

MBBZ1AI

AMD® Fusion APU E-450 processor motherboard

User's Manual

Rev. 1201

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Documentation Classifications

In order to assist in the use of this product, GIGABYTE provides the following types of documentation:

- For detailed product information, carefully read the User's Manual.

For product-related information, check on our website at:

<http://www.gigabyte.com>

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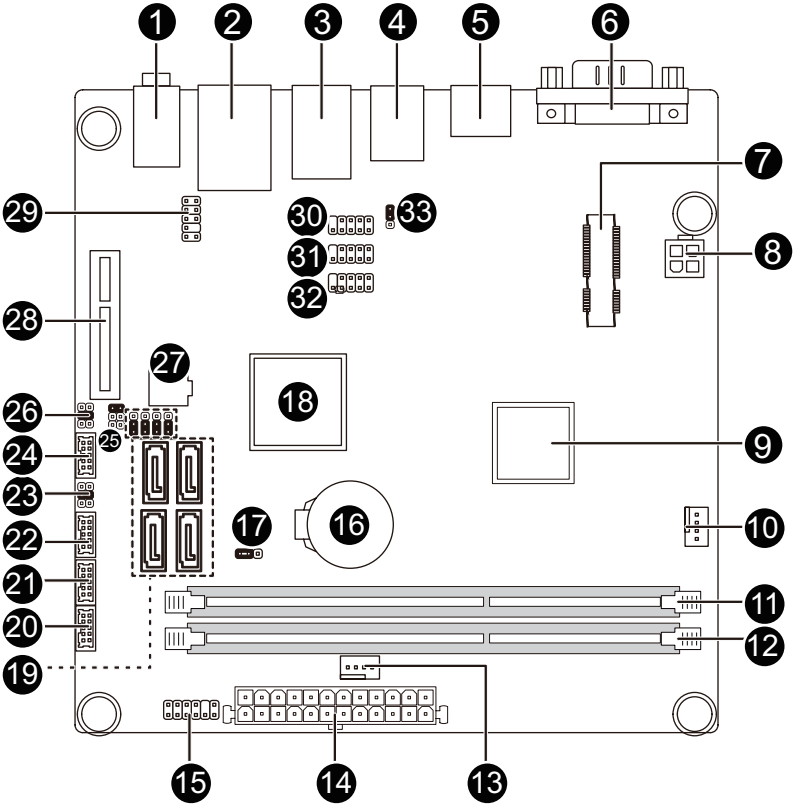
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Box Contents

- MBBZ1AI motherboard
- Driver CD
- Two SATA cables
- I/O Shield

- The box contents above are for reference only and the actual items shall depend on the product package you obtain. The box contents are subject to change without notice.
- The motherboard image is for reference only.

MBBZ1AI Motherboard Layout



Item	Code	Description
1	AUDIO	Audio connectors
2	USB_LAN	RJ45 LAN port (top) / USB 2.0 ports (bottom)
3	USB2	USB 2.0 ports
4	USB3	USB 3.0 ports
5	HDMI	HDMI port
6	VGAVGA_DVI	VGA port (top) / DVI-D port (bottom)
7	MPCIE1X	Mini PCI Express connector
8	ATX_12V	4 pin power connector
9	U1	Embedded processor
10	CPU_FAN	CPU fan connector
11	DDRIII_1	DDR3 SO-DIMM slot
12	DDRIII_2	DDR3 SO-DIMM slot
13	SYS_FAN	System fan connector
14	ATX	24 pin power connector
15	F_PANEL	Front panel header
16	BATTERY	Battery socket
17	CLR_CMOS	Clear CMOS jumper
18	U3	AMD Hudson-M1 Fusion Controller Hub (A50M)
19	SATAIII_0/12/3	SATA 6Gb/s connectors
20	COM1	Serial port cable header
21	COM2	Serial port cable header
22	COM4	Serial port cable header
23	JCOM4	Serial port #4 5V,12V, RI select jumper
24	COM3	Serial port cable header
25	JRS4	RS232,RS422,RS485 Select jumper
26	JCOM3	Serial port #3 5V,12V, RI select jumper
27	BIOS	BIOS Upgrade ROM
28	PCIE4X	PCI Express x1 slot
29	F_AUDIO	Audio cable connector
30	F_USB_1	Front USB header
31	F_USB_2	Front USB header
32	F_USB_3	Front USB header
33	USB_PWR	USB header #1 power select jumper













Chapter 1 Hardware Installation





1-1 Installation Precautions

The motherboard contains numerous delicate electronic circuits and components which can become damaged as a result of electrostatic discharge (ESD). Prior to installation, carefully read the user's manual and follow these procedures:

- Prior to installation, do not remove or break motherboard S/N (Serial Number) sticker or warranty sticker provided by your dealer. These stickers are required for warranty validation.
- Always remove the AC power by unplugging the power cord from the power outlet before installing or removing the motherboard or other hardware components.
- When connecting hardware components to the internal connectors on the motherboard, make sure they are connected tightly and securely.
- When handling the motherboard, avoid touching any metal leads or connectors.
- It is best to wear an electrostatic discharge (ESD) wrist strap when handling electronic components such as a motherboard, CPU or memory. If you do not have an ESD wrist strap, keep your hands dry and first touch a metal object to eliminate static electricity.
- Prior to installing the motherboard, please have it on top of an antistatic pad or within an electrostatic shielding container.
- Before unplugging the power supply cable from the motherboard, make sure the power supply has been turned off.
- Before turning on the power, make sure the power supply voltage has been set according to the local voltage standard.
- Before using the product, please verify that all cables and power connectors of your hardware components are connected.
- To prevent damage to the motherboard, do not allow screws to come in contact with the motherboard circuit or its components.
- Make sure there are no leftover screws or metal components placed on the motherboard or within the computer casing.
- Do not place the computer system on an uneven surface.
- Do not place the computer system in a high-temperature environment.
- Turning on the computer power during the installation process can lead to damage to system components as well as physical harm to the user.
- If you are uncertain about any installation steps or have a problem related to the use of the product, please consult a certified computer technician.

1-2 Product Specifications

 CPU	<ul style="list-style-type: none"> ◆ Supports single AMD® Fusion APU E-450 processor ◆ Supports Dual Core up to 1.65GHz ◆ TDP 18W ◆ Supports 1M Cache
 Chipset	<ul style="list-style-type: none"> ◆ AMD® FCH Hudson-D3 chipset
 Memory	<ul style="list-style-type: none"> ◆ 2 x 1.5V DDR3 slots ◆ Max. to 8GB (4GB x 2) ◆ Support for DDR3 800/1066 MHz
 Display	<ul style="list-style-type: none"> ◆ 1 x HDMI 1.3a ◆ 1 x DVI-D port ◆ 1 x VGA port
 Audio	<ul style="list-style-type: none"> ◆ Realtek ALC887 codec ◆ High Definition Audio ◆ 5.1 Channel/Line in/Line out/MIC
 LAN	<ul style="list-style-type: none"> ◆ 1 x Realtek RTL8111E supports 10/100/1000 Mbps
 Expansion Slots	<ul style="list-style-type: none"> ◆ 1 x Mini PCI Express slot (Fullsize) ◆ 1 x PCI Express x4 slot
 Onboard Graphics	<ul style="list-style-type: none"> ◆ Build in Intel® processor
 Storage Interface	<ul style="list-style-type: none"> ◆ 4 x SATA 6Gb/s connectors
 USB	<ul style="list-style-type: none"> ◆ 2 x USB 3.0 ports (Rear I/O) ◆ 4 x USB 2.0 ports (Rear I/O) ◆ 3 x USB 2.0 headers
 Internal Connectors	<ul style="list-style-type: none"> ◆ 1 x 4 pin 12V power connector ◆ 1 x 10 pin power connector ◆ 4 x SATA 6Gb/s connectors ◆ 1 x CPU fan header ◆ 1 x System fan header ◆ 1 x Front panel header ◆ 1 x Front Audio header ◆ 3 x USB 2.0 header ◆ 4 x Serial port headers ◆ 3 x Serial port headers
 Back Panel Connectors	<ul style="list-style-type: none"> ◆ 1 x VGA Port ◆ 1 x DVI-D port ◆ 1 x HDMI port ◆ 2 x USB 3.0 ports ◆ 4 x USB 2.0 ports ◆ 3 x Audio connectors (1 x Line-out/ 1 x Line-in/ 1 x MIC)

	I/O Controller	◆ iTE IT81214 chip
	Hardware Monitor	◆ CPU/System temperature detection ◆ CPU fan speed detection
	BIOS	◆ 1 x 16 Mbit flash ◆ AMI BIOS
	Form Factor	◆ Mini ITX Form Factor; 170cm x 170cm

* GIGABYTE reserves the right to make any changes to the product specifications and product-related information without prior notice.

1-3 Installing the Memory

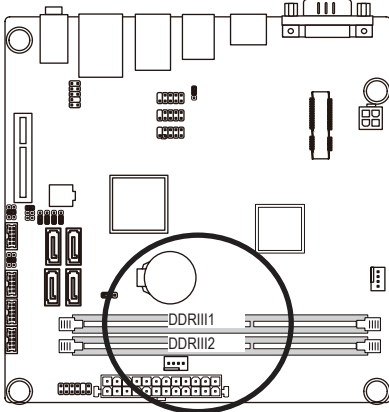


Read the following guidelines before you begin to install the memory:

- Make sure that the motherboard supports the memory. It is recommended that memory of the same capacity, brand, speed, and chips be used.
- Always turn off the computer and unplug the power cord from the power outlet before installing the memory to prevent hardware damage.
- Memory modules have a foolproof design. A memory module can be installed in only one direction. If you are unable to insert the memory, switch the direction.

1-3-1 Single Channel Memory Configuration

This motherboard provides two DDR3 memory sockets and supports Single Channel Technology. After the memory is installed, the BIOS will automatically detect the specifications and capacity of the memory. Enabling Dual Channel memory mode will double the original memory bandwidth.



1-3-2 Installing a Memory



Before installing a memory module, make sure to turn off the computer and unplug the power cord from the power outlet to prevent damage to the memory module.

