

TECHNICAL MANUAL

Of

Intel Q370 Express Chipset

Based Mini-ITX M/B

NO. G03-NF797-F

Revision: 5.0

Release date: December 12, 2022

Trademark:

- * Specifications and Information contained in this documentation are furnished for information use only, and are subject to change at any time without notice, and should not be construed as a commitment by manufacturer.

Environmental Protection Announcement

Do not dispose this electronic device into the trash while discarding. To minimize pollution and ensure environment protection of mother earth, please recycle.



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Environmental Safety Instruction

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

USER'S NOTICE

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Manual Revision Information

Reversion	Revision History	Date
5.0	Fifth Edition	December 12, 2022

Item Checklist

- ☒ Motherboard
- ☒ Cable(s)

Chapter 1

Introduction of the Motherboard

1-1 Feature of Motherboard

- Intel® Q370 express chipset
- Support LGA 1151 CPU socket for the 8th Intel® Coffee Lake processors (**TDP ≤65W**, and the whole system power consumption under 120W).
- Support 2* DDR4 2400MHz SO-DIMM up to 64GB and dual channel function
- Integrated with 1* Intel i211AT & 1* i219-LM Gigabit Ethernet LAN chip
- Support up to 6*USB 3.1 Gen.2 port & 4 * USB 2.0 port
- Support up to 2* RS232 (RS422/485 optional) COM port
- Support 2* SATAIII (6Gb/s) Devices with RAID 0/1 mode & 1* M.2 M-key, type-2242/2260/2280 slot
- Support 1* PCIE x4 side-way expansion slot; 1*M.2 E-key, type-2230 slot
- 1* HDMI port, 2* DP port & 1* EDP with support for 3 independent displays (HDMI optional changeable with DP)
- Support Smart FAN function
- Supports ACPI S3 Function
- Compliance with ErP Standard
- Support Watchdog Timer Technology
- Solution for Digital Signage, Industrial PCs, Factory Automation, Public Sector, and Digital Security applications

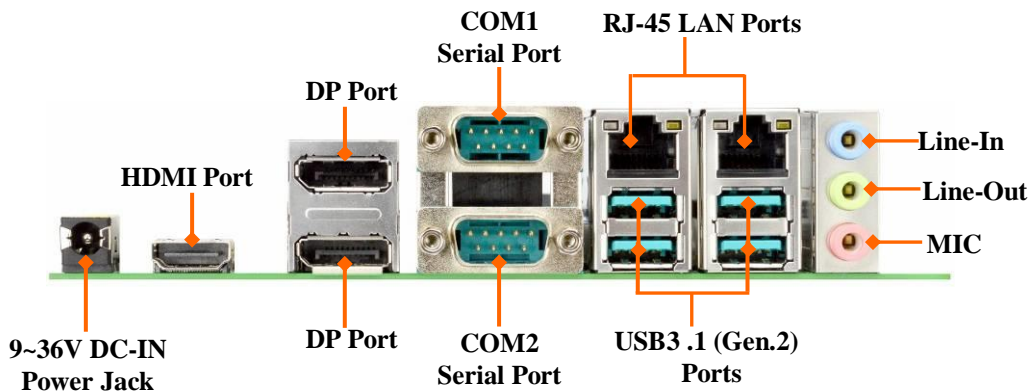
1-2 Specification

Spec	Description
Design	● Mini-ITX form factor; PCB size:17.0x17.0cm
Chipset	● Intel Q370 Express Chipset
CPU Socket	● Intel® LGA 1151 Socket for Coffee Lake series processors <i>* for detailed CPU support information please visit our website</i>
Memory Slot	● 2*DDR4 SO-DIMM slot support DDR4 2400MHz non-ECC SDRAM ● Maximum capacity: up to 64GB ● Support dual channel function <i>*Memory frequency range also depends on CPU support</i>
Expansion Slot	● 1* PCIE x 4 slot for 1* PCIE x 4 or 4*PCIE x1 for dedicated extension card (PCIEX4) ● 1 * M.2 E-key slot, type-2230 (M2E)
Storage	● 2* SATAIII 6G/s ports with support for RAID 0/1 mode ● 1* M.2 M-key slot, type-2242/2260/2280, PCIe x4 with SATA interface (M2M)
Gigabit LAN Chip	● Integrated with 1* Intel i211AT Gigabit Ethernet LAN chip & 1* Intel i219-LM Gigabit PHY LAN chip ● Support Fast Ethernet LAN function of providing 10/100/1000Mbps Ethernet data transfer rate
Audio Chip	● Realtek ALC662-VD 6-channel Audio Codec integrated ● Audio driver and utility included
BIOS	● AMI Flash ROM
Multi I/O	Rear Panel I/O: ● 1* 9V~36V DC-in power jack ● 1* HDMI port ● 2* DP port ● 2* RS232/422/485 COM port ● 4* USB 3.1 (Gen.2) port

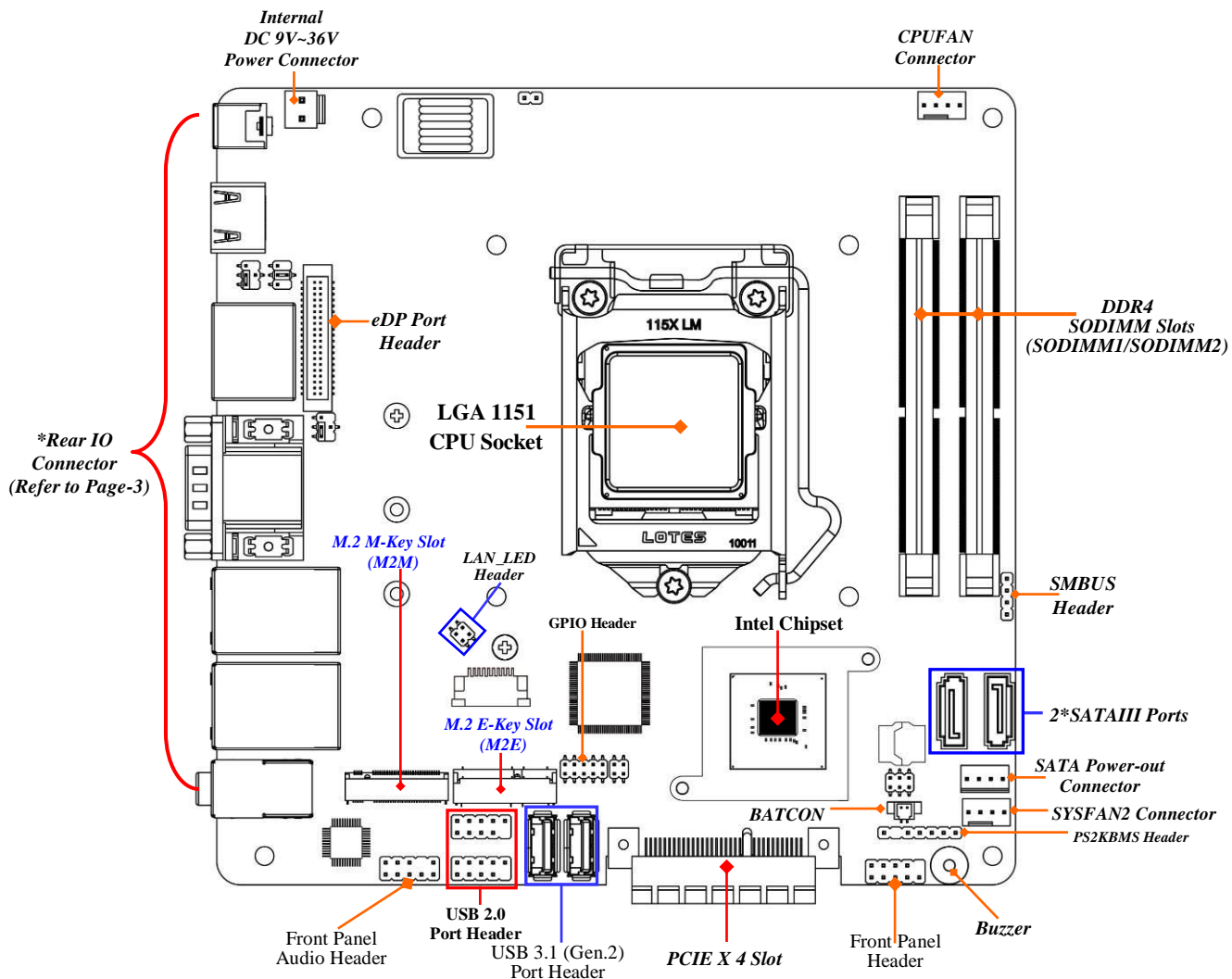
- 2* RJ-45 LAN port
 - 1*3-phone audio jack (*Line-in, Line-out, MIC*)
- Internal I/O Connectors & Headers:**
- 1 *2-pin internal 9V~36V power connector
 - 1*SATA power-out connector
 - 1* CPUFAN connector & 1* SYSFAN connector
 - 2* internal vertical USB 3.1 (Gen.2) ports
 - 1* Front panel header
 - 1 * PS2 Keyboard & Mouse header
 - 1* SMBUS header
 - 2* 9-Pin USB 2.0 headers for 4* USB 2.0 ports
 - 1* Front panel audio header
 - 1* LAN Status LED header
 - 1* GPIO header
 - 1* EDP header

