MI09-30/32 Series

User's Manual

No. G03-MI09-F

Rev: 4.0

Release date: December 13, 2022

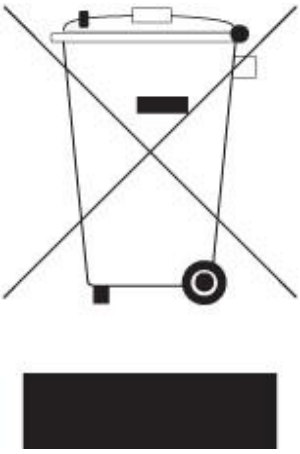
TABLE OF CONTENT

CAUTION 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 figure comes from the request of the main chipset)
- Generally speaking, dramatic changes in temperature may lead to contact malfunction and crackles due to constant thermal expansion and contraction from the welding spots' that connect components and PCB. Computer should go through an adaptive phase before it boots when it is moved from a cold environment to a warmer one to avoid condensation phenomenon. These water drops attached on PCB or the surface of the components can bring about phenomena as minor as computer instability resulted from corrosion and oxidation from components and PCB or as major as short circuit that can burn the components. Suggest starting the computer until the temperature goes up.
- The increasing temperature of the capacitor may decrease the life of computer. Using the close case may decrease the life of other device because the higher temperature in the inner of the case.
- Attention to the heat sink when you over-clocking. The higher temperature may decrease the life of the device and burned the capacitor.

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
4.0	Fourth Edition	December 13, 2022

Item Checklist

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

Chapter 1
Introduction of the Motherboard

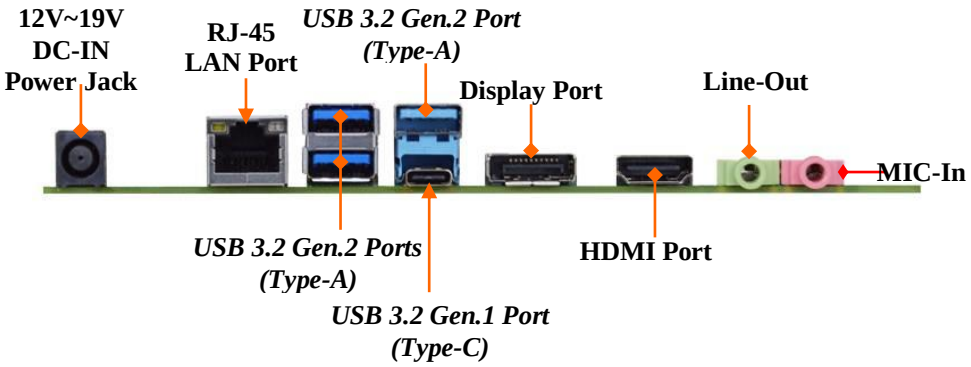
1-1 General Specifications

Spec	Description
Design	● Slim Mini-ITX form factor; PCB size: 17 x17cm
Chipset	● Intel H470 Chipset
CPU Socket	● Intel LGA 1200 Socket supports 10th/11th Core i9/i7/i5/i3/Pentium/Celeron Comet Lake-S & Rocket Lake-S processors (Max. **65W** TDP) **Note: for detailed CPU support information please visit our website*
Memory Slots	● 2*DDR4 SO-DIMM slot support 2* DDR4 SDRAM SO-DIMM ● Maximum frequency:2933/2666/2400MHz*(depends on CPU support)* ● Maximum capacity: up to 64GB ● Support dual channel function
Expansion Slots	● ***PCIE1:*** 1 * PCI-Express x4 slot ● ***M2E:*** 1* M.2 E-key type-2230 (PCIex1/USB2.0) slot with support for CNVi function
Storage	● 4*SATAIII 6Gb/s port ***(SATA1/2/3/4)*** ● ***M2M:**1* M.2 M-key slot,type-2242/2260/2280 (SATA/PCIex4) slot **** Note：** M.2 M-key type-2242 card is not supported if M.2 E-key type-2230 card is installed for the location is already occupied.*
LAN Chip	● 1* Intel i219V GbE
Audio Chip	● Integrated with C-Media HS-100B USB Audio Chip
BIOS	● AMI 256M Bit AMI Flash ROM
Multi I/O	***Rear Panel I/O:*** ● 1* 12V~19V wide voltage DC-IN power jack ● 1* 1GbE RJ-45 LAN port ● 3* Type-A USB 3.2 (Gen.2) 10Gbps port ● 1* Type-C USB 3.2 (Gen.1) 5Gbps port ● 1* Display port ● 1* HDMI 1.4 port ● 1* Line-Out port ● 1* MIC port ***Internal I/O Connectors & Headers:*** ● 1 *2-pin 12V~19V internal power connector ● 1* SATA power-out connector ● 1* CPU FAN wafer & 1* System FAN wafer ● 1* Monitor switch wafer ● 1* LVDS connector ● 1* LVDS inverter wafer (**FPD**) ● 1* Front panel header ● 1* RS232/422/485 COM port header ● 1* BL_SW Brightness control header ● 1* 19-Pin USB 3.2 (Gen.1) header for 2* USB 3.2 (Gen.1) 5Gbps

	port ● 2* 9-Pin USB 2.0 header for 4* USB 2.0 expansion ports ● 1* 4-Pin USB 2.0 header for 1* USB 2.0 expansion ports ● 1* Front panel audio header
TPM 2.0 Function	● Optional for **MI09-32** Series

