Technical Manual

Of

Intel Bay Trail Series CPU

Based Mini-ITX M/B

NO.G03-NF9HB-F

Revision: 1.0

Release date: March 30, 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.
USER’S NOTICE

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Manual Revision Information

<table>
<thead>
<tr>
<th>Reversion</th>
<th>Revision History</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>First Edition</td>
<td>March 27, 2015</td>
</tr>
</tbody>
</table>

Item Checklist

- Motherboard
- Motherboard User’s Manual
- DVD for motherboard utilities
- 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

<table>
<thead>
<tr>
<th>Spec</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Design</strong></td>
<td>● Mini-ITX form factor; PCB size: 17.0x17.0cm</td>
</tr>
<tr>
<td><strong>Embedded CPU</strong></td>
<td>● Integrated with Intel® Bay Trail-D/M/I series CPU</td>
</tr>
</tbody>
</table>
| **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 I211AT 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

<table>
<thead>
<tr>
<th>Icon</th>
<th>Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="12V DC Power-in Jack" /></td>
<td>DC12V Power-in Connector</td>
<td>For user to connect compatible power adapter to provide power supply for the system.</td>
</tr>
<tr>
<td><img src="image" alt="COM1 Port" /></td>
<td>COM1 Port</td>
<td>Mainly for user to connect external MODEM or other devices that supports Serial Communications Interface.</td>
</tr>
<tr>
<td><img src="image" alt="USB 2.0 Port" /></td>
<td>USB 2.0 Port</td>
<td>To connect USB keyboard, mouse or other devices compatible with USB specification.</td>
</tr>
<tr>
<td><img src="image" alt="USB 3.0 Port" /></td>
<td>USB 3.0 Port</td>
<td>To connect USB keyboard, mouse or other devices compatible with USB specification. USB 3.0 ports supports up to 5Gbps data transfer rate.</td>
</tr>
<tr>
<td><img src="image" alt="RJ-45 LAN Port" /></td>
<td>RJ-45 LAN Port</td>
<td>This connector is standard RJ-45 LAN jack for Network connection.</td>
</tr>
</tbody>
</table>

![Diagram of Rear IO Ports](image)
**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**

*JP2 (Optional for NF9HB series)*

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

<table>
<thead>
<tr>
<th>Model</th>
<th>JP2(Jumper)</th>
<th>Bypass LAN (on LAN3/LAN4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NF9HB</td>
<td>Y</td>
<td>Support</td>
</tr>
<tr>
<td>NF9HG</td>
<td>N</td>
<td>Not support</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Jumper</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>JBAT</td>
<td>Pin 1-2: CMOS RAM Clear Function Setting</td>
<td>4-Pin Block</td>
</tr>
<tr>
<td></td>
<td>Pin 3-4: Clear ME Function Setting</td>
<td></td>
</tr>
<tr>
<td>AT_COPEN</td>
<td>Pin 1-2: ATX Mode &amp; AT Mode Select</td>
<td>4-Pin Block</td>
</tr>
<tr>
<td></td>
<td>Pin 3-4: Case Clear Message Display Function</td>
<td></td>
</tr>
<tr>
<td>JP1</td>
<td>ME Security Measure Function Select</td>
<td>2-Pin Block</td>
</tr>
<tr>
<td><em>JP2(for NF9HB)</em></td>
<td>Bypass LAN Control Setting</td>
<td>4-pin Block</td>
</tr>
<tr>
<td>JPCOM1</td>
<td>COM1 Port Pin9 Function Select</td>
<td>4-pin Block</td>
</tr>
<tr>
<td>JPCOM2</td>
<td>COM2 Header Pin9 Function Select</td>
<td>4-pin Block</td>
</tr>
</tbody>
</table>

### Connectors

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

### Headers

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

*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**

*ATX Mode Selected: 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**

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**

*Note: JP2 is only optional for model NF9HB series, which supports Bypass LAN function (LAN3/4).
**JP COM1 (4-pin): COM1 Port Pin9 Function Select**

JP COM1 → COM1 Port

1. **2-4 Closed:** RI=RS232;
2. **3-4 Closed:** RI= +5V;
3. **4-6 Closed:** RI= +12V.

**JP COM2 (4-pin): COM2 Header Pin9 Function Select**

JP COM2 → COM2 Header

1. **2-4 Closed:** RI=RS232;
2. **3-4 Closed:** RI= +5V;
3. **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

<table>
<thead>
<tr>
<th>Pin</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GND</td>
</tr>
<tr>
<td>2</td>
<td>+12V DC_IN</td>
</tr>
</tbody>
</table>
(3) SATA1/SATA2(7-pin): SATA II Port Connector
These connectors are high-speed SATA II ports that support 3 GB/s transfer rate.

