



MODEL:
DRPC-W-EHL1 Series

Fanless System with Intel® Atom™ X6000 series on-board SoC,
with 8GB LPDDR4x memory on board,
dual 2.5GbE LAN, HDMI, DP, 2.5" SATA HDD bay

User Manual



Revision

Date	Version	Changes
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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-EHL1 Series

The DRPC-W-EHL1 Series are embedded systems for wide range temperature environments. It is equipped with Intel® Atom™ x6000 series on-board SoC, with 8GB LPDDR4x memory on board (up to 16GB). The DRPC-W-EHL1 Series include one HDMI, one DP, two 2.5GbE LAN ports, two USB 3.2 Gen2 ports, and one external fan connector.

Expansion and I/O include one M.2 A-key slot for Wi-Fi or Bluetooth expansions and one M.2 B-key slot for NVME storage or 5G module. Two USB 3.2 Gen 2 connectors on the rear panel and four USB 2.0 connectors by pin header. One SATA 6Gb/s connector. Serial device connectivity is provided by two internal RS-232/422/485 connectors. Two RJ-45 2.5 GbE connectors provide the system with smooth connections to an external LAN.

1.2 Features

The DRPC-W-EHL1 Series features are listed below:

- 10nm Intel® Atom™ x6000 series on-board SoC
- Two Intel® I225-IT/I226-IT 2.5GbE ports
- Two USB 3.2 Gen 2, four USB 2.0, two RS-232/422/485
- Support M.2 A key and M.2 B key slot
- Support triple independent display via HDMI, DP and IEI iDPM

1.3 Technical Specifications

The DRPC-W-EHL1 Series technical specifications are listed in Table 1-1.

Model Name		DRPC-W-EHL1
Chassis	Color	Black
	Dimensions (W x D x H) (mm)	176 x 116 x 60.8
	System Fan	Fanless
	Chassis Construction	Extruded aluminum alloys
Motherboard	CPU	Onboard Intel® Atom™ x6000 series processor Intel® Atom™ x6211E on-board SoC (up to 3.0 GHz, dual-core, 1.5M Cache, TDP=6W) Intel® Atom™ x6413E on-board SoC (up to 3.0GHz, quad-core, 1.5M Cache, TDP=9W) Intel® Atom™ x6425E on-board SoC (up to 3.0GHz, quad-core, 1.5M Cache, TDP=12W)
	Chipset	SoC
	Memory	Onboard LPDDR4x 3200MHz 8GB (up to 16GB)
Storage	HDD Bay	1 x 2.5" SATA 6Gb/s HDD bay
IO Interfaces	USB	2 x USB 3.2 Gen2 (10Gb/s)
	LAN	2 x Intel® I225-IT/I226-IT 2.5GbE ports
	Display	1 x DP 1 x HDMI
	Others	1 x Power button, 1 x Reset button, 1 x Power LED, 1 x HDD LED, 1 x System fan connector
Internal Expansions	M.2	1 x M.2 A Key 2230 for Wi-Fi & Bluetooth (optional) 1 x M.2 B Key (PCIe x2) 3042 with SIM slot for 5G (optional)
Power	Power Input	12V - 28V DC
	Power Consumption	28V@1.58A (Intel® Atom™ x6211E with 8GB LPDDR4x Memory)
Reliability	Mounting	DIN-Rail
	Operating Temperature	-20°C ~ 70°C, 10% ~ 95% non-condensing
	Storage Temperature	-30°C ~ 85°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)	0.92 kg/ 1.16 kg
	Safety/EMC	CE / FCC
	Watchdog Timer	Programmable 1 ~ 255 sec/min
OS	Supported OS	Microsoft® Windows 10 / Windows 11, Linux

Table 1-1: Technical Specifications

1.4 Front Panel

The front panel of the DRPC-W-EHL1 Series have the following features.



Figure 1-2: Front Panel

1.5 Top Panel

The top panel of the DRPC-W-EHL1 Series is shown below.

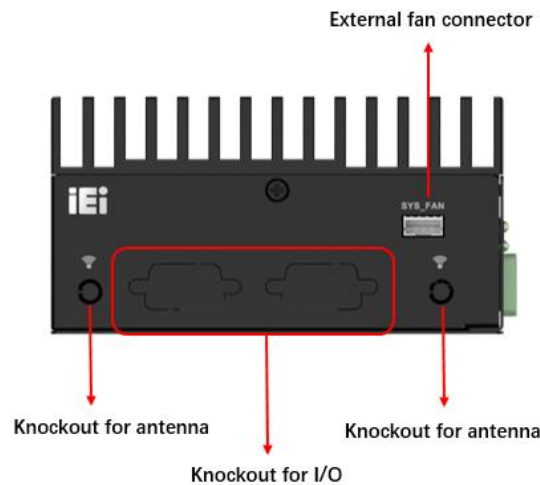


Figure 1-3: Top Panel

DRPC-W-EHL11

1.6 Physical Dimensions

The physical dimensions are shown in **Figure 1-4**.

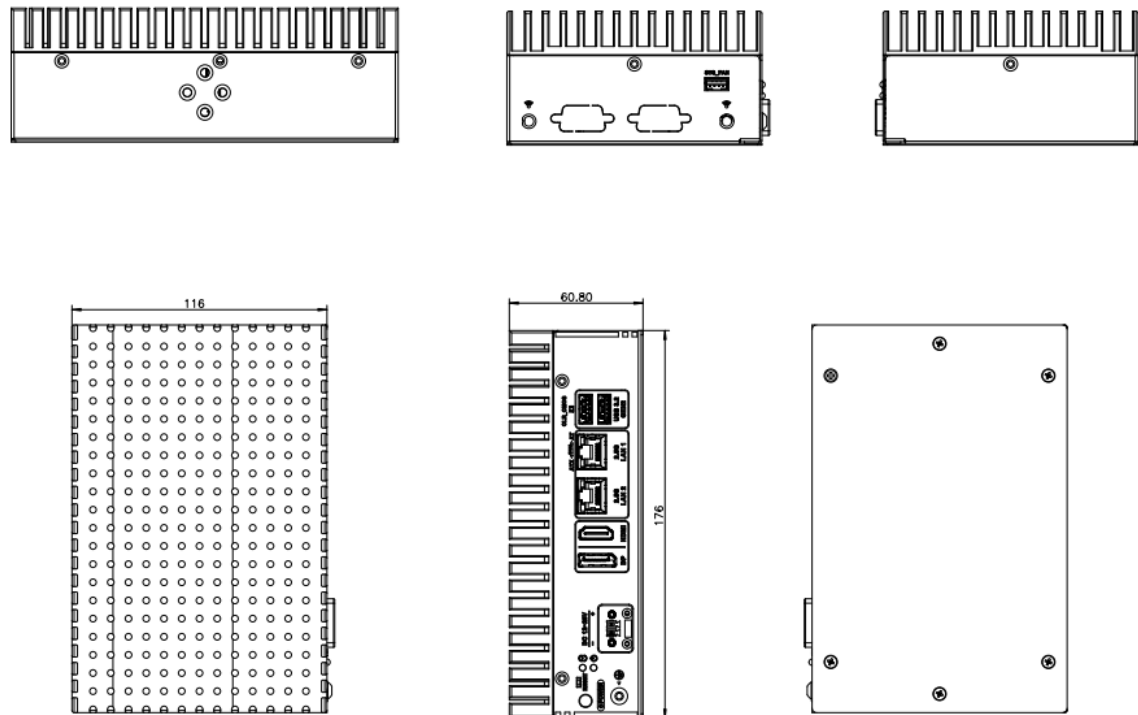


Figure 1-4: Physical Dimensions (mm)

Chapter

2

Unpacking

DRPC-W-EHL11

2.1 Anti-static Precautions

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the DRPC-W-EHL1 Series. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the DRPC-W-EHL1 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-EHL1 Series, place it on an anti-static pad. This reduces the possibility of ESD damaging the DRPC-W-EHL1 Series.

2.2 Unpacking Precautions

When the DRPC-W-EHL1 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-EHL1 Series does not fall out of the box.
- Make sure all the components shown in **Section 2.3** are present.

2.3 Unpacking Checklist



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-EHL1 Series from or contact an IEI sales representative directly. To contact an IEI sales representative, please send an email to sales@ieiworld.com.

The DRPC-W-EHL1 Series is shipped with the following components:

Quantity	Item and Part Number	Image
1	DRPC-W-EHL1 Series	
2	DIN rail mounting kit	
1	Chassis screws	

DRPC-W-EHL11

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

External fan module (P/N: SF-DRPC-W-R10)	
COM cable (P/N: 32205-008000-100-RS)	
eDP to VGA connector converter board (for IEI Display Module) (P/N: iDPM-VGA-R10)	
Wi-Fi module (P/N: EMB-WIFI-KIT02I3-R10)	

** 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, be aware of the precautions below:

- **Read the user manual:** The user manual provides a complete description of the DRPC-W-EHL1 Series, installation instructions and configuration options.
- **DANGER! Disconnect Power:** Power to the DRPC-W-EHL1 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-EHL1 Series is opened while the power cord is still connected to an electrical outlet.
- **Qualified Personnel:** The DRPC-W-EHL1 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-EHL1 Series. The DRPC-W-EHL1 Series cooling vents must not be obstructed by any objects. Blocking the vents can cause overheating of the DRPC-W-EHL1 Series. Leave at least 5 cm of clearance around the DRPC-W-EHL1 Series to prevent overheating.
- **Grounding:** The DRPC-W-EHL1 Series should be properly grounded. The voltage feeds must not be overloaded. Adjust the cabling and provide external overcharge protection per the electrical values indicated on the label attached to the back of the DRPC-W-EHL1 Series.

3.2 Cover Removal

Before installing or maintaining the internal components, the cover must be removed from the DRPC-W-EHL1 Series. Follow the steps below to complete the task.

Step 1: Loosen the six screws on 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 and remove the hard disk bracket (Figure 3-2).



Figure 3-2: Take out the Disk Bracket

DRPC-W-EHL11**3.4 Storage Installation**

The DRPC-W-EHL11 supports two types of storage, one M.2 B Key & one 2.5" SSD.

3.4.1 2.5-inch SSD Installation

Step 1: Put the hard disk bracket on the hard disk, secure the bracket with 4 screws, and connect the SATA cable.

Step 2: Install the hard disk and bracket back to the host (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.

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).

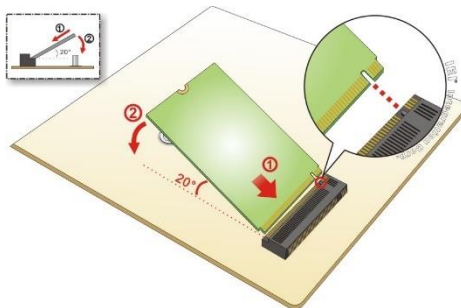


Figure 3-4: Inserting the M.2 Module into the Slot at an Angle



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

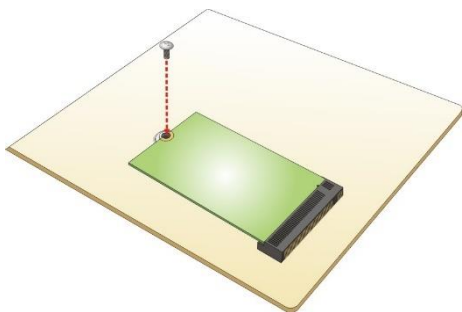


Figure 3-5: Securing the M.2 Module

3.5 Wi-Fi Module Installation (Optional)

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

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

Step 1: Locate the M.2 A Key module slot.

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).

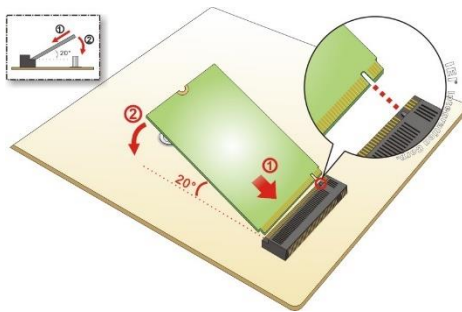


Figure 3-6: Inserting the WLAN Module

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



DRPC-W-EHL11

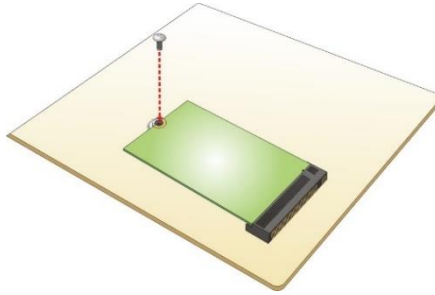


Figure 3-7: Securing the WLAN Module

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

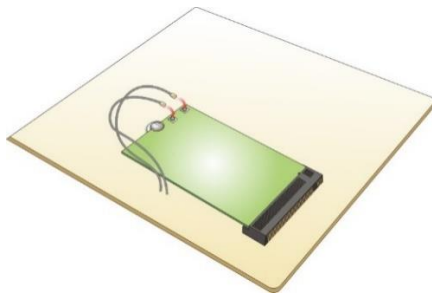


Figure 3-8: Connecting RF Cables

Step 6: Remove the nut and washer from the SMA connector 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 rear panel.

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

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

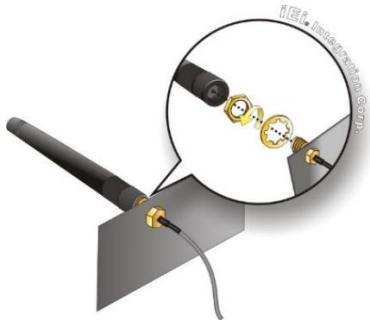


Figure 3-9: Securing SMA Connector and External Antenna Installation

3.6 Expansion I/O Installation (Optional)

The DRPC-W-EHL1 series has reserved serial port and iDPM slot for function expansions. Optional cable or module 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 connector.
- Step 2:** Connect the serial cable to the serial connector on the mainboard.

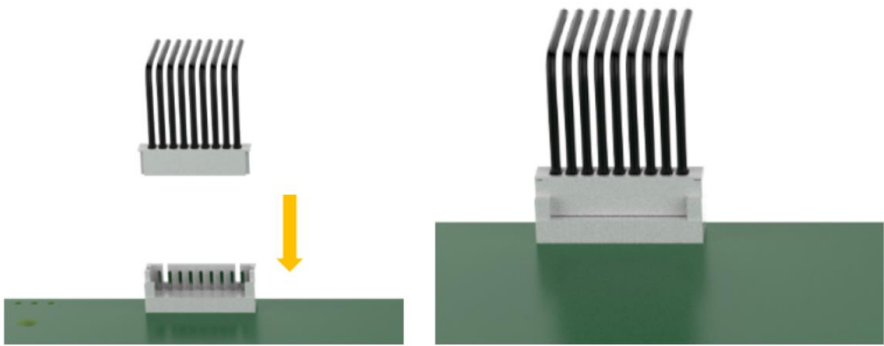


Figure 3-10: Connect the serial cable to the serial connector

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

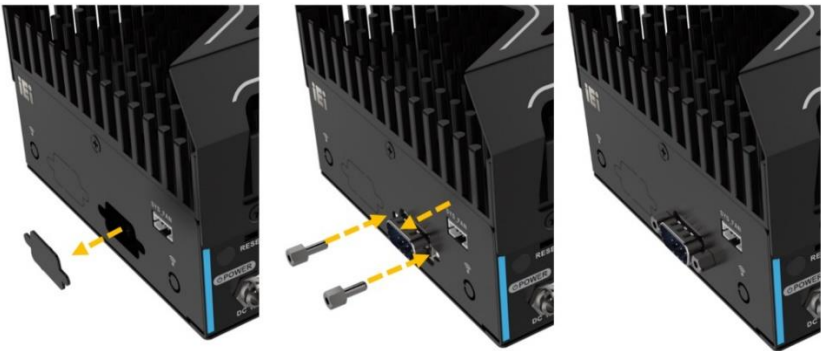


Figure 3-11: Knock out the reserved holes

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3.6.2 iDPM Module Installation

Step 1: Locate the iDPM module slot.

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 iDPM module into the socket at an angle of about 20°

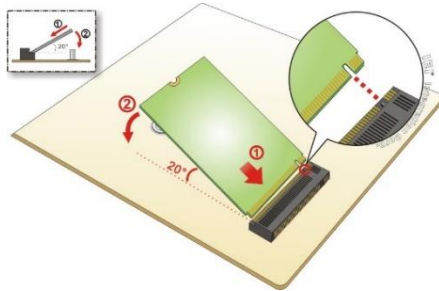


Figure 3-12: Inserting the M.2 Module into the Slot at an Angle

Step 4: Secure the iDPM module with the retention screw previously removed.

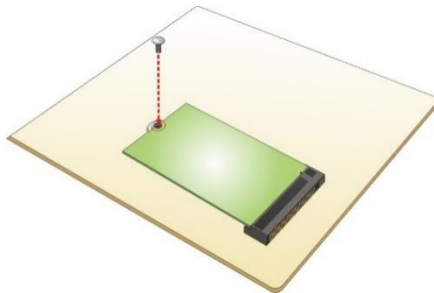


Figure 3-13: Securing the M.2 Module

Step 5: Connect the VGA cable to the VGA connector on the iDPM module.

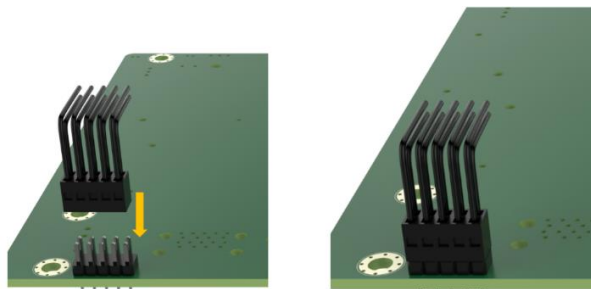


Figure 3-14: Connect the VGA cable to the VGA connector



Step 6: Knock out the reserved holes on the chassis and Secure the DB15 end of the VGA cable to the panel.



Figure 3-15: Knock out the reserved holes

3.7 Cover Installation

Install the cover, and fasten the 6 screws.



Figure 3-16: Install the cover

3.8 System Fan Installation (Optional)

When encountering high performance and high heat that need additional cooling, the optional external fan can help the DRPC-W-EHL1 solve the thermal problem. To install the optional external fan, follow the steps below.

Step 1: Remove the 4 screws (2 on the front panel, 2 on the rear panel) on the DRPC-W-EHL1 Series as shown in the figure below.



DRPC-W-EHL11

Step 2: Install the external fan module to the DRPC-W-EHL1 Series, and secure it using the 4 screws removed previously.

Step 3: Connect the fan cable to the fan connector on the side panel.

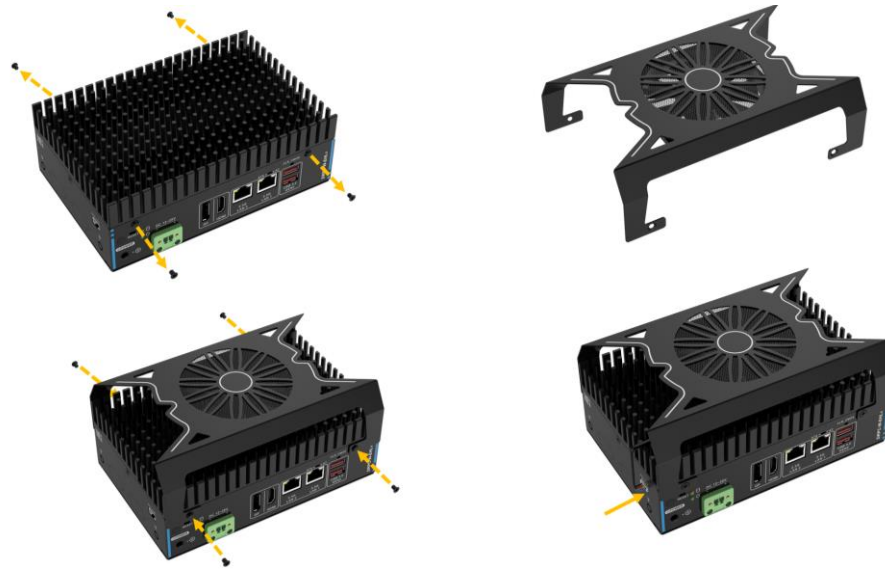


Figure 3-17: External Fan Module Installation

3.9 Mounting Brackets Installation

DRPC-W-EHL1 comes with DIN-RAIL mounting bracket, follow the steps below to install.