1-2 Layout Diagram

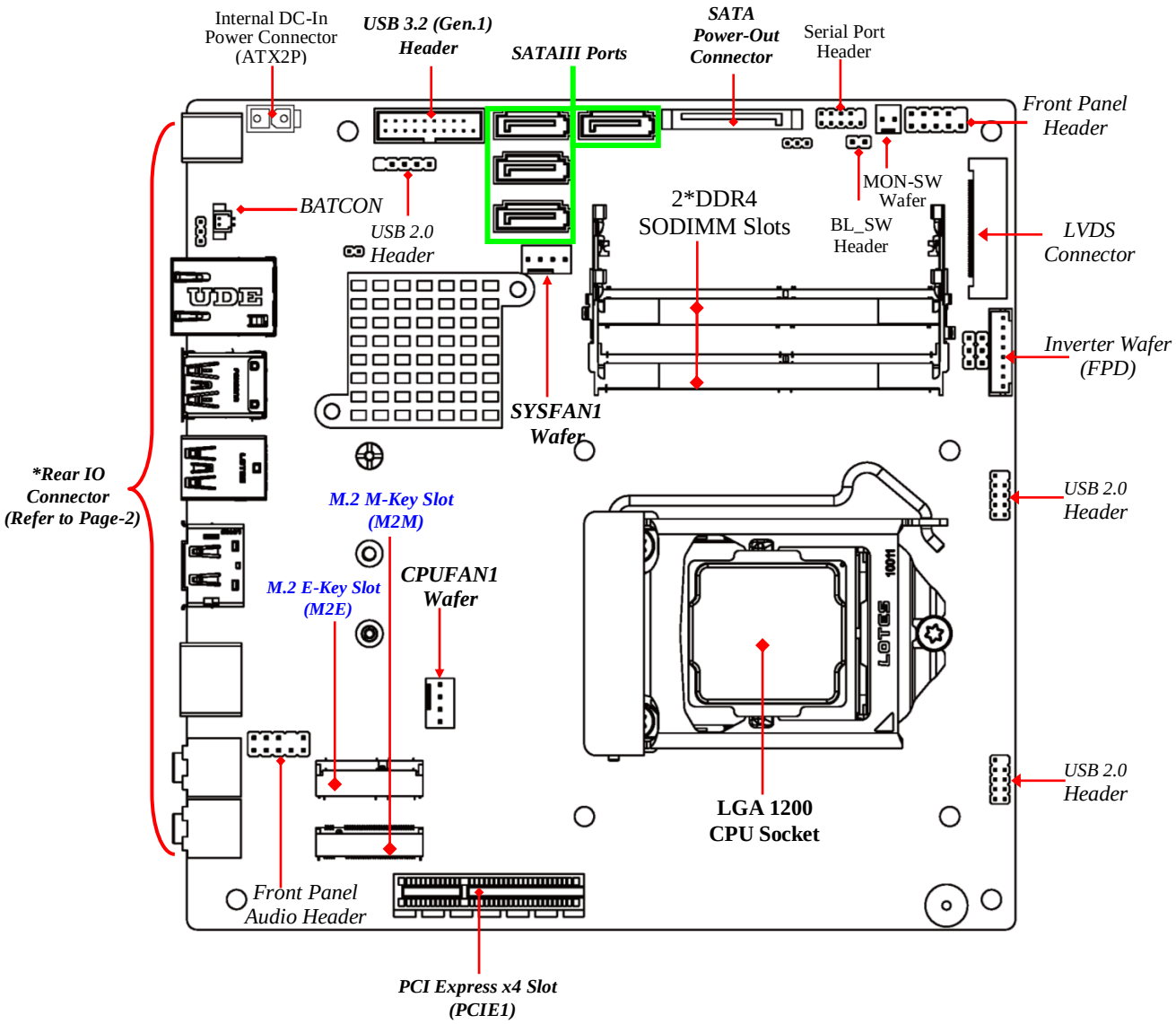
Rear IO Diagram



Icon	*Name*	*Function*
	**12V~19V DC-in Power Jack**	For user to connect compatible power adapter to provide power supply for the system.
	**RJ-45 LAN Port**	This connector is standard RJ-45 LAN jack for Network connection.
	**Type-A USB 3.2 (Gen.2) Port**	To connect USB keyboard, mouse or other devices compatible with USB 3.2 specification.
	**Type-C USB 3.2 (Gen.1) Port**	To connect USB keyboard, mouse or other devices compatible with USB 3.2 specification.
	**Display Port**	For user to the system to corresponding display device with compatible DP cable.
	**HDMI 1.4 Port**	To connect display device that support HDMI specification.
	***Line-Out**	For user to connect external speaker, earphones, etc to transfer system audio output.
	***MIC-In**	User can connect microphone device to this port.

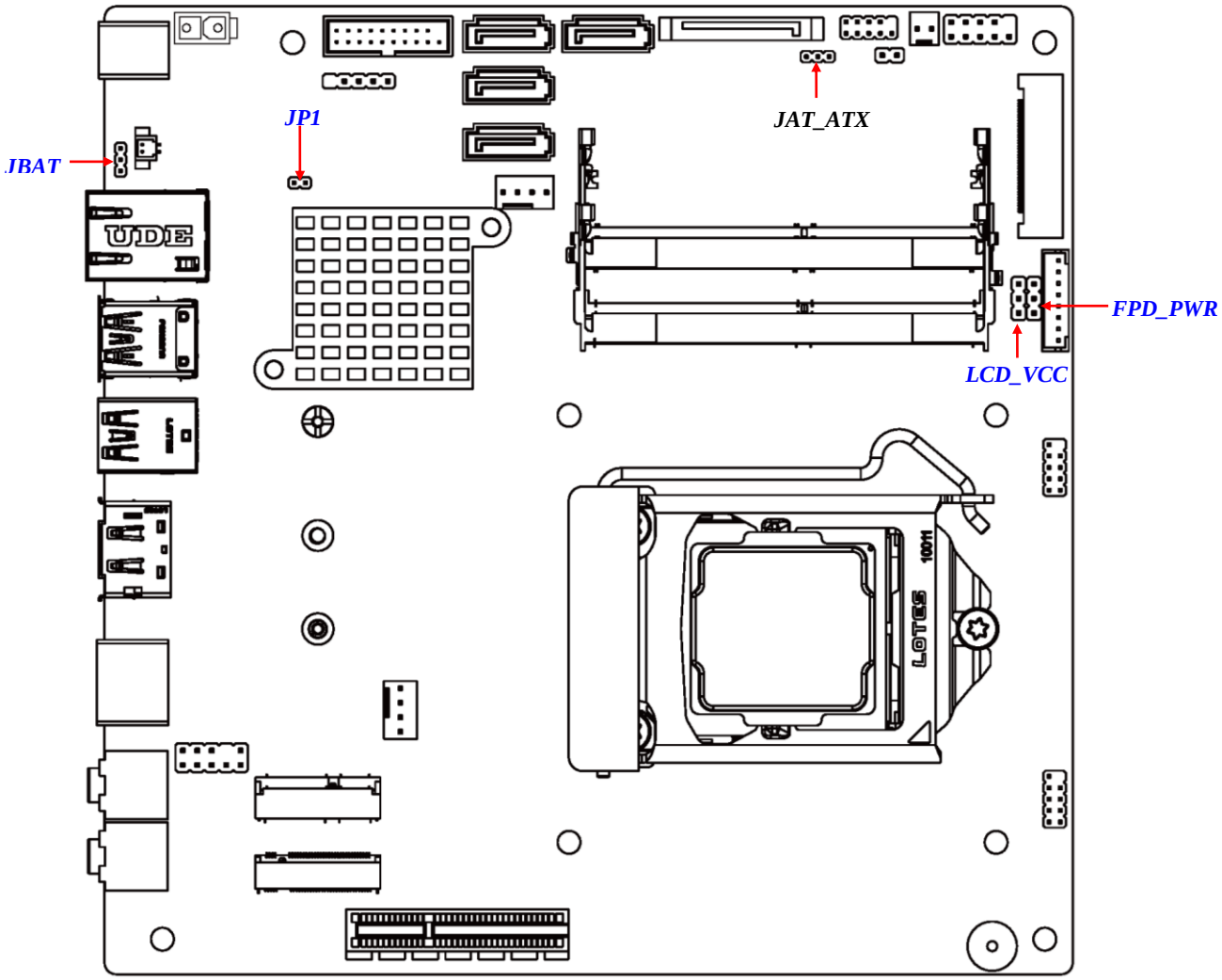
Note: **Rear IO Line-Out & MIC-In ports co-lay with **FP_AUDIO**(Line-out & MIC-In function), but only one of the settings function at the same time. User can choose either **rear I/O** Line-Out & MIC-In port or Line-Out/MIC-In drawn from **FP_AUDIO** but not both of them.*

Motherboard Internal Diagram-Front



*Note: The screw post nut fixed at location **MH1** is reserved for either **M.2 M-key** type-2242 card or **M.2 E-key** type-2230 card installation; i.e. user can choose to install only one type from these two cards at location **MH1**. If you have installed compatible M.2 E-key type-2230 card at **MH1**, you can only install compatible M2. M-key type-2260 card (at location **MH3**) or type-2280 card (at location **MH4**) on the board.*

Motherboard Jumper Position:



***Note**: The diagrams in the manual are mostly taken from **MI09-30** series unless otherwise stated.*

Jumper

Jumper	Name	Description	Pitch
JBAT	Clear CMOS RAM Settings	3-pin Block	2.0mm
JP1	ME Features Select	2-pin Block	2.0mm
JAT_ATX	ATX/AT Mode Select	3-pin Block	2.0mm
LCD_VCC	LVDS PANEL VCC Select	3-pin Block	2.54mm
FPD_PWR	LVDS INVERTER Backlight VCC Select	3-pin Block	2.54mm

Connectors & Wafers

P/N	Name
DCIN	12V~19V Internal DC-IN Power Jack
LAN1	1GbE RJ-45 LAN Port
USB31_1	Type-A USB 3.2 (Gen.2) Port X2
USB31_2	Type-A USB 3.2 (Gen.2) Port
USBC1	Type-C USB 3.2 (Gen.1) Port
DP1	Display Port
HDMI1	HDMI 1.4 Port
HOUT1	Audio Line Out Port
HMIC1	Audio MIC In Port
ATX2P	Internal 12V~19V Internal DC-IN Power Connector
SATA1/2/3/4	*SATAIII Port Connector*
SATA_PWR	*SATA Power Out Connector*
CPU_FAN1	CPU FAN Wafer
SYS_FAN1	System FAN Wafer
MON_SW	Monitor Switch Wafer
LVDS	LVDS Connector
FPD	LVDS Inverter Wafer

