IEI Integration Corp.

MODEL:

PUZZLE-5070

1U Network Appliance with 15th Gen Intel® Core™ Processor

User Manual

Rev. 1.00 – January 29, 2026

RoHS Lead Free

Revision

Date	Version	Changes
January 29, 2026	1.00	Initial release

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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.

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1

Introduction

1.1 Overview

Figure 1-1: PUZZLE-5070

The PUZZLE-5070 is a 1 U network appliance series powered by 15th Gen Intel® Core™ Processor series. It is optimized to host VNFs (Virtual Network Functions) and is ideal for SD-WAN. It supports up to four DDR5 UDIMM modules operating at 6400 MHz and delivers robust connectivity with up to ten 1GbE Ethernet ports powered by Intel® I210 controllers.

The PUZZLE-5070 offers flexible expansion through a PCIe Gen5 x4 M.2 2280 M-Key slot and accommodates two 2.5-inch U.2 SSDs for high-speed storage. Management and serviceability are enhanced with BMC support, an RJ45 console interface, two IEI proprietary network interface slots, and a redundant CRPS power supply featuring hot-swappable, field-replaceable design for high availability.

1.2 Features

The PUZZLE-5070 features are listed below:

- Powered by 15th Gen Intel® Core™ Processor series
- Four DDR5 UDIMM slots, supporting memory speeds up to 6400 MHz
- Up to ten 1GbE Ethernet ports implemented via Intel® I210 controllers
- One M.2 2280 M-Key expansion slot supporting PCIe Gen5 x4
- Two 2.5-inch U.2 SSD bays supported
- RJ 45 console port
- Two IEI proprietary interface network slots
- BMC support included
- Redundant CRPS power supply (hot-swappable, field-replaceable design)
- 1U chassis for rack mounting
- RoHS compliant

1.3 Front Panel

The overview of the front panel is shown in **Figure 1-2**.

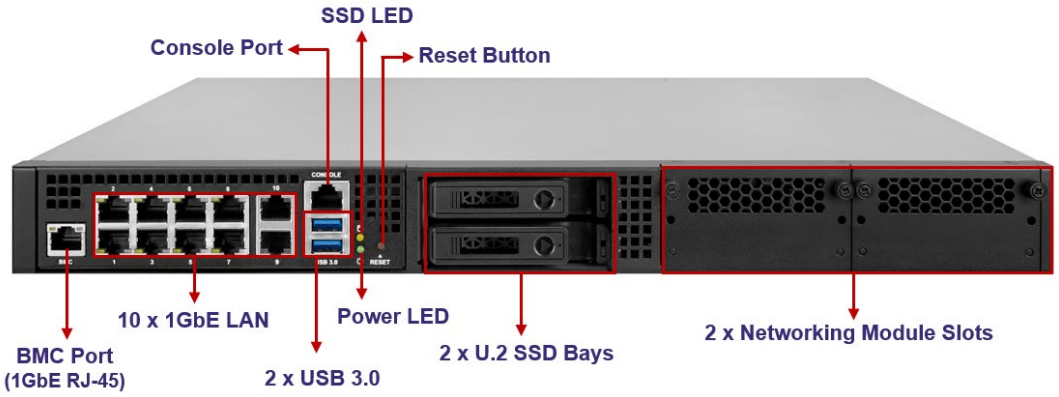


Figure 1-2: PUZZLE-5070 Front Panel

The states of the LED indicators located on the front panel are listed below.

Power LED	Off	The system is turned off.
	Green	The system is turned on.
HDD Status LED	Off	No HDD activity
	Blinking Yellow	HDD activity

1.4 Rear Panel

An overview of the PUZZLE-5070 rear pane is shown in **Figure 1-3** below.

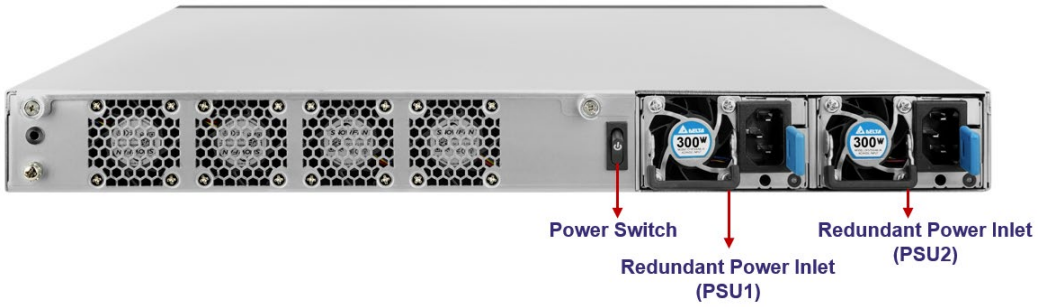


Figure 1-3: PUZZLE-5070 Rear Panel

1.5 Technical Specifications

The PUZZLE-5070 technical specifications are listed in **Table 1-1**.

System	
Form Factor	1U
CPU (SoC)	15th Gen Intel® Core™ processor (codenamed Arrow Lake S)
Chipset	Intel® 800 Series
Memory	4 x DDR5 6400 MHz UDIMM slots (288-pin)
Network Acceleration and Security Function	Intel® Threat Detection Technology (TDT) Intel® AES New Instructions (AES-NI) Intel® Trusted Execution Technology (TXT) Intel® OS Guard
	1 x TPM 2.0 pin header
BMC	1 x M.2 B key slot supporting IEI iRIS2 BMC module 1 x 1GbE RJ45 for BMC port
Networking	10 x 1GbE LAN RJ-45 ports via Intel® I210 controllers 2 x IEI proprietary networking module (PulM module) slots
Storage	2 x External 2.5" U.2 SSD bays (PCIe Gen4 x4)
Expansion	1 x M.2 2280 M key slot (PCIe Gen5 x4)
I/O and Indicators	
Console	1 x RJ-45
USB	2 x USB 3.0 (5 Gb/s) port (external, Type A)
Indicator	Power status (green) SSD status (yellow) PSU LED (green)
Switch/Button	Power switch (rear panel) Reset button (front panel)
Power	
Power Input	100 V ~ 264 V
Type/Watt	300W redundant power

Thermal Solution	1 x Passive CPU heatsink 4 x System fans
Environmental and Mechanical	
Mounting	1U rack mount
Operating Temperature	0°C~40°C (32°F~104°F)
Storage Temperature	-10°C~50°C (14°F~122°F)
Operating Humidity	5%~90%, non-condensing
Safety	By customer request
Weight	8 kg
Physical Dimensions	436.2 mm x 454.3 mm x 44.2 mm (W x D x H)
Operating System	Linux based OS, Ubuntu

Table 1-1: Technical Specifications

1.6 Dimensions

The physical dimensions are shown below:

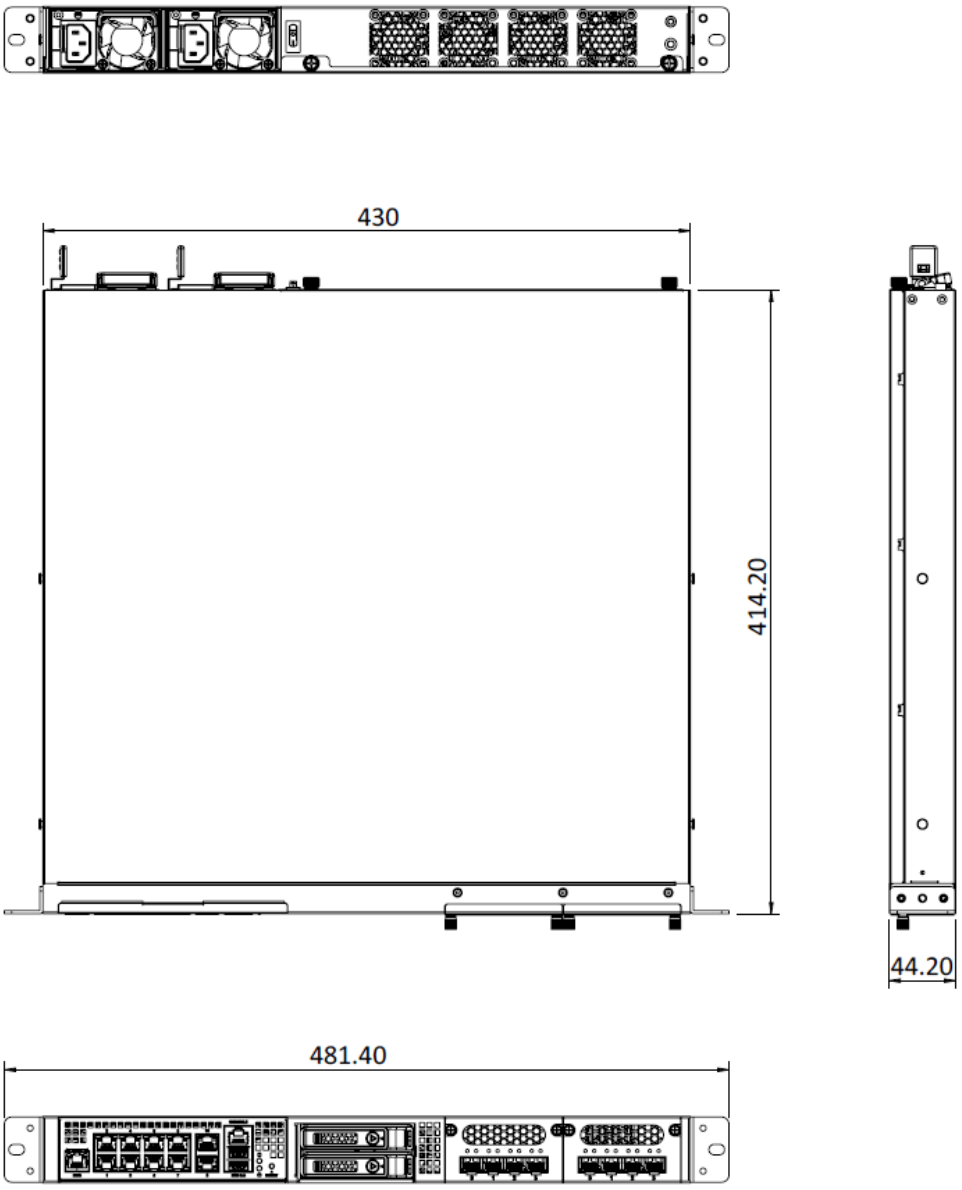


Figure 1-4: Physical Dimensions (millimeters)

Chapter

2

Unpacking

2.1 Anti-static Precautions

WARNING:

Failure to take ESD precautions during installation may result in permanent damage to the PUZZLE-5070 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the PUZZLE-5070. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the PUZZLE-5070 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 PUZZLE-5070, place it on an anti-static pad. This reduces the possibility of ESD damaging the PUZZLE-5070.

2.2 Unpacking Precautions

When the PUZZLE-5070 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 PUZZLE-5070 does not fall out of the box.
- Make sure all the components shown in **Section 2.3** are present.

2.3 Packing List

NOTE:

If some of the components listed in the checklist below are missing, please do not proceed with the installation. Contact the IEI reseller or vendor you purchased the PUZZLE-5070 from or contact an IEI sales representative directly. To contact an IEI sales representative, please send an email to sales@ieiworld.com.

The PUZZLE-5070 is shipped with the following components:

Quantity	Item	Image
1	PUZZLE-5070	
2	Power cord	
2	Rack mount brackets (*Note: The brackets must be used with sliding rails.*)	
4	Mounting bracket screw (M4*6)	
1	USB to console cable (optional)	
2 pcs/set	Sliding rail (P/N: RAIL-B02) (optional)	

Chapter

3

Installation

3.1 Installation Precautions

CAUTION!

The PUZZLE-5070 series has more than one power supply connection point.

To reduce the risk of electric shock, disconnect all power sources before installing or servicing the PUZZLE-5070 series.

During installation, be aware of the precautions below:

- **Read the user manual**: The user manual provides a complete description of the PUZZLE-5070, installation instructions and configuration options.
- **DANGER! Disconnect Power**: Power to the PUZZLE-5070 must be disconnected during the installation process. Failing to disconnect the power may cause severe injury to the body and/or damage to the system.
- **Qualified Personnel**: The PUZZLE-5070 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 PUZZLE-5070. The PUZZLE-5070's cooling vents must not be obstructed by any objects. Blocking the vents can cause overheating of the PUZZLE-5070. Leave at least 5 cm of clearance around the PUZZLE-5070 to prevent overheating.
- **Grounding**: The PUZZLE-5070 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 PUZZLE-5070.

3.2 Top Cover Removal

Before installing or maintaining the internal components, the top cover must be removed from the PUZZLE-5070. Follow the steps below to complete the task.

Step 1: Loosen the two captive screws on the rear panel as shown in **Figure 3-1**.

Figure 3-1: Top Cover Screws

Step 2: Slide the top cover towards the rear side and gently lift the top cover.

3.3 UDIMM Installation

CAUTION:

For multi-channel configuration, always install the identical memory modules that feature the same capacity, timings, voltage, number of ranks and the same brand.

To install UDIMM modules, please follow the steps below.

Step 1: Remove the top cover from the PUZZLE-5070. Please follow the instruction described in **Section 3.2**.

Step 2: Locate the DIMM slots on the motherboard.

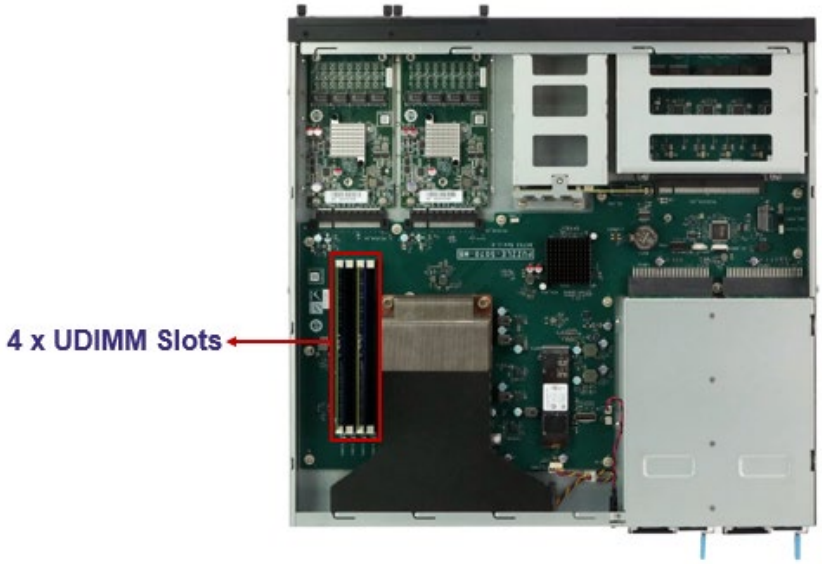


Figure 3-2: DIMM Slot Locations

Step 3: Open the DIMM socket handles. Open the two handles outwards as far as they can.

Step 4: Align the DIMM so the notch on the memory lines up with the notch on the memory socket.

Step 5: Once aligned, press down until the DIMM is properly seated. Clip the two handles into place.

Step 6: To remove a DIMM, push both handles outward. The memory module is ejected by a mechanism in the socket.

3.4 M.2 Module Installation

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

Step 1: Remove the top cover from the PUZZLE-5070. See **Section 3.2**.

Step 2: Locate the M.2 slots on the motherboard.

