TECHNICAL MANUAL

Of

Intel Q170 Express Chipset

Based Mini-ITX M/B

NO. G03-NF594-F

Revision: 6.0

Release date: July 1, 2024

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 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
6.0	Sixth Edition	July 1, 2024

Item Checklist

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

Chapter 1

Introduction of the Motherboard

1-1 Feature of Motherboard

- Intel® Q170 express chipset

- Support LGA 1151 CPU socket Intel® Core™ i7 processors / Intel® Core™ i5 processors / Intel® Core™ i3 processors / Intel® Pentium™ processors , Intel® Celeron™ processors (Max. 65W TDP)

- Support 2* DDR4 2133MHz SO-DIMM up to 32GB and dual channel function

- Integrated with dual Intel Gigabit Ethernet LAN chips

- Onboard 1* PCIE 3.0 x16 slot

- Onboard 1* full-size Mini-PCIE/MSATA shared slot

- Onboard 1* half-size Mini-PCIE slot

- Support USB 3.0 data transport demand

- Support 4 * SATAIII (6Gb/s) Devices

- 1* HDMI port, 1* DVI-D port & 1* Display port, supports Triple Independent Display

- Support Smart FAN function

- Supports ACPI S3 Function

- Compliance with ErP Standard

- Support Watchdog Timer Technology

1-2 Specification

Spec	Description
Design	● Mini-ITX form factor 6 layers ; PCB size: 17.0x17.0cm
Chipset	● Intel Q170 Express Chipset
CPU Socket	● Support Intel® LGA 1151 Socket Core™ i7 processors, Intel® Core™ i5 processors, Intel® Core™ i3 processors, Intel® Pentium™ processors, Intel® Celeron™ processors (Max. 65W TDP) ** for detailed CPU support information please visit our website*
Memory Slot	● 2*DDR4 SO-DIMM slot ● Support DDR4 2133 MHz SO-DIMM up to 32GB ● Support dual channel function
Expansion Slot	● 1* PCIE x 16 slot ● 1* Full-size Mini-PCIE/MSATA share slot (**MMPE**) ● 1* Half-size Mini-PCIE slot (**MPE**)
Storage	● 4* SATA III 6G/s connector ● 1* Full-size Mini-PCIE/MSATA share slot (**MMPE**)
Gigabit LAN Chip	● Integrated with Intel I210AT PCI-E 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	● HD Audio Codec integrated ● Audio driver and utility included
BIOS	● 128M AMI Flash ROM
Multi I/O	***Rear Panel I/O:*** ● 1* HDMI port & 1* DVI-D port & 1* Display Port ● 6* USB 3.0 port ● 2* RJ-45 port ● 1* RS232/422/485 serial port connector (**COM1**) ● 1* RS232 serial port connector (**COM2**) ● 1*3-jack audio connector (Line-in, Line-out, MIC) ***Internal I/O Connectors & Headers:*** ● 1* 24-pin main power connector ● 1* 4-pin 12V power connector

- 1* CPUFAN connector & 2* SYSFAN connector
- 1*Front panel audio header
- 1*HDMI_SPDIF out header
- 1* PS/2 keyboard & mouse header
- 1* RS232/422/485 serial port header **(COM3)**
- 1* RS232 serial port header **(COM4)**
- 1* GPIO Header
- 1*Front panel header
- 1* *JP7 jumper & header block*
- 1 * 9-Pin USB 2.0/1.1 header for 2* USB 2.0/1.1 ports
- 1* SMBUS header
- 1*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 Diagram
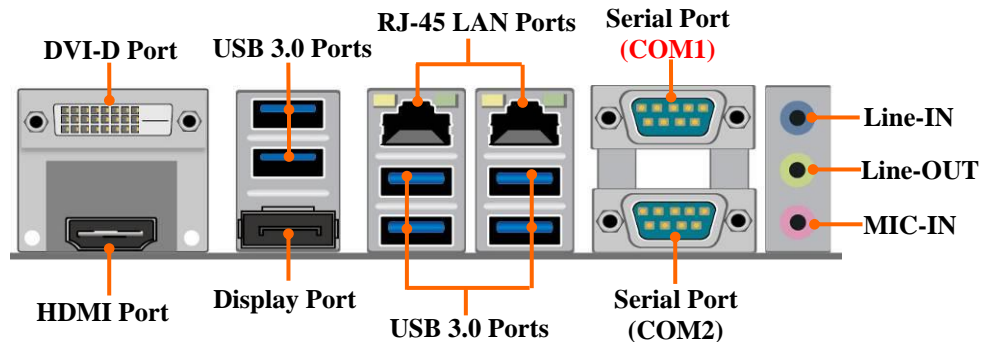
Motherboard Internal Diagram-Front
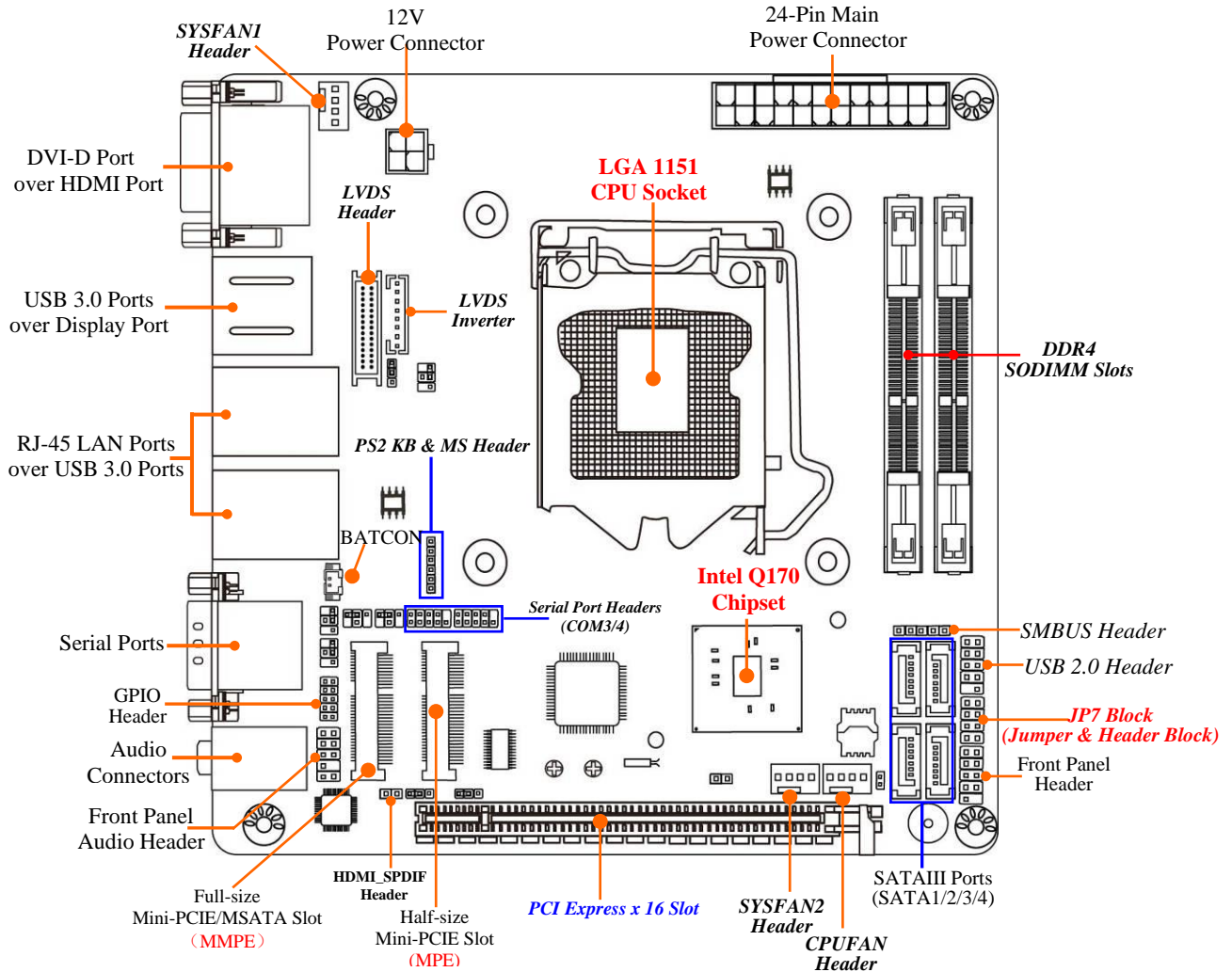
Motherboard Jumper Position

JP2

JP1

JP3

JP4

JP5

JP6

JP7 Block
(Jumper & Header Block)

