

# **SI - 334**

## **Mid-Range Digital Signage Player**

### **User's Manual**

Version 1.1  
(August 2022)



## **Copyright**

© 2022 IBASE Technology, Inc. All rights reserved.

No part of this publication may be reproduced, copied, stored in a retrieval system, translated into any language or transmitted in any form or by any means, electronic, mechanical, photocopying, or otherwise, without the prior written consent of IBASE Technology, Inc. (hereinafter referred to as "IBASE").

## **Disclaimer**

IBASE reserves the right to make changes and improvements to the products described in this document without prior notice. Every effort has been made to ensure the information in the document is correct; however, IBASE does not guarantee this document is error-free.

IBASE assumes no liability for incidental or consequential damages arising from misapplication or inability to use the product or the information contained herein, nor for any infringements of rights of third parties, which may result from its use.

## **Trademarks**

All the trademarks, registrations and brands mentioned herein are used for identification purposes only and may be trademarks and/or registered trademarks of their respective owners.

## Compliance



In a domestic environment, this product may cause radio interference in which case users may be required to take adequate measures.



This product has been tested and found to comply with the limits for a Class B device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with manufacturer's instructions, may cause harmful interference to radio communications.

### WEEE



This product must not be disposed of as normal household waste, in accordance with the EU directive of for waste electrical and electronic equipment (WEEE - 2012/19/EU). Instead, it should be disposed of by returning it to a municipal recycling collection point. Check local regulations for disposal of electronic products.

### Green IBASE



This product is compliant with the current RoHS restrictions and prohibits use of the following substances in concentrations exceeding 0.1% by weight (1000 ppm) except for cadmium, limited to 0.01% by weight (100 ppm).

- Lead (Pb)
- Mercury (Hg)
- Cadmium (Cd)
- Hexavalent chromium (Cr6+)
- Polybrominated biphenyls (PBB)
- Polybrominated diphenyl ether (PBDE)

## Important Safety Information

Carefully read the precautions before using the device.

### Environmental conditions:

- Lay the device horizontally on a stable and solid surface in case the device may fall, causing serious damage.
- Leave plenty of space around the device and do not block the openings for ventilation. NEVER DROP OR INSERT ANY OBJECTS OF ANY KIND INTO THE VENTILATION OPENINGS.
- Use this product in environments with ambient temperatures between 0°C and 45°C.
- DO NOT LEAVE THIS DEVICE IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY IS BELOW -20° C OR ABOVE 80° C. This could damage the device. The device must be used in a controlled environment.

### Care for your IBASE products:

- Before cleaning the device, turn it off and unplug all cables such as power in case a small amount of electrical current may still flow.
- Use neutral cleaning agents or diluted alcohol to clean the device chassis with a cloth. Then wipe the chassis with a dry cloth.
- Vacuum the dust with a computer vacuum cleaner to prevent the air vent or slots from being clogged.



## WARNING

### Attention during use:

- Do not use this product near water.
- Do not spill water or any other liquids on your device.
- Do not place heavy objects on the top of the device.
- Operate this device from the type of power indicated on the marking label. If you are not sure of the type of power available, consult your distributor or local power company.
- Do not walk on the power cord or allow anything to rest on it.
- If you use an extension cord, make sure that the total ampere rating of the product plugged into the extension cord does not exceed its limits.

### Avoid Disassembly

Do not disassemble, repair or make any modification to the device. Doing so could generate hazards and cause damage to the device, even bodily injury or property damage, and will void any warranty.



## CAUTION

There is danger of explosion if internal lithium-ion battery is replaced by an incorrect type. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

## Warranty Policy

- **IBASE standard products:**

24-month (2-year) warranty from the date of shipment. If the date of shipment cannot be ascertained, the product serial numbers can be used to determine the approximate shipping date.

- **3<sup>rd</sup>-party parts:**

12-month (1-year) warranty from delivery for the 3<sup>rd</sup>-party parts that are not manufactured by IBASE, such as CPU, CPU cooler, memory, storage devices, power adaptor, panel and touchscreen.

\* PRODUCTS, HOWEVER, THAT FAIL DUE TO MISUSE, ACCIDENT, IMPROPER INSTALLATION OR UNAUTHORIZED REPAIR SHALL BE TREATED AS OUT OF WARRANTY AND CUSTOMERS SHALL BE BILLED FOR REPAIR AND SHIPPING CHARGES.

## Technical Support & Services

1. Visit the IBASE website at [www.ibase.com.tw](http://www.ibase.com.tw) to find the latest information about the product.
2. If you need any further assistance from your distributor or sales representative, prepare the following information of your product and elaborate upon the problem.
  - Product model name
  - Product serial number
  - Detailed description of the problem
  - The error messages in text or in screenshots if there is any
  - The arrangement of the peripherals
  - Software in use (such as OS and application software, including the version numbers)
3. If repair service is required, you can download the RMA form at <http://www.ibase.com.tw/english/Supports/RMAService/>. Fill out the form and contact your distributor or sales representative.

# Table of Contents

---

<b>Chapter 1</b>	<b>General Information .....</b>	<b>1</b>
1.1	Introduction .....	2
1.2	Features .....	3
1.3	Packing List .....	3
1.4	Optional Accessories .....	3
1.5	Specifications .....	4
1.6	Product View .....	6
1.7	Dimensions .....	7
<b>Chapter 2</b>	<b>Hardware Installation &amp; Motherboard Information .....</b>	<b>8</b>
2.1	Installation / Replacement .....	9
2.1.1	Memory .....	10
2.1.2	M.2 Cards .....	11
2.1.3	WiFi / 5G Antenna Installation .....	11
2.1.4	Mounting Installation .....	12
2.2	Pin Assignment for DC Power Input Connector .....	13
2.3	Setting the Jumpers .....	14
2.4	Jumper & Connector Locations on Motherboard .....	15
2.5	Jumpers & Connectors Reference .....	17
2.5.1	JBAT1: Clear CMOS Setting .....	18
2.5.2	JP1: EDID Emulator MCU Functions .....	18
2.5.3	JP2: ATX / AT Power Selection .....	19
2.5.4	JP3: COM1/ RS232 RI/+5V/+12V Power Setting .....	19
2.5.5	CN1: DC_IN Connector (+12V Adaptor 4 Pin) .....	20
2.5.6	SW1: Power Button .....	21
2.5.7	CN2 / CN3 / CN4 / CN5: HDMI Ports .....	21
2.5.8	CN6: USB2.0 (top) / USB3.1 (bottom) .....	22
2.5.9	CN7: USB 3.1 Ports .....	22
2.5.10	CN8 / CN9: Gigabit LAN Port .....	23
2.5.11	COM1: COM1 Connector .....	23
2.5.12	CN10: Audio Line Out .....	24
2.5.13	SW2: EDID Clear Button .....	24
2.5.14	J1: EDID Emulator MCU Programming Header .....	25
2.5.15	J3: SPI Flash Connector .....	25
2.5.16	J4: LPC Debug Port Connector .....	26
2.5.17	J5: Front Panel Settings Connector .....	26
2.5.18	J6: ISMART MCU Programming Header .....	27

2.5.19	J7: NGFF_M.2_B-Key 3052 .....	27
2.5.20	CN11: Nano SIM Card Slot.....	28
2.5.21	J8: NGFF_M.2_E-Key 2230 .....	28
2.5.22	J9: M.2 (M-Key) 2280 Slot.....	29
2.5.23	CPU_FAN1: CPU Fan Connector.....	29
2.5.24	SYS_FAN1: System Fan Connector.....	30
<b>Chapter 3 Driver Installation .....</b>		<b>31</b>
3.1	Introduction.....	32
3.2	AMD Radeon™ Graphics Driver Installation .....	32
3.3	HD Audio Driver Installation .....	33
3.4	LAN Driver Installation.....	34
<b>Chapter 4 BIOS Setup .....</b>		<b>35</b>
4.1	Introduction.....	36
4.2	BIOS Setup.....	36
4.3	Main Settings.....	37
4.4	Advanced Settings.....	37
4.5	Chipset Settings .....	49
4.6	Security Settings.....	51
4.7	Boot Settings .....	53
4.8	Save & Exit Settings.....	54
<b>Appendix .....</b>		<b>55</b>
A.	AMD Eyefinity Multiple Displays Configuration.....	56
A.1	Setting Up AMD Eyefinity Using Quick Setup.....	56
A.2	Customizing AMD Eyefinity Using Try Advanced Setup.....	60
B.	I/O Port Address Map .....	66
C.	Interrupt Request Lines (IRQ) .....	68
D.	Watchdog Timer Configuration.....	70
E.	AMD Eyefinity Mode Display Setting Configurations.....	74





# Chapter 1

## General Information

The information provided in this chapter includes:

- Features
- Packing List
- Accessories
- Specifications
- Product View
- Dimensions

## 1.1 Introduction

The SI-334 is a digital signage player harnessing the performance of an AMD Ryzen™ Embedded V2748B with Radeon™ Graphics that provides 40 percent better graphics output over the previous generation. The compact video wall player enhances in-store shopping experience in modern retail with eye-catching, engaging displays.

Ideal for multi-display applications in public spaces, the 5G-compatible SI-334 offers breakthrough 4K graphics performance that supports 7,680 x 4,320 resolution in a 2x2 video wall setting, 15,360 x 2,160 pixels in 4x1 menu boards, or 3,840 x 8,640 resolution in a 1x4 display setting. Four HDMI 2.0 outputs come with independent audio and configurable using the AMD Multi-Display Eyefinity Technology. The platform also features HDMI-CEC for display on/off control through HDMI ports and EDID emulation that prevents image loss or defect Windows display due to cable connection issues or unrecognized display.

SI-334 is designed with segregated flow ventilation for increased reliability and 24/7 operation. It comes standard with 2x 4GB DDR4 memory, 128GB M.2 storage, and 150W power adaptor, as well as iSMART energy-saving and Observer remote monitoring technologies. Both Windows 10 IoT Enterprise and Linux Ubuntu are supported.



## 1.2 Features

- AMD Ryzen™ Embedded V2000 series processors
- Vega GPU with up to 7 Compute Units
- 4x HDMI 2.0 with independent audio output support
- iSMART intelligent energy-saving & Observer remote monitoring technologies
- Built-in CEC and hardware EDID emulation functions with the software setting mode
- 2x DDR4-3200 SO-DIMM, dual channel, Max. 64GB
- 1x M.2 B-Key for 5G or LTE options
- 1x M.2 E-Key for Wi-Fi, Bluetooth or capture card options
- 1x M.2 M-Key for storage
- Supports TPM 2.0 and watchdog timer
- Slim and segregated flow ventilation design

## 1.3 Packing List

Your product package should include the items listed below. If any of the items below is missing, contact the distributor or the dealer from whom you purchased the product.

- SI-334 Digital Signage Player
- Power adaptor
- Power cord

## 1.4 Optional Accessories

IBASE provide optional accessories as follows. Please contact us or your dealer if you need any.

