Technical Manual

Of

Intel Bay Trail Series CPU

Based Mini-ITX M/B

NO.G03-NF9HB-F

Revision: 3**.0**

Release date: July 9, 2024

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.

TABLE OF CONTENT

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.

USER'S NOTICE

Manual Revision Information

Reversion	Revision History	Date
3.0	Third Edition	July 9, 2024

Item Checklist

- ☑ Motherboard
- ☑ Cable(s)
- ☑ I/O Back panel shield

Chapter 1
Introduction of the Motherboard

1-1 Feature of Motherboard

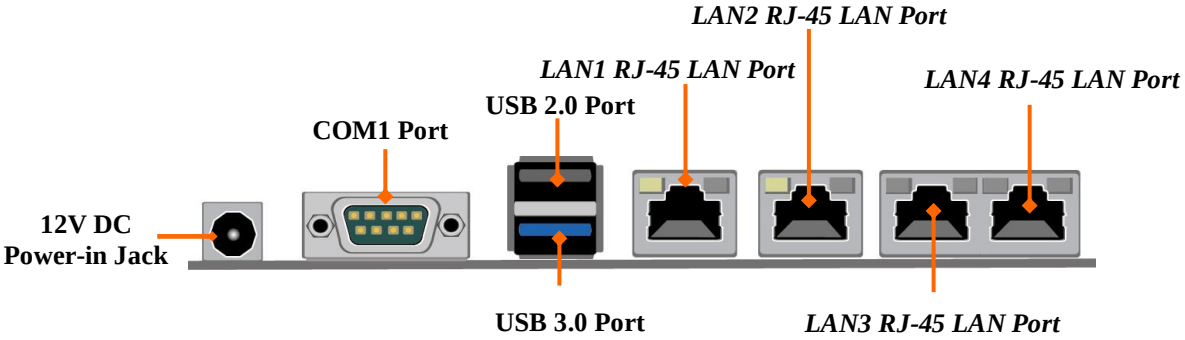
- Onboard Intel® Bay Trail Series Processor, with low power consumption never denies high performance
- Support 2* DDR3L 1066/1333 MHz SO-DIMM, up to 8GB
- Support 1*full-size Mini-PCIE connector
- Support 1*m-SATA connector
- Support 2 * SATAII port
- Support 4 * RJ45 LAN port
- Support USB 3.0 data transport demand
- Support CPU Over-Temperature protection
- Support CPU Over-Current/Under Voltage protection
- Support DRAM Over-Current/Under Voltage protection
- Supports ACPI S3 Function
- Compliance with EuP Standard
- Support CPU Smart FAN
- Support Watchdog Technology

1-2 Specification

Spec	Description
Design	● Mini-ITX form factor; PCB size: 17.0x17.0cm
Embedded CPU	● Integrated with Intel® Bay Trail-D/M/I series CPU
Memory Socket	● 2*DDR3LSODIMM Slot for un-buffered dual channel DDR3L 1066/1333 MHz SDRAM, expandable to 8GB in total ● Dual channel function supported
Expansion Slot	● 1* Full-size Mini-PCIE slot (MPE) ● 1* PCIE x1 slot (PCIE1) ● 1* PCIE x1 slot by sideway(PCIE2)
LAN Chip	● Integrated with 4 Intel I210AT PCI-E Gigabit LAN chips ● Support Fast Ethernet LAN function of providing 10/100/1000Mbps Ethernet data transfer rate
Storage	● 2* SATAII port (SATA1/2) ● 1* Full-size mSATA slot (***MSATA***: shares with SATA2)
BIOS	● AMI 64MB Flash ROM
Rear I/O	● 1* 12V system DC Jack power-in connector ● 1* COM1 serial port ● 1* USB 3.0 port ● 1* USB 2.0 port ● 4* RJ-45 LAN port
Internal I/O	● 1* 2-pin DC 12V internal power connector ● 1* SATA Power connector ● 1* CPU FAN connector & 2* SYSFAN connector ● 1* Front panel header ● 1* Power LED & speaker header ● 1* Serial port header ● 2* USB 2.0 header (Expansible to 4* USB 2.0 ports) ● 1* SMBUS header ● 1* GPIO_CON header ● 1* VGA port header ● 1* PS/2 keyboard & mouse header ● 1* 8-pin LANLED header

