

***Technical Manual***  
***Of***  
***Intel Bay Trail Series CPU***  
***Based Mini-ITX M/B***

***NO.G03-NF9V-F***

***Revision: 1.0***

***Release date: March 6, 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.



---

---

# **TABLE OF CONTENT**

ENVIRONMENTAL SAFETY INSTRUCTION .....	iv
USER'S NOTICE .....	v
MANUAL REVISION INFORMATION .....	v
ITEM CHECKLIST .....	v
<b>CHAPTER 1 INTRODUCTION OF THE MOTHERBOARD</b>	
1-1 FEATURE OF MOTHERBOARD .....	1
1-2 SPECIFICATION .....	2
1-3 LAYOUT DIAGRAM .....	3
<b>CHAPTER 2 HARDWARE INSTALLATION</b>	
2-1 JUMPER SETTING.....	8
2-2 CONNECTORS AND HEADERS .....	13
2-2-1 CONNECTORS .....	13
2-2-2 HEADERS.....	16
<b>CHAPTER 3 INTRODUCING BIOS</b>	
3-1 ENTERING SETUP.....	26
3-2 BIOS MENU SCREEN .....	27
3-3 FUNCTION KEYS.....	27
3-4 GETTING HELP.....	28
3-5 MEMU BARS.....	28
3-6 MAIN MENU .....	29
3-7 ADVANCED MENU .....	30
3-8 CHIPSET MENU .....	40
3-9 SECURITY MENU .....	43
3-10 BOOT MENU .....	44
3-11 SAVE & EXIT MENU .....	45



## 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

COPYRIGHT OF THIS MANUAL BELONGS TO THE MANUFACTURER. NO PART OF THIS MANUAL, INCLUDING THE PRODUCTS AND SOFTWARE DESCRIBED IN IT MAY BE REPRODUCED, TRANSMITTED OR TRANSLATED INTO ANY LANGUAGE IN ANY FORM OR BY ANY MEANS WITHOUT WRITTEN PERMISSION OF THE MANUFACTURER.

THIS MANUAL CONTAINS ALL INFORMATION REQUIRED TO USE THIS MOTHER-BOARD SERIES AND WE DO ASSURE THIS MANUAL MEETS USER'S REQUIREMENT BUT WILL CHANGE, CORRECT ANY TIME WITHOUT NOTICE. MANUFACTURER PROVIDES THIS MANUAL "AS IS" WITHOUT WARRANTY OF ANY KIND, AND WILL NOT BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING DAMAGES FOR LOSS OF PROFIT, LOSS OF BUSINESS, LOSS OF USE OF DATA, INTERRUPTION OF BUSINESS AND THE LIKE).

PRODUCTS AND CORPORATE NAMES APPEARING IN THIS MANUAL MAY OR MAY NOT BE REGISTERED TRADEMARKS OR COPYRIGHTS OF THEIR RESPECTIVE COMPANIES, AND THEY ARE USED ONLY FOR IDENTIFICATION OR EXPLANATION AND TO THE OWNER'S BENEFIT, WITHOUT INTENT TO INFRINGE.

## Manual Revision Information

Reversion	Revision History	Date
1.0	First Edition	March 16, 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® Bay Trail Series Processor, with low power consumption never denies high performance
- Support 1\* DDR3L 1066/1333 MHz SO-DIMM, up to 8GB
- Support full-size Mini-PCIE connector
- Support m-SATA connector
- Support 1 \* SATAII port
- 4 \* RJ45 ports for External COM interface&2\* Internal COM header
- Support USB 3.0 data transport demand
- Support LVDS & VGA dual display output
- Touch Panel Control IC integrated on board (Optional)
- Support CPU Over-Temperature protection
- Support CPU Over-Current/Under Voltage protection
- Support DRAM Over-Current/Under Voltage protection
- Amplifier implement to support 3W Speaker
- Support CPU/System Smart FAN
- Compliance with ErP standard
- Support Watchdog function

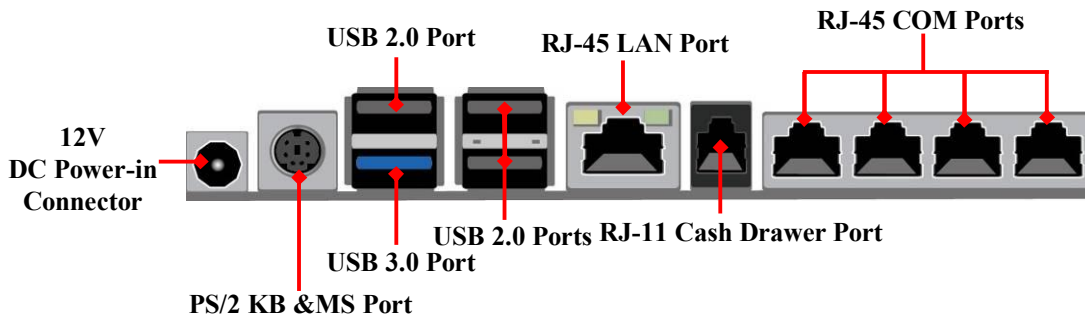
## 1-2 Specification

Spec	Description
<b>Design</b>	<ul style="list-style-type: none"><li>● 6 layers; PCB size: 17x 17 cm</li></ul>
<b>Embedded CPU</b>	<ul style="list-style-type: none"><li>● Integrated with Intel® Bay Trail-D/M/I series CPU</li></ul>
<b>Memory Slot</b>	<ul style="list-style-type: none"><li>● 1 * DDR3L SODIMM Slot for un-buffered DDR3L 1066/1333 MHz SDRAM, expandable to 8GB in total</li></ul>
<b>Expansion Slot</b>	<ul style="list-style-type: none"><li>● 1* Full-size Mini-PCIE slot</li><li>● 1* PCIE x1 slot</li></ul>
<b>LAN Chip</b>	<ul style="list-style-type: none"><li>● Integrated with Realtek RTL8111G PCI-E Gigabit LAN chip</li><li>● Support Fast Ethernet LAN function of providing 10/100/1000Mbps Ethernet data transfer rate</li></ul>
<b>Storage</b>	<ul style="list-style-type: none"><li>● 1* SATAII port</li><li>● 1* Mini-SATA slot</li></ul>
<b>BIOS</b>	<ul style="list-style-type: none"><li>● AMI 64MB Flash ROM</li></ul>
<b>Rear I/O</b>	<ul style="list-style-type: none"><li>● 1* 12V system DC Jack power-in connector</li><li>● 1* PS/2 keyboard &amp; mouse port</li><li>● 1* USB 3.0 port</li><li>● 3* USB 2.0 port</li><li>● 1* RJ-45 LAN port</li><li>● 1* RJ-11 cash Drawer port</li><li>● 4* RJ-45 COM port for Console</li></ul>
<b>Internal I/O</b>	<ul style="list-style-type: none"><li>● 1* 2-Pin DC 12V system power-in connector</li><li>● 1* 2-Pin DC 12V power-out connector</li><li>● 1* SATA Power-out connector</li><li>● 1* CPU FAN header</li><li>● 2* SYSFAN header</li><li>● 1* Front panel audio header</li><li>● 1* SPDIF Out header</li><li>● 1* LAN LED activity header</li></ul>

	<ul style="list-style-type: none"> <li>● 1* Front panel header</li> <li>● 1* Power LED &amp; speaker header</li> <li>● 1* SPEAK_CON header</li> <li>● 1* MIC header</li> <li>● 1* Line-out header</li> <li>● 2* Serial port header (COM5/6, COM6 supports RS422/485 function)</li> <li>● 1* Parallel port header</li> <li>● 2* USB 2.0 header (Expansable to 4* USB 2.0 ports)</li> <li>● 1* GPIO_CON header</li> <li>● 1* SMBUS header</li> <li>● 1* VGA port header</li> <li>● 1* Touch panel I/F header (<b>Optional</b>)</li> <li>● 1* LVDS header</li> <li>● 1* LVDS inverter header</li> </ul>
--	--

