

Technical Manual
Of
Intel Haswell/Broadwell Series CPU
Based IPC M/B

NO. G03-NF542-F

Revision: 1.0

Release date: October 28, 2015

Trademark:

- * Specifications and Information contained in this documentation are furnished for information use only, and are subject to change at any time without notice, and should not be construed as a commitment by manufacturer.

Environmental Protection Announcement

Do not dispose this electronic device into the trash while discarding. To minimize pollution and ensure environment protection of mother earth, please recycle.



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Environmental Safety Instruction

- Avoid the dusty, humidity and temperature extremes. Do not place the product in any area where it may become wet.
- 0 to 60 centigrade is the suitable temperature. (The figure comes from the request of the main chipset)
- Generally speaking, dramatic changes in temperature may lead to contact malfunction and crackles due to constant thermal expansion and contraction from the welding spots' that connect components and PCB. Computer should go through an adaptive phase before it boots when it is moved from a cold environment to a warmer one to avoid condensation phenomenon. These water drops attached on PCB or the surface of the components can bring about phenomena as minor as computer instability resulted from corrosion and oxidation from components and PCB or as major as short circuit that can burn the components. Suggest starting the computer until the temperature goes up.
- The increasing temperature of the capacitor may decrease the life of computer. Using the close case may decrease the life of other device because the higher temperature in the inner of the case.
- Attention to the heat sink when you over-clocking. The higher temperature may decrease the life of the device and burned the capacitor.

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Manual Revision Information

Reversion	Revision History	Date
1.0	First Edition	October 28, 2015

Item Checklist

- Motherboard
- User's Manual
- CD for motherboard utilities
- Cable(s)

Chapter 1

Introduction of the Motherboard

1-1 Feature of Motherboard

- Onboard Intel® Haswell/Broadwell series SoC Processor, with low power consumption never denies high performance
- Support 2 * DDR3L 1333/1600 MHz SO-DIMM, up to 16GB
- Support 2* full-size Mini-PCIE connector
- Support 1* full-size m-SATA (***share with Mini-PCIE***)
- Support 1 * 2.5" SATAII hard disk driver device (3Gb/s)
- Support USB 3.0 data transport demand
- Support DP & HDMI dual display output
- Support CPU Over-Temperature protection
- Amplifier implement to support 3W Speaker
- Support CPU Smart FAN
- Compliance with ErP standard
- Support Watchdog function

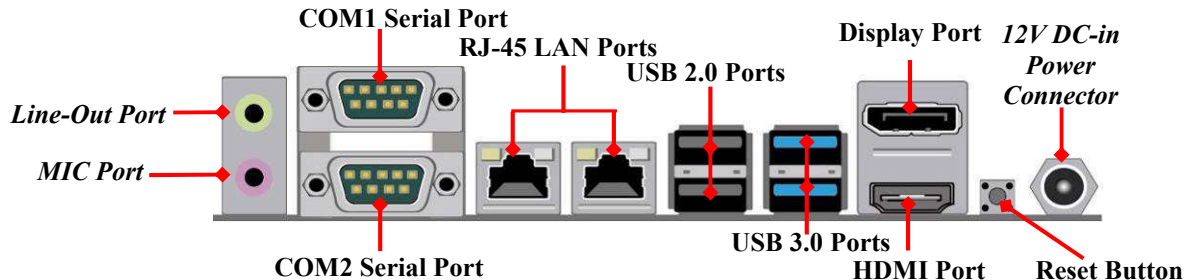
1-2 Specification

Spec	Description
Design	<ul style="list-style-type: none"> ● 6 layers; PCB size: 11 x 16.7 cm
Embedded CPU	<ul style="list-style-type: none"> ● Intel® Haswell/Boardwell ULT SoC CPU <p><i>*CPU model varies from different IPC options. Please consult your dealer for more information of onboard CPU.</i></p>
Memory Slot	<ul style="list-style-type: none"> ● 2 * DDRIII L SODIMM Slot for un-buffered DDRIII L 1333/1600 MHz SDRAM, expandable to 16GB ● Dual-channel function supported
Expansion Slot	<ul style="list-style-type: none"> ● 1* Full-size Mini-PCIE slot (MPE1) ● 1* Full-size Mini-PCIE/mSATA slot (MPE2) ● 1* PCIE x1 slot by sideways(PCIE1) ● 1* PCIE x4 slot by sideways(PCIE2)
LAN Chip	<ul style="list-style-type: none"> ● Integrated with Intel I211AT Gigabit PCI-E LAN chip & Intel I218LM Gigabit PHY LAN chip ● Support Fast Ethernet LAN function of providing 10/100/1000Mbps Ethernet data transfer rate
Audio Chip	<ul style="list-style-type: none"> ● Realtek ALC662 HD Audio Codec integrated ● Audio driver and utility included
Storage	<ul style="list-style-type: none"> ● 1* 3+7 pin HDD Connector for 2.5" SATAHDD ● 1* Full-size MSATA slot (MPE2, share with Mini-PCIE slot)
BIOS	<ul style="list-style-type: none"> ● AMI 128MB Flash ROM
Multi I/O	<p>Rear Panel I/O:</p> <ul style="list-style-type: none"> ● 1* 12V DC-in power Jack ● 1* System reset button ● 1* Display port ● 1* HDMI port ● 2* USB 3.0 port ● 2* USB 2.0 port ● 2* RJ-45 LAN port ● 2* COM RS232 serial port

	<ul style="list-style-type: none"> ● 1*Audio Line Out port ● 1*Audio MIC port <p>Internal I/O Connectors & Headers:</p> <ul style="list-style-type: none"> ● 1* 2-pin internal 12V DC-in power connector ● 1* CPUFAN header ● 1* Front panel header ● 1* 9-pin USB 2.0 header (Expansible to 2 USB 2.0 port) ● 1* GPIO_CON header ● 1* Line-in header ● 1* SPEAK_CON header (for 3W / 4 OHM amplifier) ● 1* J1 jumper & header block
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1-3 Layout Diagram

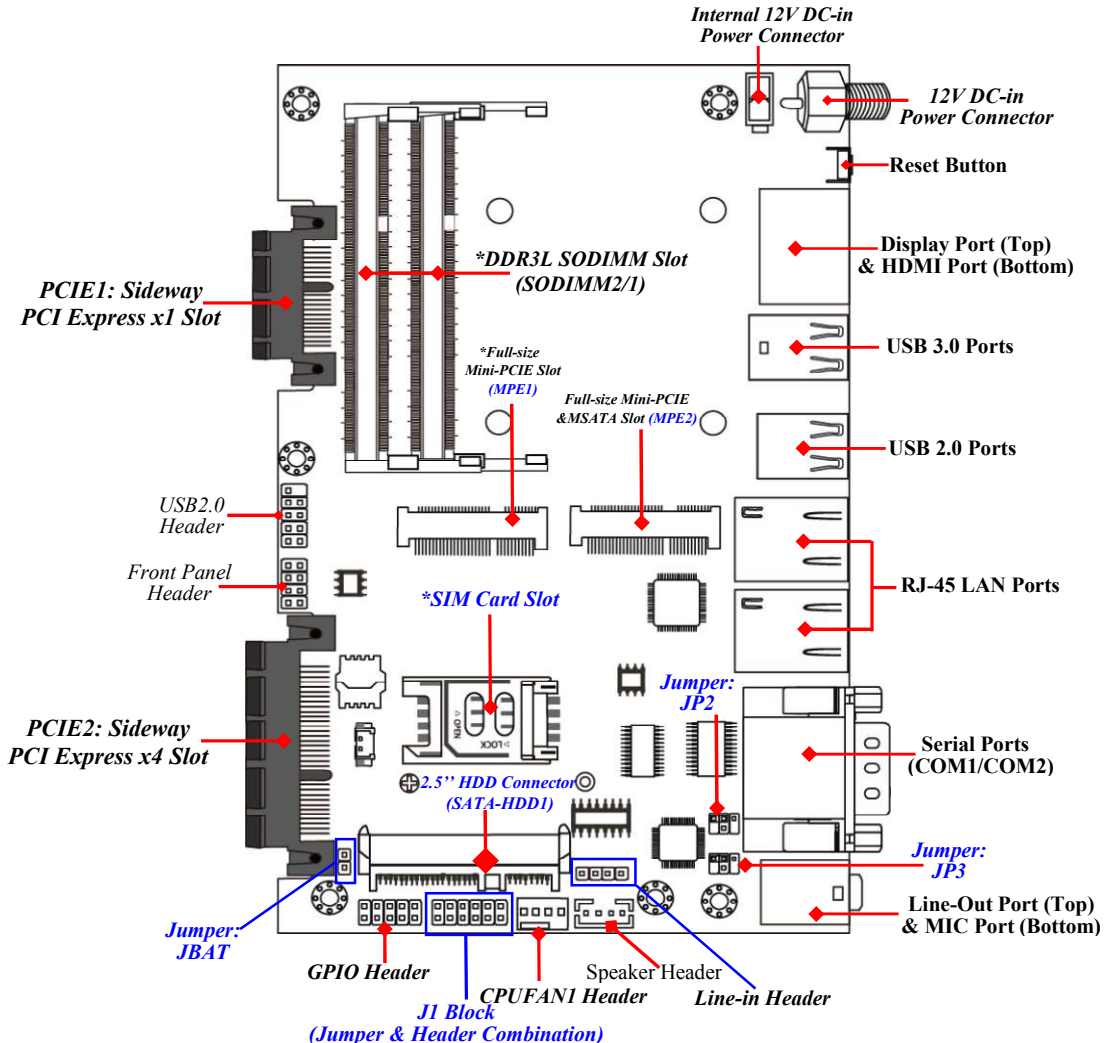
Rear IO Panel Diagram:



