

***LI36 Series***  
***User's Manual***

**NO. G03-LI36-F**

**Revision: 2.0**

**Release date: July 17, 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.

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## 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

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

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## USER'S NOTICE

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## Manual Revision Information

Reversion	Revision History	Date
2.0	Second Edition	July 17, 2024

## Item Checklist

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

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# Chapter 1

## Introduction of the Motherboard

### 1-1 Feature of Motherboard

- Onboard Intel® Elkhart Lake Series Processor, with low power consumption and high performance
- Support 1\* DDR4 3200MHz SO-DIMM, up to 32GB
- Support 6\* i226-V 2.5GbE RJ-45 LAN ports (LAN3/4/5/6 Support PoE, 802.3af/at compliance)
- Support 2\* USB 3.2(Gen.1); 4\* INT USB 2.0, 1\* INT HDMI
- 1\* EXT RS232 (RJ-45 type); 1\* INT RS232/422/485; 2\* INT RS232
- Onboard 1\* M.2 M-key (2242, SATA interface) slot supports SSD
- Support 1\* SATAIII (6Gb/s) port
- Support optional 64GB eMMC (*by order*)
- Support Intel ACPI S3 NI Function
- Support CPU Smart FAN
- Support Watchdog Technology
- Onboard TPM 2.0 (*by order*)

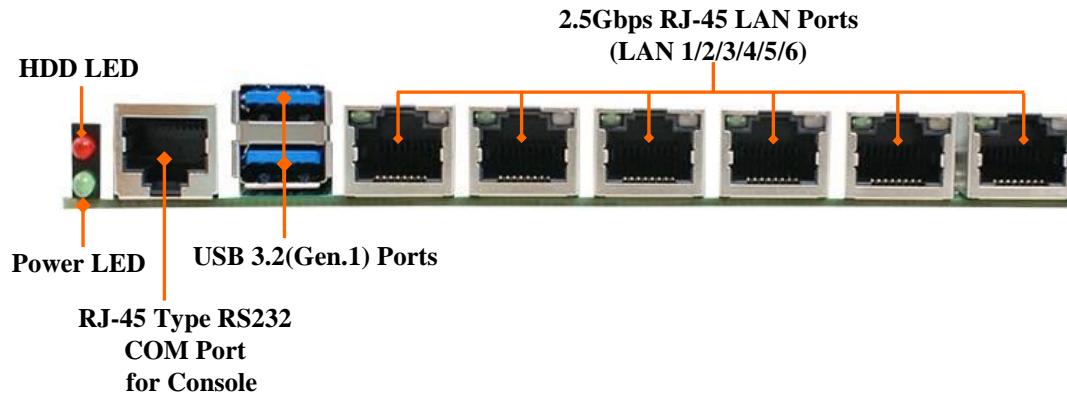
## 1-2 Specification

Spec	Description
Model	<ul style="list-style-type: none"> <li>● LI36-64120P4</li> <li>● LI36-64122P4 (TPM2.0)</li> <li>● LI36-64124P4 (eMMC)</li> </ul>
Design	<ul style="list-style-type: none"> <li>● Mini-ITX form factor; 8 layers; PCB size: 17.0x17.0cm</li> </ul>
Embedded CPU	<ul style="list-style-type: none"> <li>● Intel® Elkhart Lake series CPU (TDP 10W)</li> </ul> <p><i>* for detailed CPU support information please visit our website</i></p>
Memory Socket	<ul style="list-style-type: none"> <li>● 1* DDR4 SO-DIMM slot</li> <li>● Support 1* DDR4 3200MHz SO-DIMM, up to 32GB</li> </ul>
Storage	<ul style="list-style-type: none"> <li>● 1* SATAIII (6Gb/s) connector (<b>SATA1</b>)</li> <li>● 1* M.2 M-key (2242, SATA interface) supports SSD</li> <li>● Optional onboard 64GB eMMC (<b>LI36-64124P4 Only</b>)</li> </ul>
LAN Chip	<ul style="list-style-type: none"> <li>● Integrated with 6* Intel i226-V 2.5Gigabit LAN chips</li> <li>● Support Fast Ethernet LAN function of providing 10/100/1000/2500Mbps Ethernet data transfer rate</li> </ul> <p><b>*Note: 2500Mbps high-speed transmission rate is only supported over CAT 5e UTP cable</b></p>
Graphics	<ul style="list-style-type: none"> <li>● Intel® HD Graphics, shared memory for 1* HDMI1.4</li> </ul>
BIOS	<ul style="list-style-type: none"> <li>● AMI Flash ROM</li> </ul>
Rear I/O	<ul style="list-style-type: none"> <li>● 1* HDD LED &amp; 1* Power LED (<b>BP_LED</b>)</li> <li>● 1* RJ-45 Type RS232 COM port for console (<b>RJ45_COM1</b>)</li> <li>● 2* USB 3.2(Gen.1) port</li> <li>● 6* 2.5Gbps RJ-45 LAN port (<b>LAN1/2 &amp; *LAN3/4/5/6</b>)</li> </ul> <p><b>* Note: LAN3/4/5/6 supports PoE; 802.3 af/at compliance.</b></p>
Internal I/O	<ul style="list-style-type: none"> <li>● 1* ATX-type 4-pin internal <b>12V</b> DC-in system power connector(<b>DCIN3</b>)</li> <li>● 1* SATA HDD Power-Out Connector</li> <li>● 1* SATAIII Port Connector</li> <li>● 1* CPU FAN Connector</li> <li>● 1* ATX-type 4-pin internal <b>9V~36V</b> DC-in power connector for PoE (<b>DCIN_POE</b>)</li> <li>● 1* Front panel header (<b>JW_FP</b>)</li> </ul>

	<ul style="list-style-type: none"> <li>● 1* HDMI port header</li> <li>● 2* USB 2.0 header expansible to 4* USB 2.0 ports (<i>FP_USB21/FP_USB22</i>)</li> <li>● 3* Serial port headers (<i>FP_COM2 support RS232/422/485; FP_COM3/4 support RS232</i>)</li> <li>● 1* PS/2 keyboard &amp; mouse header</li> <li>● 1* SMBUS header</li> <li>● 1* 16-bit GPIO/80 port header (<i>GPIO</i>)</li> <li>● 1* 8-pin LANLED header (<i>LAN_LED1</i>)</li> <li>● 1* 4-pin LANLED header (<i>LAN_LED2</i>)</li> <li>● 1* Front panel LED header (<i>FP_LED1</i>)</li> </ul>
OS Support	<ul style="list-style-type: none"> <li>● Windows 10 / 11, Linux</li> </ul>