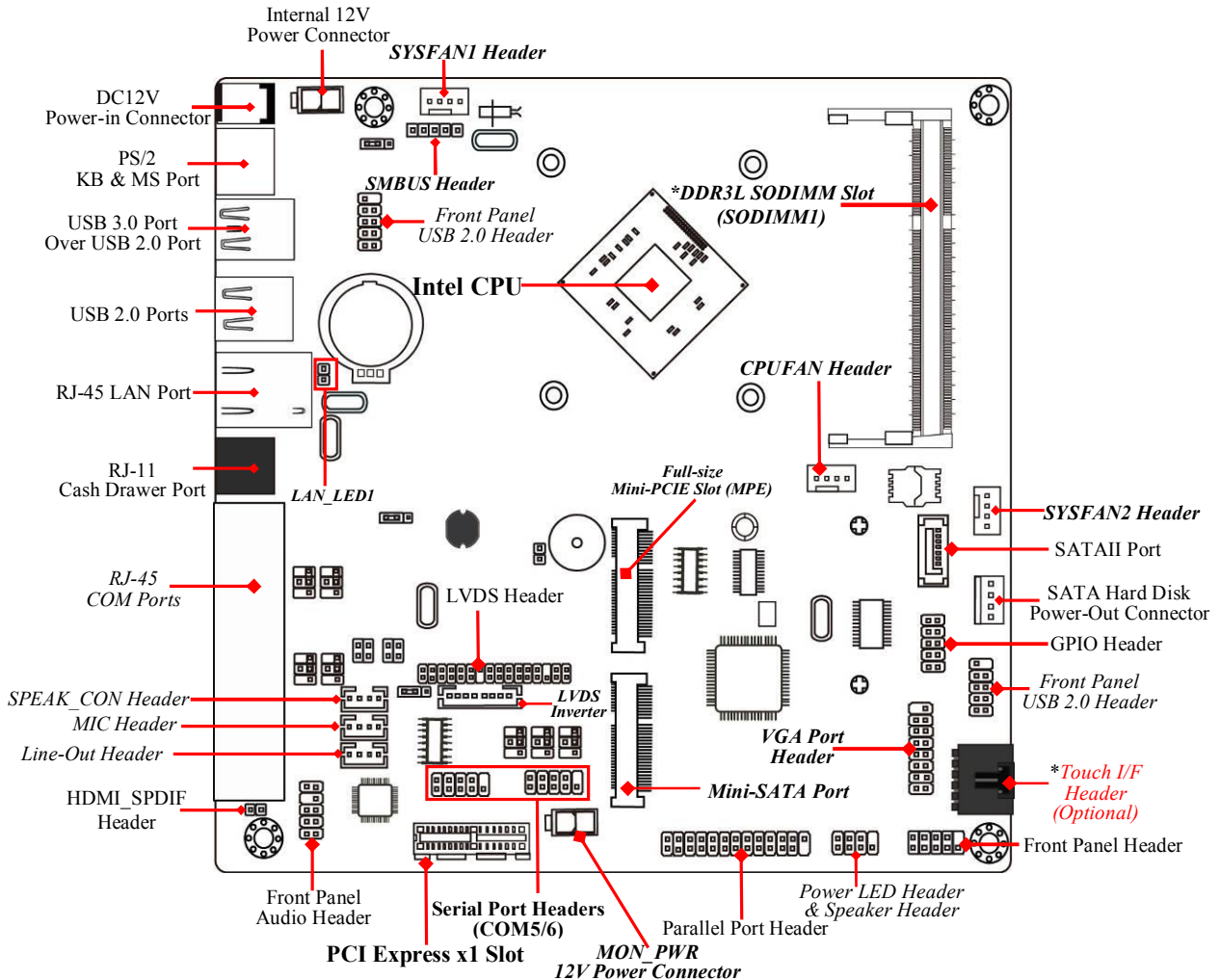
### 1-3 Layout Diagram

#### *Rear IO Panel Diagram:*



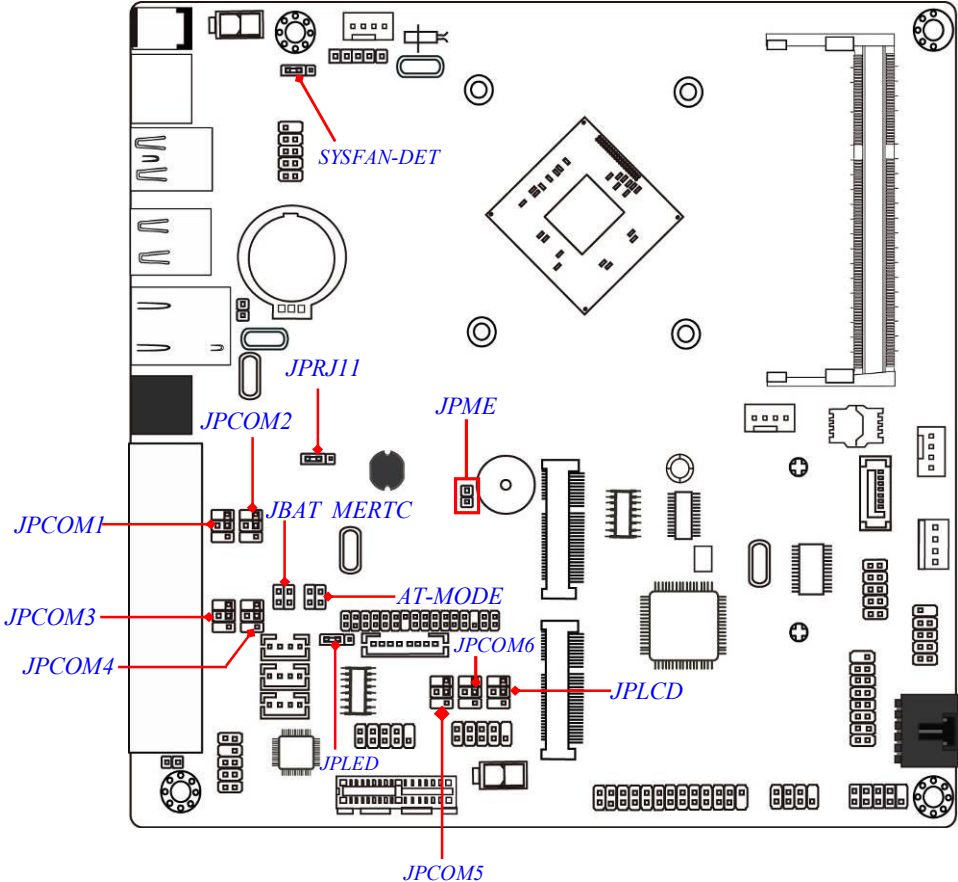


# Motherboard Internal Diagram



**Note: 1.** The module should be **DDR3L 1.35V SODIMM** and **not exceeding 8GB total capacity**.  
**2.** Touch I/F header is only optional by order.

**Jumper Position:**



---

---

## Jumper

Jumper	Name	Description
JBAT_MERTC	<b>Pin 1-3:</b> Clear ME Function Setting <b>Pin 2-4:</b> CMOS RAM Clear Function Setting	4-Pin Block
AT_COPEN	<b>Pin 1-3:</b> ATX Mode & AT Mode Select <b>Pin 2-4:</b> Case Open Message Display Function	4-Pin Block
JPME	ME Security Measure Function Select	2-Pin Block
JPLED	INVERTER Back Light 5V/12V Select	3-Pin Block
JPLCD	LVDS PVCC 3.3V/5V /12V Select	4-Pin Block
SYSFAN_DET	SYSFAN1/SYSFAN2 Smart Fan Support Select	3-Pin Block
JPRJ11	RJ11 Cash Drawer Voltage 12V/24V Select	3-Pin Block
JPCOM1	COM1 Port Pin5 GND/5V/12V Function Select	4-Pin Block
JPCOM2	COM2 Port Pin5 GND/5V/12V Function Select	4-Pin Block
JPCOM3	COM3 Port Pin5 GND/5V/12V Function Select	4-Pin Block
JPCOM4	COM4 Port Pin5 GND/5V/12V Function Select	4-Pin Block
JPCOM5	COM5 Header Pin9 RS232/5V/12V Select	4-Pin Block
JPCOM6	COM6 Header Pin9 RS232/5V/12V Select	4-Pin Block

## Connectors

Connector	Name
DCIN	DC 12V System Power-in Connector
ATX2P	Internal DC 12V System Power-in Connector
MON_PWR	DC 12V Power-out Connector
SATA1	SATAII Port Connector
SATAPW	SATA Power out Connector
CPUFAN	CPUFAN Connector
SYSFAN1/SYSFAN2	SYSFAN Connector X2
PS2	PS/2 Keyboard & Mouse Combo Port Connector
USB1(Top) /USB2	USB 2.0 Port Connector X3

---



---

USB1(Bottom)	USB 3.0 Port Connector
LAN	RJ-45 LAN Port Connector
RJ-11	RJ-11 Cash Drawer Port Connector
COM	RJ-45 COM Port Connector for Console x4

## Headers

Header	Name	Description
FP_AUDIO	Front Panel Audio Header	9-pin Block
SPDIF	SPDIF Out Header	2-pin Block
LAN_LED1	LAN Activity LED Header	2-pin Block
JW_FP	Front Panel Header(PWR LED/ HDD LED/Power Button /Reset)	9-pin Block
SPK-LED	Power LED & Speaker Header	7-pin Block
SPEAK_CON	3W Speaker Header	4-pin Block
MIC	MIC Port Header	4-pin Block
LINTOUT	Line-out Port Header	4-pin Block
COM5/6	Serial Port Header X2	9-pin Block
LPT	Parallel Port Header	25-pin Block
FP_USB1/ FP_USB2	USB 2.0 Header X2	9-pin Block
GPIO_CON	GPIO Header	10-pin Block
SMBUS	SMBUS Header	5-pin Block
VGA1	VGA Port Header	15-pin Block
<b>*TOUCH (Optional)</b>	Touch Panel I/F Header	5-pin Block
INVERTER	LVDS Inverter	8-pin Block
LVDS	LVDS Header	30-pin Block

---

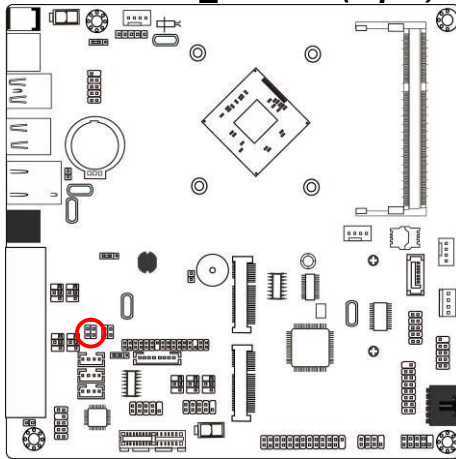
---

# Chapter 2

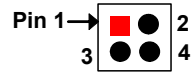
## Hardware Installation

### 2-1 Jumper Setting

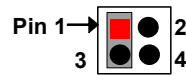
**Pin 1 & 3 of JBAT\_MERTC (4-pin): Clear ME Function Setting**



**JBAT\_MERTC(Pin 1&3) → Clear ME**

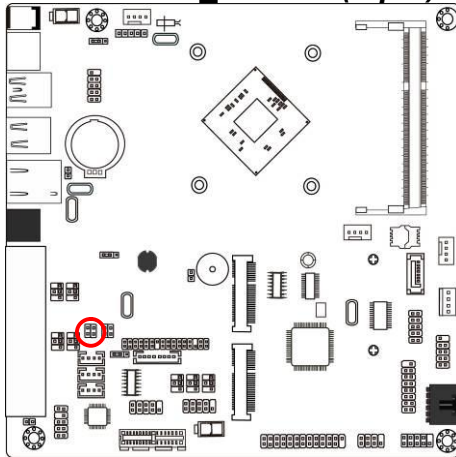


1-3 Open: Normal(Default);

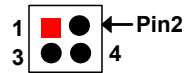


1-3 Close: Clear ME.

