IEI Integration Corp.



MODEL:

DRPC-W-JL Series

Fanless System with Intel® Celeron® N5105 up to 2.9 GHz TDP 10W, Triple 2.5GbE LAN, HDMI, DP, 8GB Memory Pre-installed, 12V DC and RoHS

User Manual

Rev. 1.01 – April 24, 2025

RoHS Lead Free

Revision

Date	Version	Changes
July 26, 2023	1.00	Initial release
April 24, 2025	1.01	Update Section 2.3: revise the part numbers of the serial cable and GPIO cable; add the fan kit to the optional items; delete the VGA module, power adapter and power cord from the optional items Delete Section 3.6.3 iDPM Module Installation

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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-JL Series

The DRPC-W-JL Series is an embedded system for wide range temperature environments. It is powered by an Intel® Celeron® N5105 processor and onboard 8GB DDR4 SO-DIMM memory (up to 16GB). The DRPC-W-JL Series includes one HDMI, one DP, three 2.5GbE LAN ports, two USB 3.2 Gen2 ports, and one external fan connector.

1.2 Features

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

- Intel® Celeron® N5105 2.0 GHz (up to 2.9 GHz, quad-core, TDP 10W)
- Support dual independent display
- 3 x 2.5GbE ports
- 1 x M.2 A Key
- 1 x M.2 B Key (with SIM card slot)

1.3 Technical Specifications

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

Model Name		DRPC-W-JL
Chassis	Color	Black
	Dimensions (WxDxH) (mm）	176 x 116 x 60.8
	System Fan	Fanless
	Chassis Construction	Extruded aluminum alloys
Motherboard	CPU	Intel® Celeron® N5105 2.0 GHz (up to 2.9 GHz, quad-core, TDP 10W)
	Chipset	SoC
	Memory	1 x DDR4 2933 MHz SO-DIMM (pre-installed 8GB) (up to 16GB)
Storage	HDD Bay	1 x 2.5” SATA 6Gb/s HDD bay
IO Interfaces	USB	2 x USB3.2
	LAN	3 x 2.5GbE
	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 2230 A key for Wi-Fi & Bluetooth (optional) 1 x M.2 3042/2280 B key (PCIe x2) with a SIM card socket for 5G module (optional)
Power	Power Input	12V DC
	Power Consumption	12V@2.45A (Intel N5105 with 16GB DDR4 Memory)
Reliability	Mounting	DIN rail
	Operating Temperature	-20°C ~ 60°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）	0.91 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-JL Series has the following features.

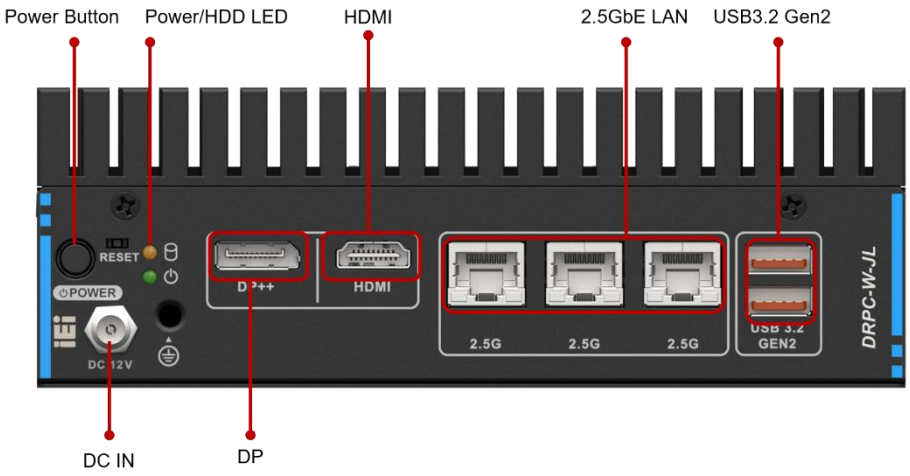


Figure 1-2: Front Panel

1.5 Top Panel

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

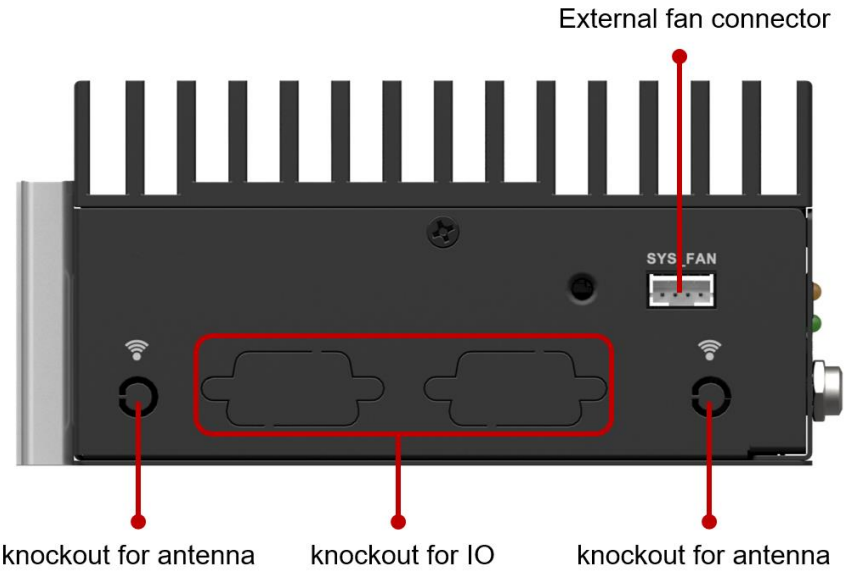


Figure 1-3: Top Panel

1.6 Physical Dimensions

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

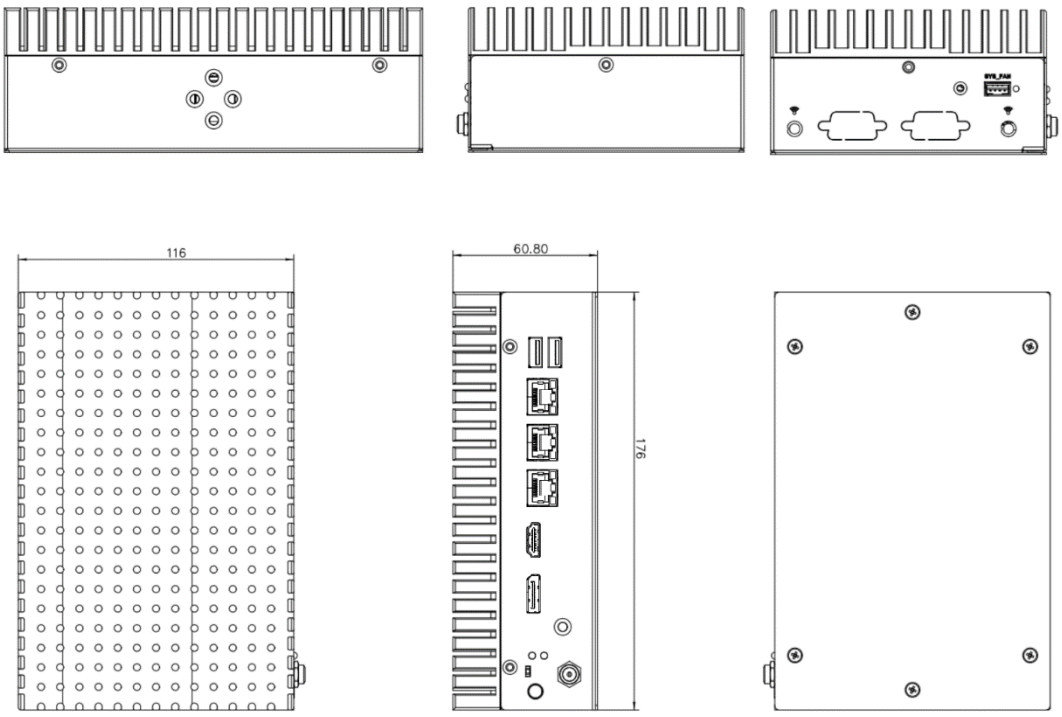


Figure 1-4: Physical Dimensions

Chapter

2

Unpacking

2.1 Anti-Static Precautions



WARNING:

Failure to take ESD precautions during installation may result in permanent damage to the DRPC-W-JL Series and severe injury to the user.

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

2.2 Unpacking Precautions

When the DRPC-W-JL 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-JL 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-JL 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-JL Series is shipped with the following components:

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

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)	
GPIO cable (**P/N**: 32031-000601-100-RS)	
Fan kit (P/N: SF-DRPC-W-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-JL Series, installation instructions and configuration options.
- **DANGER! Disconnect Power**: Power to the DRPC-W-JL 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-JL Series is opened while the power cord is still connected to an electrical outlet.
- **Qualified Personnel**: The DRPC-W-JL 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-JL Series. The DRPC-W-JL Series cooling vents must not be obstructed by any objects. Blocking the vents can cause overheating of the DRPC-W-JL Series. Leave at least 5 cm of clearance around the DRPC-W-JL Series to prevent overheating.
- **Grounding**: The DRPC-W-JL 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-JL Series.

3.2 Cover Removal

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

Step 1: Loosen the 6 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

3.4 Storage Installation

The DRPC-W-JL Series 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 B-key NVME SSD, 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 20º (**Figure 3-4**).

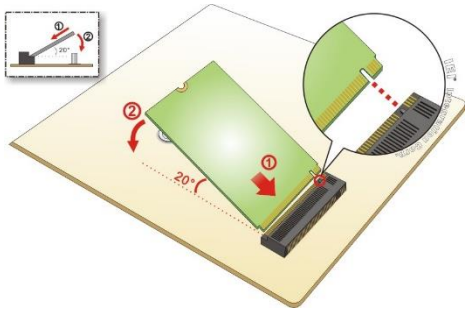


Figure 3-4: Insert the M.2 Module into the Slot at an Angle

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

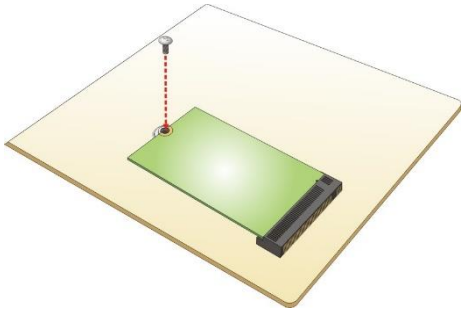


Figure 3-5: Securing the M.2 Module

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 a Wi-Fi module, an internal antenna and an 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 20º (**Figure 3-6**).

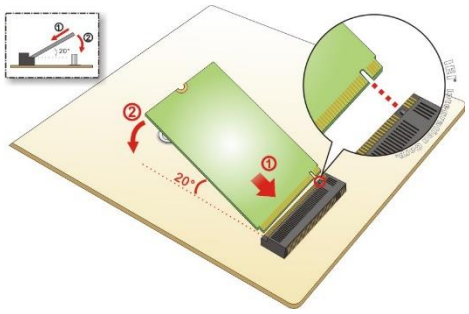


Figure 3-6: Inserting the WLAN Module

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

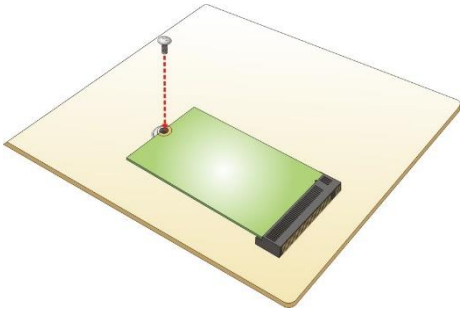


Figure 3-7: Securing the WLAN Module

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

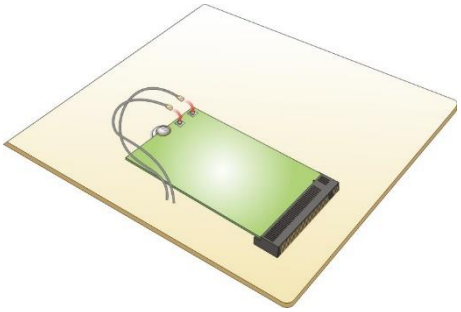


Figure 3-8: Connecting RF Cables

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 the nut.

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

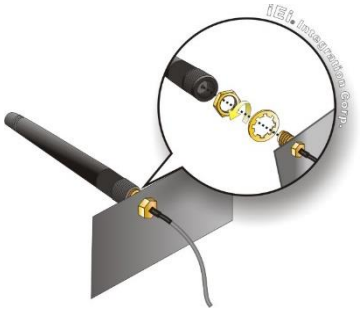


Figure 3-9: Securing SMA Connector and External Antenna Installation

3.6 Expansion I/O Installation (Optional)

The DRPC-W-JL Series products have reserved a GPIO port and a serial port for function 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 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

3.6.2 GPIO Port Installation

Step 1: Locate the GPIO port connector.

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

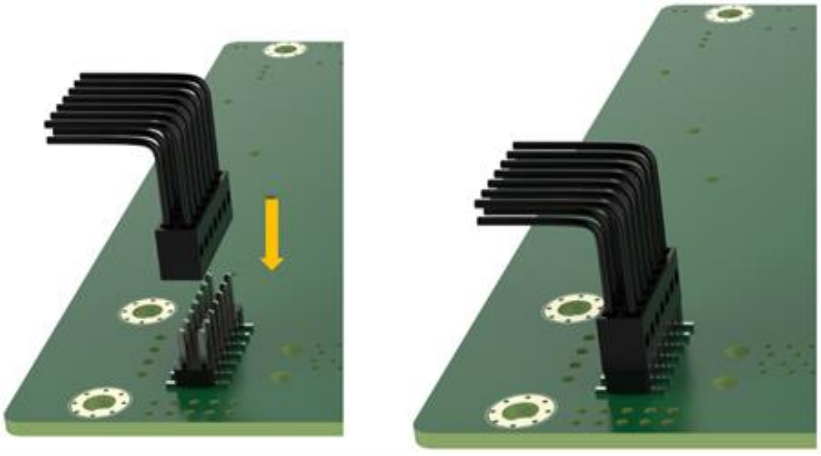


Figure 3-12: Connect the GPIO Cable to the GPIO Connector

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

Reinstall the cover by fastening the 6 screws.



Figure 3-14: 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-JL 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-JL Series as shown in the figure below.

Step 2: Install the expansion fan module (SF-DRPC-W-R10) to the DRPC-W-JL 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 3-15: External Fan Module Installation

3.9 Mounting Brackets Installation

DRPC-W-JL comes with a 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.

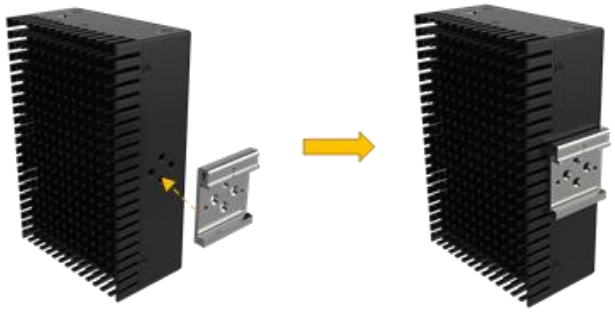


Figure 3-16: Align the retention screw holes

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

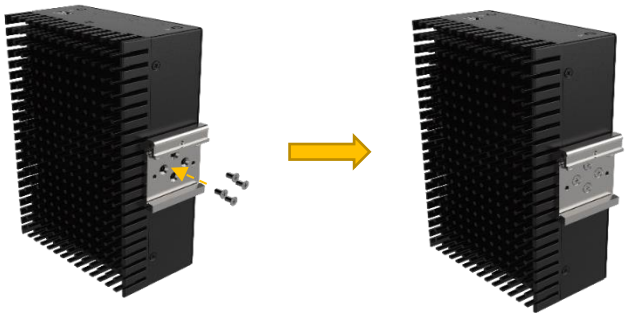


Figure 3-17:Mounting Bracket Retention Screw

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

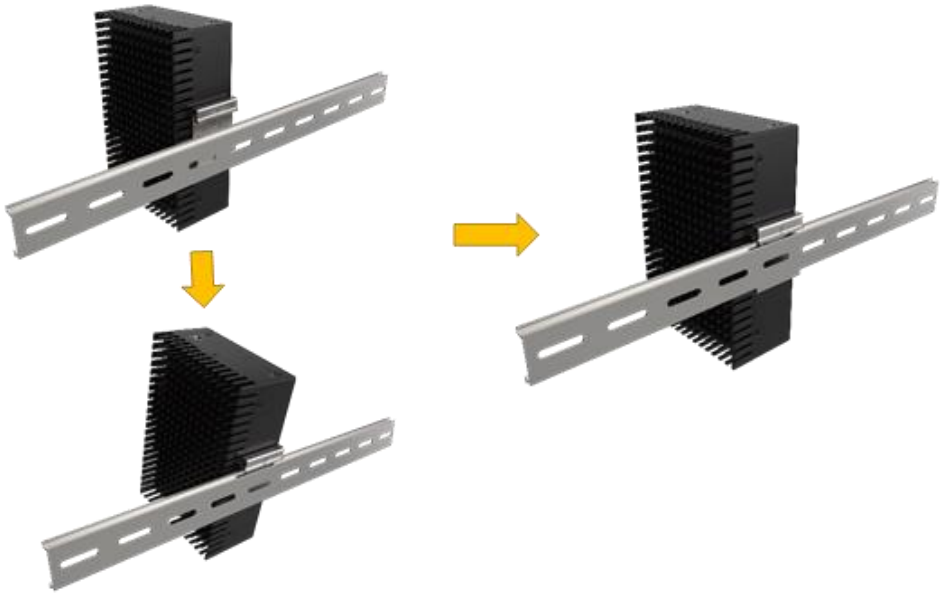


Figure 3-18: Mounting the system

3.10 External Peripheral Interface Connectors

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

- Ethernet
- Power button
- Power DC jack
- HDMI

- DP
- USB

3.10.1 HDMI/DP Connector

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



Figure 3-19: 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 **Section 4.3**.

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-JL Series. See **Figure 3-20**.