Step 1: Turn the embedded system over.

Step 2: Align the retention screw holes in each bracket with the corresponding retention screw holes on the bottom surface.

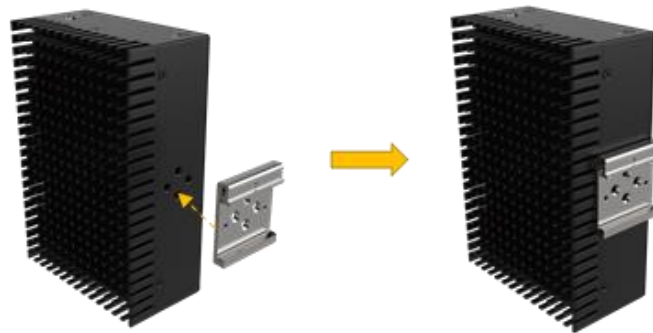


Figure 3-18: Align the retention screw holes

Step 3: Secure the brackets to the system by inserting retention screws into each bracket.

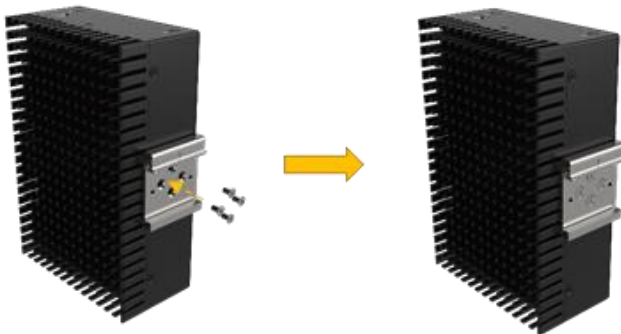


Figure 3-19: Secure the brackets

Step 4: Attach the upper edge of the mounting bracket at an angle. Push the system towards the DIN rail until mounting bracket hangs securely.

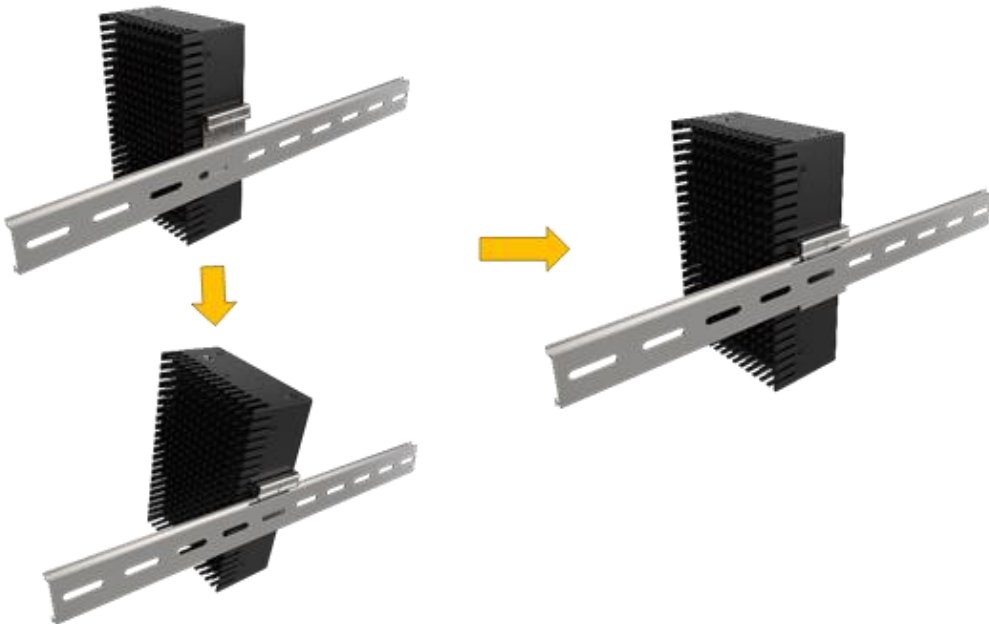


Figure 3-20: Mounting the system

3.10 External Peripheral Interface Connectors

The DRPC-W-EHL1 Series has the following connectors. Detailed descriptions of the connectors can be found in the subsections below.

- Ethernet

DRPC-W-EHL11

- Power button
- Power DC jack
- HDMI
- DP
- USB

3.10.1 HDMI/DP Connector

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



Figure 3-21: HDMI/DP Connection

3.10.2 LAN Connectors

The LAN connectors allow connection to an external network

Step 1: Locate the RJ-45 connectors. The locations of the RJ-45 connectors are shown in Chapter 4.

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-EHL1 Series. See Figure 3-22.

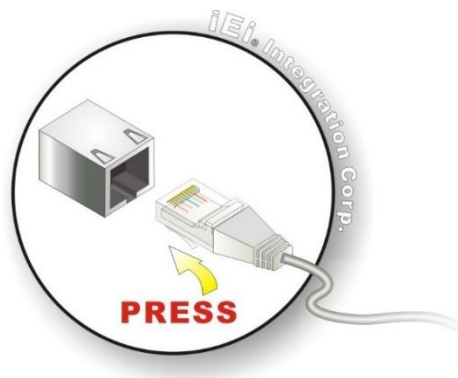


Figure 3-22: LAN Connection

Step 3: Insert the LAN cable RJ-45 connector. Once aligned, gently insert the LAN cable RJ-45 connector into the on-board RJ-45 connector

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 3-23: RJ-45 Ethernet Connector

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

Table 3-1: RJ-45 Ethernet Connector LEDs

3.10.3 Power Connector

The power connector is a 2-pin DC jack connector on the front panel that can directly connect to a power adapter. The supported power input voltage is 12 VDC.

Pin	Description
1	12V
2	GND

Table 3-2: Power Connector Pinouts



Figure 3-24: Power Connector

DRPC-W-EHL11

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

The DRPC-W-EHL11 has two USB 3.2 ports. To connect a USB device, please follow the instructions below

Step 1: Located the USB connectors. The locations of the USB connectors are shown in Chapter 4.

Step 2: Align the connectors. Align the USB device connector with one of the connectors on the I/O panel.

Step 3: Insert the device connector. Once aligned, gently insert the USB device connector into the onboard connector.

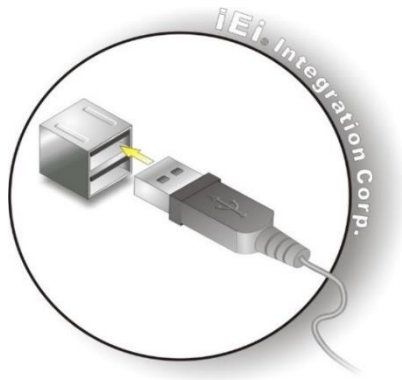


Figure 3-25: USB Connection

3.11 Powering On/Off the System



WARNING:

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

The power of the system needs more than 12V5A

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

Step 2: Push the power button, the power LED indicator should turn on.

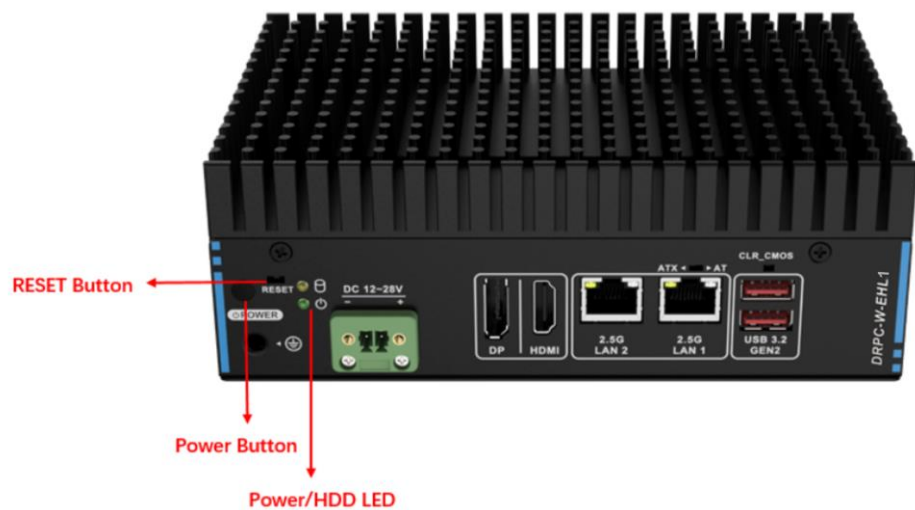


Figure 3-26: Power Input & Button & LED



Figure 3-27: Power Button

DRPC-W-EHL11

3.12 Available Drivers

All the drivers for the DRPC-W-EHL1 Series are available on IEI Resource Download Center (<https://download.ieiworld.com>). Type DRPC-W-EHL1 Series and press Enter to find all the relevant software, utilities, and documentation.

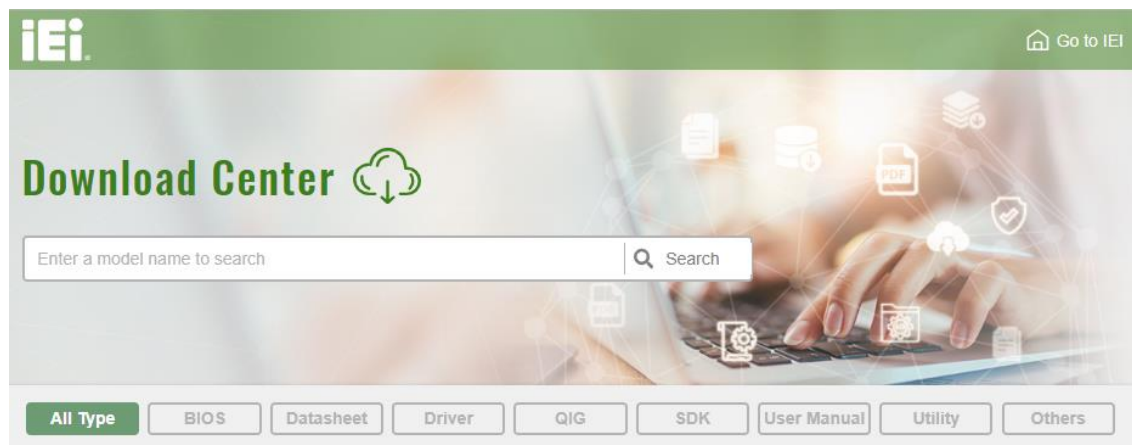
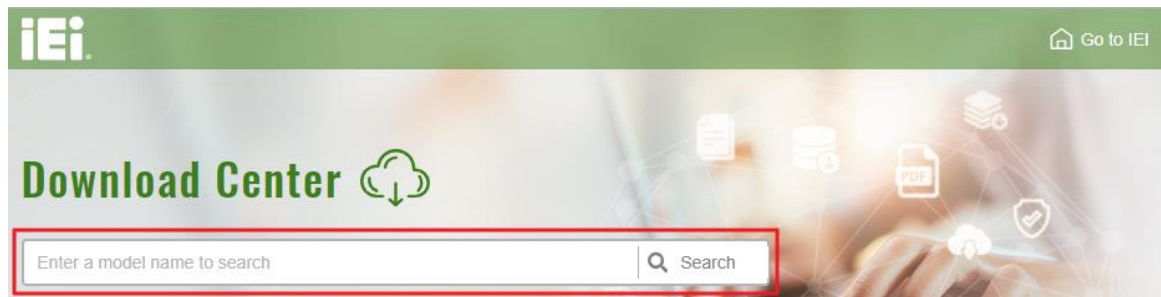


Figure 3-28: IEI Resource Download Center

3.12.1 Driver Download

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

Step 1: Go to <https://download.ieiworld.com>. Type DRPC-W-EHL1 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 Type BIOS Datasheet **Driver** QIG SDK User Manual Utility Others

WAFER-BT-i1 Product Info ▶

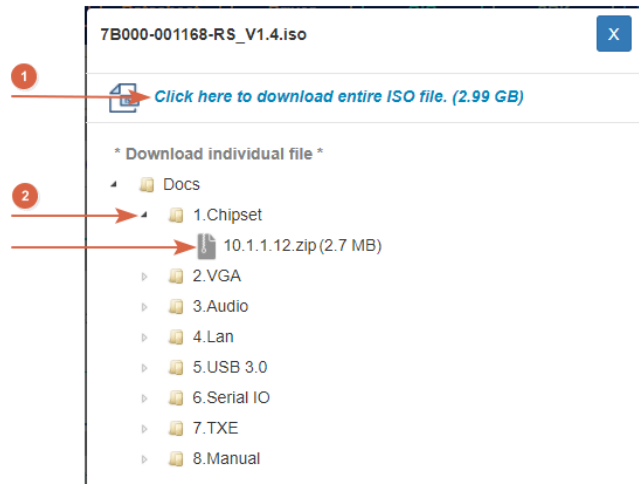
Embedded Computer ▶ Single Board Computer ▶ Embedded Board

3.5" SBC with Intel® 22nm Atom™/Celeron® on-board SoC

Driver

File Name	Published	Version	File Checksum
7B000-001033-RS V2.3.iso (2.23 GB)	2017/10/03	2.30	3B2DB1F792779A93A8F50DDBC3943E30

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).



NOTE:

To install software from the downloaded ISO image file in Windows 10 (or later), double-click the ISO file to mount it as a virtual drive to view its content.

Chapter

4

System Motherboard

4.1 Overview

The connectors and jumpers of the system motherboard are listed in the following sections.

4.2 Layout

The following diagram shows the locations of the internal/external connectors and jumpers on the motherboard.

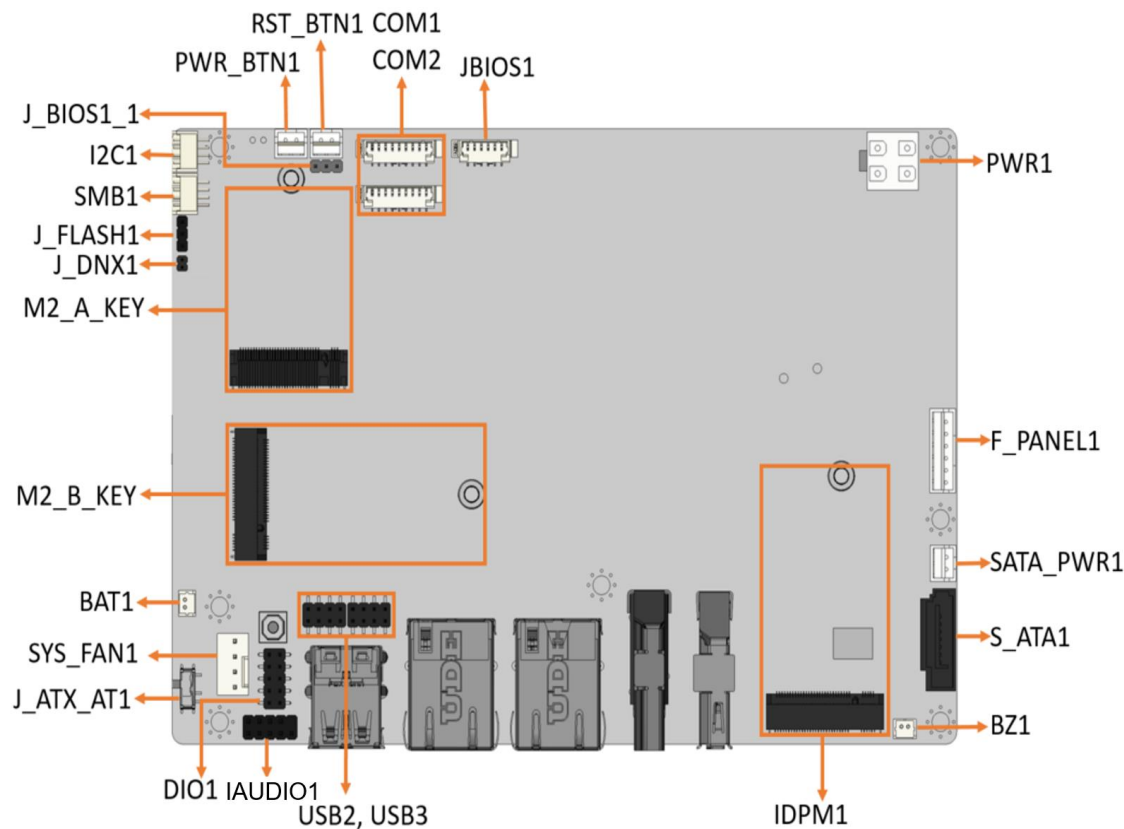


Figure 4-1: Connector and Jumper Locations

4.3 Peripheral Interface Connectors

The table below lists all the connectors on the board.

Connector	Type	Label
Clear CMOS button	Button	J_CMOS1
AT/ATX power mode setting	Switch	J_ATX_AT1
Audio connector for IEI AC-KIT-888S kit	10-pin header	IAUDIO1
ATX 12V power connector	4-pin Molex	PWR1
Battery connector	2-pin wafer	BAT1
Digital I/O connector	14-pin header	DIO1
Fan connector	4-pin header	SYS_FAN1
Power LED & HDD LED connector	6-pin wafer	F_PANEL1
Power button connector	2-pin wafer	PWR_BTN1
Reset button connector	2-pin wafer	RST_BTN1
RS-232/422/485 serial port connectors	9-pin wafer	COM1, COM2
SATA 6Gb/s connectors	7-pin SATA connector	S_ATA1
SATA power connector	2-pin wafer	SATA_PWR1
I2C connector	4-pin wafer	I2C1
SMBus connector	4-pin wafer	SMB1
Flash SPI ROM connector	6-pin wafer	JBIOS1
Internal USB 2.0 connector	8-pin header	USB2, USB3
M.2 A-key slot	M.2 A-key slot	M2_A_KEY
M.2 B-key slot	M.2 B-key slot	M2_B_KEY
IEI iDPM slot	iDPM slot	IDPM1

Table 4-1: Peripheral Interface Connectors

4.4 External Interface Panel Connectors

The table below lists the connectors on the external I/O panel.

Connector	Type	Label
External 2.5GbE RJ-45 connectors	RJ45	LAN1, LAN2
External USB 3.2 Gen 2x1 Type-A connector	USB 3.2 Gen 2 Type-A	USB1
External DisplayPort connector	DP	DP1
External dual HDMI connector	HDMI	HDMI1

Table 4-2: Rear Panel Connectors

4.5 Internal Peripheral Connectors

The section describes all of the connectors on the DRPC-W-EHL1 Series.

4.5.1 Clear CMOS Button

- CN Label:** J_CMOS1
- CN Type:** Button
- CN Location:** See Figure 4-2
- CN Pinouts:** See Table 4-3

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.

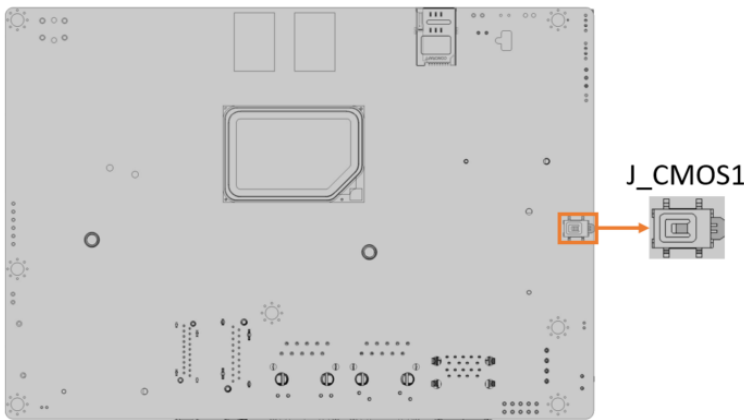


Figure 4-2: Clear CMOS Location

PIN NO.	DESCRIPTION
NC (default)	Keep CMOS Setup (Normal Operation)
Press button	Clear CMOS Setup

Table 4-3: Clear CMOS Pinouts

4.5.2 AT/ATX Power Mode Setting

CN Label: J_ATX_AT1
CN Type: 3-pin switch
CN Location: See Figure 4-3
CN Pinouts: See Table 4-4

The AT/ATX power mode selection is made through the AT/ATX power mode switch which is shown in **Figure 4-3**.

