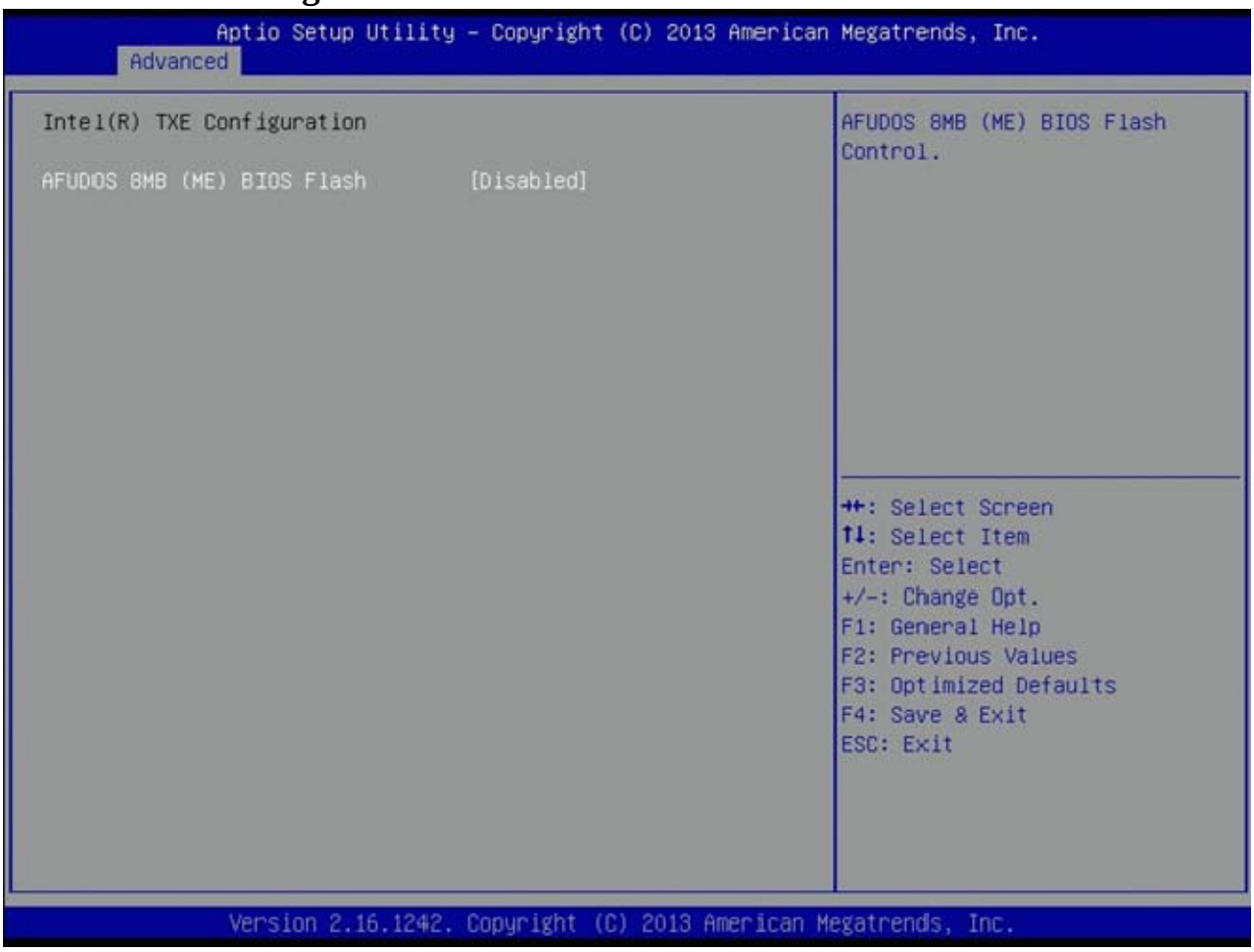
Configuration options: [Disabled], [Enabled]

• Max CPU C-state [C1]

This option controls Max C state that the processor will support.

Configuration options: [C7], [C6], [C1]

3.7.8 TXE Configuration

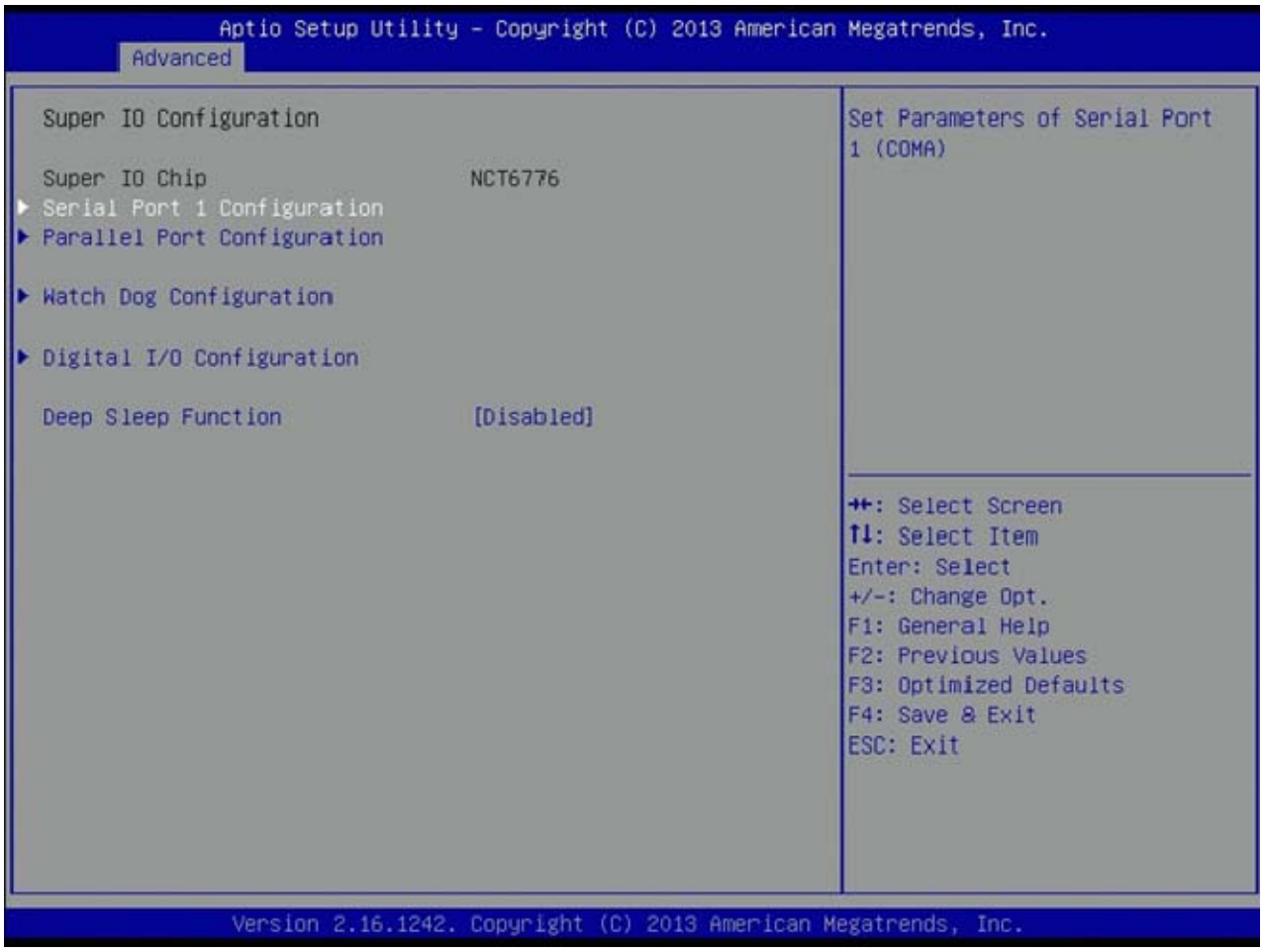


• AFUDOS 8MB (ME) BIOS Flash [Disabled]

Enable this option when update the BIOS through AFUDOS utility with 8MB version BIOS.

Configuration options: [Disabled], [Enabled]

3.7.9 Super IO Configuration

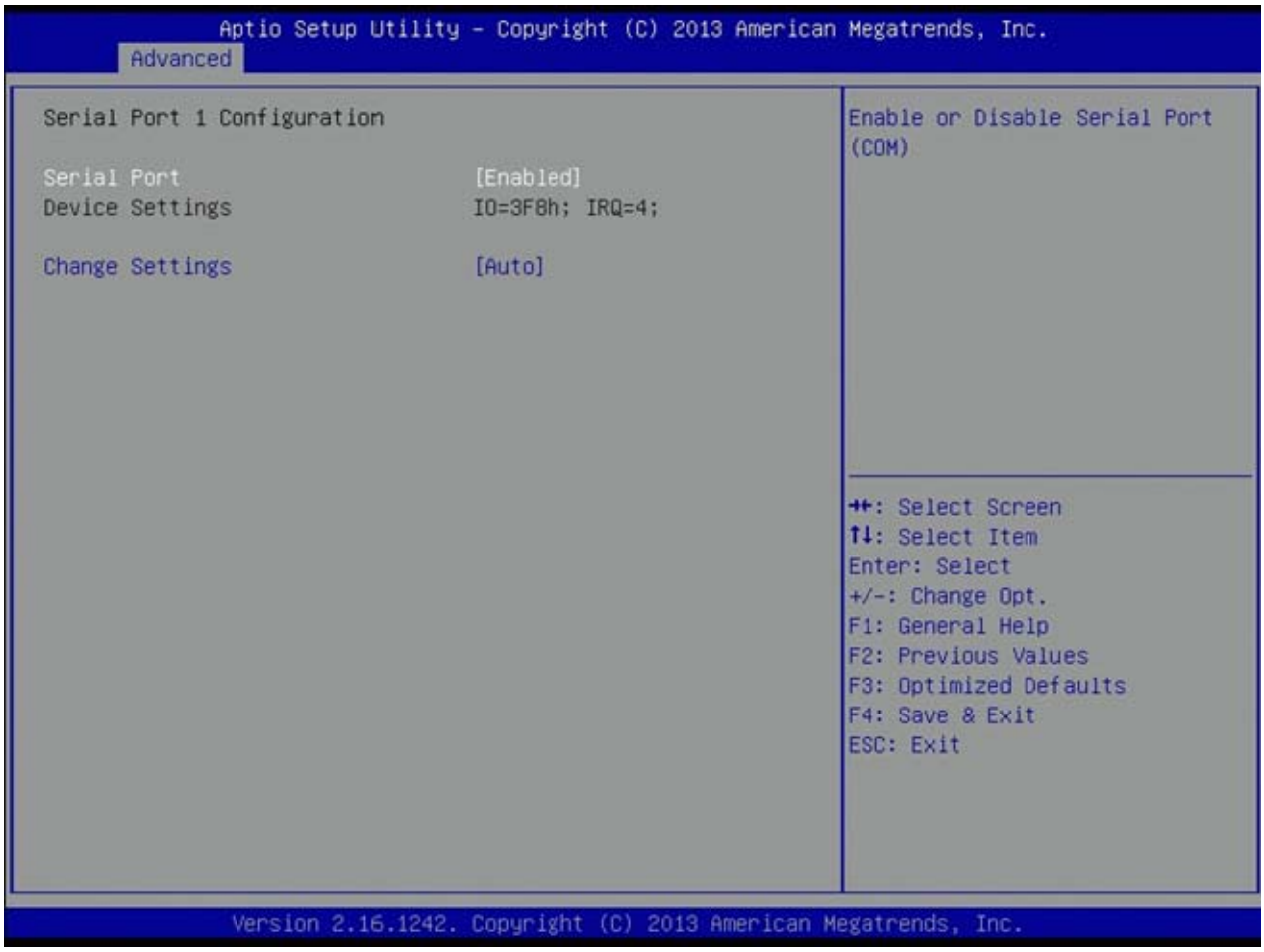


• Dep Sleep Function [Disabled]

