NF632N Series

User Manual

NO. G03-NF632N-F

Revision: 3.0

Release date: December 8, 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.

TABLE OF CONTENT

⚠ Environmental Safety Instruction

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

- 0 to 40 centigrade is the suitable temperature. (The 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.

USER'S NOTICE

Manual Revision Information

Reversion	Revision History	Date
3.0	Third Edition	December 8, 2022

Item Checklist

☑ Motherboard
☑ Cable(s)

Chapter 1
Introduction of the Motherboard

1-1 Feature of Motherboard

■ Onboard high-performance Intel® Skylake-U/Kabylake-U series SoC CPU

■ Support 2* DDR4 2133MHz Dual Channel SO-DIMM, max up to 32GB

■ Support HDMI, Display Port, LVDS/eDP Triple Independent Displays

■ Support 1* SATAIII (6Gb/s) device

■ Onboard 1* full-size Mini-PCIE/M-SATA share slot device

■ Onboard 1* half-size Mini-PCIE device

■ Support 2* RJ-45 LAN port

■ Support 6* internal COM port (COM1 support RS232/422/485)

■ Support USB 3.0 data transport demand

■ Support CPU Over-Temperature protection

■ Support CPU Over-Current/Under Voltage protection

■ Support CPU Smart FAN

■ Compliance with ErP standard

■ Support Watchdog function

■ Support TPM function (optional)

1-2 Specification

Spec	Description
Design	● 3.5" SBC Form Factor; PCB size: 148mm * 102mm
Embedded CPU	● Integrated with Intel® Skylake-U/Kabylake-U series CPU (Default:i5-7300, TDP:15W) *Note: CPU model varies from different IPC options. Please consult your dealer for more information of onboard CPU.*
Memory Slot	● 2* DDR4 SO-DIMM slot support 2* DDR4 2133 MHz SO-DIMM up to 32GB ● Support dual channel function
Expansion Slot	● 1* Full-size Mini-PCIE/MSATA slot (**MPEST***, share with MSATA slot*) ● 1* Full-size Mini-PCIE slot (**MPE**)
Storage	● 1* SATAIII 6G/s port ● 1* Full-size Mini-PCIE/MSATA slot (**MPEST***, share with MSATA slot*)
LAN Chip	● Integrated with Intel I211AT Gigabit PCI-E LAN chip & Intel I219LM Gigabit LAN PHY chip ● Support Fast Ethernet LAN function of providing 10/100/1000Mbps Ethernet data transfer rate
Audio Chip	● Realtek HD Audio Codec integrated ● Audio driver and utility included
BIOS	● AMI 128MB Flash ROM
Rear I/O	● 1* 9V~24V DC-in power jack ● 2* USB 2.0 port ● 1* Display port ● 1* HDMI port ● 2* RJ-45 LAN port ● 4* USB 3.0 port ● 1* Audio line-out port
Internal I/O	● 1* 2-Pin internal 9V~24V DC-in system power connector ● 1* SATA Power-out connector ● 1* CPUFAN connector

	● 1* Front panel audio header(When enter S3 state , Power LED no support blinking) ● 1* 3W amplifier header ● 1* Front panel header ● 2* 9-pin USB 2.0 header (Expansible to 4* USB 2.0 ports) ● 1* 4-pin USB 2.0 header (Expansible to 1* USB 2.0 port) ● 1* SMBUS header ● 1* PS/2 keyboard & mouse header ● 1* GPIO header ● 1* RS232/422/485 serial port header **(COM1)** ● 5* RS232 serial port header **(COM2/3/4/5/6)** ● 1* LAN LED activity header ● 1* 4-Lane eDP header ● 1* 24-bit dual channel LVDS header ● 1* LVDS inverter

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

1-3 Layout Diagram
Rear IO Panel Diagram:
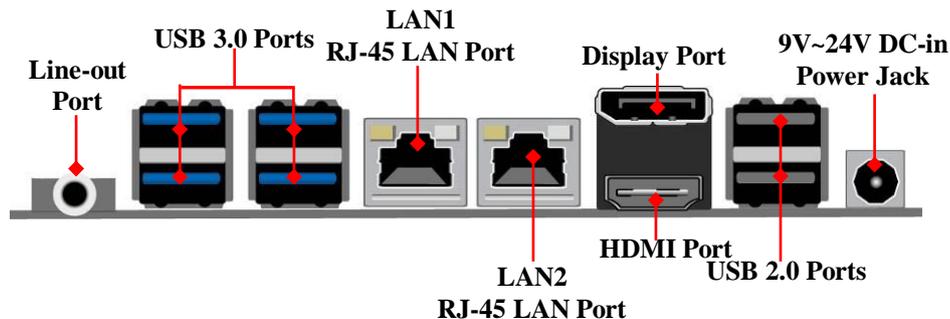
Motherboard Internal Diagram-Front Side
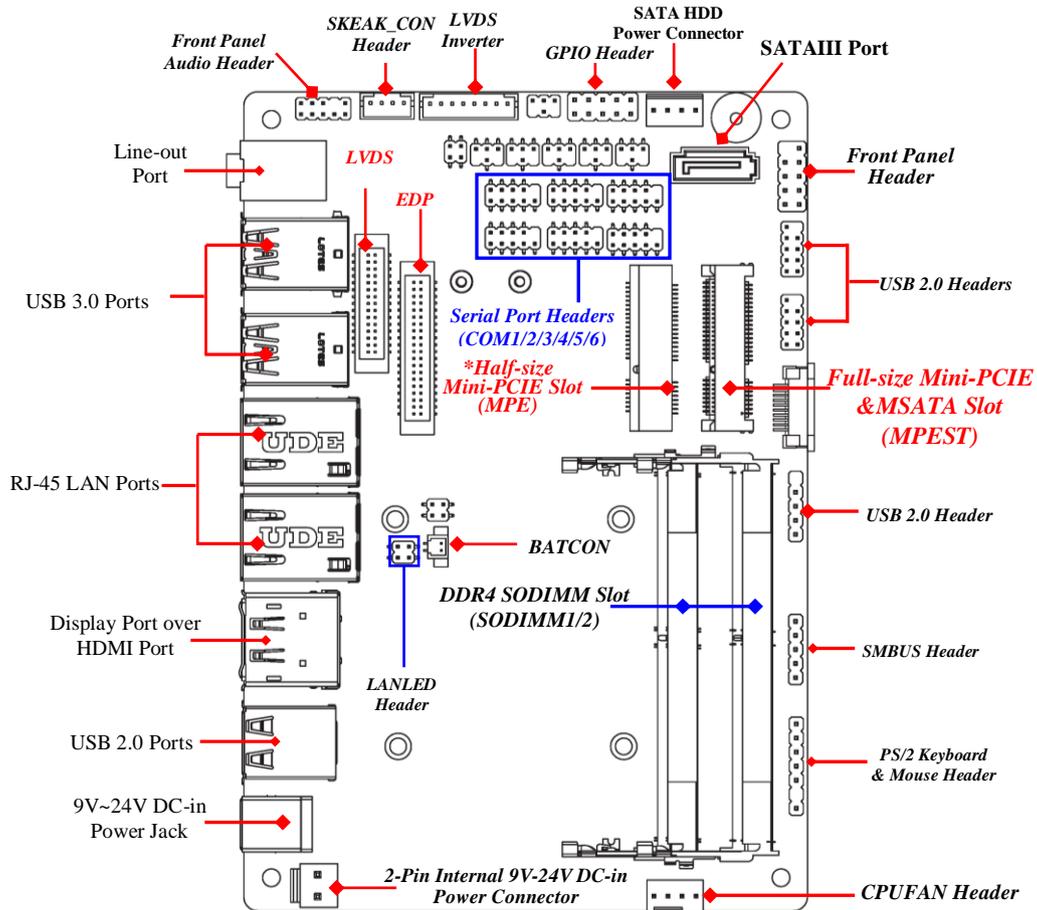
Motherboard Internal Diagram-Back Side

*Intel CPU
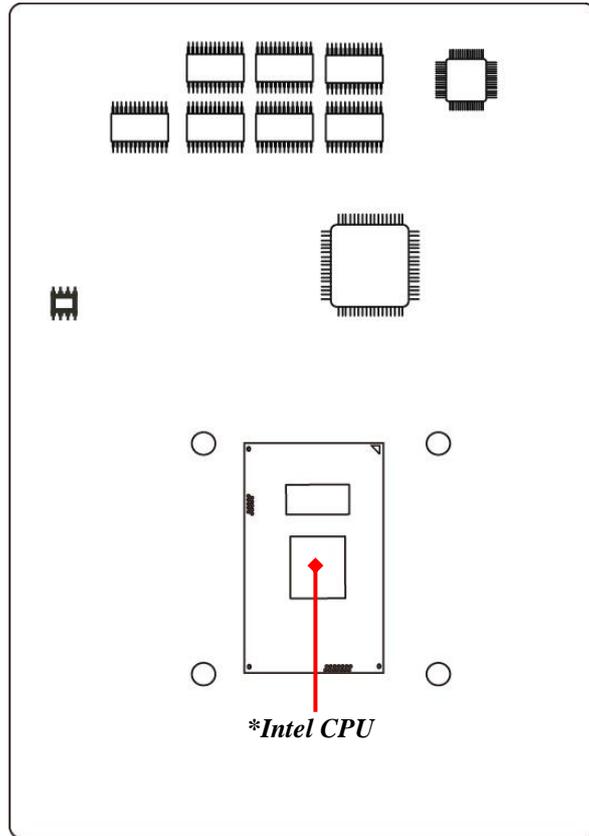
*Note: CPU is the most important part of the board and very fragile to any possible harm. Make sure that there is no damage to the CPU during any installation procedures!