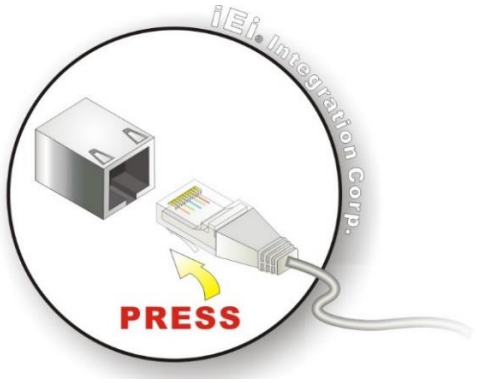


Figure 3-20: LAN Connection

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 3-21**.



Figure 3-21: 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 3-22: Power Connector

NOTE:

IEI offers purchasing options for compatible power adapters and power cords. Please refer to the product's Datasheet for detailed specifications.

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

The DRPC-W-JL 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 **Section 4.3.**

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.

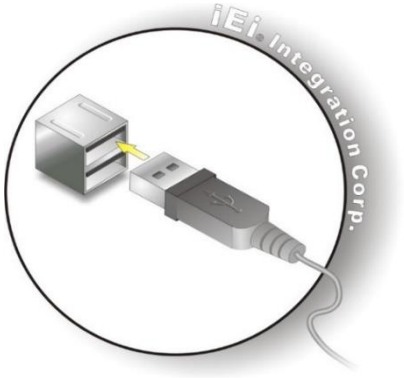


Figure 3-23: USB Connection

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 injury to users.

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, and then the power LED indicator should turn on.

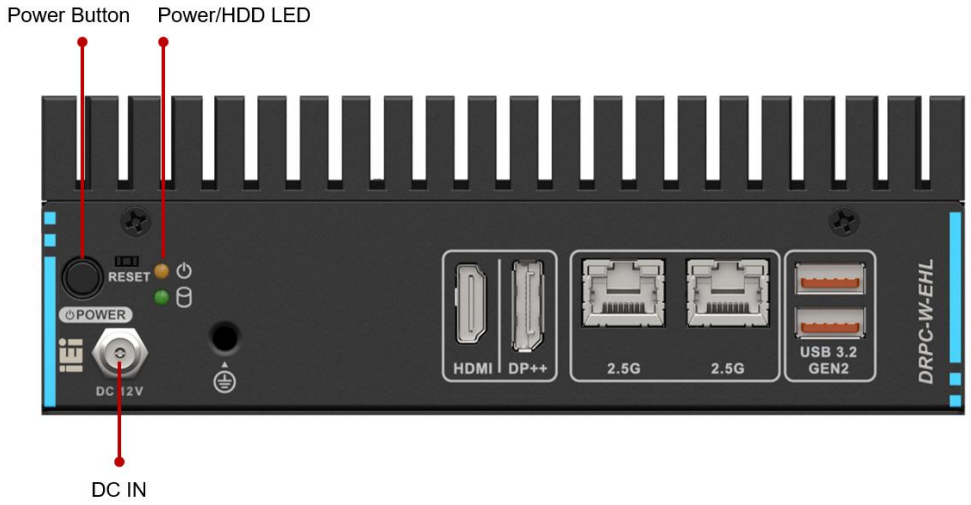


Figure 3-24: Power Input & Button & LED

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

3.12 Available Drivers

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

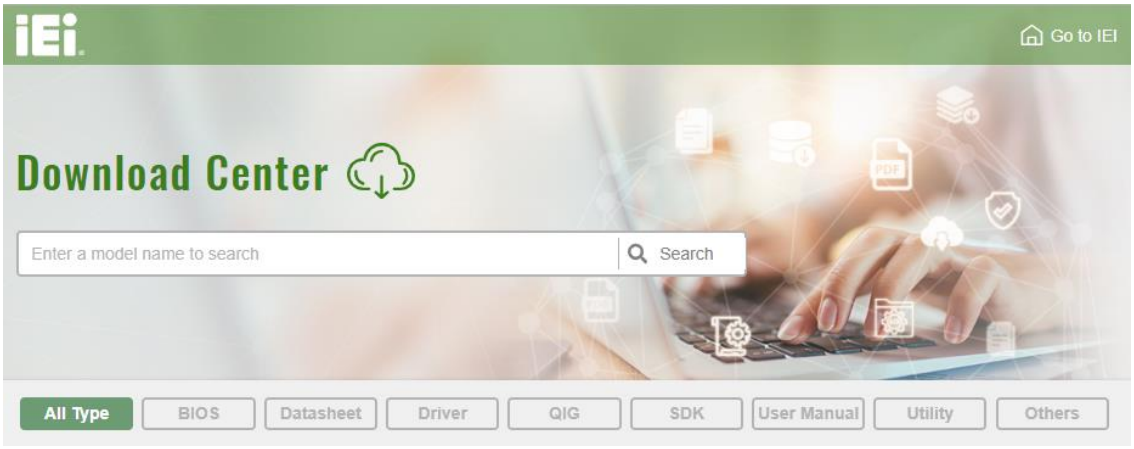
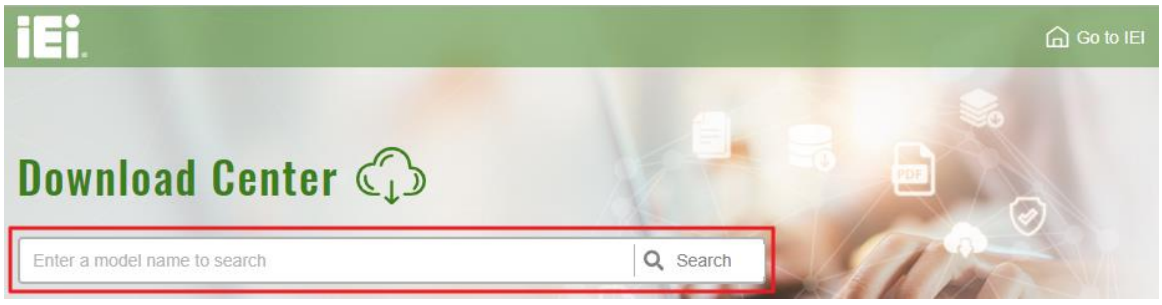


Figure 3-25: IEI Resource Download Center

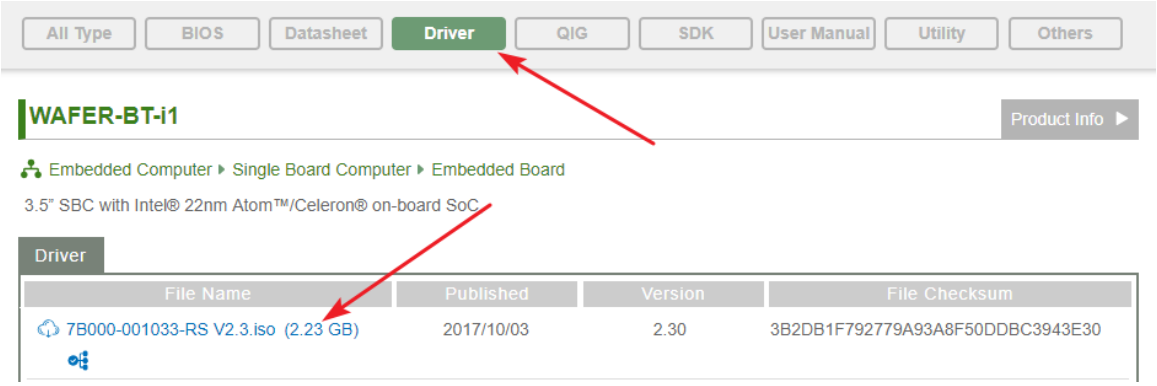
3.12.1 Driver Download

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

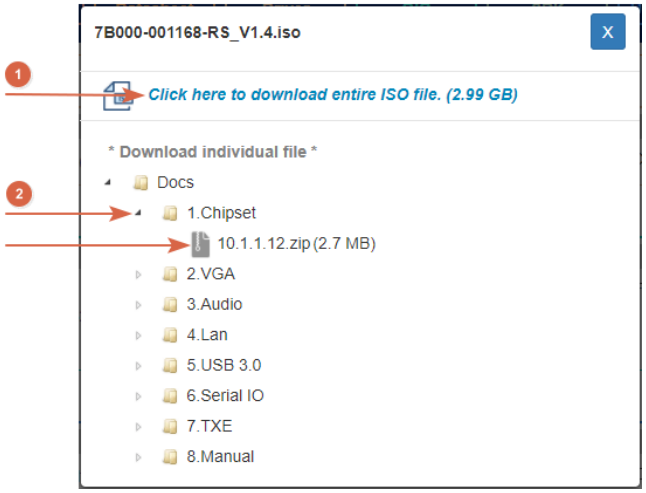
Step 1: Go to https://download.ieiworld.com. Type DRPC-W-JL Series and press Enter.



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



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 Peripheral Interface Connectors

This chapter details all the jumpers and connectors on the system's motherboard. The figures below show all the connectors and jumpers.

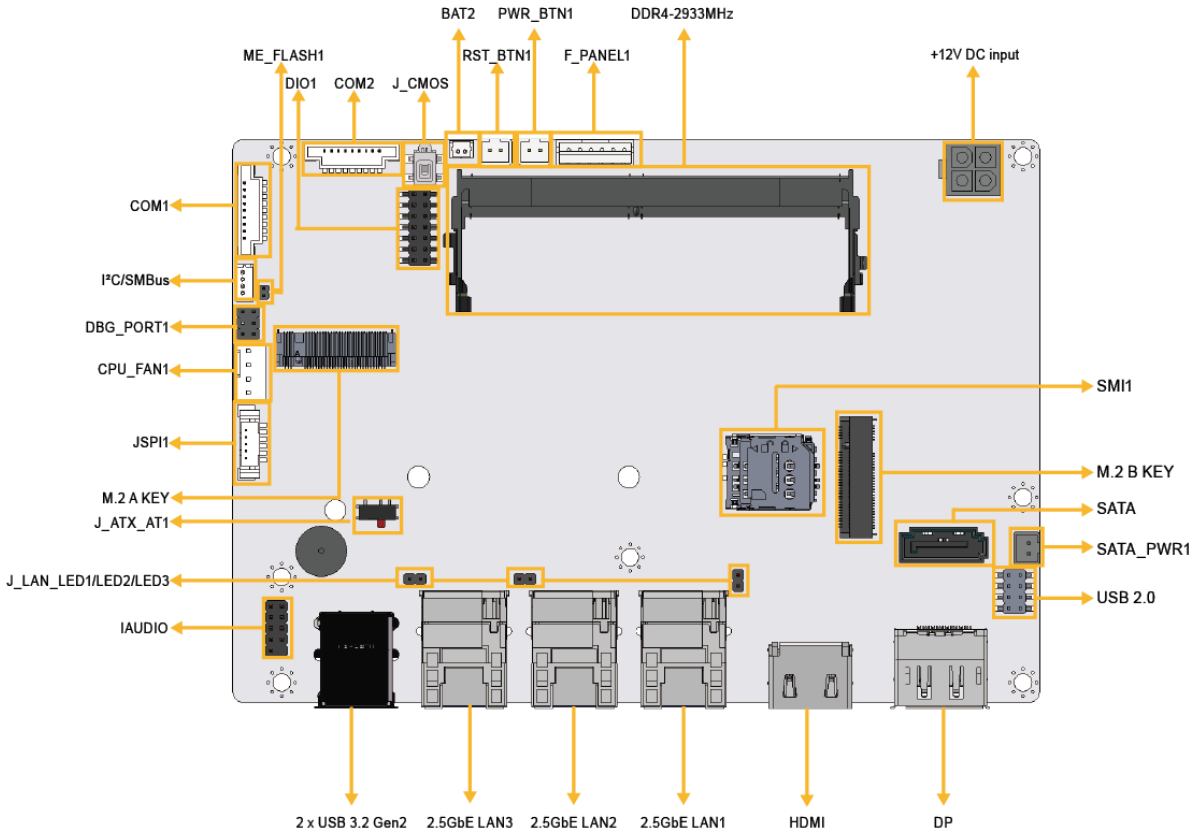


Figure 4-1: Connector and Jumper Locations

4.1.1 Internal Peripheral Connectors

The table below lists all the internal connectors on the motherboard.

Connector	Type	Label
Clear CMOS button	Button	J_CMOS1
AT/ATX power mode setting	3-pin header	J_ATX_AT1
ME override setting jumper	2-pin header	ME_FLASH1
Internal audio connector	10-pin header	AUDIO1
ATX 12V power connector	4-pin Molex	PWR1
Digital I/O connector	14-pin header	DIO1
Fan connector	4-pin header	CPU_FAN1
Power LED & HDD LED connector	6-pin wafer	F_PANEL1
LAN1 link LED connector	2-pin header	JLAN_LED1
LAN2 link LED connector	2-pin header	JLAN_LED2
LAN3 link LED connector	2-pin header	JLAN_LED3
Battery connector	2-pin wafer	BAT2
Power button connector	2-pin wafer	PWR_BTN1
Reset button connector	2-pin wafer	RST_BTN1
RS-232 serial ports	9-pin wafer	COM1, COM2
SATA 6Gb/s connectors	7-pin SATA connector	SATA1
SATA power connector	2-pin wafer	SATA_PWR1
I²C connector	4-pin wafer	I2C1
Flash SPI ROM connector	6-pin wafer	JSPI1
Internal USB 2.0 connector	8-pin header	USB2_CN1
M.2 B-key slot	M.2 B-key slot	M2_1
M.2 A-key slot	M.2 A-key slot	M2_A1
SIM slot	7-pin SIM holder	SIM1
DDR4 SO-DIMM Socket	260-pin SO-DIMM	DIMM_A1

Table 4-1: Peripheral Interface Connectors

4.1.2 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, LAN3
External USB 3.2 Gen 2x1 Type-A connector	USB 3.2 Gen 2 Type-A	USB1
External DisplayPort connector	DP	DP1
External HDMI connector	HDMI	HDMI1

Table 4-2: Rear Panel Connectors

4.2 Internal Peripheral Connectors

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

4.2.1 Clear CMOS Button

CN Label: **J_CMOS1**

CN Type: Tact switch

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.

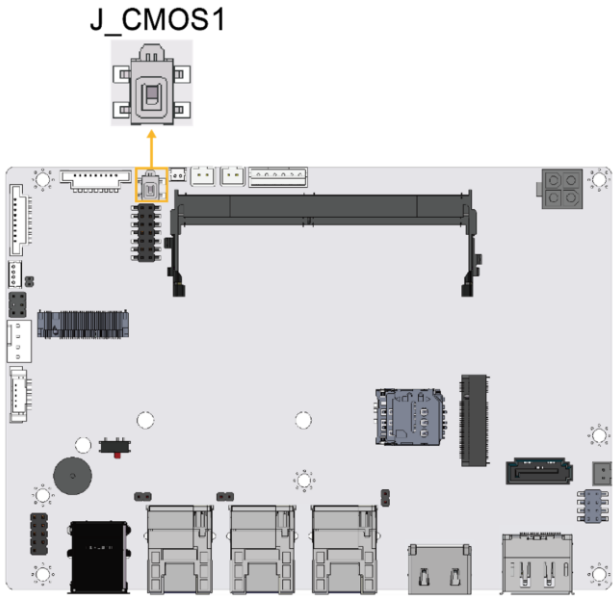


Figure 4-2: Clear CMOS Location

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

Table 4-3: Clear CMOS Pinouts

4.2.2 AT/ATX Power Mode Setting

CN Label: **J_ATX_AT1**

CN Type: Slide 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**.

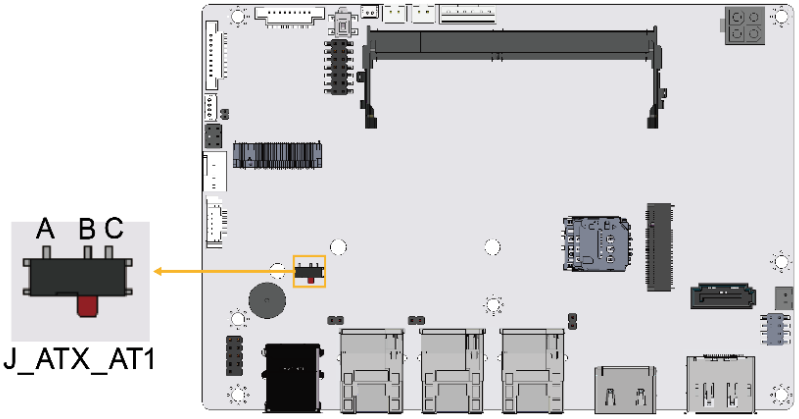


Figure 4-3: AT/ATX Power Mode Switch Locations

PIN NO.	DESCRIPTION
Short A - B	ATX Power Mode (default)
Short B – C	AT Power Mode

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

4.2.3 Flash Descriptor Security Override Jumper

CN Label: **ME_FLASH1**

CN Type: 2-pin header, P=1.27mm

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

CN Pinouts: See **Table 4-5**

The ME_FLASH1 connector is used for flash descriptor security override or ME debug mode.

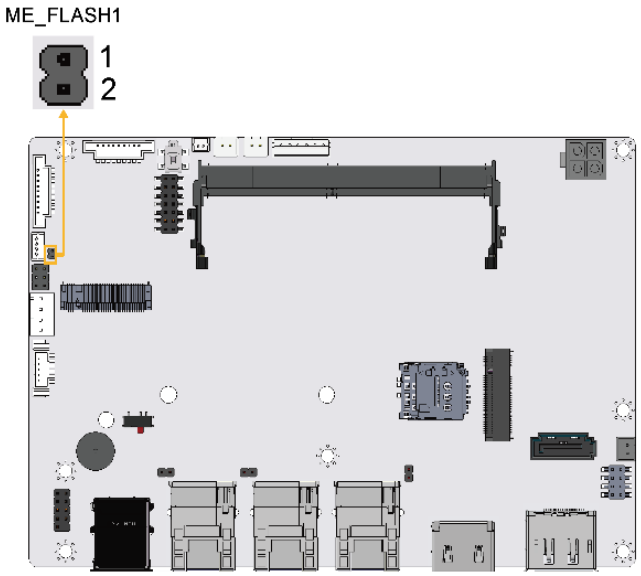


Figure 4-4: ME Override Setting Jumper Locations

Setting	Description
Short 1-2	Disabled (default)
Short 2-3	Enabled

Table 4-5: ME Override Setting 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.