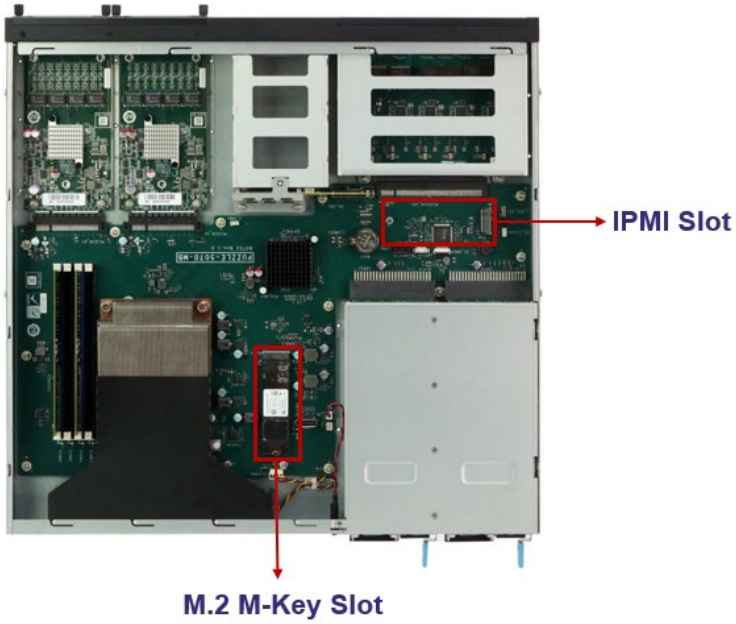


Figure 3-3: M.2 Slot Locations

Step 3: Remove the on-board retention screw.

Step 4: 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.

Step 5: Push the M.2 module down and secure it with the previously removed retention screw.

3.5 SSD Installation

The PUZZLE-5070 allows installation of two 2.5" U.2 SSD. To install SSDs into the system, please follow the steps below.

Step 1: Locate the U.2 SSD trays on the front panel.

Step 2: Grasp the tray handle and gently pull the drive tray out of the chassis.

Figure 3-4: Drive Tray Removal

Step 3: Place the SSD onto the drive tray. Secure the SSD to the tray using the bracket and four M3×4 retention screws inserted from the bottom.

Figure 3-5: Secure SSD to the Bracket

Step 4: Carefully insert the drive tray into the front-panel slot, ensuring the SSD connector is fully engaged with the internal U.2 connector.

Figure 3-6: SSD Installation

Step 5: Push the tray handle inward to lock and secure the drive tray in place.

3.6 IEI Networking Module Installation

The PUZZLE-5070 allows installation of two IEI PulM networking modules. To install a networking module, please follow the steps below.

Step 1: Disconnect all power sources from the system. **NOTE:** To install or replace the networking module, the power supply must be fully disconnected before installation.

Step 2: Loosen the two captive screws on each slot, as indicated below. Grasp the screws and pull the slot cover out to remove it.

Figure 3-7: Networking Module Slot Cover Screws

Step 3: Slide an IEI networking module into the slot until the module is seated in the slot correctly and securely. Fasten the two captive screws on the networking module to secure the module to the chassis.

CAUTION:

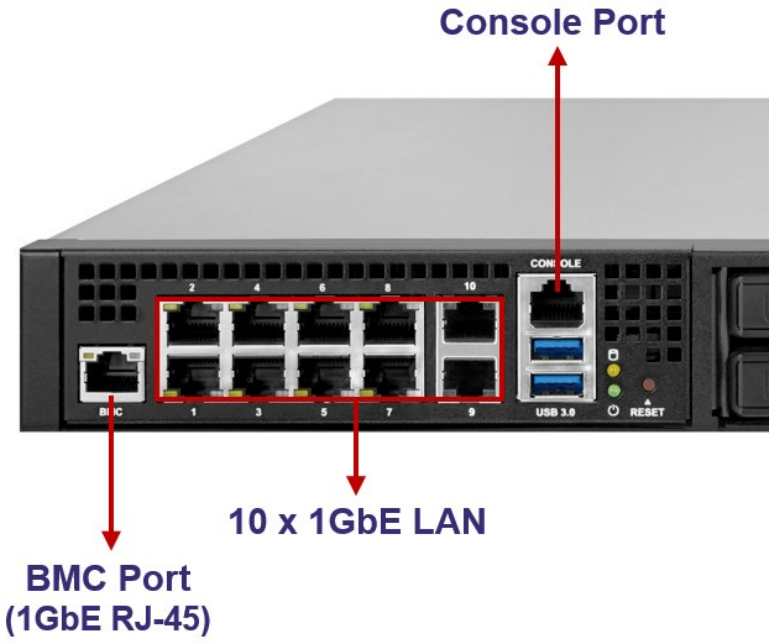
When inserting the module, the bottom of the networking module must be as close to the system base as possible so that the module can be slid into the guide rails.

When removing the module, slide the module horizontally all the way until it is completely out of the system. Lifting up the module before completely sliding out may cause the components on the module to be damaged by the chassis structure.

Figure 3-8: Networking Module Installation

3.7 External Interface Connection

The front panel has several external I/O ports. The pinouts of these I/O ports are listed in the following sections.



3.7.1 LAN Connection

The ten 1GbE LAN connectors on the front panel allow connection to an external network. The pinouts of the LAN connectors are listed below.

Pin	Description	Pin	Description
1	MDIA0+	5	MDIA2-
2	MDIA0-	6	MDIA1-
3	MDIA1+	7	MDIA3+
4	MDIA2+	8	MDIA3-

Table 3-1: 1GbE Port Pinouts

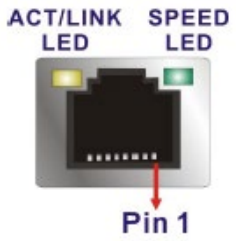


Figure 3-9: RJ-45 1GbE Connector

The RJ-45 Ethernet connector has two status LEDs, one yellow and one green/orange. The yellow LED indicates activity on the port and the green/orange LED indicates the speed. See **Table 3-2**.

Activity/Link LED		**Speed LED**	
Status	**Description**	**Status**	**Description**
Off	No link	Off	10 Mbps connection
Yellow	Linked	Orange	100 Mbps connection
Blinking	TX/RX activity	Green	1 Gbps connection

Table 3-2: RJ-45 1GbE Connector LEDs

3.7.2 BMC Connection

Use the BMC connector on the front panel to connect an external network when a BMC module is installed on the motherboard. The pinouts of the BMC connector are listed below.

Pin	Description	Pin	Description
1	MDIA0+	5	MDIA2-
2	MDIA0-	6	MDIA1-
3	MDIA1+	7	MDIA3+
4	MDIA2+	8	MDIA3-

Table 3-3: BMC Port Pinouts

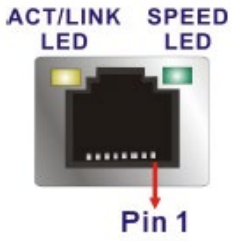


Figure 3-10: RJ-45 BMC Connector

The RJ-45 Ethernet connector has two status LEDs, one yellow and one green/orange. The yellow LED indicates activity on the port and the green/orange LED indicates the speed. See **Table 3-4**.

Activity/Link LED		**Speed LED**	
Status	**Description**	**Status**	**Description**
Off	No link	Off	10 Mbps connection
Yellow	Linked	Orange	100 Mbps connection
Blinking	TX/RX activity	Green	1 Gbps connection

Table 3-4: RJ-45 BMC Connector LEDs

3.7.3 Console Connection

The PUZZLE-5070 has one RJ-45 serial device connector on the front panel. The RJ-45 connector for the serial port can be identified easily as the RJ-45 for the network has two LEDs on the port, while the connectors for the serial cables don't. The pinouts of the serial port are listed below.

Pin	Description	Pin	Description
1	NRTS1	5	GND
2	NDTR1	6	NSIN1
3	NSOUT1	7	NDSR1
4	GND	8	NCTS1

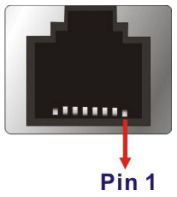


Table 3-5: RJ-45 Serial Port Pinouts

The serial device slot (RJ-45) connects to a cable with a standard D-sub 9 connector or a USB connector (varied from SKU) at the other end.

3.7.3.1 Enable Console Port When Booting

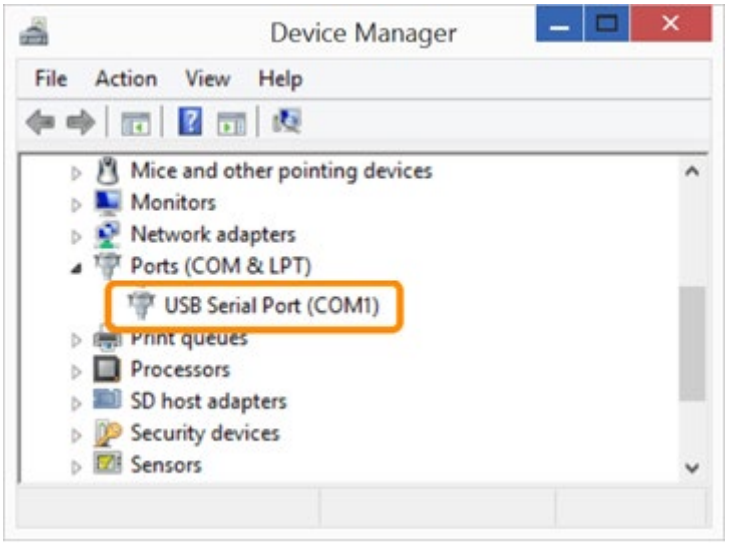
To configure the PUZZLE-5070 to make it auto enable the console port when booting, follow the steps below.

NOTE:

This method only works in Linux Ubuntu, the default operating system.

Step 1: Use the console cable shipped with the product to connect the RJ-45 console port of the PUZZLE-5070 with your PC.

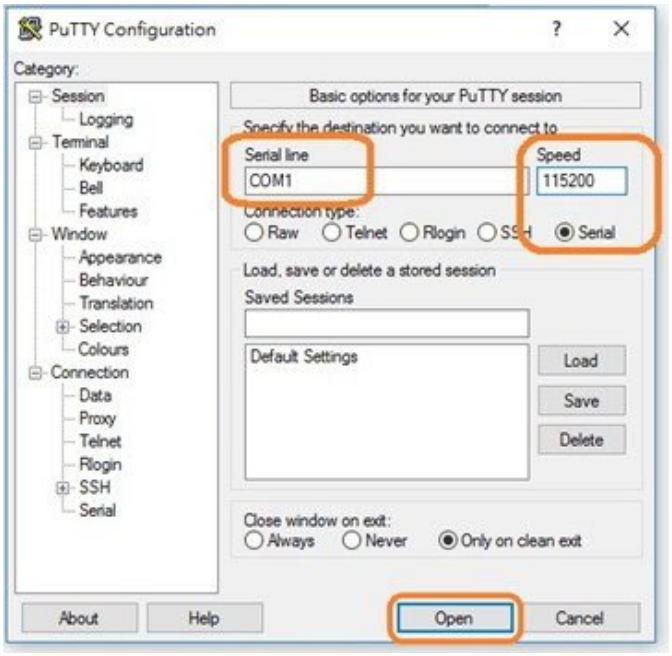
Step 2: In your PC, go to Windows **Device Manager** and check for the serial line of the connected USB serial port. In this case, it is COM1.



Step 3: Open a serial console application, PuTTY, as an example.

Step 4: Set the speed of the serial connection to “115200”, and choose “Serial” for Connection Type.

Step 5: Click “Open” on PuTTY.



Step 6: Enter the following command:

```
sudo vi /lib/systemd/system/ttyS0.service
```

Step 7: Ensure the information shown match the followings:

```
[Unit]
Description=Serial Console Service

[Service]
ExecStart=/sbin/getty -L 115200 ttyS0 vt102
Restart=always

[Install]
WantedBy=multi-user.target
```

Step 8: Run the following commands one by one:

```
sudo systemctl daemon-reload

sudo systemctl enable ttyS0

sudo systemctl start ttyS0
```

3.8 Rack Mount

The PUZZLE-5070 is shipped with two rack mount brackets that could be used to secure the system to the rack after mounting it with the optional sliding rails. To install the PUZZLE-5070 into a rack, please follow the steps below.

WARNING:

The provided rack mount brackets must be used with sliding rails. Using only the rack mount brackets to mount the system on a rack may cause damage to the system.

Step 1: Install the rack mount brackets to the sides of the PUZZLE-5070 by inserting two retention screws (M4*6) into each bracket (**Figure 3-11**). Make sure the screws are tight and on the right positions.

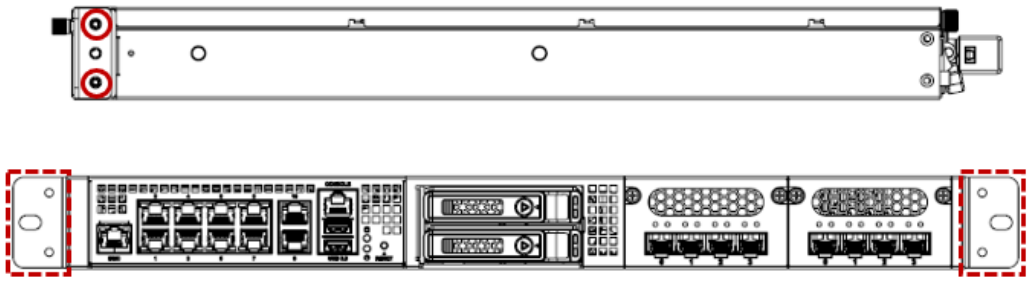


Figure 3-11: Rack Mount Bracket Installation

Step 2: Install the sliding rails according to the instruction came with the sliding rails.

Note: The sliding rails must be purchased separately.

Step 3: Slide the PUZZLE-5070 all the way into the rack enclosure.

Step 4: Secure the front of the rack mount brackets that are attached to the sides of the PUZZLE-5070 to the front of the rack.

3.9 Power-On Procedure

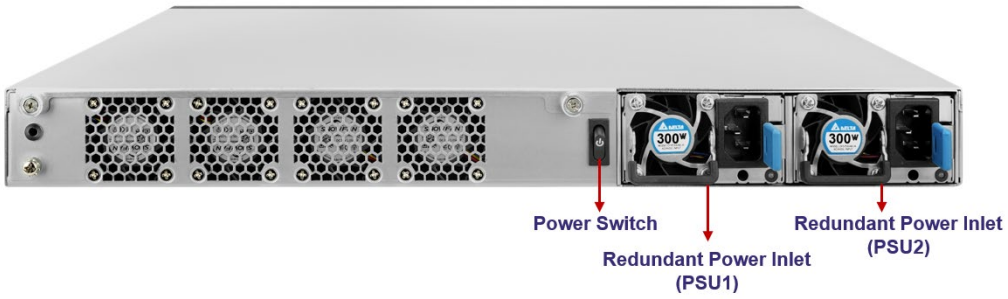
WARNING:

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.

To power-on the PUZZLE-5070 please follow the steps below:

Step 1: Connect the power source to both of the power inlets on the rear panel. **Ensure to connect the power cord to a socket-outlet with earthing connection.**

Step 2: Turn on the power switch to power up the system.



Step 3: The power LED indicator on the front panel turns to green.

Step 4: Use the following information when prompted for the username and password for login to the system.

Username: puzzle

Password: admin

3.10 Maintenance

WARNING:

The following instructions should only be performed by an authorized and trained technician.

Before starting, please ensure that you turn off the PUZZLE-5070, disconnect the power cords, network cable(s), and also remove any other device/cable that is attached to the server.

Take Anti-Static precautions whenever maintenance is being carried out on the system components. Failure to take anti-static precautions can cause permanent system damage. For more details on anti-static precautions, please refer to **Section 2.1**.

3.10.1 Power Supply Unit Replacement

The two power supply unites (PSU) of the PUZZLE-5070 series are hot-swappable, which means users can replace the PSU when the PUZZLE-5070 is up and running. To replace a failed power supply unit, please follow the steps below.

Step 1: Firmly press and hold the blue button on back of PSU inwards. Pull out power supply by pulling the black handle.

Step 2: Insert new power supply into the PUZZLE-5070.

Step 3: Connect the power cord to the PUZZLE-5070.

Step 4: Power on the system.

3.10.2 Jumper Settings

To configure the jumper settings, please follow the steps below.