Jumper Positions:
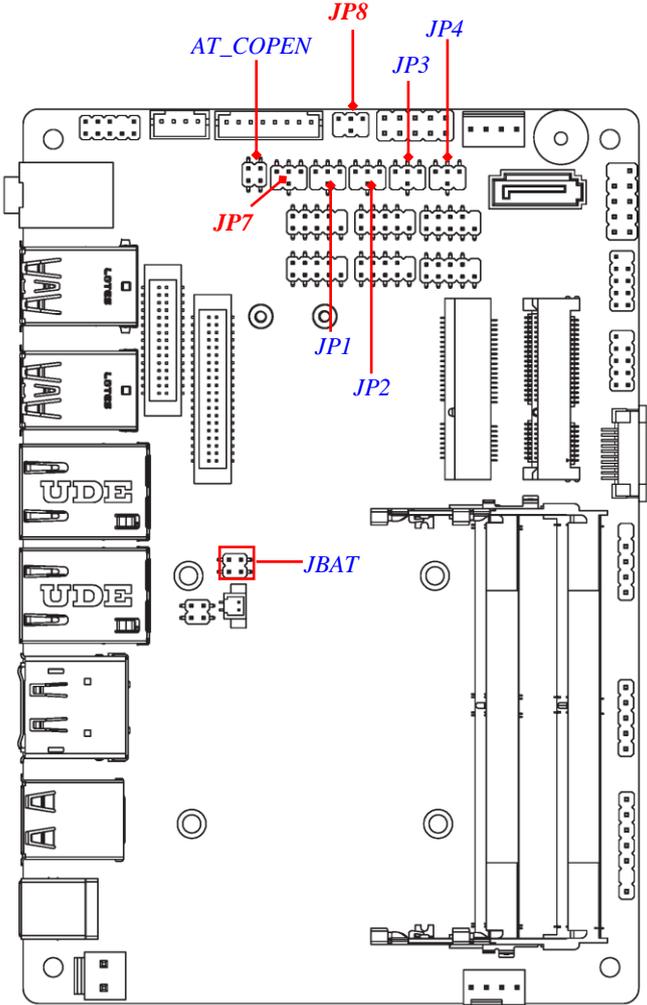
Jumper

Jumper	Name	Description
JP1	COM1 Header Pin9 Function Select	4-pin Block
JP2	COM2 Header Pin9 Function Select	4-Pin Block
JP3	COM3 Header Pin9 Function Select	4-Pin Block
JP4	COM4 Header Pin9 Function Select	4-Pin Block
JP7	LVDS Header VCC 3.3V/5V/12V Select	4-Pin Block
JP8	LVDS INVERTER Backlight 5V/12V Select	4-Pin Block
AT_COPEN	*Pin (1&2):* No Function *Pin(3&4):* Case Open Message Display Function	4-Pin Block
JBAT	*Pin (1&2):* Clear CMOS RAM Function Setting *Pin(3&4):* Flash Descriptor Security Override	4-Pin Block

Connectors

Connector	Name
DCIN	9V~24V DC–in System Power Jack
ATX2P	Internal 9V~24V System DC–in Power Connector
USB20	USB 2.0 Port Connector x2
DP_HDMI	*Top:* Display Port Connector *Bottom:* HDMI Port Connector
LAN1/LAN2	RJ-45 LAN Port Connector x2
USB30/USB31	USB 3.0 Port Connector x 4
LINE_OUT	Audio Line-Out Connector
SATA	SATAIII Connector
SATAPWR	SATA Power out Connector
CPUFAN	CPUFAN Connector

Headers

Header	Name	Description
FP_AUDIO	Front Panel Audio Header	9-pin Block
SPEAK_CON	3W Amplifier Header	4-pin Block
JW_FP	Front Panel Header(PWR LED/ HDD LED/Power Button /Reset)	9-pin Block
FP_USB20/ FP_USB21	USB 2.0 Header	9-pin Block
FP_USB	USB 2.0 Header	4-pin Block
SMBUS	SMBUS Header	5-pin Block
PS2KBMS	PS/2 Keyboard & Mouse Header	6-pin Block
GPIO	GPIO Header	10-pin Block
COM1	RS232/422/485 Serial Port Header	9-pin Block
COM2/3/4/5/6	RS232 Serial Port Header	9-pin Block
LAN_LED	LAN Activity LED Header	4-pin Block
INVERTER	LVDS Inverter Header	8-pin Block
LVDS	LVDS Header	30-pin Block
EDP	4-lane EDP Header	40-pin Block

Chapter 2
Hardware Installation
2-1 Jumper Setting

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

JP1→COM1 Header Pin-9

2 4 6	2 4 6	2 4 6
1 3 5	1 3 5	1 3 5
2-4 Closed: Pin9=RING (Default);	3-4 Closed: Pin9=+5V;	4-6 Closed: Pin9=+12V.
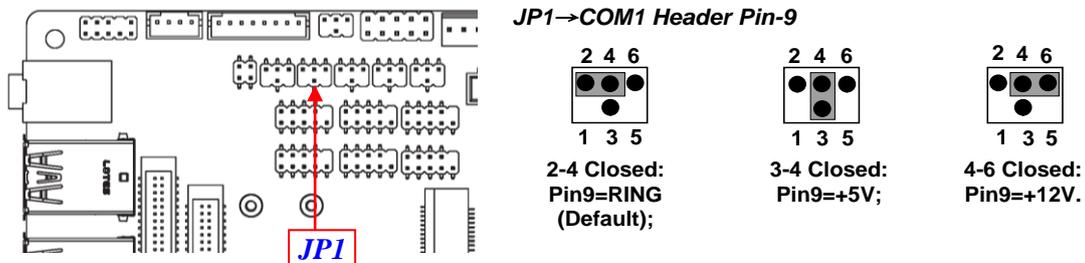
JP2 (4-pin): COM2 Header Pin9 Function Select

JP2→COM2 Header Pin-9

2 4 6	2 4 6	2 4 6
1 3 5	1 3 5	1 3 5
2-4 Closed: Pin9= RING (Default);	3-4 Closed: Pin9=+5V;	4-6 Closed: Pin9=+12V.
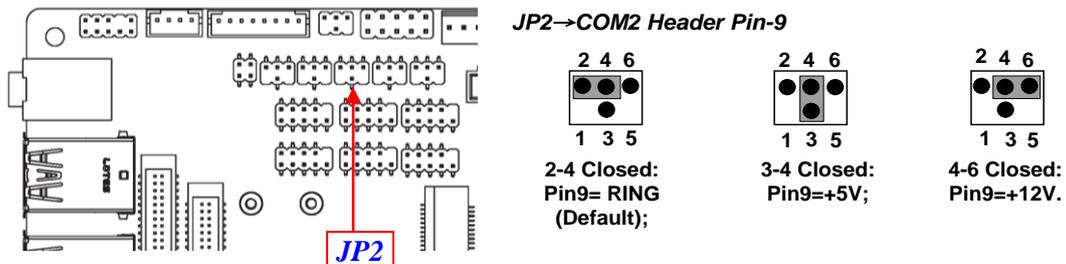
JP3 (4-pin): COM3 Header Pin9 Function Select

JP3→COM3 Header Pin-9

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

3-4 Closed:
Pin9=+5V;

4-6 Closed:
Pin9=+12V.
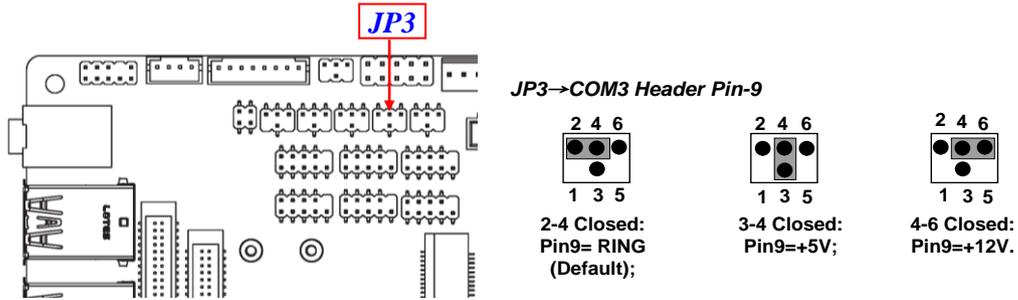
JP4 (4-pin): COM4 Header Pin9 Function Select

JP4→COM4 Header Pin-9

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

3-4 Closed:
Pin9=+5V;