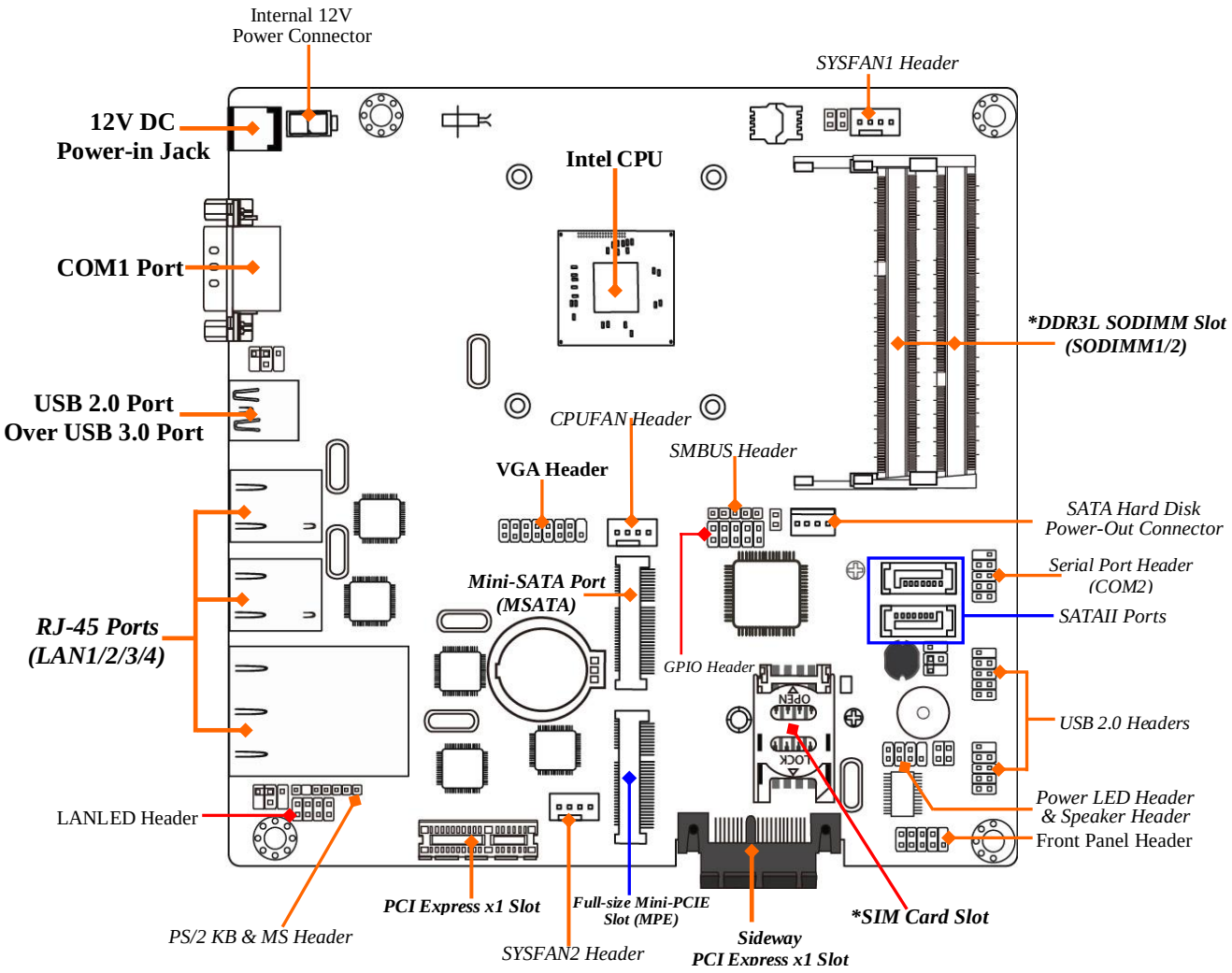
1-3 Layout Diagram

Rear IO Diagram



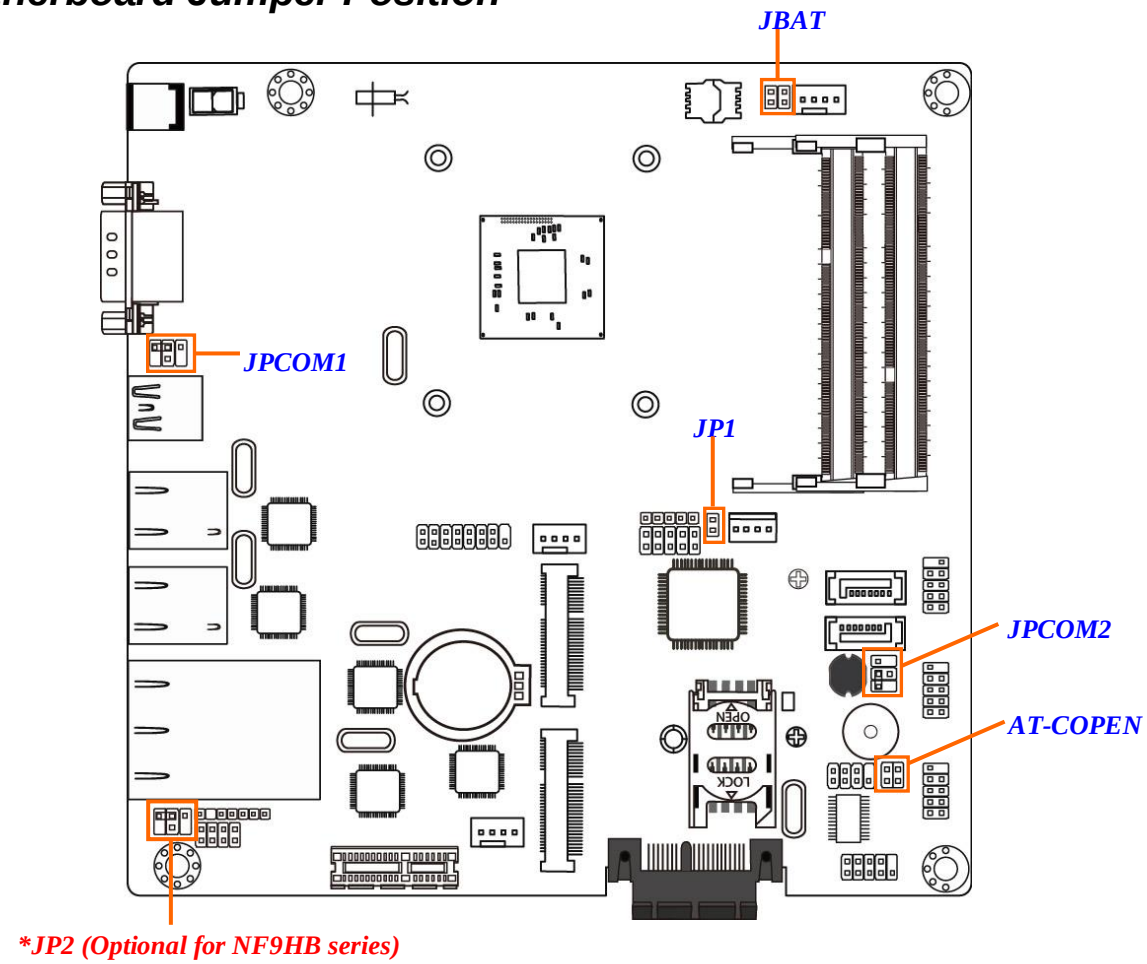
Icon	*Name*	*Function*
	**DC12V Power-in Connector**	For user to connect compatible power adapter to provide power supply for the system.
	**COM1 Port**	Mainly for user to connect external MODEM or other devices that supports Serial Communications Interface.
	**USB 2.0 Port**	To connect USB keyboard, mouse or other devices compatible with USB 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.
	**RJ-45 LAN Port**	This connector is standard RJ-45 LAN jack for Network connection.

Motherboard Internal Diagram



Note: 1. *SODIMM1 must be used for single DIMM use case.* ***2.*** *The module should be* ***DDR3L 1.35V*** *SODIMM and* ***not exceeding 8GB total capacity****.* ***3. MSATA*** *slot shares function with* ***SATA2*** *port; i.e. only one can function at a time.*

Motherboard Jumper Position



Note: *This manual serves as a common manual for* ***NF9HB & NF9HG*** *series*
Their main differences are listed as below:

Model	JP2(Jumper)	Bypass LAN (on LAN3/LAN4)
NF9HB	Y	Support
NF9HG	N	Not support

The pictures for illustration examples are mostly taken from the above layout diagram for ***NF9HB,*** *unless otherwise stated. Please refer to your actual product for specification reference.*

Jumper

Jumper	Name	Description
JBAT	***Pin 1-2:*** CMOS RAM Clear Function Setting ***Pin 3-4:*** Clear ME Function Setting	4-Pin Block
AT_COPEN	***Pin 1-2:*** ATX Mode & AT Mode Select ***Pin 3-4:*** Case Open Message Display Function	4-Pin Block
JP1	ME Security Measure Function Select	2-Pin Block
JP2(for **NF9HB)*	*Bypass LAN Control Setting*	*4-pin Block*
JPCOM1	COM1 Port Pin9 Function Select	4-pin Block
JPCOM2	COM2 Header Pin9 Function Select	4-pin Block

Connectors

Connector	Name
DCIN	DC 12V Power –in Connector
ATX2P	2-Pin Internal DC 12V Power–in Connector
SATAPW	SATA Power out Connector
SATA1/SATA2	SATAII Port Connector X2
COM1	Serial Port COM Connector
USB	***Top:*** USB 2.0 Port Connector ***Bottom:*** USB 3.0 Port Connector
LAN1/2/3/4	RJ-45 LAN Connector X4
CPUFAN/SYSFAN1/2	FAN Connector X3

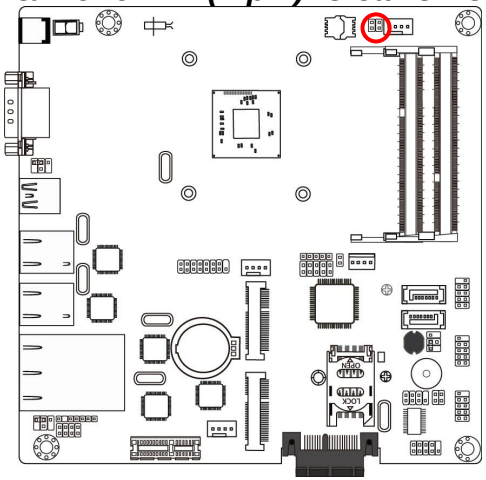
Headers

Header	Name	Description
JW_FP	Front Panel Header(PWR LED/ HD LED /Power Button /Reset)	9-pin Block
SPK-LED	Power LED & Speaker Header	7-pin Block
FP_USB1/2	USB 2.0 Header X2	9-pin Block
COM2	Serial Port Header	9-pin Block
SMBUS	SMBUS Header	5-pin Block
GPIO_CON	GPIO Header	10-pin Block
PS2KBMS	PS/2 Keyboard & Mouse Header	6-pin Block
LAN_LED	LANLED Header	8-pin Block
FP_VGA	VGA Header	15-pin Block

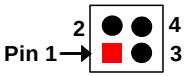
Chapter 2
Hardware Installation

2-1 Jumper Setting

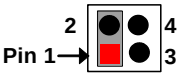
Pin 1 & 2 of JBAT (4-pin): Clear CMOS Setting



JBAT (Pin 1&2)→Clear CMOS

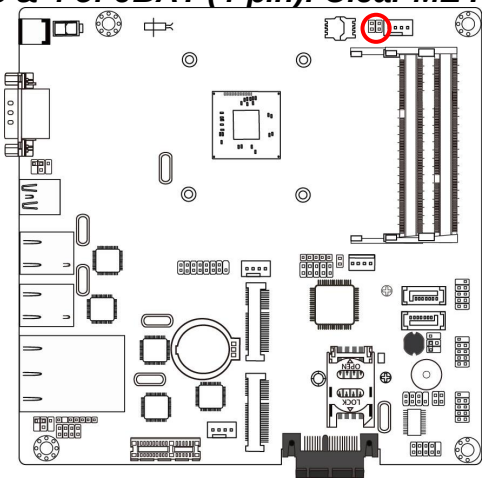


1-2 Open: Normal(Default);

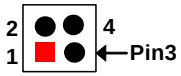


1-2 Close: Clear CMOS(One Touch).

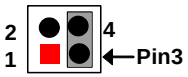
Pin 3 & 4 of JBAT (4-pin): Clear ME Function Setting



JBAT (Pin 3&4)→Clear ME

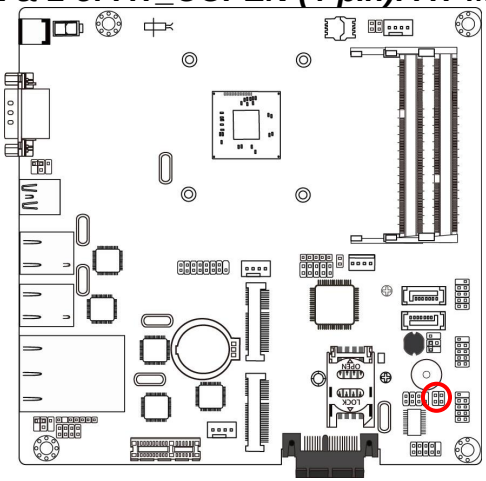


3-4 Open: Normal(Default);

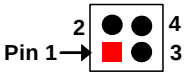


3-4 Close: Clear ME.