1-3 Layout Diagram

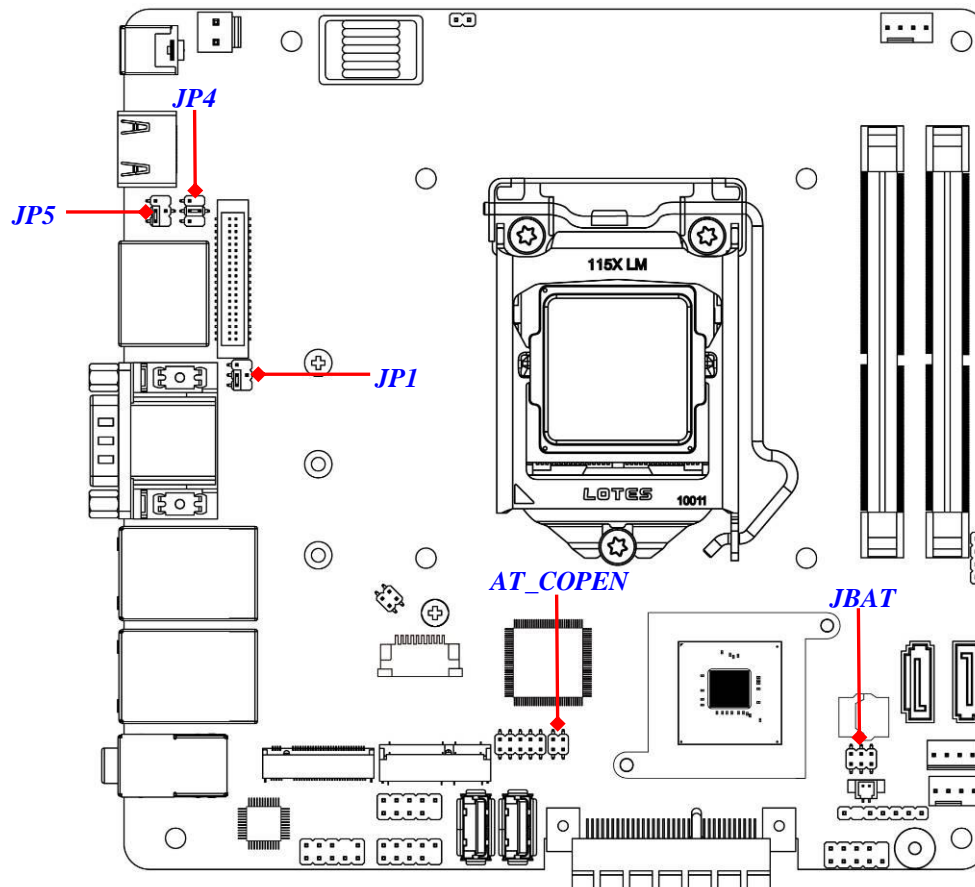
Rear IO Diagram



Motherboard Internal Diagram:



Motherboard Jumper Positions:



Jumper

P/N	Name	Description
JBAT	<i>Pin (1-2):</i> Clear CMOS RAM Settings <i>Pin (3-4):</i> Flash Descriptor Override <i>Pin (5-6):</i> PWROK Override	6-pin Block
JP1	COM1 Port Pin9 Function Select	4-pin Block
JP4	LCD Backlight Select	4-pin Block
JP5	LCD Panel VCC Select	4-pin Block
AT_ COPEN	<i>Pin (1-2):</i> AT Mode Select <i>Pin (3-4):</i> Case Open Display Select	4-pin Block

Connectors

P/N	Name
DC_IN	9V~36V DC-IN Power Jack
HDMI	HDMI Port Connector
DP12	Display Port Connector X2
COM12	Serial COM Port Connector X2
UL2/UL1	Top: RJ-45 LAN Connector X2 Middle & Bottom: USB 3.1 (Gen.2) Port Connector X4
AUDIO	Top: Line-in Connector Middle: Line-out Connector Bottom: MIC Connector
FP_USB30 /FP_USB31	Internal USB 3.1(Gen.2) Port Connector X2
DC2P	2-pin Internal 9V~36V Power Connector
SATA1/2	SATAIII Port Connector
SATAPWR	SATA Power-out Connector
CPUFAN	CPU FAN Connector
SYSFAN	System FAN Connector

Headers

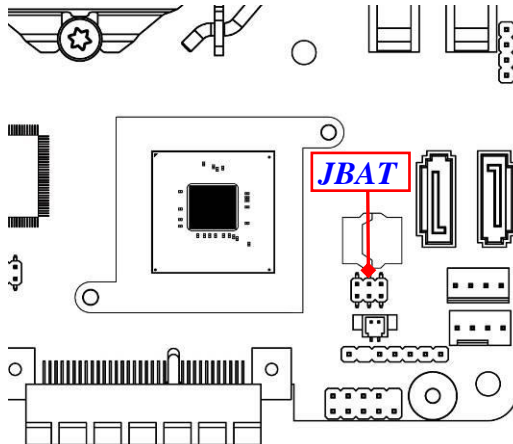
P/N	Name	Description
JW_FP	Front Panel Header(PWR LED/ HD LED/Power Button /Reset)	9-pin Block
PS2KBMS	PS2 Keyboard & Mouse Header	6-pin Block
SMBUS	SMBUS Header	4-pin Block
FP_USB20 /FP_USB21	USB 2.0 Port Header	9-pin Block
FP_AUDIO	Front Panel Audio Header	9-pin Block
LAN_LED	LAN Activity LED Header	4-pin Block
GPIO	GPIO Port Header	10-pin Block
EDP	EDP Port Header	40-pin Block

Chapter 2

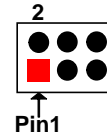
Hardware Installation

2-1 Jumper Setting

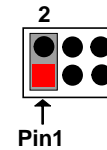
Pin 1&2 of JBAT (6-pin): Clear CMOS RAM Setting



Pin 1&2 of JBAT → Clear CMOS

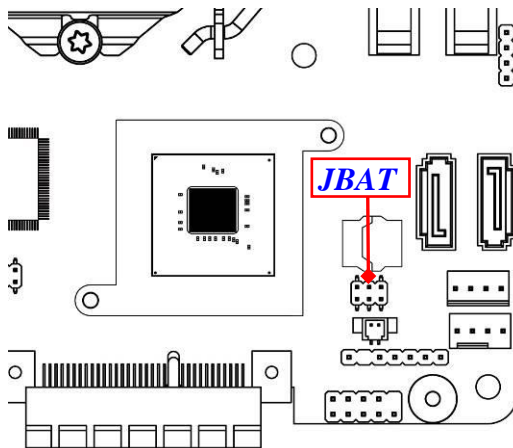


1-2 Open: Normal(Default);

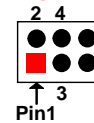


1-2 Closed: Clear CMOS(One Touch).

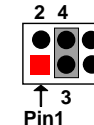
Pin 3&4 of JBAT (6-pin): Flash Descriptor Override Select



*Pin 3&4 of JBAT →
Flash Descriptor Override*

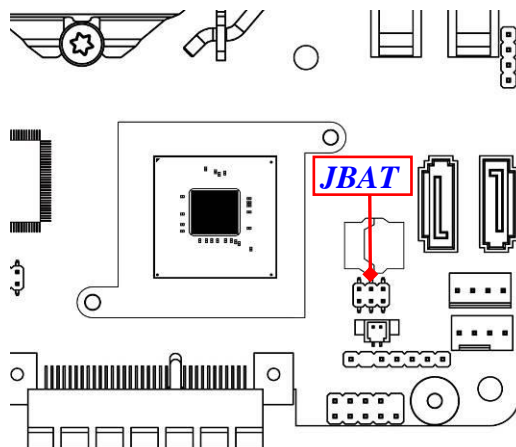


3-4 Open: Normal(Default);

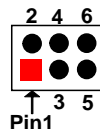


3-4 Closed: Disable Flash
Descriptor Security (override).

