MI24 Series

User's Manual

NO. G03-MI24-F

Revision: 3.0

Release date: May 30, 2024

Trademark:

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

Environmental Protection Announcement

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

TABLE OF CONTENT

⚠ CAUTION Environmental Safety Instruction

- Avoid the dusty, humidity and temperature extremes. Do not place the product in any area where it may become wet.
- 0 to 40 centigrade is the suitable temperature. (The 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
3.0	Third Edition	May 30, 2024

Item Checklist

- ☑ Motherboard
- ☑ I/O shield
- ☑ Cables

Chapter 1

Introduction of the Motherboard

1-1 Feature of Motherboard

- Intel® 13th Raptor Lake-P i5-1335UE/i5-1355U SoC Processor **(15W TDPs)**

- Support 2* DDR5 SO-DIMM up to 64GB

- Integrated with 2* Intel® 2.5GbE LAN chips

- 2* HDMI, 1* LVDS (or 1-Lane eDP)

- 2* USB3.2 (Gen.2), 2* USB3.2 (Gen.2) Type-C support DP ALT mode and PD 5V/3A, 7* USB2.0

- Support 4* RS232 & 2* RS232/422/485

- Onboard 1* M.2 E-key type-2230 slot for WiFi support CNVi, 1* M.2 B-key type-3042/3052 slot for 4G/5G module, 1* SIM card holder, 1 * M.2 M-Key type-2242/2280 slot (PCIe Gen.4 x4 Interface) support NVMe; 1* PCIe Gen.3 x1 slot

- Support 1* SATAIII (6Gb/s) & 1* M.2 M-key type-2242 slot (SATA interface)

- Support 12V~24V DC-in

- Onboard TPM2.0 (option)

- Support JetBIOS back up tool

- Support CPU Smart FAN function

- Supports ACPI S3 Function
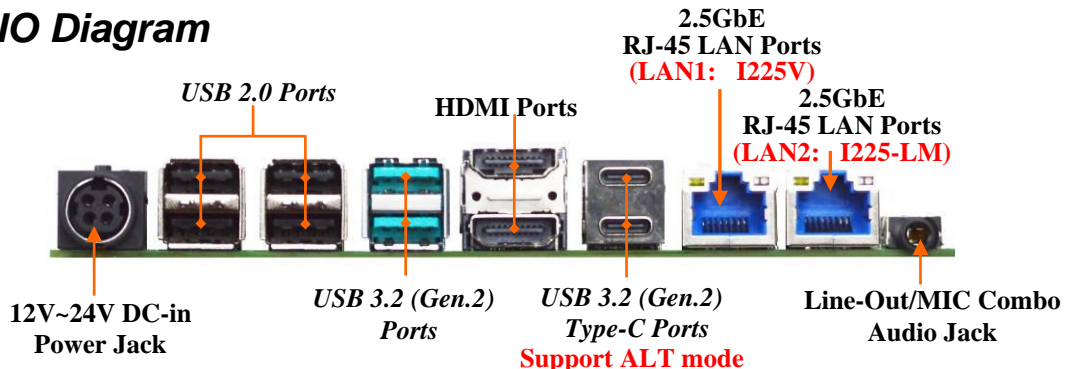
- Support Watchdog Timer Technology

1-2 Specification

Spec	Description
Design	● Slim ITX form factor; 10-layers; PCB size: 170x170mm
Embedded CPU	● Intel® 13th Raptor Lake-P i5-1335UE /i5-1335USoC Processor *For detailed CPU support information please visit our website*
Memory Slots	● 2*DDR5 SO-DIMM slots support 2* DDR5 SO-DIMM up to 64GB (*Memory frequency range also depends on CPU support & memory capacity*) ● Support dual channel function ***Note:1.**If using ≤ 16GB DDR5 Modules, **SODIMM1/SODIMM2/SODIMM1+ SODIMM2** can support up to **5200MHz.** **2.** If using ≥ 32GB DDR5 Memory Module, **SODIMM2** can support up to **5200** MHz, **SODIMM1 or SODIMM1+ SODIMM2** can only support up to **4400MHz.**
Storage	● **SATA1:** 1* SATAIII 6G/s connector ● **M2M1:** 1* M.2 M-key 2242 (**SATA interface**) slot ● **M2M2:** 1* M.2 M-key 2242/2280 (PCIe **4.0** x4 interface) slot supports NVMe
Expansion Slots	● **PCIE1:** 1*PCIe **3.0** x1 slot ● **M2E1:**1* M.2 E-key 2230 (USB2.0/PCIe 3.0 x1 interface) slot supports CNVi for WiFi ● **M2B1:**1*M.2 B-key 3042/3052 (**USB3.1/**USB2.0/PCIe 3.0 x1 interface) slot for 4G/5G Module ● **SIMCARDB1:**1* Nano-SIM card slot; co-function with **M2B1** slot
Graphics	*Intel® Iris®Xe Graphics, shared memory for:* ● *2* HDMI 2.0b* ● *2* DP 1.4a from 2* USB3.2 (Gen.2) Type-C* ● *1* LVDS/eDP* *** Note: MI24 series** support **Quad Displays**
LAN Chips	● Integrated with 1* Intel i225-LM & 1* Intel i225-V dual 2.5GbE PCIe LAN chips ● Support 10/100/1000/2500Mbps Ethernet data transfer rate ***Note: 2500Mbps** high-speed transmission rate is **only** supported over **CAT 5e UTP cable.***
BIOS	● AMI 256Mb Flash ROM
Rear I/O	● 1* 4-Pin 12V~24V Mini-DIN DC-in power jack ● 4* USB 2.0 ports

	● 2* USB 3.2 (Gen.2) ports ● 2* HDMI ports ● 2* USB 3.2 (Gen.2) Type-C support DP ALT mode and PD 5V/3A ● 2* 2.5GbE RJ-45 LAN ports ● 1* Audio jack (Line-out/MIC combo)
Internal I/O	● 1* 12V~24V internal ATX-type power connector **(DCIN2)** ● 1* SATA HDD power-out connector ● 1* CPUFAN1 connector ● 1* Front panel hearer ● 1* Front panel audio header ● 1* 3W 8 Ω Speaker wafer ● 1* LAN Activity LED header **(JLANLED1)** ● 1* 9-Pin USB 2.0 header for 2* USB 2.0 expansion ports ● 1* 4-Pin USB 2.0 header for 1* USB 2.0 expansion port ● 1* PS/2 Keyboard & Mouse header ● 1* SMBUS header ● 1* 8-bit GPIO header ● 2* Serial headers support RS232/422/485 **(COM1/2)** ● 4* Serial headers support RS232**(COM3/4/5/6)** ● 1* LVDS header (or 1-Lane eDP) ● 1* Inverter wafer
TPM 2.0	● Optional for **MI24-133E2 & MI24-13352** Series

1-3 Layout Diagram
Rear IO Diagram

USB 2.0 Ports

HDMI Ports

2.5GbE RJ-45 LAN Ports (LAN1: I225V)

2.5GbE RJ-45 LAN Ports (LAN2: I225-LM)

12V~24V DC-in Power Jack

USB 3.2 (Gen.2) Ports

USB 3.2 (Gen.2) Type-C Ports Support ALT mode

Line-Out/MIC Combo Audio Jack

Motherboard Internal Diagram

Internal ATX-Type Power Connector (DCIN2)

CPUFAN1

*SODIMM2

*SODIMM1

DDR5 SODIMM Slots (SODIMM2/1)

*Rear IO Connector (Refer to Page-3)

LVDS1

INVERTER1

M.2 E-Key Slot (M2E1)

M.2 M-Key Slot (M2M2)

SATAIII Port (SATA1)

SMBUS1

JLANLED1

M.2 M-Key Slot (M2M1)

M.2 B-Key Slot (*M2B1)

SATAPWR1

PCIE1: PCIe Gen.3x1 Slot

USB2.0 Headers

SIM Card Slot (*SIMCARD1)

Front Panel Header

SPEAK_CON1

Serial Port Headers (COM1/2/3/4/5/6)

PS2KBMS1

Front Panel Audio Header

GPIO Header

*Note: 1.SIMCARDB1 slot only work when compatible SIM card installed & 4G/5G LAN card installed in **M2B1** M.2 B-key slot.
2. **Memory slots support different frequency range.** Please refer to actual condition for higher performance. The supported memory frequency under different installation conditions is shown in the following list:

DDR5 SODIMM Slot	DDR5 8GB	DDR5 16GB	DDR5 32GB
SODIMM1	Up to 5200MHz	Up to 5200MHz	Up to 4400MHz
SODIMM2	Up to 5200MHz	Up to 5200MHz	Up to 5200MHz
SODIMM1+SODIMM2	Up to 5200MHz	Up to 5200MHz	Up to 4400MHz

Motherboard Jumper Position

JCLR_CMOS

JP2

JP1

JCASE1

JME1

J80PORT1

JPCOM2
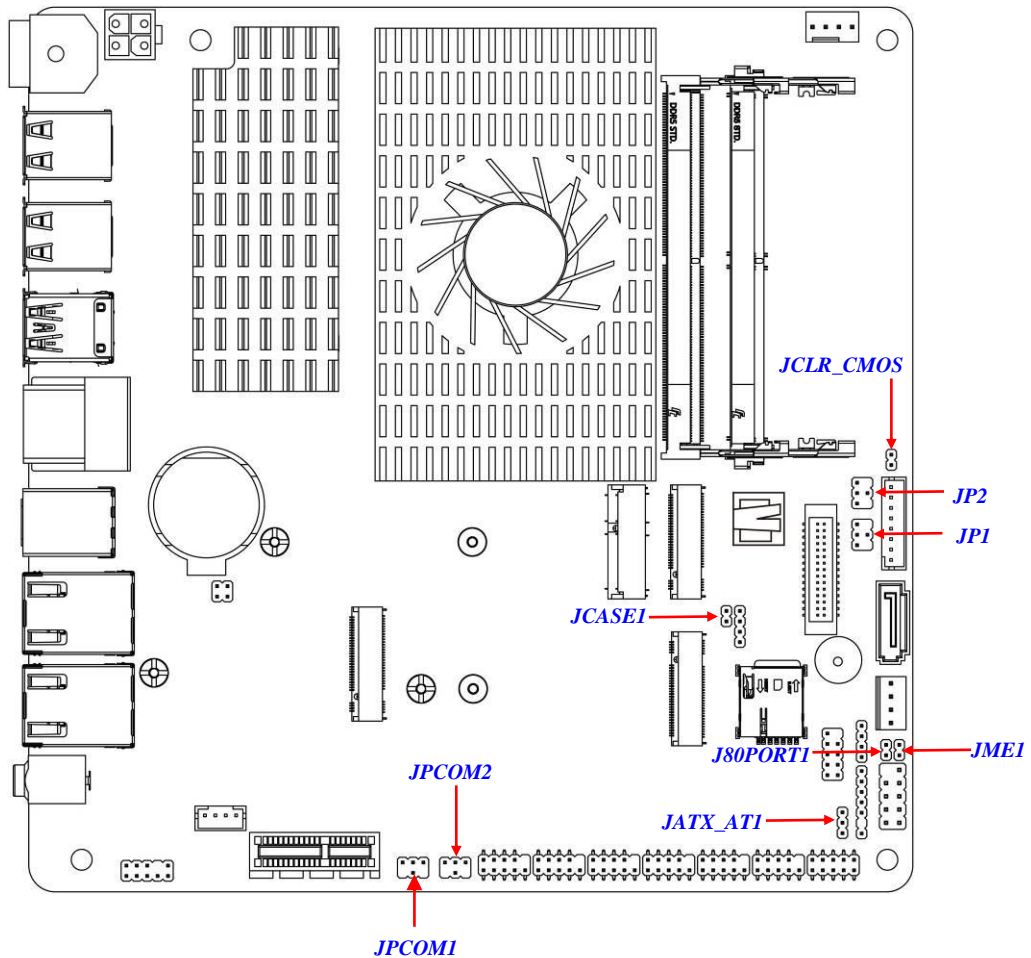
JATX_AT1

JPCOM1

Jumpers:

