



**Fanless System with Intel® Atom™ x7433RE/ x7835RE/N150 Processor,
DDR5 SO-DIMM, 3 × 2.5GbE LAN, HDMI, DP, 2.5" SATA HDD Bay, M.2 E Key,
M.2 M Key, USB 3.2 Gen 2, COM, 12 V ~ 28 V DC and RoHS**

User Manual



Revision



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Manual Conventions

**WARNING**

Warnings appear where overlooked details may cause damage to the equipment or result in personal injury. Warnings should be taken seriously.

**CAUTION**

Cautionary messages should be heeded to help reduce the chance of losing data or damaging the product.

**NOTE**

These messages inform the reader of essential but non-critical information. These messages should be read carefully as any directions or instructions contained therein can help avoid making mistakes.

**HOT SURFACE**

This symbol indicates a hot surface that should not be touched without taking care.

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Chapter

1

Introduction



1.1 Overview



Figure 1-1: DRPC-W-ASL Series

The DRPC-W-ASL Series is a compact, fanless embedded system that supports DIN-rail mounting. It is powered by an Intel® x7433RE/ x7835RE/N150 processor and features one 4800 MHz DDR5 SO-DIMM up to 16GB.

The DRPC-W-ASL Series provides three 2.5GbE LAN interfaces via Intel® I226-IT Ethernet controllers. It also includes one HDMI 1.4 (up to 4K @30Hz) and one DisplayPort 1.4 (up to 4096 x 2160 @60Hz) for dual independent display outputs.

The DRPC-W-ASL Series offers extensive expansion and I/O options, including one M.2 2230 E-key slot for Wi-Fi and Bluetooth modules, one M.2 2280 M-key slot, two USB 3.2 Gen 2 connectors, two USB 2.0 connectors, and one 2.5" SATA 6Gb/s HDD bay. Serial device connectivity is provided by two internal RS-232/422/485 connectors.

1.2 Features

The DRPC-W-ASL Series features are listed below:

- Intel® Atom™ x7433RE/ x7835RE/N150 processor
- One DDR5 SO-DIMM slot (8 GB pre-installed, up to 16 GB)
- Three 2.5GbE LAN ports via Intel® I226-IT
- One 2.5" SATA 6Gb/s HDD bay
- Two USB 3.2 Gen2 (10 Gb/s), two USB 2.0, and two internal RS-232/422/485 pin headers
- M.2 E key and M.2 M key expansions
- RoHS compliant



DRPC-W-ASL

1.3 Technical Specifications

The DRPC-W-ASL Series technical specifications are listed in **Table 1-1**.

Model Name		DRPC-W-ASL-x7433REC-R10	DRPC-W-ASL-x7835REC-R10	DRPC-W-ASL-N150C-R10
Chassis	Color	Black		
	Dimensions (WxDxH)(mm)	163mm*116mm*60mm		
	System Fan	Fanless		
	Chassis Construction	Extruded aluminum alloys		
MotherBoard	CPU	Intel Atom® x7433RE SoC Processor	Intel Atom® x7835RE SoC Processor	Intel® Processor N150
	Chipset	SOC		
	Memory	1 x DDR5 4800MHz SO-DIMMU (pre-install 8GB)(up to 16GB)		
Storage	HDD Bay	1 x 2.5" SATA 6Gb/s HDD bay		
IO Interfaces	USB	2 x USB 3.2 Gen 2 2x USB 2.0		
	LAN	3 x 2.5 GbE LAN via Intel® I226-IT		
	Display	Double Independent Displays 1 x HDMI 1.4 (up to 4K @ 30Hz) 1x DP 1.4 (up to 4K @ 60Hz)		
	Others	1 x Power button 2 x RS-232/422/485, optional feature and requires a DB9 cable to extend the connection 1 x DIO(12-bit digital I/O), optional feature and requires a DB15 cable to extend the connection		
	M.2	1 x M.2 E Key 2230 (PCIe Gen3 x1 & USB 2.0) 1 x M.2 M Key 2242/2280 (PCIe gen3 x2)		
Power	Power Input	12-28V DC		



	Power Consumption	12V@2.007A; 19V@1.273A; 24V@1.025A; 28V@0.913A (Intel Atom® x7433RE with 8GB DDR5 4800MHz memory, EuP mode disabled)	
Reliability	Mounting	DIN-Rail/Wall mounting	
	Operating temperature	-40°C ~ 70°C, 10% ~ 95% non-condensing	-10°C ~ 60°C, 10% ~ 95% non-condensing
	Storage temperature	-40°C ~ 85°C, 10% ~ 95% non-condensing	-20°C ~ 70°C, 10% ~ 95% non-condensing
	Operating Shock	Half-sine wave shock 5G, 11ms, 100 shocks per axis	
	Operating Vibration	10-500 Hz,1.04 Grms, random, 1 hr/axis	
	Weight (Net/Gross)	1.13/1.9KG	
	Safety/EMC	CE/FCC	
	Watchdog Timer	Software Programmable support 1~255 sec	
OS	Supported OS	Microsoft® Windows 10 / Windows 11, Linux	

*DRPC-W-ASL-N150C-R10 minimun order quantity may apply to this model. Please contact our sales team for further information.

Table 1-1: Technical Specifications



DRPC-W-ASL

1.4 Front Panel

The front panel of the DRPC-W-ASL Series is shown in **Figure 1-2**.

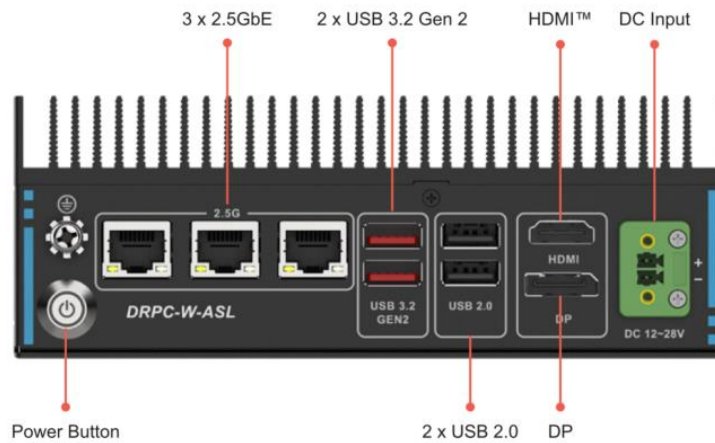


Figure 1-2: Front Panel

1.5 Top Panel

The top panel of the DRPC-W-ASL Series is shown in **Figure 1-3**.

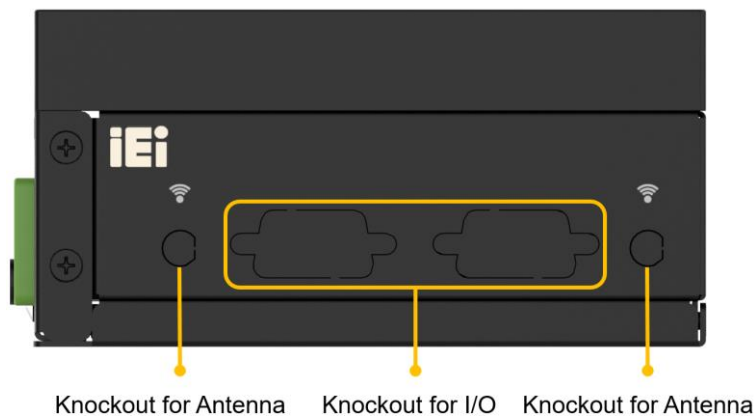


Figure 1-3: Top Panel

1.6 Physical Dimensions

The physical dimensions of the DRPC-W-ASL Series are shown in **Figure 1-4**.

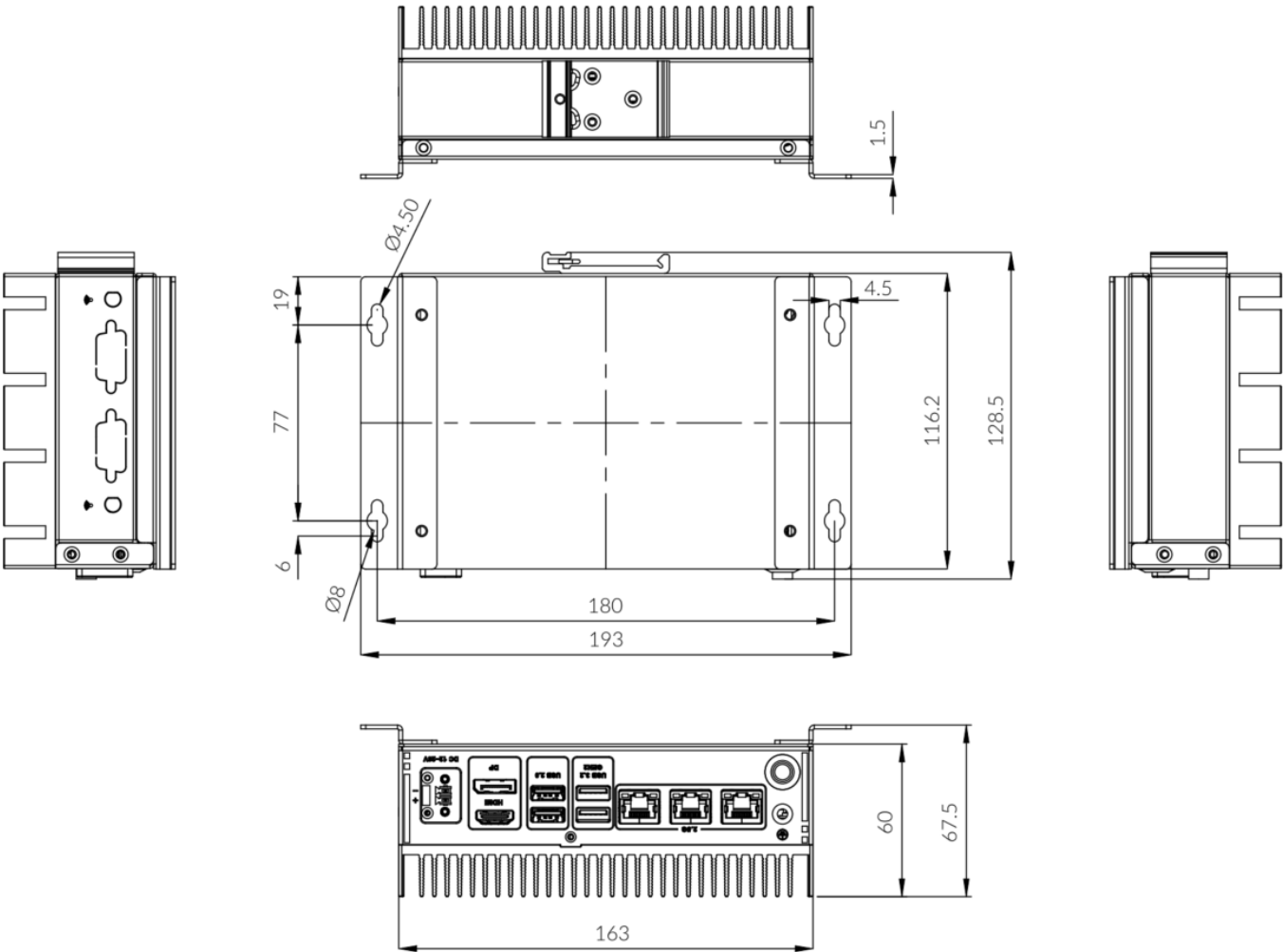


Figure 1-4: Physical Dimensions (mm)

Chapter

2

Unpacking

2.1 Anti-static Precautions

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the DRPC-W-ASL Series. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the DRPC-W-ASL Series or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband:*** Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- ***Self-grounding:*** Before handling the board touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad:*** When configuring the DRPC-W-ASL Series, place it on an anti-static pad. This reduces the possibility of ESD damaging the DRPC-W-ASL Series.

2.2 Unpacking Precautions

When the DRPC-W-ASL Series is unpacked, please do the following:

- Follow the anti-static precautions outlined in **Section 2.1**.
- Make sure the packing box is facing upwards so the DRPC-W-ASL Series does not fall out of the box.
- Make sure all the components shown in **Section 2.3** are present.

2.3 Packing List

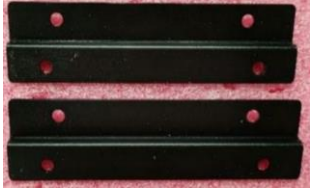


NOTE:

If some of the components listed in the checklist below are missing, please do not proceed with the installation. Contact the IEI reseller or vendor you purchased the DRPC-W-ASL Series from or contact an IEI sales representative directly. To contact IEI sales representatives, please send an email to sales@ieiworld.com.

The DRPC-W-ASL Series is shipped with the following components:

DRPC-W-ASL

Quantity	Item and Part Number	Image
1	DRPC-W-ASL Series	
1	DIN-rail mounting kit	
1	Chassis screws	
2	Wall mount kit	
1	Sata cable	
1	TERMINAL BLOCKS,2PIN,P=3.81MM	

2.4 Optional Items

The following table lists the optional items that can be purchased separately.

Optional	
Wi-Fi module (P/N: EMB-WIFI-KIT02I3-R10)	
Serial cable (P/N: 32205-008000-100-RS)	
DIO cable (P/N: 32031-000600-100-RS)	
Power adapter (P/N: 63040-010060-211-RS) * This power supply needs to be used with an DC converter cable(P/N: 32102-045700-100-RS)	
Power cord (P/N: 32702-003600-100-RS-----European standard)	
DC converter cable (P/N: 32102-045700-100-RS)	

* Each Wi-Fi module needs two antennas and two RF cables to fully support Wi-Fi function.

Chapter

3

Installation

3.1 Installation Precautions

During installation processes, be aware of the precautions below:

- **Read the user manual:** The user manual provides a complete description of the DRPC-W-ASL Series, installation instructions and configuration options.
- **Danger! Disconnect Power:** Power to the DRPC-W-ASL Series must be disconnected during the installation process, or before any attempt is made to access the rear panel. Electric shock and personal injury might occur if the rear panel of the DRPC-W-ASL Series is opened while the power cord is still connected to an electrical outlet.
- **Qualified Personnel:** The DRPC-W-ASL Series must be installed and operated only by trained and qualified personnel. Maintenance, upgrades, or repairs may only be carried out by qualified personnel who are familiar with the associated dangers.
- **Air Circulation:** Make sure there is sufficient air circulation when installing the DRPC-W-ASL Series. The DRPC-W-ASL Series cooling vents must not be obstructed by any objects. Blocking the vents can cause overheating of the DRPC-W-ASL Series. Leave at least 5 cm of clearance around the DRPC-W-ASL Series to prevent overheating.
- **Grounding:** The DRPC-W-ASL Series should be properly grounded. The voltage feeds must not be overloaded. Adjust the cabling and provide external overcharge protection as per the electrical values indicated on the label attached to the back of the DRPC-W-ASL Series.

DRPC-W-ASL

3.2 Cover Removal

Before installing or maintaining the internal components, the cover must be removed from the DRPC-W-ASL Series. Follow the steps below to complete the task.

Step 1: Loosen the two screws on the side of the cover.

Step 2: Take off the cover (**Figure 3-1**).

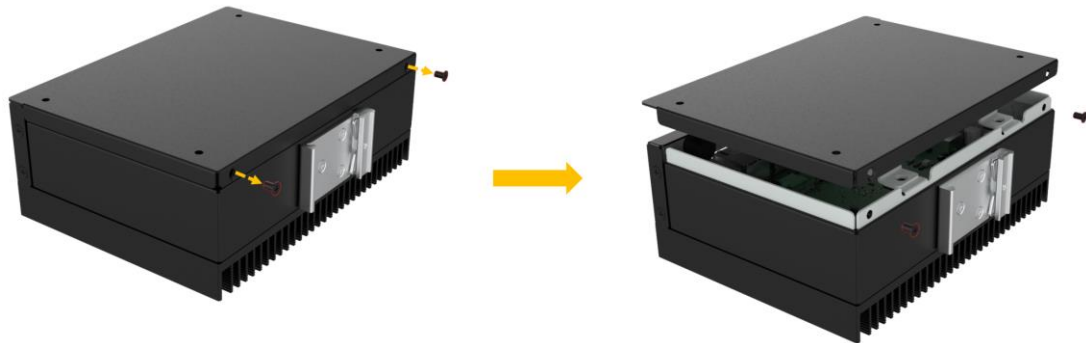


Figure 3-1: Remove the Cover

3.3 Hard Disk Bracket Removal

Loosen the four screws on the hard disk bracket and then remove it (**Figure 3-2**).



Figure 3-2: Take out the Disk Bracket

3.4 Storage Installation

The DRPC-W-ASLx supports two types of storage: M.2 M key and 2.5" SSD.

3.4.1 2.5-inch SSD Installation

Step 1: Place the hard disk bracket on the hard disk and then secure the hard drive with four retention screws.

Step 2: Connect the hard drive to the SATA connector. Reinstall the HDD bracket into the chassis and then fasten it with the four bracket screws (**Figure 3-3**).

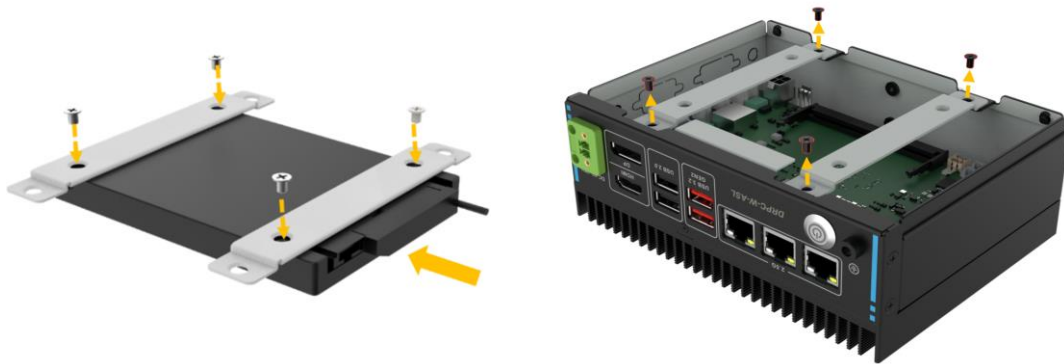


Figure 3-3: HDD Installation

3.4.2 M.2 SSD Installation

To install an M.2 module, please follow the steps below.

Step 1: Locate the M.2 module slot. See **Section 4.2.13**.

Step 2: Remove the retention screw secured on the motherboard.

Step 3: Line up the notch on the module with the notch on the slot. Slide the M.2 module into the socket at an angle of about 20° (**Figure 3-4**).

DRPC-W-ASL

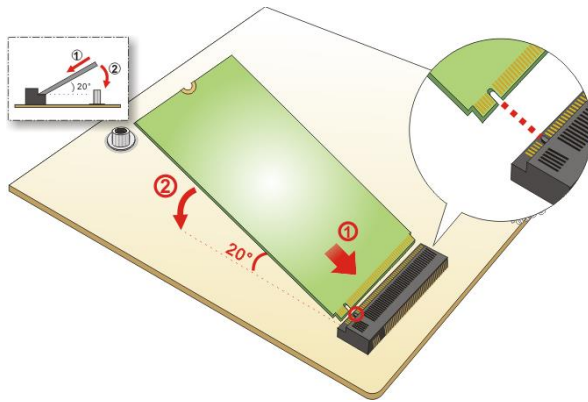


Figure 3-4: Insert the M.2 Module into the Slot

Step 4: Secure the M.2 module with the previously removed retention screw (**Figure 3-5**).

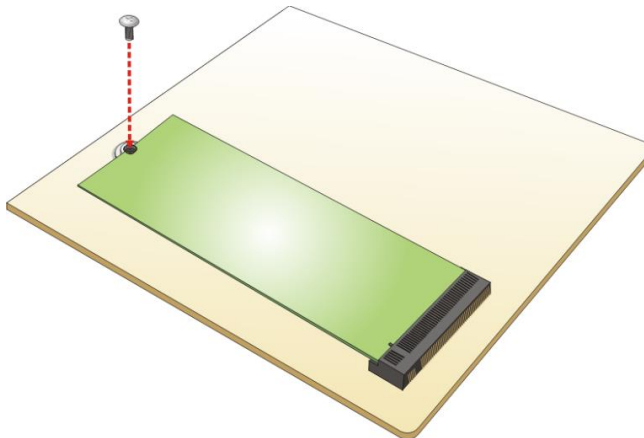


Figure 3-5: Secure the M.2 Module

3.5 Wi-Fi Module Installation (Optional)

The Wi-Fi module is an optional accessory. Users can purchase it from IEI or other vendors. Note that users have to purchase a Wi-Fi module, internal antenna and external antenna. It is suggested to purchase an internal antenna longer than 200 mm.

To install the Wi-Fi module, follow the steps below.

Step 1: Locate the M.2 E-key module slot. See **Section 4.2.20**.

Step 2: Remove the retention screw secured on the motherboard.



Step 3: Line up the notch on the WLAN module with the notch on the slot. Slide the WLAN module into the slot at an angle of about 20° (**Figure 3-6**).

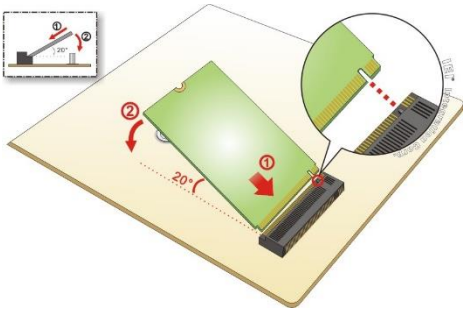


Figure 3-6: Insert the WLAN Module

Step 4: Secure the WLAN module with the retention screw previously removed (**Figure 3-7**).

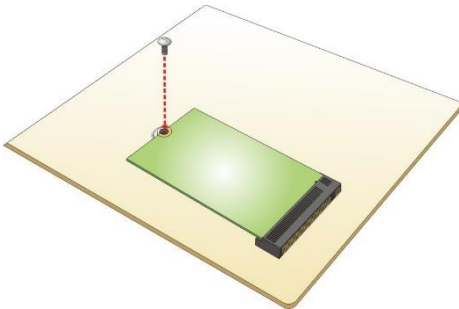


Figure 3-7: Secure the WLAN Module

Step 5: Connect the two RF cables to the antenna connectors on the WLAN module (**Figure 3-8**).

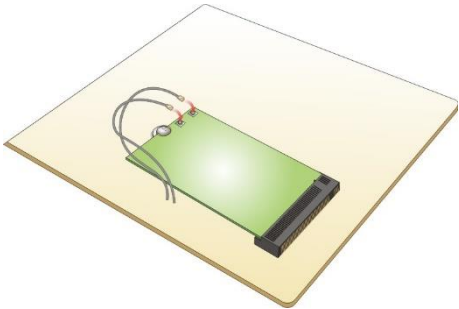


Figure 3-8: Connect RF Cables



DRPC-W-ASL

Step 6: Remove the nut and washer from the SMA connectors at the other end of the RF cable.

Step 7: Knock out the reserved antenna holes on the chassis. Insert the SMA connector to the antenna connector holes on the I/O panel.

Step 8: Secure the SMA connectors by inserting the washer and tightening it with nut.

Step 9: Install the external antenna (**Figure 3-9**).

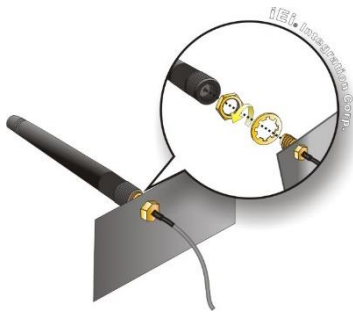


Figure 3-9: Secure SMA Connectors and External Antennas

3.6 Expansion I/O Installation (Optional)

The DRPC-W-ASL Series has reserved GPIO ports and serial ports for expansions. Optional cables or modules are ready for purchase. To install these expansion components, follow the steps below.

3.6.1 Serial Port Installation

Step 1: Locate the serial port. See **Section 4.2.6**.

Step 2: Connect the serial cable to the serial connector on the mainboard.



Figure 3-10: Connect the Serial Cable to the Serial Connector

Step 3: Knock out the reserved holes on the chassis and secure the DB9 end of the serial cable to the panel.



Figure 3-11: Knock Out the Reserved Holes

DRPC-W-ASL

3.6.2 GPIO Port Installation

Step 1: Locate the GPIO port connector. See **Section 4.2.8**.

Step 2: Connect the GPIO cable to the GPIO connector on the mainboard.