Step 1: Remove the top cover. See **Section 3.2**.

Step 2: Locate the switch/button on the embedded motherboard.

Step 3: Make the jumper settings in accordance with the settings described and defined in the following sections.

3.10.2.1 AT/ATX Power Mode Setting

The AT and ATX power mode selection can be made through the AT/ATX power mode switch which is shown below.

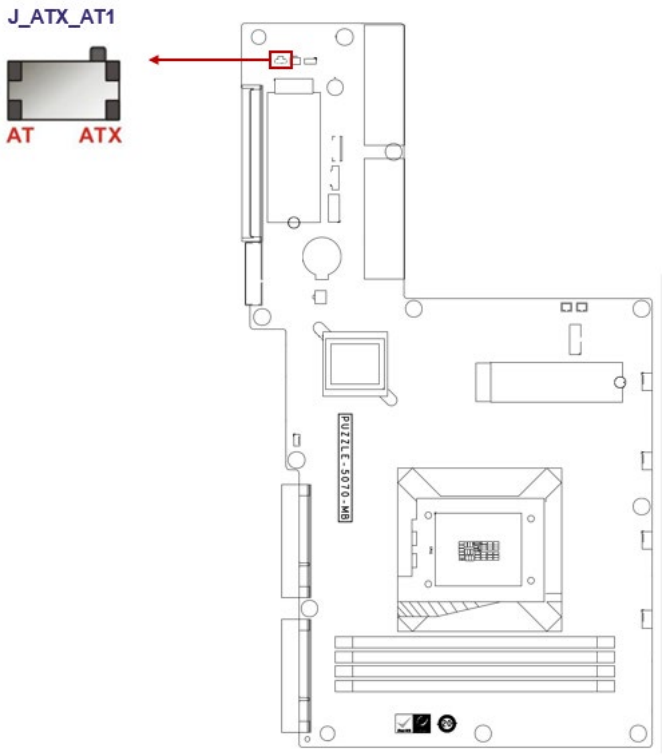


Figure 3-12: AT/ATX Power Mode Switch Location

3.10.2.2 Clear CMOS

If the PUZZLE-5070 fails to boot due to improper BIOS settings, the clear CMOS button clears the CMOS data and resets the system BIOS information. To do this, push the button for a few seconds.

The clear CMOS button location is shown in **Figure 3-13** below.

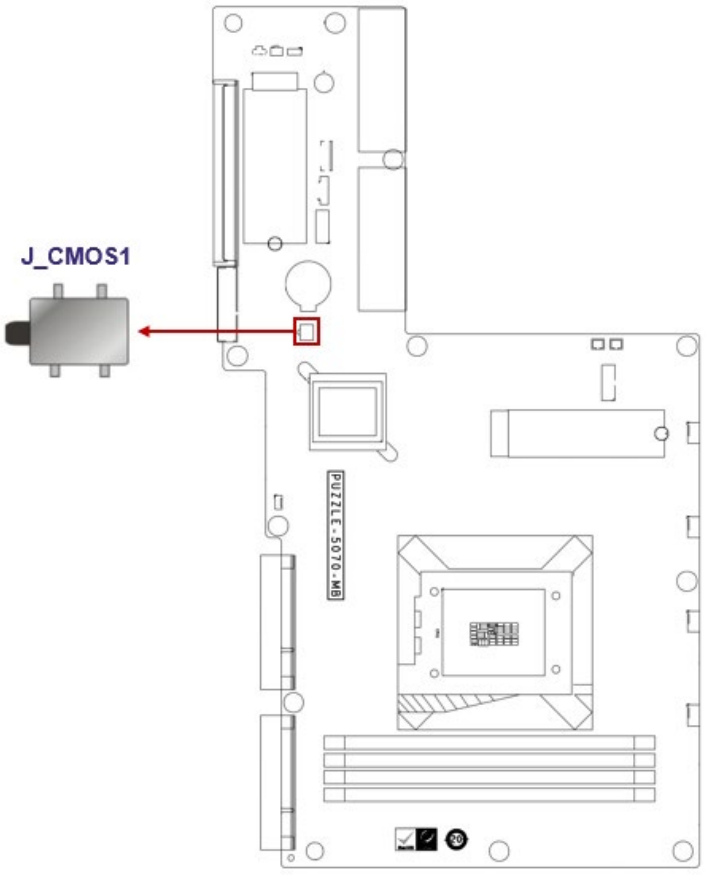


Figure 3-13: Clear CMOS Button Location

Chapter

4

BIOS

4.1 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.

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

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

4.1.2 Using Setup

Use the arrow keys to highlight items, press **ENTER** to select, use the PageUp and PageDown keys to change entries, press **F1** for help and press **Esc** to quit. Navigation keys are shown in **Table 4-1**.

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

Key	Function
-	Decrease the numeric value or make changes
Esc key	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 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 key	Load previous values
F3 key	Load optimized defaults
F4 key	Save changes and exit BIOS

Table 4-1: BIOS Navigation Keys

4.1.3 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 **Esc** or the **F1** key again.

4.1.4 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 3**.

4.1.5 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.
- Security – Sets User and Supervisor Passwords.
- Boot – Changes the system boot configuration.
- Save & Exit – Selects exit options and loads default settings
- Server Mgmt – Changes the server management settings.

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

4.2 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.

```
                              Aptio Setup - AMI
 Main    Advanced    Security    Boot    Save & Exit    Server Mgmt

BIOS Information                                    Set the Date. Use Tab to
BIOS Vendor                    American Megatrends  switch between Date
Core Version                   5.32                 elements.
Compliancy                     UEFI 2.9; PI 1.7
Project Version                Z0857AR12.BIN
Build Date and Time            11/25/2025 10:47:42

EC Version                     Z0857ER11.bin

IPMI Module                    Not Installed        ----------------------
Access Level                   Administrator        -
                                                    →←: Select Screen
Processor Information                               ↑ ↓: Select Item
Name                           ArrowLake DT         Enter: Select
Type                           Intel(R) Core(TM)    +/-: Change Opt.
                               Ultra 9 285          F1: General Help
Speed                          2500 MHz             F2: Previous Values
ID                             0xC0662              F3: Optimized
Stepping                       B0                   Defaults
Number of Efficient-core(s)    16Core(s)/16Thread(s) F4: Save & Exit
Number of Performance-core(s)  8Core(s)/8Thread(s   ESC: Exit
Microcode Revision             118

IGFX GOP Version               22.0.1062
Total Memory                   32768 MB
Memory Frequency               3200 MHz

PCH Information
Name                           MTL PCH-S
PCH SKU                        W880
Stepping                       B0
Production Type                Production

ME FW Version                  19.0.5.2005
ME Firmware SKU                Consumer SKU
PMC FW Version                 1900.21.0.1062

System Date                    [Thu 12/01/2025]
System Time                    [01:53:27]

                  Version 2.22.1299. Copyright (C) 2025 AMI
```

BIOS Menu 1: Main

The **Main** menu 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.

4.3 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.

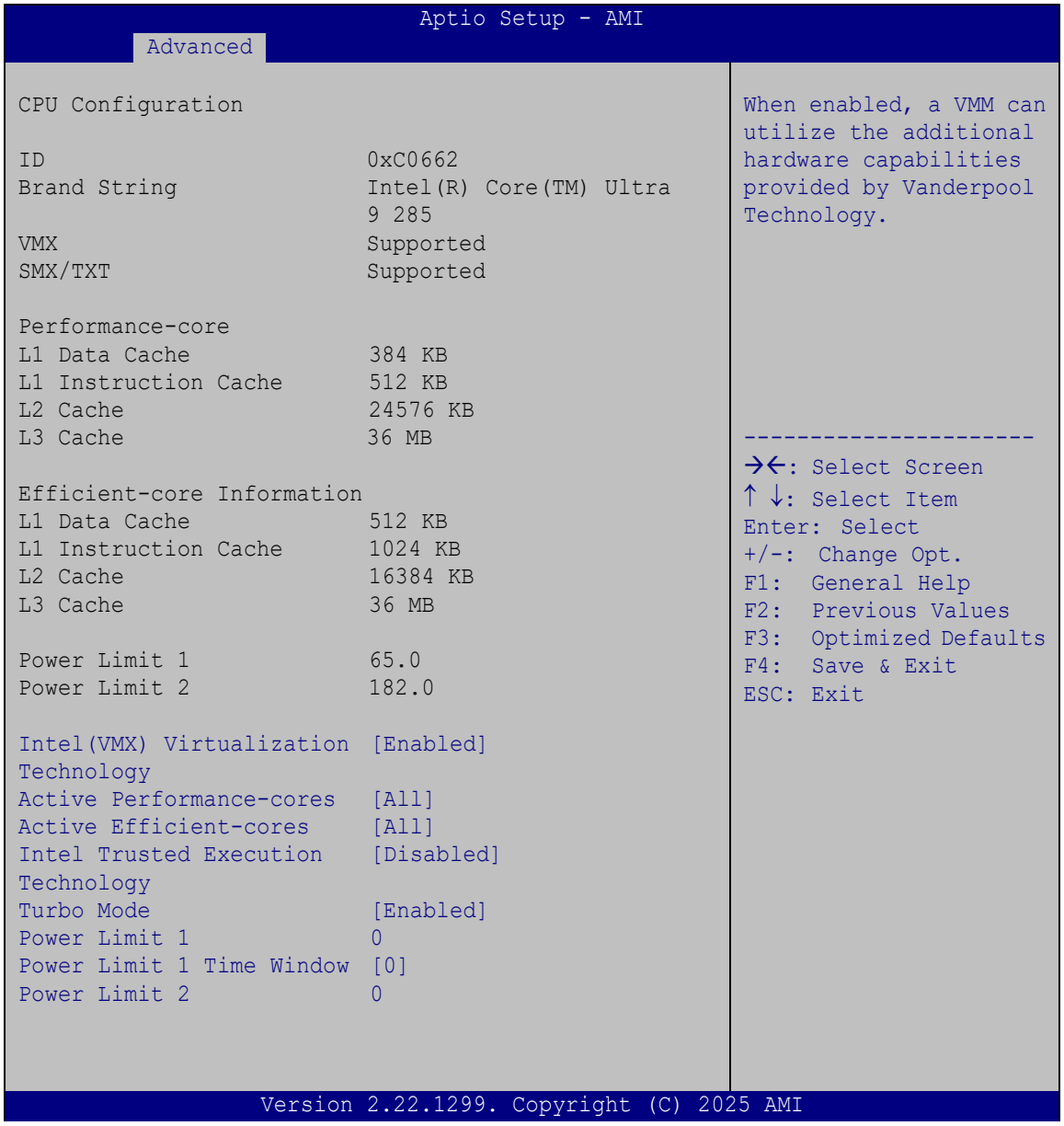
```
                         Aptio Setup - AMI
 Main   Advanced   Security   Boot   Save & Exit   Server Mgmt

> CPU Configuration                          CPU Configuration
> System Agent (SA) Configuration            Parameters
> PCIE Configuration
> PCH-IO Configuration
> PCH-FW Configuration                       ----------------------
> Trusted Computing                          →←: Select Screen
> IT5571 Super IO Configuration              ↑ ↓: Select Item
> IT5571 H/M Monitor                         Enter: Select
> Serial Port Console Redirection            +/-: Change Opt.
> PCI Subsystem Settings                     F1: General Help
> Network Stack Configuration                F2: Previous Values
> NVMe Configuration                         F3: Optimized Defaults
                                             F4: Save & Exit
                                             ESC: Exit
                Version 2.22.1299. Copyright (C) 2025 AMI
```

BIOS Menu 2: Advanced

4.3.1 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 [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 Performance-cores [All]**

Use the **Active Performance-cores** BIOS option to select the number of P-cores to enable.

➔ **Active Efficient-cores [All]**

Use the **Active Efficient-cores** BIOS option to select the number of E-cores to enable.

➔ **Intel Trusted Execution Technology [Disabled]**

Use the **Intel Trusted Execution Technology** option to enable or disable the Intel® Trusted Execution Technology.

➔	**Disabled**	**DEFAULT**	Disable Intel® Trusted Execution Technology
➔	**Enabled**		Enable Intel® Trusted Execution Technology

➔ **Turbo Power [Enabled]**

Use the **Turbo Power** option to enable or disable processor turbo mode.

➔	**Disabled**		Disable processor turbo mode
➔	**Enabled**	**DEFAULT**	Enable processor turbo mode

➔ **Power Limit 1**

Use the **Power Limit 1** BIOS option to set the power limit 1 in milliwatts. The BIOS rounds the value to the nearest 1/8 W when applied. A value of 0 disables the custom override. Example: To set a power limit of 12.50 W, enter 12500.

➔ **Power Limit 1 Time Window [0]**

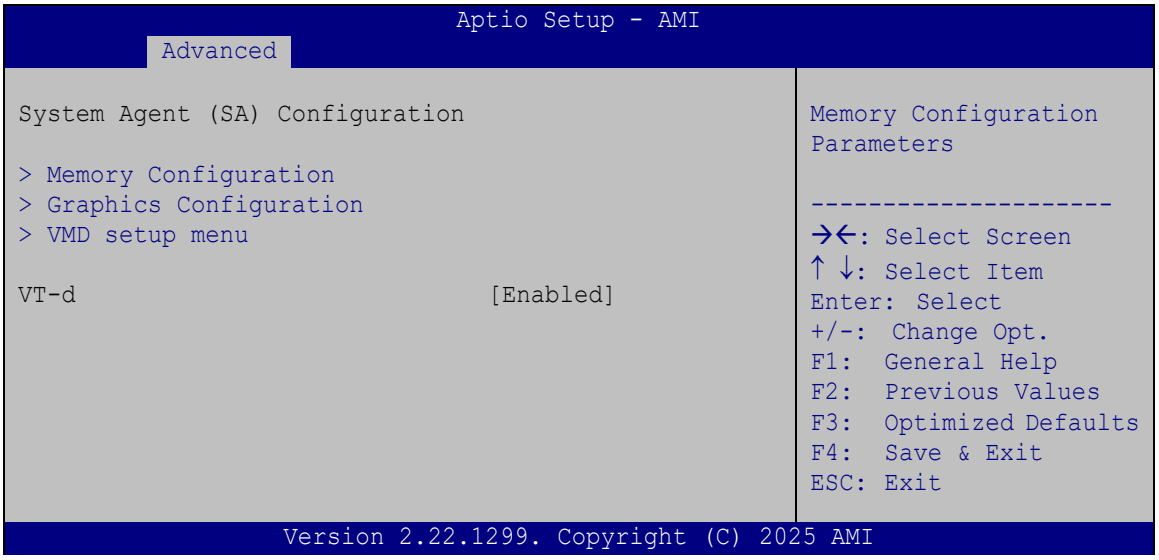
Use the **Power Limit 1 Time Window** BIOS option to select the time window value in seconds. The valid range is 0 to 128. A value of 0 uses the default setting (28 seconds for mobile platforms and 8 seconds for desktop platforms). This option defines the time period over which the processor's base power (TDP) value is maintained.

➔ **Power Limit 2**

Use the **Power Limit 2** BIOS option to set the power limit 2 in milliwatts. The BIOS rounds the value to the nearest 1/8 W when applied. If the value is 0, BIOS will program this value as 1.25*processor TDP. Example: To set a power limit of 12.50 W, enter 12500.