Be sure to install DDR3 DIMMs on this motherboard.

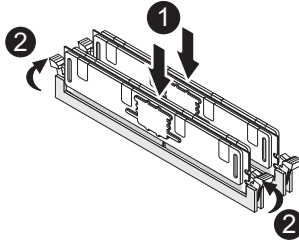
Installation Step:

Step 1. Insert the DIMM memory module vertically into the DIMM slot, and push it down.

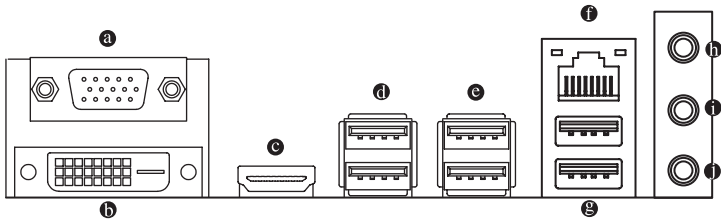
Step 2. Close the plastic clip at both edges of the DIMM slots to lock the DIMM module.

Note: For dual-channel operation, DIMMs must be installed in matched pairs.

Step 3. Reverse the installation steps when you wish to remove the DIMM module.



1-4 Back Panel Connectors



a Video Port

The video in port allows connect to video in, which can also apply to video loop thru function.

b DVI-D Port

The DVI-D port supports DVI-D specifictation. Connect a monitor that supports DVI-D connectionto this port.

c HDMI Port

The HDMI (High-Definition Multimedia Interface) provides an all-digital audio/video interface to transmit the uncompressed audio/video signals and is HDCP compliant. Connect the HDMI audio/video device to this port. The HDMI Technology can support a maximum resolution of 1920x1200 pixel but the actual resolutions supported depend on the monitor being used.



- When After installing the HDMI device, make sure the default device for sound playback is the HDMI device. (The item name may differ by operating system. Refer the figures below for details.), and enter BIOS Setup, then set Onboard VGA output connect to D-SUB/HDMI under Advanced BIOS Features..
- Please note the HDMI audio output only supports AC3, DTS and 2-channel-LPCM formats. (AC3 and DTS require the use of an external decoder for decoding.)

d USB 3.0 Port

The USB port supports the USB 3.0 specification. Use this port for USB devices such as a USB keyboard/mouse, USB printer, USB flash drive and etc.

e USB 2.0 Port

The USB port supports the USB 2.0 specification. Use this port for USB devices such as a USB keyboard/mouse, USB printer, USB flash drive and etc.

f RJ-45 LAN Port

The Gigabit Ethernet LAN port provides Internet connection at up to 1 Gbps data rate. The following describes the states of the LAN port LEDs.

g Line In Jack (Blue)

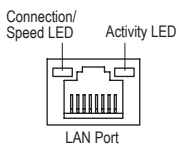
The default line in jack. Use this audio jack for line in devices such as an optical drive, walkman, etc.

h Line Out Jack (Green)

The default line out jack. Use this audio jack for a headphone or 2-channel speaker. This jack can be used to connect front speakers in a 4/5.1/7.1-channel audio configuration.

i MIC In (Pink)

The default MIC In jack. Microphone cab be connected to MIC In jack.



Connection/Speed LED:

State	Description
Orange	1 Gbps data rate
Green	100 Mbps data rate
Off	10 Mbps data rate

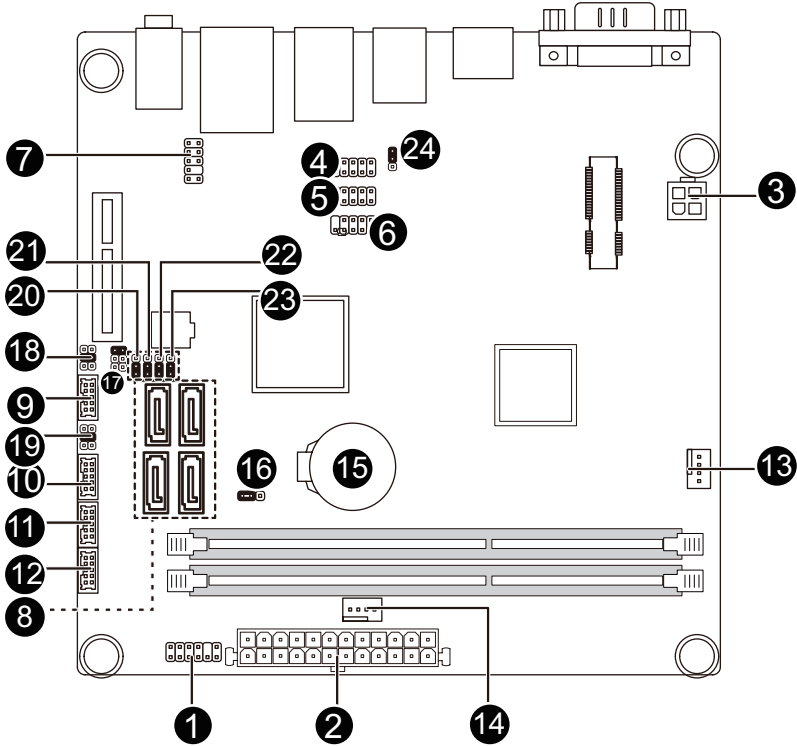
Activity LED:

State	Description
Blinking	Data transmission or receiving is occurring
Off	No data transmission or receiving is occurring



- When removing the cable connected to a back panel connector, first remove the cable from your device and then remove it from the motherboard.
- When removing the cable, pull it straight out from the connector. Do not rock it side to side to prevent an electrical short inside the cable connector.

1-5 Internal Connectors



1) F_PANEL	13) CPU_FAN
2) ATX	14) SYS_FAN
3) ATX_12V	15) BATTERY
4) F_USB2_1	16) CLR_CMOS
5) F_USB2_2	17) JRS1
6) F_USB2_3	18) JCOMC3
7) F_AUDIO	19) JCOMC4
8) SATAIII_0/1/2/3	20) JRS4
9) COM3	21) JRS5
10) COM4	22) JRS3
11) COM2	23) JRS2
12) COM1	24) USB_PWR

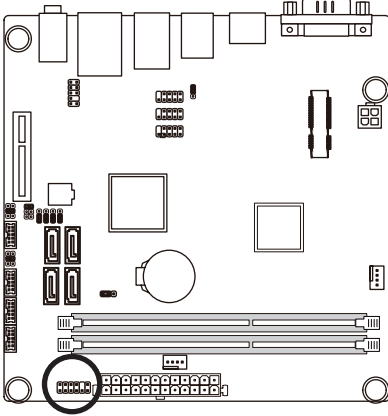


Read the following guidelines before connecting external devices:

- First make sure your devices are compliant with the connectors you wish to connect.
- Before installing the devices, be sure to turn off the devices and your computer. Unplug the power cord from the power outlet to prevent damage to the devices.
- After installing the device and before turning on the computer, make sure the device cable has been securely attached to the connector on the motherboard.

1) F_PANEL (Front Panel Header)

Connect the power switch, reset switch, speaker, LAN LED sensor and system status indicator on the chassis to this header according to the pin assignments below. Note the positive and negative pins before connecting the cables.



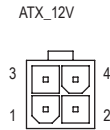
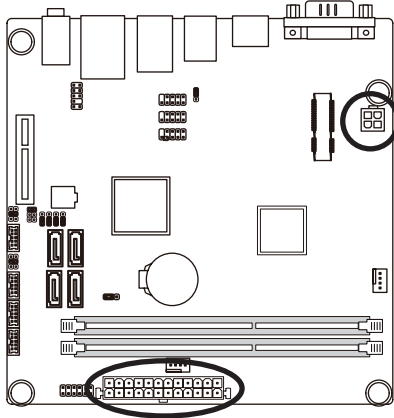
Pin No.	Signal Name	Definition
1	HD+	Hard Disk LED Signal anode (+)
2	MPD+	Power LED Signal anode (+)
3	HD-	Hard Disk LED Signal cathode(-)
4	MPD-	Power LED Signal cathode(-)
5	GND	Ground
6	PW+	Power Button anode (+)
7	RESET	Reset Button
8	PW-	Power Button cathode(-)
9	NC	Reserved
10	NC	No Pin



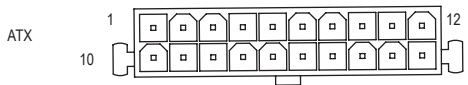
The front panel design may differ by chassis. A front panel module mainly consists of power switch, reset switch, power LED, hard drive activity LED, speaker and etc. When connecting your chassis front panel module to this header, make sure the wire assignments and the pin assignments are matched correctly.

2/3) ATX/ATX_12V (2x2 12V Power Connector and 2x10 Main Power Connector)

With the use of the power connector, the power supply can supply enough stable power to all the components on the motherboard. Before connecting the power connector, first make sure the power supply is turned off and all devices are properly installed. The power connector possesses a foolproof design. Connect the power supply cable to the power connector in the correct orientation. The 12V power connector mainly supplies power to the CPU. If the 12V power connector is not connected, the computer will not start.



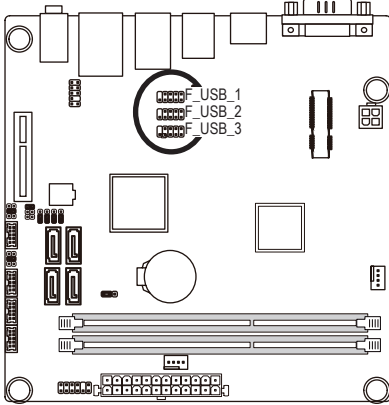
Pin No.	Definition
1	GND
2	GND
3	+12V
4	+12V



Pin No.	Definition	Pin No.	Definition
1	3.3V	13	3.3V
2	3.3V	14	-12V
3	GND	15	GND
4	+5V	16	PS_ON
5	GND	17	GND
6	+5V	18	GND
7	GND	19	GND
8	Power Good	20	-5V
9	5VSB (stand by +5V)	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	3.3V	24	GND

4/5/6) F_USB_1/2/3 (USB Headers)

The headers conform to USB 2.0/1.1 specification. Each USB header can provide two USB ports via an optional USB bracket. For purchasing the optional USB bracket, please contact the local dealer.