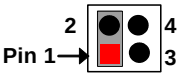
Pin 1 & 2 of AT_COPEN (4-pin): AT Mode Function Select



AT_COPEN(Pin 1&2)→AT Mode Select



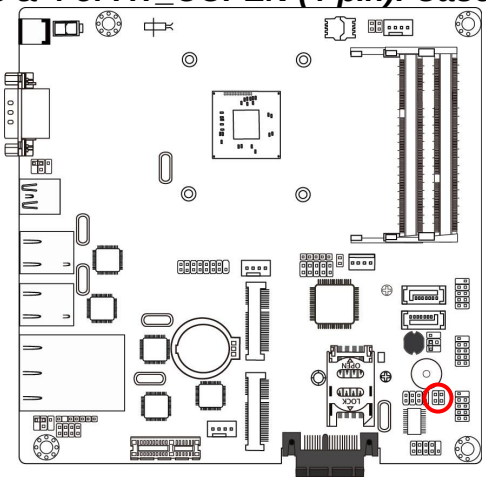
1-2 Open: ATX Mode Selected(Default);



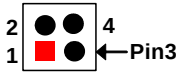
1-2 Close: AT Mode Selected.

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

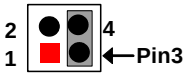
Pin 3 & 4 of AT_COPEN (4-pin): Case Open Message Display Function Select



AT_COPEN(Pin 3&4)→Case Open Function Select



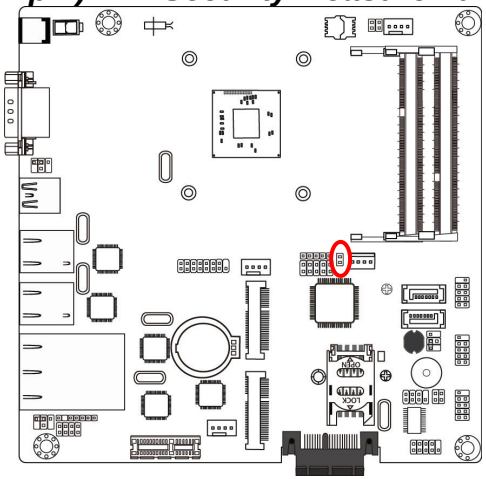
3-4 Open: Normal(Default);



3-4 Close: Case Open Function Selected (One Touch).

Pin 3-4 Close: *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.*

JP1(2-pin): ME Security Measure Function Select

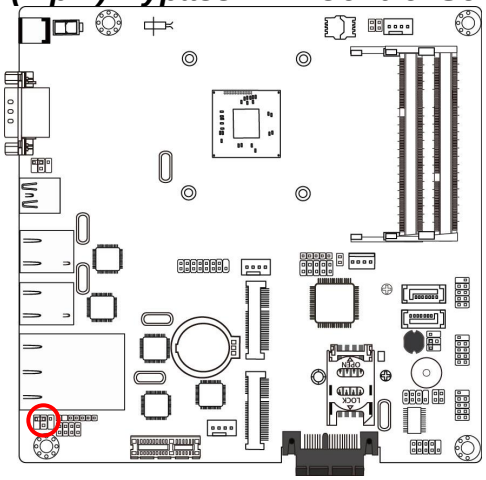


JP1

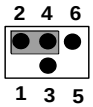
1-2 Open:Enable Security Measures in the Flash Descriptor(Default) ;

1-2 Closed:Disable Security Measures in the Flash Descriptor(Override).

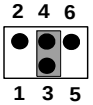
**JP2 (4-pin):Bypass LAN Control Select*



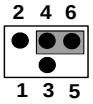
JP2→Bypass LAN (Optional for NF9HB series)



2-4 Closed: SW Control;



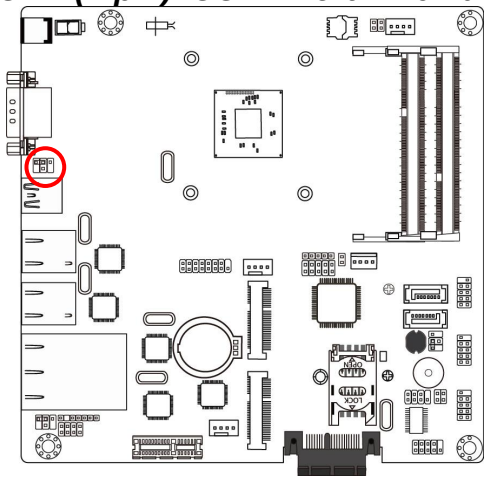
3-4 Closed: HW Control;



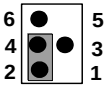
4-6 Closed: Always.

***Note:** JP2 is only optional for model **NF9HB** series, which supports Bypass LAN function(LAN3/4).*

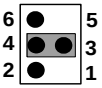
JPCOM1 (4-pin): COM1 Port Pin9 Function Select



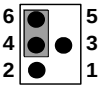
JPCOM1→COM1 Port



2-4 Closed:
RI=RS232;

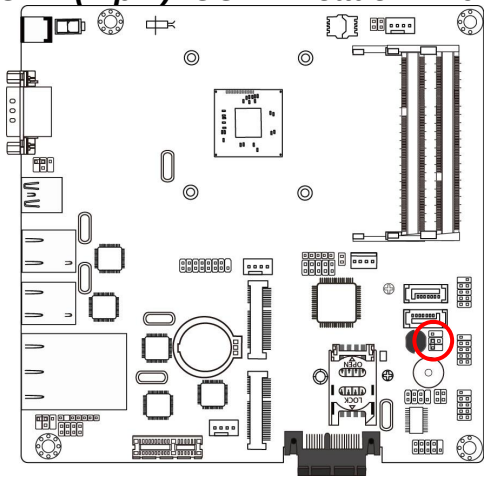


3-4 Closed:
RI= +5V;

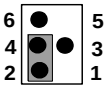


4-6 Closed:
RI= +12V.

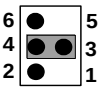
JPCOM2 (4-pin): COM2 Header Pin9 Function Select



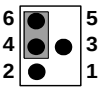
JPCOM2→COM2 Header



2-4 Closed:
RI=RS232;



3-4 Closed:
RI= +5V;

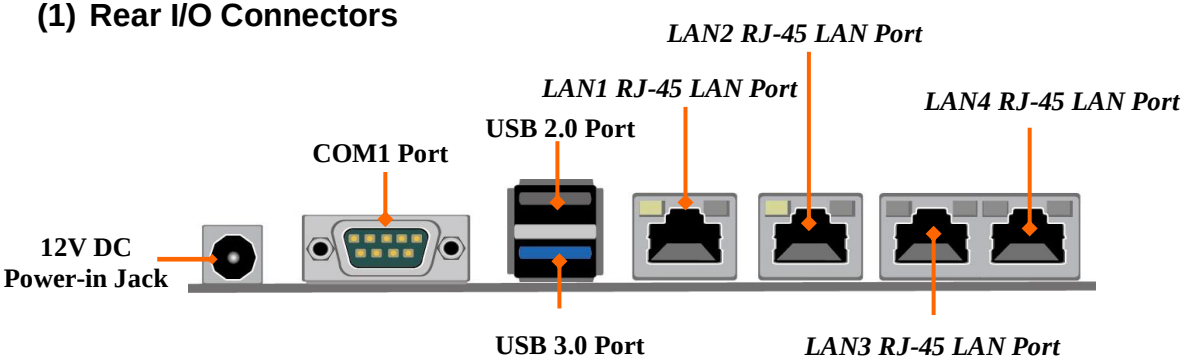


4-6 Closed:
RI= +12V.

2-2 Connectors and Headers

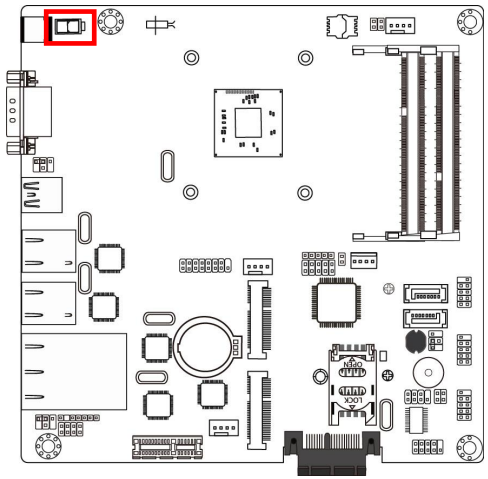
2-2-1 Connectors

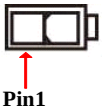
(1) Rear I/O Connectors



Warning! The board has a DC 12V power connector (DCIN) in I/O back panel and an internal ATX12V (ATX2P) power connector. User can only connect one type of compatible power supply to one of them to power the system.

(2) ATX2P (2-pin Block): DC 12V Power-in Connector

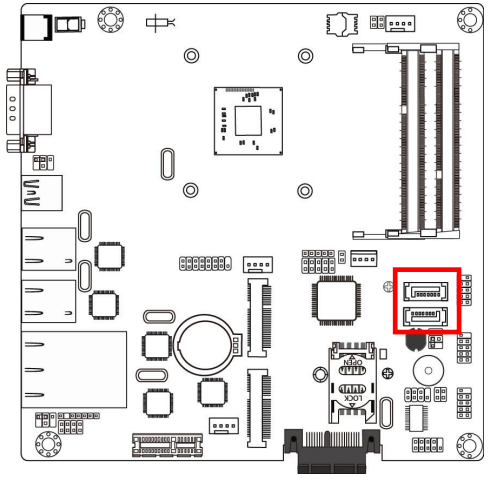




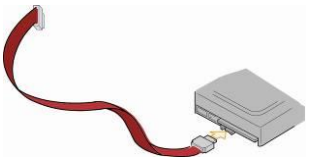
Pin.	Definition
1	GND
2	+12V DC_IN

(3) SATA1/SATA2(7-pin): SATA II Port Connector

These connectors are high-speed SATAII ports that support 3 GB/s transfer rate.