Jumper	Function	Description	Pitch
JCLR_CMOS	Clear CMOS RAM Settings	2-pin Block	2.0mm
JPCOM1	COM1 Header Pin9 Function Select	4-pin Block	2.0mm
JPCOM2	COM2 Header Pin9 Function Select	4-pin Block	2.0mm
JATX_AT1	ATX Mode / AT Mode Select	3-pin Block	2.0mm
JCASE1	Case Open Display Select	2-pin Block	2.0mm
J80PORT1	GPIO/80 Port Function Select	2-pin Block	2.0mm
JME1	ME_Features Select	2-pin Block	2.0mm
JP1	LVDS INVERTER Backlight Power Select	4-pin Block	2.0mm
JP2	LVDS1 LCD Panel Power Select	4-pin Block	2.0mm

Connectors:

Connector	Name
DC_IN3	12V~24V Mini-DIN DC-In Power Jack
USB1/USB2	USB 2.0 Port Connector X4
USB3	USB 3.2 (Gen.2) Port Connector X2
HDMI1	HDMI Port Connector X2
TCP1	USB 3.2 (Gen.2) Type-C Port Connector X2 *Support DP ALT Mode*
LAN2/LAN1	2.5GbE RJ-45 LAN Connector X2
AUDIO1	Line-out/MIC Combo Audio Jack
DCIN2	Internal 12V~24V ATX-type Power Connector
CPUFAN1	CPUFAN Connector
SATA1	SATAIII Port Connector
SATAPW1	SATA HDD Power-Out Connector

Headers & Wafers:

Header	Name	Description	Pitch
JW_FP1	Front Panel Header (PWR LED/ HD LED/Power Button /Reset)	9-pin Block	2.54mm
FP_AUDIO1	Front Panel Audio Header	9-pin Block	2.0mm
SPEAK_CON1	3W 8ΩAmplifier Wafer	4-pin Block	2.0mm
JLANLED1	LAN Activity LED Header	4-pin Block	2.0mm
FP_USB1	USB 2.0 Port Header	9-pin Block	2.0mm
FP_USB2	USB 2.0 Port Header	4-pin Block	2.0mm
PS2KBMS1	PS/2 Keyboard & Mouse Header	6-pin Block	2.0mm
SMBUS1	SMBUS Header	4-pin Block	2.0mm
COM1/COM2	RS232/422/485 Serial Port Header	9-pin Block	2.0mm
COM3/COM4 /COM5/COM6	RS232 Serial Port Header	9-pin Block	2.0mm
LVDS1	LVDS Port Header	30-pin Block	1.25mm
INVERTER1	Inverter Wafer	8-pin Block	2.0mm
GPIO_CON1	GPIO/80 Port Header	10-pin Block	2.0mm

Chapter 2
Hardware Installation

2-1 Jumper Settings

JCLR_CMOS (2-pin): Clear CMOS RAM Setting

JCLR_CMOS → Clear CMOS

Pin1 →
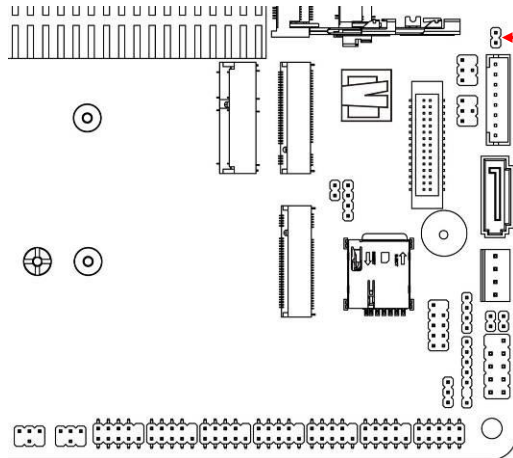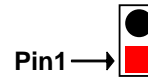
1-2 Open: Normal(default);

Pin1 →
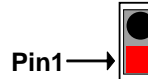
1-2 Short: Clear CMOS.

JPCOM1/ JPCOM2(4-pin): COM1 /COM2 Port Pin9 Function Select
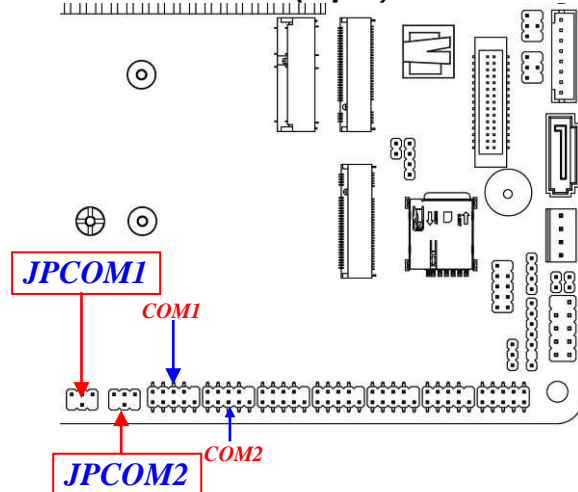
JPCOM1→COM1 Header Pin-9 VCC
JPCOM2→COM2 Header Pin-9 VCC
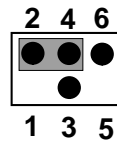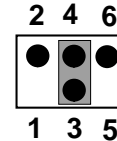
2 4 6	2 4 6	2 4 6
1 3 5	1 3 5	1 3 5
2-4 Closed: RI=RS232;	3-4 Closed: RI= 5V;	4-6 Closed: RI= 12V.
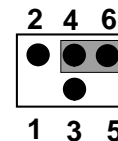
JATX_AT1 (3-pin): AT Mode /ATX Mode Select
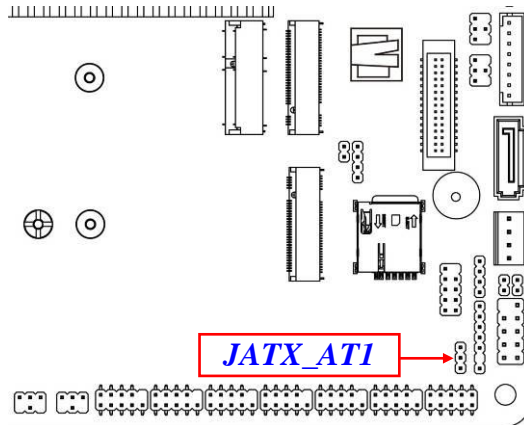
JAT_ATX1→ATX/AT Mode Select

3

1

1-2 Closed: ATX Mode Selected(default);

3

1

2-3 Closed: AT Mode Selected.

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

JCASE1 (2-pin): Case Open Message Display Function
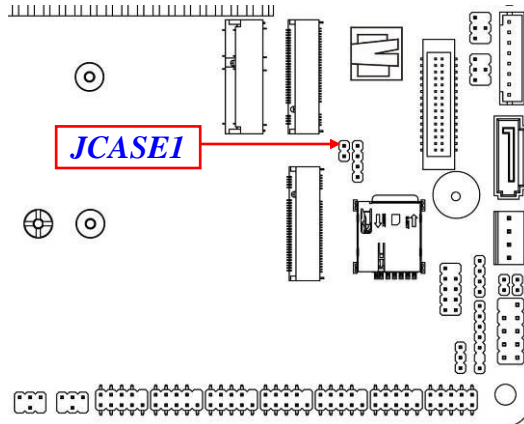
JCASE1→ Case Open Detection

GND
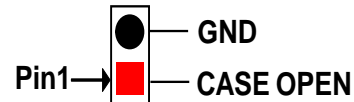
Pin1→ CASE OPEN

**Pin (1&2) Short**: *When Case open function pin short to GND, the Case open function was detected. When used, needs to enter BIOS and enable 'Case Open Detect' function. In this case if your case is removed, next time when you restart your computer, a message will be displayed on screen to inform you of this.*

J80PORT1 (2-pin): GPIO_CON 80 Port/GPIO Function Select
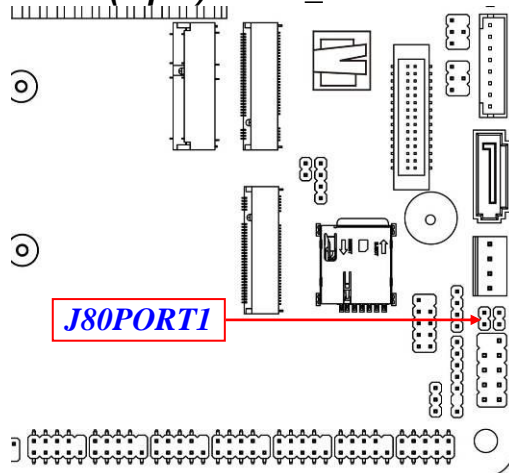
J80PORT1→GPIO/80 Function Select

Pin1 →
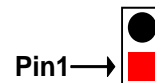
1-2 Open: GPIO_CON1= 80 Port;

Pin1 →
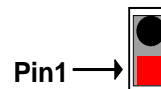
1-2 Closed: GPIO_CON1= GPIO Port(Defaut).

JME1 (2-pin): ME Features Select

JME1→ ME Features Select

Pin1 →
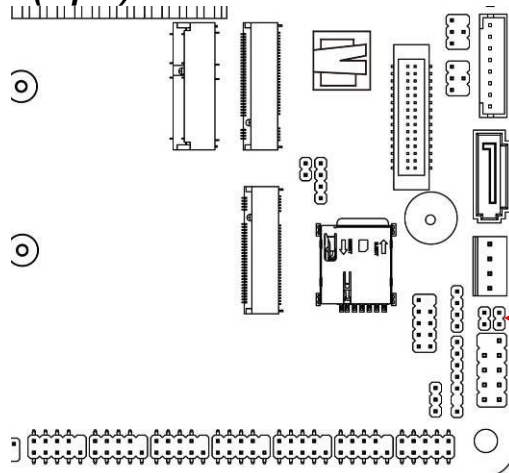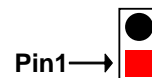
1-2 Open: Enable ME Features;

Pin1 →
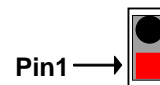
1-2 Closed: Disable ME Features.