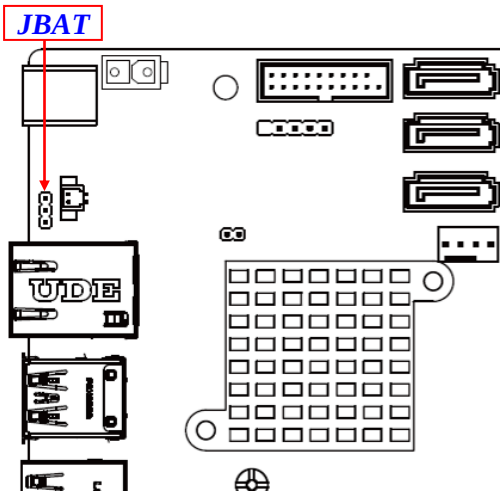
Headers

P/N	Name	Description	Pitch
SYS_PANEL(System Front Panel Header)	PWR LED/ HD LED/ Power Button /Reset	9-pin Block	2.54mm
COM1	RS232/422/485 Serial Port Header	9-pin Block	2.0mm
BL_SW	Brightness Control Switch Header	2-pin Block	2.54mm
FP_USB1	USB 3.2 (Gen.1) Port Header	19-pin Block	2.0mm
FP_USB2/ FP_USB3	USB 2.0 Port Header	9-pin Block	2.0mm
FP_USB4	USB 2.0 Port Header	4-pin Block	2.54mm
FP_AUDIO	Front Panel Audio Header	9-pin Block	2.54mm

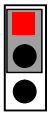
Chapter 2
Hardware Installation

2-1 Jumper Setting

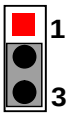
JBAT (3-pin/Pitch: 2.0mm): Clear CMOS RAM Settings



JBAT→Clear CMOS Settings

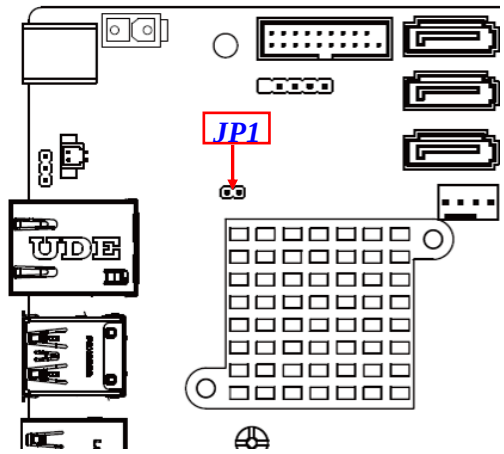


1-2 Closed: Normal;

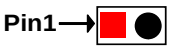


2-3 Closed: Clear CMOS.

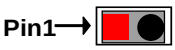
JP1(2-pin/Pitch: 2.0mm): ME Features Select



JP1→ ME Features Select

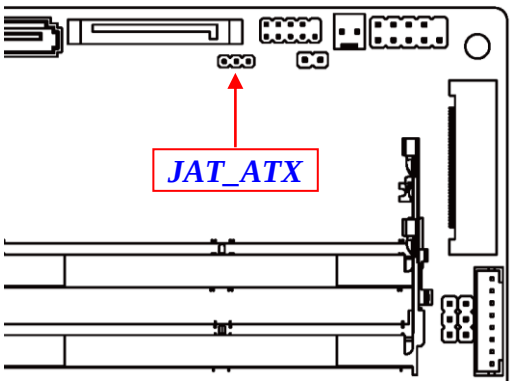


1-2 Open: Enable ME Features(Default);

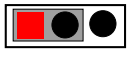


1-2 Closed: Disable ME Features.

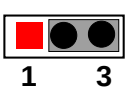
JAT_ATX (3-pin/Pitch: 2.0mm): AT Mode /ATX Mode Select



JAT_ATX→ATX/AT Mode Select



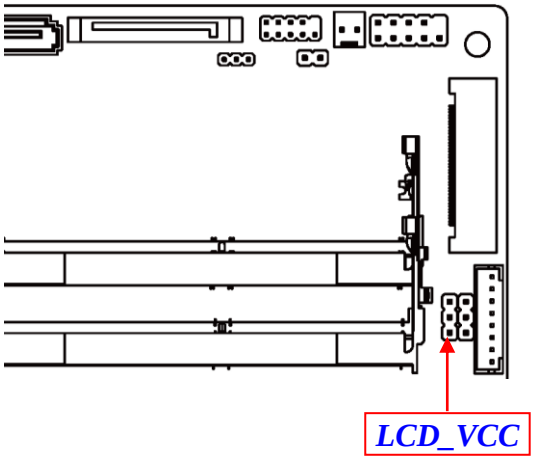
1-2 Closed: ATX Mode Selected;



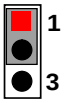
2-3 Closed: AT Mode Selected.

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

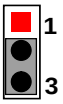
LCD_VCC(3-pin/Pitch: 2.54mm): LVDS Panel Power VCC Select



LCD_VCC→LVDS Panel Power VCC Select

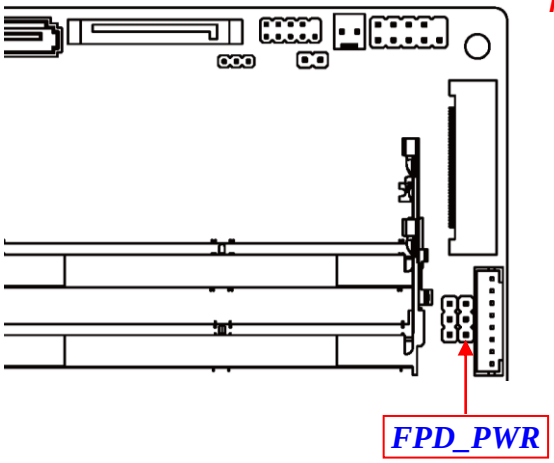


1-2 Closed: VCC=+3.3V;

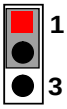


2-3 Closed: VCC=+5V.

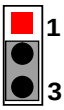
FPD_PWR(3-pin/Pitch: 2.54mm): LVDS Inverter Backlight VCC Select



FPD_PWR→ LVDS Inverter VCC Select



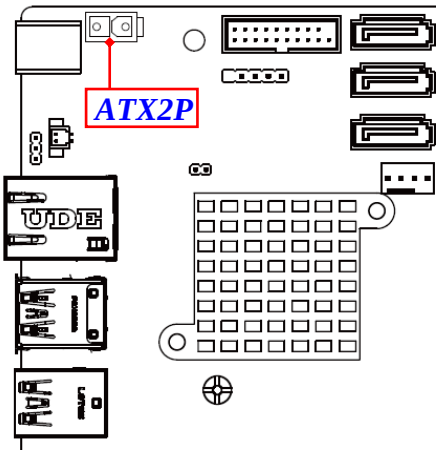
1-2 Closed: VCC=+12V;

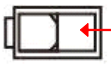


2-3 Closed: VCC=Power Adapter VCC.

2-2 Motherboard Internal Connectors & Wafers

(1) ATX2P (2-pin block): Internal 12V~19V power connector

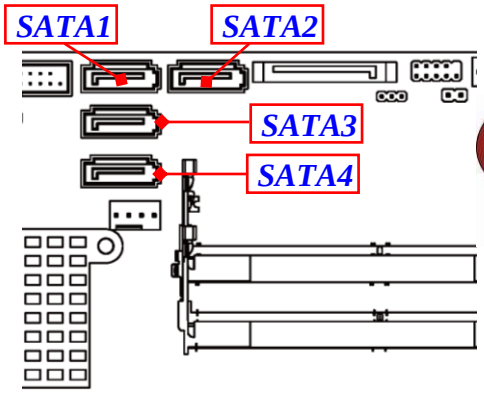


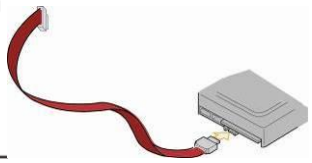


Pin No.	Definition
1	GND
2	+12V~+19V

(2) SATA1/2/3/4(7-pin): SATAIII Port connector

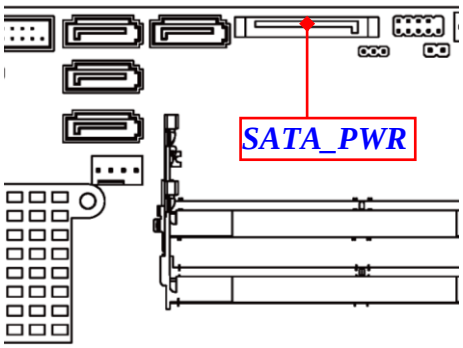
These are high-speed SATAIII ports that support 6GB/s transfer rate.