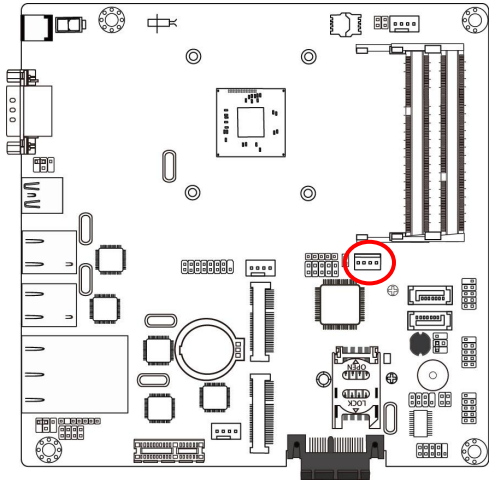


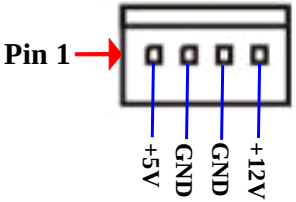
Pin No.	Defnition
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND



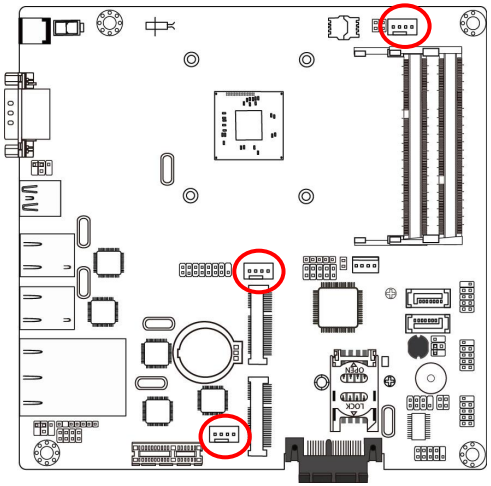
**** Note:*** *SATA2 shares with MSATA(Mini-SATA slot).*

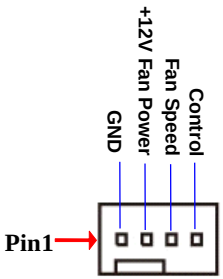
(4) SATAPW(4-pin): SATA Power Out Connector





(5) CPUFAN/SYSFAN1/SYSFAN2 (4-pin): Fan Connectors

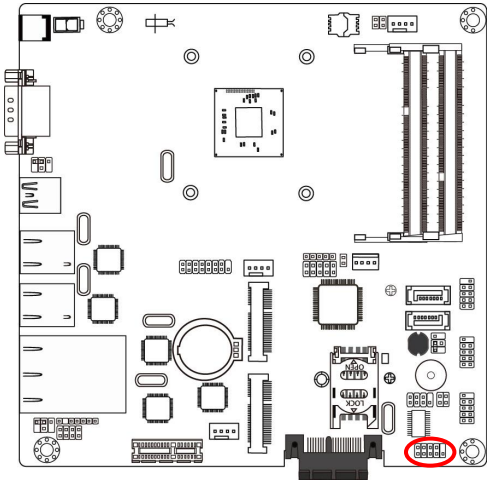


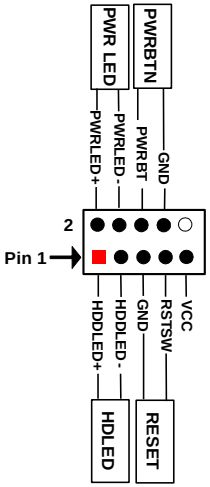


CPUFAN/ SYSFAN1/SYSFAN2

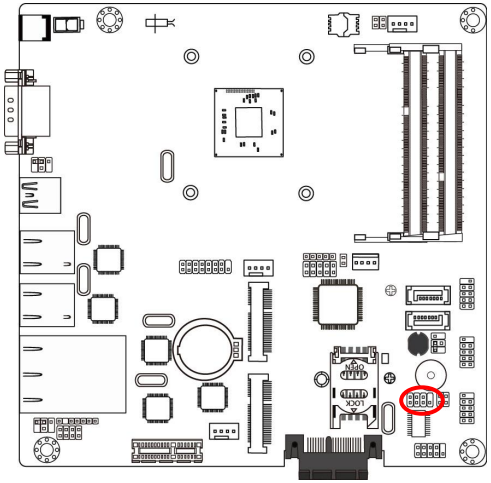
2-2-2 Headers

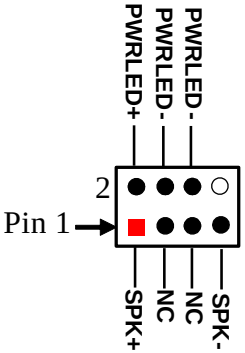
(1) JW-FP (9-pin): Front Panel Header



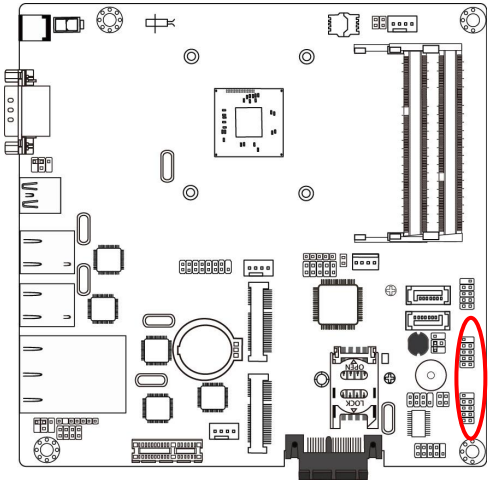


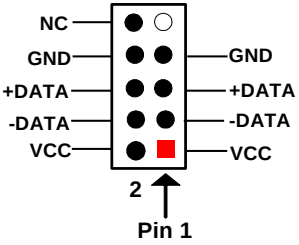
(2) SPK-LED (7-pin): Speaker Header & PWR LED Header



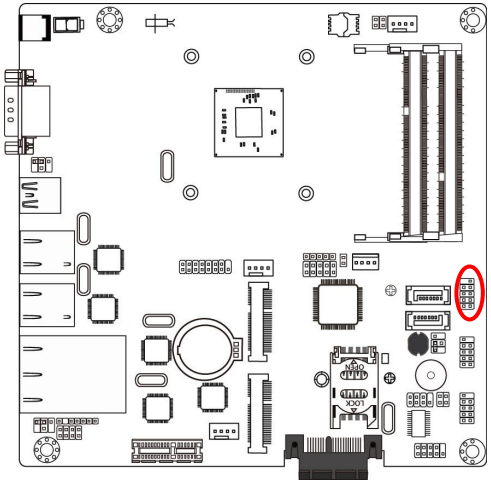


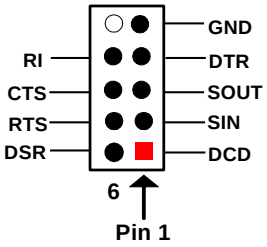
(3) FP_USB1/FP_USB2 (9-pin): USB 2.0 Port Header