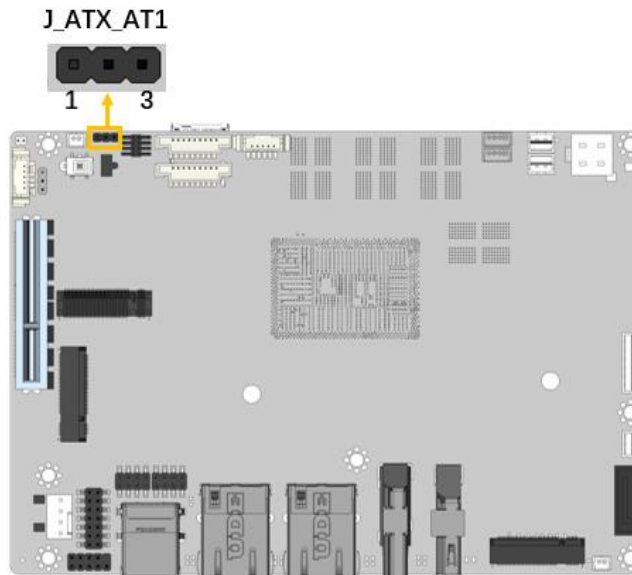


Figure 4-3: AT/ATX Power Mode Switch Locations

PIN NO.	DESCRIPTION
Short 1 - 2	ATX Power Mode (default)
Short 2 - 3	AT Power Mode

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

4.5.3 Internal Audio Connector

- CN Label:

IAUDIO1
- CN Type:

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

See Figure 4-4
- CN Pinouts:

See Table 4-5

The audio connector is connected to external audio devices (AC-KIT-888S-R10) including speakers and microphones for the input and output of audio signals to and from the system.

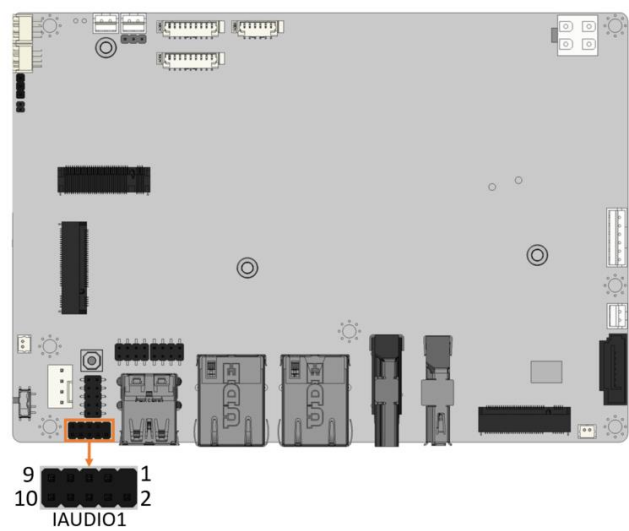


Figure 4-4 :Audio Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	HDA_SYNC	2	HDA_CLK
3	HDA_SDOUT	4	HDA_SPKR
5	HDA_SDIN	6	HDA_RST#
7	+5V	8	GND
9	+12V	10	GND

Table 4-5: Audio Connector Pinouts

DRPC-W-EHL11**4.5.4 ATX 12V Power Connector**

CN Label: PWR1

CN Type: 4-pin Molex, p=4.2 mm

CN Location: See **Figure 4-5**

CN Pinouts: See **Table 4-7**

The connector supports the +12V power supply.

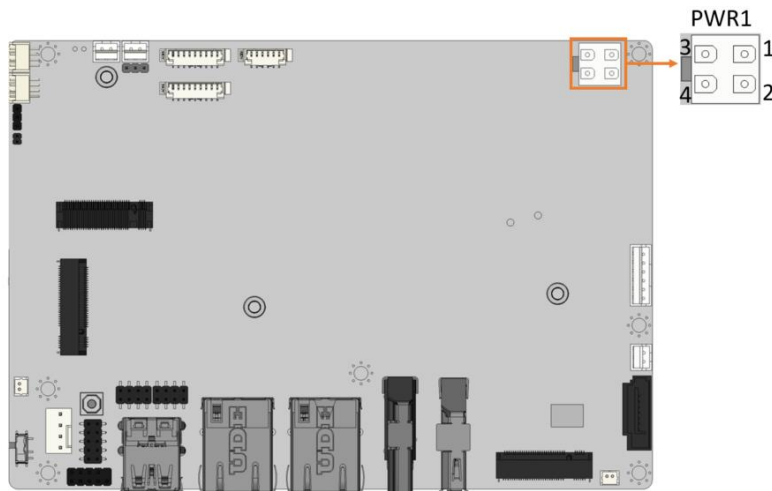


Figure 4-5: ATX 12V Power Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	GND
3	+12V	4	+12V

Table 4-6: ATX 12V Power Connector Pinouts

4.5.5 RTC Battery Connector

**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.

CN Label:	BAT1
CN Type:	2-pin wafer, p=1.25 mm
CN Location:	See Figure 4-6
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.

DRPC-W-EHL11

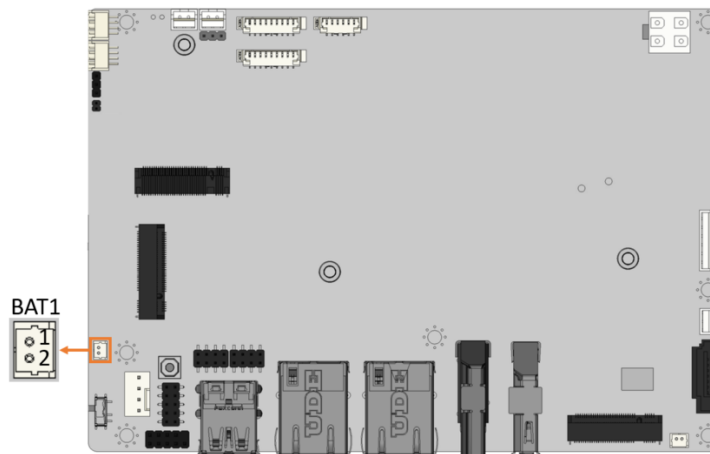


Figure 4-6: Battery Connector Location

Pin	Description
1	VBATT
2	GND

Table 4-7: Battery Connector Pinouts

4.5.6 Digital Input / Output Connector

- CN Label:

DIO1
- CN Type:

10-pin wafer, p=2.0 mm
- CN Location:

See **Figure 4-7**
- CN Pinouts:

See **Table 4-8**

The 8-bit digital I/O connector provides programmable input and output for external devices.

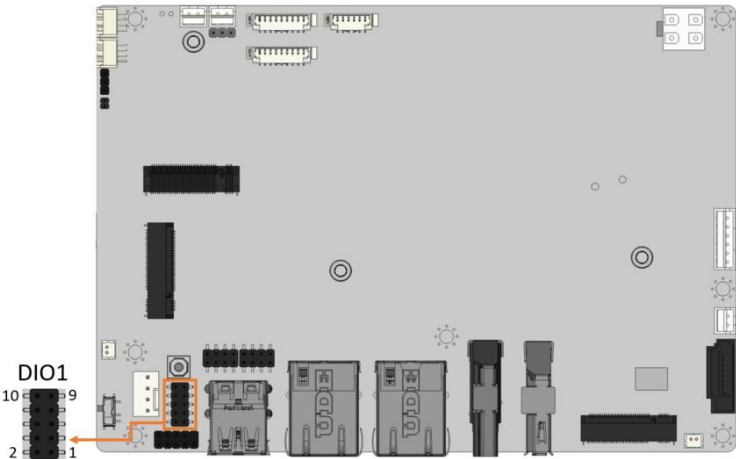


Figure 4-7: Digital I/O Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	VCC
3	DOUT3	4	DOUT2
5	DOUT1	6	DOUT0
7	DIN3	8	DIN2
9	DIN1	10	DIN0

Table 4-8: Digital I/O Connector Pinouts

DRPC-W-EHL11

4.5.7 Fan Connector

- CN Label:** SYS_FAN1
- CN Type:** 4-pin wafer, p=2.54 mm
- CN Location:** See **Figure 4-8**
- CN Pinouts:** See **Table 4-9**

The fan connector attaches to a smart cooling fan.

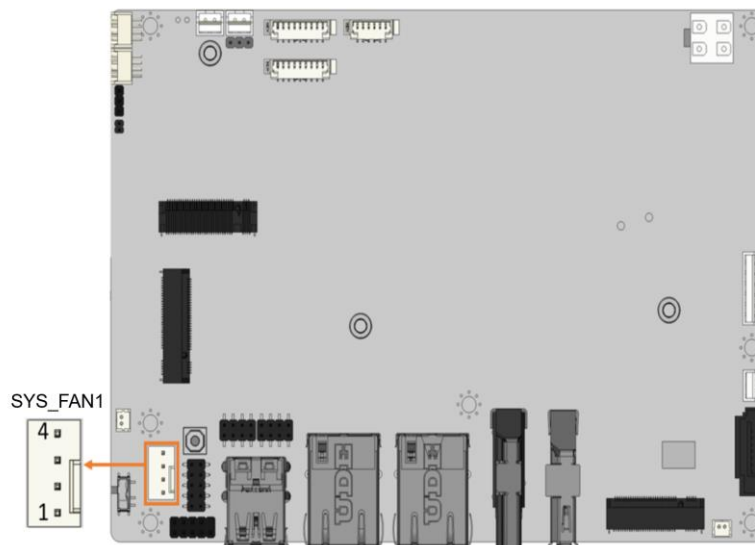


Figure 4-8: Fan Connector Location

Pin	Description	Pin	Description
1	GND	2	+12V
3	FANIO	4	PWM

Table 4-9: Fan Connector Pinouts

4.5.8 Power LED & HDD LED Connector

- CN Label: F_PANEL1
- CN Type: 6-pin wafer, p=2.00 mm
- CN Location: See Figure 4-9
- CN Pinouts: See Table 4-10

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

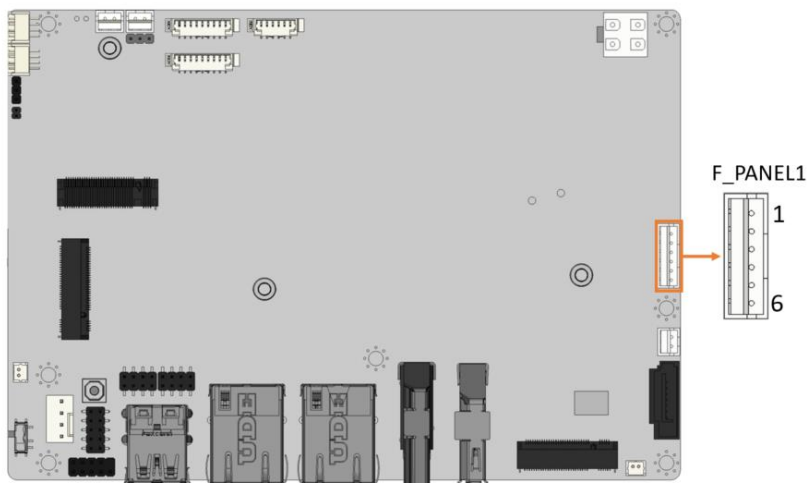


Figure 4-9: Power LED & HDD LED Connector Location

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

Table 4-10: Power LED & HDD LED Connector Pinouts

DRPC-W-EHL11

4.5.9 Power Button Connector

- CN Label:** PWR_BTN1
- CN Type:** 2-pin wafer, p=2.00 mm
- CN Location:** See **Figure 4-10**
- CN Pinouts:** See **Table 4-11**

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

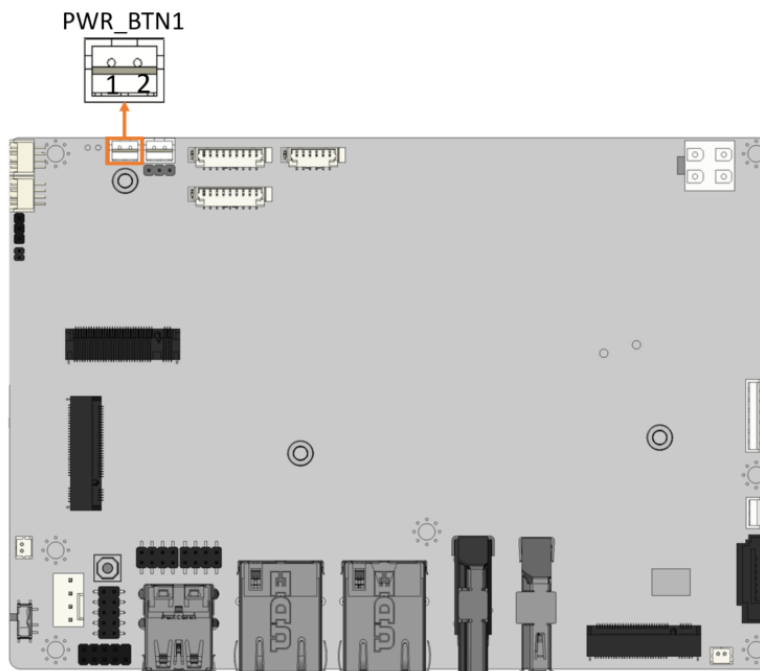


Figure 4-10: Power Button Connector Location

Pin	Description
1	PWR_BTN+
2	PWR_BTN-

Table 4-11: Power Button Connector Pinouts

4.5.10 Reset Button Connector

- CN Label:

RST_BTN1
- CN Type:

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

See Figure 4-11
- CN Pinouts:

See
Table 4-12

The reset button connector is connected to a reset switch on the system chassis to enable users to reboot the system when the system is turned on.

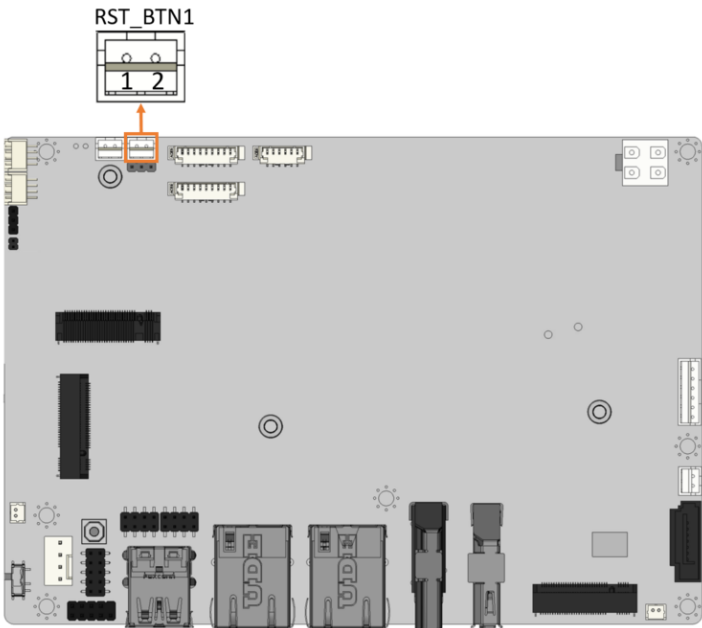


Figure 4-11: Reset Button Connector Location

Pin	Description
1	RESET+
2	RESET-

Table 4-12: Reset Button Connector Pinouts

DRPC-W-EHL11

4.5.11 RS-232 Serial Port Connector

- CN Label:** COM1, COM2
- CN Type:** 9-pin wafer, p=1.25 mm
- CN Location:** See Figure 4-12
- CN Pinouts:** See Table 4-13

The serial connector provides RS-232/422/485 connection.

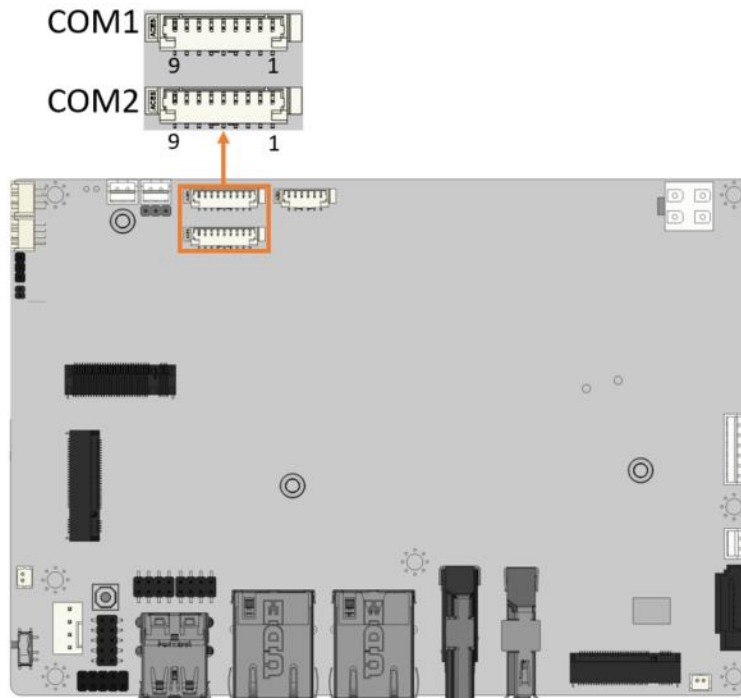


Figure 4-12: RS-232/422/485 Serial Port Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTS
7	DTR	8	RI
9	GND		

Table 4-13: RS-232 Serial Port Connector Pinouts

4.5.12 SATA 6Gb/s Drive Connector

- CN Label:

SATA1
- CN Type:

7-pin SATA connector
- CN Location:

See Figure 4-13
- CN Pinouts:

See Table 4-14

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

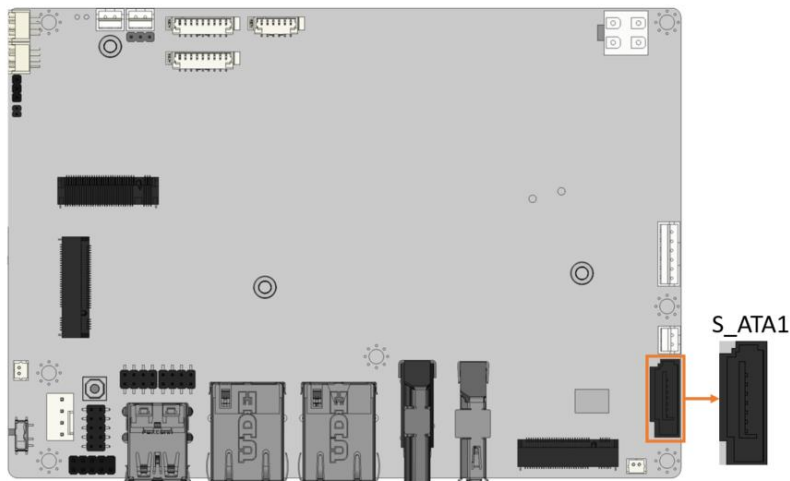


Figure 4-13: SATA 6Gb/s Drive Connectors Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	5	SATA_RX-
2	SATA_TX+	6	SATA RX+
3	SATA_TX-	7	GND
4	GND	8	N/C

Table 4-14: SATA 6Gb/s Drive Connectors Pinouts

DRPC-W-EHL11

4.5.13 SATA Power Connector

- CN Label:** SATA_PWR1
- CN Type:** 2-pin wafer, p=2.00 mm
- CN Location:** See **Figure 4-14**
- CN Pinouts:** See **Table 4-15**

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

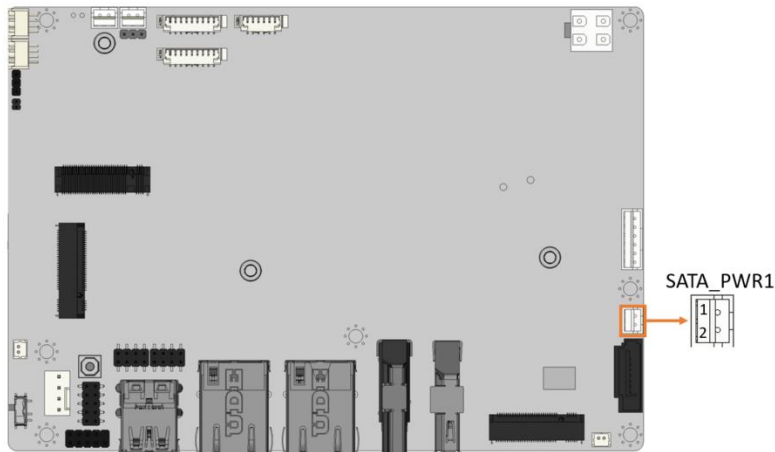


Figure 4-14: SATA Power Connector Location

Pin	Description
1	+5V
2	GND

Table 4-15: SATA Power Connector Pinouts

4.5.14 I²C Connector

- CN Label:

I2C1
- CN Type:

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

See Figure 4-15
- CN Pinouts:

See Table 4-16

The SMBus (System Management Bus) connector provides low-speed system management communications.