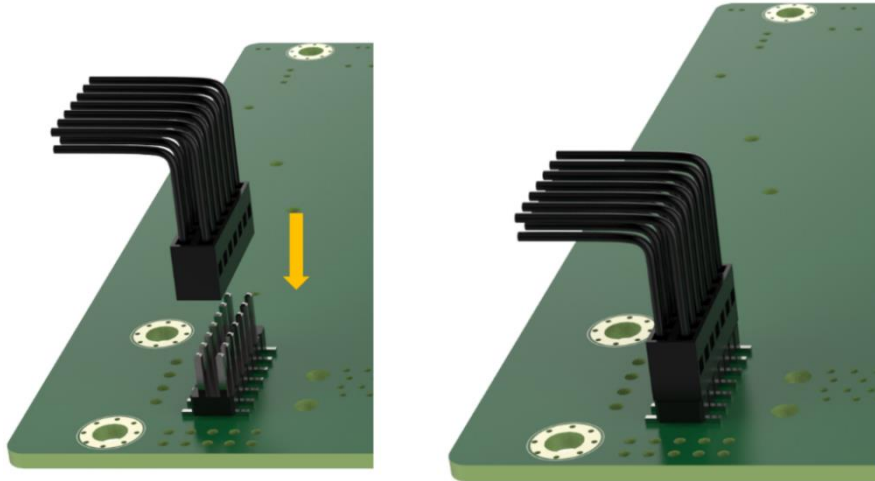


Figure 3-12: Connect the GPIO Cable to the GPIO Connector

Step 3: Knock out the reserved holes on the chassis and secure the DB15 end of the GPIO cable to the panel.



Figure 3-13: Knock Out the Reserved Holes



3.7 Cover Installation

Install the cover and fasten the two screws.



Figure 3-14: Install the Cover

3.8 Mounting Bracket Installation

DRPC-W-ASLx comes with a DIN-rail mounting bracket. Follow the steps below to install the mounting bracket.

- Step 1:** Turn the embedded system over.
- Step 2:** Align the retention screw holes in the bracket with the corresponding retention screw holes on the system, and then secure the bracket to the system by inserting the retention screws into the bracket.

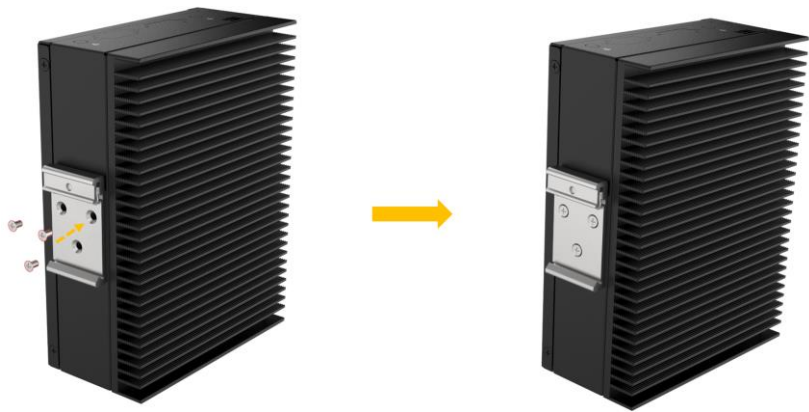


Figure 3-15: Align the Retention Screw Holes



DRPC-W-ASL

Step 3: Attach the upper edge of the mounting bracket at an angle to the DIN rail. Push the system towards the DIN rail until the mounting bracket hangs securely.

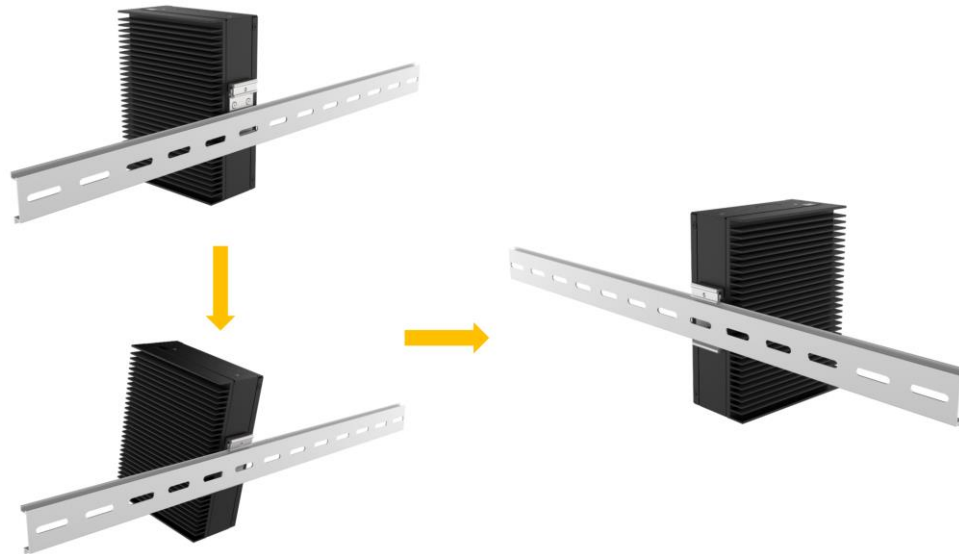


Figure 3-16: Mount the System

3.9 External Peripheral Interface Connectors

The DRPC-W-ASL Series has the following external peripheral connectors. Detailed descriptions of the connectors can be found in the subsections below.

- LAN connector
- Power button
- Power input connector
- HDMI
- DP
- USB

3.9.1 LAN Connectors

The LAN connectors allow connection to external networks.

Step 1: Locate the RJ-45 connectors.

Step 2: Align the connectors. Align the RJ-45 connector on the LAN cable with one of the RJ-45 connectors on the DRPC-W-ASL Series (**Figure 3-17**).

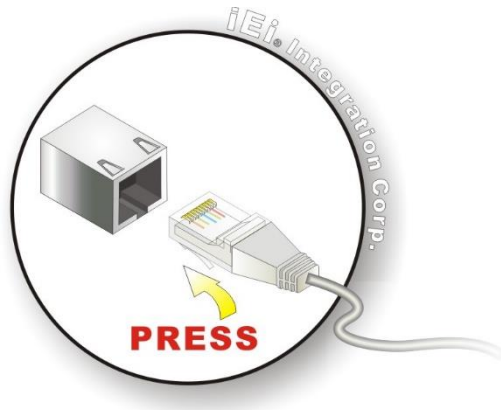


Figure 3-17: LAN Connection

Step 3: Insert the LAN cable’s RJ-45 connector. Once aligned, gently insert the LAN cable’s RJ-45 connector into the RJ-45 connector on the DRPC-W-ASL Series.

The RJ-45 Ethernet connector has two status LEDs, one green and one yellow. The green LED indicates activity on the port and the yellow LED indicates the port is linked. See Figure 3-18.



Figure 3-18: RJ-45 Ethernet Connector

Activity/Link LED		Speed LED	
Status	Description	Status	Description
Off	No link	Off	10 Mbps connection
Yellow	Linked	Orange	1000 Mbps connection
Blinking	TX/RX activity	Green	2.5 Gbps connection

Table 3-1: RJ-45 Ethernet Connector LEDs

DRPC-W-ASL

3.9.2 Power Connector



WARNING:

Make sure a power supply with correct input voltages is being fed into the system. Incorrect voltages applied to the system may cause damage to the internal electronic components and injuries to users.

The power of the system needs more than 12V@2.007A.

Step 1: Connect the power source to the power input connector.

Step 2: Push the power button, and then the button lights up in white.

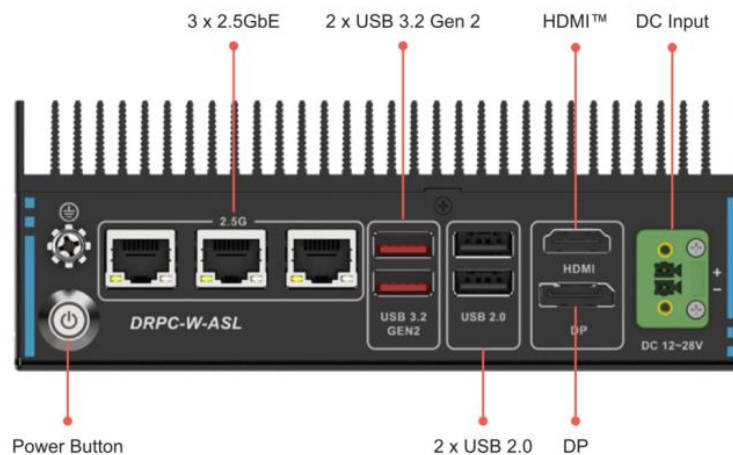


Figure 3-19: Power Connector

- **Power on** the system: press the power button for 1 seconds
- **Power off** the system: press the power button for 6 seconds

3.9.3 HDMI/DP Connector

To connect the HDMI/DP devices, plug in HDMI/DP connector in the right direction as shown below:



Figure 3-20: HDMI/DP Connection

3.9.4 USB 3.2 Gen 2 (10Gb/s) Connectors

The DRPC-W-ASLx has two USB 3.2 ports. To connect a USB device, please follow the instructions below.

Step 1: Locate the USB connectors.

Step 2: Align the connectors. Align the USB device connector with one of the connectors on the DRPC-W-ASL Series.

Step 3: Insert the device connector. Once aligned, gently insert the USB device connector into the connector on the DRPC-W-ASL Series.

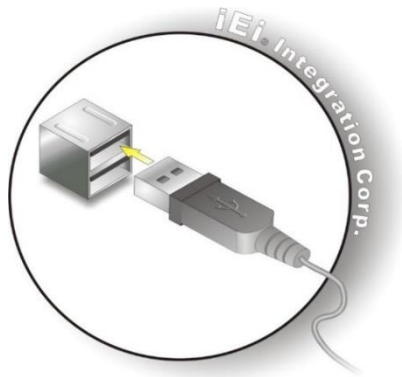


Figure 3-21: USB Connection

DRPC-W-ASL

3.10 Software Drivers

3.10.1 Available Drivers

All the drivers for the DRPC-W-ASL Series are available on the IEI Resource Download Center (<https://download.ieiworld.com>). Type DRPC-W-ASL Series and press Enter to find all the relevant software, utilities, and documentation.

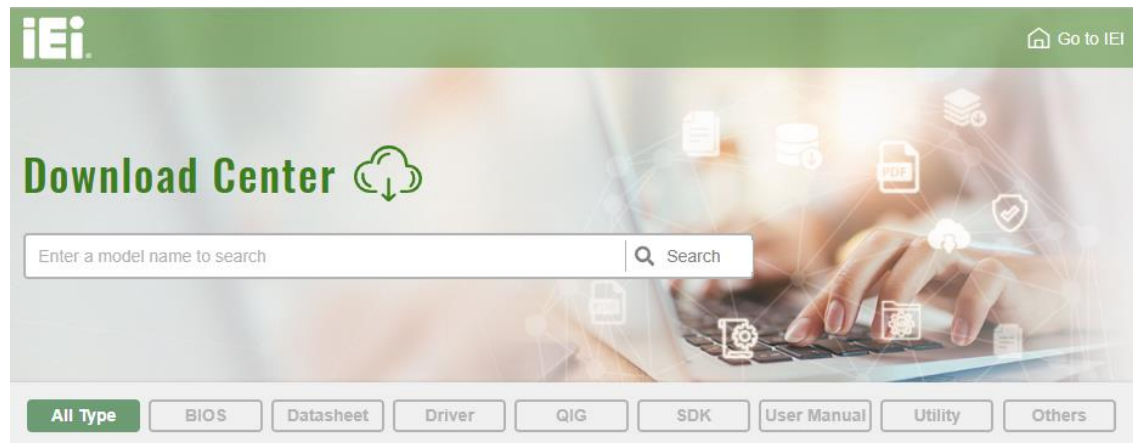
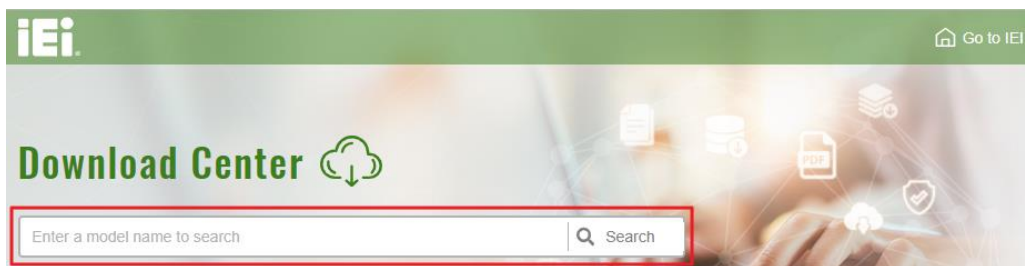


Figure 3-22: IEI Resource Download Center

3.10.2 Driver Download

To download drivers from the IEI Resource Download Center, follow the steps below.

Step 1: Go to <https://download.ieiworld.com>. Type DRPC-W-ASL Series and press Enter.



Step 2: All product-related software, utilities, and documentation will be listed. You can choose **Driver** to filter the result.

All TypeBIOSDatasheetDriverQIGSDKUser ManualUtilityOthers

 Keyword: "WAfer-ASL", Searching Result : 3 Records.

WAfer-ASL

Product Info

Embedded Computer > Single Board Computer > Embedded Board

3.5" SBC supports Intel® Atom™ x7000 RE series on-board SoC, double display with DP, HDMI, triple 2.5 GbE, USB 3.2 gen 2, M.2, SATA 6Gb/s, COM and RoHS, -40°C~85°C

Driver

File Name	Published	Version	File Checksum
 WAfer-ASL-R3-R10_V1.0.iso (2.45 GB) 	2024/09/05	1.00	E3818527366788AAC32E287899EAA17E

Step 3: Click the driver file name on the page and you will be prompted with the following window. You can download the entire ISO file (❶), or click the small arrow to find an individual driver and click the file name to download (❷).

WAfer-ASL-R3-R10_V1.0.iso

X

❶

 Click here to download entire ISO file. (2.45 GB)

* Download individual file *

Docs

❷

 1.Chipset

 1.Chipset.zip (4.94 MB)

 2.Intel SST

 3.Graphics

 4.LAN

 5.Audio

 6.SIO

 7.ME

 8.ISMM Plus

 Readme.txt (724 Bytes)



NOTE:

To install software from the downloaded ISO image file in Windows 8 or later, double-click the ISO file to mount it as a virtual drive to view its content. On Windows 7 system, an additional tool (such as Virtual CD-ROM Control Panel from Microsoft) is needed to mount the file.

Chapter

4

System Motherboard

4.1 Overview

Figure 4-1 shows the locations of the connectors and jumpers on the system's motherboard. The connectors and jumpers of the motherboard are listed in the following sections.

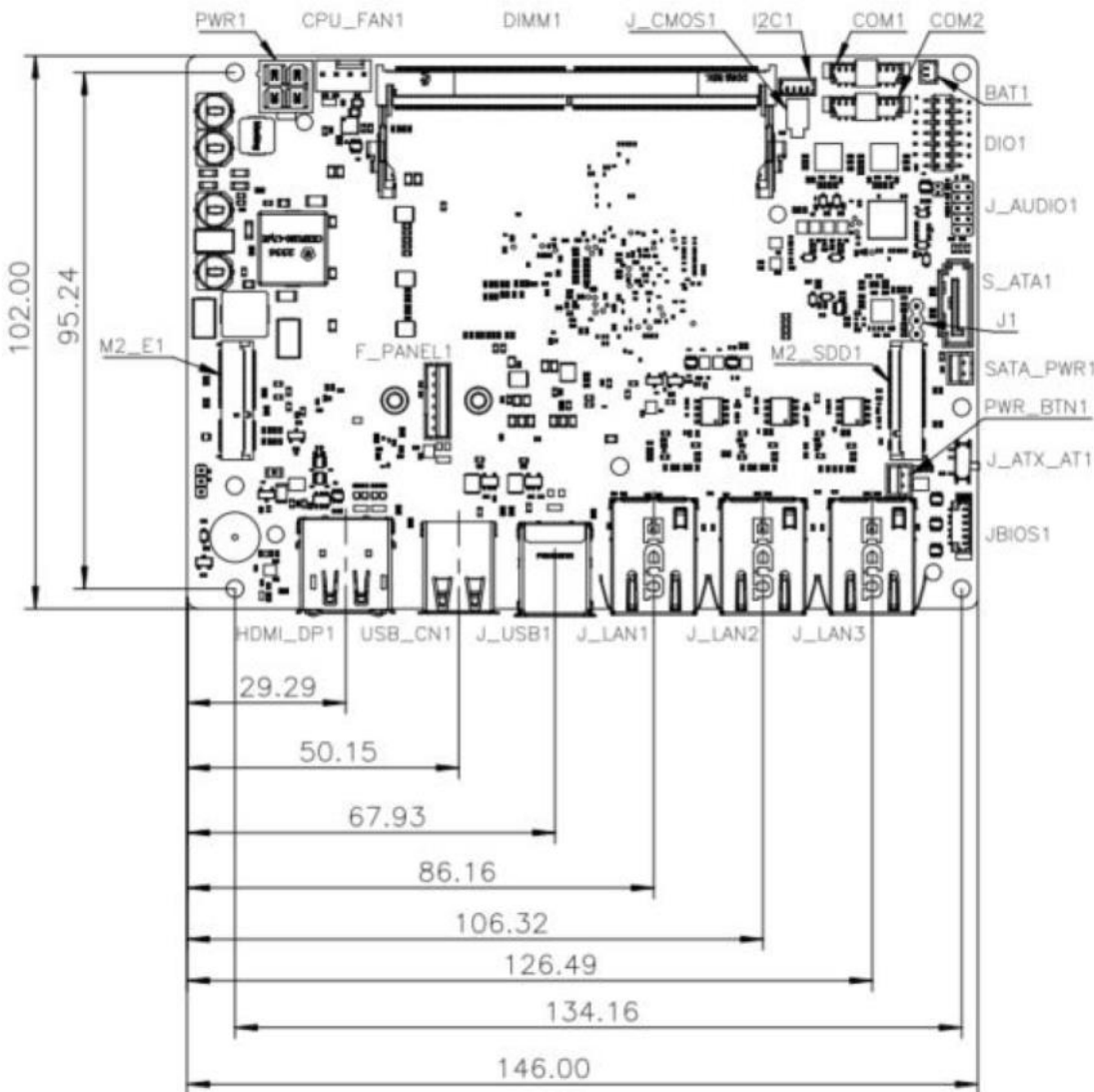


Figure 4-1: Connector and Jumper Locations

4.2 Peripheral Interface Connectors

Table 4-1 lists all the connectors on the system's motherboard.

DRPC-W-ASL

Connector	Type	Label
Power input connector	4-pin Molex connector	PWR1
CPU fan connector	4-pin wafer	CPU_FAN1
DDR5 SO-DIMM socket	262-pin SO-DIMM socket	DIMM1
SMBus connector	4-pin wafer	J_SMB1
I ² C connector	4-pin wafer	I2C1
Clear CMOS button	Tact switch	J_CMOS1
RS-232/422/485 serial ports	9-pin wafer	COM1, COM2
RTC battery connector	2-pin wafer	BAT1
Digital I/O connector	14-pin header	DIO1
Flash descriptor security override jumper	2-pin header	ME_FLASH1
AT/ATX power mode setting	Slide switch	J_ATX_AT1
Audio connector	10-pin header	J_AUDIO1
Flash SPI ROM connector	6-pin wafer	JBIOS1
M.2 M key-slot	M.2 M-key slot	M2_SSD1
SATA power connector	2-pin wafer	SATA_PWR1
SATA 6Gb/s connector	7-pin SATA connector	S_ATA1
LAN LED connectors	2-pin header	JLAN_LED1, JLAN_LED2, JLAN_LED3
USB 2.0 connector	8-pin header	USB_CN2
Power button connector	2-pin wafer	PWR_BTN1
Front panel connector	6-pin wafer	F_PANEL1
M.2 E key-slot	M.2 E-key slot	M2_E1

Table 4-1: Internal Peripheral Connectors

4.2.1 Power Input Connector

- CN Label:

PWR1
- CN Type:

4-pin Molex connector, p=4.2 mm
- CN Location:

See Figure 4-2
- CN Pinouts:

See Table 4-2
- The connector supports the +12V ~ 28V power supply.

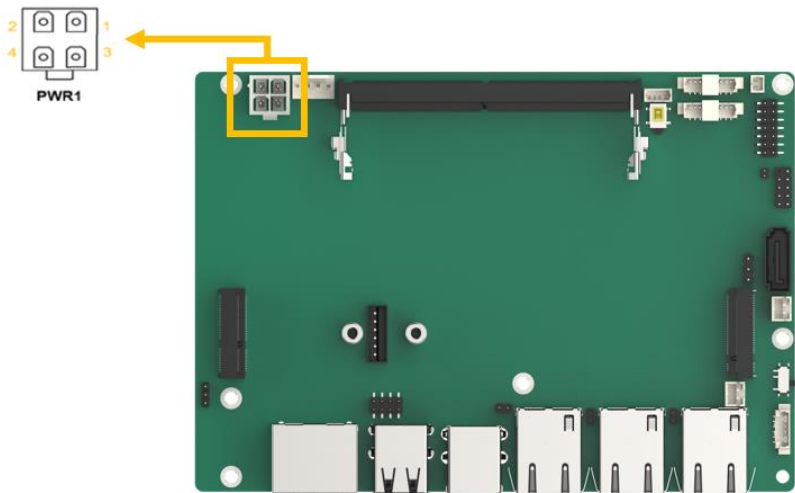


Figure 4-2: Power Input Connector Location

Pin	Description	Pin	Description
1	GND	2	GND
3	+12V~28VIN	4	+12V~28VIN

Table 4-2: Power Input Connector Pinouts

DRPC-W-ASL**4.2.2 CPU Fan Connector**

- CN Label:** CPU_FAN1
- CN Type:** 4-pin wafer, p=2.54 mm
- CN Location:** See **Figure 4-3**
- CN Pinouts:** See **Table 4-3**

The CPU fan connector attaches to a smart cooling fan.

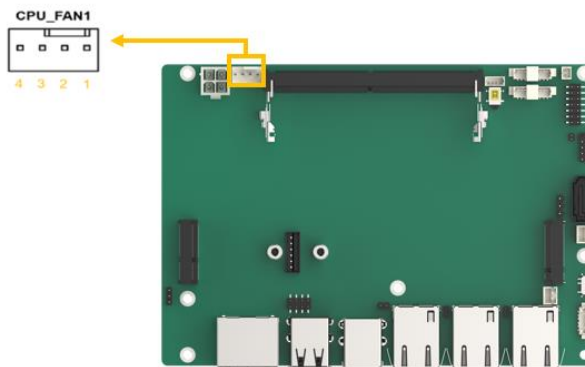


Figure 4-3: CPU Fan Connector Location

Pin	Description	Pin	Description
1	GND	2	+12V
3	FANIN	4	PWM (+5V)

Table 4-3: CPU Fan Connector Pinouts

4.2.3 DDR5 SO-DIMM Socket

CN Label: DIMM1
CN Type: 262-pin SO-DIMM socket
CN Location: See Figure 4-4

The SO-DIMM socket is for a DDR5 SO-DIMM memory module.

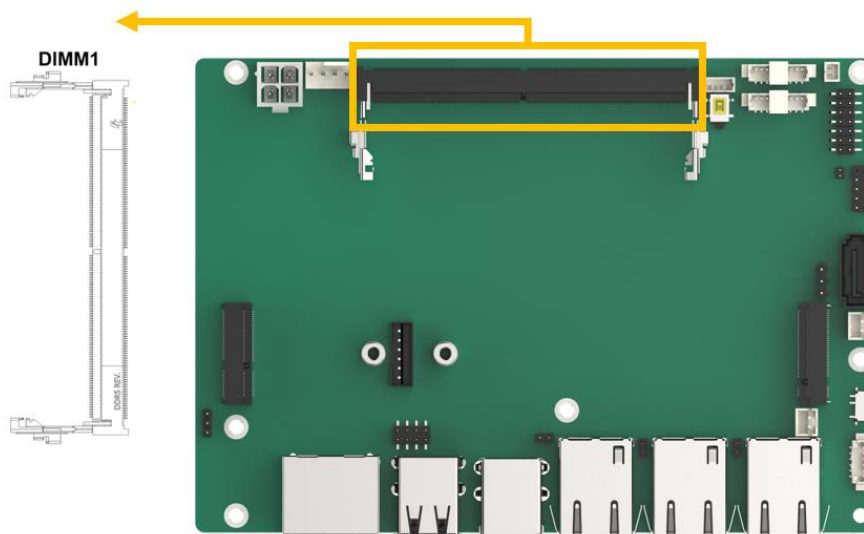


Figure 4-4: DDR5 SO-DIMM Socket Location

DRPC-W-ASL**4.2.4 I²C Connector**

CN Label:	I2C1
CN Type:	4-pin wafer, p=1.25 mm
CN Location:	See Figure 4-5
CN Pinouts:	See Table 4-4

The I²C connector is used to connect I²C-bus devices to the mainboard.