Select to enable/ disable Deep Sleep S5 function. When selected the enabled option, only the power button can power on the system.

Configuration options: [Disabled], [Enabled]

3.7.9.1 Serial Port 1 Configuration



• Serial Port [Enabled]

Enable or Disable Serial Port (COM).

Configuration options: [Disabled], [Enabled]

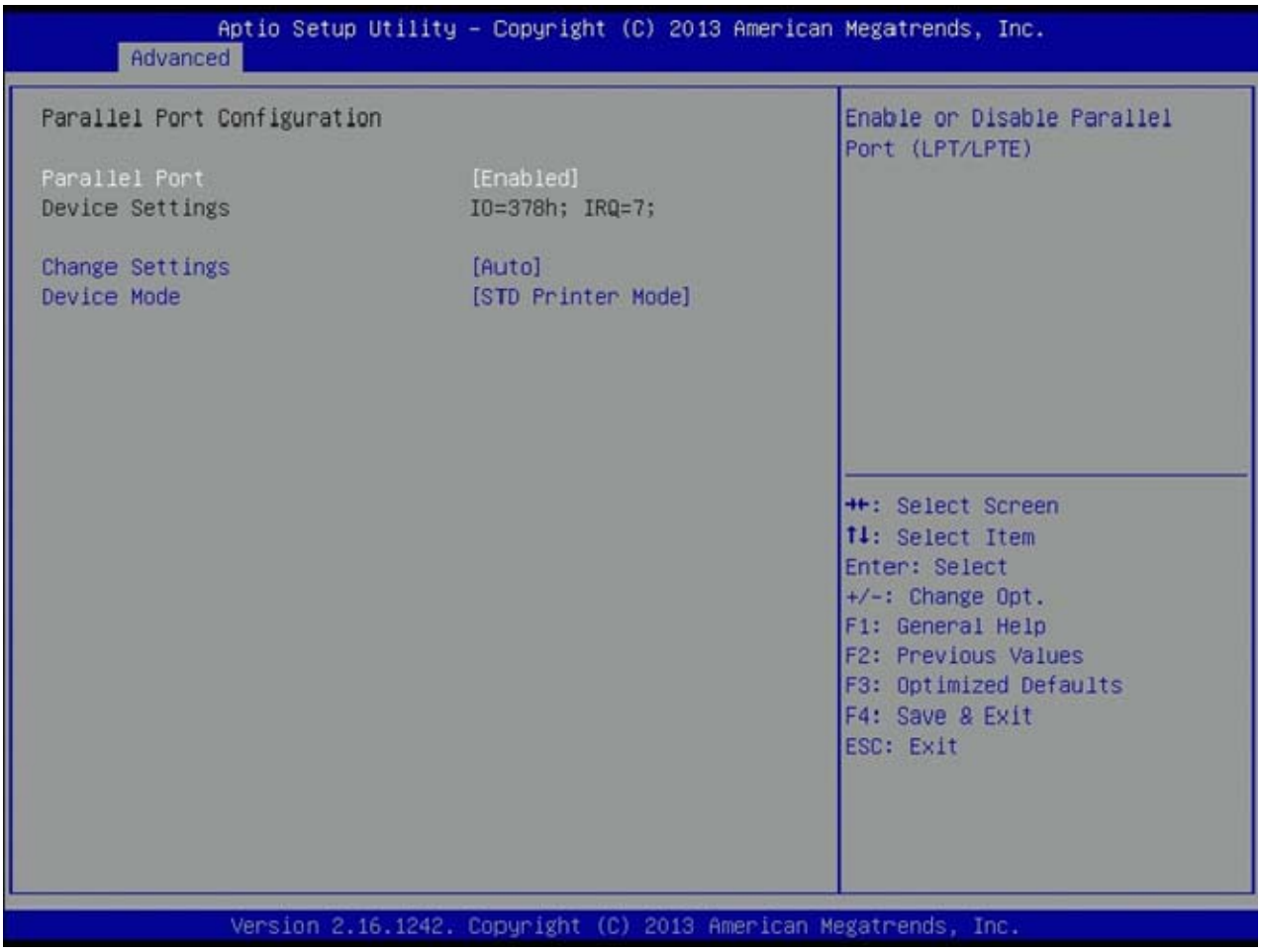
• Device Setting [IO=3F8h; IRQ=4]

• 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]

3.7.9.2 Parallel Port Configuration



• Parallel Port [Enable]

Use this item to enable or disable the onboard parallel port.

Configuration options: [Disabled], [Enabled]

• Change Settings [Auto]

Use this item to select an optional setting for Super IO device.

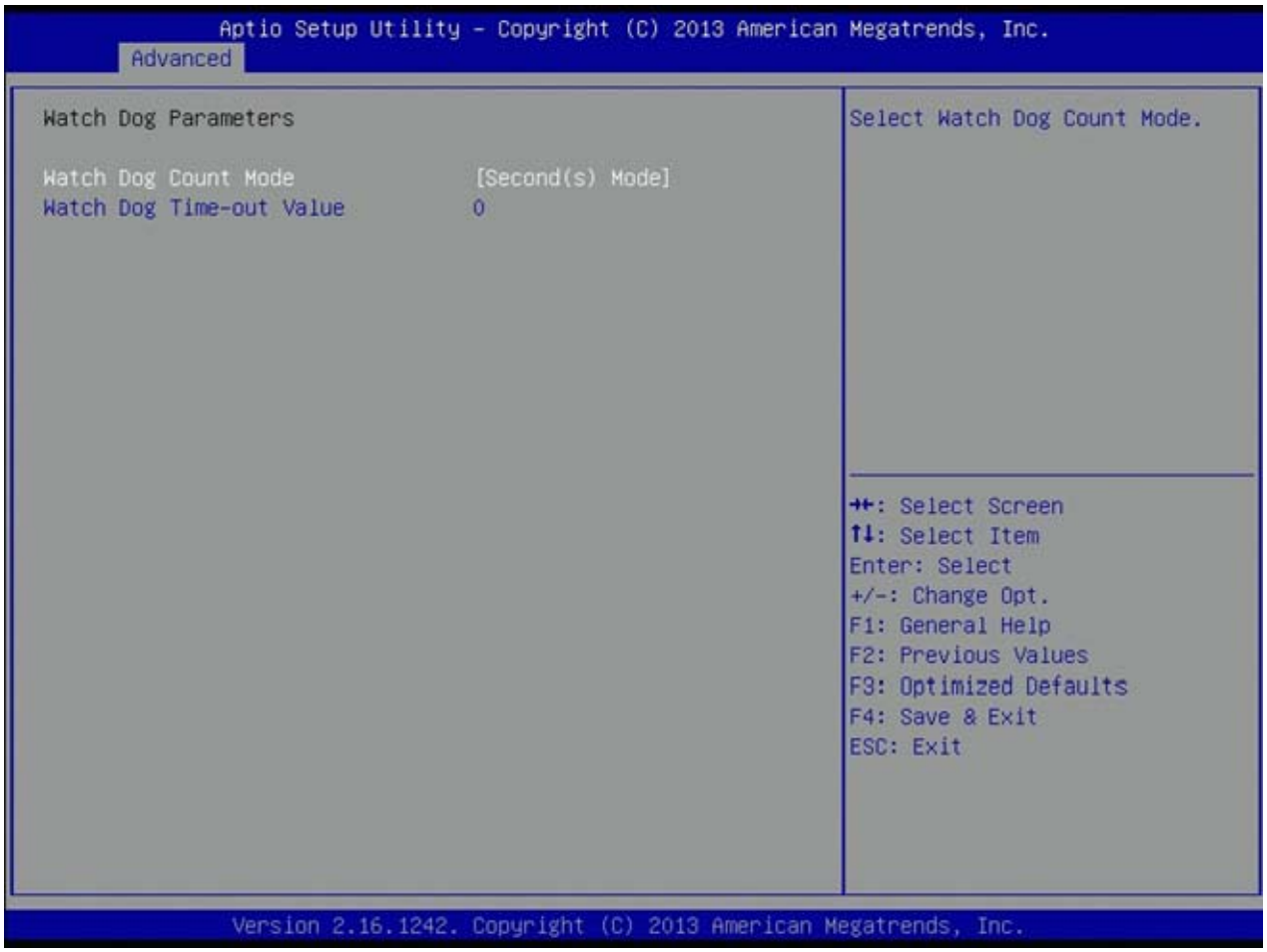
Configuration Options : [Auto], [IO=378h; IRQ=7], [IO=378h; IRQ=5,6,7,9,10,11,12], [IO=278h; IRQ=5,6,7,9,10,11,12], [IO=3BCh; IRQ=5,6,7,9,10,11,12]

• Device Mode [STD Printer Mode]

Use this item to 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 Mode and EPP-1.9 Mode], [ECP Mode and EPP-1.7 Mode]

3.7.9.3 Watch Dog Configuration



• Watch Dog Count Mode [Second(s) Mode]