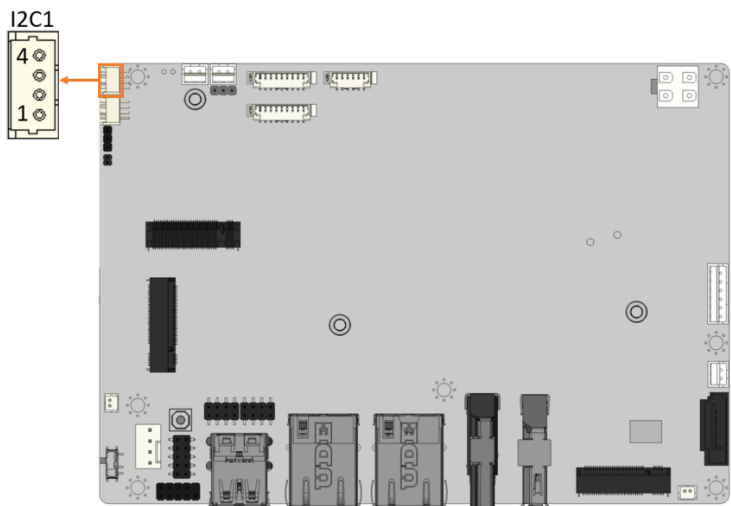


Figure 4-15: I²C Connector Location

Pin	Description
1	GND
2	I2C_DATA
3	I2C_CLK
4	+5V

Table 4-16: I²C Connector Pinouts

DRPC-W-EHL11**4.5.15 SMBus Connector**

CN Label:	SMB1
CN Type:	4-pin wafer, p=1.25 mm
CN Location:	See Figure 4-16
CN Pinouts:	See Table 4-17

The SMBus is a two-wire bus used for communication with low bandwidth devices on a motherboard such as power related chips and temperature sensors.

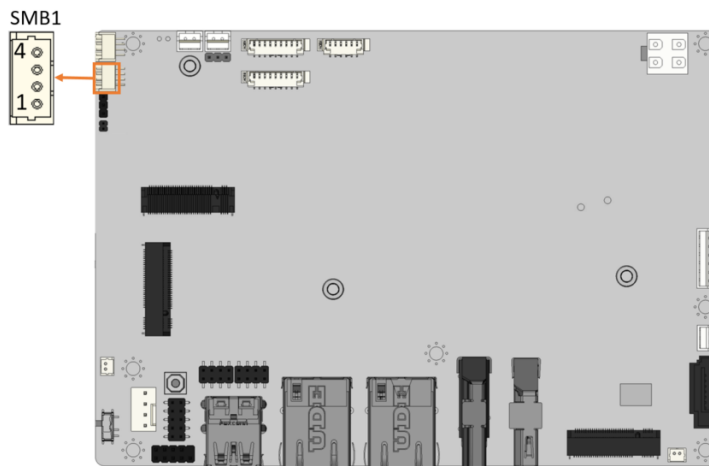


Figure 4-16: SMBus Connector Location

Pin	Description
1	GND
2	SMB_DATA
3	SMB_CLK
4	+5V

Table 4-17: SMBus Connector Pinouts

4.5.16 Flash SPI ROM Connector

- CN Label:JBIOS1
- CN Type:6-pin wafer, p=1.25 mm
- CN Location:See Figure 4-17
- CN Pinouts:See Table 4-18

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

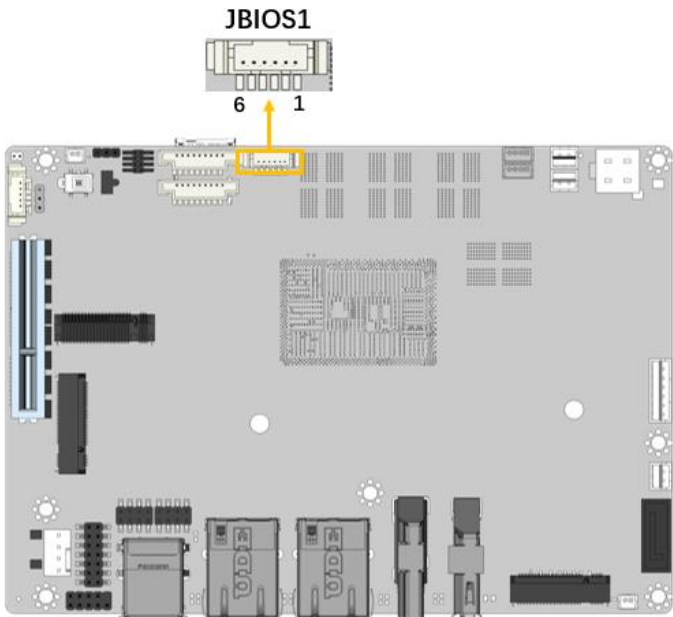


Figure 4-17: Flash SPI ROM Connector Location

Pin	Description
1	+3.3V
2	SPI_CS#
3	SPI_SO
4	SPI_CLK
5	SPI_SI
6	GND

Table 4-18: Flash SPI ROM Connector Pinouts

DRPC-W-EHL11

4.5.17 Internal USB 2.0 Connectors

- CN Label:** USB2, USB3
- CN Type:** 8-pin header, p=2.00 mm
- CN Location:** See **Figure 4-18**
- CN Pinouts:** See **Table 4-19**

Each USB connector provides two USB 2.0 ports by dual-port USB cable.

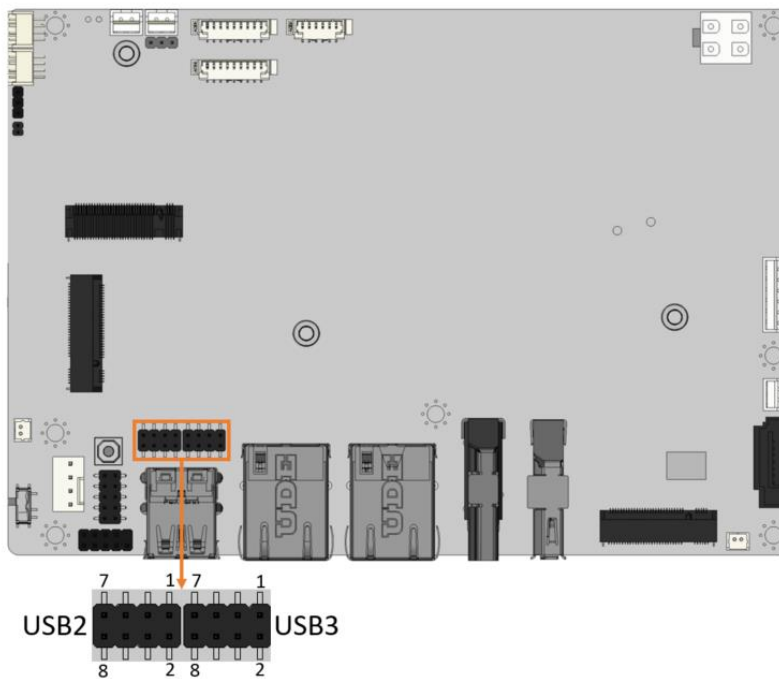


Figure 4-18: Internal USB 2.0 Connectors Locations

Pin	Description	Pin	Description
1	SPI_CS#	2	+3.3V
3	SPI_SO	4	NC
5	EC_DET_FLASH	6	SPI_CLK
7	GND	8	SPI_SI

Table 4-19: Internal USB 2.0 Connectors Pinouts

4.5.18 M.2 A-key Slot

- CN Label:

M2_A_KEY
- CN Type:

M.2 A-key slot
- CN Location:

See Figure 4-19
- CN Pinouts:

See Table 4-20

The M.2 slot is keyed in the A position and accepts 2230 size of M.2 modules. The M.2 slot supports PCIe Gen3 x1 and USB 2.0 signals.

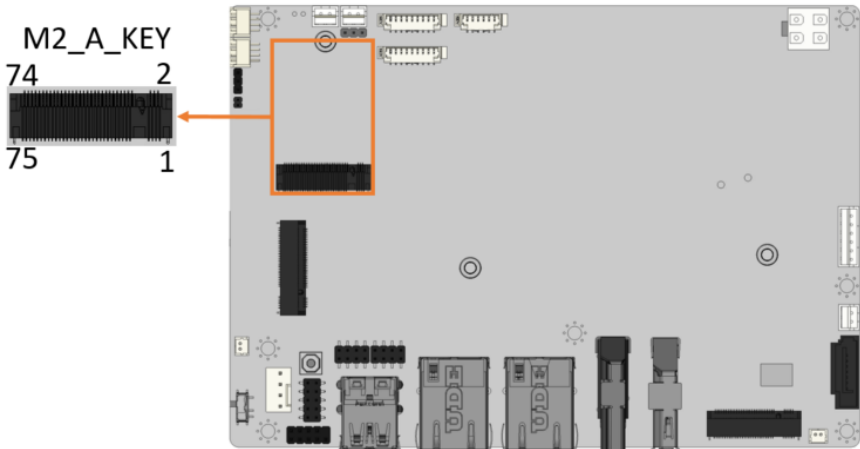


Figure 4-19: M.2 A-key Slot Location

Pin	Description	Pin	Description
1	GND	2	+V3.3A
3	USB+	4	+V3.3A
5	USB-	6	NC
7	GND	8	Module Key
9	Module Key	10	Module Key
11	Module Key	12	Module Key
13	Module Key	14	Module Key
15	Module Key	16	NC
17	NC	18	GND
19	NC	20	NC
21	NC	22	NC
23	GND	24	GND

DRPC-W-EHL11

Pin	Description	Pin	Description
25	NC	26	NC
27	NC	28	NC
29	GND	30	GND
31	NC	32	NC
33	GND	34	NC
35	PCIE_TX6+	36	GND
37	PCIE_TX6-	38	NC
39	GND	40	NC
41	PCIE_RX6+	42	NC
43	PCIE_RX6-	44	NC
45	GND	46	NC
47	CLK_M2_A+	48	NC
49	CLK_M2_A-	50	BTWIFI_SUS_CLK
51	GND	52	WLAN_PERST#
53	NC	54	+V3.3A_WLAN
55	+V3.3A_WLAN	56	+V3.3A_WLAN
57	GND	58	NC
59	NC	60	NC
61	NC	62	NC
63	GND	64	NC
65	NC	66	NC
67	NC	68	NC
69	GND	70	PEWAKE#
71	NC	72	+V3.3A
73	NC	74	+V3.3A
75	GND		

Table 4-20: M.2 A-Key Slot Pinouts

4.5.19 M.2 B-key Slot

- CN Label: M2_B_KEY
- CN Type: M.2 B-key slot
- CN Location: See Figure 4-20
- CN Pinouts: See Table 4-21

The M.2 B key 2242/3042 slot with PCIe Gen3 x2 and USB2.0 signal supports NVMe storage.

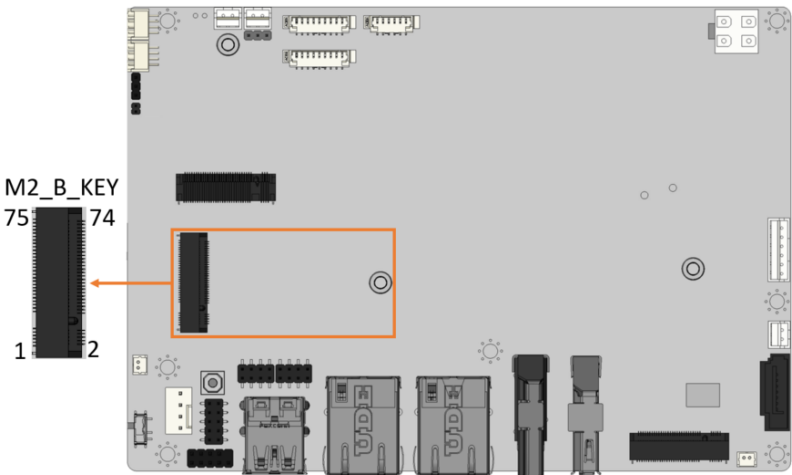


Figure 4-20: M.2 B-key Slot Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	+V3.3
3	GND	4	+V3.3
5	GND	6	WWAN_FCP_OFF_N
7	USB2_DP	8	WWAN_DISABLE_N
9	USB2_DN	10	NC
11	GND	12	Module Key
13	Module Key	14	Module Key
15	Module Key	16	Module Key
17	Module Key	18	Module Key
19	Module Key	20	NC

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PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
21	NC	22	NC
23	NC	24	NC
25	NC	26	NC
27	GND	28	NC
29	PCIE_1_RX_DN	30	NC
31	PCIE_1_RX_DP	32	NC
33	GND	34	NC
35	PCIE_1_TX_DN	36	NC
37	PCIE_1_TX_DP	38	SSD_DEVSLP
39	GND	40	NC
41	PCIE_0_RX_DN	42	NC
43	PCIE_0_RX_DP	44	NC
45	GND	46	NC
47	PCIE_0_TX_DN	48	NC
49	PCIE_0_TX_DP	50	PLT_RST_N
51	GND	52	NC
53	PCIE_CLK_DN	54	PCIE_WAKE#
55	PCIE_CLK_DP	56	NC
57	GND	58	NC
59	NC	60	NC
61	NC	62	NC
63	NC	64	NC
65	NC	66	SUSCLK
67	NC	68	NC
69	NC	70	+V3.3
71	GND	72	+V3.3
73	GND	74	+V3.3
75	GND		

Table 4-21: M. 2 B-key Slot Pinouts

4.5.20 iDPM Slot

- CN Label:

IDPM1
- CN Type:

iDPM slot
- CN Location:

See Figure 4-21
- CN Pinouts:

See Table 4-22

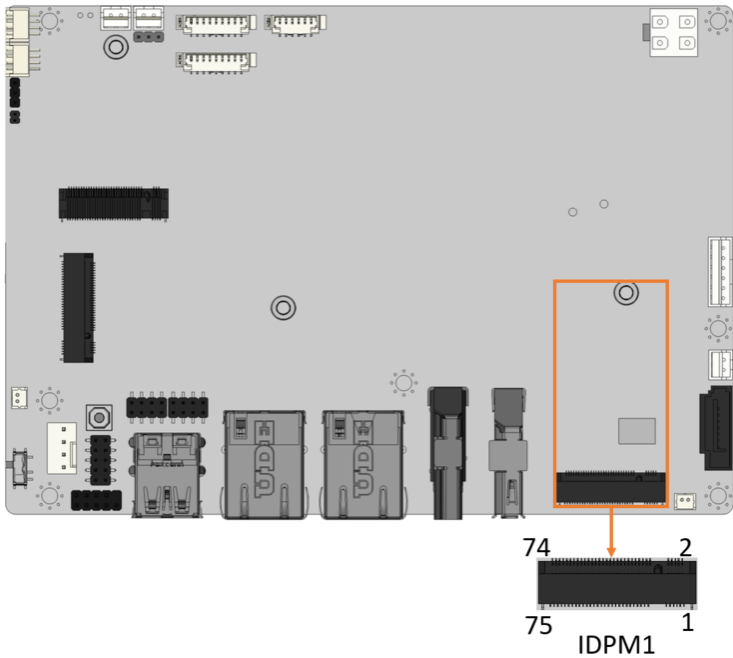


Figure 4-21: iDPM Slot Location

Pin	Description	Pin	Description
1	GND	2	+3.3V
3	GND	4	+3.3V
5	GND	6	+3.3V
7	GND	8	+3.3V
9	GND	10	+3.3V
11	+5V	12	Module Key
13	Module Key	14	Module Key
15	Module Key	16	Module Key
17	Module Key	18	Module Key
19	Module Key	20	+3.3VS

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Pin	Description	Pin	Description
21	DISPLAY_DETECT_P IN21	22	+3.3VS
23	DISPLAY_DETECT_P IN23	24	+3.3VS
25	GND	26	+3.3VS
27	GND	28	GND
29	EDP_TX3_DN	30	+12VS
31	EDP_TX3_DP	32	+12VS
33	GND	34	+12VS
35	EDP_TX2_DN	36	+12VS
37	EDP_TX2_DP	38	GND
39	GND	40	SMB_CLK
41	EDP_TX1_DN	42	SMB_DATA
43	EDP_TX1_DP	44	GND
45	GND	46	EC_BKLT_CTRL
47	EDP_TX0_DN	48	EDP1_BKLT_CTRL
49	EDP_TX0_DP	50	EDP1_BKLT_EN
51	GND	52	EDP1_VDD_EN #
53	EDP_AUX_DN	54	EDP_HPD_R
55	EDP_AUX_DP	56	BUF_PLT_RST#
57	GND	58	LVDS_EN
59	GND	60	+V5S
61	GND	62	+V5S
63	GND	64	+V5S
65	GND	66	+V5S
67	GND	68	+12VA
69	GND	70	+12VA
71	GND	72	+12VA
73	GND	74	+12VA
75	GND		

Table 4-22: iDPM Slot Pinouts

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 **F7** 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 **F7** 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.

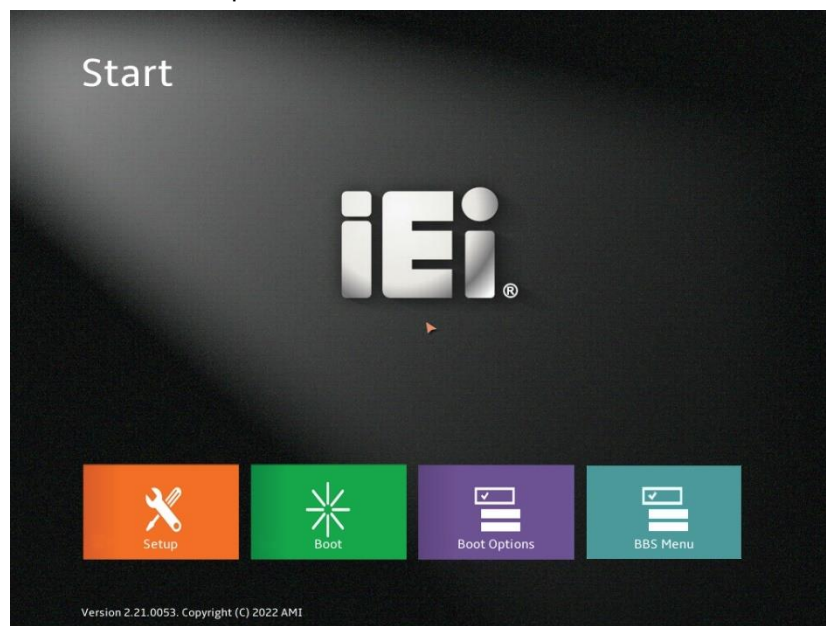


Figure 5-1: BIOS Starting Menu



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**.