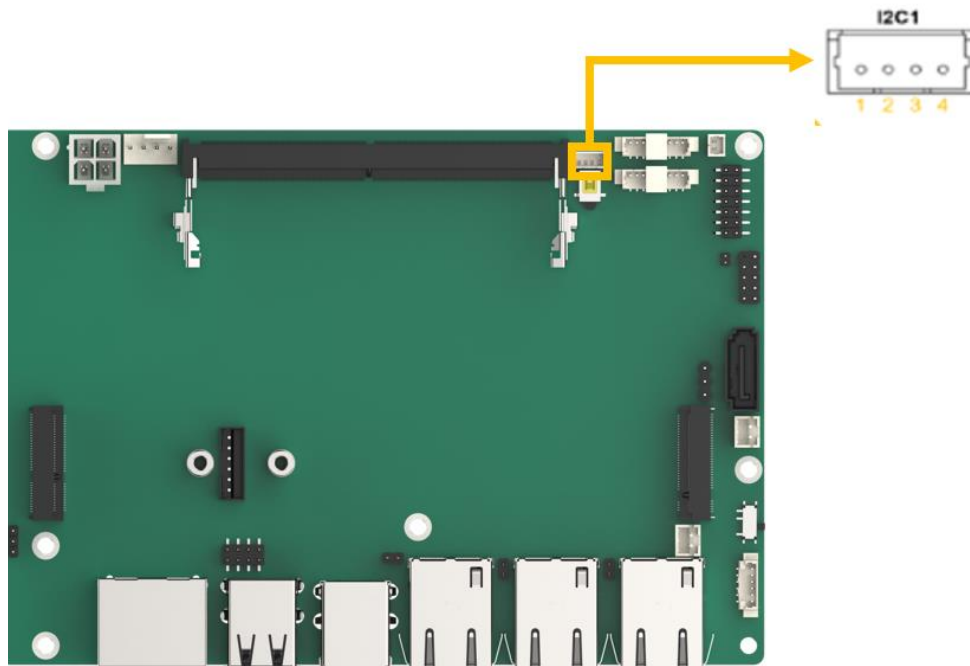


Figure 4-5: I²C Connector Location

Pin	Description
1	GND
2	EC_SMCLK0
3	EC_SMDAT0
4	+5V

Table 4-4: I²C Connector Pinouts

4.2.5 Clear CMOS Button

- CN Label:

J_CMOS1
- CN Type:

Tact switch
- CN Location:

See Figure 4-6
- CN Pinouts:

See Table 4-5

To clear the CMOS Setup (for example if you have forgotten the password, you should clear the CMOS and then reset the password), you should disconnect the RTC battery and press the button for about 3 seconds. This will set back to normal operation mode.

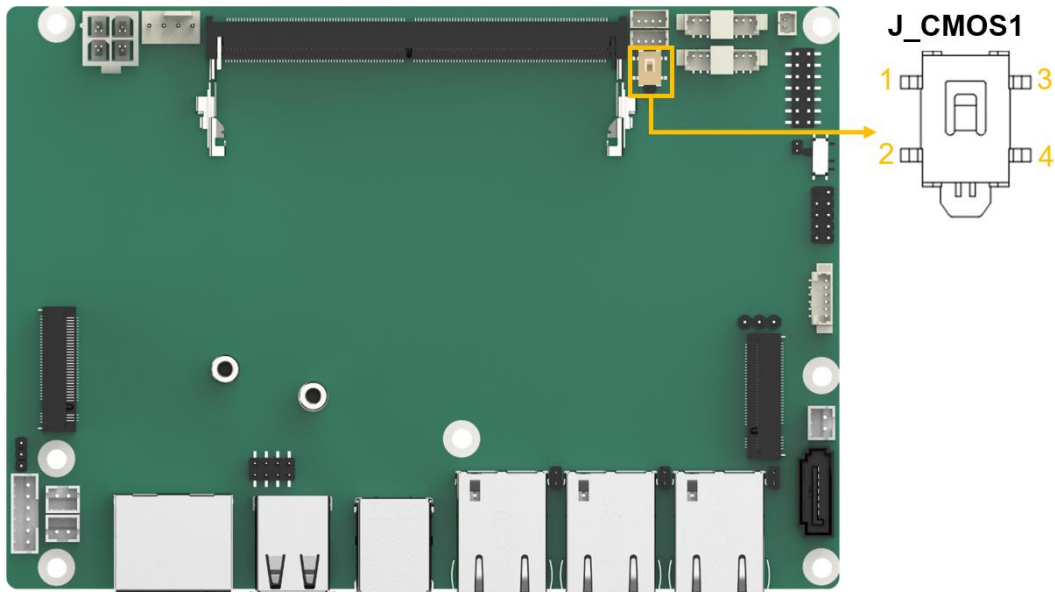


Figure 4-6: Clear CMOS Location

Status	Description
NC	Keep CMOS Setup (Normal Operation)
Press	Clear CMOS Setup

Table 4-5: Clear CMOS Pinouts

DRPC-W-ASL

4.2.6 RS-232/422/485 Serial Ports

CN Label:	COM1, COM2
CN Type:	9-pin wafer, p=1.25 mm
CN Location:	See Figure 4-7
CN Pinouts:	See Table 4-6

The serial ports provide RS-232/422/485 connections.

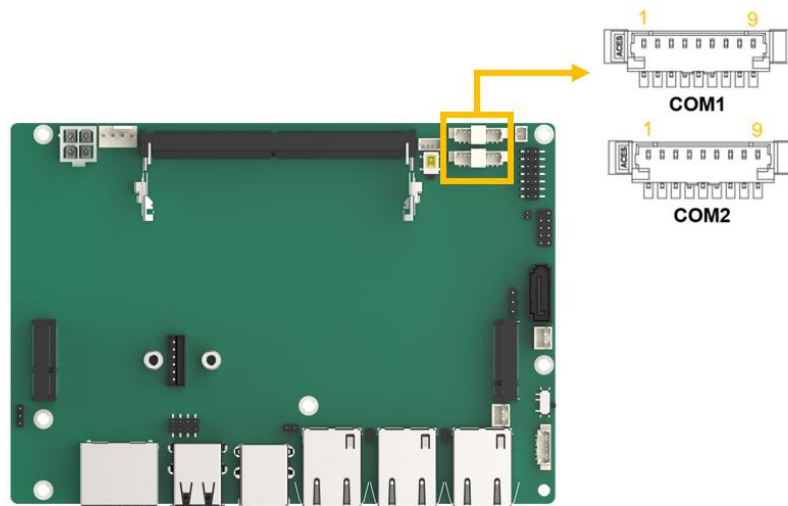


Figure 4-7: RS-232/422/485 Serial Ports Location

Pin	RS-232	RS-422	RS-485
1	DCD	TXD422-	TXD485-
2	RXD	TXD422+	TXD485+
3	TXD	RXD422+	--
4	DTR	RXD422-	--
5	GND	--	--
6	DSR	--	--
7	RTS	--	--
8	CTS	--	--
9	RI	--	--

Table 4-6: RS-232/422/485 Serial Ports Pinouts

4.2.7 RTC Battery Connector

CAUTION:

Explosion risks may occur if the battery is replaced with an incorrect type. Only certified engineers should replace the on-board battery.

Dispose of used batteries according to instructions and local regulations.

- CN Label:

BAT1
- CN Type:

2-pin wafer, p=1.25 mm
- CN Location:

See Figure 4-8
- CN Pinouts:

See Table 4-7

The battery connector is connected to the system battery. The battery provides power to the system clock to retain the time when power is turned off.

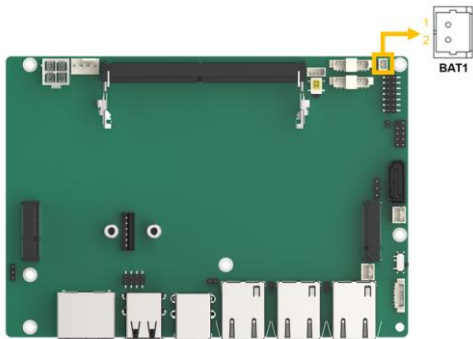


Figure 4-8: RTC Battery Connector Location

Pin	Description
1	VBATT
2	GND

Table 4-7: RTC Battery Connector Pinouts

DRPC-W-ASL**4.2.8 Digital Input /Output Connector**

CN Label:	DIO1
CN Type:	14-pin header, p=2.0 mm
CN Location:	See Figure 4-9
CN Pinouts:	See Table 4-8

The 12-bit digital I/O connector provides programmable input and output for external devices.

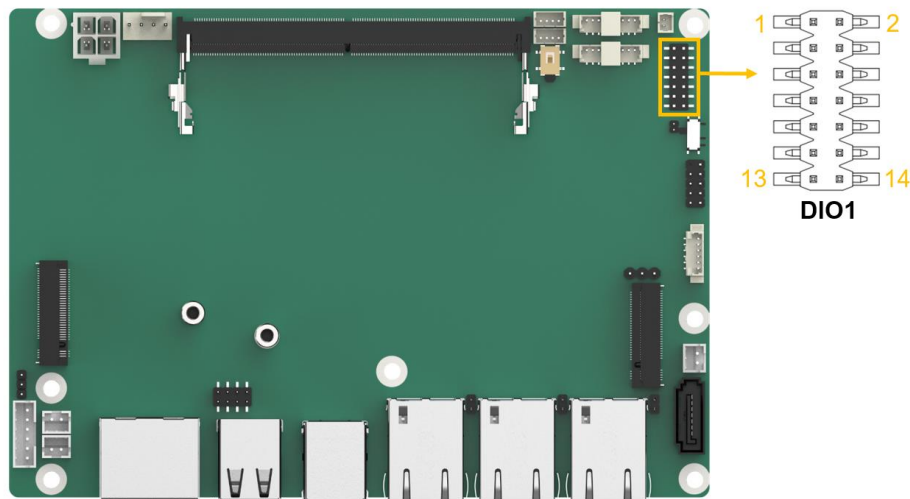


Figure 4-9: Digital I/O Connector Location

Pin	Description	Pin	Description
1	GND	2	VCC
3	Output 5	4	Output 4
5	Output 3	6	Output 2
7	Output 1	8	Output 0
9	Input 5	10	Input 4
11	Input 3	12	Input 2
13	Input 1	14	Input 0

Table 4-8: Digital I/O Connector Pinouts

4.2.9 Flash Descriptor Security Override Jumper

- CN Label:

ME_FLASH1
- CN Type:

2-pin header, p=1.27 mm
- CN Location:

See Figure 4-10
- CN Pinouts:

See Table 4-9

The ME_FLASH1 connector is used for flash descriptor security override.

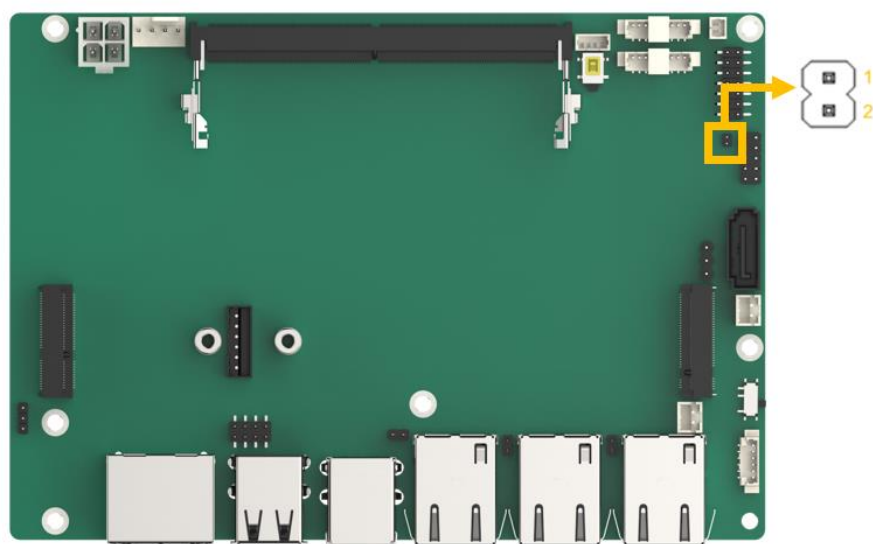


Figure 4-10: Flash Descriptor Security Override Jumper Location

Pin	Description
1	+VCCPGPPIR_3P3_1P8
2	HDA_SDO

Table 4-9: Flash Descriptor Security Override Jumper Pinouts

To update the ME firmware, please follow the steps below.

- Step 1:

Before turning on the system power, short the flash descriptor security override jumper.

DRPC-W-ASL

- Step 2:** Update the BIOS and ME firmware, and then turn off the system power.
- Step 3:** Remove the metal clip on the flash descriptor security override jumper to its default setting.
- Step 4:** Restart the system. The system will reboot 2 ~ 3 times to complete the ME firmware update.

4.2.10 AT/ATX Power Mode Switch

- CN Label:** J_ATX_AT1
- CN Type:** Slide switch
- CN Location:** See **Figure 4-11**
- CN Pinouts:** See **Table 4-10**

The AT/ATX power mode selection is made through the AT/ATX power mode switch.

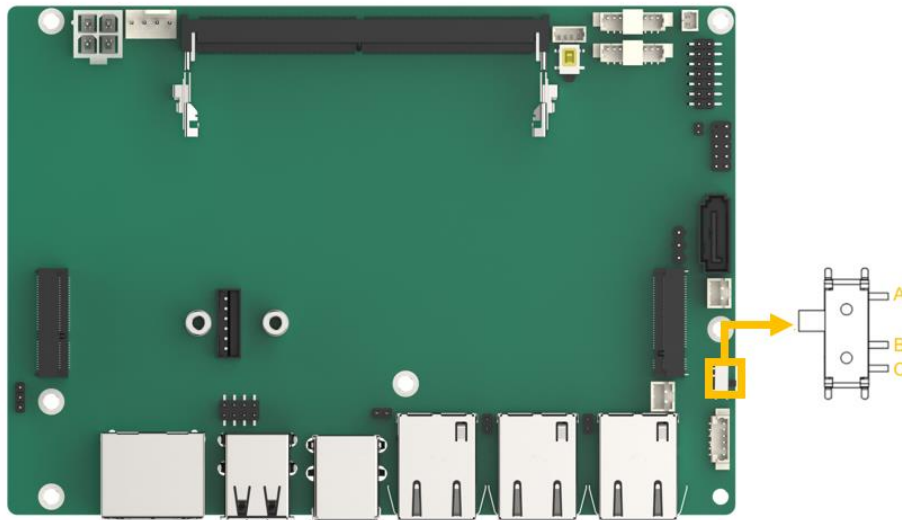


Figure 4-11: AT/ATX Power Mode Switch Locations

Pin	Description
Short A - B	ATX power mode (default)
Short B - C	AT power mode

Table 4-10: AT/ATX Power Mode Switch Pinouts

4.2.11 Audio Connector

- CN Label:

J_AUDIO1
- CN Type:

10-pin header, p=2.00 mm
- CN Location:

See Figure 4-12
- CN Pinouts:

See Table 4-11

The audio connector is connected to an external audio device which includes speakers and microphones for the input and output of audio signals to and from the system.

*Audio features require customization; please contact our sales team.

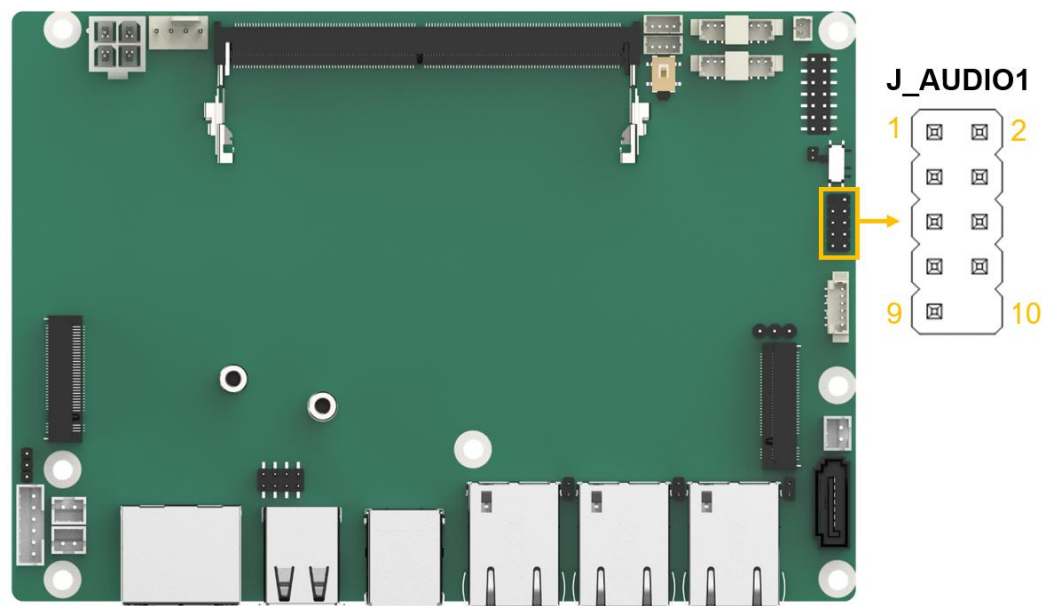


Figure 4-12: Audio Connector Location

Pin	Description	Pin	Description
1	HDA_SYNC_R	2	HDA_BCLK_R
3	HDA_SDO_R	4	HDA_PCBEEPC
5	HDA_SDI_0_R	6	HDA_RST_R
7	+5V	8	GND
9	+12V	10	GND

Table 4-11: Audio Connector Pinouts

DRPC-W-ASL

4.2.12 Flash SPI ROM Connector

CN Label:	JBIOS1
CN Type:	6-pin wafer, p=1.25 mm
CN Location:	See Figure 4-13
CN Pinouts:	See Table 4-12

The 6-pin flash SPI ROM connector is used to flash the BIOS.

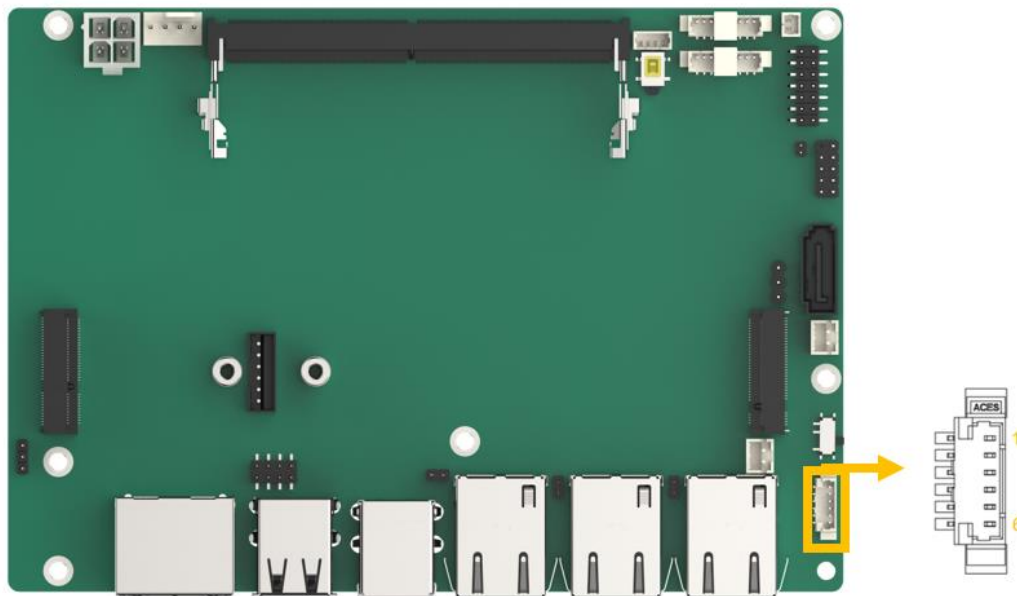


Figure 4-13: Flash SPI ROM Connector Location

Pin	Description
1	+3.3V
2	SPI_CS#
3	SPI SO
4	SPI CLK
5	SPI SI
6	GND

Table 4-12: Flash SPI ROM Connector Pinouts

4.2.13 M.2 M-Key Slot

- CN Label:

M2_SSD1
- CN Type:

M.2 M-key slot
- CN Location:

See Figure 4-14
- CN Pinouts:

See Table 4-13

The M.2 2280 M-key slot with PCIe Gen3 x2 signals can accept a NVMe storage device.

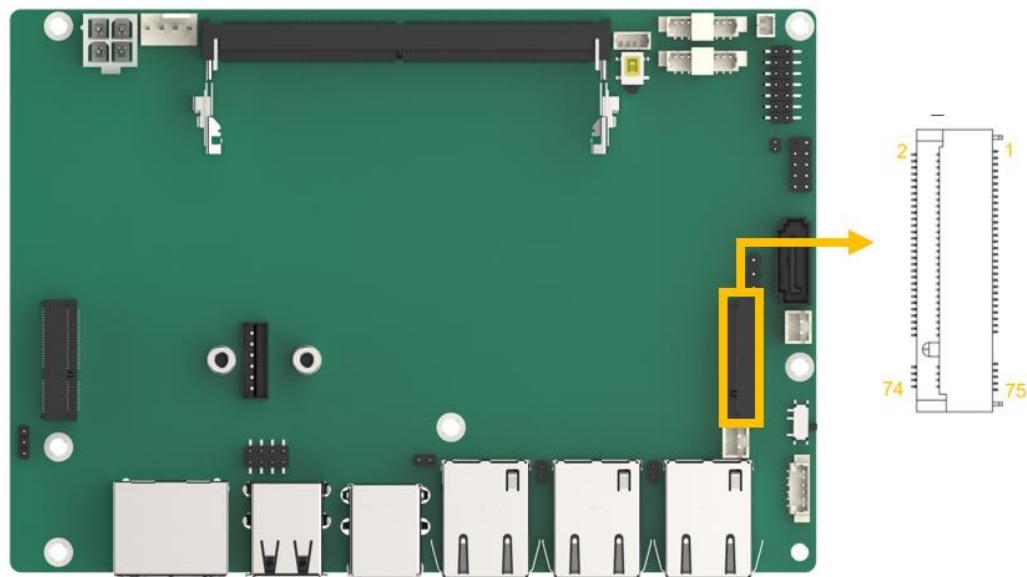


Figure 4-14: M.2 M-Key Slot Location

Pin	Description	Pin	Description
1	GND	2	+3.3V
3	GND	4	+3.3V
5	NC	6	N/C
7	NC	8	N/C
9	GND	10	NGFF1_ACT_N
11	NC	12	+3.3V
13	NC	14	+3.3V
15	GND	16	+3.3V
17	NC	18	+3.3V
19	NC	20	N/C

DRPC-W-ASL

Pin	Description	Pin	Description
21	GND	22	N/C
23	NC	24	N/C
25	NC	26	N/C
27	GND	28	N/C
29	PCIE_P4_RX_DN	30	N/C
31	PCIE_P4_RX_DP	32	N/C
33	GND	34	N/C
35	PCIE_P4_TX_DN	36	N/C
37	PCIE_P4_TX_DP	38	M2_SATA_SSD_SLP
39	GND	40	N/C
41	PCIE_P3_RX_DN	42	N/C
43	PCIE_P3_RX_DP	44	N/C
45	GND	46	N/C
47	PCIE_P3_TX_DN	48	N/C
49	PCIE_P3_TX_DP	50	BUF_PLT_RST_N
51	GND	52	NC
53	PCIE_CLKN2	54	NC
55	PCIE_CLKP2	56	N/C
57	GND	58	N/C
59	N/C	60	N/C
61	N/C	62	N/C
63	N/C	64	N/C
65	N/C	66	N/C
67	N/C	68	NC
69	N/C	70	+3.3V
71	GND	72	+3.3V
73	GND	74	+3.3V
75	GND		

Table 4-13: M.2 M-Key Slot Pinouts

4.2.14 SATA Power Connector

- CN Label:

SATA_PWR1
- CN Type:

2-pin wafer, p=2.00 mm
- CN Location:

See Figure 4-15
- CN Pinouts:

See Table 4-14

The SATA power connector provides +5 V power output to the SATA connector.