- SI-MK3A mounting bracket
- SI-1U-AD 1U rackmount kit
- HDMI cable holder

## 1.5 Specifications

<b>Product</b>	SI-334
<b>System</b>	
<b>Mainboard</b>	MBD334
<b>Operating System</b>	<ul style="list-style-type: none"> <li>Windows 10 IoT Enterprise 64-bit</li> <li>Linux Ubuntu 64-bit</li> </ul>
<b>CPU</b>	AMD Ryzen™ Embedded V2000 Processors
<b>Chipset</b>	AMD Integrated SoC
<b>Memory</b>	2x DDR4-3200, SO-DIMM, Dual channel, Max. 64GB
<b>Graphics</b>	AMD next-gen. Vega GPU integrated
<b>LAN Controller</b>	2 x Realtek RTL8111H-CG GbE LAN controllers
<b>Expansion</b>	1x M.2 E-Key (2230) 1x M.2 B-Key (3052) 1x UIM/SIM card slot
<b>I/O Interface</b>	4x HDMI 2.0 with hardware EDID emulation & CEC function 3x USB 3.1 @gen 2 (USB Type-A) 2x RJ45 for Gigabit LAN 1x RJ45 for RS-232 serial port 1x Audio connector for Line-out 1x Power button 1x Power jack (+12V DC) 2x Power/HDD LED
<b>Power Requirement</b>	DC-In 12V
<b>Power Supply</b>	150W power adaptor
<b>Watchdog</b>	Watchdog Timer 256 segments, 0, 1, 2...255 sec/min
<b>Chassis</b>	SGCC, black & white
<b>Mounting</b>	Slim design with wall mount holes
<b>Dimensions (W x H x D)</b>	269mm(W) x 193mm(D) x 31.5mm(H) 10.59"(W) x 7.59"(D) x 1.24"(H)
<b>Net Weight</b>	2.1 kg (4.63 lb)
<b>Certificate</b>	CE, FCC, cULus, CCC

Environment	
Temperature	<ul style="list-style-type: none"><li>• <b>Operating:</b> 0 ~ 45 °C (32 ~ 113 °F)</li><li>• <b>Storage:</b> -20 ~ 80 °C (-4 ~ 176 °F)</li></ul>
Relative Humidity	10 ~ 90% at 45 °C (non-condensing)
Vibration Protection	M.2 card: random operation 5grms, 5~500 Hz

All specifications are subject to change without prior notice.

---

**Note:** The product performance relies on the system functioning as a whole. The level of CPU/APU/GPU processor, the interaction among the processor and the memory and storage bandwidth, or the functionality of the digital signage application software may affect the product performance.

---

## 1.6 Product View

### Front View



No.	Name	No.	Name
1	DC Power Input	5	GbE LAN Ports
2	Power Button	6	COM Port
3	HDMI Ports	7	Audio Line-Out Jack
4	USB 3.0 Ports		

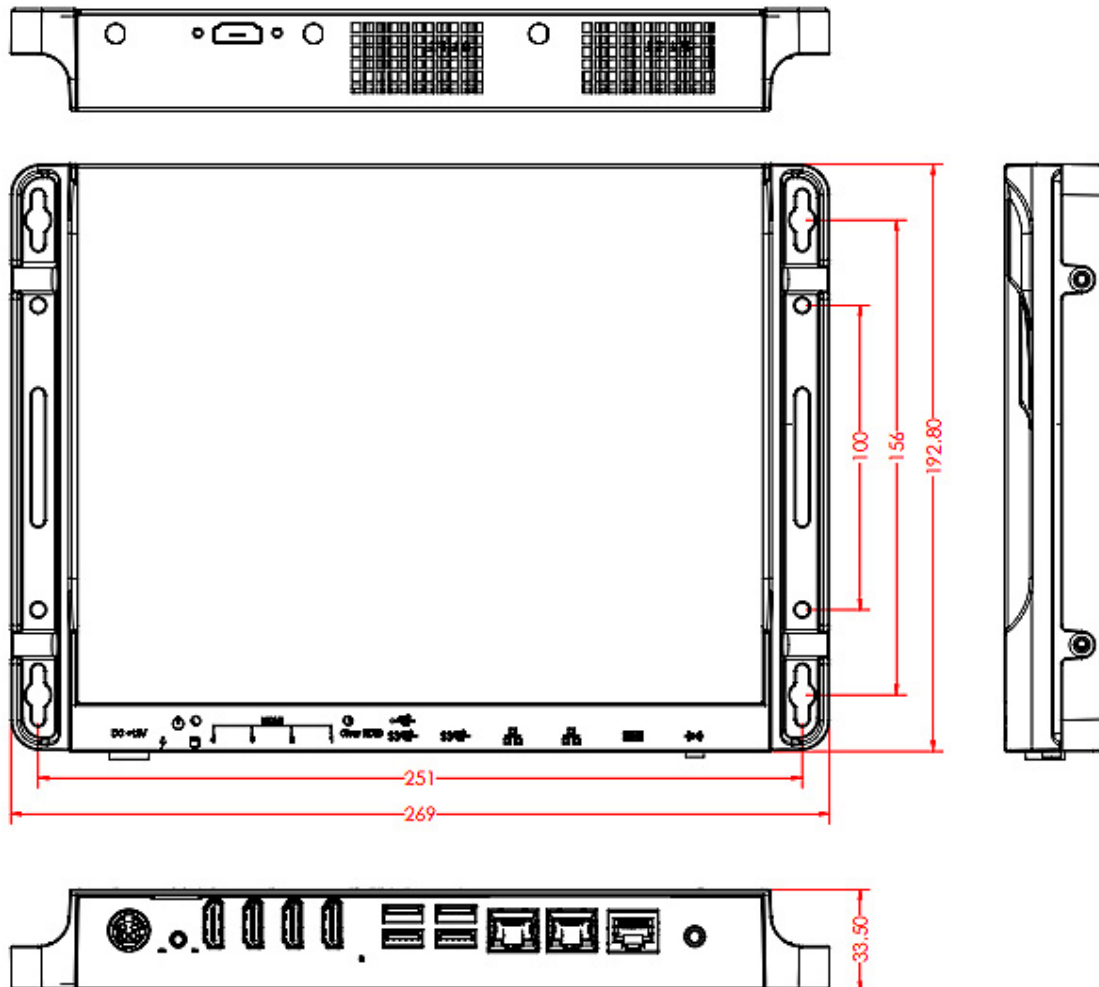


### Oblique View



## 1.7 Dimensions

Unit: mm



## **Chapter 2**

# **Hardware Installation & Motherboard Information**

The information provided in this chapter includes:

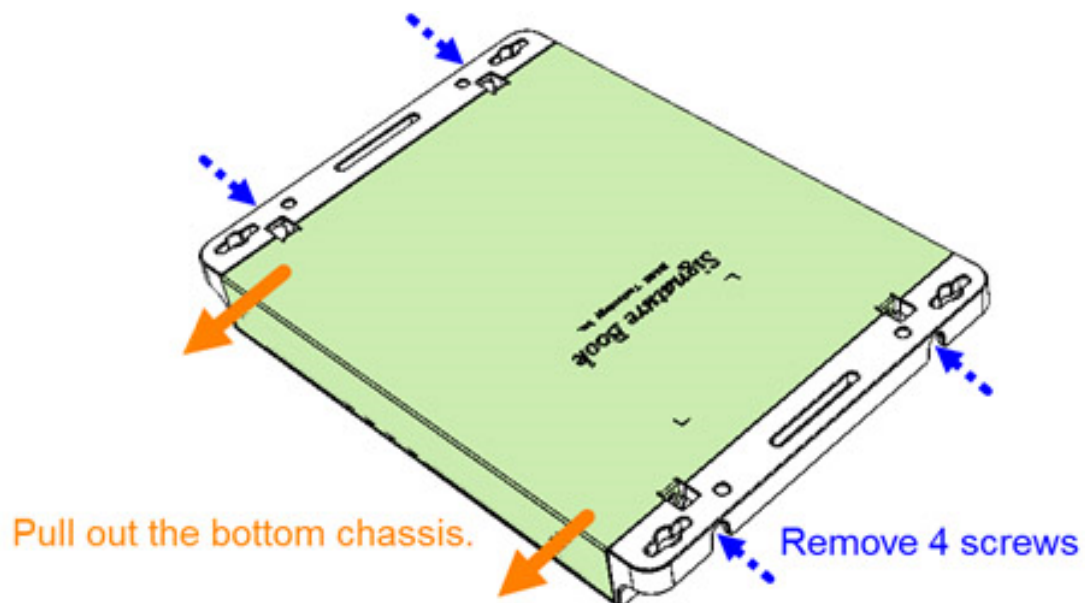
- Installation of memory and M.2 cards
- Information and locations of connectors



## 2.1 Installation / Replacement

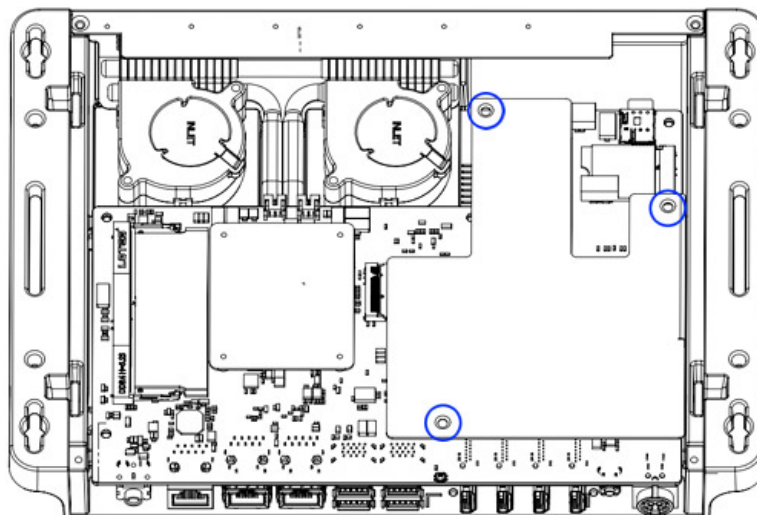
You need to remove the device bottom chassis firstly before installations.

Remove 4 screws as indicated below and pull out the device bottom chassis to install or replace the 1<sup>st</sup> memory module, M.2 M2280 & E2230 cards, and SIM card.