## 1-3 Layout Diagram

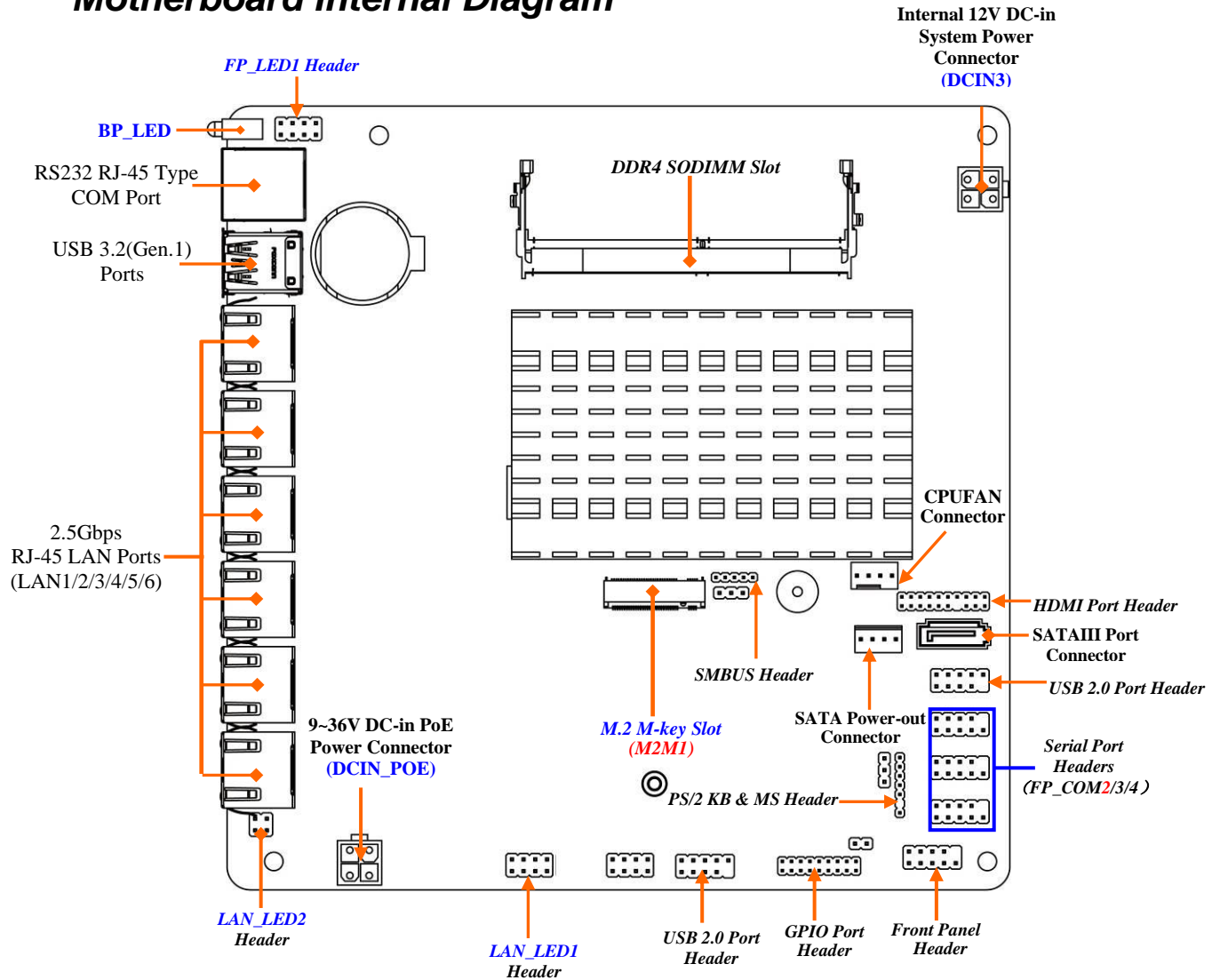
### Rear IO Diagram



**\*Note:** LAN3/4/5/6 PoE LAN, support IEEE 802.3af/at (Total Max 100W).

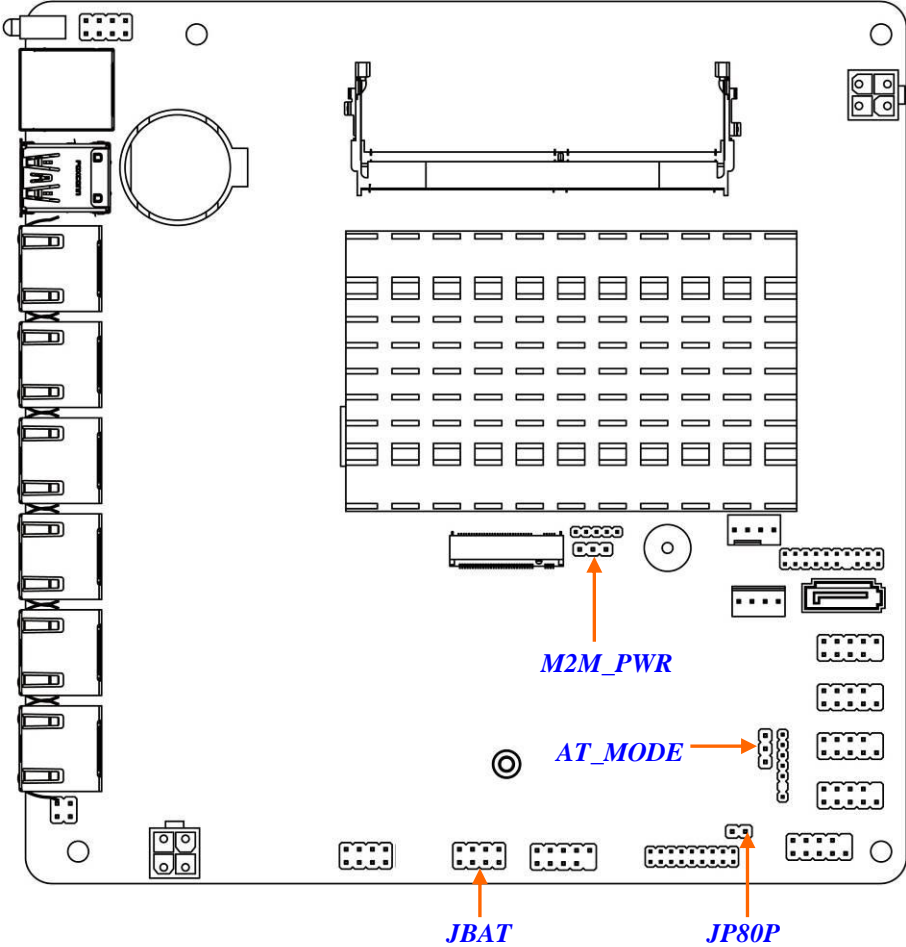


# Motherboard Internal Diagram



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# Jumper Positions



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## Connectors

P/N	Name
BP_LED	Power & HDD BP LED
RJ45_COM1	RJ-45 Type RS232 COM Port Connector for Console
USB31	USB 3.2(Gen.1) Port Connector X2
*LAN1/2/3/4/5/6	2.5Gbps RJ-45 LAN Port Connector X6
DCIN3	Internal 12V DC-in System Power Connector
DCIN_POE	Internal 9V~36V DC-in Power Connector for PoE
SATA1	SATAIII Port Connector
SATAPWR	SATA Power out Connector
CPUFAN	CPUFAN Connector

*\*Note: LAN3/4/5/6 PoE LAN, Support IEEE 802.3af/at (Total Max 100W).*

## Headers & Wafers

P/N	Name	Description	Pitch
JW_FP	Front Panel Header	9-pin Block	2.54mm
HDMI1	HDMI Port Header	19-pin Block	2.0mm
FP_USB21	USB 2.0 Port Header	9-pin Block	2.54mm
FP_USB22	USB 2.0 Port Header	9-pin Block	2.54mm
FP_COM2	RS232/422/485 Serial Port Header	9-pin Block	2.54mm
FP_COM3/4	RS232 Serial Port Header	9-pin Block	2.54mm
PS2KBMS	PS/2 Keyboard & Mouse Header	6-pin Block	2.0mm
SMBUS	SMBUS Header	5-pin Block	2.0mm
GPIO	GPIO Header	18-pin Block	2.0mm
LAN_LED1	LAN1/2/3/4 Activity LED Header	8-pin Block	2.54mm
LAN_LED2	LAN5/6 Activity LED Header	4-pin Block	2.54mm
FP_LED1	Front Panel Power LED & HDD LED Header	8-pin Block	2.54mm

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## Jumpers

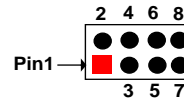
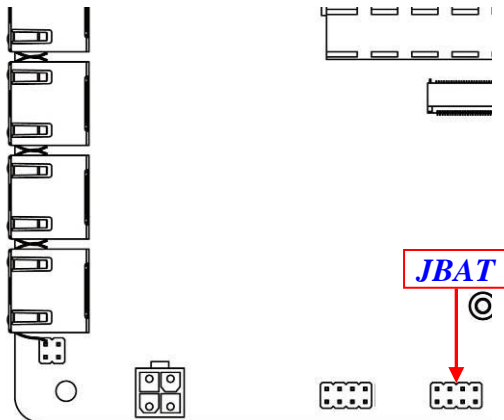
P/N	Name	Description	Pitch
JBAT	Pin (1-2): Clear RTC Pin (3-4): Clear CMOS Pin (5-6): ME Disable Pin (7-8): CASE OPEN	8-Pin Block	2.54mm
JP80P	GPIO Port GPIO/80 Function Select	2-Pin Block	2.54mm
AT_MODE	ATX Mode/ AT Mode Select	3-Pin Block	2.54mm
M2M_PWR	M.2 M-key Power Select	3-Pin Block	2.54mm

# Chapter 2

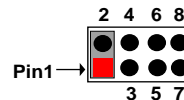
## Hardware Installation

### 2-1 Jumper Settings

Pin (1-2) of JBAT (8-pin): Clear RTC **Pitch=2.54mm**

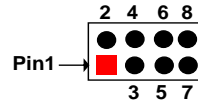
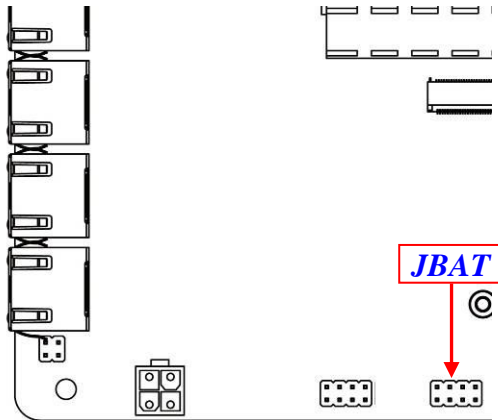


1-2 Open: Normal(Default);

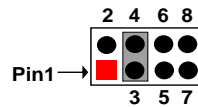


1-2 Closed: Clear RTC.

**Pin (3-4) of JBAT (8-pin): Clear CMOS** *Pitch=2.54mm*

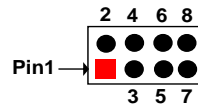
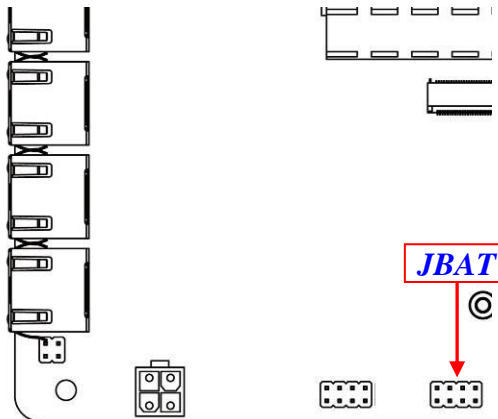


3-4 Open: Normal(Default);

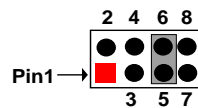


3-4 Closed: Clear CMOS.

**Pin (5-6) of JBAT (8-pin): ME Disable** *Pitch=2.54mm*

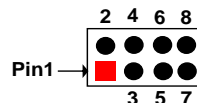
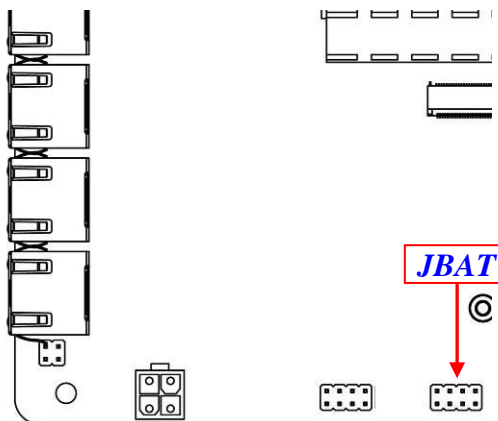


5-6 Open: Normal(Default);

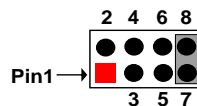


5-6 Closed: ME Disable.