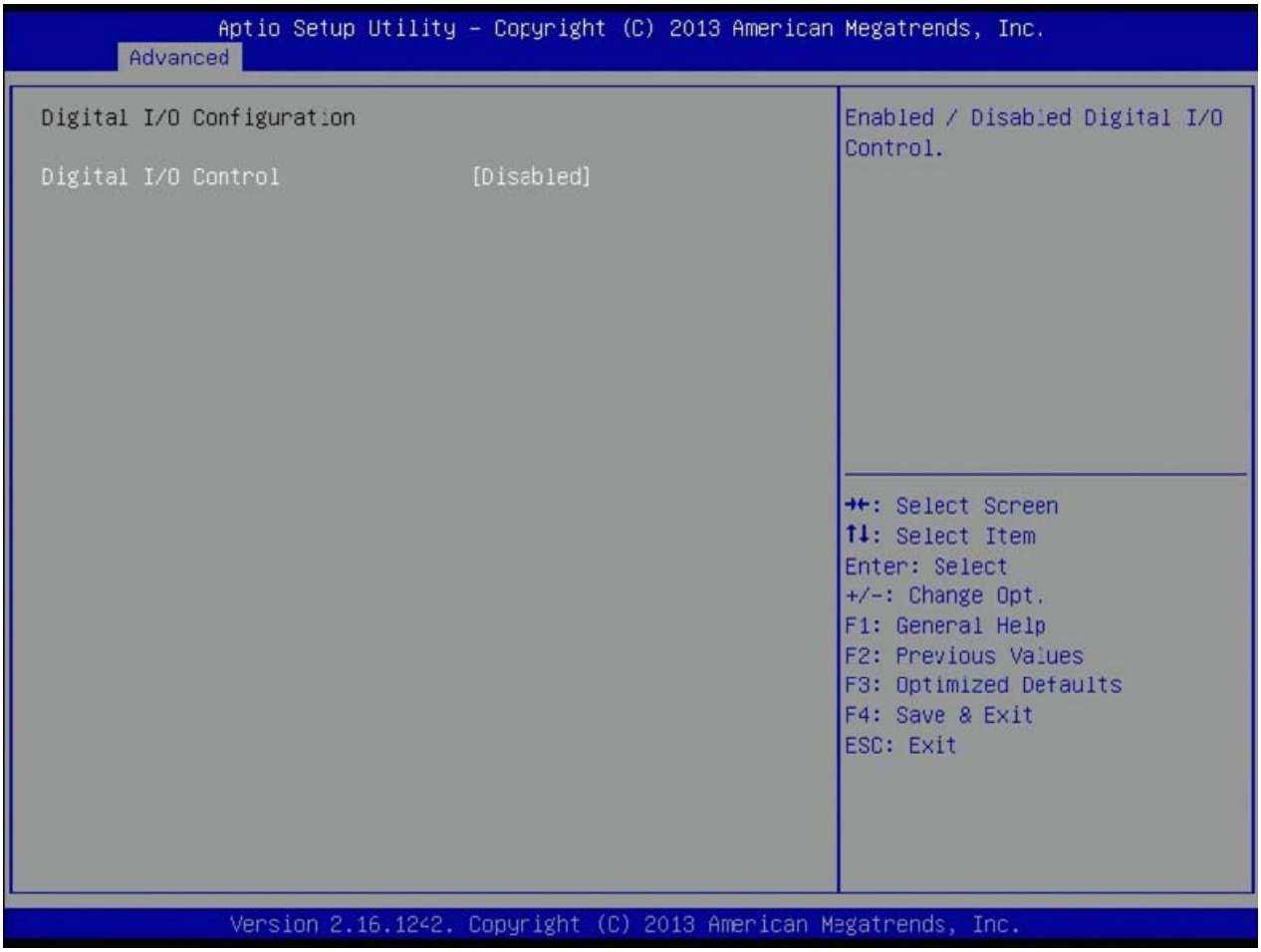
Select Watch Dog Count Mode

Configuration options: [Second(s) Mode], [Minute(s) Mode]

• Watch Dog Time-out Value [0]

Timer will start to count from end of Post. 00-Timeout Disable

3.7.9.4 Digital I/O Configurtaion



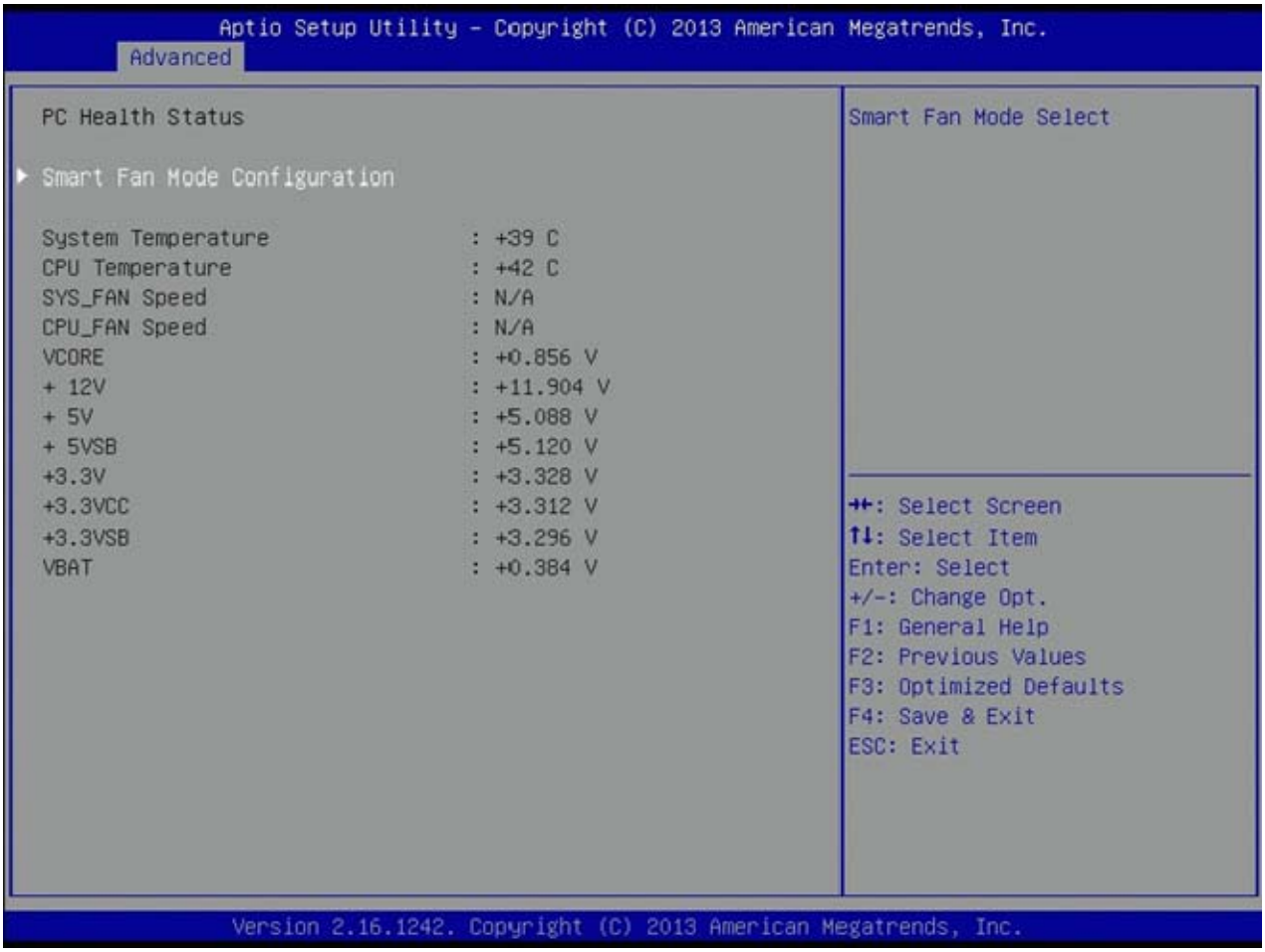
• Digital I/O Control [Disabled]

Enabled/ Disabled Digital I/O Control

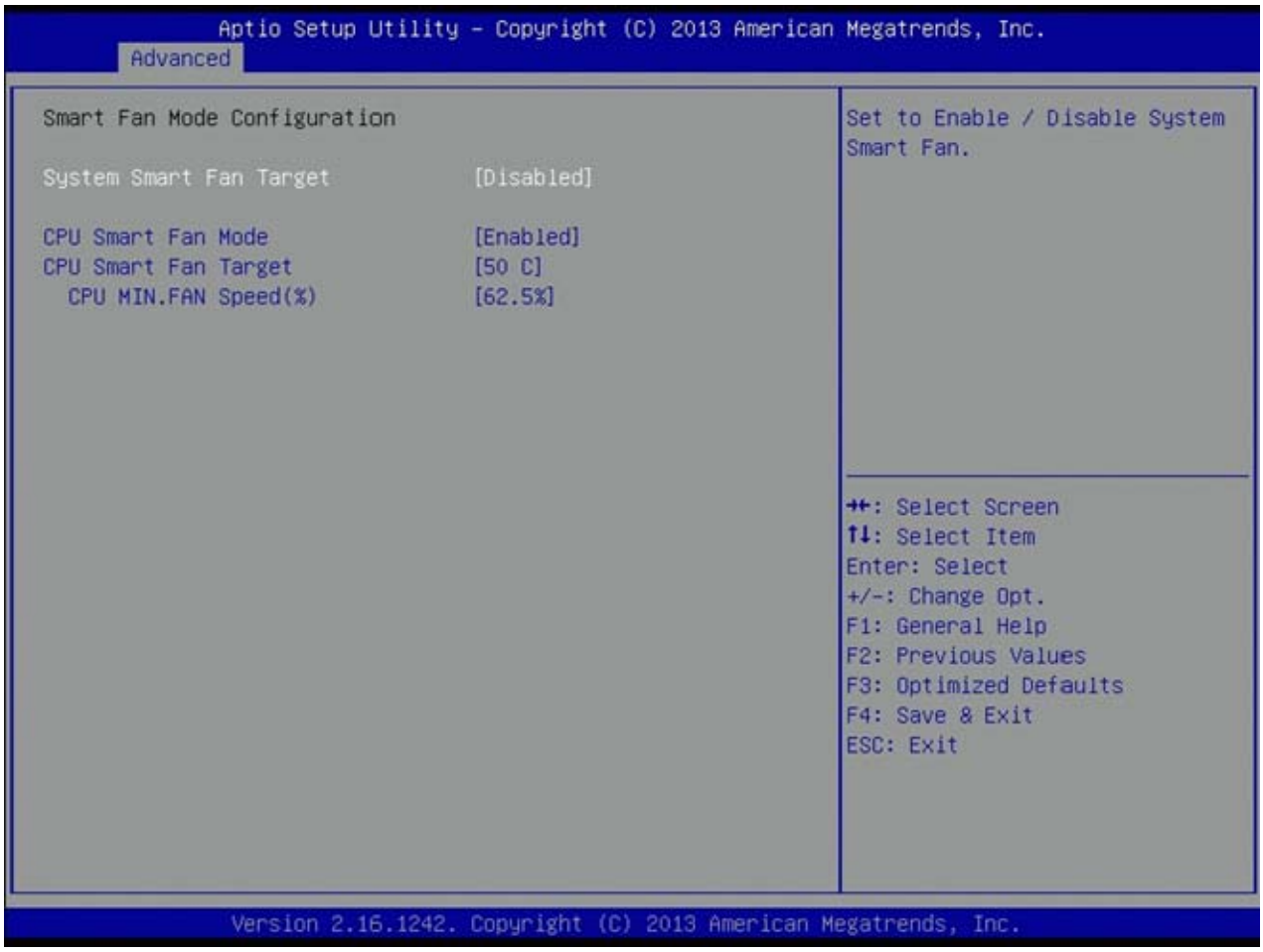
Configuration options: [Disabled], [Enabled]