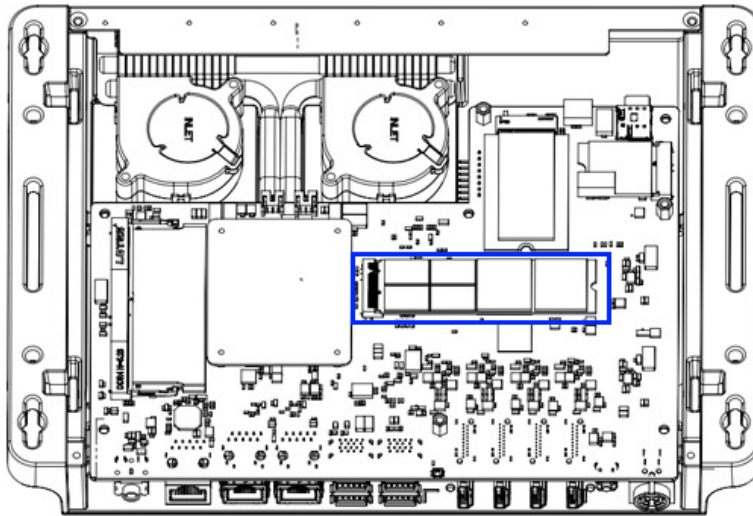


If you need to install or replace the M.2 module, perform the following steps.

1. Remove the following 3 screws to remove the M.2 heatsink.



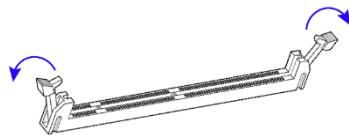
2. Install or replace the M.2 module accordingly.



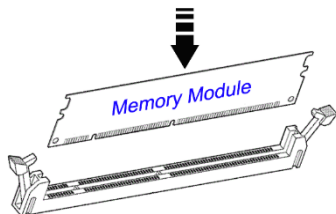
### 2.1.1 Memory

To install the modules, locate the memory slot on the motherboard and perform the following steps:

1. Press the ejector tab of the memory slot down and outwards with your fingertips.



2. Hold the memory module and align the key of the module with that on the memory slot.
3. Gently push the module in an upright position until the ejector tabs of the memory slot close to hold the module in place when the module touches the bottom of the slot.



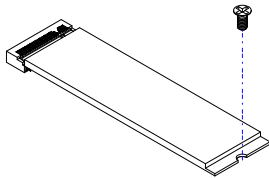
To remove the module, press the ejector tabs outwards with your fingertips to eject the module.

**NOTE:** 4K video requires two pieces of DDR4-3200 memory modules.

### 2.1.2 M.2 Cards

1. Locate the M.2 slot inside the device.
2. Align the key of the M.2 card to the slot and insert the card slantwise.
3. Fix the M.2 network card with an M2 screw.

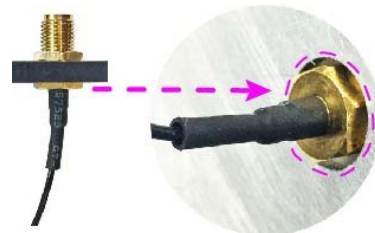
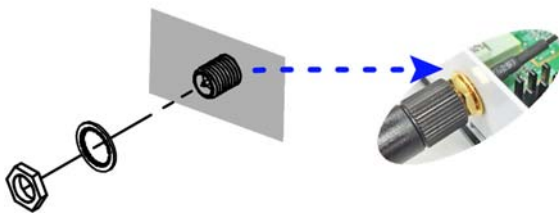
**M.2:**



### 2.1.3 WiFi / 5G Antenna Installation

Thread the WiFi / 5G antenna extension cable through an antenna hole of the front I/O cover and fasten the antenna as shown below. Then apply adhesive to the edge of the hex nut behind the front I/O cover to prevent the extension cable from falling if the cable becomes loose.

1. Thread and fasten the hex nut and the washer. Then install the antenna.
2. Apply adhesive around here.




---

**Info:** The diameter of the nut is around 6.35 mm (0.25"-36UNC).

---

#### Remarks:

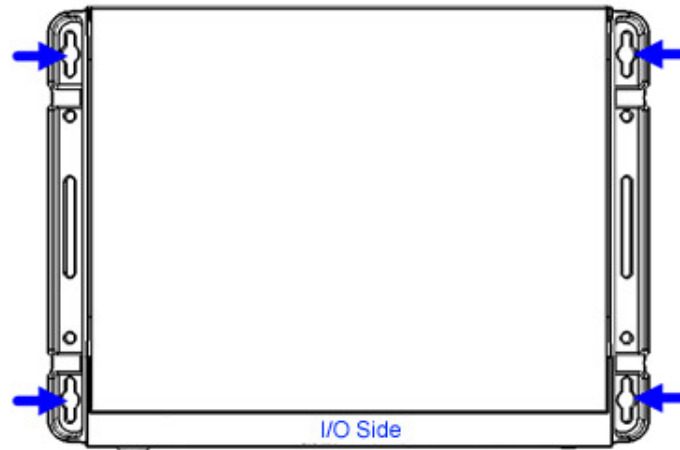
M.2 B-Key (3052) supports interface PCIe or USB. The standard SI-334 supports interface PCIe. If you need a USB interface, please contact your supplier.

The model name of the optional 5G module is Sierra EM9191 (interface PCIe). For the drivers, you may download them at:  
<https://www.ibase.com.tw/english/ProductDetail/DigitalSignagePlayer/SI-334>

## 2.1.4 Mounting Installation

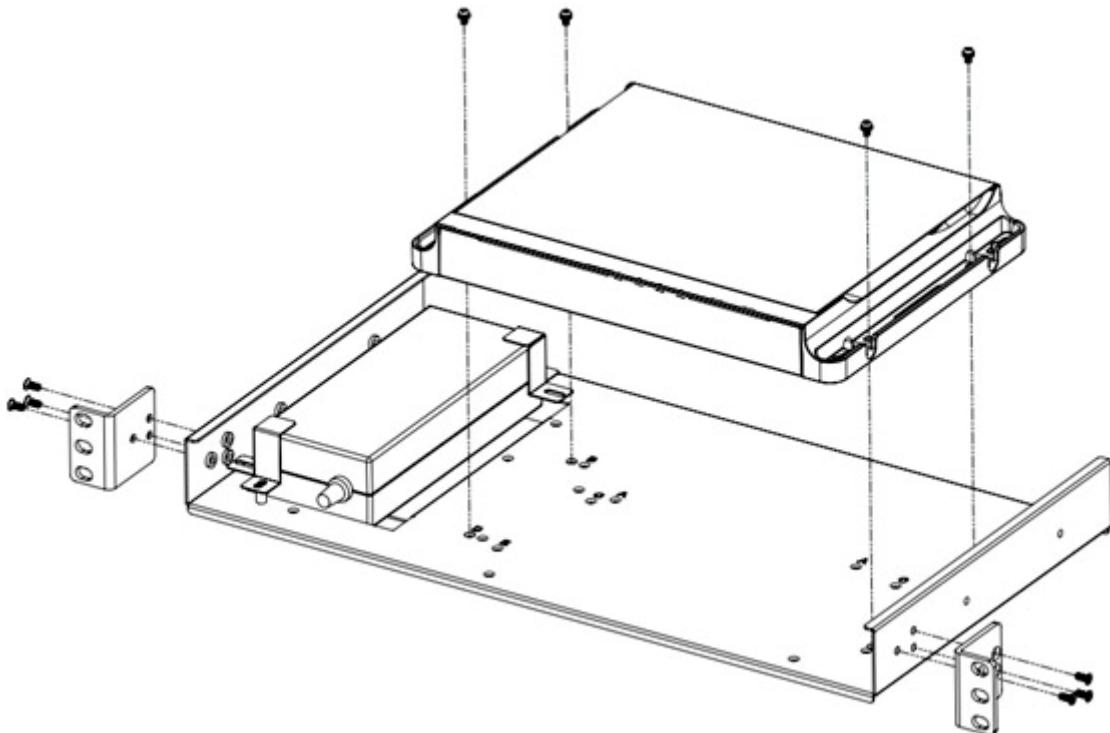
### Wall Mounting Installation

Prepare at least 4 screws (M3) to install the device on the wall as shown.

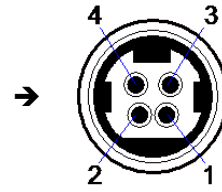


### 1U Rackmount Installation (Optional)

As shown below, to install the device on the rackmount tray, there are a total of 10 screws that will be used (four screws to install the device and six screws to install the mounting handles).



## 2.2 Pin Assignment for DC Power Input Connector



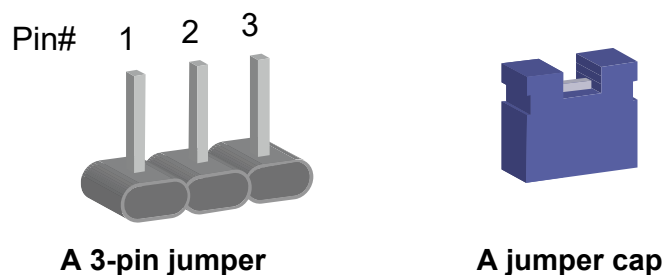
Pin	Assignment	Pin	Assignment
1	Ground	2	Ground
3	+12V	4	+12V

## 2.3 Setting the Jumpers

Set up and configure your SI-334 by using jumpers for various settings and features according to your needs and applications. Contact your supplier if you have doubts about the best configuration for your use.

### 2.4.1 How to Set Jumpers

Jumpers are short-length conductors consisting of several metal pins with a non-conductive base mounted on the circuit board. Jumper caps are used to have the functions and features enabled or disabled. If a jumper has 3 pins, you can connect either PIN1 to PIN2 or PIN2 to PIN3 by shorting.



Refer to the illustration below to set jumpers.