**Pin (7-8) of JBAT (8-pin): CASE OPEN Pitch=2.54mm**



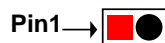
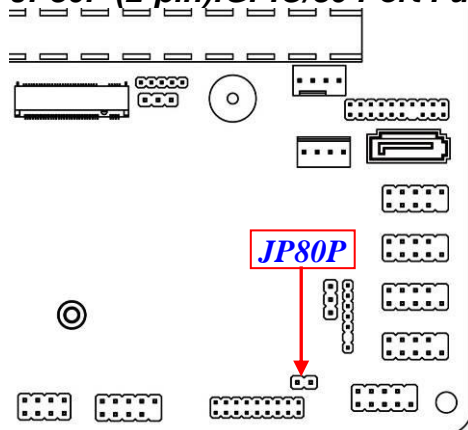
7-8 Open: Normal(Default)



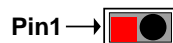
7-8 Closed: CASE OPEN

**Pin (7-8) short:** 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. Refer to **Page-32**. 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.

**JP80P (2-pin):GPIO/80 Port Function Select Pitch=2.54mm**



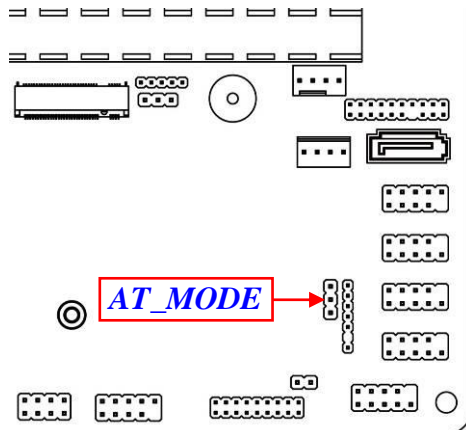
1-2 Open: GPIO=80 Port;



1-2 Short: GPIO= GPIO Port (Default).

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**AT\_MODE (3-pin): ATX Mode/ AT Mode Select** Pitch=2.54mm



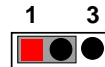
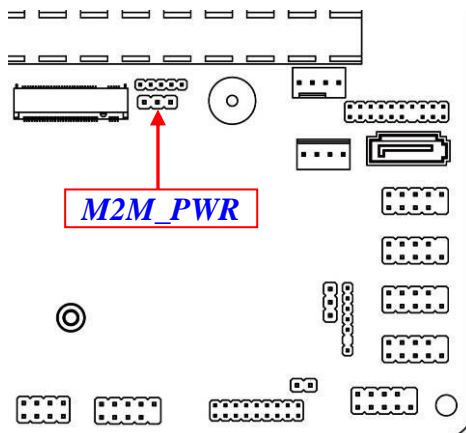
1-2 Closed: ATX Mode Selected;



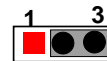
2-3 Closed: AT Mode Selected.

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

**M2M\_PWR (3-pin): M.2 M-key Power Select** Pitch=2.54mm



1-2 Closed: VCC=VCC3;



2-3 Closed: VCC=3VSB.

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## 2-2 Connectors, Headers and Wafers

### 2-2-1 Connectors

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

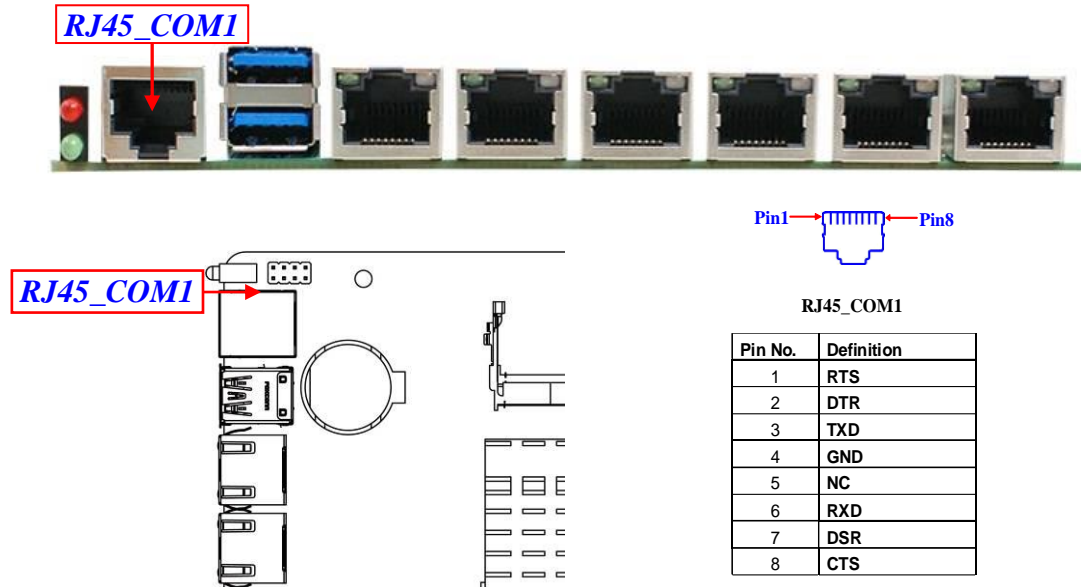
*\* Refer to Page-3 Rear IO Diagram.*

<b>Icon</b>	<b>Name</b>	<b>Function</b>
	<b>BP-LED</b>	<b>Top:</b> SATA HDD LED <b>Bottom:</b> System Power LED
	<b>RJ-45 Type RS232 COM Port</b>	Mainly for user to connect external MODEM or other devices that supports Serial Communications Interface.
	<b>USB 3.2(Gen.1) Port</b>	To connect USB keyboard, mouse or other devices compatible with USB 3.2(Gen.1) specification. Ports support up to 5Gbps data transfer rate.
	<b>2.5Gbps RJ-45 LAN Port</b>	This connector is standard 2.5Gbps RJ-45 LAN jack for Network connection. <b>(*Note: 2.5Gbps is only supported with CAT 5e UTP cable).</b>

**\*Note:** LAN3/4/5/6 PoE LAN, support IEEE 802.3af/at (Total Max 100W).

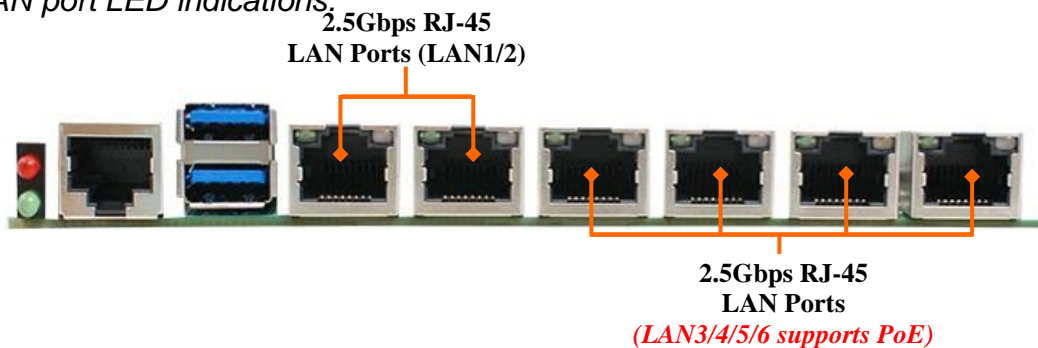


**(2) RJ45\_COM1 (8-pin block): RS232 RJ-45 Type COM Port Connector for Console**



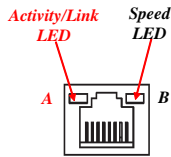
**(3) 2.5 GbE RJ-45 Ethernet Connectors:**

**\*\* There are two LED next to the LAN port. Please refer to the table below for the LAN port LED indications.**



**\*Note: LAN3/4/5/6 PoE LAN, Support IEEE 802.3af/at (Total Max 100W).**

## 2.5Gbps RJ-45 LAN port LED Description:

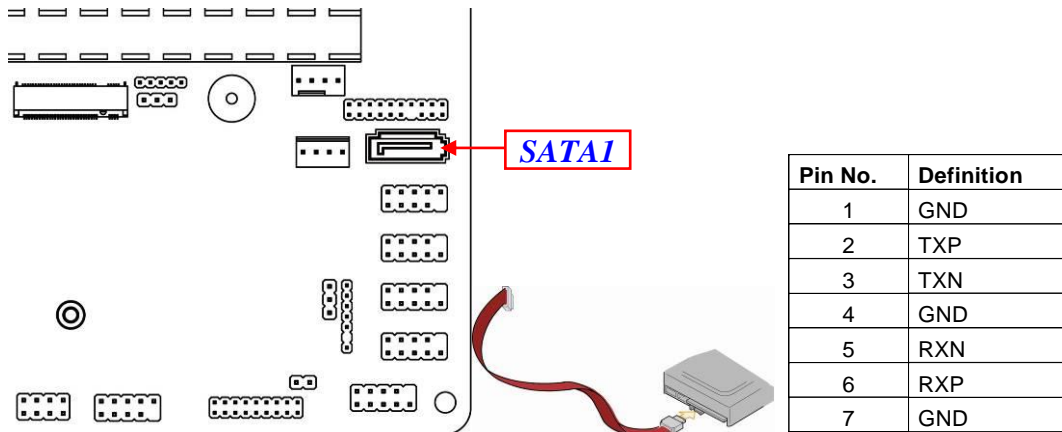


A: Activity/Link LED		B: Speed LED	
Status	Description	Status	Description
Off	No Link	Off	10/100Mbps connection
<b>Blinking</b>	Data Activity	<b>RED</b>	1000Mbps connection
On	Link	<b>Green</b>	2.5Gbps connection

\* **Note:** 2.5Gbps high-speed transmission rate is **only** supported over **CAT 5e UTP cable**.