3.7.10 Hardware Monitor

Display system health status



3.7.10.1 Smart Fan Mode Configuration



•System Smart Fan Target [Enabled]

Set to Enable/ Disable system Smart Fan.

Configuration options: [Disabled], [Enabled]

Once enabled, the available configuration options for minimum system fan speed: [Disabled], [12.5%], [25%], [37.5%], [50%], [62.5%], [75%], [87.5%]

• CPU Smart Fan Function [Enabled]

Set to Enable/ Disable CPU Smart Fan.

Configuration options: [Disabled], [Enabled]

• CPU Smart Fan Target [50C]

Set CPU Smart Fan Target Temperature

Configuration options: [40C], [45C], [50C], [55C], [60C], [65C], [70C]

• CPU MIN. Fan Speed (%) [62.5%]

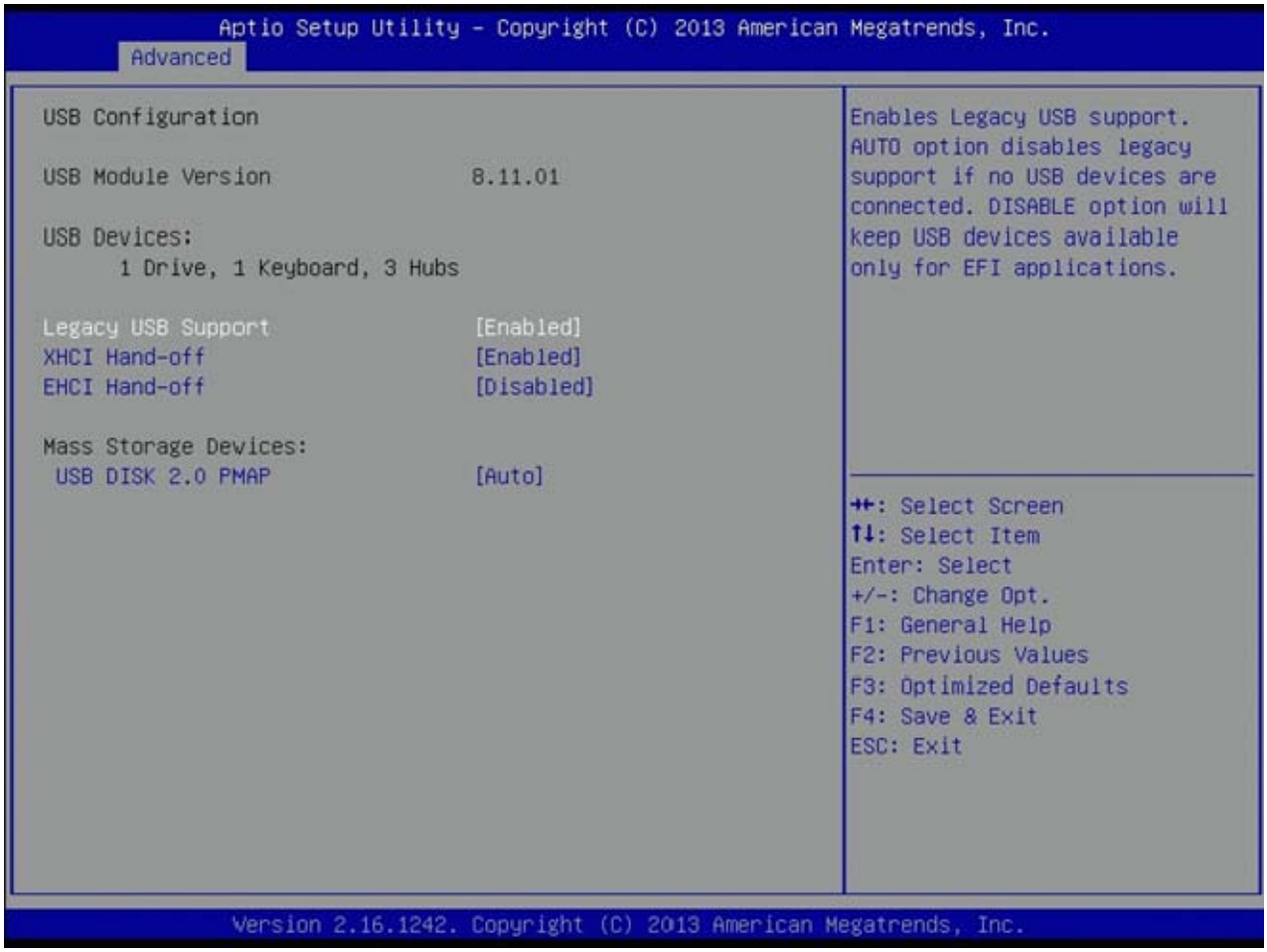
CPU Smart Fan minimum speed settings.

Configuration options: [12.5%], [25%]. [37.5%], [50%], [62.5%], [75%], [87.5%]

1. **In order to take the advantage of the smart fan feature, the fan installed must have 4-pin type connector. The 3-pin type connector can only run the installed fan at maximum speed.**
2. **Some of the low speed fan might have very low fan speed when set the smart fan feature at lower speed (for example, set it at 12.5% or 25%). In some cases, the HW monitor may not be able to track the fan speed and show its speed as 0. You may try to increase the smart fan speed if run into the situation like this.**

3.7.11 USB Configuration

USB Configuration Parameters



• USB Device

Display how many USB devices are connected

• Legacy USB Support [Enabled]

Enables legacy USB support. The “Auto” option disabled legacy support if no USB device is connected. The “Disabled” option will keep USB devices available only for EFI applications.

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

• XHCI Hand-off [Enabled]

This is a wrokaround for the OS without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.

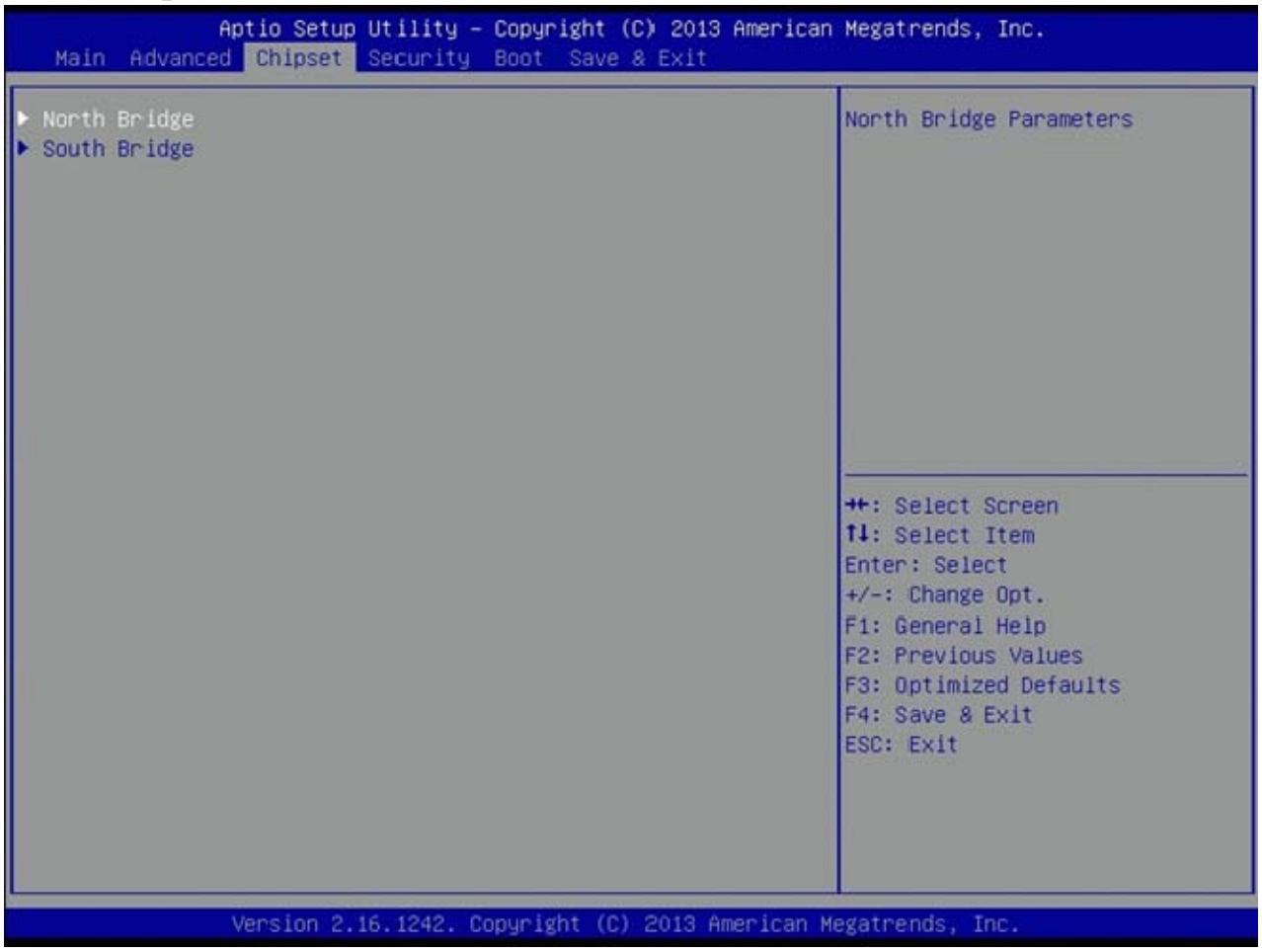
Configuraiton options : [Enabled], [Disabled]

