LZ0F Series

User's Manual

NO. G03-LZ0F-F

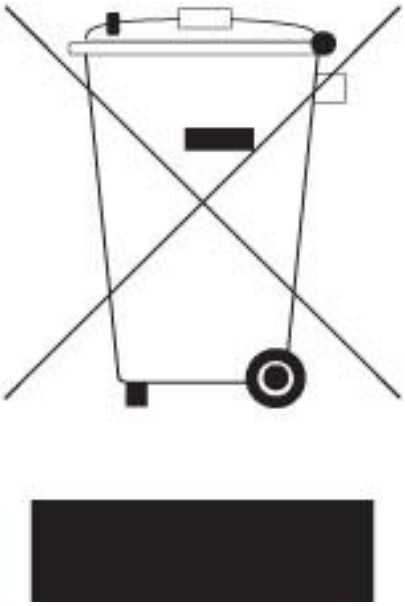
Revision: 1.0

Release date: January 11, 2022

Trademark:

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

Manual Revision Information

Reversion	Revision History	Date
1.0	First Edition	January 11, 2022

Item Checklist

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

Chapter 1
Introduction of the Motherboard

1-1 Feature of Motherboard

- Onboard Intel® Tiger Lake-UP3 SoC serial processor
- Support 2* DDR4 3200MHz SO-DIMM up to 64GB and dual channel function
- Integrated with 1* Intel i225V Gigabit Ethernet LAN chip & 1*Intel i219-LM Gigabit Ethernet LAN chip
- Support 2* USB 3.2(Gen.2) & 7* USB2.0 data transport demand
- Support 1* SATAIII (6Gb/s) Devices & 1* M.2 (M-key)
- Onboard 1* M.2 E-key 2230 (USB2.0/PCIe x1) support CNVi
- Onboard 1* M.2 B-key 3042/3052/6570 support 3G/4G/5G Module
- Support 1* HDMI port & 1* EDP & 1* LVDS Output
- Support 2* COM port (RS232/422/485) & 2* COM port (RS232)
- Support Smart FAN function
- Supports ACPI S3 Function
- Support Watchdog Timer Technology

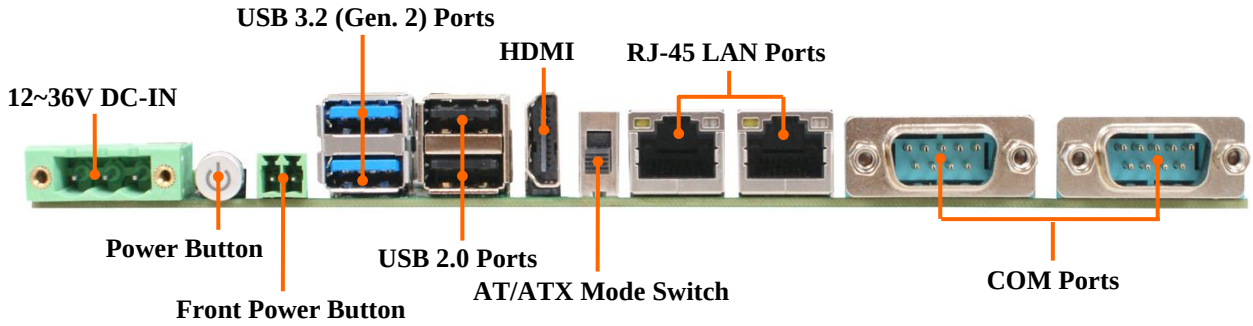
1-2 Specification

Spec	Description
Design	● 5.5” form factor 8 layers; PCB size: 20.0x13.5cm
Embedded CPU	● Integrated Intel® Tiger Lake series CPU ** For detailed CPU support information please visit our website*
Memory Slot	● 2* DDR4 SO-DIMM slot support 2* DDR4 3200MHz up to 64GB
Expansion Slot	● 1* M.2 E-key 2230 slot supports CNVi (**M2E**) ● 1* M.2 B-key 3042/3052/6570 slot supports 3G/4G/5G Module **(M2B)**
Storage	● 1* SATA III 6G/s connector ● 1* M.2 M-key 2242/2280 slot (PCIe 4.0x4 interface) supports NVMe **(M2M)**
LAN Chip	● Integrated with 1* Intel i225V Gigabit Ethernet LAN chip & 1* Intel i219-LM Gigabit Ethernet LAN chip ● Support Fast Ethernet LAN function of providing 10/100/2500 Mbps Ethernet data transfer rate
BIOS	● AMI 128M Flash ROM
Rear I/O	● 1* 12~36V DC-in power jack ● 2* COM port support RS232/422/485 ● 2* USB 3.2 (Gen.2) ports ● 2* USB2.0 ● 2* RJ-45 Lan Ports ● 1* HDMI port ● 1* AT/ATX mode switch ● 1* Power button ● 1* Front power button
Internal I/O	● 1* 2.5” HDD Connector ● 1* Front panel hearer

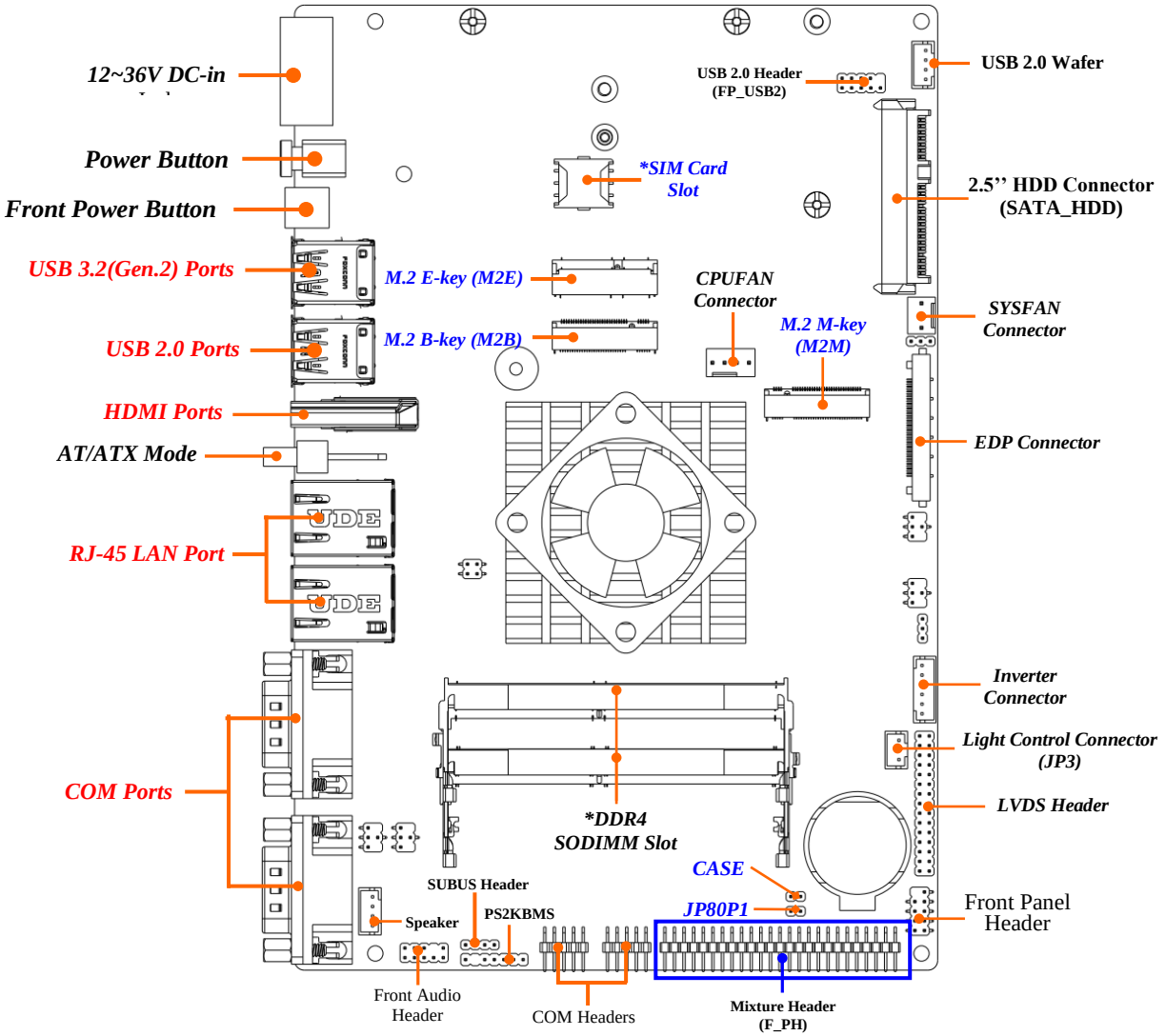
	● 1* Front panel audio header ● 1* 3W Speaker header ● 1* 9-Pin USB 2.0 header ● 1* 4-Pin USB 2.0/1.1 wafer for 1* USB 2.0/1.1 ports ● 1* SMBUS header ● 1* Mixture header support 2* USB2.0 & 1*ESPI & 16* GPIO ● 2* Serial port headers support RS232 ● 1* EDP connector ● 1* LVDS connector ● 1* Inverter connector

