IEi

IEI Integration Corp.

MODEL:

PUZZLE-7030A

1U Network Appliance with Intel® Xeon® D Processor, Four DDR4, Eight 2.5 GbE Ports, Five 10GbE SFP+, PCIe x8, OCP 3.0, M.2, USB 3.0, Console Ports, Redundant PSU, Rack Mount, and RoHS Compliant

User Manual

Rev. 1.00 – August 29, 2023

RoHS Lead Free

Revision

Date	Version	Changes
August 29, 2023	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-7030A Series

The PUZZLE-7030A is a 1 U network appliance series powered by Intel® Xeon® D Processor series. It is optimized to host VNFs (Virtual Network Functions) and is ideal for SD-WAN.

The PUZZLE-7030A supports eight copper 2.5GbE ports for high-speed network applications, and five 10GbE SFP+ connections. It is equipped with PCIe slots and OCP 3.0 slot for upgrading with expansion cards, such as NIC cards or accelerator cards. It also supports IPMI via an optional IEI module that allows remote management of the system.

Multiple storage interfaces for fast and stable data transmission are offered through two SATA 6Gb/s connectors and two M.2 slots that supports SSD module.

1.2 Model Variations

The model variations of the PUZZLE-7030A are listed below.

Model Name	CPU
PUZZLE-7030A-D1733NT	Intel® Xeon® D-1733NT (15M cache, up to 3.10 GHz)
PUZZLE-7030A-D1736NT	Intel® Xeon® D-1736NT (15M cache, up to 3.50 GHz)

Table 1-1: PUZZLE-7030A Model Variations

1.3 Features

The PUZZLE-7030A features are listed below:

- Powered by Intel® Xeon® D Processor series

- Support four 2400/2933 MHz DDR4 ECC UDIMMs/RDIMMs (up to 256 GB)

- Support up to eight 2.5GbE connections via Intel® I225V Ethernet controllers

- Support up to five 10GbE SFP+

- Upgradable with future expansion cards by one OCP 3.0 slot, and one PCIe Gen4 x8 slot / two PCIe Gen4 x4 slots

- Console ports via RJ-45 and USB Type-C

- Support two 2.5" SATA 6Gb/s SSD/HDD and two M.2 M key (SATA & PCIe Gen3 x2)

- Supports IPMI via IEI iRIS2 IPMI module

- Supports two USB 3.0 ports (5Gb/s)

- 1U chassis for rack mounting

- RoHS compliant

1.4 Front Panel

The overview of the front panel is shown in **Figure 1-2**.
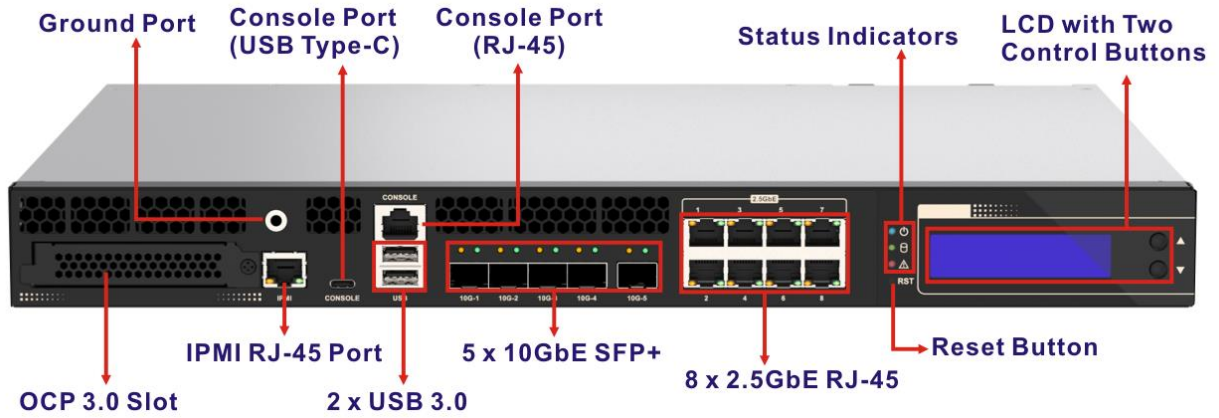
Figure 1-2: PUZZLE-7030A Front Panel

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

	Off	The system is turned off.
Power LED	Blue	The system is turned on.
HDD Status LED	Off	No HDD activity
	Blinking Green	HDD activity
Alert LED	Off	No alert
	Red	Alert message

1.5 Rear Panel

An overview of the PUZZLE-7030A rear panel is shown in **Figure 1-3** below.
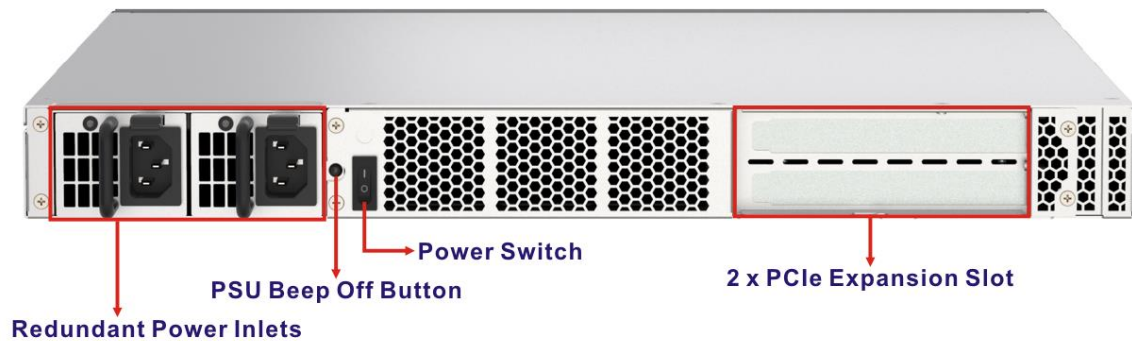
Figure 1-3: PUZZLE-7030A Rear Panel

1.6 Technical Specifications

The PUZZLE-7030A technical specifications are listed in **Table 1-2**.

System	
Form Factor	1U
CPU (SoC)	Intel® Xeon® D Processor (codenamed: Ice Lake-D LCC) Intel® Xeon® D-1733NT (15M cache, up to 3.10 GHz) Intel® Xeon® D-1736NT (15M cache, up to 3.50 GHz)
Chipset	Integrated in CPU
Memory	4 x 288-pin 2400/2933 MHz DDR4 ECC UDIMM/RDIMM slots (max. capacity: based on DIMM capacity)
Network & Security	・ Intel® AES New Instructions ・ Intel® Software Guard Extensions (Intel® SGX) ・ Intel® Memory Protection Extensions (Intel® MPX) ・ Intel® Trusted Execution Technology
TPM	1 x TPM 2.0 (2x10 pin header)

Networking	8 x Copper 2.5GbE LAN port (by Intel® I225V)
	5 x 10GbE SFP+
Storage	2 x 2.5" SATA 6Gb/s HDD/SSD bay
	2 x M.2 M key 2280 (SATA, PCIe Gen3 x2)
Expansion	
PCIe	PCIe x8:
	1 x PCIe Gen4 x8 (FH) or
	2 x PCIe Gen4 x4 (FH)
OCP 3.0	1 x Standard OCP 3.0 slot
IPMI	1 x IPMI module slot (supports IEI iRIS2 IPMI module)
	1 x 1GbE RJ-45 for IPMI port
I/O and Indicators	
Console	1 x RJ-45
	1 x USB Type-C
USB	2 x USB 3.0 port (5 Gb/s, Type-A)
Indicator	LCM (with two control buttons)
	Power status (blue)
	HDD status (green)
	Alert LED (programmable, red)
Switch/Button	Power switch (rear panel)
	Reset button (front panel)
Grounding	1 x Ground port for banana plug (4mm)
Power	
Power Input	100 V ~ 240 V, 60 Hz ~ 50 Hz
Type/Watt	320 W redundant/non-redundant power
Thermal Solution	1 x Passive heat sink for CPU
	3 x Smart fan for system
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	430 mm x 425 mm x 44.2 mm (W x D x H)
Operating System	Ubuntu, Linux based OS

Table 1-2: Technical Specifications

1.7 Dimensions

The physical dimensions are shown below:
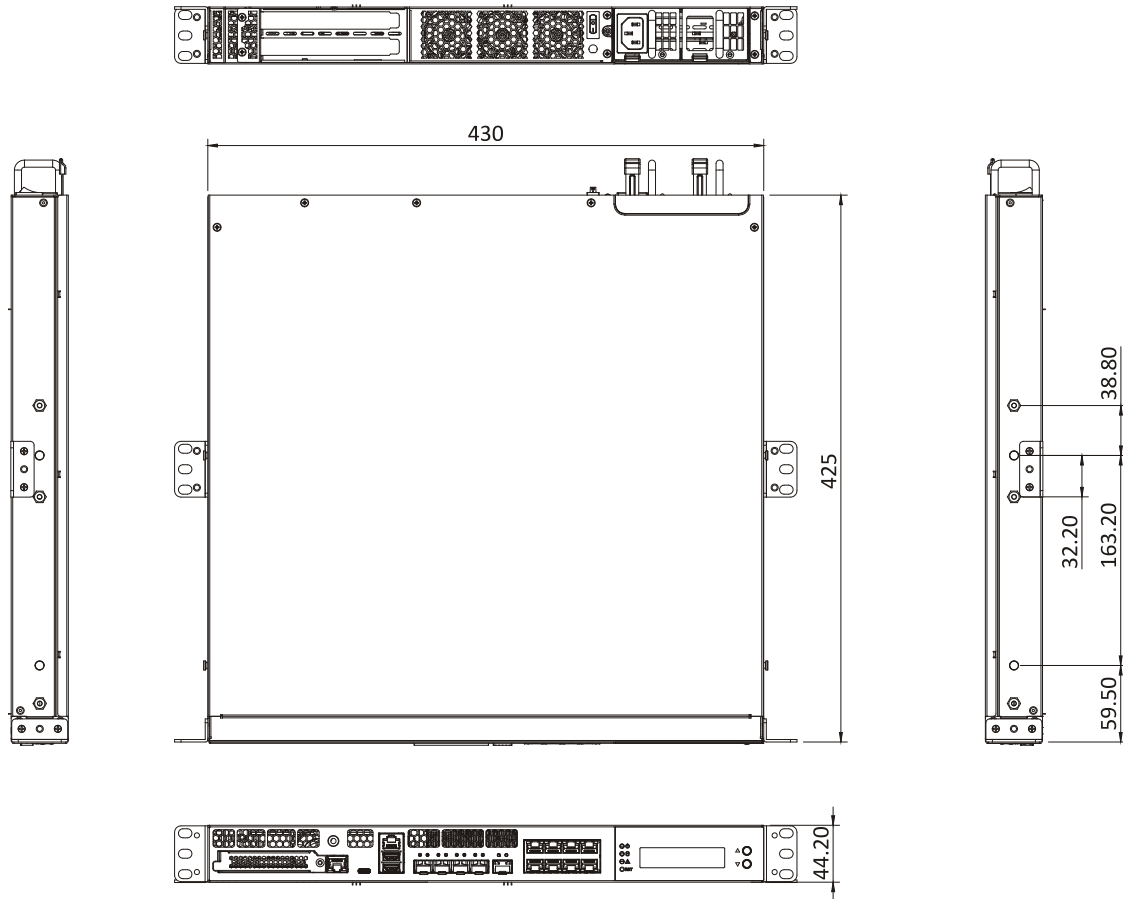
Figure 1-4: Physical Dimensions (millimeters)