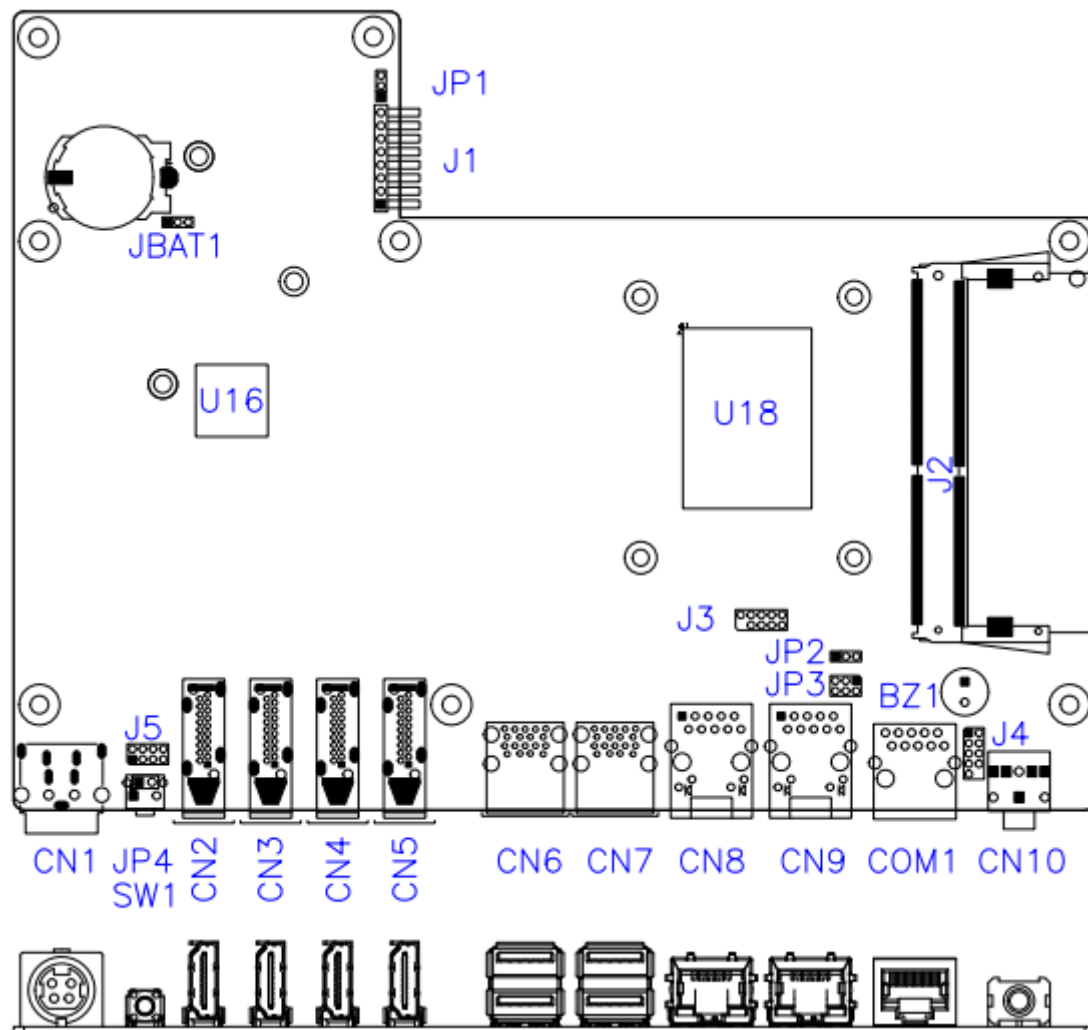
Pin	Jumper	Illustration
Open		
1-2 Closed		
2-3 Closed		

When two pins of a jumper are encased in a jumper cap, this jumper is **closed**, i.e. turned **On**.

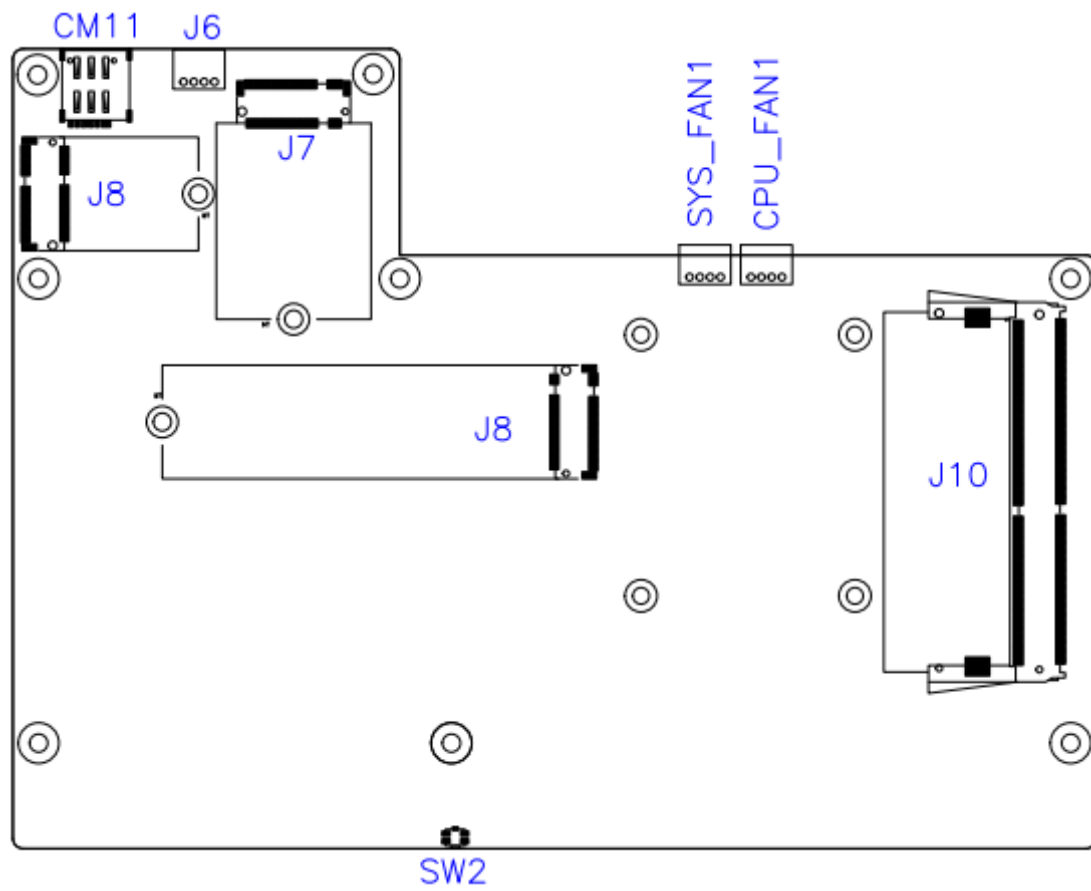
When a jumper cap is removed from two jumper pins, this jumper is **open**, i.e. turned **Off**.

## 2.4 Jumper & Connector Locations on Motherboard

Motherboard: MBD334



MBD334 – top and I/O



**MBD334 - bottom**



## 2.5 Jumpers & Connectors Reference

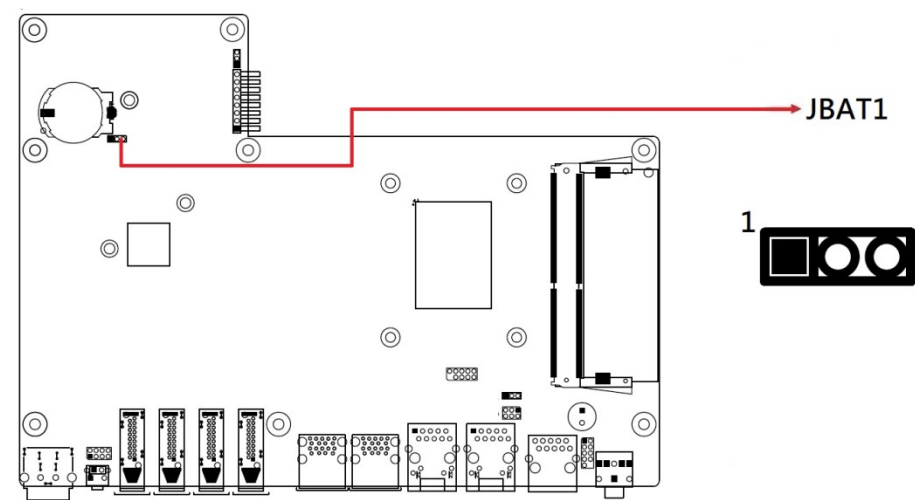
### Jumpers:

Function	Jumper	Page
Clear CMOS Setting	JBAT1	18
EDID Emulator MCU Functions	JP1	18
ATX / AT Power Selection	JP2	19
COM1/ RS232 RI/+5V/+12V Power Setting	JP3	19

### Connectors / Buttons:

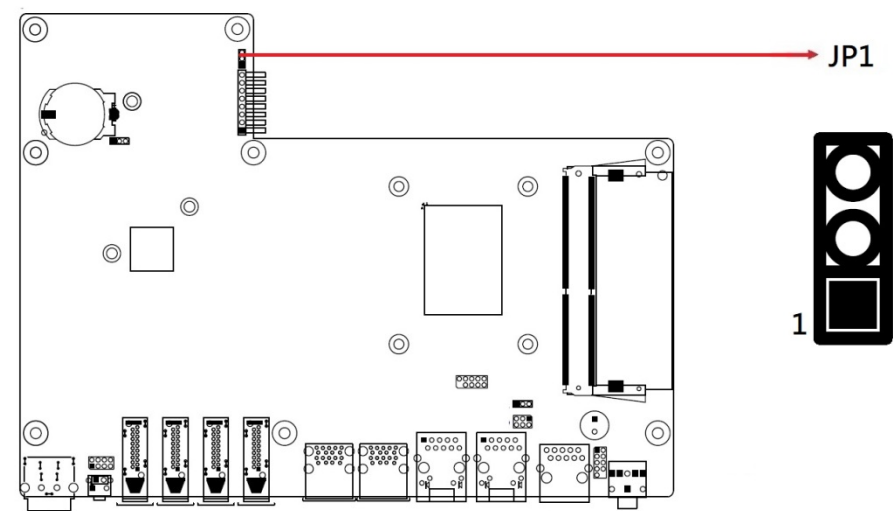
Function	Connector	Page
DC_IN Connector (+12V Adaptor 4 Pin)	CN1	20
Power Button	SW1	21
HDMI Ports	CN2 / CN3 / CN4 / CN5	21
USB2.0 (top) / USB3.1 (bottom)	CN6	22
USB 3.1 Ports	CN7	22
Gigabit LAN Port	CN8 / CN9	23
COM1 Connector	COM1	23
Audio Line Out	CN10	24
EDID Clear Button	SW2	24
EDID Emulator MCU Programming Header	J1	25
SPI Flash Connector	J3	25
LPC Debug Port Connector	J4	26
Front Panel Settings Connector	J5	26
ISMAART MCU Programming Header	J6	27
NGFF_M.2_B-Key 3052	J7	27
Nano SIM Card Slot	CN11	28
NGFF_M.2_E-Key 2230	J8	28
M.2 (M-Key) 2280 Slot	J9	29
CPU Fan Connector	CPU_FAN1	29
System Fan Connector	SYS_FAN1	30

2.5.1 JBAT1: Clear CMOS Setting



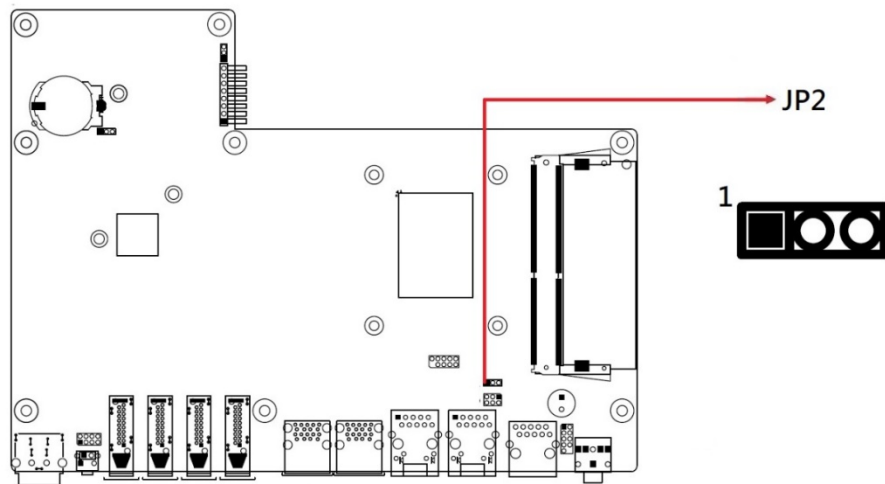
Function	Pin closed	Illustration
Normal (default)	1-2	1
Clear CMOS	2-3	1