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.

4.2.4 Audio Connector

CN Label: **AUDIO1**

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

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

CN Pinouts: See **Table 4-6**

The audio connector is connected to external audio devices including speakers and microphones for the input and output of audio signals to and from the system.

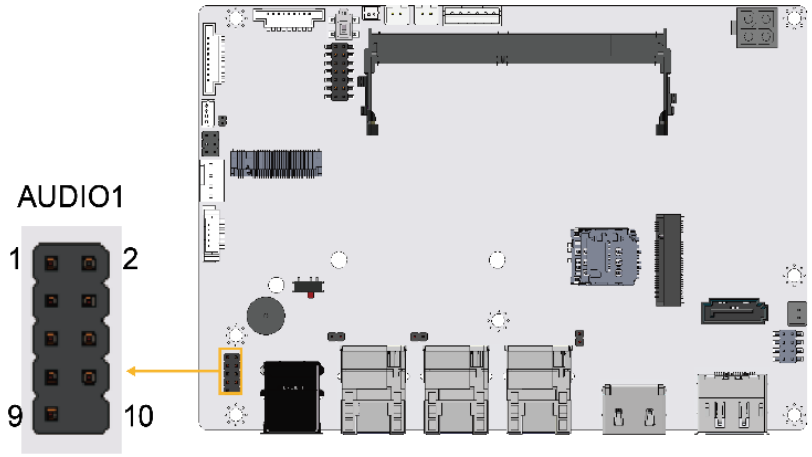


Figure 4-5: Audio Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	HDA_SYNC_R	2	HDA_BIT_CLK_R
3	HDA_SDOUT_R	4	HDA_PCBEEP_R
5	HDA_SDIN_R	6	HDA_RST#_R
7	P5V	8	GND
9	P12V	10	GND

Table 4-6: Audio Connector Pinouts

4.2.5 ATX 12V Power Connector

CN Label: **PWR1**

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

CN Location: See **Figure 4-6**

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

The connector supports the +12V power supply.

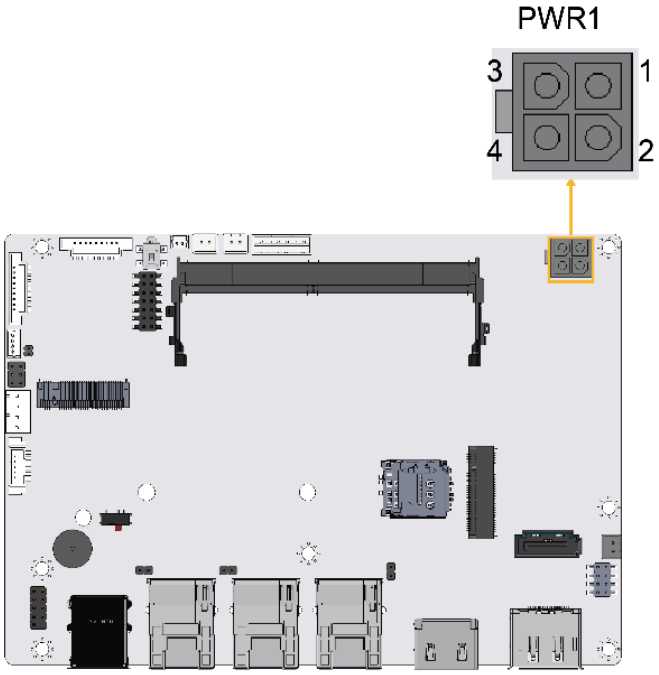


Figure 4-6: ATX 12V Power Connector Location

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

Table 4-7: ATX 12V Power Connector Pinouts

4.2.6 Digital I/O Connector

CN Label: **DIO1**

CN Type: 14-pin header, p=2.0 mm

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

CN Pinouts: See **Table 4-8**

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

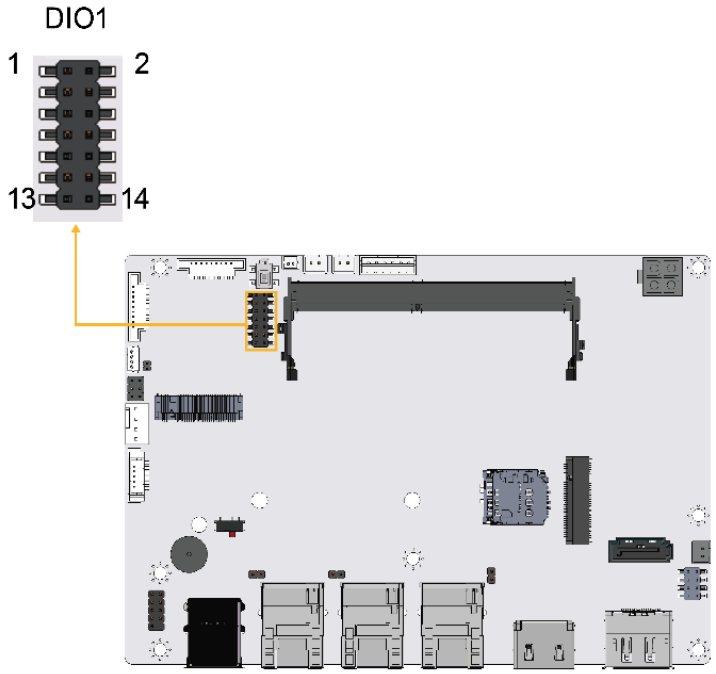


Figure 4-7: Digital I/O Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	VCC
3	DOUT5	4	DOUT4
5	DOUT3	6	DOUT2
7	DOUT1	8	DOUT0
9	DIN5	10	DIN4
11	DIN3	12	DIN2
13	DIN1	14	DIN0

Table 4-8: Digital I/O Connector Pinouts

4.2.7 Fan Connector

CN Label:	**CPU_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.

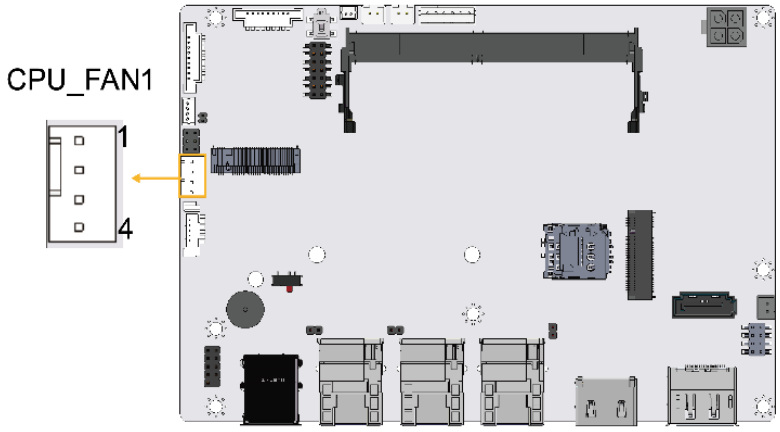


Figure 4-8: Fan Connector Location

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

Table 4-9: Fan Connector Pinouts

4.2.8 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.

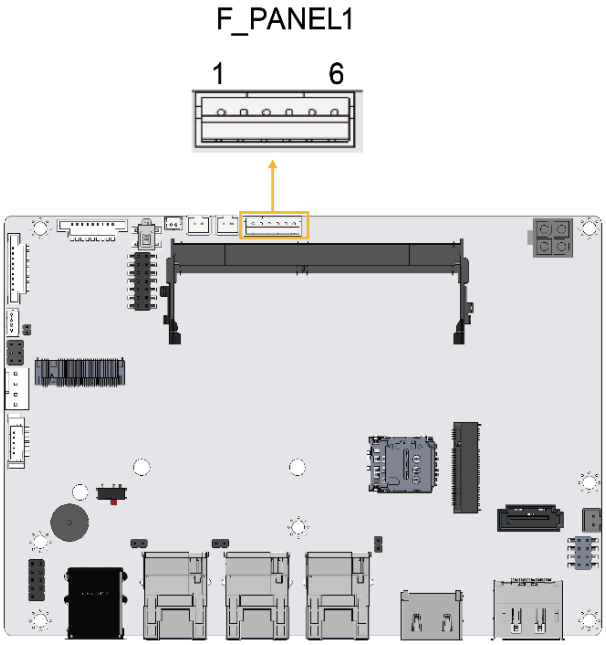


Figure 4-9: Power LED & HDD LED Connector Location

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

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

4.2.9 LAN LED Connectors

CN Label: **JLAN_LED1, JLAN_LED2, JLAN_LED3**

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

CN Location: See **Figure 4-10**

CN Pinouts: See **Table 4-11, Table 4-12** and **Table 4-13**

The LAN LED connectors connect to the LAN link LEDs on the system.

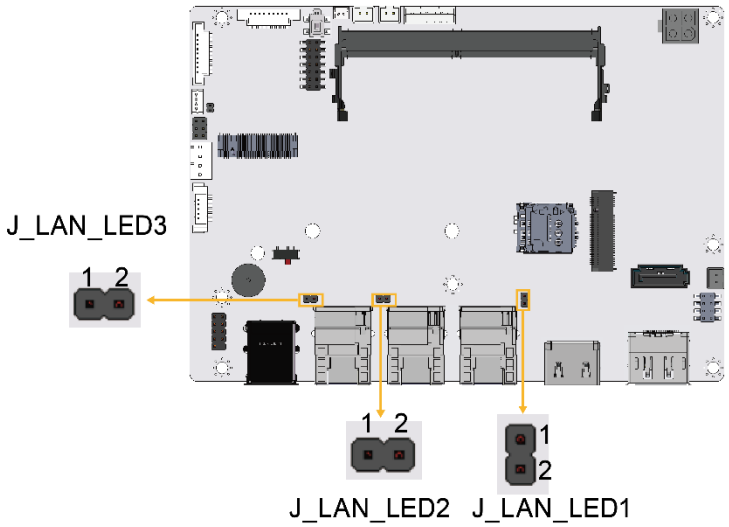


Figure 4-10: LAN LED Connector Locations

Pin	Description
1	+3.3V
2	LAN1_LED_LNK#_ACT

Table 4-11: LAN1 LED Connector Pinouts

Pin	Description
1	+3.3V
2	LAN2_LED_LNK#_ACT

Table 4-12: LAN2 LED Connector Pinouts

Pin	Description
1	+3.3V
2	LAN3_LED_LNK#_ACT

Table 4-13: LAN3 LED Connector Pinouts

4.2.10 Battery Connector

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.

CN Label:	**BAT2**
CN Type:	2-pin wafer, p=1.25 mm
CN Location:	See **Figure 4-11**
CN Pinouts:	See **Table 4-14**

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.

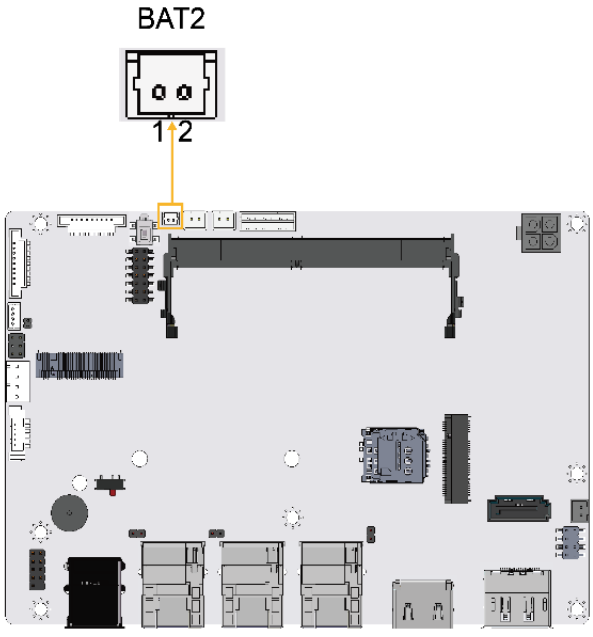


Figure 4-11: Battery Connector Location

Pin	Description
1	VBAT+
2	GND

Table 4-14: Battery Connector Pinouts

4.2.11 Power Button Connector

CN Label: **PWR_BTN1**

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

CN Location: See **Figure 4-12**

CN Pinouts: See **Table 4-15**

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

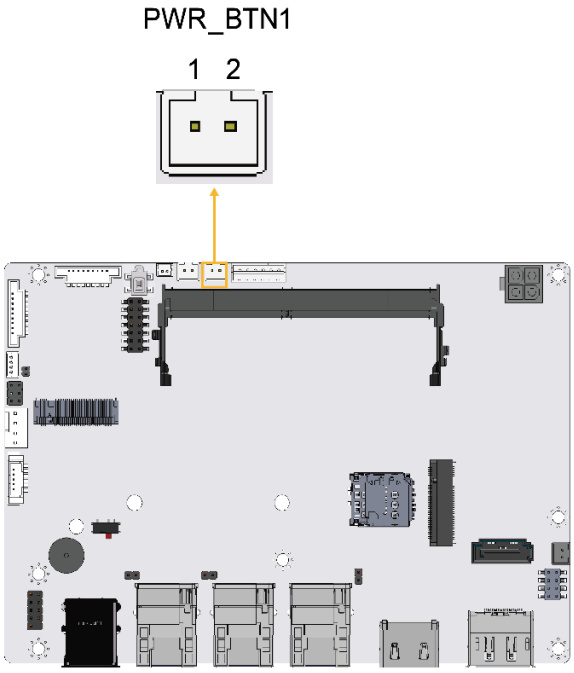


Figure 4-12: Power Button Connector Location

Pin	Description
1	PWR_BTN+
2	PWR_BTN-

Table 4-15: Power Button Connector Pinouts

4.2.12 Reset Button Connector

CN Label:	**RST_BTN1**
CN Type:	2-pin wafer, p=2.00 mm
CN Location:	See **Figure 4-13**
CN Pinouts:	See **Table 4-16**

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.

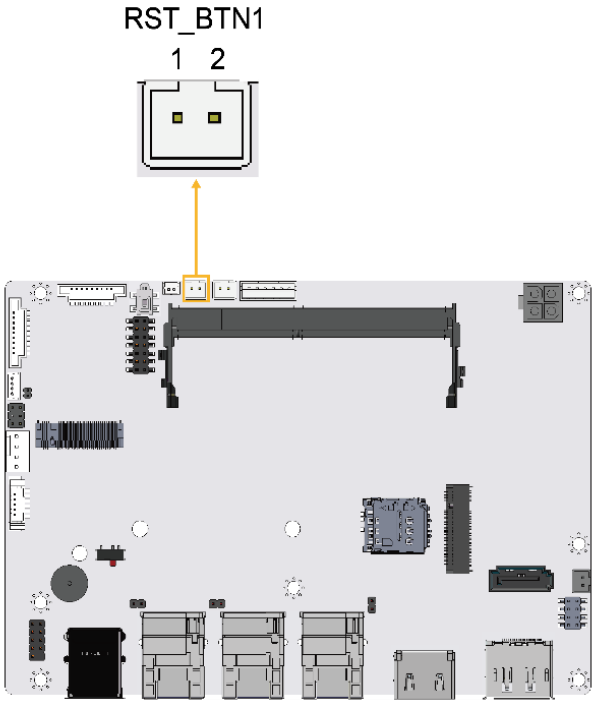


Figure 4-13: Reset Button Connector Location

Pin	Description
1	RESET+
2	RESET-

Table 4-16: Reset Button Connector Pinouts

4.2.13 RS-232 Serial Ports

CN Label: **COM1,COM2**

CN Type: 9-pin wafer, p=1.25 mm

CN Location: See **Figure 4-14**

CN Pinouts: See **Table 4-17**

The serial connectors provide RS-232 connection.

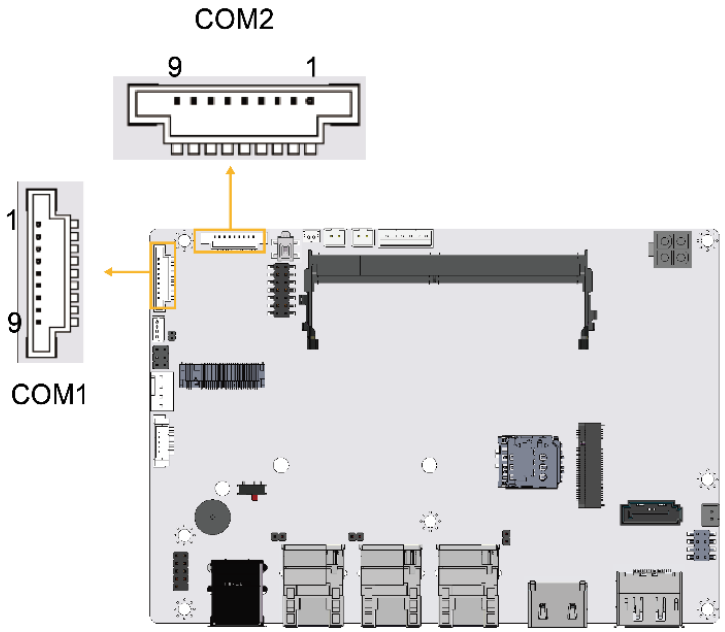


Figure 4-14: RS-232 Serial Port Location

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 4-17: RS-232 Serial Port Pinouts

4.2.14 SATA 6Gb/s Drive Connector

CN Label:	**SATA1**
CN Type:	7-pin SATA connector
CN Location:	See **Figure 4-15**
CN Pinouts:	See **Table 4-18**

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.