JP1 (4-pin): LVDS Inverter BACKLIGHT VCC Select
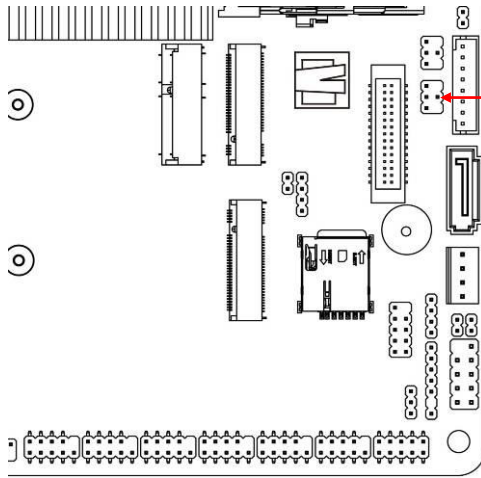
JP1→LVDS Inverter Backlight VCC

2-4 Closed: VCC=+5V	3-4 Closed: VCC=12V	4-6 Closed: VCC=ADP12V

JP2 (4-pin): LVDS LCD Panel Power VCC Select
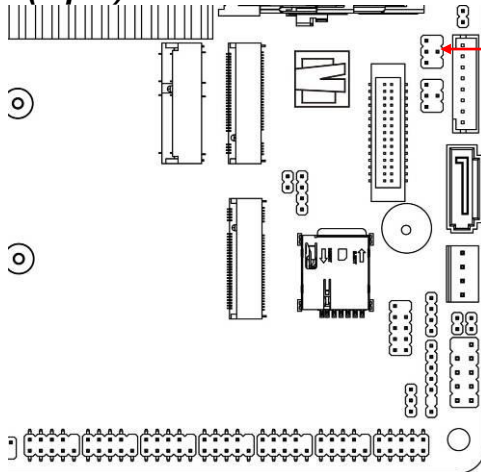
JP2→LVDS LCD Power VCC

2-4 Closed: VCC=+3.3V	3-4 Closed: VCC=5V	4-6 Closed: VCC=12V

Note: Maximum current limit is 2A while using 3.3V/5V/12V working voltage
Warning! Wrong voltage setting will result in screen burn out.

2-2 Connectors, Headers and Wafers
2-2-1 Rear I/O Panel Connectors

Rear Panel Connectors

USB 2.0 Ports

HDMI Ports

**2.5GbE
RJ-45 LAN Ports
(LAN1: I225V)**

**2.5GbE
RJ-45 LAN Ports
(LAN2: I225-LM)**

**12V~24V DC-in
Power Jack**

*USB 3.2 (Gen.2)
Ports*

*USB 3.2 (Gen.2)
Type-C Ports*
**Support ALT
mode**

**Line-Out/MIC Combo
Audio Jack**
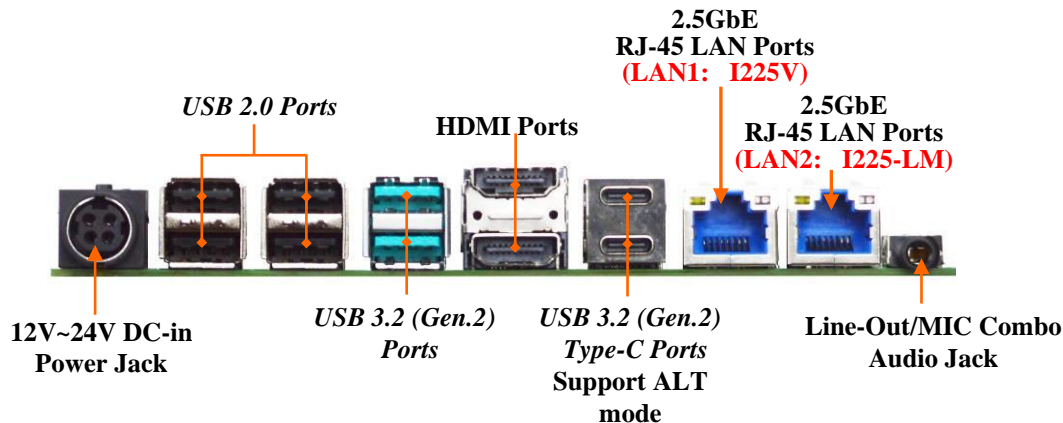
Icon	*Name*	*Function*
	Mini-DIN Power Jack	For user to connect compatible power adapter to provide power supply for the system.
	Type-A USB 2.0 Port	To connect USB keyboard, mouse or other devices compatible with USB 2.0 specification.
	Type-A USB 3.2 (Gen.2) Port	To connect USB keyboard, mouse or other devices compatible with USB 3.2 (Gen.2) specification. Ports support up to 10Gbps data transfer rate.
	HDMI2.0b Port	To connect display device that support HDMI2.0b specification.

	Type-C USB 3.2 (Gen.2) & DP 1.4a Port	Type-C USB3.2(Gen.2) port also **supports DP ALT mode & PD 5V/3A**
	2.5Gbps RJ-45 LAN Port	This connector is standard RJ-45 LAN jack for Network connection which supports10/100/1000/2500 Mbps Ethernet data transfer rate *(*Note: 2.5Gbps is only supported with CAT 5e UTP cable).*
	Line_Out/MIC Combo Audio Jack	This connector can functions as audio Line-Out jack and MIC jack with compatible cables & devices.

(1) DCIN3 (4-pin): Mini-DIN 12V~24V Wide-Voltage DC-In Power Connector
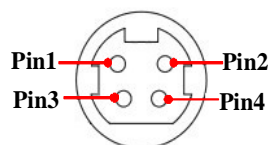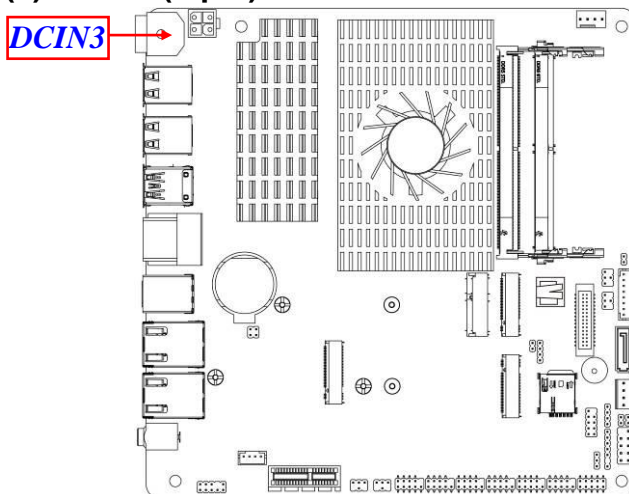
Pin No.	Definition
1	+12V~24V DC_IN
2	+12V~24V DC_IN
3	GND
4	GND

Warning!!

The board has a 12V~24V DC-in power connector **(DCIN3)** on I/O back panel and an internal 12V~24V power connector **(DCIN2).** User can only connect one type of compatible power supply to one of them to power the system.

(2) 2.5GbE RJ-45 Ethernet Connectors

** There are two LED next to the RJ-45 LAN port. Please refer to the table below for LAN port LED indications.

For 2.5Gbps RJ-45 LAN port LED Signals:

2.5GbE
RJ-45 LAN Ports
(LAN1: I225V)

2.5GbE
RJ-45 LAN Ports
(LAN2: I225-LM)
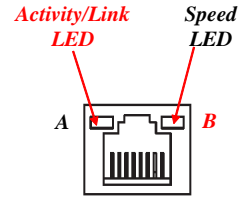
Activity/Link LED   *Speed LED*

A   B

A: Activity/Link LED

Status	Description
Off	No Link
Blinking	Data Activity
On	Link

B: Speed LED

Status	Description
Off	10/100Mbps connection
Orange	1Gbps connection
Green	2.5Gbps connection

** **Note:** **2.5Gbps** high-speed transmission rate is **only** supported over **CAT 5e UTP cable**.*

2-2-2 Motherboard Internal Connectors

(1) DCIN2 (4-pin block): Internal 12V~24V Wide-Voltage Power Connector
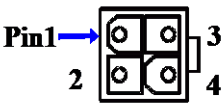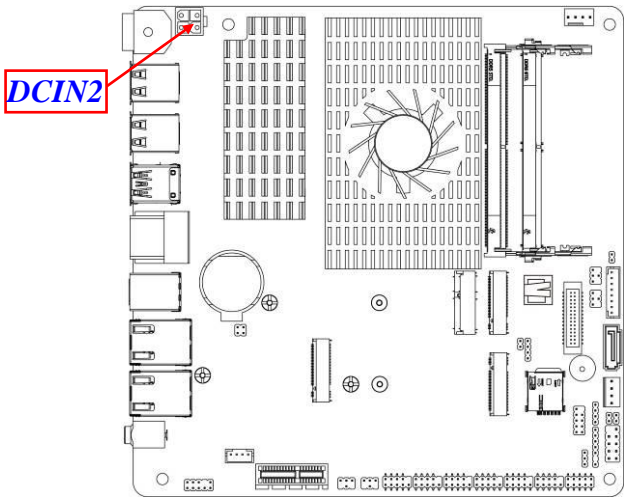
Pin No.	Definition
1	GND
2	GND
3	+12V~24V
4	+12V~24V

(2) CPUFAN1 (4-pin):CPU Fan Connector
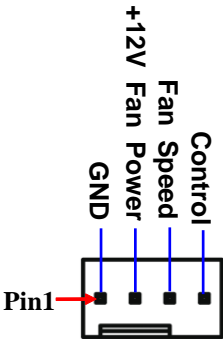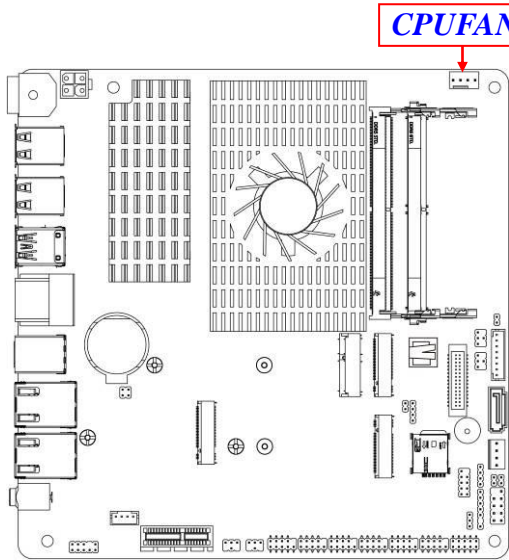
(3) SATA1 (7-pin block):SATAIII Port connector

The board comes with a SATAIII port supporting 6GB/s transfer rate.