4-6 Closed:
Pin9=+12V.
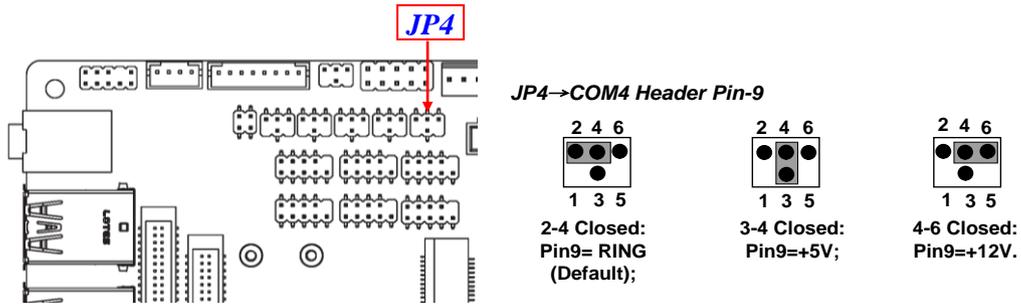
JP7 (4-pin): LVDS/eDP VCC 3.3V/5V/12V Select

JP7→LVDS VCC

2-4 Closed:
VCC = 3.3V

3-4 Closed:
VCC = 5V;

4-6 Closed:
VCC = 12V;
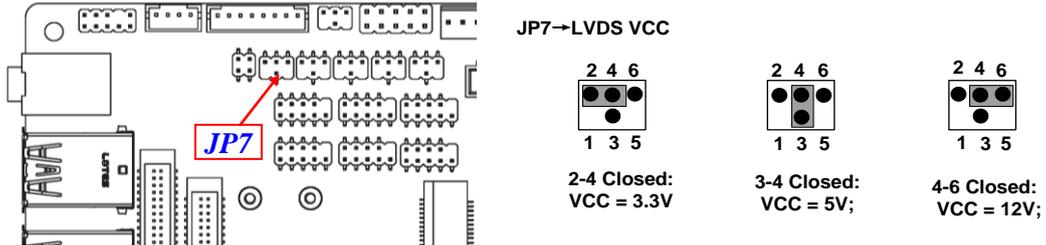
JP8 (3-pin): LVDS/eDP INVERTER Backlight 5V/12V Select

JP8→LVDS Backlight

2-4 Closed:
VCC = 5V;

3-4 Closed:
VCC = 12V;
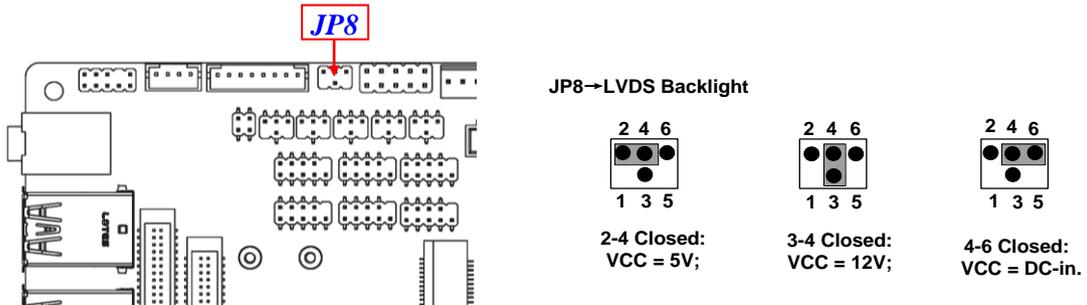
4-6 Closed:
VCC = DC-in.

Note: The maximum current carried is 1A.

Pin(1-2) of AT_COPEN (4-pin): No Function
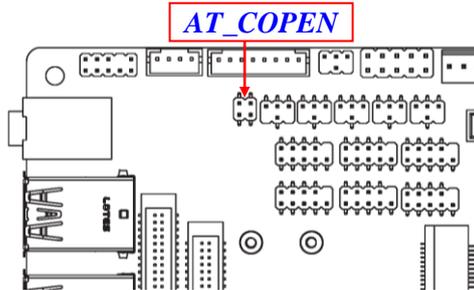
AT_COPEN

Pin(1-2) of AT_COPEN→No Function

```
  2  ● ●  4
Pin1→ ■ ●  3
```
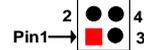
Pin(3-4) of AT_COPEN (4-pin): Case Open Message Display Function Select

Pin(3-4) of AT_COPEN→
Case Open Dectect Select

AT_COPEN

```
  2  ● ●  4
Pin1→ ■ ●  3
```
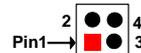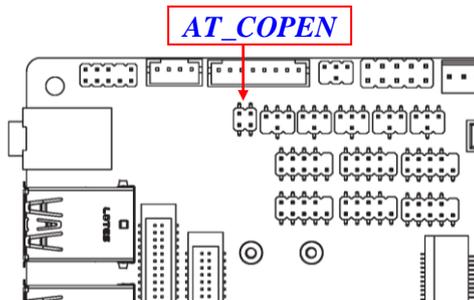
3-4 Open: Normal(Default);

```
  2  ● ●  4
Pin1→ ■ ●  3
```
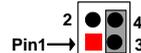
3-4 Closed: Case Open Function.
Selected(One Touch).

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

Pin (1-2) of JBAT (4-pin): Clear CMOS RAM Settings
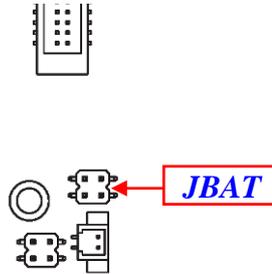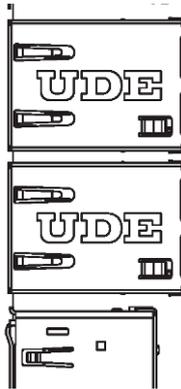
Pin(1-2) of JBAT→ Clear CMOS

4 ●● 3	
2 ●■ ← Pin1	
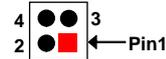
JBAT

1-2 Open: Normal(Default);

4 ●● 3	
2 ●■ ← Pin1	
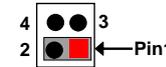
1-2 Closed: Clear CMOS(One Touch).

Pin(3-4)of JBAT (4-pin): Flash Descriptor Security Override
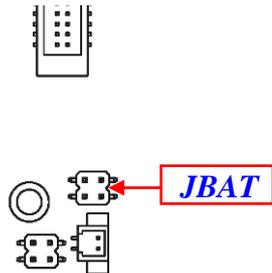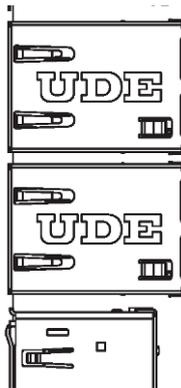
Pin(3-4) of JBAT→
Flash Descriptor Security Override

4 ●● 3	
2 ●■ ← Pin1	

JBAT
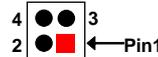
3-4 Open: Enable security measures defined in the Flash Descriptor (Default);

4 ●● 3	
2 ●■ ← Pin1	
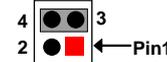
3-4 Closed: Disable Flash Descriptor security measures (override).

2-2 Connectors and Headers
2-2-1 Connectors

(1) Rear I/O Connectors
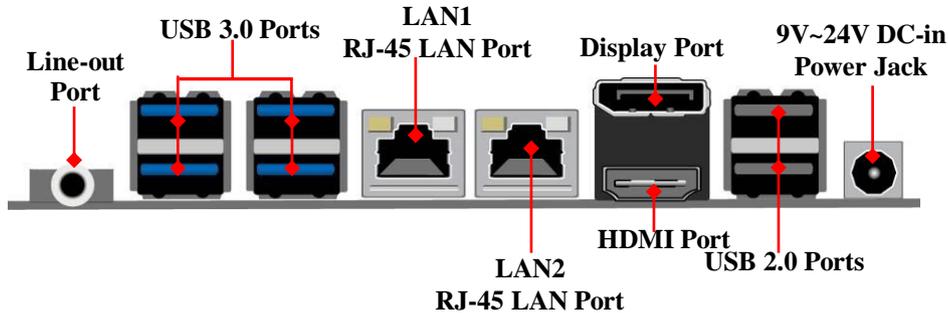
Icon	*Name*	*Function*
	9V~24V DC-in Power Jack	For user to connect compatible power adapter to provide power supply for the system.
	USB 2.0 Port	To connect USB keyboard, mouse or other devices compatible with USB specification.
	USB 3.0 Port	To connect USB keyboard, mouse or other devices compatible with USB specification. USB 3.0 ports supports up to 5Gbps data transfer rate.
	Display Port	To the system to corresponding display device with compatible DP cable.
	HDMI Port	To connect display device that support HDMI specification.
	RJ-45 LAN Port	This connector is standard RJ-45 LAN jack for Network connection.
	Line-Out Port	For user to connect external speaker, earphones, etc. to transfer system audio output.