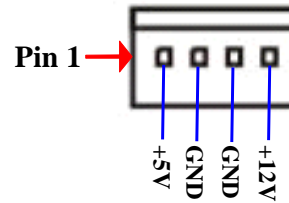
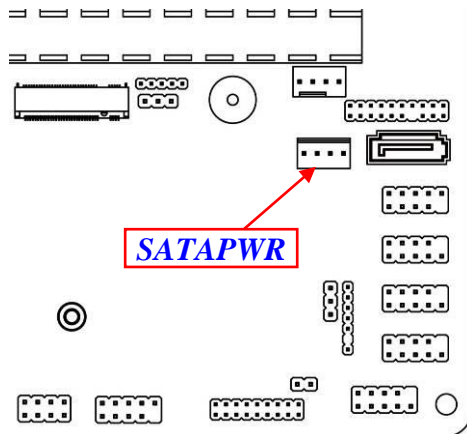
## (4) SATA1 (7-pin): SATAIII Port Connector

SATA1 is a high-speed SATAIII port that supports 6Gb/s transfer rate.



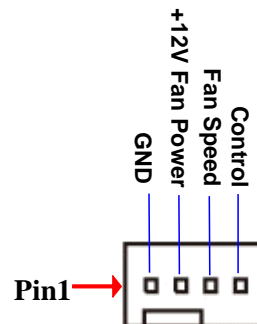
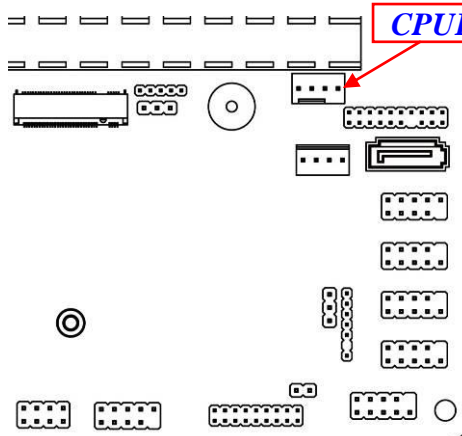
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### (5) SATAPWR (4-pin): SATA Power Out Connector



**Warning:** Make sure that Pin-1 of compatible SATA Power connector is inserted into corresponding Pin-1 of **SATAPWR** connector to avoid possible damage to the board and hard disk driver!

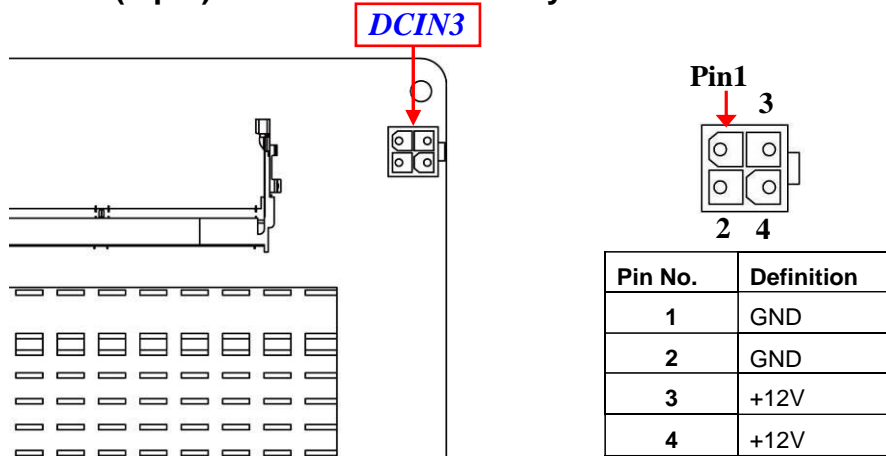
### (6) CPUFAN (4-pin): CPU FAN Connector



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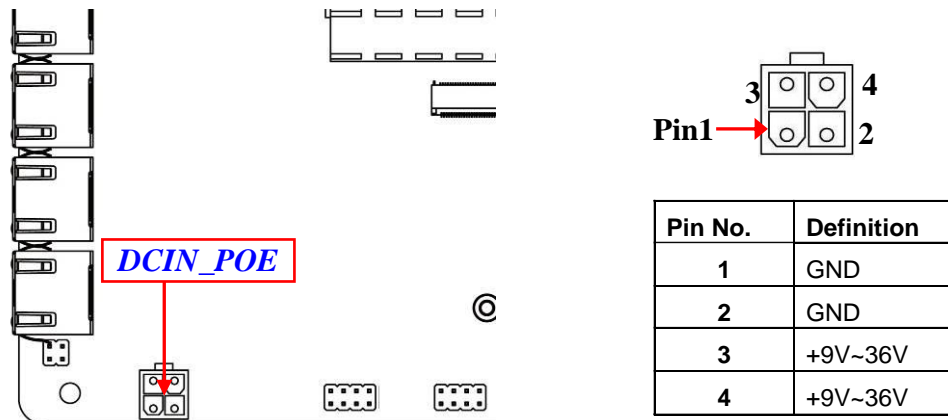
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**(7) DCIN3 (4-pin) : Internal 12V DC-in System Power Connector**



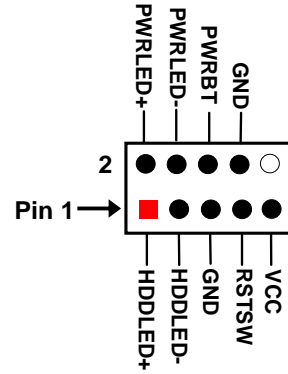
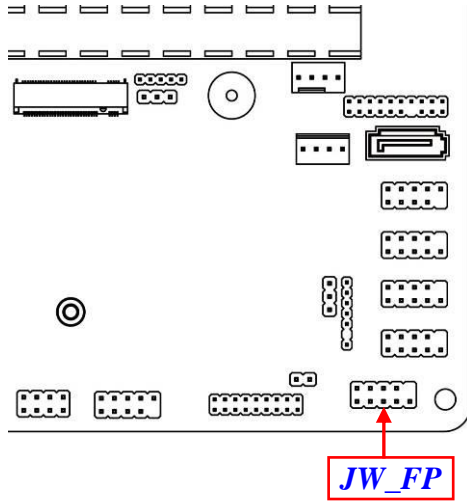
**(8) DCIN\_POE (4-pin) : Internal 9V~36V DC-in Power Connector for PoE**

**DCIN\_POE** functions as a standby power connector for POE external power supply (can be connected to 9-36V power supply).

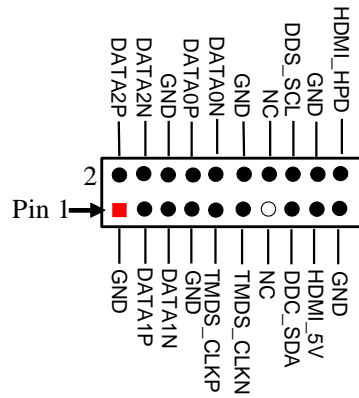
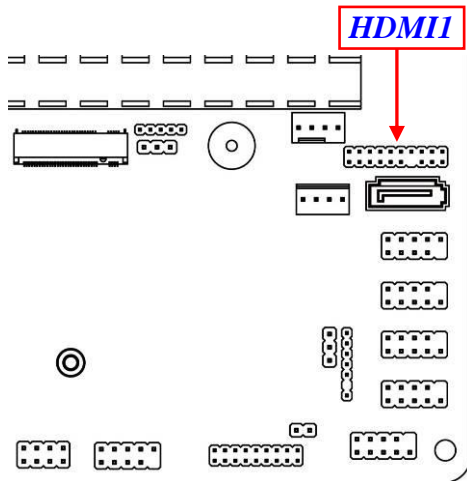


## 2-2-2 Headers & Wafers

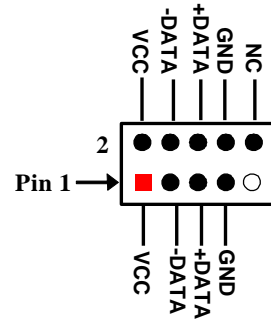
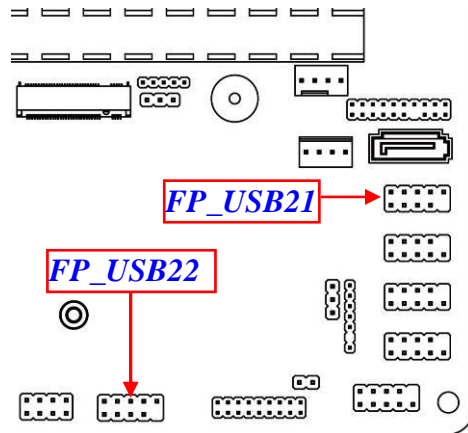
(1) JW\_FP (9-pin):Front Panel Header *Pitch=2.54mm*



(2) HDMI1 (19-pin):HDMI Port Header *Pitch=2.0mm*

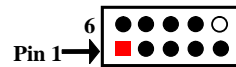
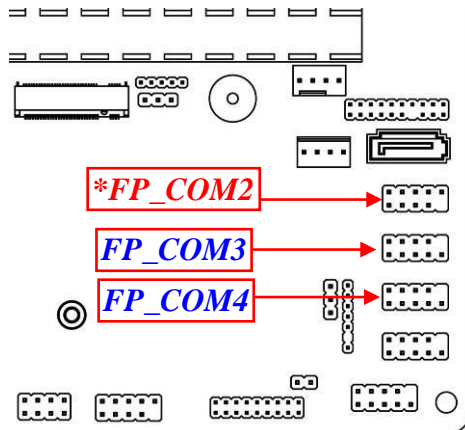


(3) FP\_USB21/ FP\_USB22 (9-pin):USB 2.0 Port Header **Pitch=2.54mm**



(4) FP\_COM2 (9-pin): Serial Port Header (support RS232/422/485 )  
 FP\_COM3 / FP\_COM4 (9-pin): Serial Port Header (support RS232)