F_USB_1

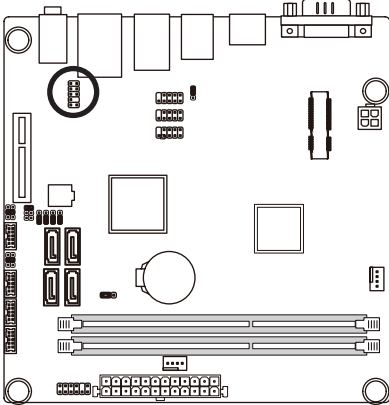
Pin No.	Definition
1	VCC
2	VCC
3	USB P0-
4	USB P1-
5	USB P0+
6	USB P1+
7	GND
8	GND
9	No Pin
10	NC

F_USB_2
F_USB_3

Pin No.	Definition
1	VCC
2	VCC
3	USB P10-
4	USB P11-
5	USB P10+
6	USB P11+
7	GND
8	GND
9	No Pin
10	NC

7) F_AUDIO (Front Panel Audio Header)

The front panel audio header supports Intel High Definition audio (HD) and AC'97 audio. You may connect your chassis front panel audio module to this header. Make sure the wire assignments of the module connector match the pin assignments of the motherboard header. Incorrect connection between the module connector and the motherboard header will make the device unable to work or even damage it.



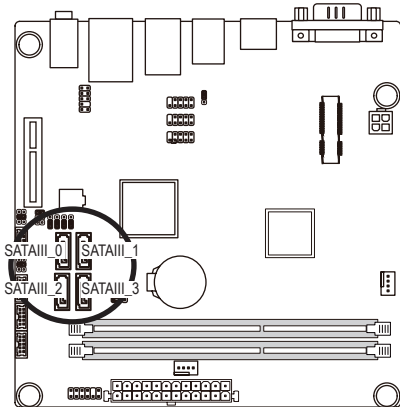
Pin No.	Definition
1	F_MIC2_L
2	GND
3	F_MIC2_R
4	-ACZ_DET
5	F_LINE2_R
6	F_MIC_JD
7	GND
8	No Pin
9	F_LINE2_L
10	F_LINE2_JD



- The front panel audio header supports HD audio by default.
- Audio signals will be present on both of the front and back panel audio connections simultaneously.
- Some chassis provide a front panel audio module that has separated connectors on each wire instead of a single plug. For information about connecting the front panel audio module that has different wire assignments, please contact the chassis manufacturer.

8) SATAIII_0/SATAIII_1/SATAIII_2/SATAIII_3 (SATA 6Gb/s Connectors)

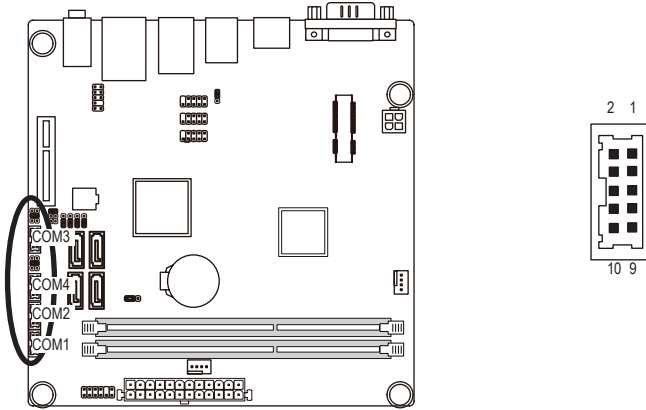
The SATA connectors conform to SATA 6Gb/s standard and are compatible with SATA 3Gb/s standard. Each SATA connector supports a single SATA device.



Pin No.	Definition
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND

9/10/11/12) COM3/COM4/COM2/COM1 (Serial Port Headers)

The COM headers can provide one serial port via an optional COM port cable. For purchasing the optional COM port cable, please contact the local dealer.



COM1

Pin No.	Definition
1	NDCDA-
2	NDSRA-
3	NSINA
4	NRTSA-
5	NSOUTA
6	NCTSA-
7	NDTDA-
8	NRIA-
9	GND
10	No Pin

COM2

Pin No.	Definition
1	NDCDB-
2	NDSRB-
3	NSINB
4	NRTSB-
5	NSOUTB
6	NCTSB-
7	NDTDB-
8	NRIB-
9	GND
10	No Pin

COM3

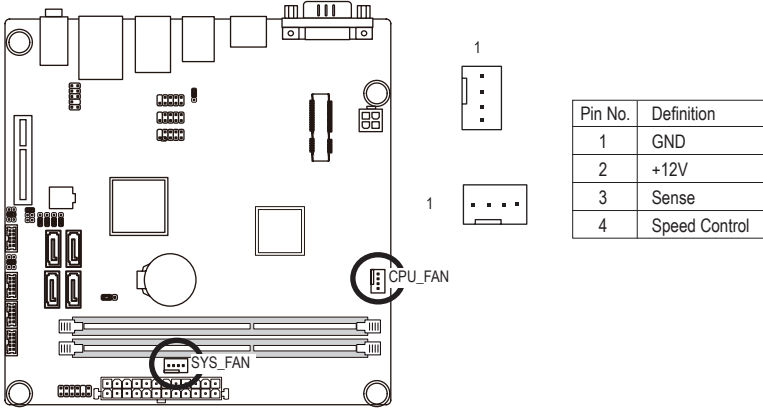
Pin No.	Definition
1	NDCDC-
2	NDSRC-
3	NSINC
4	NRTSC-
5	NSOUTC
6	NCTSC-
7	NDTDC-
8	NRIC-
9	GND
10	No Pin

COM4

Pin No.	Definition
1	NDCDD-
2	NDSRD-
3	NSIND
4	NRTSD-
5	NSOUTD
6	NCTSD-
7	NDTDD-
8	NRID-
9	GND
10	No Pin

13/14) CPU_FAN/SYS_FAN (CPU Fan/System Fan Headers)

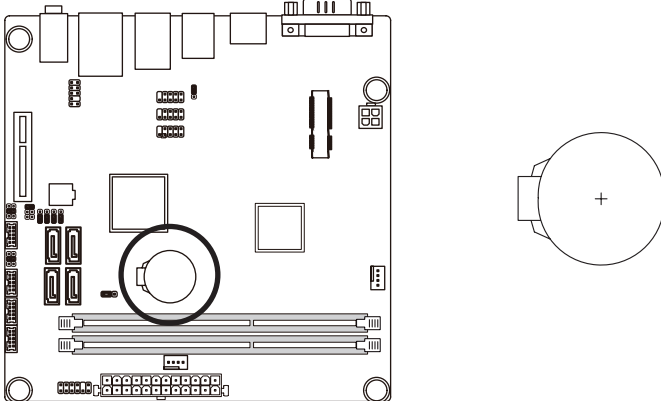
The motherboard has a 4-pin CPU fan header (CPU_FAN) and a 4-pin System fan header (SYS_FAN) header. Most fan headers possess a foolproof insertion design. When connecting a fan cable, be sure to connect it in the correct orientation (the black connector wire is the ground wire). The motherboard supports CPU fan speed control, which requires the use of a CPU fan with fan speed control design. For optimum heat dissipation, it is recommended that a system fan be installed inside the chassis.



- Be sure to connect fan cables to the fan headers to prevent your CPU and system from overheating. Overheating may result in damage to the CPU or the system may hang.
- These fan headers are not configuration jumper blocks. Do not place a jumper cap on the headers.

15) BATTERY (Battery)

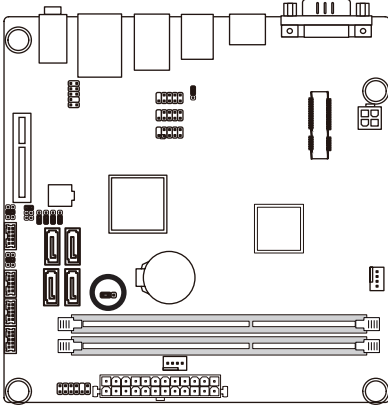
The battery provides power to keep the values (such as BIOS configurations, date, and time information) in the CMOS when the computer is turned off. Replace the battery when the battery voltage drops to a low level, or the CMOS values may not be accurate or may be lost.





- Always turn off your computer and unplug the power cord before replacing the battery.
- Replace the battery with an equivalent one. Danger of explosion if the battery is replaced with an incorrect model.
- Contact the place of purchase or local dealer if you are not able to replace the battery by yourself or uncertain about the battery model.
- When installing the battery, note the orientation of the positive side (+) and the negative side (-) of the battery (the positive side should face up).
- Used batteries must be handled in accordance with local environmental regulations.

16) CLR_CMOS (Clearing CMOS Jumper)

Use this jumper to clear the CMOS values (e.g. date information and BIOS configurations) and reset the CMOS values to factory defaults. To clear the CMOS values, place a jumper cap on the two pins to temporarily short the two pins or use a metal object like a screwdriver to touch the two pins for a few seconds.



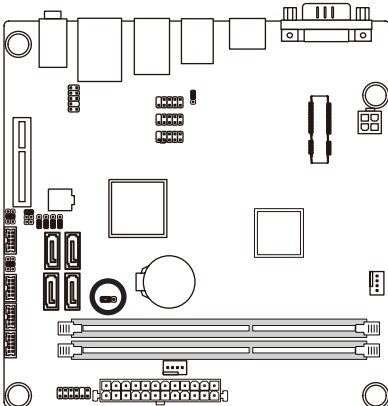
1  1-2 Close: Normal operation (Default setting)

1  2-3 Close: Clear CMOS data.



- After clearing the CMOS values and before turning on your computer, be sure to remove the jumper cap from the jumper. Failure to do so may cause damage to the motherboard.