1-3 Layout Diagram

Rear IO Diagram

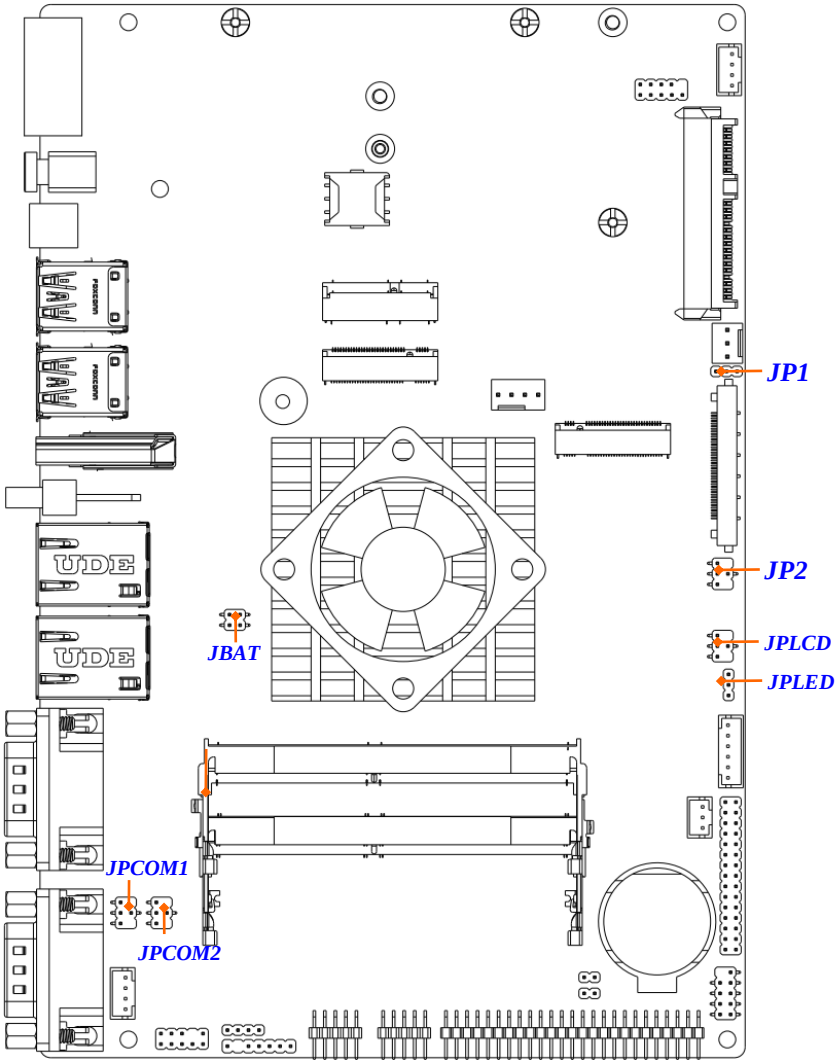


Motherboard Internal Diagram-Front



Note: ***SIMCARD*** *slot only work when compatible SIM card installed & 3G LAN card installed in* ***M2B*** *M.2 B-key slot.*

Motherboard Jumper Position



Jumper

Jumper	Name	Description
JP1	EDP BACKLIGHT Power Select	3-pin Block (2.0 pitch)
JP2	EDP Panel Power Select	4-pin Block (2.0 pitch)
JBAT	PIN (1-2) = Clear ME_RTC PIN (3-4) = Clear CMOST	4-pin Block (2.0 pitch)
JPCOM1	COM1 Port Pin9 Function Select	4-pin Block (2.0 pitch)
JPCOM2	COM2 Port Pin9 Function Select	4-pin Block (2.0 pitch)
JPLCD	LCD Panel Power Select	4-pin Block (2.0 pitch)
JPLED	LCD BACKLIGHT Power Select	3-pin Block (2.0 pitch)

Connectors

Connector	Name
DCIN1	12~36V DC–in Power Jack
FPW	Power Button
FPW_SW	Power Button Jack
USB1	USB 3.2 (Gen.2) Port Connector X2
USB2	USB 2.0 Port Connector X2
HDMI	HDMI Port Connector x 1
LAN1	RJ-45 LAN Connector
LAN2	RJ-45 LAN Connector
COM1	RS232/422/485 Serial Port Connector x 1
COM2	RS232/422/485 Serial Port Connector x 1
SATA_HDD	7+15 pin HDD Connector for 2.5'' SATA HDD
EDP	EDP Port Connector
SPEAK	3W Amplifier Connector
SIMCARD	NANO card slot
FP_USB1	USB 2.0 Wafer
CPUFAN	FAN Connector
SYSFAN	FAN Connector
JP3	LVDS Light Control Connector

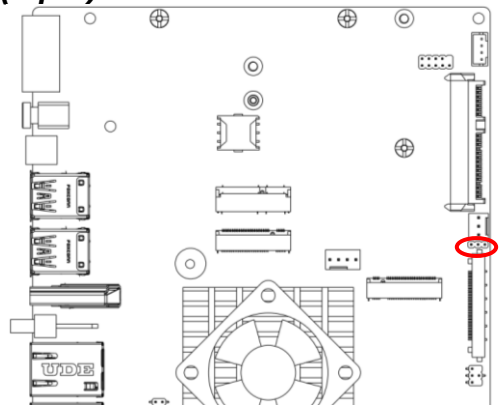
Headers

Header	Name	Description
JW_FP	Front Panel Header (PWR LED/ HD LED/Power Button /Reset)	9-pin Block (2.0 pitch)
FP_AUDIO	Audio Header X1	9-pin Block (2.0 pitch)
FP_USB2	USB Header X1	4-pin Block (2.0 pitch)
SMBUS	SMBUS Header	4-pin Block (2.0 pitch)
PS2KBMS	PS2 Keyboard & Mouse Header	6-pin Block (2.0 pitch)
COM3/4	Serial Port Header	9-pin Block (2.0 pitch)
CASE	Case Open Message Display Function	2-pin Block (2.0 pitch)
J80PORT	GPIO/80 Port Function Select	2-pin Block (2.0 pitch)
LVDS	LVDS Header	30-pin Block (2.0 pitch)
INVERTER	Inverter Header	6-pin Block (2.0 pitch)
F_PH	Mixture Header X1	50-pin Block (2.0 pitch)

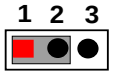
Chapter 2
Hardware Installation

2-1 Jumper Setting

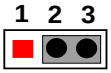
JP1 (3-pin): EDP BACKLIGHT VCC Select (2.0 pitch)



JP1→EDP BACKLIGHT VCC Select

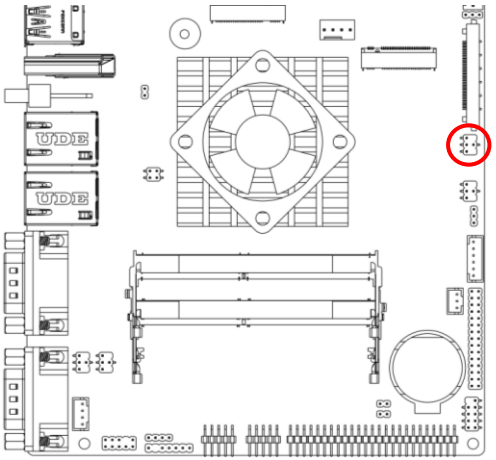


1-2 Closed:
VCC= +5V

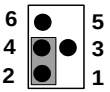


2-3 Closed:
VCC= +12V

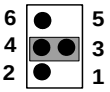
JP2 (4-pin): EPD Panel VCC Select (2.0 pitch)



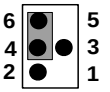
JP2 → **EDP Panel VCC Select**



2-4 Closed:
VCC=+3.3V;

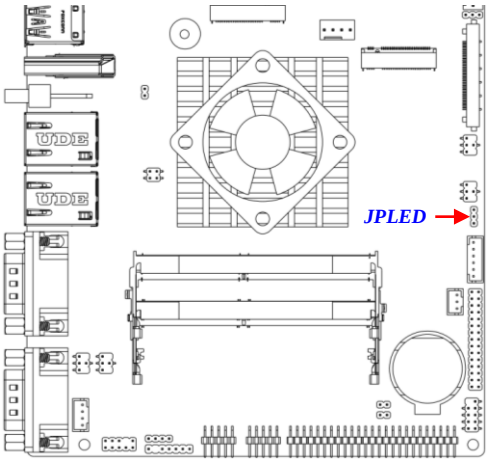


3-4 Closed:
VCC=+5V;

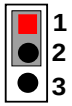


4-6 Closed:
VCC=+12V

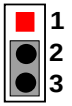
JPLED (3-pin): LCD BACKLIGHT VCC Select (2.0 pitch)