Chapter

2

Unpacking

2.1 Anti-static Precautions

WARNING:

Failure to take ESD precautions during installation may result in permanent damage to the PUZZLE-7030A and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the PUZZLE-7030A. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the PUZZLE-7030A 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-7030A, place it on an anti-static pad. This reduces the possibility of ESD damaging the PUZZLE-7030A.

2.2 Unpacking Precautions

When the PUZZLE-7030A 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-7030A 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-7030A from or contact an IEI sales representative directly. To contact an IEI sales representative, please send an email to sales@ieiworld.com.

The PUZZLE-7030A is shipped with the following components:

Quantity	Item	Image
1	PUZZLE-7030A	
2	Power cord	
2	Rack mount brackets (*Note: The brackets must be used with sliding rails.*)	
6	Mounting bracket screw (M4*6)	
12	Screws (M3*4) for 2.5" drive	

2.4 Optional Items

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

Optional Item	Image
Sliding rails (**P/N**: RAIL-B02)	
Console cable (USB to RJ-45) (**P/N**: 32013-004000-100-RS)	
Console cable (RS-232 DB-9 to RJ-45) (**P/N**: 32005-005100-100-RS)	

Chapter

3

Installation

3.1 Installation Precautions

⚡ **CAUTION!**

The PUZZLE-7030A 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-7030A series.
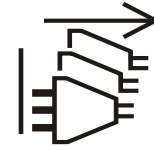
During installation, be aware of the precautions below:

- **Read the user manual**: The user manual provides a complete description of the PUZZLE-7030A, installation instructions and configuration options.
- **DANGER! Disconnect Power**: Power to the PUZZLE-7030A 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-7030A 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-7030A. The PUZZLE-7030A's cooling vents must not be obstructed by any objects. Blocking the vents can cause overheating of the PUZZLE-7030A. Leave at least 5 cm of clearance around the PUZZLE-7030A to prevent overheating.
- **Grounding**: The PUZZLE-7030A 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-7030A.

3.2 Top Cover Removal

Before installing or maintaining the internal components, the top cover must be removed from the PUZZLE-7030A. Follow the steps below to complete the task.

Step 1: Remove the five retention screws indicated in **Figure 3-1**.

Step 2: Slide the top cover towards the rear side and gently lift the top cover (**Figure 3-1**).
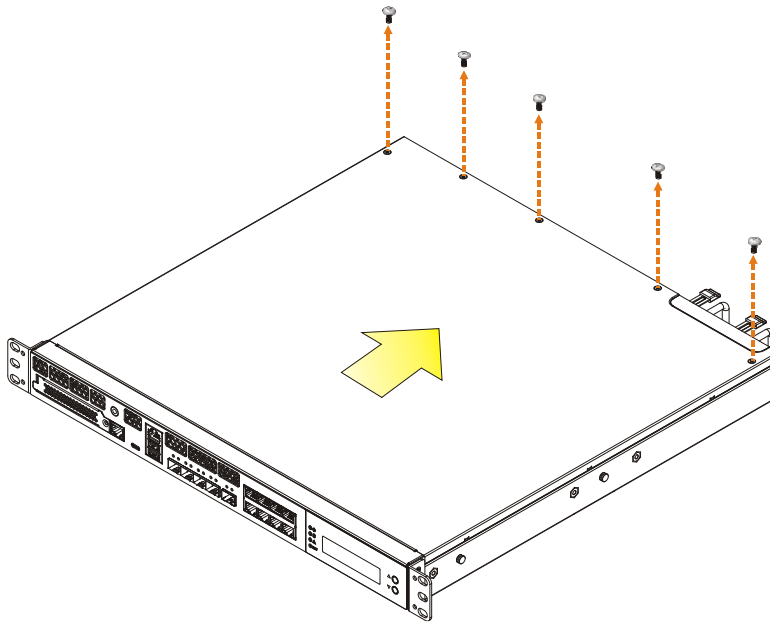
Figure 3-1: Top Cover Removal

3.3 DIMM Installation

⚠️ **CAUTION:**

1. To use one or two DIMM, be sure to install the memory module(s) in the **blue** slot(s).

2. 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 the DIMM module, please follow the steps below.

Step 1: Remove the top cover from the PUZZLE-7030A. Please follow the instruction described in **Section 3.2**.

Step 2: Locate the DIMM slots on the motherboard.
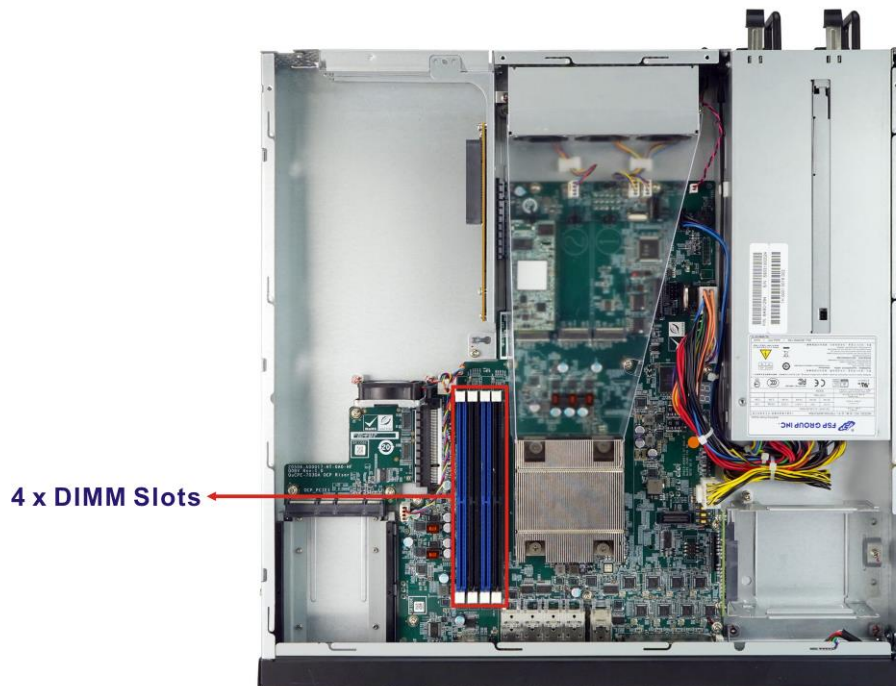
4 x DIMM Slots

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.

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

3.4 HDD Installation

The PUZZLE-7030A allows installation of two 2.5" SATA HDD/SSD. To install HDDs into the system, please follow the steps below.

Step 1: Remove the top cover from the PUZZLE-7030A. Please follow the instruction described in **Section 3.2**.

Step 2: Remove the HDD bracket from the system. To do this, remove the three retention screws indicated below. Lift the bracket to disconnect the SATA connector module from the motherboard.
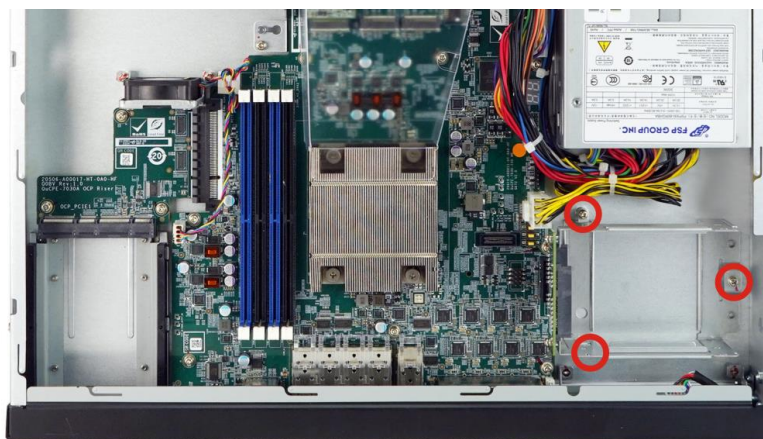
Figure 3-3: HDD Bracket Retention Screws

Step 3: Insert an HDD into the bracket until the HDD is properly connected to the SATA connector. Secure the HDD with four retention screws (M3*4). See **Figure 3-5**.

Figure 3-4: Secure HDD to the Bracket

Step 4: Re-connect the SATA connector module to the motherboard (**Figure 3-5**). Secure the bracket to the chassis with three screws removed previously.

Figure 3-5: HDD Installation

Step 5: Re-install and secure the top cover to the system.

3.5 PCIe Expansion Card Installation

The PUZZLE-7030A allows installation of one PCIe x8 card or two PCIe x4 cards. To install a PCIe expansion card, please follow the steps below.

Step 1: Remove the top cover from the PUZZLE-7030A (refer to **Section 3.2**).