4.3.2 System Agent (SA) Configuration

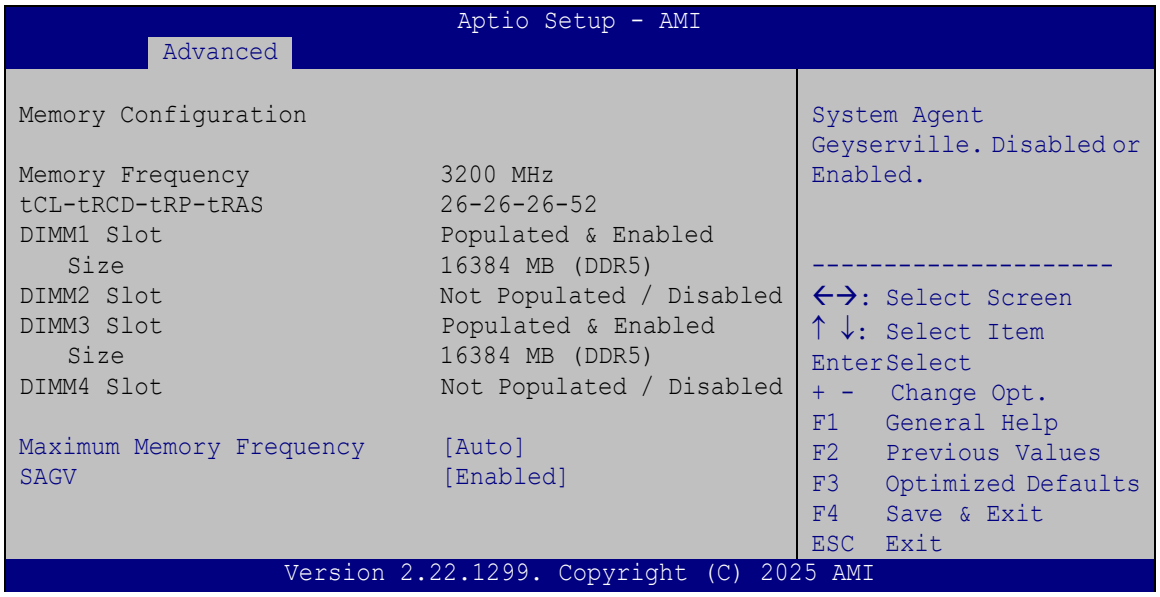
Use the **System Agent (SA) Configuration** menu (**BIOS Menu 4**) to configure the video device connected to the system.



BIOS Menu 4: System Agent (SA) Configuration

4.3.2.1 Memory Configuration

Use the **Memory Configuration** submenu (**BIOS Menu 5**) to view the memory settings.



BIOS Menu 5: Memory Configuration

➔ **Maximum Memory Frequency [Auto]**

Use the **Maximum Memory Frequency** BIOS option to select maximum memory frequency (unit: MHz).

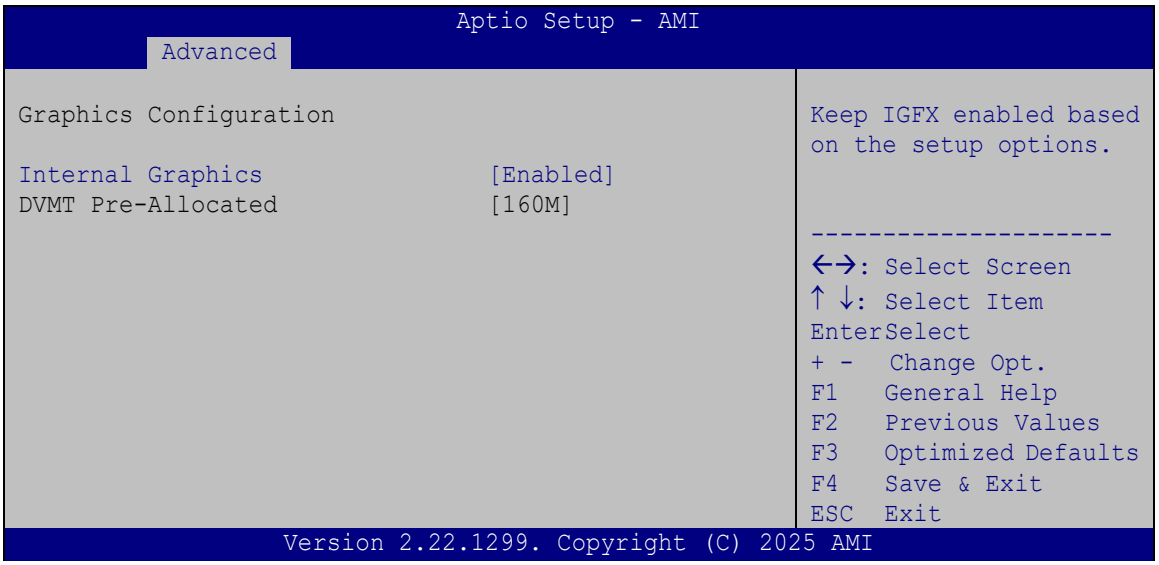
➔ **SAGV [Enabled]**

Use the **SAGV** option to enable or disable System Agent Geyserville.

➔	**Disabled**		Disable System Agent Geyserville
➔	**Enabled**	**DEFAULT**	Enable System Agent Geyserville

4.3.2.2 Graphics Configuration

Use the **Graphics Configuration** submenu (**BIOS Menu 6**) to view the graphics settings.



BIOS Menu 6: Graphics Configuration

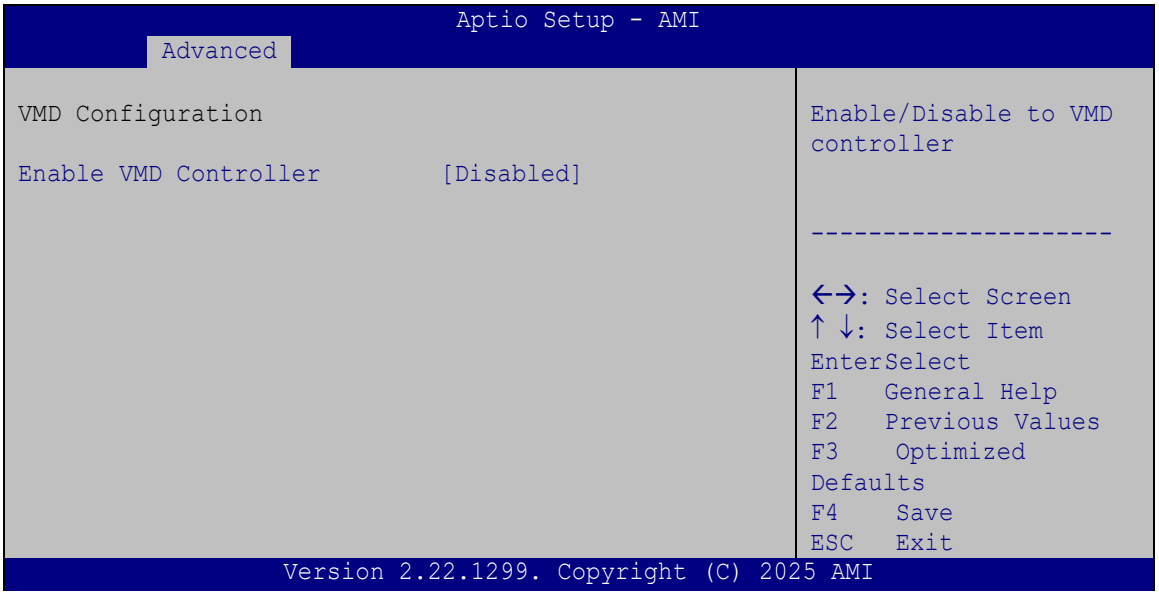
➔ **Internal Graphics [Enabled]**

Use the **Internal Graphics** option to enable or disable IGFX. Keep IGFX enabled based on the setup options

- Auto
- Disabled
- Enabled **Default**

4.3.2.3 VMD Setup Menu

Use the **VMD Setup Menu** (**BIOS Menu 7**) to change and/or set the configuration of the Volume Management Device (VMD).



BIOS Menu 7: VMD Setup Menu

➔ **Enable VMD controller [Disabled]**

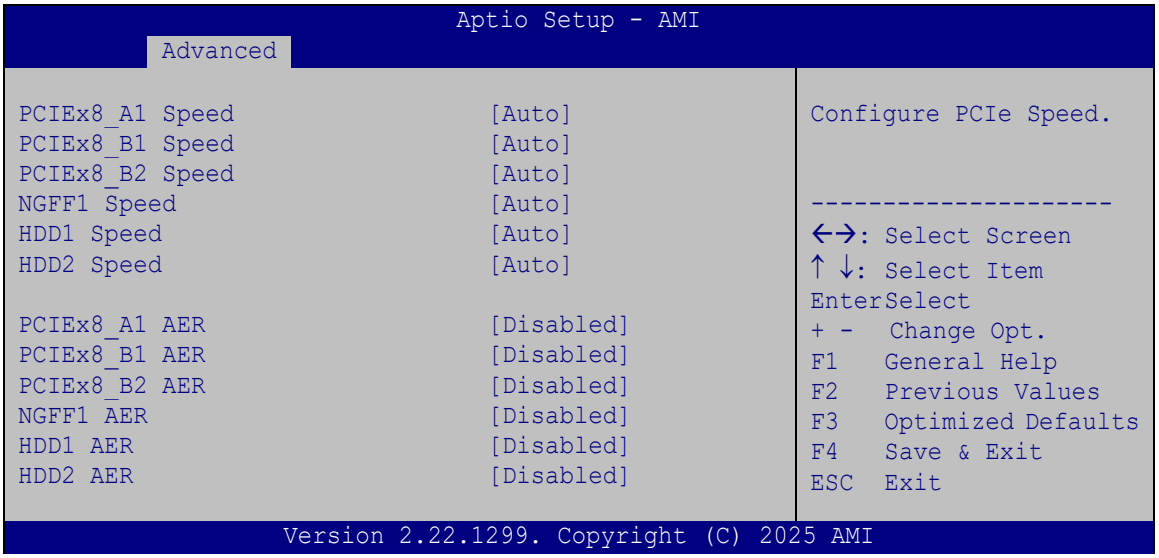
Use the **Enable VMD controller** option to enable or disable the VMD controller.

➔ **Disabled** **DEFAULT** Disables the VMD controller.

➔ **Enabled** Enables the VMD controller.

4.3.3 PCIE Configuration

Use the **PCIE Configuration** submenu (**BIOS Menu 8**) to configure the PCI Express slots.



BIOS Menu 8: PCIE Configuration

➔ **PCIE Slot Speed [Auto]**

Use the **PCIEx8_A1 Speed / PCIEx8_B1 Speed / PCIEx8_B2 Speed / NGFF1 Speed / HDD1 Speed / HDD2 Speed** options to specify the PCI Express slot speed.

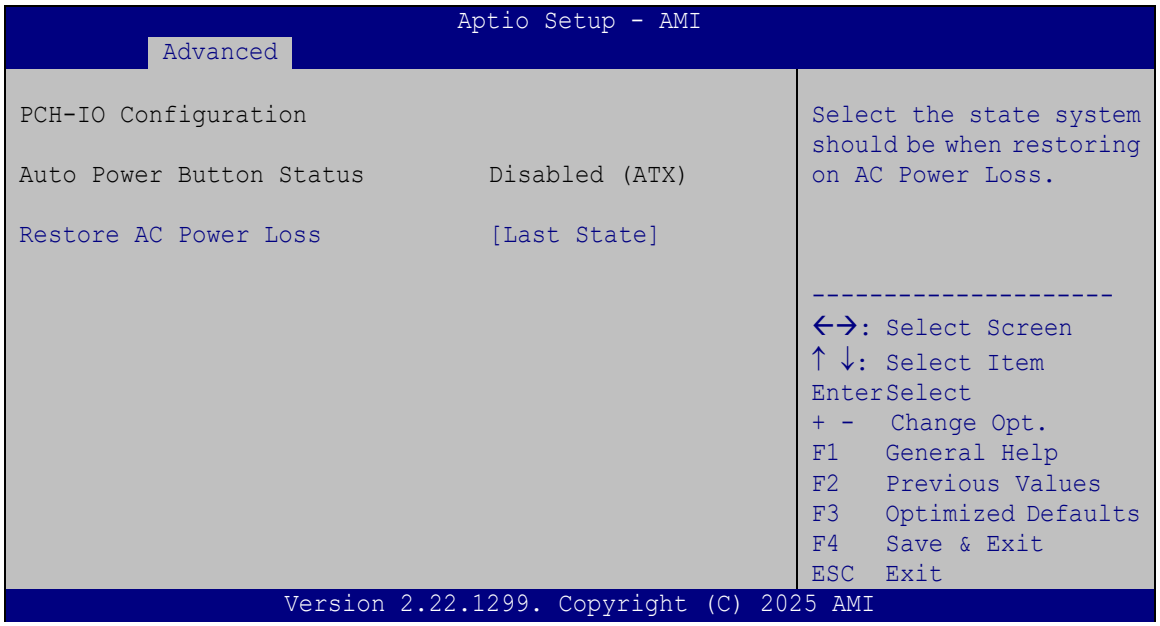
➔ **AER Enable/Disable [Disabled]**

Use the **PCIEx8_A1 AER / PCIEx8_B1 AER / PCIEx8_B2 AER / NGFF1 AER / HDD1 AER / HDD2 AER** options to enable or disable Advanced Error Reporting (AER) function.

➔	**Disabled**	**DEFAULT**	Disables Advanced Error Reporting (AER)
➔	**Enabled**		Enables Advanced Error Reporting (AER)

4.3.4 PCH-IO Configuration

Use the **PCH-IO Configuration** menu (**BIOS Menu 9**) to configure the PCH chipset.



BIOS Menu 9: PCH-IO Configuration

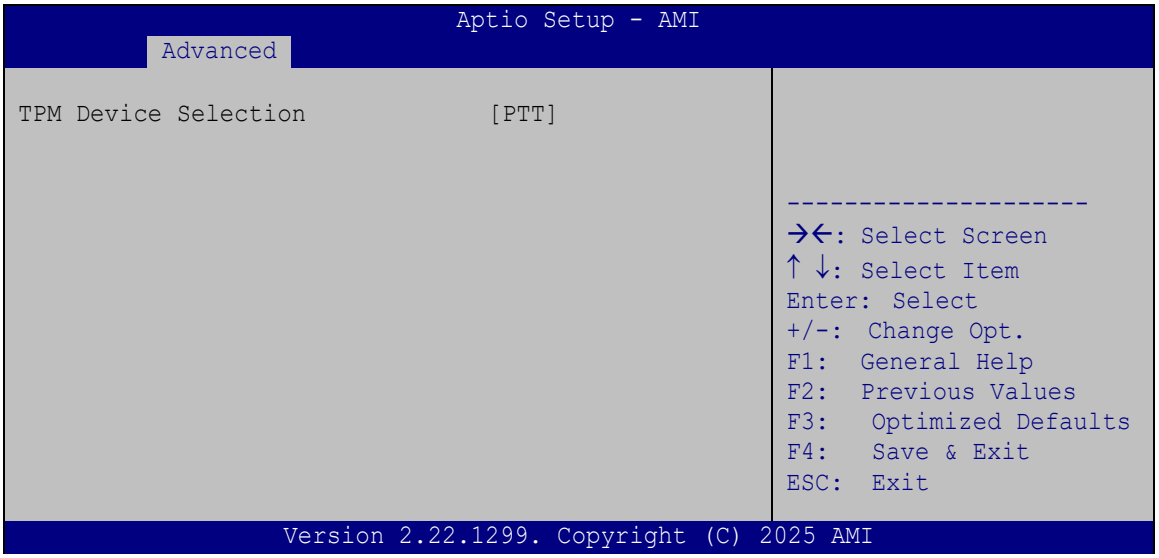
➔ **Restore on AC Power Loss [Last State]**

Use the **Restore on 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.