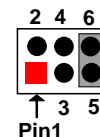
Pin 5&6 of JBAT (6-pin): PWROK Override Select



Pin 5&6 of JBAT→PWROK Override



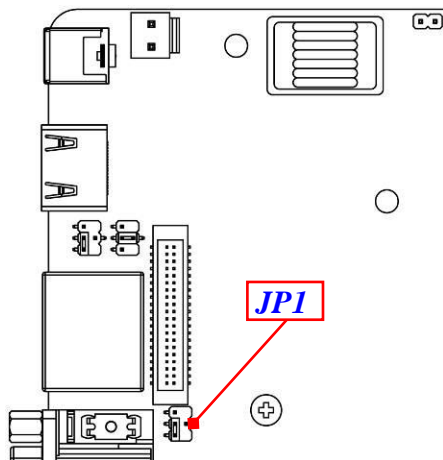
5-6 Open: Normal(Default);



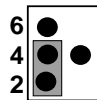
5-6 Closed: PWROK Override.

** Note : PWROK override is for manufacturing test only.*

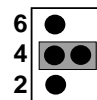
JP1 (4-pin): COM1 Port Pin9 Function Select



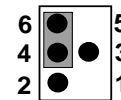
JP1→COM1 Port Pin9 Function Select



2-4 Closed:
Pin9=RING(Default);

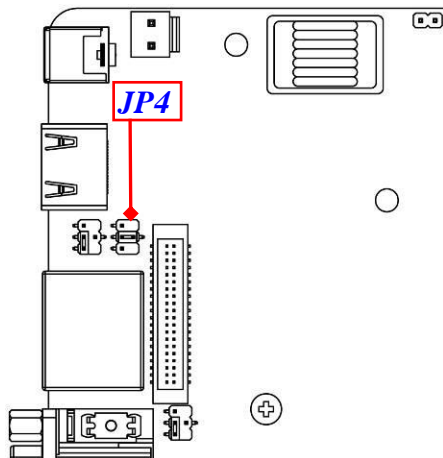


3-4 Closed:
Pin9 = 5V;

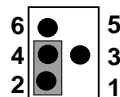


6-4 Closed:
Pin9 = 12V.

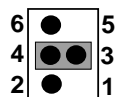
JP4 (3-pin): LCD Backlight Select



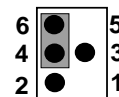
JP4→LCD Backlight Select



2-4 Closed:
Backlight=5V;

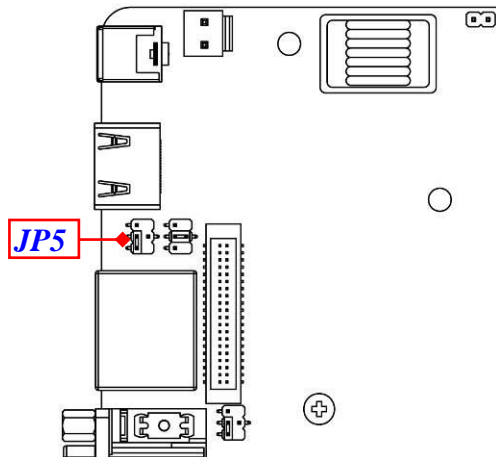


3-4 Closed:
Backlight =12V;

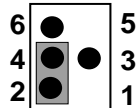


6-4 Closed:
Backlight = Adapter In.

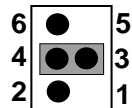
JP5 (4-pin): LCD Panel VCC Select



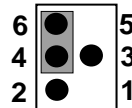
JP5→LCD VCC Select



2-4 Closed:
VCC=3.3V;



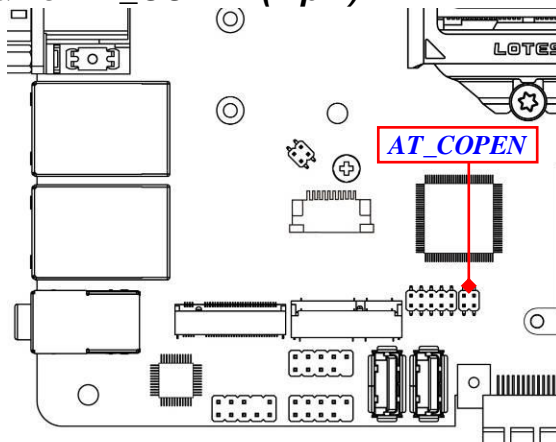
3-4 Closed:
VCC = 5V;



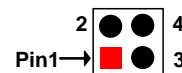
6-4 Closed:
VCC = 12V.

**** Note :** The maximum carried current is 1A.

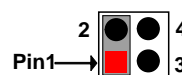
Pin 1&2 of AT_COPEN (4-pin): ATX Mode/AT Mode Select



Pin 1&2 of AT_COPEN
→ **ATX/AT Mode Select**



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

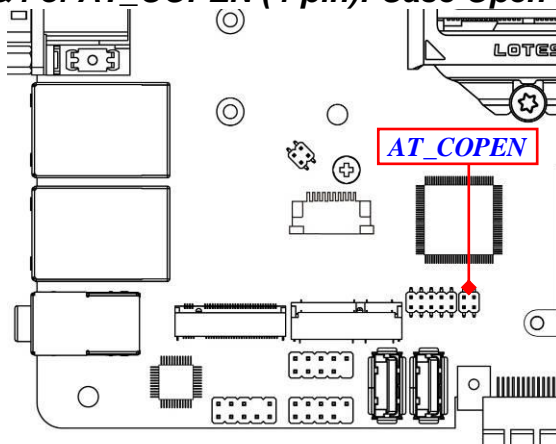


1-2 Closed: AT Mode Selected.

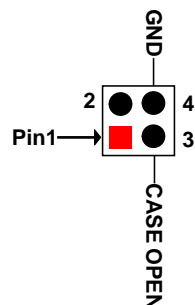
***ATX Mode Selected:** Press power button to power on after power input ready;

AT Mode Selected: Directly power on as power input ready.

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



Pin 3&4 of AT_COPEN
→ **Case Open Detection**




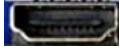





Pin (3&4) Closed: When Case open function pin short to GND, the Case open function was detected. When used, needs to enter BIOS and enable 'Case Open Detect' function. In this case if your case is removed, next time when you restart your computer, a message will be displayed on screen to inform you of this.

2-2 Connectors and Headers

2-2-1 Connectors

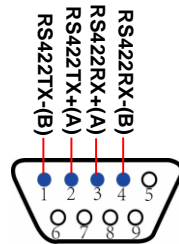
Rear Panel Connectors

**Refer to Page-3 Rear IO Diagram*

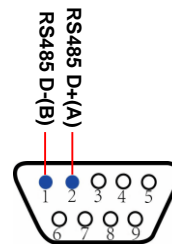
Icon	Name	Function
	9V~36V DC-in Power Jack	For user to connect compatible power adapter to provide power supply for the system.
	HDMI Port	To connect display device that support HDMI specification.
	Display Port	To the system to corresponding display device with compatible DP cable.
	Serial Port	Mainly for user to connect external MODEM or other devices that supports Serial Communications Interface.
	RJ-45 LAN Port	This connector is standard RJ-45 LAN jack for Network connection.
	USB 3.1 (Gen.2) Port	To connect USB keyboard, mouse or other devices compatible with USB 3.1 (Gen.2) specification. Ports support up to 10Gbps data transfer rate.
	Audio Connectors	Blue: Line-in Connector Green: Line-out Connector Pink : MIC Connector

(1) COM12: RS232/422/485 Ports

COM1/COM2 port can function as RS232/422/485 port. In normal settings COM1/COM2 functions as RS232 port. With compatible COM cable COM1/COM2 can function as RS422 or RS 485 port. User also needs to go to BIOS to set '**Transmission Mode Select**' for COM1/COM2 at first, before using specialized cable to connect different pins of this port.