Step 2: Remove the four expansion slot module retention screws indicated below.
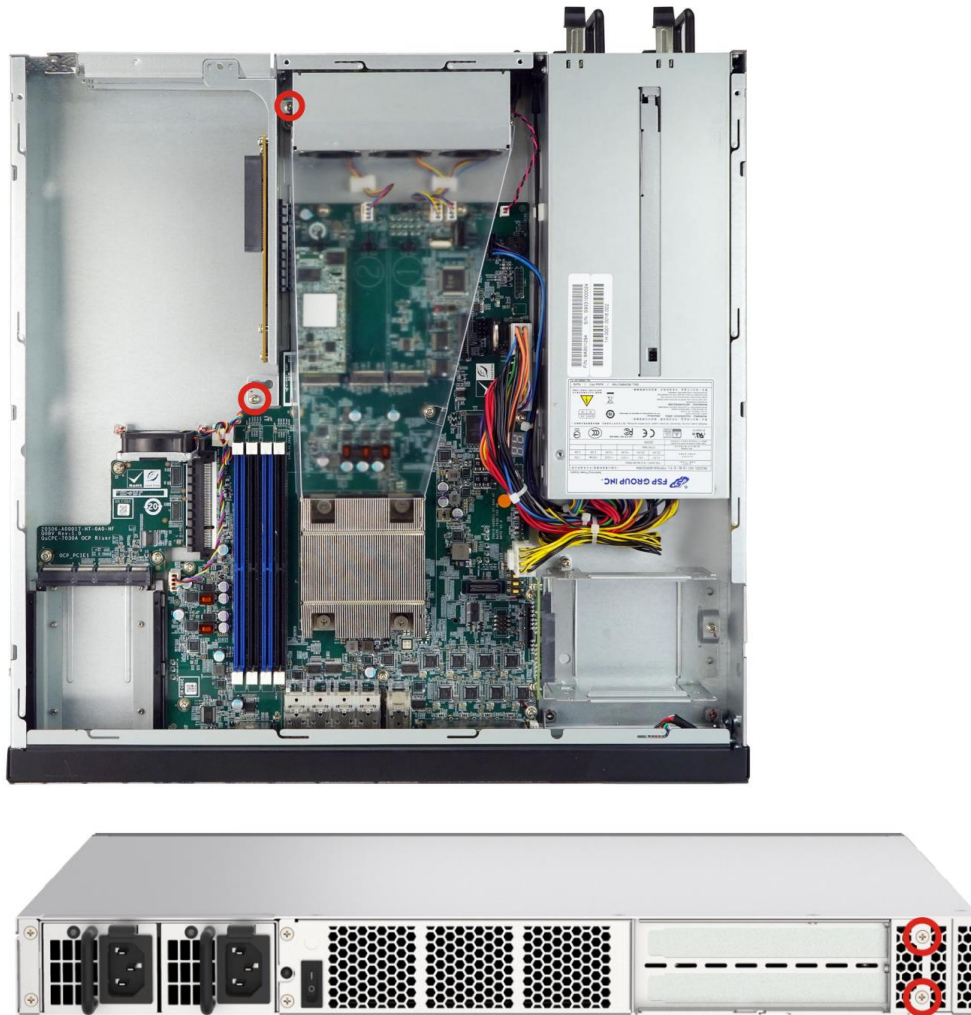
Figure 3-6: Expansion Slot Module Retention Screws

Step 3: Push the expansion slot module to disconnect the module from the edge connector of the motherboard.
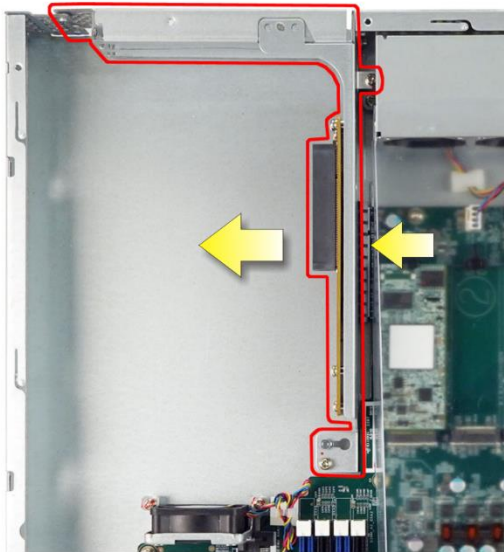
Figure 3-7: Disconnect the Expansion Slot Module

Step 4: Remove the blank bracket panel(s) that aligns with the PCIe slot for installing the expansion card. Save the bracket screw(s).

Step 5: Align the expansion card to the PCIe slot. Press gently, but firmly, to seat the expansion card correctly in the slot. Install the bracket screw(s) to secure the card to the expansion slot module.

Figure 3-8: PCIe Expansion Card Installation

Step 6: Place the expansion slot module back to the original position by hooking the slotted hole into the positioning stud in the chassis (**Figure 3-9 A**). Push the connector of the expansion slot module into the edge connector to install it. During installation, ensure that

1. the connector on the slot module is properly aligned and connected to the edge connector;

2. the two studs on the side is going through the two holes in the chassis;

3. the slot module tab is going under the chassis tab.
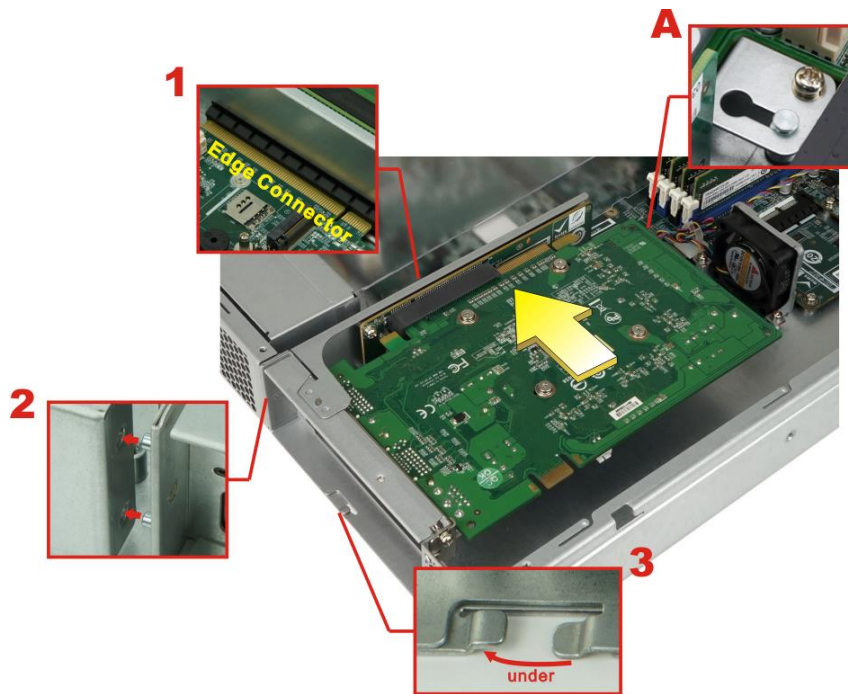
Figure 3-9: Expansion Slot Module Installation

Step 7: Secure the expansion slot module with the four retention screws previously removed.

3.6 OCP 3.0 Card Installation

The PUZZLE-7030A has one OCP 3.0 slot that allows installation of OCP 3.0 compatible cards. To install an OCP 3.0 card, please follow the steps below.

Step 1: Disconnect all power sources from the system. <u>**NOTE:** To install or replace the OCP 3.0 card, the power supply must be fully disconnected before installation.</u>

Step 2: Remove the screw indicated below to remove the slot cover.

Figure 3-10: OCP 3.0 Slot Cover Screw

Step 3: Slide an OCP 3.0 card into the slot until the card is seated in the slot correctly and securely.

⚠ CAUTION:

When inserting the card, the bottom of the OCP 3.0 card must be as close to the system base as possible so that it can be slid into the guide rails.

When removing the card, slide the card horizontally all the way until it is completely out of the system. Lifting up the card before completely sliding out may cause the components on the card to be damaged by the chassis structure.
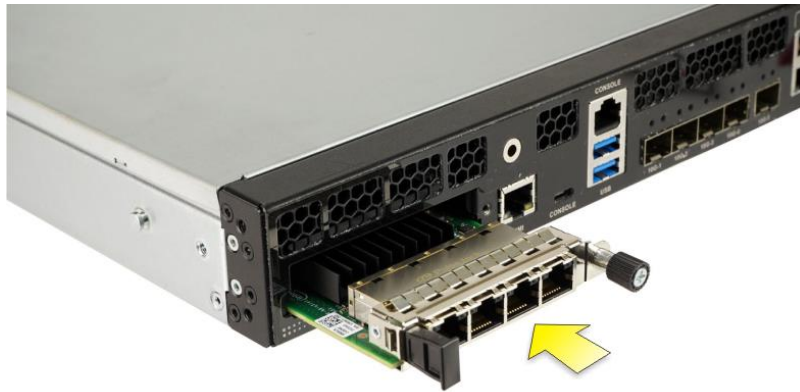
Figure 3-11: OCP 3.0 Card Installation

3.7 M.2 Module Installation

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

Step 1: Remove the top cover from the PUZZLE-7030A. See **Section 3.2**.

Step 2: Remove the cover retention screw to remove the airflow cover.

Step 3: Locate the M.2 slot on the motherboard. Pull out the hold-down pin.
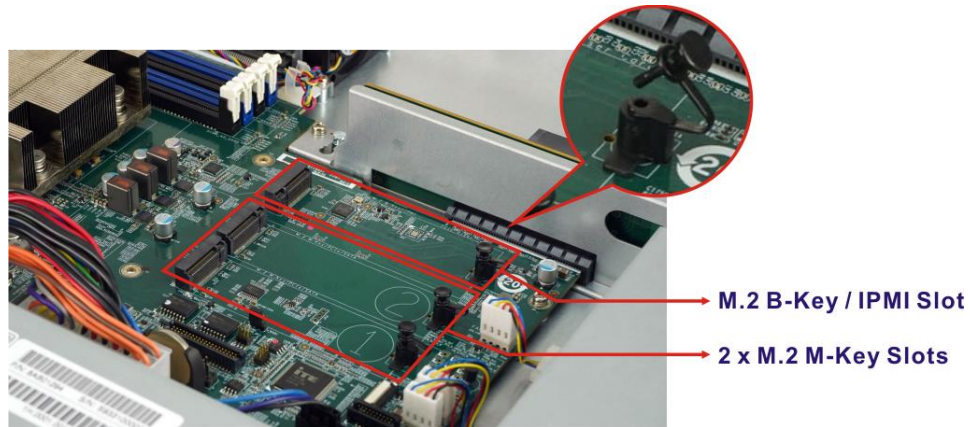
Step 4: Line up the notch on the module with the notch on the slot. Slide the M.2 module into the socket at an angle of about 20º.