**Pitch=2.54mm**

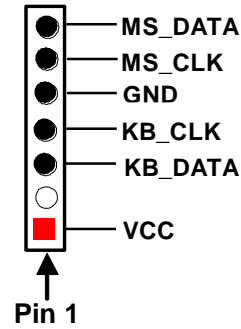
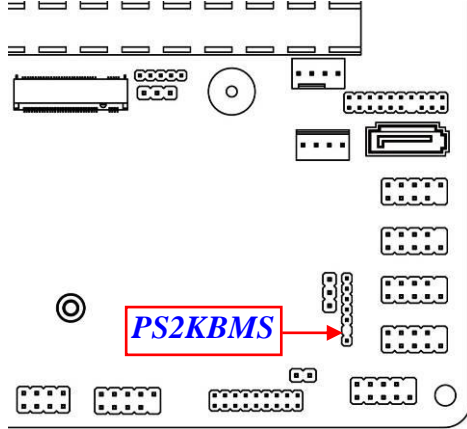


Pin NO.	RS232	*RS422	*RS485
Pin 1	DCD	TX-	DATA-
Pin 2	SIN	TX+	DATA+
Pin 3	SO-	RX+	NC
Pin 4	DTR	RX-	NC
Pin 5	GND	GND	GND
Pin 6	DSR-	NC	NC
Pin 7	RTS-	NC	NC
Pin 8	CTS-	NC	NC
Pin 9	RI-	NC	NC

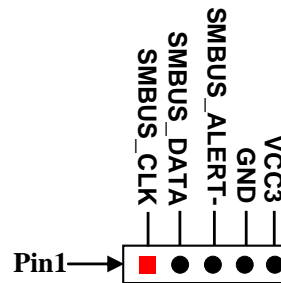
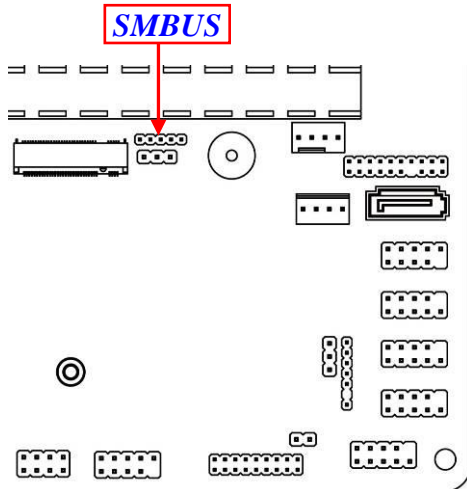
**\*Note:** RS422, RS485 function is supported by **FP\_COM2** header only, with compatible COM cable for RS422 or RS485 function. User also needs to go to BIOS to set 'Transmission Mode Select' for **FP\_COM2** (refer to **Page-31**).

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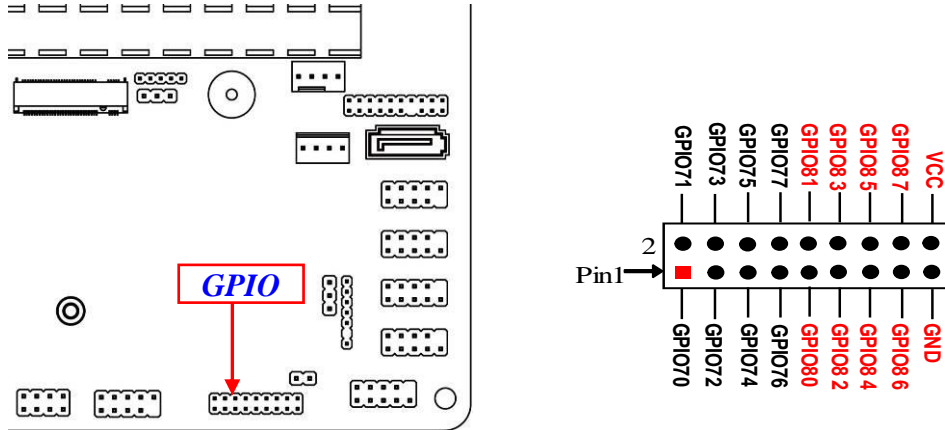
(5) PS2KBMS (6-pin): PS/2 Keyboard & Mouse Header *Pitch=2.0mm*



(6) SMBUS (5-pin): SM BUS Header *Pitch=2.0mm*

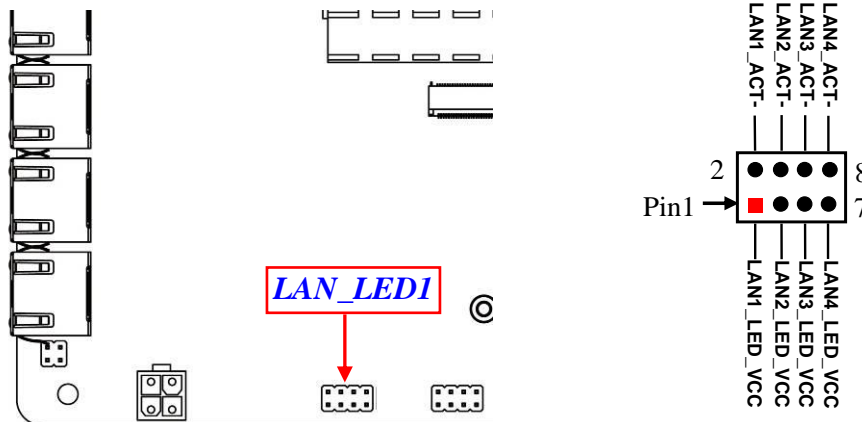


**(7) GPIO (18-pin):GPIO Header Pitch=2.0mm**



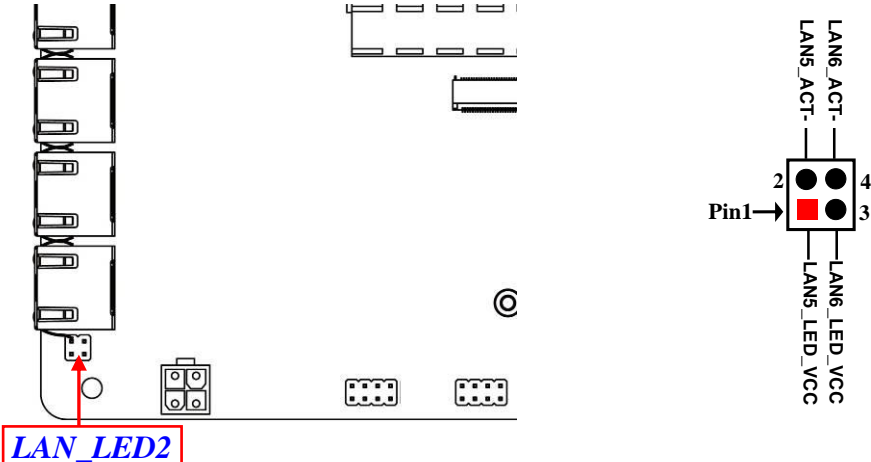
**\*Note:** Please refer to **Page-9 JP80P** jumper setting for **GPIO 80Port** or **GPIO Port** function select

**(8) LAN\_LED1(8-pin): LAN1 & LAN2 & LAN3 & LAN4 Activity LED Header Pitch=2.54mm**

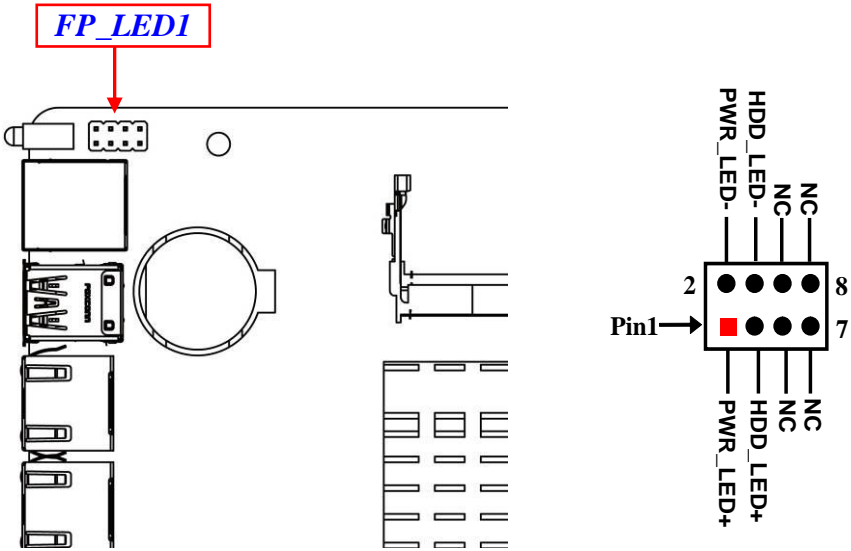




(9) LAN\_LED2 (4-pin): LAN5 & LAN6 Activity LED Header *Pitch=2.54mm*



(10) FP\_LED1 (8-pin): Power LED & HDD LED Header *Pitch=2.54mm*



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### 2-2-3 Maximum Voltage & Current Limit

Below is a list of maximum voltage & Current Limit specification for motherboard interface (including but not limited to slots, connectors, wafers and headers) for setup reference:

Location	Function	Working Voltage	Current Support
USB31	USB3.2 Gen.1	5V	1.5A
SATAPWR	SATA 4-Pin Power out	5V	1A
CPUFAN	CPU FAN	5V	0.5A
JW_FP	Front Panel	5V	1A
FP_USB21	USB2.0	5V	1.5A
FP_USB22	USB2.0	5V	1.5A
SMBUS	SMBUS	5V	0.3A
GPIO	GPIO/80 Port	5V	1.5A
PS2KBMS	PS/2 Keyboard & Mouse	5V	0.5A
M2M1	M.2 M-key Power	3.3V	2A