Pin No.	Definition
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND
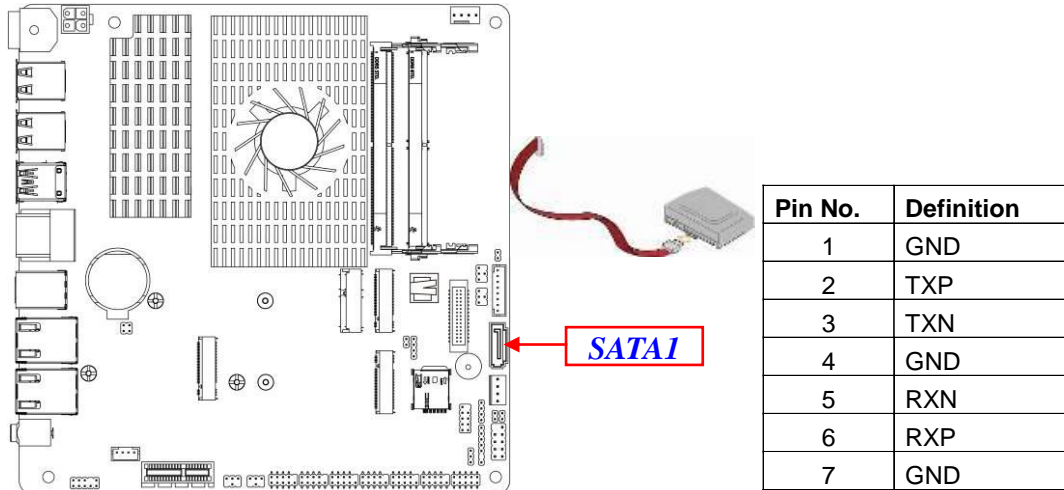
(4) SATAPW1 (4-pin): SATA HDD Power-out Connector

+12V
GND
GND
+5V

Pin1
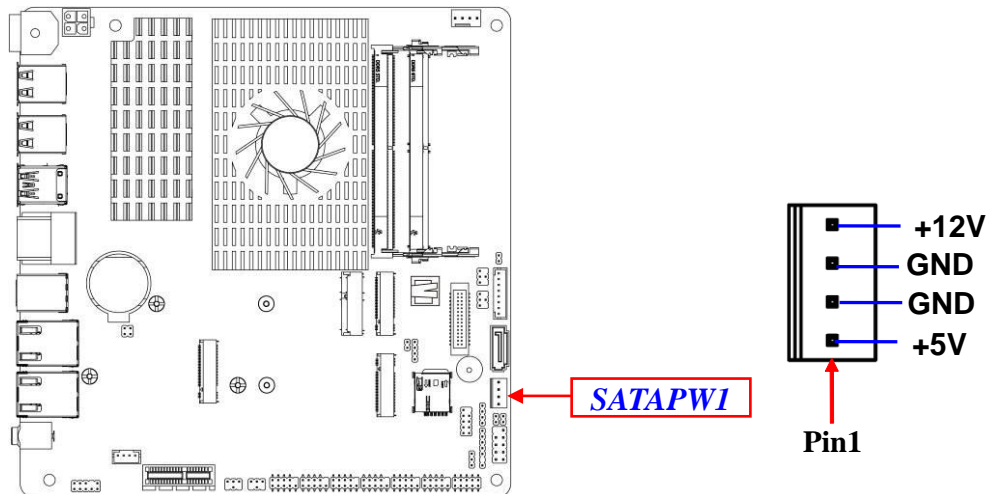
2-2-3 Pin Definition for Headers & Wafers

(1) JW_FP1 (9-pin): Front Panel Header
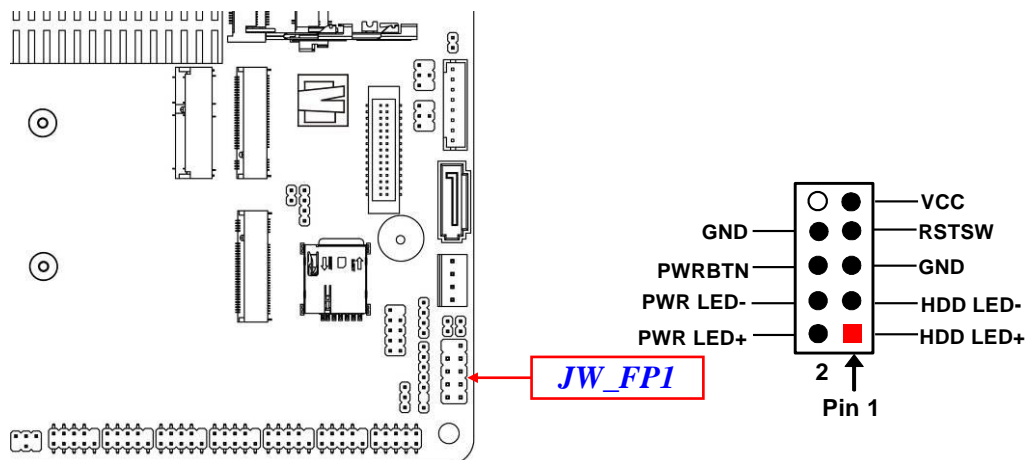
(2) FP_AUDIO1 (9-pin): Line-Out, MIC-In Header

This header is connected to Front Panel Line-out, MIC connector with cable.
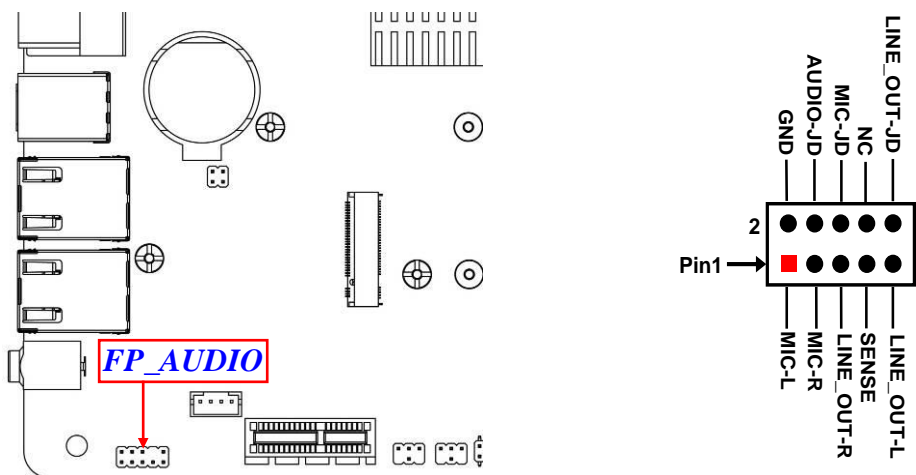
(3) SPEAK_CON1 (4-pin): 3W 8 Ω Amplifier Wafer

SPEAK_CON1

Pin1 → **L- L+ R+ R-**
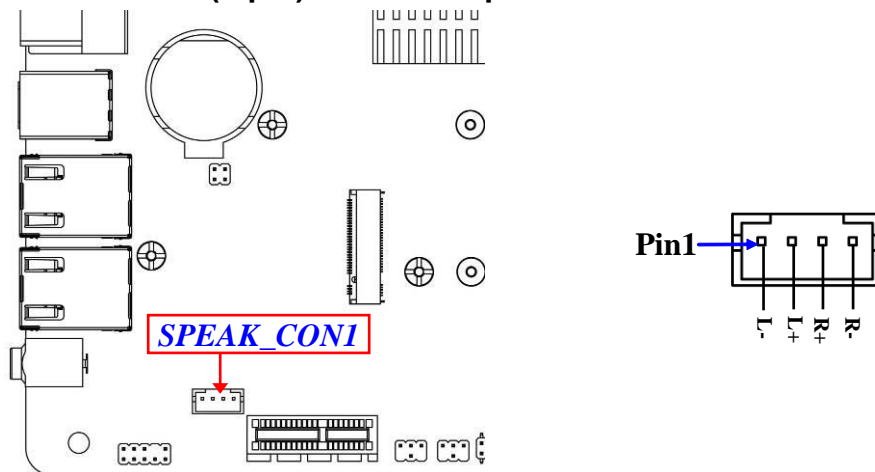
(4) JLANLED1 (4-pin): LAN1 & LAN2 Activity LED Header

JLANLED1

LAN2_LED-
LAN1_LED-

2 ● ● 4
Pin1 → ● ■ 3

LAN2_LED+
LAN1_LED+
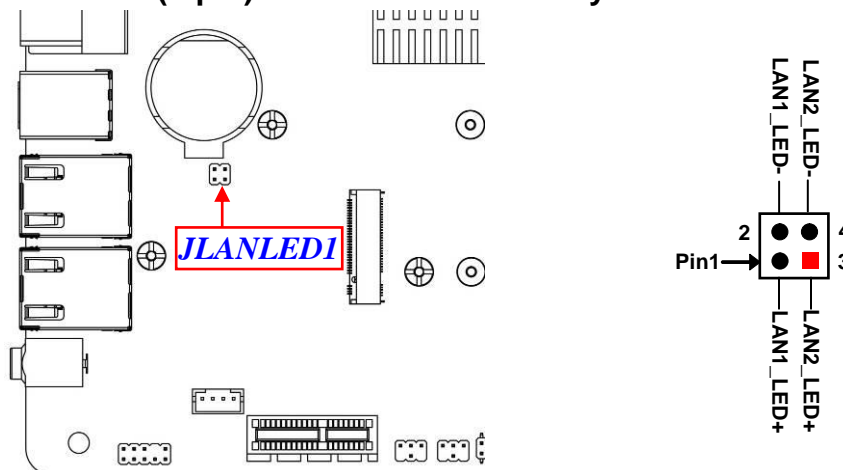
Note: Maximum current limit is 300uA while using 3.3V working voltage.