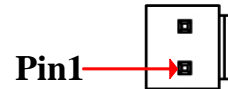
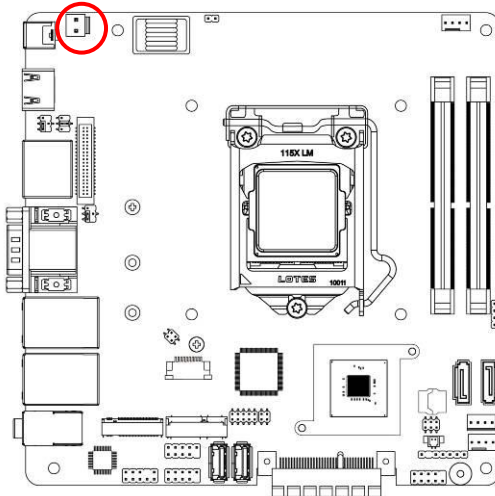


For RS422 Mode



For RS485 Mode

(2) DC2P (2-pin block): Internal 9V~36V Power Connector

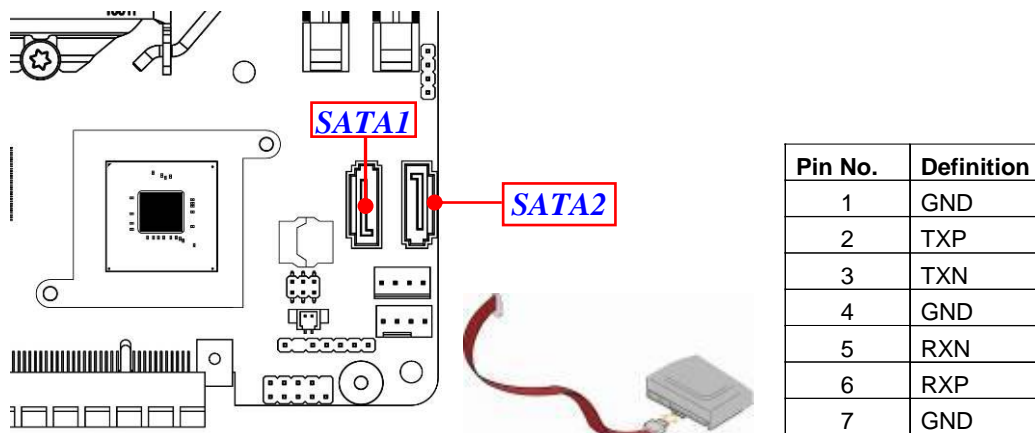


Pin No.	Definition
1	+9V~36V
2	GND

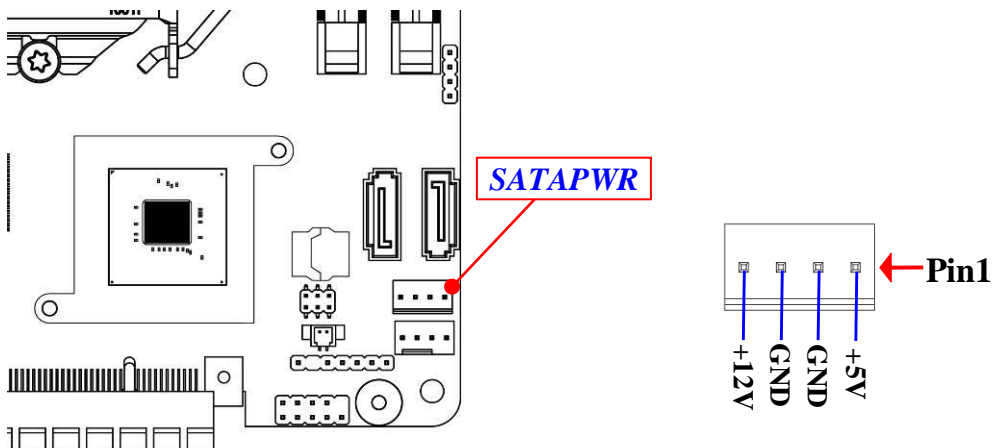
Warning: Find Pin-1 position before connecting power cable to this 2-pin power connector. **WRONG INSTALLATION DIRECTION WILL DAMAGE THE BOARD!!**

(3) SATA1/2 (7-pin): SATAIII Port connector

These are high-speed SATAIII port that supports 6GB/s transfer rate.

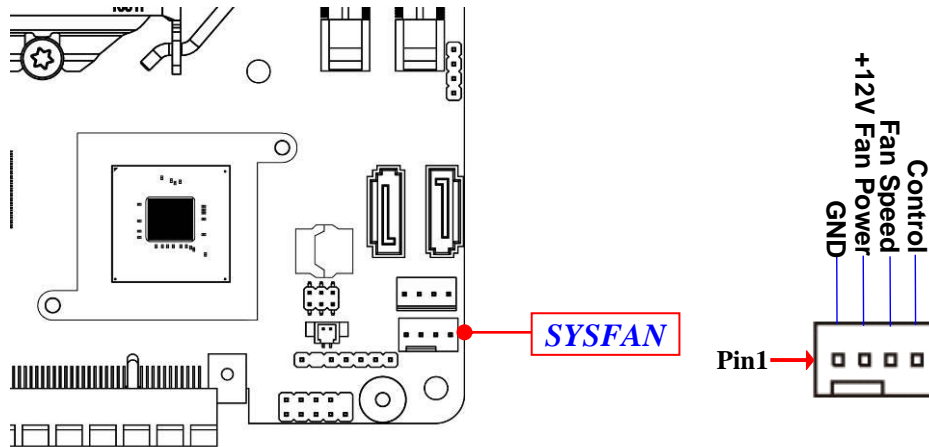


(4) SATAPWR (4-pin): SATA HDD Power-Out Connector

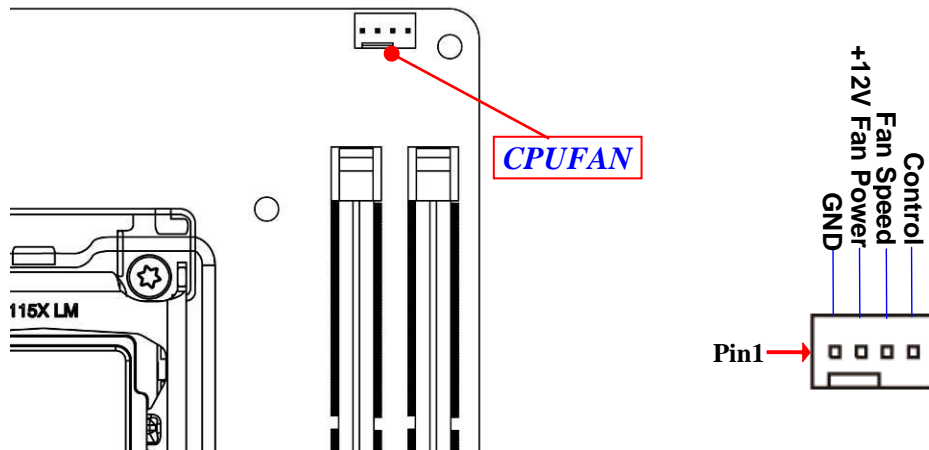


Warning: Make sure that Pin-1 of compatible SATA Power connector is inserted into corresponding Pin-1 of **SATAPWR** connector to avoid possible damage to the board and hard disk drive!

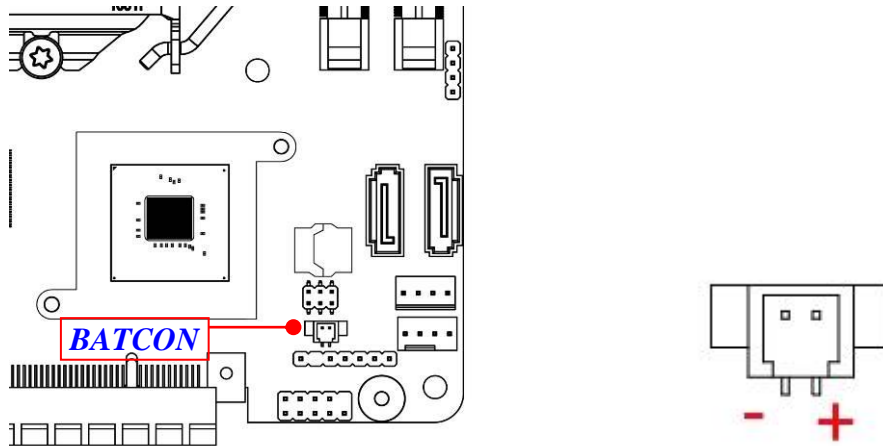
(5) SYSFAN (4-pin): System Fan Connector