JPLED →LCD BACKLIGHT VCC Select

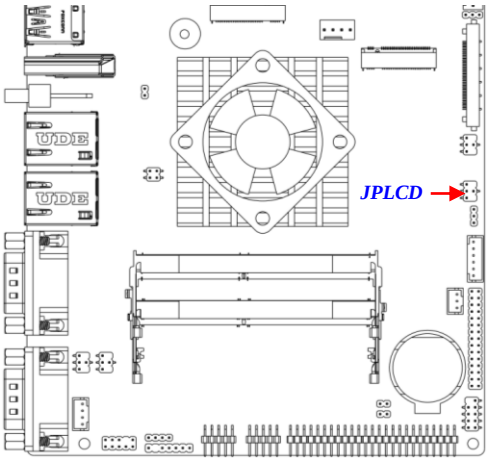


1-2 Closed:
VCC= +5V

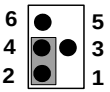


2-3 Closed:
VCC= +12V

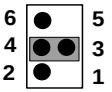
JPLCD (4-pin): LCD Panel VCC Select (2.0 pitch)



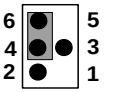
***JPLCD → LCD* Panel VCC Select**



2-4 Closed:
VCC=+3.3V;

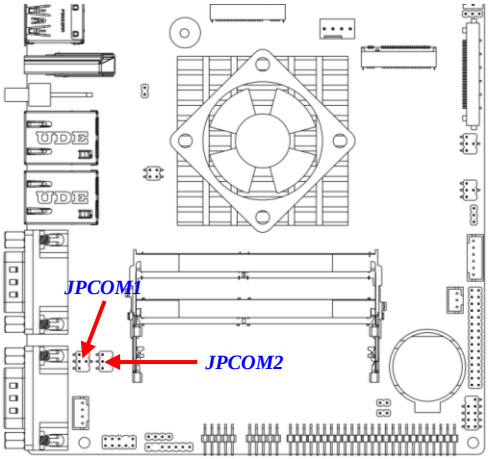


3-4 Closed:
VCC=+5V;

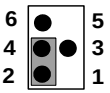


4-6 Closed:
VCC=+12V

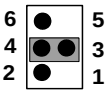
JPCOM1/2 (4-pin): COM1/COM2 Port Pin9 Function Select (2.0 pitch)



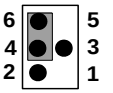
JPCOM1 → COM1 Port Pin-9
JPCOM2 → COM2 Port Pin-9



2-4 Closed:
PIN9=RS232;

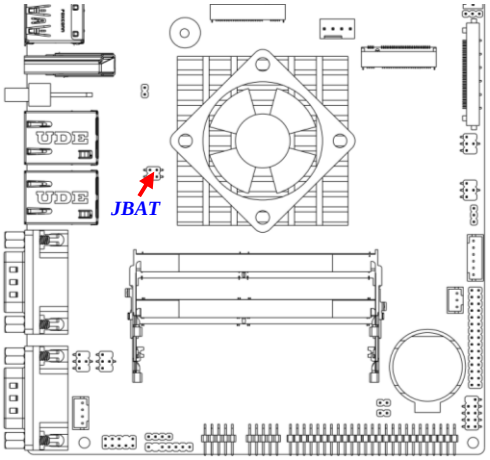


3-4 Closed:
PIN9=+5V;

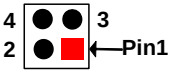


4-6 Closed:
PIN9=+12V

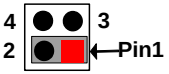
Pin (1-2) of JBAT (4-pin): Clear ME_RTC (2.0 pitch)



PIN(1-2) Clear ME_RTC

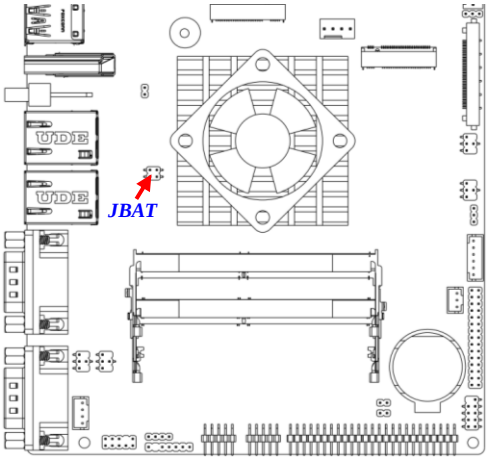


1-2 Open: Normal(Default)

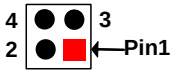


1-2 Closed: Clear ME_RTC

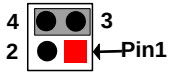
Pin (3-4) of JBAT (4-pin): Clear CMOS Setting (2.0 pitch)



PIN(3-4) Clear CMOS

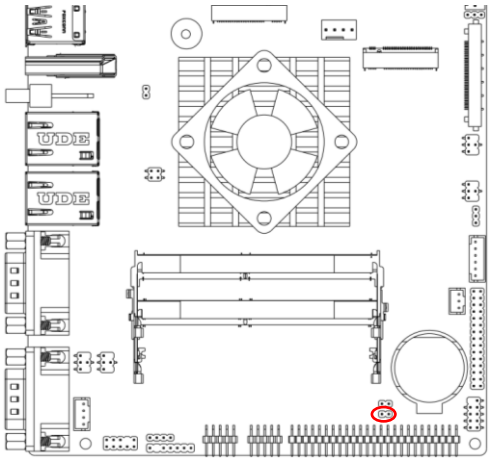


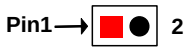
3-4 Open: Normal(Default)



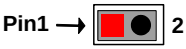
3-4 Closed: Clear CMOS

J80PORT (2-pin): GPIO Select (2.0 pitch)





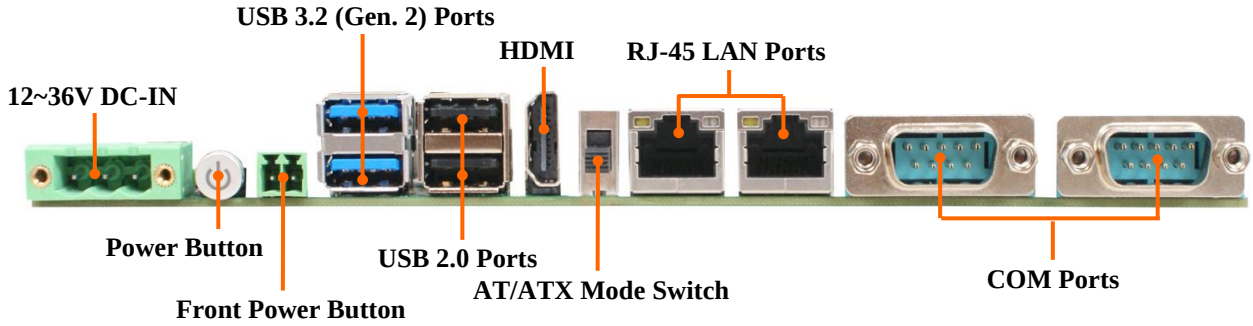
1-2 Open: 80 port

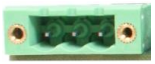


1-2 Closed: GPIO

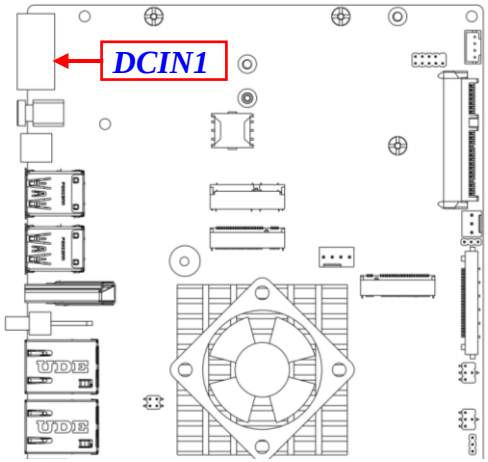
2-2-1 Connectors

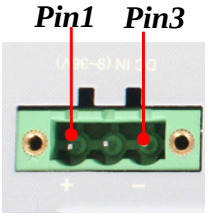
(1) Rear Panel Connectors



Icon	Name	Function
	**12~36V DC-in Power Jack**	For user to connect compatible power adapter to provide power supply for the system.
	**Power Button**	For user to turn on/off the system.
	**Power Button Jack**	For user to turn on/off the system.
	**HDMI Port**	To connect display device that support HDMI specification.
	**AT/ATX Mode Switch**	AT/ATX mode Supported at front side I/O switch. – AT: Directly PWR on as Power input ready – ATX: Press Button to PWR on after Power input ready ***Note**: User can switch up for ATX Mode or switch down for AT Mode.*
	**RJ-45 LAN Port**	This connector is standard RJ-45 LAN jack for Network connection.
	**USB 3.2 Ports**	To connect USB keyboard, mouse or other devices compatible with USB specification. USB 3.2 ports supports up to 10Gbps data transfer rate.
	**USB 2.0 Ports**	To connect USB keyboard, mouse or other devices compatible with USB specification.
	**RS232/422/485 Serial Port**	Mainly for user to connect external MODEM or other devices that supports Serial Communications Interface.

