MB-i89Q8 R2.0

User's Manual

Revision: 3.1

Release date: June 16, 2022

TABLE OF CONTENT

Environmental Safety Instruction

- Avoid the dusty, humidity and temperature extremes. Do not place the product in any area where it may become wet.

- 0 to 40 centigrade is the suitable temperature. (The temperature comes from the request of the chassis and thermal solution)

- 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.

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.

USER'S NOTICE

Manual Revision Information

Reversion	Revision History	Date
3.1	Third Edition	June 16, 2022

Item Checklist

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

Chapter 1

Introduction of the Motherboard

1-2 Specification

Spec	Description
Design	● ATX form factor; PCB size: 30.5 x22 cm
Chipset	● Intel H110 Express Chipset
CPU Socket	● Supports Intel® Core™ i7, Core™ i5, Core™ i3 series, Pentium® processor in LAG1151 Package (Max. 100W)
Memory Slot	● 2*DDR4 RAM module slot ● Support 2 *2133MHz DDR4 RAM Module, expandable to 64GB (Maximum) ● Support dual channel function
Expansion Slot	● 1 * PCI-Express x16 slot *(PCIEX16)* ● 1 * PCI-Express x4 slot (PCIEX4, default) or ● 1 * PCI-Express x1 slot (PCIEX1, OEM request support only) ● 4 * PCI slot (PCI1/2/3/4)
Storage	● 4 * SATAIII 6G/s ports (SATA1/2/3/4) ● 1*M.2 M-key (SATAIII onlyl, support Type 2242/2280 SSD)
LAN Chip	● Integrated with 1* I211-AT + 1* I219-LM GbE Intel LAN Support Fast Ethernet LAN function of providing 10/100/1000Mbps Ethernet data transfer rate
Audio Chip (Optional)	● Realtek ALC662-VD 6-channel Audio Codec integrated with Audio driver and utility included, Optional by OEM request
BIOS	● AMI Flash ROM
Multi I/O	**Rear Panel I/O:** ● 2*Serial port connector (COM1/2, COM1 supports RS232/422/485 function) ● 2* USB 2.0 port connector ● 1* HDMI port connector ● 1* VGA port connector ● 2* RJ-45 LAN port connector ● 4* USB 3.0 port connector ● 1* 3-jack audio jack (*Default is no function, optional by OEM request) ● 1* PS/2 combo jack **Internal I/O Connectors & Headers:** ● 1 *24-pin main power connector ● 1 *8-pin 12V power connector ● 1* Front panel audio header (* Default is no function, Optional by OEM request) ● 1* GPIO header ● 1* Parallel header
TPM 2.0	● Optional function by OEM request

1-3 Layout Diagram
Rear IO Diagram

PS/2 Keyboard & Mouse Combo

VGA Port

RJ-45 LAN Ports

Line-IN

Line-OUT

MIC-IN

USB 2.0 Ports

Serial Port (COM1/2)

HDMI Port

USB 3.0 Ports
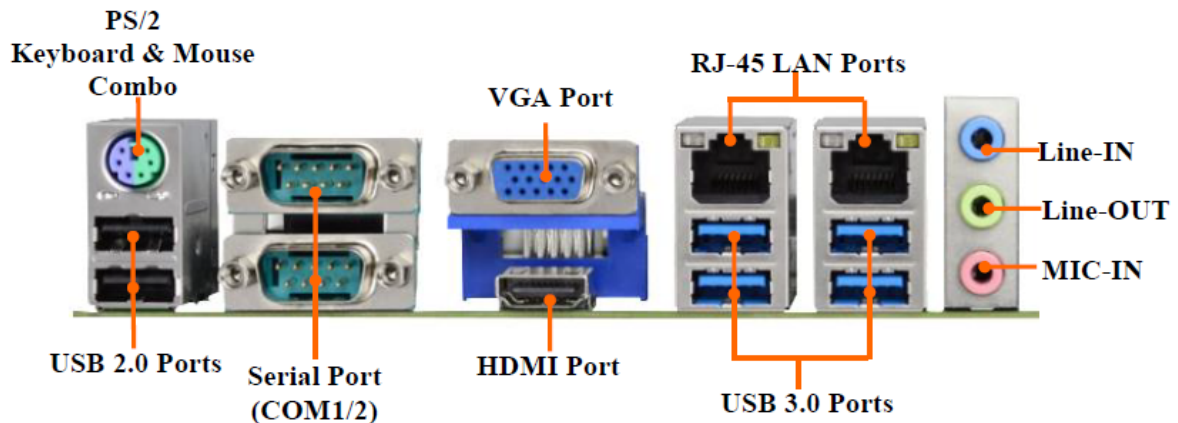
* Note: Many PCs now include XHCI USB controllers which allow for the support of USB 3.0 and higher USB speeds. This inclusion of XHCI controllers has lessened the need for EHCI USB controllers within platforms. However, legacy operating systems (OS) may not natively recognize XHCI controllers. You might need to pre-install XHCI driver while desiring to install a non-XHCI OS (ex.Windows* 7) on Intel platforms which do not include EHCI controllers. Please contact your representative for more details.

Motherboard Internal Diagram
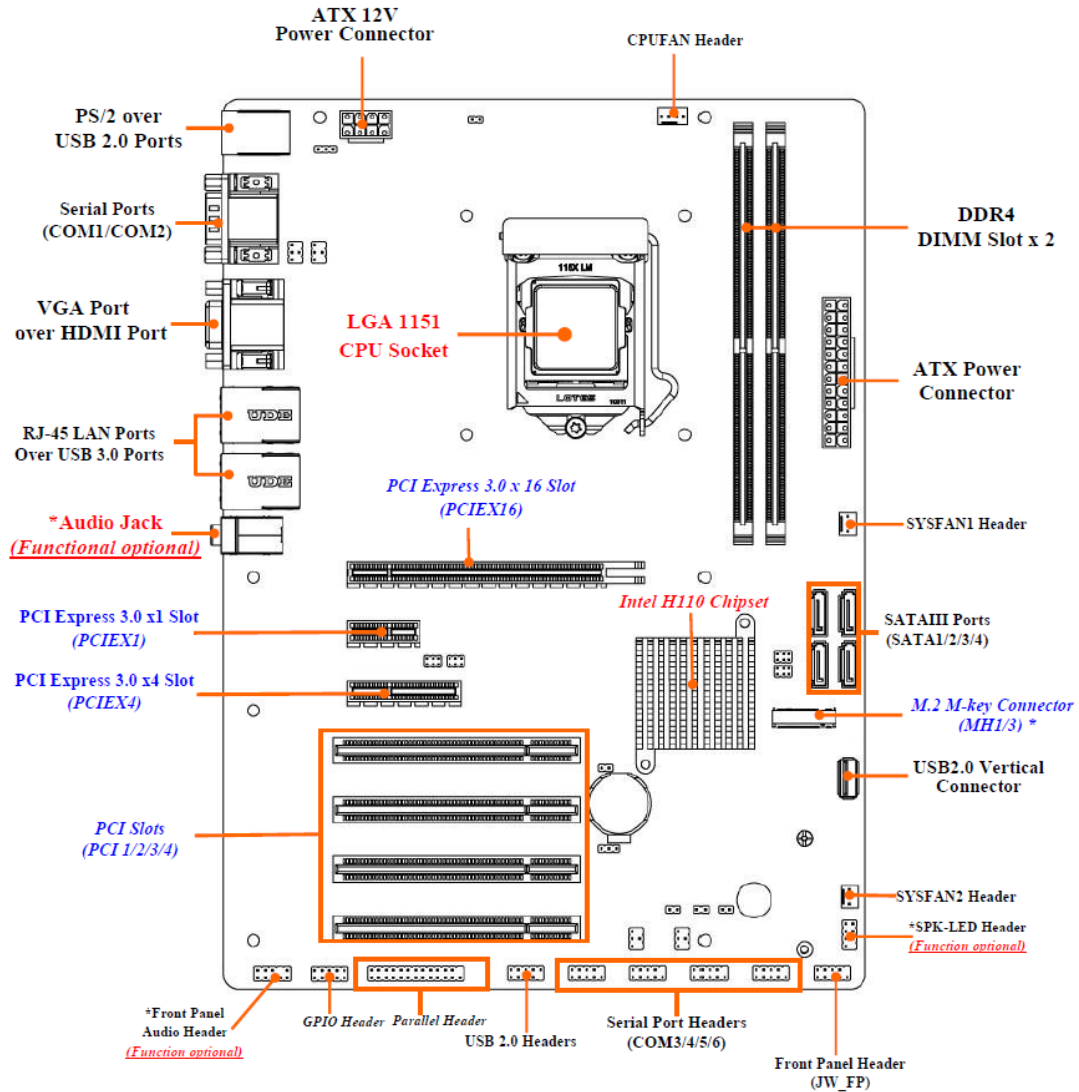
Note: 1. Rear panel Audio Jack (Line-in/Line-out /MIC), front panel audio header **and Speaker pins from SPK-LED header have no actual function and lack of Audio Code; 2. SIM card slot only work when compatible SIM card installed & 3G LAN card installed in MPE Mini-PCIE slot.**

PCIe expansion setting:

1. *PCIEX4 is default setting*

   or

2. *PCIEX1 is for OEM reques*

both can't not work simultaneously.