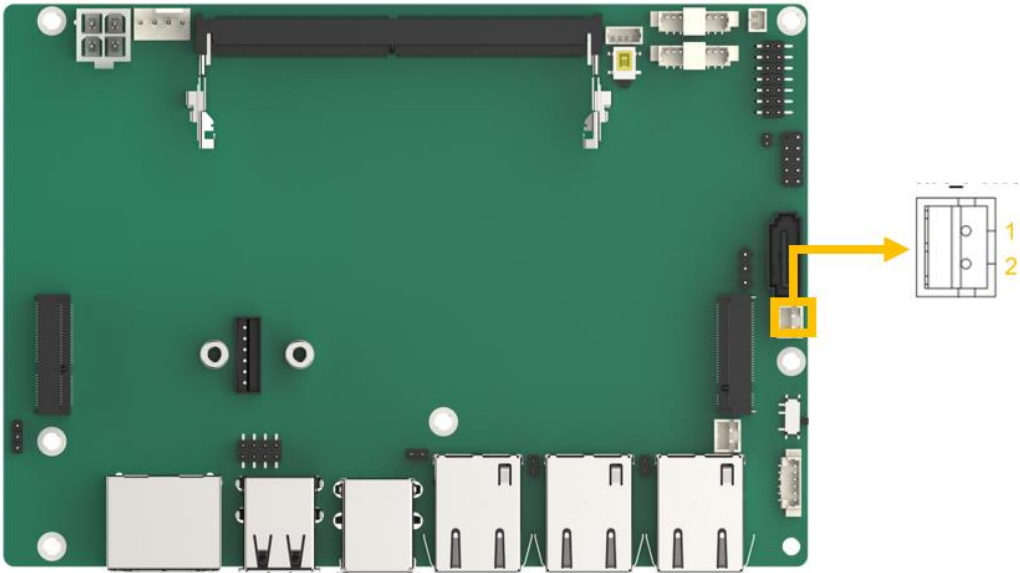


Figure 4-15: SATA Power Connector Location

Pin	Description
1	VCC5V
2	GND

Table 4-14: SATA Power Connector Pinouts

DRPC-W-ASL**4.2.15 SATA 6Gb/s Connector**

- CN Label:** S_ATA1
- CN Type:** 7-pin SATA connector, p=1.27 mm
- CN Location:** See **Figure 4-16**
- CN Pinouts:** See **Table 4-15**

The SATA 6Gb/s drive connector is connected to a SATA 6Gb/s drive. The SATA drive transfers data at speeds as high as 6Gb/s.

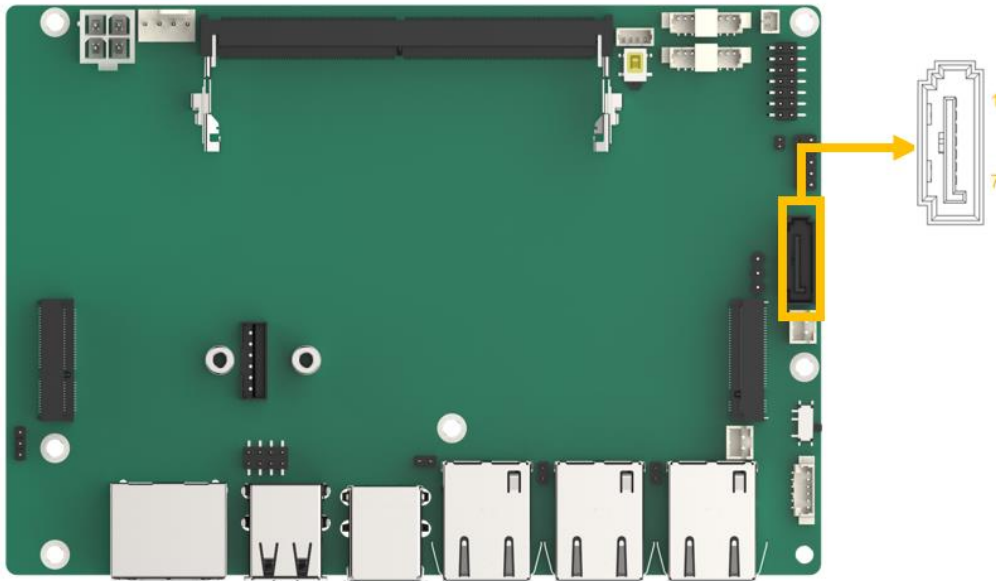


Figure 4-16: SATA 6Gb/s Connector Location

Pin	Description	Pin	Description
1	GND	5	SATA_RX-
2	SATA_TX+	6	SATA RX+
3	SATA_TX-	7	GND
4	GND		

Table 4-15: SATA 6Gb/s Connector Pinouts

4.2.16 LAN LED Connectors

- CN Label:

JLAN_LED1, JLAN_LED2, JLAN_LED3
- CN Type:

2-pin header, p=2.00 mm
- CN Location:

See [Figure 4-17](#)
- CN Pinouts:

See [Table 4-16](#)

The LAN LED connectors are used to connect to the LAN LED indicators on the chassis to indicate the link activities of the three LAN ports.

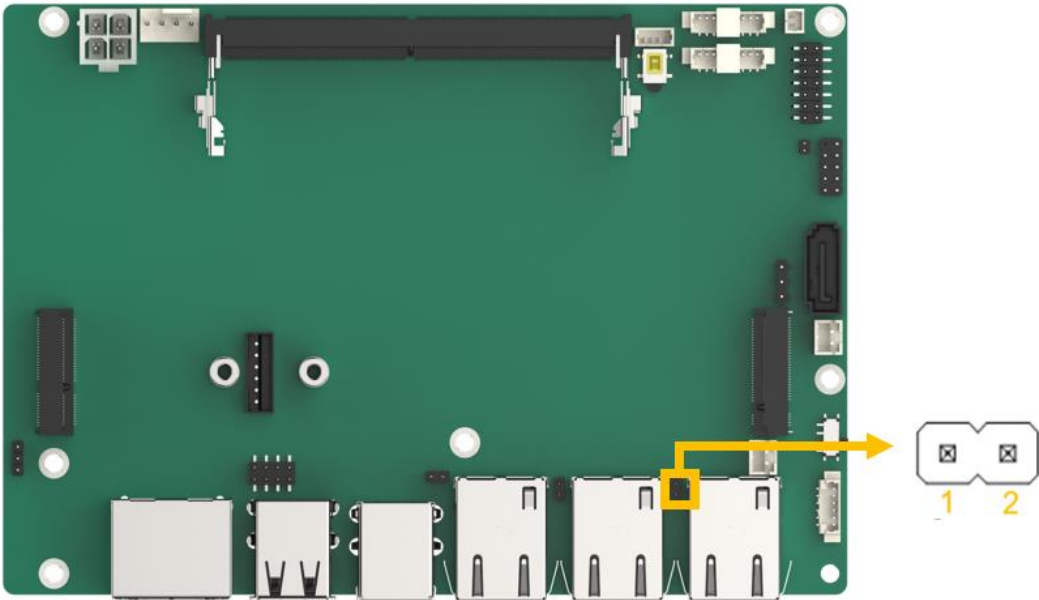


Figure 4-17: LAN LED Connector Locations

Pin	Description
1	+3.3V
2	I225_LINK_ACT_N

Table 4-16: LAN LED Connector Pinouts

DRPC-W-ASL

4.2.17 Internal USB 2.0 Connector

CN Label:	USB_CN2
CN Type:	8-pin header, p=2.00 mm
CN Location:	See Figure 4-18
CN Pinouts:	See Table 4-17

The internal USB 2.0 connector provides two USB 2.0 ports via a dual-port USB cable.

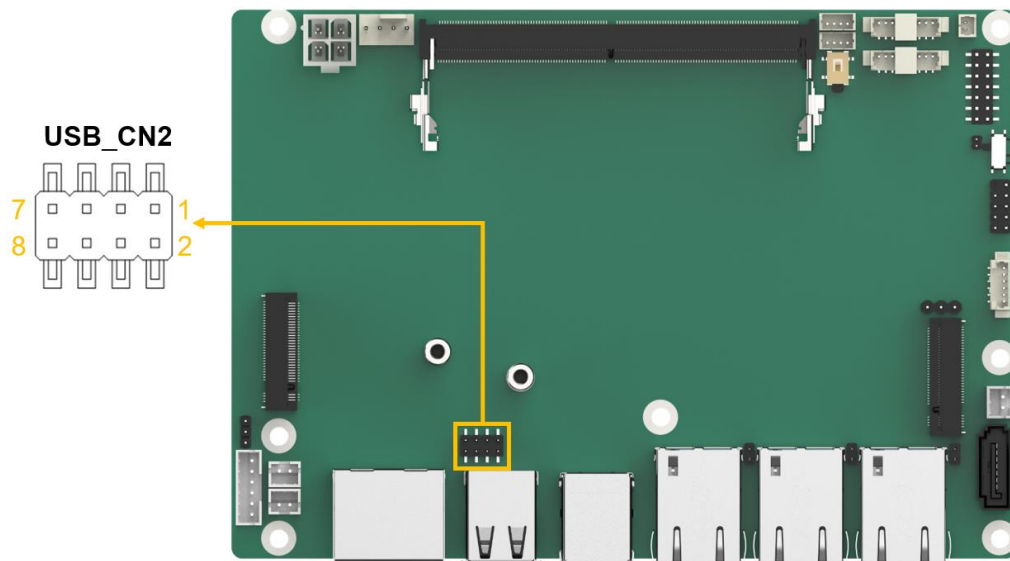


Figure 4-18: Internal USB 2.0 Connector Locations

Pin	Description	Pin	Description
1	+5V	2	USB_D6N
3	USB_D6P	4	GND
5	+5V	6	USB_D5N
7	USB_D5P	8	GND

Table 4-17: Internal USB 2.0 Connectors Pinouts

4.2.18 Power Button Connector

- CN Label: PWR_BTN1
- CN Type: 2-pin wafer, p=2.00 mm
- CN Location: See Figure 4-19
- CN Pinouts: See Table 4-18

The power button connector is connected to a power switch on the system chassis to enable users to turn the system on and off.

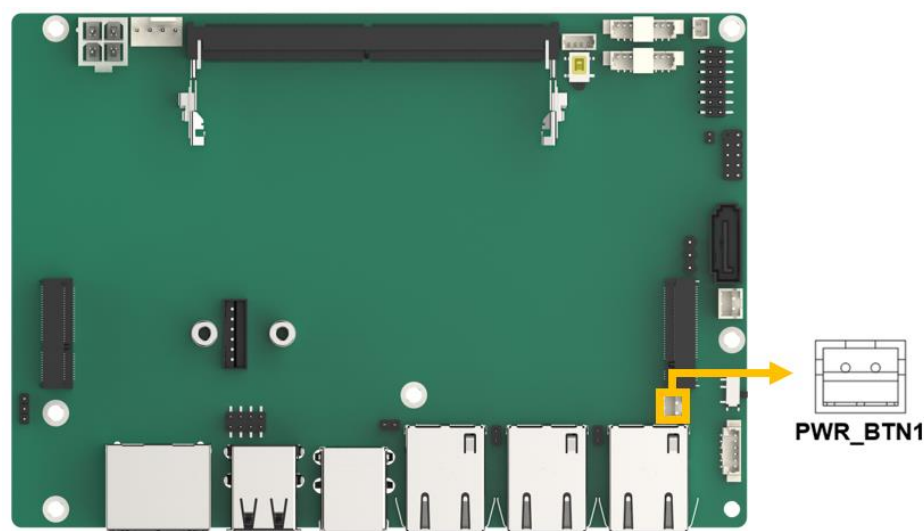


Figure 4-19: Power Button Connector Location

Pin	Description
1	PWR_BTN_N
2	GND

Table 4-18: Power Button Connector Pinouts

DRPC-W-ASL

4.2.19 Front Panel Connector

CN Label:	F_PANEL1
CN Type:	6-pin wafer, p=2.00 mm
CN Location:	See Figure 4-20
CN Pinouts:	See Table 4-19

The front panel connector connects to the power LED indicator and HDD LED indicator on the system's front panel.

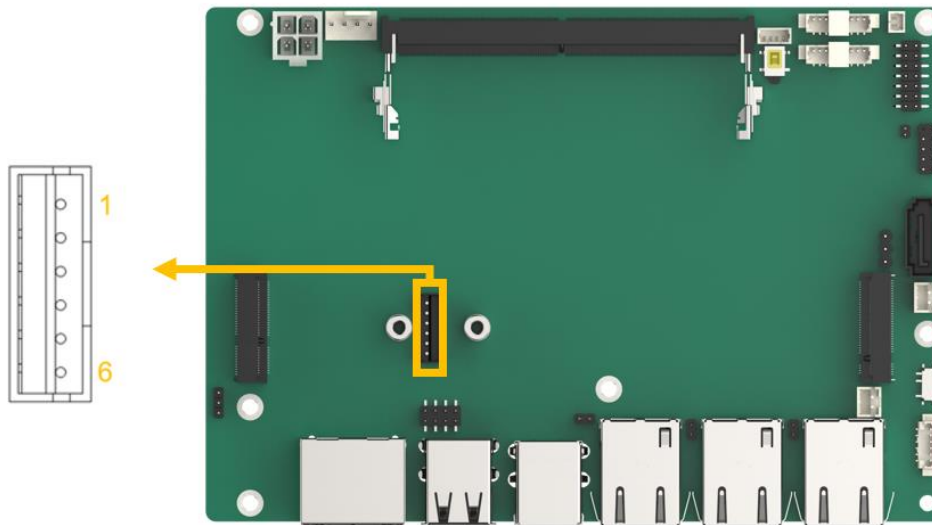


Figure 4-20: Front Panel Connector Location

Pin	Description	Pin	Description
1	VCC	2	GND
3	PWR_LED+	4	PWR_LED-
5	HDD_LED+	6	HDD_LED-

Table 4-19: Front Panel Connector Pinouts

4.2.20 M.2 E-Key Slot

- CN Label:

M2_E1
- CN Type:

M.2 E-key slot
- CN Location:

See Figure 4-21
- CN Pinouts:

See 错误!未找到引用源。

The M.2 2230 E-key slot supporting PCIe Gen3 x1 and USB 2.0 signals can accept a Wi-Fi and Bluetooth module.

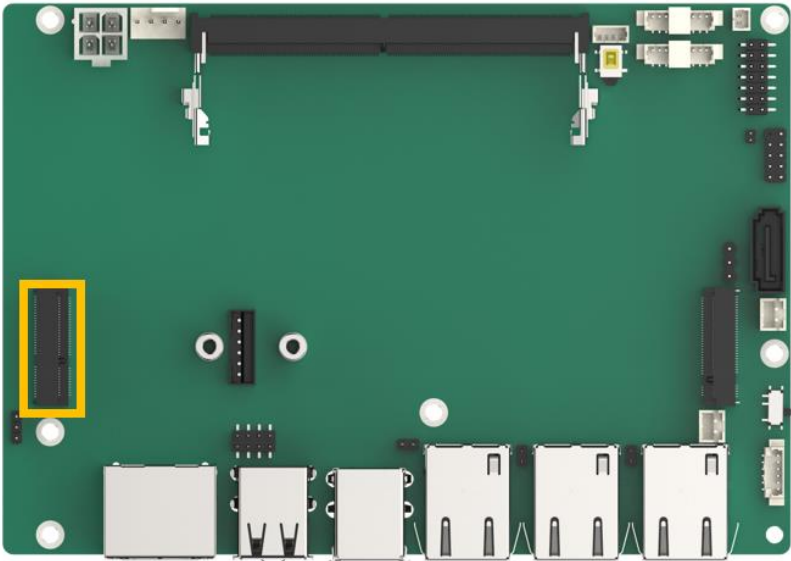


Figure 4-21: M.2 2230 E-Key Slot Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	+3.3V
3	USB2_P7_DP	4	+3.3V
5	USB2_P7_DN	6	N/C
7	NC	8	N/C
9	GND	10	N/C
11	NC	12	N/C
13	NC	14	N/C
15	GND	16	N/C
17	NC	18	GND
19	NC	20	N/C

DRPC-W-ASL

21	GND	22	N/C
23	NC	24	N/C
25	NC	26	N/C
27	GND	28	N/C
29	N/C	30	GND
31	N/C	32	N/C
33	GND	34	N/C
35	PCIE_P7_TX_DP	36	GND
37	PCIE_P7_TX_DN	38	GND
39	GND	40	N/C
41	PCIE_P7_RX_DP	42	N/C
43	PCIE_P7_RX_DN	44	N/C
45	GND	46	N/C
47	PCIE_CLKP0	48	N/C
49	PCIE_CLKN0	50	N/C
51	GND	52	BUF_PLT_RST_N
53	N/C	54	BT_RF_KILL_N
55	PCIE_WAKE_N	56	WIFI_RF_KILL_N
57	GND	58	N/C
59	N/C	60	N/C
61	N/C	62	N/C
63	N/C	64	N/C
65	N/C	66	N/C
67	N/C	68	NC
69	N/C	70	+3.3V
71	GND	72	+3.3V
73	GND	74	+3.3V
75	GND		
N1	NC		
N2	NC		

Chapter

5

BIOS

5.1 Introduction

The BIOS is programmed onto the BIOS chip. The BIOS setup program allows changes to certain system settings. This chapter outlines the options that can be changed.



NOTE:

Some of the BIOS options may vary throughout the life cycle of the product and are subject to change without prior notice.

5.1.1 Starting Setup

The UEFI BIOS is activated when the computer is turned on. The setup program can be activated in one of two ways.

1. **Using keyboard:** Press the **DEL** or **F2** as soon as the system is turned on.
2. **Using touchscreen:** Press the **Setup** button on the upper right corner of the BIOS Starting Menu.

If the message disappears before the **DEL** or **F2** key is pressed, restart the computer and try again, then the BIOS Starting Menu will appear. Select "Setup" and press Enter to get into the BIOS Setup.

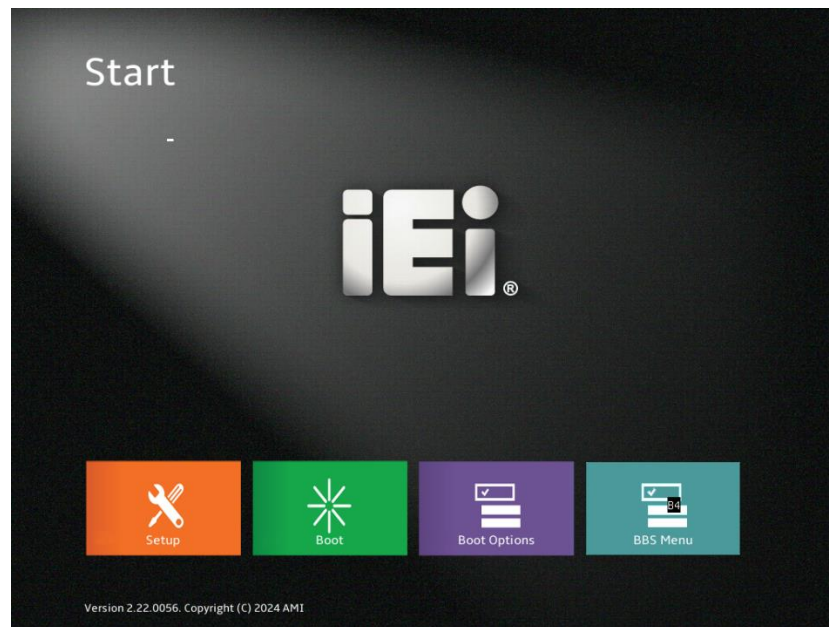


Figure 5-1: BIOS Starting Menu



5.1.2 Using Setup

The BIOS Setup menu can be navigated by using a keyboard or a touchscreen.

5.1.2.1 Keyboard Navigation

For keyboard navigation, use the navigation keys shown in **Table 5-1**.

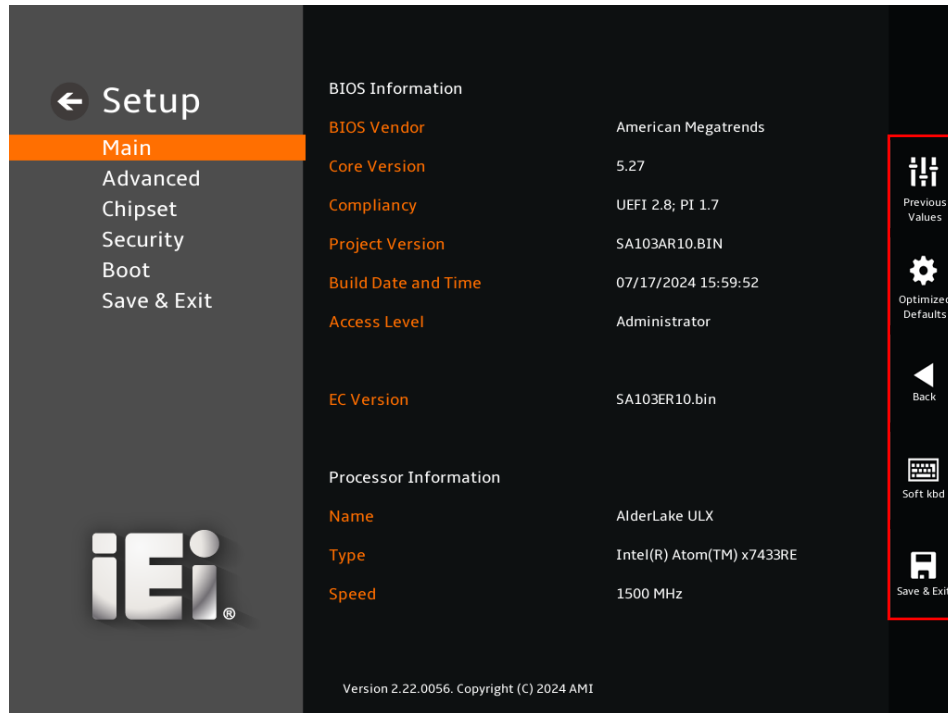
Key	Function
Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item on the left hand side
Right arrow	Move to the item on the right hand side
+	Increase the numeric value or make changes
-	Decrease the numeric value or make changes
Page Up	Move to the previous page
Page Dn	Move to the next page
Esc	Main Menu – Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
F1	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2	Load previous values
F3	Load optimized defaults
F4	Save changes and Exit BIOS
<K>	Scroll help area upwards
<M>	Scroll help area downwards

Table 5-1: BIOS Navigation Keys



5.1.2.2 Touch Navigation

For touchscreen navigation, use the on-screen navigation keys shown below.



On-screen Button	Function
Previous Values	Load the last value you set.
Optimized Defaults	Load the factory default values in order to achieve the best performance.
Back	Return to the previous menu.
Soft kbd	Display the on-screen keyboard.
Save & Exit	Save the changes made to the BIOS options and reset the system.

Table 5-2: BIOS On-screen Navigation Keys

5.1.3 Getting Help

When **F1** is pressed a small help window describing the appropriate keys to use and the possible selections for the highlighted item appears. To exit the Help Window, press the **Esc** key.

5.1.4 Unable to Reboot after Configuration Changes

If the computer cannot boot after changes to the system configuration is made, CMOS defaults. Use the clear CMOS button described in **Chapter 4**.

5.1.5 BIOS Menu Bar

The **menu bar** on top of the BIOS screen has the following main items:

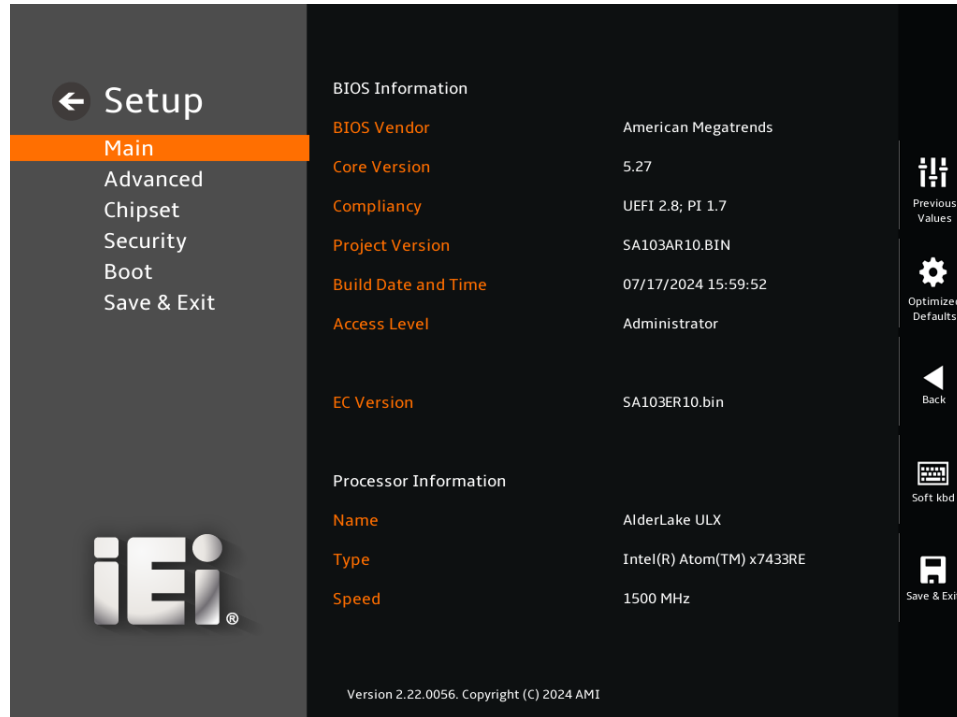
- Main – Changes the basic system configuration.
- Advanced – Changes the advanced system settings.
- Chipset – Changes the chipset settings.
- Security – Set User and Supervisor Passwords.
- Boot – Changes the system boot configuration.
- Save & Exit – Selects exit options and loads default settings

The following sections completely describe the configuration options found in the menu items at the top of the BIOS screen and listed above.