Warning!!

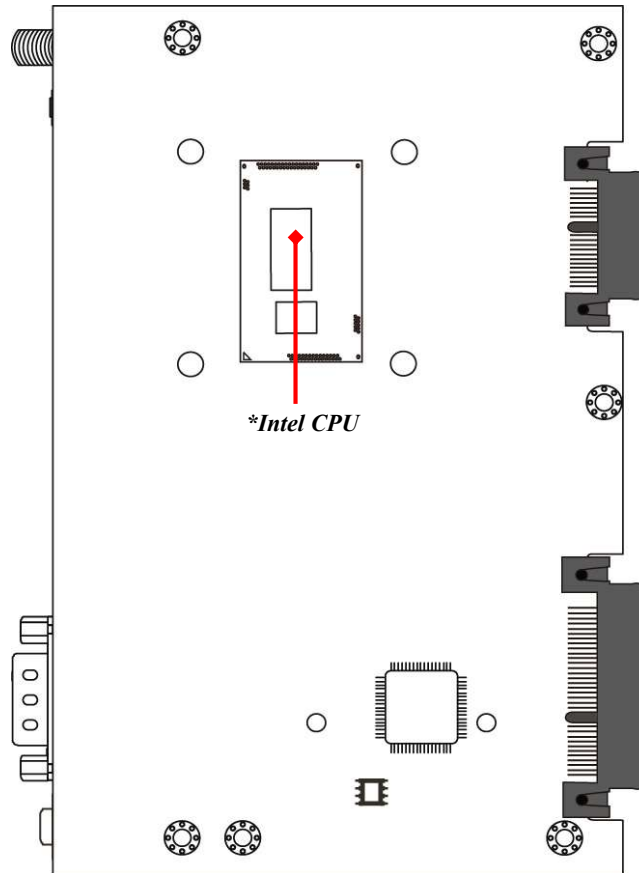
The board has a 12V DC-in power connector (DCIN1) in I/O back panel and an internal ATX12V (DCIN2) power connector. User can only connect one type of compatible power supply to one of them to power the system.

Motherboard Internal Diagram-Front Side



Note: 1. The memory module should be **DDR3L 1.35V SODIMM** and **not exceeding 16GB total capacity**. 2. **SIM card slot** only work **when compatible SIM card** installed & 3G LAN card installed in **MPE1 Mini-PCIE slot**.

Motherboard Internal Diagram-Back Side



***Note:** CPU is the most important part of the board and very fragile to any possible harm. Make sure that there is no damage to the CPU during any installation procedures!

Jumper

Jumper	Name	Description
JBAT	Clear CMOS RAM Function Setting	2- pin Block
JP2	COM1 Port Pin9 Function Select	4- pin Block
JP3	COM2 Port Pin9 Function Select	4- pin Block
J1	Pin (1&2): ATX Mode / AT Mode Select Pin(3&4): Case Open Message Display Function Pin (9&10): ME Security Measure Function Select	12-pin Block

Connectors

Connector	Name
DCIN1	12V System DC-in Power Jack Connector
DCIN2	Internal 12V System DC-in Power Connector
DP_HDMI	Top: DP display port Connector Bottom: HDMI Port Connector
USB1	USB 3.0 Port Connector x 2
USB2	USB 2.0 Port Connector x 2
LAN2/LAN1	RJ-45 LAN Port Connector x 2
COM1/COM2	RS232 Serial Port Connector x 2
AUDIO	Top: Audio Line Out Connector Bottom: Audio MIC Connector
SATA-HDD1	3+7 pin HDD Connector for 2.5" SATA HDD
CPUFAN	CPUFAN Connector

Headers

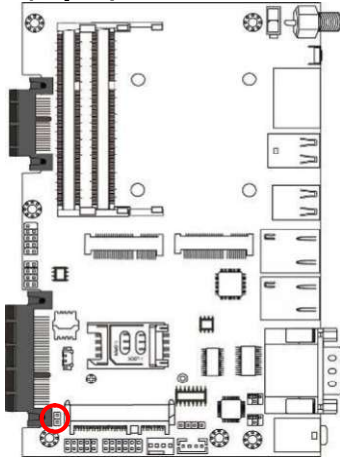
Header	Name	Description
FP	Front Panel Header(PWR LED/ HDD LED/Power Button /Reset)	8-pin Block
FP_USB1	USB 2.0 Header	9-pin Block
GPIO	GPIO Header	10-pin Block
J1	Pin(5&6): LAN1 Activity LED Header Pin(7&8): LAN2 Activity LED Header Pin(11&12): SPDIF_Out Header	12-pin Block
SPK_OUT	Speaker Header	4-pin Block
LINEIN	Line-in Header	4-pin Block

Chapter 2

Hardware Installation

2-1 Jumper Setting

JBAT (2-pin): Clear CMOS Setting



JBAT → Clear CMOS

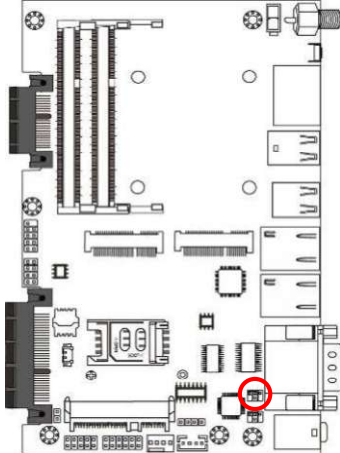


1-2 Open: Normal(Default);

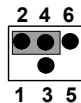


1-2 Closed: Clear CMOS(One Touch).