2.5.2 JP1: EDID Emulator MCU Functions



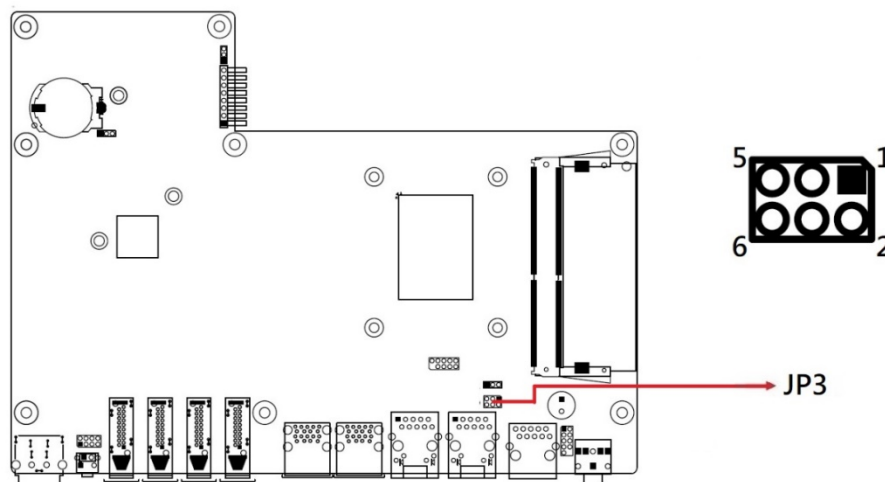
Function	Pin closed	Illustration
Enable EDID	1-2	1
Bypass EDID	2-3	1

### 2.5.3 JP2: ATX / AT Power Selection



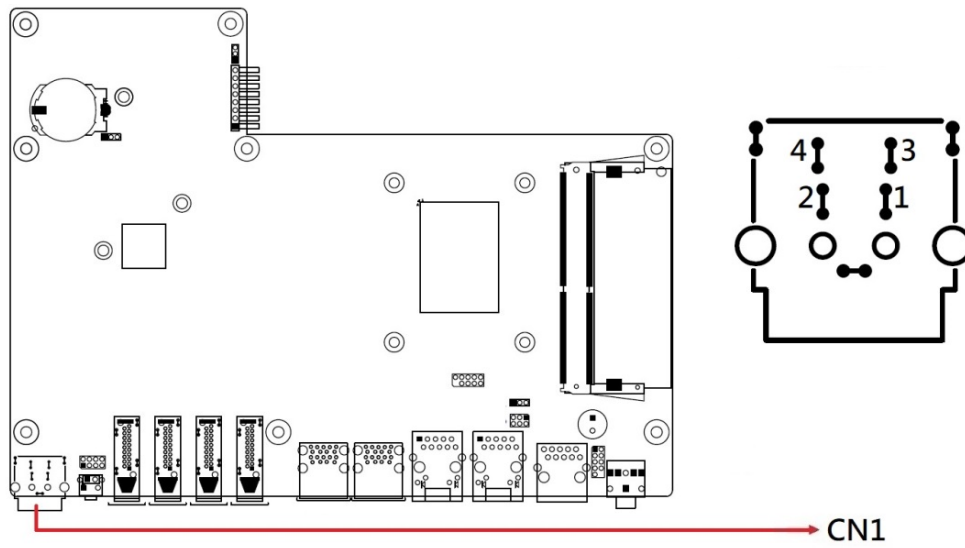
Function	Pin closed	Illustration
ATX Mode	1-2	1
AT Mode	2-3	1

### 2.5.4 JP3: COM1/ RS232 RI/+5V/+12V Power Setting



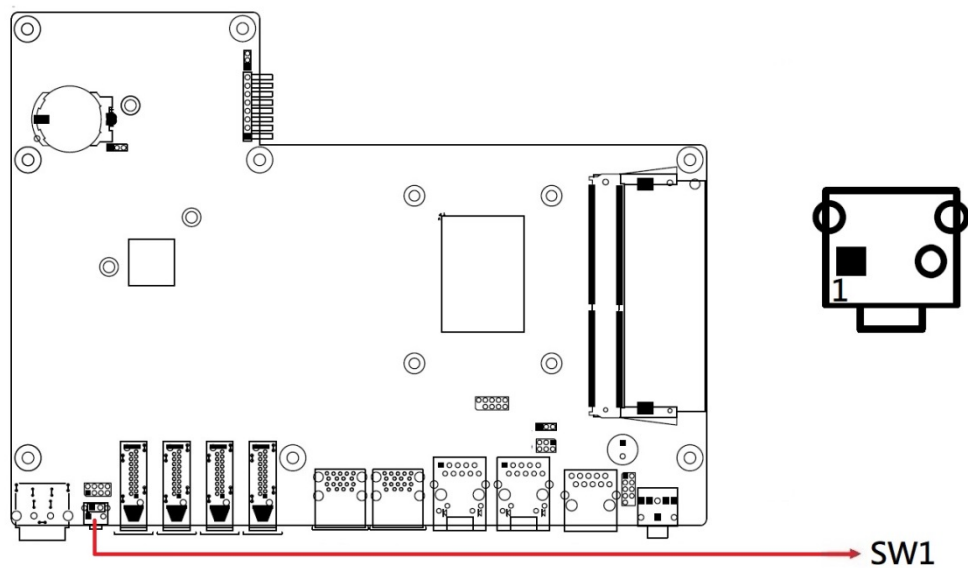
Function	Pin	Illustration
+12V	Pin 1-3 Short	
RI	Pin 3-4 Short	
+5V	Pin 3-5 Short	

### 2.5.5 CN1: DC\_IN Connector (+12V Adaptor 4 Pin)

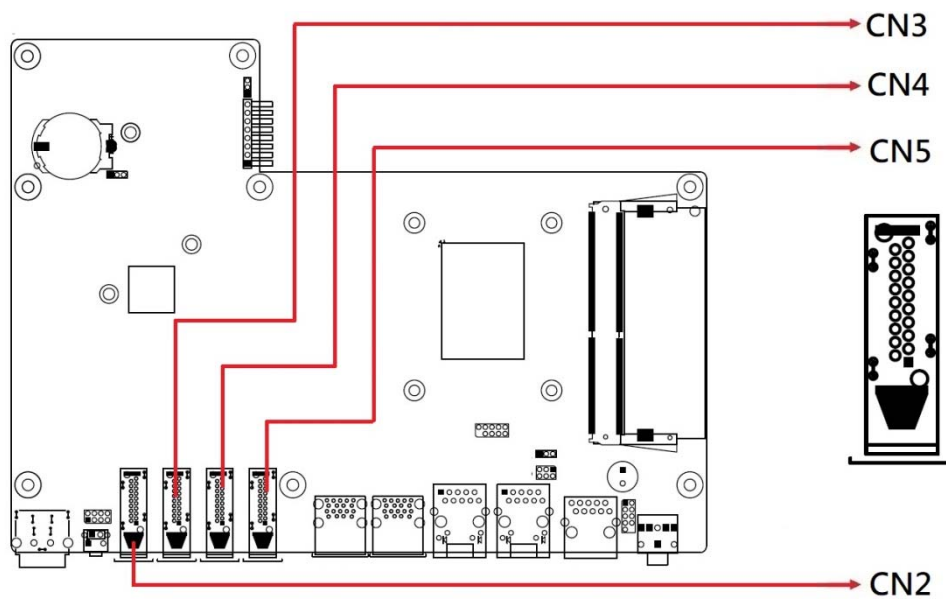


Pin	Signal Name
1	GND
2	GND
3	+12V
4	+12V

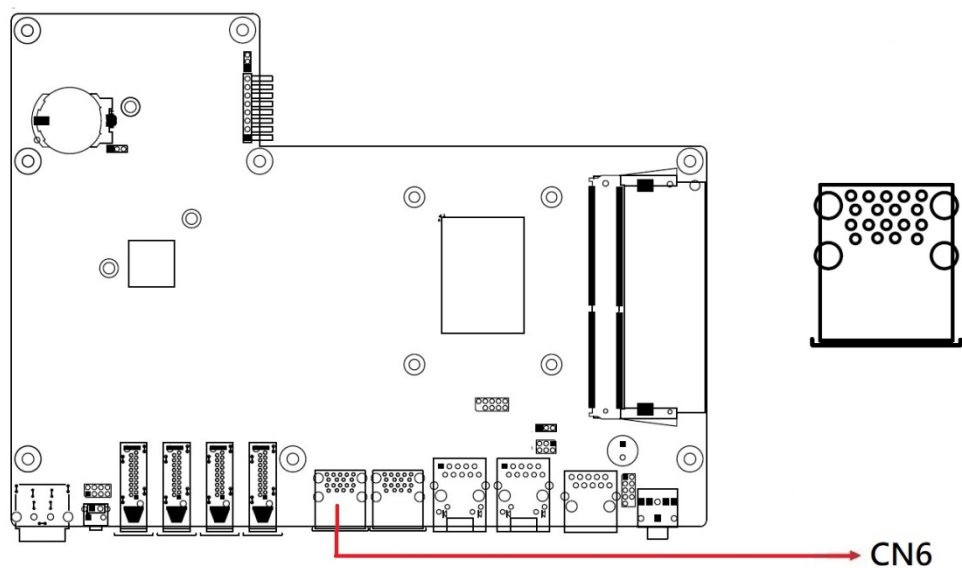
### 2.5.6 SW1: Power Button



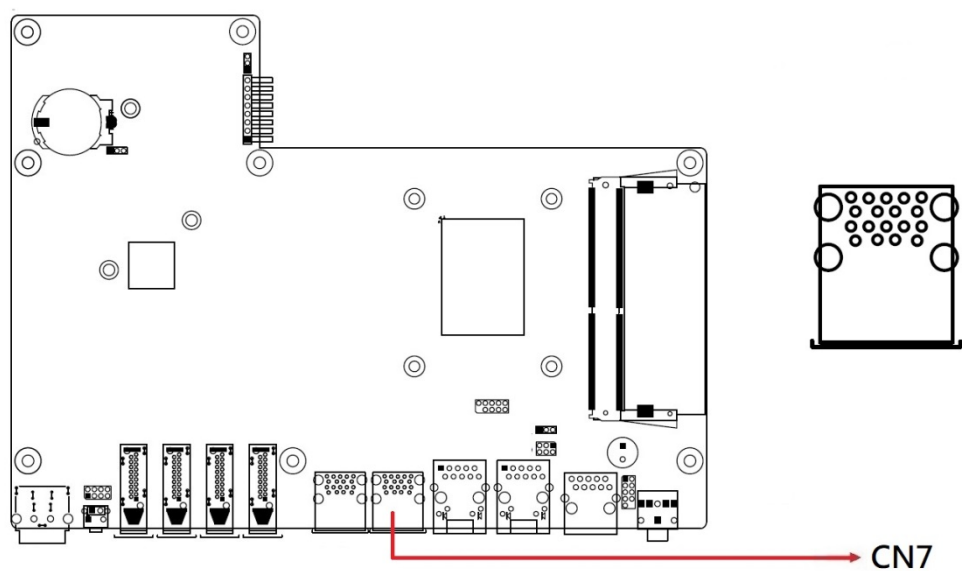
### 2.5.7 CN2 / CN3 / CN4 / CN5: HDMI Ports