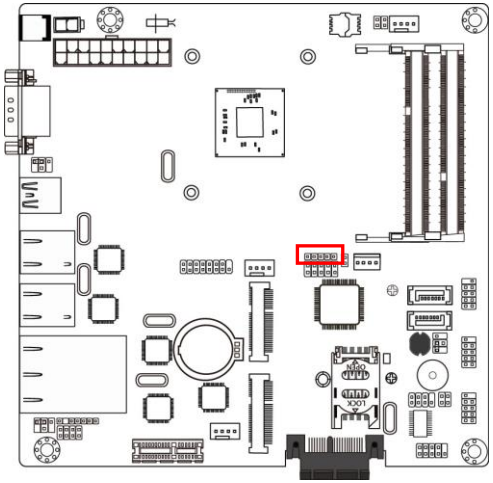


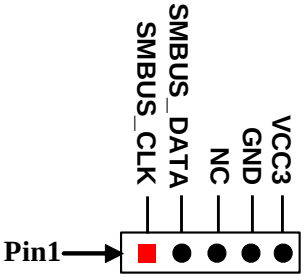
(4) COM2 (9-Pin): Serial Port Header



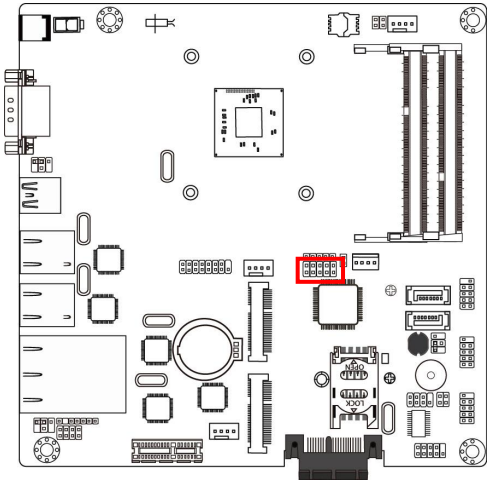


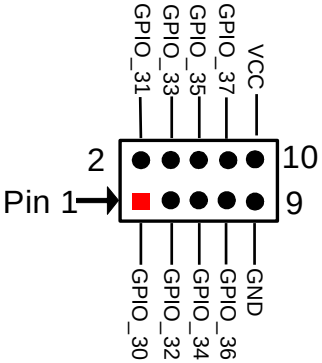
(5) SMBUS (5-Pin): SM BUS Header



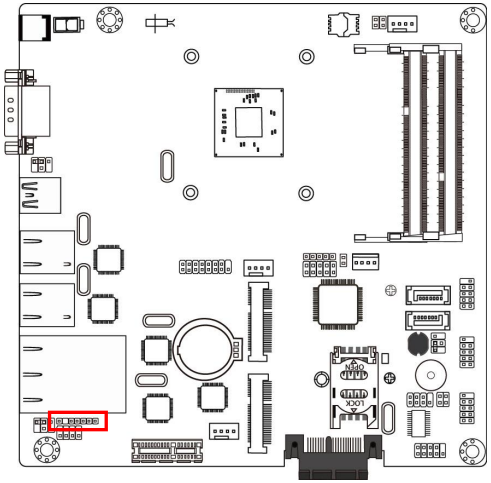


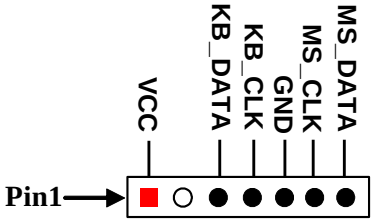
(6) GPIO_CON (10-pin): GPIO Header



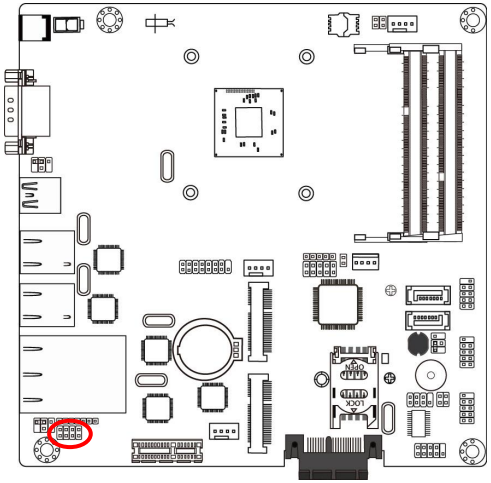


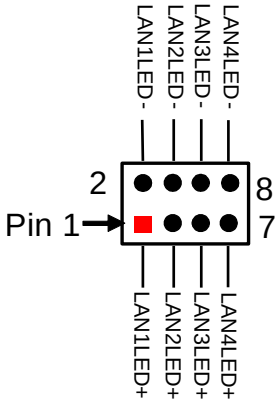
(7) PS2KBMS (6-pin): PS/2 Keyboard & Mouse Header



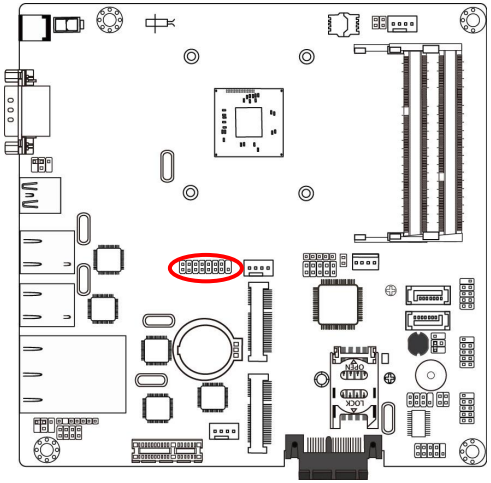


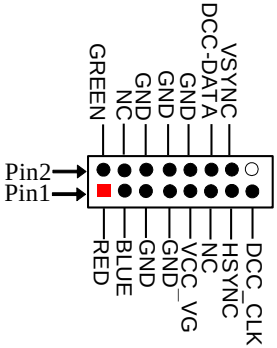
(8) LAN_LED (8-pin): LANLED Header





(9) FP_VGA (15-pin): VGA 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.

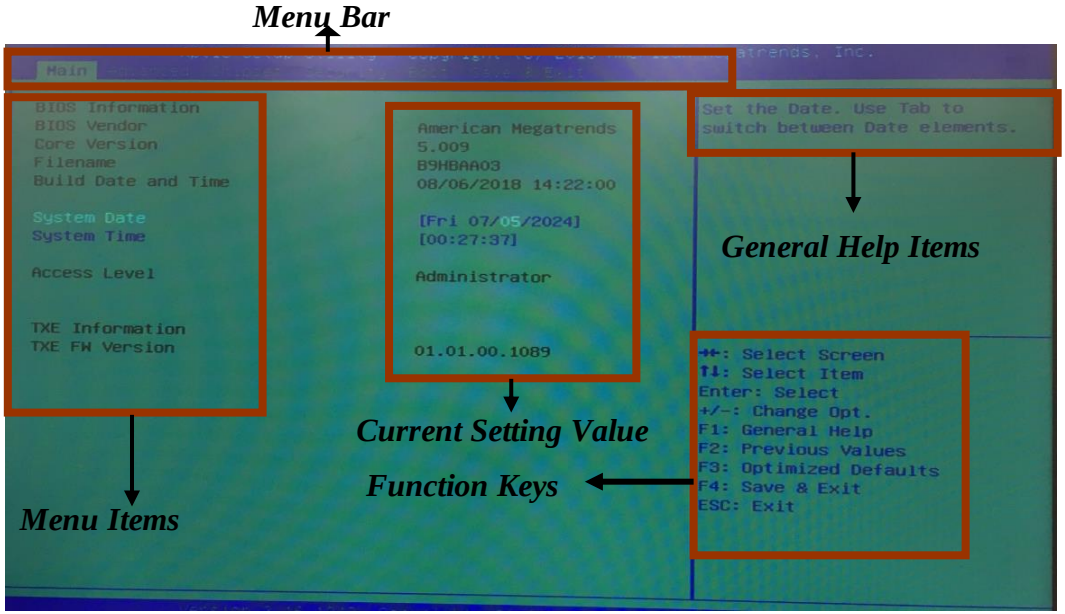
3-1 Entering Setup

Power on the computer and by pressing <Del> 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 **<Del>** to enter Setup; press < **F7**> for Pop Menu.

3-2 BIOS Menu Screen

The following diagram show a general BIOS menu screen:



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 value.

- **[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

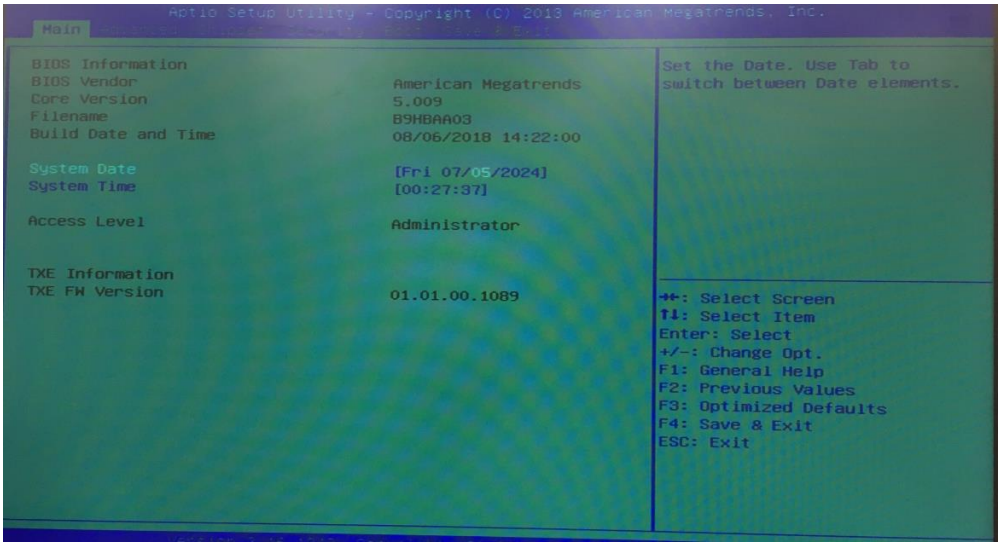
There are six menu bars on top of BIOS screen:

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.