4.3.5 PCH-FW Configuration

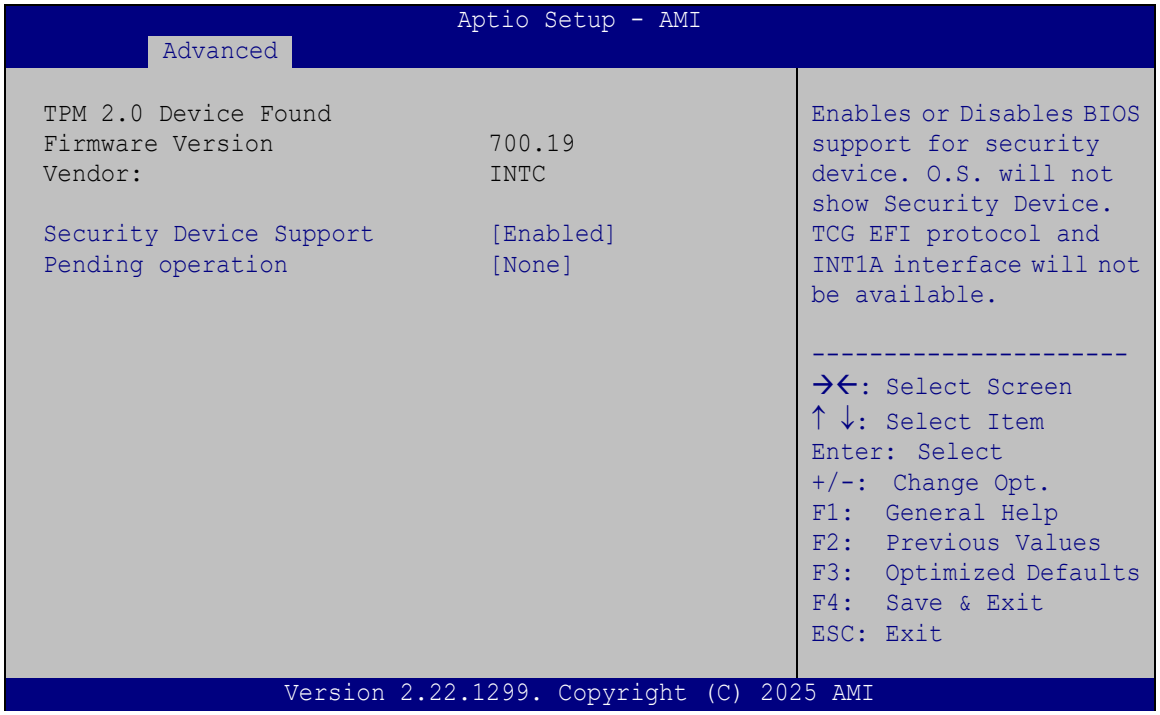
The **PCH-FW Configuration** menu (**BIOS Menu 10**) view information related to Trusted Platform Module (TPM).



BIOS Menu 10: PCH-FW Configuration

4.3.6 Trusted Computing

Use the **Trusted Computing** menu (**BIOS Menu 11**) to configure settings related to the Trusted Computing Group (TCG) Trusted Platform Module (TPM).



BIOS Menu 11: Trusted Computing

➔ **Security Device Support [Enabled]**

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

➔ **Disabled** TPM support is disabled.

➔ **Enabled** **DEFAULT** TPM support is enabled.

➔ **Pending Operation [None]**

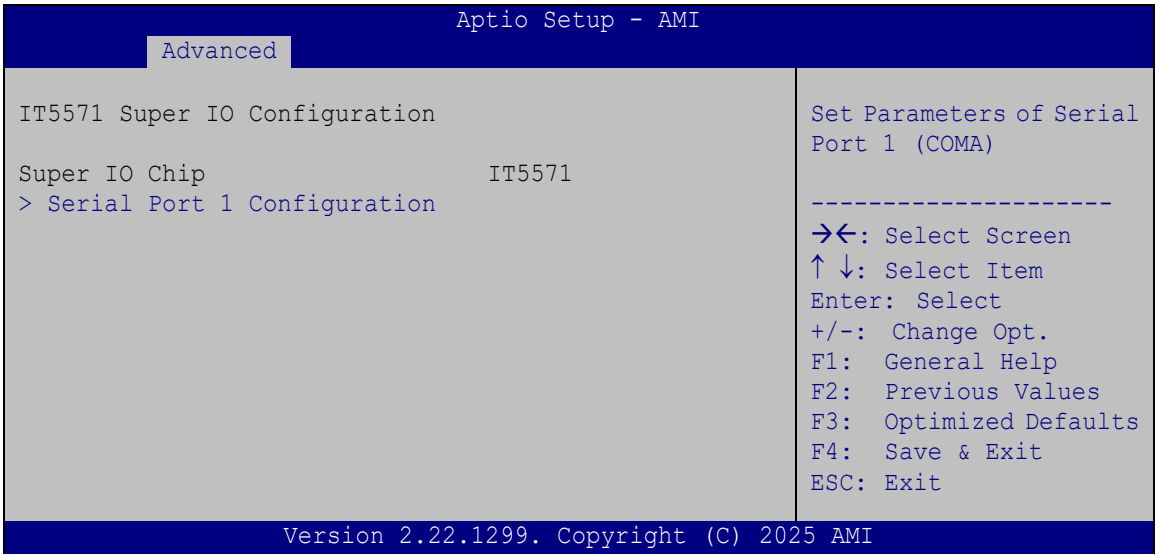
Use the **Pending Operation** option to specify a TPM operation which will be performed during the next boot process.

➔ **None** **DEFAULT** No TPM operation will be performed.

➔ **TPM Clear** TPM is reset to the factory setting. All data in the TPM will be deleted.

4.3.7 IT5571 Super IO Configuration

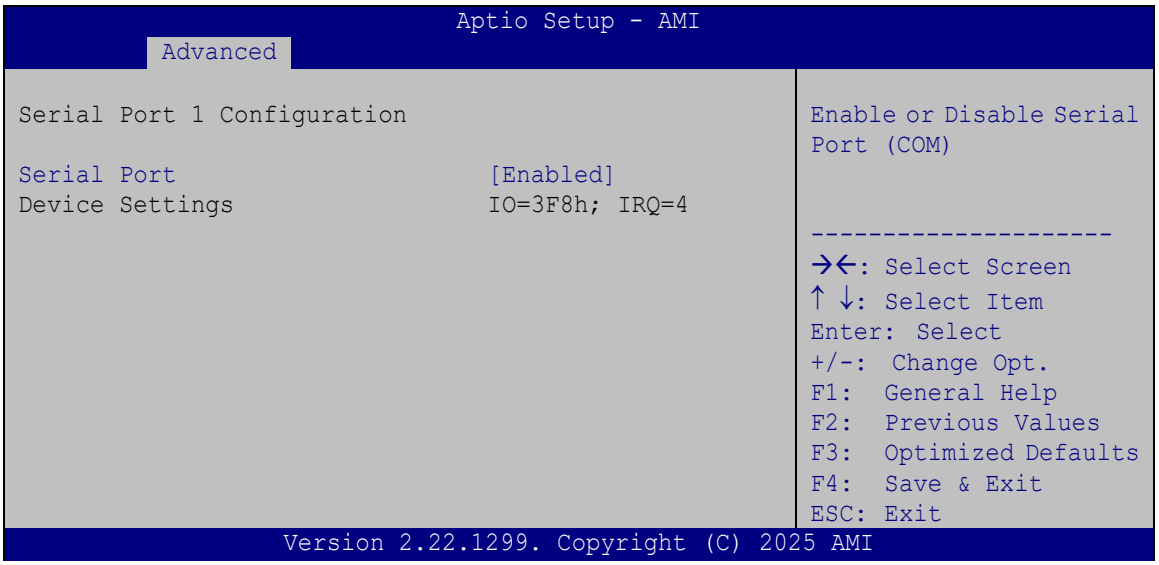
Use the **IT5571 Super IO Configuration** menu (**BIOS Menu 12**) to set or change the configurations for the parallel ports and serial ports.



BIOS Menu 12: IT5571 Super IO Configuration

4.3.7.1 Serial Port 1 Configuration

Use the **Serial Port 1 Configuration** menu (**BIOS Menu 13**) to configure the serial port 1.



BIOS Menu 13: Serial Port 1 Configuration Menu

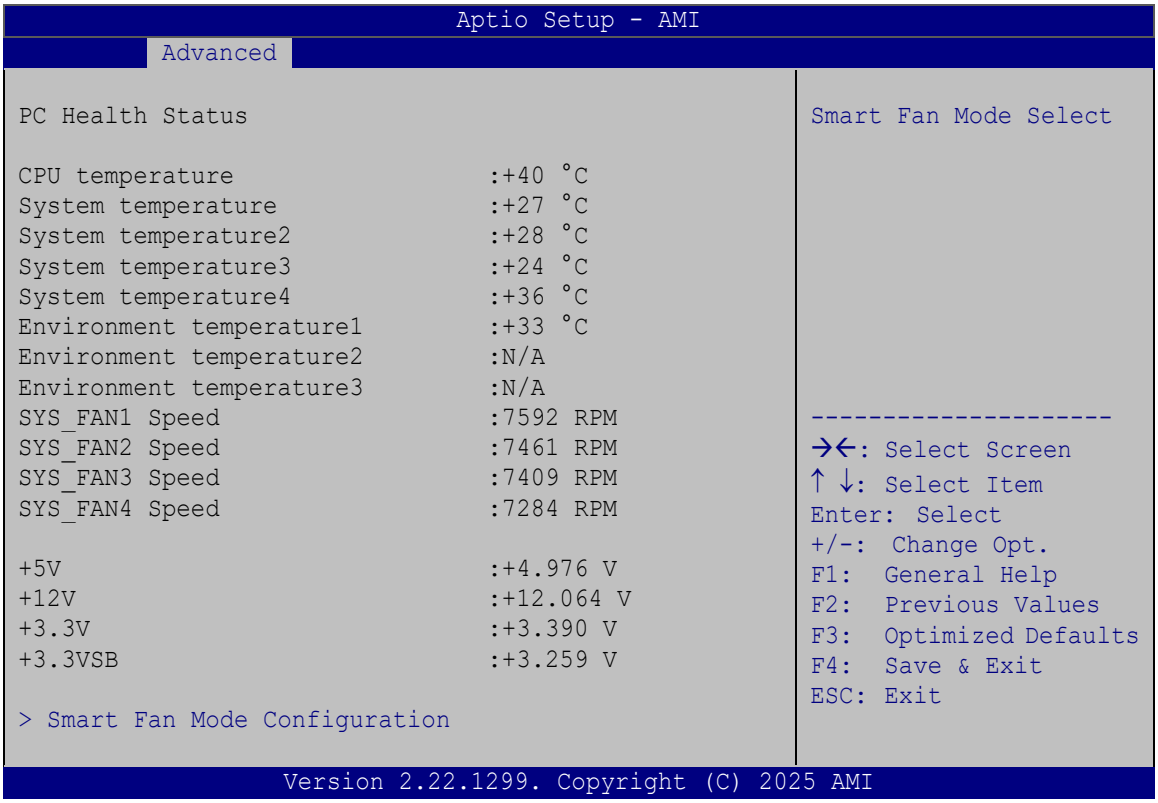
➔ **Serial Port [Enabled]**

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

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

4.3.8 IT5571 H/W Monitor

The **IT5571 H/W Monitor** menu (**BIOS Menu 14**) contains the fan configuration submenu, and displays the system temperature and CPU fan speed.



BIOS Menu 14: IT5571 H/W Monitor

➔ **PC Health Status**

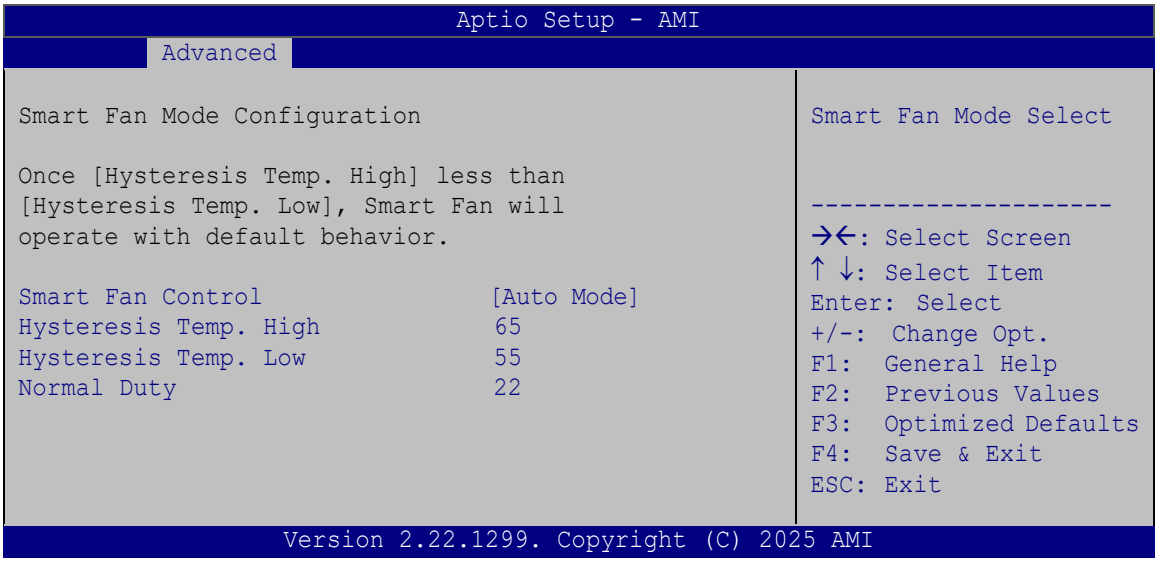
The following system parameters and values are shown. The system parameters that are monitored are:

- Temperatures:
  - CPU temperature
  - System temperature
  - Environment temperature
- Fan Speeds:
  - System Fan Speed

- Voltages:
  - +5V
  - +12V
  - +3.3V
  - +3.3VSB

4.3.8.1 Smart Fan Mode Configuration

Use the **Smart Fan Mode Configuration** submenu (**BIOS Menu 15**) to configure the CPU/system fan temperature and speed settings.



BIOS Menu 15: Smart Fan Mode Configuration

➔ **Smart Fan Control [Auto Mode]**

Use the **Smart Fan Control** options to configure the system smart fans.

➔ **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.

The following options can only be set if the CPU Smart Fan Control option is set to Auto Mode.

➔ **Hysteresis Temp. High**

If the current CPU temperature exceeds this setting, the fan speed increases. To set a value, Use the + or – key to change the value or enter a decimal number between 1 and 100.

➔ **Hysteresis Temp. Low**

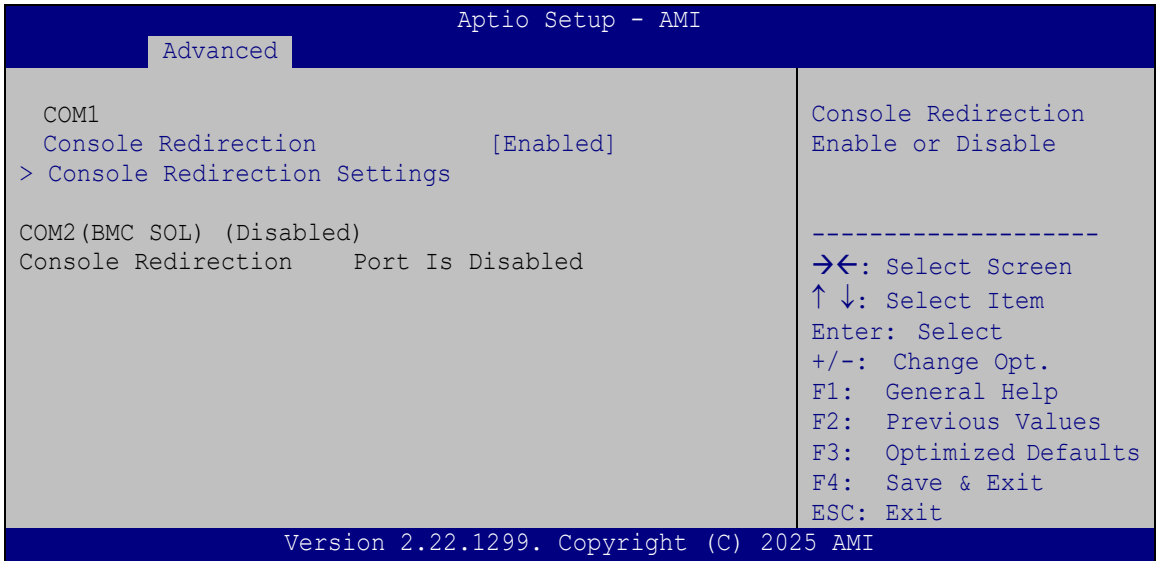
If the CPU temperature falls below this setting, the fan speed decreases; however, it will not drop below the **Normal Duty** setting. To set a value, Use the + or – key to change the value or enter a decimal number between 1 and 100.