Step 5: Push the M.2 module down and secure it with the hold-down pin.

3.8 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.

3.8.1 LAN Connection - 2.5GbE

The 2.5GbE 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	MDIA3-	5	MDIA1+
2	MDIA3+	6	MDIA2+
3	MDIA2-	7	MDIA0-
4	MDIA1-	8	MDIA0+

Table 3-1: 2.5GbE Port Pinouts
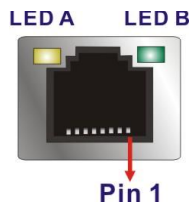
Figure 3-12: RJ-45 2.5GbE Connector

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

LED	Description	LED	Description
A	On (yellow): linked blinking: data is being sent/received	B	off: 10 Mb/s amber: less than 2500 Mb/s green: 2500 Mb/s

Table 3-2: RJ-45 2.5GbE Connector LEDs

3.8.2 LAN Connection - 10GbE SFP+

The 10GbE SFP+ connectors on the front panel allow transfer rate of up to 10 gigabits per second. The pinouts of the 10GbE LAN connectors are listed below.

Pin	Description	Pin	Description
1	GND	11	GND
2	SFP+_TX_FAULT	12	SFP+_RX-
3	SFP+_TX_DISABLE	13	SFP+_RX+
4	SFP+_SDA	14	GND
5	SFP+_SCL	15	SFP+_VCCR
6	SFP+_MOD_ABS	16	SFP+_VCCT
7	SFP+_RS0	17	GND
8	SFP+_LOS	18	SFP+_TX+
9	SFP+_RS1	19	SFP+_TX-
10	GND	20	GND

Table 3-3: 10GbE Port Pinouts
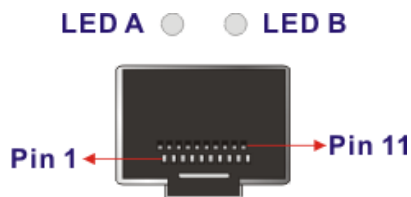
Figure 3-13: 10GbE SFP+ Connector

The 10GbE SFP+ connector has two status LEDs. See **Table 3-4**.

LED	Description	LED	Description
A	off: not connected amber: non-10G network green: 10G	B	On (amber): linked* blinking: data is being sent/received
*Intel limitation: When plugging in LAN cable (more than 1 port), LED might not flash due to less data transmission.			

Table 3-4: 10GbE SFP+ Connector LEDs

3.8.3 IPMI Connection

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

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

Table 3-5: IPMI LAN Port Pinouts
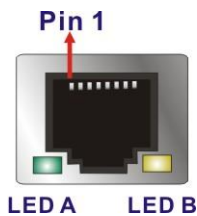
Figure 3-14: IPMI LAN Connector

The IPMI LAN connector has two status LEDs, one yellow and one green/amber. The yellow LED indicates activity on the port and the green/amber LED indicates the speed. See **Table 3-6**.

LED	Description	LED	Description
A	off: 10 Mb/s amber: 100 Mb/s green: 1000 Mb/s	B	On (yellow): linked blinking: data is being sent/received
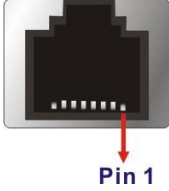
Table 3-6: IPMI LAN Connector LEDs

3.8.4 Console Connection

The PUZZLE-7030A has one RJ-45 console port on the front panel. The RJ-45 connector for the console port can be identified easily as the RJ-45 for the network has two LEDs on the port, while the connectors for the console port cables don't. The pinouts of the console port are listed below.
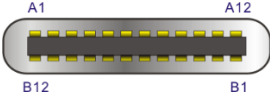
Pin	Description	Pin	Description	
1	NRTS1	5	GND	
2	NDTR1	6	NSIN1	
3	NSOUT1	7	NDSR1	
4	GND	8	NCTS1	

Table 3-7: RJ-45 Console Port Pinouts

The PUZZLE-7030A also has one USB Type-C console port on the front panel. The pinouts of the USB Type-C console port are listed below.

Pin	Description	Pin	Description	
A1	GND	B12	GND	
A2	N/C	B11	N/C	
A3	N/C	B10	N/C	
A4	USB_C_5V	B9	USB_C_5V	
A5	USB_CC1	B8	N/C	
A6	USB_C_DP	B7	USB_C_DN	
A7	USB_C_DN	B6	USB_C_DP	
A8	N/C	B5	USB_CC2	
A9	USB_C_5V	B4	USB_C_5V	
A10	N/C	B3	N/C	
A11	N/C	B2	N/C	
A12	GND	B1	GND	

Table 3-8: USB Type-C Console Port Pinouts

3.8.4.1 Enable Console Port When Booting

To configure the PUZZLE-7030A to make it auto enable the console port when booting, follow the steps below.

![NOTE icon] **NOTE:**

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

Step 1: Use a console cable to connect to one of the console port of the PUZZLE-7030A 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 COM3.
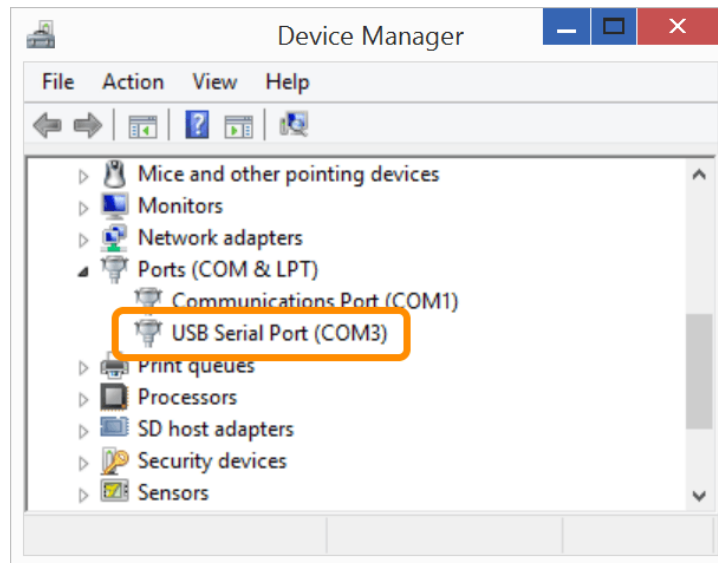
Step 3: Open a serial console application, PuTTY, as an example.

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

Step 5: Click "Open" on PuTTY.
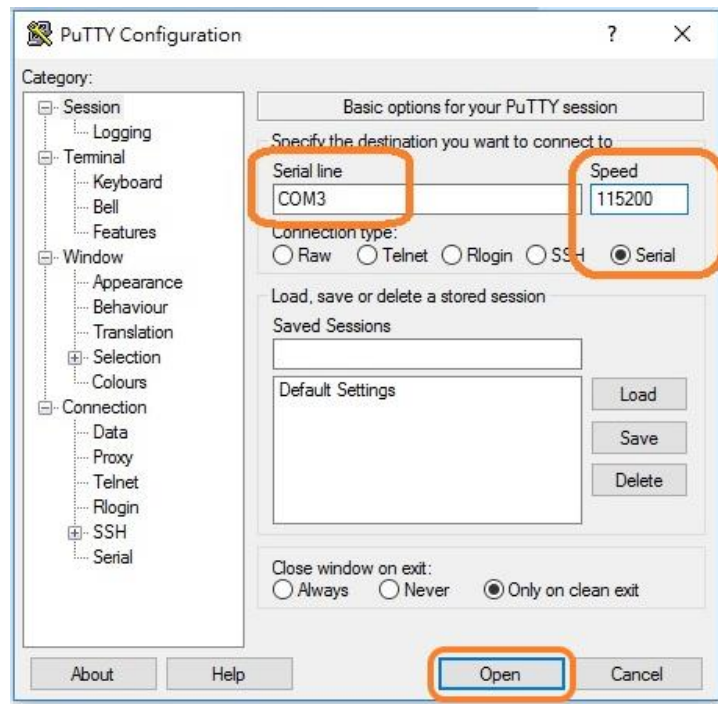
Step 6: Enter the following command:

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

3.9 Rack Mount

The PUZZLE-7030A 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-7030A into a rack, please follow the steps below.

![warning icon] **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-7030A by inserting two retention screws (M4*6) into each bracket (**Figure 3-15**). Make sure the screws are tight and on the right positions.
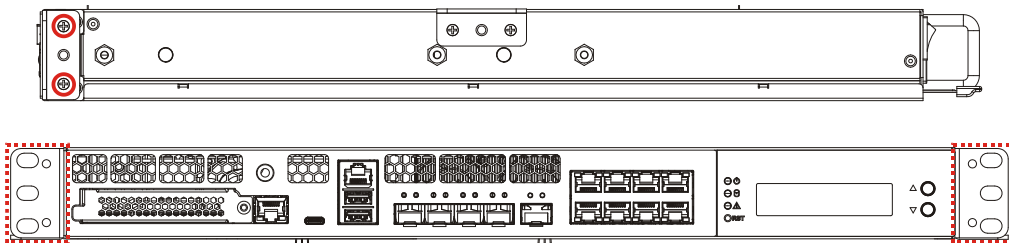
Figure 3-15: Rack Mount Bracket Installation

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-7030A 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-7030A to the front of the rack.

3.10 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-7030A 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 blue.

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

Username: puzzle

Password: admin

NOTE:

Connecting only one power supply will trigger the beep sound. If redundant power usage is not necessary for the application, press the PSU beep off button to disable the beep sound.