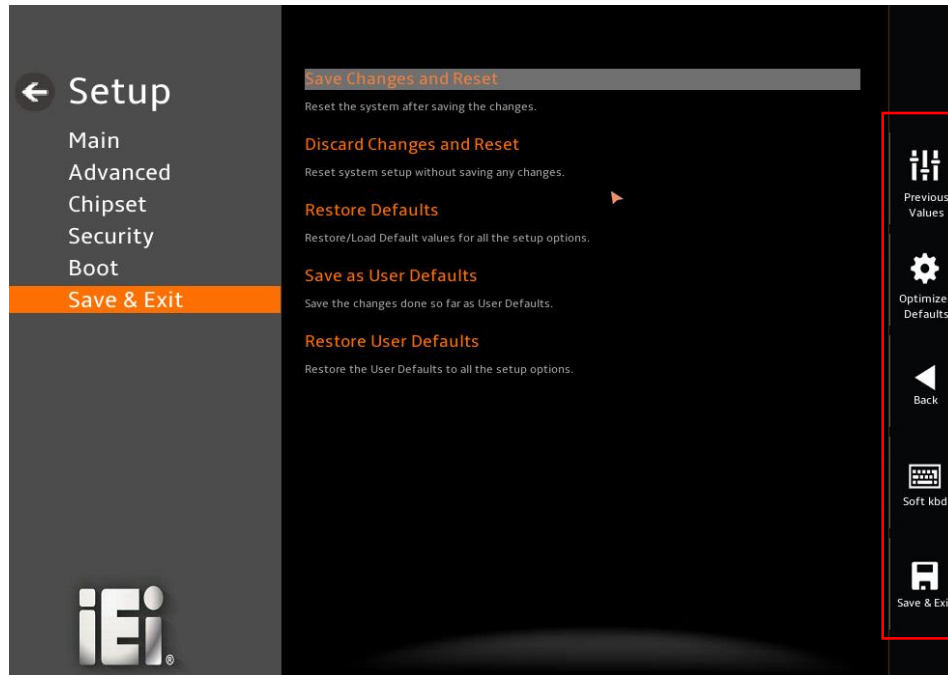
Key	Function
Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item on the left hand side
Right arrow	Move to the item on the right hand side
+	Increase the numeric value or make changes
-	Decrease the numeric value or make changes
Page Up	Move to the previous page
Page 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:

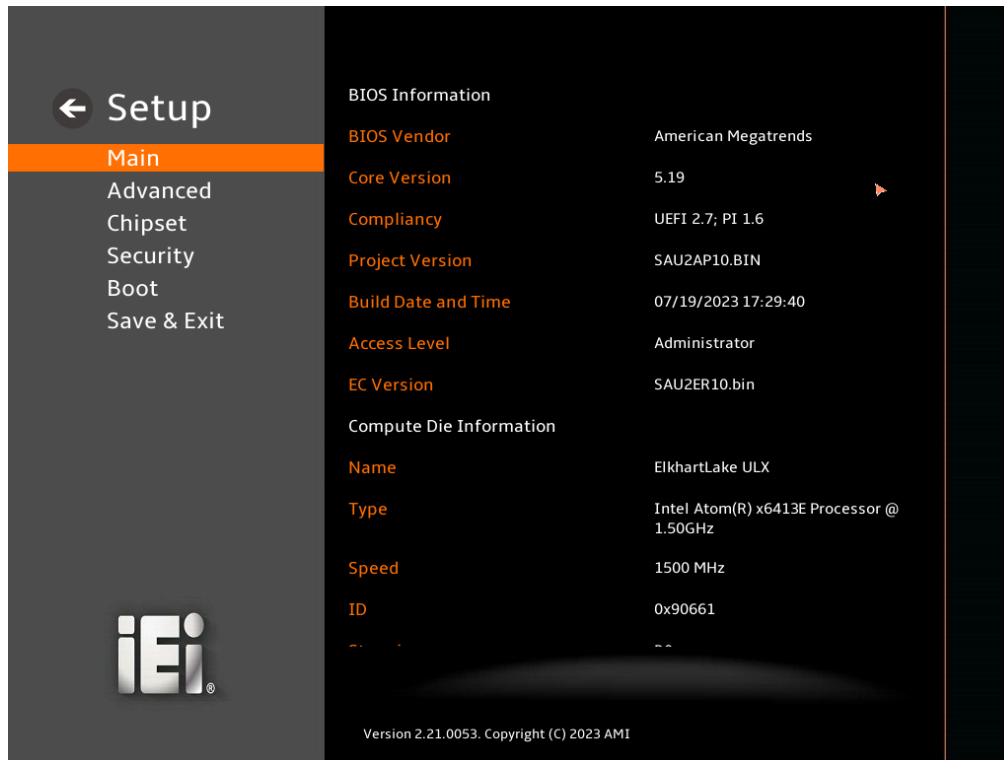
- Main – Changes the basic system configuration.
- Advanced – Changes the advanced system settings.
- Chipset – Changes the chipset settings.
- Security – Sets User and Supervisor Passwords.
- Boot – Changes the system boot configuration.
- Save & Exit – Selects exit options and loads default settings

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

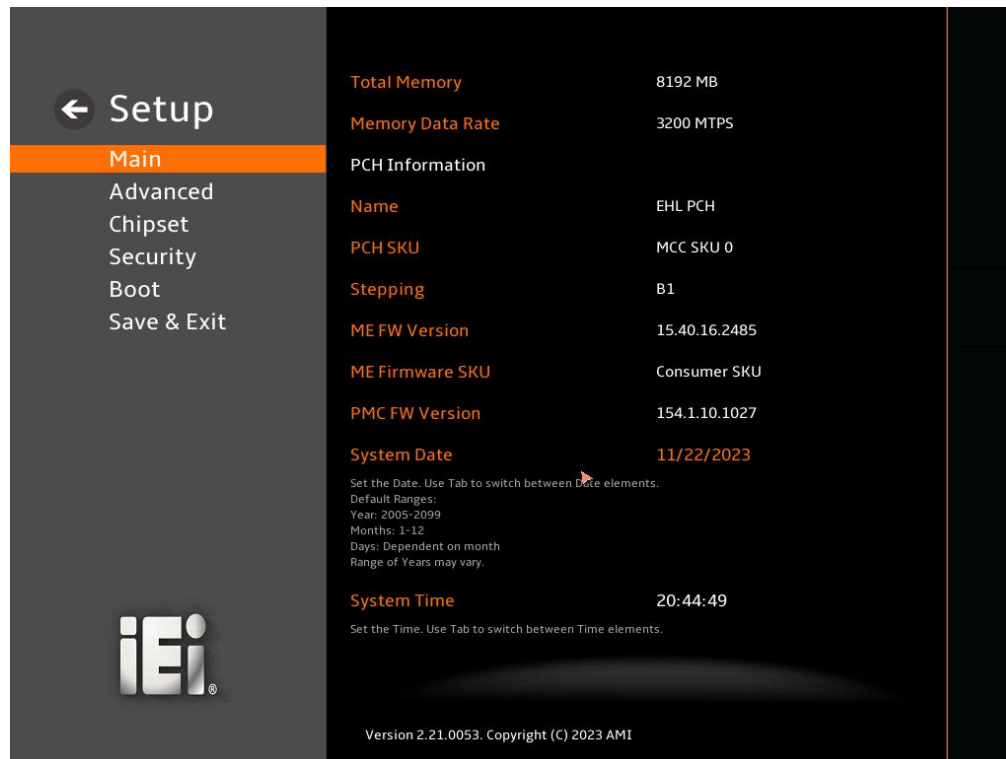
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5.2 Main

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



BIOS Menu 1: Main (1/2)



BIOS Menu 2: Main (2/2)

→ 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
- **EC Version:** Current EC version
- BIOS Information

→ Compute Die Information

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

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- **Name:** Displays the Processor Details
- **Type:** Displays the Processor Type
- **Speed:** Displays the Processor Speed
- **ID:** Displays the Processor ID
- **Stepping:** Displays the Processor Stepping
- **Number of Processors:** Displays number of CPU cores
- **Microcode Revision:** CPU Microcode Revision
- **Total Memory:** Total Memory in the System
- **Memory Data Rate:** Displays the Data Rate 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
- **Stepping:** Displays the PCH Stepping
- **ME FW Version:** Displays the ME Firmware Version
- **ME Firmware SKU:** Displays the ME Firmware SKU

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.

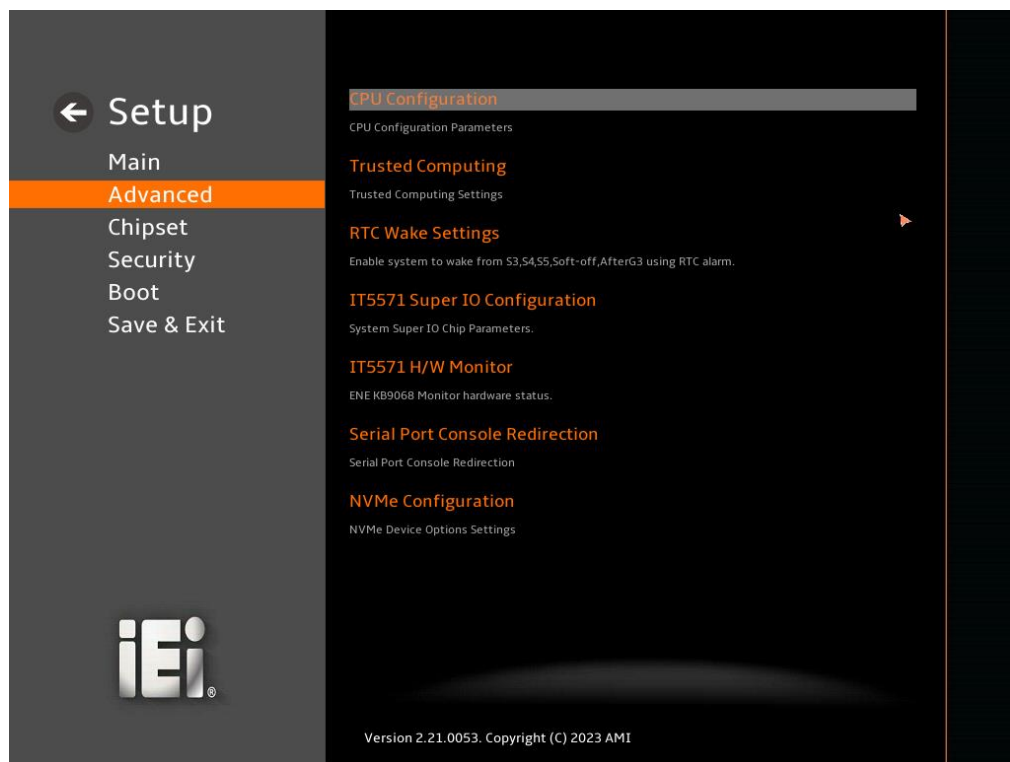
5.3 Advanced

Use the **Advanced** menu (**BIOS Menu 3**) 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 made are compatible with the hardware.



BIOS Menu 3: Advanced

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5.3.1 CPU Configuration

Use the **CPU Configuration** menu (**BIOS Menu 4 & BIOS Menu 5**) to view detailed CPU specifications or enable the Intel Virtualization Technology.



BIOS Menu 4: CPU Configuration (1/2)



BIOS Menu 5: 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 | | Disables Intel Virtualization Technology. |
| ➔ | Enabled | DEFAULT | Enables Intel Virtualization Technology. |

➔ Active Processor Cores [All]

Use the **Active Processor Cores** BIOS option to enable numbers of cores in the processor package.

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

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→ 3

Enable three cores in the processor package.

→ EIST [Enable]

Use the **EIST** option to enable more than two frequency ranges to be supported.

→ **Disabled** Disables more than two frequency ranges

→ **Enabled** **DEFAULT** Enables more than two frequency ranges

→ C states [Disabled]

Use the **C states** option to enable or disable the CPU Power Management.

→ **Disabled** **DEFAULT** Disables CPU to go to C states when it's not 100% utilized.

→ **Enabled** Enables CPU to go to C states when it's not 100% utilized.

→ Tcc Activation Offset [0]

Use the **Tcc Activation** option to set Tcc activation temprature at which the Thermal Control Circuit must be activated.Tcc will be activated at: Tcc Activation Temp-Tcc Activation Offset. Tcc Activation Offset range is 0 to 63.

→ 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** Disables Turbo Mode Technology

→ **Enabled** **DEFAULT** Enables Turbo Mode Technology

→ Power Limit 1

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. Overclocking SKU: Value must be between Min and Max Power Limits. 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**

Power Limit 1 Time Window value in second. The value may vary from 0 to 128.0, 0 = default value (28 sec for mobile and 8 sec for desktop). Defines time window which TDP value should be maintained.

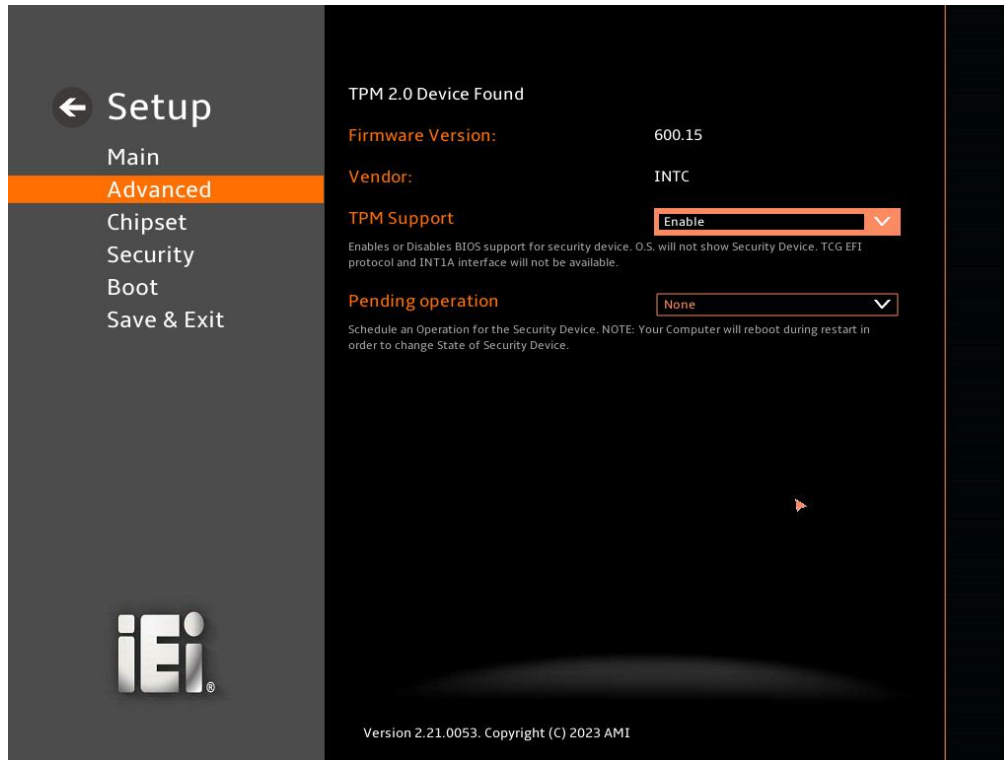
➔ **Power Limit 2**

Use the **Power Limit 2** to set Power Limit in Max 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 6**) to configure settings related to the Trusted Computing Group (TCG) Trusted Platform Module (TPM).



BIOS Menu 6: Trusted Computing

→ TPM Support [Enable]

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

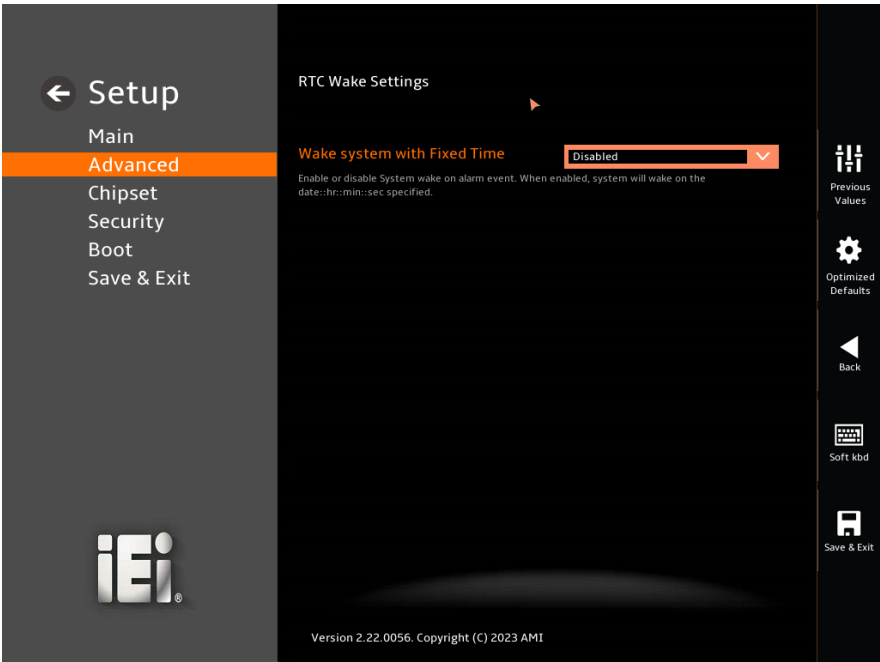
- **Disable** TPM support is disabled.
- **Enable** **DEFAULT** TPM support is enabled.

→ Pending Operation [None]

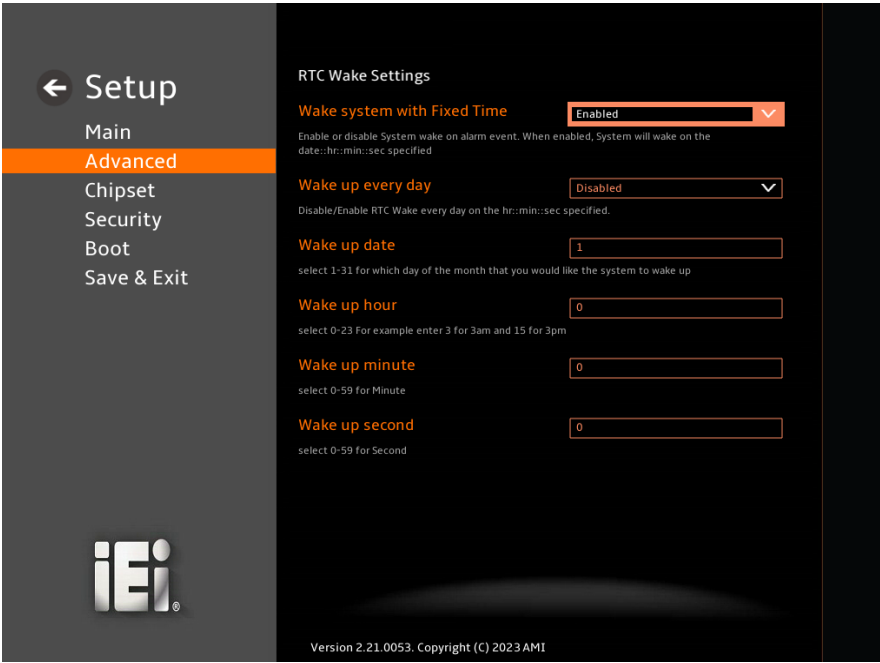
Use the **Pending Operation** option to schedule an operation for the security device.