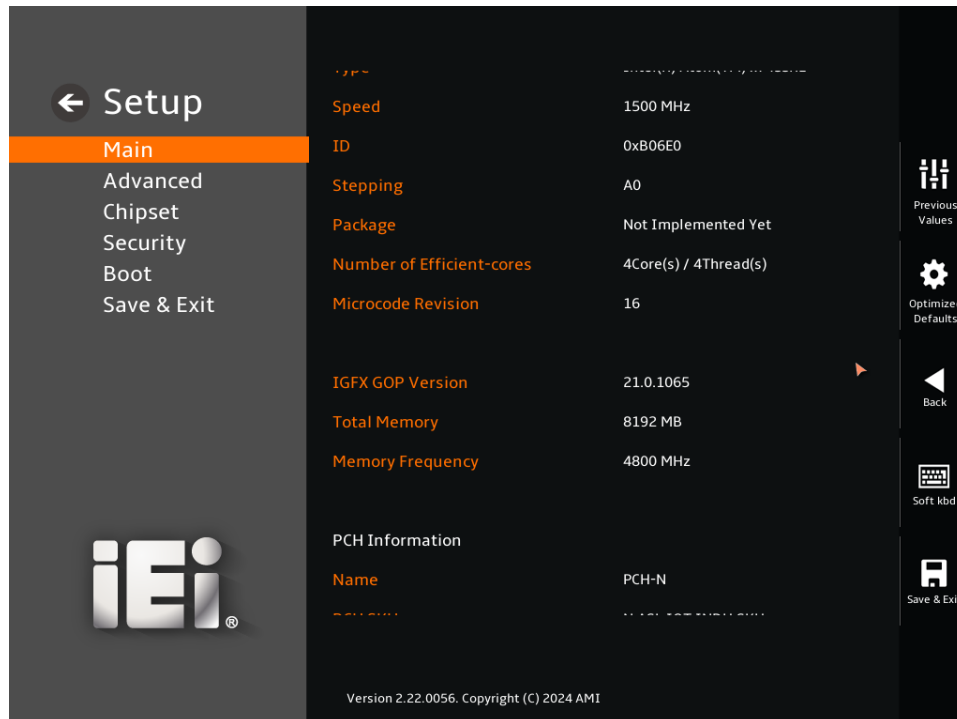
5.2 Main

The Main BIOS menu (**BIOS Menu 1**, **BIOS Menu 2** and **BIOS Menu 3**) appears when the BIOS Setup program is entered. The Main menu gives an overview of the basic system information.

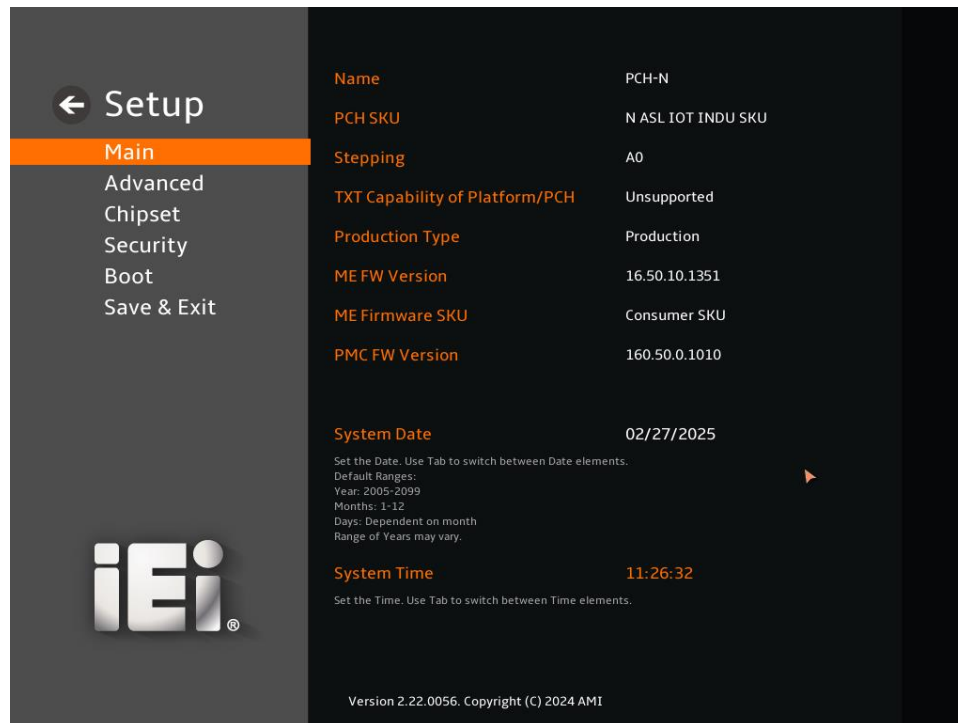
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BIOS Menu 1:Main (1/3)



BIOS Menu 2: Main (2/3)



BIOS Menu 3: Main (3/3)

→ BIOS Information

The **BIOS Information** lists a brief summary of the BIOS. The fields in **BIOS Information** cannot be changed. The items shown in the system overview include:

- **BIOS Vendor:** Installed BIOS vendor
- **Core Version:** Current BIOS version
- **Compliance:** Current UEFI & PI version
- **Project Version:** The board version
- **Build Date and Time:** Date the current BIOS version was made
- **Access Level:** Current access administrator
- **EC Version:** Current EC version

→ Processor Information

The **Processor Information** lists a brief summary of the processor. The fields in **Processor Information** cannot be changed. The items shown in the system overview include:

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- **Name:** Displays the processor name
- **Type:** Displays the processor type
- **Speed:** Displays the processor speed
- **ID:** Displays the processor ID
- **Stepping:** Displays the processor stepping
- **Number of Efficient-cores:** The number of E-cores in the processor
- **Microcode Revision:** CPU microcode revision
- **IGFX GOP Version:** The firmware version of integrated graphics
- **Total Memory:** Total memory in the system
- **Memory Frequency:** Displays frequency of memory

➔ PCH Information

The **PCH Information** lists a brief summary of the PCH. The fields in **PCH Information** cannot be changed. The items shown in the system overview include:

- **Name:** Displays the PCH name
- **PCH SKU:** Displays the PCH SKU
- **Stepping:** Displays the PCH stepping
- **ME FW Version:** Displays the ME firmware version
- **ME Firmware SKU:** Displays the ME firmware SKU
- **System Date:** Displays the system date

The System Overview field also has two user configurable fields:

➔ System Date [xx/xx/xx]

Use the **System Date** option to set the system date. Manually enter the day, month and year.

➔ System Time [xx: xx: xx]

Use the **System Time** option to set the system time. Manually enter the hours, minutes and seconds.

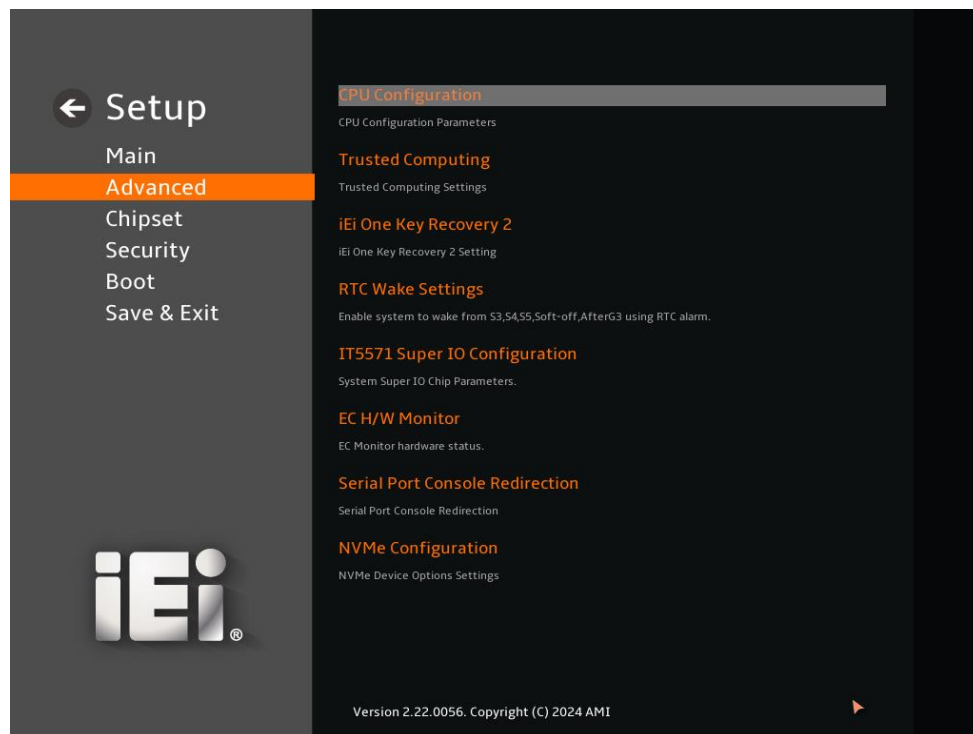
5.3 Advanced

Use the **Advanced** menu (**BIOS Menu 4**) to configure the CPU and peripheral devices through the following sub-menus:



WARNING!

Setting the wrong values in the sections below may cause the system to malfunction. Make sure that the settings are compatible with the hardware.

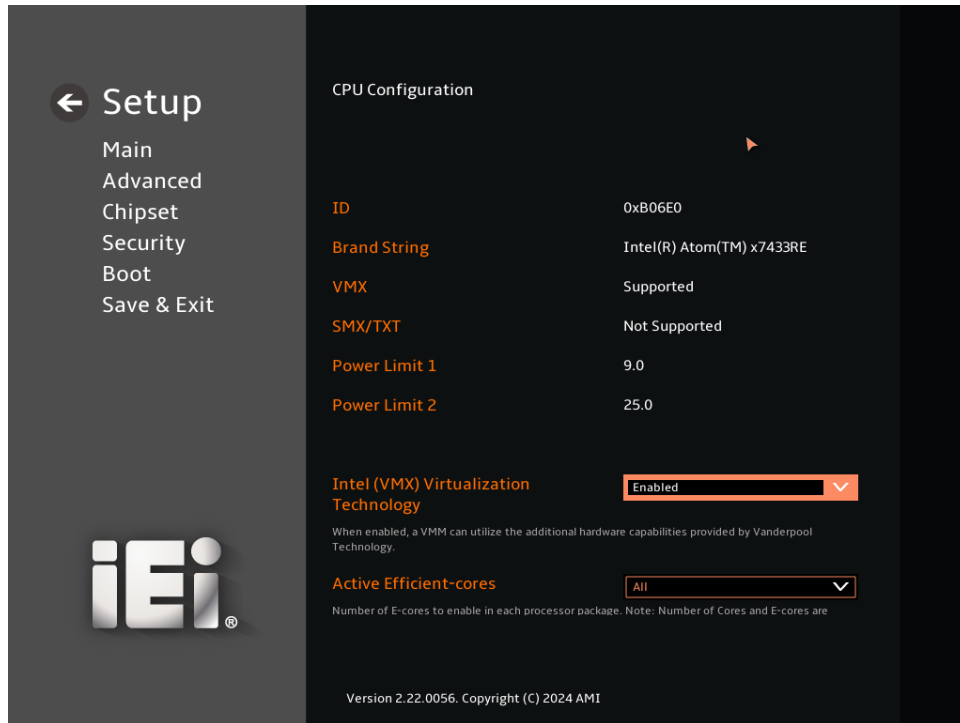


BIOS Menu 4:Advanced

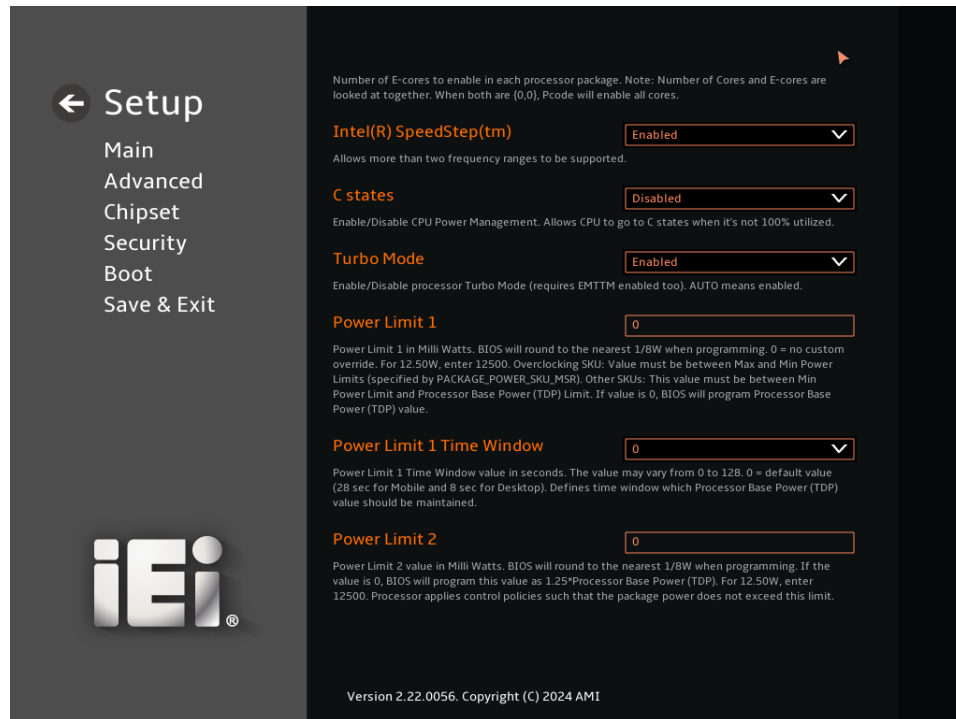
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5.3.1 CPU Configuration

Use the **CPU Configuration** menu (**BIOS Menu 5 & BIOS Menu 6**) to view detailed CPU specifications or enable the Intel Virtualization Technology.



BIOS Menu 5: CPU Configuration (1/2)



BIOS Menu 6: CPU Configuration (2/2)

➔ **Intel (VMX) Virtualization Technology [Enabled]**

Use the **Intel (VMX) Virtualization Technology** option to enable or disable virtualization on the system. When combined with third party software, Intel® Virtualization technology allows several OSs to run on the same system at the same time.

- | | | | |
|---|-----------------|----------------|--|
| ➔ | Disabled | | Disable Intel Virtualization Technology. |
| ➔ | Enabled | DEFAULT | Enable Intel Virtualization Technology. |

➔ **Active Efficient Cores [All]**

Use the **Active Efficient Cores** BIOS option to enable the number of E-cores in the processor package.

- | | | | |
|---|------------|----------------|--|
| ➔ | All | DEFAULT | Enable all E-cores in the processor package. |
| ➔ | 0 | | Enable zero E-core in the processor package. |
| ➔ | 1 | | Enable one E-cores in the processor package. |
| ➔ | 2 | | Enable two E-cores in the processor package. |

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→ 3

Enable three E-cores in the processor package.

→ **Intel(R) SpeedStep(tm) [Enabled]**

Use the **Intel(R) SpeedStep(tm)** option to enable or disable the Intel® SpeedStep Technology which allows more than two frequency ranges to be supported.

- | | | | |
|---|-----------------|----------------|-------------------------------------|
| → | Disabled | | Disable Intel® SpeedStep Technology |
| → | Enabled | DEFAULT | Enable Intel® SpeedStep Technology |

→ **C states [Disabled]**

Use the **C states** option to enable or disable CPU power management which allows CPU to go to C states when it is not 100% utilized.

- | | | | |
|---|-----------------|----------------|------------------------------|
| → | Disabled | DEFAULT | Disable CPU power management |
| → | Enabled | | Enable CPU power management |

→ **Turbo Mode [Enabled]**

Use the **Turbo Mode** option to enable or disable turbo mode which requires Intel Speed Step or Intel Speed Shift to be available and enabled.

- | | | | |
|---|-----------------|----------------|-------------------------------|
| → | Disabled | | Disable Turbo Mode Technology |
| → | Enabled | DEFAULT | Enable Turbo Mode Technology |

→ **Power Limit 1 [0]**

Use the **Power Limit 1** to set power limit in Milli Watts. BIOS will round to the nearest 1/8W when programming. 0 = no custom override. For 12.50W, enter 12500. For overclocking SKU, value must be between max and min power limits. For other SKUs, this value must be between min power limit and TDP limit. If value is 0, BIOS will program TDP value.

→ Power Limit 1 Time Window [0]

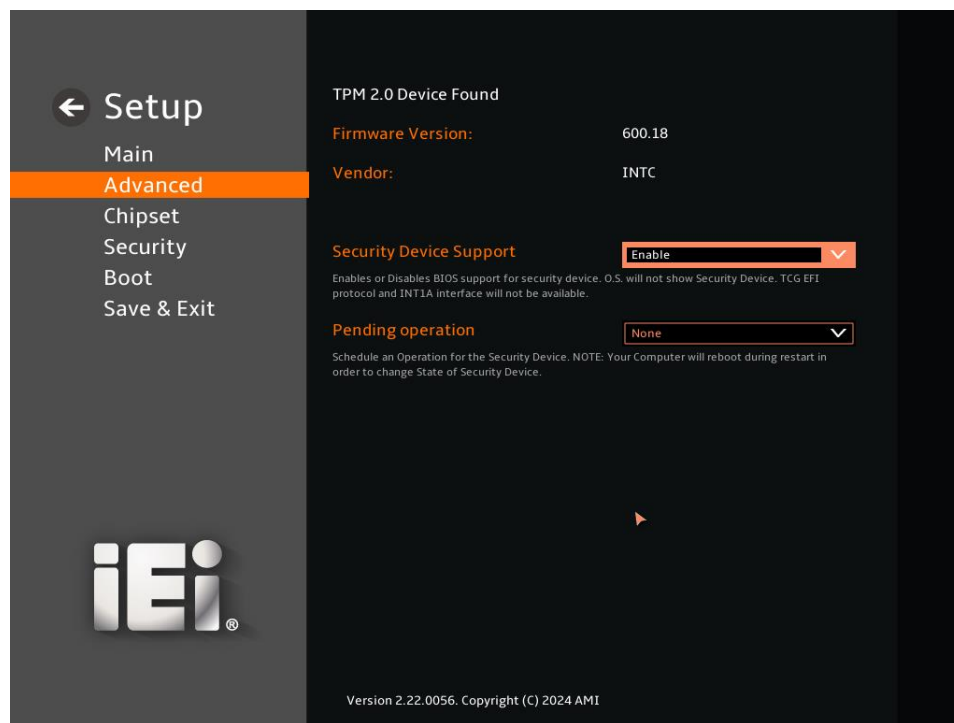
Use the **Power Limit 1 Time Window** option to select the PL1 time duration. The value may vary from 0 to 128. 0 is the default value.

→ Power Limit 2 [0]

Use the **Power Limit 2** to set power limit in Milli Watts. BIOS will round to the nearest 1/8W when programming. If the value is 0, BIOS will program this value as $1.25 \times \text{TDP}$. For 12.50W, enter 12500. Processor applies control policies such that the package power does not exceed this limit.

5.3.2 Trusted Computing

Use the **Trusted Computing** menu (**BIOS Menu 7**) to configure settings related to the Trusted Computing Group (TCG) and Trusted Platform Module (TPM).

**BIOS Menu 7: Trusted Computing****→ Security Device Support [Enable]**

Use the **Security Device Support** option to configure support for the TPM.

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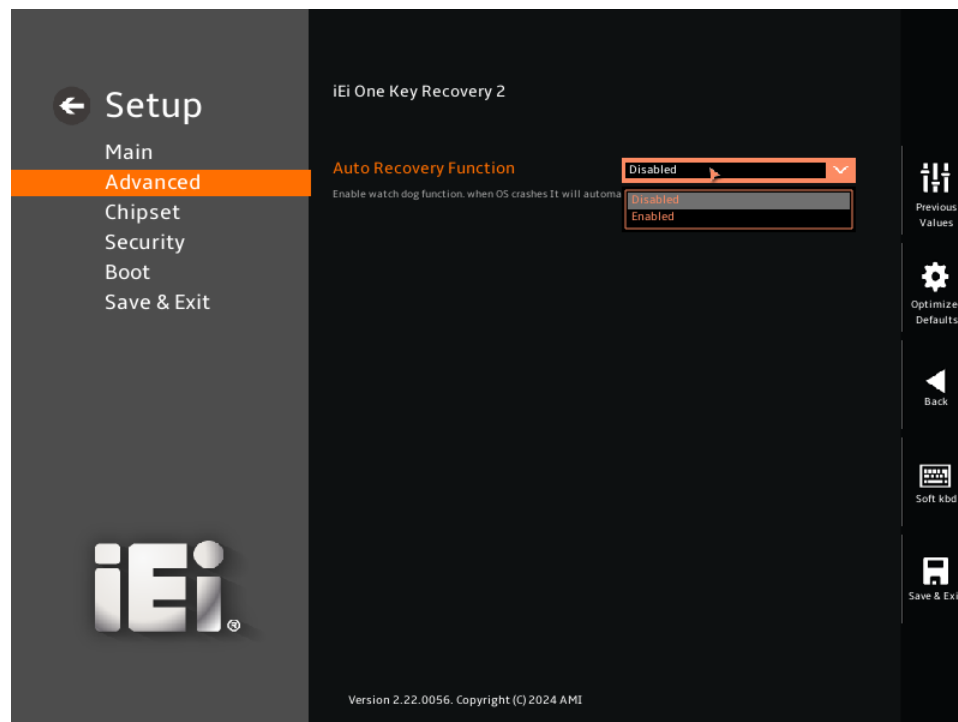
- ➔ **Disable** TPM support is disabled.
- ➔ **Enable** **DEFAULT** TPM support is enabled.

➔ **Pending Operation [None]**

Use the **Pending Operation** option to schedule an operation for the security device.

- ➔ **None** **DEFAULT** TPM retains its previous information.
- ➔ **TPM Clear** TPM information is cleared.

5.3.1 iEi One Key Recovery 2



BIOS Menu 8: iEi One Key Recovery2 Configuration

➔ **Auto Recovery Function [Disabled]**

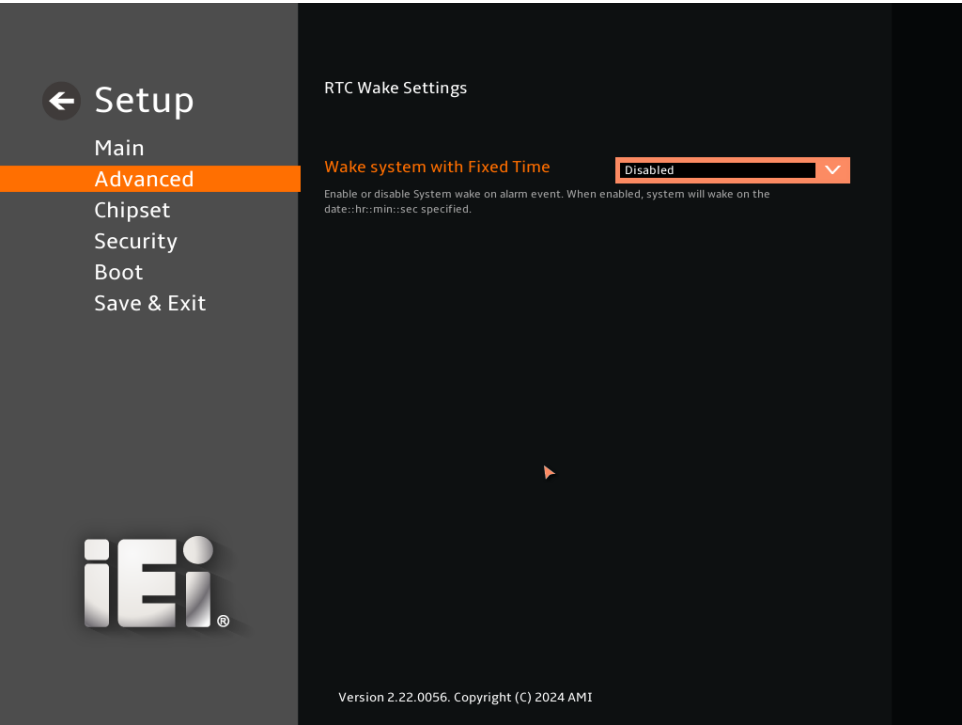
Use the **Auto Recovery Function** option to configure watch dog function.