(2) DCIN1(3-pin) : 12~36V DC-in Power Connector

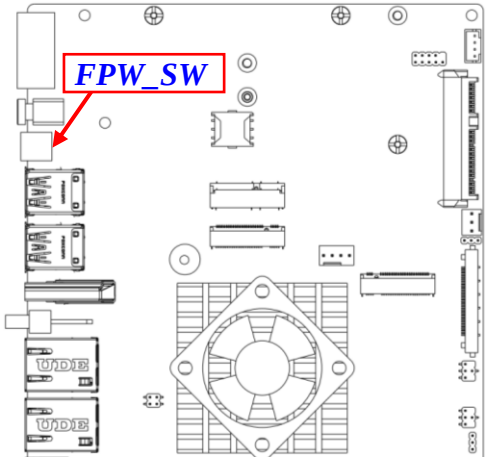


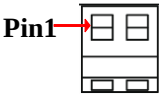


Pin No.	Definition
1	+12~36V VCC
2	GND
3	GND

Warning: *Find Pin-1 position before connecting power cable to this 3-pin power connector.* ***WRONG INSTALLATION DIRECTION WILL DAMAGE THE BOARD!!***

(3) FPW_SW (2-pin block): Power button jack

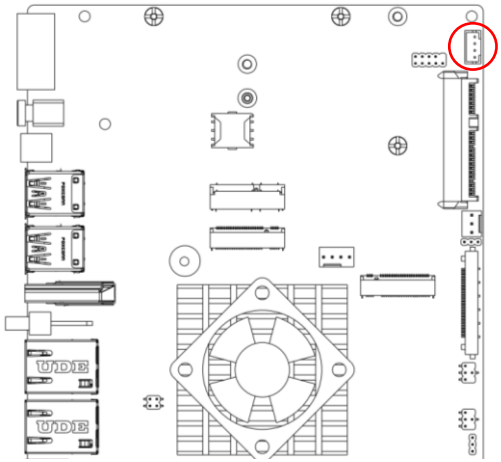


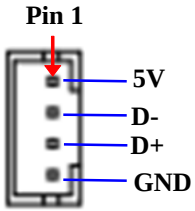


Pin No.	Definition
1	FP_SPSW
2	GND

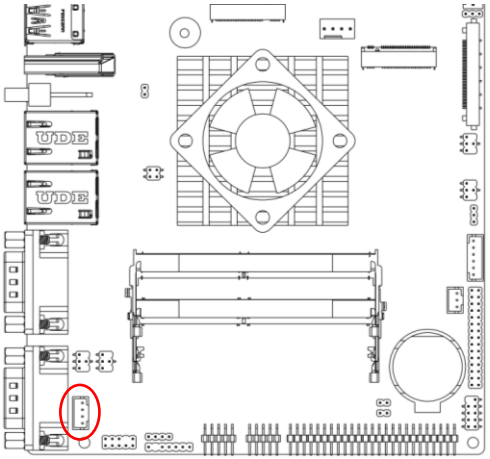
Warning: *Power connection to Rear* ***DCIN1*** *and Internal* ***FPW_SW*** *can not be made simultaneously. Apply compatible power cable to only one of them to power on the system.*

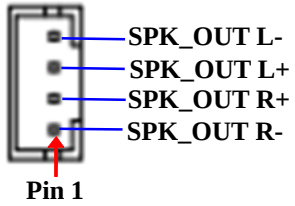
(4) FP_USB1 (4-pin): USB 2.0 Connector



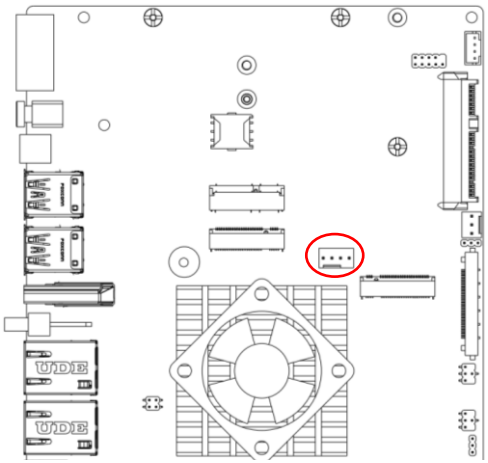


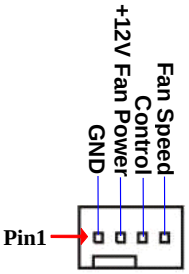
(5) SPEAK (4-pin): 3W Amplifier Connector





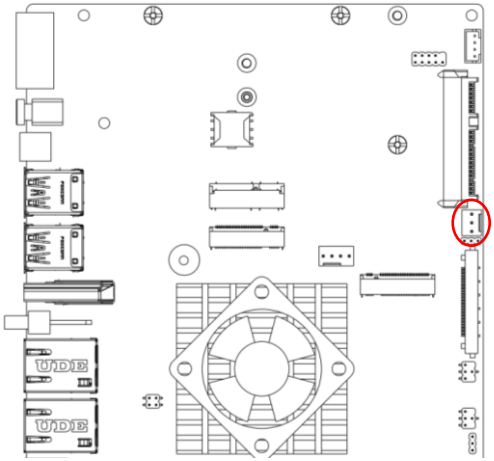
(6) CPUFAN (4-pin): Fan Connector

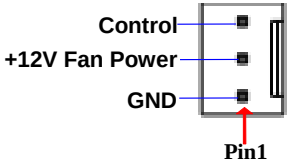




CPUFAN

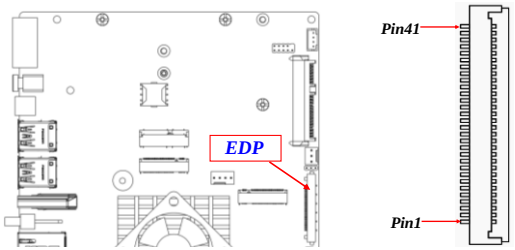
(7) SYSFAN (3-pin): Fan Connector





SYSFAN

(8) EDP (41-pin): EDP Connector

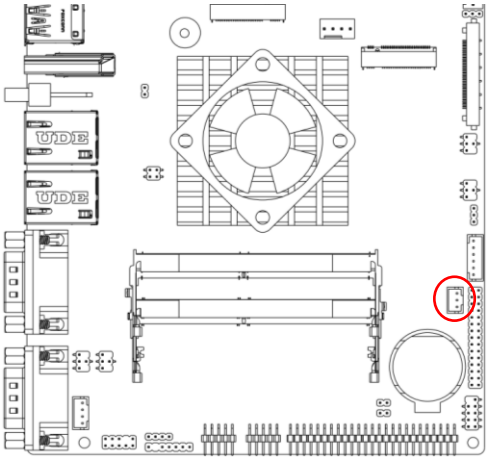


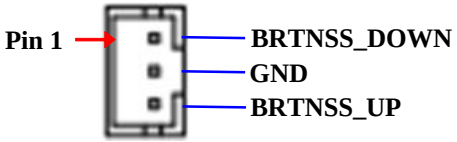
Pin No.	Pin Define	Pin No.	Pin Define
Pin 1	NC	**Pin 21**	LCD_VCC
Pin 2	GND	**Pin 22**	NC
Pin 3	EDP_LANE3N	**Pin 23**	GND
Pin 4	EDP_ LANE3P	**Pin 24**	GND
Pin 5	GND	**Pin 25**	GND
Pin 6	EDP_LANE2N	**Pin 26**	GND
Pin 7	EDP_ LANE2P	**Pin 27**	EDP_HPD
Pin 8	GND	**Pin 28**	GND
Pin 9	E DP_LANE1N	**Pin 29**	GND
Pin 10	EDP_LANE1P	**Pin 30**	GND
Pin 11	GND	**Pin 31**	GND
Pin 12	EDP_LANE0N	**Pin 32**	EDP_BKLT_EN
Pin 13	EDP_LANE0P	**Pin 33**	EDP _BKLT_CTL
Pin 14	GND	**Pin 34**	NC
Pin 15	EDP_AUXP	**Pin 35**	NC
Pin 16	EDP_AUXN	**Pin 36**	LCD_BKLT_PWR
Pin 17	GND	**Pin 37**	LCD_BKLT_PWR
Pin 18	LCD_VCC	**Pin 38**	LCD_BKLT_PWR
Pin 19	LCD_VCC	**Pin 39**	LCD_BKLT_PWR
Pin 20	LCD_VCC	**Pin 40**	NC
		Pin 41	NC

***Note**: Please follow the setting of **JP1** for LCD_BKLT_PWR.*

***Note**: Please follow the setting of **JP2** for LCD_VCC.*

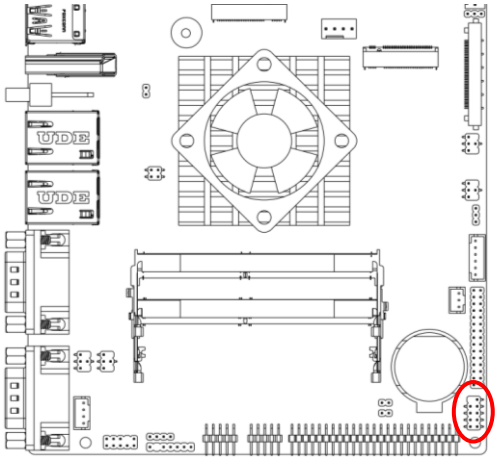
(9) JP3 (3-pin): Light Control Connector