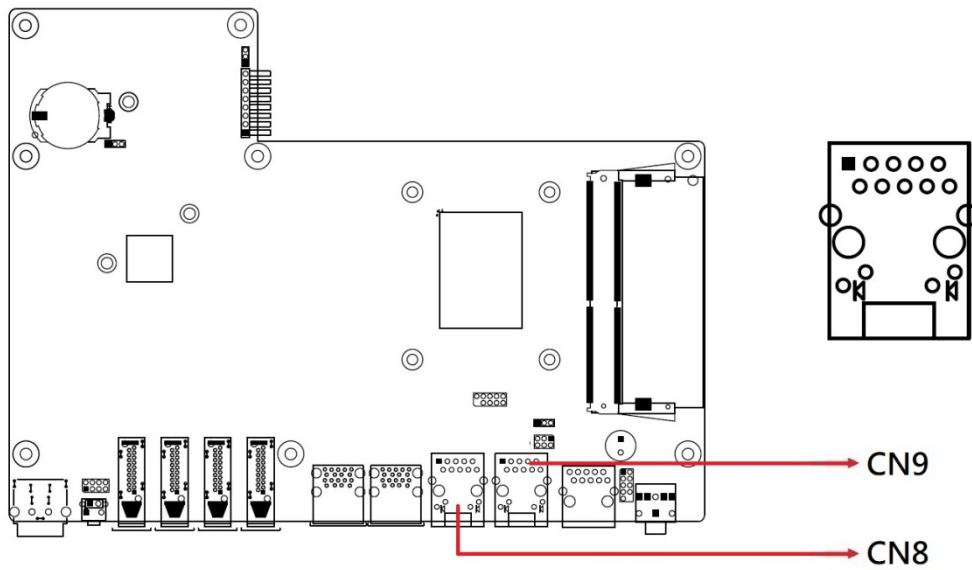
### 2.5.8 CN6: USB2.0 (top) / USB3.1 (bottom)



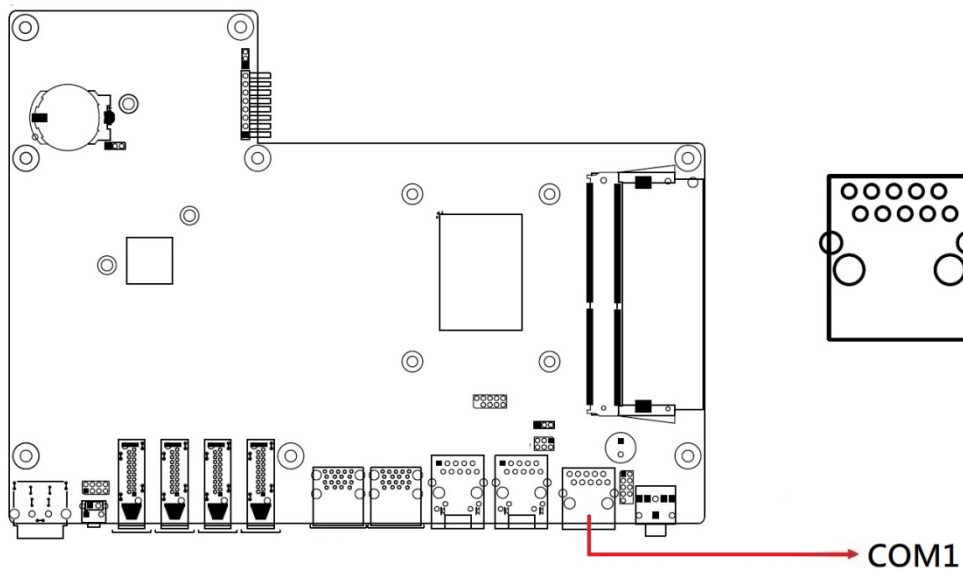
### 2.5.9 CN7: USB 3.1 Ports



### 2.5.10 CN8 / CN9: Gigabit LAN Port

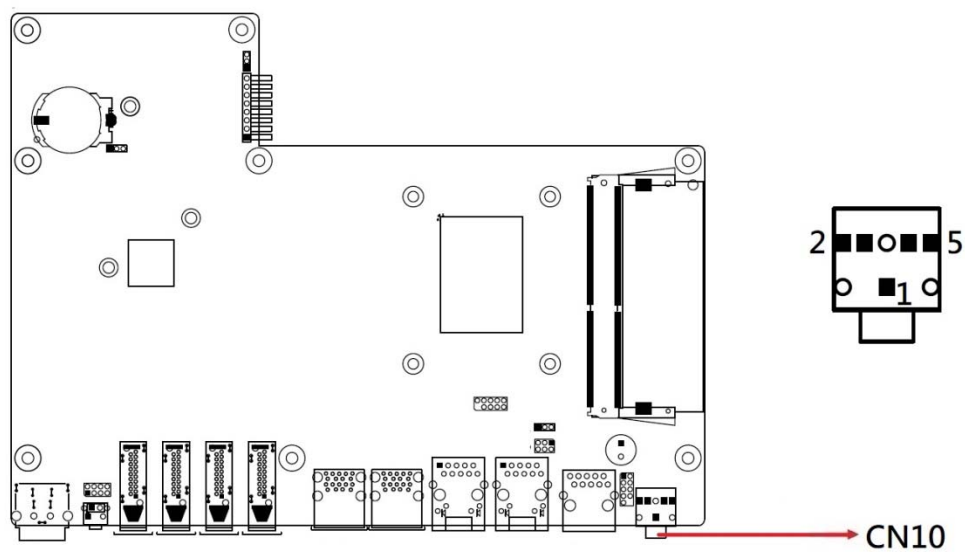


### 2.5.11 COM1: COM1 Connector

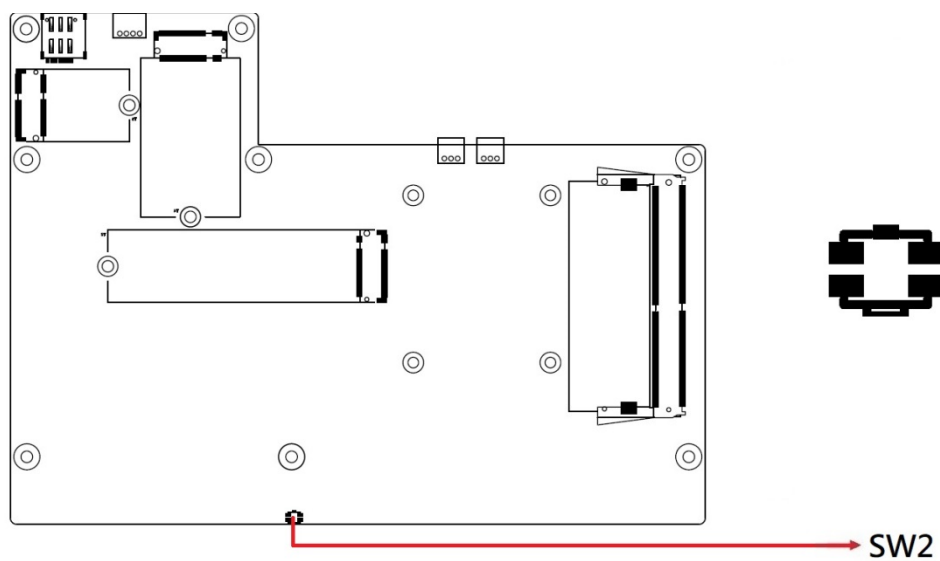


Signal Name	Pin	Pin	Signal Name
DSR, Data set ready	1	6	DCD, Data carrier detect
GND, ground	2	7	DTR, Data terminal ready
GND, ground	3	8	CTS, Clear to send
TXD, Transmit data	4	9	RTS, Request to send
RXD, Receive data	5	10	RI, Ring indicator