- ➔ **Disabled** **DEFAULT** Auto recovery support is disabled.
- ➔ **Enabled** Auto recovery support is enabled.



5.3.2 RTC Wake Settings

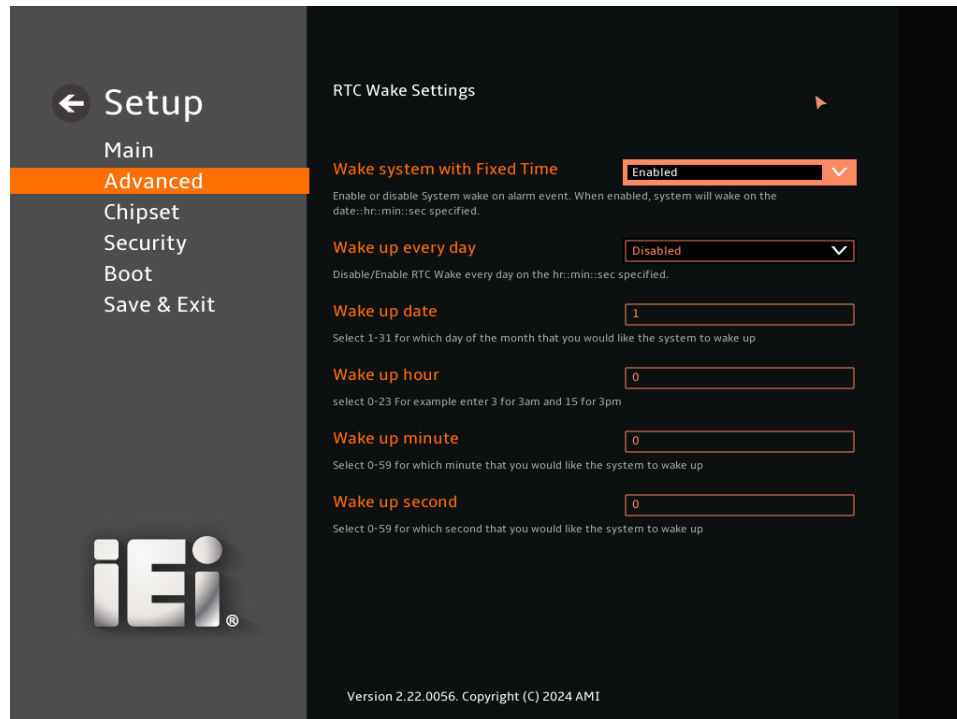
Use the RTC Wake Settings menu (**BIOS Menu 9 & BIOS Menu 10**) to enable or disable system wake on alarm event. When enabled, system will wake on the “date:hour:minute:second” specified.



BIOS Menu 9:RTC Wake Settings



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BIOS Menu 10: Wake system with Fixed Time [Enabled]

→ Wake system with Fixed Time [Disabled]

Use the **Wake system with the Fixed Time** option to enable or disable the system wake on alarm event.

- | | | | |
|---|-----------------|----------------|---|
| → | Disabled | DEFAULT | The RTC cannot generate a wake event. |
| → | Enabled | | If selected, the Wake up every day option appears, allowing users to enable the system to wake up every day at the specified time. Besides, the following options appear with values that can be selected: |

Wake up date

Wake up hour

Wake up minute

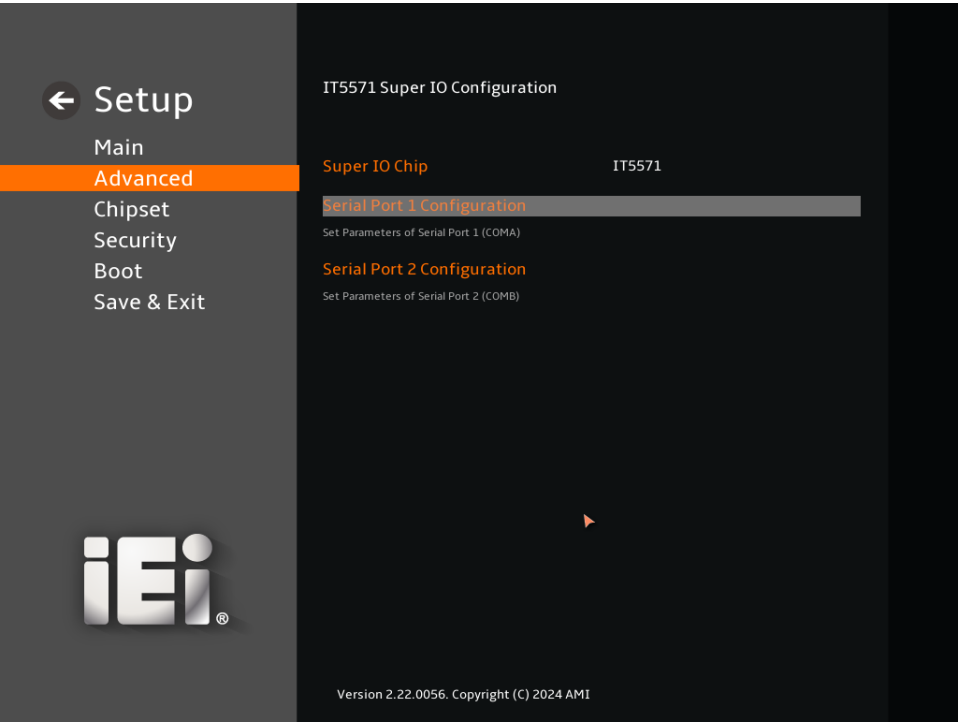
Wake up second

After setting the alarm, the computer turns itself on from a suspended state when the alarm goes off.



5.3.3 IT5571 Super IO Configuration

Use the **IT5571 Super IO Configuration** menu (**BIOS Menu 11**) to set or change the configurations for the serial ports.

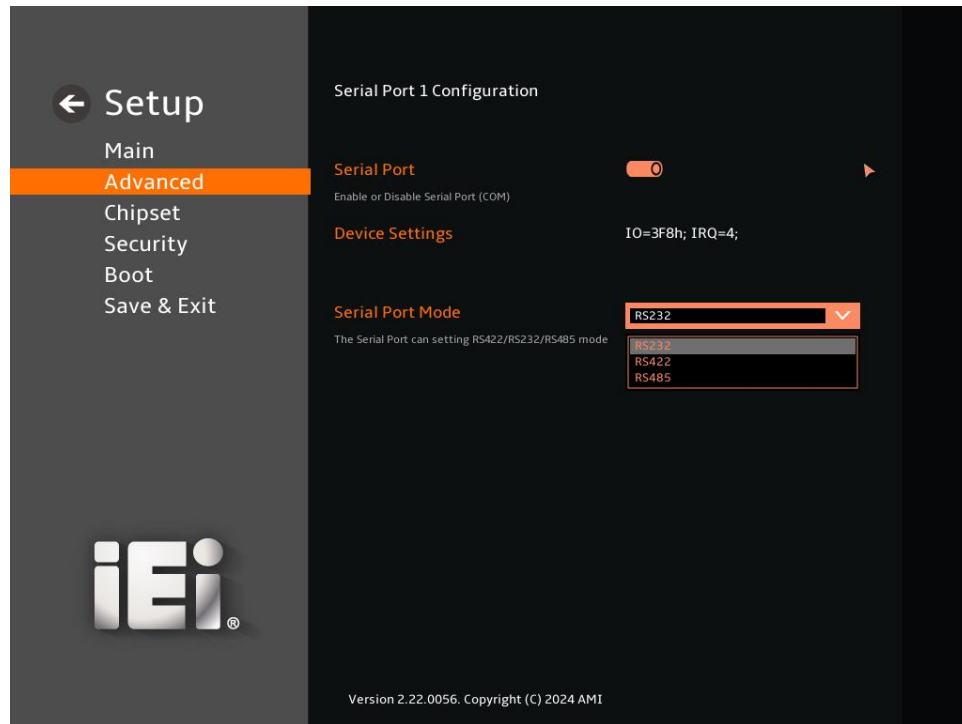


BIOS Menu 11: IT5571 Super IO Configuration



5.3.3.1 Serial Port 1 Configuration

Use the **Serial Port 1 Configuration** menu (**BIOS Menu 12**) to configure the serial port.



BIOS Menu 12: Serial Port 1 Configuration Menu

➔ Serial Port [Enabled]

Use the **Serial Port** option to enable or disable the serial port.

- ➔ **Disabled** Disable the serial port
- ➔ **Enabled** **DEFAULT** Enable the serial port

➔ Device Settings

The **Device Settings** option shows the serial port's address and interrupt address.

- ➔ **IO=3F8h;** The serial port address is 3F8h and the interrupt
IRQ=4 address is IRQ4

➔ Device Mode [RS232]

Use the **Device Mode** option to change the serial port mode.



- ➔ **RS232** **DEFAULT** The serial port mode is RS-232
- RS422 with Register** The serial port mode is RS-422
- RS485 with Register** The serial port mode is RS-485

5.3.3.2 Serial Port 2 Configuration

Use the **Serial Port 2 Configuration** menu (**BIOS Menu 13**) to configure the serial port.



BIOS Menu 13: Serial Port 2 Configuration Menu

➔ **Serial Port [Enabled]**

Use the **Serial Port** option to enable or disable the serial port.

- ➔ **Disabled** Disable the serial port
- ➔ **Enabled** **DEFAULT** Enable the serial port

➔ **Device Settings**

The **Device Settings** option shows the serial port IO port address and interrupt address.



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→ **IO=2F8h;**
IRQ=3

Serial Port I/O port address is 2F8h and the interrupt address is IRQ3

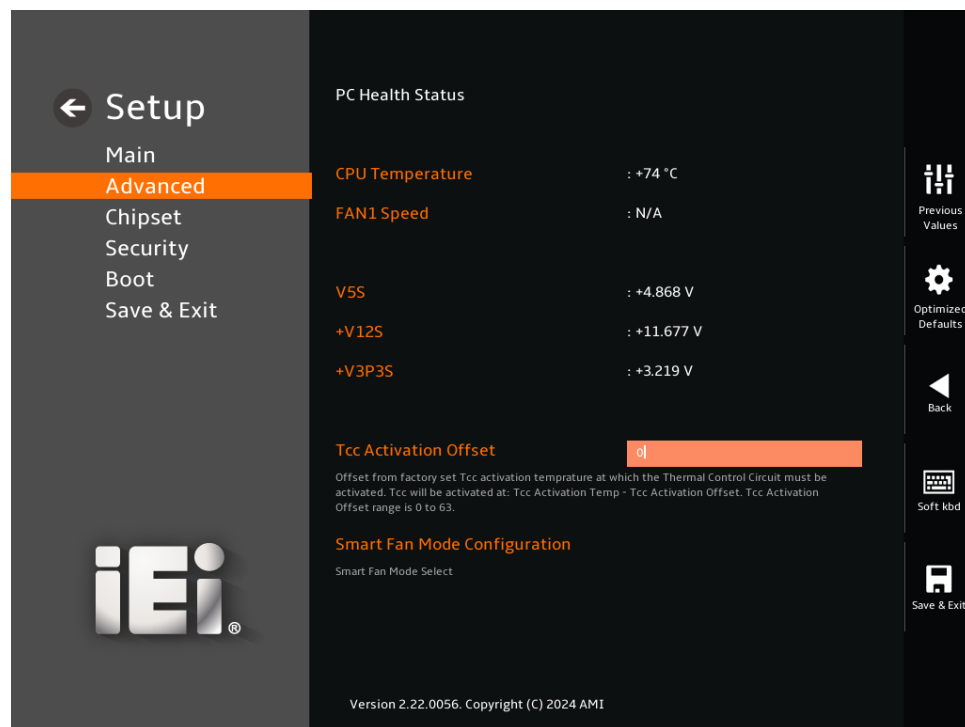
→ **Device Mode [RS232]**

Use the **Device Mode** option to change the serial port mode.

→ RS232	DEFAULT	The serial port mode is RS-232
RS422 with Register		The serial port mode is RS-422
RS485 with Register		The serial port mode is RS-485

5.3.4 EC IT5571 H/W Monitor

The **EC IT5571 H/W Monitor** menu (**BIOS Menu 14**) shows the state of H/W real-time operating temperature, fan speed and system voltages, and contains the system thermal control and the smart fan mode configuration submenus.



BIOS Menu 14: EC IT5571 H/W Monitor

→ PC Health Status

The following system parameters and values are shown. The system parameters that are monitored are:

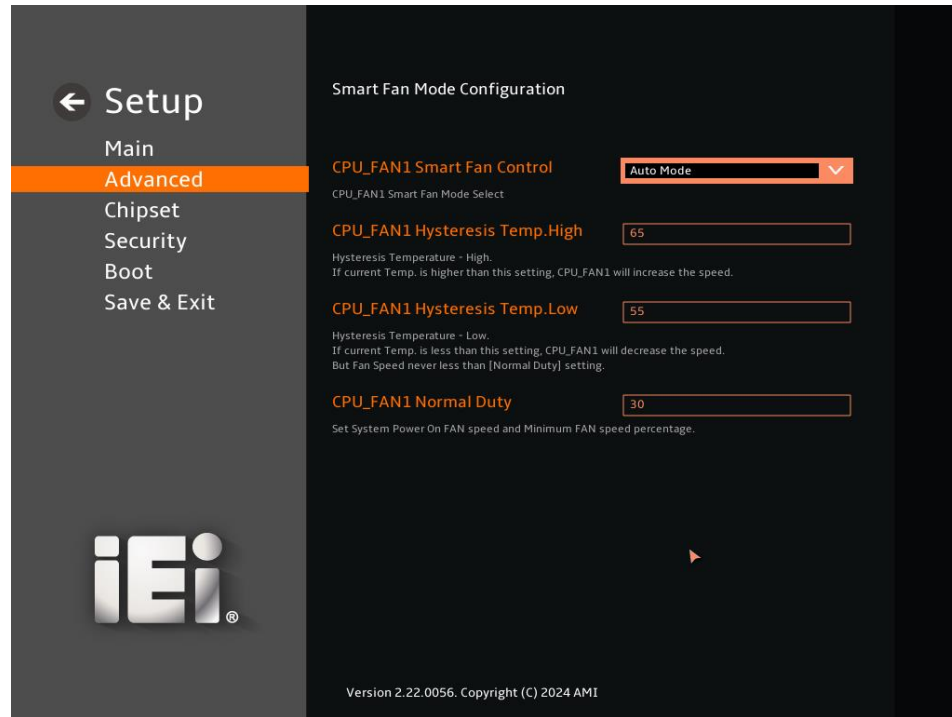
- System Temperatures:
 - CPU Temperature
- Fan Speeds:
 - Fan1 Speed
- Voltages:
 - V5S
 - +V12S
 - +V3P3S

→ Tcc Activation Offset [0]

This setting adjusts the offset from the factory-defined Thermal Control Circuit (TCC) activation temperature, determining when the TCC should activate. The activation temperature is calculated as: $\text{TCC Activation Temperature} = \text{Factory Set Temperature} - \text{TCC Activation Offset}$. The offset range is between 0 and 63.

5.3.4.1 Smart Fan Mode Configuration

Use the **Smart Fan Mode Configuration** submenu (**BIOS Menu 15**) to configure the CPU fan speed based on the temperature.



BIOS Menu 15: Smart Fan Mode Configuration

→ CPU_FAN1 Smart Fan Control [Auto Mode]

Use the **Smart Fan Control** option to configure the CPU smart fan.

- **Manual Mode** The fan spins at the speed specified in manual mode settings.
- **Auto Mode** **DEFAULT** The fan adjusts its speed as per auto mode settings.

→ CPU_FAN1 Hysteresis Temp.High [65]

If the current CPU temperature is higher than this setting, CPU_FAN1 will increase the speed.

→ CPU_FAN1 Hysteresis Temp.Low [55]

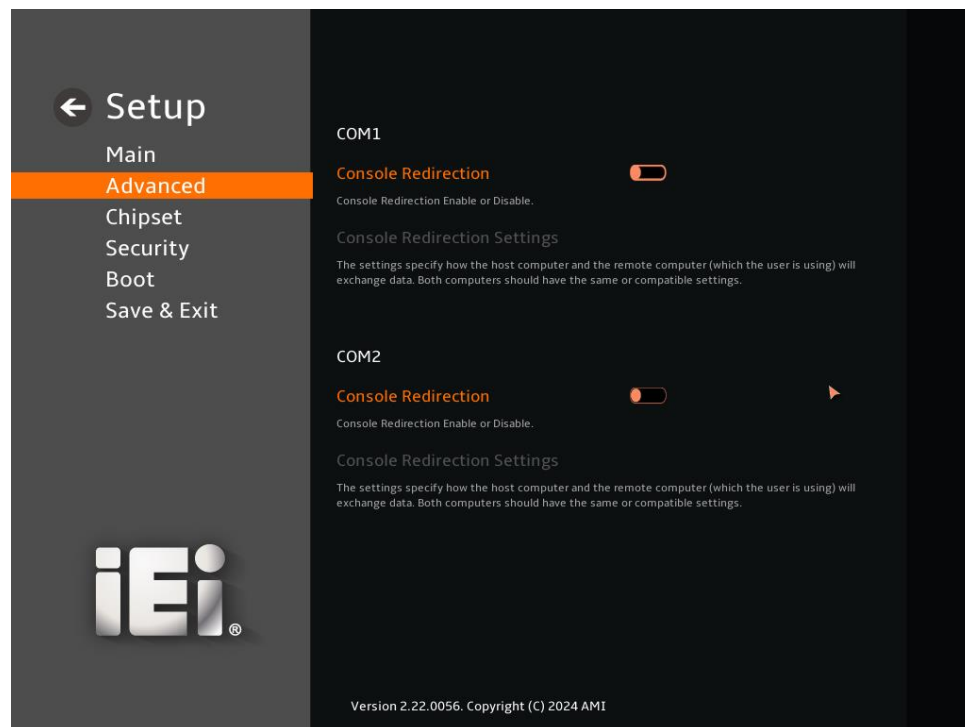
If the current CPU temperature is lower than this setting, CPU_FAN1 will decrease the speed. But the fan speed is never less than the [Normal Duty] value.

→ CPU_FAN1 Normal Duty [30]

Use the **CPU_FAN1 Normal Duty** option to set the minimum fan speed percentage and the fan speed when the system is powered on.

5.3.5 Serial Port Console Redirection

The **Serial Port Console Redirection** menu (**BIOS Menu 16**) allows the console redirection options to be configured. Console Redirection allows users to maintain a system remotely by re-directing keyboard input and text output through the serial port.



BIOS Menu 16:Serial Port Console Redirection

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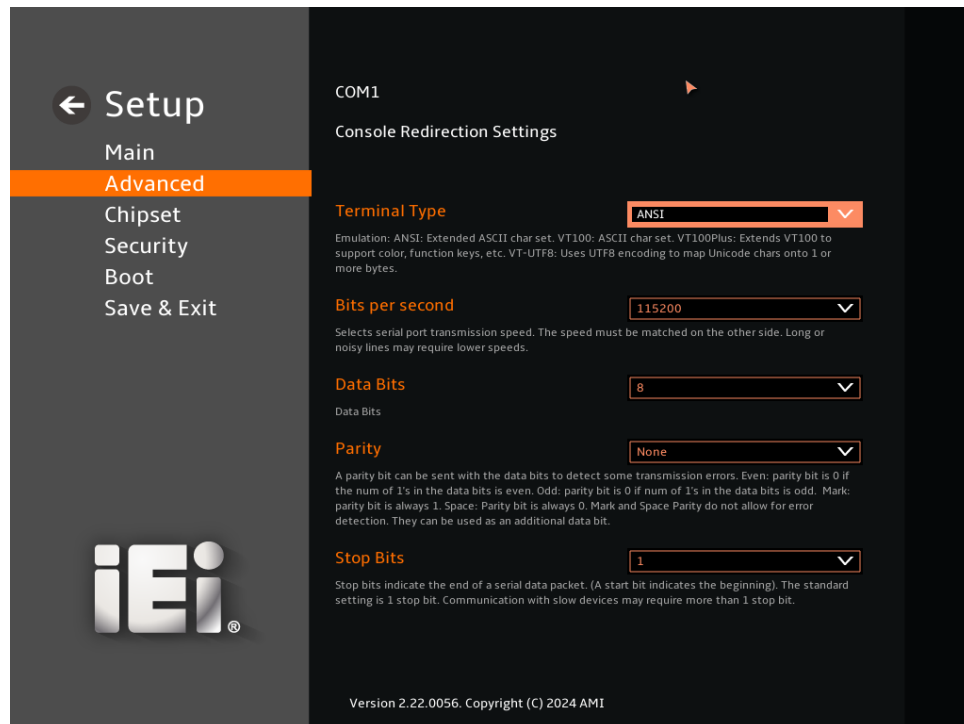
→ Console Redirection [Disabled]

Use **Console Redirection** option to enable or disable the console redirection function.

- **Disabled** **DEFAULT** Disabled the console redirection function
- **Enabled** Enabled the console redirection function

5.3.5.1 Console Redirection Settings

The following options are available in the **Console Redirection Settings** submenu (**BIOS Menu 17**) when the **COM Console Redirection** option is enabled.



BIOS Menu 17: COM Console Redirection Settings

→ Terminal Type [ANSI]

Use the **Terminal Type** option to specify the remote terminal type.

- **VT100** The target terminal type is VT100
- **VT100Plus** The target terminal type is VT100Plus

- ➔ **VT-UTF8** The target terminal type is VT-UTF8
- ➔ **ANSI** **DEFAULT** The target terminal type is ANSI

➔ **Bits per second [115200]**

Use the **Bits per second** option to specify the serial port transmission speed. The speed must match the value set in the remote terminal. Long or noisy lines may require lower speeds.

- ➔ **9600** Set the serial port transmission speed at 9600.
- ➔ **19200** Set the serial port transmission speed at 19200.
- ➔ **38400** Set the serial port transmission speed at 38400.
- ➔ **57600** Set the serial port transmission speed at 57600.
- ➔ **115200** **DEFAULT** Set the serial port transmission speed at 115200.

➔ **Data Bits [8]**

Use the **Data Bits** option to specify the number of data bits.

- ➔ **7** Set the data bits at 7.
- ➔ **8** **DEFAULT** Set the data bits at 8.

➔ **Parity [None]**

Use the **Parity** option to specify the parity bit that can be sent with the data bits for detecting the transmission errors.

- ➔ **None** **DEFAULT** No parity bit is sent with the data bits.
- ➔ **Even** The parity bit is 0 if the number of ones in the data bits is even.
- ➔ **Odd** The parity bit is 0 if the number of ones in the data bits is odd.
- ➔ **Mark** The parity bit is always 1. This option does not allow for error detection.

DRPC-W-ASL**→ Space**

The parity bit is always 0. This option does not allow for error detection.

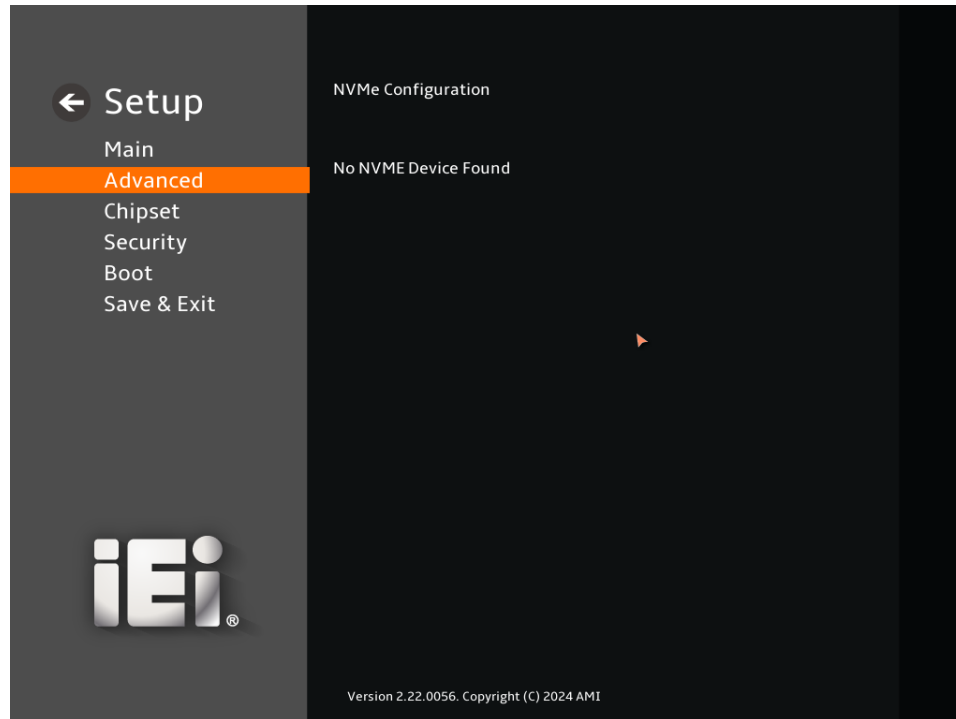
→ Stop Bits [1]

Use the **Stop Bits** option to specify the number of stop bits used to indicate the end of a serial data packet. Communication with slow devices may require more than 1 stop bit.