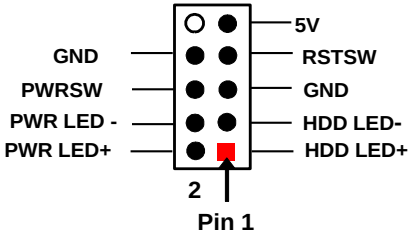




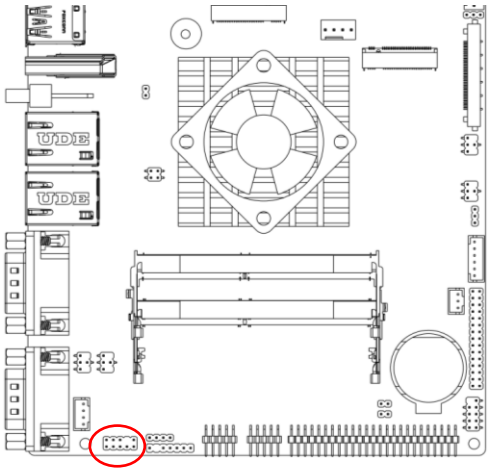
2-2-2 Headers

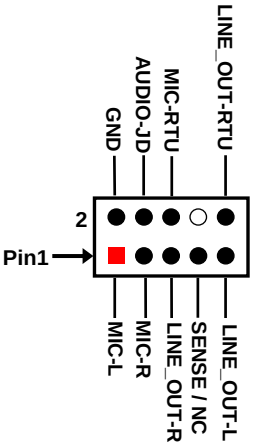
(1) JW_FP (9-pin): Front Panel Header (2.0 pitch)



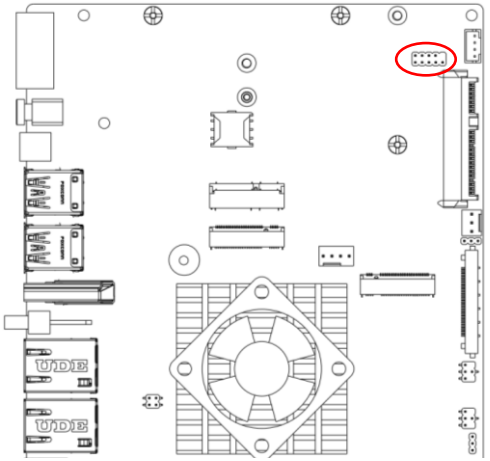


(2) FP_AUDIO (9-pin): Line-Out, MIC-In Header (2.0 pitch)

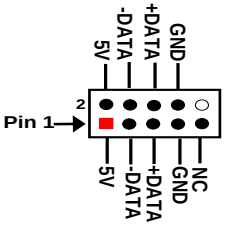




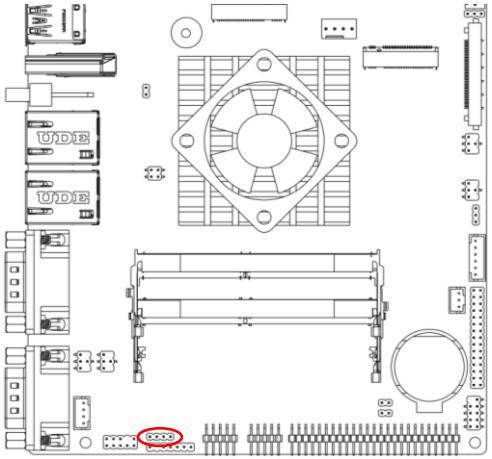
(3) FP_USB2 (9-pin): USB 2.0 Port Headers (2.0 pitch)

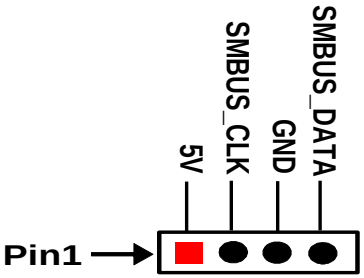


*FP_USB2 → USB 2.0 Port *2*

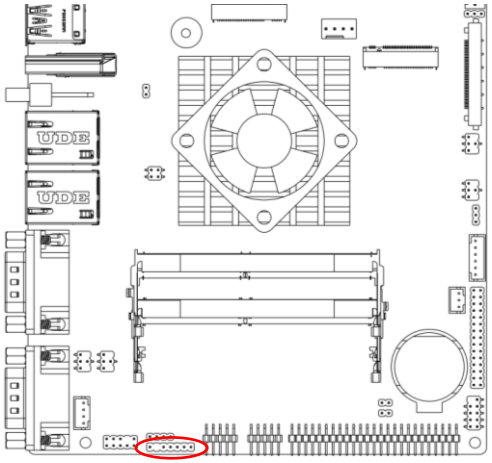


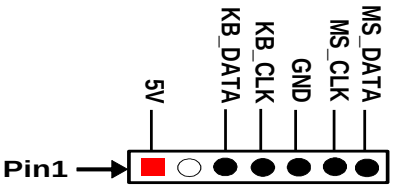
(4) SMBUS (4-Pin): SMBUS Header (2.0 pitch)



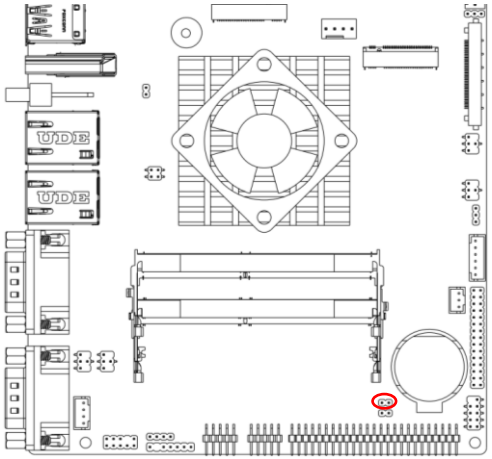


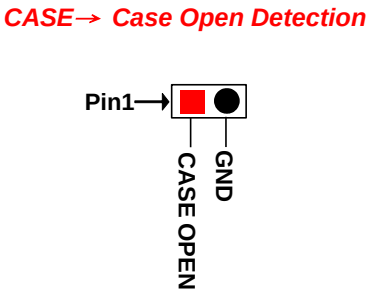
(5) PS2KBMS (6-pin): PS/2 Keyboard & Mouse Header (2.0 pitch)





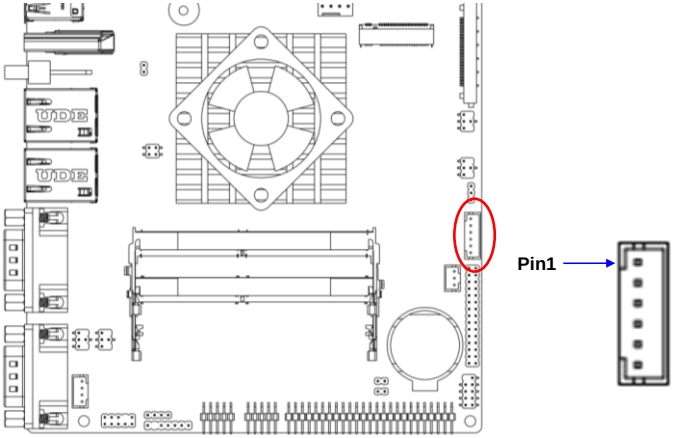
(6) CASE (2-pin): Case Open Message Display Function Select (2.0 pitch)





Pin (1&2) short**:** *When Case open function pin short to GND, the Case open function was detected. When used, needs to enter BIOS and enable* ***'Case Open Detect'*** *function. 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.*

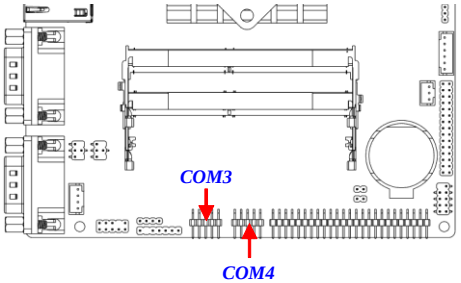
(7) INVERTER (6-pin): LVDS Inverter Connector (2.0 pitch)

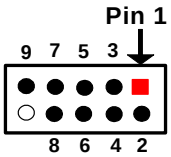


Pin No.	Definition
1	Backlight Power
2	Backlight Power
3	Backlight Enable
4	Backlight PWM
5	GND
6	GND

***Note:** Please follow the setting of **JPLED** for Backlight Power.*

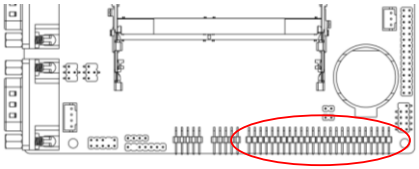
(8) COM3/COM4 (9-pin): RS232 Serial Port Header (2.0 pitch)

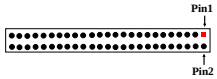




Pin NO.	RS232
Pin 1	DCD
Pin 2	DSR
Pin 3	SIN
Pin 4	RTS
Pin 5	SOUT
Pin 6	CTS
Pin 7	DTR
Pin 8	RI
Pin 9	GND