17) JRS1 (RS232/RS422/RS485 Select Headers)

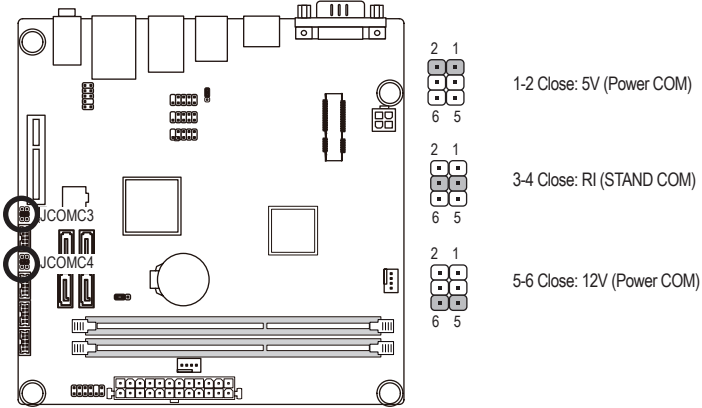


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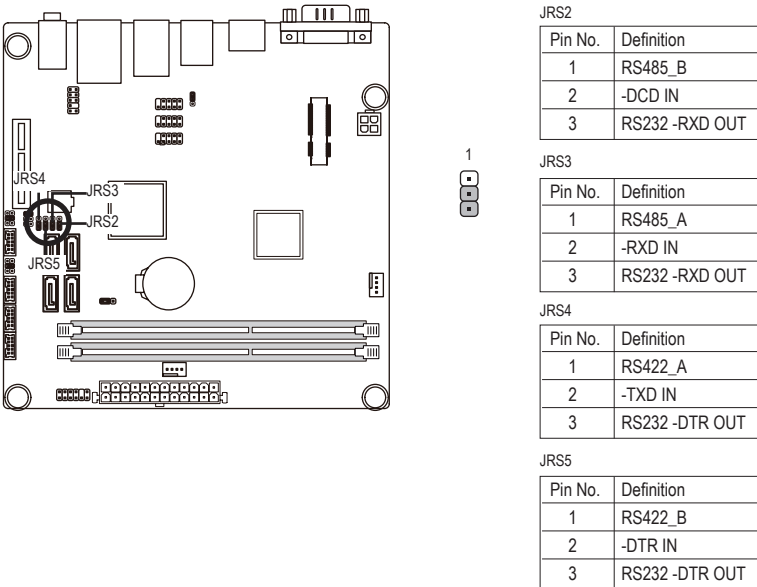
 6 5

Pin No.	Definition
1	RXD232
2	RXD
3	RXD422
4	RXD
5	RS485
6	RXD

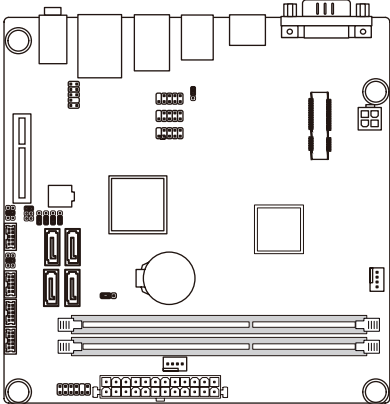
18/19) JCOMC3/JCOMC4 (Serial Port #3/#4 5V/12V/RI Select Headers)





20/21/22/23) JRS4/JRS5/JRS3/JRS2 (RS232/RS422/RS485 Mode Select Jumper)



24) USB_PWR (USB Stand-by 5V/VCC 5V Select Jumper)



- 1  1-2 Close: VCC 5V. (Default setting)
- 1  2-3 Close: Stand-by 5V.

Pin No.	Definition
1	12V
2	VCC
3	Stand-by 5V

Chapter 2 BIOS Setup

BIOS (Basic Input and Output System) records hardware parameters of the system in the CMOS on the motherboard. Its major functions include conducting the Power-On Self-Test (POST) during system startup, saving system parameters and loading operating system, etc. BIOS includes a BIOS Setup program that allows the user to modify basic system configuration settings or to activate certain system features. When the power is turned off, the battery on the motherboard supplies the necessary power to the CMOS to keep the configuration values in the CMOS.

To access the BIOS Setup program, press the <F2> key during the POST when the power is turned on.



- BIOS flashing is potentially risky, if you do not encounter problems of using the current BIOS version, it is recommended that you don't flash the BIOS. To flash the BIOS, do it with caution. Inadequate BIOS flashing may result in system malfunction.
- It is recommended that you not alter the default settings (unless you need to) to prevent system instability or other unexpected results. Inadequately altering the settings may result in system's failure to boot. If this occurs, try to clear the CMOS values and reset the board to default values. (Refer to the "Load Optimized Defaults" section in this chapter or introductions of the battery/clearing CMOS jumper in Chapter 1 for how to clear the CMOS values.)

BIOS Setup Program Function Keys

<↑><↓>	Move the selection bar to select an item
<<><→>	Move the selection bar to select the screen
<Enter>	Execute command or enter the submenu
<Esc>	Main Menu: Exit the BIOS Setup program Submenus: Exit current submenu
<+>	Increase the numeric value or make changes
<->	Decrease the numeric value or make changes
<F1>	General Help
<F2>	Restore the previous BIOS settings for the current submenus
<F3>	Load the Optimized BIOS default settings for the current submenus
<F4>	Save all the changes and exit the BIOS Setup program

■ **Main**

This setup page includes all the items in standard compatible BIOS.

■ **Advanced**

This setup page includes all the items of AMI BIOS special enhanced features.

(ex: Auto detect fan and temperature status, automatically configure hard disk parameters.)

■ **Chipset**

Northbridge and Southbridge additional features configuration.

■ **Boot**

This setup page provides items for configuration of boot sequence.

■ **Security**

Change, set, or disable supervisor and user password. Configuration supervisor password allows you to restrict access to the system and BIOS Setup.

A supervisor password allows you to make changes in BIOS Setup.

A user password only allows you to view the BIOS settings but not to make changes.

■ **Save & Exit**

Save all the changes made in the BIOS Setup program to the CMOS and exit BIOS Setup. (Pressing <F10> can also carry out this task.)

Abandon all changes and the previous settings remain in effect. Pressing <Y> to the confirmation message will exit BIOS Setup. (Pressing <Esc> can also carry out this task.)

2-1 The Main Menu

Once you enter the BIOS Setup program, the Main Menu (as shown below) appears on the screen. Use arrow keys to move among the items and press <Enter> to accept or enter other sub-menu.

Main Menu Help

The on-screen description of a highlighted setup option is displayed on the bottom line of the Main Menu.

Submenu Help

While in a submenu, press <F1> to display a help screen (General Help) of function keys available for the menu. Press <Esc> to exit the help screen. Help for each item is in the Item Help block on the right side of the submenu.



- If you do not find the settings you want in the Main Menu or a submenu, press <Ctrl>+<F1> to access more advanced options.
- When the system is not stable as usual, select the **Restore Defaults** item to set your system to its defaults.
- The BIOS Setup menus described in this chapter are for reference only and may differ by BIOS version.

```
Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit

BIOS Information
BIOS Vendor          American Megatrends
Core Version         4.6.5.4
Compliance           UEFI 2.3.1; PI 1.2
Project Version      MBBZ1A1-6B / D05
Build Date and Time  12/28/2012 10:05:50

Memory Information
Total Memory         2048 MB (DDR3)

System Date          [Fri 12/28/2012]
System Time          [10:31:43]

Set the Date. Use Tab to
switch between Date elements.

+-: Select Screen
F1: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

Version 2.15.1234. Copyright (C) 2012 American Megatrends, Inc.
```

☞ **BIOS Information**

☞ **BIOS Vendor**

Display BIOS vendor information.

☞ **BIOS Version**

Display version number of the BIOS setup utility.

☞ **Core Version**

Display version of the processor.

☞ **Complieny**

Display complieny information.

☞ **Project Version**

Display version number of the project.

☞ **BIOS Build Date and Time**

Displays the date and time when the BIOS setup utility was created.

☞ **Memory Information**

☞ **Total Memory**

Determines how much total memory is present during the POST.

☞ **System Date**

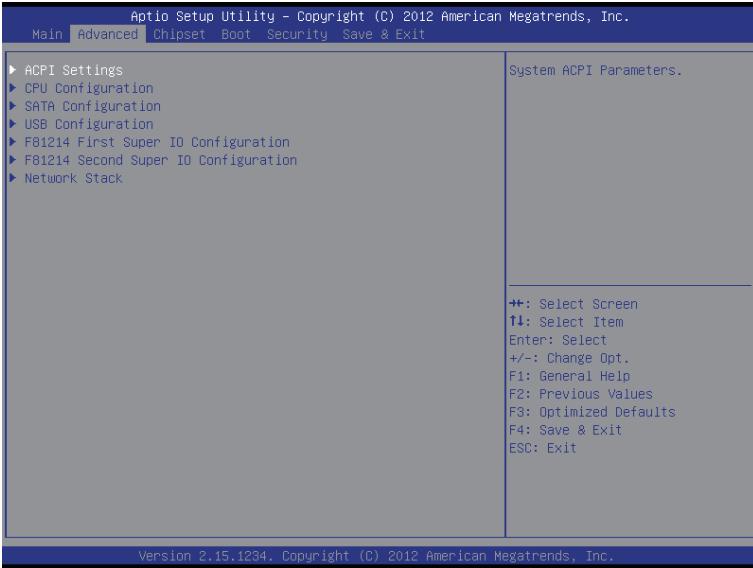
Set the date following the weekday-month-day- year format.

☞ **System Time**

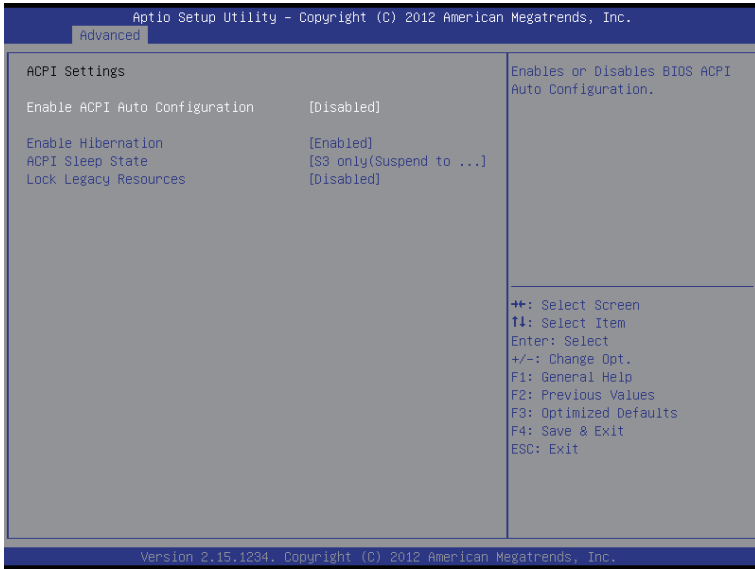
Set the system time following the hour-minute- second format.