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GND</td>
</tr>
<tr>
<td>2</td>
<td>TXP</td>
</tr>
<tr>
<td>3</td>
<td>TXN</td>
</tr>
<tr>
<td>4</td>
<td>GND</td>
</tr>
<tr>
<td>5</td>
<td>RXN</td>
</tr>
<tr>
<td>6</td>
<td>RXP</td>
</tr>
<tr>
<td>7</td>
<td>GND</td>
</tr>
</tbody>
</table>

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

(4) SATAPW(4-pin): SATA Power Out Connector
(5) CPUFAN/SYSFAN1/SYSFAN2 (4-pin): Fan Connectors

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): SMBUS 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:
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: [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] (refer to Page 32).

- **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)].

- **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.
The optional settings: [Disabled]; [Enabled].
When set as [Enabled], system will wake on the hour/min/sec specified.

**Wake-up System with Dynamic Time**
Use this item to enable or disable system wake-up on alarm event.
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.
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 I/O Configuration**

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

† Serial Port 1 Configuration/ 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).

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

**Serial Port FIF0 Mode**
The optional settings are: [16-Byte FIF0]; [32-Byte FIF0]; [64-Byte FIF0]; [128-Byte FIF0].
**ERP Support**
The optional settings: [Enabled]; [Disabled].
This item should be set as [Disabled] if you wish to have all active wake-up functions.

**WatchDog Timer**
Use this item to enable or disable WatchDog Timer Control. 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 Unit**
The optional settings are: [Sec.]; [Min.].

**WatchDog Wake-up Timer in ERP**
This item support WDT wake-up while ‘ERP Support’ is set as [Auto].
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 Unit in ERP**
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 8~9, Jumper AT_MODE for ATX Mode & AT Mode Select).

**Case Open Detect**
This item controls detect case open function.
The optional settings are: [Enabled]; [Disabled].

- **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
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**
  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.
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: [Enabled]; [Disabled].

**Recorder Mode**
The optional settings are: [Enabled]; [Disabled].

**Resolution 100x31**
The optional settings are: [Enabled]; [Disabled].

**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 are: [Enabled]; [Disabled].

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

- **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.*

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

**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].

**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.

**Intel Virtualization Technology**
The optional settings: [Enabled]; [Disabled].
When set as [Enabled], a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

**EIST**
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.
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 C7 Report**
  Use this item to enable or disable CPU C7 report to OS.
  The optional settings are: [Disabled]; [CPU C7]; [CPU C7s].

**Package C-state Limit**
The optional settings: [C0]; [C1]; [C3] [C6]; [C7]; [No Limit].

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

  **SATA Configuration**
  **SATA Port**
The optional settings: [Disabled]; [Enabled].
  *When set as [Enabled], the following sub-items shall appear:*

  **SATA Mode**
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. The optional settings are: [Gen1]; [Gen2].

  **SATA Port1/ SATA Port2**
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].
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], 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.

- **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.
  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]; [UEFI first]; [Legacy first].

  **Other PCI devices**
  This item determines OpROM execution policy for devices other than Network, storage or video.
  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].
  
  [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. 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) I211 Gigabit Network Connection-:XX:XX:XX:XX:XX:XX**
Use this item to get driver information and configure Intel(R) I211 gigabit network connection.
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.
    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.
    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.
    The optional settings are: [128M]; [256M]; [MAX].
  - **Aperture Size**
The optional settings are: [128MB]; [256MB]; [512MB].

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

**IGD Turbo Enable**
The optional settings are: [Enabled]; [Disabled].

**Spread Spectrum Clock**
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**
    The optional settings are: [Auto]; [Enabled]; [Disabled]; [Auto]; [Smart Auto].

    **USB 3.0 Link Power Management**
    The optional settings are: [Enabled]; [Disabled].

    **USB 2.0 Support**
    The optional settings are: [Auto]; [Disabled].

    *‘USB 2.0 Support’ is only available for further settings when ‘USB 3.0 Support’ is set as [Disabled].*

    *LAN3&4 Bypass State @ Power On*
    The optional settings are: [Bypass]; [Passthrough].

    *LAN3&4 Bypass State @ Power Off*
    The optional settings are: [Bypass]; [Passthrough].

    *LAN3&4 Bypass WDT Function*
    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**

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

- **MPE Controller**

  The optional settings are: [Enabled]; [Disabled].
Onboard Lan1 Controller/ Onboard Lan2 Controller Onboard Lan2 Controller Onboard Lan3 Controller
The optional settings are: [Enabled]; [Disabled].

**System State after Power Failure**
Use this item to select AC power state when power is re-applied after a power failure.
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**
The optional settings are: [UEFI: Built-in EFI Shell]; [Disabled].
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
UEFI: 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 available filesystem devices.

Reset System with TXE disable Mode
Press [Enter] for TXE to run into the temporary disable mode. Ignore if TXE Ignition FM.