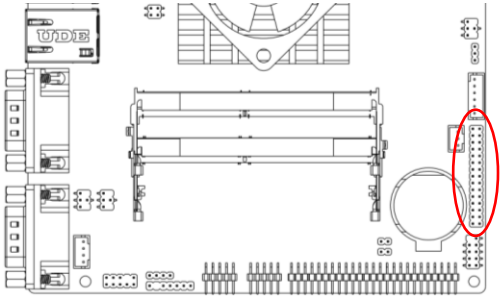
(9) F_PH (50-pin): Mixture Header (2.0 pitch)

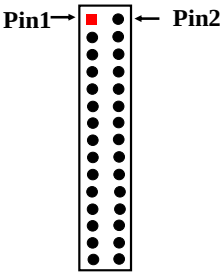




Pin Define	Pin NO.	Pin NO.	Pin Define
USB2_P8_P	Pin 1	Pin 2	USB2_P8_N
GND	Pin 3	Pin 4	GND
ESPI_CLK	Pin 5	Pin 6	ESPI_IO_0
ESPI_RESET	Pin 7	Pin 8	ESPI_IO_1
ESPI_ALERT	Pin 9	Pin 10	ESPI_IO_2
ESPI_CS	Pin 11	Pin 12	ESPI_IO_3
GND	Pin 13	Pin 14	GND
GND	Pin 15	Pin 16	GND
GND	Pin 17	Pin 18	GND
GND	Pin 19	Pin 20	GND
SIO_GPIO70	Pin 21	Pin 22	SIO_GPIO80
SIO_GPIO71	Pin 23	Pin 24	SIO_GPIO81
SIO_GPIO72	Pin 25	Pin 26	SIO_GPIO82
SIO_GPIO73	Pin 27	Pin 28	SIO_GPIO83
SIO_GPIO74	Pin 29	Pin 30	SIO_GPIO84
SIO_GPIO75	Pin 31	Pin 32	SIO_GPIO85
SIO_GPIO76	Pin 33	Pin 34	SIO_GPIO86
SIO_GPIO77	Pin 35	Pin 36	SIO_GPIO87
GND	Pin 37	Pin 38	GND
GND	Pin 39	Pin 40	VCC3
GND	Pin 41	Pin 42	VCC3
3VSB	Pin 43	Pin 44	+12V
3VSB	Pin 45	Pin 46	+12V
5VSB	Pin 47	Pin 48	5V
5VSB	Pin 49	Pin 50	5V

(10) LVDS (30-pin): 24-bit Dual Channel LVDS Header (2.0 pitch)





Pin Define	Pin NO.	Pin NO.	Pin Define
LCD_VCC	Pin 1	Pin 2	LCD_VCC
LCD_VCC	Pin 3	Pin 4	GND
GND	Pin 5	Pin 6	GND
LVDSA_DATAN0	Pin 7	Pin 8	LVDSA_DATAP0
LVDSA_DATAN1	Pin 9	Pin 10	LVDSA_DATAP1
LVDSA_DATAN2	Pin 11	Pin 12	LVDSA_DATAP2
GND	Pin 13	Pin 14	GND
LVDSA_CLKN	Pin 15	Pin 16	LVDSA_CLKP
LVDSA_DATAN3	Pin 17	Pin 18	LVDSA_DATAP3
LVDSB_DATAN0	Pin 19	Pin 20	LVDSB_DATAP0
LVDSB_DATAN1	Pin 21	Pin 22	LVDSB_DATAP1
LVDSB_DATAN2	Pin 23	Pin 24	LVDSB_DATAP2
GND	Pin 25	Pin 26	GND
LVDSB_CLKN	Pin 27	Pin 28	LVDSB_CLKP
LVDSB_DATAN3	Pin 29	Pin 30	LVDSB_DATAP3
CH_SPD1	Pin 31	Pin 32	CH_SPC1

***Note**: Please follow the setting of **JPLCD** for LCD_VCC.*

***Note**: User can choose between LVDS and EDP display options, but **only one of them can function at the same time**. Before connecting compatible cable to corresponding header/wafer, user should go to BIOS settings →**Chipset** →**Memory Configuration**→ **Active LFP**, and set it as **[LVDS]** or **[EDP]** based on actual configuration.*

Chapter 3
Introducing BIOS

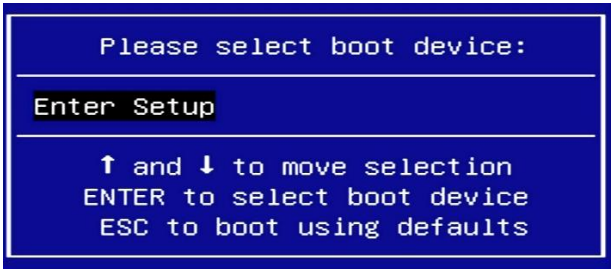
Notice!	The BIOS options in this manual are for reference only. Different configurations may lead to difference in BIOS screen and BIOS screens in manuals are usually the first BIOS version when the board is released and may be different from your purchased motherboard. Users are welcome to download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

The BIOS is a program located on a Flash Memory on the motherboard. This program is a bridge between motherboard and operating system. When you start the computer, the BIOS program will gain control. The BIOS first operates an auto-diagnostic test called POST (power on self test) for all the necessary hardware, it detects the entire hardware device and configures the parameters of the hardware synchronization. Only when these tasks are completed done it gives up control of the computer to operating system (OS). Since the BIOS is the only channel for hardware and software to communicate, it is the key factor for system stability, and in ensuring that your system performance as its best.

3-1 Entering Setup

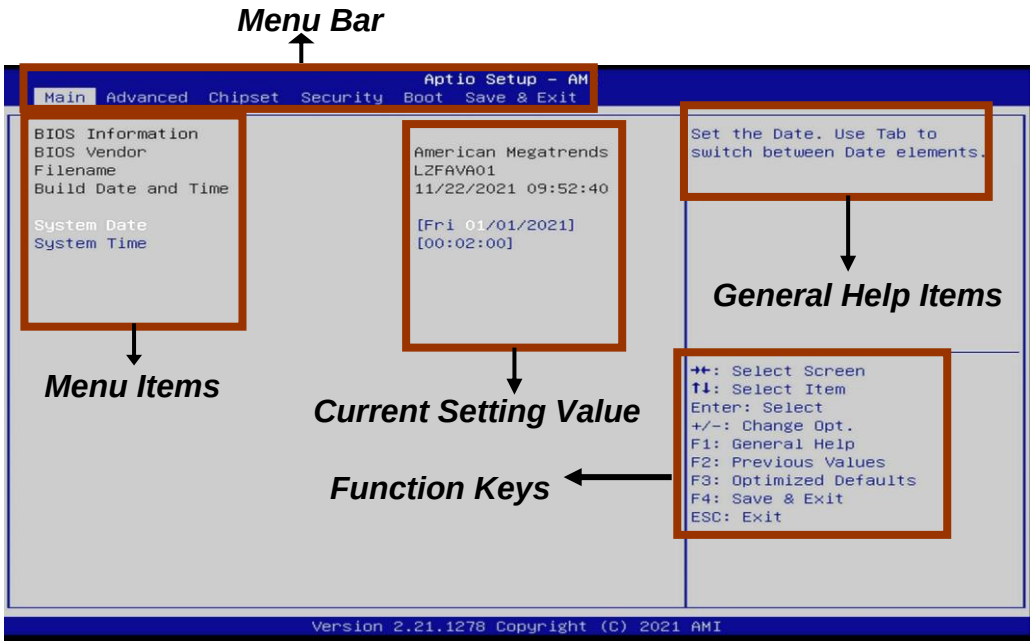
Power on the computer and by pressing <Del> immediately allows you to enter Setup. If the message disappears before your respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the “RESET” button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt> and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to

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



3-2 BIOS Menu Screen

The following diagram show a general BIOS menu screen:



3-3 Function Keys

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

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

3-4 Getting Help

Main Menu

The on-line description of the highlighted setup function is displayed at the top right corner the screen.

Status Page Setup Menu/Option Page Setup Menu

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press <**Esc**>.

3-5 Menu Bars

There are six menu bars on top of BIOS screen:

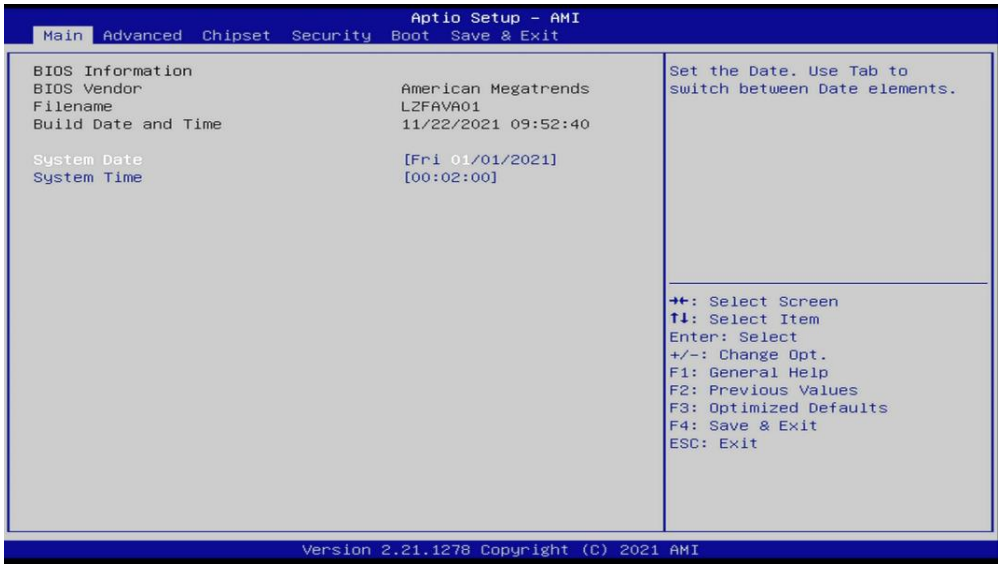
Main	To change system basic configuration
Advanced	To change system advanced configuration

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.