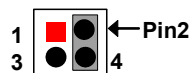
**Pin 2 & 4 of JBAT\_MERTC (4-pin): Clear CMOS Setting**



**JBAT\_MERTC(Pin 2&4) → Clear CMOS**



2-4 Open: Normal(Default);

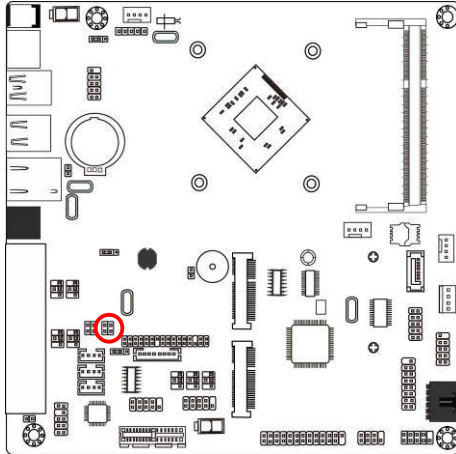


2-4 Close: Clear CMOS(One Touch).

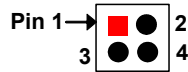
---

---

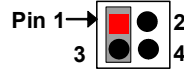
### Pin 1 & 3 of AT\_COPEN (4-pin): AT Mode Function Select



*AT\_COPEN(Pin 1&3)→AT Mode Select*



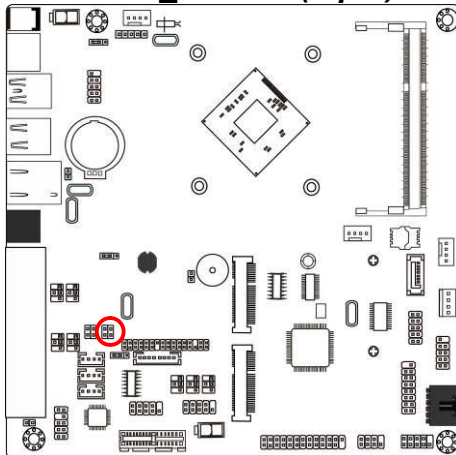
1-3 Open: ATX Mode Selected(Default);



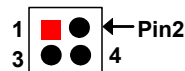
1-3 Close: AT Mode Selected.

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

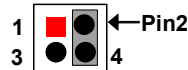
### Pin 2 & 4 of AT\_COPEN (4-pin): Case Open Message Display Function Select



*AT\_COPEN(Pin 2&4)→Case Open Function Select*



2-4 Open: Normal(Default);



2-4 Close: Case Open Function Selected (One Touch).

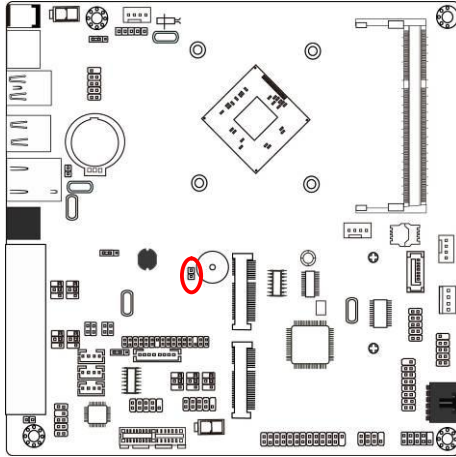
**Pin 2-4 Close:** When Case open function pin short to GND, the Case open function was detected. When Used, needs to enter BIOS and enable 'Case Open Detect'

---

---

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.

**JPME (2-pin): ME Security Measure Function Select**



**JPME**

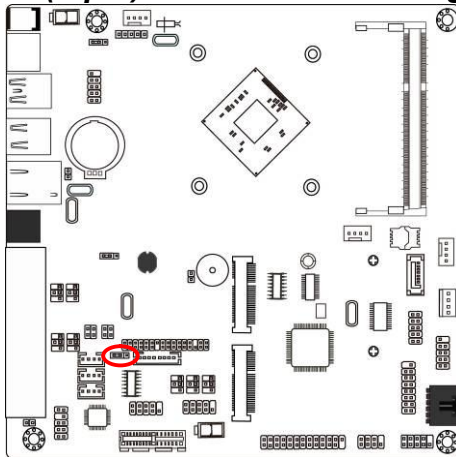


**1-2 Open: Enable Security Measures in the Flash Descriptor(Default) ;**

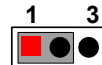


**1-2 Closed: Disable Security Measures in the Flash Descriptor(Override).**

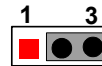
**JPLED (3-pin): INVERTER Back Light VCC 5V/12V Select**



**JPLED → INVERTER Back Light VCC**



**1-2 Close: INVERTER Back Light 5V Selected(Default);**

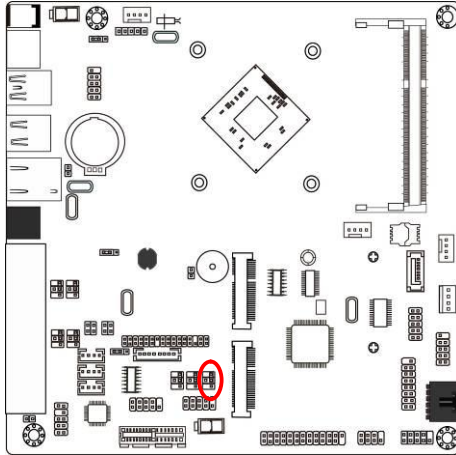


**2-3 Close: INVERTER Back Light 12V Selected.**

---

---

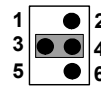
### **JPLCD (4-pin): LCD Back Light VCC 3.3V/5V/12V Select**



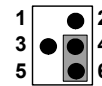
**JPLCD→LCD Back Light Voltage**



**2-4 Closed:**  
VCC=3.3V  
(Default);

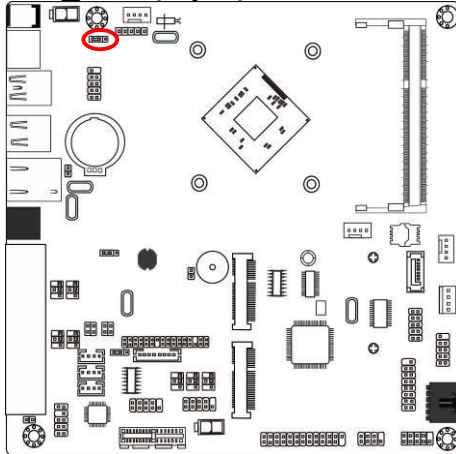


**3-4 Closed:**  
VCC= 5V;



**4-6 Closed:**  
VCC= 12V.

### **SYSFAN\_DET (3-pin): SYSFAN1/SYSFAN2 Smart Fan Select**



**SYSFAN\_DET→SYSFAN1/2 Smart Fan Select**



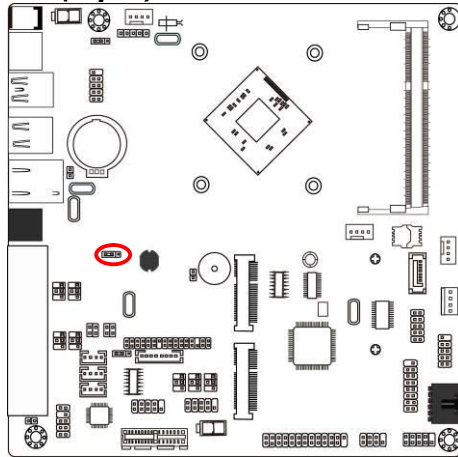
**1-2 Close: SYSFAN1 Smart Fan Function Selected(Default);**



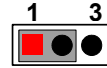
**2-3 Closed: SYSFAN2 Smart Fan Function Selected.**



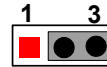
**JPRJ11 (3-pin): RJ11 Cash Drawer Voltage 12V/24V Select**



**JPRJ11 → RJ11 Cash Drawer Port**

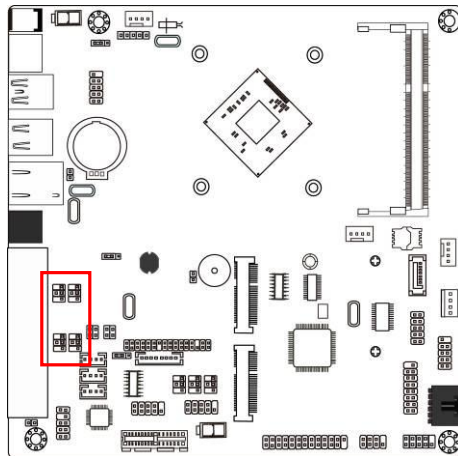


1-2 Close: RJ11 Cash Drawer Voltage=12V(Default);

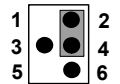


2-3 Close: RJ11 Cash Drawer Voltage=24V.