➔ **Normal Duty**

Use the **Normal Duty** option to define the fan speed at system power-on and the minimum fan speed percentage. Use the + or – key to change the value or enter a decimal number between 1 and 100.

4.3.9 Serial Port Console Redirection

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



BIOS Menu 16: Serial Port Console Redirection

➔ **Console Redirection [Enabled]**

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

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

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

➔ **Terminal Type [ANSI]**

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

➔ **VT100**		The target terminal type is VT100
➔ **VT100Plus**		The target terminal type is 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.
➔ **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 provide error detection.
➔ **Space**		The parity bit is always 0. This option does not provide error detection.

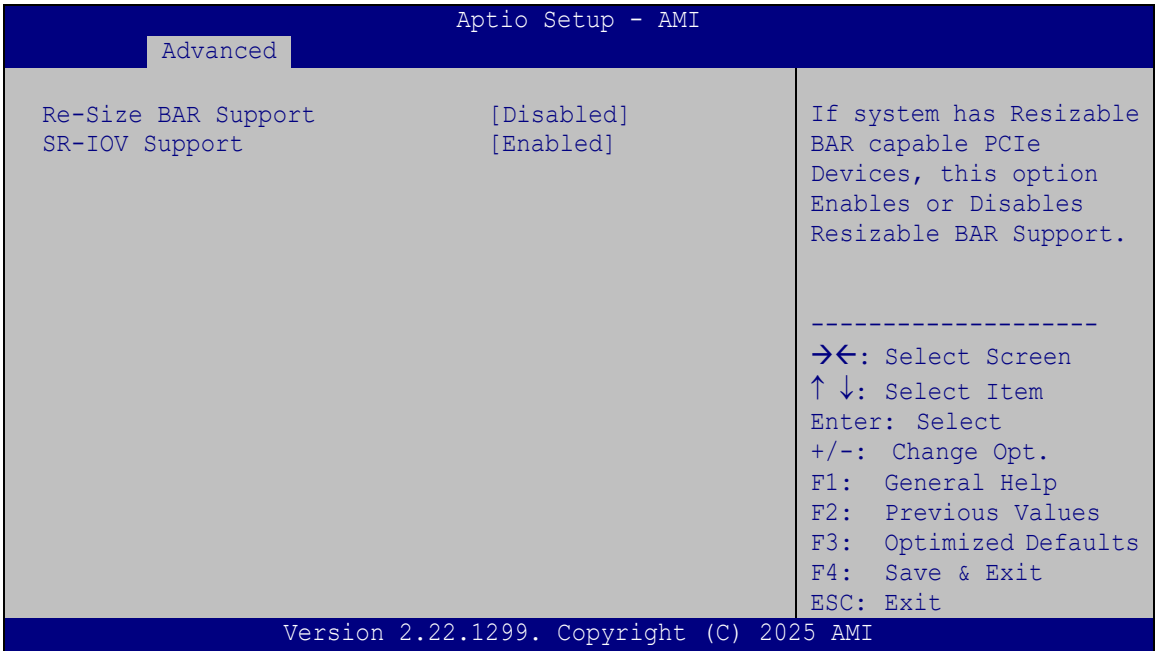
➔ **Stop Bits [1]**

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.

4.3.10 PCI Subsystem Settings

The **PCI Subsystem Settings** menu (**BIOS Menu 17**) allows users to configure PCI. PCI-X and PCI Express settings.



BIOS Menu 17: PCI Subsystem Settings

➔ **Re-Size BAR Support [Disabled]**

Use **Re-Size BAR Support** option to enable or disable Resizable BAR Support if the system contains PCIe devices that support Resizable BAR.

➔ **Disabled** **DEFAULT** Disabled the Resizable BAR support

➔ **Enabled** Enabled the Resizable BAR support

➔ **SR-IOV Support [Enabled]**

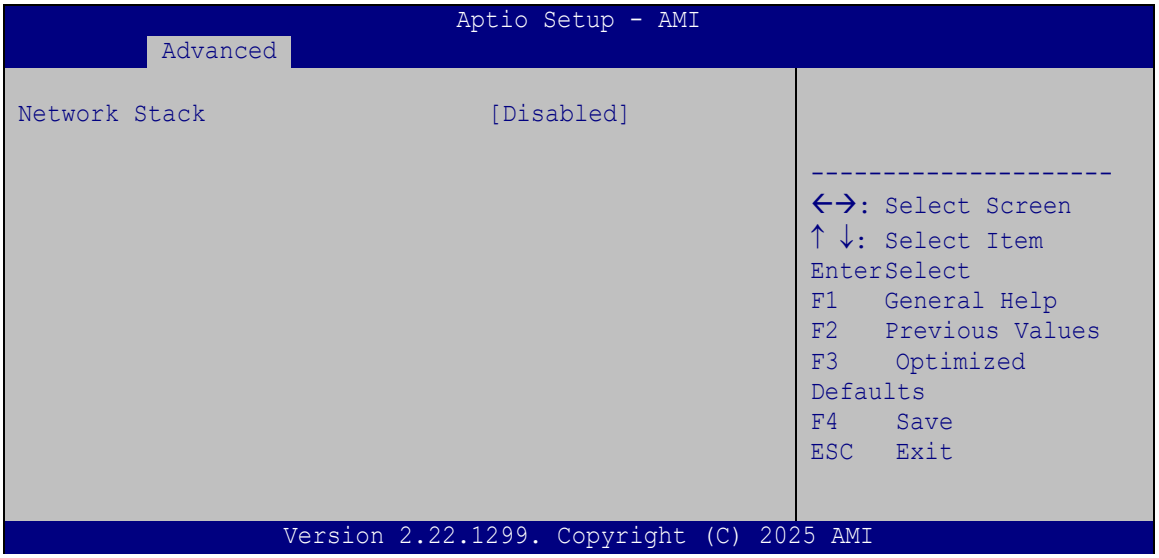
Use **SR-IOV Support** option to enable or disable the Single Root I/O Virtualization (SR-IOV) support if the system has SR-IOV-capable PCIe devices.

➔ **Disabled** Disabled the SR-IOV support

➔ **Enabled** **DEFAULT** Enabled the SR-IOV support

4.3.11 Network Stack Configuration

Use the **Network Stack Configuration** menu (**BIOS Menu 18**) to configure network stack settings.



BIOS Menu 18: Network Stack Configuration

➔ **Network Stack [Disabled]**

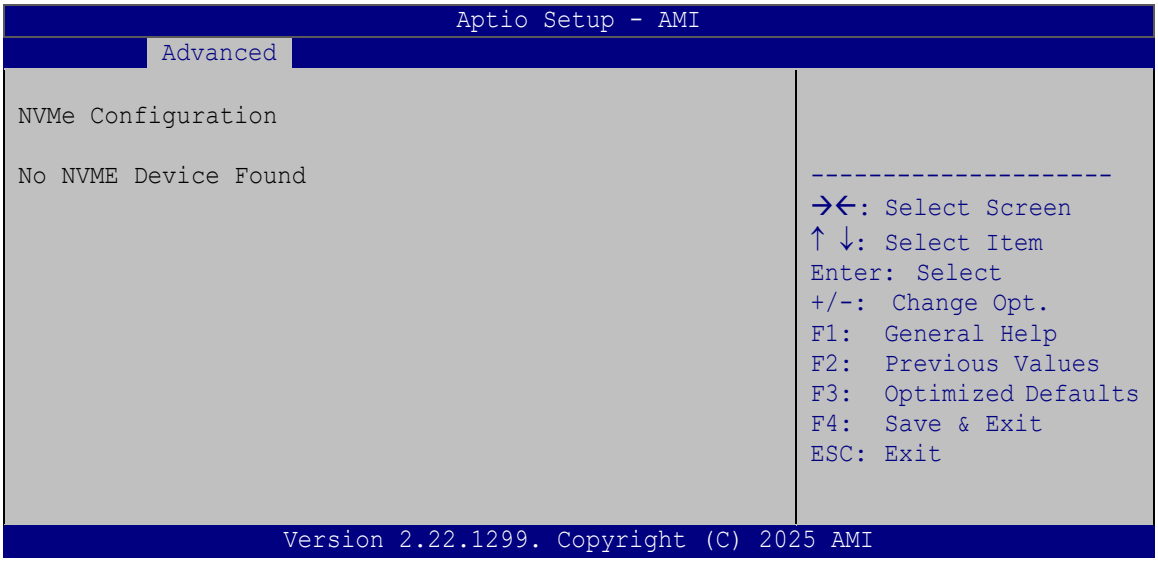
Use **Network Stack** option to enable or disable UEFI network stack.

➔ **Disabled** **DEFAULT** Disabled UEFI network stack

➔ **Enabled** Enabled UEFI network stack

4.3.12 NVMe Configuration

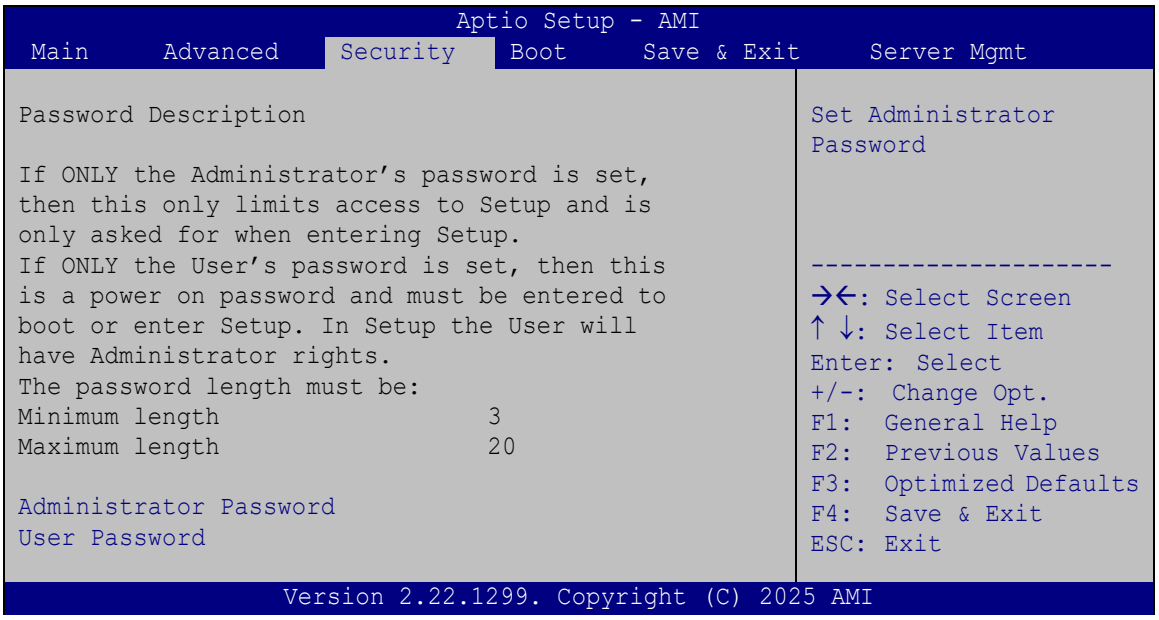
Use the **NVMe Configuration** submenu (**BIOS Menu 19**) to change and/or set the configuration of the NVMe devices installed in the system.



BIOS Menu 19: NVMe Configuration

4.4 Security

Use the **Security** menu (**BIOS Menu 20**) to set system and user passwords.



BIOS Menu 20: Security

➔ **Administrator Password**

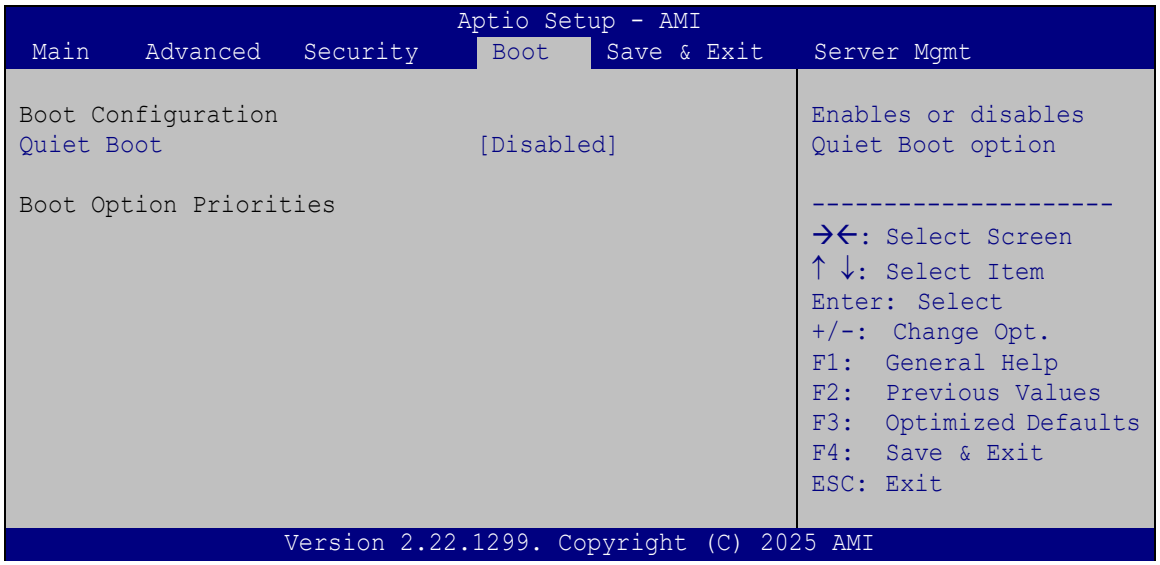
Use the **Administrator Password** to set or change a administrator password.

➔ **User Password**

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

4.5 Boot

Use the **Boot** menu (**BIOS Menu 21**) to configure system boot options.



BIOS Menu 21: Boot

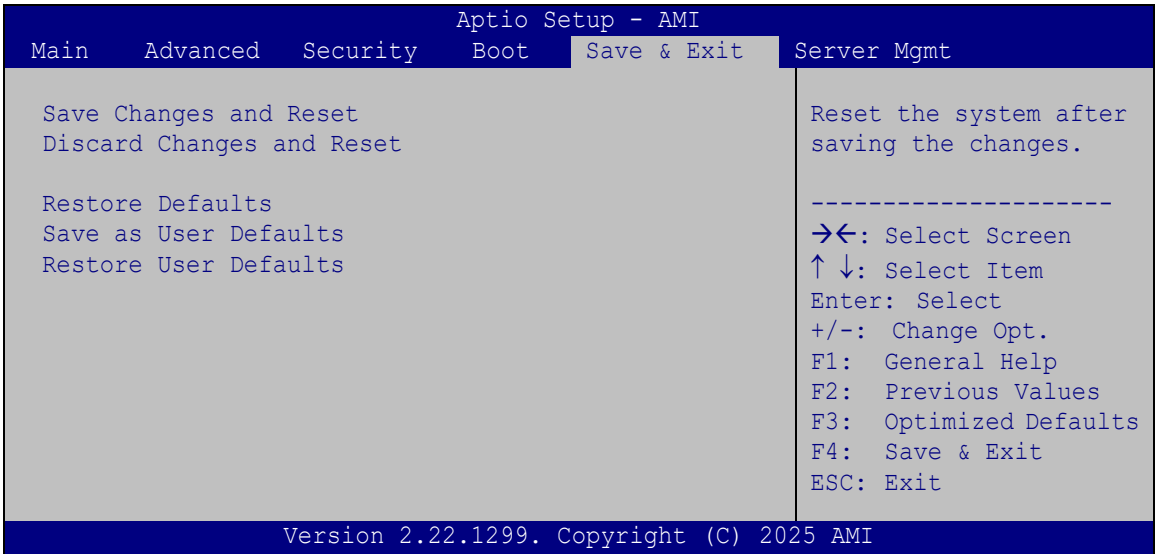
➔ **Quiet Boot [Disabled]**

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

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

4.6 Save & Exit

Use the **Safe & Exit** menu (**BIOS Menu 22**) to load default BIOS values, optimal failsafe values and to save configuration changes.