Motherboard Jumper position
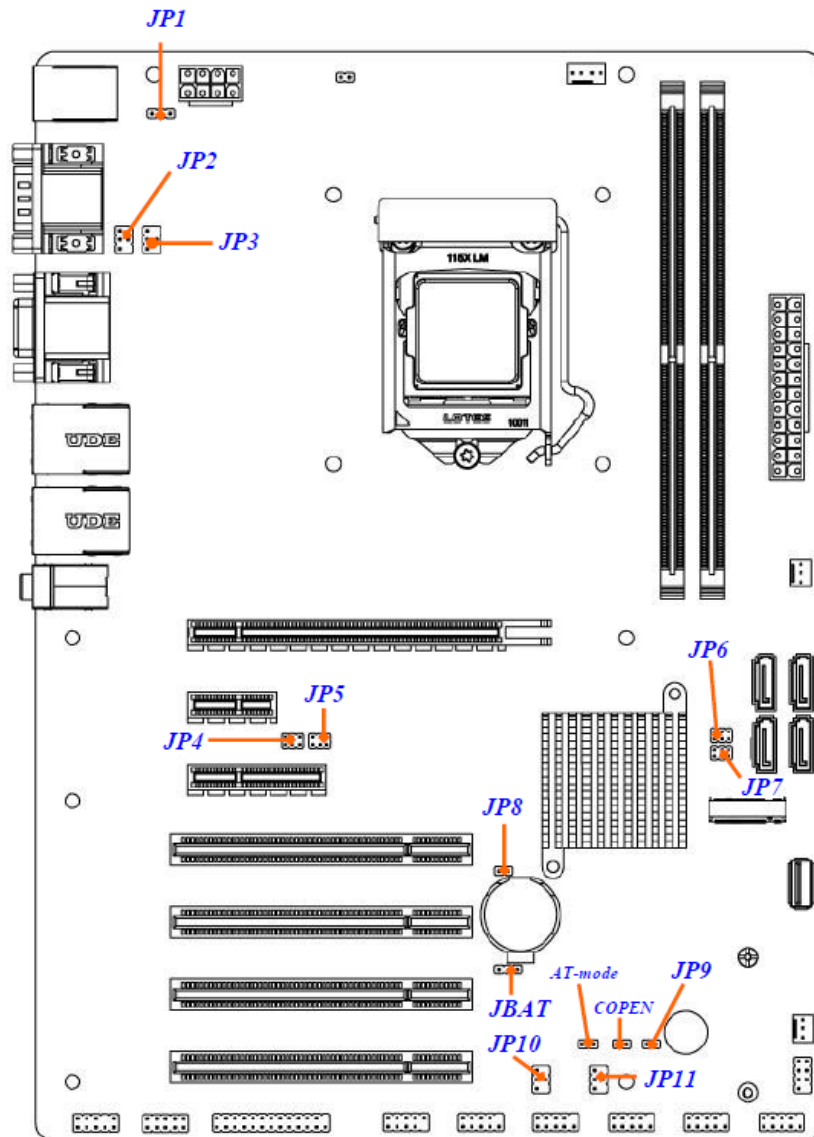
Jumper

Location	Description	Pin
JP1	PS/2-USB USB2.0 Port Function Select	3-pin Block (2.54 pitch)
JP2	COM2 Port Pin9 Function Select	4-pin Block (2.54 pitch)
JP3	COM1 Port Pin9 Function Select	4-pin Block (2.54 pitch)
JP4	PCIEX1 & PCIEX4 Function Select	6-pin Block (2.54 pitch)
JP5	PCIEX1 & PCIEX4 Function Select	6-pin Block (2.54 pitch)
JP6	M.2 & SATA4 Port Function Select	6-pin Block (2.54 pitch)
JP7	M.2 & SATA4 Port Function Select	6-pin Block (2.54 pitch)
JP8	M# Feature Select	2-pin Block (2.54 pitch)
JP10	COM3 Header Pin9 Function Select	4-pin Block (2.54 pitch)
JP11	COM4 Header Pin9 Function Select	4-pin Block (2.54 pitch)
AT-MODE	AT & ATX Mode Switch	2-pin Block (2.54 pitch)
COPEN	Case Open Message Display Function	2-pin Block (2.54 pitch)
JBAT	Clear CMOS RAM Settings	3-pin Block (2.54 pitch)

Connectors

Connector	Description
ATXPWR	ATX Main Power Connector
ATX12V	ATX 12V Power Connector
PS/2-USB	Top: PS/2 combo Middle & Bottom: USB 2.0 Port Connector X2
COM1_@	Serial Port COM Connector X2
VGA	VGA Port Connector
HDMI	HDMI Port Connector
UL1/ UL2	Top: RJ-45 LAN connector x2 Middle & Bottom: USB 3.0 port connector x4
● AUDIO (OEM request)	Top: Line-in connector Middle: Lin-out connector Bottom: MIC connector
SATA1/2/3/4	SATAIII Connector x4
USB2	Vertical Type USB2.0
SODIMM1/2	DDR4 UDIMM 2213 MHZ slot
PCIEX16	PCI-Express x16 slot
PCIEX1	PCI-Express x1 slot
PCIEX4	PCI-Express x4 slot
PCI1/2/3/4	PCI slot x4

Headers

Location	Description	Pin
*FP_AUDIO	Front Panel Audio Header (Optional by OEM request)	9-pin Block (2.54 pitch)
GPIO	GPIO header	10-pin Block (2.54 pitch)
PARALLEL	Parallel header	25-pin Block (2.54 pitch)
USB1	USB 2.0 header	9-pin Block (2.54 pitch)
COM 3/4/5/6	Serial Port header	9-pin Block (2.54 pitch)
JW_FP	PWR LED/ HD LED/ Power Button/ Reset	9-pin Block (2.54 pitch)
*SPK_LED	Power LED & Speaker header	7-pin Block (2.54 pitch)
SYSFAN1/ SYSFAN2/ CPUFAN	FAN header	4-pin Block (2.54 pitch)

*Note: Rear panel Audio Jack (Line-in/Line-out /MIC), front panel audio header **and** Speaker pins from SPK-LED header **have no actual function for lack of Audio Codec**

Chapter 2
Hardware Installation

2-1 Jumper Setting

JP1 (3-pin): PS/2-USB USB2.0 Port Function Select (2.54 pitch)

JP1→PS/2-USB USB2.0 Port Function Select

1 2 3

1 2 3
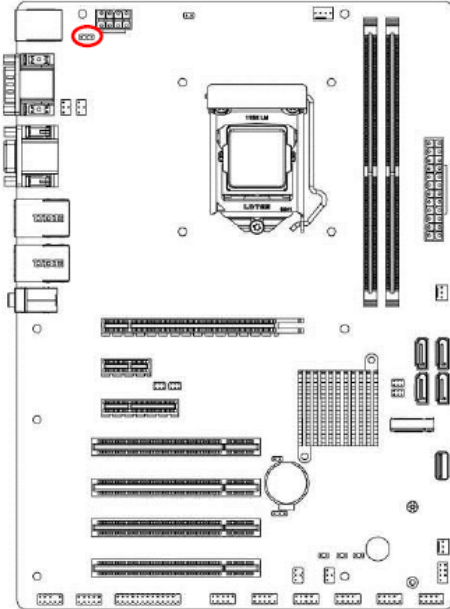
1-2 Closed:
USB Vo = 5 VSB
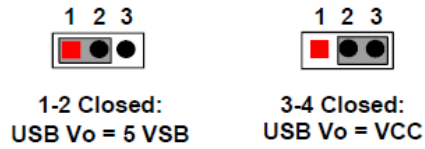
3-4 Closed:
USB Vo = VCC

JP2 (4-pin): COM2 Port Pin9 Function Select (2.54 pitch)

JP2→COM2 Port Pin9 Function Select

6 5
4 3
2 1

6 5
4 3
2 1

6 5
4 3
2 1
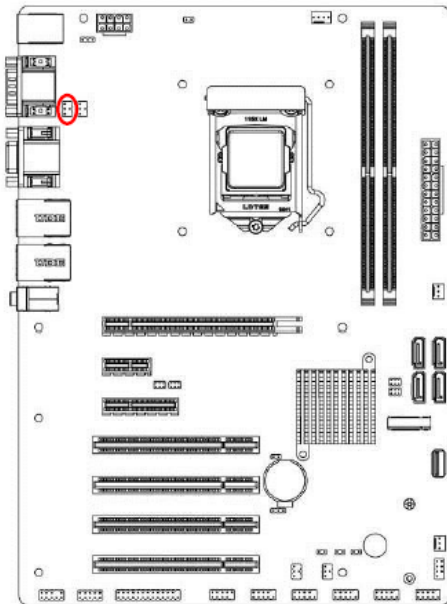
2-4 Closed:
RI=RS232

3-4 Closed:
RI= 5V
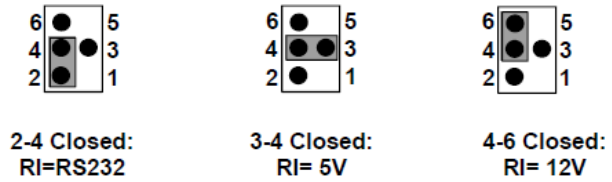
4-6 Closed:
RI= 12V

JP3 (4-pin): COM1 Port Pin9 Function Select (2.54 pitch)
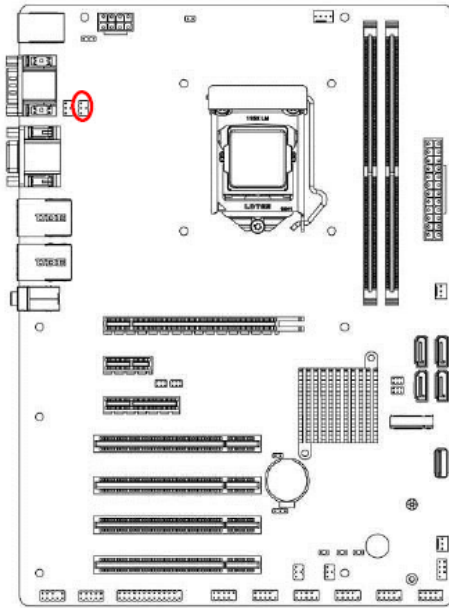
JP3→COM1 Port Pin9 Function Select
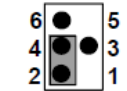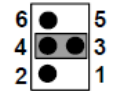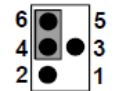
2-4 Closed: RI=RS232	3-4 Closed: RI= 5V	4-6 Closed: RI= 12V

JP4/5 (6-pin): PCIEX1 & PCIEX4 Function Select (2.54 pitch)
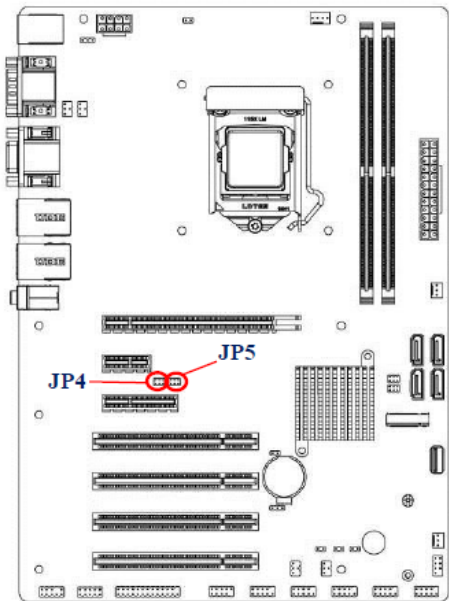
JP4/5→PCIEX1 & PCIEX4 Function Select**
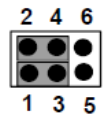
JP4:
2-4 Closed
1-3 Closed
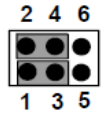
JP5:
2-4 Closed
1-3 Closed

+ → PCIEX1 Enable PCIEX4 Disable
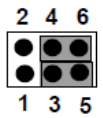
JP4:
4-6 Closed
3-5 Closed
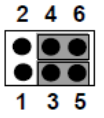
JP5:
4-6 Closed
3-5 Closed

+ → PCIEX1 Disable PCIEX4 Enable

** JP4 Jumper setting Location must be the same of JP5. PCIEX1 & PCIEX4 only could use one slot.

JP6/7 (6-pin): M.2 & SATA4 Port Function Select (2.54 pitch)

JP6/7→M.2 & SATA4 Port Function Select **
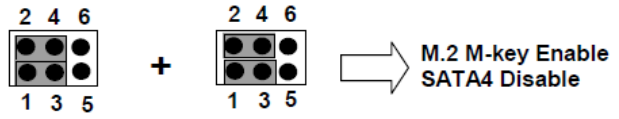
2 4 6 + 2 4 6 → M.2 M-key Enable
1 3 5   1 3 5   SATA4 Disable