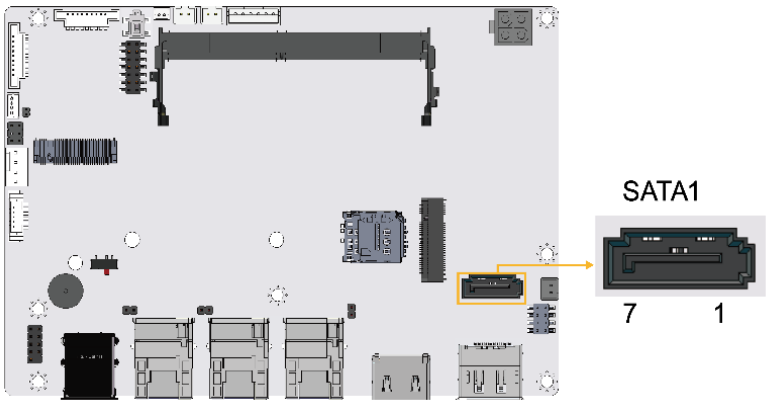


Figure 4-15: SATA 6Gb/s Drive Connectors Location

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 4-18: SATA 6Gb/s Drive Connectors Pinouts

4.2.15 SATA Power Connector

CN Label: **SATA_PWR1**

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

CN Location: See **Figure 4-16**

CN Pinouts: See **Table 4-19**

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

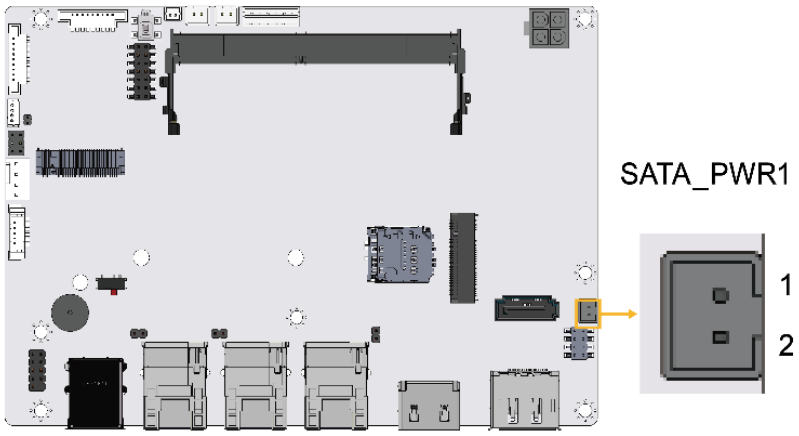


Figure 4-16: SATA Power Connector Location

Pin	Description
1	+5V
2	GND

Table 4-19: SATA Power Connector Pinouts

4.2.16 SMBus/I²C Connector

CN Label: **I2C1**

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

CN Location: See **Figure 4-17**

CN Pinouts: See **Table 4-20**

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

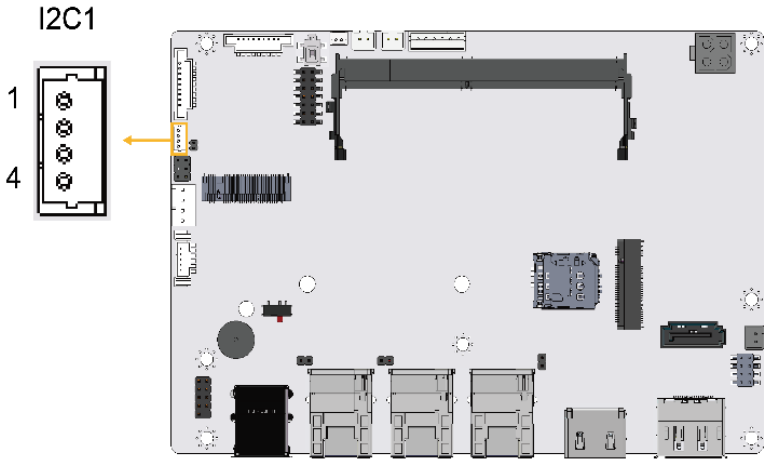


Figure 4-17: SMBus Connector Location

Pin	Description
1	GND
2	SMB DATA
3	SMB CLK
4	+5V

Table 4-20: SMBus Connector Pinouts

4.2.17 SPI Flash Connector

CN Label: **JSPI1**

CN Type: 6-pin wafer, p=1.25 mm

CN Location: See **Figure 4-18**

CN Pinouts: See **Table 4-21**

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

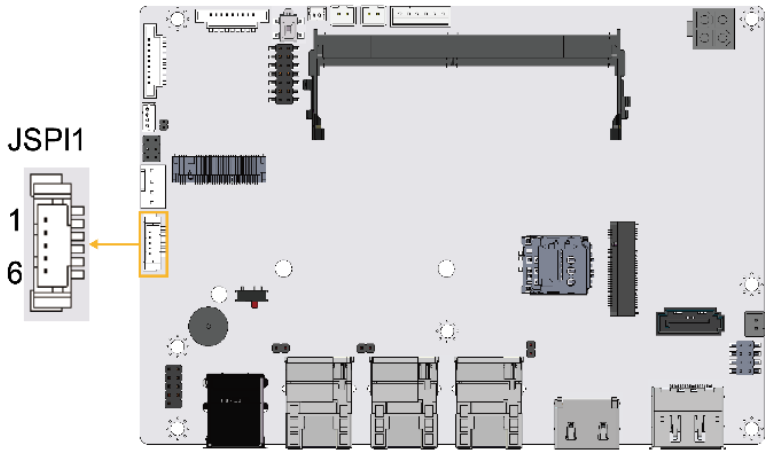


Figure 4-18: SPI Flash Connector Location

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

Table 4-21: SPI Flash Connector Pinouts

4.2.1 USB 2.0 Connector

CN Label: **USB2_CN1**

CN Type: 8-pin header, p=2.00 mm

CN Location: See **Figure 4-19**

CN Pinouts: See **Table 4-22**

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

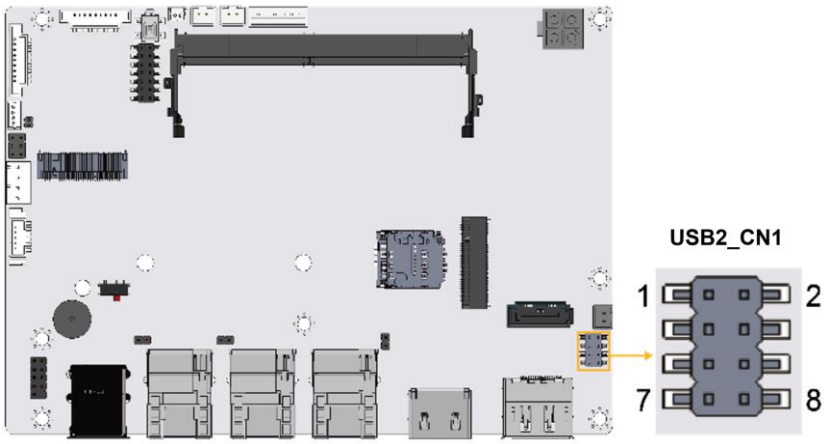


Figure 4-19: USB Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	2	GND
3	USB DATA-	4	USB DATA+
5	USB DATA+	6	USB DATA-
7	GND	8	VCC

Table 4-22: USB Connector Pinouts

4.2.2 M.2 B-Key Slot

CN Label: **M2_1**

CN Type: M.2 B-key slot

CN Location: See **Figure 4-20**

CN Pinouts: See **Table 4-23**

The M.2 3042/2280 B-key slot with PCIe Gen3 x2 and USB 2.0 signals supports NVMe storage or 5G module with a SIM card holder.

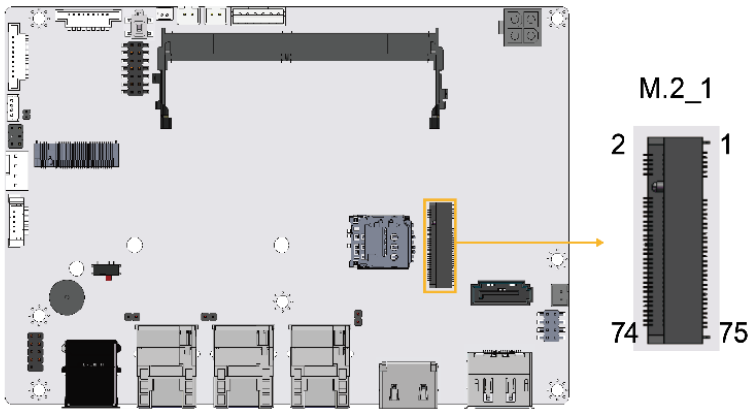


Figure 4-20: M.2 B-Key Slot Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	CONFIG_3	2	+3.3V
3	GND	4	+3.3V
5	GND	6	POWER_OFF
7	USB_D+	8	W_DISABLE
9	USB_D-	10	DAS/DSS#
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	N/C
21	CONFIG_0	22	N/C
23	N/C	24	N/C

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
25	N/C	26	GNSS_DISABLE
27	GND	28	N/C
29	PCIE_RXN1	30	UIM_RST
31	PCIE_RXP1	32	UIM_CLK
33	GND	34	UIM_DATA
35	PCIE_TXN1	36	UIM_VCC
37	PCIE_TXP1	38	DEVSLP
39	GND	40	N/C
41	PCIE_RXN0	42	N/C
43	PCIE_RXP0	44	N/C
45	GND	46	N/C
47	PCIE_TXN0	48	N/C
49	PCIE_TXP0	50	PERST#
51	GND	52	CLKREQ#
53	REFCLKN	54	PEWAKE
55	REFCLKP	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	WWAN_RST	68	N/C
69	PEDET	70	+3.3V
71	GND	72	+3.3V
73	GND	74	+3.3V
75	CONFIG_2		

Table 4-23: M.2 B-Key Slot Pinouts

4.2.3 M.2 A-Key Slot

CN Label: **M2_A1**

CN Type: M.2 A-key slot

CN Location: See **Figure 4-21**

CN Pinouts: See **Table 4-24**

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

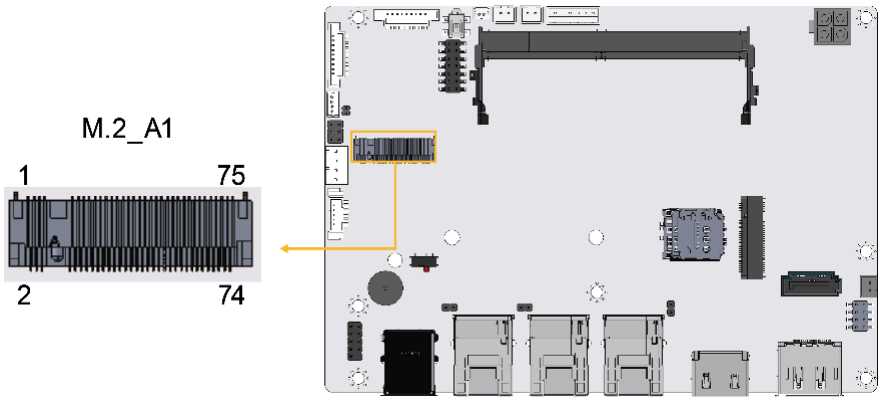


Figure 4-21: M.2 A-Key Slot Location

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

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_TX0+	36	GND
37	PCIE_TX0-	38	NC
39	GND	40	NC
41	PCIE_RX0+	42	NC
43	PCIE_RX0-	44	NC
45	GND	46	NC
47	CLK_PCIE0+	48	NC
49	CLK_PCIE0-	50	NC
51	GND	52	BUF_PLT_RST#
53	PCIE_CLKREQ#	54	Pull Up +V3.3A
55	PCIE_WAKE#	56	Pull Up +V3.3A
57	GND	58	NC
59	PCIE_TX1+	60	NC
61	PCIE_TX1-	62	NC
63	GND	64	NC
65	PCIE_RX1+	66	NC
67	PCIE_RX1-	68	NC
69	GND	70	NC
71	CLK_PCIE1+	72	+V3.3A
73	CLK_PCIE1-	74	+V3.3A
75	GND		

Table 4-24: M.2 A-Key Slot Pinouts

4.2.4 SIM Card Slot

CN Label: **SIM1**

CN Type: 7-pin SIM holder

CN Location: See **Figure 4-22**

CN Pinouts: See **Table 4-25**

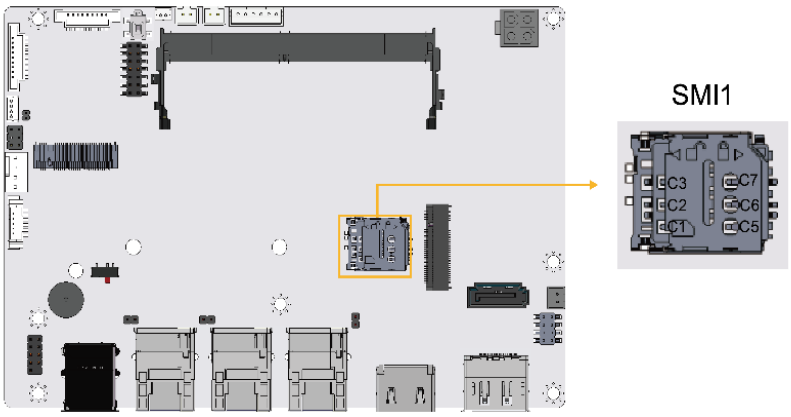


Figure 4-22: SIM Card Slot Location

PIN NO.	DESCRIPTION
C1	SIM_VCC
C2	SIM_RST
C3	SIM_Clock
C5	GND
C6	SIM_VPP
C7	SIM_DATA

Table 4-25: SIM Card Slot Pinouts

4.2.5 DDR4 SO-DIMM Socket

CN Label: **DIMM_A1**

CN Type: 260-pin DDR4 SO-DIMM socket

CN Location: See **Figure 4-23**

The SO-DIMM slot is used for installing the DDR4 SO-DIMM memory.

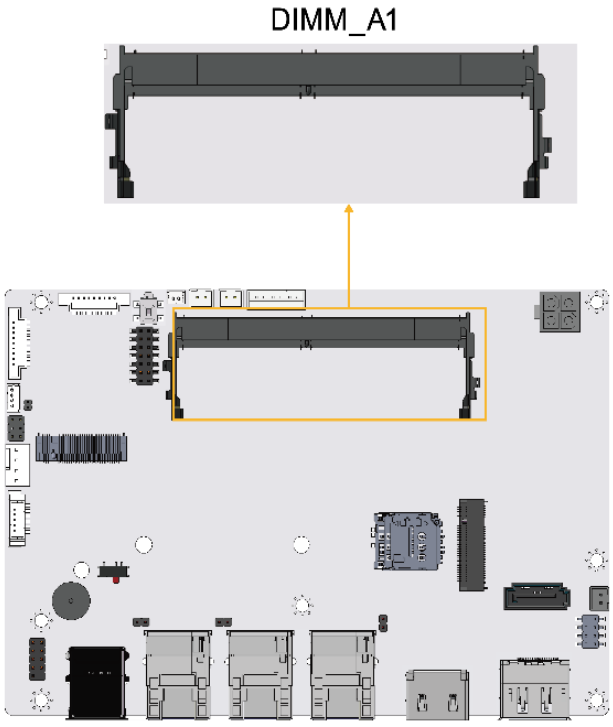


Figure 4-23: DDR4 SO-DIMM Socket Location

4.3 External Peripheral Interface Connector Panel

Figure 4-24 shows the DRPC-W-JL Series external peripheral interface connector (EPIC) panel. The EPIC panel consists of the following:

- 1 x HDMI connector
- 1 x DP connector
- 3 x GbE RJ-45 connector
- 2 x USB 3.2 Gen 2 connector

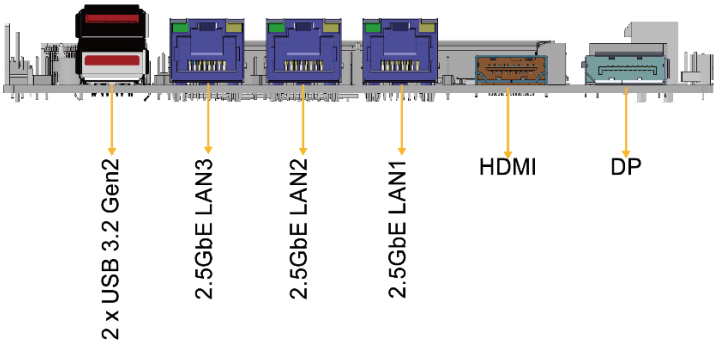


Figure 4-24: External Peripheral Interface Connector

4.3.1 External 2.5GbE RJ-45 Connectors

CN Label:	**LAN1, LAN2, LAN3**
CN Type:	RJ-45
CN Location:	See **Figure 4-25**
CN Pinouts:	See **Table 4-26**

The LAN connector connects to a local network. LAN LED location and status see **Figure 4-26** and **Table 4-27.**

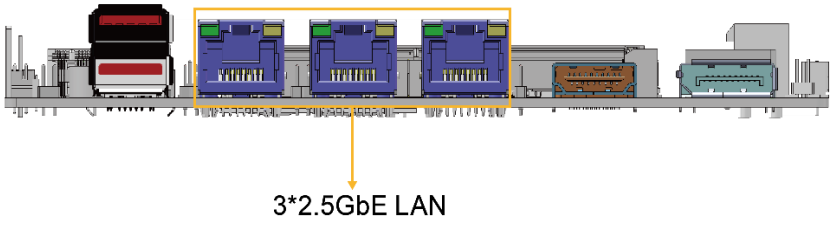


Figure 4-25: LAN Location

Pin	Description	Pin	Description
1	MDI0P	5	MDI2P
2	MDI0N	6	MDI2N
3	MDI1P	7	MDI3P
4	MDI1N	8	MDI3N

Table 4-26: LAN Pinouts

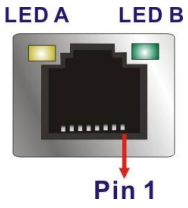


Figure 4-26: LAN LED Location

LED	Description	LED	Description
A	on: linked blinking: data is being sent/received	B	off: 100 Mb/s orange: 1000 Mb/s green: 2500 Mb/s

Table 4-27: LAN LED Status

4.3.2 External USB 3.2 Gen 2x1 Type-A

CN Label: **USB1, USB2**

CN Type: USB 3.2 Gen 2 port Type-A

CN Location: See **Figure** 4-27

CN Pinouts: See **Table 4-28**

The DRPC-W-JL Series has two external USB 3.2 Gen 2 ports. The USB connector can be connected to a USB 2.0 or USB 3.2 device. The pinouts of USB 3.2 Gen 2 connectors are shown below.