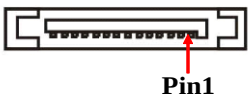




Pin No.	Definition
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND

(3) SATA_PWR (15-pin block): SATA power connector



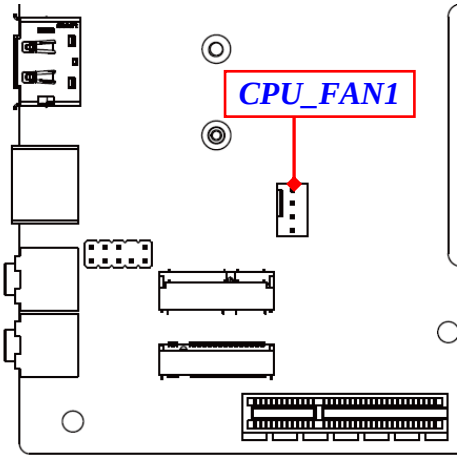


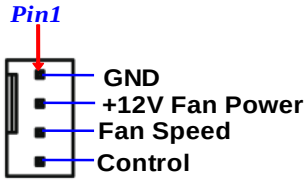
SATA Power Out Connector

Pin NO.	Definition
Pin 1	NC
Pin 2	NC
Pin 3	NC
Pin 4	GND
Pin 5	GND
Pin 6	GND
Pin 7	+5V
Pin 8	+5V
Pin 9	+5V
Pin 10	GND
Pin 11	NC
Pin 12	GND
Pin 13	+12V
Pin 14	+12V
Pin 15	+12V

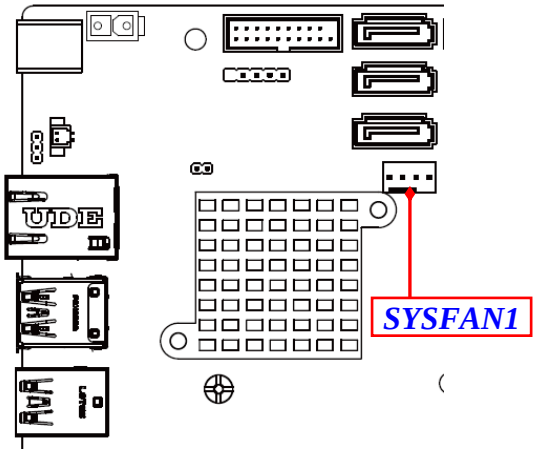
***Note:** Maximum current limit is **2A** while using **5V** working voltage and 1**A** while using **12V** working voltage .*

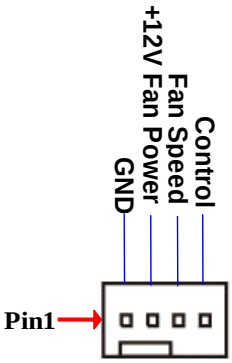
(4) CPU_FAN1 (4-pin): CPU FAN Wafer





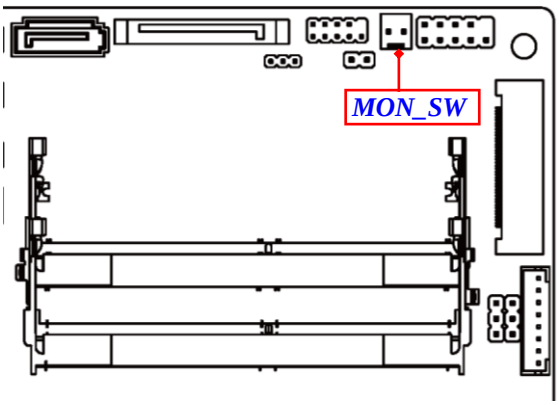
(5) SYS_FAN1 (4-pin): System FAN Wafer

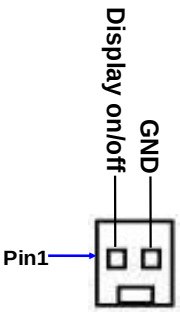




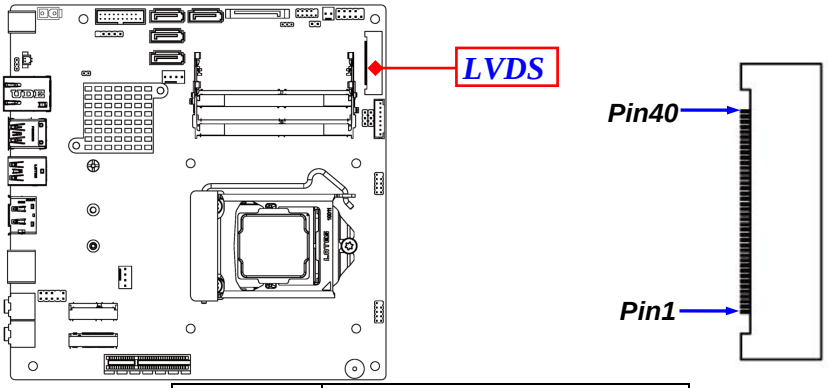
(6) MON_SW (2-Pin): Monitor Switch Wafer

MON_SW is for LVDS display switch.



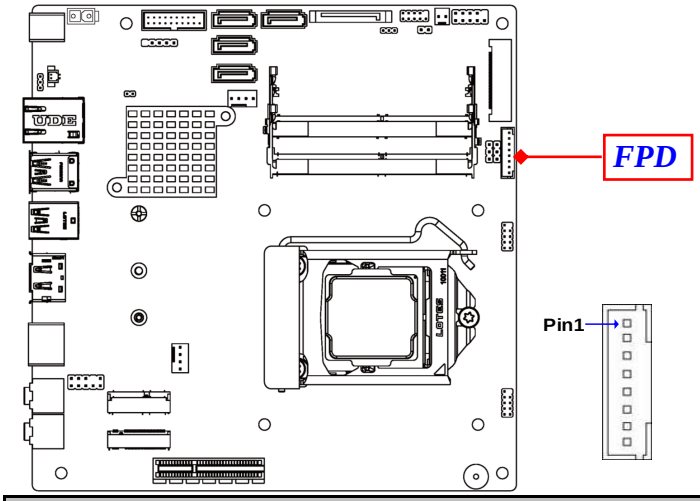


(7) LVDS(40-pin): 48-bit LVDS Connector



Pin No.	Pin Define
Pin 40	LVDS_DDC_DATA
Pin 39	NC
Pin 38	LVDS_BKLT_PWR option
Pin 37	LVDS_BKLT_PWR option
Pin 36	LVDS_BKLT_PWR option
Pin 35	LVDS_CLKBN
Pin 34	LVDS_CLKBP
Pin 33	LCD_BKLT_PWM
Pin 32	LCD_BKLT_EN
Pin 31	LVDS_DDC_CLK
Pin 30	GND
Pin 29	GND
Pin 28	GND
Pin 27	LVDS_CLKAN
Pin 26	LVDS_CLKAP
Pin 25	GND
Pin 24	GND
Pin 23	GND
Pin 22	EDID_3V3 Option
Pin 21	NC
Pin 20	LCD_VCC
Pin 19	LCD_VCC
Pin 18	LCD_VCC
Pin 17	GND
Pin 16	LVDSB_DATAN0
Pin 15	LVDSB_DATAP0
Pin 14	LVDSB_DATAN1
Pin 13	LVDSB_DATAP1
Pin 12	LVDSB_DATAN2
Pin 11	LVDSB_DATAP2
Pin 10	LVDSB_DATAN3
Pin 9	LVDSB_DATAP3
Pin 8	LVDSA_DATAN0
Pin 7	LVDSA_DATAP0
Pin 6	LVDSA_DATAN1
Pin 5	LVDSA_DATAP1
Pin 4	LVDSA_DATAN2
Pin 3	LVDSA_DATAP2
Pin 2	LVDSA_DATAN3
Pin 1	LVDSA_DATAP3