JP9

JP10

JBAT

JP8
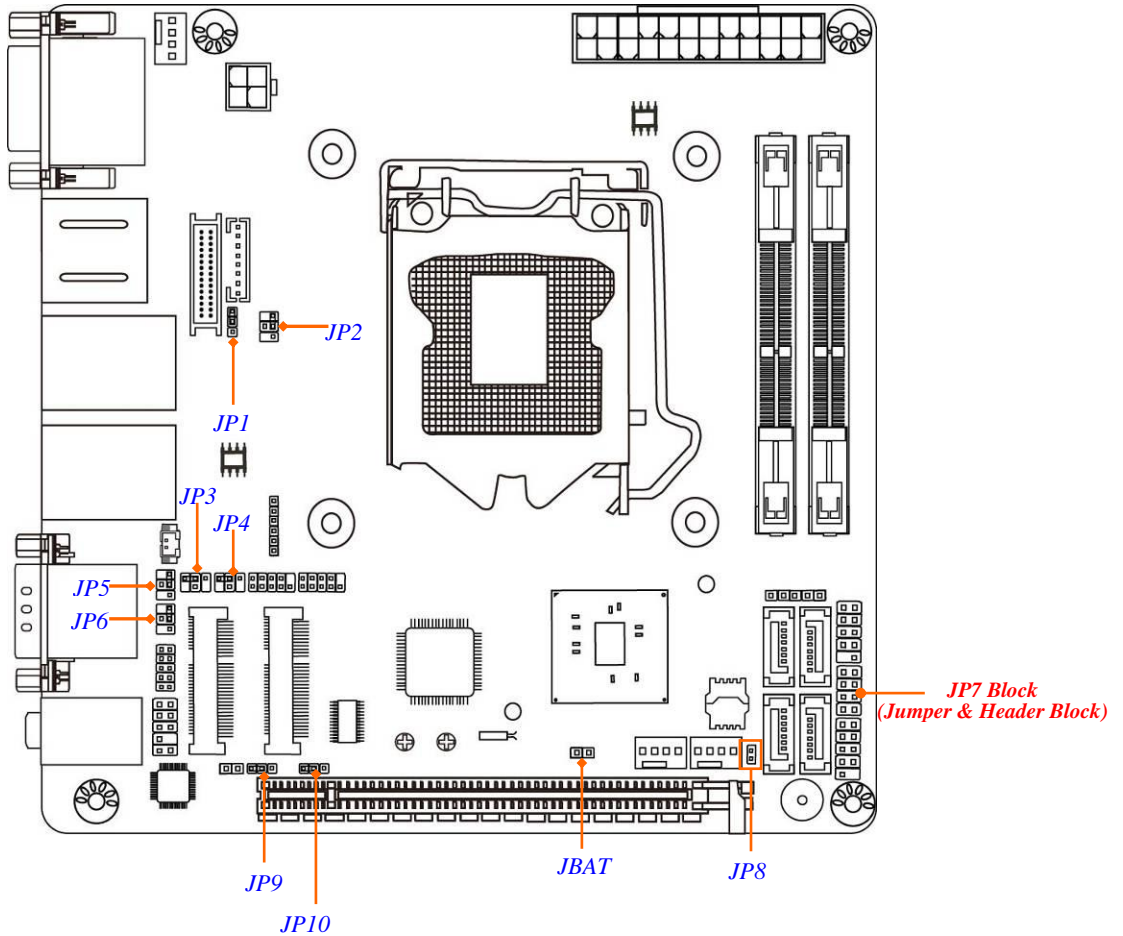
Jumper

Jumper	Name	Description
JP6	COM1 Port Pin9 Function Select	4-pin Block
JP5	COM2 Port Pin9 Function Select	4-pin Block
JP3	COM3 Header Pin9 Function Select	4-pin Block
JP4	COM4 Header Pin9 Function Select	4-pin Block
JP1	Inverter Backlight VCC 5V/12V Select	3-pin Block
JP2	LCD Panel VCC 3.3V /5V/12V Select	4-pin Block
JP9	MMPE Slot PWR VCC3.3V/3.3VSB Select	3-pin Block
JP10	MPE Slot PWR VCC3.3V/3.3VSB Select	3-pin Block
JP7	*Pin(1-2):* Case Open Message Display Function *Pin(3-4):* ATX Mode / AT Mode Select	8-pin Block
JBAT	Clear CMOS RAM Setting	2-pin Block
JP8	ME Features Select	2-pin Block

Connectors

Connector	Name
ATXPWR	24-Pin Main Power Connector
ATX12V	4-Pin 12V Power Connector
HDMI	High-Definition Multimedia Interface
DVI	DVI-D Port Connector
DP	Display Port Connector
USB1	USB 3.0 Connector X2
UL1/UL2	**Top:** RJ-45 LAN Connector X2 **Middle & Bottom**: USB 3.0 Port Connector X 4
COM1_2	Serial Port COM Connector X2
AUDIO	**Top:** Line-in Connector **Middle:** Line-out Connector **Bottom:** MIC Connector
SATA1/2/3/4	SATAIII Connector X4
CPUFAN/SYSFAN1/2	FAN Connector X3

Headers

Header	Name	Description
FP_AUDIO	Front Panel Audio Header	9-pin Block
SPDIFOUT	HDMI_SPDIF Out Header	2-pin Block
PS2KBMS	PS/2 Keyboard & Mouse Header	6-pin Block
GPIO	GPIO Header	10-pin Block
COM3/COM4	Serial Port Header	9-pin Block
FP	Front Panel Header(PWR LED/ HD LED/Power Button /Reset)	9-pin Block
JP7	*Pin(5-6)*：LAN1 Activity LED Header *Pin(7-8)*：LAN2 Activity LED Header	8-pin Block
USB4	USB 2.0 Port Header	9-pin Block
SMBUS	SMBUS Header	5-pin Block
LVDS	LVDS Header	30-pin Block
INVERTER	LVDS Inverter Header	8-pin Block

Chapter 2
Hardware Installation
2-1 Jumper Setting
JP6 (4-pin): COM1 Port Pin9 Function Select
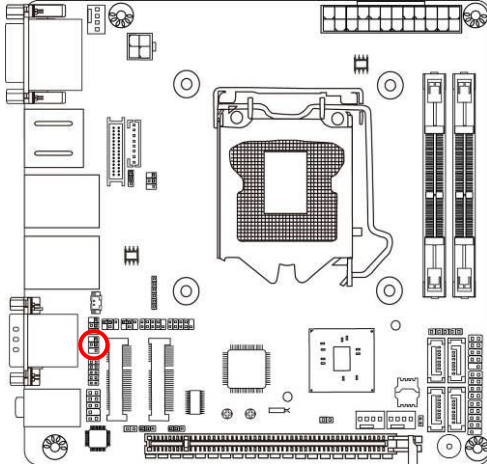
JP6→COM1 Port Pin-9
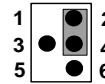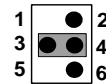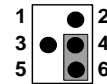
	2-4 Closed: Pin9=RING;	3-4 Closed: Pin9=5V;	4-6 Closed: Pin9=12V.

JP5 (4-pin): COM2 Port Pin9 Function Select
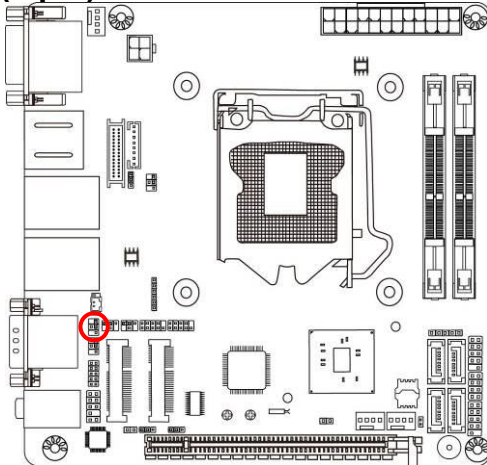
JP5→COM2 Port Pin-9
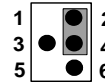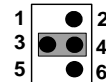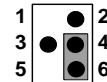
	2-4 Closed: Pin9=RING;	3-4 Closed: Pin9=5V;	4-6 Closed: Pin9=12V.

JP3 (4-pin): COM3 Header Pin9 Function Select
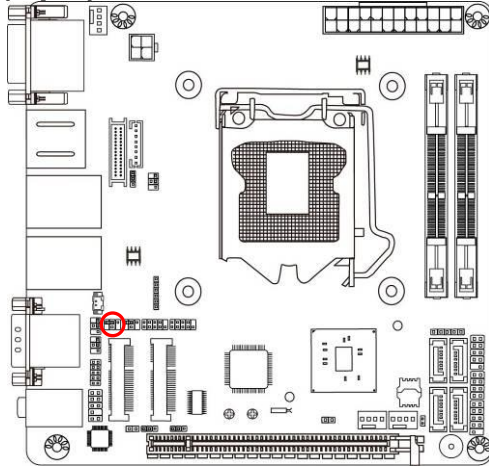
JP3→COM3 Header Pin-9
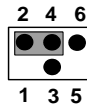
2-4 Closed:
Pin9=RING;
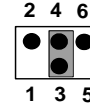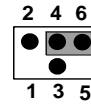
3-4 Closed:
Pin9= 5V;

4-6 Closed:
Pin9= 12V.

JP4 (4-pin): COM4 Header Pin9 Function Select
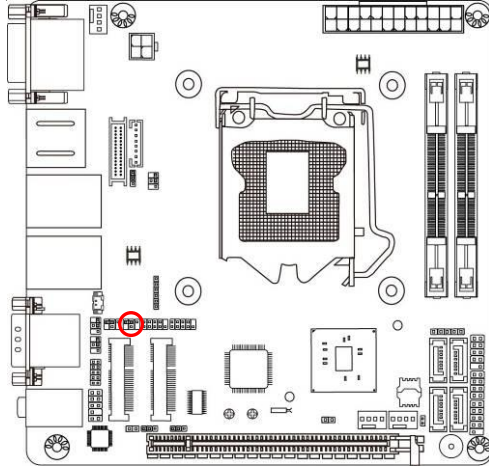
JP4→COM4 Header Pin-9
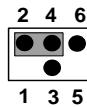
2-4 Closed:
Pin9=RING;
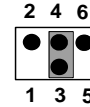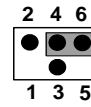
3-4 Closed:
Pin9= 5V;

4-6 Closed:
Pin9= 12V.

JP1 (3-pin): INVERTER Backlight VCC 5V/12V Select
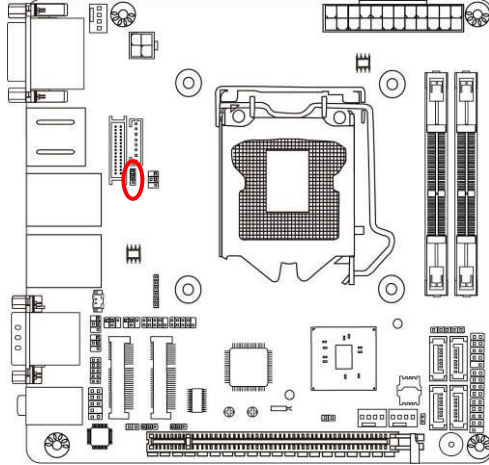
JP1→INVERTER Backlight VCC

1-2 Closed: Inverter backlight VCC= 5V;

2-3 Closed: Inverter backlight VCC=12V.