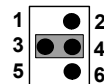
**JPCOM1/JPCOM 2/JPCOM3/JPCOM4 (4-pin):RJ45 COM1/2/3/4 Port Pin-5 Signal Select**



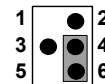
**JPCOMP1 → COM1 Port Pin-5**  
**JPCOMP2 → COM2 Port Pin-5**  
**JPCOMP3 → COM3 Port Pin-5**  
**JPCOMP4 → COM4 Port Pin-5**



2-4 Closed:  
Pin5=GND(Default);

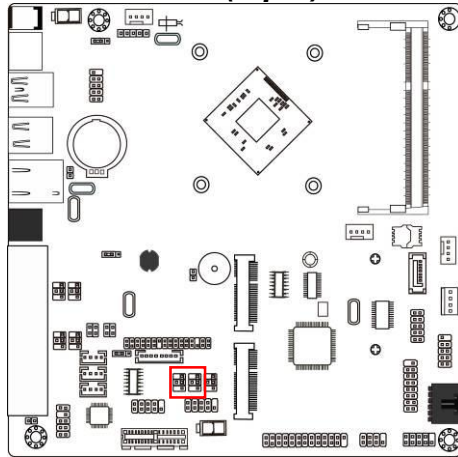


3-4 Closed:  
Pin5=VCC;

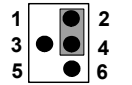


4-6 Closed:  
Pin5= 12V.

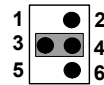
**JPCOM5/ JPCOM6 (4-pin): COM5/ COM6 Header Pin9 Function Select**



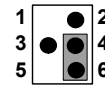
JCOMP5 → COM5 Header Pin-9  
 JCOMP6 → COM6 Header Pin-9



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



3-4 Closed:  
 RI= 5V;

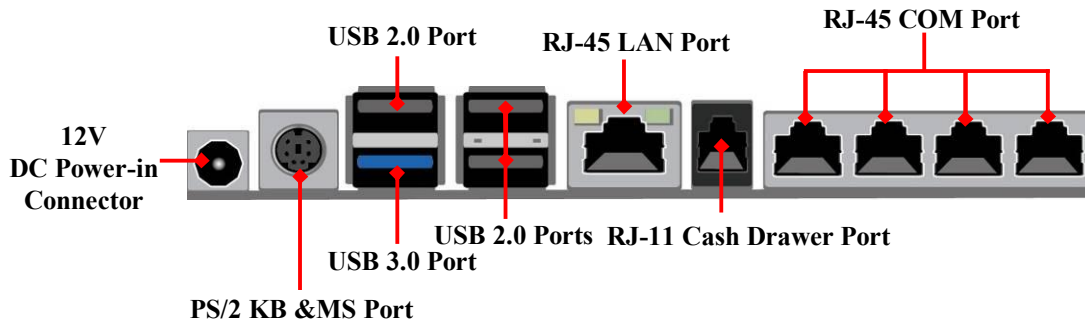


4-6 Closed:  
 RI= 12V.

**2-2 Connectors and Headers**

**2-2-1 Connectors**

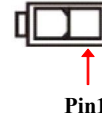
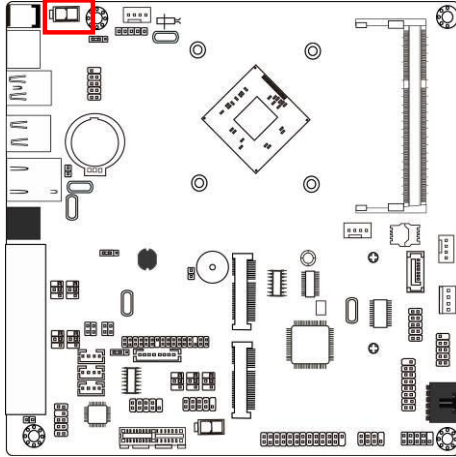
**(1) Rear I/O Connectors**



---

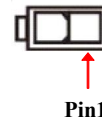
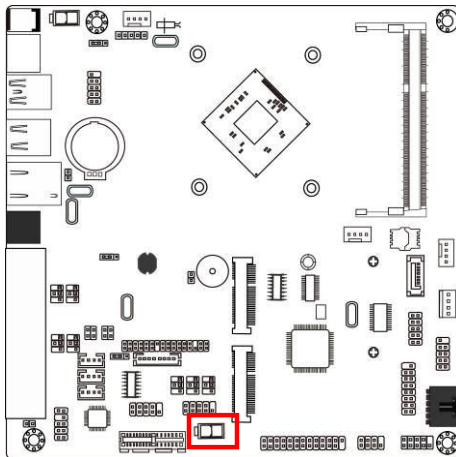
---

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



Pin.	Definition
1	GND
2	+12V DC_IN

## (3) MON\_PWR(2-pin Block): DC 12V Power-out Connector



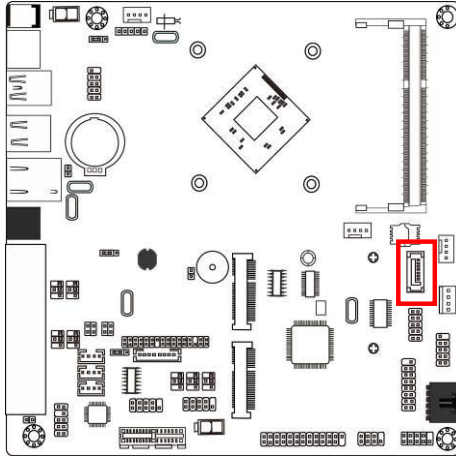
Pin.	Definition
1	GND
2	+12V

---

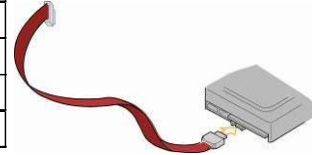
---

#### (4) SATA1(7-Pin Block) : SATAII Port connector

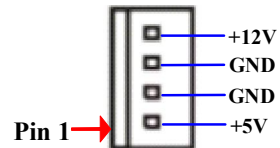
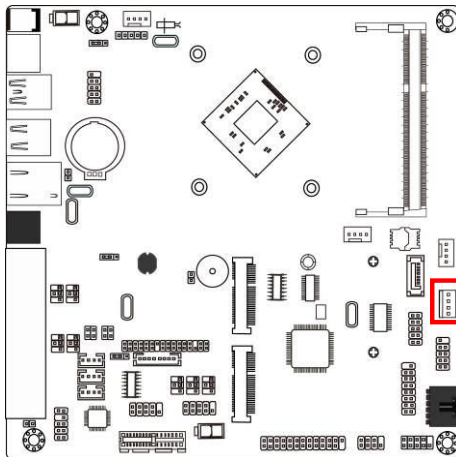
SATA1 port is high-speed SATAII ports that support 3GB/s transfer rate.



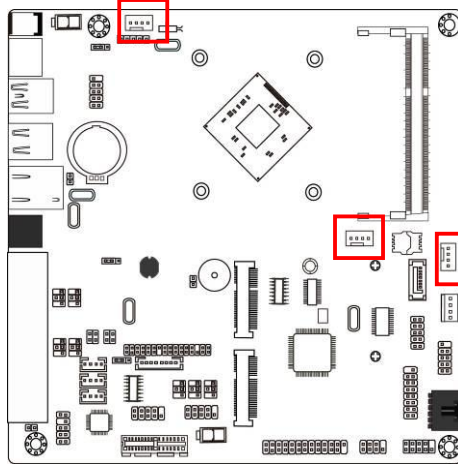
Pin No.	Definition
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND



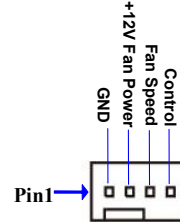
#### (5) SATAPW(4-pin): SATA Power Out Connector



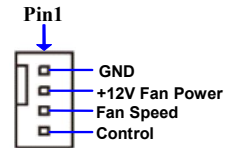
## (6) CPUFAN/SYSFAN1/SYSFAN2 (4-pin): Fan Connectors



SYSFAN1/CPUFAN



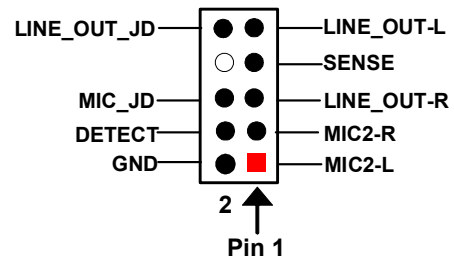
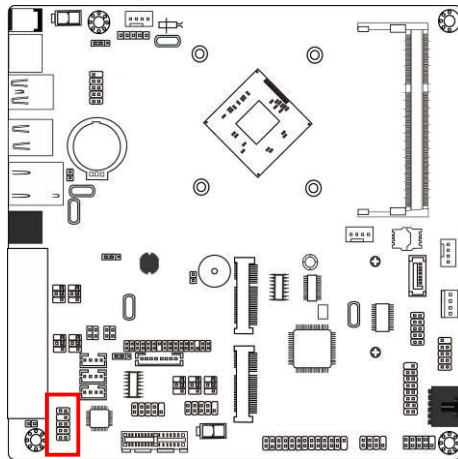
SYSFAN2



## 2-2-2 Headers

### (1) FP\_AUDIO (9-pin): Line-Out, MIC-In Header

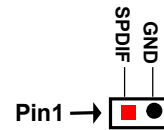
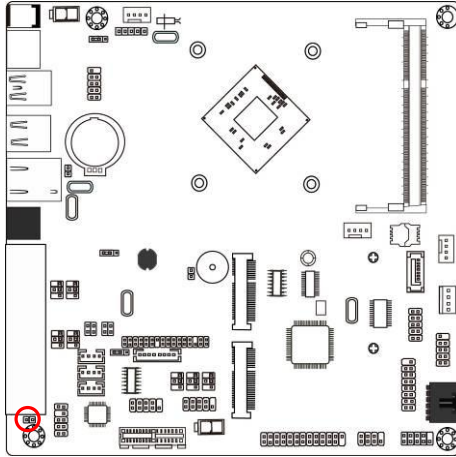
This header connects to Front Panel Line-out, MIC-In connector with cable.