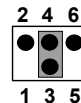
JP2 (4-pin): COM1 Port Pin9 Function Select



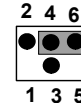
JP2 → COM1 Port Pin-9



**2-4 Closed:
RI=RS232(Default);**

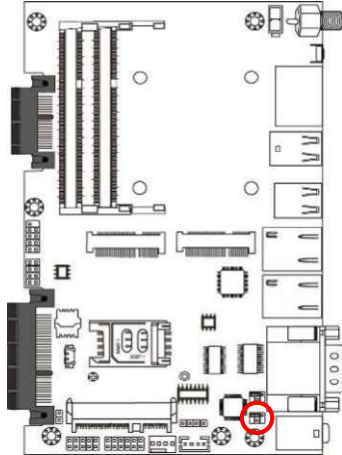


**3-4 Closed:
RI=+5V;**

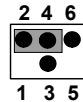


**4-6 Closed:
RI=+12V.**

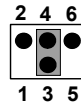
JP3 (4-pin): COM2 Port Pin9 Function Select



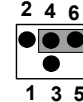
JP3→COM2 Port Pin-9



2-4 Closed:
RI=RS232(Default);

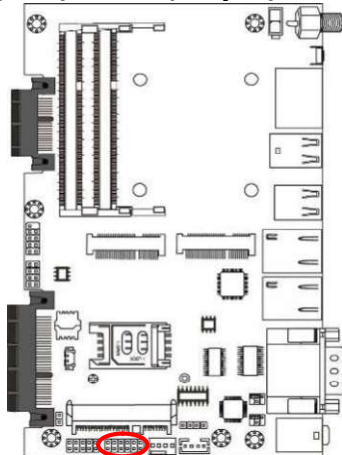


3-4 Closed:
RI=+5V;

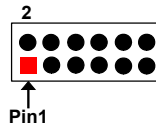


4-6 Closed:
RI=+12V.

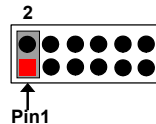
Pin (1&2) of J1 (12-pin): ATX Mode/AT Mode Select



Pin (1&2) of J1 → ATX/AT Mode Select



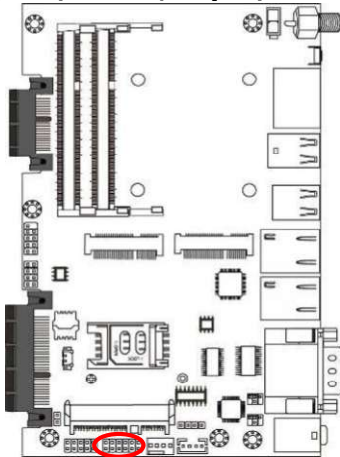
1-2 Open: ATX Mode Selected(Default);



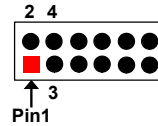
1-2 Closed: AT Mode Selected.

***ATX Mode Selected:** Press power button to power on after power input ready;
AT Mode Selected: Directly power on as power input ready.

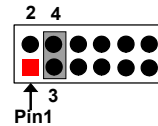
Pin (3&4) of J1 (12-pin): Case Open Message Display Function Select



Pin (3&4) of J1 → Case Open



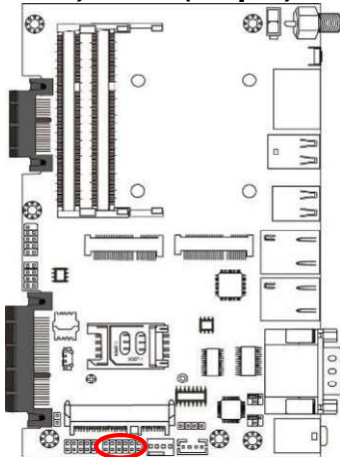
3-4 Open: Normal(Default);



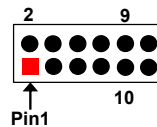
3-4 Closed: Case Open Alert.

Pin (3&4) Closed: When Case open function pin short to GND, the Case open function was detected. When Used, needs to enter BIOS and enable 'Case Open Detect' function. In this case if your case is removed, next time when you restart your computer, a message will be displayed on screen to inform you of this.

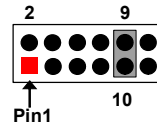
Pin (9&10) of J1 (12-pin): ME Security Measure Function Select



Pin (9&10) of J1 → ME Security Function Select



9-10 Open: Disable Security Measures in the Flash Descriptor(Default);











9-10 Closed: Enable Security Measures in the Flash Descriptor(Override).

2-2 Connectors and Headers

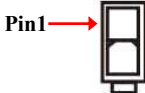
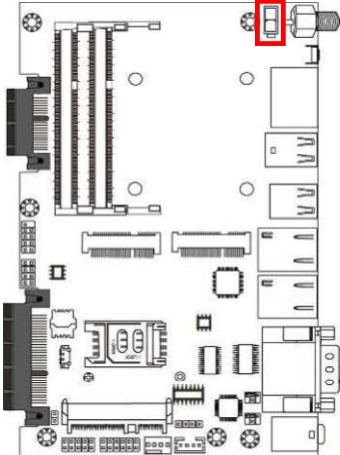
2-2-1 Connectors

(1) Rear I/O Connectors

**Refer to Page-3: Rear IO Panel Diagram.*

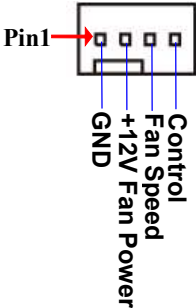
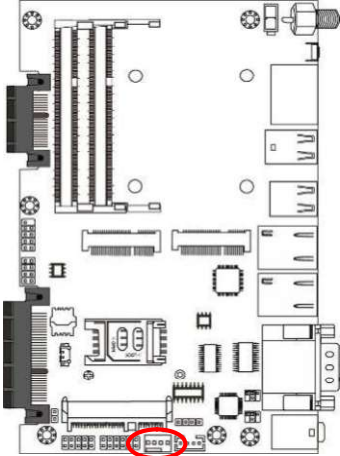
Icon	Name	Function
	12V DC-in Power Connector	For user to connect compatible power adapter to provide power supply for the system.
	Display Port	To the system to corresponding display device with compatible DP cable.
	HDMI Port	To connect display device that support HDMI specification.
	USB 3.0 Port	To connect USB keyboard, mouse or other devices compatible with USB specification. USB 3.0 ports supports up to 5Gbps data transfer rate.
	USB 2.0 Port	To connect USB keyboard, mouse or other devices compatible with USB specification.
	RJ-45 LAN Port	This connector is standard RJ-45 LAN jack for Network connection.
	Serial Port	Mainly for user to connect external MODEM or other devices that supports Serial Communications Interface.
	Audio Connectors	GREEN: Line-out Connector PINK : MIC Connector

(2) DCIN2 (2-pin Block): Internal 12V DC-in Power Connector



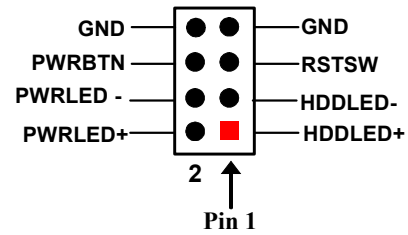
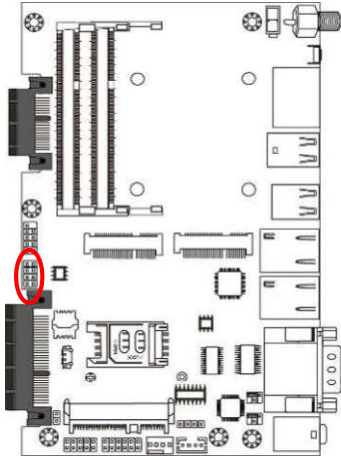
Pin.	Definition
1	GND
2	+12V DC_IN

(3) CPUFAN (4-pin): CPUFAN Connector

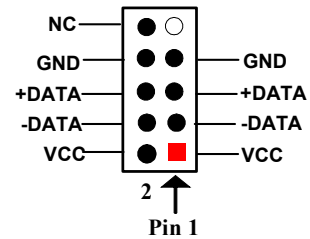
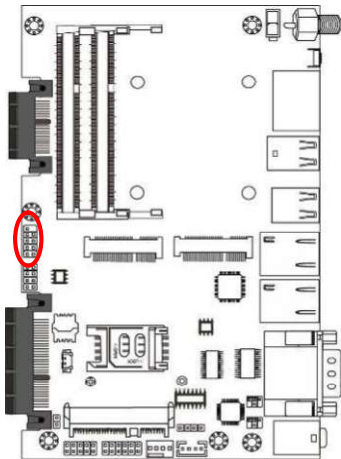