JP2 (4-pin): LCD Panel VCC 3.3V/5V/12V Select
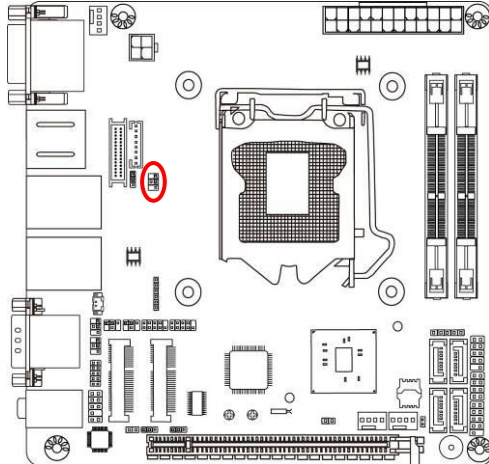
JP2→LCD Panel VCC
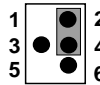
2-4 Closed: LCD VCC= 3.3V;

3-4 Closed: LCD VCC= 5V;
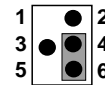
4-6 Closed: LCD VCC= 12V.

JP9 (3-pin): MMPE Slot PWR VCC 3.3V/3.3 VSB Select
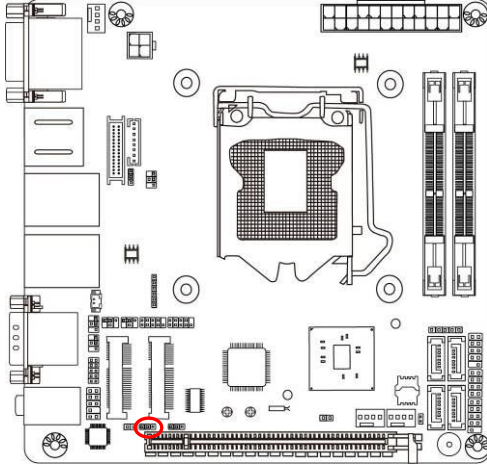
JP9→MMPE Slot PWR VCC

1   3
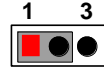
1-2 Closed：MMPE Slot PWR VCC= 3.3V(Default);

1   3
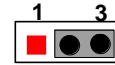
2-3 Closed：MMPE Slot PWR VCC= 3.3VSB.

JP10 (3-pin): MPE Slot PWR VCC 3.3V/3.3 VSB Select
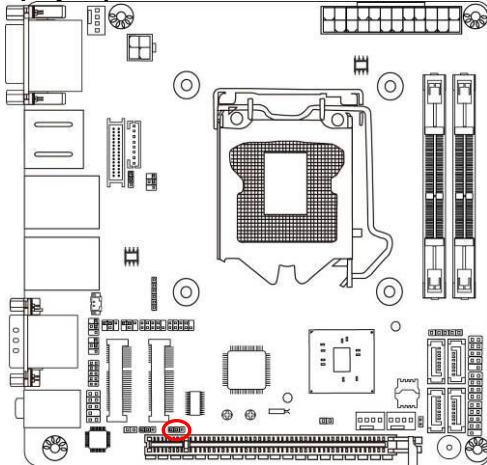
JP10→MPE Slot PWR VCC

1   3
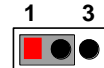
1-2 Closed：MPE Slot PWR VCC= 3.3V(Default);

1   3
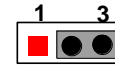
2-3 Closed：MPE Slot PWR VCC= 3.3VSB.

Pin (1-2) of JP7 (8-pin):Case Open Message Display Function Select
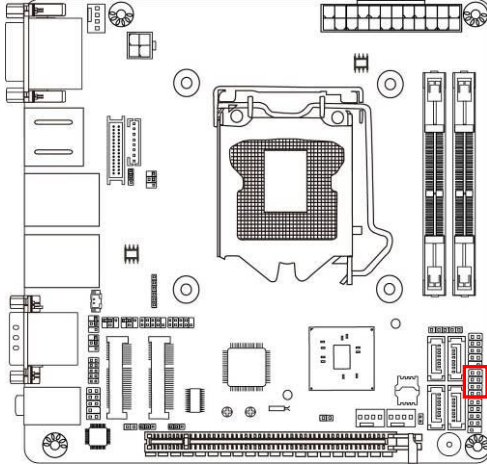
Pin(1-2) of JP7 →Case Open Detection

Pin 1→ [diagram] 2

1-2 Open: Normal (Default);

Pin 1→ [diagram] 2
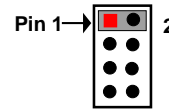
1-2 Close: Case Open Function Selected (One Touch).

Pin (1-2) Close: *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 (3-4) of JP7 (8-pin): ATX Mode/ AT Mode Select
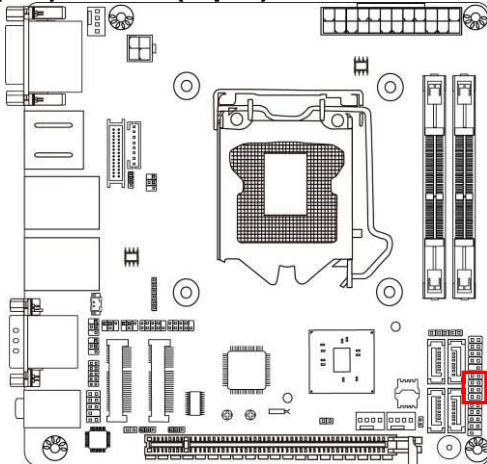
Pin(3-4) of JP7 →ATX/AT Mode Select

Pin 1→ [diagram] 2
3   4
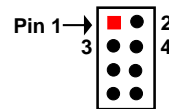
3-4 Open: ATX Mode Selected (Default);

Pin 1→ [diagram] 2
3   4
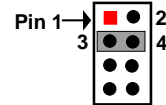
3-4 Close : AT Mode Selected.

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

JBAT (2-pin): Clear CMOS RAM Settings
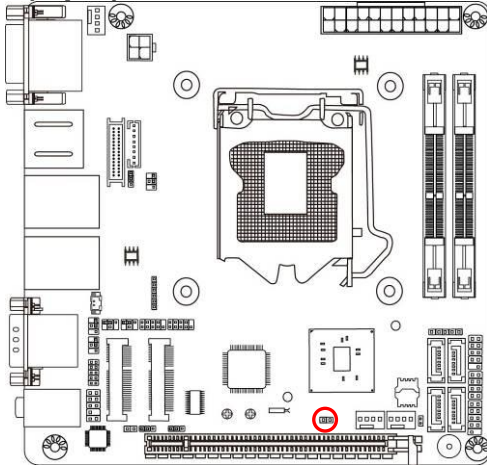
JBAT→Clear CMOS

1-2 Open: Normal (Default);

1-2 Closed:Clear CMOS Settings.

JP8 (2-pin): ME Features Select
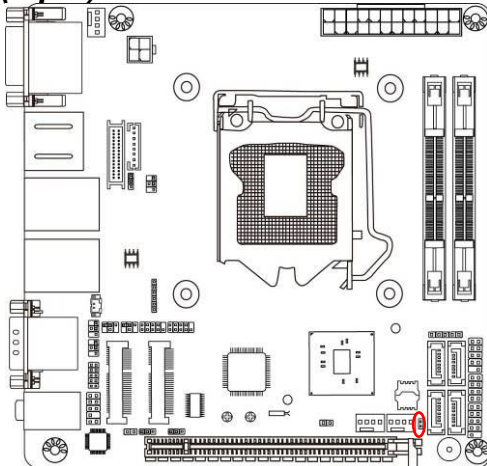
JP8→ME Features
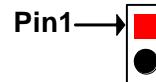
1-2 Open: Enable ME Features；
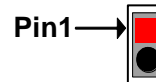
1-2 Closed: Disable ME Features.

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

(1) Rear Panel Connectors
Refer to Page-3.

Icon	*Name*	*Function*
	DVI-D Port	To connect display device that support DVI-D specification (Max. resolution Support: 1920*1080).
	HDMI Port	To connect display device that support HDMI specification. (Max. resolution Support : 4096*2160 @ 60Hz)
	Display Port	To the system to corresponding display device with compatible DP cable. (Max. resolution Support : 4096*2304 @ 60Hz)
	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.
	RJ-45 LAN Port	This connector is standard RJ-45 LAN jack for Network connection.
	Serial Port	Mainly for user to connect external MODEM or other devices that supports Serial Communications Interface. *COM1: RS232/422/485 Serial Port;* *COM2: RS232 Seial Port.*
	Audio Connectors	**BLUE:** Line-in Connector **GREEN:** Line-out Connector **PINK :** MIC Connector

(2) COM1 (9-pin Block): RS232/422/485 Serial Port

COM1 port can function as RS232/422/485 port. In normal settings COM1 functions as RS232 port. With compatible COM cable they can function as RS422 or RS 485 port.