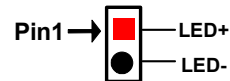
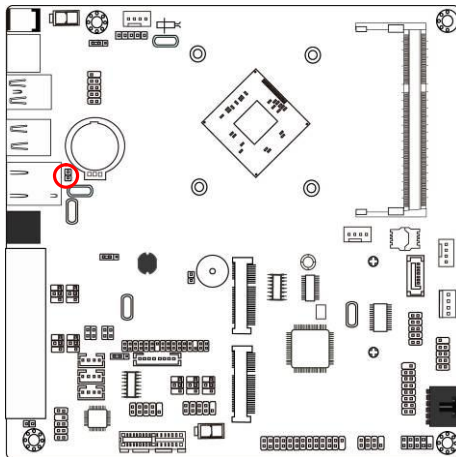
---

---

**(2) SPDIF (2-pin): SPDIF Out Header**



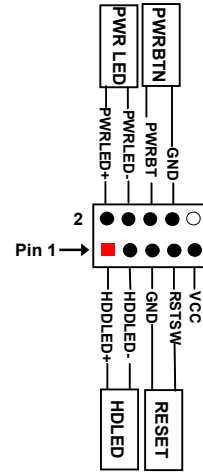
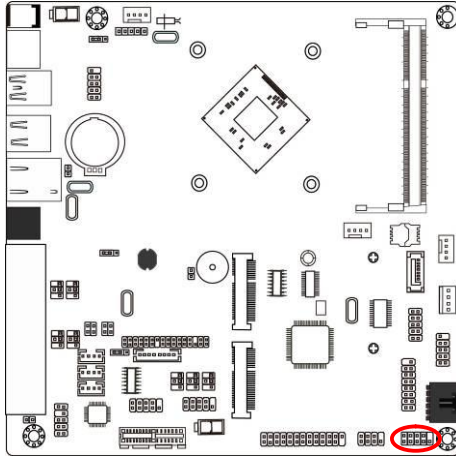
**(3) LAN\_LED1 (2-pin): LAN1Activity LED Header**



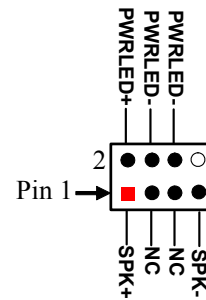
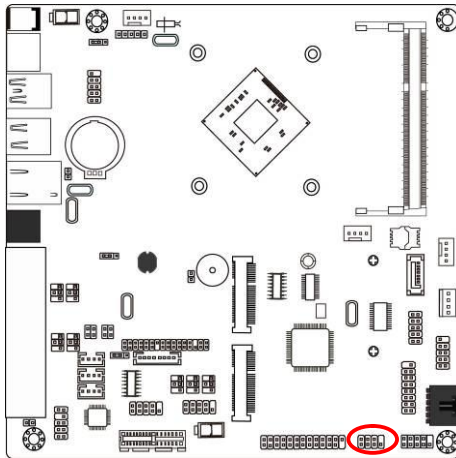
---

---

#### (4) JW\_FP (9-pin): Front Panel Header



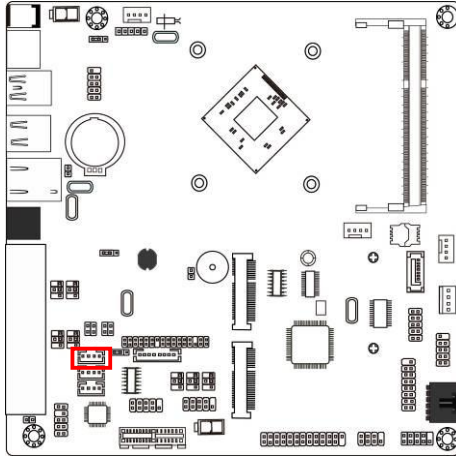
#### (5) SPK-LED (7-pin): Speaker Header & PWR LED Header



---

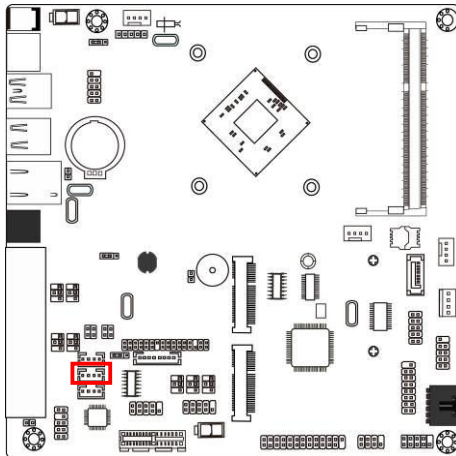
---

### (6)SPEAK\_CON (4-pin): Speaker Header



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

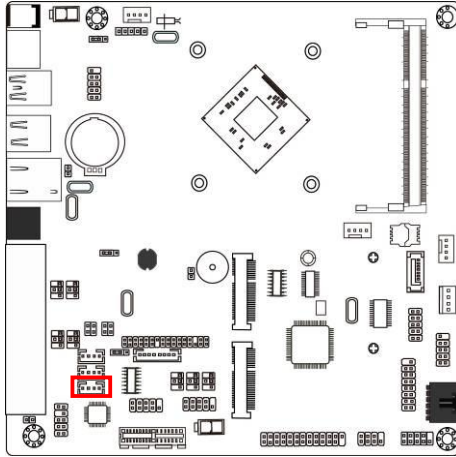
### (7)MIC (4-pin): MIC Header



Pin No.	Definition
1	MIC1-R
2	MIC1-JD
3	GND
4	MIC1-L

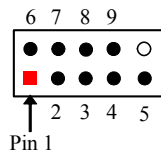
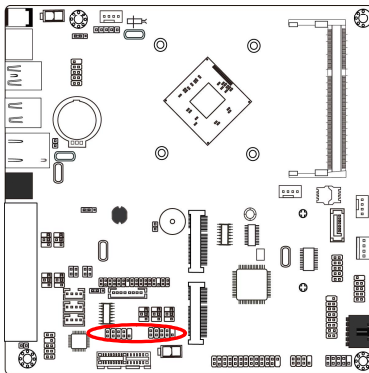


### (8)LINTOUT(4-pin): Line-Out Header



Pin No.	Definition
1	FRONTR_OUT
2	GND
3	GND
4	FRONTL_OUT

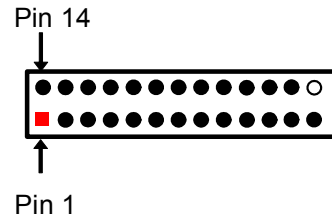
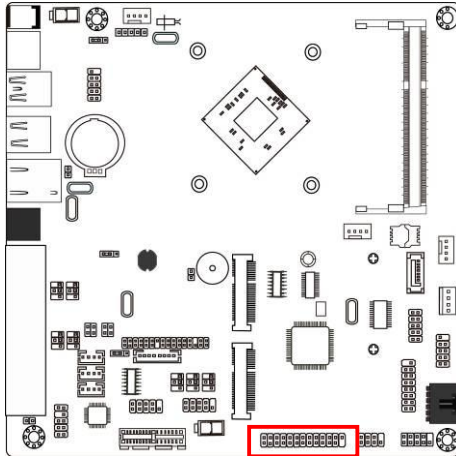
### (9) COM5/COM6 (9-pin): Serial Port Headers



Pin NO.	RS232	*RS422 (for COM6)	*RS485 (for COM6)
Pin 1	DCD	TX-	DATA-
Pin 2	RXD	TX+	DATA+
Pin 3	TXD	RX+	NC
Pin 4	DTR	RX-	NC
Pin 5	GND	GND	GND
Pin 6	DSR	NC	NC
Pin 7	RTS	NC	NC
Pin 8	CTS	NC	NC
Pin 9	RI	NC	NC

**\*Notice:** RS422, RS485 function is supported by COM6 header only, with compatible COM cable for RS422 or RS 485 function. User also needs to go to BIOS to set 'Transmission Mode Select' for COM6 (refer to Page 31).