2-2-2 Headers

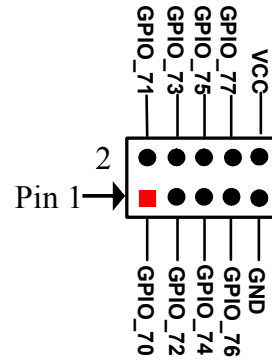
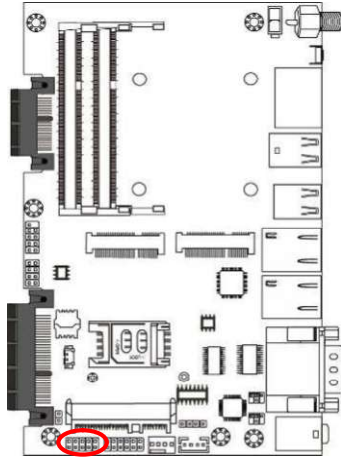
(1) FP (8-pin): Front Panel Header



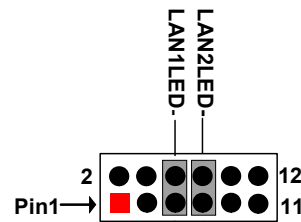
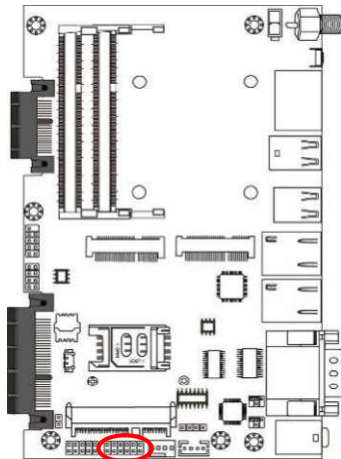
(2) FP_USB1 (9-pin): USB 2.0 Port Header



(3) GPIO (10-pin): GPIO Header

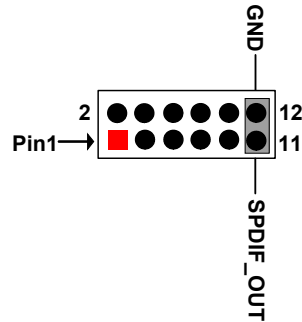
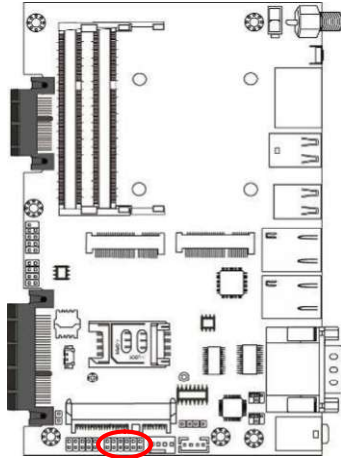


(4) Pin(5&6) & Pin(7&8) of J1 (12-pin): LAN Activity LED Headers



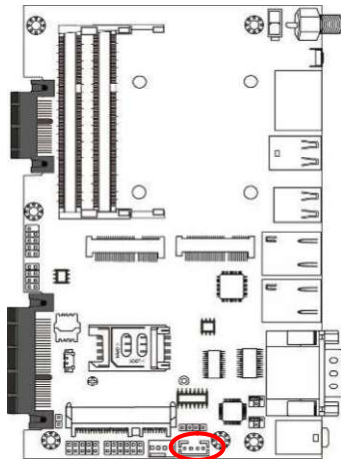
J1: Pin (5&6) → LAN1 LED
J1: Pin (7&8) → LAN2 LED

(5) Pin(11&12) of J1 (12-pin): SPDIF Out Header



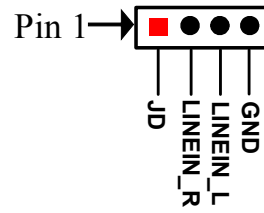
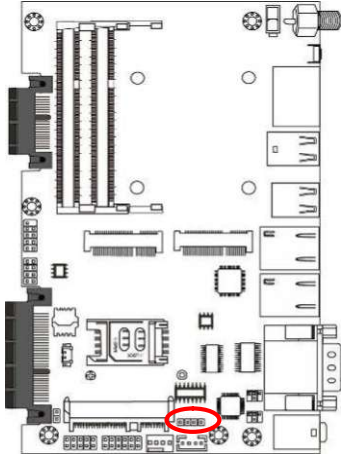
J1: Pin(11&12)→SPDIF_OUT Header

(6) SPK_CON (4-pin): Speaker Header



Pin No.	Definition
1	L-
2	L+
3	R+
4	R-

(7) LINEIN (4-pin): Line-in Header



Chapter 3

Introducing BIOS

Notice! The BIOS options in this manual are for reference only. Different configurations may lead to difference in BIOS screen and BIOS screens in manuals are usually the first BIOS version when the board is released and may be different from your purchased motherboard. Users are welcome to download the latest BIOS version form our official website.

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 will gain 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.

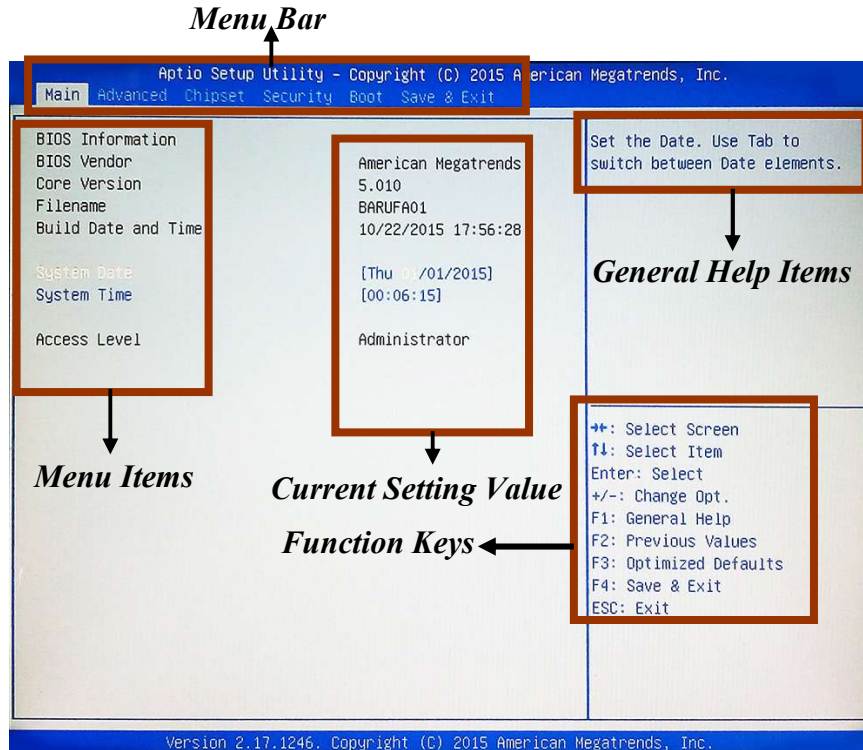
3-1 Entering Setup

Power on the computer and by pressing immediately allows you to enter Setup. If the message disappears before your respond and 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. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to

Press **** to enter Setup; press **< F7>** for Pop Menu.

3-2 BIOS Menu Screen

The following diagram show a general BIOS menu screen:



3-3 Function Keys

In the above BIOS Setup main menu of, 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 ← → (left, right) to select screen;

-
-
- Press ↑↓ (up, down) to choose, in the main menu, the option you want to confirm or to modify.
 - Press <Enter> to select.
 - Press <+>/<-> keys when you want to modify the BIOS parameters for the active option.
 - [F1]: General help.
 - [F2]: Previous values.
 - [F3]: Optimized defaults.
 - [F4]: Save & Exit.
 - Press <Esc> to quit the BIOS Setup.

3-4 Getting Help

Main Menu

The on-line description of the highlighted setup function is displayed at the top right corner the screen.