- **None** **DEFAULT** TPM information is previous.S
- **TPM Clear** TPM information is cleared

5.3.3 RTC Wake Setting



BIOS Menu 7: RTC Wake Setting (1/2)



BIOS Menu 8: RTC Wake Settings (2/2)

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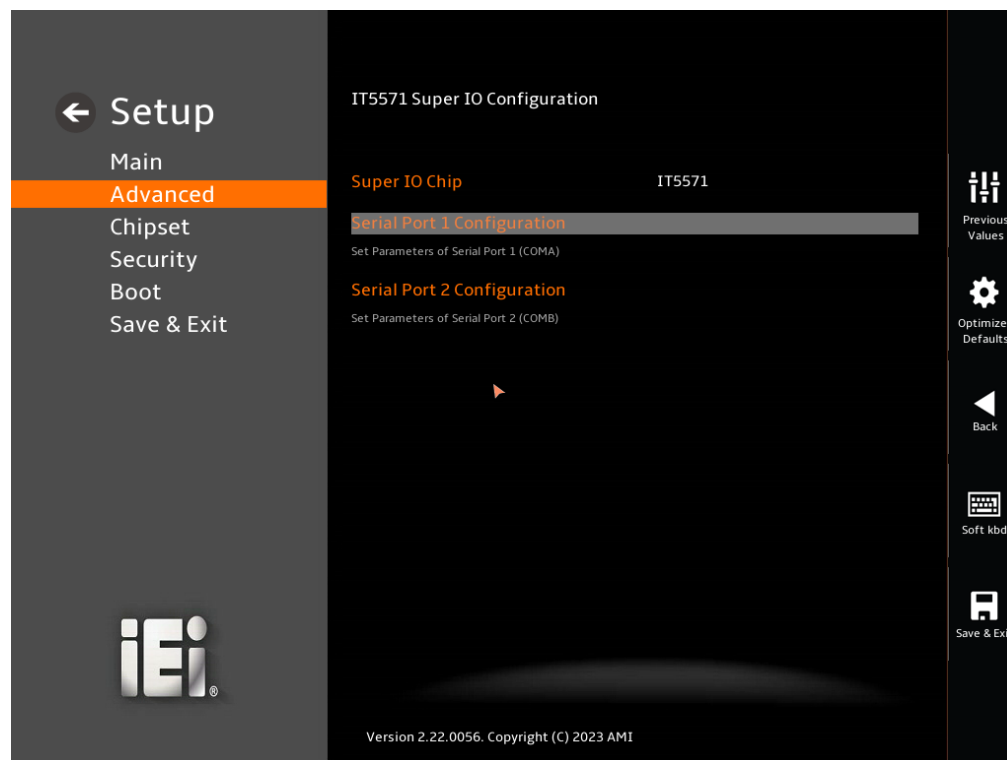
→ Wake system with Fixed Time [Disable]

Use the **Wake system with Fixed Time** option to enable or disable System wake on alarm event. When enable, system will wake on the date.

- **Disable** **DEFAULT** Disable System wake on alarm event
- **Enable** Enable System wake on alarm event

5.3.4 IT5571 Super IO Configuration

Use the **IT5571 Super IO Configuration** menu (**BIOS Menu 9**) to set or change the configurations for the serial ports.

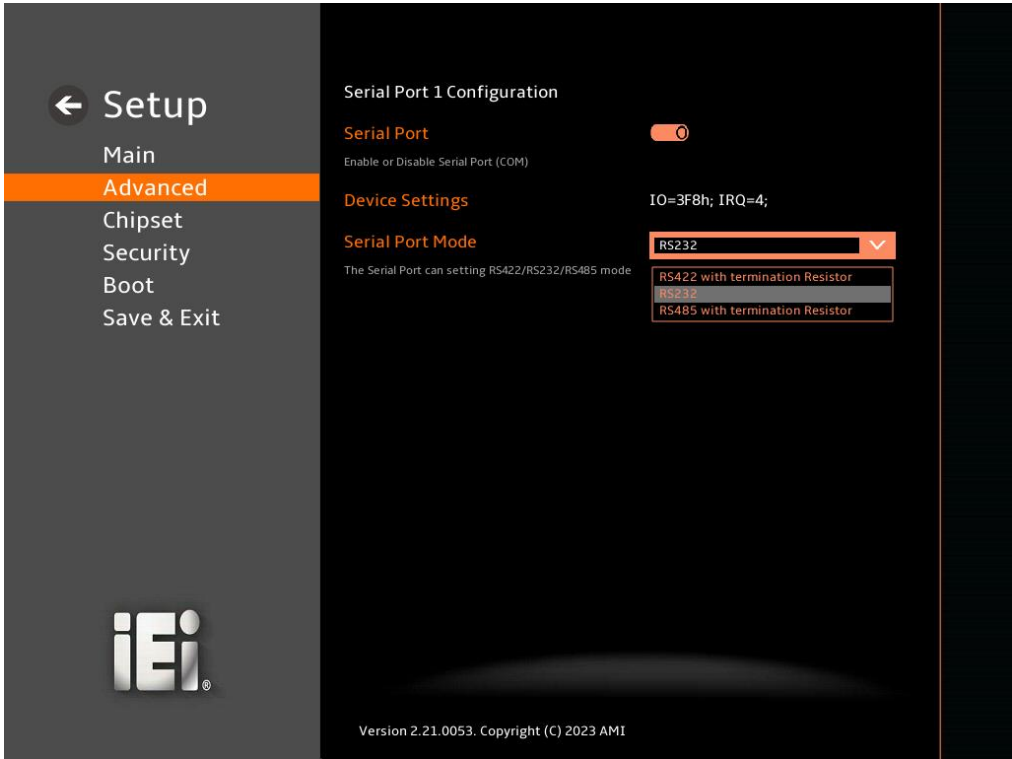


BIOS Menu 9: IT5571 Super IO Configuration



5.3.4.1 Serial Port 1 Configuration

Use the **Serial Port 1 Configuration** menu (**BIOS Menu 10**) to configure the serial port.



BIOS Menu 10: 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 IO port address and interrupt address.

- ➔ **IO=3F8h;** Serial Port I/O port address is 3F8h and the interrupt
IRQ=4 address is IRQ4



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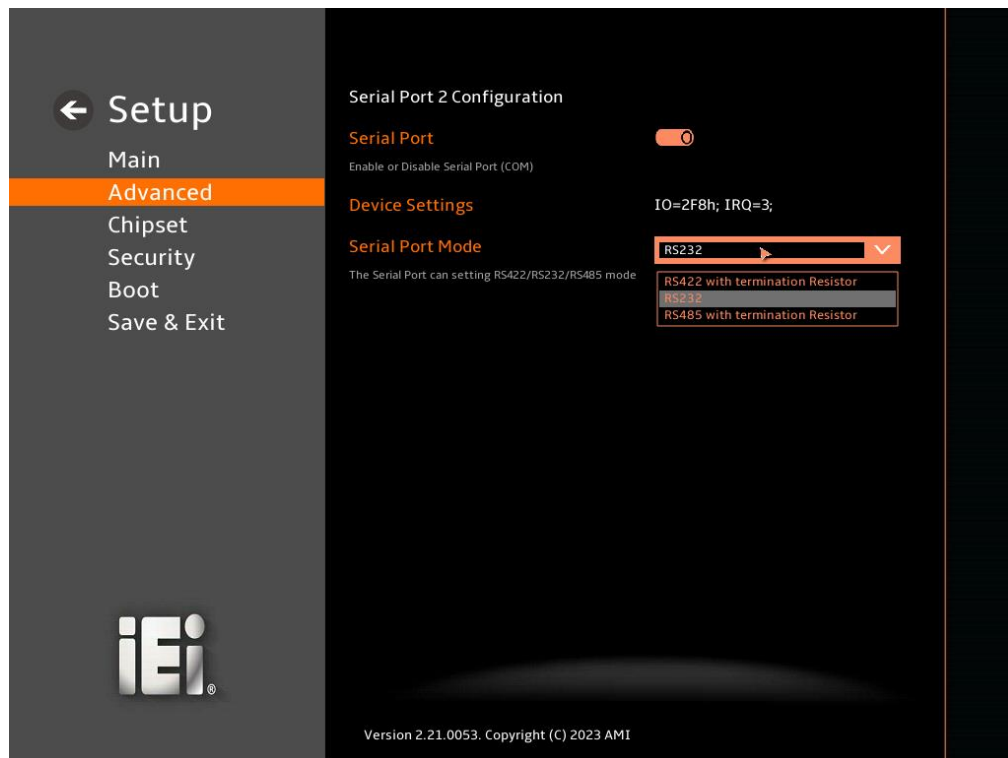
→ Device Mode

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 |

5.3.4.2 Serial Port 2 Configuration

Use the **Serial Port 2 Configuration** menu (**BIOS Menu 11**) to configure the serial port.



BIOS Menu 11: 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.

- | | | |
|---|-----------------|--|
| ➔ | IO=2F8h; | Serial Port I/O port address is 2F8h and the interrupt |
| | IRQ=3 | address is IRQ3 |

➔ **Device Mode**

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 |



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5.3.5 EC H/W Monitor

The EC H/W Monitor menu (**BIOS Menu 12**) contains the smart fan mode configuration submenu and shows the state of H/W real-time operating temperature, fan speeds and system voltages.



BIOS Menu 12: IT5571 Monitor

➔ PC Health Status

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

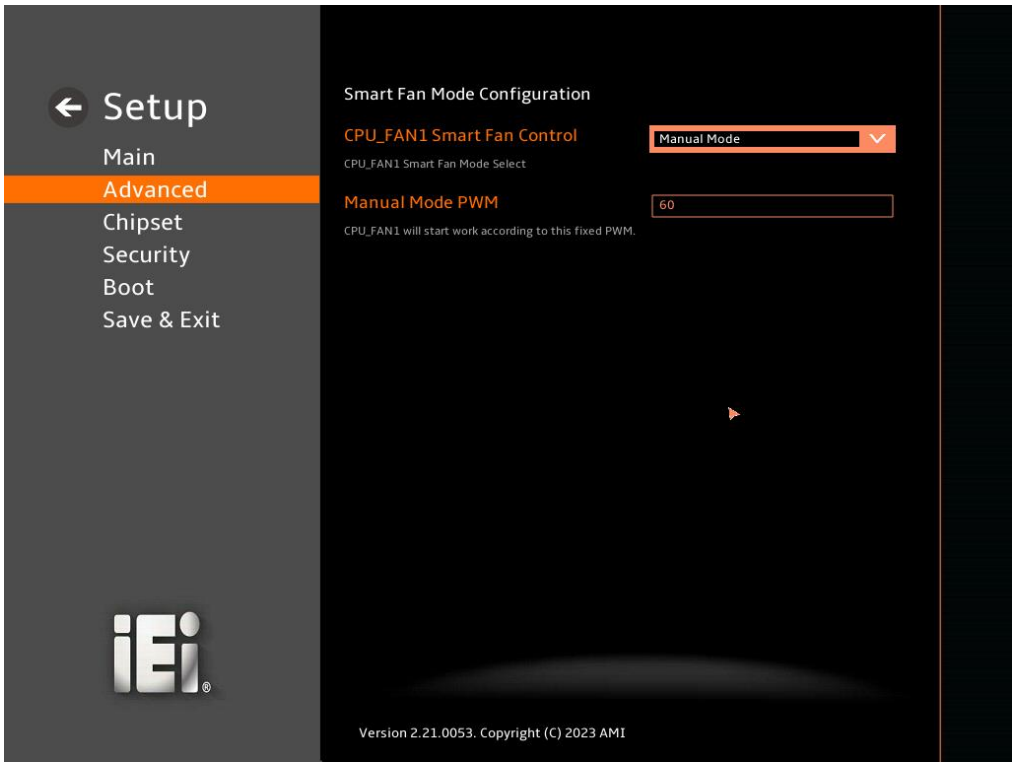
- System Temperatures:
 - CPU Temperature
 - System Temperature
- Fan Speeds:
 - Fan1 Speed
- Voltages:
 - CPU_CORE



- +12V
- DDR
- +5VSB
- +3.3VSB

5.3.5.1 Smart Fan Mode Configuration

Use the **Smart Fan Mode Configuration** submenu (**BIOS Menu 13**) to configure the CPU/system fan start/off temperature and control mode.



BIOS Menu 13: Smart Fan Mode Configuration

➔ CPU_FAN1 Smart Fan Control [Manual Mode]

Use the **CPU_FAN1 Smart Fan Control** option to configure the CPU Smart Fan.

- | | | | |
|---|--------------------|----------------|---|
| ➔ | Manual Mode | DEFAULT | The fan spins at the speed set in Manual Mode settings. |
| ➔ | Auto Mode | | The fan adjusts its speed using Auto Mode settings. |



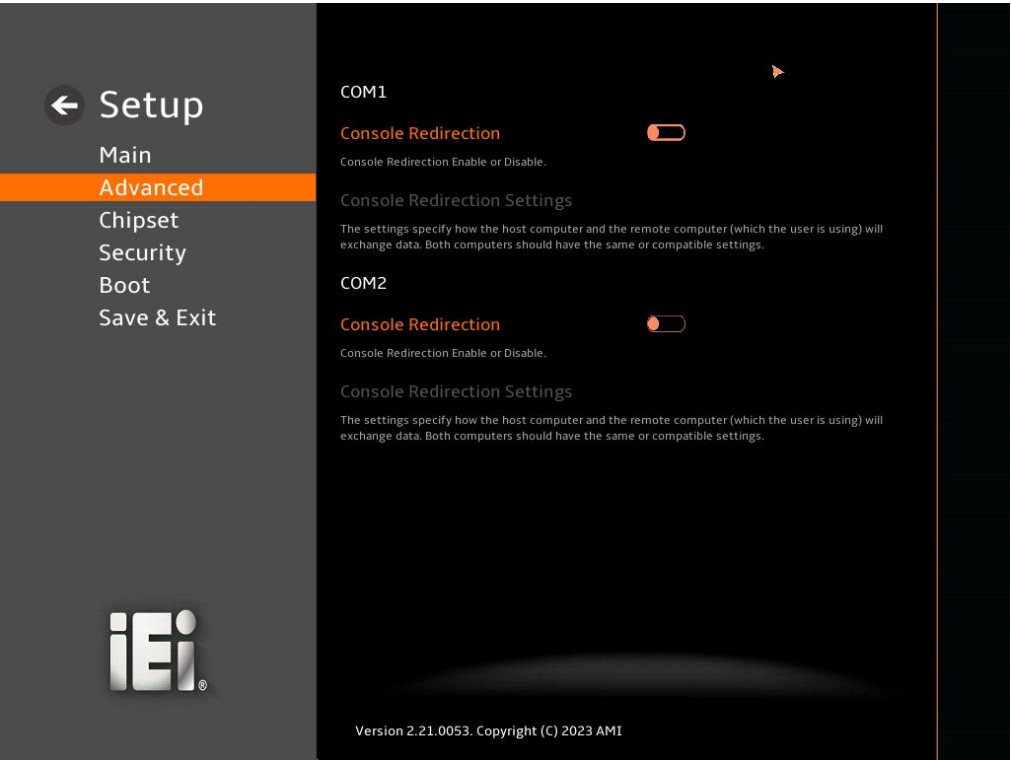
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➔ Manual Mode PWM

CPU_FAN1 will start work according to this fixed PWM. To set a value, Use the + or – key to change the value or enter a decimal number between 1 and 100.

5.3.6 Serial Port Console Redirection

The **Serial Port Console Redirection** menu (**BIOS Menu 14**) 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 14: Serial Port Console Redirection

➔ **Console Redirection [Disabled]**

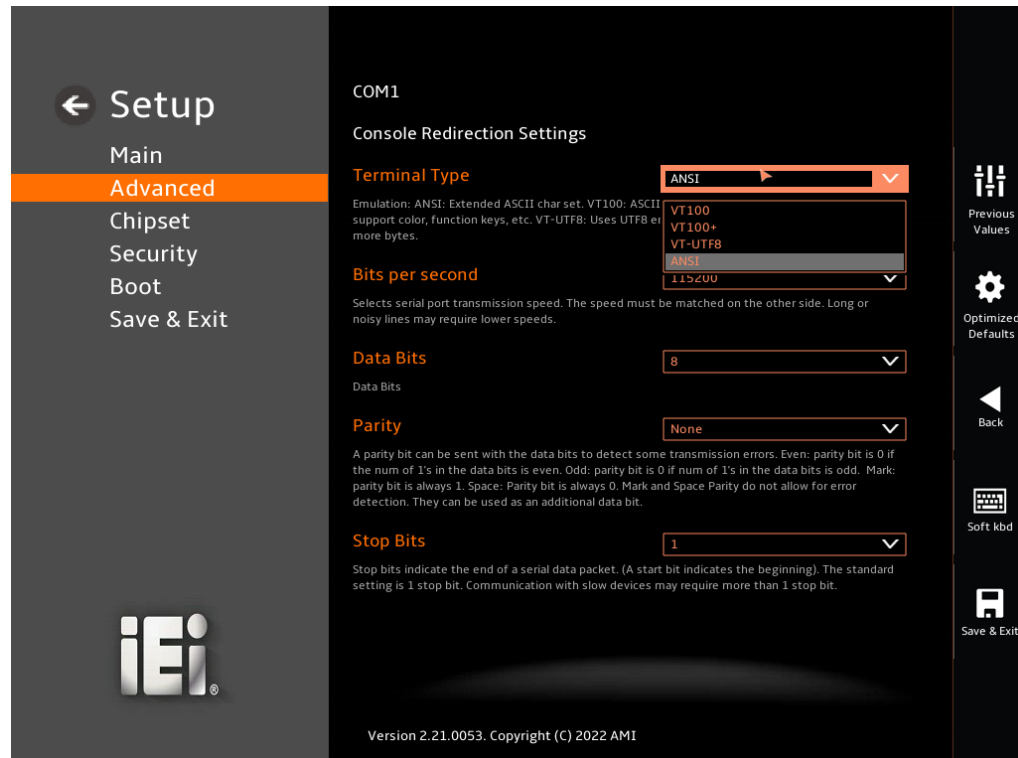
Use **Console Redirection** option to enable or disable the console redirection function.

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

The **Console Redirection Settings** submenu will be available when the **Console Redirection** option is enabled.

5.3.6.1 Console Redirection Settings

The following options are available in the **Console Redirection Settings** submenu (**BIOS Menu 15**) when the **COM Console Redirection** (for COM1 to COM6) option is enabled.



BIOS Menu 15: 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 |
| → | VT100+ | | The target terminal type is VT100+ |
| → | 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 on the other side. Long or noisy lines may require lower speeds.

→	9600		Sets the serial port transmission speed at 9600.
→	19200		Sets the serial port transmission speed at 19200.
→	38400		Sets the serial port transmission speed at 38400.
→	57600		Sets the serial port transmission speed at 57600.
→	115200	DEFAULT	Sets the serial port transmission speed at 115200.

→ Data Bits [8]

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

→	7		Sets the data bits at 7.
→	8	DEFAULT	Sets 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.
→	Space		The parity bit is always 0. This option does not allow for error detection.