**(10) LPT (25-pin): Parallel Port Header**

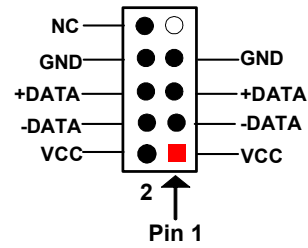
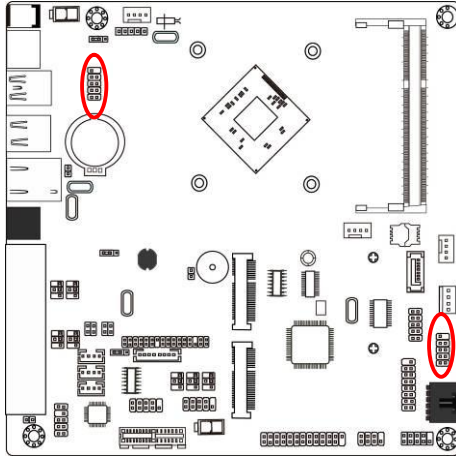


Pin NO.	Pin Definition	Pin NO.	Pin Definition
Pin 1	STB-	Pin 14	AFD-
Pin 2	PRD0	Pin 15	ERR-
Pin 3	PRD1	Pin 16	INIT-
Pin 4	PRD2	Pin 17	SLIN-
Pin 5	PRD3	Pin 18	GND
Pin 6	PRD4	Pin 19	GND
Pin 7	PRD5	Pin 20	GND
Pin 8	PRD6	Pin 21	GND
Pin 9	PRD7	Pin 22	GND
Pin 10	ACK-	Pin 23	GND
Pin 11	BUSY	Pin 24	GND
Pin 12	PE	Pin 25	GND
Pin 13	SLCT		

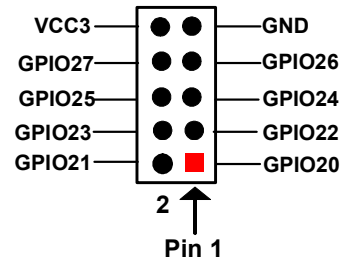
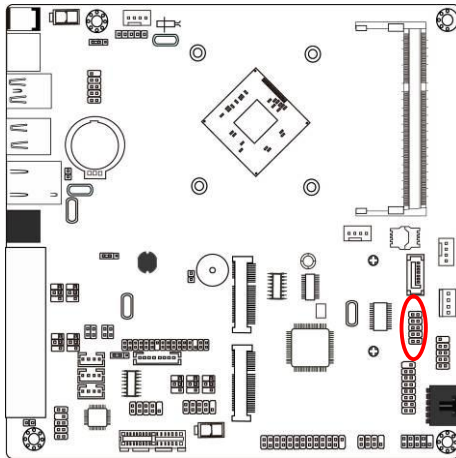
---

---

**(11) FP\_USB1/FP\_USB2 (9-pin): USB 2.0 Port Header**



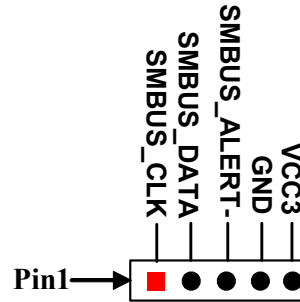
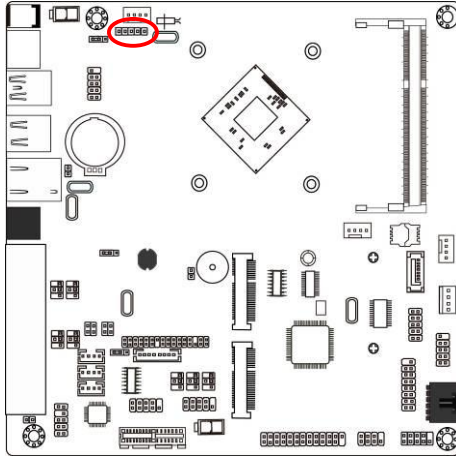
**(12) GPIO\_CON (10-pin): GPIO Header**



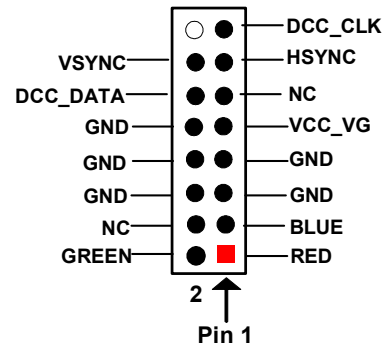
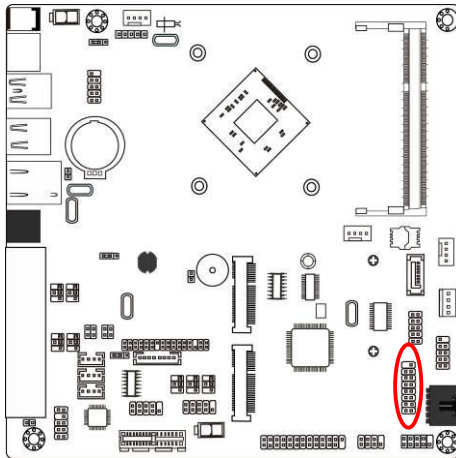
---

---

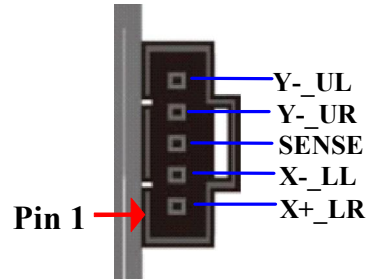
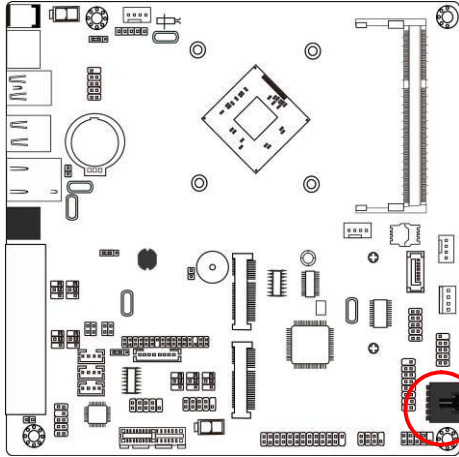
**(13) SMBUS (5-Pin): SM BUS Header**



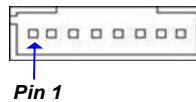
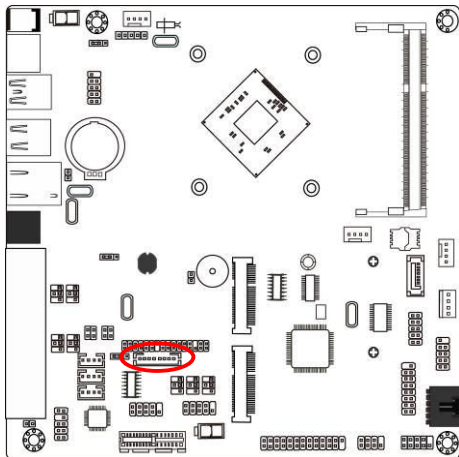
**(14) VGA1(15-pin): VGA Port Header**



**(15) TOUCH(5-pin):TOUCH I/F Header (Optional)**

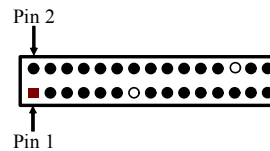
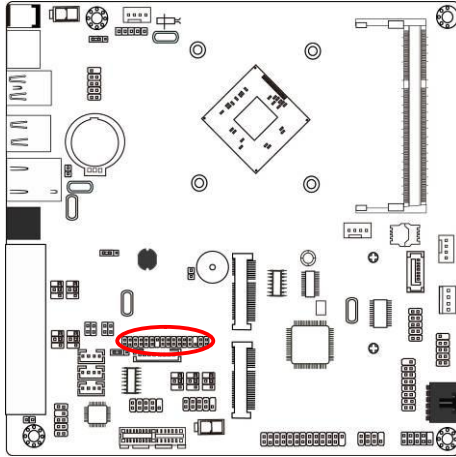


**(16) INVERTER (8-pin): LVDS Inverter Connector**



Pin No.	Definition
1	Backlight Enable
2	Backlight PWM
3	Backlight VCC
4	Backlight VCC
5	GND
6	GND
7	Backlight Up SW
8	Backlight Down SW

## (17) LVDS (30-pin): 24-bit Dual Channel LVDS Header



Pin NO.	Pin Define	Pin NO.	Pin Define
Pin 1	LVDSB_DATAN3	Pin 2	LVDSB_DATAP3
Pin 3	LVDS_CLKBN	Pin 4	LVDS_CLKBP
Pin 5	LVDSB_DATAN2	Pin 6	LVDSB_DATAP2
Pin 7	LVDSB_DATAN1	Pin 8	LVDSB_DATAP1
Pin 9	LVDSB_DATAN0	Pin 10	LVDSB_DATAP0
Pin 11	LVDS_DDC_DAT	Pin 12	LVDS_DDC_CLK
Pin 13	N/A	Pin 14	GND
Pin 15	GND	Pin 16	GND
Pin 17	LVDSA_DATAP3	Pin 18	LVDSA_DATAN3
Pin 19	LVDS_CLKAP	Pin 20	LVDS_CLKAN
Pin 21	LVDSA_DATAP2	Pin 22	LVDSA_DATAN2
Pin 23	LVDSA_DATAP1	Pin 24	LVDSA_DATAN1
Pin 25	LVDSA_DATAP0	Pin 26	LVDSA_DATAN0
Pin 27	PVDD	Pin 28	N/A
Pin 29	PVDD	Pin 30	PVDD
Pin 31	GND	Pin 32	GND