(6) CPUFAN(4-pin): CPU Fan Connector

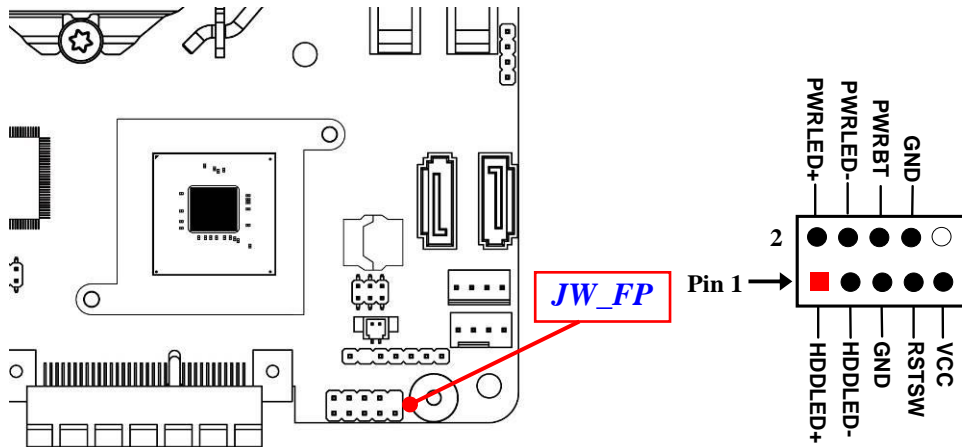


(7) BATCON (2-pin): Battery Connector

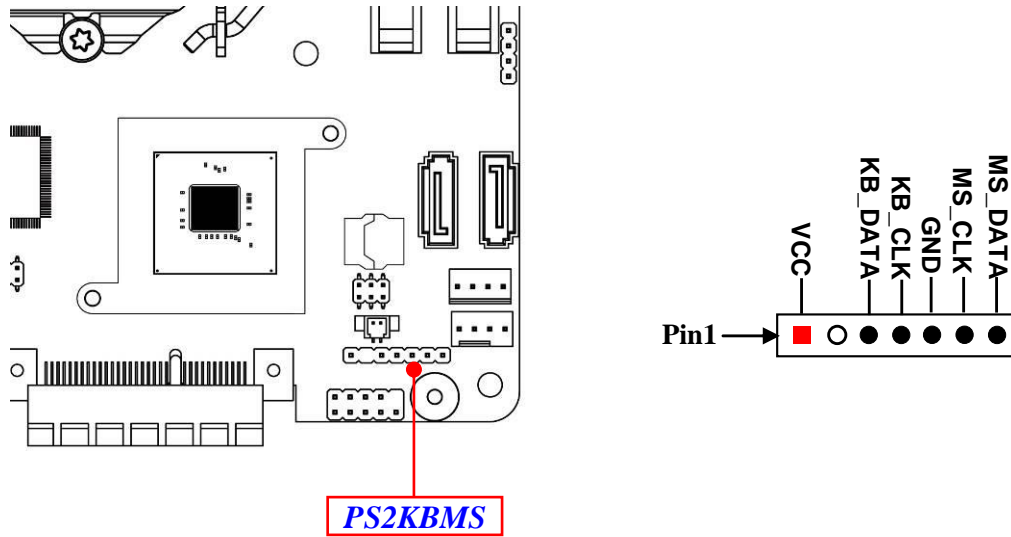


2-2-2 Headers

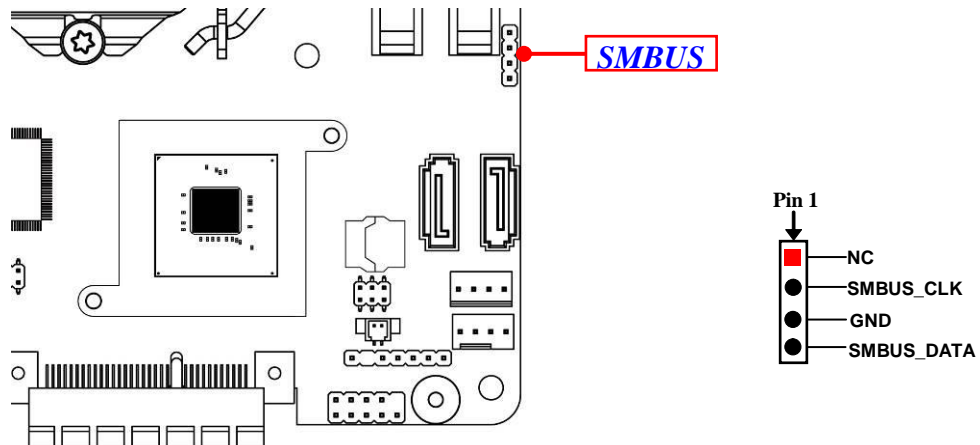
(1) JW_FP (9-pin): Front Panel Header



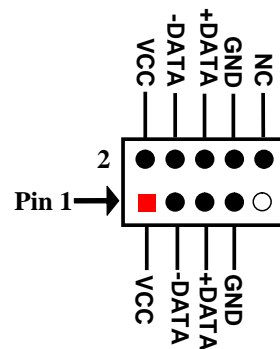
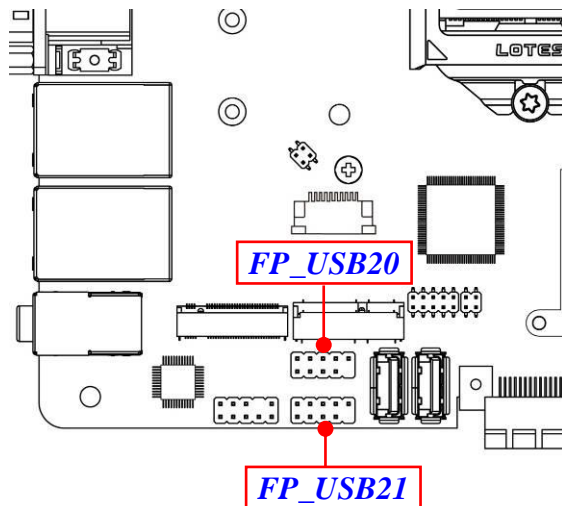
(2) PS2KBMS (6-pin): PS/2 Keyboard & Mouse Header



(3) SMBUS (4-pin): SMBUS Header

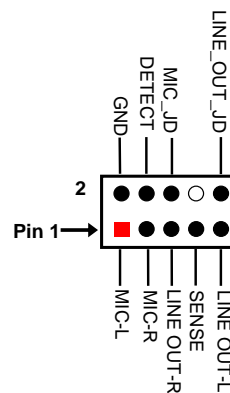
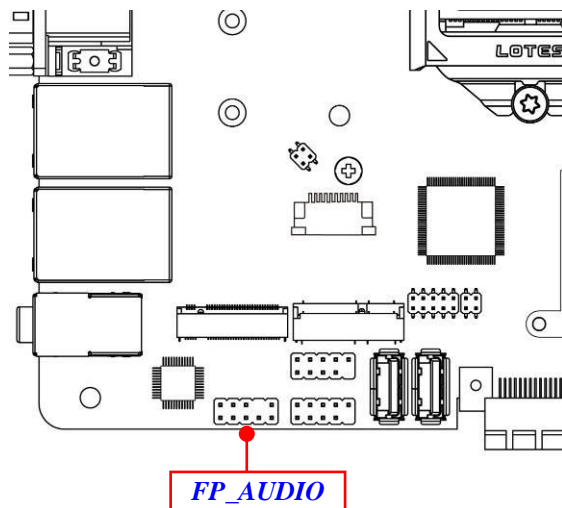


(4) FP_USB20/FP_USB21 (9-pin): USB 2.0 Port Header

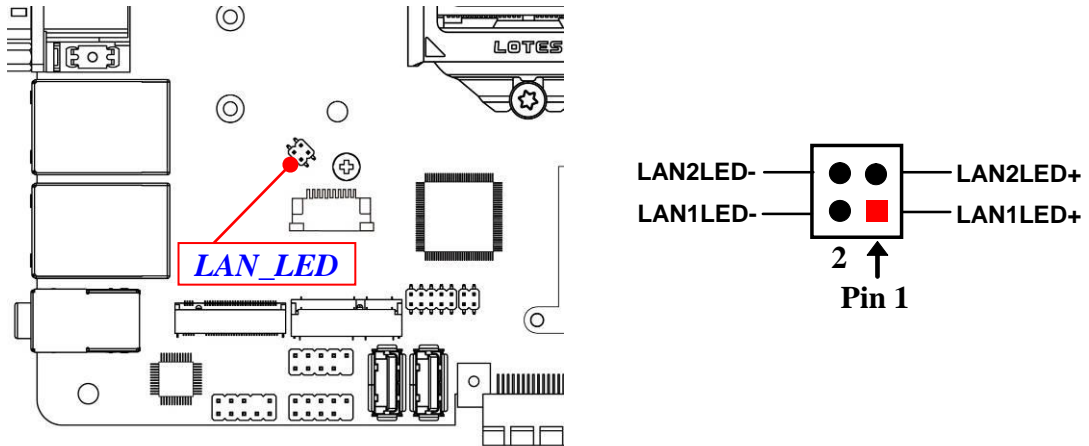


(5) FP_AUDIO (9-pin): Line-Out, MIC-In Header

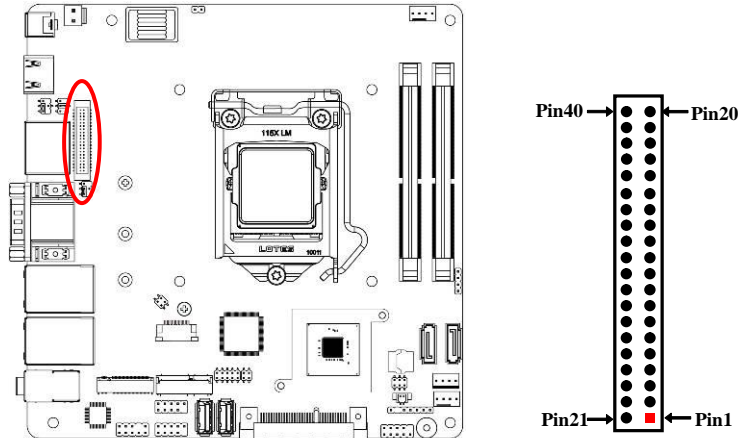
This header connects to Front Panel Line-out, MIC-In connector with cable.