2-2 Advanced Menu

The Advanced menu display submenu options for configuring the function of various hardware components. Select a submenu item, then press Enter to access the related submenu screen.



2-2-1 ACPI Settings



⌵ ACPI Settings

⌵ Enable ACPI Auto Configuration

Enable/Disable BIOS ACPI Auto Configuration.

Option available: Enabled/Disabled. Default setting is **Disabled**.

⌵ ACPI Sleep State

Select the highest ACPI sleep state the system will enter, when the suspend button is pressed.

Suspend Disabled/S1 only (CPU Stop Clock)/S3 only (Suspend to RAM).

Default setting is **S3 only (Suspend to RAM)**.

⌵ Lock Legacy Resources

When enabled (locked), this option prevents the operating system from modifying assignments for legacy resources (serial, parallel, and PS/2 ports).

Option available: Enabled/Disabled. Default setting is **Disabled**.

2-2-2 CPU Configuration

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.

Advanced

<p>CPU Configuration</p> <p>Module Version: 4.6.3.7 OntarioPI 029 AGESA Version : 1.2.0.0</p> <p>PSS Support [Disabled] PSTATE Adjustment [PState 0] NX Mode [Disabled] SVM Mode [Disabled] C6 Mode [Disabled] CPB Mode [Disabled]</p> <p>▶ Node 0 Information</p>	<p>Enable/disable the generation of ACPI _PPC, _PSS, and _PCT objects.</p> <p>++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</p>
--	--

Version 2.15.1234. Copyright (C) 2012 American Megatrends, Inc.

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.

Advanced

<p>Socket0: AMD G-T56N Processor Dual Core Running @ 1646 MHz 1350 mV Max Speed:1650 MHz Intended Speed:1650 MHz Min Speed:825 MHz Microcode Patch Level: 500010d</p> <p>----- Cache per Core ----- L1 Instruction Cache: 32 KB/2-way L1 Data Cache: 32 KB/8-way L2 Cache: 512 KB/16-way No L3 Cache Present</p>	<p>++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</p>
--	---

Version 2.15.1234. Copyright (C) 2012 American Megatrends, Inc.

☞ **CPU Configuration**

☞ **PSS Support (Performance Support States/P-states Support)**

Enable/Disable PSS support.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **PSTATE Adjustment**

P-states level adjustment.

Options available: PState 0/PState 1/PState 2/PState 3/PState 4/PState 5/PState 6/PState 7/PState 8.

Default setting is **PState 0**.

☞ **NX Mode**

This BIOS feature is a toggle for AMD processor's No Execute feature.

When enabled, the processor prevents the execution of code in data-only memory pages. This provides some protection against buffer overflow attacks.

When disabled, the processor will not restrict code execution in any memory area.

Options available: Enable/Disabled. Default setting is **Enabled**.

☞ **SVM Mode**

Enable AMD CPU virtualization function. allows a single platform to run multiple operating systems in independent hardware by decoupling OS and physical hardware with hypervisor layer.

Options available: Enable/Disabled. Default setting is **Enabled**.

☞ **C6 Mode**

Allows you to determine whether to let the CPU enter C6 mode in system halt state. When enabled, the CPU core frequency and voltage will be reduced during system halt state to decrease power consumption. The C6 state is a more enhanced power-saving state than C1.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **CPB Mode (Core Performance Boost)**

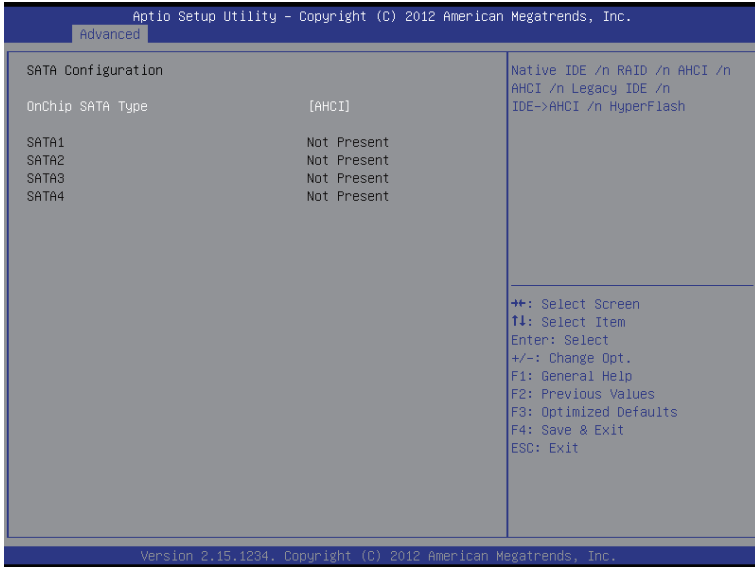
Auto detect or disable CPB Mode.

Options available: Auto/Disabled. Default setting is **Auto**.

☞ **Node 0 Information**

Displays the CPU L1/L2/L3 Cache information.

2-2-3 SATA Configuration



☞ IDE Configuration

☞ OnChip SATA Type

Select the on chip SATA type.

IDE Mode: When set to IDE, the SATA controller disables its AHCI function and runs in the IDE emulation mode.

AHCI Mode: When set to AHCI, the SATA controller enables its AHCI functionality.

Options available: IDE/AHCI/Disabled. Default setting is **AHCI Mode**.

☞ SATA1/SATA2/SATA3/SATA4

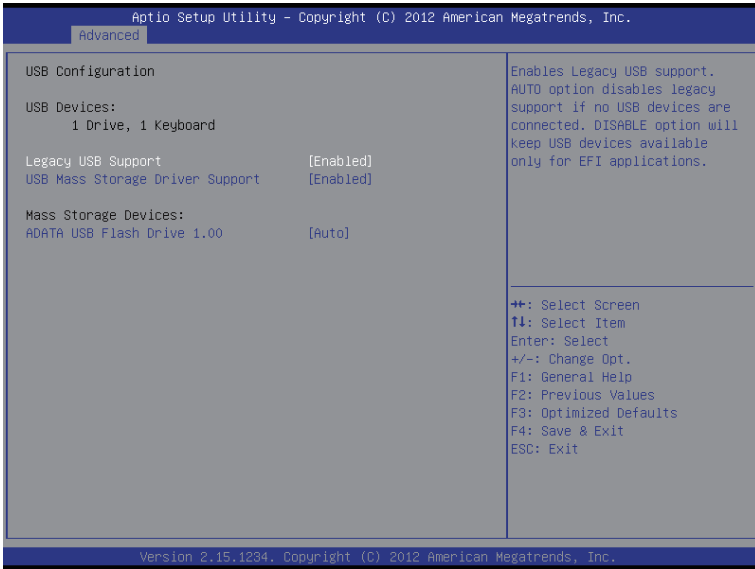
The category identifies Serial ATA and mSATA types of hard disk that are installed in the computer.

System will automatically detect HDD type.

Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category.

Hard drive information should be labeled on the outside device casing. Enter the appropriate option based on this information.

2-2-4 USB Configuration



☞ USB Configuration

☞ USB Device

Display the connected USB devices information.

☞ Legacy USB Support

Enables or disables support for legacy USB devices.

Options available: Auto/Enabled/Disabled. Default setting is **Enabled**.

☞ USB Mass Storage Drive Support

Enables/Disable USB Mass Storage Drive Support.

Options available: Enabled/Disabled. Default setting is **Enabled**.

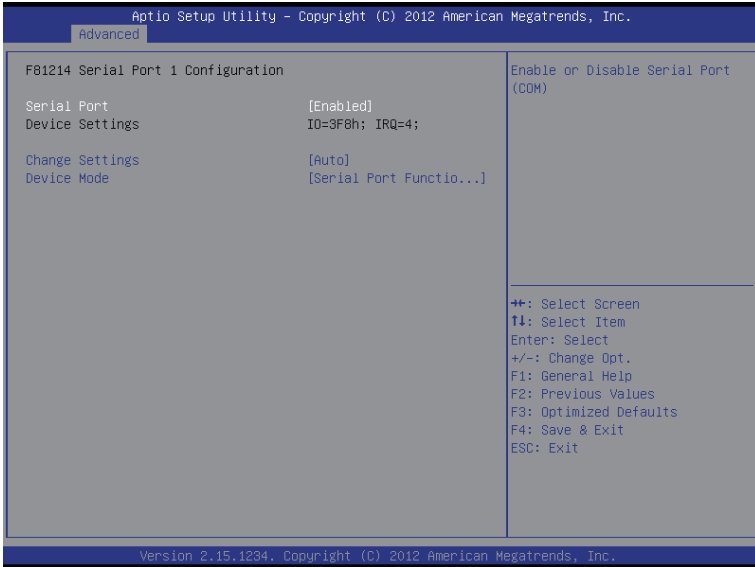
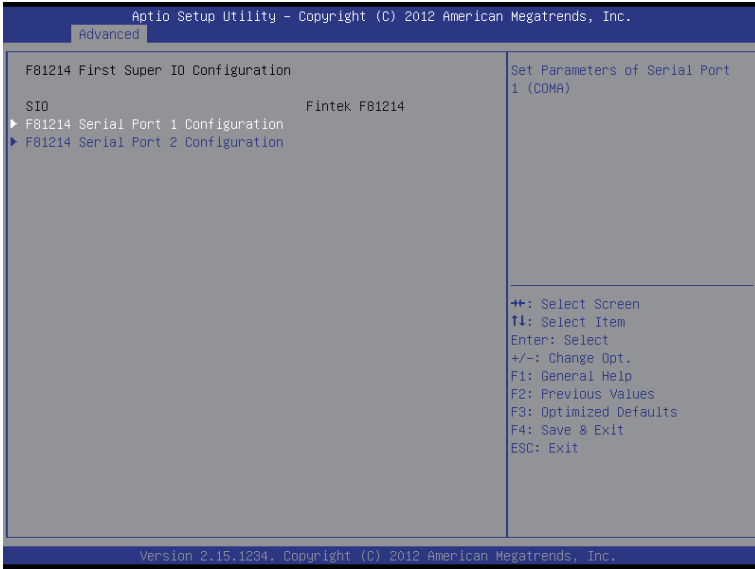
☞ Mass Storage Device^(Note)