---

---

# 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

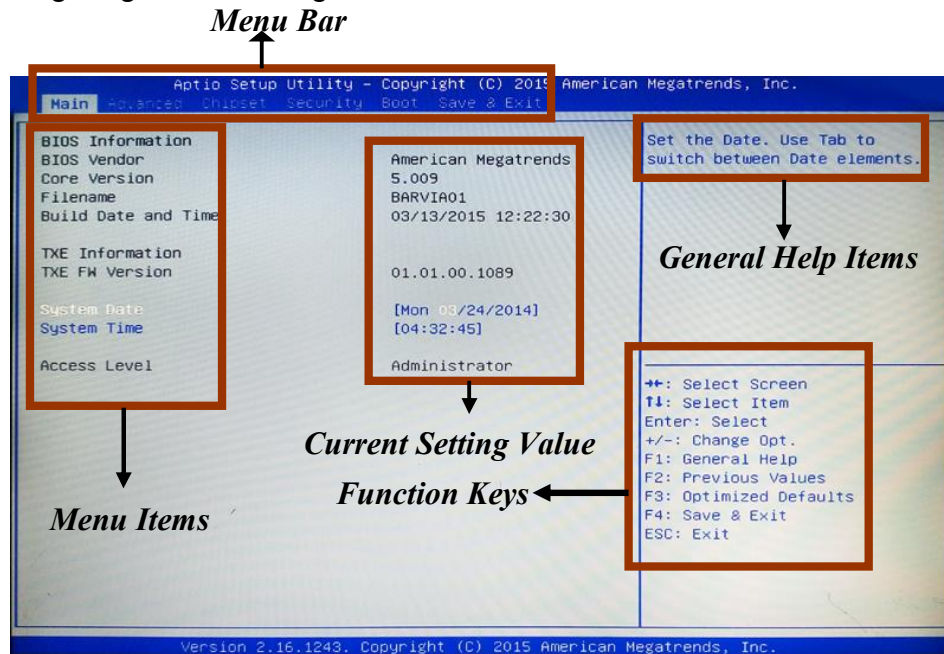
Power on the computer and by pressing <Del> immediately allows you to enter Setup. If the message disappears before your respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the “RESET” button on the system case. You may also restart by simultaneously 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:

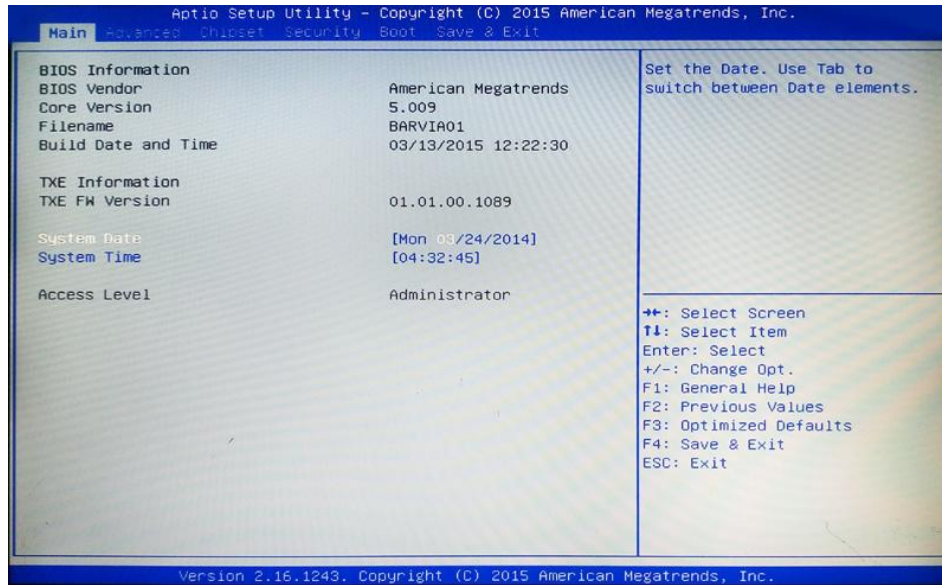
<b>Main</b>	To change system basic configuration
<b>Advanced</b>	To change system advanced configuration
<b>Chipset</b>	To change chipset configuration
<b>Security</b>	Password settings
<b>Boot</b>	To change boot settings
<b>Save &amp; Exit</b>	Save setting, loading and exit options.

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.

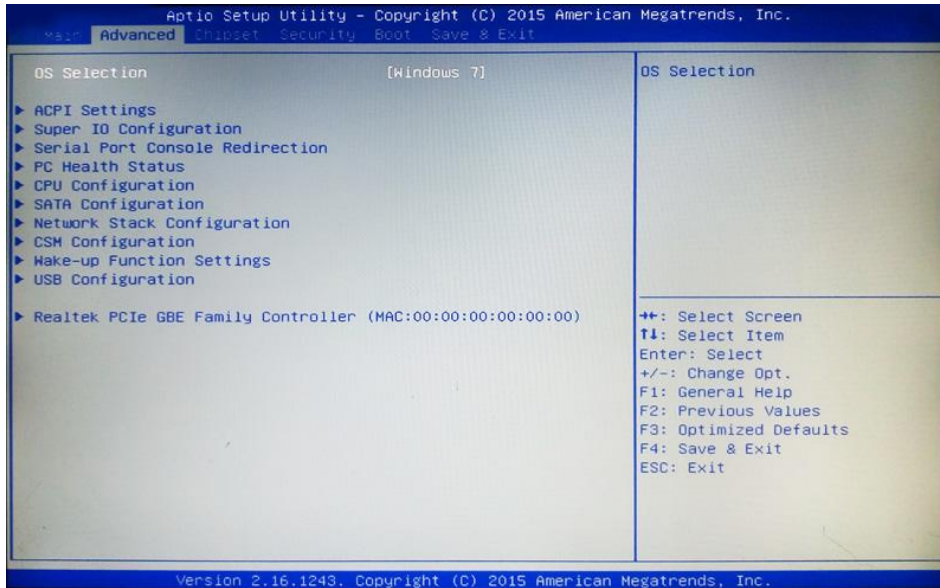
### System Time

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

---

---

## 3-7 Advanced Menu



### OS Selection

The optional settings: [Windows 8.X]; [Android]; [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 40).

#### ▶ 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)].

---

---

▶ **Super I/O Configuration**

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

**Super IO Configuration**

▶ **Serial Port 5 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 6 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.

**Transmission Mode Select**

The optional settings are: [RS422]; [RS232]; [RS485].

**Mode Speed Select**

The optional settings are: [RS232/RS422/RS485=250kbps]; [RS232=1Mbps, RS422/RS485=10Mbps].

**Serial Port FIFO Mode**

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

▶ **Parallel Port Configuration**

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

**Parallel Port Configuration**

**Parallel Port**

Use this item to enable or disable parallel port (LPT/LPTE).

**Change Settings**

---

---

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

**Device Mode**

Use this item to change the printer port mode.

The optional settings are: [STD Printer Mode]; [SPP Mode]; [EPP-1.9 and SPP Mode]; [EPP-1.7 and SPP Mode]; [ECP Mode]; [ECP and EPP 1.9 Mode]; [ECP and EPP 1.7 Mode].

**OS Select for Serial Port**

The optional settings are: [Windows]; [LINUX].

**ERP Support**

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

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 are: [Enabled]; [Disabled].

**PS2KB/MS Connect**

Use this item to set PS2 connect primary device.

The optional settings are: [Keyboard First]; [Mouse First].

**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 [Enabled].

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).

#### ▶ **Serial Port Console Redirection**

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

#### **COM1/COM2/COM3/COM4**

##### **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 optional settings are: [COM1]; [COM2]; [COM3]; [COM4].

**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, set shutdown temperature, or make further settings in '**Smart Fan Configuration**'.

▶ **SmartFan Configuration**

Press [Enter] to make settings for SmartFan Configuration:

**CPUFAN / SYSFAN1/2 Smart Mode**

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

**CPUFAN / SYSFAN1/2 Full-Speed Temperature**

Use this item to set CPUFAN/SYSFAN1/2 full speed temperature. Fan will run at full speed when above this temperature.

**CPUFAN / SYSFAN1/2 Full-Speed Duty**

Use this item to set CPUFAN/SYSFAN1/2 full speed duty. Fan will run at full speed when above the pre-set duty.

**CPUFAN / SYSFAN1/2 Idle-Speed Temperature**

Use this item to set CPUFAN/SYSFAN1/2 idle speed temperature. Fan will run at idle speed when below this temperature.



---

---

### **CPUFAN / SYSFAN1/2 Idle-Speed Duty**

Use this item to set CPUFAN/SYSFAN1/2 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].

### ▶ **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 C6 Report**

Use this item to enable or disable CPU C6 (ACPI C3) report to OS.

---

---

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

### **CPU C7 Report**

Use this item to enable or disable CPU C7 (ACPI C3) report to OS.

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

### **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 Controller**

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

#### **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 Mode**

The optional settings are: [IDE Mode]; [AHCI Mode].

#### **SATA Port/MSATA**

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 optional 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.

### ▶ **CSM Configuration**

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

#### **Compatibly Support Module Configuration**

##### **Boot Option Filter**

This item controls Legacy/UEFI ROM 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: [UEFI first]; [Legacy first].

### ▶ **Wakeup 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).

#### **USB (S3-S4)/PS2 (S3-S4) Wake-up**

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

▶ **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**'.