(2) ATX2P (2-pin Block): Internal 9V~24V DC-in Power Connector

Pin 1
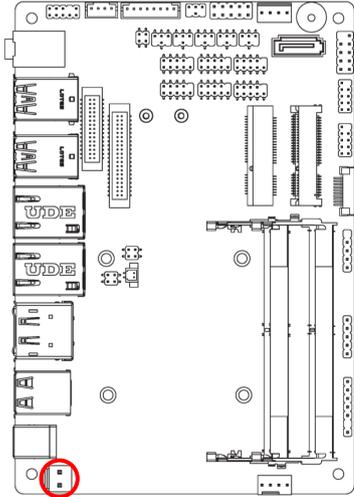
Pin.	Definition
1	+9V~+ 24V DC_IN
2	GND

(3) SATA (7-pin): SATAIII Port connector
The onboard SATA port is high-speed SATAIII port that supports 6GB/s transfer rate.
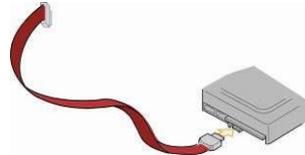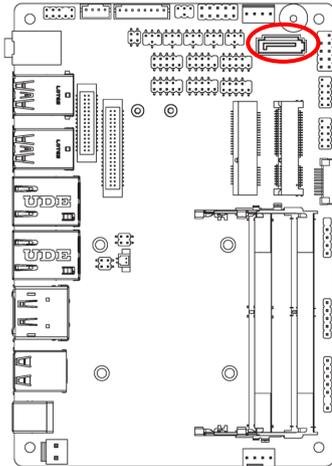
Pin No.	Definition
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND

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

Pin 1 →

+5V
GND
GND
+12V
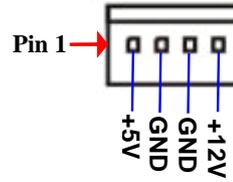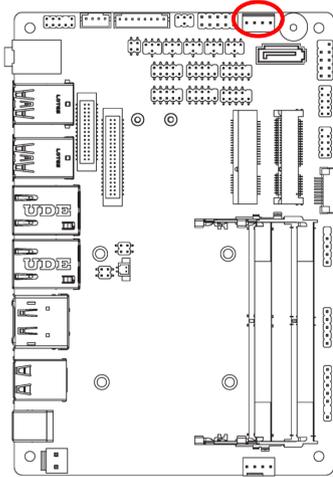
Warning: *Make sure that Pin-1 of compatible SATA Power connector is inserted into corresponding Pin-1 of SATAPW to avoid possible damage to the board and hard disk driver!*

(5) CPUFAN (4-pin): CPUFAN Connector

Control
Fan Speed
+12V Fan Power
GND
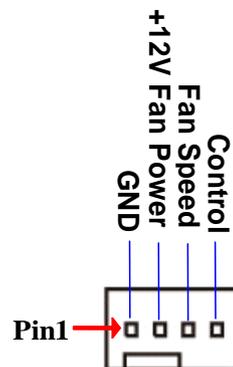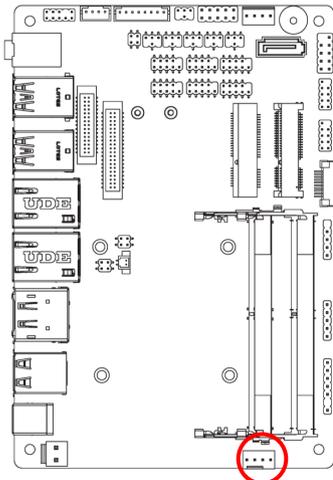
Pin1 →

(6) BATCON (2-pin): Battery Connector
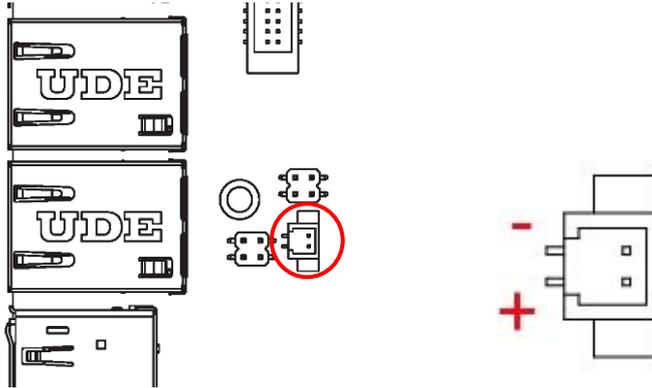
2-2-2 Headers

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

This header connects to Front Panel Line-out, MIC-In connector with cable.
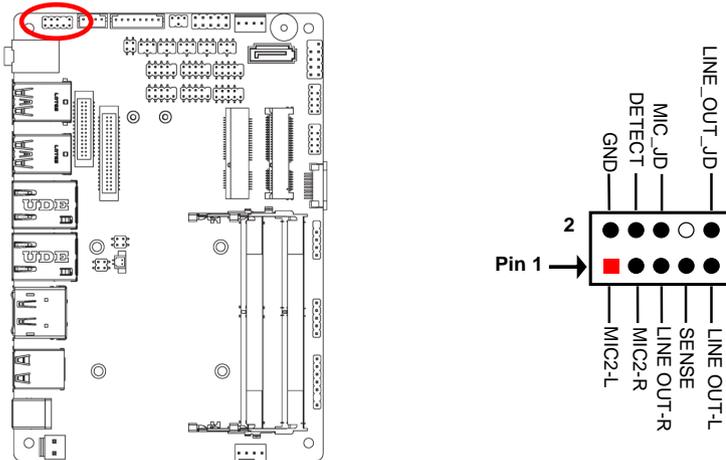
(2) SPEAK_CON (4-pin block): Speaker Header
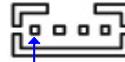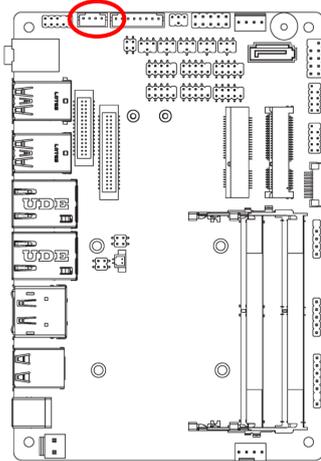
Pin1

Pin No.	Definition
1	L-
2	L+
3	R+
4	R-

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

	VCC
GND	RSTSW
PWRBTN	GND
PWR LED-	HDD LED-
PWR LED+	HDD LED+

2

Pin 1

18
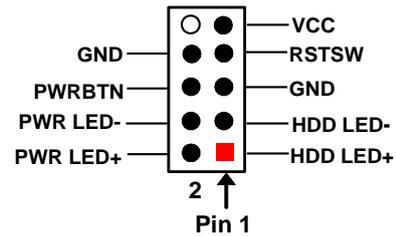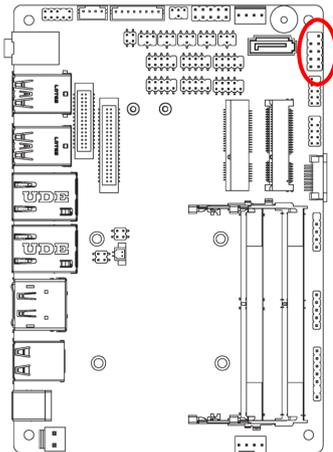
(4) FP_USB20/F_USB21 (9-pin): USB 2.0 Port Header

NC	
GND	GND
+DATA	+DATA
-DATA	-DATA
VCC	VCC

2

Pin 1
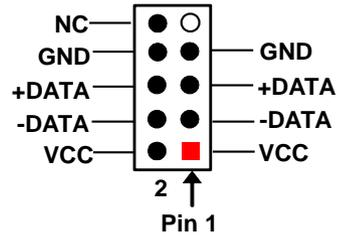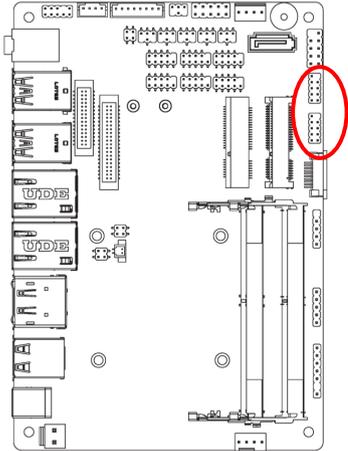
(5) FP_ USB(4-pin): USB 2.0 Port Header

GND
+DATA
-DATA
VCC

Pin 1
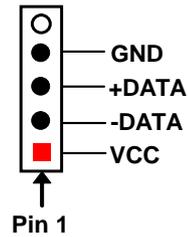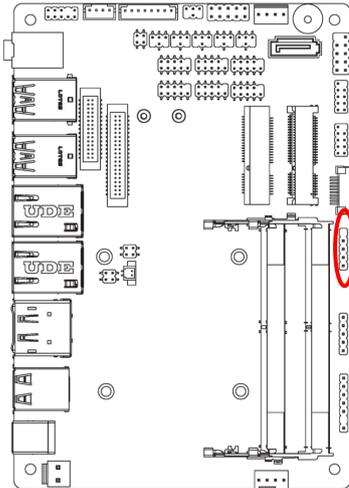
(6) SMBUS (5-Pin): SM BUS Header