3.11 Resource Download

All the resources for the PUZZLE-7030A are available on IEI Resource Download Center (https://download.ieiworld.com). Type PUZZLE-7030A and press Enter to find all the relevant software, utilities, and documentation.
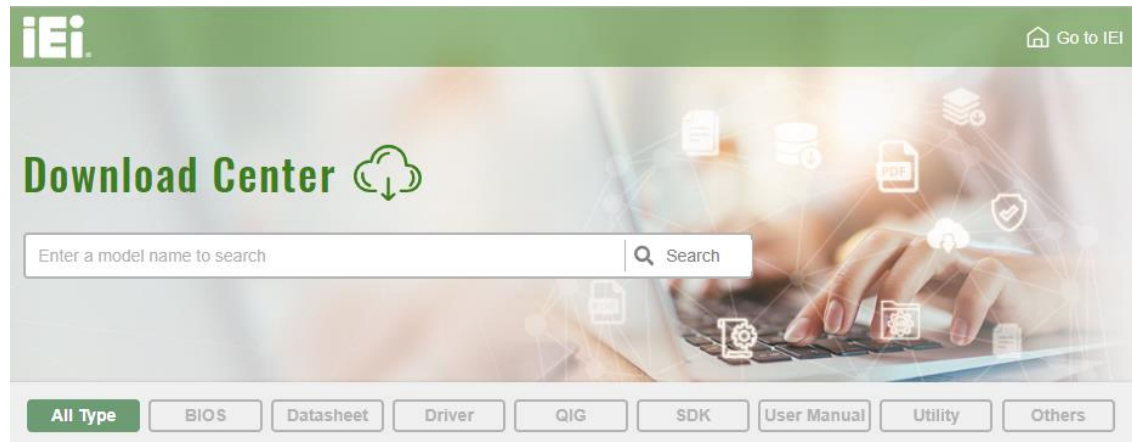
Figure 3-16: IEI Resource Download Center

3.12 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-7030A, 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**.

3.12.1 Power Supply Unit Replacement

To replace a failed power supply unit, please follow the steps below.

Step 1: Turn off the PUZZLE-7030A. Disconnect the power cords, network cable(s), and any other connectors or cables from the PUZZLE-7030A.

Step 2: Firmly press and hold the black button on back of PSU downwards. Pull out power supply by pulling the black handle.
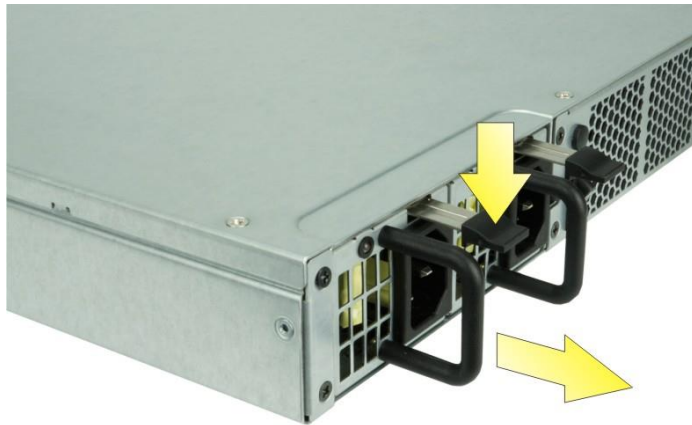
Step 3: Insert new power supply into the PUZZLE-7030A.

Step 4: Connect the power cord to the PUZZLE-7030A.

Step 5: Power on the system.

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 icon] **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.
- Chipset – Changes the chipset settings.
- Socket – Changes the CPU settings.
- Server Mgmt – Configure server management settings.
- Security – Sets User and Supervisor Passwords.
- Boot – Changes the system boot configuration.
- Save & Exit – Selects exit options and loads default settings

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

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  Chipset   Socket   Server Mgmt  Security  Boot  Save & Exit

 BIOS Information                                      Set the Date. Use Tab to
 BIOS Vendor                      American             switch between Date
 Megatrends                                            elements.
 Core Version                     5.25
 Compliancy                       UEFI 2.8; PI 1.7
 Project Version                  Z799AR11 x64
 Build Date and Time              06/06/2023
 13:35:45

 Platform Information
 Platform                         ServerSocIdaville
 Processor                        606C1 - ICX-D B0
 PCH                              CDF SKU - B1         ----------------------
 RC Revision                      21.D40
 BIOS ACM                         1.0.0               →←: Select Screen
 SINIT ACM                        1.0.0               ↑↓: Select Item
                                                      Enter: Select
                                                      +/-:  Change Opt.
 Memory Information                                   F1:  General Help
 Total Memory                     32768 MB            F2:  Previous Values
                                                      F3:  Optimized Defaults
 EC Information                                       F4:  Save & Exit
 EC Version                       Z799ER11            ESC: Exit

 System Date                      [Thu 01/01/2019]
 System Time                      [01:10:27]

              Version 2.22.1283 Copyright (C) 2023 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 peripheral devices through the following sub-menus:

![WARNING icon] **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  Chipset   Socket   Server Mgmt  Security  Boot  Save & Exit

   Restore AC Power Loss          [Last State]         Select AC power state
 > Trusted Computing                                   when power is re-applied
 > Hardware Monitor                                    after a power failure
 > Serial Port Console Redirection
 > Network Stack Configuration
                                                       ---------------------
                                                       →←: Select Screen
                                                       ↑↓: Select Item
                                                       Enter: Select
                                                       +/-:  Change Opt.
                                                       F1:   General Help
                                                       F2:   Previous Values
                                                       F3:   Optimized Defaults
                                                       F4:   Save & Exit
                                                       ESC: Exit
               Version 2.22.1283 Copyright (C) 2023 AMI
```

BIOS Menu 2: Advanced

➔ **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.

4.3.1 Trusted Computing

Use the **Trusted Computing** menu (**BIOS Menu 3**) to configure settings related to the Trusted Computing Group (TCG) Trusted Platform Module (TPM).

```
                            Aptio Setup - AMI
      Advanced

Configuration                                        Enables or Disables BIOS
  Security Device Support        [Enable]            support for security
  NO Security Device Found                           device. O.S. will not
                                                     show Security Device.
                                                     TCG EFI protocol and
                                                     INT1A interface will not
                                                     be available.

                                                     ----------------------
                                                     →←: Select Screen
                                                     ↑ ↓: Select Item
                                                     Enter: Select
                                                     +/-:  Change Opt.
                                                     F1:  General Help
                                                     F2:  Previous Values
                                                     F3:  Optimized
                                                     Defaults
                                                     F4:  Save & Exit
                                                     ESC: Exit

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```
BIOS Menu 3: Trusted Computing

➔ **Security Device Support [Enable]**

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

➔ **Disable**   TPM support is disabled.

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

4.3.2 Hardware Monitor

The **Hardware Monitor** menu (**BIOS Menu 4**) displays the system temperature and CPU fan speed.

```
                        Aptio Setup - AMI
         Advanced

PC Health Status                                    Enable or Disable Smart
                                                    Fan
Smart Fan Function             [Auto]
CPU1 temperature               :+44 °C
System temperature1            :+28 °C

CPU Fan1 Speed                 :5284 RPM
CPU Fan2 Speed                 :5259 RPM
CPU Fan3 Speed                 :5310 RPM         --------------------
System Fan1 Speed              :1666 RPM         ➔←: Select Screen
                                                 ↑ ↓: Select Item
VIN_5V                         :+4.914 V         Enter: Select
VSB5V                          :+5.052 V         +/-:  Change Opt.
VIN_12V                        :+12.129 V        F1:  General Help
VIN_3.3V                       :+3.266 V         F2:  Previous Values
                                                 F3:  Optimized Defaults
                                                 F4:  Save & Exit
                                                 ESC: Exit
             Version 2.22.1283 Copyright (C) 2023 AMI
```

BIOS Menu 4: Hardware Monitor

➔ **Smart Fan Function [Auto]**

Use the **Smart Fan Function** options to configure the CPU Smart Fans.

➔ **Auto**   DEFAULT The fan adjusts its speed using Auto Mode settings.

➔ **Manual**   The fan spins at the speed set in Manual Mode settings.

➔ **PC Health Status**

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

- Temperatures:
  - ○ CPU1 temperature
  - ○ System temperature1

- Fan Speeds:
  - ○ CPU Fan1 Speed
  - ○ CPU Fan2 Speed
  - ○ CPU Fan3 Speed
  - ○ System Fan1 Speed

- Voltages:
  - ○ VIN_5V
  - ○ VSB5V
  - ○ VIN_12V
  - ○ VIN_3.3V

4.3.3 Serial Port Console Redirection

The **Serial Port Console Redirection** menu (**BIOS Menu 5**) 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.

```
                        Aptio Setup – AMI
        Advanced

 COM1                                          Console Redirection Enable
  Console Redirection     [Enabled]            or Disable.
> Console Redirection Settings

 COM(BMC)                                      --------------------
  Console Redirection     [Disabled]           ←→: Select Screen
> Console Redirection Settings                 ↑↓: Select Item
                                               EnterSelect
                                               +/-: Change Opt.
                                               F1   General Help
                                               F2   Previous Values
                                               F3   Optimized
                                               Defaults
                                               F4   Save & Exit
                                               ESC  Exit
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```
BIOS Menu 5: 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

➔ **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**   D<small>EFAULT</small>   Sets the number of stop bits at 1.

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

4.3.4 Network Stack Configuration

Use the **Network Stack Configuration** menu (**BIOS Menu 6**) to configure UEFI network stack.

```
                         Aptio Setup - AMI
            Advanced

Network Stack                    [Disabled]           Enable/Disable UEFI
                                                      Network Stack


                                                      --------------------
                                                      →←: Select Screen
                                                      ↑ ↓: Select Item
                                                      Enter:  Select
                                                      +/-:  Change Opt.
                                                      F1:   General Help
                                                      F2:   Previous Values
                                                      F3:    Optimized
                                                      Defaults
                                                      F4:   Save & Exit
                                                      ESC:  Exit
                  Version 2.22.1283 Copyright (C) 2023 AMI
```
BIOS Menu 6: Network Stack Configuration

4.4 Chipset

Use the **PCH-IO Configuration** menu (**BIOS Menu 7**) to configure the PCH parameters.