JP6:   JP7:
2-4 Closed   2-4 Closed
1-3 Closed   1-3 Closed

2 4 6 + 2 4 6 → M.2 M-key Disable
1 3 5   1 3 5   SATA4 Enable
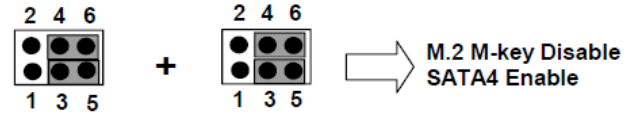
JP6:   JP7:
4-6 Closed   4-6 Closed
3-5 Closed   3-5 Closed

** JP6 Jumper setting Location must be the same of JP7.
M.2 M-key & SATA4 only could use one slot.

JP8 (2-pin): ME Features Select (2.54 pitch)
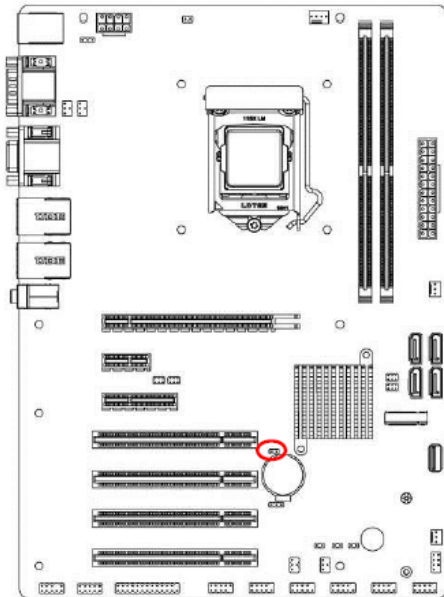
JP8→ME Features Select

Pin 1→ [2]
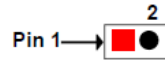
1-2 Open: ME Features Enabled (Default)

Pin 1→ [2]
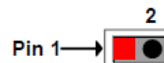
1-2 Closed: ME Features Disabled

JP10 (4-pin): COM3 Header Pin9 Function Select (2.54 pitch)
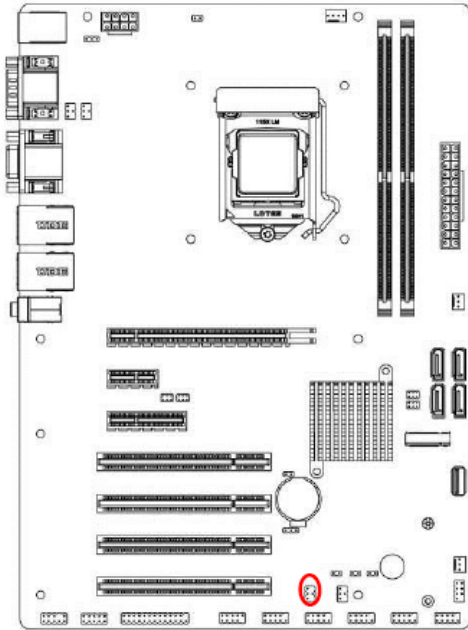
JP10→COM3 Header Pin9 Function Select
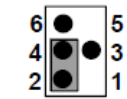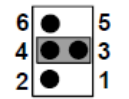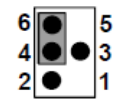
2-4 Closed: RI=RS232	3-4 Closed: RI= 5V	4-6 Closed: RI= 12V

JP11 (4-pin): COM4 Header Pin9 Function Select (2.54 pitch)
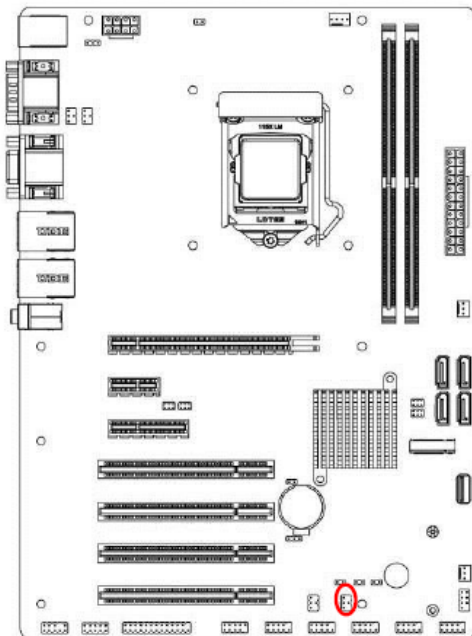
JP11→COM4 Header Pin9 Function Select
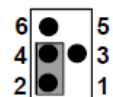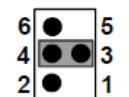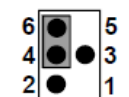
2-4 Closed: RI=RS232	3-4 Closed: RI= 5V	4-6 Closed: RI= 12V

AT-MODE (2-pin): AT & ATX Mode Switch (2.54 pitch) **

AT-MODE (2-pin)→AT & ATX Mode Switch

Pin 1→ [■ ●] 2
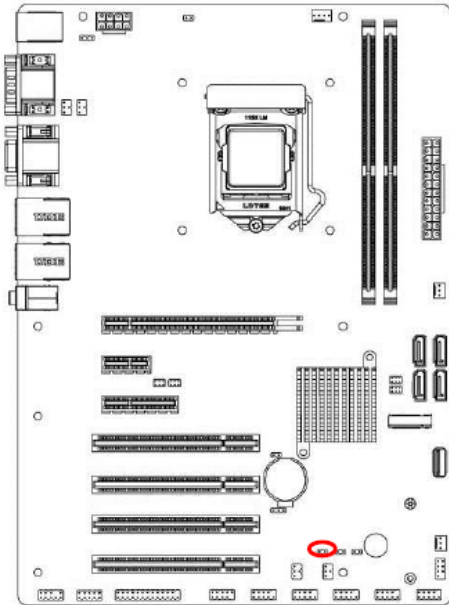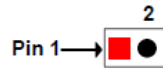
1-2 Open: ATX Mode Selected(Default)

Pin 1→ [■ ●] 2
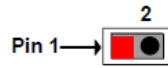
1-2 Closed: AT Mode Selected

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

COPEN (2-pin): Case Open Message Display Function (2.54 pitch)

COPEN→Case Open Message Display Function

Pin 1→ [■ ●] 2

1-2 Open: Normal (Default)

Pin 1→ [■ ●] 2
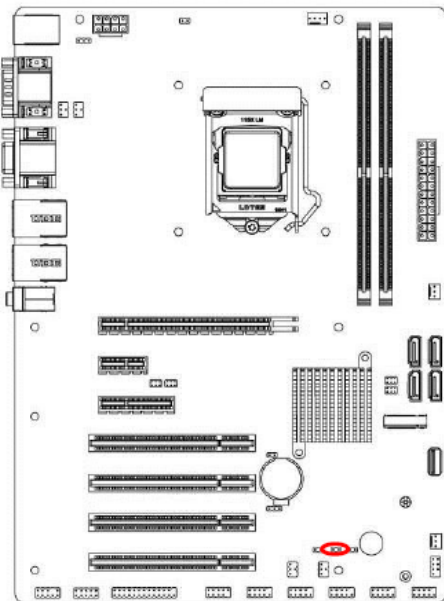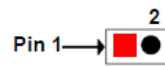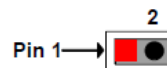
1-2 Closed: Case Open Funcion Selected

Use needs to enter BIOS and enable 'Case Open Detect' function. In this case if you case is removed, next time when you restart your computer a message will be displayed onscreen to inform you of this.

JBAT (3-pin): Clear CMOS RAM Function Settings (2.54 pitch)
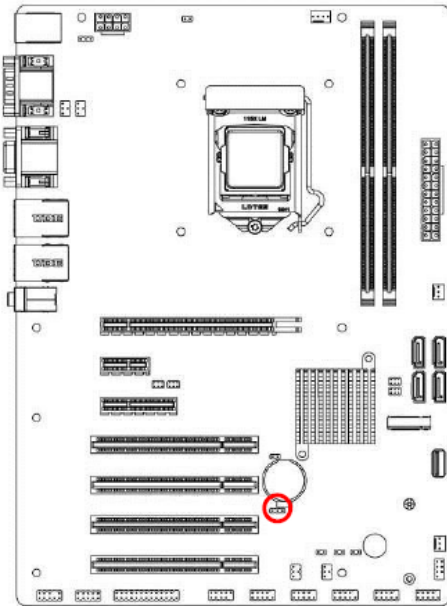
JBAT→Clear CMOS RAM Settings

1   3
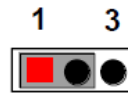
1-2 Open: Normal (Default)

1   3
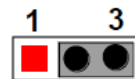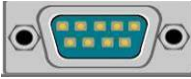
1-2 Closed: Clear CMOS

2-2   Connectors and Headers
2-2-1 Rear Panel Connectors

*Refer to Rear IO Diagram

Icon	Name	Function
	Serial Port	Mainly for user to connect external MODEM or other devices that supports Serial Communications Interface. Note: COM1 supports RS-232/422/485 function
	VGA Port	VGA connector is the 15-pin D-subminiature female connector; it is for the display devices, such as the CRT monitor, LCD monitor and so on. (Max. resolution Support:1920*1200@60Hz)
	HDMI Port	To connect display device that support HDMI specification. (Max. resolution Support: 4096*2304@24Hz)
	USB 2.0 Port	To connect USB keyboard, mouse or other devices compatible with USB 2.0 specification.
	USB 3.0 Port	To connect USB keyboard, mouse or other devices compatible with USB 3.0 specification. USB 3.0 ports supports up to 5Gbps data transfer rate.
	RJ-45 LAN Port	This connector is standard RJ-45 LAN jack for Network connection.
	Audio Connectors (Default is not populated)	**Blue:** Line-in Connector **Green:** Line-out Connector **Pink :** MIC Connector

COM1: RS232/422/485 Port

COM1 port can function as RS232/422/485 port. In normal settings COM1 functions as RS232 port. With compatible COM cable COM1can function as RS422 or RS 485 port. User also needs to go to BIOS to set **'Transmission Mode Select'** for COM1 at first, before using specialized cable to connect different pins of this port.
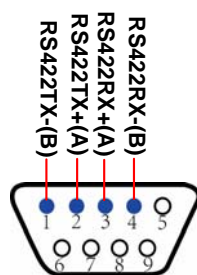
For RS422 Mode
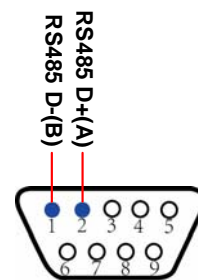
For RS485 Mode

2-2-2 Motherboard Internal Connectors

(1) ATXPWR(24-pin block): Main Power Connector

ATX Power Supply connector: This is a new defined 24-pins connector that usually comes with ATX case. The ATX Power Supply allows using soft power on momentary switch that connect from the front panel switch to 2-pins Power On jumper pole on the motherboard. When the power switch on the back of the ATX power supply turned on, the full power will not come into the system board until the front panel switch is momentarily pressed. Press this switch again will turn off the power to the system board.

** We recommend that you use an ATX 12V Specification 2.0-compliant power supply unit (PSU) with a minimum of 350W power rating. This type has 24-pin and 4-pin power plugs.