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# Chapter 3

## Introducing BIOS

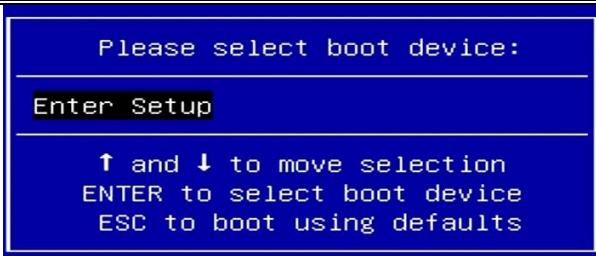
**Notice!** The BIOS options in this manual are for reference only. Different configurations may lead to difference in BIOS screen and BIOS screens in manuals are usually the first BIOS version when the board is released and may be different from your purchased motherboard. Users are welcome to download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

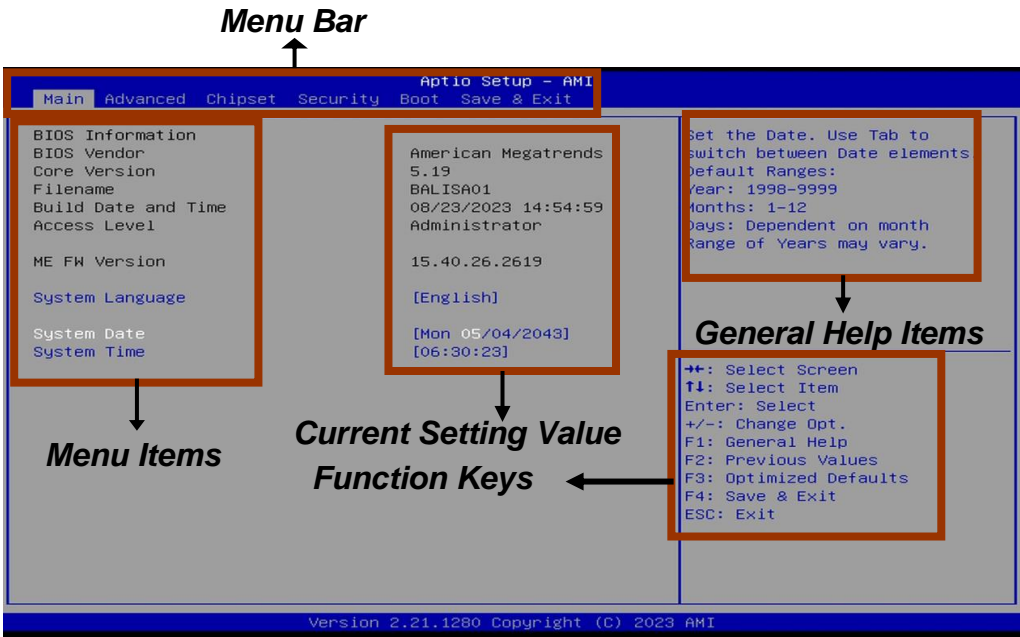
Power on the computer and by pressing <Del> immediately allows you to enter Setup. If the message disappears before your respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the “RESET” button on the system case. You may also restart by simultaneously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



### 3-2 BIOS Menu Screen

The following diagram show a general BIOS menu screen:



### 3-3 Function Keys

In the above BIOS Setup main menu of, you can see several options. We will explain these options step by step in the following pages of this chapter, but let us first see a short description of the function keys you may use here:

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

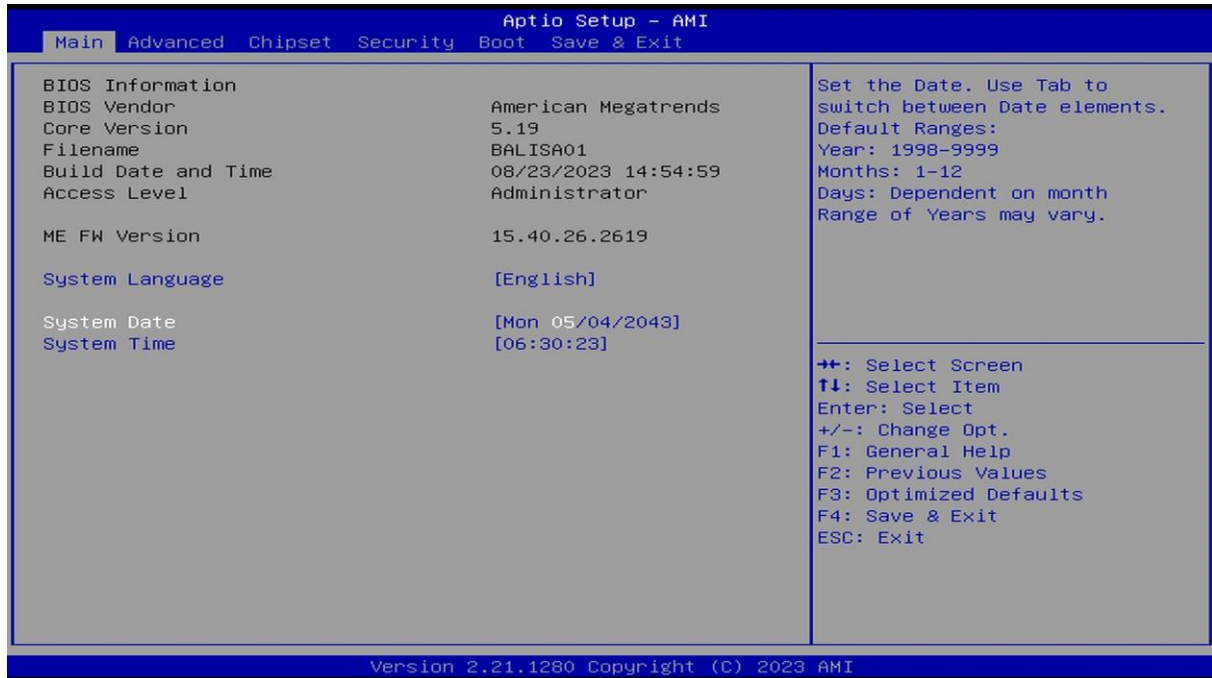
<b>Main</b>	To change system basic configuration
<b>Advanced</b>	To change system advanced configuration
<b>Chipset</b>	To change chipset configuration
<b>Security</b>	Password settings
<b>Boot</b>	To change boot settings
<b>Save &amp; Exit</b>	Save setting, loading and exit options.

---

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 Language

Choose the system default language.

#### System Date

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

#### System Time

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

---

## 3-7 Advanced Menu



### ▶ CPU Configuration

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

#### **Boot Performance**

Use this item to select the performance state that the BIOS will set starting from reset vector.

The optional settings are: [Max Battery]; [Max Non-Turbo Performance]; [Turbo Performance].

#### **Intel(R) SpeedStep(tm)**

This item allows more than two frequency ranges to be supported.

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

When set as **[Enabled]**, user can make further setting in the following item:

#### **Turbo Mode**

Use this item to enable or disable processor Turbo Mode (requires EMTTM

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enabled too). Auto means enabled.

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

### **C states**

Use this item to enable or disable CPU Power Management. Allows CPU to go to C states when it's not 100% utilized.

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

When set as **[Enabled]**, user can make further setting in the following item:

#### **Enhanced C-states**

Use this item to enable or disable C1E. When set as [Enabled], CPU will switch to minimum speed when all cores enter C-State.

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

### **Package C State Limit**

Use this item to select the Maximum Package C State Limit Setting.

The optional settings are: [C0/C1]; [C2]; [C3]; [C6]; [C7]; [C7S]; [C8]; [C9]; [C10]; [CPU Default]; [Auto].

**[CPU Default]**: Leaves to Factory default value.

**[Auto]**: Initializes to deepest available Package C State Limit.

### **Power Limit 1 Override**

Use this item to enable or disable Power Limit 1 override. If this option is disabled, BIOS will program the default values for Power Limit 1 and Power Limit 1 Time Window.

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

When set as **[Enabled]**, user can make further setting in the following item:

#### **Power Limit 1**

Power Limit 1 in Milli Watts BIOS will round to the nearest 1/8W when programming. 0= no custom override. For 12.50W, enter 12500.

**[Overclocking SKU]**: Value must be between Max and Min Power Limits (specified by PACKAGE\_POWER\_SKU\_MSR).

**[Other SKUs]**: This value must be between Min Power Limit and TDP Limit. If value is 0, BIOS will program TDP value

#### **Power Limit 1 Time Window**

Power Limit 1 Time Window value in seconds. The value may vary from 0 to 128.0= default value (28 sec for Mobile and 8 sec for Desktop). Defines time



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window which TDP value should be maintained.

The optional settings are: [0]; [1]; [2]; [3]; [4]; [5]; [6]; [7]; [8]; [10]; [12]; [14]; [16]; [20]; [24]; [28]; [32]; [40]; [48]; [56]; [64]; [80]; [96]; [112]; [128].

### **Power Limit 2 Override**

Use this item to enable or disable Power Limit 2 override. If this option is disabled, BIOS will program the default values for Power Limit 2

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

When set as **[Enabled]**, user can make further setting in the following item:

### **Power Limit 2**

Power Limit 2 value in Milli Watts. BIOS will round to the nearest 1/8W when programming. If the value is 0, BIOS will program this value as 1.25\*TDP. For 12.50W, enter 12500. Processor applies control policies such that the package power does not exceed this limit.

## ▶ **Intel(R) Time Coordinated Computing**

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

### **Intel(R) Time Coordinated Computing**

#### **Intel(R) TCC Mode**

Use this item to enable or disable Intel(R) TCC mode. When enabled, this will modify system settings to improve real-time performance. The full list of settings and their current state are displayed below when Intel(R) TCC mode is enabled.