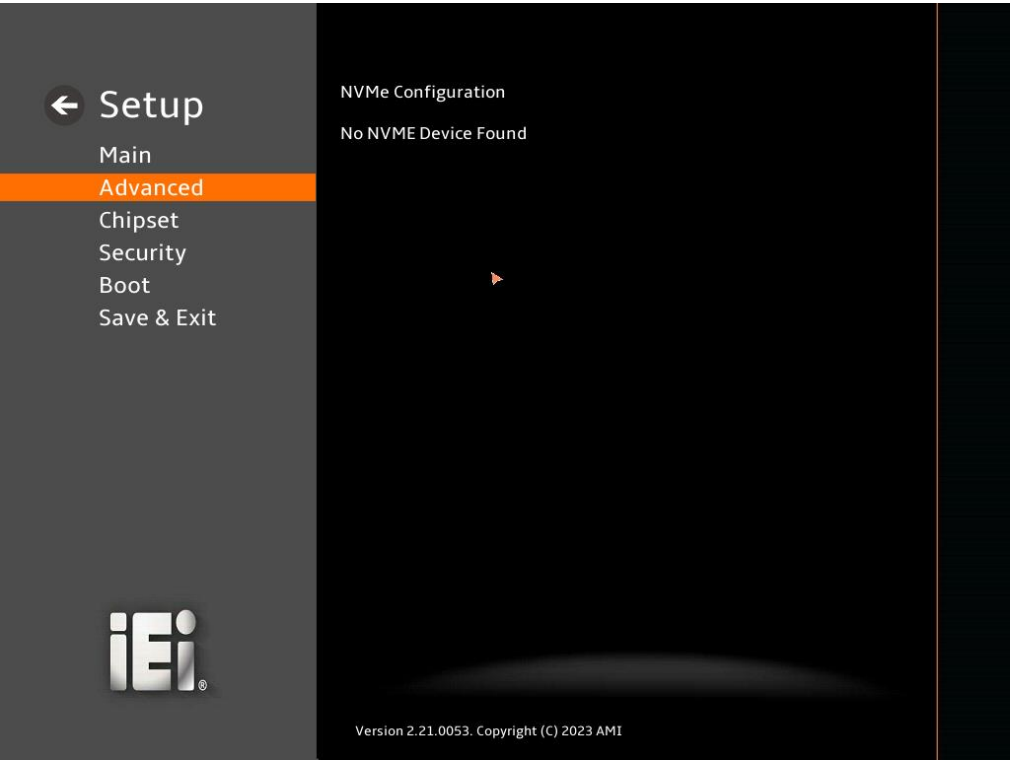
DRPC-W-EHL11**→ Stop Bits [1]**

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 | Sets the number of stop bits at 1. |
| → | 2 | | Sets the number of stop bits at 2. |

5.3.7 NVMe Configuration

Use the **NVMe Configuration (BIOS Menu 16)** menu to display the NVMe controller and device information.



BIOS Menu 16: NVMe Configuration

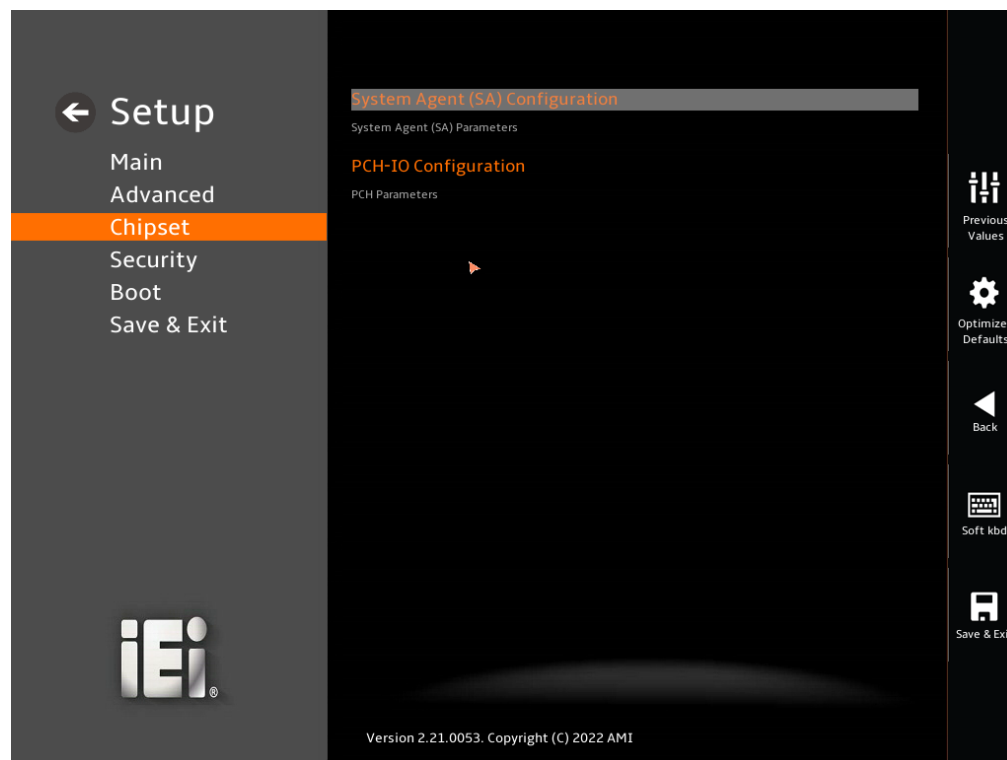
5.4 Chipset

Use the **Chipset** menu (**BIOS Menu 17**) to access the PCH IO and System Agent (SA) configuration menus.



WARNING!

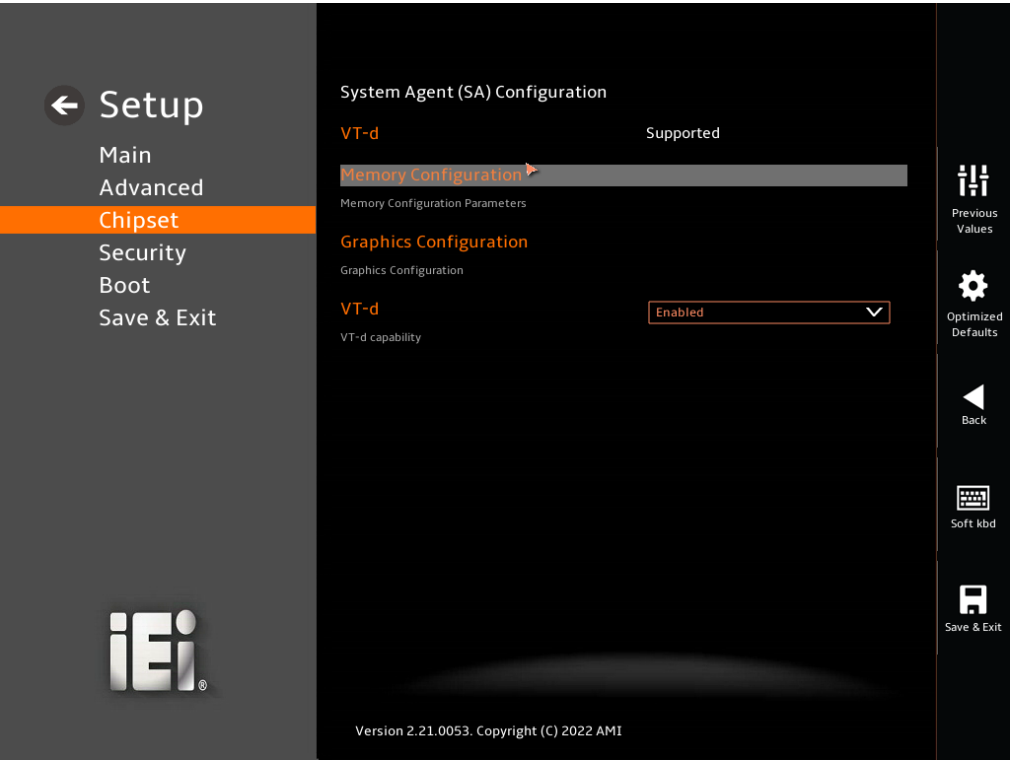
Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.



BIOS Menu 17: Chipset

5.4.1 System Agent (SA) Configuration

Use the **System Agent (SA) Configuration** menu (**BIOS Menu 18**) to configure the System Agent (SA) parameters.



BIOS Menu 18: System Agent (SA) Configuration

➔ VT-d [Enabled]

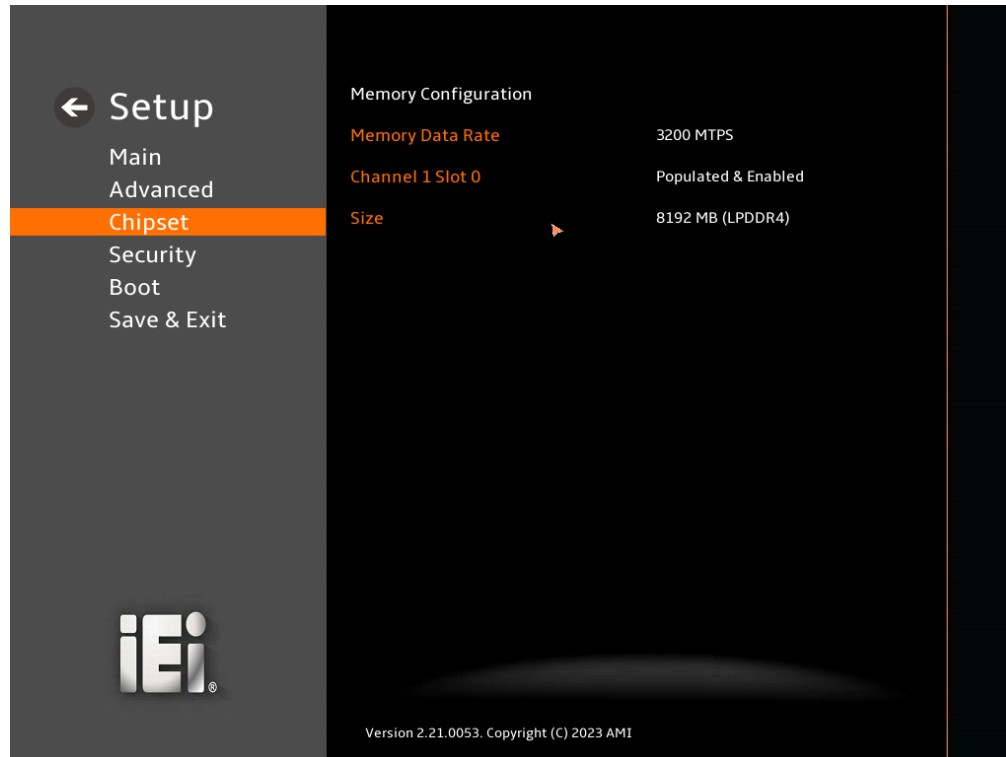
Use the **VT-d** option to enable or disable the VT-d capability.

- ➔ DisabledDisable 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 19**) to view memory information.

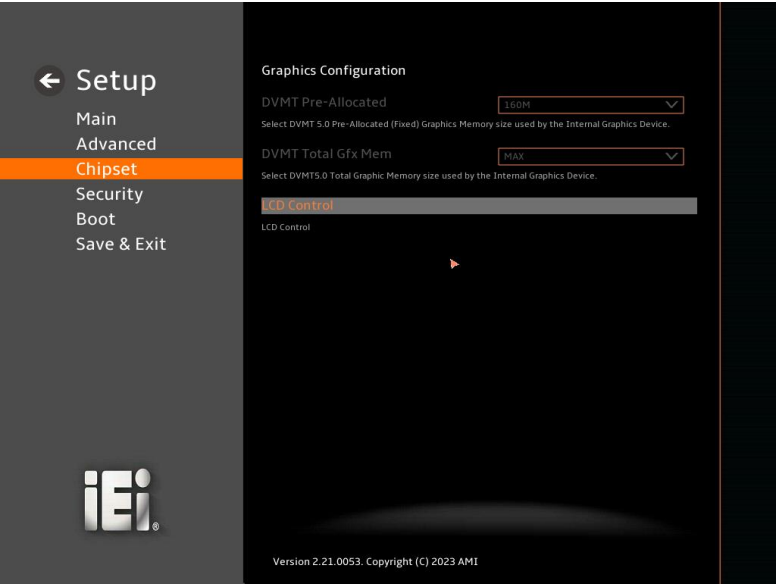


BIOS Menu 19: Memory Configuration



5.4.1.2 Graphics Configuration

Use the **Graphics Configuration (BIOS Menu 20)** menu to configure the video device connected to the system.



BIOS Menu 20: Graphics Configuration

➔ 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:

- 80M
- 160M **Default**

➔ DVMT Total Gfx Mem [MAX]

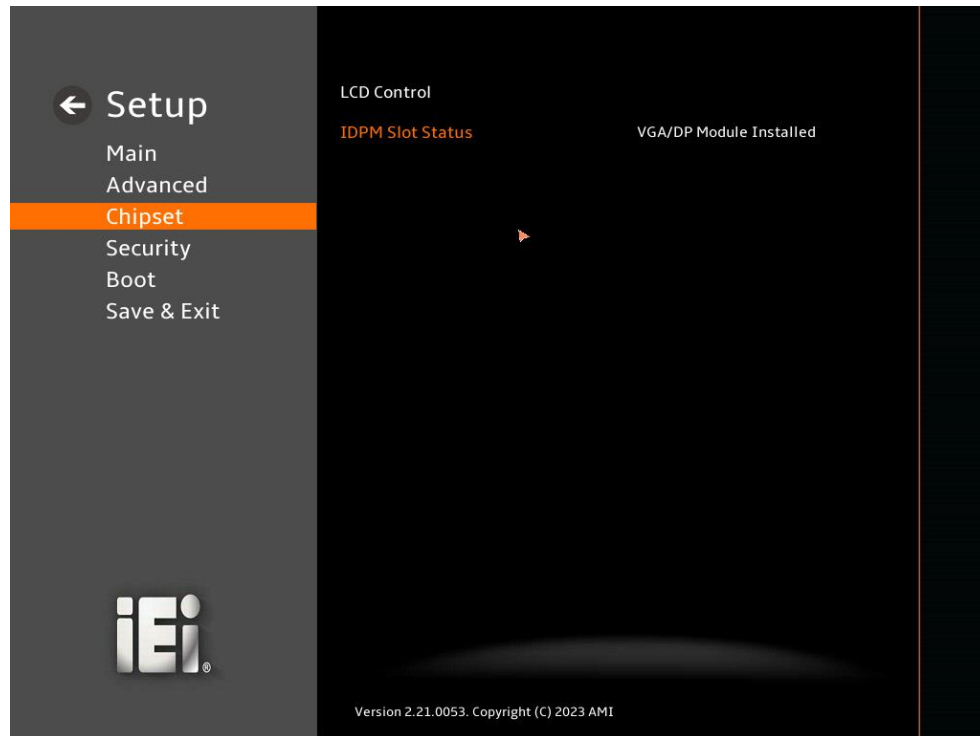
Use the **DVMT Total Gfx Mem** option to select DVMT5.0 total graphic memory size used by the internal graphic device. The following options are available:

- 128M
- 256M
- MAX **Default**



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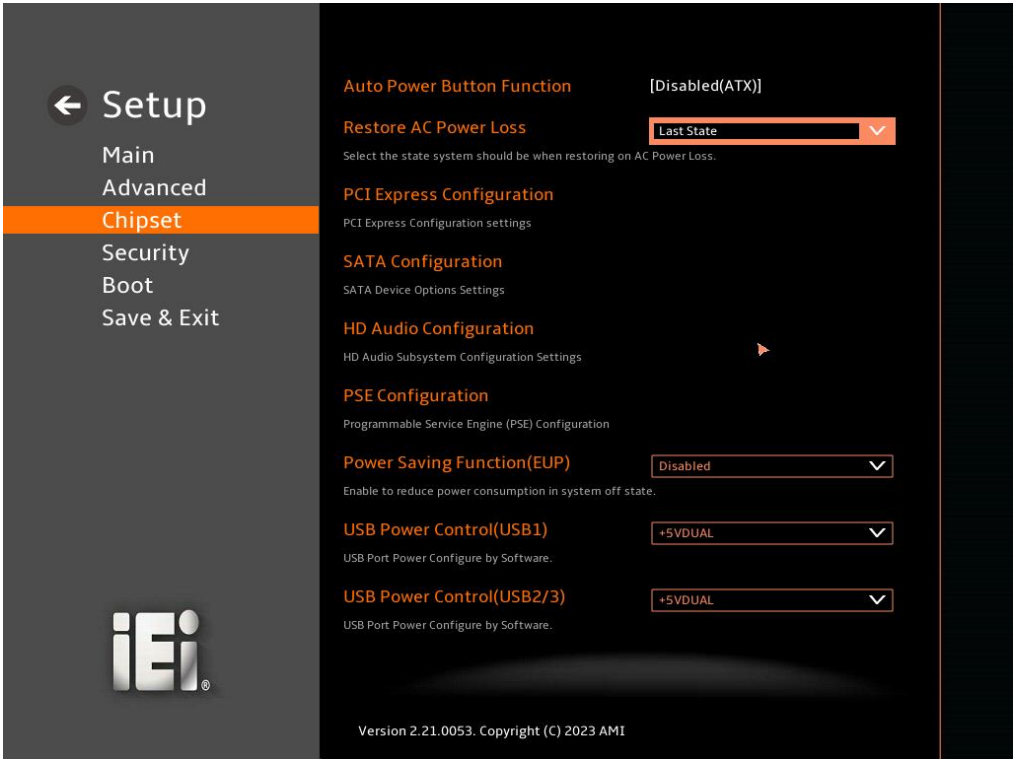
→ LCD Control



BIOS Menu 21: LCD Control

5.4.2 PCH-IO Configuration

Use the **PCH-IO Configuration** menu to configure the PCH parameters.



BIOS Menu 22: PCH-IO Configuration

➔ **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.

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

DRPC-W-EHL11**→ 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 (USB1) [+5V DUAL]

Use the **USB Power Control** BIOS option to configure the USB power source for the corresponding USB connectors (**Figure 5-2**).

- **+5V DUAL** **DEFAULT** Sets the USB power source to +5V dual
- **+5V** Sets the USB power source to +5V

→ USB Power Control (USB2/3) [+5V DUAL]

Use the **USB Power Control** BIOS option to configure the USB power source for the corresponding USB connectors (**Figure 5-2**).

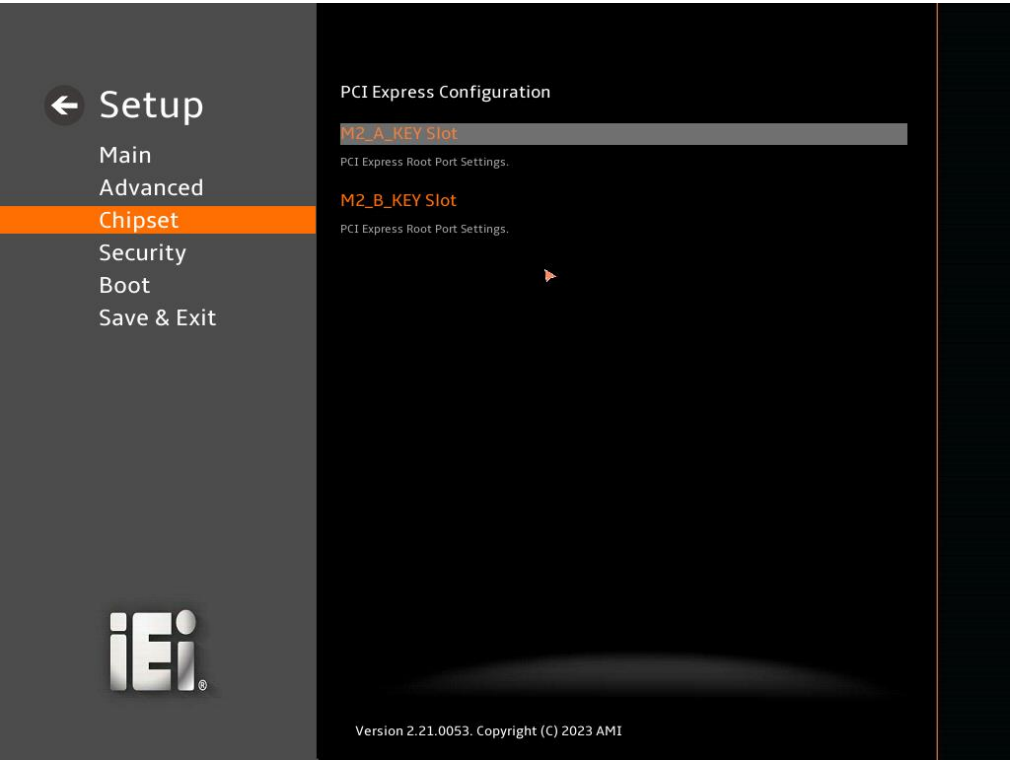
- **+5V DUAL** **DEFAULT** Sets the USB power source to +5V dual
- **+5V** Sets the USB power source to +5V

BIOS Options	Configured USB Ports
USB Power Control (USB1)	USB1 (external USB 3.2 Gen 2 ports)
USB Power Control (USB2/3)	USB2/3 (internal USB 2.0 ports)

Figure 5-2: BIOS Options and Configured USB Ports

5.4.2.1 PCI Express Configuration

Use the **PCI Express Configuration** submenu (**BIOS Menu 23**) to configure the PCI Express slots.