(8) FPD (8-pin): LVDS Inverter Connector

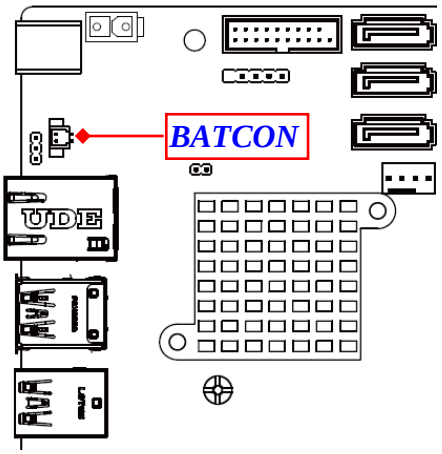


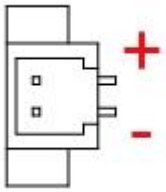
Pin No.	Definition
1	Backlight Enable
2	Backlight Duty
3	*PVCC
4	*PVCC
5	GND
6	GND
7	Brightness up
8	Brightness down

***Note:** Maximum current limit is **3A** in total while using **12V/VCC** **from power adapter** (refer to **FPD_PWR**) working voltage.*

***Warning!** Find Pin-1 location of the inverter and make sure that the installation direction is correct! Otherwise serious harm will occur to the board/display panel!!*

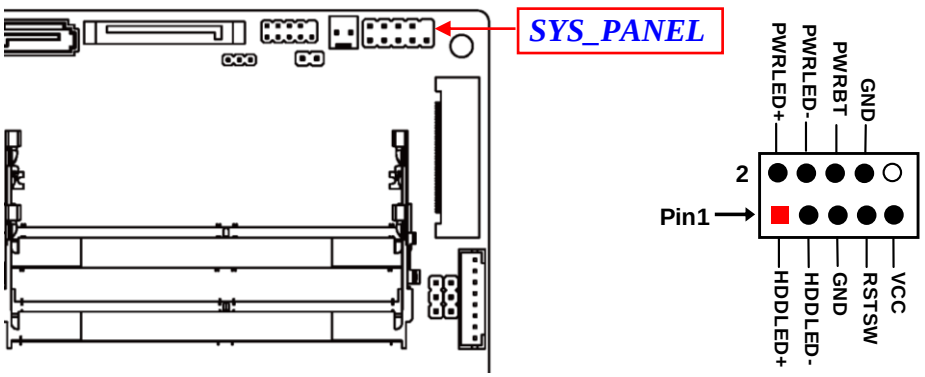
(9) BATCON (2-pin): Battery Connector



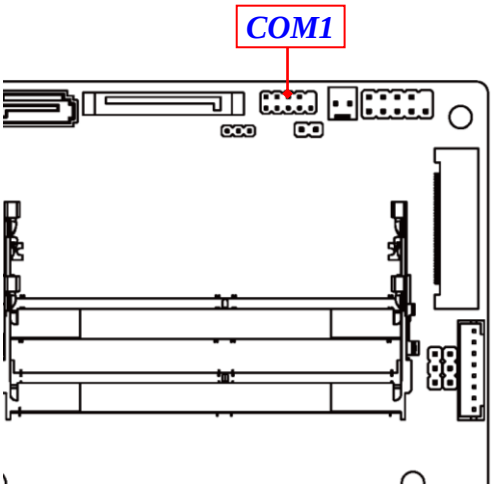


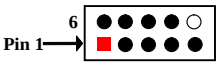
2-3 Header Pin Definition

(1) SYS_PANEL (9-pin/*Pitch: 2.54mm*): System Front Panel Header



(2) COM1(9-Pin/*Pitch: 2.0mm*): RS232/RS422/RS485 Serial Port Header

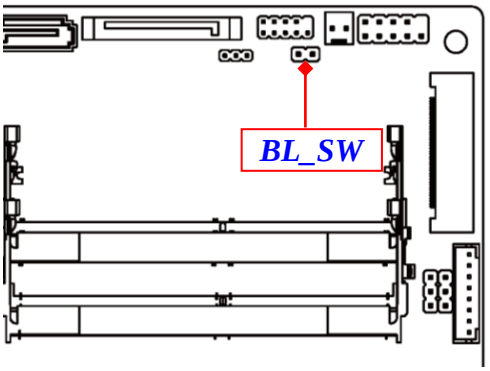




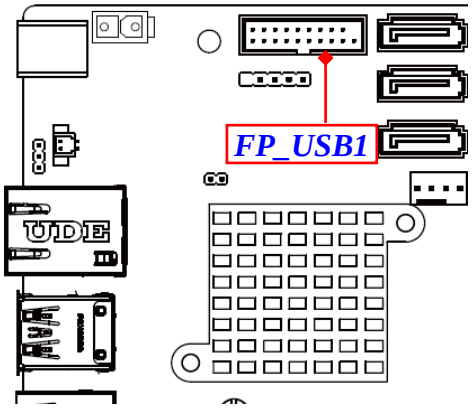
Pin NO.	RS232	*RS422 (optional)	*RS485 (optional)
Pin 1	DCD	TX-	DATA-
Pin 2	RXD	TX+	DATA+
Pin 3	TXD	RX+	NC
Pin 4	DTR	RX-	NC
Pin 5	GND	GND	GND
Pin 6	DSR	NC	NC
Pin 7	RTS	NC	NC
Pin 8	CTS	NC	NC
Pin 9	RI	NC	NC

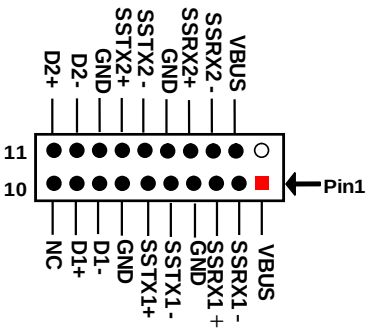
***Note: COM header can function as RS232/422/485 port header.** In normal settings COM functions as RS232 header. With compatible COM cable COM can function as RS422 or RS 485 header. User also needs to go to BIOS to set '**Transmission Mode Select**' (refer to Page-**21**) at first, before using specialized cable to connect different pins of this port.*