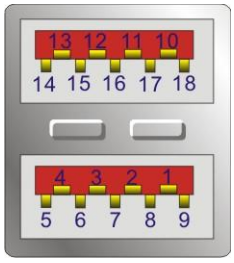


Figure 4-27: USB 3.2 Gen 2 Port

Pin	Description	Pin	Description
1	VCC	10	VCC
2	USB_DATA0-	11	USB_DATA1-
3	USB_DATA0+	12	USB_ DATA1+
4	GND	13	GND
5	USB3_RX0-	14	USB3_RX1-
6	USB3_RX0+	15	USB3_ RX1+
7	GND	16	GND
8	USB3_TX0-	17	USB3_TX1-
9	USB3_TX0+	18	USB3_TX1+

Table 4-28: USB 3.2 Gen 2 Port Pinouts

4.3.3 External DisplayPort Connector

CN Label: **DP1**

CN Type: External DP connector

CN Location: See **Figure 4-28**

CN Pinouts: See **Table 4-29**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DATA_0P	11	GND
2	GND	12	DATA_3N
3	DATA_0N	13	CONFIG1
4	DATA_1P	14	CONFIG2
5	GND	15	AUX_P
6	DATA_1N	16	GND
7	DATA_2P	17	AUX_N
8	GND	18	DP HPD
9	DATA_2N	19	GND
10	DATA_3P	20	DP PWR

Table 4-29: External Display Port Connector Pinouts

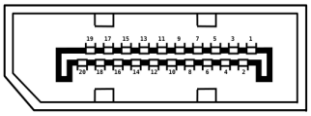


Figure 4-28: External DisplayPort Connector Location

4.3.4 External HDMI Connector

CN Label: **HDMI1**

CN Type: HDMI connector

CN Location: See **Figure 4-29**

CN Pinouts: See **Table 4-30**

The HDMI connector can connect to HDMI devices.

Pin	Description	Pin	Description
1	HDMI2_DATA2	2	GND
3	HDMI2_DATA2#	4	HDMI2_DATA1
5	GND	6	HDMI2_DATA1#
7	HDMI2_DATA0	8	GND
9	HDMI2_DATA0#	10	HDMI2_CLK
11	GND	12	HDMI2_CLK#
13	N/C	14	N/C
15	HDMI2_SCL	16	HDM2I_SDA
17	GND	18	+5V
19	HDMI2_HPD		

Table 4-30: HDMI Connector Pinouts

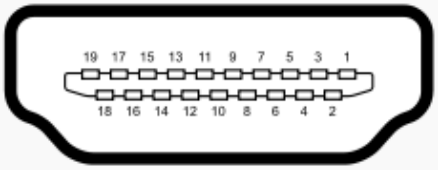


Figure 4-29: HDMI Connector Pinout Locations

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. Press the **DEL** or **F2** key as soon as the system is turned on or
2. Press the **DEL** or **F2** key when the "**Press DEL or F2 to enter SETUP**" message appears on the screen.

If the message disappears before the **DEL or F2** key is pressed, restart the computer and try again.

5.1.2 Using Setup

Use the arrow keys to highlight items, press **ENTER** to select, use the **Page Up** and **Page Down** keys to change entries, press **F1** for help and press **Esc** to quit. Navigation keys are 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 Down	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

Table 5-1: BIOS 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 items:

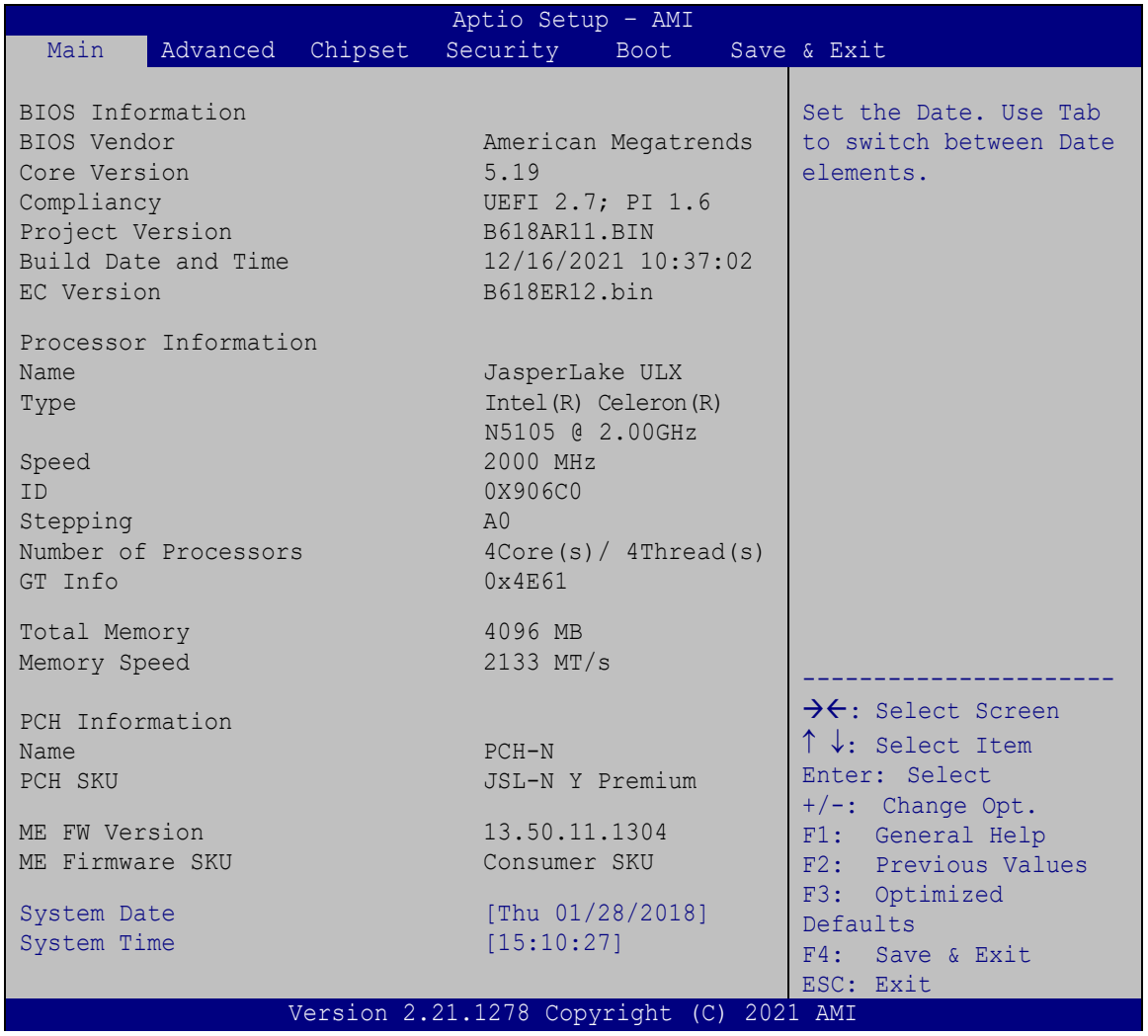
- Main – Changes the basic system configuration.
- Advanced – Changes the advanced system settings.
- Chipset – Changes the chipset settings.
- Security – Sets user and administrator passwords.
- Boot – Changes the system boot configuration.
- Save & Exit – Selects exit options and loads default settings

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**) appears when the **BIOS Setup** program is entered.

The **Main** menu gives an overview of the basic system information.



BIOS Menu 1: Main

➔ **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]**

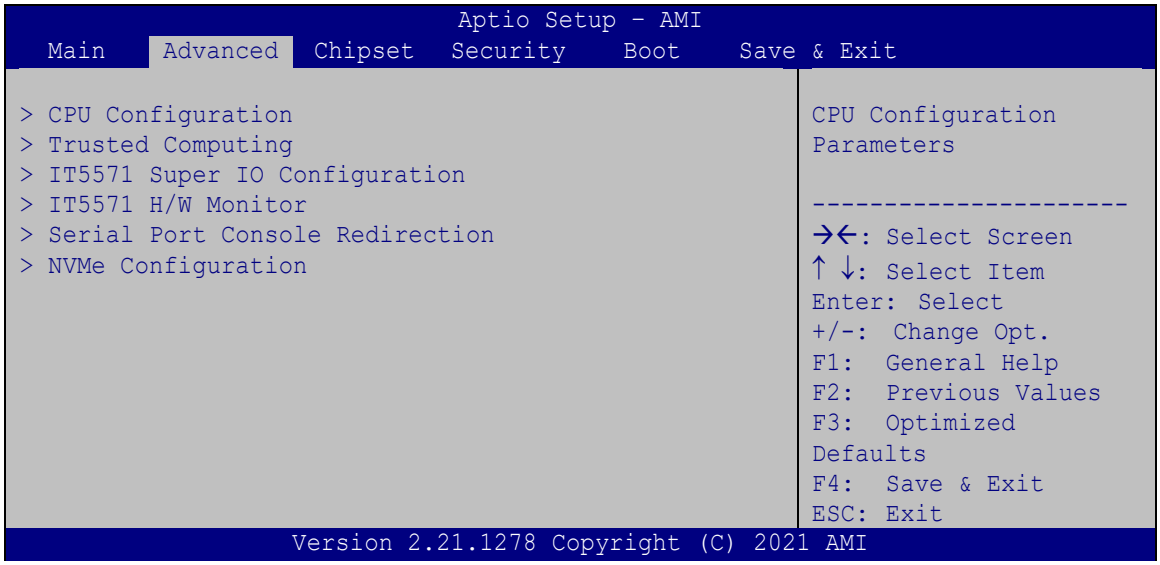
Use the **System Time** option to set the system time. Manually enter the hours, minutes and seconds.

5.3 Advanced

Use the **Advanced** menu (**BIOS Menu 2**) to configure the CPU and peripheral devices through the following sub-menus:

WARNING!

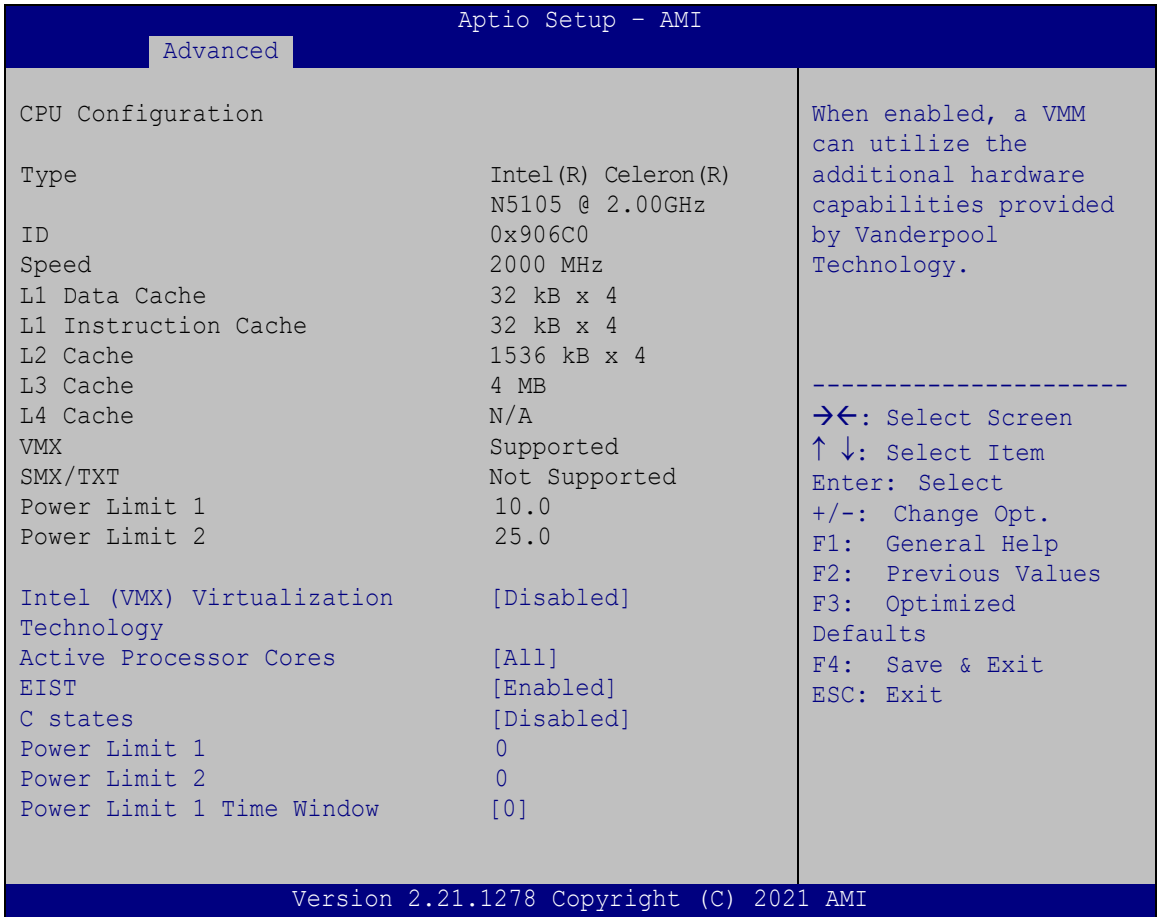
Setting the wrong values in the sections below may cause the system to malfunction. Make sure that the settings made are compatible with the hardware.



BIOS Menu 2: Advanced

5.3.1 CPU Configuration

Use the **CPU Configuration** menu (**BIOS Menu 3**) to view detailed CPU specifications or enable the Intel Virtualization Technology.



BIOS Menu 3: CPU Configuration

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

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**	**DEFAULT**	Disables Intel Virtualization Technology.
➔	**Enabled**		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.
➔	**3**		Enable three cores in the processor package.

➔ **EIST [Enabled]**

Use the **EIST** option to enable or disable the capability that allows more than two frequency ranges to be supported.

➔	**Disabled**		Disables the EIST Technology
➔	**Enabled**	**DEFAULT**	Enables the EIST 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**	Disables CPU power management
➔	**Enabled**		Enables CPU power management

➔ **Power Limit 1 [0]**

Use the + or – key to change the **Power Limit 1** value. BIOS will program the default values for Limit 1 and Power Limit 1 Time Window. For 12.50W, enter 12500.

➔ **Power Limit 2 [0]**

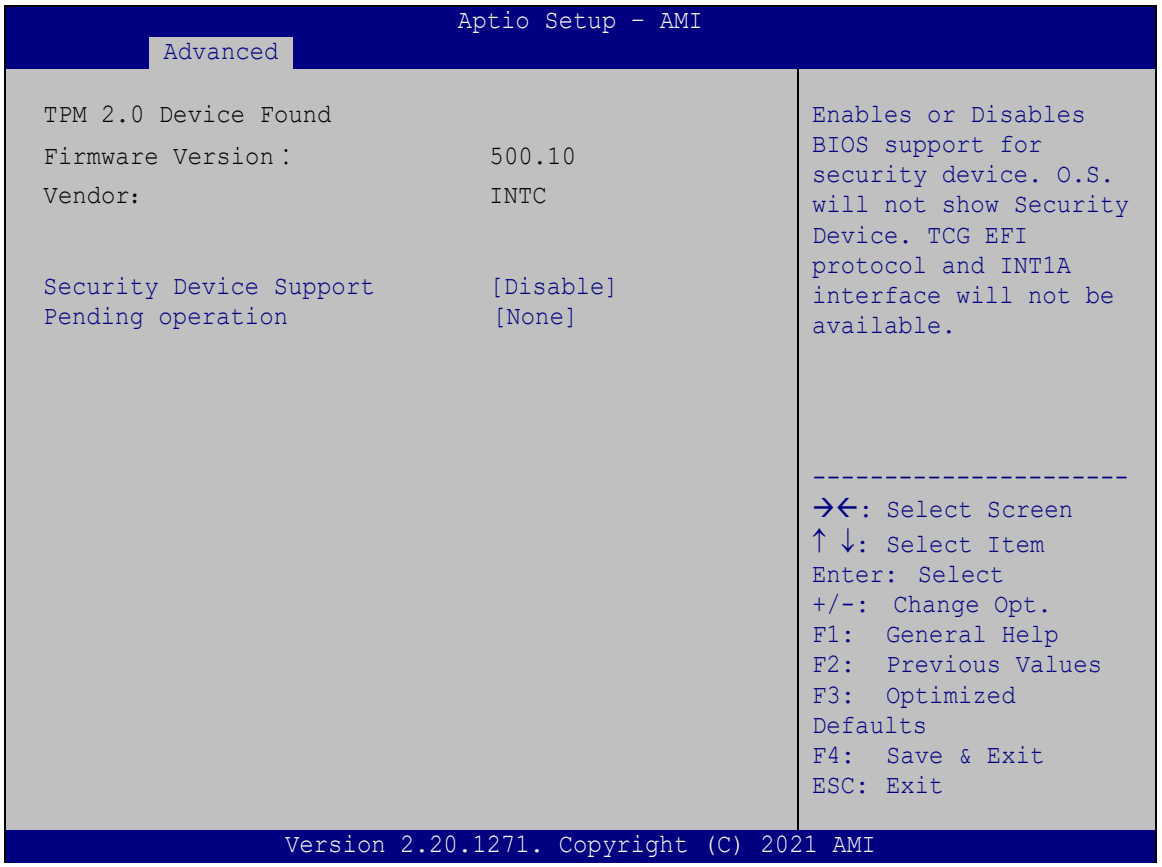
Use the + or – key to change the **Power Limit 2** value. BIOS will round to the nearest 1/8W when programming. 0 = no custom override. For 12.50W, enter 12500.

➔ **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. For 0 is the default value

5.3.2 Trusted Computing

Use the **Trusted Computing** menu (**BIOS Menu 4**) to configure settings related to the Trusted Computing Group (TCG) and Trusted Platform Module (TPM).