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

When set as **[Enabled]**, user can make further setting in the following item:

#### **Intel(R) TCC Authentication**

Use this item to enable or disable authentication of Intel(R) TCC configuration data.

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

#### **IO Fabric Low Latency**

Use this item to enable or disable IO Fabric Low Latency. This will turn off some power management in the PCH IO fabrics. This option provides the most aggressive IO Fabric performance setting. S3 state is NOT supported.

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

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## **GT CLOS**

Use this item to enable or disable Graphics Technology(GT) Class of Service. Enable will reduce Gfx LLC allocation to minimize impact of Gfx workload on LLC. The optional settings are: [Disabled]; [Enabled].

### ▶ **Trusted Computing**

Press [Enter] to enable or disable Security Device Support.

#### **TPM 2.0 Device Found**

##### **Security Device Support**

Use this item to enable or disable BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

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

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

##### **Active PCR Banks**

##### **Available PCR Banks**

##### **SHA-1 PCR Bank**

Use this item to enable or disable SHA-1 PCR Bank.

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

##### **SHA256 PCR Bank**

Use this item to enable or disable SHA256 PCR Bank.

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

##### **SHA384 PCR Bank**

Use this item to enable or disable SHA384 PCR Bank.

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

##### **SM3\_256 PCR Bank**

Use this item to enable or disable SM3\_256 PCR Bank.

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

##### **Pending Operation**

Use this item to schedule an operation for the Security Device.

**\*Note:** *Your Computer will reboot during restart in order to change State of Security Device.*

The optional settings are: [None]; [TPM Clear].

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▶ **ACPI Settings**

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

**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 1 Configuration**

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

**Serial Port 1 Configuration**

**Serial Port**

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

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

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

**Device Settings**

**Change Settings**

Use this item to select an optimal settings for Super IO Device.

The optional settings are: [Auto]; [IO=3F8h; IRQ=4]; [IO=2F8h; IRQ=3]; [IO=3E8h; IRQ=4]; [IO=2E8h; IRQ=3].

▶ **Serial Port 2 Configuration**

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

**Serial Port 2 Configuration**

**Serial Port**

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

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

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

**Device Settings**

**Change Settings**

Use this item to select an optimal settings for Super IO Device.

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The optional settings are: [Auto]; [IO=3F8h; IRQ=4;]; [IO=2F8h; IRQ=3]; [IO=3E8h; IRQ=4]; [IO=2E8h; IRQ=3].

**Transmission Mode Select**

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

**Mode Speed Select**

Use this item to set RS232/RS422/RS485 Speed Select.

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

▶ **Serial Port 3 Configuration**

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

**Serial Port 3 Configuration**

**Serial Port**

Use this item to enable or disable Serial Port (COM).

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

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

**Device Settings**

**Change Settings**

Use this item to select an optimal setting for Super IO Device.

The optional settings are: [Auto]; [IO=3F8h; IRQ=10;]; [IO=2F8h; IRQ=10]; [IO=3E8h; IRQ=10]; [IO=2E8h; IRQ=10]; [IO=2F0h; IRQ=10]; [IO=2E0h; IRQ=10].

▶ **Serial Port 4 Configuration**

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

**Serial Port 4 Configuration**

**Serial Port**

Use this item to enable or disable Serial Port (COM).

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

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

**Device Settings**

**Change Settings**

Use this item to select an optimal setting for Super IO Device.

The optional settings are: [Auto]; [IO=3F8h; IRQ=10;]; [IO=2F8h; IRQ=10]; [IO=3E8h; IRQ=10]; [IO=2E8h; IRQ=10]; [IO=2F0h; IRQ=10]; [IO=2E0h; IRQ=10].

**ERP Support**

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Use this item to set Energy-Related Products function.

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

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

### **Case Open Detect**

Use this item to detect if case have ever been opened. Show message in POST.

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

When set as [**Enabled**], system will detect if COPEN has been short or not (*refer to **JBAT** jumper setting for Case Open Detection*); if Pin 7&8 of **JBAT** are short, system will show Case Open Message during POST.

### **WatchDog Reset Timer**

Use this item to enable or disable WDT reset function.

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

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

#### **WatchDog Reset Timer Value**

User can select a value in the range of [10] to [255] seconds when 'WatchDog Reset Timer Unit' set as [Sec]; or in the range of [1] to [255] minutes when 'WatchDog Reset Timer Unit' set as [Min].

#### **WatchDog Reset Timer Unit**

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

#### **WatchDog Wake-up Timer**

This item support WDT wake-up.

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

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

#### **WatchDog Wake-up Timer Value**

User can select a value in the range of [10] to [4095] seconds when '**WatchDog Wake-up Timer Unit**' set as [Sec]; or in the range of [1] to [4095] minutes when '**WatchDog Wake-up Timer Unit**' set as [Min].

#### **WatchDog Wake-up Timer Unit**

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

#### **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*

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*AT\_MODE Pin 1&2 jumper setting for ATX Mode & Pin 2&3 jumper setting for AT Mode Select).*

▶ **Serial Port Console Redirection**

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

**COM1**

**Console Redirection**

Use this item to enable or disable 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].

**[ANSI]:** Extended ASCII char set;

**[VT100]:** ASCII char set;

**[VT100+]:** Extends VT100 to support color, function keys, etc.;

**[VT-UTF8]:** Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.

**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 are: [9600]; [19200]; [38400]; [57600]; [115200].

**Data Bits**

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 are: [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;

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**[Mark]:** parity bit is always 1;

**[Space]:** parity bit is always 0.

**[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 are: [1]; [2].

### **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 are: [None]; [Hardware RTS/CTS].

### **VT-UTF8 Combo Key Support**

Use this item to enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals.

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

### **Recorder Mode**

With this mode enable only text will be sent. This is to capture Terminal data.

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

### **Resolution 100x31**

Use this item to enable or disable extended terminal resolution.

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

### **Putty KeyPad**

Use this item to select FunctionKey and KeyPad on Putty.

The optional settings are: [VT100]; [LINUX]; [XTERM6]; [SCO]; [ESCN]; [VT400].

### **Serial Port for Out-of-Band Management/**

### **Windows Emergency Management Services (EMS)**

### **Console Redirection EMS**

Use this item to enable or disable Console Redirection.

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

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

► **Console Redirection Settings**

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

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

**Out-of-Band Mgmt Port**

The default setting is: [COM1].

**Terminal Type EMS**

The optional settings are: [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.

**Bits per second EMS**

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 are: [9600]; [19200]; [57600]; [115200].

**Flow Control EMS**

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

**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].

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

▶ **PC Health Status**

Press [Enter] to view current hardware health status, make further settings in 'SmartFAN Configuration'.

▶ **SmartFAN Configuration**

Press [Enter] to make settings for SmartFan Configuration:

**SmartFAN Configuration**

**CPUFAN Smart Mode**

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

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

**CPUFAN Full-Speed Temperature**

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

**CPUFAN Full-Speed Duty**

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

**CPUFAN Idle-Speed Temperature**

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

**CPUFAN Idle-Speed Duty**

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

▶ **USB Configuration**

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

**USB Configuration**

**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].

**USB Mass Storage Driver Support**

Use this item to enable or disable USB Mass Storage Driver Support.

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

### **USB Hardware Delays 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 are: [Auto]; [Manual].

Select [**Manual**] you can set value for the following sub-item: '**Device power-up delay in seconds**', the delay range is from 1 to 40 seconds, in one second increments.

### ▶ **Network Stack Configuration**

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

#### **Network Stack**

Use this item to enable or disable UEFI Network Stack.

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

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

#### **IPv4 PXE Support**

Use this item to enable/disable IPv4 PXE Boot Support. When set as [Disabled], IPv4 PXE boot support will not be available.

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

#### **IPv6 PXE Support**

Use this item to enable/disable IPv6 PXE Boot Support. When set as [Disabled], IPv6 PXE boot support will not be available.

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

#### **PXE boot wait time**

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

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Use either [+] / [-] or numeric keys to set the value.

**Media detect count**

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

Use either [+] / [-] or numeric keys to set the value.

▶ **Wake-up Function Settings**

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

**Wake-up System With Fixed Time**

*\*This item will only show when 'Wake-up System With Dynamic Time' is set as [Disabled].*

Use this item to enable or disable System wake-up by RTC alarm. When this function is enabled, system will wake on the timer (hr::min::sec) specified.

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

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

**Wake-up Hour**

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

**Wake-up Minute**

Use this item to select 0-59.

**Wake-up Second**

Use this item to select 0-59.

**Wake-up System with Dynamic Time**

*\*This item will only show when 'Wake-up System With Fixed Time' is set as [Disabled].*

Use this item to enable or disable System wake-up by RTC alarm. When this function is enabled, system will wake on the current time + Increase minute(s).

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

**Wake-up Time Increase**

Use this item to select 1-60 minute(s).

**PS KB/MS Wake-Up from S3-S5**

PS2 KB/MS Wake-up is affected by ERP function in S4-S5. Please disable ERP before activating this function in S4-S5

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

**USB Power Gating S4-S5**

USB Wake-up is affected by ERP function in S4. Please disable ERP before

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activating this function in S4.

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

▶ **PTT Configuration**

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

**TPM Device Selection**

Use this item to select TPM device.

The optional settings are: [dTPM]; [PTT].

[PTT]: Enables PTT in SkuMgr;

[dPTT]: Disables PTT in SkuMgr.

**Warning!** PTT/dTPM will be disabled and all data saved on it will be lost.

## 3-8 Chipset Menu



▶ **System Agent (SA) Configuration**

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

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## **System Agent (SA) Configuration**

### **GTT Size**

Use this item to select the GTT Size.