Status Page Setup Menu/Option Page Setup Menu

Press [F1] to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press <Esc>.

3-5 Menu Bars

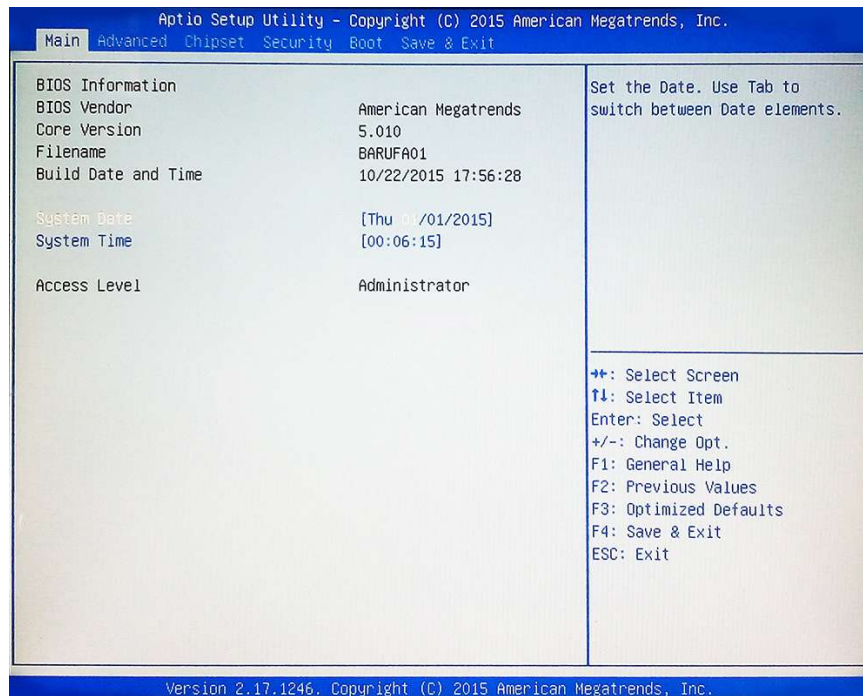
There are six menu bars on top of BIOS screen:

Main	To change system basic configuration
Advanced	To change system advanced configuration
Chipset	To change chipset configuration
Security	Password settings
Boot	To change boot settings
Save & Exit	Save setting, loading and exit options.

User can press the right or left arrow key on the keyboard to switch from menu bar. The selected one is highlighted.

3-6 Main Menu

Main menu screen includes some basic system information. Highlight the item and then use the <+> or <-> and numerical keyboard keys to select the value you want in each item.



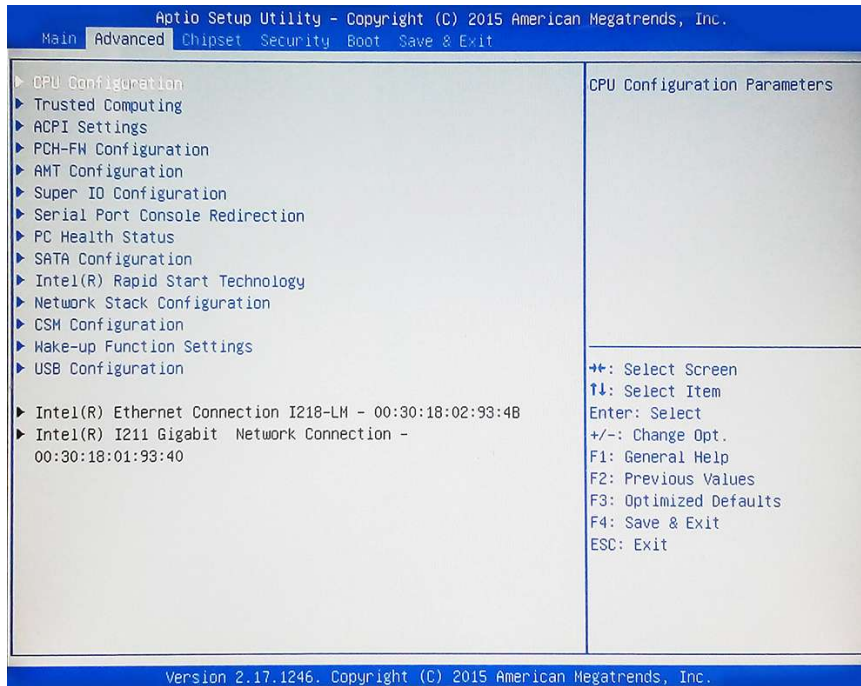
System Date

Set the date. Please use [Tab] to switch between data elements.

System Time

Set the time. Please use [Tab] to switch between time elements.

3-7 Advanced Menu



▶ CPU Configuration

Press [Enter] to view current CPU configuration and make settings for the following sub-items:

Hyper-Threading

The optional settings: [Disabled]; [Enabled]. When set as [Disabled] only one thread per enabled core is enabled.

[Enabled]: for Windows XP and Linux (OS optimized for Hyper-Threading Technology).

[Disabled]: for other OS (OS optimized not for Hyper-Threading Technology).

Limit CPUID Maximum

The optional settings: [Disabled]; [Enabled].

This item should be set as [Disabled] for Windows XP.

Execute Disable Bit

The optional settings: [Disabled]; [Enabled].

Intel Virtualization Technology

The optional settings: [Enabled]; [Disabled].

When set as [Enabled], a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

Hardware Prefetcher

The optional settings are: [Disabled]; [Enabled].

Use this item to turn on/off the Mid Level Cache (L2) streamer prefetcher.

Adjacent Cache Line Prefetch

The optional settings are: [Disabled]; [Enabled].

Use this item to turn on/off prefetching of adjacent cache lines.

EIST

The optional settings are: [Disabled]; [Enabled].

CPU C States

Use this item to enable or disable CPU C states.

The optional settings are: [Disabled]; [Enabled].

When set as [Enabled], the following item shall appear:

CPU C6 Report

Use this item to enable or disable CPU C6 report to OS.

The optional settings are: [Disabled]; [Enabled].

CPU C7 Report

Use this item to enable or disable CPU C7 report to OS.

The optional settings are: [Disabled]; [Enabled].

▶ **Trusted Computing**

Press [Enter] to make settings to make further settings in '**Security Device Support**'.

Configuration

Security Device Support

Use this item to enable or disable BIOS support for security device. O.S. will not

show security device. TGG EFI protocol and INT1A interface will not be available. The optional settings are: [Disabled]; [Enabled].

▶ **ACPI Settings**

Press [Enter] to make settings for the following sub-item:

ACPI Settings

ACPI Sleep State

Use this item to select the highest ACPI sleep state the system will enter when the suspend button is pressed.

The optional settings are: [Suspend Disabled]; [S3 (Suspend to RAM)].

▶ **PCH-FW Configuration**

Press [Enter] to view ME information and make further settings for the following sub-item:

▶ **Firmware Update Configuration**

Press [Enter] to make settings for '**ME FW Image Re-Flash**'.

ME FW Image Re-Flash

Use this item to enable or disable ME FW Image Re-Flash function.

The optional settings: [Disabled]; [Enabled].

** In the case that user needs to update ME firmware, user should set '**ME FW Image Re-Flash**' as **[Enabled]**, save the settings and exit. The system will turn off and reboot after 4 seconds. If the user goes to BIOS screen again will find this item is set again as **[Disabled]**, but user can still re-flash to update firmware next time.*

▶ **AMT Configuration**

Use this item to configure Active Management Technology parameters.

Press [Enter] to make settings for the following sub-items:

Intel AMT

Use this item to enable or disable Intel Active Management Technology BIOS extension.

The optional settings: [Disabled]; [Enabled].

BIOS Hotkey Pressed

Use this function to enable or disable BIOS Hotkey Press function.

MEBx Selection Screen

Use this function to enable or disable MEBx Selection Screen function.

Hide Un-Configure ME Confirmation Prompt

The optional settings: [Disabled]; [Enabled].