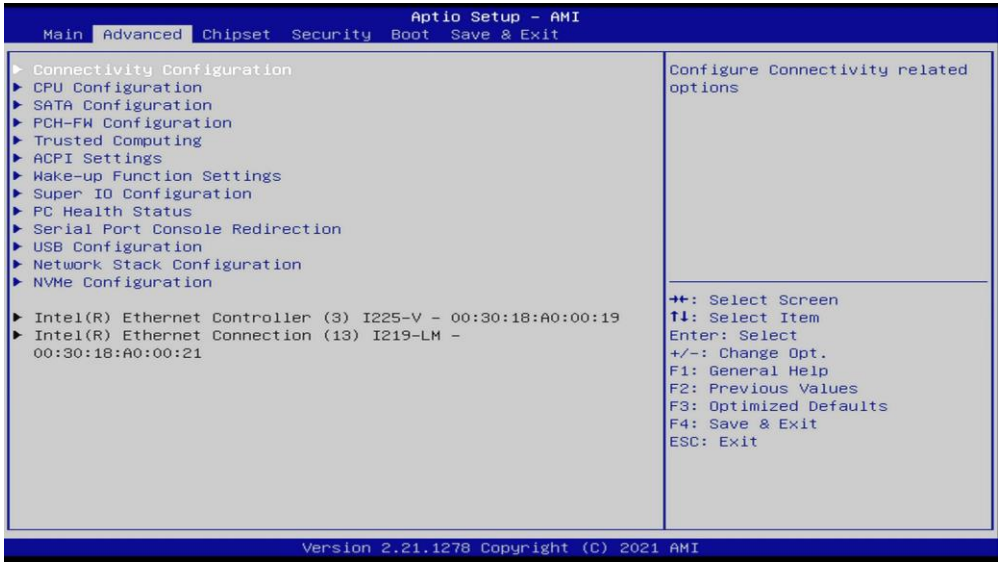
System Date

Set the date. Please use [Tab] to switch between data 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 make settings for the following sub-items:

  Intel (VMX) Virtualization

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

C states

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

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

Hardware Prefetcher

Use this item to turn on/off the MLC streamer prefetcher.

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

Adjacent Cache Line Prefetch

Use this item to turn on/off prefetching of adjacent cache lines.

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

- **SATA Configuration**

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

SATA Configuration

SATA

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].

- **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:
  Configuration
  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].

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

  ACPI Sleep State
  Use this item to select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.
  The optional settings: [Suspend Disabled]; [S3 (Suspend to RAM)].

- **Wake-up Function Settings**
  Press [Enter] to make settings for the following sub-items:
  Wake-up System With Fixed Time
  Use this item to enable or disable System wake on alarm event.
  The optional settings: [Disabled]; [Enabled].

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

Wake-up Hour

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

Wake-up Minute

Use this item to select 0-59.

Wake-up Second

Use this item to select 0-59.

Wake-up System with Dynamic Time

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

System will wake on the current time + Increase minute(s).

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

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

PS2 KB/MS Wake-up

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

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

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

USB S3/S4 Wake-up

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

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

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

USB S5 Power

Use this item to enable or disable USB Power after System Shutdown.

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

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

- **Super IO Configuration**

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

uper 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].

► **Serial Port 2 Configuration**

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

Serial Port 2 Configuration

Serial Port

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

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

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

Device Settings

Change Settings

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

The optional settings: [IO=2F8h; IRQ=3;]; [IO=3F8h; IRQ=3,4,5,7,10,11;]; [IO=2F8h; IRQ=3,4,5,7,10,11;]; [IO=3E8h; IRQ=3,4,5,7,10,11;]; [IO=2E8h; IRQ=3,4,5,7,10,11;].

Transmission Mode Select
The optional settings: [RS422]; [RS232]; [RS485].
Mode Speed Select
Use this item to select RS232/RS422/RS485 Speed.
The optional settings: [RS232/RS422/RS485=250Kbps]; [RS232=1Mbps, RS422/RS485=10Mbps].

► **Serial Port 3 Configuration**
Press [Enter] to make settings for the following items:
Serial Port 3 Configuration

Serial Port
Use this item to enable or disable Serial Port (COM).
The optional settings: [Disabled]; [Enabled].
When set as **[Enabled]**, user can make further settings in the following items:
Device Settings
Change Settings
Use this item to select an optimal setting for Super IO Device.
The optional settings: [IO=3E8h; IRQ=10;]; [IO=3F8h; IRQ=3,4,5,7,10,11;]; [IO=2F8h; IRQ=3,4,5,7,10,11;]; [IO=3E8h; IRQ=3,4,5,7,10,11;]; [IO=2E8h; IRQ=3,4,5,7,10,11;]; [IO=3E0h; IRQ=3,4,5,7,10,11;]; [IO=2E0h; IRQ=3,4,5,7,10,11;].

► **Serial Port 4 Configuration**
Press [Enter] to make settings for the following items:
Serial Port 4 Configuration

Serial Port
Use this item to enable or disable Serial Port (COM).
The optional settings: [Disabled]; [Enabled].
When set as **[Enabled]**, user can make further settings in the following items:
Device Settings
Change Settings
Use this item to select an optimal setting for Super IO Device.

The optional settings: [IO=2F8h; IRQ=10;]; [IO=3F8h; IRQ=3,4,5,7,10,11;]; [IO=2F8h; IRQ=3,4,5,7,10,11;]; [IO=3E8h; IRQ=3,4,5,7,10,11;]; [IO=2E8h; IRQ=3,4,5,7,10,11;]; [IO=3E0h; IRQ=3,4,5,7,10,11;]; [IO=2E0h; IRQ=3,4,5,7,10,11;].

WatchDog Reset Timer
Use this item to enable or disable WDT reset function.
The optional settings: [Disabled]; [Enabled].
When set as **[Enabled]**, the following sub-items shall appear:
WatchDog Reset Timer Value
User can select a value in the range of [4] to [255] seconds when 'WatchDog Reset Timer Unit' set as [Sec]; or in the range of [4] to [255] minutes when 'WatchDog Reset Timer Unit' set as [Min].
WatchDog Reset Timer Unit
The optional settings: [Sec.]; [Min.].

Case Open Detect
Use this item to detect case has already open or not, show message in POST.
The optional settings: [Disabled]; [Enabled].
When set as [Enabled], system will detect if COPEN has been short or not (*refer to **CASE** jumper setting for Case Open Detection*); if Pin 1&2 of ***CASE*** are 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 Smart Mode
The optional settings: [Disabled]; [Enabled].
When set as **[Enabled]**, the following sub-items shall appear:

CPUFAN Full-Speed Temperature
Use this item to set CPUFAN full speed temperature. Fan will run at full speed when above this pre-set temperature.
CPUFAN Full-Speed Duty
Use this item to set CPUFAN full-speed duty. Fan will run at full speed when above this pre-set duty.
CPUFAN Idle-Speed Temperature
Use this item to set CPUFAN idle speed temperature. Fan will run at idle speed when below this pre-set temperature.
CPUFAN Idle-Speed Duty
Use this item to set CPUFAN idle speed duty. Fan will run at idle speed when below this pre-set duty.

- **Serial Port Console Redirection**

COM1
Console Redirection
Use this item to enable or disable COM1 Console Redirection.
The optional settings: [Disabled]; [Enabled].
When set as **[Enabled]**, user can make further settings in the following items:

- **Console Redirection Settings**

The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.
Press [Enter] to make settings for the following sub-items.