```
                        Aptio Setup – AMI
 Main   Advanced   Chipset    Socket    Server Mgmt  Security  Boot  Save & Exit

 > PCH-IO Configuration                              PCH Parameters

 -------------------------------------------------   --------------------
 Setup Warning:                                      →←: Select Screen
 Setting items on this Screen to incorrect values    ↑ ↓: Select Item
 may cause system to malfunction!                    Enter:  Select
                                                     +/-:  Change Opt.
                                                     F1:   General Help
                                                     F2:   Previous Values
                                                     F3:   Optimized
                                                     Defaults
                                                     F4:   Save & Exit
                                                     ESC: Exit

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```
BIOS Menu 7: Chipset

4.4.1 SATA Configuration

Use the **SATA Configuration** menu (**BIOS Menu 8**) to change and/or set the configuration of the M.2 slots on the motherboard.
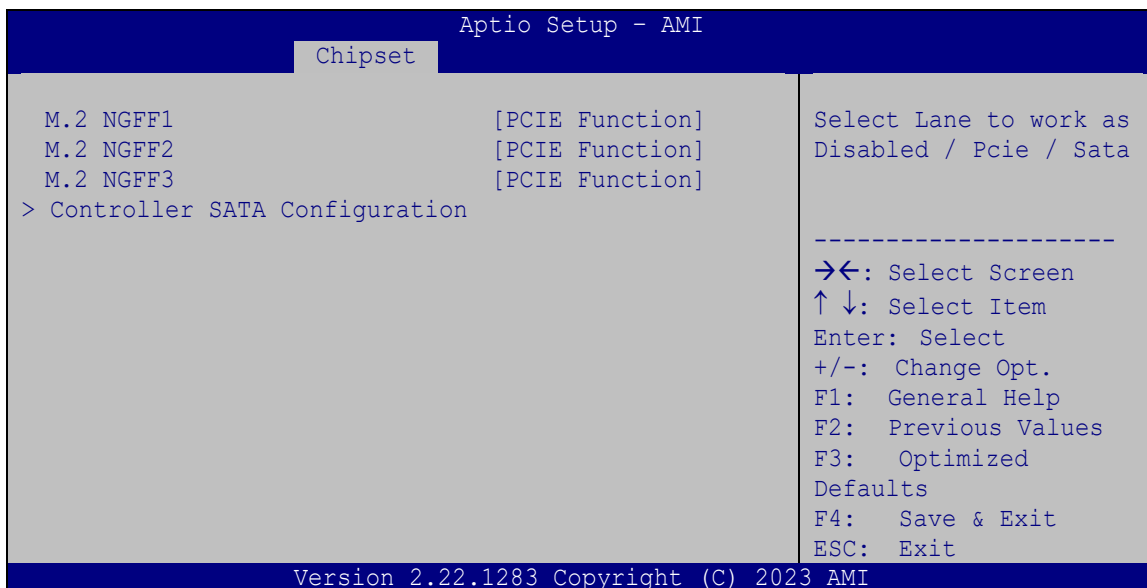
```
                        Aptio Setup – AMI
                 Chipset

 M.2 NGFF1                    [PCIE Function]         Select Lane to work as
 M.2 NGFF2                    [PCIE Function]         Disabled / Pcie / Sata
 M.2 NGFF3                    [PCIE Function]
 > Controller SATA Configuration
                                                     --------------------
                                                     →←: Select Screen
                                                     ↑ ↓: Select Item
                                                     Enter: Select
                                                     +/-:  Change Opt.
                                                     F1:   General Help
                                                     F2:   Previous Values
                                                     F3:   Optimized
                                                     Defaults
                                                     F4:   Save & Exit
                                                     ESC:  Exit

              Version 2.22.1283 Copyright (C) 2023 AMI
```
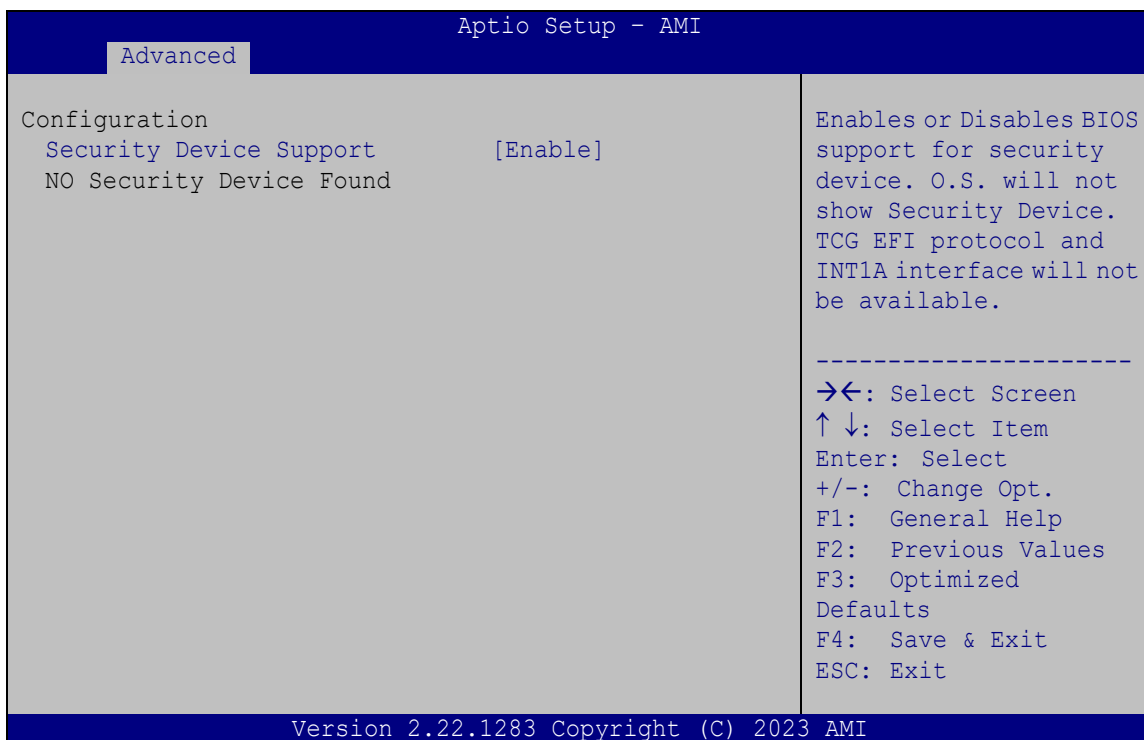**BIOS Menu 8: SATA Configuration**

➔ **M.2 NGFF [PCIE Function]**

Use the **M.2 NGFF** option to configure the M.2 slots to PCIe mode or SATA mode.

➔ **PCIE Function** DEFAULT Configures the M.2 slot to PCIe mode

➔ **SATA Function** Configures the M.2 slot to SATA mode

4.4.2 Controller SATA Configuration

Use the **Controller SATA Configuration** menu (**BIOS Menu 9**) to change and/or set the configuration of the SATA devices installed in the system.

```
                        Aptio Setup - AMI
            Chipset

Controller SATA Configuration                          SATA test settings

SATA Configuration              [Enabled]
SATA Mode Selection             [AHCI]                  --------------------
SATA Port1                      [Not Installed]        →←: Select Screen
  Hot Plug                      [Disabled]             ↑↓: Select Item
SATA Port3                      [Not Installed]        Enter: Select
  Hot Plug                      [Disabled]             +/-:  Change Opt.
M.2 NGFF1                       [Not Installed]        F1:  General Help
  Hot Plug                      [Disabled]             F2:  Previous Values
M.2 NGFF2                       [Not Installed]        F3:   Optimized
  Hot Plug                      [Disabled]             Defaults
M.2 NGFF3                       [Not Installed]        F4:   Save & Exit
  Hot Plug                      [Disabled]             ESC:  Exit


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```

BIOS Menu 9: Controller SATA Configuration

➔ **SATA Configuration**

Use the **SATA Configuration** option to enable or disable the onboard SATA port.

➔ **Disabled** DEFAULT Disables the onboard SATA port.

➔ **Enabled** Enables the onboard SATA port.

➔ **SATA Mode Selection [AHCI]**

Use the **SATA Mode Selection** option to configure SATA devices as normal IDE devices.

➔ **AHCI**   D<small>EFAULT</small>   Configures SATA devices as AHCI device.

➔ **RAID**   Configures SATA devices as RAID device.

➔ **Hot Plug [Disabled]**

Use the **Hot Plug** option to enable or disable the hot plug function.

➔ **Disabled**   D<small>EFAULT</small>   Disables the hot plug function.

➔ **Enabled**   Enables the hot plug function.

4.5 Socket

Use the **Socket** menu (**BIOS Menu 10**) to view detailed CPU specifications or enable the Intel Virtualization Technology.

```
                      Aptio Setup – AMI
                        Socket

----------------------------------------------------    Enable Hyper Threading
Processor BSP Revision    606c1 – ICX-D LCC B          (Software Method to
Processor Socket          Socket 0      Socket 1       Enable/Disable Logical
Processor ID              000606C1*                    Processor threads.
Processor Frequency       2.000GHz
Processor Max Ratio            14H
Processor Min Ratio            08H
Microcode Revision        01000150                     ----------------------
L1 Cache RAM(Per Core)         80KB                    →←: Select Screen
L2 Cache RAM(Per Core)       1280KB                    ↑↓: Select Item
L3 Cache RAM(Per Package)   15360KB                    Enter: Select
Processor 9 Version       Intel(R) Xeon(R) D-1733      +/-: Change Opt.
                          NT CPU @ 2.00GHz             F1:  General Help
                                                       F2:  Previous Values
Hyper-Threading [ALL]     [Enabled]                    F3:  Optimized Defaults
VMX                       [Enabled]                    F4:  Save & Exit
Intel® VT for Directed I/O [Enabled]                   ESC: Exit

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```

BIOS Menu 10: Socket

➔ **Hyper-threading [Enable]**

Use the **Hyper-threading** BIOS option to enable or disable the Intel Hyper-Threading Technology.

➔ **Disable** Disables the Intel Hyper-Threading Technology.

➔ **Enable** DEFAULT Enables the Intel Hyper-Threading Technology.

➔ **VMX [Enable]**

Use the **VMX** option to enable or disable Vanderpool Technology.

➔ **Disable** Disables Vanderpool Technology

➔ **Enable** DEFAULT Enables Vanderpool Technology

➔ **Intel® VT for Directed I/O [Enable]**

Use the **Intel® VT for Directed I/O** option to enable or disable Intel® Virtualization Technology for Directed I/O (VT-d).