BIOS Menu 22: 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**

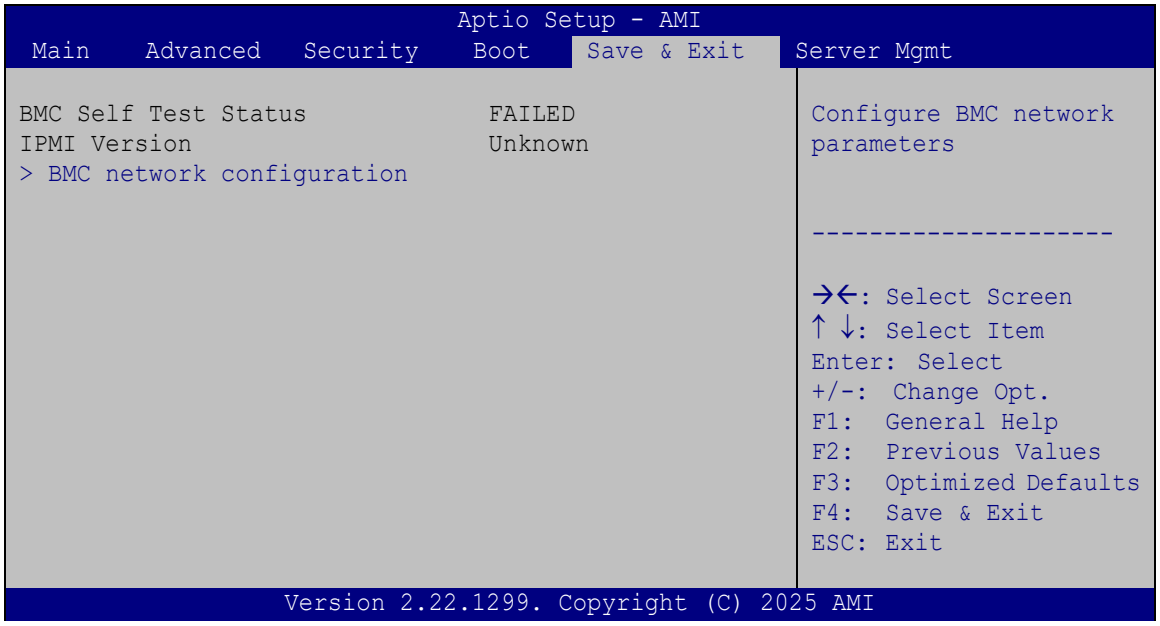
Use the **Save as User Defaults** option to save the changes done so far as user defaults.

➔ **Restore User Defaults**

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

4.7 Server Management

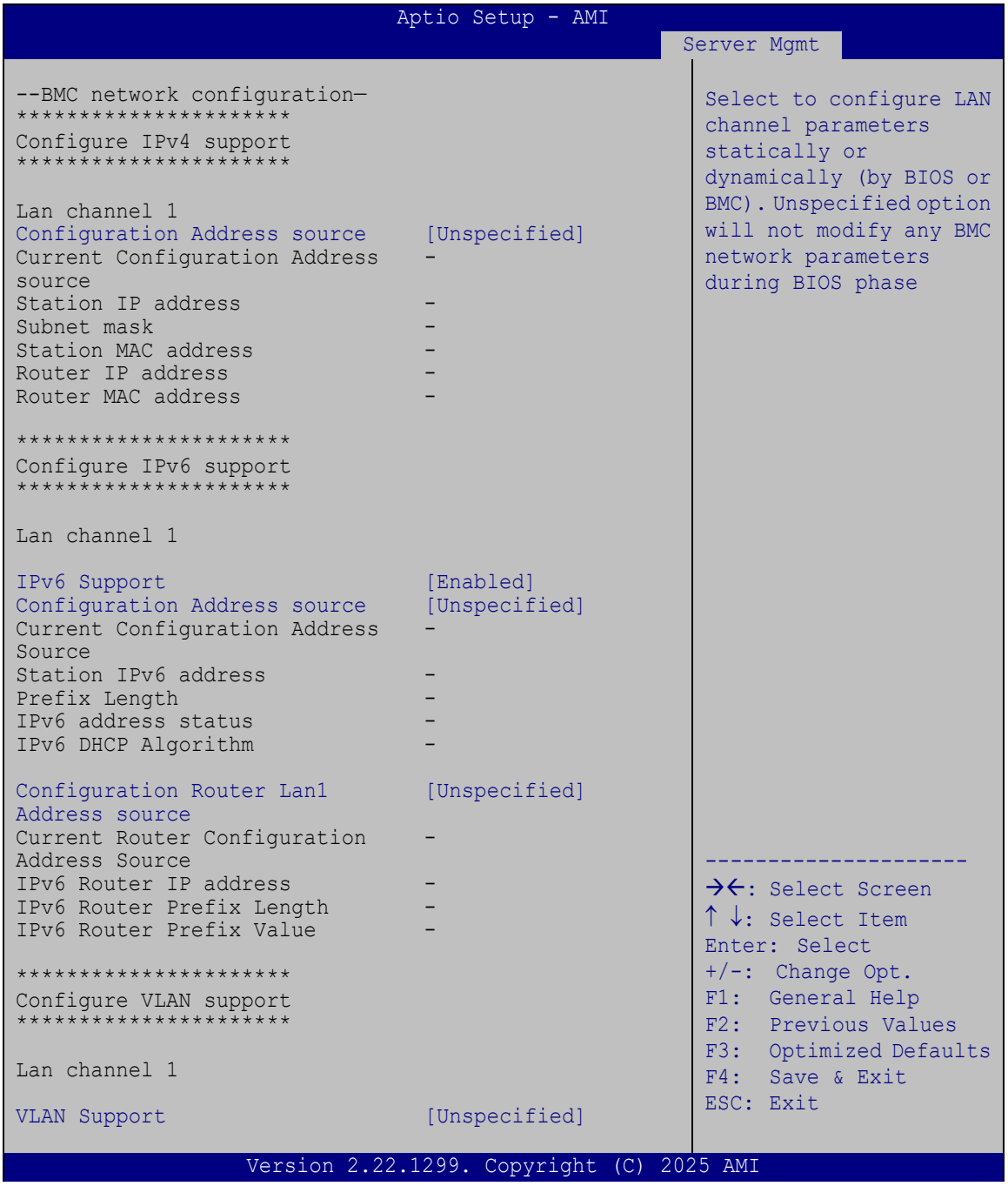
Use the **Server Management** menu (**BIOS Menu 23**) to display the server management status and change the settings.



BIOS Menu 23: Server Management

4.7.1 BMC Network Configuration

Use the **BMC Network Configuration** menu (**BIOS Menu 24**) to configure the BMC network parameters.



BIOS Menu 24: BMC Network Configuration

➔ **Configuration Address Source [Unspecified]**

Use the **Configuration Address Source** option to select the BMC network address source.

➔ **Unspecified**	**DEFAULT**	Does not modify any BMC network parameters during BIOS phase
➔ **Static**		Manually sets the BMC network parameters. If this option is selected, the following items will be configurable: *Station IP address *Subnet mask *Station MAC address *Router IP address *Router MAC address
➔ **DynamicBmcDhcp**		Obtains BMC network parameters by BMC dynamically.
➔ **DynamicBmcNonDhcp**		Obtains BMC network parameters by BMC manually.

➔ **IPv6 Support [Enabled]**

Use the **IPv6 Support** option to enable or disable the IPv6 support of LAN1.

➔ **Enabled**	**DEFAULT**	Enables the IPv6 support of LAN1
➔ **Disabled**		Disables the IPv6 support of LAN1

➔ **VLAN Support [Unspecified]**

Use the **VLAN Support** option to control whether the system uses an 802.1Q VLAN ID for pre-OS network traffic.

➔ **Enabled**		Applies the specified VLAN ID to all pre-OS network traffic.
➔ **Disabled**		VLAN tagging is turned off; network traffic is untagged.
➔ **Unspecified**	**DEFAULT**	No VLAN ID is set; the system uses the network's default behavior.

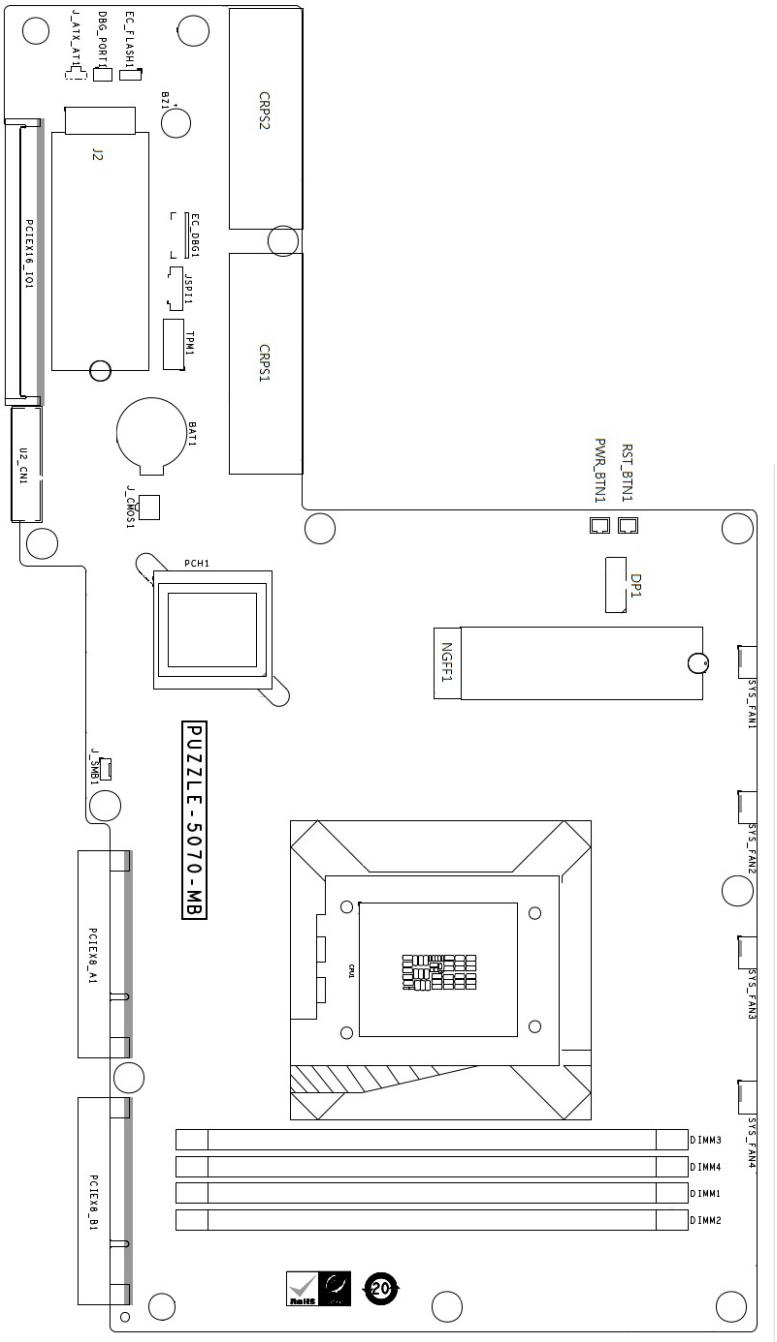
Chapter

5

Interface Connectors

5.1 Peripheral Interface Connectors

The connector locations of the PUZZLE-5070's motherboard are shown below. The connector pinouts for these connectors are listed in the following sections.



5.2 Internal Peripheral Connectors

Internal peripheral connectors on the motherboard and are only accessible when the motherboard is outside of the chassis. The table below shows a list of the connectors on the motherboard. Pinouts of these connectors can be found in the following sections.

Connector	Type	Label
CRPS (Common Redundant Power Supply) connectors	50-pin connector	CRPS1, CRPS2
Debug port	6-pin header	DBG_PORT1
DisplayPort connector	20-pin connector	DP1
EC debug connector	20-pin FPC	EC_DBG1
Fan connectors	4-pin wafer	SYS_FAN1, SYS_FAN2, SYS_FAN3, SYS_FAN4
IPMI module slot	75-pin slot	J2
M.2 M-key slot	M.2 2280 M-key	NGFF1
Memory slots	DDR5 DIMM slot	DIMM1, DIMM2, DIMM3, DIMM4
Power button connector	2-pin wafer	PWR_BTN1
Reset button connector	2-pin wafer	RST_BTN1
SMBus connector	4-pin wafer	J_SMB1
SPI flash connector	6-pin wafer	JSPI1
SPI flash connector (EC)	4-pin wafer	EC_FLASH1
TPM connector	20-pin connector	TPM1
U.2 connector	84-pin connector	U.2_CN1

5.2.1 CRPS Connectors (CRPS1, CRPS2)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
A1	GND	B1	GND
A2	GND	B2	GND
A3	GND	B3	GND
A4	GND	B4	GND
A5	GND	B5	GND
A6	GND	B6	GND
A7	GND	B7	GND
A8	GND	B8	GND
A9	GND	B9	GND
A10	12V	B10	12V
A11	12V	B11	12V
A12	12V	B12	12V
A13	12V	B13	12V
A14	12V	B14	12V
A15	12V	B15	12V
A16	12V	B16	12V
A17	12V	B17	12V
A18	12V	B18	12V
A19	PSU_SDA	B19	PSU_AD0
A20	PSU_SCL	B20	PSU_AD1
A21	PS_ON_N	B21	12V_STANDBY
A22	PSU_ALERT_N	B22	PSU_SMART_ON
A23	PSU_RS_N	B23	N/A
A24	PSU_RS_P	B24	PSU_PRESENT_N
A25	PSU_PWROK	B25	N/A

Table 5-1: CRPS Connectors (CRPS1, CRPS2) Pinouts

5.2.2 Debug Port (DBG_PORT1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC5V	2	SMCLK_EC
3	NC	4	SMDAT_EC
5	GND	6	RST#

Table 5-2: Debug Port (DBG_PORT1) Pinouts

5.2.3 DisplayPort Connector (DP1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DP_DATA0_P	11	GND
2	GND	12	DP_DATA3_N
3	DP_DATA0_N	13	N/C
4	DP_DATA1_P	14	N/C
5	GND	15	DP_AUX_P
6	DP_DATA1_N	16	GND
7	DP_DATA2_P	17	DP_AUX_N
8	GND	18	DPI_HPD
9	DP_DATA2_N	19	DP_PWR_RETUR N
10	DP_DATA3_P	20	DP_PWR

Table 5-3: DisplayPort Connector (DP1) Pinouts

5.2.4 EC Debug Connector (EC_DBG1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	EC_EPP_STB#	2	EC_EPP_AFD#
3	EC_EPP_PD0	4	NC
5	EC_EPP_PD1	6	EC_EPP_INIT#
7	EC_EPP_PD2	8	EC_EPP_SLIN#
9	EC_EPP_PD3	10	GND
11	EC_EPP_PD4	12	NC
13	EC_EPP_PD5	14	EC_EPP_BUSY
15	EC_EPP_PD6	16	EC_EPP_KSI5
17	EC_EPP_PD7	18	EC_EPP_KSI4