User also needs to go to BIOS to set '*Transmission Mode Select*' for COM1 (refer to Page 33) at first, before using specialized cable to connect different pins of this port.
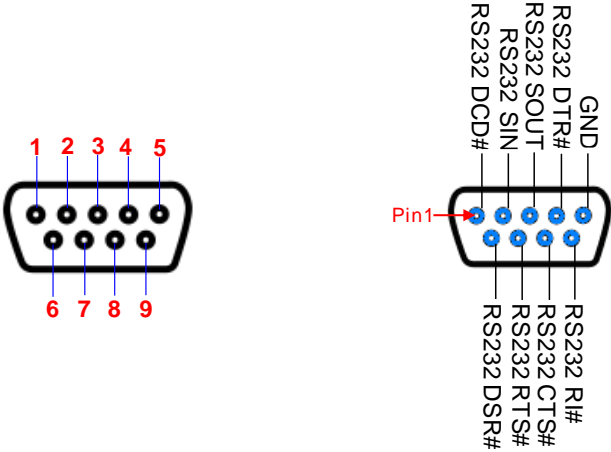
For RS232 Mode
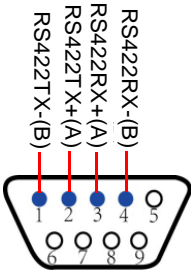
For RS422 Mode
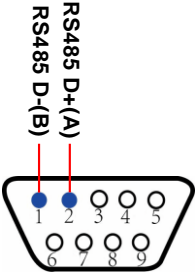
For RS485 Mode

(3) ATXPWR (24-pin block): Power Connector
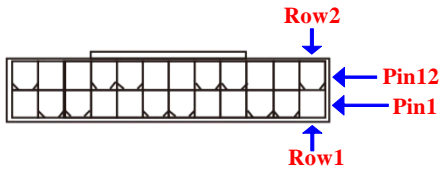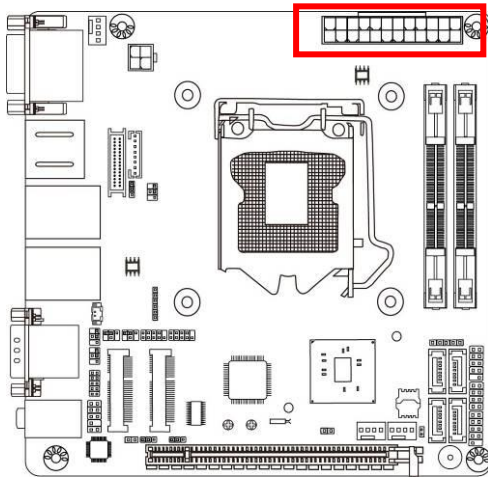
PIN	ROW1	ROW2
1	+3.3V	+3.3V
2	+3.3V	-12V
3	GND	GND
4	+5V	Soft Power on
5	GND	GND
6	+5V	GND
7	GND	GND
8	Power OK	-5V
9	+5V Stand by	+5V
10	+12V	+5V
11	+12V	+5V
12	+3.3V	GND

(4) ATX12V (4-pin block): ATX12V Type Power Connector
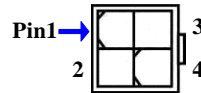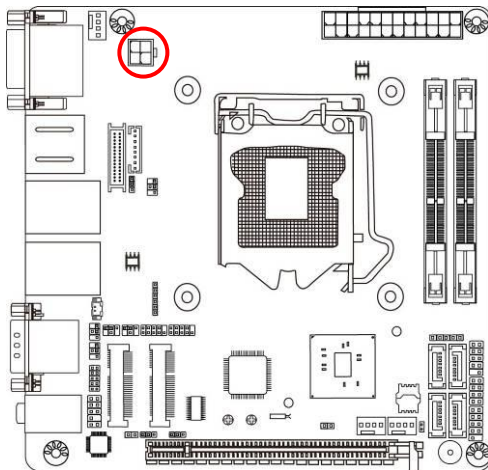
Pin No.	Definition
1	GND
2	GND
3	+12V
4	+12V

(5) SATA1/2/3/4 (7-pin): SATA III Port connector

SATA1/2/3/4 port is a high-speed SATAIII port that supports 6 GB/s transfer rate.
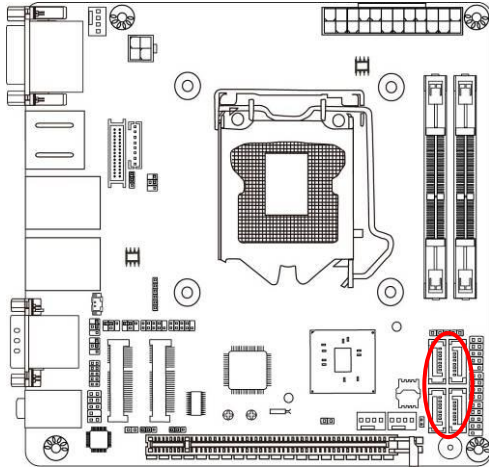
Pin No.	Defnition
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND

(6) CPUFAN/SYSFAN1/SYSFAN2 (4-pin): Fan Connector

Pin1

GND
+12V Fan Power
Fan Speed
Control

SYSFAN2

+12V Fan Power
Fan Speed
Control
GND

Pin1
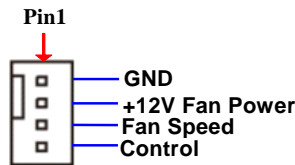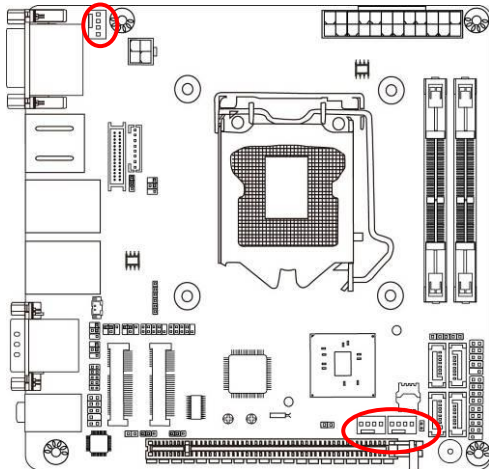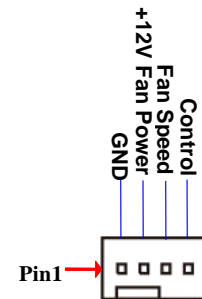
SYSFAN2/CPUFAN

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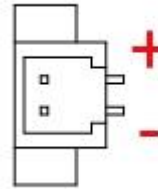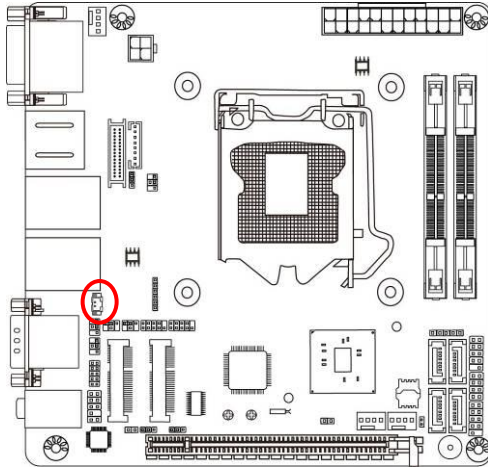
2-2-2 Headers

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

This header connects to Front Panel Line-out, MIC-In connector with cable.
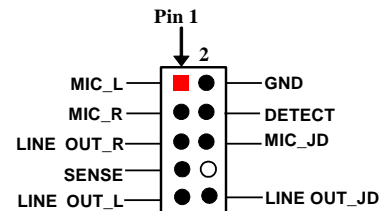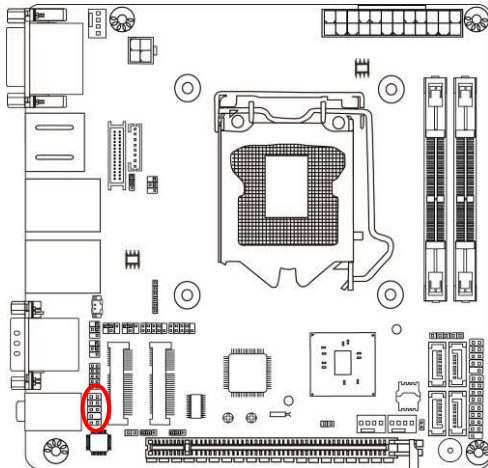
(2) SPDIFOUT(2-Pin): HDMI SPDIF_Out Header

Pin1 → SPDIF_OUT GND
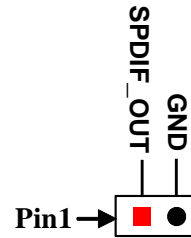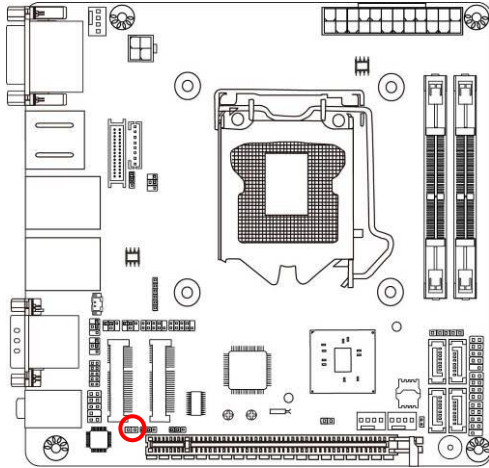
(3) PS2KBMS (6-pin): PS/2 Keyboard & Mouse Header