### 2.5.12 CN10: Audio Line Out

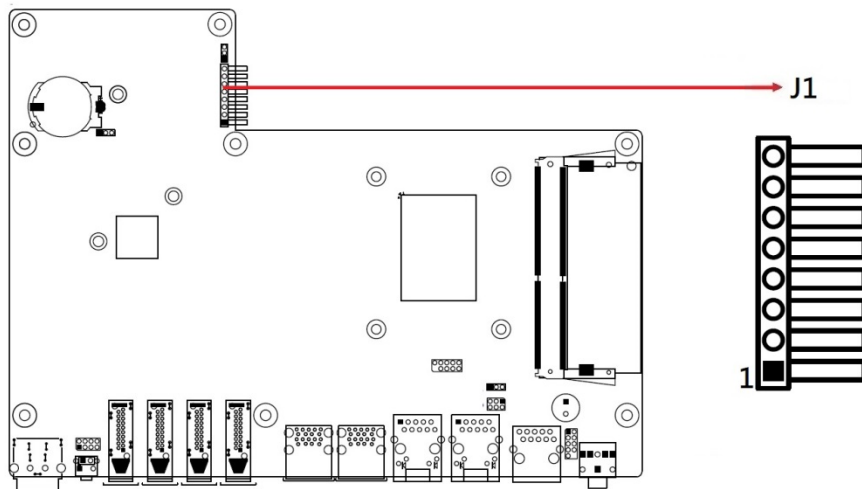


### 2.5.13 SW2: EDID Clear Button

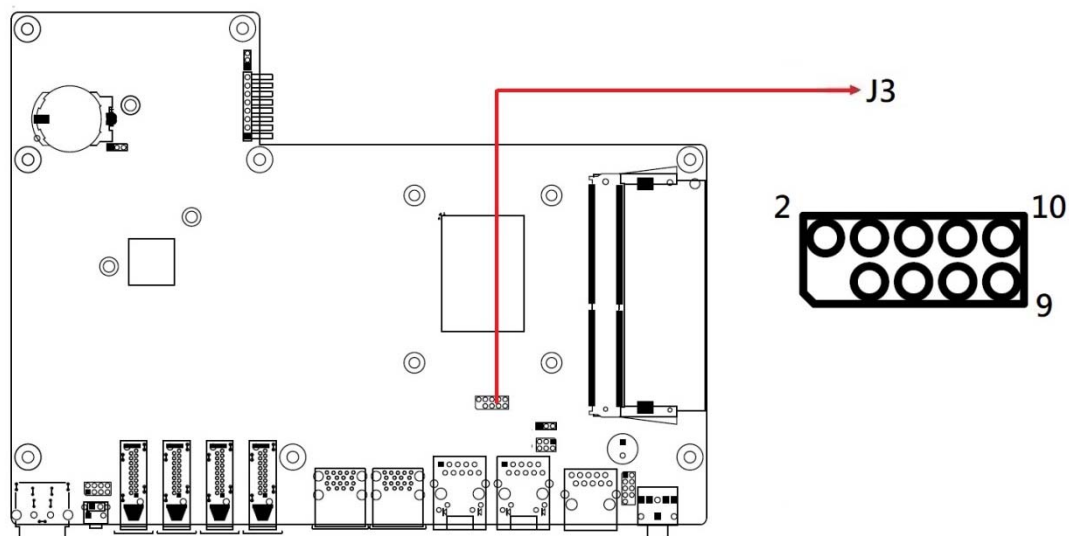




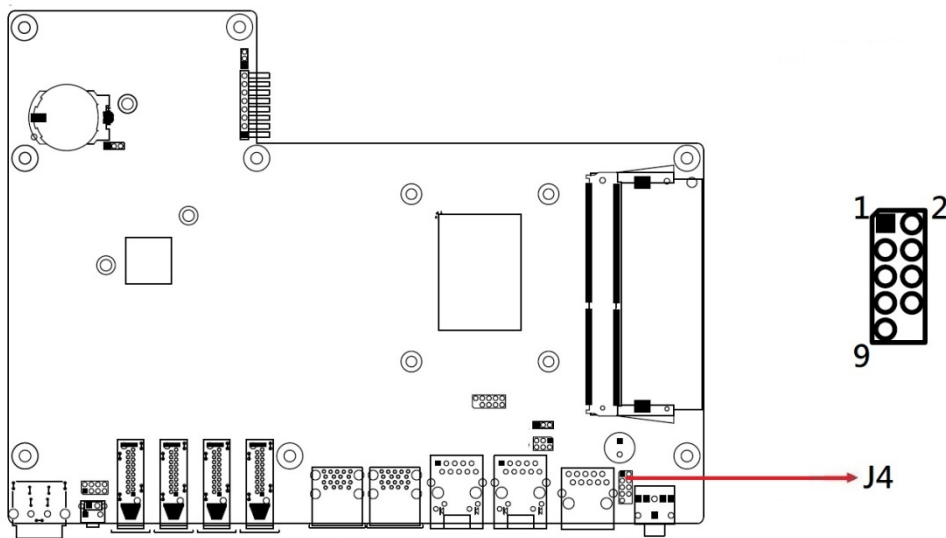
### 2.5.14 J1: EDID Emulator MCU Programming Header



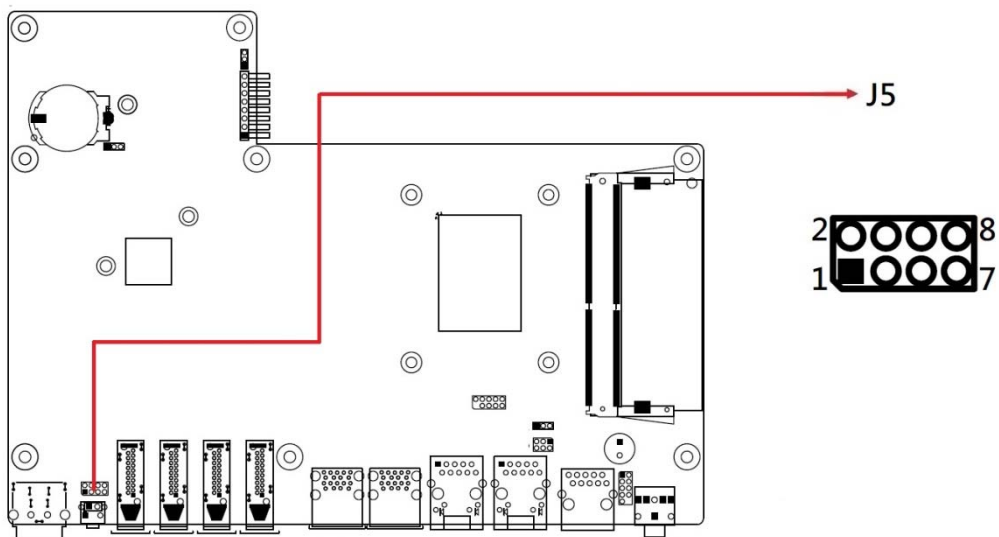
### 2.5.15 J3: SPI Flash Connector



### 2.5.16 J4: LPC Debug Port Connector

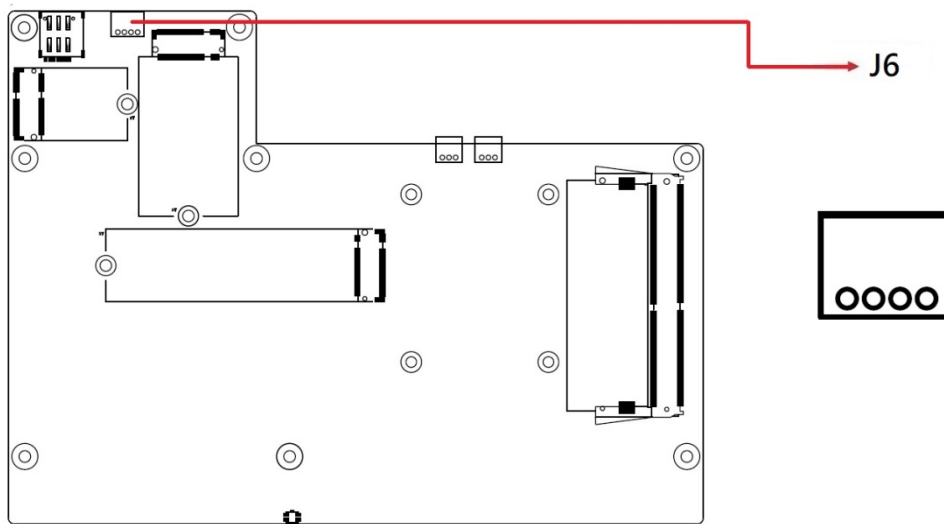


### 2.5.17 J5: Front Panel Settings Connector



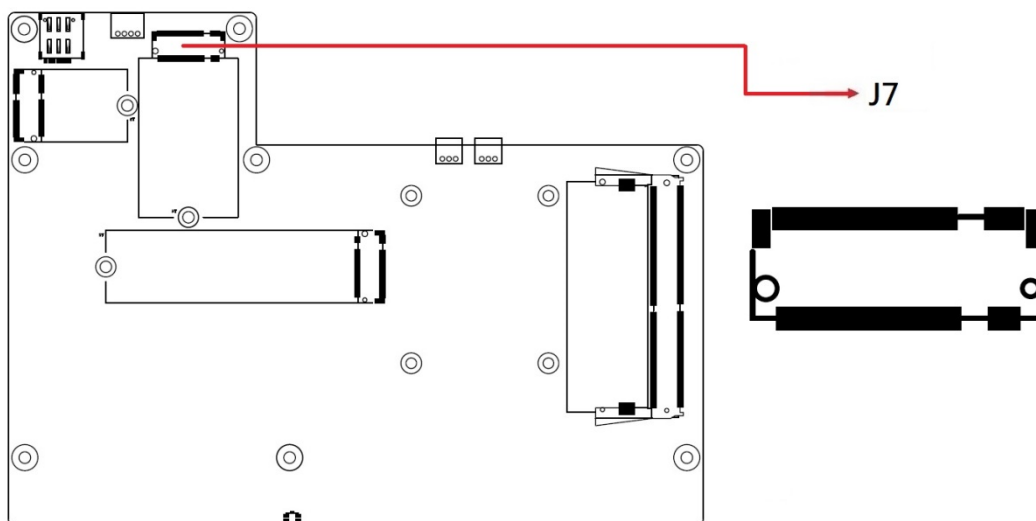
Signal Name	Pin	Pin	Signal Name
Power BTN-	1	2	Power BTN+
HDD LED+	3	4	HDD LED-
Reset BTN-	5	6	Reset BTN+
Power LED+	7	8	Power LED-

### 2.5.18 J6: ISMART MCU Programming Header

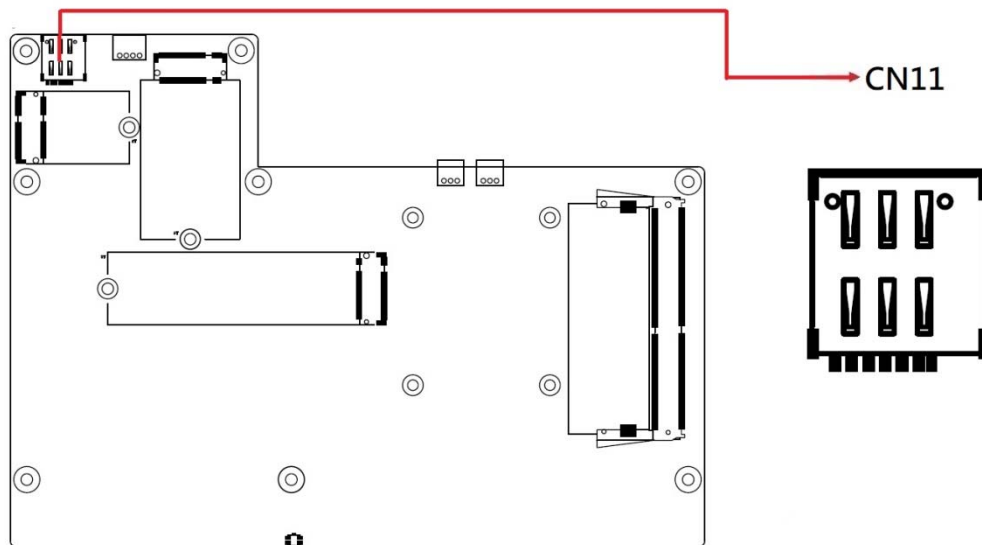


### 2.5.19 J7: NGFF\_M.2\_B-Key 3052

J7 supports USB 3.1 & PCIE (1x) & SIM card.