(6) LAN_LED (4-pin): LAN Activity LED Header

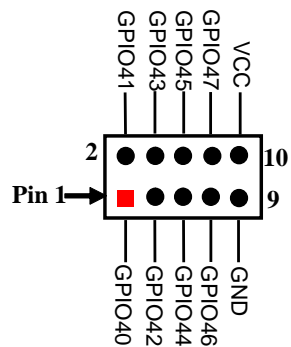
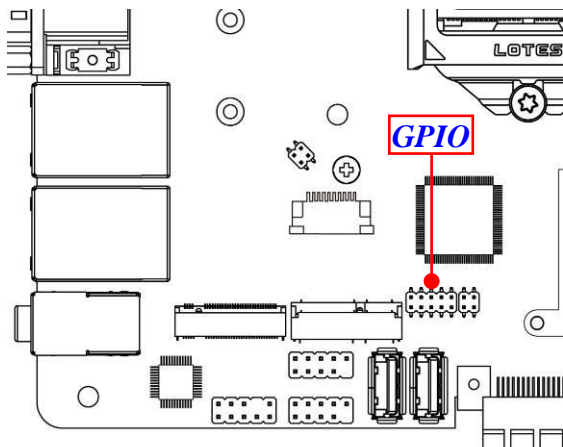


(7) EDP (40-pin): 4-lane eDP Header



Pin Define	Pin NO.	Pin NO.	Pin Define
NC	Pin 40	Pin 20	LCD_VCC
BL_PWR	Pin 39	Pin 19	LCD_VCC
BL_PWR	Pin 38	Pin 18	LCD_VCC
BL_PWR	Pin 37	Pin 17	GND
BL_PWR	Pin 36	Pin 16	AUX_CH_N
NC	Pin 35	Pin 15	AUX_CH_P
NC	Pin 34	Pin 14	GND
BL_PWM_DIM	Pin 33	Pin 13	Lane0_P
BL_ENABLE	Pin 32	Pin 12	Lane0_N
GND	Pin 31	Pin 11	GND
GND	Pin 30	Pin 10	Lane1_P
GND	Pin 29	Pin 9	Lane1_N
GND	Pin 28	Pin 8	GND
HPD	Pin 27	Pin 7	Lane2_P
GND	Pin 26	Pin 6	Lane2_N
GND	Pin 25	Pin 5	GND
GND	Pin 24	Pin 4	Lane3_P
GND	Pin 23	Pin 3	Lane3_N
NC	Pin 22	Pin 2	GND
NC	Pin 21	Pin 1	NC

(8) GPIO (10-pin): GPIO Port Header



Chapter 3

Introducing BIOS

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

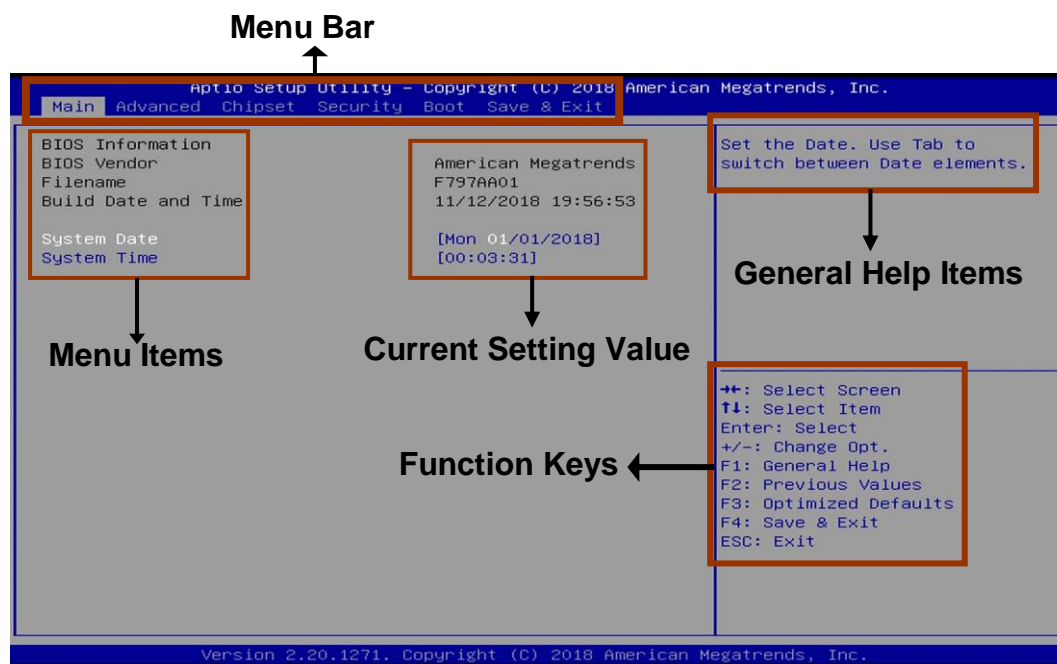
3-1 Entering Setup

Power on the computer and by pressing 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 **** 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

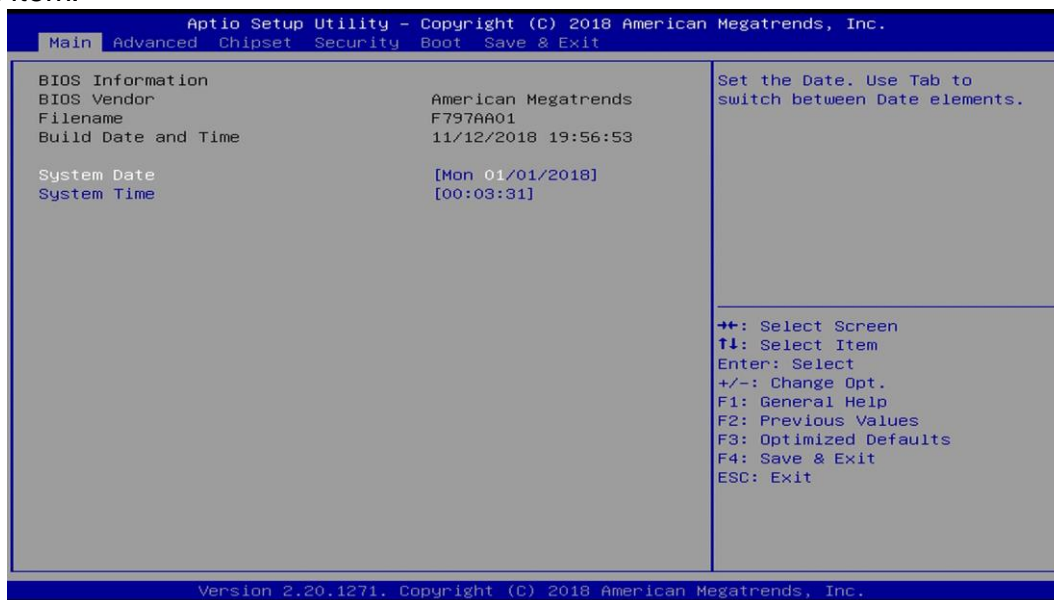
There are six menu bars on top of BIOS screen:

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

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

3-6 Main Menu

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



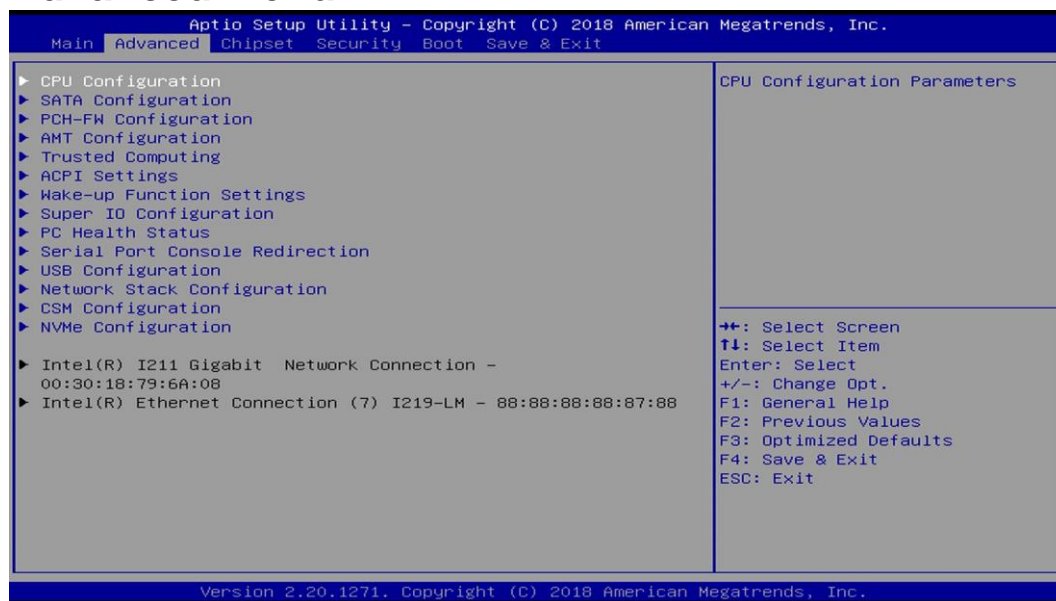
System Date

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

System Time

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

3-7 Advanced Menu



▶ 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 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 are: [Enabled]; [Disabled].

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 are: [Disabled]; [Enabled].

C states

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

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.

Turbo Mode

Use this item to enable or disable Turbo Mode.

**This item might not be available depending on configuration.*

▶ **SATA Configuration**

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

SATA Controller(s)

Use this item to enable or disable SATA device.

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

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

SATA Mode Selection

This item controls how SATA controller(s) operate.

The optional settings are: [AHCI]; [RAID].

SATA1/SATA2/M.2

Port

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

Use this item to enable or disable respective SATA port or M.2 SATA Port.

Hot Plug

Use this item to designate this port as Hot Pluggable.

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

▶ **PCH-FW Configuration**

Press [Enter] to view Management Engine technology parameters and make settings in the following sub-item:

▶ **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 are: [Disabled]; [Enabled].

** 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 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.

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

When disabled AMT BIOS Features are no longer supported and user is not longer able to access MEBx Setup.

****Note:** This option does not disable **Manageability Features** in FW.*

ASF Support

Use this item to enable or disable Alert Standard Format support.

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

WatchDog

Use this item to enable or disable WatchDog Timer. When set as [Enabled], the following sub-items shall appear:

OS Timer

Use this item to set OS watch dog 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 are: [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 are: [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 are: [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 Configuration Prompt when attempting ME unconfiguration.

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

MEBx OEM Debug Menu Enable

Use this function to enable or disable MEBx Debug menu in MEBx.

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

Unconfigure ME

Use this function to enable or disable Unconfigure ME with resetting MEBx password to default.

The optional settings are: [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 are: [Auto]; [80x25]; [100x31].

UI Mode Resolution

Use this item to set resolution for UI text mode.

The optional settings are: [Auto]; [80x25]; [100x31].

Graphics Mode Resolution

Use this item to set resolution for graphics mode.

The optional settings are: [Auto]; [640x480]; [800x600]; [1024x768].

▶ **Trusted Computing**

Press [Enter] to view current status information, or make further settings in the following sub-items:

Security Device Support

Use this item to enable or disable BIOS support for security device. O.S. will not show security device. TGG 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:*

Pending Operation

Use this item to schedule an operation for the security device. Your computer will reboot during restart to change state of device.

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

TPM2.0 UEFI Spec Version

Use this item to select the TCG2 Spec Version Support.

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

▶ **Wake-up Function Settings**

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

Wake-up System With Fixed Time

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

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

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

Wake-up System With Dynamic Time

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

System will wake on the current time + Increase minutes.

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

When set as [Enabled], system will wake on the current time + increased minute(s).

PS2 KB/MS Wake-up

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

Use this item to enable or disable PS2 KB/MS wake-up from S3/S4/S5.

This function is supported when 'ERP Support**' is set as [Disabled].*

USB S3/S4 Wake-up

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

Use this item to enable or disable USB wake-up from S3/S4 state.

This function is supported when ‘ERP Support**’ is set as [Disabled].*

USB S5 Power

Use this item to enable or disable USB power after power shutdown.

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 power shutdown.

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

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

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

▶ **Serial Port 1 Configuration/Serial Port 2 Configuration**

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

Serial Port

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

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

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

Change Settings

Use this item to select an optimal setting for super IO device. Changing setting may conflict with system resources.

Transmission Mode Select

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

COM1/COM2 Mode Speed Select

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

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 set a value in the range of [4] to [255].

WatchDog Reset 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 **Page-11**, Pin1&2 of **AT_COPEN** jumper for AT Mode Select).

Case Open Detect

Use this item to detect case has already open or not, 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 **Page-11**, Pin 3&4 of **AT_COPEN** jumper for Case Open Detection); if Pin 1&2 of **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 are: [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 are: [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

The optional settings are: [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:

COM1

Console Redirection Settings

Terminal Type

The optional settings are: [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 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; [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 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].

Legacy Console Redirection

► **Legacy Console Redirection Settings**

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

Legacy Console Redirection Settings

Redirection COM Port

For user to select a COM port to display redirection of legacy OS and Legacy OPROM messages.

The optional settings are: [COM1]; [COM1(Pci Bus0, Dev0, Func0) (Disabled)].

Resolution

This item is for user to select the number of Rows and Columns supported redirection.

The optional settings are: [80x24]; [80x25].

Redirect After POST

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

[Enabled]: To enable legacy USB support.

[Disabled]: to keep USB devices available only for EFI specification,

[Auto]: To disable legacy support if no USB devices are connected.

XHCI Hand-off

This is a workaround for OSeS without XHCI hand-off support. The XHCI

ownership change should be claimed by XHCI driver.

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

USB Mass Storage Driver Support

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

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

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

Ipv4 PXE Support

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

Use this item to enable IPv4 PXE boot support.

When set as [Disabled], IPv4 boot support will not be available.

Ipv6 PXE Support

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

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

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 are: [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 are: [Do not launch]; [Legacy].

Storage

This option controls the execution of UEFI and Legacy Storage OpROM.

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

▶ **NVMe Configuration**

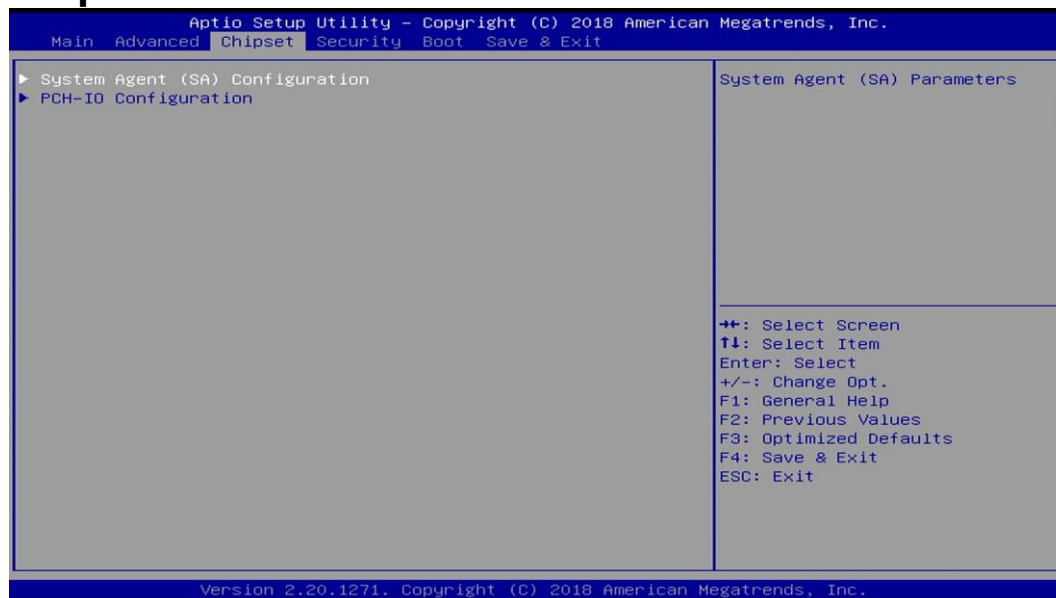
Press [Enter] to view current NVMe Configuration.