BIOS Menu 4: Trusted Computing

➔ **Security Device Support [Disable]**

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

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

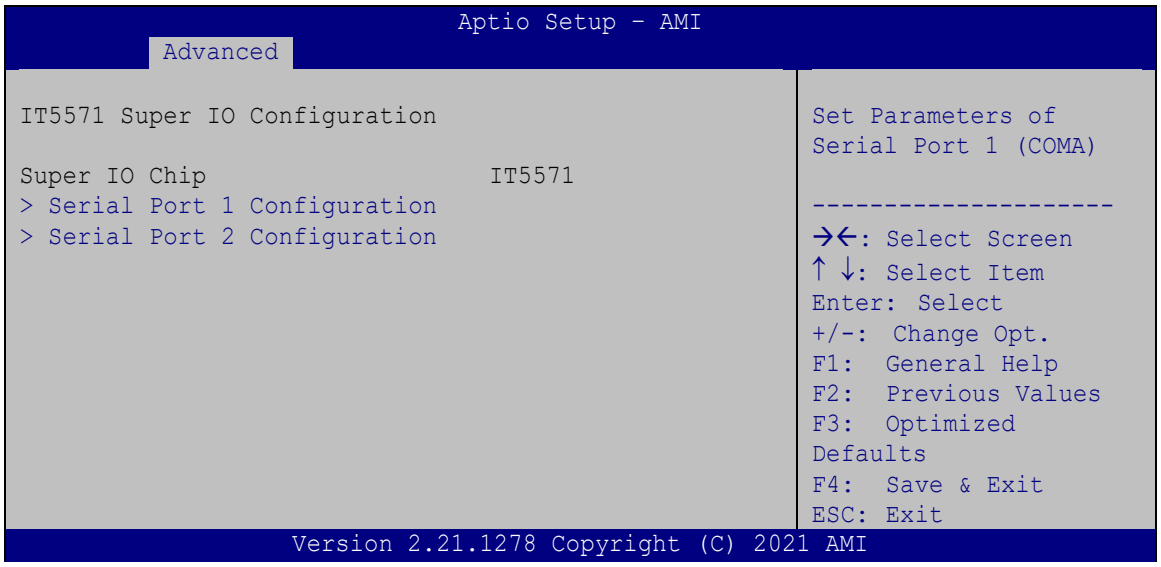
➔ **Pending Operation [None]**

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

➔ **None**	**DEFAULT**	TPM information is previous.
➔ **TPM Clear**		TPM information is cleared

5.3.3 IT5571 Super IO Configuration

Use the **IT5571 Super IO Configuration** menu (**BIOS Menu 5**) to set or change the configurations for the serial ports.



BIOS Menu 5: F81866 Super IO Configuration

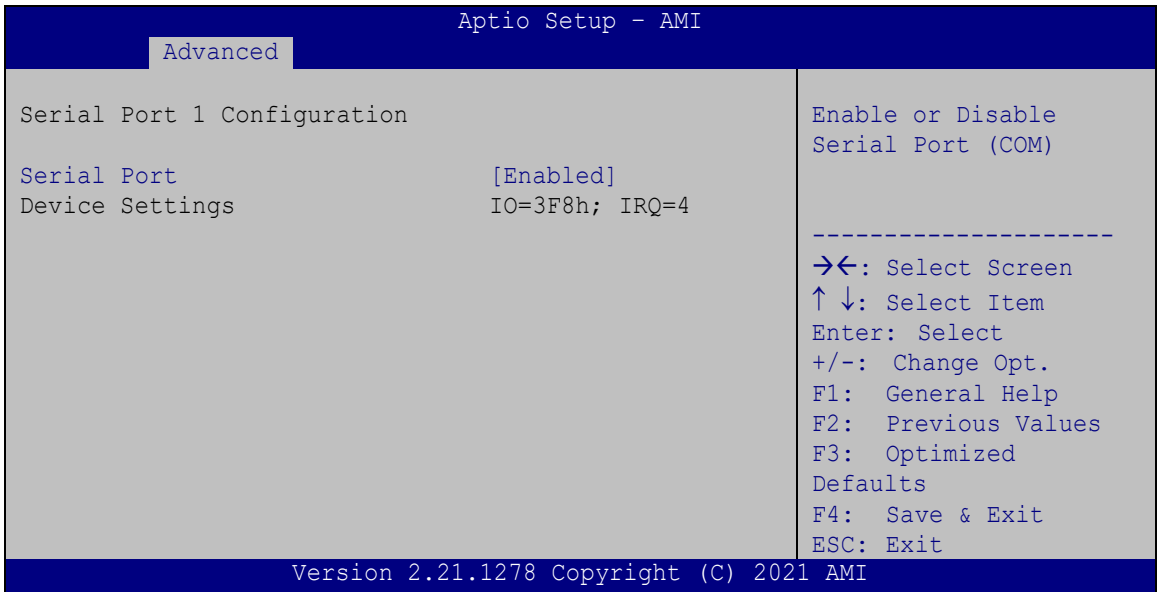
➔ **IT5571 Super IO Configuration**

The **IT5571 Super IO Configuration** lists a brief summary of the Super IO Chip information. The items shown in the system overview include:

- **Serial Port 1 Configuration: Set Parameters of Serial Port 1 (COMA)**
- **Serial Port 2 Configuration: Set Parameters of Serial Port 2 (COMB)**

5.3.3.1 Serial Port 1 Configuration

Use the **Serial Port 1 Configuration** submenu (**BIOS Menu 6**) to configure serial port 1.



BIOS Menu 6: 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

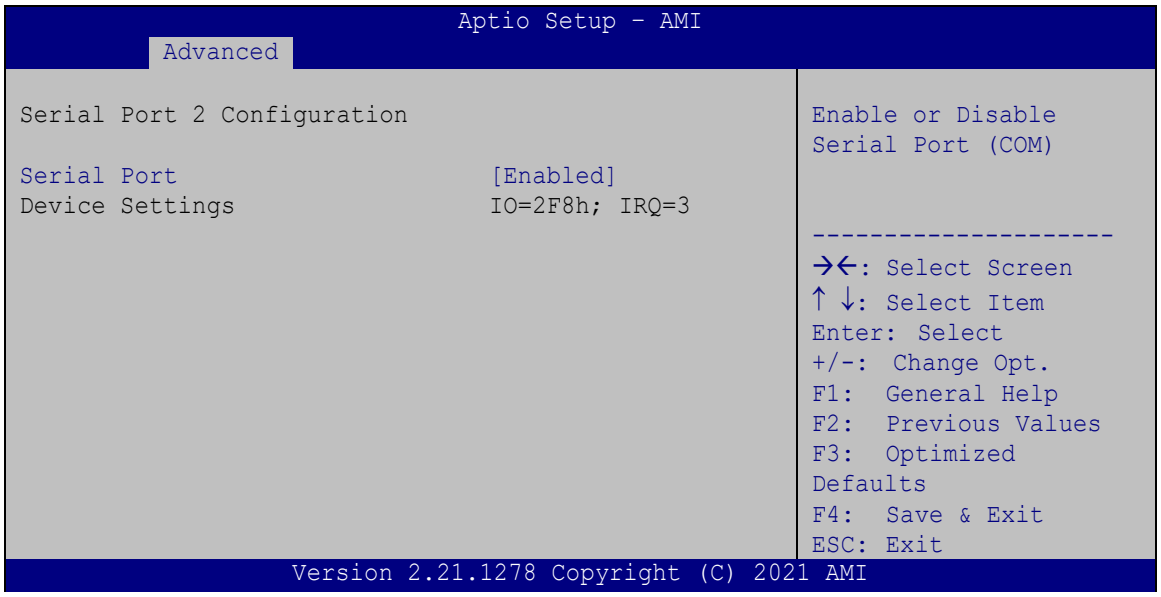
➔ **Device Settings**

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

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

5.3.3.2 Serial Port 2 Configuration

Use the **Serial Port 2 Configuration** submenu (**BIOS Menu 7**) to configure serial port 2.



BIOS Menu 7: 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

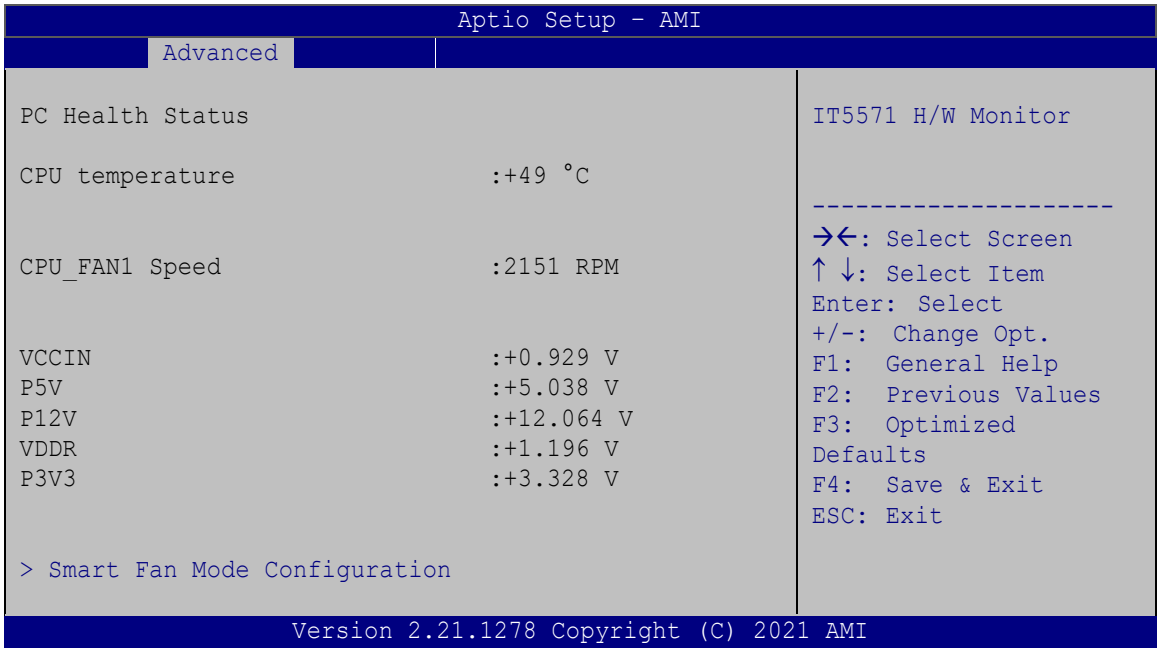
➔ **Device Settings**

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

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

5.3.4 IT5571 H/W Monitor

The **IT5571 H/W Monitor** menu (**BIOS Menu 8**) contains the fan configuration submenu, and displays the system temperature and CPU fan speed.



BIOS Menu 8:IT5571 H/W Monitor

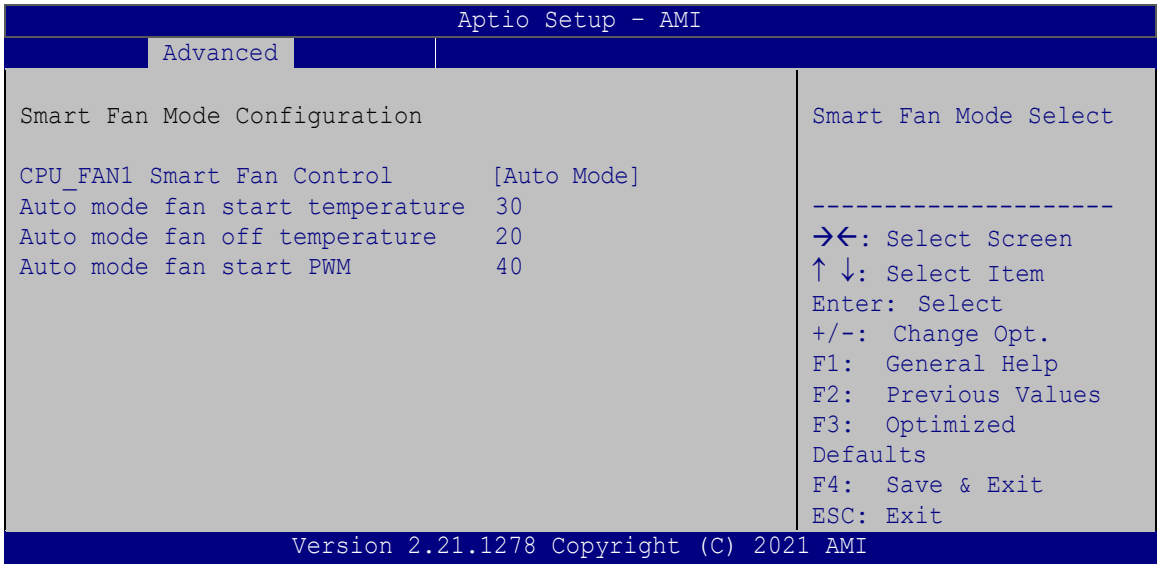
➔ **PC Health Status**

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

- System Temperatures:
  - CPU Temperature
- Fan Speeds:
  - CPU Fan Speed
- Voltages:
  - VCCIN
  - P5V
  - P12V
  - VDDR
  - P3V3

5.3.4.1 Smart Fan Mode Configuration

Use the **Smart Fan Mode Configuration** submenu (**BIOS Menu 9**) to configure the CPU/system fan temperature and speed settings.



BIOS Menu 9: Smart Fan Mode Configuration

➔ **CPU_FAN1 Smart Fan Control [Auto Mode]**

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

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

➔ **Auto mode fan start/off temperature**

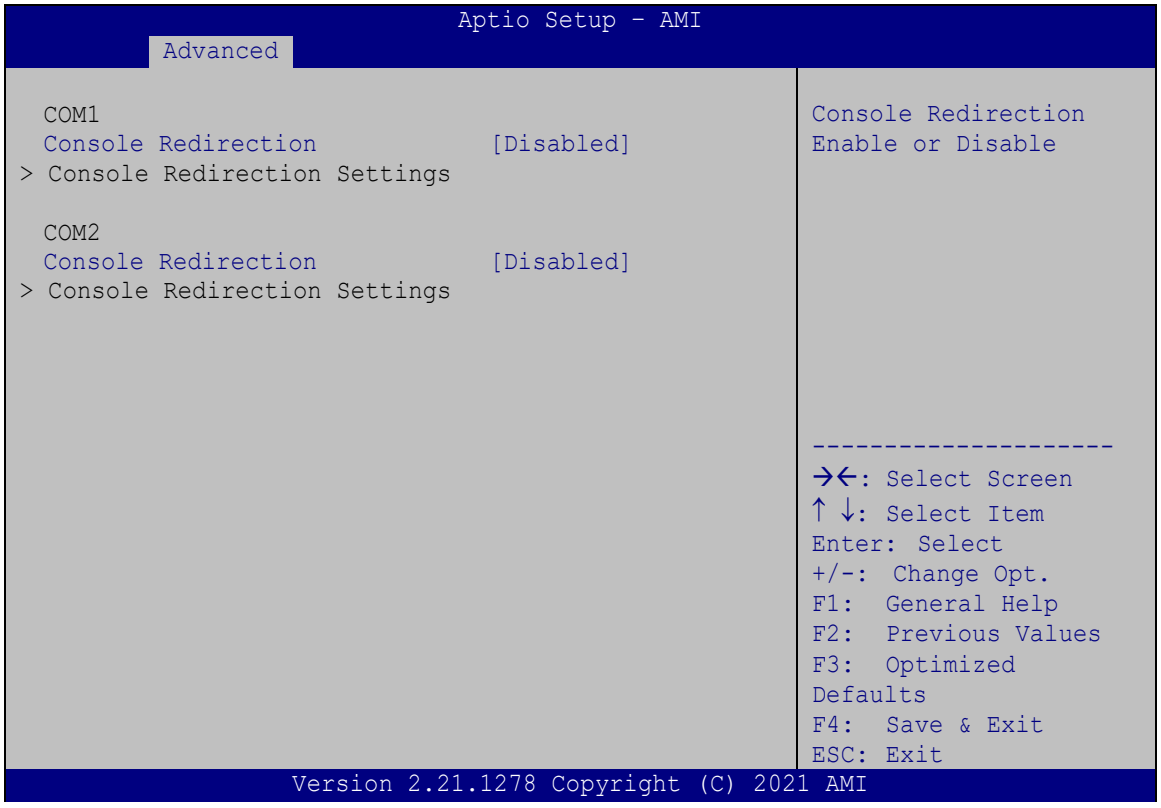
Use the + or – key to change the **Auto mode fan start/off temperature** value. Enter a decimal number between 1 and 100.

➔ **Auto mode fan start PWM**

Use the + or – key to change the **Auto mode fan start PWM** value. Enter a decimal number between 1 and 100.