VCC3
GND
NC
SMBUS_DATA
SMBUS_CLK

Pin 1
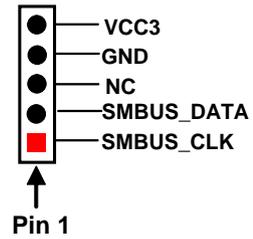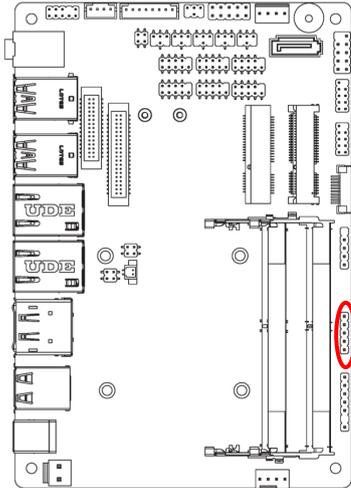
(7) PS2KBMS (6-pin): PS2 Keyboard & Mouse Header

MS_DATA
MS_CLK
GND
KB_CLK
KB_DATA

5VSB

Pin 1

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


```
            GPIO_41 —
          GPIO_43 —
        GPIO_45 —
      GPIO_47 —
    VCC —

  2    ●  ●  ●  ●  ●
Pin1→ ■  ●  ●  ●  ●

            GPIO_40 —
          GPIO_42 —
        GPIO_44 —
      GPIO_46 —
    GND —
```
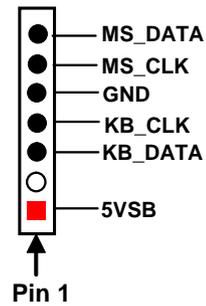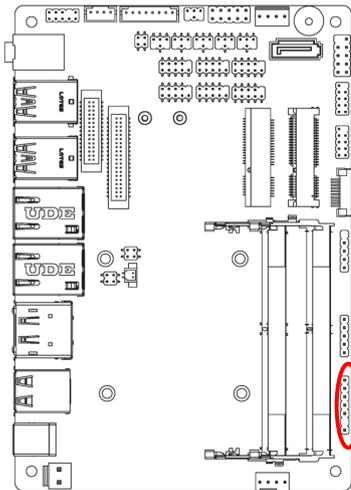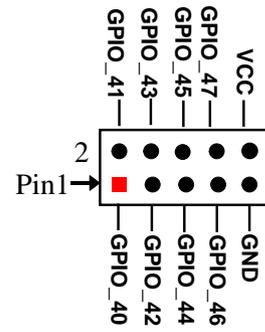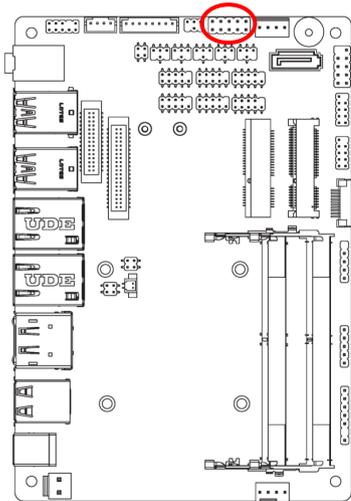
(9) COM1/2/3/4/5/6 (9-pin): Serial Port Header
COM1 (9-pin): RS232/422/485 Serial Port Header
COM2/3/4/5/6 (9-pin): RS232 Serial Port Header

Pin NO.	RS232	*RS422 (COM1)	*RS485 (COM1)
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
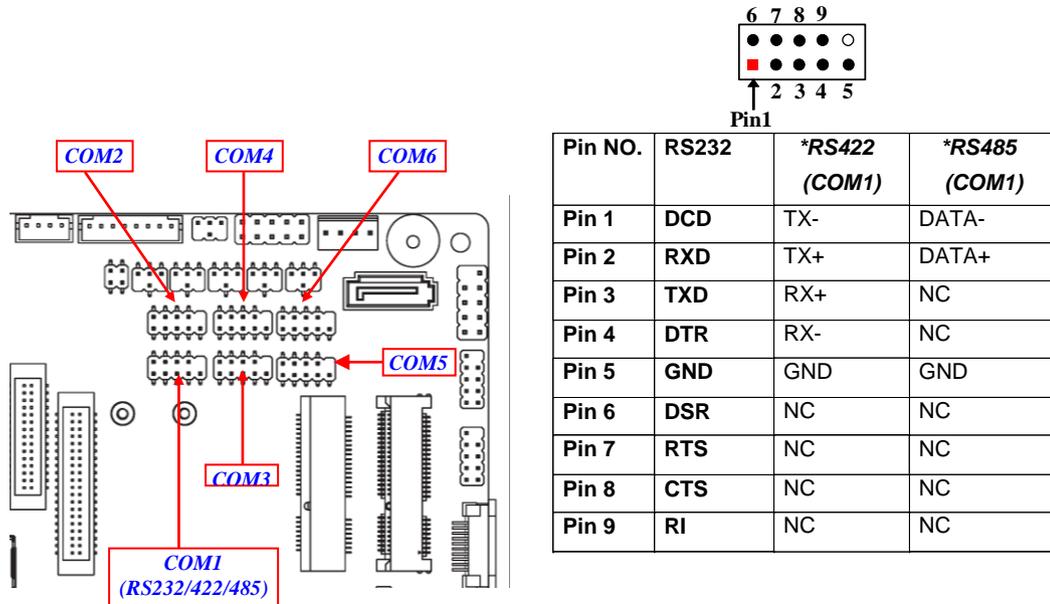
*Notice: **COM1** header can function as RS232/422/485 port. In normal settings COM1 functions as RS232 port. With compatible COM cable **COM1** can function as RS422 or RS 485 port. User also needs to go to BIOS to set '**Transmission Mode Select**' for COM1 as [RS422] or [RS485] for boards that support RS422/485 function before connecting compatible COM cable to COM1 header.

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

LAN2LED- ———— ● ● ———— LAN2LED+
LAN1LED- ———— ● ■ ———— LAN1LED+

2 ↑
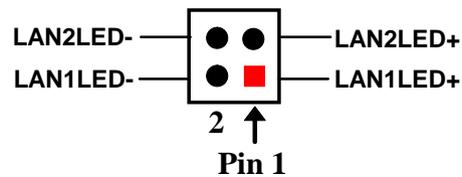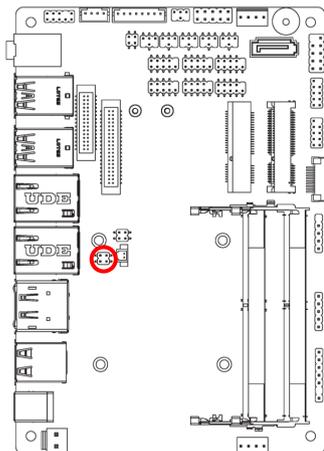
Pin 1

(11) INVERTER (8-pin): LVDS/eDP Inverter Header
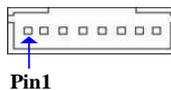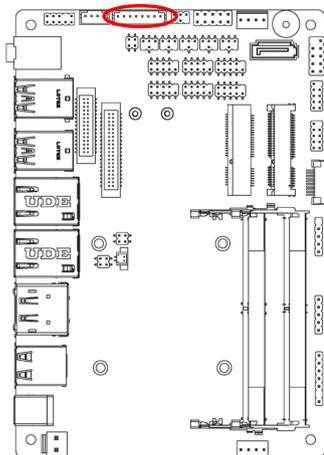
Pin1

Pin No.	Definition
1	Backlight Enable
2	Backlight PWM
3	Backlight VCC
4	Backlight VCC
5	GND
6	GND
7	Backlight Brightness Up SW
8	Backlight Brightness Down SW

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!!