** If you intend to use a PSU with 20-pin and 4-pin power plugs, make sure that the 20-pin power plug can provide at least 15A on +12V and the power supply unit has a minimum power rating of 350W. The system may become unstable or may not boot up if the power is inadequate.

** If you are using a 20-pin power plug, please refer to Figure1 for power supply connection. Power plug form power supply and power connectors from motherboard both adopt key design to avoid mistake installation. You can insert the power plug into the connector with ease only in the right direction. If the direction is wrong it is hard to fit in and if you make the connection by force if is possible.
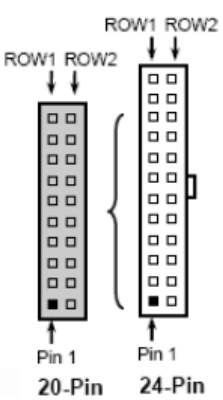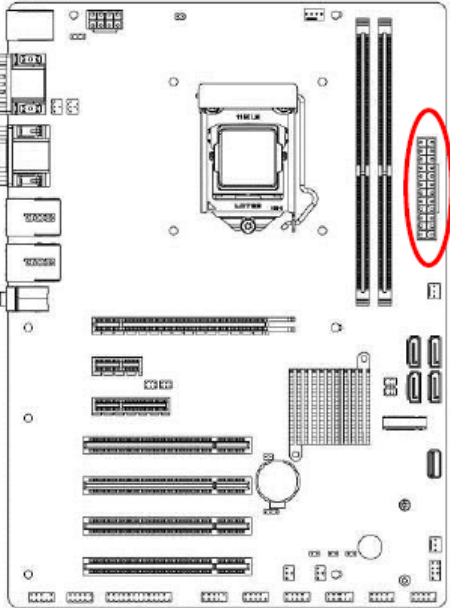
PIN	ROW1	ROW2
1	+3.3V	+3.3V
2	+3.3V	-12V
3	GND	GND
4	+5V	Soft Power on
5	GND	GND
6	+5V	GND
7	GND	GND
8	Power OK	-5V
9	+5V Stand by	+5V
10	+12V	+5V
11	+12V	+5V
12	+3.3V	GND

24-pin Main Power Connector
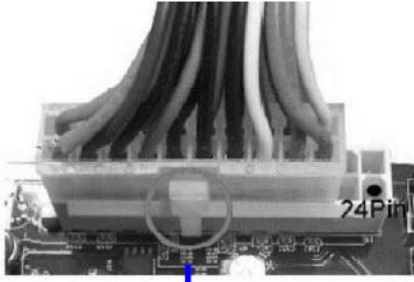
Figure1: 20-pin power plug
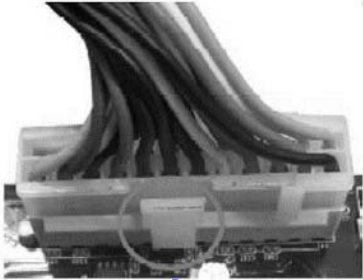
Figure 2: 24-pin power plug

(2) ATX12V (4-pin block): ATX-Type 12V Power Connector

This is a new defined 8-pin connector that usually comes with ATX power Supply that supports extra 12V voltage to maintain system power consumption. Without this connector might cause system unstable because the power supply can not provide sufficient current for system.
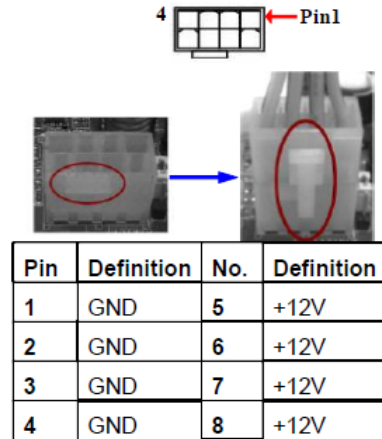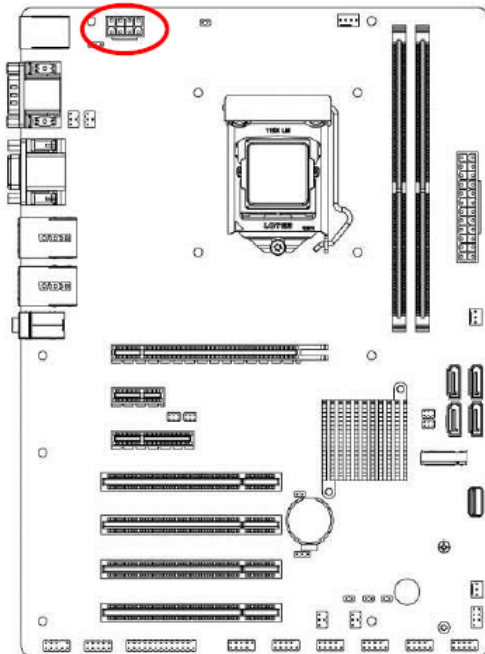
Pin	Definition	No.	Definition
1	GND	5	+12V
2	GND	6	+12V
3	GND	7	+12V
4	GND	8	+12V

(3) SATA1/2/3/4: SATAIII Port Connector

These connectors are high-speed SATAIII ports that support 6GB/s transfer rate.
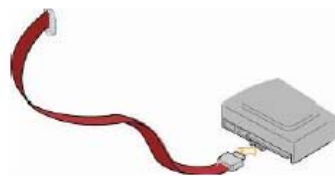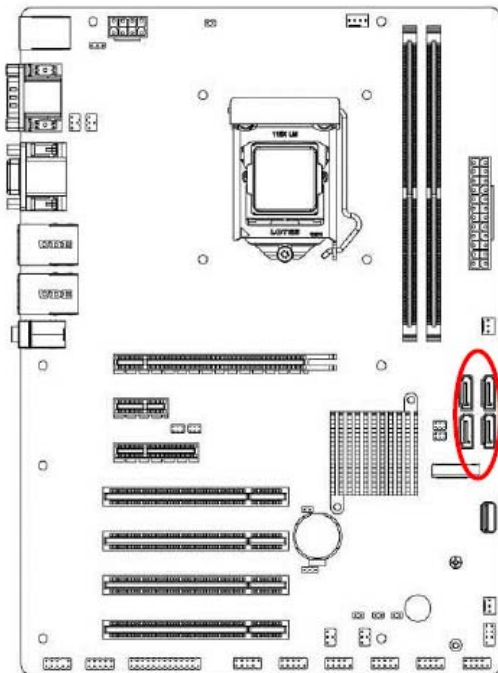
Pin No.	Definition
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND

(4) M.2 M-key Connector

This M.2 connector supports compatible type 224/2280 SATA SSD module.
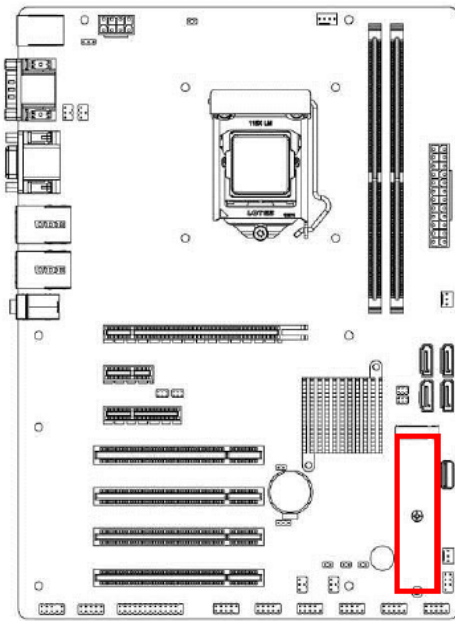
M.2 M-key Connector

M.2 Module Installation Guide

1. Prepare compatible M.2 SATA SSD 2242 or 2280 type card. Deferent type of cards has different length. Find corresponding nut location for further installation. (Ex. 2242 type)

2. Remove the screw post and nut fixed at location MH3 by default (Skip step 2 & 3 and go straight to Step 4 if you are going to use the default nut).

3. Lock the screw post into the location corresponding to the length of the module.

4. Align and insert corresponding M.2 module, as the photo shows.
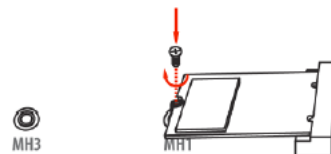
5. Tighten up the screw to secure the module into the M.2 connector.   Mare sure not overtighten the screw to avoid possible damage to the module.

2-2-3 Header Pin Definition

(1) FP_AUDIO (9-pin): Front Panel Audio Header (2.54 pitch)

This header is connected to Front Panel Line-out, MIC connector with cable.
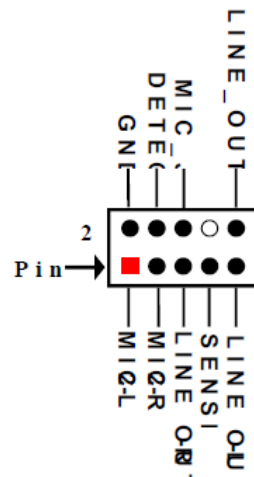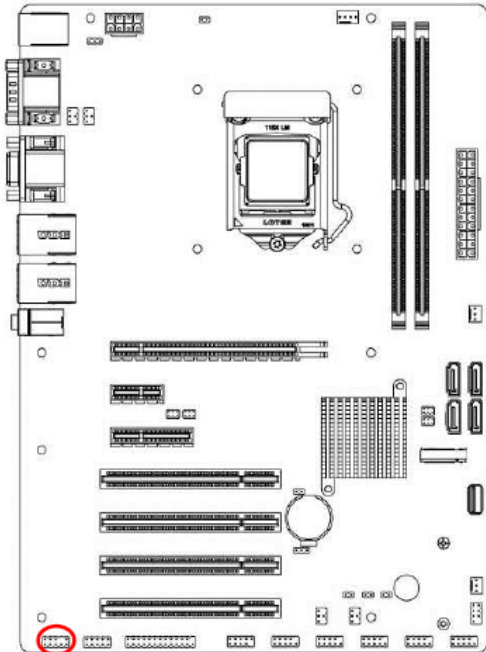
(2) GPIO (10-pin): GPIO Header (2.54 pitch)
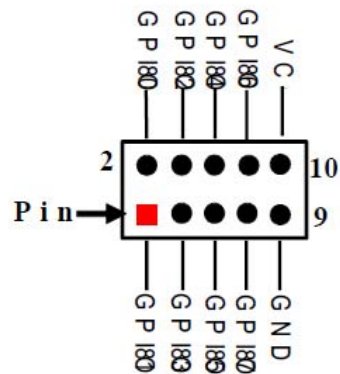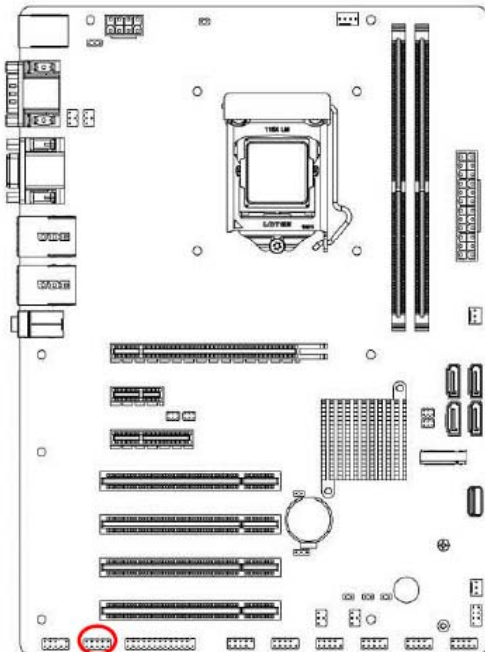
(3) PARALLEL (25-pin): Parallel Header (2.54 pitch)
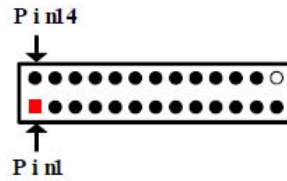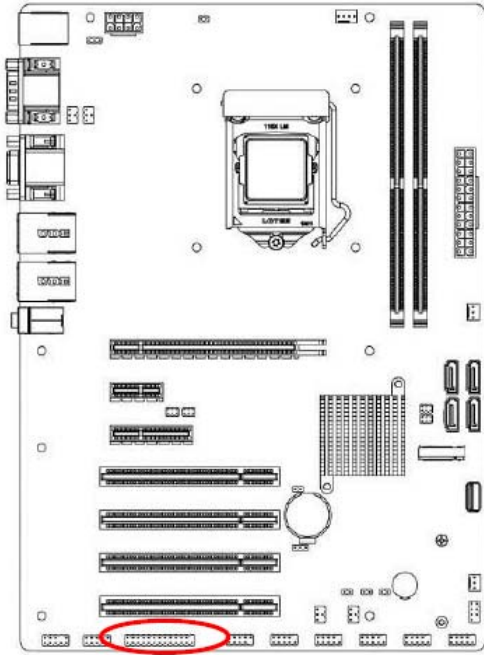
Pin No.	Pin Definition	Pin No.	Pin Definition
1	STB-	14	AFD-
2	PRD0	15	ERR-
3	PRD1	16	INIT-
4	PRD2	17	SLIN-
5	PRD3	18	GND
6	PRD4	19	GND
7	PRD5	20	GND
8	PRD6	21	GND
9	PRD7	22	GND
10	ACK-	23	GND
11	BUSY	24	GND
12	PE	25	GND
13	SLCT		