(3) BL_SW (2-pin/*Pitch: 2.54mm*): Brightness Control Switch Header

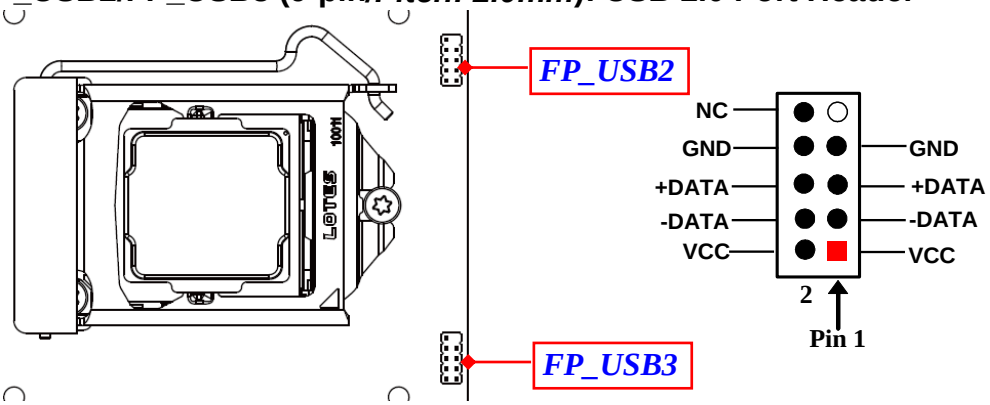


(4) FP_USB1(19-pin/*Pitch: 2.0mm*): USB 3.2 (Gen.1) Port Wafer

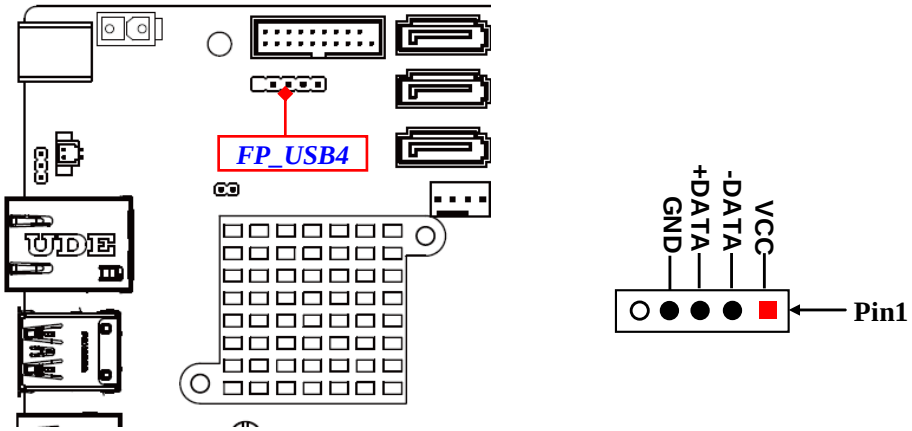




(5) FP_USB2/FP_USB3 (9-pin/*Pitch: 2.0mm*): USB 2.0 Port Header

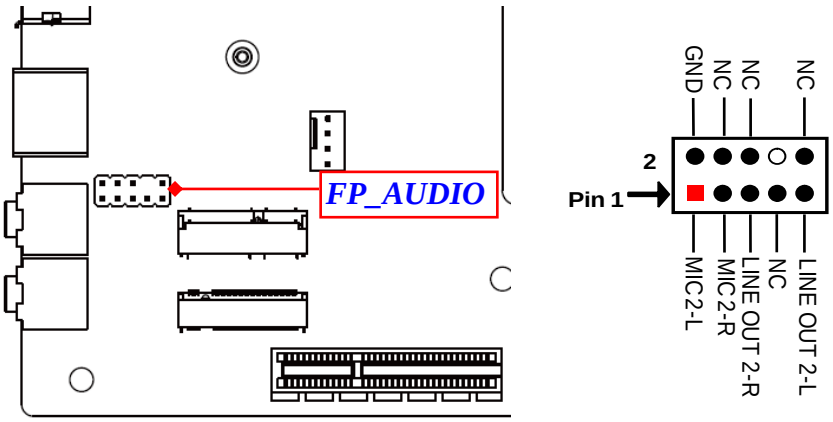


(6) FP_USB4 (4-pin/*Pitch: 2.54mm*): USB 2.0 Port Header



(7) FP_AUDIO (9-pin/*Pitch: 2.54mm*): Line-Out, MIC-In Header

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



Note: **FP_AUDIO (Line-out & MIC-In function) co-lay with rear IO Line-Out & MIC ports, but only one of the settings function at the same time. User can choose either Line-Out/MIC-In drawn from **FP_AUDIO** or directly from the **rear I/O** but not both of them.*

2-4 Maximum Voltage & Current Limit

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

Parts		Working Voltage	Current Support
USB Ports from	***USB31_1***	5V	1.5A
	USB31_2	5V	1.5A
	USBC1	5V	1.5A
	FP_USB1	5V	1.5A
	FP_USB2/3/4	5V	1.5A
SATA_PWR		5V	2A
		12V	1A
FPD (via jumper FPD_PWR)		12V/Power Adapter VCC	3A
SYS_PANEL		5V	1A
CPU_FAN1		12V	1.5A
SYS_FAN1		12V	1.5A
M2E		3.3V	2A
M2M		3.3V	2A

Chapter 3
Introducing BIOS

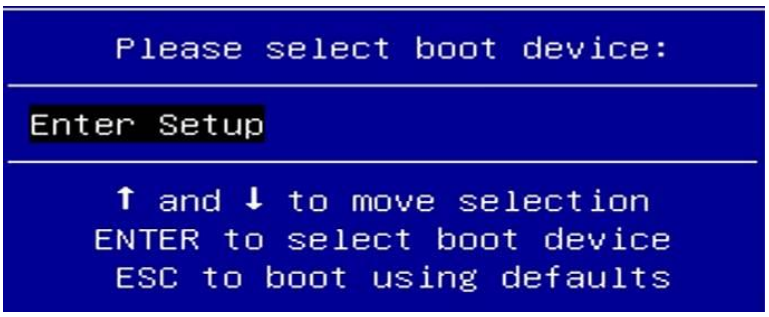
Notice!	The BIOS options in this manual are for reference only. Different configurations may lead to difference in BIOS screen and BIOS screens in manuals are usually the first BIOS version when the board is released and may be different from your purchased motherboard. Users are welcome to download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

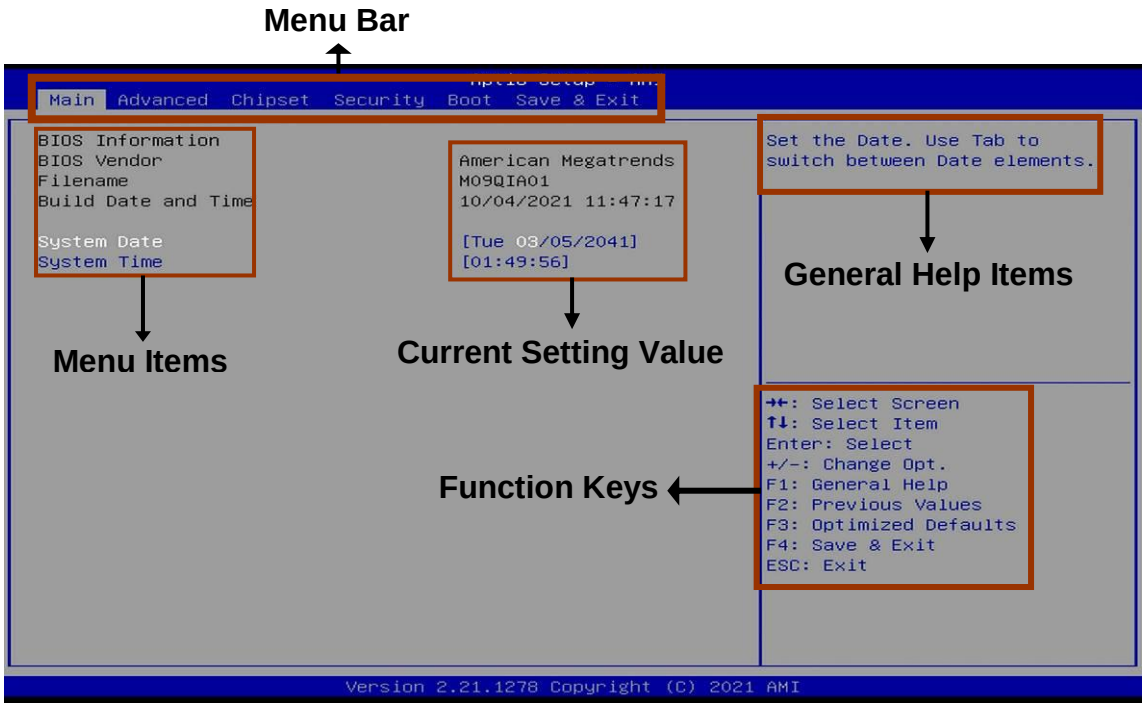
Press **<Del>** to enter Setup; press < **F7**> to enter pop-up Boot menu.



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:



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

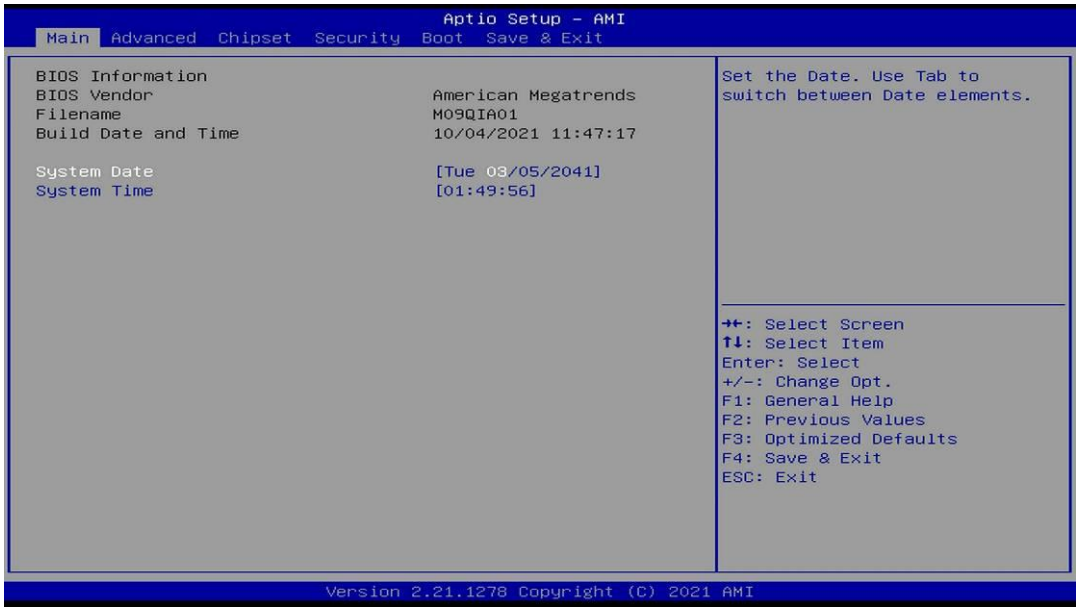
There are six menu bars on top of BIOS screen:

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.