Pin1
KB_CLK
GND
KB_DATA
MS_DATA
VCC
MS_CLK

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

Pin 1

2

GPIO_80	GPIO_81
GPIO_82	GPIO_83
GPIO_84	GPIO_85
GPIO_86	GPIO_87
GND	VCC
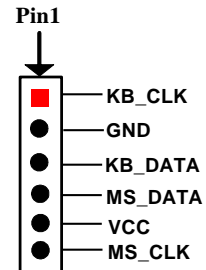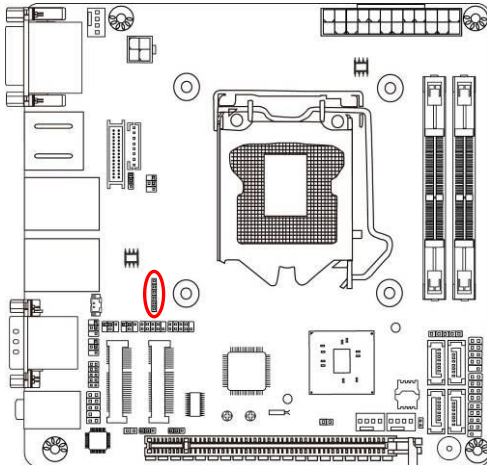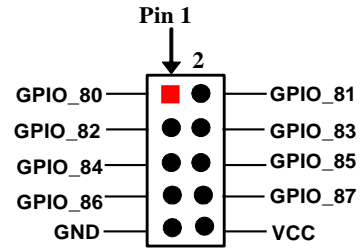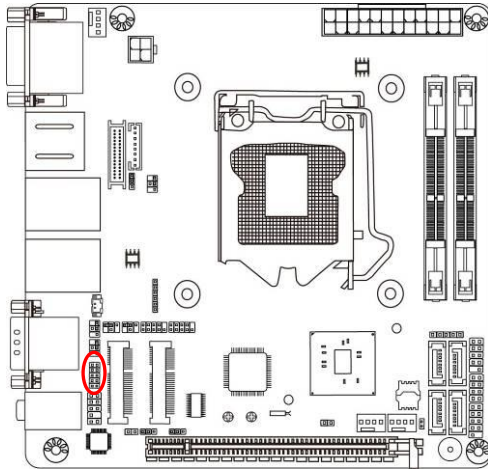
(5) COM3/COM4 (9-pin): Serial Port Header
COM3: RS232/422/485 Serial Port Header
COM4: RS232 Serial Port Header
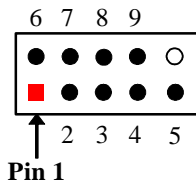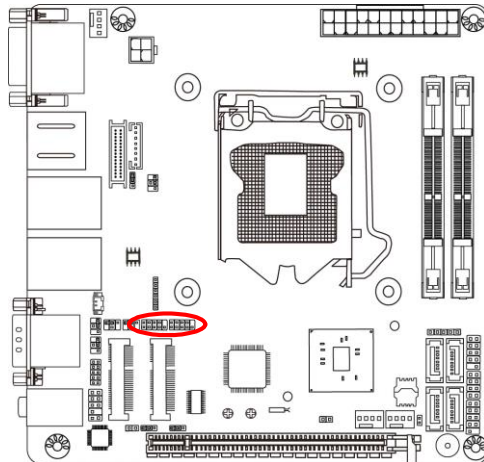
Pin NO.	RS232	*RS422 (COM3)	*RS485 (COM3)
Pin 1	DCD	TX-	DATA-
Pin 2	RXD	TX+	DATA+
Pin 3	TXD	RX+	NC
Pin 4	DTR	RX-	NC
Pin 5	GND	GND	GND
Pin 6	DSR	NC	NC
Pin 7	RTS	NC	NC
Pin 8	CTS	NC	NC
Pin 9	RI	NC	NC

*Notice: COM3 servers as RS232 serial port header in most cases.RS422 & RS485 function is only optional to customized models. *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 COM3 header.*

(6) FP (9-pin): Front Panel Header

Pin 1

	2
HDD LED+	PWR LED+
HDD LED-	PWR LED -
GND	PWRBTN
RSTSW	GND
VCC	
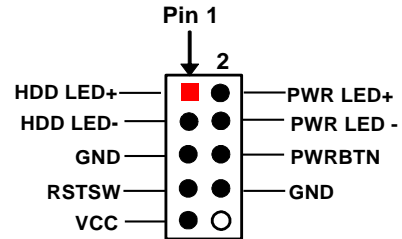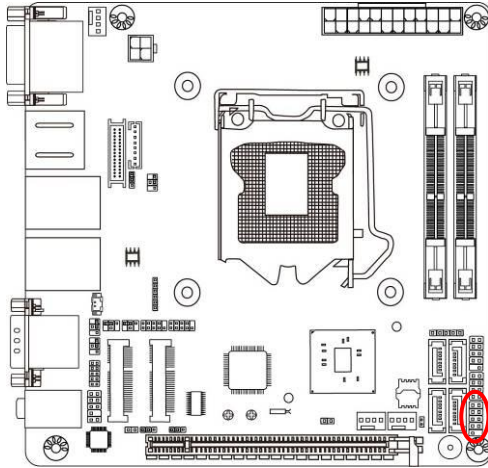
(7) Pin (5-6) & Pin(7-8) of JP7 (8-pin): LAN Activity LED Headers
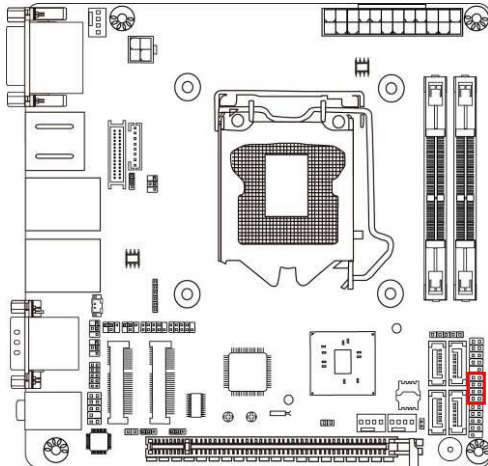
J7: Pin (5&6) →LAN1 Activity LED
J7: Pin (7&8) →LAN2 Activity LED

Pin 1

2

LAN1LED+ ——— LAN1LED-
LAN2LED+ ——— LAN2LED-

7 8
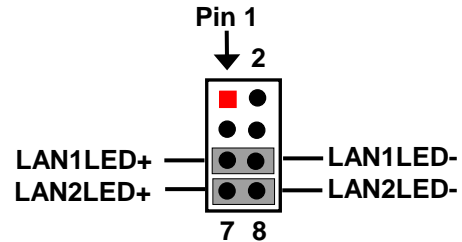
(8) USB4 (9-pin): USB 2.0 Port Header

Pin 1
2

VCC	VCC
-DATA	-DATA
+DATA	+DATA
GND	GND
	NC
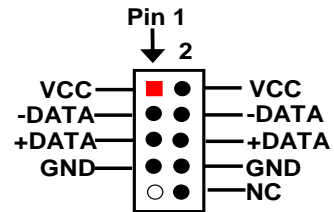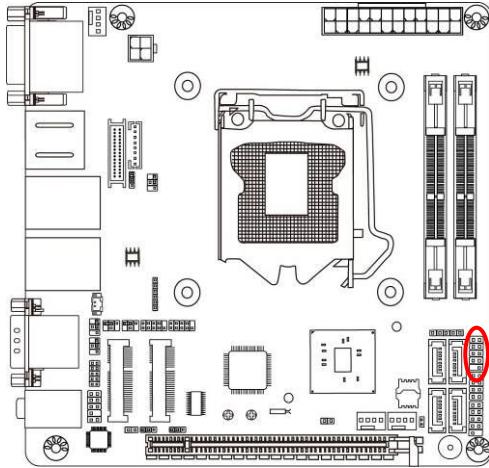
(9) SMBUS (4-Pin): SMBUS Header

SMBUS_CLK
SMBUS_DATA
SMBUS_ALERT
GND
VCC3
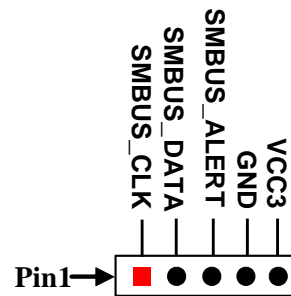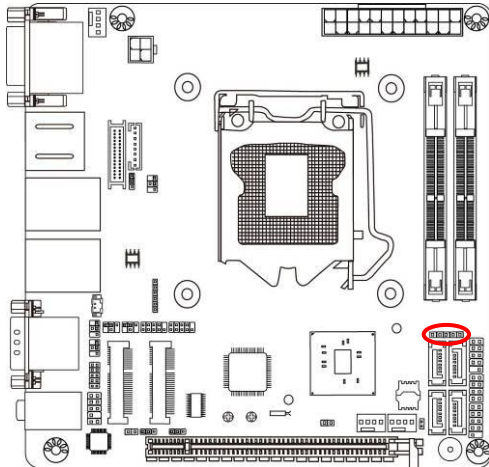
Pin1

(10)   LVDS (30-pin): 24-bit Dual Channel LVDS Header
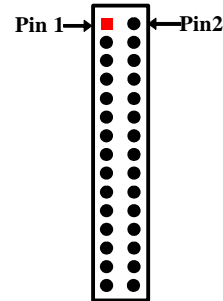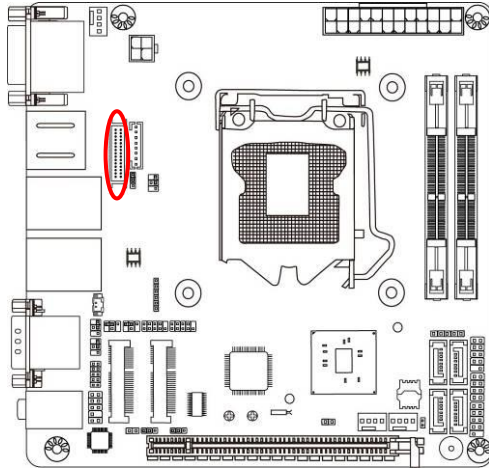
Pin NO.	Pin Define	Pin NO.	Pin Define
Pin 1	LVDSB_DATAN3	Pin 2	LVDSB_DATAP3
Pin 3	LVDS_CLKBN	Pin 4	LVDS_CLKBP
Pin 5	LVDSB_DATAN2	Pin 6	LVDSB_DATAP2
Pin 7	LVDSB_DATAN1	Pin 8	LVDSB_DATAP1
Pin 9	LVDSB_DATAN0	Pin 10	LVDSB_DATAP0
Pin 11	NC/DDC_DATA	Pin 12	NC/DDC_CLK
Pin 13	GND	Pin 14	GND
Pin 15	GND	Pin 16	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

(11)   INVERTER (8-pin): LVDS Inverter Connector
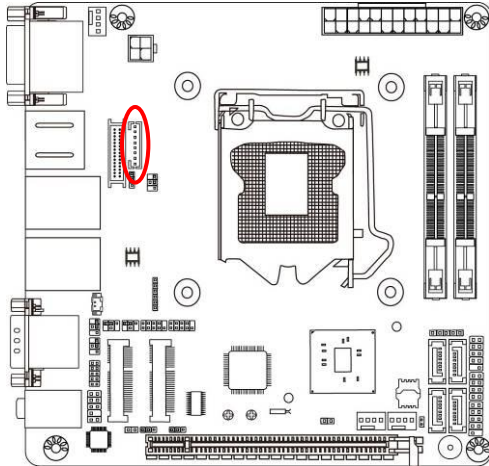
Pin No.	Definition
1	Backlight Enable
2	Backlight Duty
3	PVCC
4	PVCC
5	GND
6	GND
7	Brightness up
8	Brightness down

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!!