➔ **Enable**   DEFAULT   Enables Intel® VT for Directed I/O

➔ **Disable**   Disables Intel® VT for Directed I/O

4.6 Server Management

Use the **Server Management** menu (**BIOS Menu 11**) to display the server management status and change the settings.

```
                          Aptio Setup – AMI
  Main   Advanced  Chipset   Socket   Server Mgmt  Security  Boot  Save & Exit

 BMC Self Test Status            FAILED              Press <Enter> to change
 BMC Firmware Revision           1.01                the SEL event log
                                                     configuration.
 > System Event Log
 > BMC network configuration
                                                     ---------------------

                                                     →←: Select Screen
                                                     ↑↓: Select Item
                                                     Enter: Select
                                                     +/-:  Change Opt.
                                                     F1:   General Help
                                                     F2:   Previous Values
                                                     F3:   Optimized Defaults
                                                     F4:   Save & Exit
                                                     ESC:  Exit
              Version 2.22.1283 Copyright (C) 2023 AMI
```
   BIOS Menu 11: Server Management

4.6.1 System Event Log

Use the **System Event Log** menu (**BIOS Menu 12**) to configure the System Event Log (SEL) options.

```
                     Aptio Setup - AMI
                     Server Mgmt

Enabling/Disabling Options              |  Change this to enable or
SEL Components                [Enabled] |  disable event logging
                                        |  for error/progress codes
Erase Settings                          |  during boot.
Erase SEL                     [No]      |
When SEL is Full              [Do Nothing] |  --------------------
                                        |
                                        |  →←: Select Screen
NOTE: All values changed here do not take effect |  ↑↓: Select Item
      until computer is restarted.      |  Enter: Select
                                        |  +/-:  Change Opt.
                                        |  F1:  General Help
                                        |  F2:  Previous Values
                                        |  F3:  Optimized Defaults
                                        |  F4:  Save & Exit
                                        |  ESC: Exit
              Version 2.22.1283 Copyright (C) 2023 AMI
```

BIOS Menu 12: System Event Log

➔ **SEL Components [Enabled]**

Use the **SEL Components** option to enable or disable all features of System Event Log.

➔ **Disabled**   Disables SEL

➔ **Enabled**   DEFAULT   Enables SEL

➔ **Erase SEL [No]**

Use the **Erase SEL** option to determine whether to erase SEL or not. The following options are available:

▪ No   **Default**
▪ Yes, On next reset
▪ Yes, On every reset

➔ **When SEL is full [Do Nothing]**

Use the **When SEL is Full** option to determine the action to be taken when SEL is full. The following options are available:

▪ Do Nothing   **Default**
▪ Erase Immediately

4.6.2 BMC Network Configuration

Use the **BMC Network Configuration** menu (**BIOS Menu 13**) to configure the BMC network parameters.

```
                    Aptio Setup - AMI
                    Server Mgmt

BMC network configuration                            Select to configure LAN
                                                     channel parameters
Lan channel 1                                        statically or
Configuration Address source   [Unspecified]         dynamically (by BIOS or
Current Configuration          DynamicAddressBmcDhcp  BMC). Unspecified option
Address source                                       will not modify any BMC
Station IP address             0.0.0.0               network parameters
Subnet mask                    -                     during BIOS phase
Station MAC address            -                     --------------------
Router IP address              -                     →←: Select Screen
Router MAC address             -                     ↑ ↓: Select Item
                                                     Enter:  Select
                                                     +/-:  Change Opt.
                                                     F1:   General Help
                                                     F2:   Previous Values
                                                     F3:   Optimized Defaults
                                                     F4:   Save & Exit
                                                     ESC: Exit
             Version 2.22.1283 Copyright (C) 2023 AMI
```

BIOS Menu 13: 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 non-DHCP BMC network parameters by BMC dynamically.

4.7 Security

Use the **Security** menu (**BIOS Menu 14**) to set system and user passwords.

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

  Password Description                              Set Administrator
                                                   Password
  If ONLY the Administrator's password is set,
  then this only limits access to Setup and is
  only asked for when entering Setup.
  If ONLY the User's password is set, then this     --------------------
  is a power on password and must be entered to     →←: Select Screen
  boot or enter Setup. In Setup the User will       ↑ ↓: Select Item
  have Administrator rights.                        Enter: Select
  The password length must be:                      +/-:  Change Opt.
  Minimum length              3                     F1:  General Help
  Maximum length              20                    F2:  Previous Values
                                                    F3:  Optimized
  Administrator Password                            Defaults
  User Password                                     F4:  Save & Exit
                                                    ESC: Exit
                Version 2.22.1283 Copyright (C) 2023 AMI
```

BIOS Menu 14: Security

➔ **Administrator Password**

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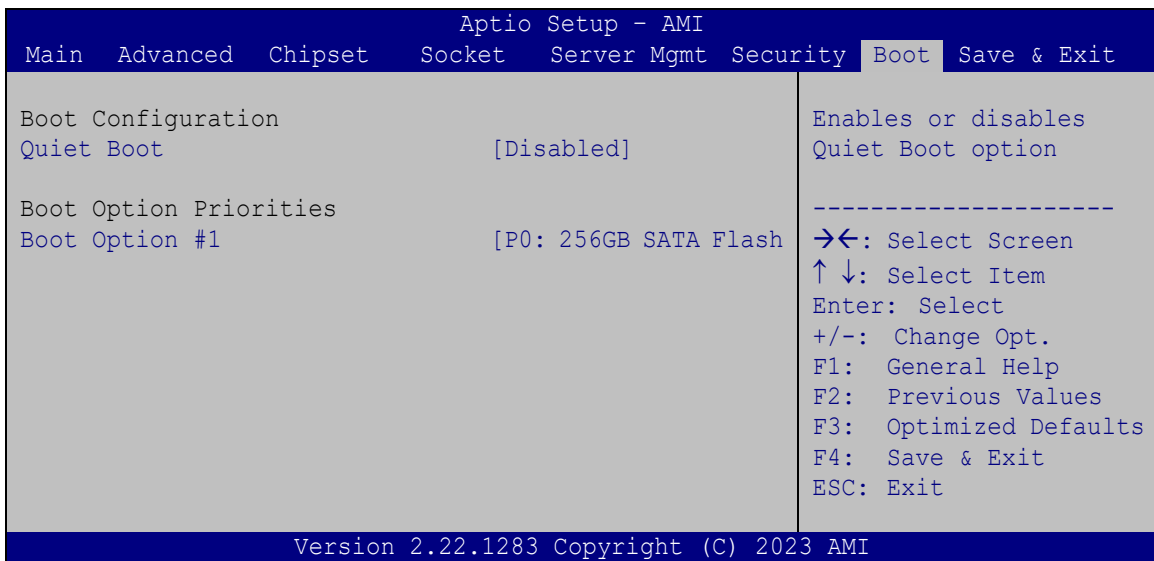
➔ **User Password**

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

4.8 Boot

Use the **Boot** menu (**BIOS Menu 15**) to configure system boot options.

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

  Boot Configuration                                    Enables or disables
  Quiet Boot                        [Disabled]          Quiet Boot option

  Boot Option Priorities                                --------------------
  Boot Option #1                    [P0: 256GB SATA Flash  ➔←: Select Screen
                                                        ↑ ↓: Select Item
                                                        Enter: Select
                                                        +/-:  Change Opt.
                                                        F1:   General Help
                                                        F2:   Previous Values
                                                        F3:   Optimized Defaults
                                                        F4:   Save & Exit
                                                        ESC: Exit

             Version 2.22.1283 Copyright (C) 2023 AMI
```
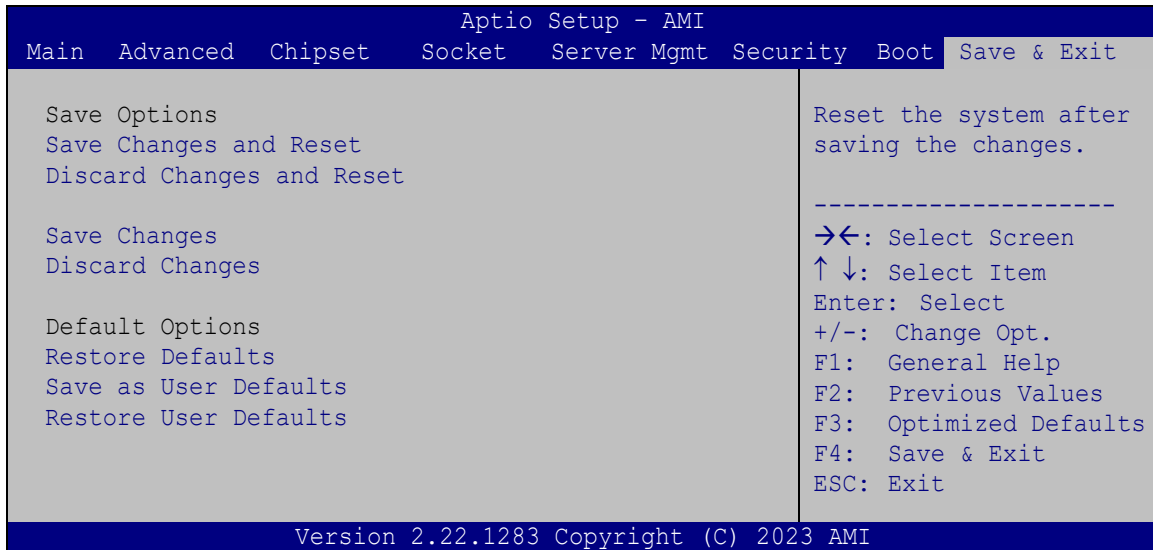
BIOS Menu 15: Boot

➔ **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

4.9 Save & Exit

Use the **Safe & Exit** menu (**BIOS Menu 16**) to load default BIOS values, optimal failsafe values and to save configuration changes.