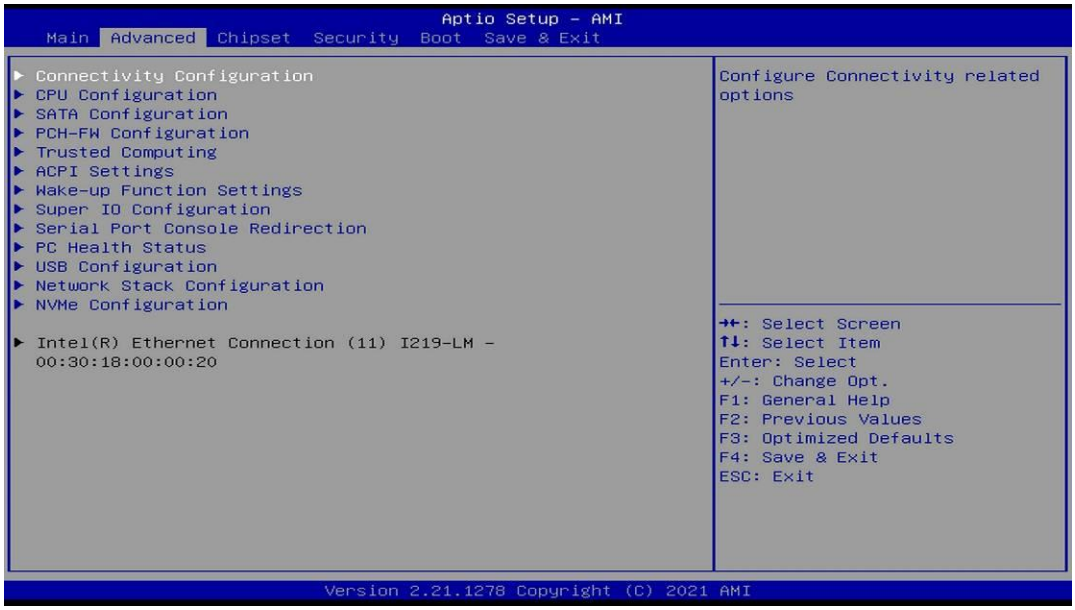
3-6 Main Menu

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



- **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

  Use this item to enable or disable Hyper-Threading Technology.

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

  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 processor Turbo Mode (requires Intel Speed Step or Intel Speed Shift to be available and enabled.)
The optional settings: [Disabled]; [Enabled].
***Note:** **'Turbo Mode'** item may or may not show up, depending on different CPU.*

- **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].

SATA1/SATA2/SATA3/SATA4

Port

Use this item to enable or disable SATA Port.
The optional settings: [Disabled]; [Enabled].

Hot Plug

Use this item to designate this port as Hot Pluggable.
The optional settings: [Disabled]; [Enabled].

M.2

Port

Use this item to enable or disable SATA Port.
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

TPM Device Selection

Use this item to select TPM device.
The optional settings: [dTPM]: [PTT].
[PTT]: Enable PTT in SkuMgr.
[dTPM]: Disable PTT in SkuMgr.
***Warning!** PTT/dTPM will be disabled and all data saved on it will be lost.*

- **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.*

- **Trusted Computing**

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

TPM 2.0 Device Found

***Note:** TPM function is optional, **MI09-32** model supports TPM2.0.*

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].

- **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).

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].*

- **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].
Mode Speed Select
Use this item to select RS232/RS422/RS485 Speed.
The optional settings: [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 select a value in the range of [10] to [255] seconds when 'WatchDog Reset Timer Unit' set as [Sec]; or in the range of [1] to [255] minutes when 'WatchDog Reset Timer Unit' set as [Min].

WatchDog Reset Timer Unit
The optional settings: [Sec.]; [Min.].

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 **JAT_ATX** jumper setting for ATX Mode & AT Mode Select).*

- **Serial Port Console Redirection**

COM1
Console Redirection
Use this item to enable or disable 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].

Serial Port for Out-of-Band Management/ Windows Emergency Management Services (EMS)

Console Redirection EMS

Use this item to enable or disable 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

Terminal Type EMS

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 EMS

Use this item to select serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.
The optional settings: [9600]; [19200]; [57600]; [115200].

Flow Control EMS

Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a “stop” signal can be sent to stop the data flow. Once the buffers are empty, a “start” signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.
The optional settings: [None]; [Hardware RTS/CTS]; [Software Xon/Xoff].

Data Bits EMS

The default setting is: [8].
**This item may or may not show up, depending on different configuration.*

Parity EMS

The default setting is: [None].

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

Stop Bits EMS

The default setting is: [1].

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

- **PC Health Status**

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

PC Health Status

► **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.

- **USB Configuration**

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

USB Configuration

XHCI Hand-off

This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.

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

USB Mass Storage Driver Support

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

The optional settings: [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: [1 sec]; [5 sec]; [10 sec]; [20 sec].

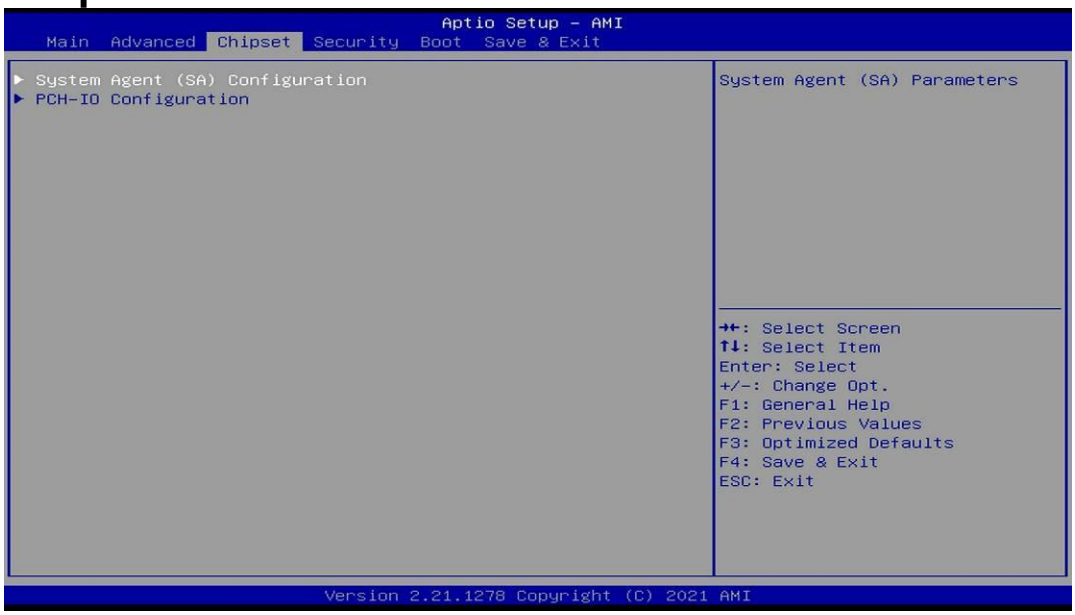
Device reset time-out
Use this item to set USB mass storage device Start Unit command time-out.
The optional settings: [10 sec]; [20 sec]; [30 sec]; [40 sec].
Device power-up delay
Use this item to set maximum time the device will take before it properly reports itself to the host controller. 'Auto' 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.
- **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) Ethernet Connection (11) I219-V - 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:

System Agent (SA) Configuration

VT-d

► **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

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 DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device.