(4) GPIO (10-pin): GPIO Header (2.54 pitch)
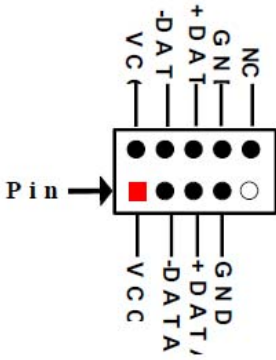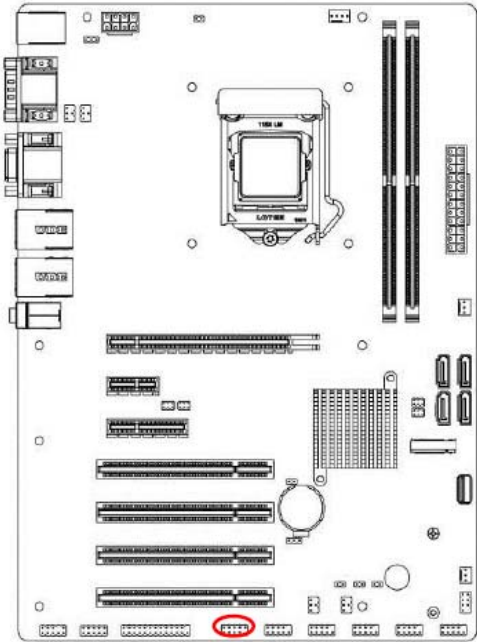
(5) COM 3/4/5/6 (9-pin): Serial port Header (2.54 pitch)
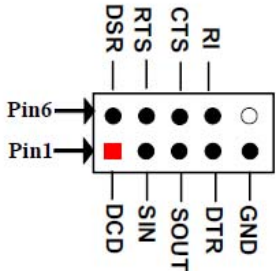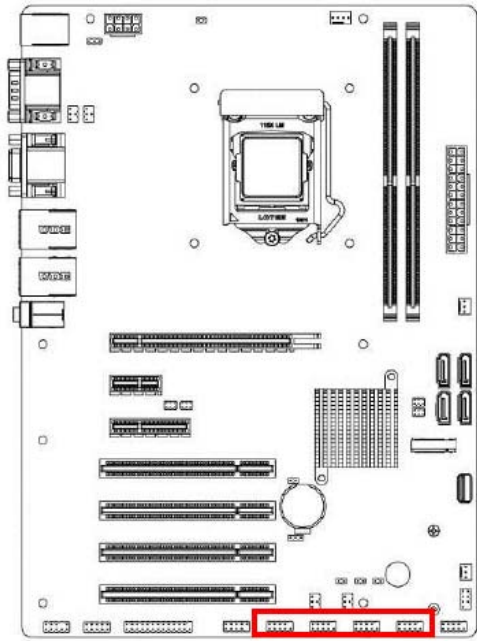
(6) JW_FP (9-pin): PWR LED/ HD LED/ Power Button/ Reset (2.54 pitch)
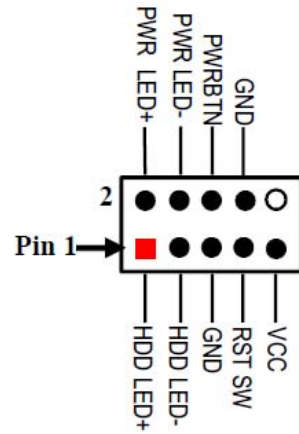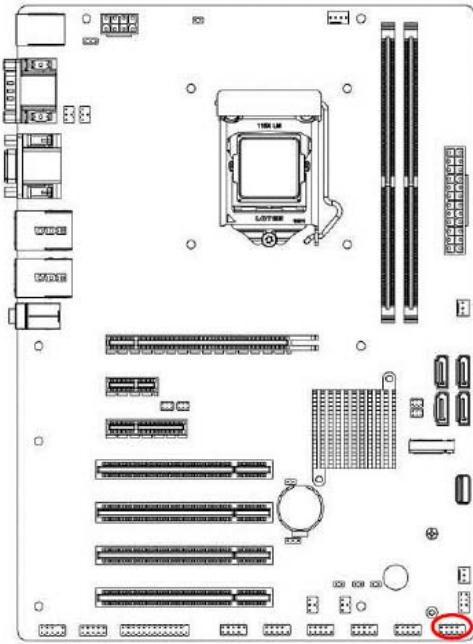
(7) SPK_LED (7-pin):PWR LED Heade & Speaker Header (2.54 pitch)
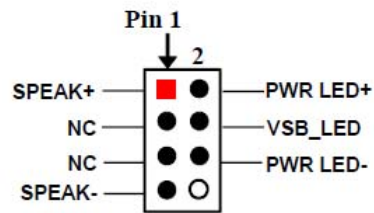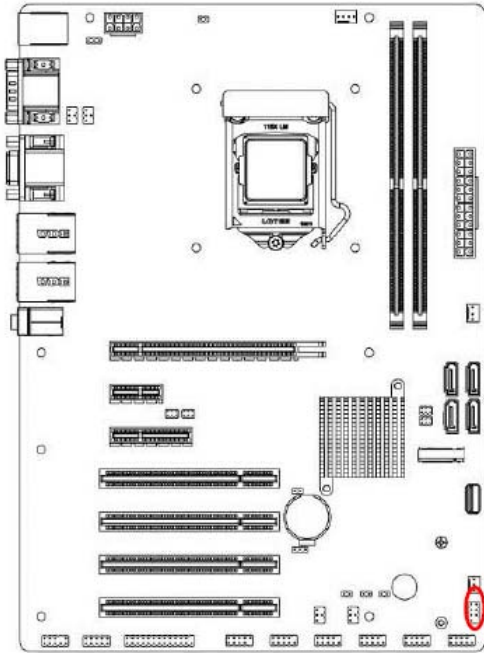
(8) SYSFAN1/ CPUFAN/ SYSFAN2 (4-pin): FANHeaders (2.54 pitch)
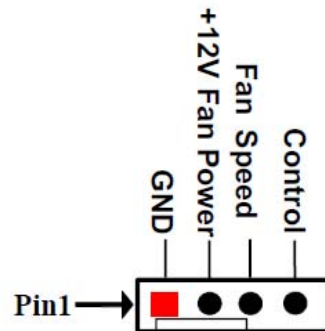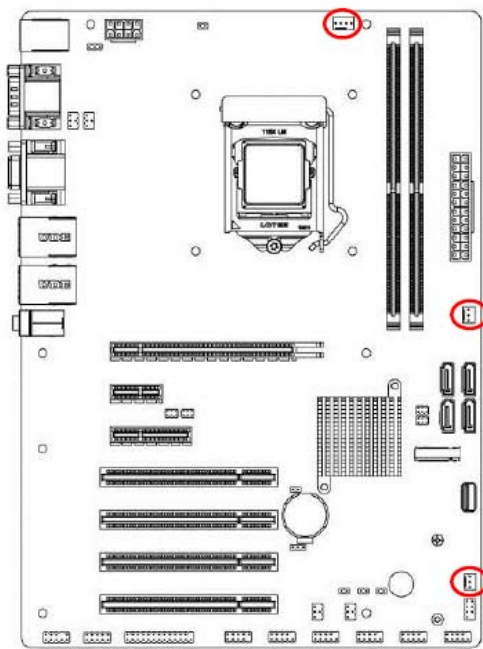
(9) Dual Channel Memory Installation
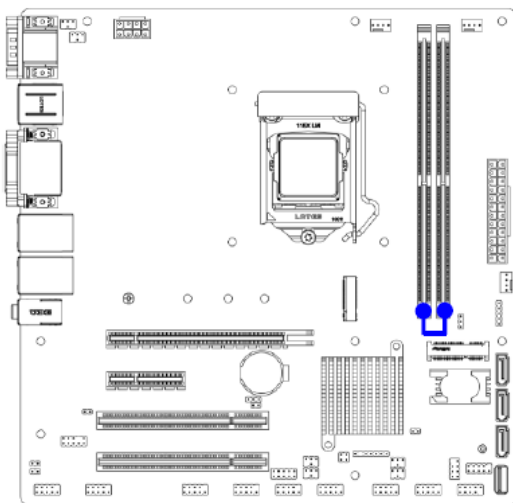
config	Slot 1	Slot 2
1	install	--
2	--	install
3	install	install

Notice!
- **For dual channel installation, you need to install the same brand, speed, size and type memory module.**
- **It is unable to activate dual channel feature if you install only one memory module. Slot order can be from left-to-right or right-to-left, and it must be installed in pairs.**
- **If you install memory modules in wrong direction, it will damage the motherboard and memory module.**