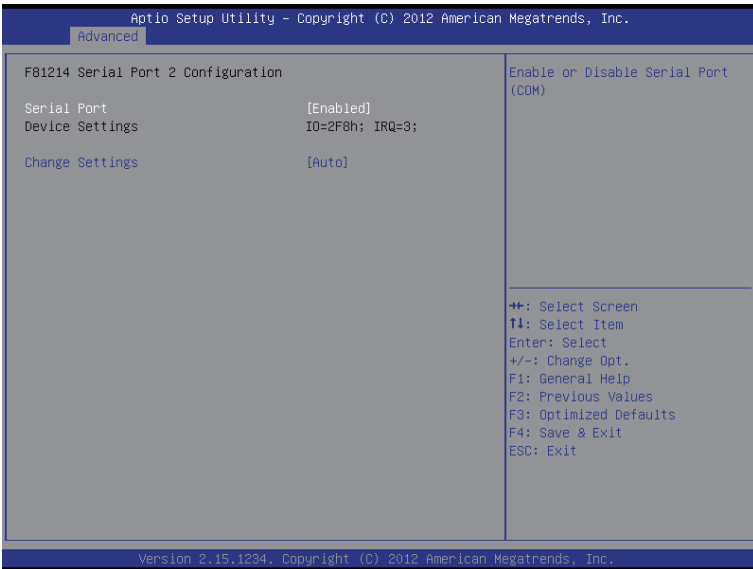
This BIOS feature determines if the USB flash drive be treated as a floppy disk drive or a hard drive.

Options available: Auto.

(Note) This item is present only if you attach USB types of device.

2-2-5 F81214 First Super IO Configuration





☞ F81214 First Super IO Configuration

☞ SIO

Display the mode name of Super IO chip.

☞ F81214 Serial Port 1/2 Configuration

Press [Enter] to enter advanced menu for serial port 1 and serial port 2 settings.

☞ Serial Port

When enabled allows you to configure the serial port settings. When set to Disabled, displays no configuration for the serial port.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ Device Settings

Configure the Port 1/2 base I/O address and IRQ.

Options available: Auto/I/O=3F8; IRQ=4/I/O=3F8h; IRQ=3,4,5,6,7,10,11,12/

IO=2F8h; IRQ=3,4,5,6,7,10,11,12 /IO=3E8h; IRQ=3,4,5,6,7,10,11,12/IO=2E8h; IRQ=3,4,5,6,7,10,11,12.

☞ Device Mode

Change Serial Port 1/2 device mode.

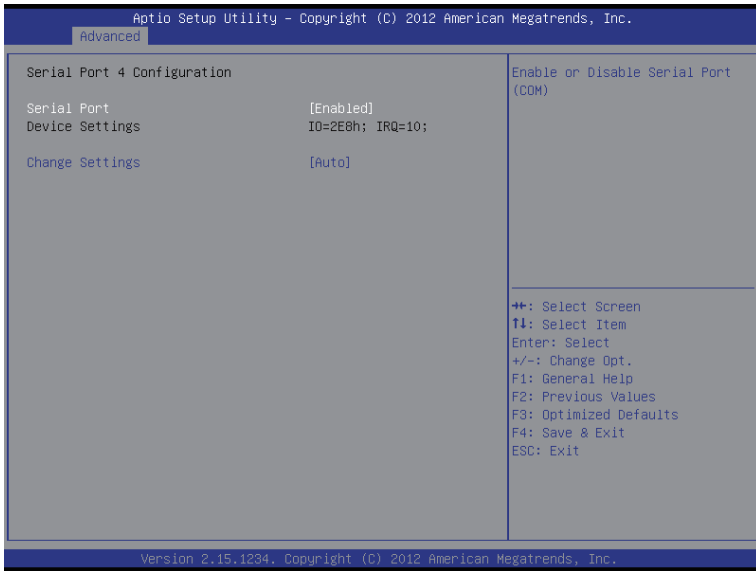
Options available: Serial Port Function Mode

IR Mode, PULSE 1.6us, Full Duplex/IR Mode, PULSE 1.6us, Half Duplex

IR Mode, PULSE 3/16 Bit Time, Full Duplex/IR Mode, PULSE 3/16 Bit Time, Half Duplex

2-2-6 F81214 Second Super IO Configuration





☞ **F81214 Second Super IO Configuration**

☞ **F81214 Second Super IO Chip**

Display the mode name of Super IO chip.

☞ **F81214 Serial Port 3/4 Configuration**

Press [Enter] to enter advanced menu for serial port 2 and serial port 4 settings.

☞ **Serial Port**

When enabled allows you to configure the serial port settings. When set to Disabled, displays no configuration for the serial port.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **Device Settings**

Displays the Serial Port 3/4 base I/O address and IRQ.

☞ **Device Mode**

Change Serial Port 1/2 device settings.

Options available: Auto/IO=3F8; IRQ=4/IO=3F8h; IRQ=3,4,5,6,7,10,11,12/

IO=2F8h; IRQ=3,4,5,6,7,10,11,12 /IO=3E8h; IRQ=3,4,5,6,7,10,11,12/IO=2E8h; IRQ=3,4,5,6,7,10,11,12.

2-2-7 Network Stack

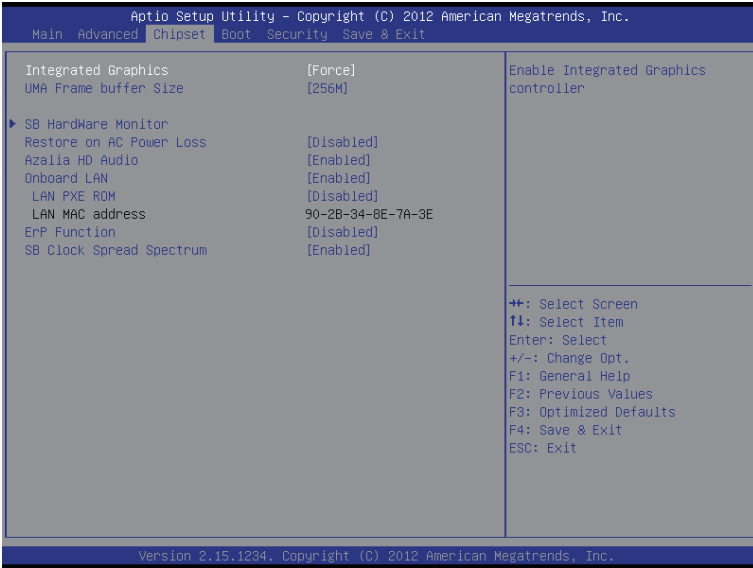


🔗 Network stack

Enable/Disable the network stack (PXE and UEFI).

Option available: Enabled/Disabled. Default setting is **Disabled**.

2-3 Chipset Menu



☞ Integrated Graphics

Configure the onboard integrated graphic device.

Options available: Auto/Disabled/Force. Default setting is **Auto**.

☞ UMA Frame buffer Size^(Note)

Configure the UMA frame buffer size for onboard integrated graphic device.

Please note that this item appears when the **Integrated Graphics** is set to force.

Options available: 32M/64M/128M/256M/512M/1G/2G. Default setting is **256M**.

☞ Restore AC Power Loss

This option provides user to set the mode of operation if an AC / power loss occurs.

Power On: System power state when AC cord is re-plugged.

Power Off: Do not power on system when AC power is back.

Last State: Set system to the last state when AC power is removed.

Options available: Power On/Power Off/Last State. Default setting is **Power Off**.

☞ Azalia HD Audio

Enable/Disable onboard audio controller.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ Onboard LAN

Enable/Disable onboard LAN controller.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ LAN PXE ROM

Enable/Disable Boot Option for PXE device with option ROM.

Options available: Enabled/Disabled. Default setting is **Disabled**.

(Note) This item is present only when **Integrated Graphics** is set to **Force**.

☞ **LAN MAC Address**

Display the information of LAN1 MAC address.

☞ **Erp Function**

Enable/Disable Erp support function.

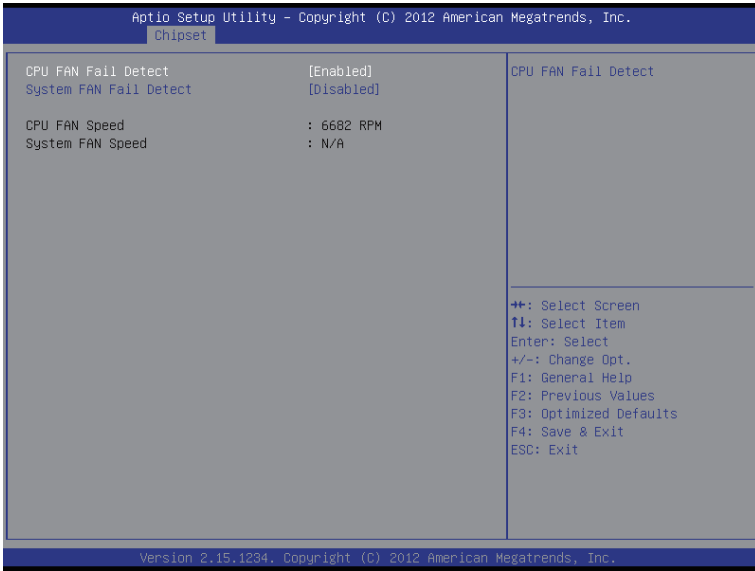
Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **SB Clock Spread Spectrum**

Enable/Disable South Bridge Clock Spread Spectrum function.