COM1
Console Redirection Settings
Terminal Type
The optional settings: [VT100]; [VT100+]; [VT-UTF8]; [ANSI].
[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.*

- **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.*

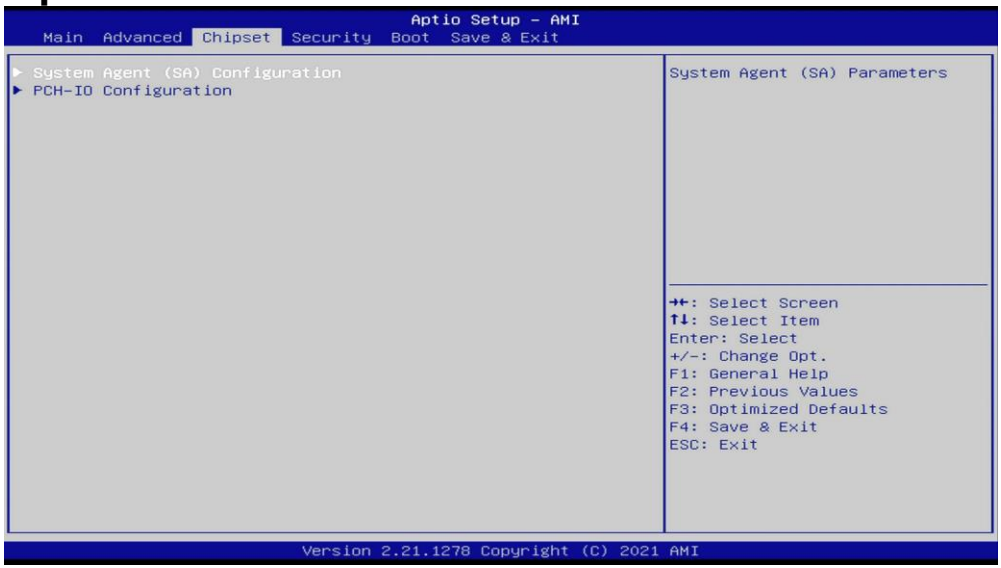
- **Intel(R) Ethernet Connection (3) I225-V - XX:XX:XX:XX:XX:XX**

This item shows current network brief information.

- **Intel(R) Ethernet Connection (13) 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:

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

Active LVDS

Use this item to select the active configuration.

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

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

Panel Type

Use this item to select panel type.

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

LVDS FW Write Protect

Use this item to support LVDS FW update/protect.

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

Aperture Size

Use this item to select the Aperture Size.

The optional settings: [128M]; [256M]; [512M]; [1024M].

***Note:** Above 4GB MMIO BIOS assignment is automatically enabled when selecting 2048MB aperture. To use this feature, please disable CSM Support.*

DVMT Pre-Allocated

Use this item to select DVMT5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.

The optional settings: [0M]; [32M]; [64M]; [96M]; [128M]; [160M].

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].

► **PCH-IO Configuration**

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

PCH-IO Configuration

USB Controller

Use this item to enable or disable USB Physical Connector (physical port). Once **[Disabled]**, any USB devices plug into the connector will not be detected by BIOS or OS.

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

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.

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.*

Onboard Lan1 Controller

Use this item to control the PCI Express Root Port.
The optional settings: [Disabled]; [Enabled].

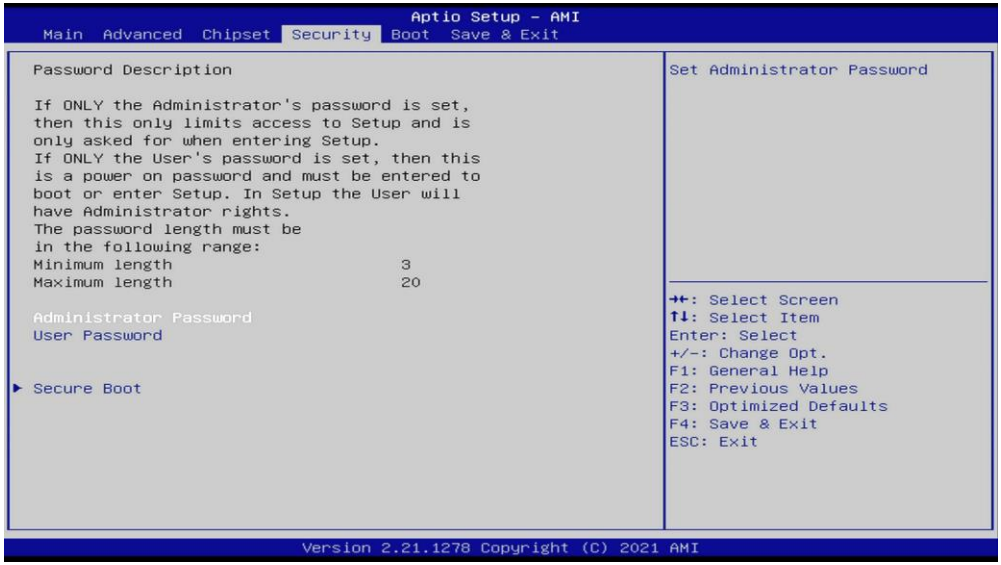
Onboard Lan2 Controller

Use this item to enable or disable 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].

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 are: [Disabled]; [Enabled].

Secure Boot Mode

Use this item to 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

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

Reset to Setup Mode

Key Management

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

Vendor Keys

Factory Key Provision

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

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

Restore Factory Keys

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

Reset To Setup Mode

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 default

This item restore DB variable to factory defaults.

Secure Boot variable/Size/Keys/Key Source

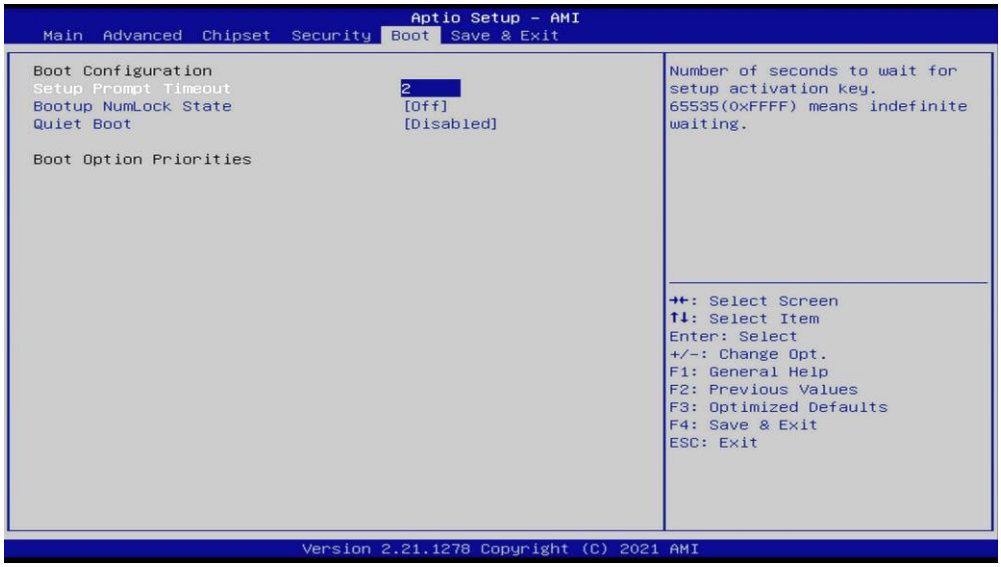
Platform Key(PK)/Key Exchange Keys/Authorized Signatures/Forbidden Signatures/ Authorized TimeStamps/OsRecovery Signatures

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

1. Public Key Certificate:
   a) EFI_SIGNATURE_LIST
   b) EFI_ CERT_X509 (DER)
   c) EFI_ CERT_RSA2048 (bin)
   d) EFI_ CERT_SHAXXX
2. Authenticated UEFI Variable
3. EFI PE/COFF Image (SHA256)

Key Source: Factory, External, Mixed.

3-10 Boot Menu

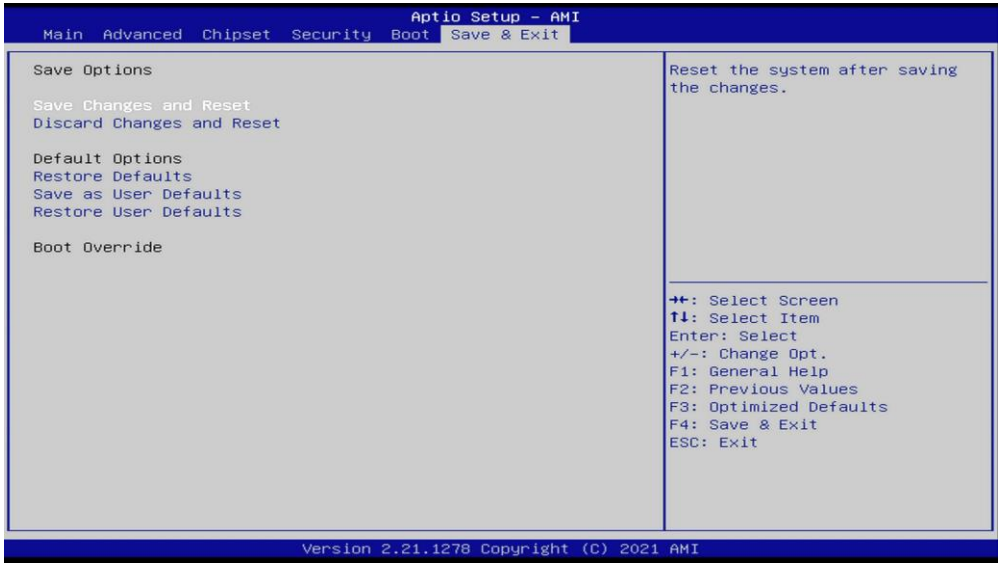


Boot Configuration

Setup Prompt Timeout
Use this item to set number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.
Bootup NumLock State
Use this item to select keyboard NumLock state.
The optional settings: [On]; [Off].
Quiet Boot
Use this item to enable or disable Quite 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 defaults to all the setup options.

Boot Override