(12) LVDS (30-pin): 24-bit Dual Channel LVDS Header
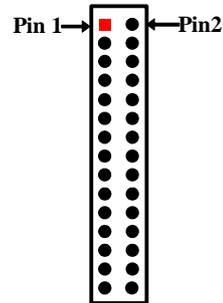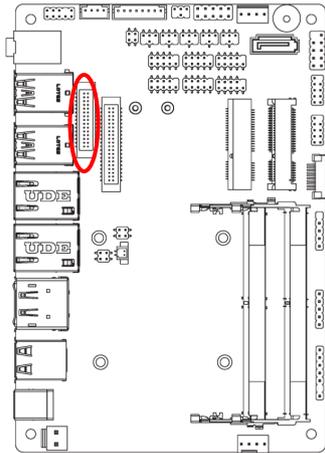
Pin NO.	Pin Define	Pin NO.	Pin Define
Pin 1	LVDSB_DATAN3	Pin 2	LVDSB_DATAP3
Pin 3	LVDS_CLKBN	Pin 4	LVDS_CLKBP
Pin 5	LVDSB_DATAN2	Pin 6	LVDSB_DATAP2
Pin 7	LVDSB_DATAN1	Pin 8	LVDSB_DATAP1
Pin 9	LVDSB_DATAN0	Pin 10	LVDSB_DATAP0
Pin 11	NC/DDC_DATA	Pin 12	NC/DDC_CLK
Pin 13	GND	Pin 14	GND
Pin 15	GND	Pin 16	GND
Pin 17	LVDSA_DATAP3	Pin 18	LVDSA_DATAN3
Pin 19	LVDS_CLKAP	Pin 20	LVDS_CLKAN
Pin 21	LVDSA_DATAP2	Pin 22	LVDSA_DATAN2
Pin 23	LVDSA_DATAP1	Pin 24	LVDSA_DATAN1
Pin 25	LVDSA_DATAP0	Pin 26	LVDSA_DATAN0
Pin 27	VLCD	Pin 28	VLCD
Pin 29	VLCD	Pin 30	VLCD

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

Pin21→ ● ■ ← Pin 1
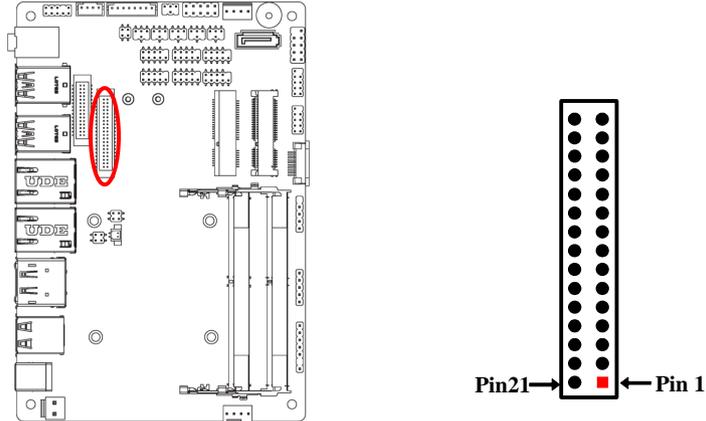
Pin Define	Pin NO.	Pin NO.	Pin Define
NC	Pin 40	Pin 20	LCD_VCC
BL_PWR	Pin 39	Pin 19	LCD_VCC
BL_PWR	Pin 38	Pin 18	LCD_VCC
BL_PWR	Pin 37	Pin 17	GND
BL_PWR	Pin 36	Pin 16	AUX_CH_N
NC	Pin 35	Pin 15	AUX_CH_P
NC	Pin 34	Pin 14	GND
BL_PWM_DIM	Pin 33	Pin 13	Lane0_P
BL_ENABLE	Pin 32	Pin 12	Lane0_N
GND	Pin 31	Pin 11	GND
GND	Pin 30	Pin 10	Lane1_P
GND	Pin 29	Pin 9	Lane1_N
GND	Pin 28	Pin 8	GND
HPD	Pin 27	Pin 7	Lane2_P
GND	Pin 26	Pin 6	Lane2_N
GND	Pin 25	Pin 5	GND
GND	Pin 24	Pin 4	Lane3_P
GND	Pin 23	Pin 3	Lane3_N
NC	Pin 22	Pin 2	GND
NC	Pin 21	Pin 1	NC

Chapter 3
Introducing BIOS

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

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

3-1 Entering Setup

Power on the computer and by pressing <Del> immediately allows you to enter Setup. If the message disappears before your respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt> and <Delete> keys.   If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to Press   **<Del>** to enter Setup; press < **F7**> to enter pop-up Boot menu.

```
         Please select boot device:

UEFI: Built-in EFI Shell
Enter Setup

    ↑ and ↓ to move selection
  ENTER to select boot device
   ESC to boot using defaults
```

3-2 BIOS Menu Screen

The following diagram show a general BIOS menu screen:

Menu Bar

```
        Aptio Setup Utility - Copyright (C) 2021 American Megatrends, Inc.
   Main  Advanced  Chipset  Security  Boot  Save & Exit

  BIOS Information                                      Set the Date. Use Tab to
  BIOS Vendor              American Megatrends          switch between Date elements.
  Core Version             5.12
  Filename                 F63EPAO9
  Build Date and Time      10/13/2021 15:32:28

  System Date              [Fri 01/01/2021]
  System Time              [00:02:50]

  Access Level             Administrator

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

        Version 2.18.1263. Copyright (C) 2021 American Megatrends, Inc.
```

General Help Items

Current Setting Value

Menu Items

Function Keys

3-3 Function Keys

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

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

3-4 Getting Help

Main Menu

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

Status Page Setup Menu/Option Page Setup Menu

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

3-5 Menu Bars

There are six menu bars on top of BIOS screen:

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

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

3-6 Main Menu

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

```
         Aptio Setup Utility – Copyright (C) 2021 American Megatrends, Inc.
   Main  Advanced  Chipset  Security  Boot  Save & Exit

   BIOS Information                                        Set the Date. Use Tab to
   BIOS Vendor                   American Megatrends       switch between Date elements.
   Core Version                  5.12
   Filename                      F63EPA09
   Build Date and Time           10/13/2021 15:32:28

   System Date                   [Fri 01/01/2021]
   System Time                   [00:02:50]

   Access Level                  Administrator



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


         Version 2.18.1263. Copyright (C) 2021 American Megatrends, Inc.
```

System Date

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

System Time

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

3-7 Advanced Menu
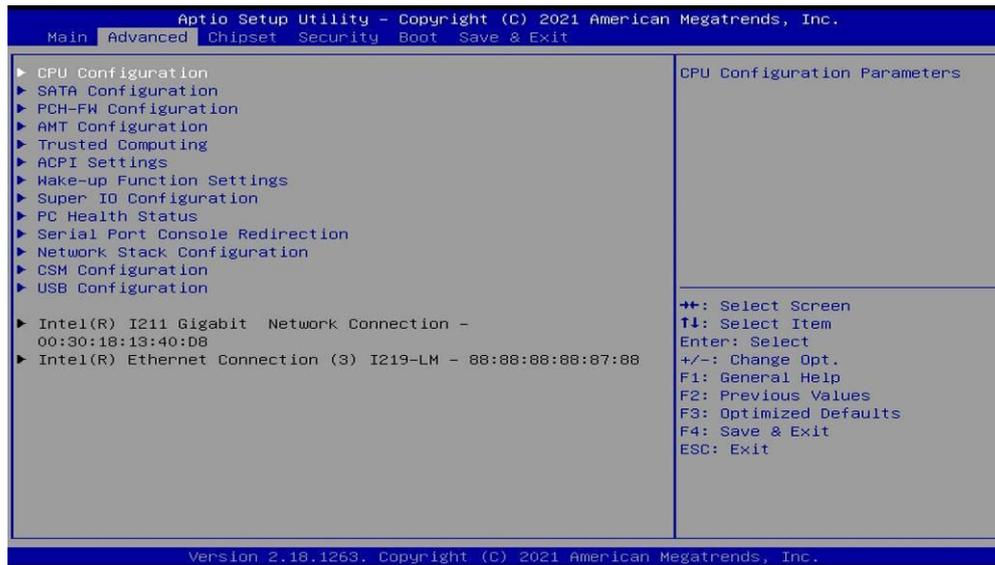
► **CPU Configuration**

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

Hyper-Threading

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

When set as **[Disabled]** only one thread per enabled core is enabled.

[Enabled]: for Windows and Linux (OS optimized for Hyper-Threading Technology).

[Disabled]: for other OS (OS optimized not for Hyper-Threading Technology).

Note: 'Hyper-Threading' item may or may not show up, depending on different CPU.

Intel Virtualization Technology

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

When set as **[Enabled]**, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

Hardware Prefetcher

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

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

Adjacent Cache Line Prefetch

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

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

Intel(R) SpeedStep(tm)

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

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

  Turbo Mode

  Use this item to enable or disable processor Turbo Mode.

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

  Note: 'Turbo Mode' item may or may not show up, depending on different CPU.

CPU C States

Use this item to enable or disable CPU power management. This item allows CPU to go to C states when it's not 100% utilized.

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

Package C State Limit

Use this item to select the maximum Package C State limit setting.

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

[CPU Default]: Leaves to factory default value.

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

‣ **SATA Configuration**

Press [Enter] to make settings for the following sub-items:
SATA Controller(s)
The optional settings: [Enabled]; [Disabled].
When set as **[Enabled]**, the following items shall appear:
SATA Mode Selection
The default setting is: [AHCI].

SATA
  Software Preserve
  Port
  Use this item to enable or disable each SATA port.
  The optional settings: [Disabled]; [Enabled].
  Hot Plug
  Use this item to designate this port as Hot Pluggable.
  The optional settings: [Disabled]; [Enabled].
mSATA
  Software Preserve
  Port
  Use this item to enable or disable SATA Port.
  The optional settings: [Disabled]; [Enabled].
▸ **PCH-FW Configuration**
  Press [Enter] to view ME information and make settings in the following sub-items:
  TPM Device Selection
  Use this item to select TPM device: PTT or dTPM.
  The optional settings: [dTPM]; [PTT].
  Warnning! 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].