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

3-2 BIOS Menu Screen

The following diagram show a general BIOS menu screen:

Menu Bar

```
           Aptio Setup Utility - Copyright (C) 202  American Megatrends, Inc.
  Main  Advanced  Chipset  Security  Boot  Save & Exit

  BIOS Information                   American Megatrends       Set the Date. Use Tab to
  BIOS Vendor                        5.12                      switch between Date elements.
  Core Version                       BF54AA11
  Filename                           12/01/2021 09:59:10
  Build Date and Time
                                     [Mon 06/24/2024]
  System Date                        [15:58:35]
  System Time

  Access Level                       Administrator
```

General Help Items

Menu Items

Current Setting Value

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

Function Keys

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

3-3 Function Keys

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

- Press←→ (left, right) to select screen;
- Press ↑↓ (up, down) to choose, in the main menu, the option you want to confirm or to modify.
- Press <Enter> to select.

- Press <+>/<−> keys when you want to modify the BIOS parameters for the active option.
- [F1]: General help.
- [F2]: Previous values.
- [F3]: Optimized defaults.
- [F4]: Save & Exit.
- Press <Esc> to exit from BIOS Setup.

3-4 Getting Help

Main Menu

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

Status Page Setup Menu/Option Page Setup Menu

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

3-5 Menu Bars

There are six menu bars on top of BIOS screen:

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

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

3-6 Main Menu

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

```
                Aptio Setup Utility - Copyright (C) 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                       BF54AA11
    Build Date and Time            12/01/2021 09:59:10

    System Date                    [Mon 06/24/2024]
    System Time                    [15:58:35]

    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

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

 ► CPU Configuration                                  CPU Configuration Parameters
 ► SATA Configuration
 ► PCH-FW Configuration
 ► AMT Configuration
 ► Trusted Computing
 ► ACPI Settings
 ► Wake-up Function Settings
 ► Super IO Configuration
 ► PC Health Status
 ► Serial Port Console Redirection
 ► Network Stack Configuration
 ► CSM Configuration
 ► NVMe Configuration
 ► USB Configuration                                  →←: Select Screen
                                                      ↑↓: Select Item
 ► Intel(R) I210 Gigabit Network Connection - 00:30:18:22:22:0A   Enter: Select
 ► Intel(R) Ethernet Connection (H) I219-LM - 88:88:88:88:87:88  +/-: 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.
```

► **CPU Configuration**
Press [Enter] to view current CPU configuration and make settings for the following sub-items:
Intel Virtualization Technology
Use this item to When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool technology.
Intel Virtualization Technology Set the default value to: [Enabled]

The optional settings: [Disabled]; [Enabled].
Hardware Prefetcher
Use this item to turn on/off the MLC streamer prefetcher.
Hardware Prefetcher Set the default value to: [Enabled]

The optional settings: [Disabled]; [Enabled].
Adjacent Cache Line Prefetch

Use this item to turn on/off prefeching of adjacent cache lines.
Adjacent Cache Line Prefetch Set the default value to: [Enabled]

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

Intel(R) SpeedStep(tm)
This item allows more than two frequency ranges to be supported.
Intel(R) SpeedStep(tm) Set the default value to: [Enabled]

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

CPU C Status
Use this item to enable/disable CPU power management. Allows CPU to go to C states when it's not 100% utilized.
CPU C Status Set the default value to: [Enabled]

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

Package C State Limit
Use this item to maximum package C state limit setting. CPU Default: Leaves to factory default value. Auto: initializes to deepest available package C state limit.
Package C State Limit Set the default value to: [Auto]

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

► **SATA Configuration**
Press [Enter] to make settings for the following sub-items:
SATA Controller(s)
Use this item to enable or disable SATA device.
SATA Controller(s) Set the default value to: [Enabled]

The optional settings: [Disabled]; [Enabled].
When set as [Enabled], the following sub-items shall appear:
SATA Mode Selection
Use this item to determines how SATA controller(s) operate.
SATA Mode Selection Set the default value to: [AHCI]

The optional settings are: [AHCI]; [RAID].
SATA1
Software Preserve
Port

Use this item to enable or disable each SATA port.
Port Set the default value to: [Enabled]

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

Hot Plug
Use this item to designates this port as hot pluggable.
Hot Plug Set the default value to: [Disabled]

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

SATA2/3/4
Software Preserve
Port
Use this item to enable or disable each SATA port.
Port Set the default value to: [Enabled]

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

Hot Plug
Use this item to designates this port as hot pluggable.
Hot Plug Set the default value to: [Enabled]

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

mSATA
Software Preserve
Port
Use this item to enable or disable SATA Port.
Port Set the default value to: [Enabled]
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 selects TPM device: PTT or dTPM.Warning! PTT/dTPM will be disabled and all data saved on it will be lost.
TPM Device Selection Set the default value to: [dTPM]

The optional settings: [dTPM]; [PTT].

► **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.
ME FW Image Re-Flash Set the default value to: [Disabled]

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 Active Management Technology parameters.
Press [Enter] to make settings for the following sub-items:
Intel AMT
Use this item to when disabled AMT BIOS Features are no longer supported and user is no lounger able to access MEBx Setup.
Note: This option does not disable manageability features in FW.
Intel AMT Set the default value to: [Enabled]

The optional settings: [Disabled]; [Enabled].
When set as [Enabled], the following sub-items shall appear:
Hide Un-Configure ME Confirmation Prompt
Use this item to Wide Un-Configure ME confirmation prompt when attempting ME unconfiguration .
Hide Un-Configure ME Confirmation Prompt Set the default value to: [Disabled]

The optional settings: [Disabled]; [Enabled].
MEBx Debug Message Output
Use this function to enable or disable MEBx Debug Message Output function.
MEBx Debug Message Output Set the default value to: [Disabled]

The optional settings: [Disabled]; [Enabled].
Un-Configure ME
Use this item to unconfigure ME with restting MEBx password to default.
Un-Configure ME Set the default value to: [Disabled]

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

ASF

Use this item to enable or disable Alert Specification Format.

ASF Set the default value to: [Enabled]

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

Activate Remote Assistance Process

Use this item to enable or disable Trigger CIRA boot function.

Activate Remote Assistance Process Set the default value to: [Disabled]

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

USB Configure

Use this item to enable or disable USB configure function.

USB Configure Set the default value to: [Disabled]

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

PET Progress

Use this item to enable or disable PET events progress to receive PET events or not.

PET Progress Set the default value to: [Enabled]

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

AMT CIRA Timeout

WatchDog

Use this item to enable or disable WatchDog Timer.

WatchDog Set the default value to: [Disabled]

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

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

OS Timer

Use this item to set OS watch dog timer.

OS Timer Set the default value to: [0]

BIOS Timer

Use this item to set BIOS watch dog timer.

BIOS Timer Set the default value to: [0]

► **Trusted Computing**

Press [Enter] to enable or disable '**Security Device Support**'.

Security Device Support

Use this item to enable or disable BIOS support for security device. O.S. will not show security device. TGG EFI protocol and INT1A interface will not be available. Security Device Support Set the default value to: [0]

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

*When set as **[Enabled]**, user can make further settings in the following items:*
Pending Operation
Use this item to schedule an operation for the security device. Your computer will reboot during restart to change state of device.
Pending Operation Set the default value to: [None]

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

► **ACPI Settings**
Press [Enter] to make settings for the following sub-items:
<u>*ACPI Settings*</u>

ACPI Sleep State
Use this item to select the highest ACPI sleep state the system will enter when the suspend button is pressed.
ACPI Sleep State Set the default value to: [S3 (Suspend to RAM)]

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

► **Wake-up Function Settings**
Press [Enter] to make settings for the following sub-items:
Wake-up System with Fixed Time
Use this item to enable or disable system wake-up by RTC alarm. When this function is enabled, system will wake on the time (hr::min::sec) specified.
The optional settings: [Disabled]; [Enabled].
Wake-up System With Fixed Time Set the default value to: [Disabled]
When set as [Enabled], system will wake on the hour/min/sec specified.
Wake-up Hour
Use this item to select 0-23 for example enter 3 for 3am and 15 for 3pm.
Wake-up Hour Set the default value to: [0]
Wake-up Minute
Use this item to select 0-59.

Wake-up Minute Set the default value to: [0]
Wake-up Second
Use this item to select 0-59.
Wake-up Second Set the default value to: [0]
Wake-up System with Dynamic Time
Use this item to enable or disable system wake on alarm event.
System will wake on the current time + Increase minutes.
Wake-up System with Dynamic Time Set the default value to: [Disabled]
The optional settings: [Disabled]; [Enabled].
When set as [Enabled], system will wake on the current time + increased minute(s).
Wake-up Minute Increase
Use this item to select 1-60 minute(s).
Wake-up Minute Increase Set the default value to: [1]
The optional settings: [Disabled]; [Enabled].
USB Power Gating S4-S5 Set the default value to: [Enabled]
PS2 KB/MS Wake-up
Use this item to enable or disable PS2 KB/MS wake-up from S3/S4/S5 state.
This function is supported when 'ERP Support' is set as [Disabled].
PS2 KB/MS Wake-up Set the default value to: [Disabled]
The optional settings: [Enabled]; [Disabled].
USB S3/S4 Wake-up
Use this item to enable or disable USB wake-up from S3/S4 state.
This function is supported when 'ERP Support' is set as [Disabled]
USB S3/S4 Wake-up Set the default value to: [Disabled]
The optional settings: [Enabled]; [Disabled].
USB S5 Power
Use this item to enable or disable USB power after power shutdown.
This function is supported when 'ERP Support' is set as [Disabled].
USB S5 Power Set the default value to: [Enabled]
The optional settings: [Enabled]; [Disabled].