MEBx Debug Message Output

Use this function to enable or disable MEBx Debug Message Output function.

Un-Configure ME

Use this function to enable or disable Un-Configure ME without password function.

Amt Wait Timer

Use this item to set time to wait before sending ASF_GET_BOOT_OPTIONS.

Disable ME

Use this item to set ME to soft Temporary Disabled function.

The optional settings: [Disabled]; [Enabled].

ASF

Use this item to enable or disable Alert Specification Format.

Active Remote Assistance Process

Use this item to enable or disable Trigger CIRA boot function.

USB Configure

Use this item to enable or disable USB configure function.

PET Progress

Use this item to enable or disable PET events progress to receive PET event or not.

WatchDog

Use this item to enable or disable WatchDog Timer.

**When set as [Enabled], the following sub-items shall appear:*

OS Timer

Use this item to set OS watch dog timer.

BIOS Timer

Use this item to set BIOS watch dog timer.

▶ **Super I/O Configuration**

Press [Enter] to make settings for the following sub-items:

Super IO Configuration

▶ **Serial Port 1 Configuration/ Serial Port 2 Configuration**

Press [Enter] to make settings for the following items:

Serial Port 1 Configuration/ Serial Port 2 Configuration

Serial Port

Use this item to enable or disable serial port (COM).

Change Settings

Use this item to select an optimal setting for super IO device.

Serial Port FIFO Mode

The optional settings are: [16-Byte FIFO]; [32-Byte FIFO]; [64-Byte FIFO]; [128-Byte FIFO].

ERP Support

The optional settings: [Disabled]; [Enabled].

This item should be set as **[Disabled]**, if you wish to have all active wake-up functions.

Case Open Detect

This item controls detect case open function.

The optional settings: [Disabled]; [Enabled].

WatchDog Reset Timer

This item is for user to enable or disable support for WDT reset function.

The optional settings: [Disabled]; [Enabled].

When set as [Enabled], the following sub-items shall appear:

WatchDog Reset Timer Value

User can set a value in the range of [10] to [255].

WatchDog Reset Timer Unit

The optional settings are: [Sec.]; [Min.].

WatchDog Wake-up Timer

This item support WDT wake-up function.

The optional settings are: [Enabled]; [Disabled].

When set as [Enabled], the following sub-items shall appear:

WatchDog Wake-up Timer Value

The setting range is [10] ~ [4095] seconds, or [1] ~ [4095] minutes.

WatchDog Wake-up Timer

The optional settings are: [Sec.]; [Min.].

ATX Power Emulate AT Power

This item displays current Emulate AT Power Status, motherboard power On/Off control by power supply. User needs to select 'AT or ATX Mode' on MB jumper at first (refer to **Page 9, Pin (1&2) of J1** for ATX Mode & AT Mode Select).

▶ **Serial Port Console Redirection**

Press [Enter] to make settings for the following sub-items:

COM1

Console Redirection

Use this item to enable or disable COM1 Console Redirection.

The optional settings are: [Disabled]; [Enabled].

When set as [Enabled], user can make further settings in the 'Console Redirection Settings' screen:

▶ **Console Redirection Settings**

The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.

Press [Enter] to make settings for the following sub-items.

Terminal Type

The optional settings are: [VT100]; [VT100+]; [VT-UTF8]; [ANSI].

Bits per second

The optional settings are: [9600]; [19200]; [38400]; [57600]; [115200].

Data Bits

The optional settings are: [7]; [8].

Parity

The optional settings are: [None]; [Even]; [Odd];[Mark]; [Space].

Stop Bits

The optional settings are: [1]; [2].

Flow Control

The optional settings are: [None]; [Hardware RTS/CTS].

VT-UTF8 Combo Key Support

The optional settings are:[Disabled]; [Enabled].

Recorder Mode

The optional settings are: [Disabled]; [Enabled].

Resolution 100x31

The optional settings are:[Disabled]; [Enabled].

Legacy OS Redirection Resolution

The optional settings are: [80x24]; [80x25].

Putty Keypad

The optional settings are: [VT100]; [LINUX]; [XTERMR6]; [SCO]; [ESCN]; [VT400].

Redirection After BIOS POST

The optional settings are: [Always Enable]; [BootLoader].

Serial Port for Out-of-Band Management/

Windows Emergency Management Services (EMS)

Console Redirection

The optional settings: [Disabled]; [Enabled].

*When set as [Enabled], user can make further settings in ‘**Console Redirection Settings**’ screen:*

▶ Console Redirection Settings

The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.

Press [Enter] to make settings for the following sub-items.

Out-of-Band Mgmt Port

The default setting is: [COM1].

Terminal Type

The optional settings are: [VT100]; [VT100+]; [VT-UTF8]; [ANSI].

Bits per second

The optional settings are: [9600]; [19200]; [57600]; [115200].

Flow Control

The optional settings are: [None]; [Hardware RTS/CTS]; [Software Xon/Xoff].

Data Bits

The default setting is: [8].

**This item may or may not show up, depending on different configuration.*

Parity

The default setting is: [None].

**This item may or may not show up, depending on different configuration.*

Stop Bits

The default setting is: [1].

**This item may or may not show up, depending on different configuration.*

▶ **PC Health Status**

Press [Enter] to view current hardware health status & make further settings in 'Smart Configuration' & 'Shutdown Temperature'.

▶ **SmartFan Configuration**

Press [Enter] to make settings for SmartFan Configuration:

SmartFAN Configuration

CPUFAN Smart Mode

The optional settings: [Disabled]; [Enabled].

When set as [Enabled], the following sub-items shall appear:

CPUFAN Full-Speed Temperature

Use this item to set CPUFAN full speed temperature. Fan will run at full speed when above the pre-set temperature.

CPUFAN Full-Speed Duty

Use this item to set CPUFAN full speed duty. Fan will run at full speed when above the pre-set duty.

CPUFAN Idle-Speed Temperature

Use this item to set CPUFAN idle speed temperature. Fan will run at idle speed when below the pre-set temperature.

CPUFAN Idle-Speed Duty

Use this item to set CPUFAN idle speed duty. Fan will run at idle speed when below the pre-set duty.

▶ **Shutdown Temperature Configuration**

Use this item to select system shutdown temperature.

The optional settings are: [Disabled]; [70° C/156° F]; [75° C/164° F]; [80° C/172° F]; [85° C/180° F];[90° C/188° F].

▶ **SATA Configuration**

Press [Enter] to make settings for the following sub-items:

SATA Controller(s)

The optional settings are: [Enabled]; [Disabled].

When set as [Enabled], user can make further settings in the 'SATA Mode Selection' & 'SATA Controller Speed' items:

SATA Mode Selection

The optional settings are: [AHCI]; [RAID].

SATA Controller Speed

The item is for user to set the maximum speed the SATA controller can support.

The optional settings are:[Default]; [Gen1]; [Gen2];[Gen3].

SATA Port

SATA Port

The optional settings: [Disabled]; [Enabled].

SATA Device Type

The optional settings: [Hard Disk Drive]; [Solid State Drive].

mSATA

mSATA

The optional settings: [Disabled]; [Enabled].

▶ **Intel(R) Rapid Start Technology**

Press [Enter] to go to next screen to enable or disable 'Intel(R) Rapid Start Technology'.

Intel(R) Rapid Start Technology

The optional settings: [Disabled]; [Enabled].

**When set as [Enabled], user can also make further settings in the following items that appear:*

Entry on S3 RTC Wake

Use this item to enable or disable RapidStart innovation upon S3 RTC wake.

Entry After

Use this item to enable RTC wake timer at S3 entry. Value ranges from 0 (immediately) to 120 minutes.

Active Page Threshold Support

Use this item to enable or disable support for RST with small partition.

▶ **Network Stack Configuration**

Press [Enter] to go to 'Network Stack' screen to make further settings.

Network Stack

Use this item to enable or disable UEFI Network Stack.

The optional settings are: [Enabled]; [Disabled].