Options available: Enabled/Disabled. Default setting is **Enabled**.

2-3-1 SB Hardware Monitor



☞ CPU FAN Fail Detect

Enable CPU Fan Stop Warning function.

Option available: Enabled/Disabled. Default setting is **Enabled**.

☞ System FAN Fail Detect

Enable System Fan Stop Warning function.

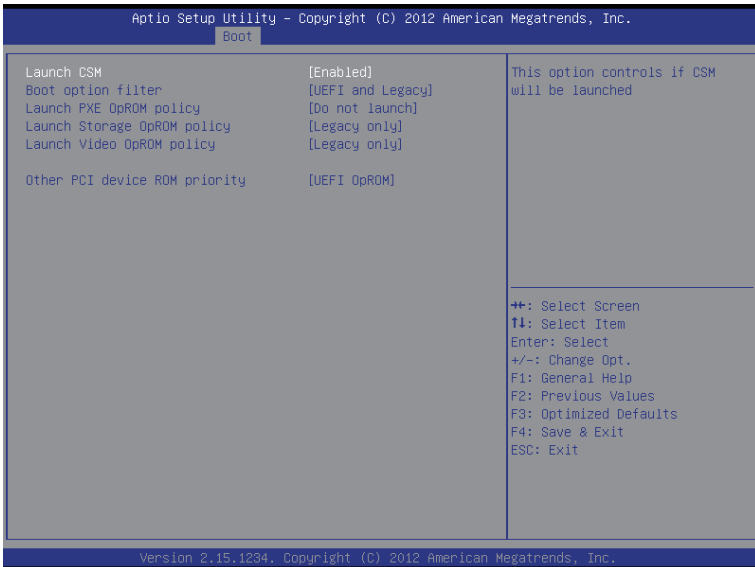
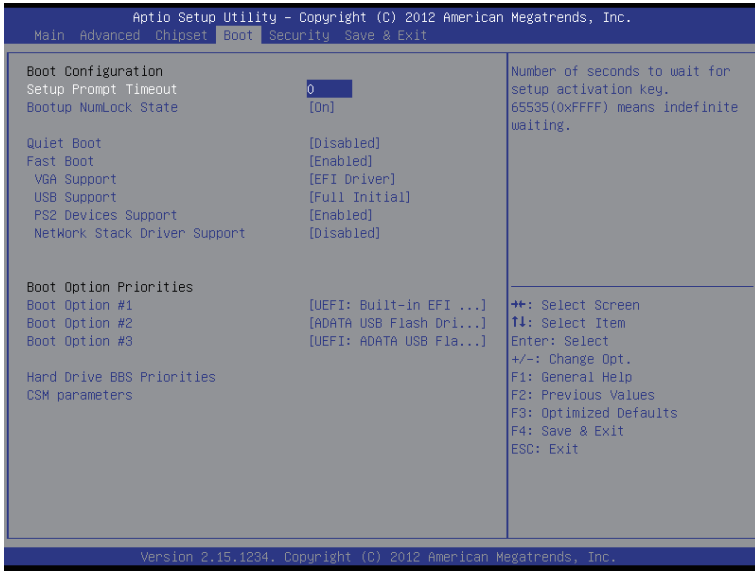
Option available: Enabled/Disabled. Default setting is **Disabled**.

☞ CPU/System Fan Speed (RPM)

Displays current CPU/System fan speed.

2-4 Boot Menu

The Boot menu allows you to set the drive priority during system boot-up. BIOS setup will display an error message if the drive(s) specified is not bootable.



☞ **Boot Configuration**

☞ **Setup Prompt Timeout**

Press <+> and <-> keys to adjust the desired number.

☞ **Bootup NumLock State**

Allows you to select power-on state for NumLock function.

Options available: On/Off. Default setting is **On**.

☞ **Quiet Boot**

This BIOS feature determines if the BIOS should hide the normal POST message with the motherboard or system manufacturer's full-screen.

When it is enabled, the BIOS will display the full-screen logo during the boot-up sequence, hiding normal POST message.

When it is disabled, the BIOS will display the normal POST messages, instead of the full-screen logo,

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **Fast Boot**

If enabled, the system will speed the boot up time.

Options available: Enabled/Disabled. Default setting is **Enabled**.

- The following four items appears and configurable when the **Fast Boot** is set to **Enabled**.



☞ **VGA Support**

All VGA devices will not be available until OS boot up for a fastest POST time.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **USB Support**

All USB devices will not be available until OS boot up for a fastest POST time.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **PS2 Devices Support**

The PS/2 keyboard and mouse devices will not be available until OS boot up for a fastest POST time.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ **Network Stack Drive Support**

When enabled, the system will load the network stack driver during POST.

When disabled, the system will skip the network stack driver from loading during POST.

Options available: Enabled/Disabled. Default setting is **Disabled**.

☞ **Boot Option Priorities**

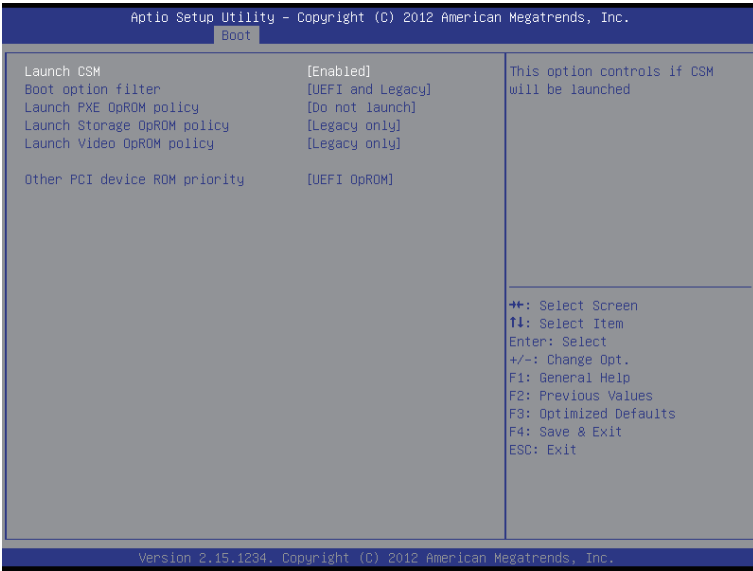
☞ **Boot Option #1/2/3**

Press Enter to configure the boot priority.

☞ **Hard Drive BBS Priorities**

Press Enter to configure the boot priority.

2-4-1 CSM parameters



☞ CSM parameters

Press Enter to configure the advanced items.

☞ Launch CSM (Compatibility Support Module)

Enable/Disable Compatibility Support Module (CSM) launch.

Options available: Enabled/Disabled. Default setting is **Enabled**.



- The following five items appears and configurable when the **Launch CSM** is set to **Enabled**.
- If the **Launch CSM** is set to **Disabled**, the following five items will not be able to support Legacy mode.

☞ Boot option filter

Determines which devices system will boot to.

Options available: UEFI and Legacy/Legacy only/UEFI only. Default setting is **UEFI and Legacy**.

☞ Launch PXE OpROM policy

Determines which devices system will boot to.

Options available: Do not launch/UEFI only/Legacy only/Legacy first/UEFI first. Default setting is **Do not launch**.

☞ Launch Storage OpROM policy

Determines which devices system will boot to.

Options available: Do not launch/UEFI only/Legacy only/Legacy first/UEFI first. Default setting is **Legacy only**.

☞ Launch Video OpROM policy

Determines which devices system will boot to.

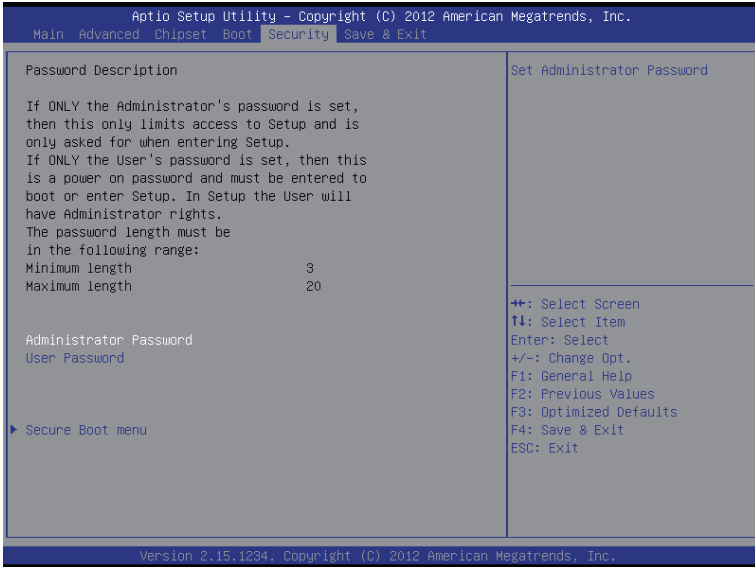
Options available: Do not launch/UEFI only/Legacy only/Legacy first/UEFI first. Default setting is **Legacy only**.

☞ **Other PCI device ROM priority**

For PCI devices other than Network, Mass storage or Video device, defines which OpROM to launch.
Options available: UEFI OpROM/Legacy OpROM. Default setting is **UEFI OpROM**.

2-5 Security Menu

The Security menu allows you to safeguard and protect the system from unauthorized use by setting up access passwords.



There are two types of passwords that you can set:

- **Administrator Password**
Entering this password will allow the user to access and change all settings in the Setup Utility.
- **User Password**
Entering this password will restrict a user's access to the Setup menus. To enable or disable this field, a Administrator Password must first be set. A user can only access and modify the System Time, System Date, and Set User Password fields.