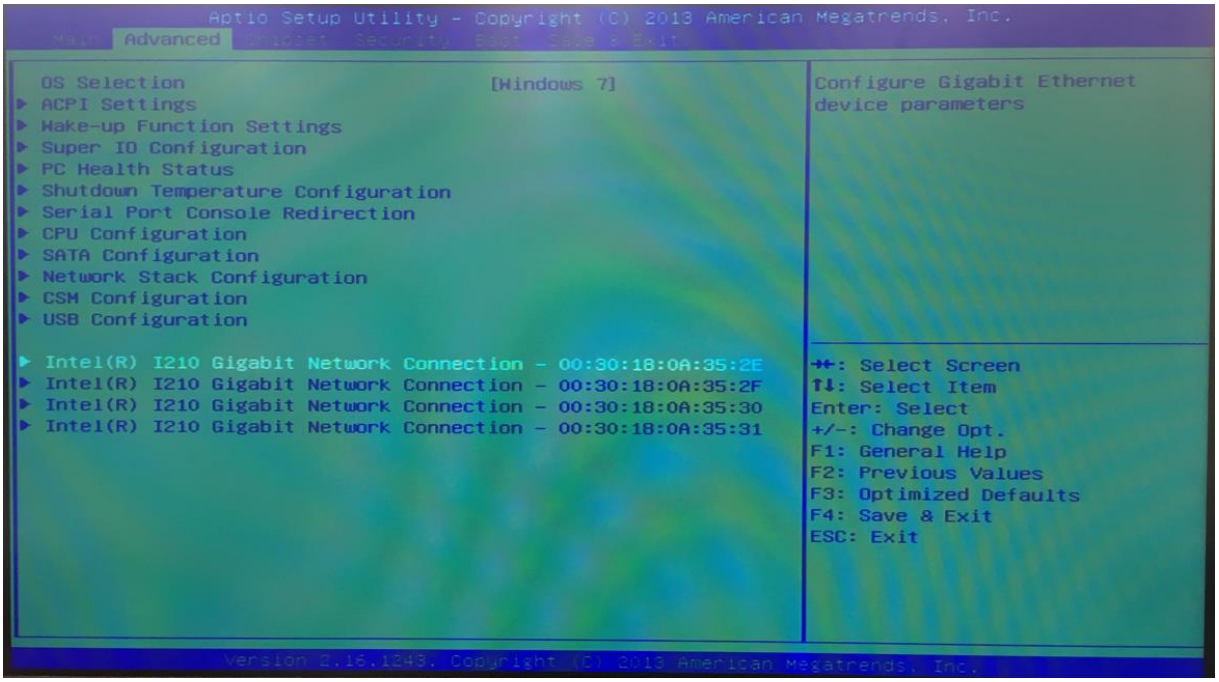
System Date

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



OS Selection

The optional settings: [Linux/Android]; [Windows 8.X]; [Windows 7].

***Note**: User needs to go to this item to select OS before installing OS.*

If Windows Embedded standard 8, please select [Windows 8x] and set "USB 3.0 Support" as [Disabled], "USB 2.0 Support" as [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.

  ACPI Sleep State Set the default value to: [S3 (Suspend to RAM)]

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

- **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-up on alarm event.

  Wake-up System with Fixed Time Set the default value to: [Disabled]

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

  When set as [Enabled], system will wake on the hour/min/sec specified.

  Wake-up Hour

  Use this item to select 0-23 for example enter 3 for 3am and 15 for 3pm

  Wake-up Hour Set the default value to: [0]

  Wake-up Minute

  Use this item to select 0-59

  Wake-up Minute Set the default value to: [0]

  Wake-up Second

  Use this item to select 0-59

  Wake-up Second Set the default value to: [0]

  Wake-up System with Dynamic Time

  Use this item to enable or disable system wake-up on alarm event.

  Wake-up System with Dynamic Time Set the default value to: [Disabled]

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

  When set as [Enabled], system will wake on the current time + increased minute(s).The settings range is from [1] ~ [60] minute(s).

  PS2 (S3-S5) / USB (S3-S4) Wake-up

  Use this item to enable or disable PS2 (S3-S5)/USB (S3-S4) / Wake-up.

  PS2 (S3-S5) / USB (S3-S4) Wake-up Set the default value to: [Disabled]

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

  This item is only supported when **'ERP Support' is set as [Disabled].When **'ERP Support'** is set as [Enabled],user can only enable or disable '**USB(S3)/PS2(S3) Wake-up**' .*

- **Super I/O Configuration**

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

  Super IO Configuration

  ERP Support

  ERP Support Set the default value to: [Disabled]

The optional settings: [Auto]; [Disabled].
This item should be set as [Disabled] if you wish to have all active wake-up functions.

- **Serial Port 1 Configuration**

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

Serial Port

Use this item to enable or disable serial port (COM).
Serial Port Set the default value to: [Enabled]
The optional settings: [Enabled]; [Disabled].

Change Settings

Use this item to select an optimal setting for super IO device.
The optional settings are: [Auto]; [IO=3F8h; IRQ=4]; [IO=3F8h; IRQ=3,4,5,6,7,9,10,11]; [IO=2F8h; IRQ=3,4,5,6,7,9,10,11]; [IO=3E8h; IRQ=3,4,5,6,7,9,10,11]; [IO=2E8h; IRQ=3,4,5,6,7,9,10,11].
Change Settings Set the default value to: [Auto]

Serial Port FIF0 Mode

Serial Port FIF0 Mode Set the default value to: [128-Byte FIF0]
The optional settings are: [16-Byte FIF0]; [32-Byte FIF0]; [64-Byte FIF0]; [128-Byte FIF0]

- **Serial Port 2 Configuration**

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

Serial Port

Use this item to enable or disable serial port (COM).
Serial Port Set the default value to: [Enabled]
The optional settings: [Enabled]; [Disabled].

Change Settings

Use this item to select an optimal setting for super IO device.
The optional settings are: [Auto]; [IO=2F8h; IRQ=3]; [IO=3F8h; IRQ=3,4,5,6,7,9,10,11]; [IO=2F8h; IRQ=3,4,5,6,7,9,10,11]; [IO=3E8h; IRQ=3,4,5,6,7,9,10,11]; [IO=2E8h; IRQ=3,4,5,6,7,9,10,11].
Change Settings Set the default value to: [Auto]

Serial Port FIF0 Mode

Serial Port FIF0 Mode Set the default value to: [128-Byte FIF0]

The optional settings are: [16-Byte FIF0]; [32-Byte FIF0]; [64-Byte FIF0]; [128-Byte FIF0]

WatchDog Timer
Use this item to enable or disable WatchDog Timer Control.
WatchDog Timer Set the default value to: [Disabled]
The optional settings: [Enabled]; [Disabled].
When set as [Enabled], the following sub-items shall appear:
WatchDog Timer Value
User can set a value in the range of [10] to [255].
WatchDog Timer Value Set the default value to: [10]
WatchDog Timer Unit
The optional settings are: [Sec.]; [Min.].
WatchDog Timer Unit Set the default value to: [Sec.]
WatchDog Wake-up Timer in ERP
This item support WDT wake-up while '**ERP Support**' is set as [Auto].
WatchDog Wake-up Timer in ERP Set the default value to: [Disabled]
The optional settings are: [Enabled]; [Disabled].
When set as [Enabled], the following sub-items shall appear:
WatchDog Timer Value in ERP
User can set a value in the range of [10] to [4095].
WatchDog Timer Value in ERP Set the default value to: [10]
WatchDog Timer Unit
The optional settings are: [Sec.]; [Min.].
WatchDog Timer Unit Set the default value to: [Sec.]

ATX Power Emulate AT Power
This item support Emulate AT power function, MB power On/Off control by power supply. Use needs to select 'AT or ATX Mode' on MB jumper at first (refer to AT_COPEN Pin (1-2) of AT_COPEN block for ATX Mode & AT Mode Select).
Case Open Detect
Use this item to detect if case have ever been opened. Show message in POST.
The optional settings: [Disabled]; [Enabled].
Case Open Detect Set the default value to: [Disabled]
When set as [Enabled], system will detect if COPEN has been short or not (*refer to*

AT_COPEN *jumper setting for Case Open Detection*); if Pin 3&4 of AT_COPEN are short, system will show Case Open Message during POST

- **PC Health Status**

  Press [Enter] to view current hardware health status, set shutdown temperature, or make further settings in '**Smart Fan Configuration**'.

  - **SmartFan Configuration**

  Press [Enter] to make settings for SmartFan Configuration:

  SmartFAN Configuration

  CPUFAN / SYSFAN1/ SYSFAN2 Smart Mode

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

  CPUFAN / SYSFAN1/ SYSFAN2 Smart Mode Set the default value to: [Enabled]

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

  CPUFAN / SYSFAN1/ SYSFAN2 Full-Speed Temperature

  Use this item to set CPUFAN/SYSFAN1/SYSFAN2 full speed temperature. Fan will run at full speed when above this temperature.

  CPUFAN / SYSFAN1/ SYSFAN2 Full-Speed Duty

  Use this item to set CPUFAN/SYSFAN1/SYSFAN2 full speed duty. Fan will run at full speed when above the pre-set duty.

  CPUFAN / SYSFAN1/ SYSFAN2 Idle-Speed Temperature

  Use this item to set CPUFAN/SYSFAN1/SYSFAN2 idle speed temperature. Fan will run at idle speed when below this temperature.

  CPUFAN / SYSFAN1/ SYSFAN2 Idle-Speed Duty

  Use this item to set CPUFAN/SYSFAN1/SYSFAN2 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.

  Shutdown Temperature

  Shutdown Temperature Configuration Set the default value to: [Disabled]

  The optional settings are: [Disabled]; [70°C/158°F]; [75°C/167°F]; [80°C/176°F]; [85°C/185°F].

- **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.