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

  Save Options                               Reset the system after
  Save Changes and Reset                     saving the changes.
  Discard Changes and Reset
                                             --------------------
  Save Changes                               →←: Select Screen
  Discard Changes                            ↑↓: Select Item
                                             Enter: Select
  Default Options                            +/-:  Change Opt.
  Restore Defaults                           F1:   General Help
  Save as User Defaults                      F2:   Previous Values
  Restore User Defaults                      F3:   Optimized Defaults
                                             F4:   Save & Exit
                                             ESC: Exit

             Version 2.22.1283 Copyright (C) 2023 AMI
```
BIOS Menu 16: 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.

➔ **Save Changes**

Use the **Save Changes** option to save the changes done so far to any of the setup options.

➔ **Discard Changes**

Use the **Discard Changes** option to discard changes done so far to any of the setup options.

➔ **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.
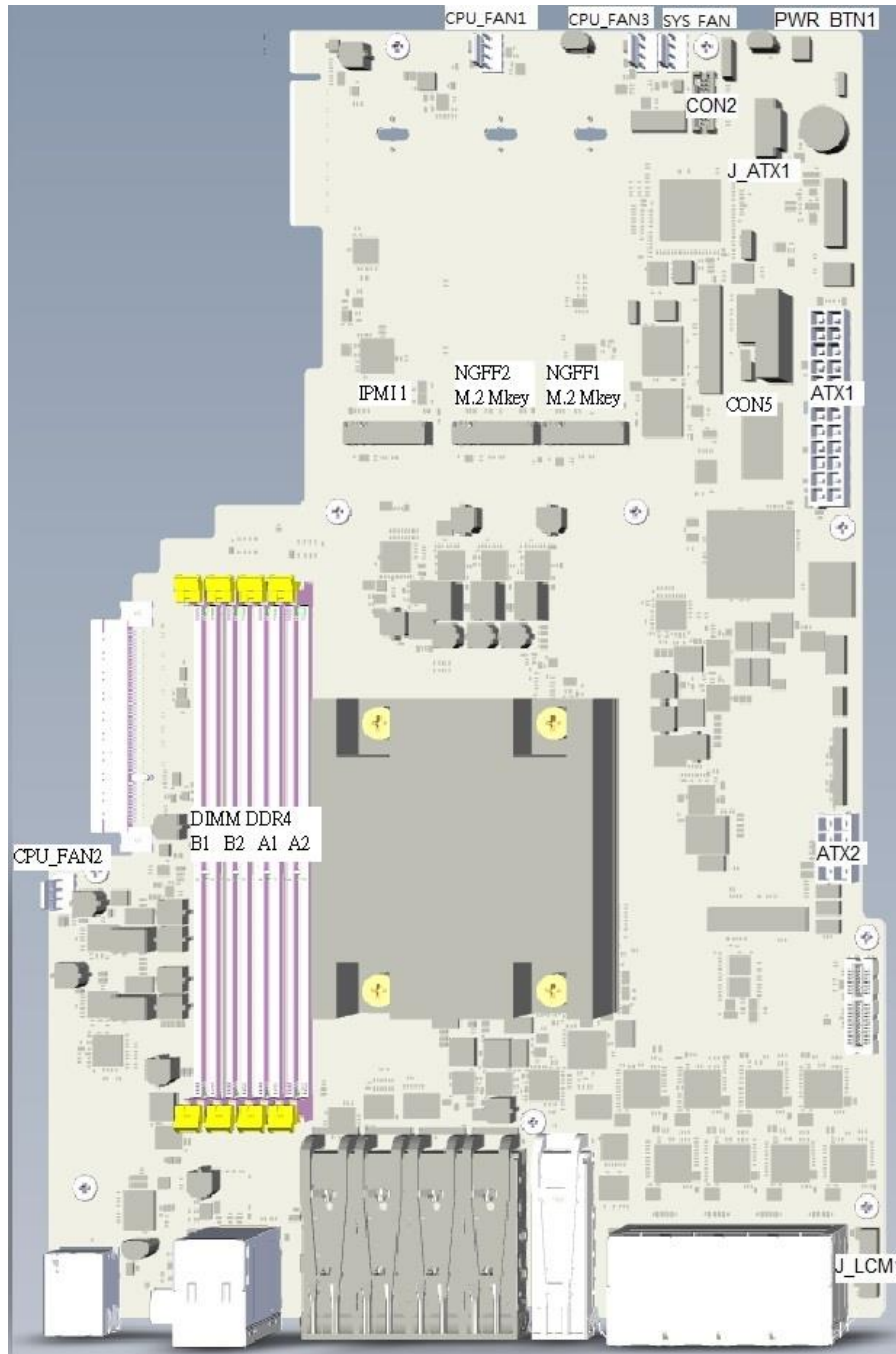
Chapter

5

Interface Connectors

5.1 Peripheral Interface Connectors

The connector locations of the PUZZLE-7030A'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
ATX power connector 1	24-pin connector	ATX1
ATX power connector 2	8-pin connector	ATX2
ATX PSU SMBus connector	5-pin wafer	J_ATX1
Clear CMOS jumper	2-pin header	CON5
Fan connectors	4-pin wafer	CPU_FAN1, CPU_FAN2, CPU_FAN3, SYS_FAN1
IPMI module slot	M.2 B-key slot	IPMI1
LCM connector	8-pin wafer	J_LCM1
M.2 M-key slots	M.2 M-key 2280	NGFF1, NGFF2
Memory slots	DDR4 DIMM slot	DIMM_A1, DIMM_A2, DIMM_B1, DIMM_B2
Power button connector	2-pin wafer	PWR_BTN1
TPM connector	20-pin header	CON2

5.2.1 ATX Power Connector 1 (ATX1)

Pin	Description	Pin	Description
1	+3.3 V	13	+3.3 V
2	+3.3 V	14	NC
3	GND	15	GND
4	+5 V	16	PS-ON
5	GND	17	GND
6	+5 V	18	GND
7	GND	19	GND
8	PW-OK	20	-5V
9	+5VSB	21	+5 V
10	+12V	22	+5 V
11	+12V	23	+5 V
12	+3.3 V	24	GND

Table 5-1: ATX Power Connector 1 (ATX1) Pinouts

5.2.2 ATX Power Connector 2 (ATX2)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	5	+12V
2	GND	6	+12V
3	GND	7	+12V
4	GND	8	+12V

Table 5-2: ATX Power Connector 2 (ATX2) Pinouts

5.2.3 ATX PSU SMBus Connector (J_ATX1)

PIN NO.	DESCRIPTION
1	ATX_PMBUS_CLK
2	ATX_PMBUS_DAT
3	N/C
4	GND
5	N/C

Table 5-3: ATX PSU SMBus Connector (J_ATX1) Pinouts

5.2.4 Clear CMOS Jumper (CON5)

Setting	Description
Open	Keep current BIOS setup
Short	Clear BIOS

Table 5-4: Clear BIOS Jumper Settings

5.2.5 Fan Connectors (CPU_FAN1/2/3 & SYS_FAN1)

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

Table 5-5: Fan Connectors (CPU_FAN1/2/3 & SYS_FAN1) Pinouts

5.2.6 LCM Connector (J_LCM1)

PIN NO.	DESCRIPTION
1	+5V
2	Power button
3	LCM RX
4	LCM TX
5	HDD LED
6	Alert LED
7	Reset button
8	GND

Table 5-6: LCM Connector (J_LCM1) Pinouts

5.2.7 M.2 M-key Slots (NGFF1, NGFF2)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	+3.3V
3	GND	4	+3.3V
5	N/C	6	N/C
7	N/C	8	N/C
9	GND	10	ACT-
11	N/C	12	+3.3V
13	N/C	14	+3.3V
15	GND	16	+3.3V
17	N/C	18	+3.3V
19	N/C	20	N/C
21	GND	22	N/C
23	N/C	24	N/C
25	N/C	26	N/C
27	GND	28	N/C
29	M2_RX_D-	30	N/C
31	M2_RX_D+	32	N/C

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
33	GND	34	N/C
35	M2_TX_D-	36	N/C
37	M2_TX_D+	38	DESLP
39	GND	40	N/C
41	SATA-RX+	42	N/C
43	SATA-RX-	44	N/C
45	GND	46	N/C
47	SATA-TX-	48	N/C
49	SATA-TX+	50	PCIE_RST-
51	GND	52	N/C
53	CLK_100M_D-	54	PCIE_WAKE-
55	CLK_100M_D+	56	N/C
57	GND	58	N/C
59	Notch	60	Notch
61	Notch	62	Notch
63	Notch	64	Notch
65	Notch	66	Notch
67	N/C	68	SUS_CLK
69	FM_SSD_PEDET	70	+3.3V
71	GND	72	+3.3V
73	GND	74	+3.3V
75	NGFF_PRSNT-		

Table 5-7: M.2 M-key Slots (NGFF1, NGFF2) Pinouts

5.2.8 Power Button Connector (PWR_BTN1)

PIN NO.	DESCRIPTION
1	PWRBTN_SW#
2	GND

Table 5-8: Power Button Connector (PWR_BTN1) Pinouts

5.2.9 TPM Connector (TPM1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
n/a	n/a	2	NC
3	TPM_GPIO	4	NC
5	GND	6	P3V3_AUX
7	TPM_CLK	8	NC
9	NC	10	TPM_MISO
11	NC	12	TPM_MOSI
13	TPM_CS_N	14	GND
15	NC	16	NC
17	IRQ_TPM	18	P3V3_AUX
19	PLTRST	20	NC

Table 5-9: TPM Connector (TPM1) Pinouts

Appendix

A

Regulatory Compliance

DECLARATION OF CONFORMITY $\quad$ C ϵ

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/ЕС.
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 C□rp, erklärt dieses Gerät entspricht□de□ grundlegenden Anforderungen und den weiteren entsprechenden Vorgaben der Richtlinie 1999/5/EU.
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-7030A.

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-7030A may result in permanent damage to the PUZZLE-7030A and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the PUZZLE-7030A. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the PUZZLE-7030A 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:
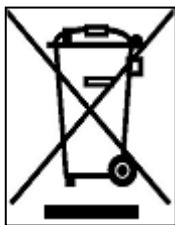
EU-wide legislation, as implemented in each Member State, requires that waste electrical and electronic products carrying the mark (left) must be disposed of separately from normal household waste. This includes monitors and electrical accessories, such as signal cables or power cords. When you need 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-7030A, please follow the guidelines below.

B.2.1 Maintenance and Cleaning

Prior to cleaning any part or component of the PUZZLE-7030A, please read the details below.

- The interior of the PUZZLE-7030A does not require cleaning. Keep fluids away from the PUZZLE-7030A interior.
- Be cautious of all small removable components when vacuuming the PUZZLE-7030A.
- Turn the PUZZLE-7030A off before cleaning the PUZZLE-7030A.
- Never drop any objects or liquids through the openings of the PUZZLE-7030A.
- Be cautious of any possible allergic reactions to solvents or chemicals used when cleaning the PUZZLE-7030A.
- Avoid eating, drinking and smoking within vicinity of the PUZZLE-7030A.

B.2.2 Cleaning Tools

Some components in the PUZZLE-7030A 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-7030A.

- *Cloth* – Although paper towels or tissues can be used, a soft, clean piece of cloth is recommended when cleaning the PUZZLE-7030A.
- *Water or rubbing alcohol* – A cloth moistened with water or rubbing alcohol can be used to clean the PUZZLE-7030A.
- *Using solvents* – The use of solvents is not recommended when cleaning the PUZZLE-7030A 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-7030A. Dust and dirt can restrict the airflow in the PUZZLE-7030A 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。						