- | | | |
|------------|----------------|-----------------------------------|
| → 1 | DEFAULT | Set the number of stop bits to 1. |
| → 2 | | Set the number of stop bits to 2. |

5.3.6 NVMe Configuration

Use the **NVMe Configuration (BIOS Menu 18)** menu to display the NVMe controller and device information.



BIOS Menu 18: NVMe Configuration

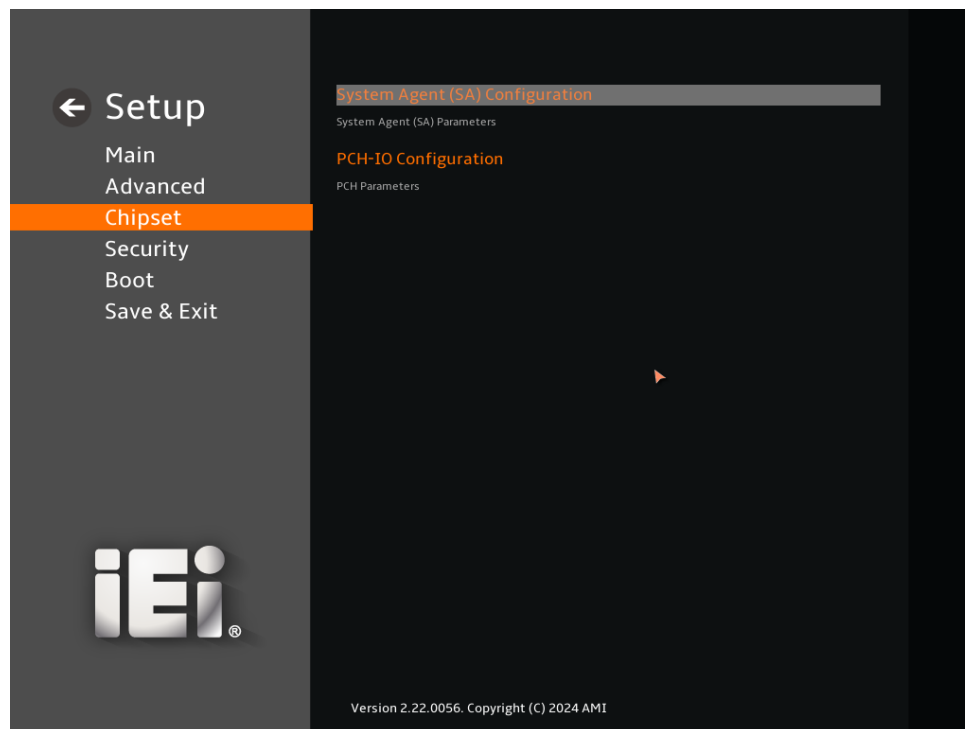
DRPC-W-ASL

5.4 Chipset

Use the **Chipset** menu (**BIOS Menu 19**) to access the PCH-IO and System Agent (SA) configuration menus.

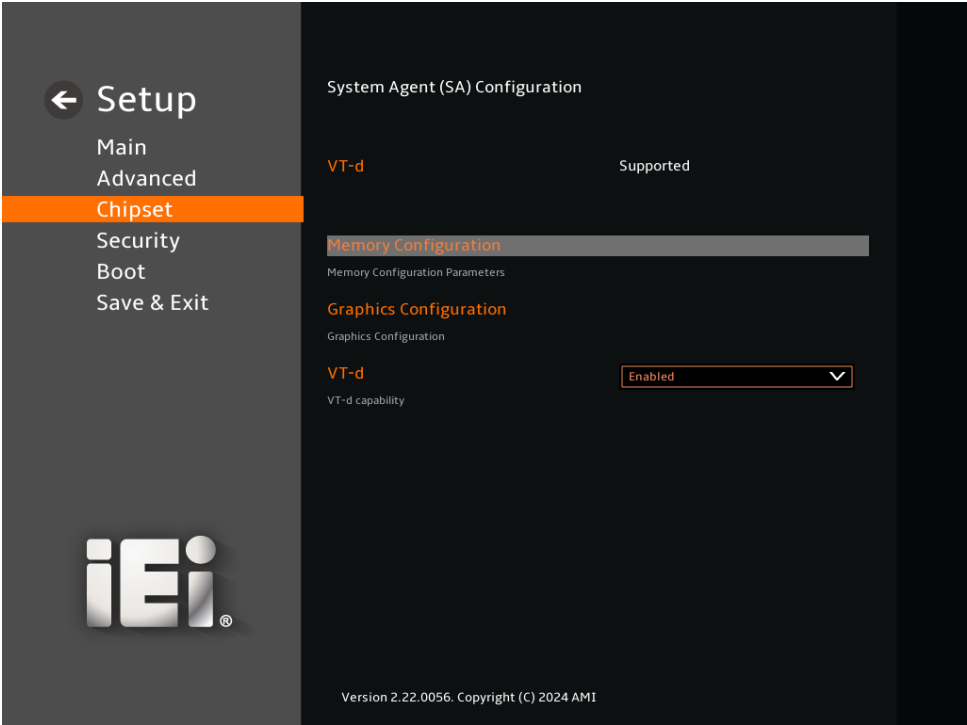
**WARNING!**

Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.

**BIOS Menu 19: Chipset**

5.4.1 System Agent (SA) Configuration

Use the **System Agent (SA) Configuration** menu (**BIOS Menu 20**) to configure the System Agent (SA) parameters.



BIOS Menu 20: System Agent (SA) Configuration

➔ VT-d [Enabled]

Use the **VT-d** option to enable or disable the VT-d capability.

- ➔

Disabled

Disable the VT-d capability
- ➔

Enabled

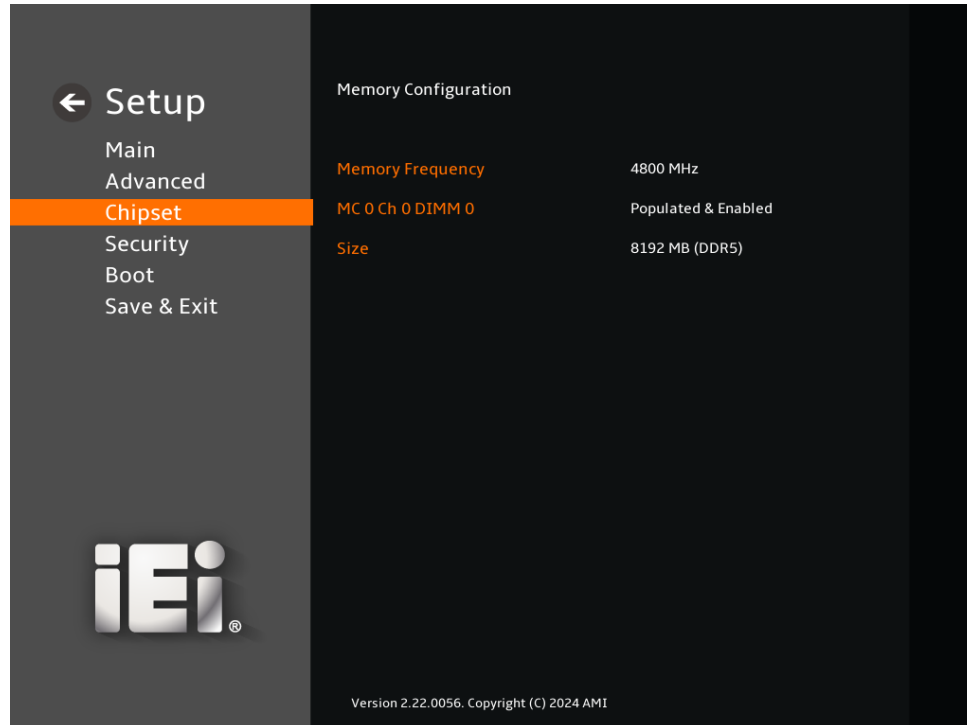
DEFAULT

Enable the VT-d capability

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5.4.1.1 Memory Configuration

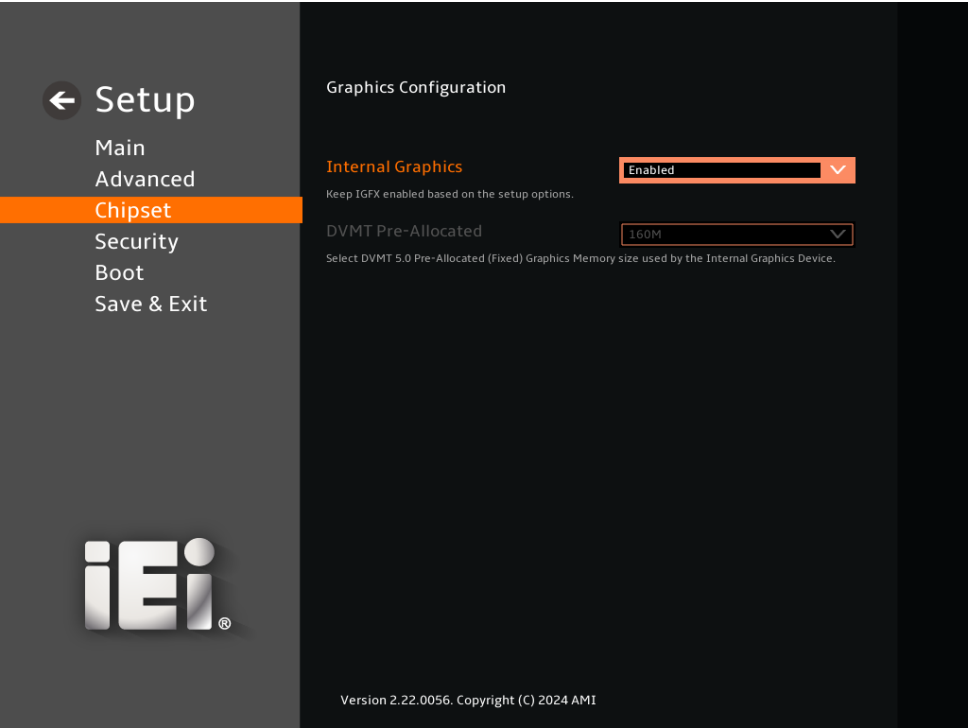
Use the **Memory Configuration** submenu (**BIOS Menu 21**) to view memory information.



BIOS Menu 21: Memory Configuration

5.4.1.2 Graphics Configuration

Use the **Graphics Configuration (BIOS Menu 22)** menu to configure the system's graphics.



BIOS Menu 22: Graphics Configuration

➔ Internal Graphics [Enabled]

Use the **Internal Graphics** option to configure whether to keep IGFX enabled.

- | | | |
|---|----------|----------------------|
| ➔ | Auto | Auto mode |
| ➔ | Disabled | Disable IGFX. |
| ➔ | Enabled | Default Enable IGFX. |

➔ DVMT Pre-Allocated [160M]

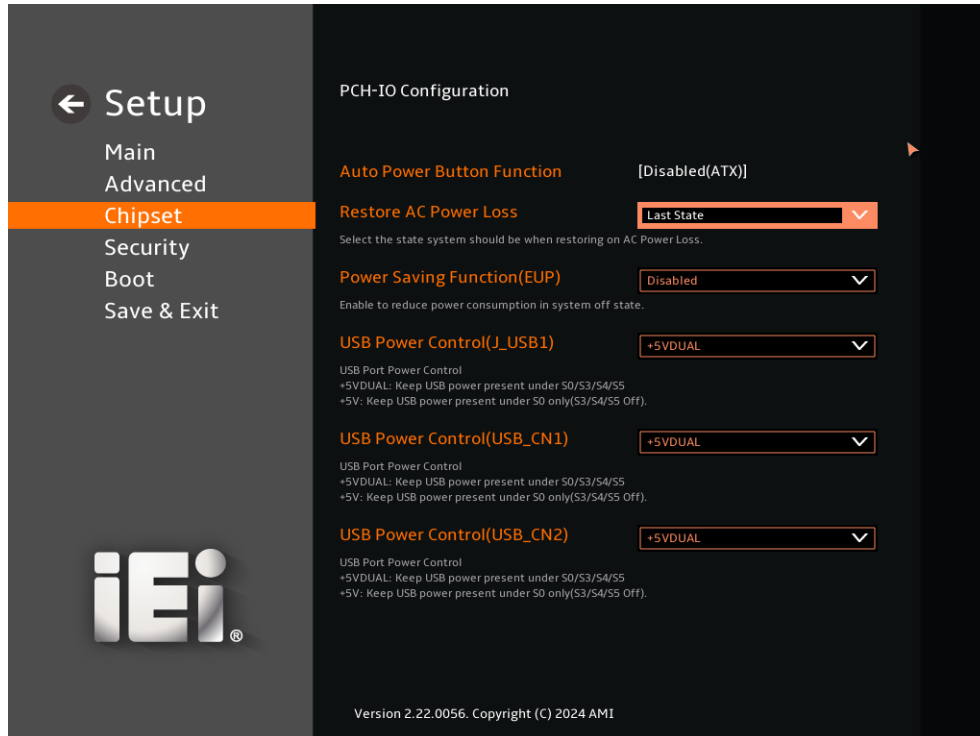
Use the **DVMT Pre-Allocated** option to set the amount of system memory allocated to the integrated graphics processor when the system boots. The system memory allocated can then only be used as graphics memory, and is no longer available to applications or the operating system. Configuration options are listed below:

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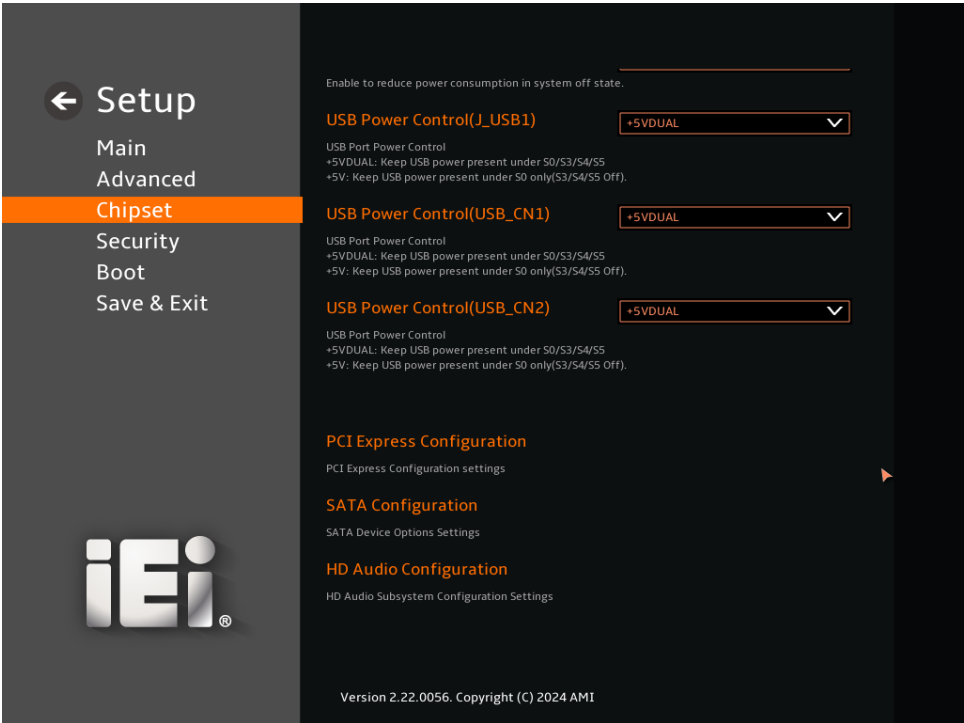
- 80M
- 160M **Default**

5.4.2 PCH-IO Configuration

Use the **PCH-IO Configuration** menu (**BIOS Menu 23 & BIOS Menu 24**) to configure the PCH parameters.



BIOS Menu 23:PCH-IO Configuration (1/2)



BIOS Menu 24:PCH-IO Configuration (2/2)

➔ Auto Power Button Function [Disabled (ATX)]

Use the **Auto Power Button Function** BIOS option to show the power mode state. Use the **J_ATX_AT1** to switch the AT/ATX power mode.

- ➔

Disabled
(ATX)

DEFAULT

The system power mode is ATX.
- ➔

Enabled (AT)

The system power mode is AT.

➔ Restore AC Power Loss [Last State]

Use the **Restore AC Power Loss** BIOS option to specify what state the system returns to if there is a sudden loss of power to the system when the power mode is ATX.

- ➔

Power Off

The system remains turned off.
- ➔

Power On

The system turns on.

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- ➔ **Last State** **DEFAULT** The system returns to its previous state. If it was on, it turns itself on. If off, it remains off.

➔ **Power Saving Function (EUP) [Disabled]**

Use the **Power Saving Function (EUP)** BIOS option to enable or disable the power saving function.

- ➔ **Disabled** **DEFAULT** Power saving function is disabled.
- ➔ **Enabled** Power saving function is enabled. It will reduce power consumption when the system is off.

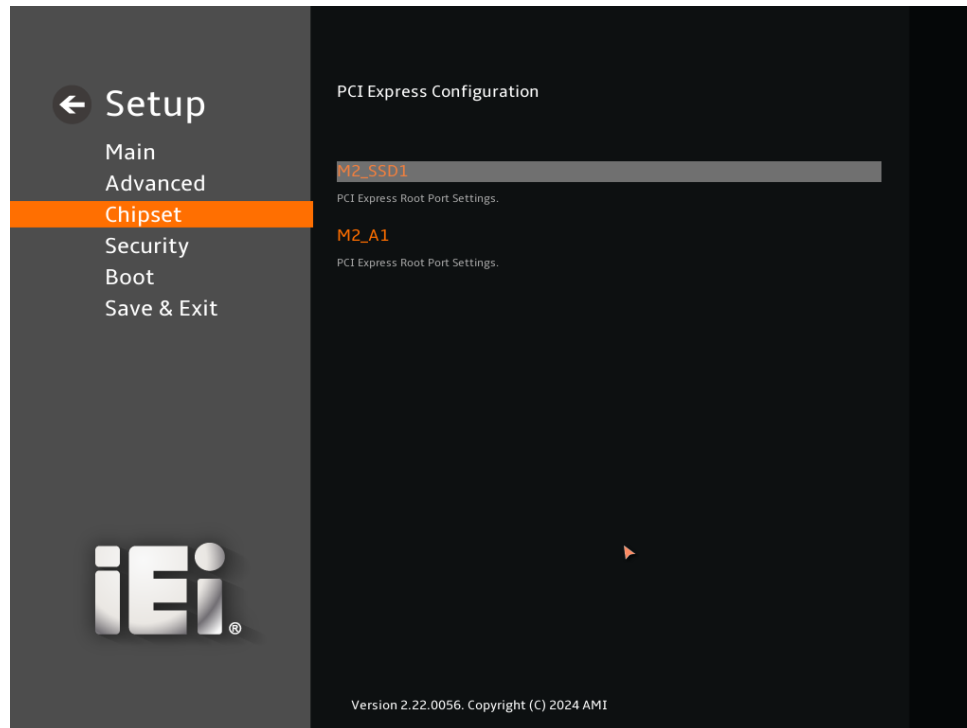
➔ **USB Power Control [+5VDUAL]**

Use the **USB Power state option** to control the USB power state.

- ➔ **+5VDUAL** **DEFAULT** USB Power is on. USB power is on in all power states: S0 (Working), S3 (Sleep), S4 (Hibernate), and S5 (Soft Off).
- ➔ **+5V** USB power is only available in the S0 state.

5.4.2.1 PCI Express Configuration

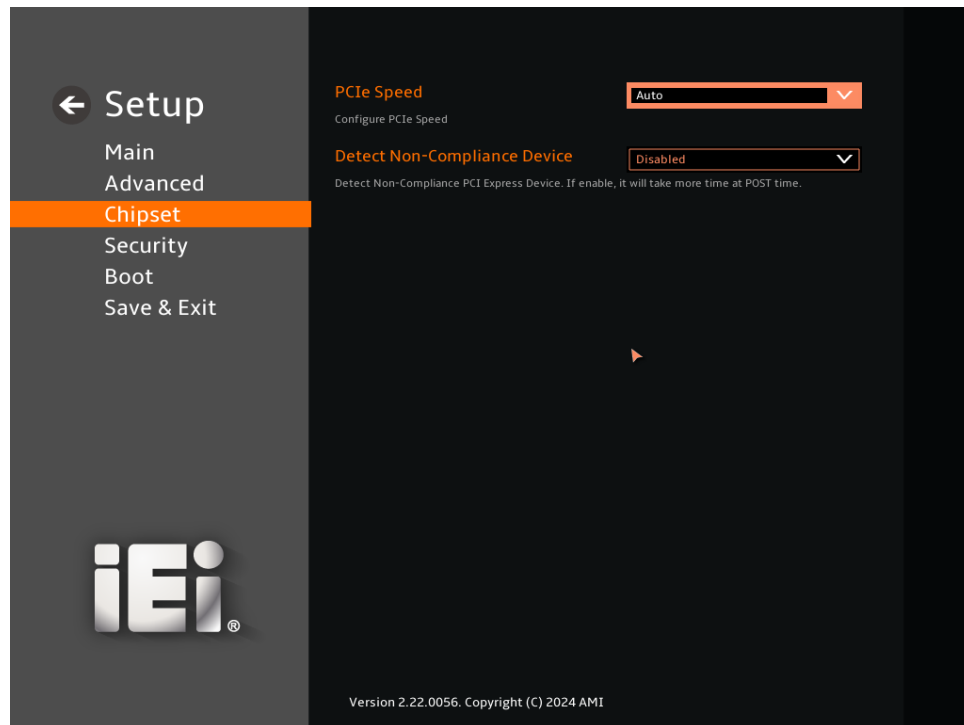
Use the **PCI Express Configuration** submenus (**BIOS Menu 25**) to configure the PCI Express slots.



BIOS Menu 25: PCI Express Configuration

5.4.2.1.1 PCIe Root Port Setting

Use the **M2_SSD1** and **M2_A1** submenus (**BIOS Menu 26**) to configure the PCIe root port settings.



BIOS Menu 26: PCIe Slot Configuration Submenu

→ PCIe Speed [Auto]

Use the **PCIe Speed** option to specify the PCIe port speed. Configuration options are listed below.

- | | | | |
|---|-------------|----------------|-------------------------------|
| → | Auto | DEFAULT | Auto mode. |
| → | Gen1 | | Configure PCIe Speed to Gen1. |
| → | Gen2 | | Configure PCIe Speed to Gen2. |
| → | Gen3 | | Configure PCIe Speed to Gen3. |

→ Detect Non-Compliance Device [Disabled]

Use the **Detect Non-Compliance Device** option to enable or disable detection of non-compliance PCI Express device connected to the PCIe port.