Console Redirection Set the default value to: [Disabled]

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

Terminal Type Set the default value to: [ANSI]

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

Bits per second

Bits per second Set the default value to: [115200]

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

Data Bits

Data Bits Set the default value to: [8]

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

Parity

A parity bit can be sent with the data bits to detect some transmission errors.

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

[Even]: parity bit is 0 if the num of 1's in the data bits is even;

[Odd]: parity bit is 0 if num of 1's in the data bits is odd;

[Mark]: parity bit is always 1;

[Space]: parity bit is always 0;

Parity Set the default value to: [None]

[Mark] and **[Space]**: parity do not allow for error detection. They can be used as an additional data bit.

Stop Bits

Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.

The optional settings: [1]; [2].
Stop Bits Set the default value to: [1]

Flow Control

Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a “stop” signal can be sent to stop the data flow. Once the buffers are empty, a “start” signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.
The optional settings: [None]; [Hardware RTS/CTS].
Flow Control Set the default value to: [None]

VT-UTF8 Combo Key Support

Use this item to enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals.
The optional settings: [Disabled]; [Enabled].
VT-UTF8 Combo Key Support Set the default value to: [Enabled]

Recorder Mode

With this mode enabled only text will be sent. This is to capture Terminal data.
The optional settings: [Disabled]; [Enabled].
Recorder Mode Set the default value to: [Disabled]

Resolution 100x31

Use this item to enable or disable extended terminal resolution.
The optional settings: [Disabled]; [Enabled].
Resolution 100x31 Set the default value to: [Disabled]

Legacy OS Redirection Resolution

Use this item to on Legacy OS, The mumber of rows and columns supported redirection.
Legacy OS Redirection Resolution Set the default value to: [80x24]
The optional settings are: [80x24]; [80x25].

Putty Keypad

Use this item to select functionkey and keypad on putty.
Putty Keypad Set the default value to: [VT100]
The optional settings are: [VT100]; [LINUX]; [XTERMR6]; [SCO]; [ESCN]; [VT400].

Redirection After BIOS POST

Redirection After BIOS POST Set the default value to: [Always Enable]

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

Serial Port for Out-of-Band Management/ Windows Emergency Management Services (EMS)

Console Redirection

Use this item to enable or disable console redirection.

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

Console Redirection EMS Set the default value to: [Disabled]

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: [VT100]; [VT100+]; [VT-UTF8]; [ANSI].

[VT-UTF8] is the preferred terminal type for out-of-band management. The next best choice is **[VT100+]** and then **[VT100]**. See above, in Console Redirection Settings page, for more help with Terminal Type/Emulation.

Terminal Type EMS Set the default value to: [VT-UTF8]

Bits per second

Use this item to select serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.

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

Bits per second EMS Set the default value to: [115200]

Flow Control

Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a "stop" signal can be sent to stop the data flow. Once the buffers are empty, a "start" signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.

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

Flow Control EMS Set the default value to: [None]

Data Bits EMS

The default setting is: [8].

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

Parity EMS

The default setting is: [None].

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

Stop Bits EMS

The default setting is: [1].

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

- **CPU Configuration**

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

Limit CPUID Maximum

Limit CPUID Maximum Set the default value to: [Disabled]

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

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

Execute Disable Bit

Execute Disable Bit Set the default value to: [Enabled]

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

Hardware Prefetcher

Hardware Prefetcher Set the default value to: [Enabled]

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

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

Adjacent Cache Line Prefetch

Adjacent Cache Line Prefetch Set the default value to: [Enabled]

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

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

Intel Virtualization Technology

Intel Virtualization Technology Set the default value to: [Enabled]

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

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

EIST

EIST Set the default value to: [Enabled]
The optional settings: [Disabled]; [Enabled].
Use this item to enable or disable Intel SpeedStep.

CPU C Status

Use this item to enable or disable CPU C status.
CPU C Status Set the default value to: [Enabled]
The optional settings: [Disabled]; [Enabled].
When set as [Enabled], the following sub-items shall appear:

CPU C6 Report

Use this item to enable or disable CPU C6 report to OS.
CPU C6 Report Set the default value to: [Enabled]
The optional settings: [Disabled]; [Enabled].

CPU C7 Report

Use this item to enable or disable CPU C7 report to OS.
CPU C7 Report Set the default value to: [Enabled]
The optional settings are: [Disabled]; [CPU C7]; [CPU C7s].

Package C-state Limit

The optional settings: [C0]; [C1]; [C3] [C6]; [C7]; [No Limit].
Package C-state Limit Set the default value to: [No Limit]

- **SATA Configuration**

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

SATA Configuration

SATA Port

SATA Port Set the default value to: [Enabled]
The optional settings: [Disabled]; [Enabled].
When set as [Enabled], the following sub-items shall appear:

SATA Mode

SATA Port Set the default value to: [Enabled]
The optional settings are: [IDE Mode]; [AHCI Mode].

SATA Speed Support

The item is for user to set the maximum speed the SATA controller can support.
SATA Speed Support Set the default value to: [Gen2]
The optional settings are: [Gen1]; [Gen2].

SATA Port1/ SATA Port2

SATA Port1/ SATA Port2 Set the default value to: [Enabled]
The optional settings are: [Enabled]; [Disabled].

- **Network Stack Configuration**

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

Network Stack

The optional settings are: [Enabled]; [Disabled].
Network Stack Set the default value to: [Disabled]
When set as [Enabled], the following sub-items shall appear:

Ipv4 PXE Support

The optional settings are: [Disabled]; [Enabled].
Ipv4 PXE Support Set the default value to: [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].
Ipv6 PXE Support Set the default value to: [Enabled]
Use this item to enable Ipv6 PXE Boot Support. When set as [Disabled], Ipv6 boot option will not be created.

PXE boot wait time

Use this item to set wait time to press [ESC] key to abort the PXE boot.
PXE boot wait time Set the default value to: [0]

- **CSM Configuration**

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

Option ROM execution order

Network

This item controls the execution of UEFI and legacy PXE OpROM.
Network Set the default value to: [Do not launch]
The optional settings are: [Do not launch]; [UEFI only]; [Legacy only].

Storage

This item controls the execution of UEFI and Legacy Storage OpROM.
Storage Set the default value to: [Legacy only]
The optional settings are: [Do not launch]; [UEFI only]; [Legacy only] ; [UEFI first]; [Legacy first].

Other PCI devices

This item determines OpROM execution policy for devices other than Network, storage or video.
Other PCI devices Set the default value to: [UEFI first]
The optional settings are: [UEFI first]; [Legacy first].

- **USB Configuration**

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

USB Configuration

Legacy USB Support

The optional settings are: [Enabled]; [Disabled]; [Auto].
Legacy USB Support Set the default value to: [Enabled]
[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.
XHCI Hand-off Set the default value to: [Enabled]
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.
EHCI Hand-off Set the default value to: [Disabled]
The optional settings are: [Disabled]; [Enabled].

USB Mass Storage Driver Support

USB Mass Storage Driver Support Set the default value to: [Enabled]
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.
USB Transfer time-out Set the default value to: [20 sec]
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.
Device reset time-out Set the default value to: [20 sec]

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.

Device power-up delay Set the default value to: [Auto]

The optional settings: [Auto]; [Manual].

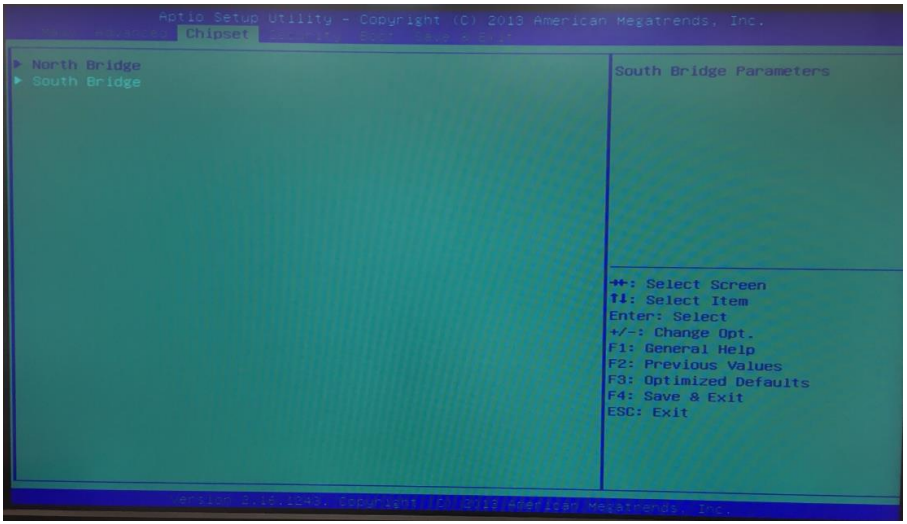
Select [Manual] you can set value for the following sub-item: ‘**Device Power-up delay in seconds’.**

Device Power-up delay in seconds

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

- **Intel(R) I210 Gigabit Network Connection-:XX:XX:XX:XX:XX:XX**
- **Intel(R) I210 Gigabit Network Connection-:XX:XX:XX:XX:XX:XX**
- **Intel(R) I210 Gigabit Network Connection-:XX:XX:XX:XX:XX:XX**
- **Intel(R) I210 Gigabit Network Connection-:XX:XX:XX:XX:XX:XX**

3-8 Chipset Menu



- **North Bridge**

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

PAVC

Use this item to enable or disable protected audio video control.