Table 5-4: EC Debug Connector (EC_DBG1) Pinouts

5.2.5 Fan Connectors (SYS_FAN1 ~ SYS_FAN4)

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

Table 5-5: Fan Connectors (SYS_FAN1 ~ SYS_FAN4) Pinouts

5.2.6 Power Button Connector (PWR_BTN1)

PIN NO.	DESCRIPTION
1	PWR_BTN_SW
2	GND

Table 5-6: Power Button Connector (PWR_BTN1) Pinouts

5.2.7 Reset Button Connector (RST_BTN1)

PIN NO.	DESCRIPTION
1	Reset_BTN_SW
2	GND

Table 5-7: Reset Button Connector (RST_BTN1) Pinouts

5.2.8 SMBus Connector (J_SMB1)

PIN NO.	DESCRIPTION
1	GND
2	SDA
3	SCL
4	5V

Table 5-8: SMBus Connector (J_SMB1) Pinouts

5.2.9 SPI Flash Connector (JSPI1)

PIN NO.	DESCRIPTION
1	1.8V_SPI_VCC
2	SPI_CS
3	SPI_SO_SW
4	SPI_CLK_SW
5	SPI_SI_SW
6	GND

Table 5-9: SPI Flash Connector (JSPI1) Pinouts

5.2.10 SPI Flash Connector - EC (EC_FLASH1)

PIN NO.	DESCRIPTION
1	GND
2	I2C_DAT
3	I2C_CLK
4	NC

Table 5-10: SPI Flash Connector (EC_FLASH1) Pinouts

5.2.11 TPM Connector (TPM1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
		2	N/C
3	+1.8V	4	N/C
5	GND	6	+1.8V
7	SPI_TPM_CLK_SW	8	N/C
9	N/C	10	SPI_TPM_SO_SW
11	N/C	12	SPI_TPM_SI_SW
13	SPI_TPM_CS#_SW	14	GND
15	N/C	16	N/C
17	TPM_PIRQ_L	18	+1.8V
19	TPM_RST_L	20	N/C

Table 5-11: TPM Connector (TPM1) Pinouts

5.2.12 IPMI Module Slot (J2)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	IPMI_DETECT_N	2	3.3V
3	GND	4	3.3V
5	GND	6	LINK_1G_LED_N
7	USB_D+	8	ACT_LED_N
9	USB_D-	10	N/A

11	GND	12	N/A
13	N/A	14	N/A
15	N/A	16	N/A
17	N/A	18	N/A
19	N/A	20	MDI3_N
21	N/A	22	MDI3_P
23	N/A	24	MDI2_N
25	N/A	26	MDI2_P
27	GND	28	MDI1_N
29	N/A	30	MDI1_P
31	N/A	32	MDI0_N
33	GND	34	MDI0_P
35	N/A	36	LINK_100M_LED_N
37	N/A	38	N/A
39	GND	40	I2C_SCL
41	IPMI_ PCIE_RX_N	42	I2C_SDA
43	IPMI_ PCIE_RX_P	44	BIOS_SPI_CS
45	GND	46	BIOS_SPI_CLK
47	IPMI_ PCIE_TX_N	48	BIOS_SPI_MOSI
49	IPMI_ PCIE_TX_P	50	PLTRST_N
51	GND	52	N/A
53	IPMI_PCIE_CLK_N	54	PCIE_WAKE_N
55	IPMI_PCIE_CLK_P	56	BIOS_SPI_MISO
57	GND	58	LPC_LAD0
59	LPC_RST_N	60	LPC_LAD1
61	LPC_FRAME_N	62	LPC_LAD2
63	LPC_CLK	64	LPC_LAD3
65	LPC_SERIRQ	66	LPC_Espi_SEL
67	N/A	68	N/A
69	N/A	70	3.3V
71	N/A	72	3.3V
73	GND	74	3.3V
75	N/A		

5.2.13 M.2 M-key Slot (NGFF1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	+3.3V
3	GND	4	+3.3V
5	PCIE_RXN3	6	N/C
7	PCIE_RXP3	8	N/C
9	GND	10	DAS/DSS#
11	PCIE_TXN3	12	+3.3V
13	PCIE_TXP3	14	+3.3V
15	GND	16	+3.3V
17	PCIE_RXN2	18	+3.3V
19	PCIE_RXP2	20	N/C
21	GND	22	N/C
23	PCIE_TXN2	24	N/C
25	PCIE_TXP2	26	N/C
27	GND	28	N/C
29	PCIE_RXN1	30	N/C
31	PCIE_RXP1	32	N/C
33	GND	34	N/C
35	PCIE_TXN1	36	N/C
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	Module Key	60	Module Key
61	Module Key	62	Module Key

63	Module Key	64	Module Key
65	Module Key	66	Module Key
67	N/C	68	SUSCLK
69	PEDET	70	+3.3V
71	GND	72	+3.3V
73	GND	74	+3.3V
75	GND		

5.2.14 IEI Networking Module Slots

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
B1	+12v	A1	NC
B2	+12v	A2	+12v
B3	+12v	A3	+12v
B4	GND	A4	GND
B5	SMCLK	A5	NC
B6	SMDAT	A6	NC
B7	GND	A7	NC
B8	+3.3v	A8	NC
B9	NC	A9	+3.3v
B10	3.3Vaux	A10	+3.3v
B11	WAKE#	A11	PWRGD
B12	NC	A12	GND
B13	GND	A13	REFCLK+
B14	HSOp(0)	A14	REFCLK-
B15	HSOn(0)	A15	GND
B16	GND	A16	HSIp(0)
B17	RLYCTL1*	A17	HSIn(0)
B18	GND	A18	GND
B19	HSOp(1)	A19	LANID1**
B20	HSOn(1)	A20	GND
B21	GND	A21	HSIp(1)
B22	GND	A22	HSIn(1)
B23	HSOp(2)	A23	GND

B24	HSOn(2)	A24	GND
B25	GND	A25	HSIp(2)
B26	GND	A26	HSIn(2)
B27	HSOp(3)	A27	GND
B28	HSOn(3)	A28	GND
B29	GND	A29	HSIp(3)
B30	RLYCTL2*	A30	HSIn(3)
B31	NC	A31	GND
B32	GND	A32	LANID2**
B33	HSOp(4)	A33	NC
B34	HSOn(4)	A34	GND
B35	GND	A35	HSIp(4)
B36	GND	A36	HSIn(4)
B37	HSOp(5)	A37	GND
B38	HSOn(5)	A38	GND
B39	GND	A39	HSIp(5)
B40	GND	A40	HSIn(5)
B41	HSOp(6)	A41	GND
B42	HSOn(6)	A42	GND
B43	GND	A43	HSIp(6)
B44	GND	A44	HSIn(6)
B45	HSOp(7)	A45	GND
B46	HSOn(7)	A46	GND
B47	GND	A47	HSIp(7)
B48	NC	A48	HSIn(7)
B49	GND	A49	GND

*PIN B17 & B30 is assigned to Relay control signal; it is only active when inserting a specific LAN module that supports LAN bypass function.

PIN A19 & A32 is identification of PCIe Link configuration. See **Table 5-13 for PCIe Link configuration.

Table 5-12: IEI Networking Module Slot Pinouts

A19	A32	PCIe Config.
0	1	Two x4
1	0	One x8

Table 5-13: PCIe Link Configuration

Appendix

A

Regulatory Compliance

DECLARATION OF CONFORMITY

CE

This equipment is in conformity with the following EU directives:

- EMC Directive 2014/30/EU
- Low-Voltage Directive 2014/35/EU
- RoHS II Directive 2015/863/EU

If the user modifies and/or install other devices in the equipment, the CE conformity declaration may no longer apply.

If this equipment has telecommunications functionality, it also complies with the requirements of the R&TTE Directive 1999/5/EC.

English IEI Integration Corp declares that this equipment is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
Български [Bulgarian] IEI Integration Corp. декларира че този оборудване е в съответствие със съществените изисквания и другите приложими правила на Директива 1999/5/EC.
Česky [Czech] IEI Integration Corp tímto prohlašuje, že tento zařízení je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.
Dansk [Danish] IEI Integration Corp erklærer herved, at følgende udstyr overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
Deutsch [German] IEI Integration Corp erklärt, dass dieses Gerät den grundlegenden Anforderungen sowie den sonstigen einschlägigen Bestimmungen der Richtlinie 1999/5/EG entspricht.
Eesti [Estonian] IEI Integration Corp deklareerib seadme seadme vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.

Español [Spanish] IEI Integration Corp declara que el equipo cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.
Ελληνική [Greek] IEI Integration Corp ΔΗΛΩΝΕΙ ΟΤΙ ΕΞΟΠΛΙΣΜΟΣ ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ.
Français [French] IEI Integration Corp déclare que l'appareil est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.
Italiano [Italian] IEI Integration Corp dichiara che questo apparecchio è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Latviski [Latvian] IEI Integration Corp deklarē, ka iekārta atbilst būtiskajām prasībām un citiem ar to saistītajiem noteikumiem Direktīvas 1999/5/EK.
Lietuvių [Lithuanian] IEI Integration Corp deklaruoja, kad šis įranga atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.
Nederlands [Dutch] IEI Integration Corp dat het toestel toestel in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.
Malti [Maltese] IEI Integration Corp jiddikjara li dan prodott jikkonforma mal-ħtiġijiet essenzjali u ma provvedimenti oħrajn relevanti li hemm fid-Dirrettiva 1999/5/EC.
Magyar [Hungarian] IEI Integration Corp nyilatkozom, hogy a berendezés megfelel a vonatkozó alapvetõ követelményeknek és az 1999/5/EC irányelv egyéb elõírásainak.
Polski [Polish] IEI Integration Corp oświadcza, że wyrobu jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 1999/5/EC.
Português [Portuguese] IEI Integration Corp declara que este equipamento está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.

Româna [Romanian] IEI Integration Corp declară că acest echipament este in conformitate cu cerinţele esenţiale şi cu celelalte prevederi relevante ale Directivei 1999/5/CE.
Slovensko [Slovenian] IEI Integration Corp izjavlja, da je ta opreme v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/ES.
Slovensky [Slovak] IEI Integration Corp týmto vyhlasuje, že zariadenia spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.
Suomi [Finnish] IEI Integration Corp vakuuttaa täten että laitteet on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
Svenska [Swedish] IEI Integration Corp förklarar att denna utrustningstyp står I överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.

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.

ROHS STATEMENT

The label on the product indicates this product conforms to European (EU) Restriction of Hazardous Substances (RoHS) that set maximum concentration limits on hazardous materials used in electrical and electronic equipment.

CHINA ROHS

The label on the product indicates the estimated “Environmentally Friendly Use Period” (EFUP). This is an estimate of the number of years that these substances would “not leak out or undergo abrupt change.” This product may contain replaceable sub-assemblies/components which have a shorter EFUP such as batteries and lamps. These components will be separately marked.

Appendix

B

Safety Precautions

B.1 Safety Precautions

WARNING:

The precautions outlined in this appendix should be strictly followed. Failure to follow these precautions may result in permanent damage to the PUZZLE-5070.

Please follow the safety precautions outlined in the sections that follow:

B.1.1 General Safety Precautions

Please ensure the following safety precautions are adhered to at all times.

- ***Make sure the power is turned off and the power cord is disconnected*** when moving, installing or modifying the system.
- ***Do not apply voltage levels that exceed the specified voltage range***. Doing so may cause fire and/or an electrical shock.
- ***Electric shocks can occur*** if opened while still powered on.
- ***Do not drop or insert any objects*** into the ventilation openings.
- ***If considerable amounts of dust, water, or fluids enter the system***, turn off the power supply immediately, unplug the power cord, and contact the system vendor.
- This equipment is not suitable for use in locations where children are likely to be present.
- **DO NOT**:
  - Drop the system against a hard surface.
  - In a site where the ambient temperature exceeds the rated temperature

B.1.2 Anti-static Precautions

WARNING:

Failure to take ESD precautions during the installation of the PUZZLE-5070 may result in permanent damage to the PUZZLE-5070 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the PUZZLE-5070. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the PUZZLE-5070 is opened and any of the electrical components are 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 any electrical component.
- ***Self-grounding***: Before handling any electrical component, touch any grounded conducting material. During the time the electrical component is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad***: When configuring or working with an electrical component, place it on an anti-static pad. This reduces the possibility of ESD damage.
- ***Only handle the edges of the electrical component***: When handling the electrical component, hold the electrical component by its edges.

B.1.3 Product Disposal

CAUTION:

Risk of explosion if the battery is replaced by an incorrect type;

Replacement of a battery with an incorrect type that can defeat a safeguard (for example, in the case of some lithium battery types);

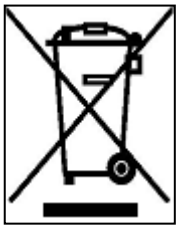
Disposal of a battery into fire or a hot oven, or mechanically crushing or cutting of a battery, that can result in an explosion;

Leaving a battery in an extremely high temperature surrounding environment that can result in an explosion or the leakage of flammable liquid or gas;

A battery subjected to extremely low air pressure that may result in an explosion or the leakage of flammable liquid or gas.

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:



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 display products, 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.

B.2 Maintenance and Cleaning Precautions

When maintaining or cleaning the PUZZLE-5070, please follow the guidelines below.

B.2.1 Maintenance and Cleaning

Prior to cleaning any part or component of the PUZZLE-5070, please read the details below.

- The interior of the PUZZLE-5070 does not require cleaning. Keep fluids away from the PUZZLE-5070 interior.
- Be cautious of all small removable components when vacuuming the PUZZLE-5070.
- Turn the PUZZLE-5070 off before cleaning the PUZZLE-5070.
- Never drop any objects or liquids through the openings of the PUZZLE-5070.
- Be cautious of any possible allergic reactions to solvents or chemicals used when cleaning the PUZZLE-5070.
- Avoid eating, drinking and smoking within vicinity of the PUZZLE-5070.

B.2.2 Cleaning Tools

Some components in the PUZZLE-5070 may only be cleaned using a product specifically designed for the purpose. In such case, the product will be explicitly mentioned in the cleaning tips. Below is a list of items to use when cleaning the PUZZLE-5070.

- ***Cloth*** – Although paper towels or tissues can be used, a soft, clean piece of cloth is recommended when cleaning the PUZZLE-5070.
- ***Water or rubbing alcohol*** – A cloth moistened with water or rubbing alcohol can be used to clean the PUZZLE-5070.
- ***Using solvents*** – The use of solvents is not recommended when cleaning the PUZZLE-5070 as they may damage the plastic parts.
- ***Vacuum cleaner*** – Using a vacuum specifically designed for computers is one of the best methods of cleaning the PUZZLE-5070. Dust and dirt can restrict the airflow in the PUZZLE-5070 and cause its circuitry to corrode.
- ***Swabs*** - Swaps moistened with rubbing alcohol or water are excellent tools for wiping hard to reach areas. Whenever possible, it is best to use lint free swabs such as foam swabs for cleaning.

Appendix

C

Error Beep Code

C.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

C.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

D

Hazardous Materials Disclosure

D.1 RoHS II Directive (2015/863/EU)

The details provided in this appendix are to ensure that the product is compliant with the RoHS II Directive (2015/863/EU). The table below acknowledges the presences of small quantities of certain substances in the product, and is applicable to RoHS II 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 (PBB)	Polybrominated Diphenyl Ethers (PBDE)	Bis(2-ethylhexyl) phthalate (DEHP)	Butyl benzyl phthalate (BBP)	Dibutyl phthalate (DBP)	Diisobutyl phthalate (DIBP)
Housing	O	O	O	O	O	O	O	O	O	O
Display	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.

D.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
显示	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。