• EHCI Hand-off [Enabled]

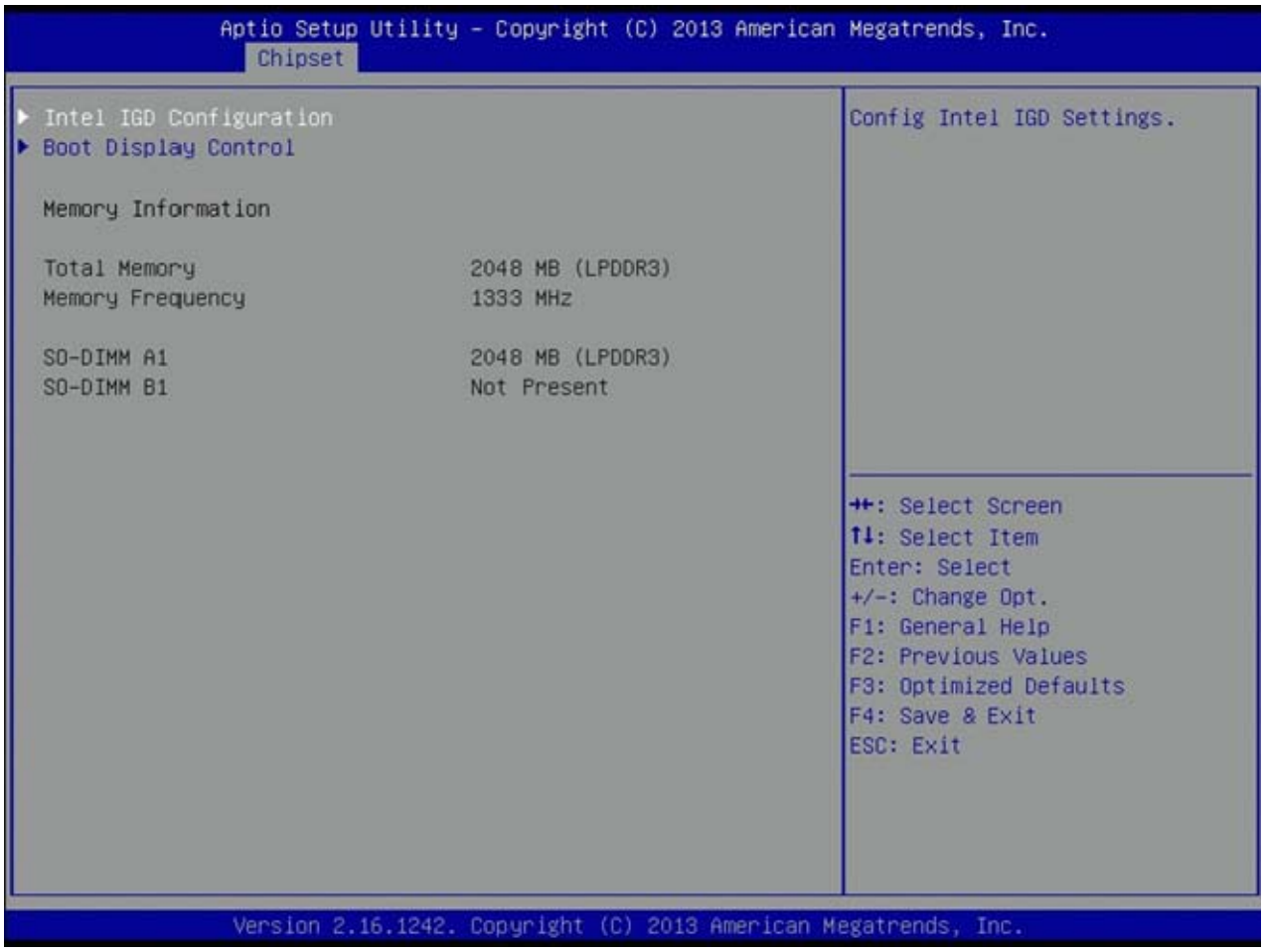
This is a wrokaround for the OS without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver.

Configuraiton options : [Enabled], [Disabled]

3.8 Chipset

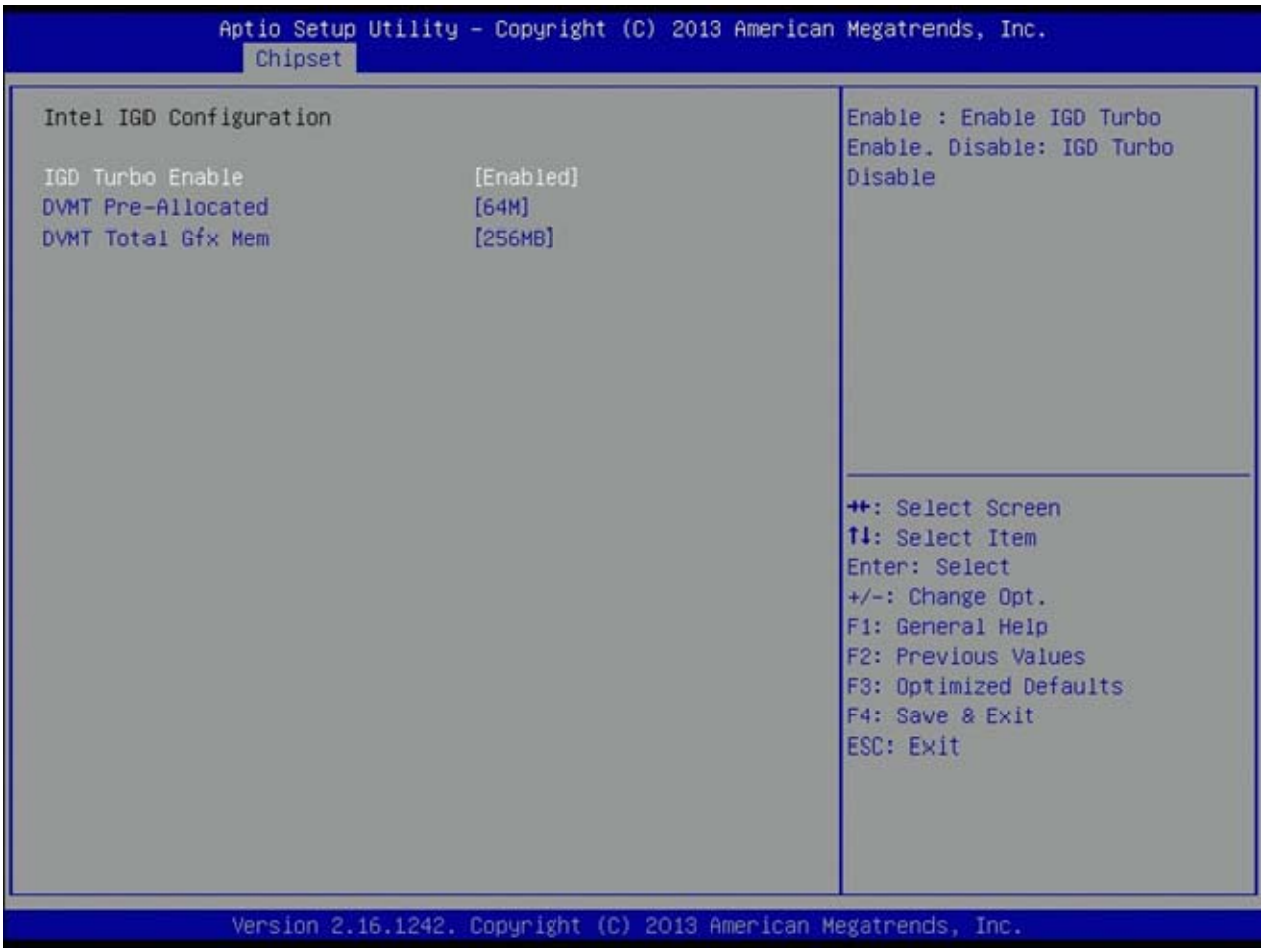

Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Main Advanced Chipset Security Boot Save & Exit
North Bridge
South Bridge
North Bridge Parameters
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.

3.8.1 North Bridge



• Dsplay Memory Information

3.8.1.1 Intel IGD Configuration



• IG Turbo Enable [Enabled]

Enable/Disable IGD Turbo

Configuration options: [Disabled], [Enabled]

• DVMT Pre-Allocated [64M]

Select DVMT 5.0 Pre-Allocated (Fixed) graphics memory size used by the internal graphics device.

Configuration options: [64M]~ [512M]

• DVMT Total Graphics Mem [256M]

Select DVMT 5.0 total graphics memory size used by the internal graphics device.

Configuration options: [128M], [256M], [MAX]

3.8.1.2 Boot Display Control

• Boot Display Selection [VBIOS Default]

Select the video device which will be activated during system post. This feature will be disabled automatically if an external graphic card is installed.