5.3.5 Serial Port Console Redirection

The **Serial Port Console Redirection** menu (**BIOS Menu 10**) 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 10: Serial Port Console Redirection

➔ **Console Redirection [Disabled]**

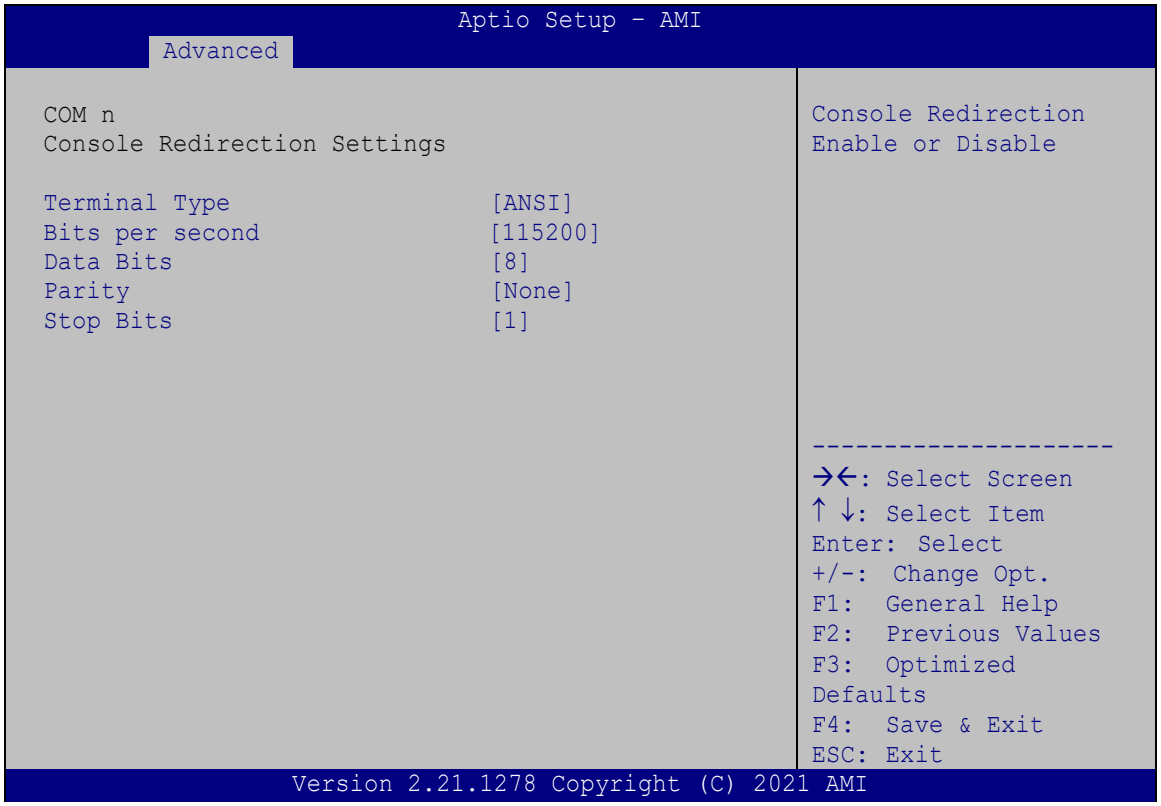
Use **Console Redirection** option to enable or disable the console redirection function.

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

The following options are available in the **Console Redirection Settings** submenu when the **Console Redirection** option is enabled.

5.3.5.1 Console Redirection Settings

The following options are available in the **Console Redirection Settings** submenu (**BIOS Menu 11**) when the **COM Console Redirection (for COM1 to COM2)** option is enabled.



BIOS Menu 11: 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 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.
➔ **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 provide error detection.
➔ **Space**		The parity bit is always 0. This option does not provide error detection.

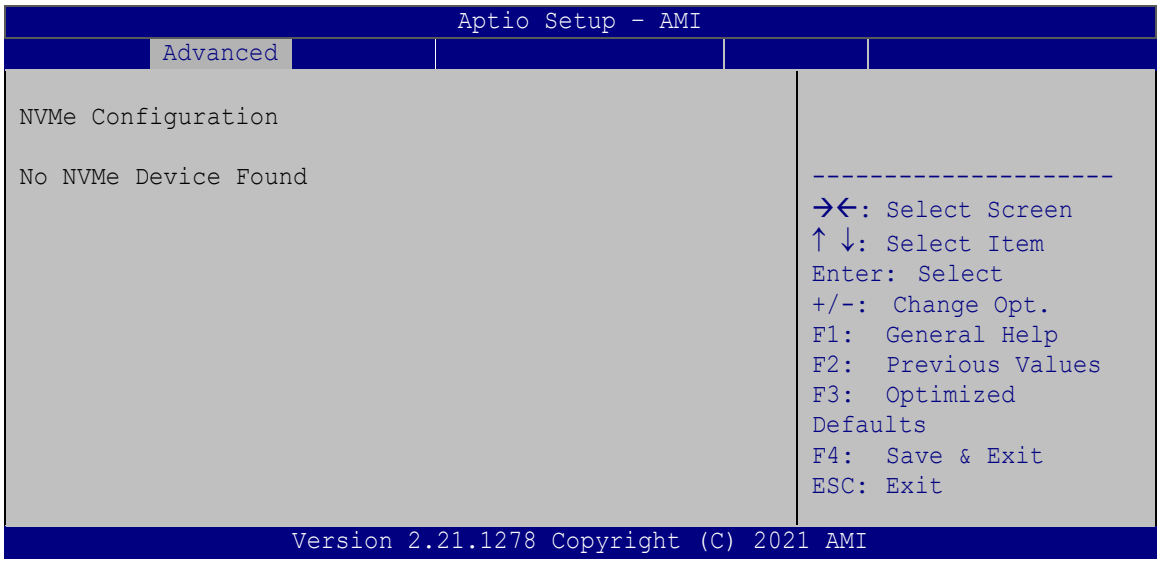
➔ **Stop Bits [1]**

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**	Sets the number of stop bits at 1.
➔	**2**		Sets the number of stop bits at 2.

5.3.6 NVMe Configuration

Use the **NVMe Configuration** (**BIOS Menu 12**) menu to display the NVMe controller and device information.



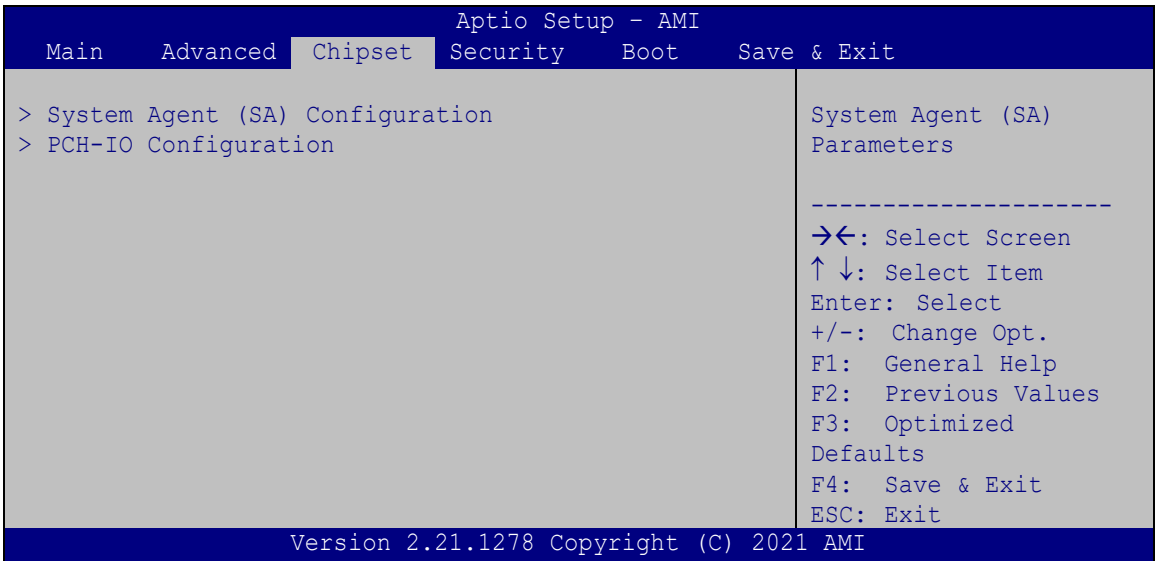
BIOS Menu 12: NVMe Configuration

5.4 Chipset

Use the **Chipset** menu (**BIOS Menu 13**) to access the PCH IO and System Agent (SA) configuration menus.

WARNING!

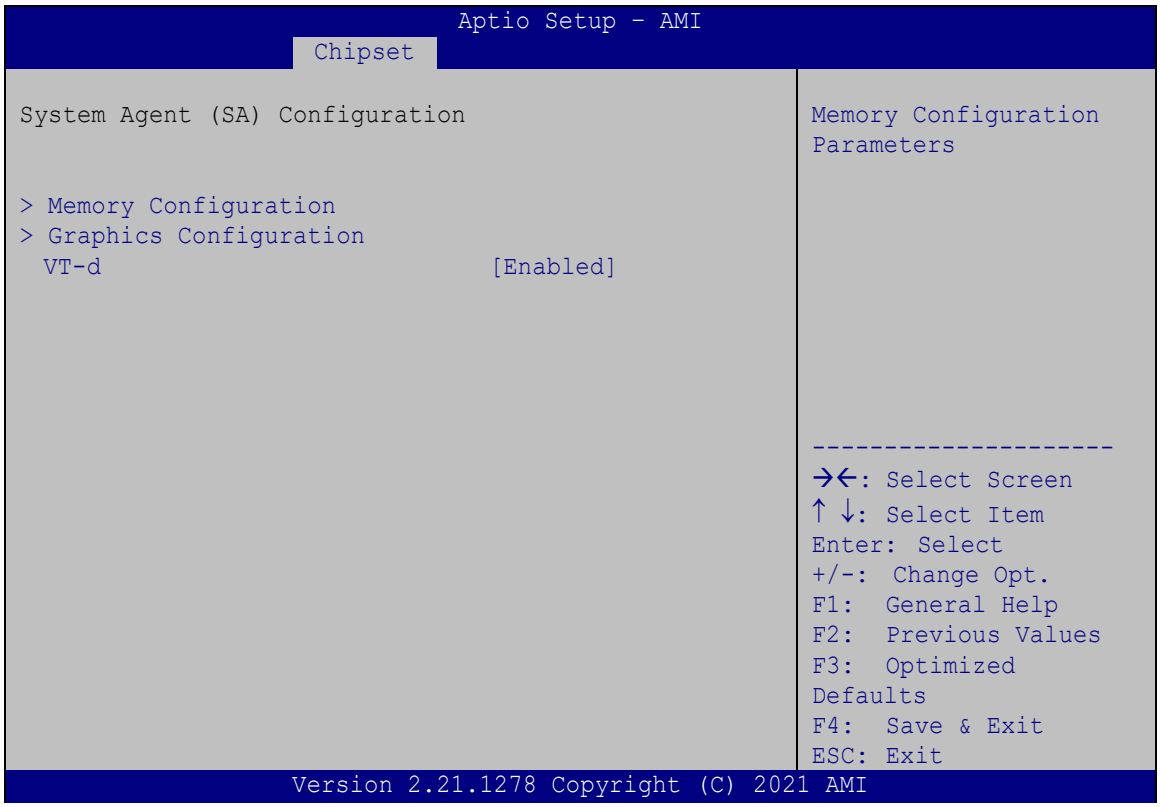
Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.



BIOS Menu 13: Chipset

5.4.1 System Agent (SA) Configuration

Use the **System Agent (SA) Configuration** menu (**BIOS Menu 14**) to configure the System Agent (SA) parameters.



BIOS Menu 14: System Agent (SA) Configuration

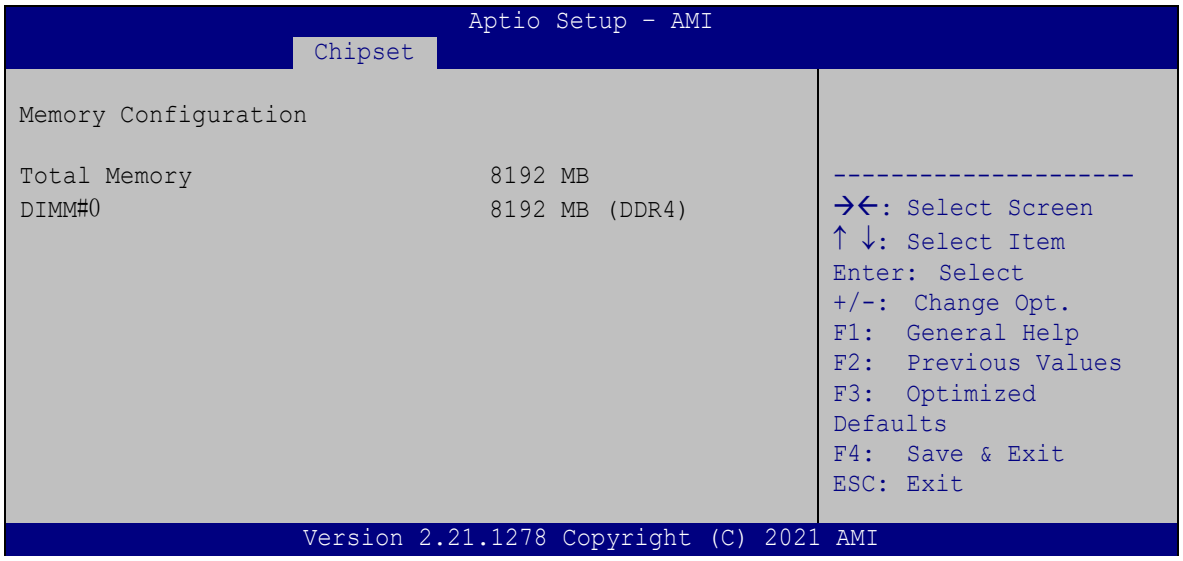
➔ **VT-d [Enabled]**

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

5.4.1.1 Memory Configuration

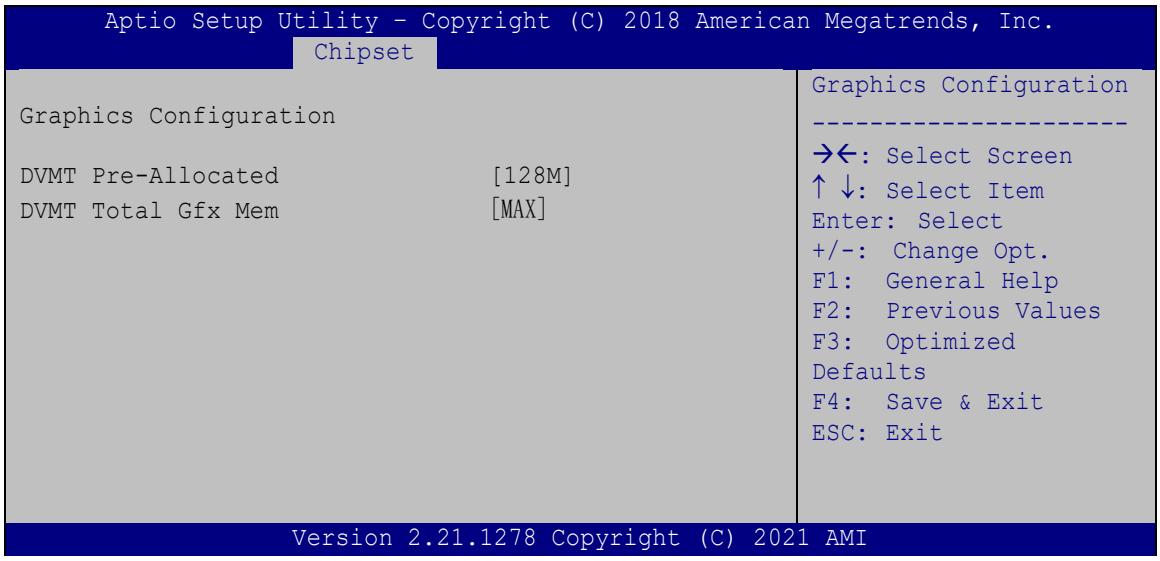
Use the **Memory Configuration** submenu (**BIOS Menu 15**) to view memory information.



BIOS Menu 15: Memory Configuration

5.4.1.2 Graphics Configuration

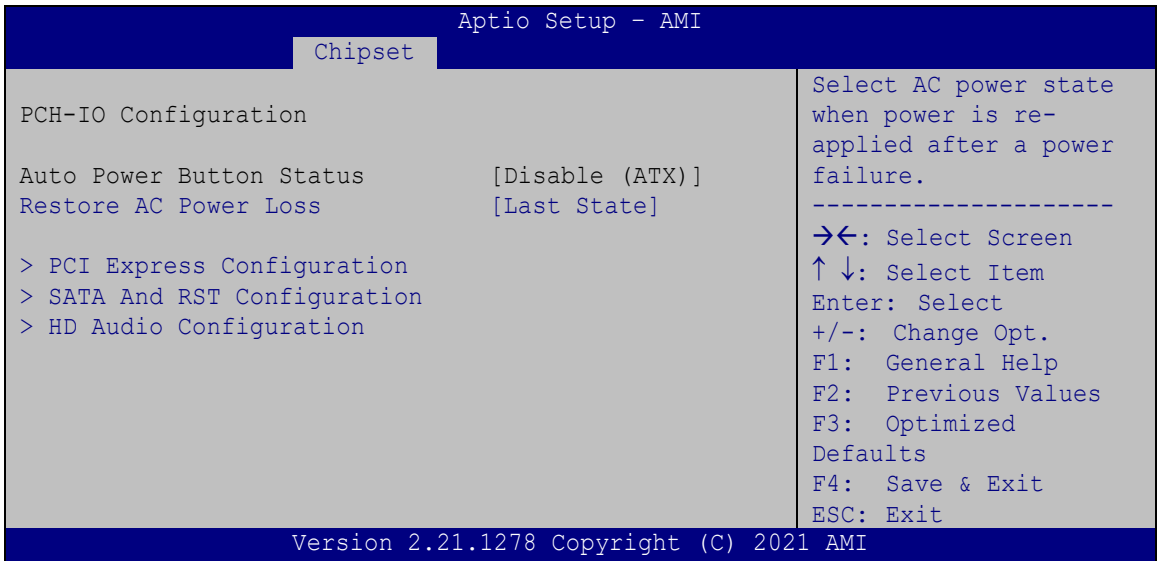
Use the **Graphics Configuration** (**BIOS Menu 16**) menu to view the information of the video device connected to the system.



BIOS Menu 16: Graphics Configuration

5.4.2 PCH-IO Configuration

Use the **PCH-IO Configuration** menu (**BIOS Menu 17**) to configure the PCH parameters.



BIOS Menu 17: 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.

- ➔ **Enabled (AT)** The system power mode is AT.
- ➔ **Disabled (ATX)** The system power mode is ATX.