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.

```
       Please select boot device:

Enter Setup

    ↑ and ↓ to move selection
  ENTER to select boot device
   ESC to boot using defaults
```
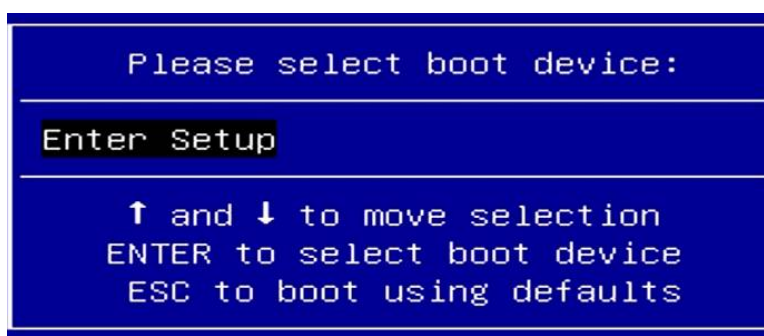
BIOS Boot Menu Screen (boot device options please refer to actual configuration)

3-2 BIOS Menu Screen

The following diagram show a general BIOS menu screen:

Menu Bar

```
          Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.
  Main  Advanced  Chipset  Security  Boot  Save & Exit

  BIOS Information                                            Set the Date. Use Tab to
  BIOS Vendor              American Megatrends                switch between Date elements.
  Filename                 N96MQA01
  Build Date and Time      09/08/2020 12:20:05

  System Date              [Sat 09/26/2020]
  System Time              [15:43:51]
                                                             General Help Items


                                                             →←: Select Screen
                                                             ↑↓: Select Item
                                                             Enter: Select
                                                             +/-: Change Opt.
                                                             F1: General Help
                                                             F2: Previous Values
                                                             F3: Optimized Defaults
                                                             F4: Save & Exit
                                                             ESC: Exit


          Version 2.20.1271. Copyright (C) 2020 American Megatrends, Inc.
```

Menu Items   **Current Setting Value**   **Function Keys**

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:

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

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

3-6 Main Menu

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

```
Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.
Main  Advanced  Chipset  Security  Boot  Save & Exit

BIOS Information                                          Set the Date. Use Tab to
BIOS Vendor              American Megatrends              switch between Date elements.
Filename                 N96MQA01
Build Date and Time      09/08/2020 12:20:05

System Date              [Sat 09/26/2020]
System Time              [15:43:51]




                                                         ↔: Select Screen
                                                         ↑↓: Select Item
                                                         Enter: Select
                                                         +/-: Change Opt.
                                                         F1: General Help
                                                         F2: Previous Values
                                                         F3: Optimized Defaults
                                                         F4: Save & Exit
                                                         ESC: Exit



            Version 2.20.1271. Copyright (C) 2020 American Megatrends, Inc.
```

System Date
Set the date. Please use [Tab] to switch between date elements.
System Time
Set the time. Please use [Tab] to switch between time elements.

3-7 Advanced Menu

```
               Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.
        Main  Advanced  Chipset  Security  Boot  Save & Exit

     ▶ Connectivity Configuration                          Configure Connectivity related
     ▶ CPU Configuration                                   options
     ▶ SATA Configuration
     ▶ PCH-FW Configuration
     ▶ AMT Configuration
     ▶ Trusted Computing
     ▶ ACPI Settings
     ▶ Wake-up Function Settings
     ▶ Super IO Configuration
     ▶ PC Health Status
     ▶ Serial Port Console Redirection
     ▶ USB Configuration
     ▶ Network Stack Configuration
     ▶ CSM Configuration                                   →←: Select Screen
     ▶ NVMe Configuration                                  ↑↓: Select Item
                                                           Enter: Select
     ▶ Intel(R) I211 Gigabit  Network Connection -         +/-: Change Opt.
       00:30:18:79:60:13                                   F1: General Help
     ▶ Intel(R) Ethernet Connection (7) I219-LM - 00:30:18:79:60:12   F2: Previous Values
                                                           F3: Optimized Defaults
                                                           F4: Save & Exit
                                                           ESC: Exit


               Version 2.20.1271. Copyright (C) 2020 American Megatrends, Inc.
```

▶ **Connectivity Configuration**
Use this item to configure Connectivity related options. Press [Enter] to make settings for the following sub-items:
CNVi present
CNVi Configuration
  CNVi Mode
  This option configures Connectivity.
  The optional settings: [Disabled Integrated]; [Auto Detection].
  [Auto Detection] means that if Discrete Solution is discovered it will be enabled by default. Otherwise Integrated Solution (CNVi) will be enabled;
  [Disabled Integrated] disables Integrated Solution.

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

  Hyper-Threading
  The optional settings: [Disabled]; [Enabled].
  When set as [Disabled] only one thread per enabled core is enabled.
  [Enabled]: for Windows and Linux (OS optimized for Hyper-Threading Technology).
  [Disabled]: for other OS (OS optimized not for Hyper-Threading Technology).
  Note: 'Hyper-Threading' item may or may not show up, depending on different CPU.
  Intel (VMX) Virtualization Technology
  The optional settings: [Disabled]; [Enabled].
  When set as [Enabled], a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

Intel(R) SpeedStep(tm)
This item allows more than two frequency ranges to be supported.
The optional settings: [Disabled]; [Enabled].
C states
Use this item to enable or disable CPU Power Management. When set as [Enabled], it allows CPU to go to C states when it's not 100% utilized.
The optional settings: [Disabled]; [Enabled].
Turbo Mode
Use this item to enable or disable Turbo Mode (requires Intel Speed Step or Intel Speed Shift to be available and enabled.)
The optional settings: [Disabled]; [Enabled].
Note: This item might not be available depending on configuration.

▶ **SATA Configuration**
Press [Enter] to make settings for the following sub-items:
SATA Configuration
SATA Controller(s)
Use this item to enable or disable SATA Device.
The optional settings: [Enabled]; [Disabled].
When set as [Enabled], the following items shall appear:
SATA Mode Selection
This item determines how SATA controller(s) operate.
The optional settings: [AHCI]; [RAID].
*Note: The item of [RAID] is only for **Q370** and **C246 chipset**.*
M.2
Port
Use this item to Enable or Disable SATA Port.
The optional settings: [Disabled]; [Enabled].
SATA1/SATA2/SATA3 (/SATA4/SATA5)
Port
Use this item to enable or disable SATA Port.
The optional settings: [Disabled]; [Enabled].
*Note: The option item [RAID] is only for **Q370** and **C246 chipset**.*
Hot Plug
Use this item to designate this port as Hot Pluggable.
The optional settings: [Disabled]; [Enabled].

▶ **PCH-FW Configuration**
Press [Enter] to view Management Engine Technology Parameters and make settings in the following sub-item:
ME Firmware Version
ME Firmware Mode

▶ **Firmware Update Configuration**
Press [Enter] to make settings for '**Me FW Image Re-Flash**'.
Me FW Image Re-Flash
Use this item to enable or disable Me FW Image Re-Flash function.
The optional settings: [Disabled]; [Enabled].

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

▶ **AMT Configuration**
Use this item to configure Intel(R) Active Management Technology Parameters.
Press [Enter] to make settings for the following sub-items:
AMT Support
Use this item to enable or disable AMT support. When disabled AMT BIOS Features are no longer supported and user is no longer able to access MEBx Setup.
*Note: This option does not disable Manageability Features in FW.
The optional settings: [Disabled]; [Enabled].
ASF Support
Use this item to enable or disable Alert Standard Format support.
The optional settings: [Disabled]; [Enabled].
When set as [Enabled], user can make further settings in 'ASF Configuration**' & '**Secure Erase Configuration**'.*

USB Provisioning of AMT
Use this item to enable or disable AMT USB Provisioning.
The optional settings: [Disabled]; [Enabled].
▶ **CIRA Configuration**
This item is for user to configure Remote Assistance Process parameters.
Press [Enter] to make settings for in the following sub-item:
Activate Remote Assistance Process
Use this item to trigger CIRA boot.
*Note: Network Access must be activated first from MEBx Setup.
The optional settings: [Disabled]; [Enabled].
When set as [Enabled], user can make further settings in 'CIRA Timeout**'.*
CIRA Timeout
OEM defined timeout for MPS connection to be established.
The setting range is from [0] to [255].
[0]: use the default timeout value of 60 seconds;
[255]: MEBx waits until the connection succeeds.

▶ **ASF Configuration**
This item is for user to configure Alert Standard Format parameters.
Press [Enter] to make settings for in the following sub-items:
PET Progress
Use this item to enable or disable PET Events Progress to receive PET Events.
The optional settings: [Disabled]; [Enabled].
WatchDog
Use this item to enable or disable WatchDog Timer.
The optional settings: [Disabled]; [Enabled].
When set as [Enabled], the following sub-items shall appear:
  OS Timer
  Use this item to set OS watchdog timer.
  BIOS Timer
  Use this item to set BIOS watch dog timer.
ASF Sensors Table
Use this item to add ASF Sensor Table into ASF ! ACPI Table.
The optional settings: [Disabled]; [Enabled].

▶ **Secure Erase Configuration**
Press [Enter] to make settings for in the following sub-items:

Secure Erase Mode
Use this item to change Secure Erase module behavior.
The optional settings: [Simulated]; [Real].
[Simulated]: Performs SE flow without erasing SSD.
[Real]: Erase SSD.
Force Secure Erase
This item is for user to force Secure Erase on next boot.
The optional settings: [Disabled]; [Enabled].

▶ **OEM Flags Settings**
Use this item to configure OEM flags.
Press [Enter] to make settings for in the following sub-items:
Hide Unconfigure ME Confirmation Prompt
Use this function to enable or disable Hide Unconfigure ME confirmation prompt when attempting ME unconfiguration.
The optional settings: [Disabled]; [Enabled].
MEBx OEM Debug Menu Enable
Use this function to enable or disable MEBx debug menu in MEBx.
The optional settings: [Disabled]; [Enabled].
Unconfigure ME
Use this function to enable or disable Unconfigure ME with resetting MEBx password to default.
The optional settings: [Disabled]; [Enabled].

▶ **MEBx Resolution Settings**
Use this item to configure resolution settings for MEBx display modes.
Press [Enter] to make settings for in the following sub-items:
Non-UI Mode Resolution
Use this item to set resolution for non-UI text mode.
The optional settings: [Auto]; [80x25]; [100x31].
UI Mode Resolution
Use this item to set resolution for UI text mode.
The optional settings: [Auto]; [80x25]; [100x31].
Graphics Mode Resolution
Use this item to set resolution for graphics mode.
The optional settings: [Auto]; [640x480]; [800x600]; [1024x768].

▶ **Trusted Computing**
Press [Enter] to view current status information, or make further settings in the following sub-items:
TPM20 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: [Disabled]; [Enabled].
When set as **[Enabled]**, user can make further settings in the following items:

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: [None]; [TPM Clear].

TPM2.0 UEFI Spec Version
Use this item to select the TCG2 Spec Version Support.
The optional settings: [TCG_1_2]; [TCG_2].

▶ **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: [Suspend Disabled]; [S3 (Suspend to RAM)].

▶ **Wake-up Function Settings**
Press [Enter] to make settings for the following sub-items:
Wake-up System With Fixed Time
Use this item to enable or disable System wake on alarm event.
The optional settings: [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
Use this item to enable or disable System wake on alarm event.
System will wake on the current time + Increase minute(s).
The optional settings: [Disabled]; [Enabled].
When set as [Enabled], system will wake on the current time + increased minute(s).