(5) FP_USB1 (9-pin): USB 2.0 Port Header

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

2 ← Pin 1
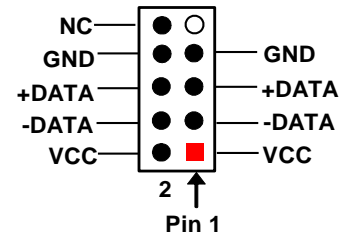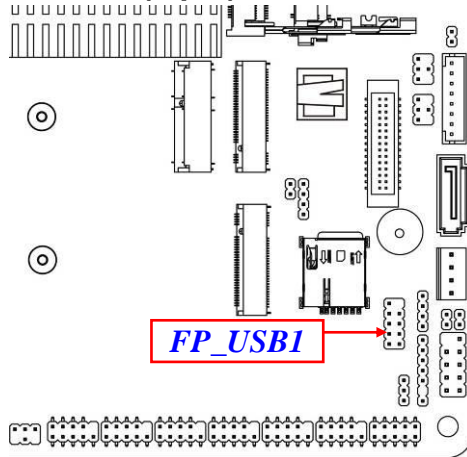
(6) FP_USB2 (4-pin): USB 2.0 Port Header

GND
+DATA
-DATA
VCC
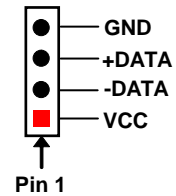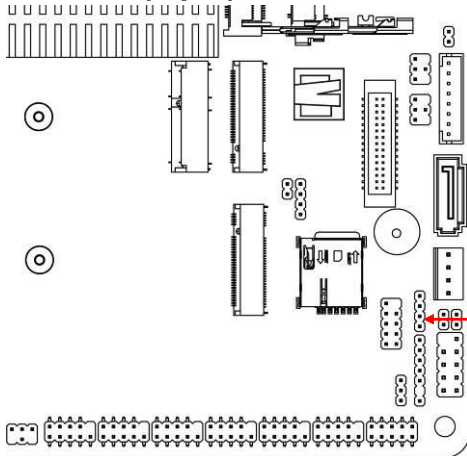
Pin 1

(7) PS2KBMS1 (6-pin): PS/2 Keyboard & Mouse Header

- MS_DATA
- MS_CLK
- GND
- KB_CLK
- KB_DATA
- VCC

Pin 1

PS2KBMS1
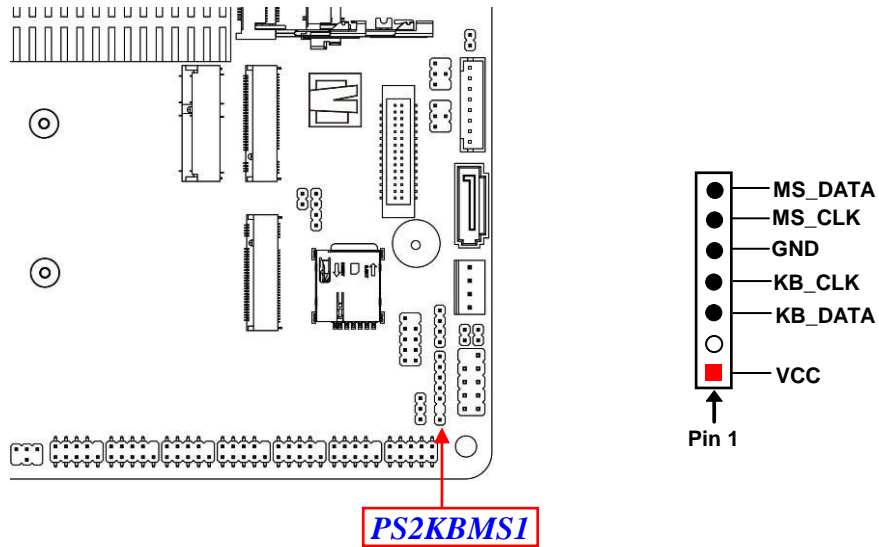
(8) SMBUS1 (4-Pin): SMBUS Header

SMBUS1

- SMBUS_DATA
- GND
- SMBUS_CLK
- VCC
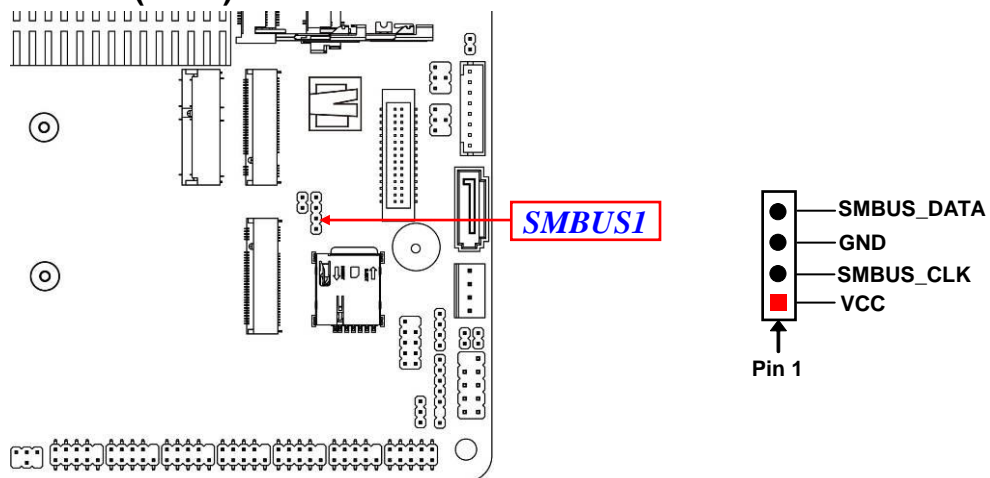
Pin 1

(9) COM1/2/3/4/5/6 (9-pin): Serial Port Header

COM1/2:RS232/422/485 Serial Port;
COM3/4/5/6:RS232 Serial Port Header.
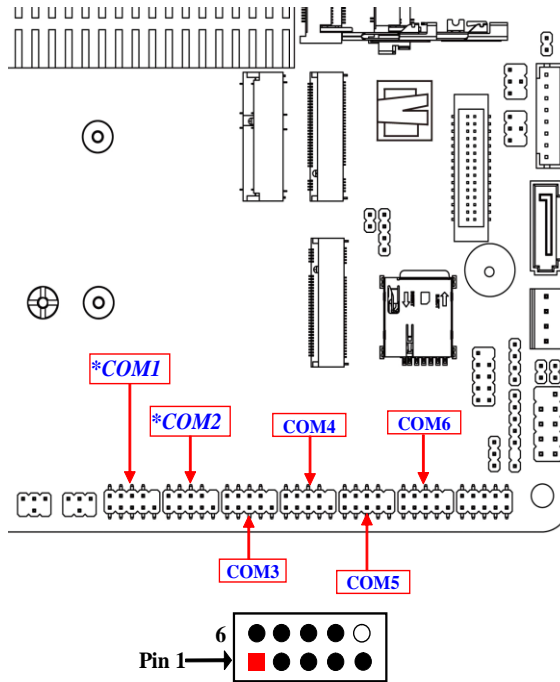
Pin NO.	RS232	*RS422 (COM1/2)	*RS485 (COM1/2)
Pin 1	DCD	TX-	DATA-
Pin 2	SIN-	TX+	DATA+
Pin 3	SO-	RX+	NC
Pin 4	DTR-	RX-	NC
Pin 5	GND	GND	GND
Pin 6	DSR-	NC	NC
Pin 7	RTS-	NC	NC
Pin 8	CTS-	NC	NC
Pin 9	RI-	NC	NC

Notice: COM1/2 header can function as RS232/422/485 port header. In normal settings COM1/2 functions as RS232 header. With compatible COM cable COM1/2 can function as RS422 or RS 485 header. User also needs to go to BIOS to set '**Transmission Mode Select**' for COM1 or COM2 at first, before using specialized cable to connect different pins of this port.

(10) LVDS1 (30-pin): 24-bit Dual Channel LVDS Header(or 1-Lane eDP)
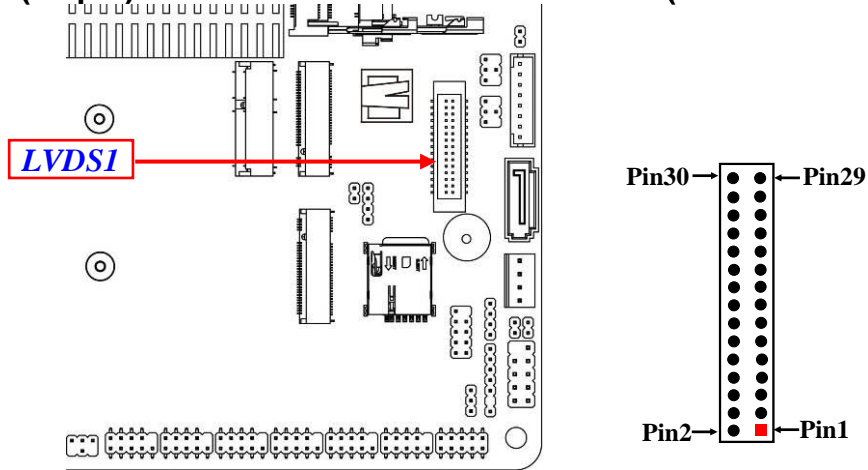
Pin Define	Pin NO.	Pin NO.	Pin Define
LCD_VCC	**Pin 30**	**Pin 29**	LCD_VCC
LCD_VCC	**Pin 28**	**Pin 27**	LCD_VCC
LVDSA_DATAN0	**Pin 26**	**Pin 25**	LVDSA_DATAP0
LVDSA_DATAN1	**Pin 24**	**Pin 23**	LVDSA_DATAP1
LVDSA_DATAN2/EDP_TX1N	**Pin 22**	**Pin 21**	LVDSA_DATAP2/EDP_TX1P
LVDS_CLKAN/ EDP_TX0N	**Pin 20**	**Pin 19**	LVDS_CLKAP/EDP_TX0P
LVDSA_DATAN3/EDP_AUXN	**Pin 18**	**Pin 17**	LVDSA_DATAP3/EDP_AUXP
GND	**Pin 16**	**Pin 15**	GND
GND	**Pin 14**	**Pin 13**	GND
CH_SCL	**Pin 12**	**Pin 11**	CH_SDA
LVDSB_DATAP0	**Pin 10**	**Pin 9**	LVDSB_DATAN0
LVDSB_DATAP1	**Pin 8**	**Pin 7**	LVDSB_DATAN1
LVDSB_DATAP2	**Pin 6**	**Pin 5**	LVDSB_DATAN2
LVDS_CLKBP	**Pin 4**	**Pin 3**	LVDS_CLKBN
LVDSB_DATAP3	**Pin 2**	**Pin 1**	LVDSB_DATAN3

***Note:** Please follow the settings of **jumper JP2** for **LVDS panel power VCC**.*

(11)   INVERTER1 (8-pin): LVDS/eDP Inverter Connector

Pin No.	Definition
8	BRTNSS_DOWN
7	BRTNSS_UP
6	GND
5	GND
4	Backlight VCC
3	Backlight VCC
2	LCD_BKLT_PWM
1	LCD_BKLT_EN
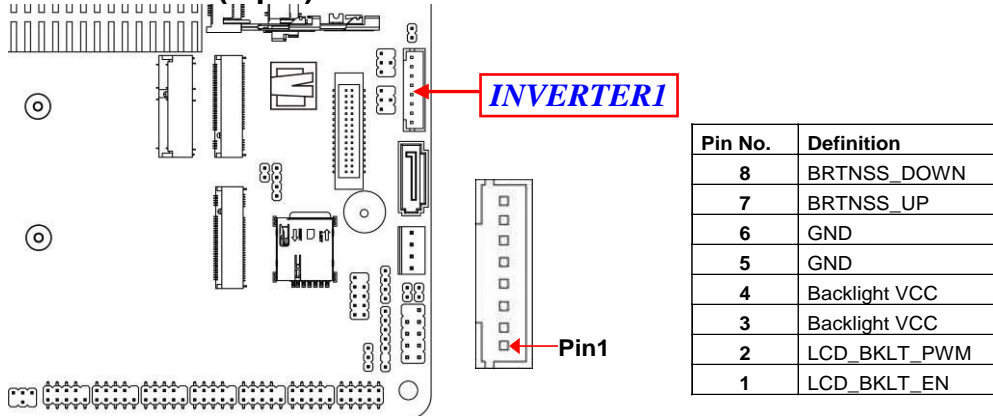
Warning! Find *Pin-1* location of the inverter and make sure that the installation direction is correct! Otherwise serious harm will occur to the board/display panel!!