Configuration options: [VBIOS Default], [CRT], [Display port], [eDP/LVDS]

• Enable LVDS Controller [Disabled]

Enable/Disable Chrontel CH7511B

Configuration options: [Disabled], [Enabled]

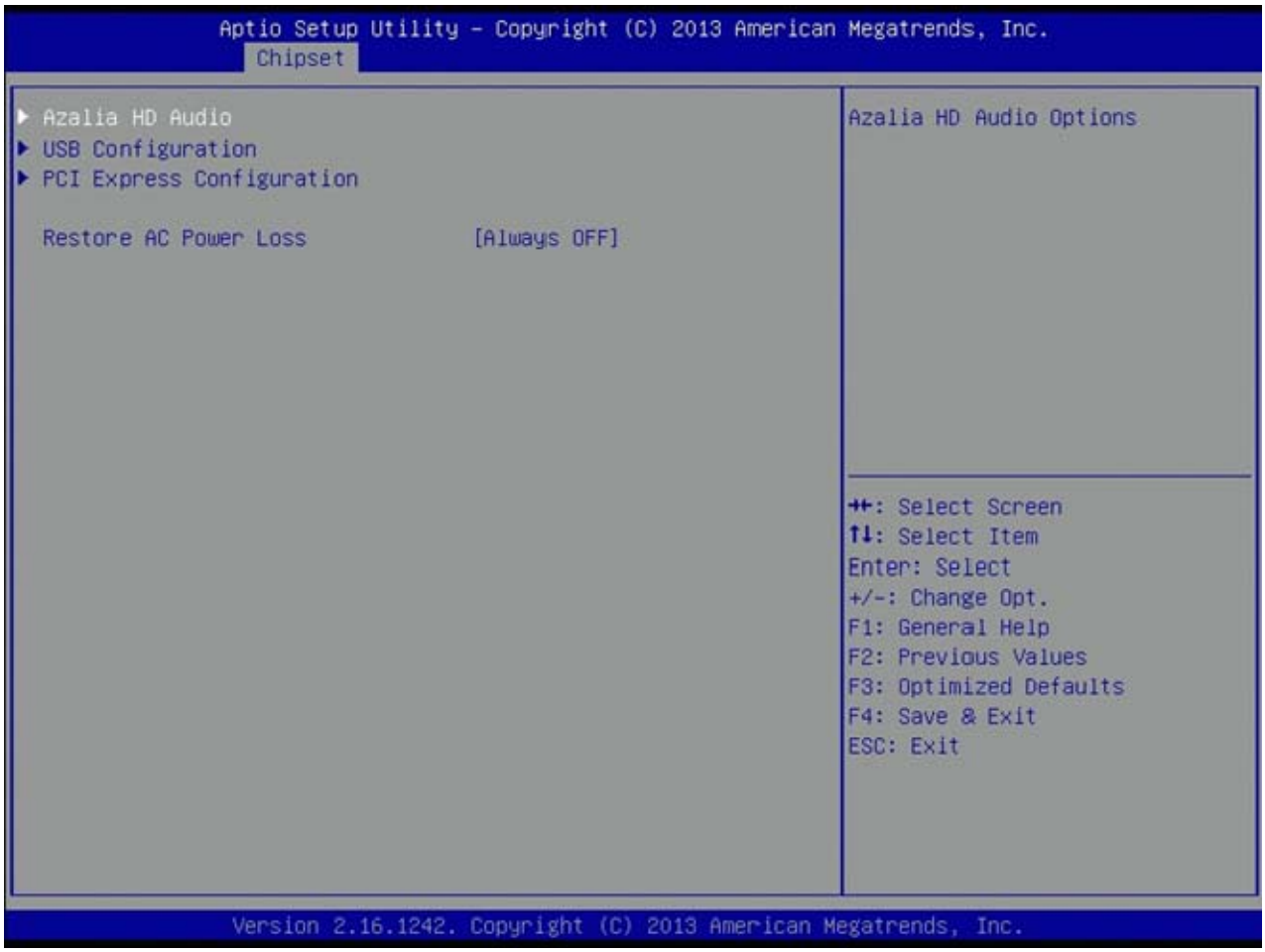
• LCD Panel Type [VBIOS Default]

Select LCD panel resolution.

• LCD Brightness Control [30]

Configuration options [1]~[63]

3.8.2 South Bridge



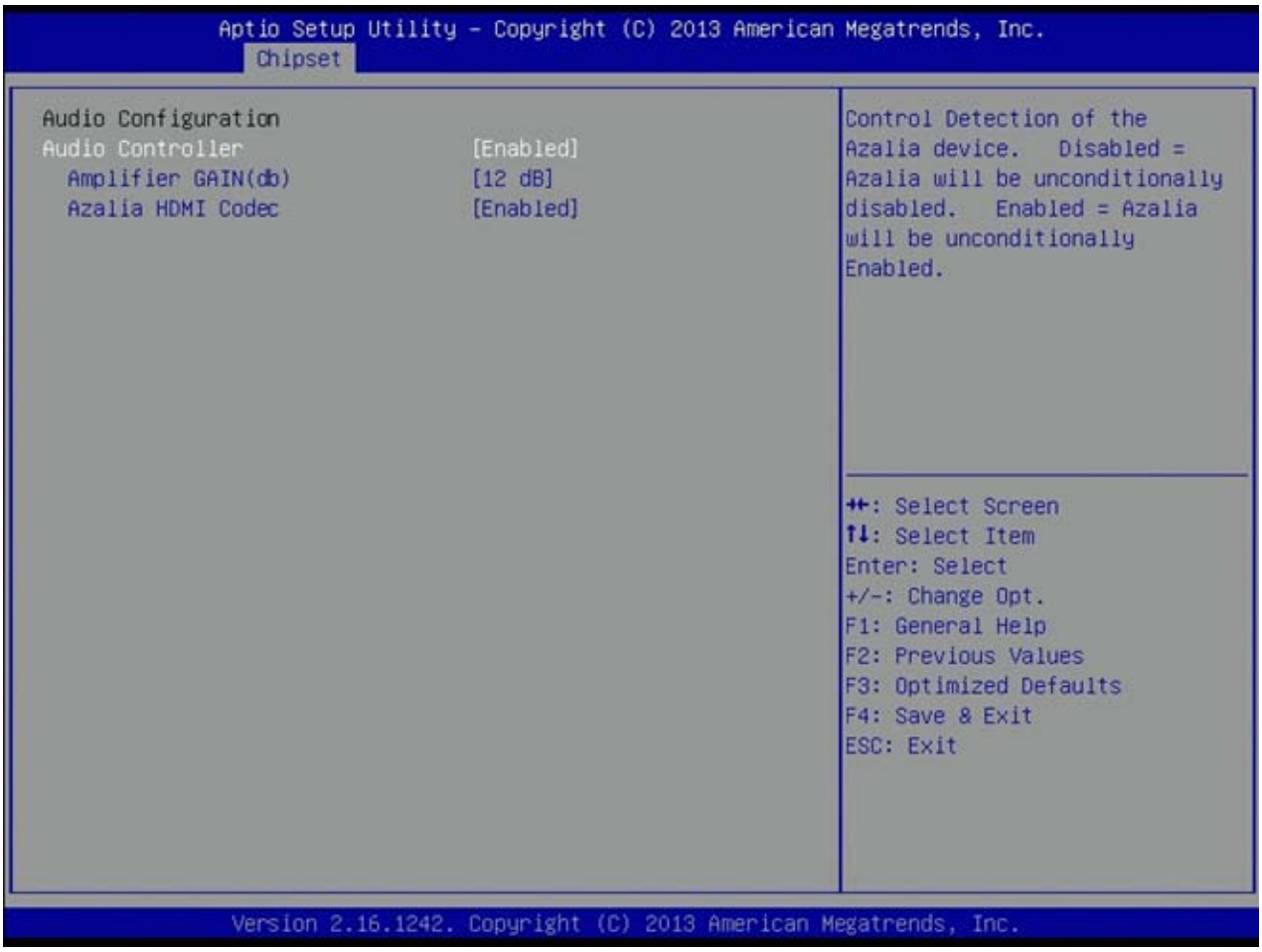
• Restore AC Powre Loss [Always OFF]

Select the AC power state when power is re-applied after a power failure.

Configuration options: [Always OFF], [Always ON], [Last State]

1. If the option "Always ON" is planning to be used, instead of using this option under BIOS, it is recommended to set the jumper switch "JPSON1" to "AT" mode. This will emulate the system power on/off like using an AT type power supply, which will turn on the system when there is power connection to the power supply. And turn-off the system once the power connection to the power supply is removed.

3.8.2.1 Azalia HD Audio



• Audio Controller [Enabled]

Control detectionof the Azalia device.

Configuration options: [Enabled], [Disabled]

• Amplifier GAIN (db) [12dB]

Select Amplifier GAIN value.

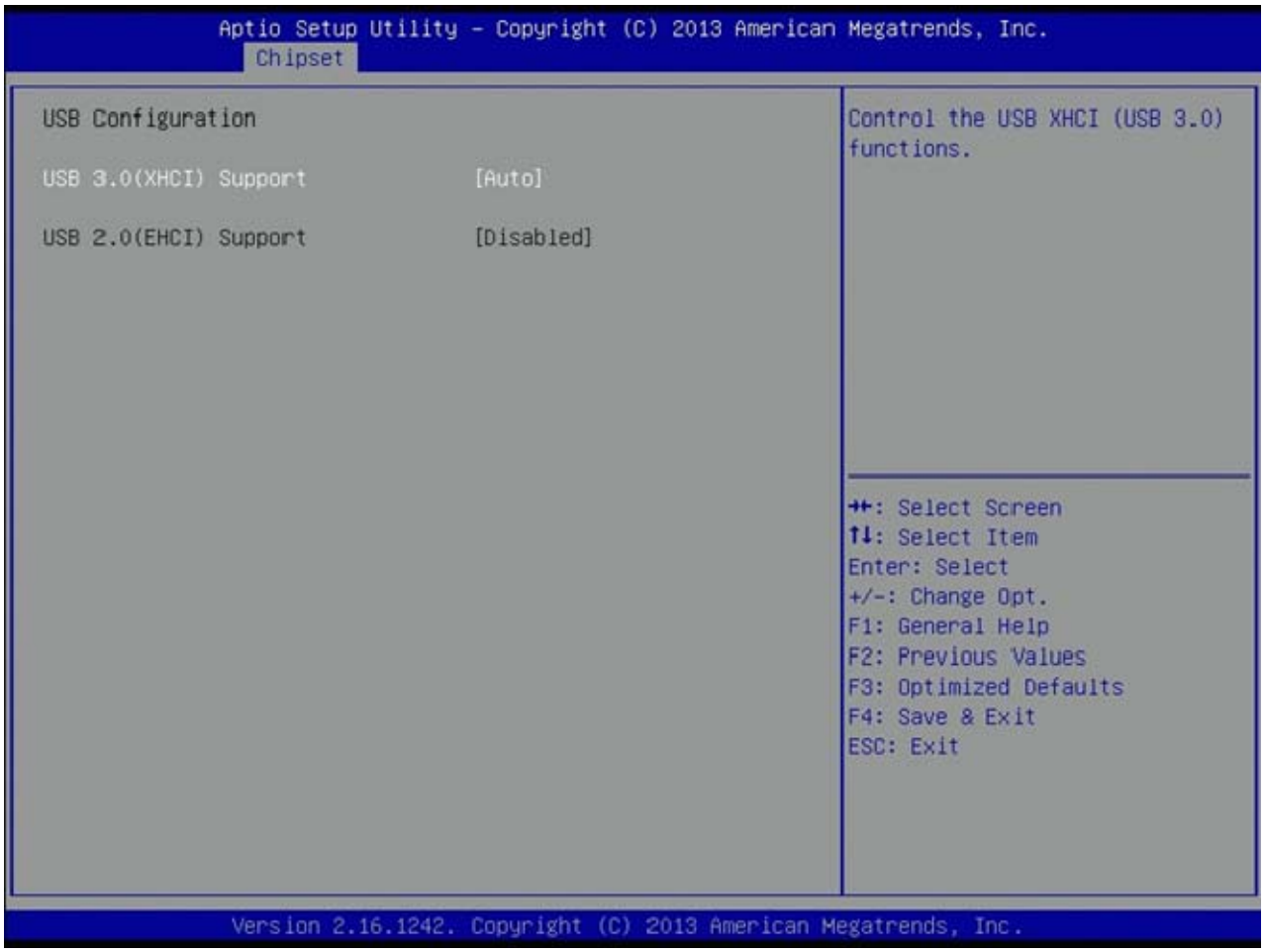
Configuration options: [6dB], [12dB], [18dB], [24dB]

• Azalia HDMI Codec [Enabled]

Enable/ Disable internal HDMI codec for Azalia.