PAVC Set the default value to: [LITE Mode]

The optional settings are: [Disabled]; [LITE Mode]; [SERPENT Mode].

DVMT Pre-Allocated

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

DVMT Pre-Allocated Set the default value to: [64M]

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

DVMT Total Gfx Mem

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

DVMT Total Gfx Mem Set the default value to: [256M]

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

Aperture Size

Aperture Size Set the default value to: [256MB]

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

GTT Size

GTT Size Set the default value to: [2MB]

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

IGD Turbo Enable

IGD Turbo Enable Set the default value to: [Enabled]

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

Spread Spectrum Clock

Spread Spectrum Clock Set the default value to: [Disabled]

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

- **South Bridge**

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

- **USB Configuration**

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

USB Configuration

USB 3.0 Support

USB 3.0 Support Set the default value to: [Auto]

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

USB 3.0 Link Power Management

USB 3.0 Link Power Management Set the default value to: [Enabled]

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

USB 2.0 Support

***LAN3&4 Bypass State @ Power On**

LAN3&4 Bypass State @ Power On Set the default value to: [Passthrough]

The optional settings are: [Bypass]; [Passthrough].

***LAN3&4 Bypass State @ Power Off**

LAN3&4 Bypass State @ Power Off Set the default value to: [Passthrough]

The optional settings are: [Bypass]; [Passthrough].

***LAN3&4 Bypass WDT Function**

LAN3&4 Bypass State @ Power Off Set the default value to: [Disabled]

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

*****Note****: The above three setting items: '****LAN3&4 Bypass State @ Power On****', '****LAN3&4 Bypass State @ Power Off****' and '****LAN3&4 Bypass WDT Function****' are only optional for* ***NF9HB*** *series.* ***NF9HG*** *series do not support these functions so there are no such items in BIOS settings.*

PCIE1 Slot

PCIE1 Slot Set the default value to: [Enabled]

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

MPE Controller

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

MPE Controller Set the default value to: [Enabled]

Onboard Lan1 Controller/ Onboard Lan2 Controller/Onboard Lan3 Controller /Onboard Lan4 Controller

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

Onboard Lan1 Controller/ Onboard Lan2 Controller/Onboard Lan3 Controller /Onboard Lan4 Controller Set the default value to: [Enabled]

System State after Power Failure

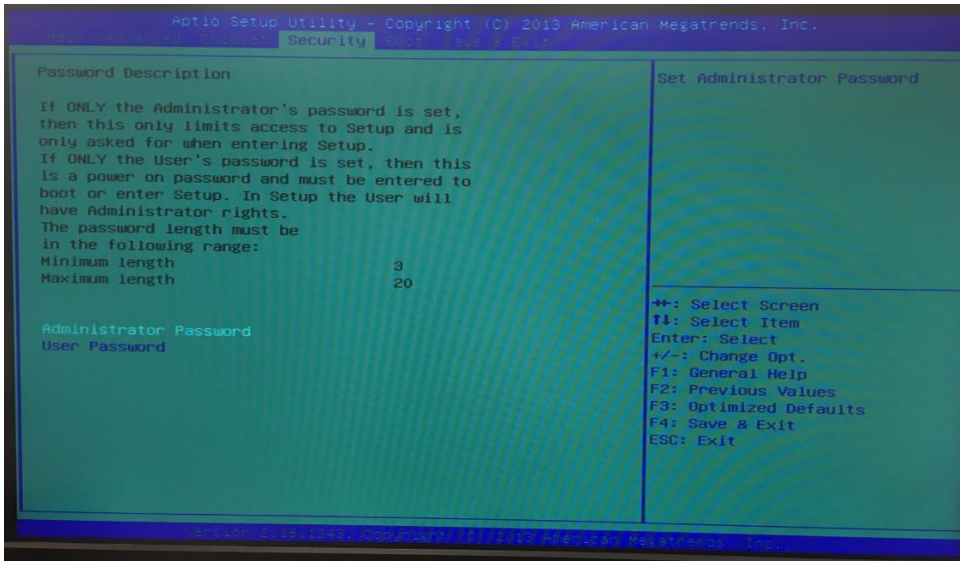
Use this item to select AC power state when power is re-applied after a power failure.

System State after Power Failure Set the default value to: [Always Off]

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.

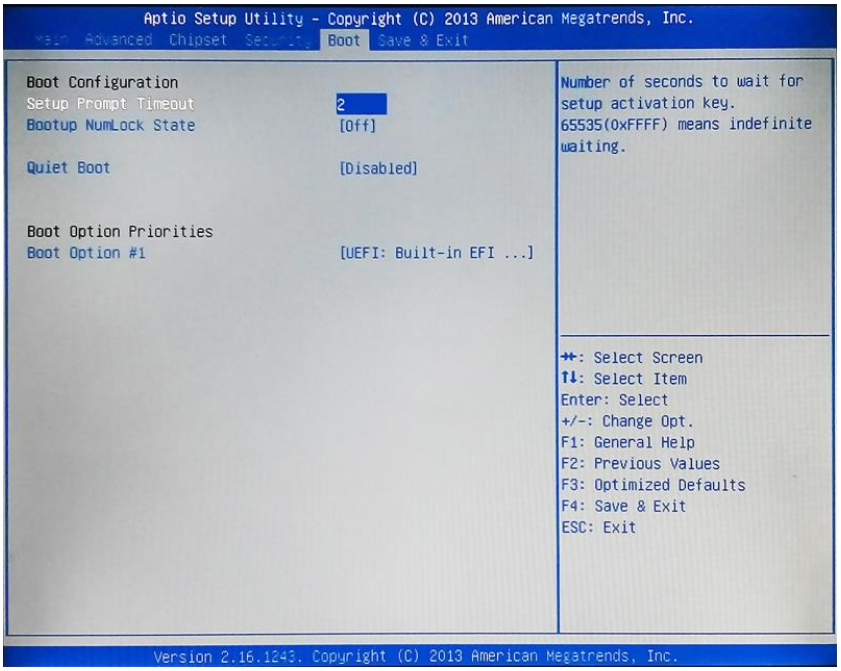
Administrator Password

Press [Enter] to create new administrator password. Press again to confirm the new administrator password.

User Password

Press [Enter] to create new user password. Press again to confirm the new user password.

3-10 Boot Menu



Boot Configuration

Setup Prompt Timeout

Use this item to set number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.

Setup Prompt Timeout Set the default value to: [1]

Bootup NumLock State

Use this item to select keyboard NumLock state.

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

Bootup NumLock State Set the default value to: [Off]

Quiet Boot

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

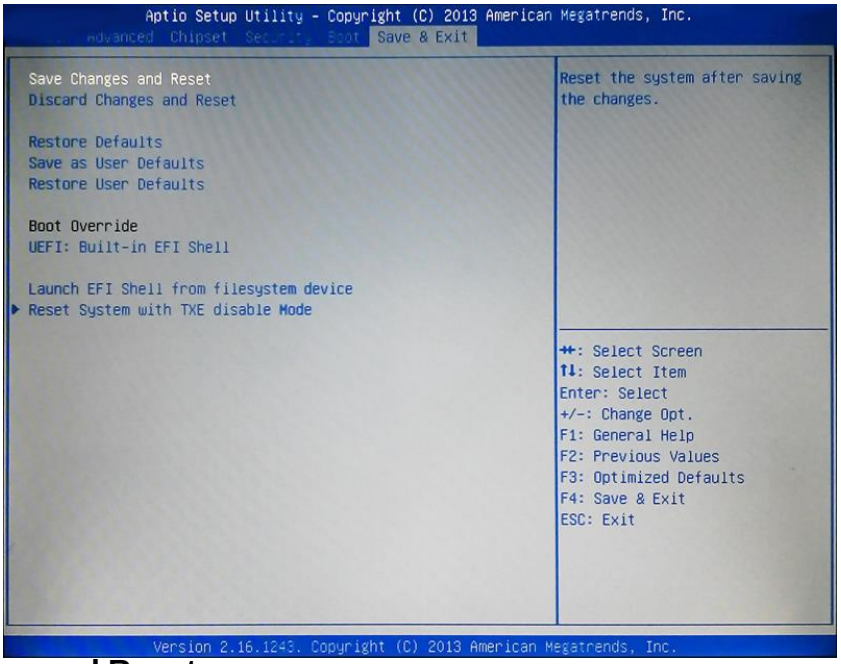
Quiet Boot Set the default value to: [Disabled]

Boot Option Priorities

Boot Option #1

The optional settings are: [UEFI: Built-in EFI Shell]; [Disabled].
Boot Option #1 Set the default value to: [UEFI: Built-in EFI Shell]

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 defaults to all the setup options.
Boot Override
UEFT: Built-in EFI Shell
Launch Internal EFI shell application (shell.efi).

Launch EFI Shell from filesystem device
Use this item to launch EFI shell application (Shell.efi)from one of the avaialbe filesystem devices.
Reset System with TXE disable Mode
Press [Enter] for TXE to run into the temporary disable mode.Ignore if TXE Ignition FM.