When set as [Enabled], the following sub-items shall appear:

Ipv4 PXE Support

The optional settings are: [Disabled]; [Enabled].

Use this item to enable Ipv4 PXE Boot Support. When set as [Disabled], Ipv4 boot option will not be created.

Ipv6 PXE Support

The optional settings are: [Disabled]; [Enabled].

Use this item to enable Ipv6 PXE Boot Support. When set as [Disabled], Ipv4 boot optional will not be created.

PXE boot wait time

Use this item to set wait time to press [ESC] key to abort the PXE boot.

Media Detect Count

Use this item to set number of times presence of media will be checked.

▶ **CSM Configuration**

Press [Enter] to make settings for the following sub-items:

Compatibility Support Module Configuration

Boot Option Filter

This item controls Legacy/UEFI ROMs priority.

The optional settings are: [UEFI and Legacy]; [Legacy only]; [UEFI only].

Network

This item controls the execution of UEFI and legacy PXE OpROM.

The optional settings are: [Do not launch]; [UEFI only]; [Legacy only].

Storage

This item controls the execution of UEFI and Legacy Storage OpROM.

The optional settings are: [Do not launch]; [UEFI only]; [Legacy only].

Other PCI devices

This item determines OpROM execution policy for devices other than Network, storage or video.

The optional settings are: [Do not launch]; [UEFI only]; [Legacy only].

▶ **Wake-up Function Settings**

Press [Enter] to make settings for the following sub-items:

Wake-up System with Fixed Time

Use this item to enable or disable system wake by RTC alarm. When set as [Enabled], system will wake on the hour/min/sec specified.

The optional settings: [Disabled]; [Enabled].

Wake-up System with Dynamic Time

Use this item to enable or disable system wake by RTC alarm. When set as [Enabled], system will wake on the current time + increase minute(s).

The optional settings: [Disabled]; [Enabled].

USB1(2/3) Wake-up from S3-S4

The optional settings: [Disabled]; [Enabled].

Use this item to enable or disable USB S3/S4 wakeup.

**USB wake-up is affected by ERP function in S4. Please disable ERP function before activating this function in S4.*

▶ **USB Configuration**

Press [Enter] to make settings for the following sub-items:

USB Configuration

Legacy USB Support

The optional settings are: [Enabled]; [Disabled]; [Auto].

[Enabled]: To enable legacy USB support.

[Disabled]: To keep USB devices available only for EFI specification,

[Auto]: To disable legacy support if no USB devices are connected.

XHCI Hand-off

This is a workaround for OSeS without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.

The optional settings are: [Enabled]; [Disabled].

EHCI Hand-off

This is a workaround for OSeS without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver.

The optional settings are: [Disabled]; [Enabled].

USB Mass Storage Driver Support

The optional settings are: [Disabled]; [Enabled].

USB hardware delay and time-outs:

USB Transfer time-out

Use this item to set the time-out value for control, bulk, and interrupt transfers.

The optional settings are: [1 sec]; [5 sec]; [10 sec]; [20 sec].

Device reset time-out

Use this item to set USB mass storage device start unit command time-out.

The optional settings are: [10 sec]; [20 sec]; [30 sec]; [40 sec].

Device power-up delay

Use this item to set maximum time the device will take before it properly reports itself to the host controller. 'Auto' uses default value: for a root port it is 100 ms, for

a hub port the delay is taken from hub descriptor.

Select [Manual] you can set value for the following sub-item: '**Device Power-up delay in seconds**'.

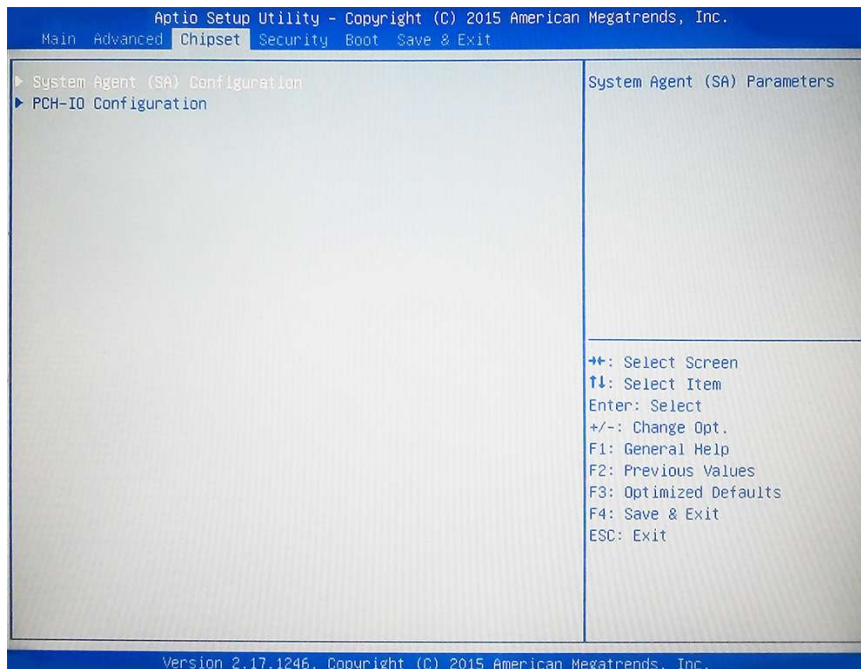
Device Power-up delay in seconds

The delay range is from 1 to 40 seconds, in one second increments.

- ▶ **Intel(R) Ethernet Connection I218-LM-XX:XX:XX:XX:XX/ Intel(R) I211 Gigabit Network Connection- XX:XX:XX:XX:XX**

This item shows current network brief information.

3-8 Chipset Menu



- ▶ **System Agent (SA) Configuration**

Press [Enter] to make settings for the following sub-items:

VT-d

The optional settings are: [Enabled]; [Disabled].

* *This item might not be available depending on configuration.*

▶ **Graphics Configuration**

Press [Enter] to for user to view IGFX basic information or make further settings for graphics configuration.

Graphics Configuration

GTT Size

The optional settings are: [2MB]; [4MB]; [8MB].

Aperture Size

The optional settings are: [128MB]; [256MB]; [512MB]; [1024MB]; [2048MB]; [4096MB].

DVMT Pre-Allocated

Use this item to select DVMT 5.0 pre-allocated (fixed) graphics memory size used by the internal graphics device.

The optional settings are: [32M]; [64M]; [96M]; [128M]; [160M]; [192M]; [224M]; [256M]; [288M]; [320M]; [352M]; [384M]; [416M]; [448M]; [480M]; [512M]; [1024MB]; [2016MB].

DVMT Total Gfx Mem

Use this item to select DVMT 5.0 total graphics memory size used by the internal graphics device.

The optional settings are: [128M]; [256M]; [MAX].

▶ **Memory Configuration**

Press [Enter] to view current memory configuration.

▶ **PCH-IO Configuration**

Press [Enter] to make settings for the following sub-items:

PCIe Root Port Function Swapping

The optional settings are: [Disabled]; [Enabled].

Onboard PCIe LAN1 (I218)

Use this item to enable or disable onboard NIC.

The optional settings are: [Enabled]; [Disabled].

When set as [Enabled], the following sub-items shall appear:

Wake on LAN (I218)

Use this item to enable or disable integrated LAN to wake the system (The Wake On LAN cannot be disabled if ME is on at Sx state).

The optional settings are: [Enabled]; [Disabled].

Onboard PCIE LAN2 (I211)

Use this item to enable or disable onboard LAN2 controller.

The optional settings are: [Enabled]; [Disabled].

Mini PCIE

The optional settings are: [Enabled]; [Disabled].

Mini PCIE Speed

The optional settings are: [Auto]; [Gen1]; [Gen2].

PCIE Slot (x4)

The optional settings are: [Enabled]; [Disabled].

PCIE Slot (x4) Speed

The optional settings are: [Auto]; [Gen1]; [Gen2].

PCIE Slot (x1)

The optional settings are: [Enabled]; [Disabled].