🔑 Administrator Password

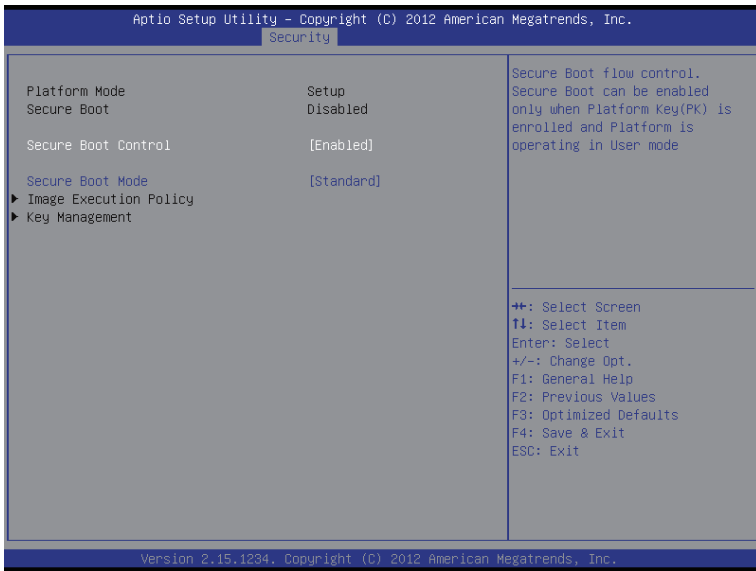
Press Enter to configure the Administrator password.

🔑 User Password

Press Enter to configure the user password.

2-5-1 Secure Boot menu (Optional)

The Secure Boot Menu appears when your device is installed the Windows® 8 operatin system.



☞ Secure Boot menu

☞ Platform Mode

Display the System Platform Mode State.

☞ Secure Boot

Display the status of Secure Boot.

☞ Secure Boot Control

Enable/Disable Secure Boot function.

Options available: Enabled/Disabled. Default setting is **Enabled**.

☞ Secure Boot Mode

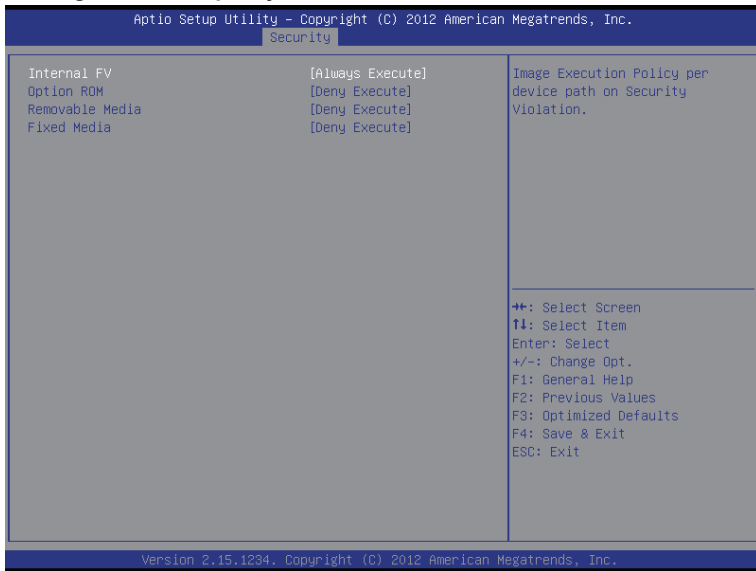
Secure Boot requires all the applications that are running during the booting process to be pre-signed with valid digital certificates. This way, the system knows all the files being loaded before Windows 8 loads and gets to the login screen have not been tampered with.

When set to Standard, it will automatically load the Secure Boot keys form the BIOS databases.

When set to Custom, you can customize the Secure Boot settings and manually load its keys from the BIOS database.

Options available: Standard/Custom. Default setting is **Standard**.

2-5-1-1 Image Execution policy



☞ Internal FV

Image Execution Policy per device path on Security Violation.

Options available: Always Execute/Always Deny/Allow Execute/Defer Execute/ Deny Execute/ Query User. Default setting is **Deny Execute**.

☞ Option ROM

Image Execution Policy per device path on Security Violation.

Options available: Always Execute/Always Deny/Allow Execute/Defer Execute/ Deny Execute/ Query User. Default setting is **Deny Execute**.

☞ Removable Media

Image Execution Policy per device path on Security Violation.

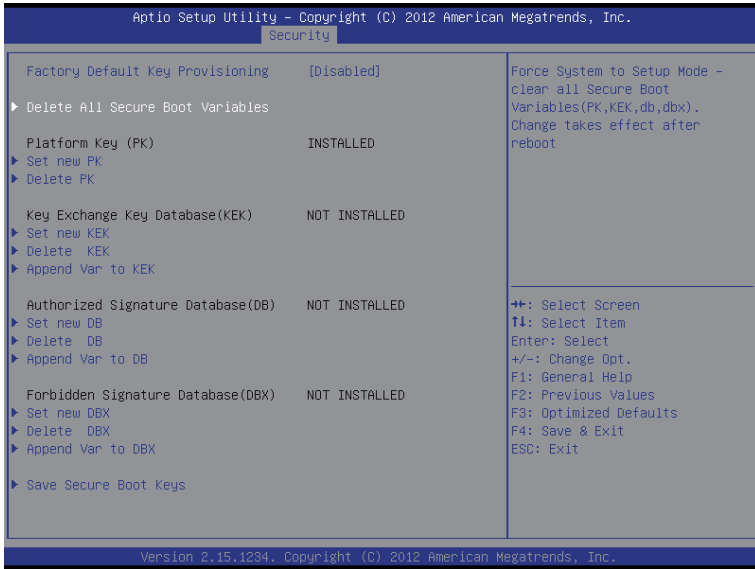
Options available: Always Execute/Always Deny/Allow Execute/Defer Execute/ Deny Execute/ Query User. Default setting is **Deny Execute**.

☞ Fixed Media

Image Execution Policy per device path on Security Violation.

Options available: Always Execute/Always Deny/Allow Execute/Defer Execute/ Deny Execute/ Query User. Default setting is **Deny Execute**.

2-5-1-2 Key Management



🔑 Key Management

This item appears only when the **Secure Boot Mode** is set to **Custom**.

🔑 Factory Default Key Provisioning

Force the system to Setup Mode. This will clear all Secure Boot Variables such as Platform Key (PK), Key-exchange Key (KEK), Authorized Signature Database (db), and Forbidden Signatures Database (dbx).

Options available: Enabled/Disabled. Default setting is **Disabled**.

🔑 Platform Key (PK)

Display the status of Platform Key.

🔑 Set new PK

Press [Enter] to configure a new PK.

🔑 Delete PK

Press [Enter] to delete the existed PK. Once the PK is deleted, all the system's Secure Boot keys will not be activated.

🔑 Key Exchange Key Database (KEK)

Display the status of Platform Key.

🔑 Set new KEK

Press [Enter] to configure a new KEK.

🔑 Delete KEK

Press [Enter] to delete the KEK from your system.

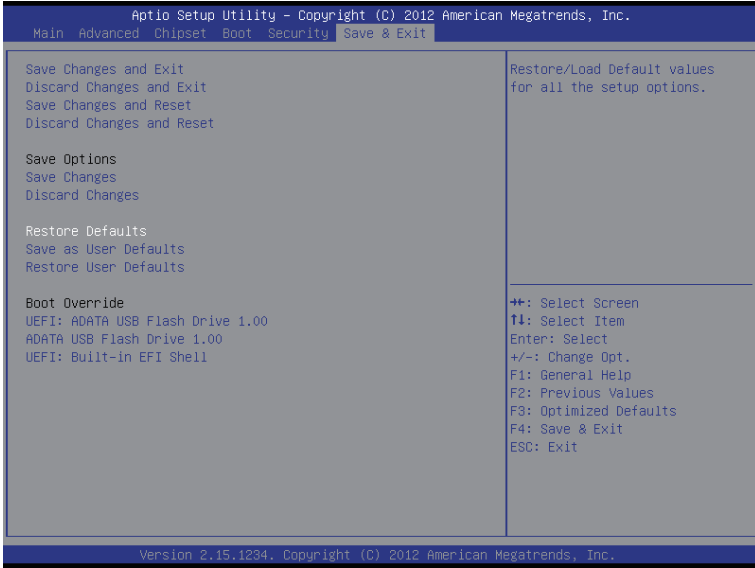
🔑 Append Var to KEK

Press [Enter] to load additional KEK from a storage devices for an additional db and dbx management.

- ☞ **Authorized Signature Database (DB)**
Display the status of Authorized Signature Database.
- ☞ **Set new DB**
Press [Enter] to configure a new db.
- ☞ **Delete DB**
Press [Enter] to delete the db from your system.
- ☞ **Append Var to DB**
Press [Enter] to load additional db from a storage devices.
- ☞ **Forbidden Signature Database (DBX)**
Display the status of Forbidden Signature Database.
- ☞ **Set new DB**
Press [Enter] to configure a new dbx.
- ☞ **Delete DB**
Press [Enter] to delete the dbx from your system.
- ☞ **Append Var to DB**
Press [Enter] to load additional db from a storage devices.
- ☞ **Save Secure Boot Keys**
Press [Enter] to store content of each Secure Boot Variable.

2-6 Save & Exit Menu

The Exit menu displays the various options to quit from the BIOS setup. Highlight any of the exit options then press **Enter**.



☞ Save Changes and Exit

Saves changes made and close the BIOS setup and exit system setup.

Options available: Yes/No.

☞ Discard Changes and Exit

Discards changes made and close the BIOS setup and exit system setup .

Options available: Yes/No.

☞ Save Changes and Reset

Active this option to reset system after saving the changes.

Options available: Yes/No.

☞ Discard Changes and Reset

Active this option to reset system after without saving any changes.

Options available: Yes/No.

☞ Save Changes

Active this option to save all the changes.

☞ Discard Changes

Discards changes made and close the BIOS setup.

☞ Restore Defaults

Press <Enter> on this item and then press the <Y> key to load the default BIOS settings.

Options available: Yes/No.

☞ **Save as User Defaults**

Press <Enter> on this item and then press the <Y> key to save as user default settings.

Options available: Yes/No.

☞ **Restore User Defaults**

Press <Enter> on this item and then press the <Y> key to restore user default settings.

Options available: Yes/No.

☞ **Boot Override**

Press Enter to configure the device as the boot-up drive.

☞ **UEFI: Built-in in EFI Shell**

Press <Enter> on this item to Launch EFI Shell from filesystem device.