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

Active LVDS

Use this item to select the Active LFP Configuration.

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

No LVDS: VBIOS does not enable LVDS.

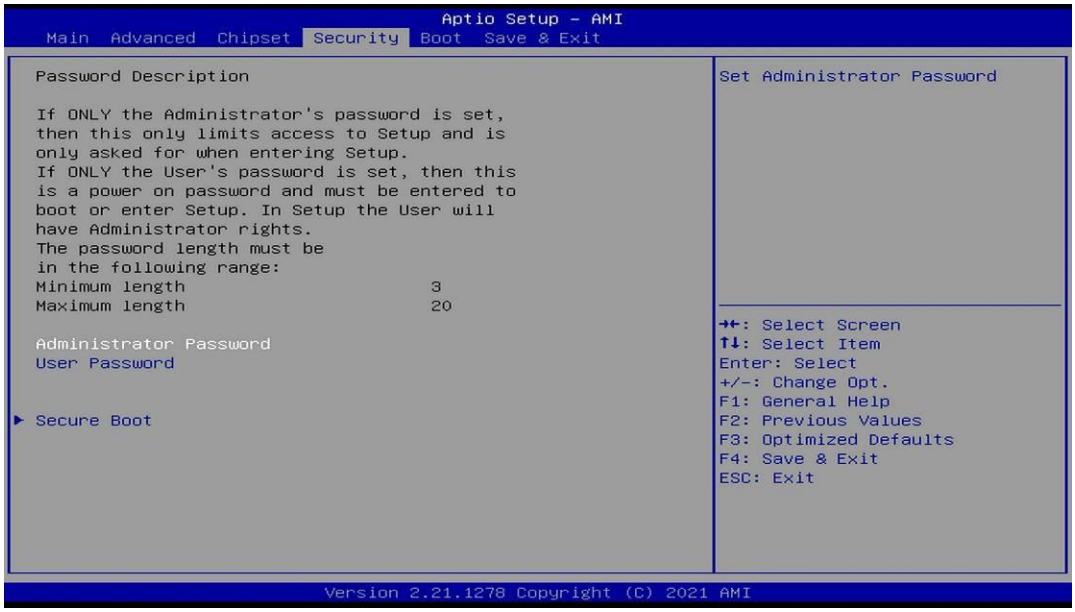
Int-LVDS: VBIOS enables LVDS driver by Integrated encoder.

SDVO LVDS: VBIOS enables LVDS driver by SDVO encoder.
eDP Port-A: LFP Driven by Int-DisplayPort encoder from Port-A.
When set as **[Enabled]**, the following sub-items shall appear:
Panel Type
Use this item to select panel type.
The optional settings: [800x 480 18bit Single]; [800x 600 18bit Single]; [800x 600 24bit Single]; [1024 x 600 18bit Single]; [1024 x 768 18bit Single]; [1024 x 768 24bit Single]; [1280 x 768 24bit Single]; [1280 x 800 18bit Single]; [1280 x 800 24bit Single]; [1366 x 768 18bit Single]; [1366 x 768 24bit Single]; [1440 x 900 18bit Dual]; [1440 x 900 24bit Dual]; [1280 x 1024 24bit Dual]; [1680 x 1050 24bit Dual]; [1920 x 1080 24bit Dual].

► **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.
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].
PCIE1 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



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 expert users to modify Secure Boot Policy variables without full authentication, which includes the following items:

Vendor Keys

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

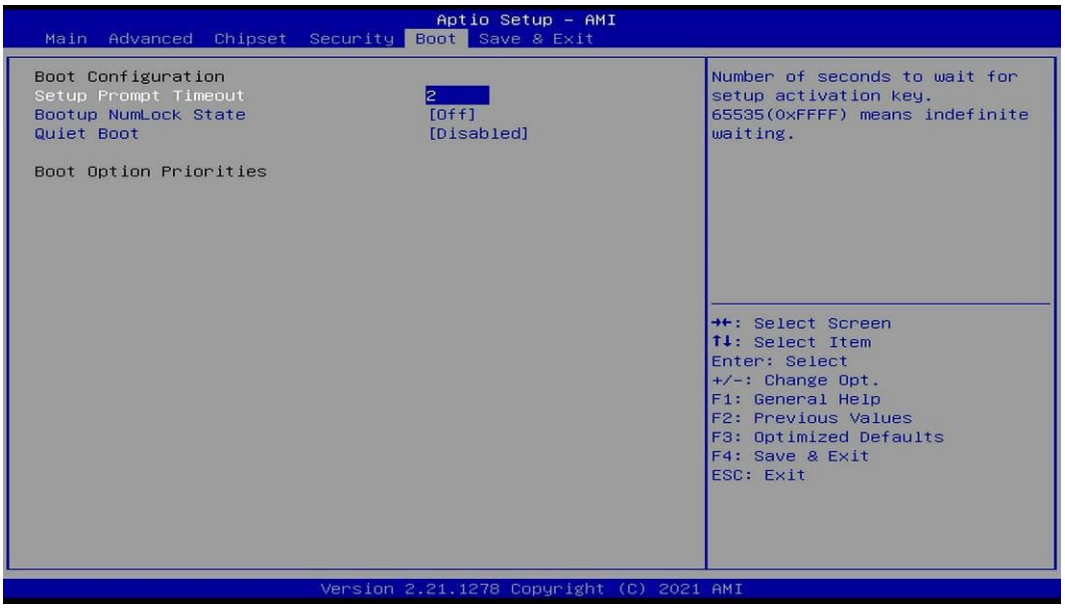
- **Platform Key(PK)/Key Exchange Keys/Authorized Signatures/Forbidden Signatures/ Authorized TimeStamps/OsRecovery Signatures**

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



Boot Configuration

Setup Prompt Timeout

Use this item to set number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.

Bootup NumLock State

Use this item to select keyboard NumLock state.

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

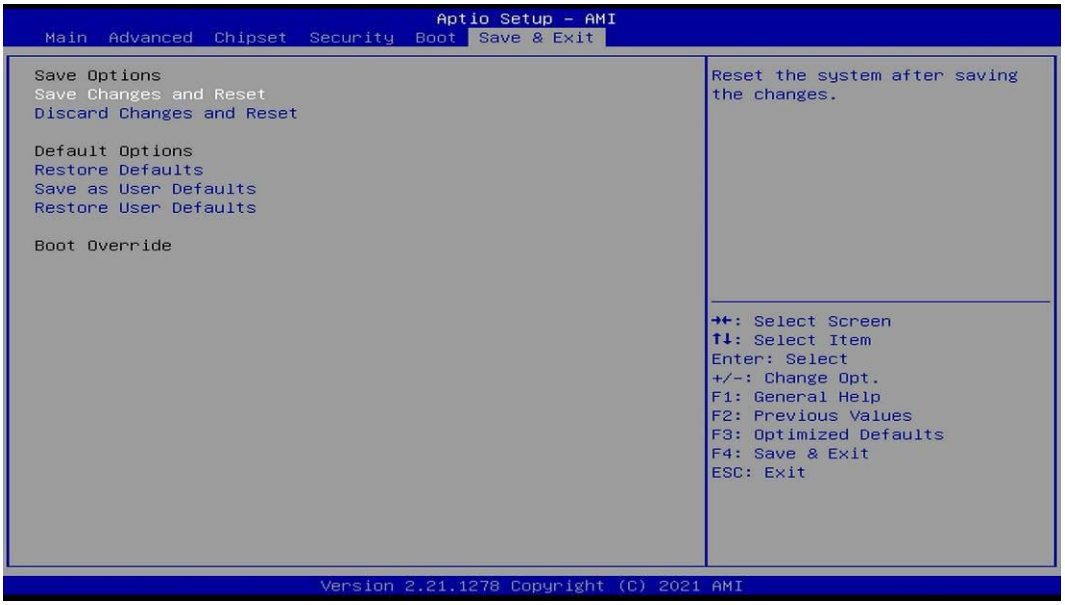
Quiet Boot

Use this item to enable or disable Quiet Boot option.

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

Boot Option Priorities

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