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

► **AMT Configuration**
Use this item to configure Intel(R) Active Management Technology Parameters.
Press [Enter] to make settings for the following sub-items:
Intel AMT
Use this item to enable or disable Intel Active Management Technology BIOS extension.
When disabled AMT BIOS Features are no longer supported and user is no longer able to access MEBx Setup.
*Note: This option does not disable Manageability Features in FW.
The optional settings: [Disabled]; [Enabled].
When set as **[Enabled]**, the following items shall appear:
Hide Un-Configure ME Confirmation Prompt
Use this item to hide Un-Configure ME confirmation prompt when attempting ME unconfiguration.
The optional settings: [Disabled]; [Enabled].
MEBx Debug Message Output
Use this item to enable or disable MEBx debug message output.
The optional settings: [Disabled]; [Enabled].
Un-Configure ME
Use this item to enable or disable unconfigure ME with resetting MEBx password to default.
The optional settings: [Disabled]; [Enabled].
ASF
Use this item to enable or disable Alert Standard Format support.
The optional settings: [Disabled]; [Enabled].
Activate Remote Assistance Process
Use this item to enable or disable Trigger CIRA boot.

The optional settings: [Disabled]; [Enabled].
*Note: Network Access must be activated first from MEBx Setup.
When set as **[Enabled]**, the following items shall appear:
USB Configure
Use this item to enable or disable of AMT USB Provisioning.
The optional settings: [Disabled]; [Enabled].
PET Progress
Use this item to enable or disable PET Events Progress to receive PET Events.
The optional settings: [Disabled]; [Enabled].
AMT CIRA Timeout
OEM defined timeout for MPS connection to be established.
The setting range is from [0] to [255].
[0]: use the default timeout value of 60 seconds;
[255]: MEBx waits until the connection succeeds.
WatchDog
Use this item to enable or disable WatchDog Timer.
The optional settings: [Disabled]; [Enabled].
When set as **[Enabled]**, the following items shall appear:
OS Timer
Use this item to set OS watchdog timer.
BIOS Timer
Use this item to set BIOS watchdog timer.

‣ **Trusted Computing**
Press [Enter] to enable or disable Security Device Support.
__Configuration__

Security Device Support
Use this item to enable or disable BIOS support for security device. TCG EFI protocol and INT1A interface will not be available. 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-item:
ACPI Settings

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

▶ **Wake-up Function Settings**
Press [Enter] to make settings for the following sub-items:
Wake-up System With Fixed Time
Use this item to enable or disable System wake on alarm event.
The optional settings: [Disabled]; [Enabled].
When set as **[Enabled]**, the following items shall appear:
Wake-up Hour
Use this item to select 0-23. For example enter 3 for 3am and 15 for 3pm.
Wake-up Minute
Use this item to select 0-59.
Wake-up Second
Use this item to select 0-59.

Wake-up System with Dynamic Time
Use this item to enable or disable System wake on alarm event.
System will wake on the current time + Increase minute(s).
The optional settings: [Disabled]; [Enabled].
When set as [Enabled], system will wake on the current time + increased minute(s).

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

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

▸ **Super I/O Configuration**
Press [Enter] to make settings for the following sub-items:
Super IO Configuration

ERP Support
The optional settings: [Disabled]; [Auto].
This item should be set as [**Disabled**] if you wish to have all active wake-up functions.

► **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=3,4,5,6,7,9,10,11,12;];
[IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12;]; [IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12;];
[IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;].
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 FIFO Mode
The optional settings: [16-Byte FIFO]; [32-Byte FIFO]; [64-Byte FIFO]; [128-Byte
FIFO].
► **Serial Port 2 Configuration**
Press [Enter] to make settings for the following sub-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=3,4,5,6,7,9,10,11,12;];
[IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12;]; [IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12;];

[IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;].
Serial Port FIFO Mode
The optional settings: [16-Byte FIFO]; [32-Byte FIFO]; [64-Byte FIFO]; [128-Byte FIFO].
► **Serial Port 3 Configuration**
Press [Enter] to make settings for the following sub-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=3,4,5,6,7,9,10,11,12;]; [IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12;]; [IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12;]; [IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;]; [IO=3E0h; IRQ=3,4,5,6,7,9,10,11,12;]; [IO=2E0h; IRQ=3,4,5,6,7,9,10,11,12;].
Serial Port FIFO Mode
The optional settings: [16-Byte FIFO]; [32-Byte FIFO]; [64-Byte FIFO]; [128-Byte FIFO].
► **Serial Port 4 Configuration**
Press [Enter] to make settings for the following sub-items:
Serial Port 4 Configuration

Serial Port
Use this item to enable or disable Serial Port (COM).
The optional settings: [Disabled]; [Enabled].
When set as **[Enabled]**, user can make further settings in the following items:

Device Settings

Change Settings
Use this item to select an optimal setting for Super IO Device.
The optional settings: [IO=2E8h; IRQ=10;]; [IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12;];
[IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12;]; [IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12;];
[IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;]; [IO=3E0h; IRQ=3,4,5,6,7,9,10,11,12;];
[IO=2E0h; IRQ=3,4,5,6,7,9,10,11,12;].

Serial Port FIFO Mode
The optional settings: [16-Byte FIFO]; [32-Byte FIFO]; [64-Byte FIFO]; [128-Byte
FIFO].

► **Serial Port 5 Configuration**
Press [Enter] to make settings for the following sub-items:

Serial Port 5 Configuration

Serial Port
Use this item to enable or disable Serial Port (COM).
The optional settings: [Disabled]; [Enabled].
When set as **[Enabled]**, user can make further settings in the following items:

Device Settings

Change Settings
Use this item to select an optimal setting for Super IO Device.
The optional settings: [IO=3E0h; IRQ=11;]; [IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12;];
[IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12;]; [IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12;];
[IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;]; [IO=3E0h; IRQ=3,4,5,6,7,9,10,11,12;];
[IO=2E0h; IRQ=3,4,5,6,7,9,10,11,12;].

Serial Port FIFO Mode
The optional settings: [16-Byte FIFO]; [32-Byte FIFO]; [64-Byte FIFO]; [128-Byte
FIFO].

► **Serial Port 6 Configuration**
Press [Enter] to make settings for the following sub-items:
Serial Port 6 Configuration

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

Change Settings
Use this item to select an optimal setting for Super IO Device.
The optional settings: [IO=2E0h; IRQ=11;]; [IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12;];
[IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12;]; [IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12;];
[IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;]; [IO=3E0h; IRQ=3,4,5,6,7,9,10,11,12;];
[IO=2E0h; IRQ=3,4,5,6,7,9,10,11,12;].
Serial Port FIFO Mode
The optional settings: [16-Byte FIFO]; [32-Byte FIFO]; [64-Byte FIFO]; [128-Byte
FIFO].

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.].

ATX Power Emulate AT Power

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 *AT_COPEN* jumper setting for Case Open Detection; if **Pin 3&4** of jumper *AT_COPEN* are short, system will show Case Open Message during POST).

▶ **PC Health Status**
Press [Enter] to view current hardware health status, set shutdown temperature, or make further settings in '**SmartFAN Configuration**'.

▶ **SmartFAN Configuration**
Press [Enter] to make settings for SmartFAN Configuration:

SmartFAN Configuration

CPUFAN Smart Mode
The optional settings: [Disabled]; [Enabled].
When set as **[Enabled]**, the following sub-items shall appear:
CPUFAN Full-Speed Temperature
Use this item to set CPUFAN full speed temperature. Fan will run at full speed when above the pre-set temperature.
CPUFAN Full-Speed Duty
Use this item to set CPUFAN full speed duty. Fan will run at full speed when above the pre-set duty.
CPUFAN Idle-Speed Temperature
Use this item to set CPUFAN idle speed temperature. Fan will run at idle speed when below the pre-set temperature.
CPUFAN Idle-Speed Duty
Use this item to set CPUFAN idle speed duty. Fan will run at idle speed when below the pre-set duty.

Shutdown Temperature Configuration

Use this item to select system shutdown temperature.

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

‣ **Serial Port Console Redirection**

Press [Enter] to make settings for '**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 **'Console Redirection Settings'** item:

‣ **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].

Legacy OS Redirection Resolution

On Legacy OS, the Number of Rows and Columns supported redirection.
The optional settings: [80x24]; [80x25].
Putty KeyPad
Use this item to select FunctionKey and KeyPad on Putty.
The optional settings: [VT100]; [LINUX]; [XTERMR6]; [SCO]; [ESCN]; [VT400].
Redirection After BIOS POST
The Settings specify if BootLoader is selected then Legacy console redirection is disabled before booting to Legacy OS. Default value is Always Enable which means Legacy console Redirection is enabled for Legacy OS.
The optional settings: [Always Enable]; [BootLoader].

Serial Port for Out-of-Band Management/

Windows Emergency Management Services (EMS)

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 '**Console Redirection Settings**' screen:

▶ **Console Redirection Settings**
The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.
Press [Enter] to make settings for the following sub-items.
Out-of-Band Mgmt Port
Microsoft Windows Emergency Management Services (EMS) allows for remote management of a Windows Server OS through a serial port.
The optional settings: [COM1]; [COM1(Pci Bus0, Dev0, Func0) (Disabled)].
Terminal Type
The optional settings: [VT100]; [VT100+]; [VT-UTF8]; [ANSI].
[VT-UTF8] is the preferred terminal type for out-of-band management. The

next best choice is **[VT100+]** and them **[VT100]**. See above, in Console Redirection Settings page, for more help with Terminal Type/Emulation.