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

### **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: [0M]; [4M]; [8M]; [12M]; [16M]; [20M]; [24M]; [28M]; [32M]; [36M]; [40M]; [44M]; [48M]; [52M]; [56M]; [60M]; [64M]; [96M]; [128M]; [160M].

### **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].

### **VT-d**

Use this item to enable or disable VT-d capability.

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

## ▶ **PCH-IO Configuration**

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

### **PCH-IO Configuration**

## ▶ **SATA Configuration**

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

### **SATA Configuration**

#### **SATA Controller**

Use this item to enable or disable SATA device.

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

When set as **[Enabled]**, user can make further setting in the following item:

#### **SATA Mode Selection**

Use this item to determine how SATA controller(s) operate.

The default setting is: [AHCI].

#### **SATA Port**

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## **SATA Port**

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

### **Hot Plug**

Use this item to designate this port as Hot Pluggable.

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

## **M.2**

### **M.2**

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

## **HD-Audio Support**

Use this item to control Detection of the HD-Audio device.

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

**[Disabled]:** HAD will be unconditionally disabled.

**[Enabled]:** HAD will be unconditionally enabled.

## **SCS eMMC Support**

Use this item to enable or disable SCC eMMC Support.

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

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

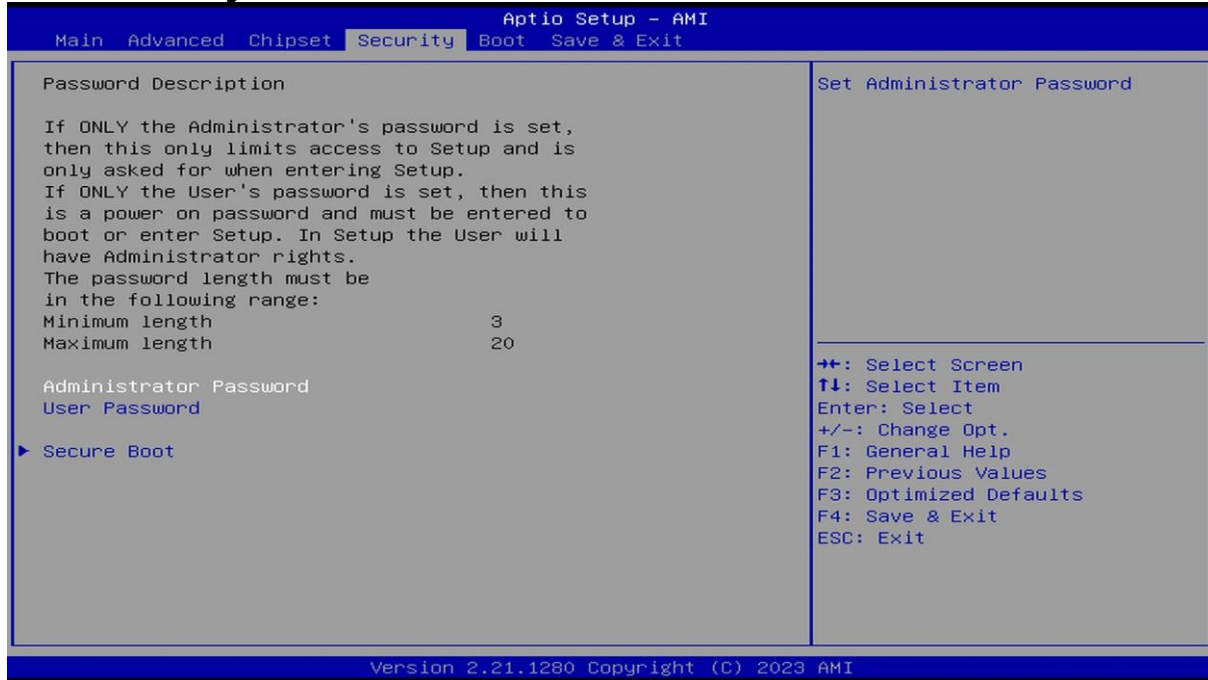
**\*\*Note: ‘SCC eMMC Support’ item is optional for boards with eMMC integrated.**

## **System State after Power Failure**

Use this item to specify what state to go to when power is re-applied after a power failure.

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

## 3-9 Security Menu



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

### Administrator Password

If there is no password present on system, please press [Enter] to create new administrator password. If password is present on system, please press [Enter] to verify old password then to clear/change password. Press again to confirm the new administrator password.

### User Password

If there is no password present on system, please press [Enter] to create new user password. If password is present on system, please press [Enter] to verify old password then to clear/change password. Press again to confirm the new user password.

### ▶ Secure Boot

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Press [Enter] to make customized secure settings:

### **System Mode**

#### **Secure Boot**

Secure Boot feature is active if secure boot is enabled, Platform Key(PK) is enrolled and the system is in user mode. The mode change requires platform reset.

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

#### **Secure Boot Mode**

Use this item to set Secure Boot mode as Standard mode or Custom mode.

In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication.

The optional settings: [Standard]; [Custom].

When set as [**Custom**], user can make further settings in the following items that show up:

- ▶ **Restore Factory Keys**

This item force system to user mode. Install factory default secure boot key databases.

- ▶ **Reset to Setup Mode**

This item delete all secure boot key databases from NVRAM.

- ▶ **Key Management**

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

#### **Vendor Keys**

##### **Factory Key Provision**

This item install factory default Secure Boot keys after the platform reset and while the system is in setup mode.

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

- ▶ **Restore Factory Keys**

This item force system to user mode. Install factory default secure boot key databases.

- ▶ **Reset to Setup Mode**

Delete all Secure Boot key databases from NVRAM.



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▶ **Export Secure Boot Variables**

This item copy NVRAM content of Secure Boot variables to files in a root folder on a file system device.

▶ **Enroll Efi Image**

This item allows the image to run in Secure Boot mode.

Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database (db).

**Device Guard Ready**

▶ **Remove 'UEFI CA' from DB**

Device Guard ready system must not list 'Microsoft UEFI CA' Certificate in Authorized Signature database (db).

▶ **Restore DB default**

This item restore DB variable to factory defaults.

**Secure Boot variable/Size/Keys/Key Source**

**Platform Key(PK)/Key Exchange Keys/Authorized Signatures/Forbidden Signatures/ Authorized TimeStamps/OsRecovery Signatures**

Use this item to enroll Factory Defaults or load certificates from a file:

1. Public Key Certificate:

- a) EFI\_SIGNATURE\_LIST
- b) EFI\_CERT\_X509 (DER)
- c) EFI\_CERT\_RSA2048 (bin)
- d) EFI\_CERT\_SHAXXX

2. Authenticated UEFI Variable

3. EFI PE/COFF Image (SHA256)

Key Source: Factory, External, Mixed.

## 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.

#### **Bootup NumLock State**

Use this item to select the keyboard NumLock state.  
The optional settings: [On]; [Off].

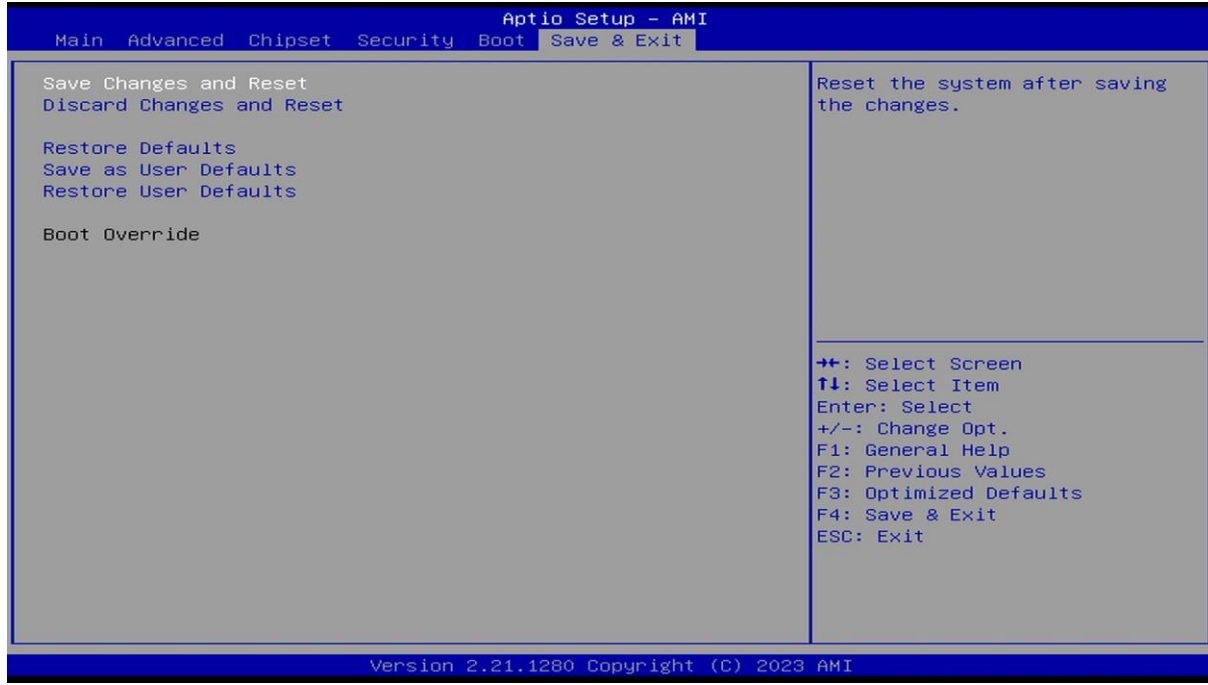
#### **Quiet Boot**

Use this item to enable or disable Quiet Boot option.  
The optional settings: [Disabled]; [Enabled].

### **Boot Option Priorities**

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## 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 setup without saving any changes.

### **Restore Defaults**

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

### **Save as User Defaults**

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

### **Restore User Defaults**

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

### **Boot Override**