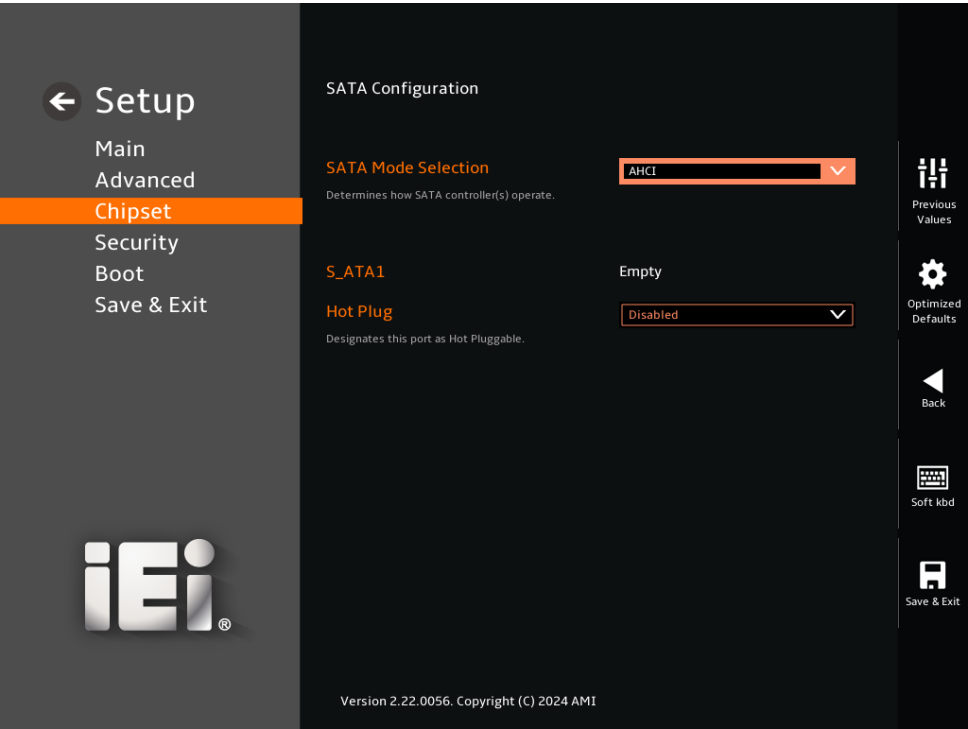
- | | | | |
|---|-----------------|----------------|--|
| → | Disabled | DEFAULT | Do not detect if a non-compliance PCIe device is connected to the PCIe port. |
|---|-----------------|----------------|--|



- ➔ Enabled
- Detect if a non-compliance PCIe device is connected to the PCIe port.

5.4.2.2 SATA Configuration

Use the **SATA Configuration** menu (**BIOS Menu 27**) to configure the SATA devices installed in the system.



BIOS Menu 27: SATA Configuration

➔ **SATA Mode Selection [AHCI]**

Use the **SATA Mode Selection** option to determine how the SATA devices operate.

- ➔ AHCI

DEFAULT

Configures SATA devices as AHCI device.
- ➔ Intel RST Premium With Intel Optane System Acceleration

Configures SATA devices to the Intel RST Premium with the Intel Optane System Acceleration mode.



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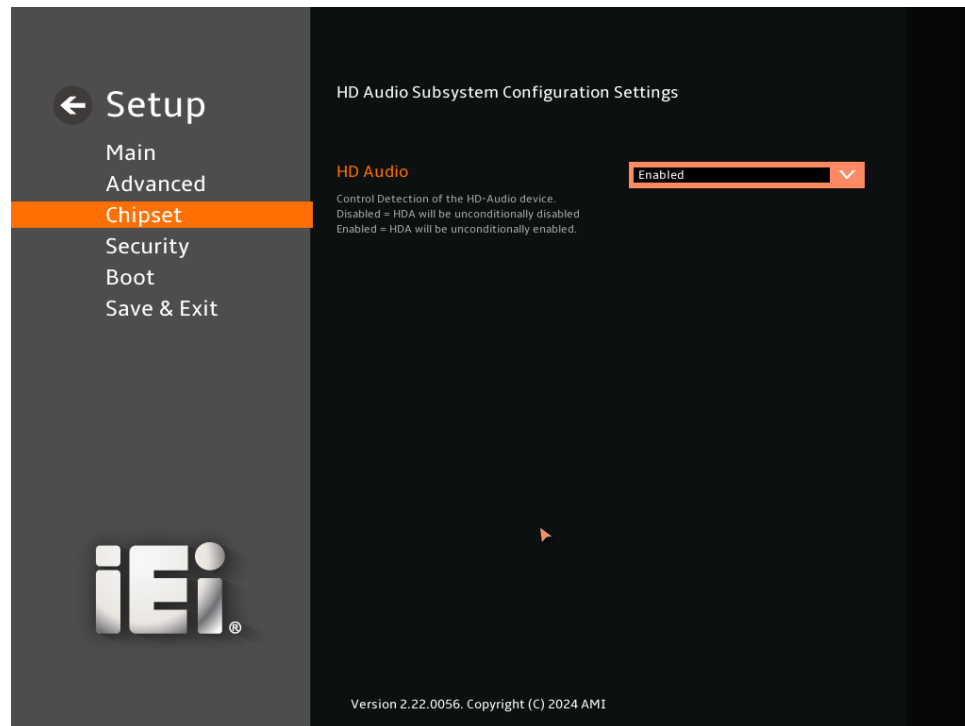
→ Hot Plug [Disabled]

Use the **Hot Plug** option to designate the correspondent port as hot-pluggable.

- **Disabled** **DEFAULT** Disable the hot-pluggable function of the SATA port.
- **Enabled** Designate the SATA port as hot-pluggable.

5.4.2.3 HD Audio Configuration

Use the **HD Audio Configuration** menu (**BIOS Menu 28**) to configure the PCH HD Audio settings.



BIOS Menu 28: HD Audio Configuration

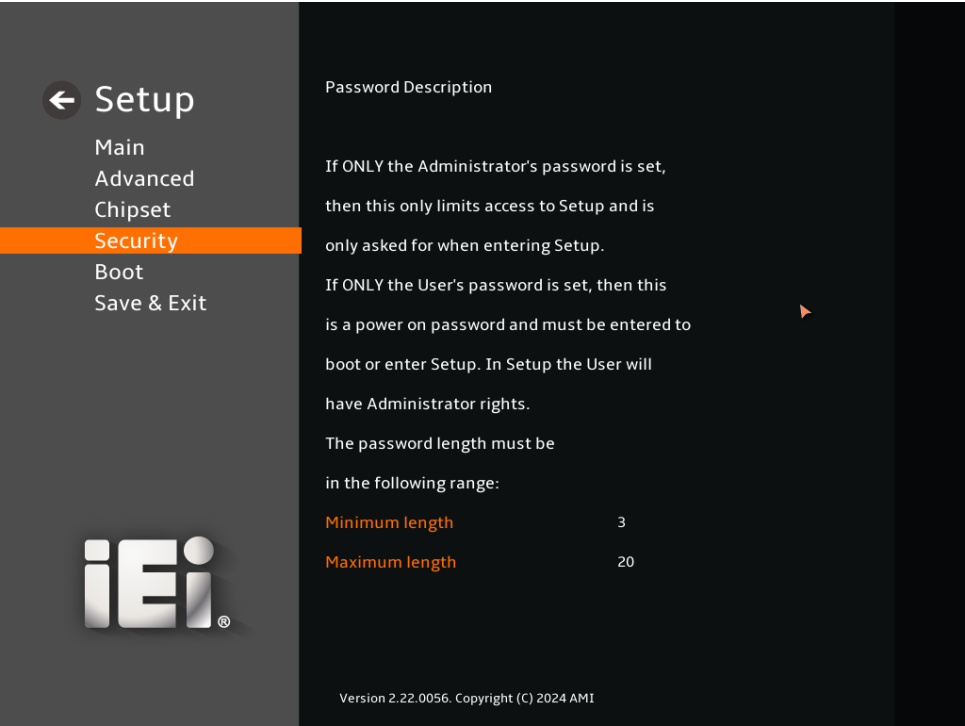
→ HD Audio [Enabled]

Use the **HD Audio** option to enable or disable the High Definition Audio controller.

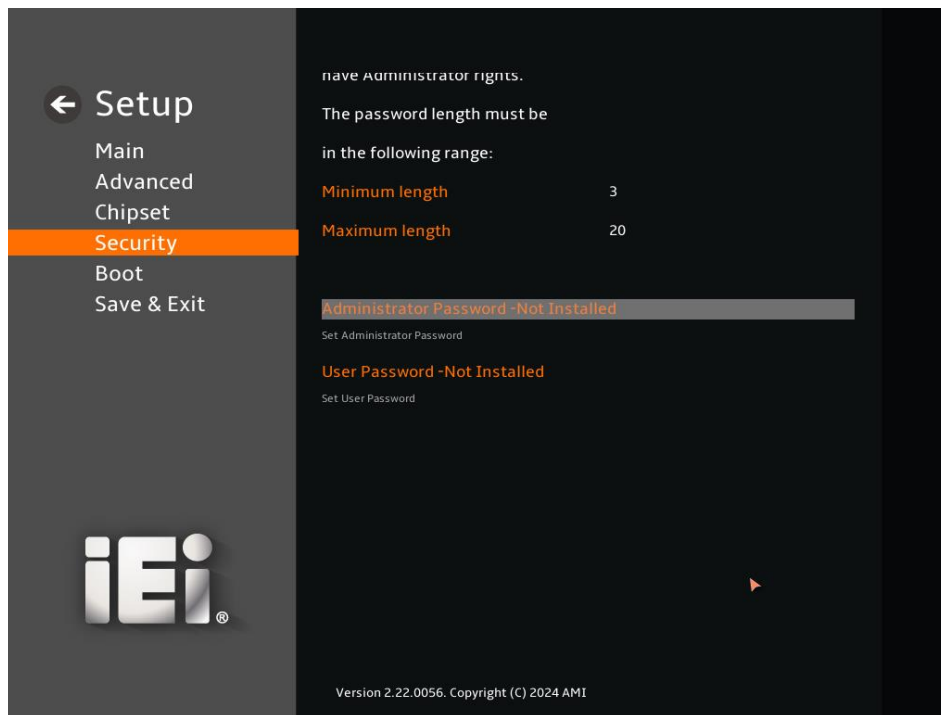
- **Disabled** The onboard High Definition Audio controller is disabled.
- **Enabled** **DEFAULT** The onboard High Definition Audio controller is enabled.

5.5 Security

Use the **Security** menu (**BIOS Menu 29**) to set system and user passwords.



BIOS Menu 29: Security (1/2)



BIOS Menu 30: Security (2/2)

➔ Administrator Password

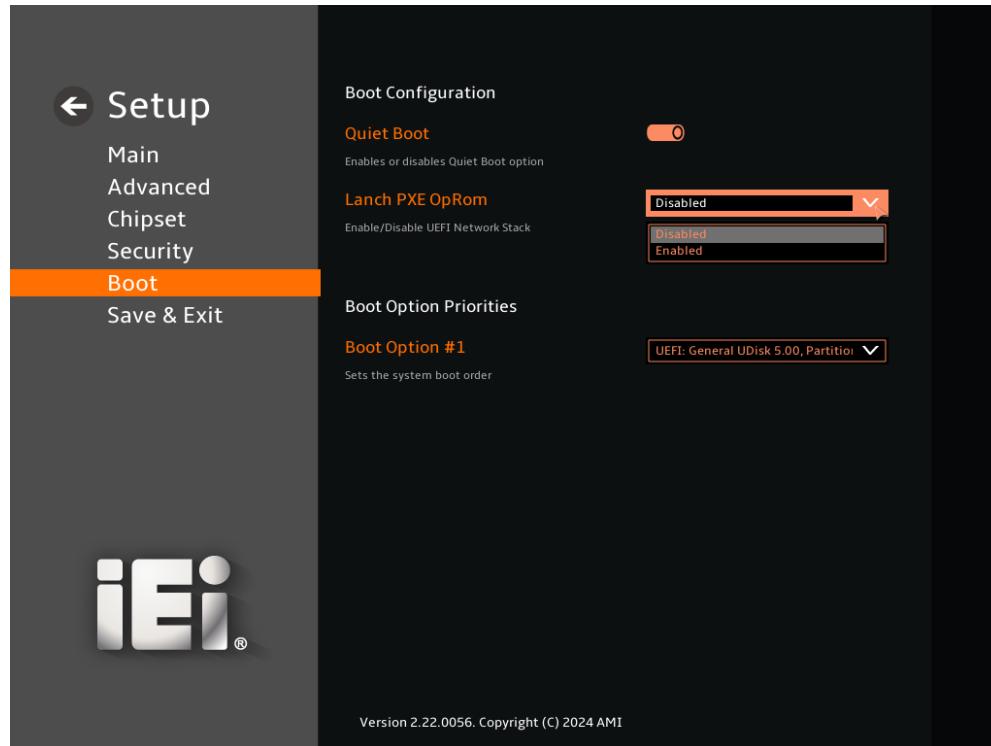
Use the **Administrator Password** to set or change the administrator password.

➔ User Password

Use the **User Password** to set or change the user password.

5.6 Boot

Use the **Boot** menu (**BIOS Menu 31**) to configure system boot options.



BIOS Menu 31: Boot

5.6.1 Boot Configuration

➔ Quiet Boot [Enabled]

Use the **Quiet Boot** BIOS option to select the screen display when the system boots.

- | | | | |
|---|-----------------|----------------|---|
| ➔ | Disabled | | Normal POST messages displayed |
| ➔ | Enabled | DEFAULT | OEM Logo displayed instead of POST messages |

➔ Launch PXE OpROM [Disabled]

Use the **Launch PXE OpROM** option to enable or disable boot option for legacy network devices.

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- ➔ **Disabled** **DEFAULT** Ignore all PXE Option ROMs
- ➔ **Enabled** Load PXE Option ROMs.

5.6.2 Boot Option Priorities

Use the Boot Option # N to choose the system boots from the peripherals you selected.
The following boot option is listed as an example.

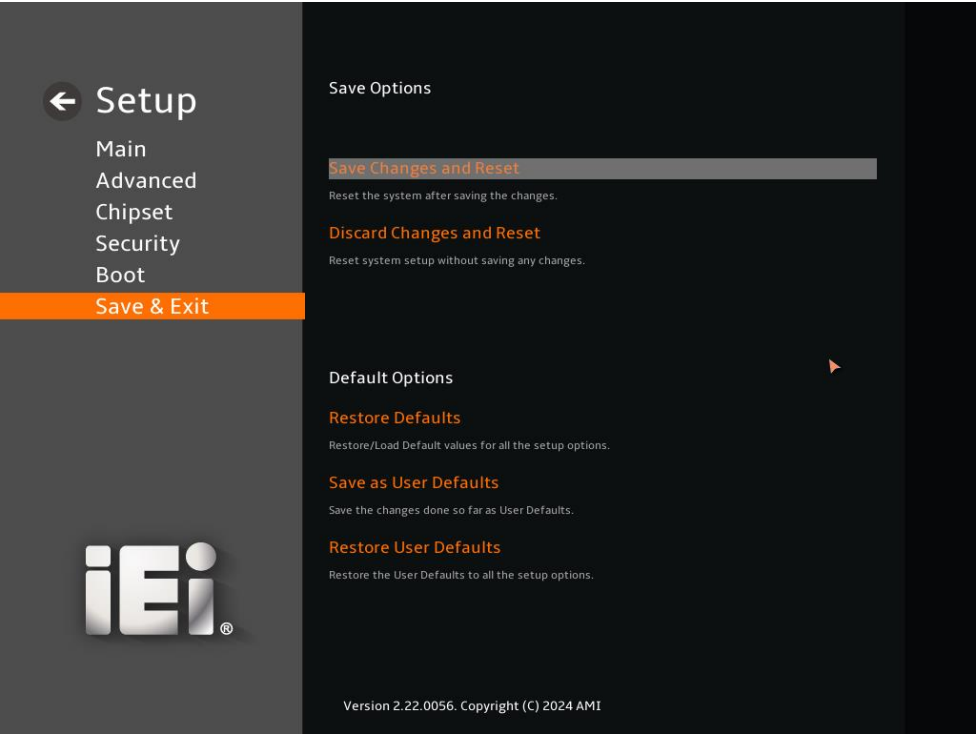
➔ **Boot Option #1**

Set the system boot order **USB Partition 1** as the top priority.

- ➔ **UEFI: USB, Partition 1**
- ➔ **Disabled**

5.7 Save & Exit

Use the **Save & Exit** menu (**BIOS Menu 32**) to load default BIOS values, optimal failsafe values and to save configuration changes.



BIOS Menu 32: Save & Exit

➔ **Save Changes and Reset**

Use the **Save Changes and Reset** option to save the changes made to the BIOS options and reset the system.

➔ **Discard Changes and Reset**

Use the **Discard Changes and Reset** option to exit the system without saving the changes made to the BIOS configuration setup program.

➔ **Restore Defaults**

Use the **Restore Defaults** option to load the optimal default values for each of the parameters on the Setup menus. **F3 key can be used for this operation.**

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➔ **Save as User Defaults**

Use the **Save as User Defaults** option to save the changes done so far as user defaults.

➔ **Restore User Defaults**

Use the **Restore User Defaults** option to restore the user defaults to all the setup options.

Appendix

A

Regulatory Compliance

DECLARATION OF CONFORMITY

This equipment has been tested and found to comply with specifications for CE marking. If the user modifies and/or installs other devices in the equipment, the CE conformity declaration may no longer apply.

FCC WARNING

This equipment complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Appendix

A

Product Disposal

DRPC-W-ASL

**CAUTION:**

Risk of fire or explosion or defeat the safeguard of equipment if the battery is replaced by an incorrect type. Replace only with the same or equivalent type.

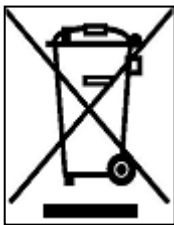
Disposal of a battery into fire or a hot oven, or mechanically crushing or cutting of a battery, that can result in an explosion.

High or low extreme temperatures or low air pressure at high altitude that the battery can be subjected to during use, storage or transportation.

Leaving the battery in an extremely high temperature and/or low air pressure surrounding environment that can result in an explosion or the leakage of flammable liquid or gas.

Outside the European Union—If you wish to dispose of used electrical and electronic products outside the European Union, please contact your local authority so as to comply with the correct disposal method.

Within the European Union—The device that produces less waste and is easier to recycle is classified as electronic device in terms of the European Directive 2012/19/EU (WEEE), and must not be disposed of as domestic garbage.



EU-wide legislation, as implemented in each Member State, requires that waste electrical and electronic products carrying the mark (left) must be disposed of separately from normal household waste. This includes monitors and electrical accessories, such as signal cables or power cords. When you need to dispose of your device, please follow the guidance of your local authority, or ask the shop where you purchased the product. The mark on electrical and electronic products only applies to the current European Union Member States.

Please follow the national guidelines for electrical and electronic product disposal.



Appendix

B

BIOS Options



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Below is a list of BIOS configuration options in the BIOS chapter.

➔ BIOS Information	58
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➔ PCH Information.....	59
➔ System Date [xx/xx/xx]	59
➔ System Time [xx: xx: xx]	59
➔ Intel (VMX) Virtualization Technology [Enabled]	62
➔ Active Efficient Cores [All]	62
➔ Intel(R) SpeedStep(tm) [Enabled].....	63
➔ C states [Disabled].....	63
➔ Turbo Mode [Enabled]	63
➔ Power Limit 1 [0]	63
➔ Power Limit 1 Time Window [0].....	64
➔ Power Limit 2 [0]	64
➔ Security Device Support [Enable]	64
➔ Pending Operation [None]	65
➔ Auto Recovery Function [Disabled]	65
➔ Wake system with Fixed Time [Disabled].....	67
➔ Serial Port [Enabled].....	69
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➔ Serial Port [Enabled].....	70
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➔ PC Health Status	72
➔ Tcc Activation Offset [0].....	72
➔ CPU_FAN1 Smart Fan Control [Auto Mode]	73
➔ CPU_FAN1 Hysteresis Temp.High [65].....	73
➔ CPU_FAN1 Hysteresis Temp.Low [55]	74
➔ CPU_FAN1 Normal Duty [30]	74
➔ Console Redirection [Disabled].....	75
➔ Terminal Type [ANSI].....	75
➔ Bits per second [115200].....	76
➔ Data Bits [8]	76

➔ Parity [None].....	76
➔ Stop Bits [1]	77
➔ VT-d [Enabled].....	80
➔ Internal Graphics [Enabled]	82
➔ DVMT Pre-Allocated [160M]	82
➔ Auto Power Button Function [Disabled (ATX)]	84
➔ Restore AC Power Loss [Last State]	84
➔ Power Saving Function (EUP) [Disabled]	85
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➔ PCIe Speed [Auto].....	87
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➔ SATA Mode Selection [AHCI].....	88
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➔ Quiet Boot [Enabled]	92
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➔ Save Changes and Reset	94
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➔ Restore Defaults	94
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Appendix

D

Watchdog Timer

**NOTE:**

The following discussion applies to DOS environment. Contact IEI support or visit the IEI website for specific drivers for other operating systems.

The Watchdog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that cause the CPU to crash. This condition may have occurred by external EMIs or a software bug. When the CPU stops working correctly, Watchdog Timer either performs a hardware reset (cold boot) or a Non-Maskable Interrupt (NMI) to bring the system back to a known state.

A BIOS function call (INT 15H) is used to control the Watchdog Timer.

INT 15H:

AH – 6FH Sub-function:	
AL – 2:	Sets the Watchdog Timer's period.
BL:	Time-out value (Its unit-second is dependent on the item "Watchdog Timer unit select" in CMOS setup).

Table D-1: AH-6FH Sub-function

Call sub-function 2 to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer starts counting down. When the timer value reaches zero, the system resets. To ensure that this reset condition does not occur, calling sub-function 2 must periodically refresh the Watchdog Timer. However, the watchdog timer is disabled if the time-out value is set to zero.

A tolerance of at least 10% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time-consuming.

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**NOTE:**

When exiting a program it is necessary to disable the Watchdog Timer, otherwise the system resets.

EXAMPLE PROGRAM:

; INITIAL TIMER PERIOD COUNTER

;

W_LOOP:

;

```

MOV      AX, 6F02H      ;setting the time-out value
MOV      BL, 30          ;time-out value is 48 seconds
INT      15H

```

;

; ADD THE APPLICATION PROGRAM HERE

;

```

CMP      EXIT_AP, 1      ;is the application over?
JNE      W_LOOP          ;No, restart the application

MOV      AX, 6F02H      ;disable Watchdog Timer
MOV      BL, 0           ;
INT      15H

```

;

; EXIT ;

Appendix

E

Error Beep Code

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E.1 PEI Beep Codes

Number of Beeps	Description
1	Memory not Installed
1	Memory was installed twice (InstallPeiMemory routine in PEI Core called twice)
2	Recovery started
3	DXE IPL was not found
3	DXE Core Firmware Volume was not found
4	Recovery failed
4	S3 Resume failed
7	Reset PPI is not available

E.2 DXE Beep Codes

Number of Beeps	Description
1	Invalid password
4	Some of the Architectural Protocols are not available
5	No Console Output Devices are found
5	No Console Input Devices are found
6	Flash update is failed
7	Reset protocol is not available
8	Platform PCI resource requirements cannot be met

**NOTE:**

If you have any question, please contact IEI for further assistance.

Appendix

F

Hazardous Materials Disclosure

DRPC-W-ASL

F.1 RoHS Directive (2015/863/EU)

The details provided in this appendix are to ensure that the product is compliant with the RoHS Directive (2015/863/EU). The table below acknowledges the presences of small quantities of certain substances in the product, and is applicable to RoHS Directive (2015/863/EU).

Please refer to the following table.

Part Name	Toxic or Hazardous Substances and Elements									
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (CR(VI))	Polybrominated Biphenyls	Polybrominated Diphenyl Ethers	Bis(2-ethylhexyl) phthalate	Butyl benzyl phthalate (BBP)	Dibutyl phthalate (DBP)	Diisobutyl phthalate (DIBP)
Housing	O	O	O	O	O	O	O	O	O	O
Printed Circuit Board	O	O	O	O	O	O	O	O	O	O
Metal Fasteners	O	O	O	O	O	O	O	O	O	O
Cable Assembly	O	O	O	O	O	O	O	O	O	O
Fan Assembly	O	O	O	O	O	O	O	O	O	O
Power Supply Assemblies	O	O	O	O	O	O	O	O	O	O
Battery	O	O	O	O	O	O	O	O	O	O
O: This toxic or hazardous substance is contained in all of the homogeneous materials for the part is below the limit requirement in Directive (EU) 2015/863. X: This toxic or hazardous substance is contained in at least one of the homogeneous materials for this part is above the limit requirement in Directive (EU) 2015/863.										



F.2 China RoHS

此附件旨在确保本产品符合中国 RoHS 标准。以下表格标示此产品中某有毒物质的含量符合中国 RoHS 标准规定的限量要求。

本产品上会附有“环境友好使用期限”的标签，此期限是估算这些物质“不会有泄漏或突变”的年限。本产品可能包含有较短的环境友好使用期限的可替换元件，像是电池或灯管，这些元件将会单独标示出来。

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CR(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
壳体	O	O	O	O	O	O
印刷电路板	O	O	O	O	O	O
金属螺帽	O	O	O	O	O	O
电缆组装	O	O	O	O	O	O
风扇组装	O	O	O	O	O	O
电力供应组装	O	O	O	O	O	O
电池	O	O	O	O	O	O
O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T11364-2014 與 GB/T26572-2011 标准规定的限量要求以下。 X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11364-2014 與 GB/T26572-2011 标准规定的限量要求。						