Ring Wake-up

Use this item to enable or disable ring wake-up
Ring Wake-up Set the default value to: [Disabled]
The optional settings: [Enabled]; [Disabled].

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

ERP Support
The optional settings: [Disabled]; [Auto].
ERP Support Set the default value to: [Disabled]
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
Use this item to enable or disable serial port (COM).
The optional settings: [Disabled]; [Enabled].
Serial Port Set the default value to: [Enabled]
When set as [Enabled], user can make settings in the following items that appear:
Change Settings
Use this item to select an optimal settings for super IO device.
The optional settings are: [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]
Change Settings Set the default value to: [IO=3F8h; IRQ=4]
Transmission Mode Select
The optional settings are: [RS422]; [RS232]; [[RS485].
Transmission Mode Select Set the default value to: [RS232]
Mode Speed Select
Use this item to RS232/RS422/RS485 Speed Select.
The optional settings are: [RS232/RS422/RS485=250Kbps]; [RS232=1Mbps, RS422/RS485=10Mbps].
Mode Speed Select Set the default value to: [RS232=1Mbps,

RS422/RS485=10Mbps]

Serial Port FIF0 Mode

Serial Port FIF0 Mode Set the default value to: [128-Byte FIF0]

The optional settings are: [16-Byte FIF0]; [32-Byte FIF0]; [64-Byte FIF0]; [128-Byte FIF0]

▶ **Serial Port 2 Configuration**

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

Serial Port

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

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

Serial Port Select Set the default value to: [Enabled]

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

Change Settings

Use this item to select an optimal setting for super IO device.

The optional settings are: [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]

Change Settings Set the default value to: [IO=2F8h; IRQ=3]

Serial Port FIF0 Mode

Serial Port FIF0 Mode Set the default value to: [128-Byte FIF0]

The optional settings are: [16-Byte FIF0]; [32-Byte FIF0]; [64-Byte FIF0]; [128-Byte FIF0]

▶ **Serial Port 3 Configuration**

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

Serial Port

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

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

Serial Port Select Set the default value to: [Enabled]

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

Change Settings

Use this item to select an optimal setting for super IO device.

The optional settings are: [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]

Change Settings Set the default value to: [IO=3E8h; IRQ=10]

Transmission Mode Select

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

Transmission Mode Select Set the default value to: [RS232]

Mode Speed Select

Use this item to RS232/RS422/RS485 Speed Select.

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

Mode Speed Select Set the default value to: [RS232=1Mbps, RS422/RS485=10Mbps]

Serial Port FIF0 Mode

Serial Port FIF0 Mode Set the default value to: [128-Byte FIF0]

The optional settings are: [16-Byte FIF0]; [32-Byte FIF0]; [64-Byte FIF0]; [128-Byte FIF0]

‣ **Serial Port 4 Configuration**

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

Serial Port

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

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

Serial Port Select Set the default value to: [Enabled]

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

Change Settings

Use this item to select an optimal setting for super IO device.

The optional settings are: [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]

Change Settings Set the default value to: [IO=2E8h; IRQ=10]

Serial Port FIF0 Mode

Serial Port FIF0 Mode Set the default value to: [128-Byte FIF0]

The optional settings are: [16-Byte FIF0]; [32-Byte FIF0]; [64-Byte FIF0];

[128-Byte FIF0]

WatchDog Reset Timer
Use this item to support WDT reset function.
The optional settings: [Disabled]; [Enabled].
WatchDog Reset Timer Set the default value to: [Disabled]
When set as [Enabled], user can make settings in the following items that appear:
WatchDog Reset Timer Value
User can set a value in the range of [10] to [255] seconds or [1] to [255] minutes.
WatchDog Reset Timer Value Set the default value to: [10]
WatchDog Reset Timer Unit
The optional settings are: [Sec.]; [Min.].
WatchDog Reset Timer Unit Set the default value to: [Sec]
WatchDog Wake-up Timer in ERP
Use this item to support WDT Wake-up.
The optional settings are: [Disabled]; [Enabled].
WatchDog Wake-up Timer in ERP Set the default value to: [Disabled]
When set as [Enabled], user can make settings in the following items that appear:
WatchDog Wake-up Timer Value in ERP
User can set a value in the range of [10]~[4095] seconds, or [1]~[4095] minutes.
WatchDog Reset Timer Value in ERP Set the default value to: [10]
WatchDog Wake-up Timer Unit in ERP
The optional settings are: [Sec.]; [Min.].
WatchDog Reset Timer Unit in ERP Set the default value to: [Sec]

ATX Power Emulate AT Power
This item support Emulate AT power function, MB power On/Off control by power
supply. Use needs to select 'AT or ATX Mode' on MB jumper at first (refer to P7
Pin (3-4) of JP7 block for ATX Mode & AT Mode Select).

Case Open Detect
Use this item to detect if case have ever been opened. Show message in POST.
The optional settings: [Disabled]; [Enabled].
Case Open Detect Set the default value to: [Disabled]
When set as [Enabled], system will detect if COPEN has been short or not (*refer to*

JP7 *jumper setting for Case Open Detection*); if Pin 1&2 of *JP7* are short, system will show Case Open Message during POST

PS2 KB/MS Connect

Use this item to select PS2 connect primary device.

PS2 KB/MS Connect Set the default value to: [Keyboard First]

The optional settings are: [Keyboard First]; [Mouse First].

► **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 / SYSFAN1/ SYSFAN2 Smart Mode

CPUFAN / SYSFAN1/ SYSFAN2 Smart Mode Set the default value to: [Enabled]

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

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

CPUFAN / SYSFAN1/ SYSFAN2 Full-Speed Temperature

Use this item to set CPUFAN (/SYSFAN1/SYSFAN2) full speed temperature. Fan will run at full speed when above this pre-set temperature.

CPUFAN / SYSFAN1/ SYSFAN2 Full-Speed Duty

Use this item to set CPUFAN (/SYSFAN1/SYSFAN2) full-speed duty. Fan will run at full speed when above this pre-set duty.

CPUFAN / SYSFAN1/ SYSFAN2 Idle-Speed Temperature

Use this item to set CPUFAN (/SYSFAN1/SYSFAN2) idle speed temperature. Fan will run at idle speed when below this pre-set temperature.

CPUFAN / SYSFAN1/ SYSFAN2 Idle-Speed Duty

Use this item to set CPUFAN (/SYSFAN1/SYSFAN2) idle speed duty. Fan will run at idle speed when below this pre-set duty.

Shutdown Temperature

Use this item to select system shutdown temperature.

Shutdown Temperature Set the default value to: [Disabled]

The optional settings are: [Disabled]; [70°C/158°F]; [75°C/167°F]; [80°C/176°F];

[85°C/185°F]; [90°C/194°F].

► **Serial Port Console Redirection**
Press [Enter] to make settings for the following sub-items:
COM1

Console Redirection
Use this item to enable or disable COM1 Console Redirection.
Console Redirection Set the default value to: [Disabled]
The optional settings are: [Disabled]; [Enabled].
*When set as [Enabled], user can make further settings in the '**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.
Terminal Type
The optional settings: [VT100]; [VT100Plus]; [VT-UTF8]; [ANSI].
[ANSI]: Extended ASCII char set;
[VT100]: ASCII char set;
[VT100Plus]: Extends VT100 to support color, function keys, etc.
[VT-UTF8]: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.
Terminal Type Set the default value to: [ANSI]
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].
Bits per second Set the default value to: [115200]
Data Bits
The optional settings: [7]; [8].
Data Bits Set the default value to: [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;

Parity Set the default value to: [None]

[Mark] and **[Space]**: parity do not allow for error detection. They can be used as an additional data bit.

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].

Stop Bits Set the default value to: [1]

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].

Flow Control Set the default value to: [None]

VT-UTF8 Combo Key Support

Use this item to enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals.

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

VT-UTF8 Combo Key Support Set the default value to: [Enabled]

Recorder Mode

With this mode enabled only text will be sent. This is to capture Terminal data.

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

Recorder Mode Set the default value to: [Disabled]

Resolution 100x31

Use this item to enable or disable extended terminal resolution.

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

Resolution 100x31 Set the default value to: [Disabled]

Legacy OS Redirection Resolution

Use this item to on legacy OS, The number of rows and columns supported redirection.

Legacy OS Redirection Resolution Set the default value to: [80x24]

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

Putty KeyPad

Use this item to select FunctionKey and KeyPad on Putty.

The optional settings: [VT100]; [LINUX]; [XTERMR6]; [SCO]; [ESCN]; [VT400].

Putty KeyPad Set the default value to: [VT100]

Redirection After BIOS POST

Redirection After BIOS POST Set the default value to: [Always Enable]

The optional settings are: [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].

Console Redirection EMS Set the default value to: [Disabled]

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

Use this item to Microsoft Windows Emergency Management Services (EMS) allows for remote management of a Windows server OS through a serial port.

Out-of-Band Mgmt Port Set the default value to: [COM1]

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

Terminal Type

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

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

Terminal Type EMS Set the default value to: [VT-UTF8]

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].

Bits per second EMS Set the default value to: [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].

Flow Control EMS Set the default value to: [None]

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.

▸ **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].