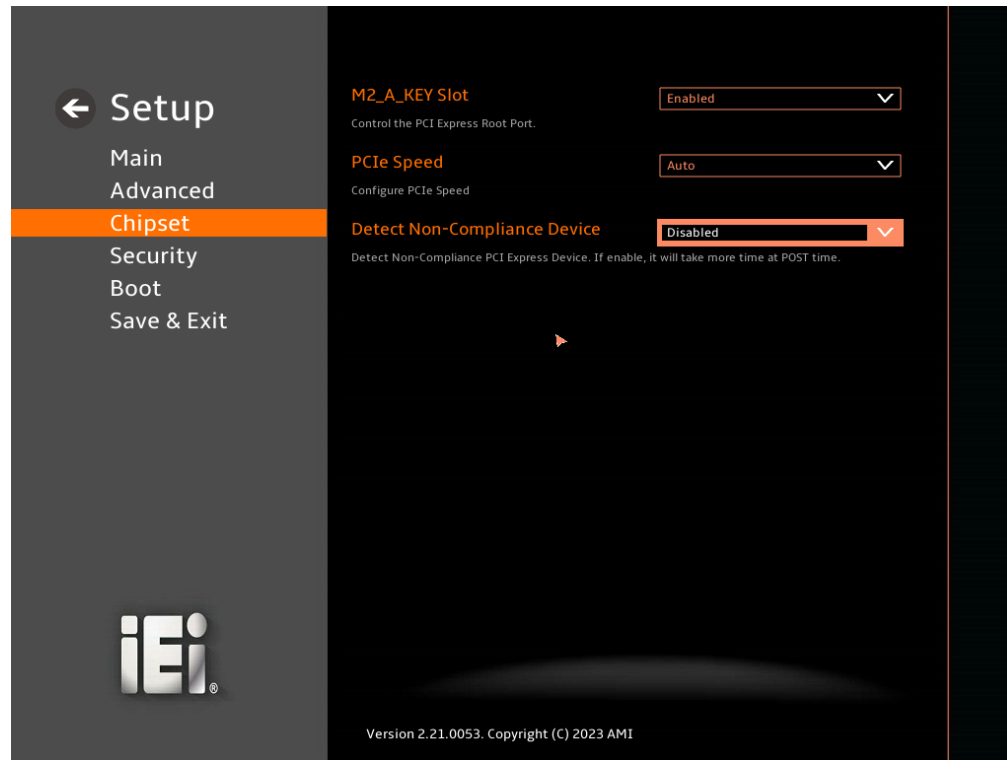


BIOS Menu 23: PCI Express Configuration

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5.4.2.1.1 M2_A_KEY Slot

Use the **M2_A_KEY Slot** menu (**BIOS Menu 24**) to change and/or set the configuration of the SATA devices installed in the system.



BIOS Menu 24: M.2 A KEY

➔ PCIe Speed [Auto]

Use the **PCIe Speed** option to specify the PCI Express 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.

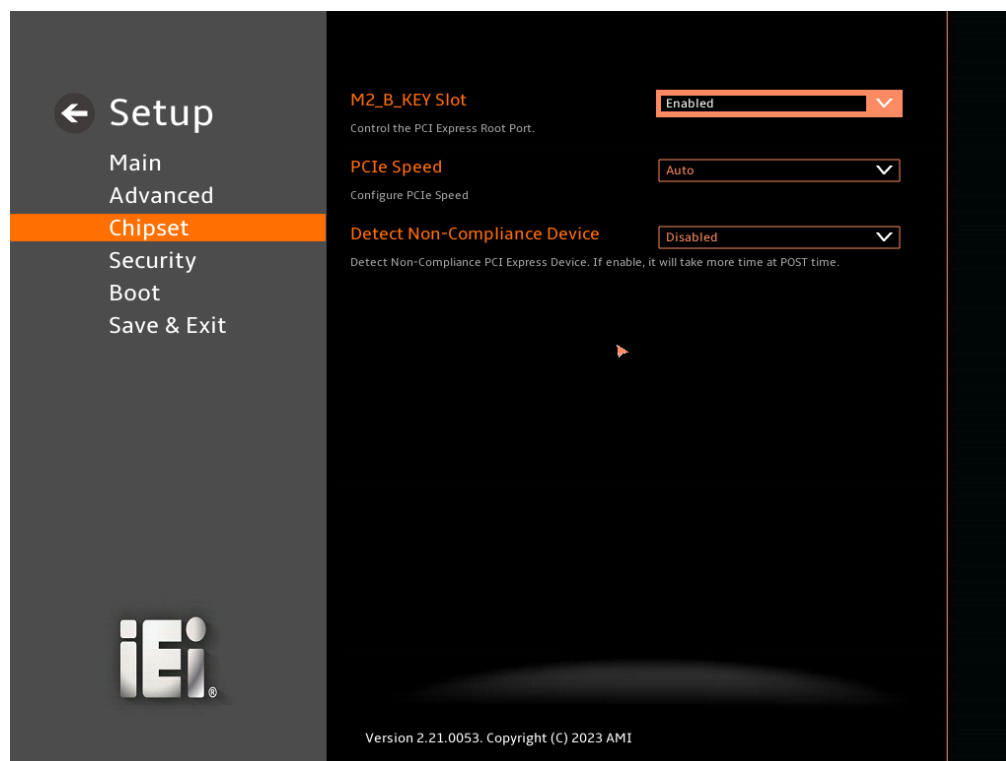
➔ Detect Non-Compliance Device [Disabled]

Use the **Detect Non-Compliance Device** option to configure whether to detect if a non-compliance PCI Express device is connected to the PCI Express port.

- | | | | |
|---|-----------------|----------------|--|
| ➔ | Disabled | DEFAULT | Do not detect if a non-compliance PCI Express device is connected to the PCI Express port. |
| ➔ | Enabled | | Detect if a non-compliance PCI Express device is connected to the PCI Express port. |

5.4.2.1.2 M2_B_KEY Slot

Use the **M2_B_KEY** menu (**BIOS Menu 25**) to change and/or set the configuration of the SATA devices installed in the system.



BIOS Menu 25: M.2 M KEY

➔ PCIe Speed [Auto]

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

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

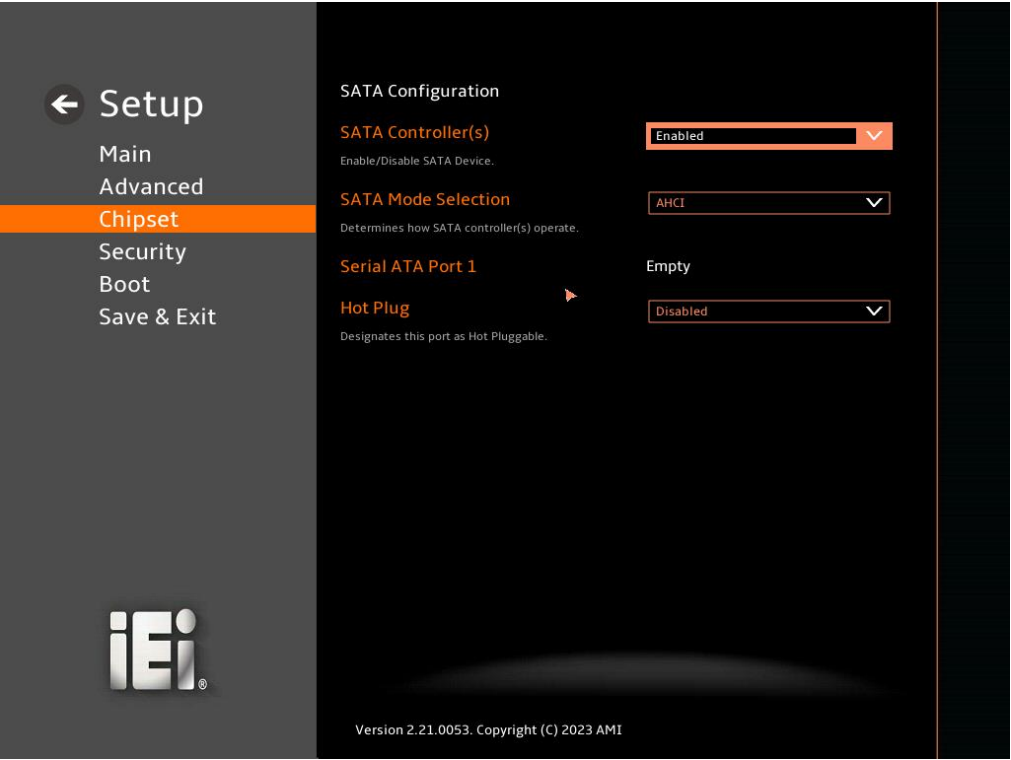
➔ **Detect Non-Compliance Device [Disabled]**

Use the **Detect Non-Compliance Device** option to configure whether to detect if a non-compliance PCI Express device is connected to the PCI Express port.

- | | | | |
|---|-----------------|----------------|--|
| ➔ | Disabled | DEFAULT | Do not detect if a non-compliance PCI Express device is connected to the PCI Express port. |
| ➔ | Enabled | | Detect if a non-compliance PCI Express device is connected to the PCI Express port. |

5.4.2.2 SATA Configuration

Use the **SATA Configuration** menu (**BIOS Menu 26**) to change and/or set the configuration of the SATA devices installed in the system.



BIOS Menu 26: SATA Configuration

➔ **SATA Controller(s) [Enabled]**

Use the **SATA Controller(s)** option to configure the SATA controller(s).

- ➔ **Enabled** **DEFAULT** Enables the on-board SATA controller(s).
- ➔ **Disabled** Disables the on-board SATA controller(s).

➔ **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.

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→ **Intel RST
Premium
With Intel
Optane
System
Acceleration**

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

→ **Hot Plug [Disabled]**

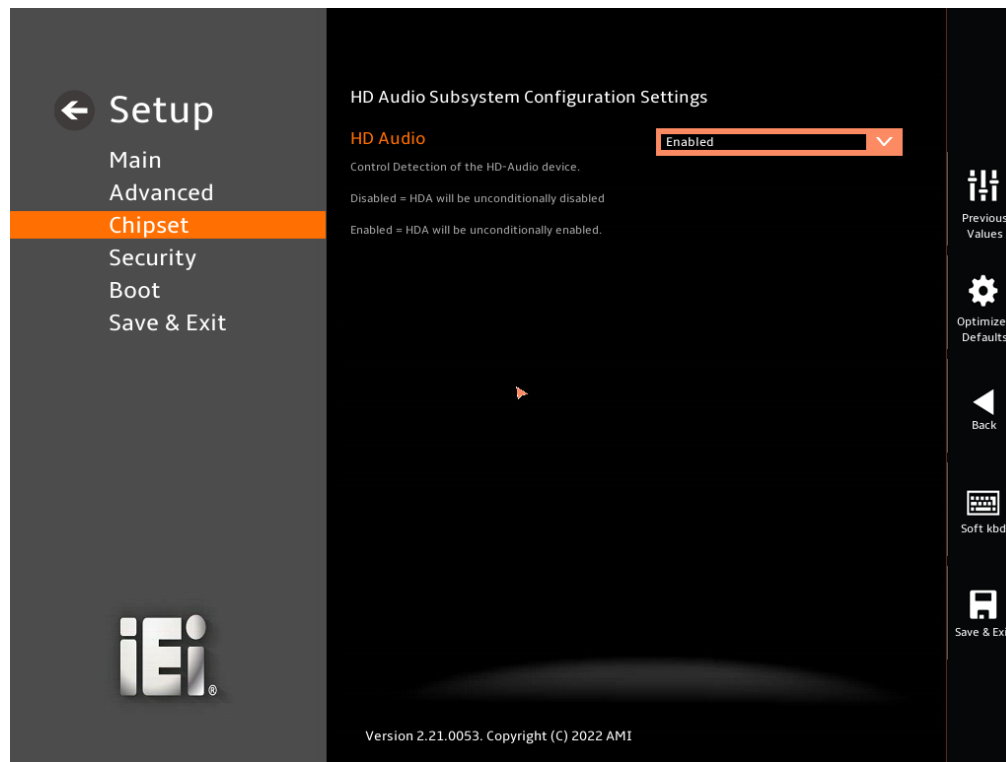
Use the **Hot Plug** option (for S_ATA1 and M2_SSD1) to designate the correspondent port as hot-pluggable.

→ **Disabled** **DEFAULT** Disables the hot-pluggable function of the SATA/M.2 M key port.

→ **Enabled** Designates the SATA/M.2 M key port as hot-pluggable.

5.4.2.3 HD Audio Configuration

Use the **HD Audio Configuration** menu (**BIOS Menu 27**) to configure the PCH Azalia settings.



BIOS Menu 27: HD Audio Configuration

→ HD Audio [Auto]

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 28**) to set system and user passwords.



BIOS Menu 28: Security

➔ Administrator Password

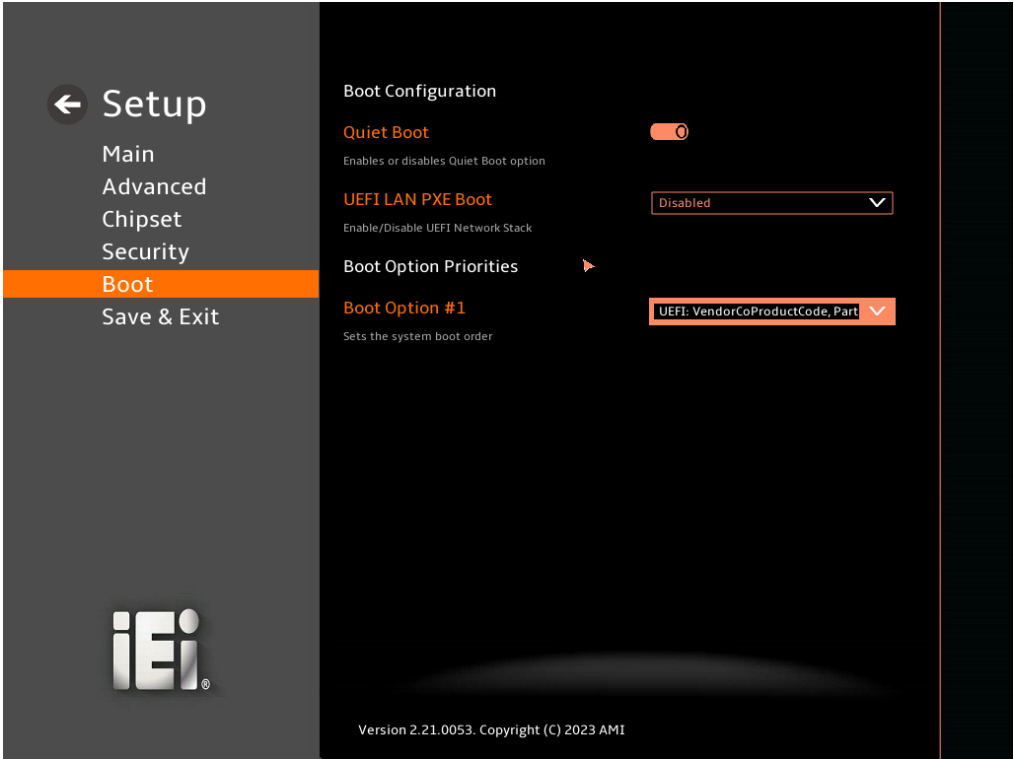
Use the **Administrator Password** to set or change a administrator password.

➔ User Password

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

5.6 Boot

Use the **Boot** menu (**BIOS Menu 29**) to configure system boot options.



BIOS Menu 29: 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

5.6.2 Boot Option Priorities

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

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→ Boot Option #1

Sets the system boot order **ADATA SP580** as the first priority.

- **Windows Boot Manager (P1: ADATA SSD SP580 240GB)**
- **Disabled**

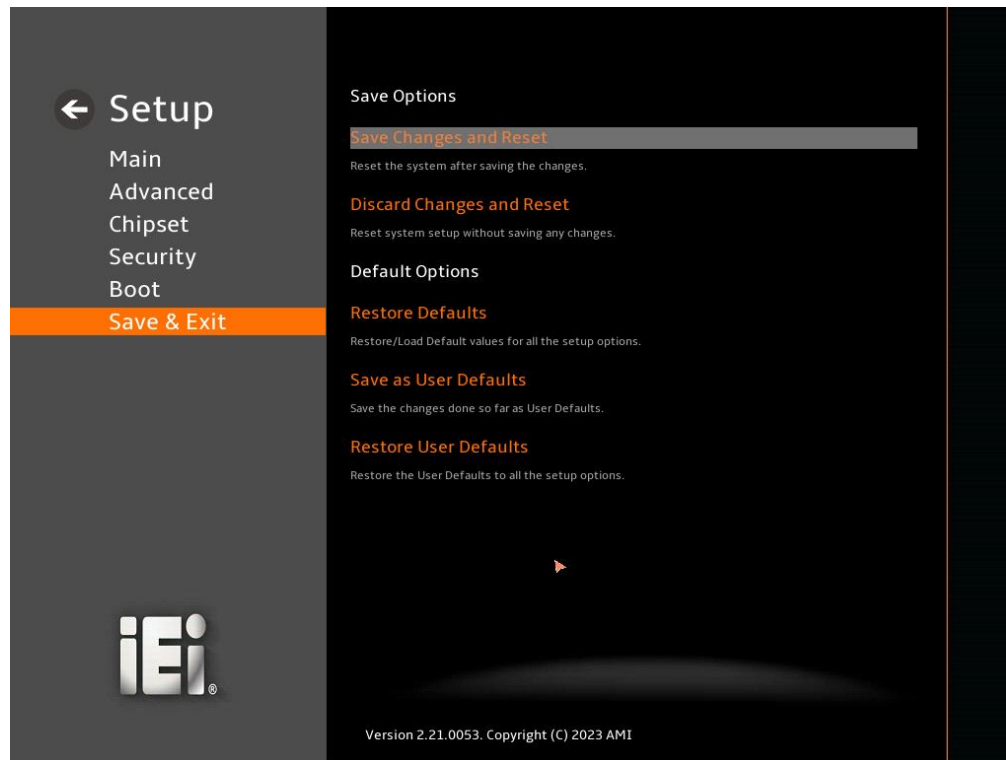
→ Boot Option #2

Sets the system boot order **USB Partition 1** as the second priority.

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

5.7 Save & Exit

Use the **Save & Exit** menu (**BIOS Menu 30**) to load default BIOS values, optimal failsafe values and to save configuration changes.



BIOS Menu 30: 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

B

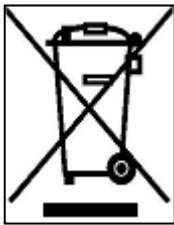
Product Disposal

**CAUTION:**

Risk of explosion if battery is replaced by an incorrect type. Only certified engineers should replace the on-board battery.

Dispose of used batteries according to instructions and local regulations.

- 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

C

BIOS Options



DRPC-W-EHL11

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

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➔ System Date [xx/xx/xx]	61
➔ System Time [xx:xx:xx]	61
➔ Intel (VMX) Virtualization Technology [Enabled]	64
➔ Active Processor Cores [All]	64
➔ EIST [Enable]	65
➔ C states [Disabled].....	65
➔ Tcc Activation Offset [0].....	65
➔ Turbo Mode [Enabled]	65
➔ Power Limit 1.....	65
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➔ Power Limit 2.....	66
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➔ Pending Operation [None]	67
➔ Wake system with Fixed Time [Disable].....	69
➔ Serial Port [Enabled].....	70
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➔ Serial Port [Enabled].....	71
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➔ Data Bits [8]	78
➔ Parity [None].....	78
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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



DRPC-W-EHL11**PEI Beep Codes**

Number of Beeps	Description
4	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.1 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-EHL11

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。						