(12)   GPIO_CON1 (10-pin): GPIO Port Header
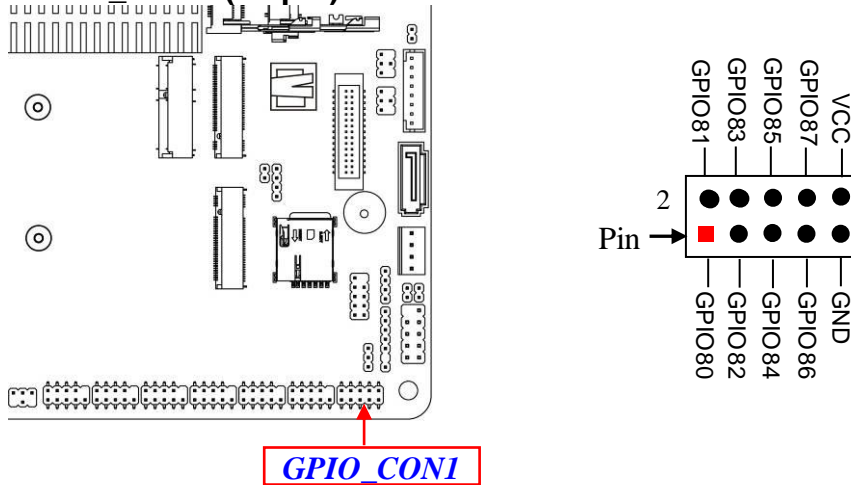
Note: *GPIO_CON1* can function as Debug 80 port or GPIO port via *J80PORT1* jumper setting (refer to *Page-10* for *J80PORT1* description).

2-3 Maximum Voltage & Current Limit

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

Parts		Working Voltage	Current Support
USB Ports from	*USB1/USB2*	5V	1.5A
	USB3	5V	1.5A
	FP_USB1/ FP_USB 2	5V	1.5A
COM1		5V/12V*(via JPCOM1)*	0.5A
COM2		5V/12V*(via JPCOM2)*	0.5A
SATAPWR1		5V	1A
CPUFAN1		12V	1.5A
JW_FP1		5V	1A
JLAN_LED1		3.3V	0.3A
GPIO_CON1		5V	1A
PS2KBMS1		5V	0.5A
SMBUS1		5V	0.3A
LVDS1		3.3V/5V/12V (via **JP2** setting)	**2A**
INVERTER1		5V/12V(via **JP1** setting)	**2A**

Chapter 3
Introducing BIOS

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

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

3-1 Entering Setup

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

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

```
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
```
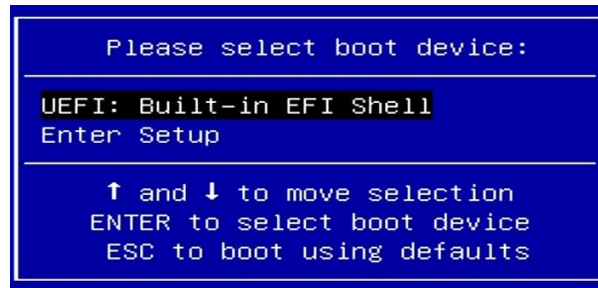
3-2 BIOS Menu Screen

The following diagram show a general BIOS menu screen:

Menu Bar   BIOS Menu Screen

```
                        Aptio Setup - AMI
 Main  Advanced  Chipset  Security  Boot  Save & Exit  MEBx

 BIOS Information                              Choose the system default
 BIOS Vendor              American Megatrends  language
 Core Version             5.27
 Filename                 BAITYA01
 Build Date and Time      07/27/2023 17:26:25
 Access Level             Administrator

 ME FW Version            16.1.25.2157

 System Language          [English]

 System Date              [Tue 01/17/2023]
 System Time              [22:49:13]
                                              →←: Select Screen
                                              ↑↓: Select Item
                                              Enter: Select
                                              +/-: Change Opt.
                                              F1: General Help
                                              F2: Previous Values
                                              F3: Optimized Defaults
                                              F4: Save & Exit
                                              ESC: Exit

             Version 2.22.1289 Copyright (C) 2023 AMI
```

General Help Items

Menu Items

Current Setting Value

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 & Reset.
● 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 - AMI
    Main  Advanced  Chipset  Security  Boot  Save & Exit  MEBx

    BIOS Information                                    Choose the system default
    BIOS Vendor               American Megatrends       language
    Core Version              5.27
    Filename                  BAITYA01
    Build Date and Time       07/27/2023 17:26:25
    Access Level              Administrator

    ME FW Version             16.1.25.2157

    System Language           [English]

    System Date               [Tue 01/17/2023]
    System Time               [22:49:13]
                                                    →←: Select Screen
                                                    ↑↓: Select Item
                                                    Enter: Select
                                                    +/-: Change Opt.
                                                    F1: General Help
                                                    F2: Previous Values
                                                    F3: Optimized Defaults
                                                    F4: Save & Exit
                                                    ESC: Exit