Bits per second

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

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

Flow Control

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

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

Data Bits

The default setting is: [8].

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

Parity

The default setting is: [None].

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

Stop Bits

The default setting is: [1].

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

▸ **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. If disabled Ipv4 PXE boot option will not be created.

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

Ipv4 HTTP Support

Use this item to enable Ipv4 HTTP Boot Support. If disabled Ipv4 HTTP boot option will not be created.

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

Ipv6 PXE Support

Use this item to enable Ipv6 PXE Boot Support. If disabled Ipv6 PXE boot option will not be created.

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

Ipv6 HTTP Support

Use this item to enable Ipv6 HTTP Boot Support. When set as [Disabled], Ipv6 HTTP boot option will not be created.

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.

Media Detect Count

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

The optional settings range from [1] to [50].

‣ **CSM Configuration**

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

CSM Support

Use this item enable or disable CSM support.

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

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

Option ROM execution

Network

Use this item to control the execution of Legacy PXE OpROM.

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

Storage

Use this item to control the execution of UEFI and Legacy Storage OpROM.

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

Video
Use this item to control the execution of UEFI and Legacy Video OpROM.
The optional settings: [Do not launch]; [UEFI]; [Legacy].
Other PCI devices
This item determines OpROM execution policy for devices other than Network, Storage, or Video.
The optional settings: [Do not launch]; [UEFI]; [Legacy].

‣ **USB Configuration**
Press [Enter] to make settings for the following sub-items:
USB Configuration

Legacy USB Support
Use this item to enable or disable Legacy USB support.
The optional settings: [Enabled]; [Disabled]; [Auto].
[Enabled]: To enable legacy USB support.
[Disabled]: To keep USB devices available only for EFI specification,
[Auto]: To disable legacy support if no USB devices are connected.
XHCI Hand-off
This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
The optional settings: [Enabled]; [Disabled].
USB Mass Storage Driver Support
Use this item to enable or disable USB Mass Storage Driver Support.
The optional settings: [Disabled]; [Enabled].

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.

The optional settings: [Auto]; [Manual].

'Auto' uses default value: for a root port it is 100 ms, for a hub port the delay is taken from hub descriptor.

Select **[Manual]** you can set value for the following sub-item: '**Device power-up delay in seconds'**.

Device power-up delay in seconds

The delay range is from [1] to [40] seconds, in one second increments.

‣ **Intel(R) I211 Gigabit Network Connection –**
   XX:XX:XX:XX:XX:XX

‣ **Intel(R) Ethernet Connection (3) I219-LM – XX:XX:XX:XX:XX:XX**

   This item shows current network brief information.

3-8 Chipset Menu


```
                 Aptio Setup Utility – Copyright (C) 2021 American Megatrends, Inc.
       Main  Advanced  Chipset  Security  Boot  Save & Exit

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




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



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```

▸ **System Agent (SA) Configuration**
Press [Enter] to make settings for the following sub-items:
System Agent (SA) Configuration

VT-d
The optional settings: [Disabled]; [Enabled].
► **Graphics Configuration**
Press [Enter] to make further settings for Graphics Configuration.
Graphics Configuration

GTT Size
Use this item to select the GTT Size.
The optional settings: [2MB]; [4MB]; [8MB].

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].
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]; [96M]; [128M]; [160M]; [192M]; [224M]; [256M];

[288M]; [320M]; [352M]; [384M]; [416M]; [448M]; [480M]; [512M]; [1024M];

[1536M]; [2048M]; [4M]; [8M]; [12M]; [16M]; [20M]; [24M]; [28M] [32M/F7]; [36M];

[40M]; [44M]; [48M]; [52M]; [56M]; [60M].
DVMT Total Gfx Mem
Use this item to select DVMT 5.0 Total Graphics Memory size used by the Internal Graphics Device.
The optional settings: [128M]; [256M]; [MAX].
Primary IGFX Boot Display
Use this item to select the Video Device which will be activated during POST. This has no effect if external graphics present. Secondary boot display selection will appear based on your selection.
The optional settings: [VBIOS Default]; [DP]; [HDMI]; [eDP/LVDS].
Secondary IGFX Boot Display
Use this item to select Secondary Display Device.
The optional settings: [Disabled]; [DP]; [HDMI].

Active LFP
The optional settings: [eDP]; [LVDS].
When set as **[LVDS]**, user can make further settings in the following items:
Backlight Control
The optional settings: [PWM Inverted]; [PWM Normal].

Panel Type

Use this item to manually select LCD panel type used by internal graphics device by selecting the appropriate setup item.

The optional setting: [800x 480 18bit Single]; [800x 60018bit Single]; [800x 600 24bit Single]; [1024 x 60018bit 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].

LVDS FW Write Protect

This item supports LVDS FW Update / Protect.

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

► **Memory Configuration**

Press [Enter] to view brief information for the working memory module.

► **PCH-IO Configuration**

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

USB Controller

Use this item to enable or disable this USB Physical Connector (physical port). Once disabled, any USB devices plug inot 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]; [Auto].

[Disabled]: HAD will be unconditionally disabled;

[Enabled]: HAD will be unconditionally enabled;

[Auto]: HAD will be enabled if present, disable otherwise.

Onboard Lan1 Controller

Use this item to enable or disable NIC.

When set as **[Enabled],** user can make further settings in '**Wake on LAN**' item:

    Wake on LAN

    Use this item to enable or disable integrated LAN to wake the system.

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

Onboard Lan2 Controller

Use this item to enable or disable Device or Controller.

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

MPEST Slot

Use this item to enable or disable Device or Controller.

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

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

    Speed

    Use this item to configure PCIe Speed.

    The optional settings: [Auto]; [Gen1]; [Gen2]; [Gen3].

MPE Slot

Use this item to enable or disable Device or Controller.

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

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

    Speed

    The optional settings: [Auto]; [Gen1]; [Gen2]; [Gen3].

System State after Power Failure

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

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

3-9 Security Menu

```
                Aptio Setup Utility - Copyright (C) 2021 American Megatrends, Inc.
      Main  Advanced  Chipset  Security  Boot  Save & Exit

      Password Description                                         Set Administrator Password

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


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```

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

Administrator Password

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

User Password

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

▶ **Secure Boot**

Press [Enter] to make customized secure settings:

Secure Boot

Secure Boot activated when Platform Key(PK) is enrolled, System mode is in User/Deployed, and CCSM function is disabled.

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

Secure Boot Mode

Secure Boot mode selector: Standard/Custom.

In Custom mode, Secure Boot Policy Variables can be configured without authentication.

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

‣ **Key Management**

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

Provision Factory Defaults

This item allows to provision factory default Secure Boot keys when System is in Setup Mode.

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

‣ **Install Factory Default keys**

Use this item to force System to User Mode – install all Factory Default keys.

‣ **Enroll Efi Image**

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

Enroll SHA256 hash of the binary into Authorized Signature Database (db).

‣ ***Save all Secure Boot Variables***

 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 encoded)

c) EFI_ CERT_RSA2048 (bin)

d) EFI_ CERT_SHAXXX

2. Authenticated UEFI Variable

3. EFI PE/COFF Image (SHA256)

Key Source:

Default, External, Mixed, Test.

3-10 Boot Menu

```
            Aptio Setup Utility - Copyright (C) 2021 American Megatrends, Inc.
    Main  Advanced  Chipset  Security  Boot  Save & Exit

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

    Boot Option Priorities
    Boot Option #1                     [UEFI: Built-in EFI
                                       Shell]

    UEFI Boot                          [Enabled]


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



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```

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

Boot Option #1
Use this item to set the system boot order.
The optional settings: [UEFI: Built-in EFI Shell]; [Disabled].

UEFI Boot
The optional settings: [Disabled]; [Enabled].
[Enabled]: Enable all UEFI boot options.
[Disabled]: Disable all UEFI boot options.

3-11 Save & Exit Menu

```
                Aptio Setup Utility - Copyright (C) 2021 American Megatrends, Inc.
        Main  Advanced  Chipset  Security  Boot  Save & Exit

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

  Default Options
  Restore Defaults
  Save as User Defaults
  Restore User Defaults

  Boot Override
  UEFI: Built-in EFI Shell
  Launch EFI Shell from filesystem device

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

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```

Save Options
Save Changes and Reset
This item allows user to reset the system after saving the changes.
Discard Changes and Reset
This item allows user to reset the system without saving any changes.

Default Options
Restore Defaults
Use this item to restore /load default values for all the setup options.
Save as User Defaults
Use this item to save the changes done so far as user defaults.
Restore User Defaults
Use this item to restore the user defaults to all the setup options.

Boot Override

UEFI: Built-in EFI Shell
Press this item to select the device as boot disk after save configuration and reset.

Launch EFI Shell from filesystem device
This item is used for attempts to launch EFI shell application from one of the available file system devices.