PCIE Slot (x1) Speed

The optional settings are: [Auto]; [Gen1]; [Gen2].

Azalia

Use this item to control detection of the Azalia device.

The optional settings are: [Disabled]; [Enabled].

[Disabled]: Azalia will be unconditionally disabled;

[Enabled]: Azalia will be unconditionally enabled.

▶ **USB Devices Configuration**

Press [Enter] to further setting USB device configuration.

USB Devices Configuration

XHCI Mode

Use this item to control the USB XHCI controller.

The optional settings are: [Auto]; [Enabled]; [Disabled].

*** Note:** When set as [Disabled], user can make further settings in 'EHCI'.

EHCI1

Use this item to control the USB EHCI (USB 2.0) functions.

One EHCI controller must always be enabled.

The optional settings are: [Disabled]; [Enabled].

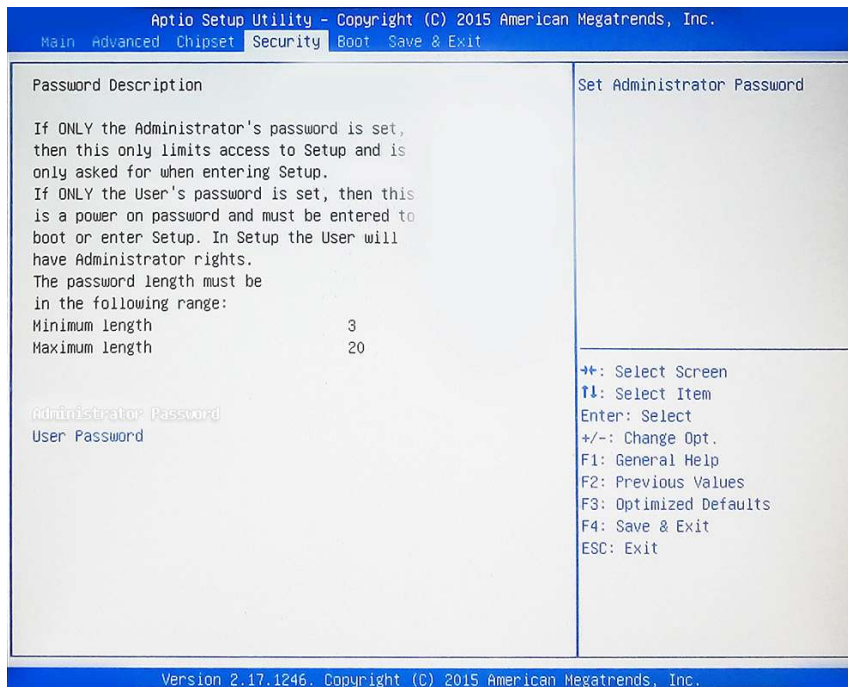
Restore AC Power Loss

Use this item to select AC power state when power is re-applied after a power loss.

The optional settings are: [Always Off]; [Always On]; [Former State].

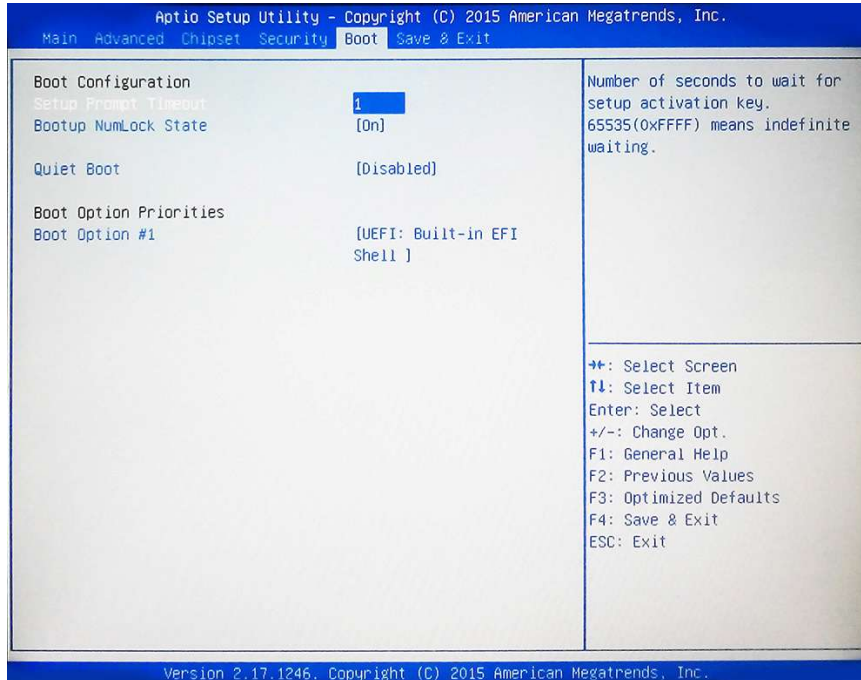
** The option [Always On] and [Former State] are affected by ERP function. Please disable ERP to support [Always On] and [Former State] function.*

3-9 Security Menu



Security menu allow users to change administrator password and user password settings.

3-10 Boot Menu



Boot Configuration

Setup Prompt Timeout

Use this item to set number of seconds to wait for setup activation key.

Bootup Numlock State

Use this item to select keyboard numlock state.

The optional settings are: [On]; [Off].

Quiet Boot

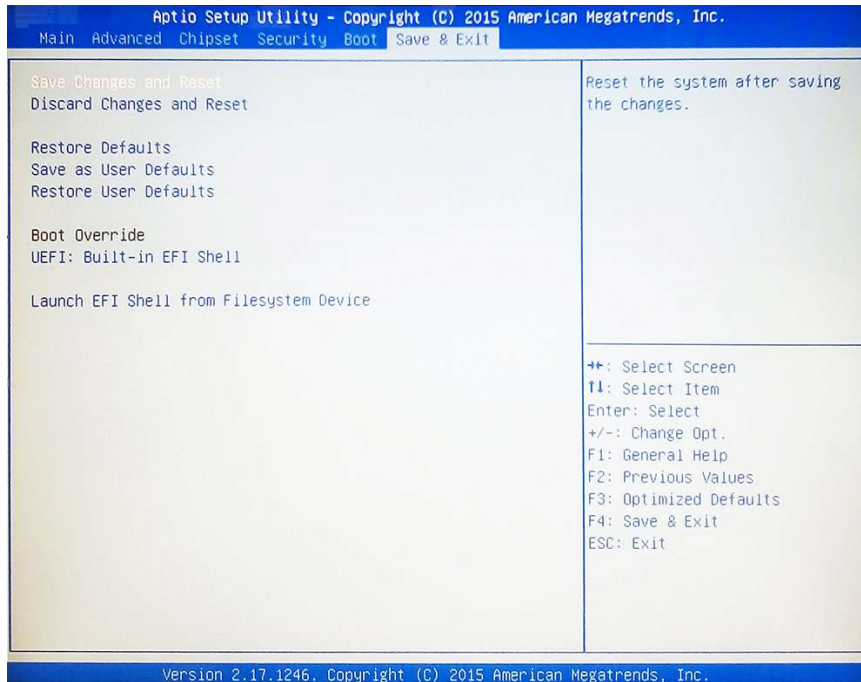
The optional settings are: [Disabled]; [Enabled].

Boot Option Priorities

Boot Option #1(Boot Option #2/...)

Use this item to decide system boot order from available options.

3-11 Save & Exit Menu



Save Changes and Reset

This item allows user to reset the system after saving the changes.

Discard Changes and Reset

This item allows user to reset the system without saving any changes.

Restore Defaults

Use this item to restore /load default values for all the setup options.

Save as User Defaults

Use this item to save the changes done so far as user defaults.

Restore User Defaults

Use this item to restore the user defaults to all the setup options.

Boot Override

Boot Override

UEFI:xx/...

Press this item to select the device as boot disk after save configuration and reset.

Launch EFI Shell from filesystem device

Use this item to launch EFI shell application (shell.efi) from one of the available filesystem device.