                      Version 2.22.1289 Copyright (C) 2023 AMI
```

System Date

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

System Time

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

3-7 Advanced Menu
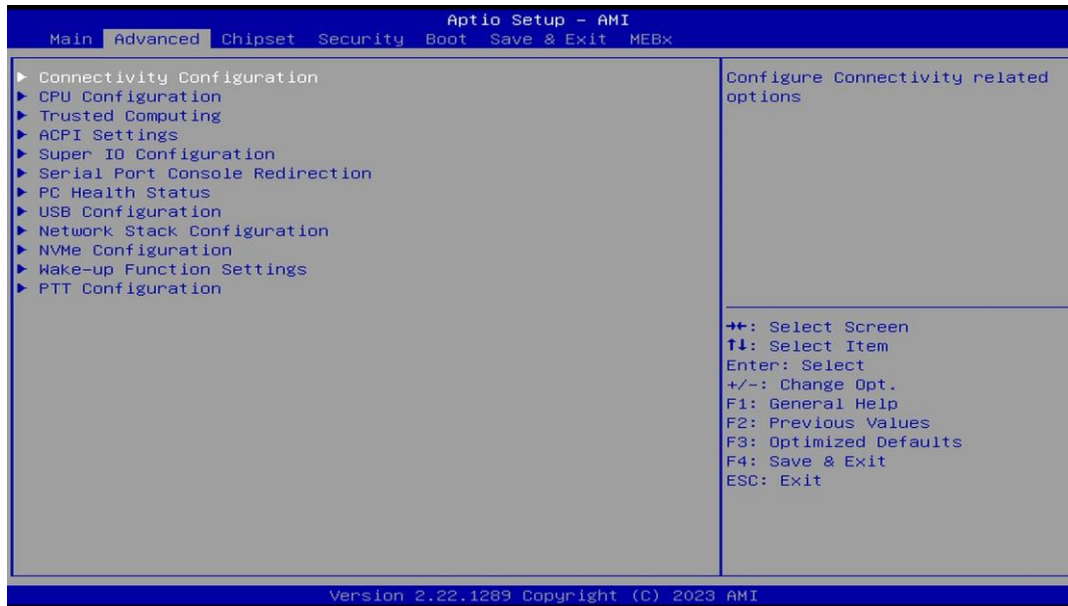
‣ **Connectivity Configuration**

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

CNVi Mode

This option configures connectivity.

[Auto Detection] means that if Discrete solution is discovered it will be enabled by default. Otherwise integrated solution (CNVi) will be enabled；

[Disable Integrated] disables Integrated solution.

** **Note**: When CNVi is present, the GPIO pins that are used for radio interface cannot be assigned to the other native function.*

The optional settings are: [Disable Integrated]; [Auto Detection]
▶ **CPU Configuration**
Press [Enter] to view current CPU configuration and make settings for the following sub-items:
CPU Configuration
▶ **Efficient-Core Information**
Press [Enter] to view the E-Core Information.
▶ **Performance-Core Information**
Press [Enter] to view the P-Core Information.
Boot Performance Mode
Use this item to select the performance state that the BIOS will set starting from reset vector.
The optional settings are:[Max Battery]; [Max Non-Turbo Performance]; [Turbo Performance].
Intel (R) SpeedStep ™
Use this item to Allows more than two frequency ranges to be supported.
The optional settings are: [Disabled]; [Enabled].
　Turbo Mode
　Use this item to enable/disable processor turbo mode (requires EMTTM enabled too). AUTO means enabled.
　The optional settings are: [Disabled]; [Enabled].
C states
Use this item to enable/disable CPU Power management. Allows CPU to go to C states when it's not 100% utilized.
The optional settings are: [Disabled]; [Enabled].
　Enhanced C-States
　Use this item to enable/disable C1E. When enabled, CPU will switch to minimum speed when all cores enter C-State.
　The optional settings are: [Disabled]; [Enabled].
Package C State Limit
Use this item to select maximum package C State Limit Setting.
Cpu Default: Leaves to Factory default value.
Auto: Initializes to deepest available Package C State Limit.

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

Power Limit 1

Use this item to set Power Limit 1 in Milli Watts. BIOS will round to the nearest 1/8W when programming.

0 = no custom override. For 12.5W, enter 12500.

Overclocking SKU: Value must be between Max and Min Power Limits (specified by PACKAGE_POWER_SKU_MSR).

Other SKUs: This value must be between Min Power Limit and Processor Base Power (TDP) Limit.

Power Limit 1 Time Window

Use this item to set Power Limit 1 Time Window value in seconds. The value may vary from 0 to 128. 0 = default value (28 sec for Mobile and 8 sec for Desktop). Defines time window which Processor Base Power (TDP) value should be maintained.

The optional settings are: [0]; [1]; [2]; [3]; [4]; [5]; [6]; [7]; [8]; [10]; [12]; [14]; [16]; [20]; [24]; [28]; [32]; [40]; [48]; [56]; [64]; [80]; [96]; [112]; [128].

Power Limit 2

Use this item to set Power Limit 2 Value in Milli Watts. BIOS will round to the nearest 1/8W when programming.

0 = no custom override. For 12.5W, enter 12500. Processor applies control policies such that the package power does not exceed this limit.

Power Limit 4 Override

Use this item to enable/disable Power Limit 4 override. If this option is disabled, BIOS will leave the default values for Power Limit 4.

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

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

Power Limit 4

Use this item to set Power Limit 4 in Milli Watts. BIOS will round to the nearest 1/8W when programming. For 12.50W, enter 12500. If the value is 0, BIOS leaves default value.

▸ **Trusted Computing**

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

Security Device Support

Use this item to enables or disables BIOS support for security device. O.S. will not show security device. TCG EFI protocol and INT1A interface will not be available.

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

▸ **ACPI Settings**

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

ACPI Settings

ACPI Sleep State

Use this item to select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.

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

▸ **Super IO Configuration**

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

Super IO Configuration

▸ **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].

Change Settings

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

The optional settings are: [Auto]; [IO=3F8h; IRQ=4]; [IO=2F8h; IRQ=3]; [IO=3E8h; IRQ=4]; [IO=2E8h; IRQ=3];

Transmission Mode Select

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

Mode Speed Select

Use this item to RS232/RS422/RS485 Speed Select

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

▸ **Serial Port 2 Configuration**

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

Serial Port

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

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

Change Settings

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

The optional settings are: [Auto]; [IO=3F8h; IRQ=4]; [IO=2F8h; IRQ=3]; [IO=3E8h; IRQ=4]; [IO=2E8h; IRQ=3];

Transmission Mode Select

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

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].

▸ **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].

Change Settings

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

The optional settings are: [Auto]; [IO=3F8h; IRQ=10]; [IO=2F8h; IRQ=10]; [IO=3E8h; IRQ=10]; [IO=2E8h; IRQ=10]; [IO=2F0h; IRQ=10]; [IO=2E0h; IRQ=10];

▸ **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].

Change Settings

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

The optional settings are: [Auto]; [IO=3F8h; IRQ=10]; [IO=2F8h; IRQ=10]; [IO=3E8h; IRQ=10]; [IO=2E8h; IRQ=10]; [IO=2F0h; IRQ=10]; [IO=2E0h; IRQ=10];

▸ **Serial Port 5 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].

Change Settings

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

The optional settings are: [Auto]; [IO=3F8h; IRQ=11]; [IO=2F8h; IRQ=11];

[IO=3E8h; IRQ=11]; [IO=2E8h; IRQ=11]; [IO=2F0h; IRQ=11]; [IO=2E0h; IRQ=11];

▸ **Serial Port 6 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].

Change Settings

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

The optional settings are: [Auto]; [IO=3F8h; IRQ=11]; [IO=2F8h; IRQ=11];

[IO=3E8h; IRQ=11]; [IO=2E8h; IRQ=11]; [IO=2F0h; IRQ=11]; [IO=2E0h; IRQ=11];

ERP Support

Use this item to energy-related products function. Disable ERP to active all wake-up functions.

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

Case Open Detect

Use this item to detect if case have ever been opened. 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 JCASE1 jumper setting for Case Open Detection*); if Pin 1&2 of **JCASE1** are short, system will show Case Open Message during POST.

WatchDog Reset Timer

Use this item to support WDT reset function.

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

When set as [Enabled], the following sub-items shall 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 Unit
The optional settings are: [Sec.]; [Min.]
WatchDog Wake-up Timer
Support WDT Wake-up.
The optional settings are: [Disabled]; [Enabled].
When set as [Enabled], the following sub-items shall appear:
WatchDog Wake-up Timer Value
User can set a value in the range of [10] to [4095] seconds, or [1] to [4095] minutes.
WatchDog Wake-up Timer Unit
The optional settings are: [Sec.]; [Min.].
ATX Power Emulate AT Power
This item support Emulate AT power function, MB power On/Off control by power supply. Use needs to select **'AT or ATX Mode'** on MB jumper at first (refer to **JATX_AT1** jumper setting Pin 1&2 of for ATX Mode & Pin 2&3 of AT Mode Select).

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

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

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. 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].

Flow Control

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

The optional settings: [None]; [Hardware RTS/CTS].

VT-UTF8 Combo Key Support

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

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

Recorder Mode

With this mode enable only text will be sent. This is to capture Terminal data.
The optional settings: [Disabled]; [Enabled].

Resolution 100x31

Use this item to enable or disable extended terminal resolution.
The optional settings: [Disabled]; [Enabled].

Putty KeyPad

Use this item to select Function Key and KeyPad on Putty.
The optional settings: [VT100]; [LINUX]; [XTERMR6]; [SCO]; [ESCN]; [VT400].

__Legacy Console Redirection__

▸ **Legacy Console Rediretion Settings**

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

Redirection COM Port

Use this item to select a COM port to display redirection of Legacy OS and
Legacy OPROM Messages
The optional settings: [COM1]

Resolution

On Legacy OS, the number of rows and columns supported redirection
The optional settings: [80x24]; [80x25]

Redirect After POST

When bootloader is selected, then legacy console redirection is disabled
before booting to legacy OS. When always enable is selected, then legacy
console redirection is enabled for legacy OS. Default setting for this option is
set to always enable.
The optional settings: [Always Enable]; [BootLoader]

__Serial Port for Out-of-Band Management/__
__Windows Emergency Management Services (EMS)__

Console Redirection EMS

Use this item to enable or disable console redirection.
The optional settings: [Disabled]; [Enabled].
When set as **[Enabled]**, 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.

Terminal Type EMS
The optional settings: [VT100]; [VT100Plus]; [VT-UTF8]; [ANSI].
[VT-UTF8] is the preferred terminal type for out-of-band management. The next best choice is **[VT100+]** and then **[VT100]**. See above, in Console Redirection Settings page, for more help with Terminal Type/Emulation.
Bits per second EMS
Use this item to select serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.
The optional settings: [9600]; [19200]; [57600]; [115200].
Flow Control
Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a "stop" signal can be sent to stop the data flow. Once the buffers are empty, a "start" signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.
The optional settings: [None]; [Hardware RTS/CTS]; [Software Xon/Xoff].
Data Bits EMS
The default setting is: [8].
This item may or may not show up, depending on different configuration.
Parity EMS
The default setting is: [None].
This item may or may not show up, depending on different configuration.
Stop Bits EMS
The default setting is: [1].
This item may or may not show up, depending on different configuration.

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

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

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

► **USB Configuration**
Press [Enter] to make settings for the following sub-items:
USB Configuration
XHCI Hand-off
This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
The optional settings: [Enabled]; [Disabled].
USB Mass Storage Driver Support
Use this item to enable or disable USB Mass storage driver support
The optional settings: [Disabled]; [Enabled].

USB hardware Delays and Time-outs;

USB Transfer time-out

Use this item to set the time-out value for control, bulk, and interrupt transfers.

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

Device reset time-out

Use this item to set USB mass storage device start unit command time-out.

The optional settings: [10 sec]; [20 sec]; [30 sec]; [40 sec].

Device power-up delay

Use this item to set maximum time the device will take before it properly reports itself to the host controller. 'Auto' uses default value: for a root port it is 100 ms, for a hub port the delay is taken from hub descriptor.

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

Select **[Manual]** you can set value for the following sub-item: '**Device power-up delay in seconds**'**,** the delay range in from 1 to 40 seconds, in one second increments.

▸ **Network Stack Configuration**

Press [Enter] to go to '**Network Stack**' screen to make further settings.

Network Stack

Use this item to enable or disable UEFI Network Stack.

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

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

IPv4 PXE Support

Use this item to enable IPv4 PXE Boot Support. When set as [Disabled], IPv4 PXE boot support will not be available.

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

Ipv6 PXE Support

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

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

PXE boot wait time

Use this item to set wait time in seconds to press [ESC] key to abort the PXE boot. Use either +/- or numeric keys to set the value.

Media detect count

Use this item to set number of times the presence of media will be checked. Use either +/- or numeric keys to set the value.

▶ **NVMe Configuration**

Press [Enter] to view current NVMe Configuration.

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

► **Wake-up Function Settings**

 Wake-up System With Fixed Time

*_This item will only show when_ **'Wake-up System With Dynamic Time'** _is set as [Disabled]._

 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].

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

*_This item will only show when_ **'Wake-up System With Fixed Time'** _is set as [Disabled]._

Use this item to enable or disable system wake-up by RTC alarm. When this function is enabled, system will wake on the (current time) + (Increase minute(s))

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

Wake-up Minute Increase

Use this item to select 1-60

PS2 KB/MS Wake-Up from S3-S5

PS2 KB/MS Wake-up is affected by ERP function in S4-S5. Please disable ERP before activating this function in S4-S5.

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

USB Power Gating S4-S5

USB Wake-up is affected by ERP function in S4. Please disable ERP before

activating this function in S4.

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

PCIE Wake-up from S3-S5

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

▸ **PTT Configuration**

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

PTT Capability/state

TPM Device Selection

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

Use this item to selects TPM device: PTT or dTPM.

[PTT]- Enables PTT in SkuMgr.

[dTPM 1.2] – Disables PTT in SkuMgr.

Warning! PTT/dTPM will be disabled and all data saved on it will be lost

3-8 Chipset Menu

```
                          Aptio Setup - AMI
     Main  Advanced  Chipset  Security  Boot  Save & Exit  MEBx