PS2 KB/MS Wake-up
Use this item to enable or disable PS2 KB/MS Wake-up from (S3/S4/S5).
The optional settings: [Disabled]; [Enabled].
Note: This function is supported when 'ERP Support' is set as [Disabled].
USB S3/S4 Wake-up
Use this item to enable or disable USB S3/S4 Wake-up.
The optional settings: [Disabled]; [Enabled].
Note: This function is supported when 'ERP Support' is set as [Disabled].
USB S5 Power
Use this item to enable or disable USB Power after System Shutdown.
The optional settings: [Disabled]; [Enabled].
Note: This function is supported when 'ERP Support' is set as [Disabled].
Internal USB Port S5 Power
Use this item to enable or disable USB Power after System Shutdown.
The optional settings: [Disabled]; [Enabled].
Note: This function is supported when 'ERP Support' is set as [Disabled].

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

ERP Support

Use this item to select Energy-Related Products function. This item should be set as [Disabled] if you wish to have all active wake-up functions.
The optional settings: [Disabled]; [Auto].

► **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: [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: [IO=3F8h; IRQ=4;]; [IO=3F8h; IRQ=3,4,5,7,10,11;]; [IO=2F8h; IRQ=3,4,5,7,10,11;]; [IO=3E8h; IRQ=3,4,5,7,10,11;]; [IO=2E8h; IRQ=3,4,5,7,10,11;].
Transmission Mode Select
The optional settings: [RS422]; [RS232]; [RS485].
► **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: [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: [IO=2F8h; IRQ=3;]; [IO=3F8h; IRQ=3,4,5,7,10,11;]; [IO=2F8h; IRQ=3,4,5,7,10,11;]; [IO=3E8h; IRQ=3,4,5,7,10,11;]; [IO=2E8h; IRQ=3,4,5,7,10,11;].
Transmission Mode Select
The optional settings: [RS422]; [RS232]; [RS485].
COM1/COM2 Mode Speed Select
Use this item to select RS232/RS422/RS485 speed.
The optional settings: [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: [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: [IO=3E8h; IRQ=10;]; [IO=3F8h; IRQ=3,4,5,7,10,11;];
[IO=2F8h; IRQ=3,4,5,7,10,11;]; [IO=3E8h; IRQ=3,4,5,7,10,11;]; [IO=2E8h;
IRQ=3,4,5,7,10,11;]; [IO=3E0h; IRQ=3,4,5,7,10,11;]; [IO=2E0h;
IRQ=3,4,5,7,10,11;].
► **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: [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: [IO=2E8h; IRQ=10;]; [IO=3F8h; IRQ=3,4,5,7,10,11;];
[IO=2F8h; IRQ=3,4,5,7,10,11;]; [IO=3E8h; IRQ=3,4,5,7,10,11;]; [IO=2E8h;
IRQ=3,4,5,7,10,11;]; [IO=3E0h; IRQ=3,4,5,7,10,11;]; [IO=2E0h;
IRQ=3,4,5,7,10,11;].
► **Serial Port 5 Configuration**
 Press [Enter] to make settings for the following items:
Serial Port 5 Configuration

Serial Port
Use this item to enable or disable Serial Port (COM).
The optional settings: [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: [IO=3E0h; IRQ=11;]; [IO=3F8h; IRQ=3,4,5,7,10,11;];
[IO=2F8h; IRQ=3,4,5,7,10,11;]; [IO=3E8h; IRQ=3,4,5,7,10,11;]; [IO=2E8h;
IRQ=3,4,5,7,10,11;]; [IO=3E0h; IRQ=3,4,5,7,10,11;]; [IO=2E0h;
IRQ=3,4,5,7,10,11;].
► **Serial Port 6 Configuration**
 Press [Enter] to make settings for the following items:
Serial Port 6 Configuration

Serial Port
Use this item to enable or disable Serial Port (COM).
The optional settings: [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: [IO=2E0h; IRQ=11;]; [IO=3F8h; IRQ=3,4,5,7,10,11;]; [IO=2F8h; IRQ=3,4,5,7,10,11;]; [IO=3E8h; IRQ=3,4,5,7,10,11;]; [IO=2E8h; IRQ=3,4,5,7,10,11;]; [IO=3E0h; IRQ=3,4,5,7,10,11;]; [IO=2E0h; IRQ=3,4,5,7,10,11;].

WatchDog Reset Timer
Use this item to enable or disable WDT reset function. When set as [Enabled], the following sub-items shall appear:
WatchDog Reset Timer Value
User can select a value in the range of [4] to [255] seconds when 'WatchDog Reset Timer Unit' set as [Sec]; or in the range of [4] to [255] minutes when 'WatchDog Reset Timer Unit' set as [Min].
WatchDog Reset Timer Unit
The optional settings: [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* Pin 1&2 of **AT_COPEN jumper** *setting for ATX Mode & AT Mode Select).*

Case Open Detect
Use this item to detect case has already open or not, show message in POST.
The optional settings: [Disabled]; [Enabled].
When set as [Enabled], system will detect if COPEN has been short or not (*refer to* Pin 3&4 of **AT_COPEN** *jumper setting for Case Open Detection*); if Pin 3&4 of **AT_COPEN** is short, system will show Case Open Message during POST.

▸ **PC Health Status**
Press [Enter] to view current hardware health status, make further settings in '**SmartFAN Configuration**' and set value in '**Shutdown Temperature**'.

▸ **SmartFAN Configuration**
Press [Enter] to make settings for '**SmartFan Configuration**':
SmartFAN Configuration

CPUFAN / SYSFAN Smart Mode
The optional settings: [Disabled]; [Enabled].
When set as [Enabled], the following sub-items shall appear:
CPUFAN / SYSFAN 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 / SYSFAN 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 / SYSFAN 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 / SYSFAN 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.

Shutdown Temperature

Use this item to select system shutdown temperature.

The optional settings: [Disabled]; [70°C/158°F]; [75°C/167°F]; [80°C/176°F]; [85°C/185°F]; [90°C/194°F].

▸ **Serial Port Console Redirection**
COM1
Console Redirection

Use this item to enable or disable COM1 Console Redirection.

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

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

▸ **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.

COM1
Console Redirection Settings

Terminal Type

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

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

Data Bits

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

Parity

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

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

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

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

[Mark]: parity bit is always 1;

[Space]: parity bit is always 0;

[Mark] and **[Space]**: parity do not allow for error detection.

Stop Bits

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

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

Flow Control

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

Hardware flow control uses two wires to send start/stop signals.
The optional settings: [None]; [Hardware RTS/CTS].
VT-UTF8 Combo Key Support
Use this item to enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals.
The optional settings: [Disabled]; [Enabled].
Recorder Mode
With this mode enable only text will be sent. This is to capture Terminal data.
The optional settings: [Disabled]; [Enabled].
Resolution 100x31
Use this item to enable or disable extended terminal resolution.
The optional settings: [Disabled]; [Enabled].
Putty KeyPad
Use this item to select FunctionKey and KeyPad on Putty.
The optional settings: [VT100]; [LINUX]; [XTERMR6]; [SCO]; [ESCN]; [VT400].

Legacy Console Redirection

▸ **Legacy Console Redirection Settings**
Press [Enter] to make settings for the following item:
Legacy Console Redirection Settings

Redirection COM Port
Use this item to select a COM port to display redirection of Legacy OS and Legacy OPROM Messages.
The optional settings: [COM1]; [COM1(Pci Bus0, Dev0, Func0) (Disabled)].
Resolution
On Legacy OS, the number of Rows and Columns supported redirection.
The optional settings: [80x24]; [80x25].
Redirect After POST
The optional settings: [Always Enable]; [BootLoader].
When [**Bootloader**] is selected, then Legacy Console Redirection is disabled before booting to legacy OS. When [**Always Enabled**] is selected, then Legacy Console Redirection is enabled for legacy OS. Default setting for this option is set to [**Always Enabled**].

Serial Port for Out-of-Band Management/
Windows Emergency Management Services (EMS)
Console Redirection
The optional settings: [Disabled]; [Enabled].
When set as [Enabled], the following sub-items shall appear:

▸ **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 items:
Out-of-Band Mgmt Port
Microsoft Windows Emergency Management Services (EMS) allows for remote management of a Windows Server OS through a serial port.
The optional settings: [COM1]; [COM1(Pci Bus0, Dev0, Func0) (Disabled)].

Terminal Type

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

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

Bits per second

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

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

Flow Control

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

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

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.

▸ **USB Configuration**

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

USB Configuration

Legacy USB Support

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

USB Mass Storage Driver Support

Use this item to enable or disable USB mass storage driver support.

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

PS2 KB/MS Enable

Use this item to enable or disable I/O port 60h/64h emulation support. This should be enabled for the complete USB keyboard legacy support for non-USB aware OSes.

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

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: [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: [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**', the delay range in 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: [Disabled]; [Enabled].
When set as [Enabled], the following sub-items shall appear:

Ipv4 PXE Support

Use this item to enable IPv4 PXE boot support. When set as [Disabled], IPv4 boot support will not be available.
The optional settings: [Disabled]; [Enabled].

Ipv6 PXE Support

Use this item to enable IPv6 PXE boot support. When set as [Disabled], IPv6 boot support will not be available.
The optional settings: [Disabled]; [Enabled].

PXE boot wait time

Use this item to set wait time to press [ESC] key to abort the PXE boot.
Use either [+] / [-] or numeric keys to set the value.

Media detect count

Use this item to set number of times presence of media will be checked.
Use either [+] / [-] or numeric keys to set the value.

▸ **CSM Configuration**

Press [Enter] to make settings for the following sub-items:
Compatibility Support Module Configuration

CSM Support

Use this item enable or disable CSM support.
The optional settings: [Disabled]; [Enabled].
When set as [Enabled], the following sub-items shall appear:
Option ROM execution

Network

This option controls the execution of Network OpROM.
The optional settings: [Do not launch]; [Legacy].

Storage

This option controls the execution of UEFI and Legacy Storage OpROM.
The optional settings: [Do not launch]; [UEFI]; [Legacy].

Other PCI devices

This item is for system to determine OpROM execution policy for devices other than Network, Storage or Video.

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

▸ **NVMe Configuration**
Press [Enter] to view current NVMe Configuration.
__Note__: options only when NVME device is available.

__Note__: When '__CSM Support__' set as __[Disabled]__ and '__SATA Mode Selection__' set as __[RAID]__, the following sub-items shall appear:

▸ ***Intel(R) Rapid Storage Technology***
Intel(R) RST 17.2.0.3790 RAID Driver

▸ ***Intel(R) I211 (I210) Gigabit Network Connection - XX:XX:XX:XX:XX:XX***
▸ ***Intel(R) Ethernet Connection (7) I219-LM - XX:XX:XX:XX:XX:XX***
This item shows current network brief information.
__Note__: Intel __I210__ Gigabit Network Connection if for __C246 chipset__; Intel I211 Gigabit Network Connection is for __Q370 chipset__.