**Note: options only when NVME device is available.*

▶ **Intel(R) I211 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.

3-8 Chipset Menu



▶ System Agent (SA) Configuration

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

VT-d

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

▶ 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 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.

The optional settings are: [VBIOs Default]; [DP1]; [DP2]; [HDMI]; [eDP].

***Note:** In the case that the '**Primary IGFX Boot Display**' is select as [DP1], [DP2], [HDMI], or [eDP], 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 are: [Disabled]; [DP1]; [DP2]; [HDMI].

Aperture Size

Use this item to select the Aperture Size. Above 4GB MMIO BIOS assignment is automatically enabled when selecting 2048MB aperture. To use this feature, please disable CSM Support.

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

Backlight Control

Use this item to select Back Light Control settings.

The optional settings are: [PWM Inverted]; [PWM Nornal].

► PCH-IO Configuration

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

PCH-IO Configuration

HD Audio

This item controls detection of the HD-Audio device.

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

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

Onboard Lan2 Controller

Use this item to enable or disable Lan2 onboard NIC device or controller.

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

M2E Slot

Use this item to enable or disable M2E slot function.

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

M2M Slot

Use this item to enable or disable M2M slot function.

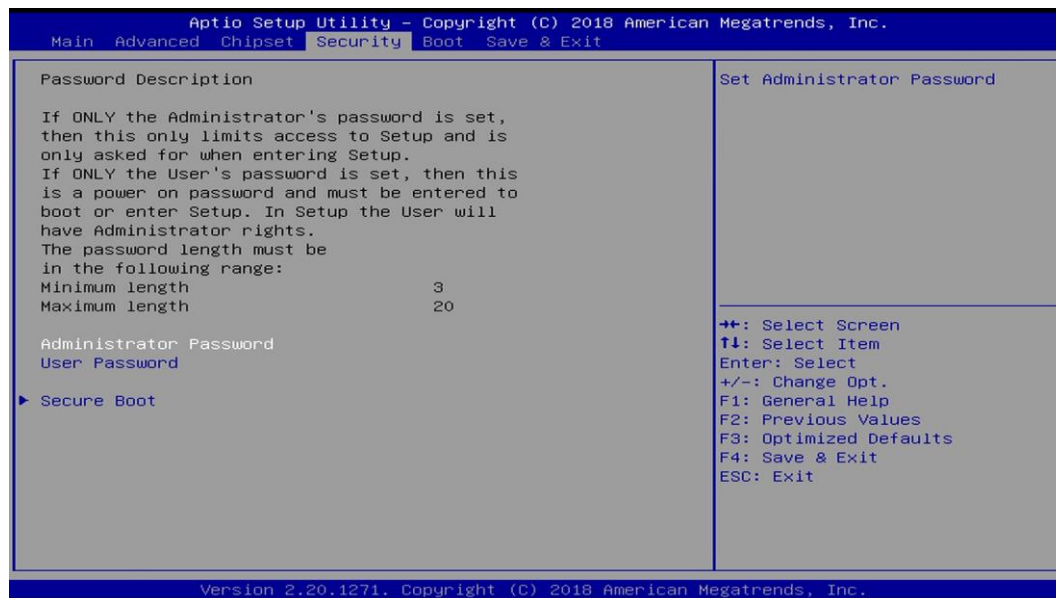
The optional settings are: [Disabled]; [Enabled].

State After G3

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

The optional settings are: [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 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:

Secure Boot

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

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.

Secure Boot Mode

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

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.

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**

Use this item to delete all Secure Boot Key databases from NVRAM.

- ▶ **Key Management**

This item enables experienced users to modify Secure Boot variables, 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 are: [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**

Use this item to delete all Secure Boot key databases from NVRAM.

- ▶ **Export Secure Boot variables**

Use this item to 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 EFI CA' Certificate in Authorized Signature database (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 Signature/Forbidden Signature/ Authorized TimeStamps/OS Recovery Signatures**

Use this item to enroll Factory Defaults or load the keys from a file with:

1. Public Key Certificate in:

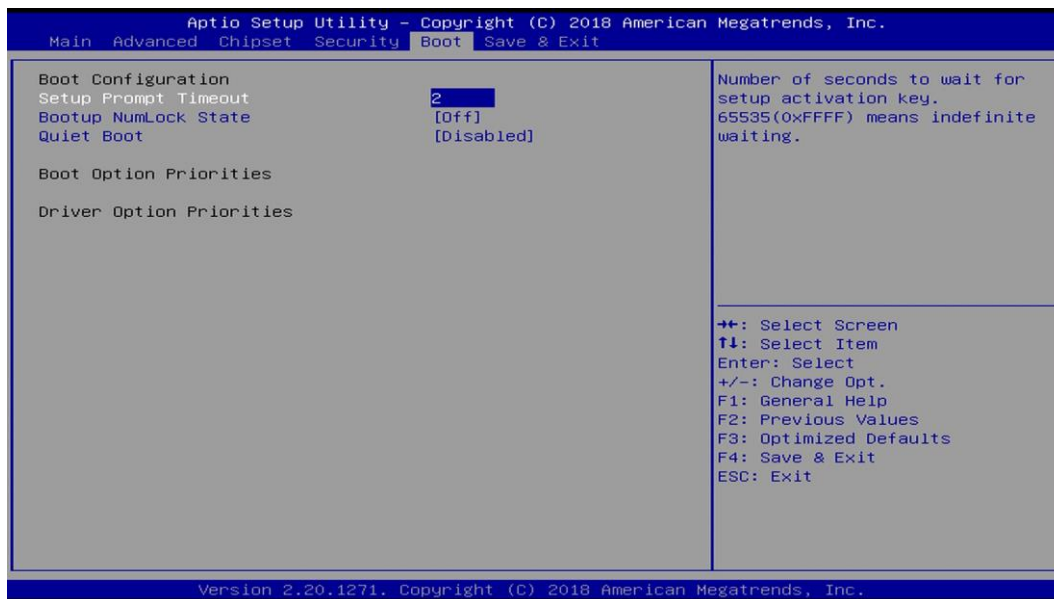
- a) EFI_SIGNATURE_LIST
- b) EFI_CERT_X509 (DER encoded)
- c) EFI_CERT_RSA2048 (bin)
- d) EFI_CERT_SHAXXX (bin)

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.

Bootup Numlock State

Use this item to select keyboard numlock state.

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

Quiet Boot

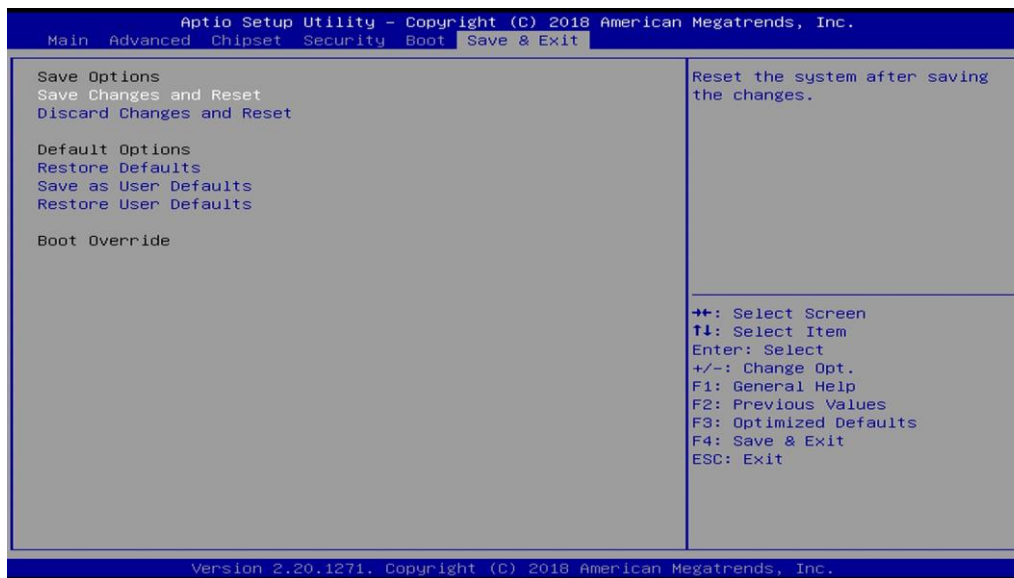
The optional settings are: [Disabled]; [Enabled].

Boot Option Priorities

Boot Option #1/ Boot Option #2...

Use this item to decide system boot order from available options.

3-11 Save & Exit Menu



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

UEFI: Built-in EFI Shell

Press this item and a dialogue box shall appear to ask if user wish to save configuration and reset.