  ▶ 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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```
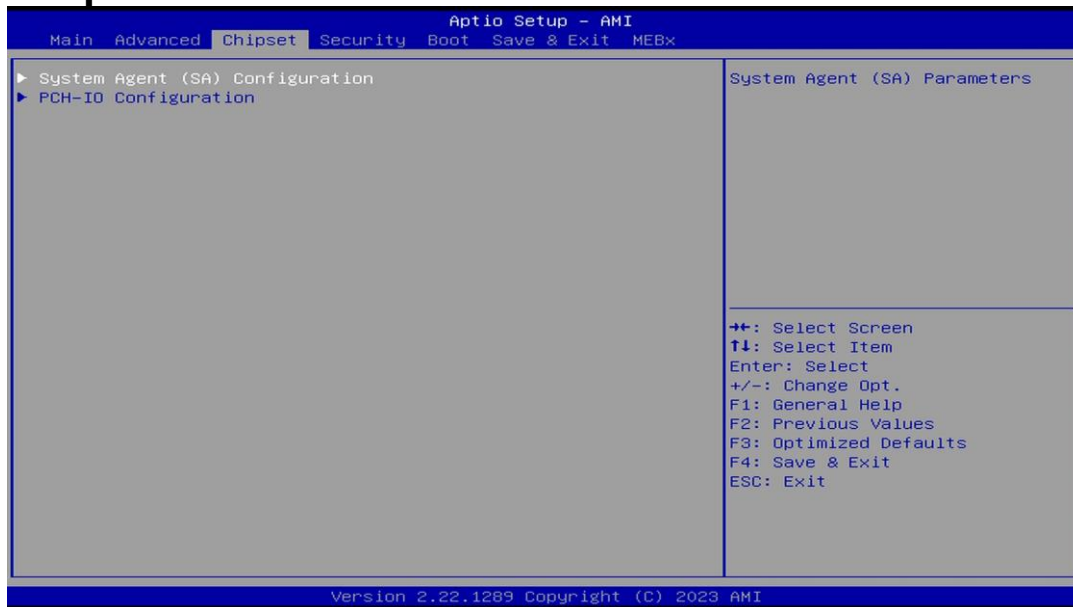
▶ **System Agent (SA) Configuration**
Press [Enter] to make settings for the following sub-items:
System Agent (SA) Configuration
▶ **VMD setup menu**
Press [Enter] to make settings for the following sub-items:
Enable VMD controller
Use this item to enable/disable to VMD controller
The optional settings: [Disabled]; [Enabled].
When set as [Enabled], the following sub-items shall appear:
Enable VMD Global Mapping
Use this item to enable/disable to VMD global mapping
The optional settings: [Disabled]; [Enabled].
When set as [Disabled], the following sub-items shall appear:
Map this Root Port under VMD
Use this item to Map/UnMap this root port to VMD
The optional settings: [Disabled]; [Enabled].
Root Port BDF details
GTT Size
Use this item to select the GTT Size.
The optional settings are: [2MB]; [4MB]; [8MB].
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: [0M]; [32M]; [64M]; [96M]; [128M]; [160M]; [4M]; [8M]; [12M]; [16M]; [20M]; [24M]; [28M]; [32M/F7]; [36M]; [40M]; [44M]; [48M]; [52M];[56M]; [60M].
Active Type
The optional settings: [Disabled]; [Enabled].
When set as **[Enabled]**, user can make settings in the '**Panel Type**' screen:
Panel Type
Use this item to set panel type.
The optional settings: [800*480 1ch 18bit]; [800*600 1ch 18bit]; [800*600 1ch 24bit]; [1024*600 1ch 18bit]; [1024*768 1ch 18bit]; [1024*768 1ch 24bit];

[1280*800 1ch 18bit]; [1280*800 1ch 24bit]; [1366*768 1ch 18bit]; [1366*768 1ch 24bit]; [1440*900 2ch 18bit]; [1440*900 2ch 24bit]; [1280*1024 2ch 24bit]; [1680*1050 2ch 24bit]; [1920*1080 2ch 24bit]; [eDP].

Backlight Control
Use this item to back light control setting
The optional settings: [PWM Inverted]; [PWM Normal].

Maximum Memory Frequency
Use this item to set maximum memory frequency selections in Mhz.
The optional settings are: [Auto]; [1067]; [1333]; [1400]; [1600]; [1800]; [1867]; [2000]; [2133]; [2200]; [2400]; [2600]; [2667]; [2800]; [2933]; [3000]; [3200]; [3467]; [3600]; [3733]; [4000]; [4200]; [4267]; [4400]; [4600]; [4800]; [5000]; [5200]; [5400]; [5600]; [5800]; [6000]; [6200]; [6400]; [6600]; [6800]; [7000]; [7200]; [7400]; [7600]; [7800]; [8000]; [8200]; [8400]; [8600]; [8800]; [9000]; [9200]; [9400]; [9600]; [9800]; [10000]; [12800].

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

▸ **SATA Configuration**
Use this item to set SATA Device Options Settings.
SATA Configuration
SATA Controller(s)
Use this item to enable/disable SATA Device.
When set as [Enabled], user can make settings in the following items that appear:
SATA Mode Selection
Use this item to determine how SATA controller(s) operate.
The optional setting: [AHCI].
M.2 SATA
Port
Use this item to enable or disable SATA port.
The optional settings: [Disabled]; [Enabled].
SATA Port
Port

Use this item to enable/disable SATA Port.

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

Hot Plug

Use this item to designate this port as Hot Pluggable.

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

HD Audio

Use this item to control detection of the HD-Audio device.

Disabled= HDA will be unconditionally disabled.

Enabled= HDA will be unconditionally enabled.

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

System State after Power Failure

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

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

3-9 Security Menu
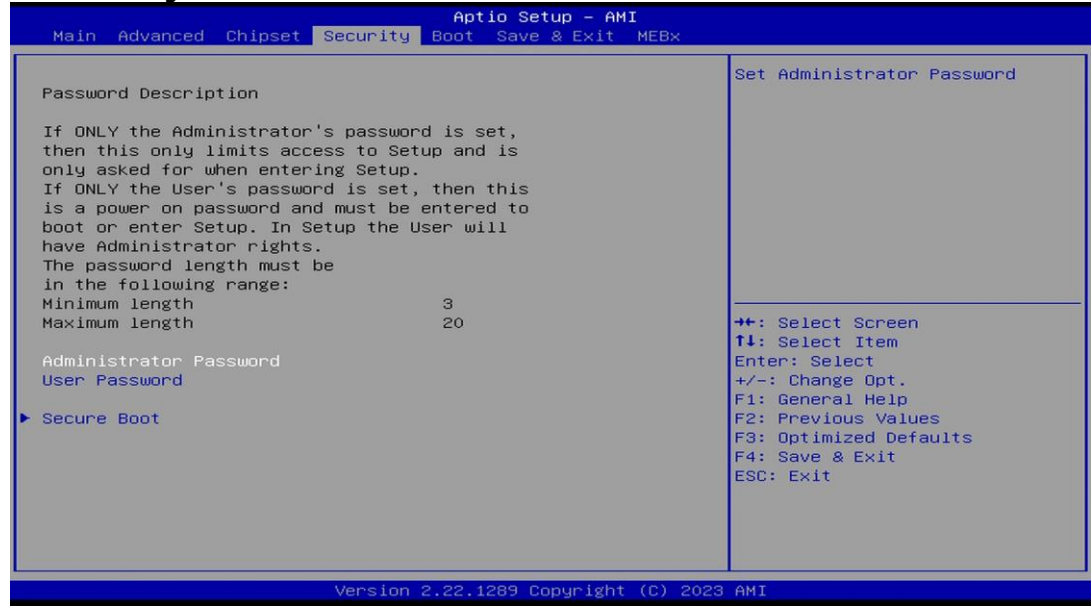
Security menu allow users to change administrator password and user password settings.

Administrator Password

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

User Password

If there is no password present on system, please press [Enter] to create new 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 user password.

▶ **Secure Boot**

Press [Enter] to make customized secure settings:

System Mode

Secure Boot

Secure Boot feature is Active if Secure Boot is Enabled, Platform Key(PK) is enrolled and the System is in User mode. The mode change requires platform reset.

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

Secure Boot Mode

Set Secure Boot Mode to Standard mode or Custom mode. In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication.

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

When set as [**Custom**], user can make further settings in the following items that show up:

▶ **Restore Factory Keys**

Use this item to force system to User Mode. Install factory default Secure Boot key databases.

▶ **Reset To Setup Mode**

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

▶ **Key Management**

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

Vendor Keys

Factory Key Provision

This item is for user to install factory default Secure Boot keys after the platform reset and while the System is in Setup mode.

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

‣ **Restore Factory Keys**

Use this item to force system into User Mode. Install factory default Secure Boot key databases.

‣ **Reset To Setup Mode**

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

‣ **Enroll Efi Image**

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

Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database (db).

‣ **Export Secure Boot variables**

Use this item to save NVRAM content of Secure Boot variables to a files

Secure Boot variable/Size/Keys/Key Source

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

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

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

Key Source: Factory, Modifued, Mixed

3-10 Boot Menu


```
                          Aptio Setup - AMI
   Main  Advanced  Chipset  Security  Boot  Save & Exit  MEBx

   Boot Configuration                                Number of seconds to wait for
   Setup Prompt Timeout            [     ]           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]

   Driver Option Priorities

                                                     →←: 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 the keyboard NumLock state.
The optional settings are: [On]; [Off].

Quiet Boot

Use this item to enable/disable Quiet Boot option.
The optional settings are: [Disabled]; [Enabled].
When set as [Enabled], user can make settings in the following items that appear:

Boot Option Priorities

Boot Option #1

Use this item to set the system boot order.
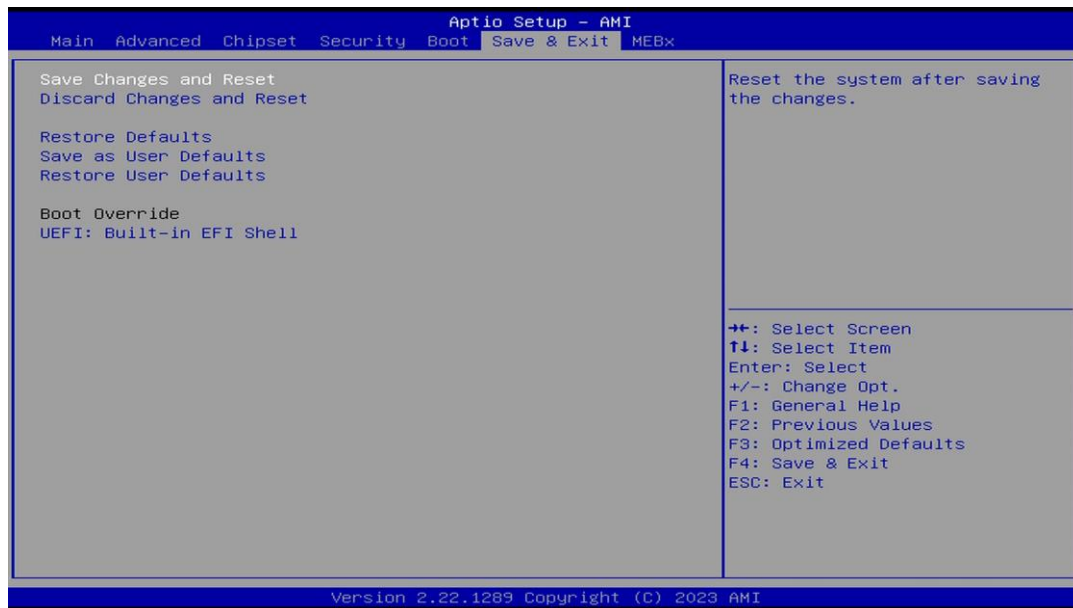The optional settings: [UEFI: Built –in EFI Shell]; [Disabled].
Drover Option Prioritirs

3-11 Save & Exit Menu

```
                          Aptio Setup — AMI
     Main  Advanced  Chipset  Security  Boot  Save & Exit  MEBx

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

   Restore Defaults
   Save as User Defaults
   Restore User Defaults

   Boot Override
   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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```

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 the User Defaults to all the setup options.

Boot Override

UEFI: Built – in EFI Shell

Use this item to save configuration and reset.

3-12 MEBx

Configuration locked after End0fPost