Configuration options: [Enable], [Disabled]

3.8.2.2 USB Configuration



• US3.0 (XHCI) Support [Auto]

Control the USB XHCI (USB3.0) functions.

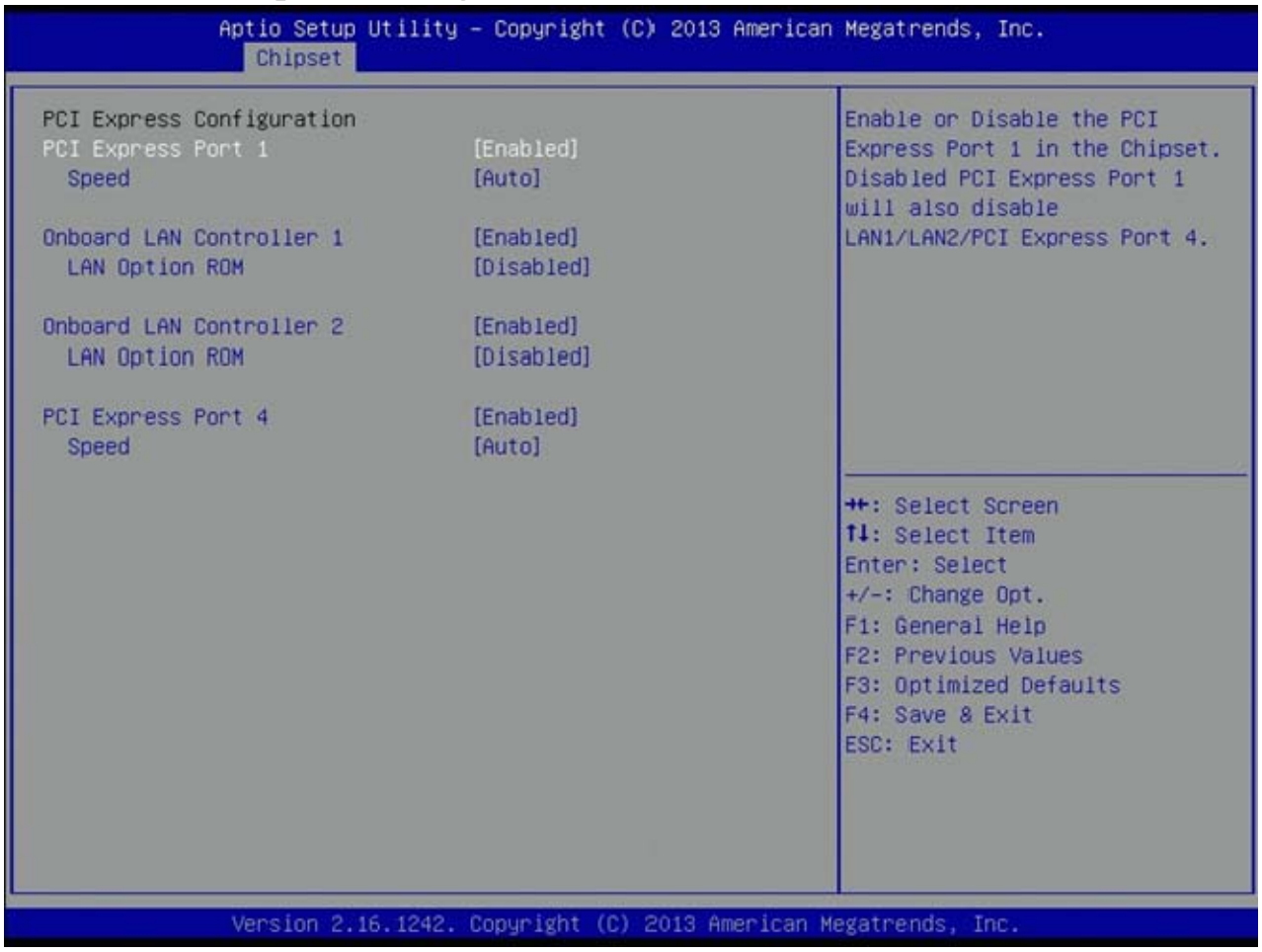
Configuration options: [Disabled], [Enabled], [Auto]

• USB2.0 (EHCI) Support [Disabled]

Control the USB EHCI (USB2.0) functions.

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

3.8.2.3 PCI Express Configuration



• PCI xpress Port 1 [Enabled]

Enable/ Disable Mini PCIe card 1 controller (control the “MINI_CARD1” slot).

Configuration options: [Disabled], [Enabled]

• Speed [Auto]

Configure PCIe port speed of Mini PCIe card 1 controller

Configuration options: [Auto], [Gen 2], [Gen1]

• Onboard LAN Controller 1 [Enable]

Enable/ Disable LAN1 Controller.

Configuration options: [Disabled], [Enabled]

• LAN Option ROM [Disabled]

Enable/ Disable LAN1 PXE option ROM.

Configuration options: [Disabled], [Enabled]

• Onboard LAN Controller 2 [Enable]

Enable/ Disable LAN2 Controller.

Configuration options: [Disabled], [Enabled]

• LAN Option ROM [Disabled]

Enable/ Disable LAN2 PXE option ROM.

Configuration options: [Disabled], [Enabled]

• PCI Express Port 4 [Enabled]

Enable/ Disable Mini PCIe card 2 controller (control the “MINI_CARD2” slot).

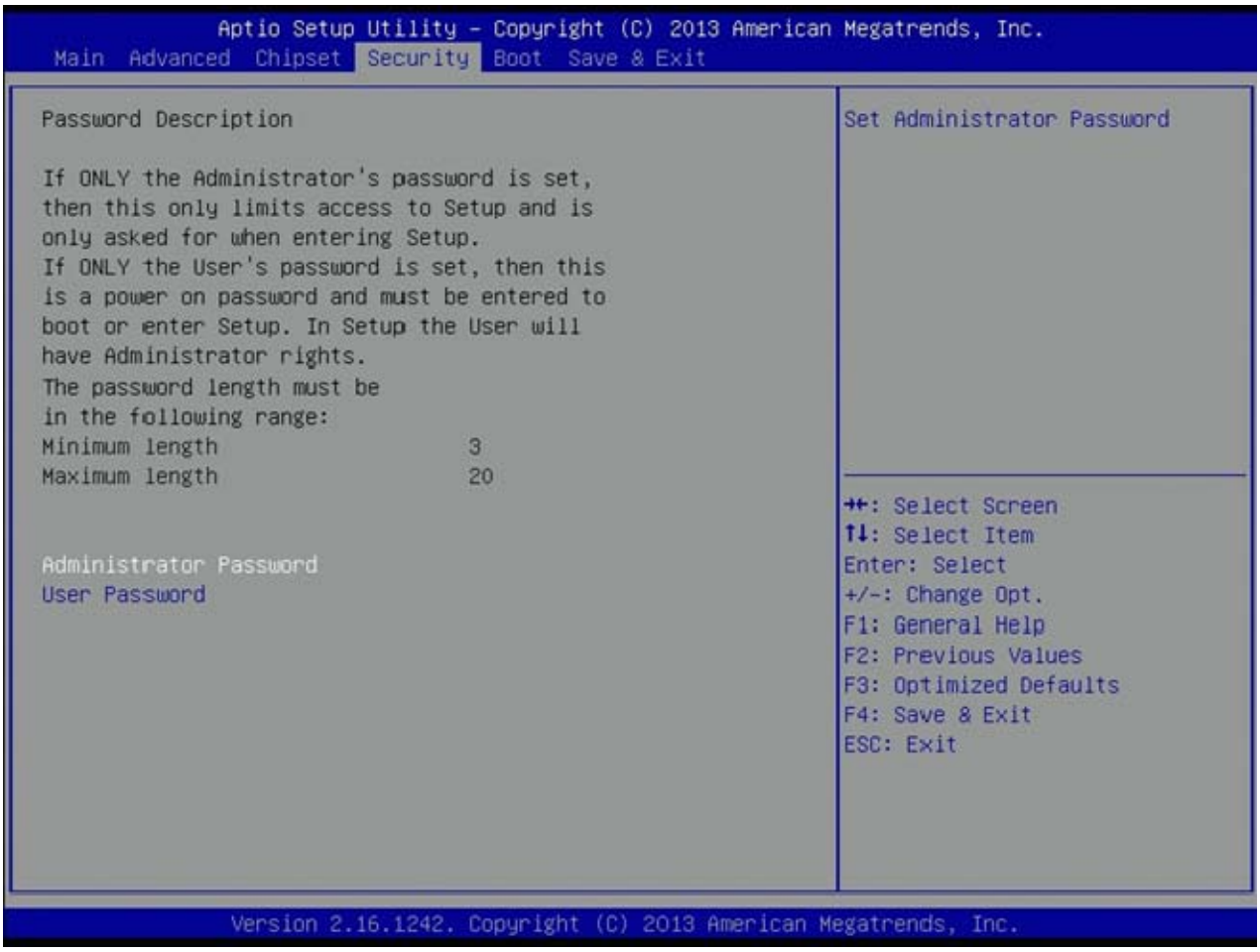
Configuration options: [Disabled], [Enabled]

• Speed [Auto]