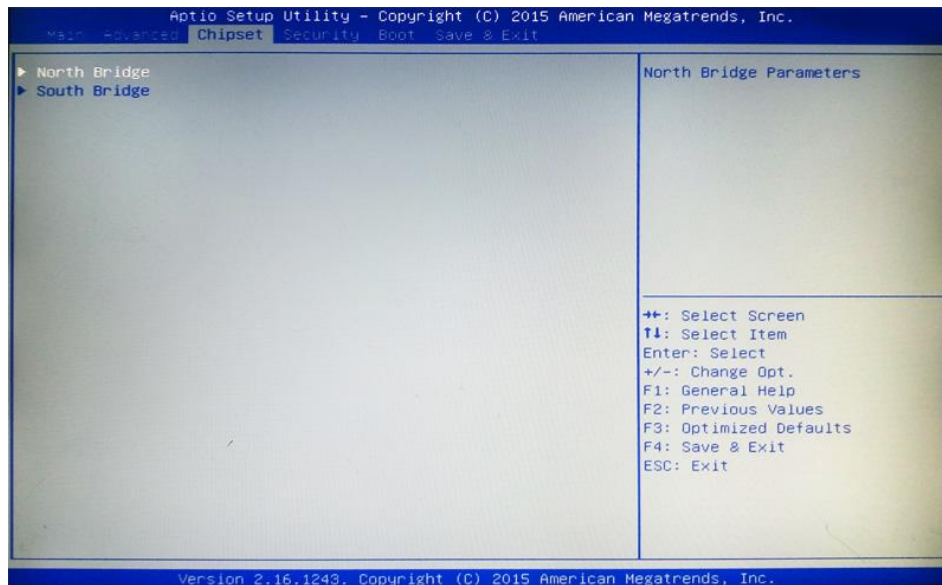
### **Device Power-up delay in seconds**

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

### ▶ **Realtek PCIe GBE Family Controller (MAC:XX:XX:XX:XX:XX:XX)**

Use this item to get driver information and configure Realtek ethernet controller parameter.

## **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].

**Primary IGFX Boot Display**

The optional settings are: [VBIOS Default]; [CRT]; [LVDS].

**Active LVDS**

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

[Disable]: VBIOS disable LVDS.

[Enable]: VBIOS enable LVDS.

\* **Note:** *When set as 'Enabled', user can make further settings in 'LVDS Panel Type'.*

**LVDS Panel Type**

Use this item to manually select LVDS panel type.

The optional setting are: [800x 480 1ch 18-bit]; [800x 600 1ch18-bit]; [800x 600 1ch 24-bit]; [1024 x 600 1ch 18-bit]; [1024 x 768 1ch 24-bit]; [1280 x 768 1ch 24-bit]; [1280 x 800 1ch 18-bit]; [1280 x 800 24-bit]; [1366 x 768 1ch 18-bit]; [1366 x 768 1ch 24-bit]; [1440 x 900 1ch 18-bit]; [1440 x 900 2ch 24-bit]; [1280 x 1024 2ch 18-bit]; [1680 x 1050 2ch 24-bit]; [1920 x 1080 2ch 24-bit].

---

---

▶ **South Bridge**

Press [Enter] to further setting USB device configuration.

**PCIE Slot**

The default settings is: [Enabled].

**PCIE Slot Speed**

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

**Mini PCIE**

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

**Speed**

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

**Onboard PCIE LAN**

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

**Audio Controller**

Use this item to control detection of the Azalia device.

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

[Disabled]: Azalia will be unconditionally disabled;

[Enabled]: Azalia will be unconditionally enabled.

▶ **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].

**USB 2.0 Support**

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

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

**System State after Power Failure**

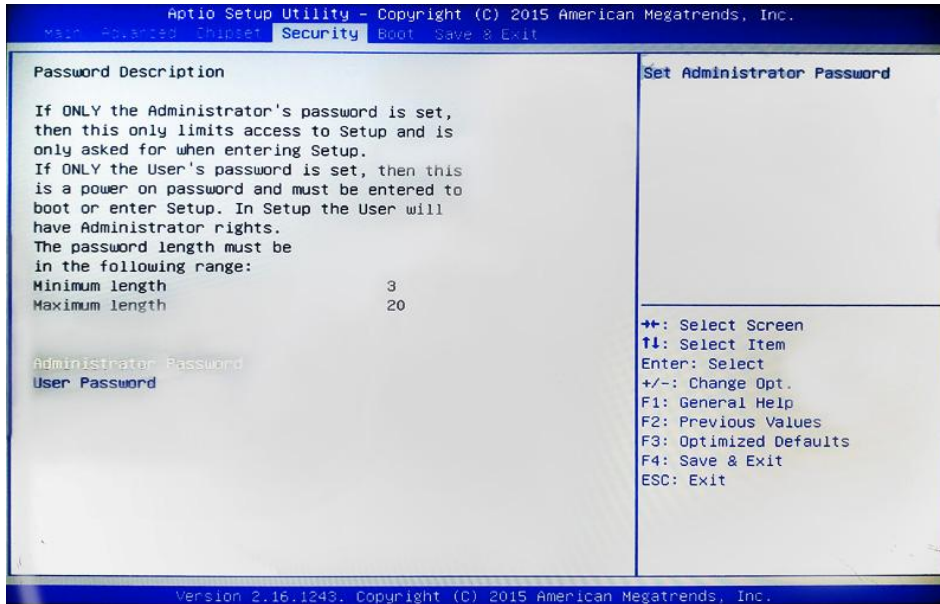
Use this item to select AC power state when power is re-applied after a power failure.

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

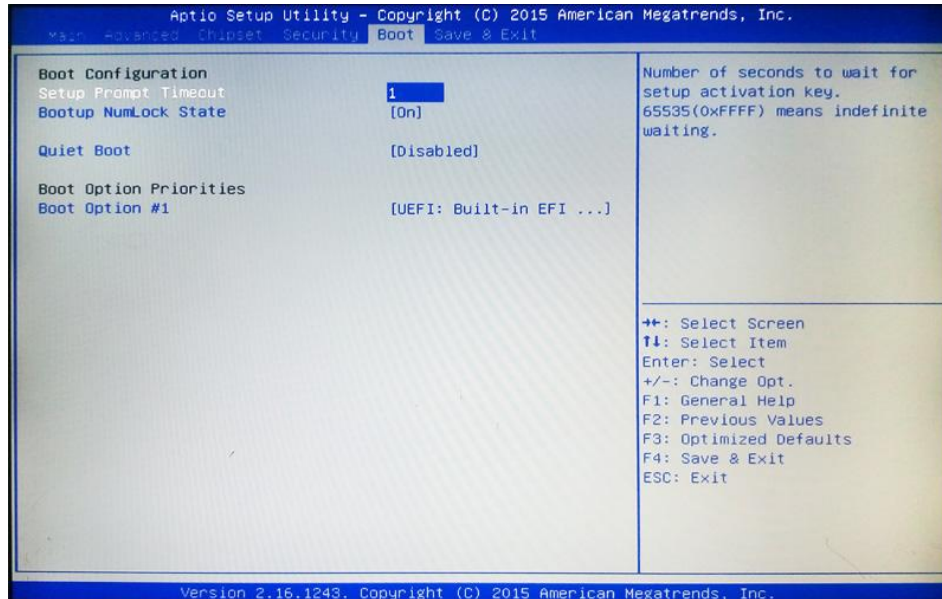


Security menu allow users to change administrator password and user password settings.



---

## 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**

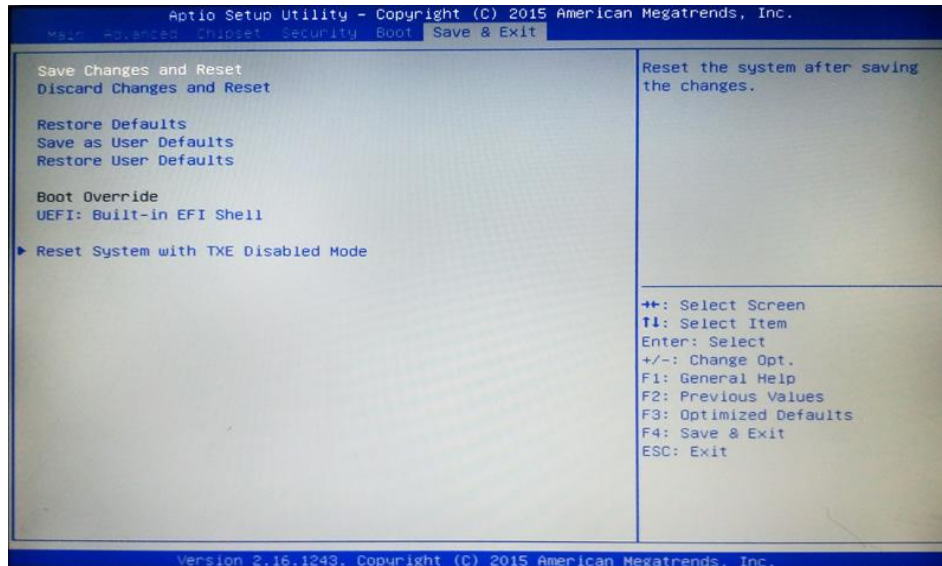
#### **Boot Option**

The optional settings are: [UEFI: Built-in EFI Shell]; [Disabled].

---

---

## 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**

### **UEFI: Built-in EFI Shell**

Launch Internal EFI shell application (shell.efi).

### **Reset System with TXE disable Mode**

Press [Enter] for ME to run into the temporary disable mode. Ignore if TXE Ignition FM.