3-8 Chipset Menu

```
                Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.
        Main  Advanced  Chipset  Security  Boot  Save & Exit

     ▶ System Agent (SA) Configuration                          System Agent (SA) Parameters
     ▶ PCH-IO Configuration




                                                                →←: Select Screen
                                                                ↑↓: Select Item
                                                                Enter: Select
                                                                +/-: Change Opt.
                                                                F1: General Help
                                                                F2: Previous Values
                                                                F3: Optimized Defaults
                                                                F4: Save & Exit
                                                                ESC: Exit



                Version 2.20.1271. Copyright (C) 2020 American Megatrends, Inc.
```

▸ **System Agent (SA) Configuration**
Press [Enter] to make settings for the following sub-items:
VT-d
The optional settings: [Disabled]; [Enabled].

► **Memory Configuration**
Press [Enter] to view brief information for the working memory module.
► **Graphics Configuration**
Press [Enter] to make further settings for Graphics Configuration.
Graphics Configuration

Primary Display

Use this item to select which Graphics device should be Primary Display.
The optional settings: [Auto]; [IGFX]; [PEG].

Primary IGFX Boot Display
Use this item to select the Video Device which will be activated during POST. This has no effect if external graphics present.
VGA modes will be supported only on primary display.
The optional settings: [VBIOS Default]; [VGA]; [DP]; [HDMI]; [LVDS].

Note: In the case that the 'Primary IGFX Boot Display' is select as [VGA], [DP], [HDMI] or [LVDS], user can make further settings in 'Secondary IGFX Boot Display':

Secondary IGFX Boot Display
Use this item to select the Secondary Display Device.
The optional settings: [Disabled]; [VGA]; [DP]; [HDMI].

Internal Graphics
Use this item to keep IGFX enabled based on the setup options.
The optional settings: [Auto]; [Disabled]; [Enabled].

Aperture Size
Use this item to select the Aperture Size.
Note: Above 4GB MMIO BIOS assignment is automatically enabled when selecting 2048MB aperture. To use this feature, please disable CSM Support.
The optional settings: [128MB]; [256MB]; [512MB]; [1024MB]; [2048MB].

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: [32M]; [64M].

DVMT Total Gfx Mem
Use this item to select DVMT 5.0 Total Graphic Memory size used by the Internal Graphics Device.
The optional settings: [128M]; [256M]; [MAX].

Note: In the case that the 'Primary IGFX Boot Display' is select as [LVDS], user can make further settings in 'Backlight Control' and 'Panel Type':

Backlight Control
Use this item to select Back Light Control setting.
The optional settings: [PWM Inverted]; [PWM Normal].

Panel Type
The optional settings: [800x480 18bit Single]; [800x600 18bit Single]; [800x600 24bit Single]; [1024x600 18bit Single]; [1024x768 18bit Single]; [1024x768 24bit Single]; [1280x768 24bit Single]; [1280x800 18bit Single]; [1280x800 24bit Single]; [1366x768 18bit Single]; [1366x768 24bit Single]; [1440x900 18bit Dual]; [1440x900 24bit Dual]; [1280x1024 24bit Dual]; [1680x1050 24bit Dual]; [1920x1080 24bit Dual].

LVDS FW Write Protect

► **PEG Port Configuration**
Press [Enter] to make further settings for PEG port options.
PEG Port Configuration

PCIEX16 Slot

Enable Root Port
Use this item to enable or disable the Root Port.
The optional settings: [Disabled]; [Enabled]; [Auto].
Max Link Speed
Use this item to configure PEG 0:1:0 Max Speed.
The optional settings: [Auto]; [Gen1]; [Gen2]; [Gen3].
Max Link Width
This item is for user to force PEG link to retrain to X1/2/4/8.
The optional settings are: [Auto]; [Force X1]; [Force X2]; [Force X4]; [Force X 8].

PCIEX16 Slot (Bifurcation)

Max Link Speed
Use this item to configure PEG 0:1:1 Max Speed.
The optional settings: [Auto]; [Gen1]; [Gen2]; [Gen3].
Max Link Width
This item is for user to force PEG link to retrain to X1/2/4/8.
The optional settings are: [Auto]; [Force X1]; [Force X2]; [Force X4]; [Force X 8].

Detect Non-Compliance Device
This item is for user to detect Non-Compliance PCI Express Device in PEG.
The optional settings: [Disabled]; [Enabled].

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

HD Audio
Use this item to control Detection of the HD-Audio device.
The optional settings: [Disabled]; [Enabled].
[**Disabled**]: HDA will be unconditionally disabled.
[**Enabled**]: HAD will be unconditionally enabled.
Onboard Lan1 Controller
Use this item to enable or disable corresponding onboard NIC device or controller.
The optional settings: [Enabled]; [Disabled].
When set as [Enabled], the following sub-items shall appear:
Wake on LAN Enable
Use this item to enable or disable integrated LAN to wake the system.
The optional settings: [Enabled]; [Disabled].
Onboard Lan2 Controller
Use this item to control the PCI Express Root Port.
The optional settings: [Disabled]; [Enabled].
M2M Slot
Use this item to control the PCI Express Root Port.
The optional settings: [Disabled]; [Enabled].
M2E Slot
Use this item to control the PCI Express Root Port.
The optional settings: [Disabled]; [Enabled].

System State after Power Failure

Use this item to specify what state to go to when power is re-applied after a power failure (G3 state).

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

Note: The option [Always On] and [Former State] are affected by 'ERP Support' function. Please disable ERP to support [Always On] and [Former State] function.

3-9 Security Menu

```
             Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.
  Main  Advanced  Chipset  Security  Boot  Save & Exit

  Password Description                                Set Administrator Password

  If ONLY the Administrator's password is set,
  then this only limits access to Setup and is
  only asked for when entering Setup.
  If ONLY the User's password is set, then this
  is a power on password and must be entered to
  boot or enter Setup. In Setup the User will
  have Administrator rights.
  The password length must be
  in the following range:
  Minimum length              3
  Maximum length              20
                                                     →←: Select Screen
  Administrator Password                             ↑↓: Select Item
  User Password                                      Enter: Select
                                                     +/-: Change Opt.
  ▶ Secure Boot                                      F1: General Help
                                                     F2: Previous Values
                                                     F3: Optimized Defaults
                                                     F4: Save & Exit
                                                     ESC: Exit



             Version 2.20.1271. Copyright (C) 2020 American Megatrends, Inc.
```

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 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.

▶ **Secure Boot**

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: [Disabled]; [Enabled].

Secure Boot Mode

Set UEFI Secure Boot Mode to Standard mode or Custom mode. This change is effective after save. After reset, this mode will return to Standard 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**

Use this item to force system to User Mode, to install factory default Secure Boot key databases.

▸ ***Reset To Setup Mode***

▸ **Key Management**

This item enables expet users to modify Secure Boot Policy variables without full authentication, which includes the following items:

Factory Key Provision

This item is for user to install factory default Secure Boot keys after the platform reset and while the System is in Setup mode.

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

▸ **Restore Factory Keys**

Use this item to force system into User Mode. Install factory default Secure Boot Key databases.

▸ ***Reset To Setup Mode***
▸ ***Export Secure Boot variables***
▸ **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***
▸ **Restore DB defaults**

Use this item to 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:
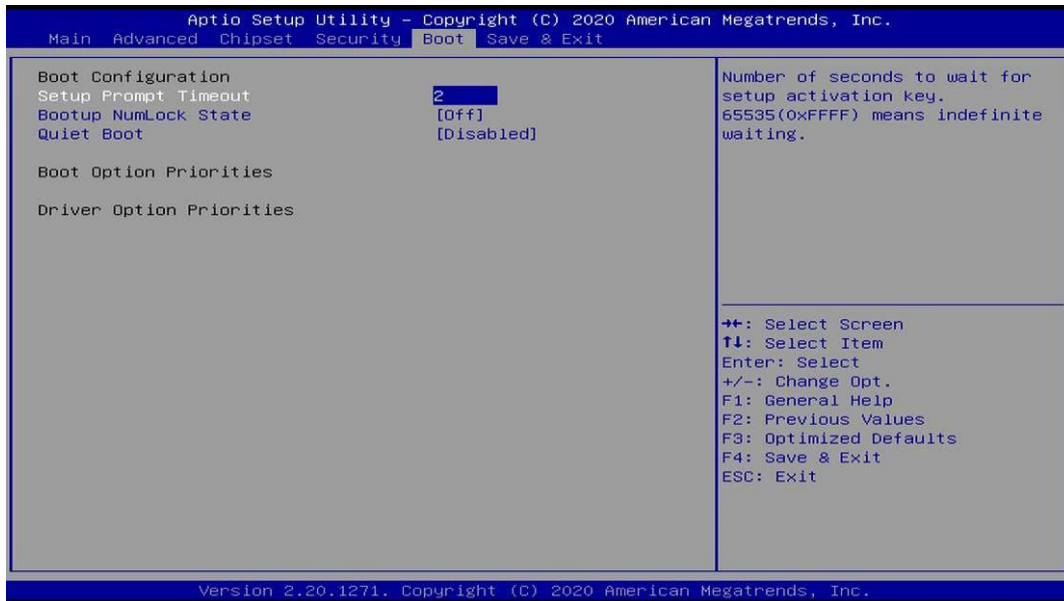
1. Public Key Certificate:
 a) EFI_SIGNATURE_LIST
 b) EFI_ CERT_X509 (DER)
 c) EFI_ CERT_RSA2048 (bin)
 d) EFI_ CERT_SHAXXX
2. Authenticated UEFI Variable
3. EFI PE/COFF Image (SHA256)
Key Source: Factory, External, Mixed.

3-10 Boot Menu

```
             Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.
        Main  Advanced  Chipset  Security  Boot  Save & Exit

        Boot Configuration                                       Number of seconds to wait for
        Setup Prompt Timeout            2                        setup activation key.
        Bootup NumLock State            [Off]                    65535(0xFFFF) means indefinite
        Quiet Boot                      [Disabled]               waiting.

        Boot Option Priorities

        Driver Option Priorities




                                                                 →←: Select Screen
                                                                 ↑↓: Select Item
                                                                 Enter: Select
                                                                 +/-: Change Opt.
                                                                 F1: General Help
                                                                 F2: Previous Values
                                                                 F3: Optimized Defaults
                                                                 F4: Save & Exit
                                                                 ESC: Exit



             Version 2.20.1271. Copyright (C) 2020 American Megatrends, Inc.
```

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
Driver Option Priorities

3-11 Save & Exit Menu

```
             Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.
        Main  Advanced  Chipset  Security  Boot  Save & Exit

        Save Options                                             Reset the system after saving
        Save Changes and Reset                                   the changes.
        Discard Changes and Reset

        Default Options
        Restore Defaults
        Save as User Defaults
        Restore User Defaults

        Boot Override



                                                                 →←: Select Screen
                                                                 ↑↓: Select Item
                                                                 Enter: Select
                                                                 +/-: Change Opt.
                                                                 F1: General Help
                                                                 F2: Previous Values
                                                                 F3: Optimized Defaults
                                                                 F4: Save & Exit
                                                                 ESC: Exit



             Version 2.20.1271. Copyright (C) 2020 American Megatrends, Inc.
```

Save Options
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.

Default Options
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