Configure PCIe port speed of Mini PCIe card 2 controller

Configuration options: [Auto], [Gen 2], [Gen1]

3.9 Security



• dministrator Password

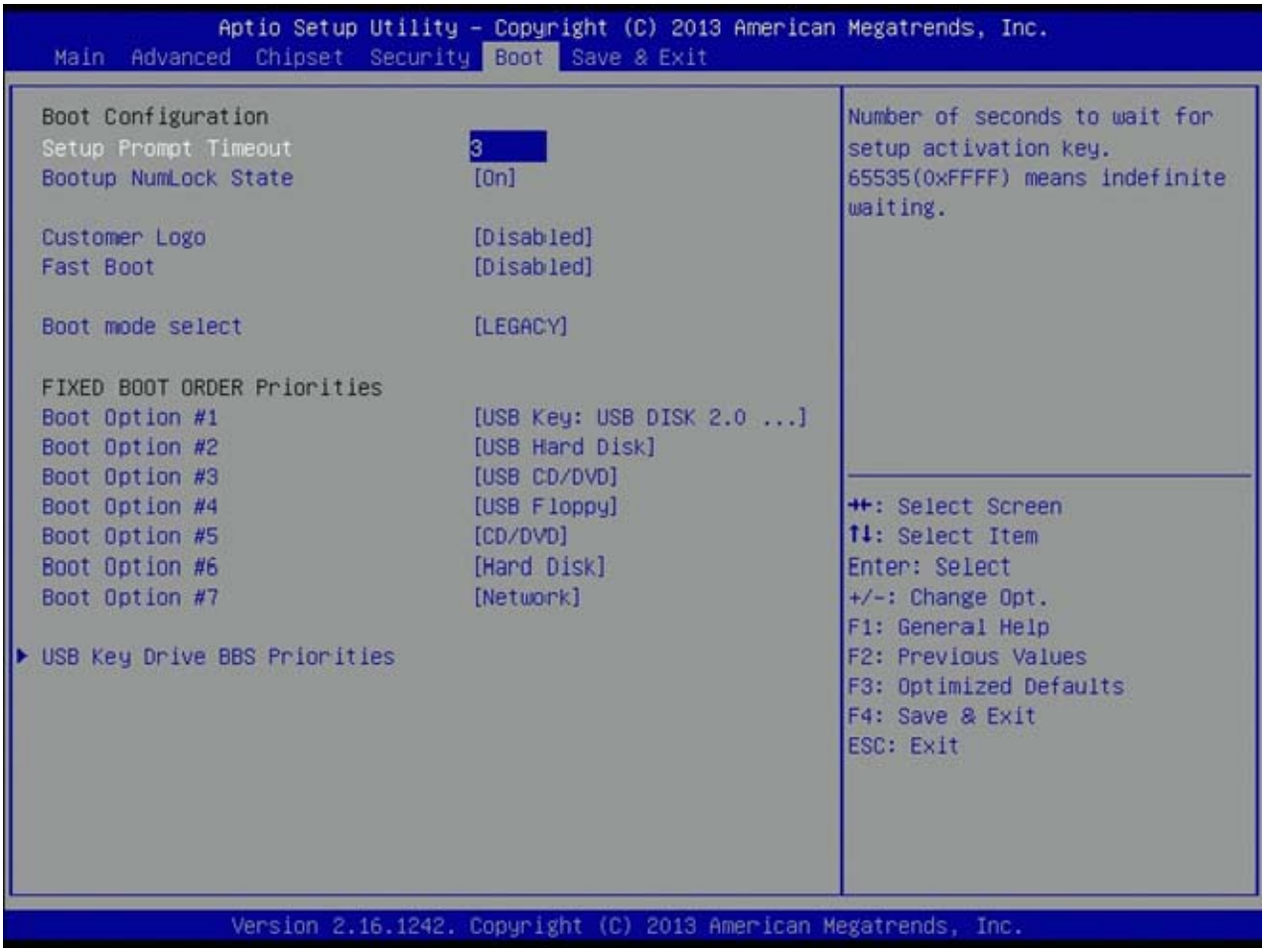
Setup Administrator Password

• User Password

Setup User Password

3.10 Boot

Boot Configuration



• Setu Prompt Timeout [3]

Number of seconds to wait during system post.

• Bootup NumLock State [On]

Select the keyboard NumLock state

Configuration options: [On], [Off]

• Customer Logo [Disabled]

If a customer logo is added to the BIOS, this option will enable/ disable the display of customer logo during system post.

Configuration options: [Disabled], [Enabled]

• Fast Boot [Disabled]

Enable/ Disable boot with initialization of minimal set of devices required to launch active boot options. Hs no effect for BBS boot options.

Configuration options: [Disabled], [Enabled]

• Boot mode select [LEGACY]

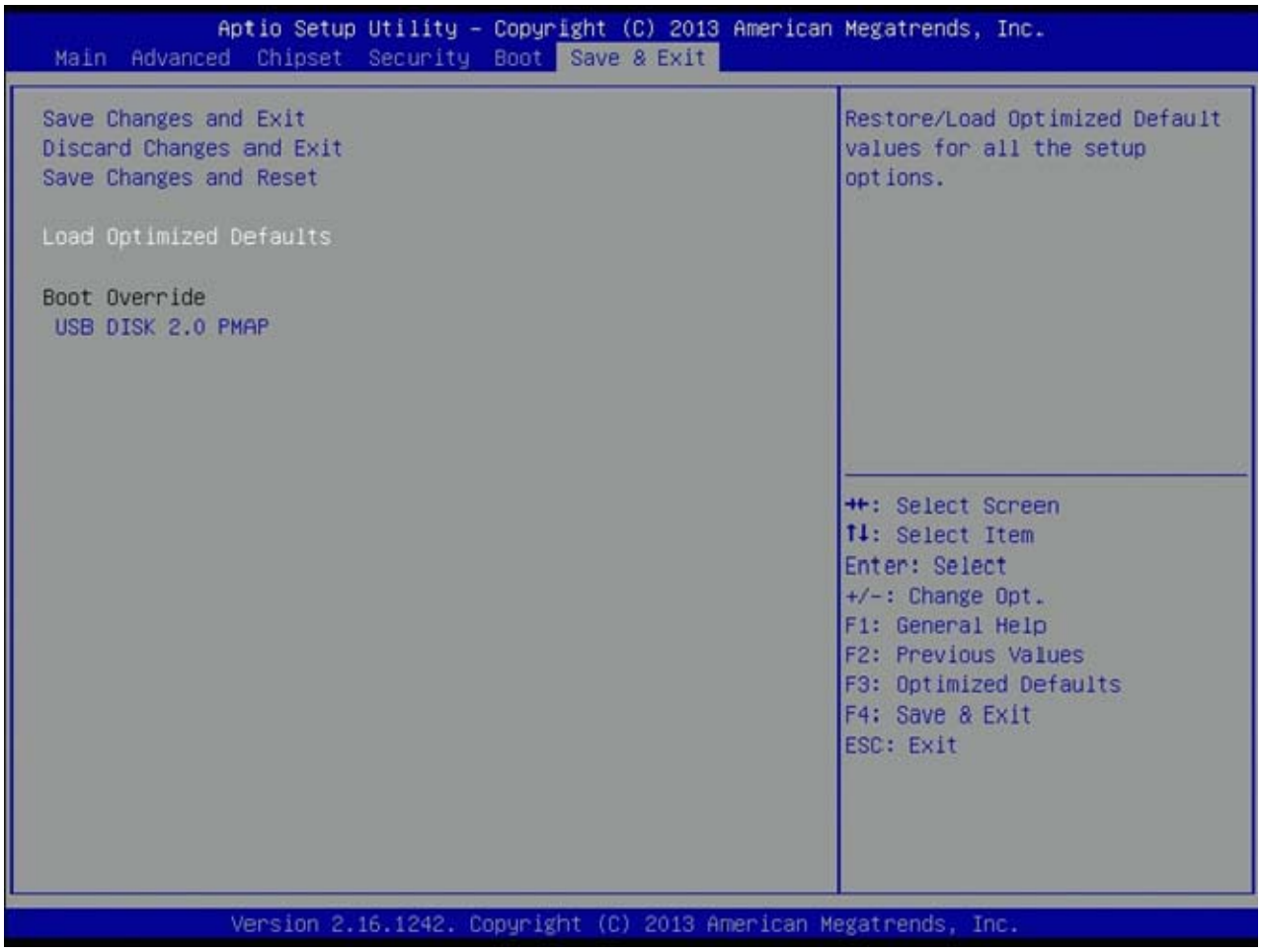
Select boot mode LEGACY/UEFI

Configuration options: [LEGACY], [UEFI]

• Fixed Boot Order Priorities

Select the system boot order.

3.11 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 system setup after saving the changes.

• Load Optimized Defaults

Restore/Load default values for all the setup option.

Chapter 4: Application Note

Please read the following application notes before proceed with the system setup and/or OS installation:

1. **Due to "SATA2" and "MINI_CARD1" are sharing the same SATA channel, only either one of them can be used. Please DO NOT install devices to these two headers at the same time.**
2. **If there is only one memory module being installed, install it at memory slot "SODIMM_A1" only.**
3. **Due to there is no active cooling mechanism on MX1900J board, it is recommended to maintain the air flow around the MX1900J board at 33.4°C or below.**
4. **If "Win7+SP1" is going to be installed, it is recommended to set the BIOS option "Miscellaneous Configuration" to "Windows 7".**
5. **If "Win8.x" is going to be installed, it is recommended to set the BIOS option "Miscellaneous Configuration" to "Win8.X".**
6. **If "Linux" is going to be installed, it is recommended to download the latest kernel (12.04 or later), the native driver in the kernel should be able to support the LANs, graphic features.**
7. **Please install the MX1900J drivers (available from BCM website: www.bcmcom.com, under "Support" section) for the following OS:**
   a. **Windows 7+SP1**
      1. **Intel inf**
      2. **Intel Graphic**
      3. **Intel LAN**
      4. **Realtek Audio**
      5. **Intel TXE base driver**
      6. **Intel TXE update driver**
      7. **Intel USB3.0 driver (Intel recommended to copy the file to system hard drive first, then install driver from there).**
   b. **Win8.x**
      1. **Intel inf**
      2. **Intel Graphic**
      3. **Intel LAN**
      4. **Realtek Audio**
      5. **Intel TXE base driver**
      6. **Intel MEI driver (shown as "unknown device" under Device Manager)**