Network Stack Set the default value to: [Disabled]

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

IPv4 PXE Support
Use this item to enable/disable IPv4 PXE Boot Support. When set as [Disabled], IPv4 PXE boot support will not be available.
The optional settings: [Disabled]; [Enabled].
IPv4 PXE Support Set the default value to: [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].
IPv4 HTTP Support Set the default value to: [Disabled]
IPv6 PXE Support
Use this item to enable/disable IPv6 PXE Boot Support. When set as [Disabled], IPv6 PXE boot support will not be available.
The optional settings: [Disabled]; [Enabled].
IPv6 PXE Support Set the default value to: [Disabled]
IPv6 HTTP Support
Use this item to Enable Ipv6 HTTP Boot Support. If disabled IPV6 HTTP boot option will not be created.
The optional settings: [Disabled]; [Enabled].
IPv6 HTTP Support Set the default value to: [Disabled]
PXE boot wait time
Wait time in seconds to press [ESC] key to abort the PXE boot.
Use either [+]/[-] or numeric keys to set the value.
PXE boot wait time Set the default value to: [5]
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.
 Media detect count Set the default value to: [2]

► **CSM Configuration**
Press [Enter] to make settings for the following sub-items:
Option ROM execution
Network
This option controls the execution of UEFI and Legacy PXE OpROM.

Network Set the default value to: [Do not launch]
The optional settings are: [Do not launch]; [UEFI]; [Legacy].
Storage
This option controls the execution of UEFI and Legacy Storage OpROM.
Storage Set the default value to: [Do not launch]
The optional settings are: [Do not launch]; [UEFI]; [Legacy].
Other PCI devices
This item is for PCI devices other than Network, Mass storage or video defines which OpROM to launch.
Other PCI devices Set the default value to: [UEFI]
 The optional settings are: [Do not launch]; [UEFI]; [Legacy].

‣ **NVMe Configuration**
 Use this item to set NVMe Device options settings.

► **USB Configuration**
Press [Enter] to make settings for the following sub-items:
USB Configuration
Legacy USB Support
Legacy USB Support Set the default value to: [Enabled]
The optional settings are: [Enabled]; [Disabled]; [Auto].
[**Enabled**]: To enable legacy USB support.
[**Disabled]**: to keep USB devices available only for EFI specification,
[**Auto**]: To disable legacy support if no USB devices are connected.
XHCI Hand-off
This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
XHCI Hand-off Set the default value to: [Disabled]
The optional settings are: [Enabled]; [Disabled].
USB Mass Storage Driver Support
USB Mass Storage Driver Support Set the default value to: [Enabled]
The optional settings are: [Disabled]; [Enabled].
USB hardware delay and time-out

USB Transfer time-out

Use this item to set the time-out value for control, bulk, and interrupt transfers.
USB Transfer time-out Set the default value to: [20 sec]
The optional settings are: [1 sec]; [5 sec]; [10 sec]; [20 sec].
Device reset time-out
Use this item to set USB mass storage device start unit command time-out.
Device reset time-out Set the default value to: [20 sec]
The optional settings are: [10 sec]; [20 sec]; [30 sec]; [40 sec].
Device power-up delay
Use this item to set maximum time the device will take before it properly reports itself to the host controller. 'Auto' uses default value: for a root port it is 100 ms, for a hub port the delay is taken from hub descriptor. The optional settings: [Auto]; [Manual].Select [Manual] you can set value for the following sub-item: '**Device Power-up delay in seconds',** the delay range in from 1 to 40 seconds, in one second increments.

► **Intel(R) I210 Gigabit Network Connection- XX:XX:XX:XX:XX:XX /**

► **Intel(R) Ethernet Connection (H) I219-LM- XX:XX:XX:XX:XX:XX**

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:
VT-d
VT-d Set the default value to: [Enabled]
The optional settings are: [Enabled]; [Disabled].
► **Graphics Configuration**
Press [Enter] to make further settings for Graphics Configuration.
__Graphics Configuration__

Primary Display
Use this item to select which of graphics device should be primary display.\
Primary Display Set the default value to: [Auto]
The optional settings are: [Auto]; [IGFX]; [PEG].

Internal Graphics

Internal Graphics Set the default value to: [Auto]

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

GTT Size

GTT Size Set the default value to: [8MB]

The optional settings are: [2MB]; [4MB]; [8MB].

Aperture Size

Aperture Size Set the default value to: [256MB]

The optional settings are: [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 are: [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 Pre-Allocated Set the default value to: [32M]

DVMT Total Gfx Mem

Use this item to select DVMT 5.0 total graphics memory size used by the internal graphics device.

DVMT Total Gfx Mem Set the default value to: [256M]

The optional settings are: [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. VGA modes will be supported only on primary display.

Primary IGFX Boot Display Set the default value to: [VBIOS Default]

The optional settings are: [VBIOS Default]; [HDMI]; [DP]; [DVI]; [LVDS].

Secondary IGFX Boot Display

Use this item to select secondary IGFX boot display.

Secondary IGFX Boot Display Set the default value to: [Disabled]

The optional settings are: [Disabled]; [HDMI]; [DP]; [DVI].

Active LFP

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

Active LFP Set the default value to: [Disabled]

Note: *When set as 'Enabled', user can make further settings in '**Panel Type**'.*

Panel Type

Use this item to manually select LCD panel type.

Panel Type Set the default value to: [1024 x 768 18bit Single]

The optional setting are: [800x 480 18bit Single]; [800x 600 18bit Single]; [800x 600 24bit Single]; [1024 x 600 18bit Single]; [1024 x 768 18bit Single]; [1024 x 768 24bit Single]; [1280 x 768 24bit Single]; [1280 x 800 18bit Single]; [1280 x 800 24bit Single]; [1366 x 768 18bit Single]; [1366 x 768 24bit Single]; [1440 x 900 18bit Dual]; [1440 x 900 24bit Dual]; [1280 x 1024 24bit Dual]; [1680 x 1050 24bit Dual]; [1920 x 1080 24-bit Dual].

► **PEG Port Configuration**

Press [Enter] to make further settings for PEG port Configuration.

PEG Port Configuration

PEG (PCIE1 Slot)

This will show the current PCIE1 slot connected, if any available.

    Max Link Speed

    Use this item to configure maximum speed for available working card connected to PCIE1 slot.

    Max Link Speed Set the default value to: [Auto]

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

► **Memory Configuration**

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

Memory Frequency

Total Memory

DIMM1

DIMM2

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

  Administrator Password                                     →←: Select Screen
  User Password                                              ↑↓: Select Item
                                                             Enter: Select
                                                             +/-: Change Opt.
                                                             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

Press [Enter] to create new administrator password. Press again to confirm the new administrator password.

User Password

Press [Enter] to create new user password. Press again to confirm the new user password.

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]



                                                               →←: 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.
Setup Prompt Timeout Set the default value to: [2]
Bootup Numlock State
Use this item to select keyboard numlock state.
Bootup NumLock State Set the default value to: [Off]
The optional settings are: [On]; [Off].
Quiet Boot
Quiet Boot Set the default value to: [Disabled]
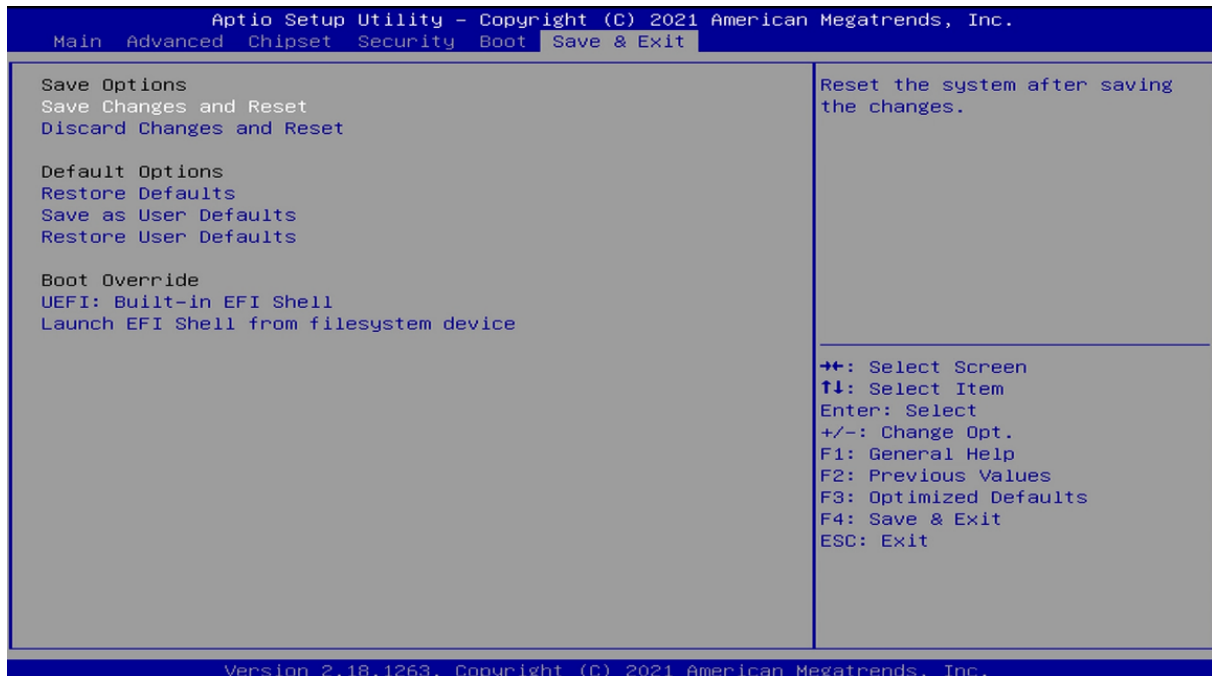The optional settings are: [Disabled]; [Enabled].
Boot Option Priorities

Boot Option #1
Use this item to decide system boot order from available options.
Boot Option #1 Set the default value to: [UEFI: Built-in EFI Shell]
The optional settings are: [Disabled]; [UEFI: Built-in EFI Shell].

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 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.
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
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
Press this item to launch EFI Shell application (Shell.efi) from one of the available file system device.