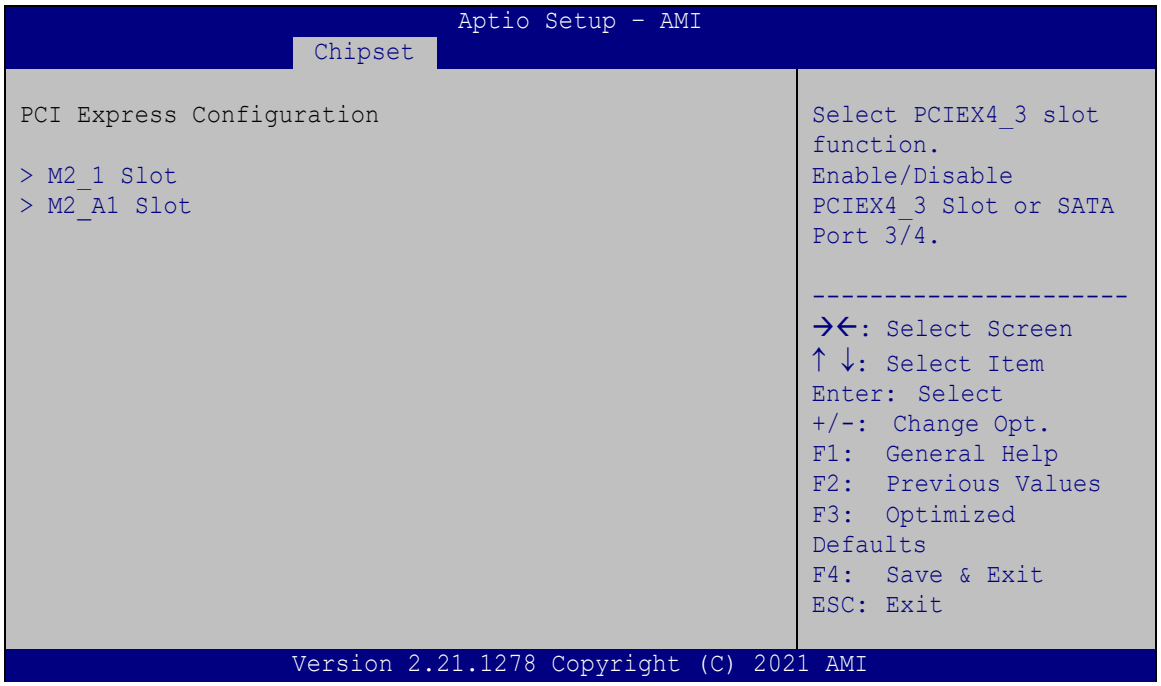
➔ **Restore AC Power Loss [Last State]**

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.

- ➔ **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.

5.4.2.1 PCI Express Configuration

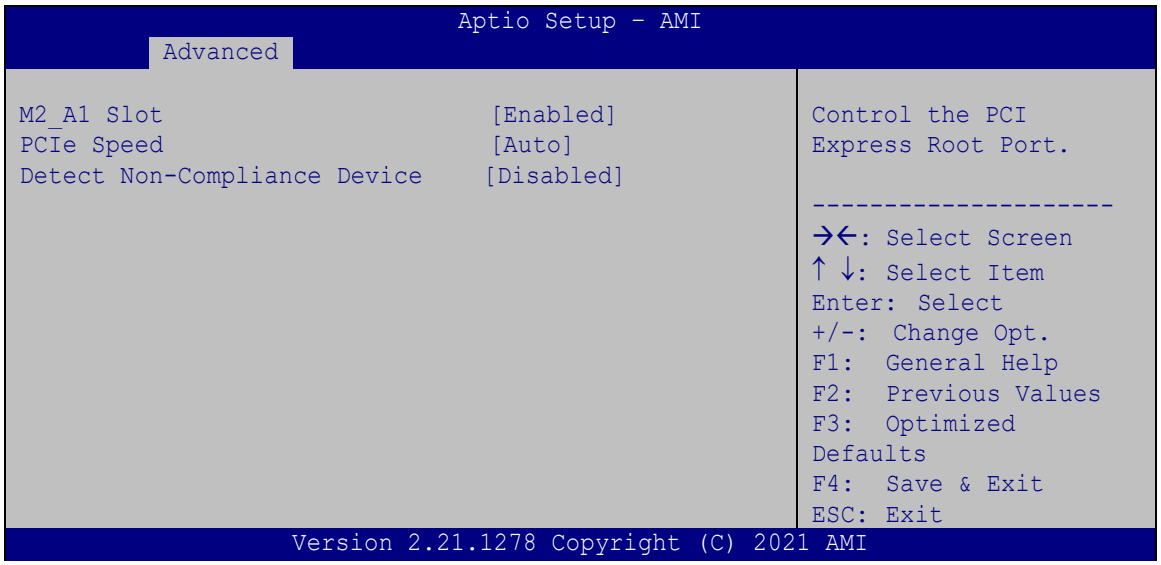
Use the **PCI Express Configuration** menu (**BIOS Menu 18**) to configure the PCI Express and M.2 slots.



BIOS Menu 18: PCI Express Configuration

5.4.2.1.1 M2_1 and M2_A1 Slots

Use the **M2_1, M2_A1** submenu (**BIOS Menu 19**) to configure the PCI Root Port Setting.



BIOS Menu 19: PCIe Slot Configuration Submenu

➔ **M2_A1 Slot [Enabled]**

Use the **M2_A1 Slot** option to enable or disable the M.2 slot.

➔ **Disabled**		Disables the M.2 slot.
➔ **Enabled**	**DEFAULT**	Enables the M.2 slot.

➔ **PCIe Speed [Auto]**

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

➔ **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]**

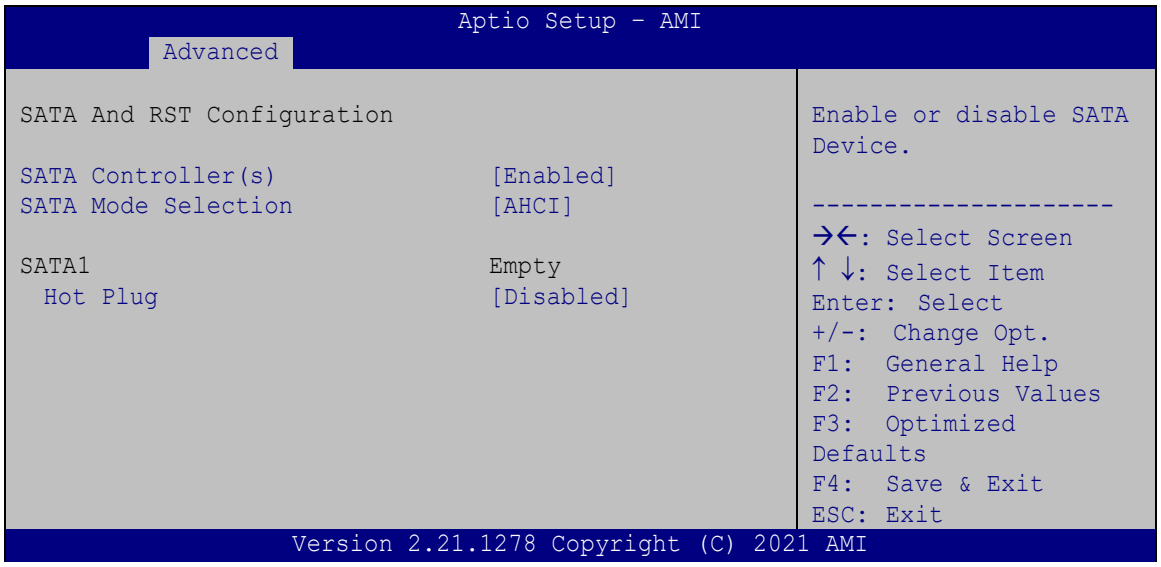
Use the **Detect Non-Compliance Device** option to configure whether to detect if a non-compliance PCI Express device is connected to the PCI Express port.

➔ **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 And RST Configuration

Use the **SATA And RST Configuration** menu (**BIOS Menu 20**) to change and/or set the configuration of the SATA devices installed in the system.



BIOS Menu 20: 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.

➔ **Hot Plug [Disabled]**

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

➔	**Disabled**	**DEFAULT**	Disables the hot-pluggable function of the SATA port.
➔	**Enabled**		Designates the SATA port as hot-pluggable.

5.4.2.3 HD Audio Configuration

Use the **HD Audio Configuration** menu (**BIOS Menu 21**) to configure the PCH Azalia settings.



BIOS Menu 21: HD Audio Configuration

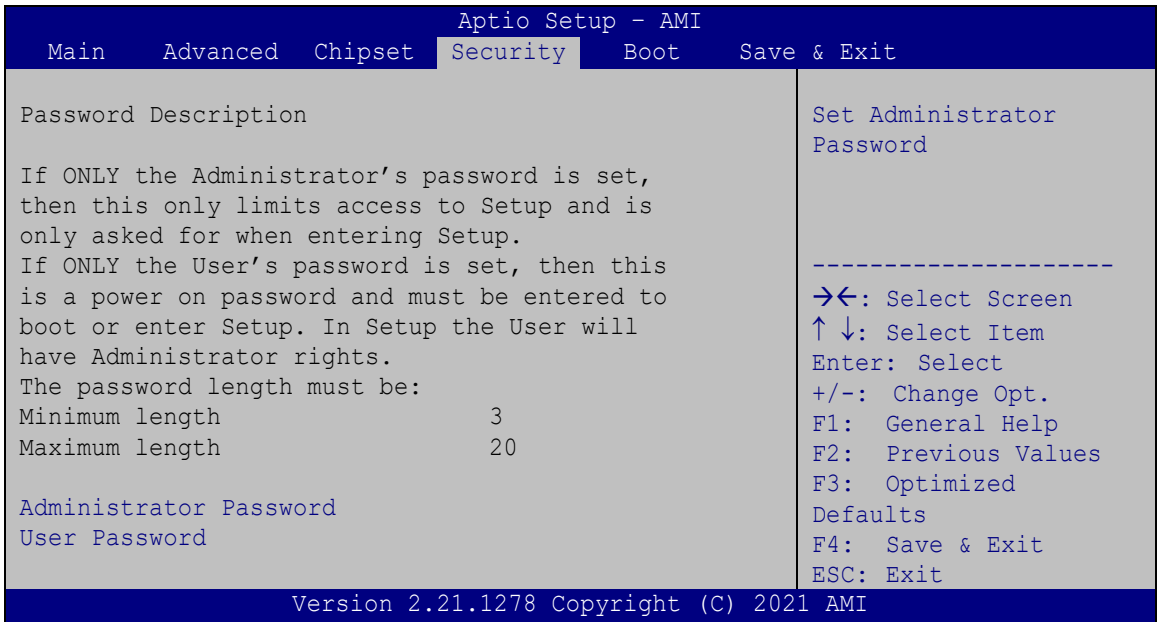
➔ **HD Audio [Enabled]**

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 22**) to set system and user passwords.



BIOS Menu 22: Security

➔ **Administrator Password**

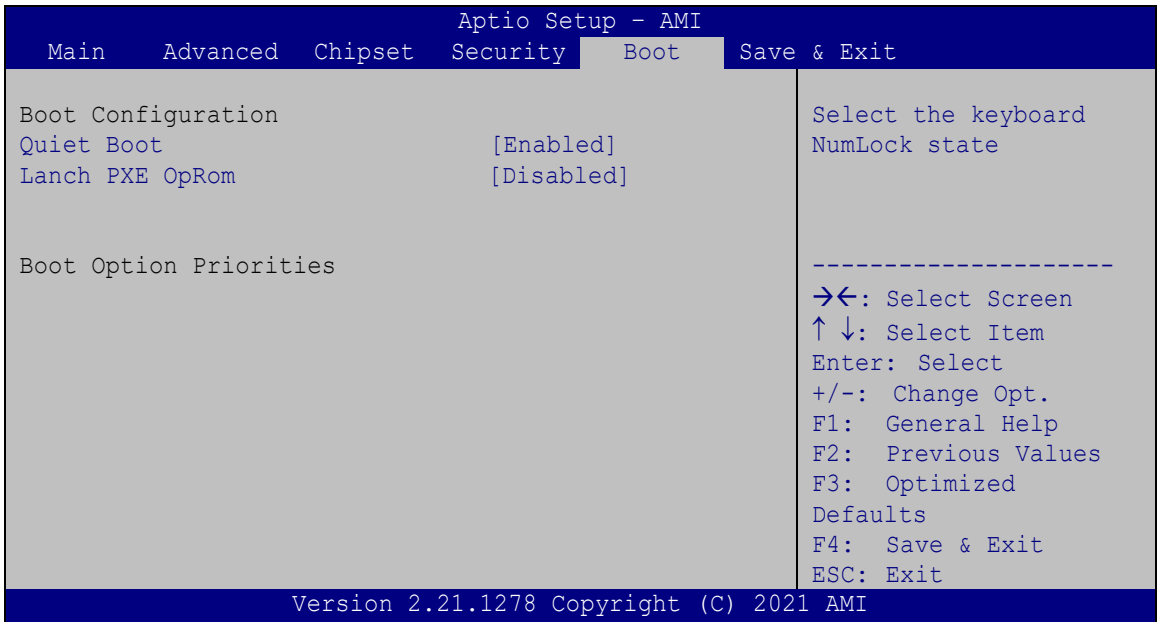
Use the **Administrator Password** to set or change a administrator password.

➔ **User Password**

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

5.6 Boot

Use the **Boot** menu (**BIOS Menu 23**) to configure system boot options.



BIOS Menu 23: 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.

➔ **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 Options are listed as an example.

➔ **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**

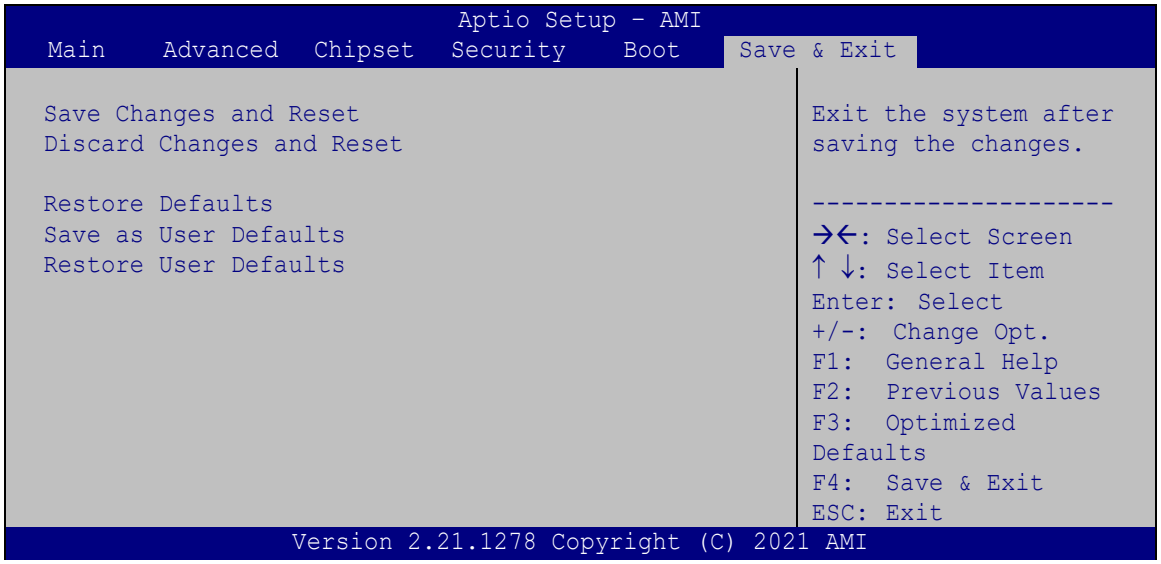
Sets the system boot order **UEFI: KingstonDataTraveler2.0** as the second priority.

➔ **UEFI: KingstonDataTraveler2.0, Partition 1**

➔ **Disabled**

5.7 Save & Exit

Use the **Save & Exit** menu (**BIOS Menu 24**) to load default BIOS values, optimal failsafe values and to save configuration changes.



BIOS Menu 24: 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.**

➔ **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

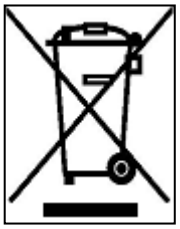
Product Disposal

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

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

➔ **System Date [xx/xx/xx] 64**

➔ **System Time [xx:xx:xx] 64**

➔ **Intel (VMX) Virtualization Technology [Disabled] 66**

➔ **Active Processor Cores [All] 67**

➔ **EIST [Enabled] 67**

➔ **C states [Disabled] 67**

➔ **Power Limit 1 [0] 67**

➔ **Power Limit 2 [0] 67**

➔ **Power Limit 1 Time Window [0] 68**

➔ **Security Device Support [Disable] 68**

➔ **Pending Operation [None] 69**

Use the Pending Operation option to schedule an operation for the security device. 69

➔ **IT5571 Super IO Configuration 69**

➔ **Serial Port [Enabled] 70**

➔ **Device Settings 70**

➔ **Serial Port [Enabled] 71**

➔ **Device Settings 71**

➔ **PC Health Status 72**

➔ **CPU_FAN1 Smart Fan Control [Auto Mode] 73**

➔ **Auto mode fan start/off temperature 73**

➔ **Auto mode fan start PWM 73**

➔ **Console Redirection [Disabled] 74**

➔ **Terminal Type [ANSI] 75**

➔ **Bits per second [115200] 76**

➔ **Data Bits [8] 76**

➔ **Parity [None] 76**

➔ **Stop Bits [1] 77**

➔ **VT-d [Enabled] 79**

➔ **Auto Power Button Function [Disabled(ATX)] 81**

➔ **Restore AC Power Loss [Last State] 81**

➔ **M2_A1 Slot [Enabled] 83**

➔ **PCIe Speed [Auto] 83**

➔ **Detect Non-Compliance Device [Disabled] 83**

- SATA Controller(s) [Enabled] 84
- SATA Mode Selection [AHCI] 84
- Hot Plug [Disabled] 85
- HD Audio [Enabled] 85
- Administrator Password 86
- User Password 86
- Quiet Boot [Enabled] 87
- Launch PXE OpROM [Disabled] 87
- Boot Option #1 88
- Boot Option #2 88
- Save Changes and Reset 89
- Discard Changes and Reset 89
- Restore Defaults 89
- Save as User Defaults 89
- Restore User Defaults 89

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.

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

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	DXEIPL 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

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))	Polybromina ted Biphenyls	Polybromina ted 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。