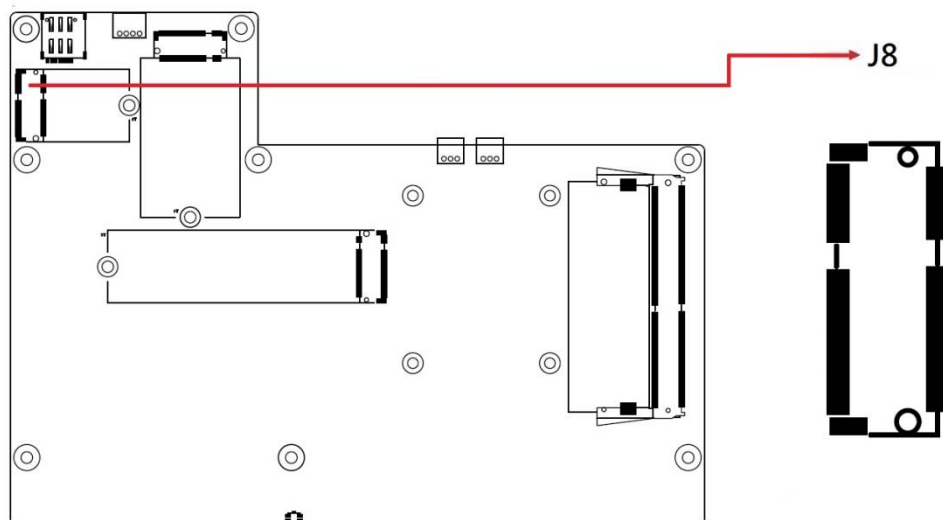


### 2.5.20 CN11: Nano SIM Card Slot



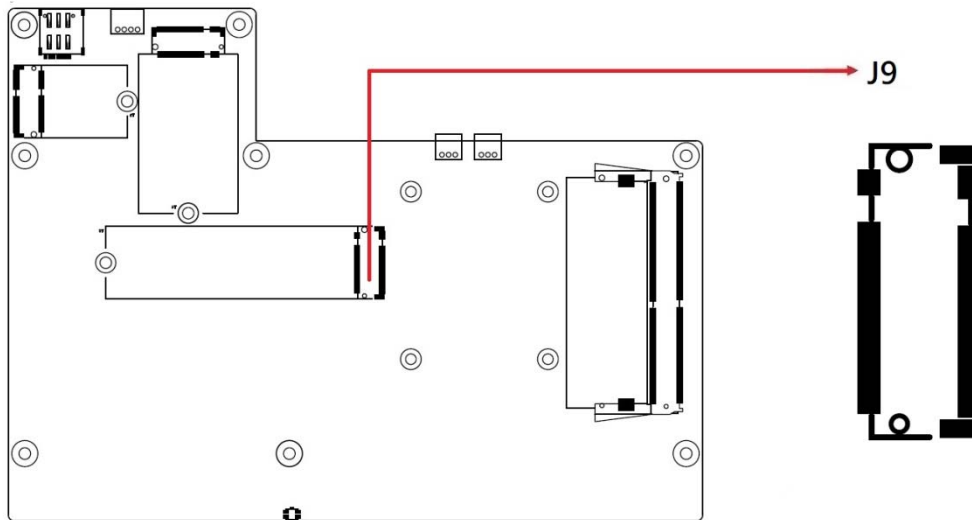
### 2.5.21 J8: NGFF\_M.2\_E-Key 2230

J8 supports USB2.0 & PCIE(1x).

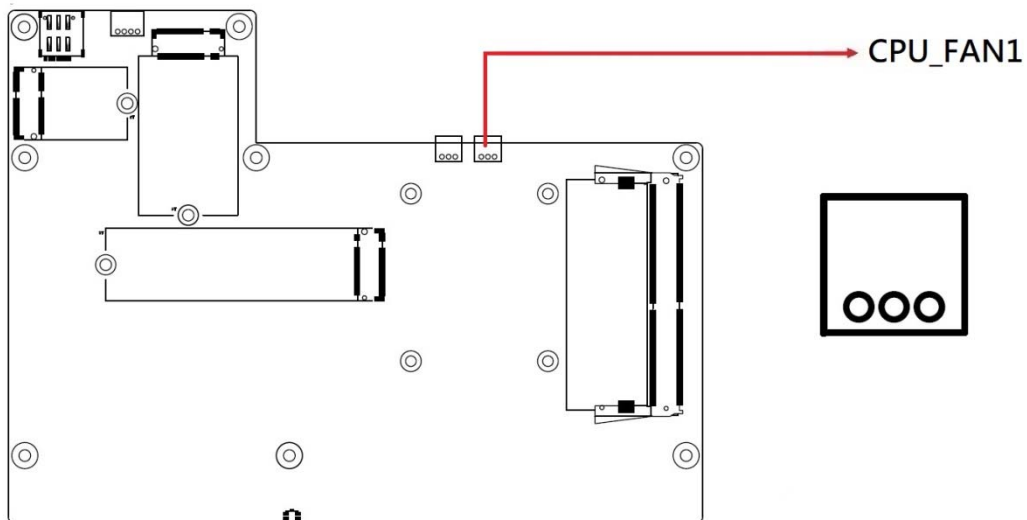


### 2.5.22 J9: M.2 (M-Key) 2280 Slot

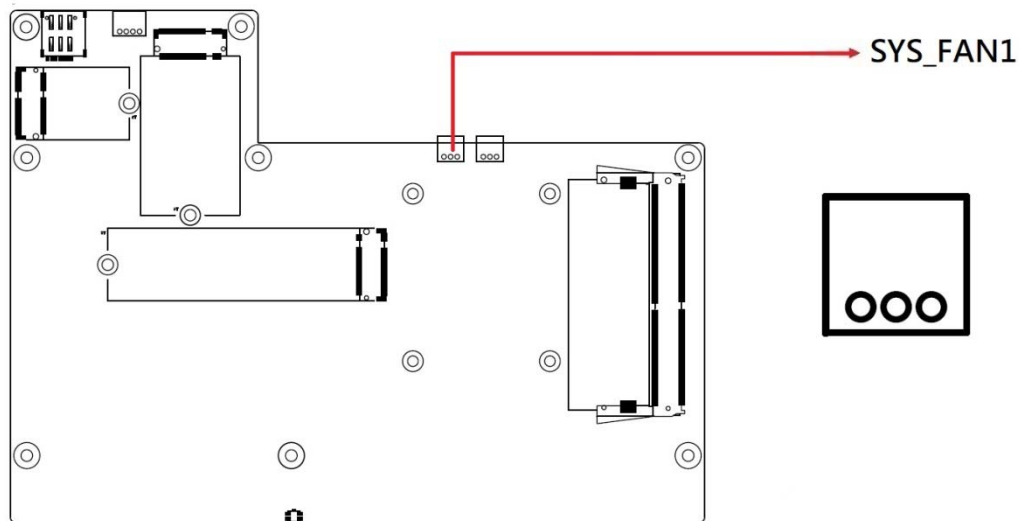
J9 supports NVMe/ PCIe (4x) & SATA.



### 2.5.23 CPU\_FAN1: CPU Fan Connector



## 2.5.24 SYS\_FAN1: System Fan Connector



## Chapter 3

# Driver Installation

The information provided in this chapter includes:

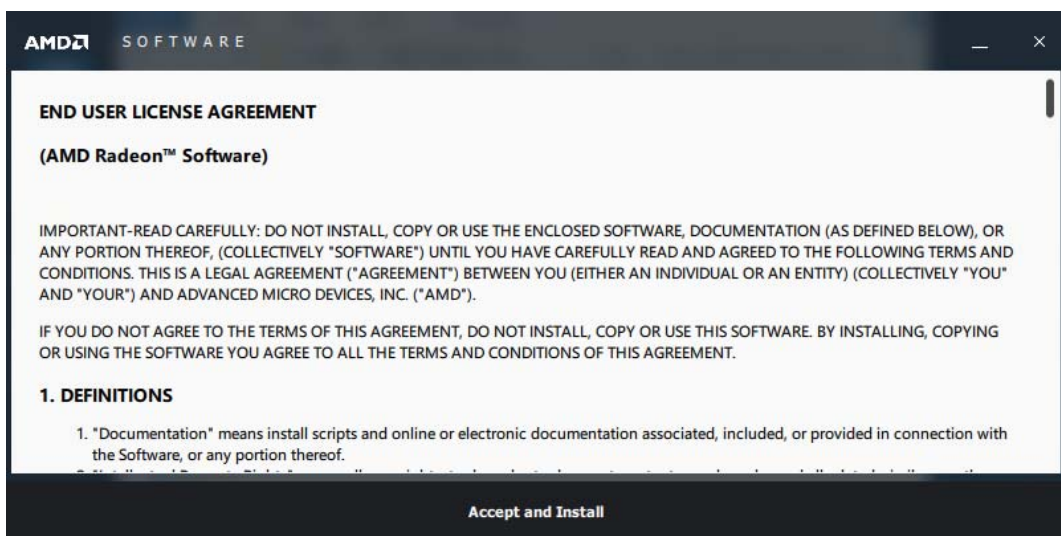
- AMD Radeon™ Graphics Driver Installation
- HD Audio Driver Installation
- LAN Driver Installation

### 3.1 Introduction

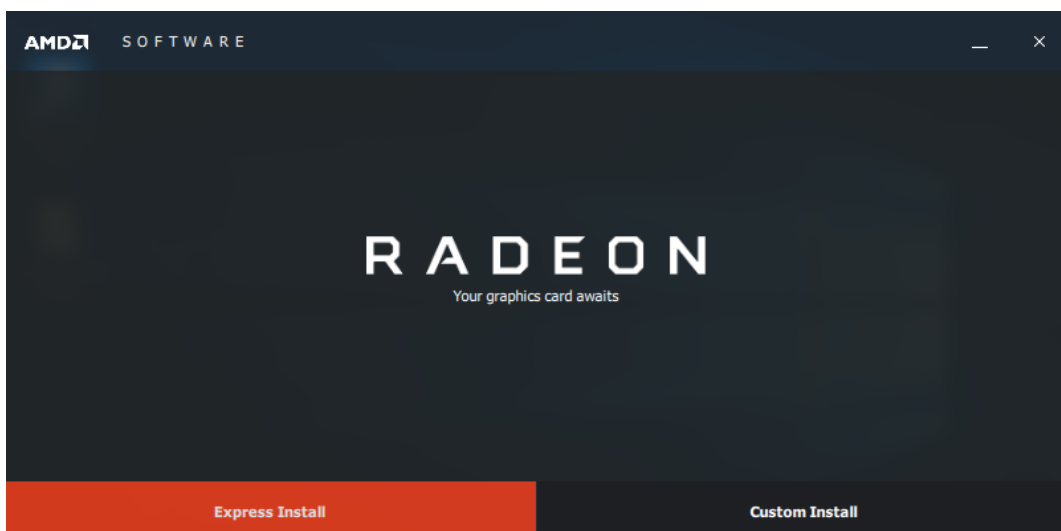
This section describes the installation procedures for software drivers. The software drivers are available on IBASE website [www.ibase.com.tw](http://www.ibase.com.tw). Register as a member of our website to download all the necessary drivers and extract for installation.

### 3.2 AMD Radeon™ Graphics Driver Installation

1. Run the **Setup.exe** file.
2. Accept the license agreement to continue.



3. Choose either **Express Install** or **Custom Install**.

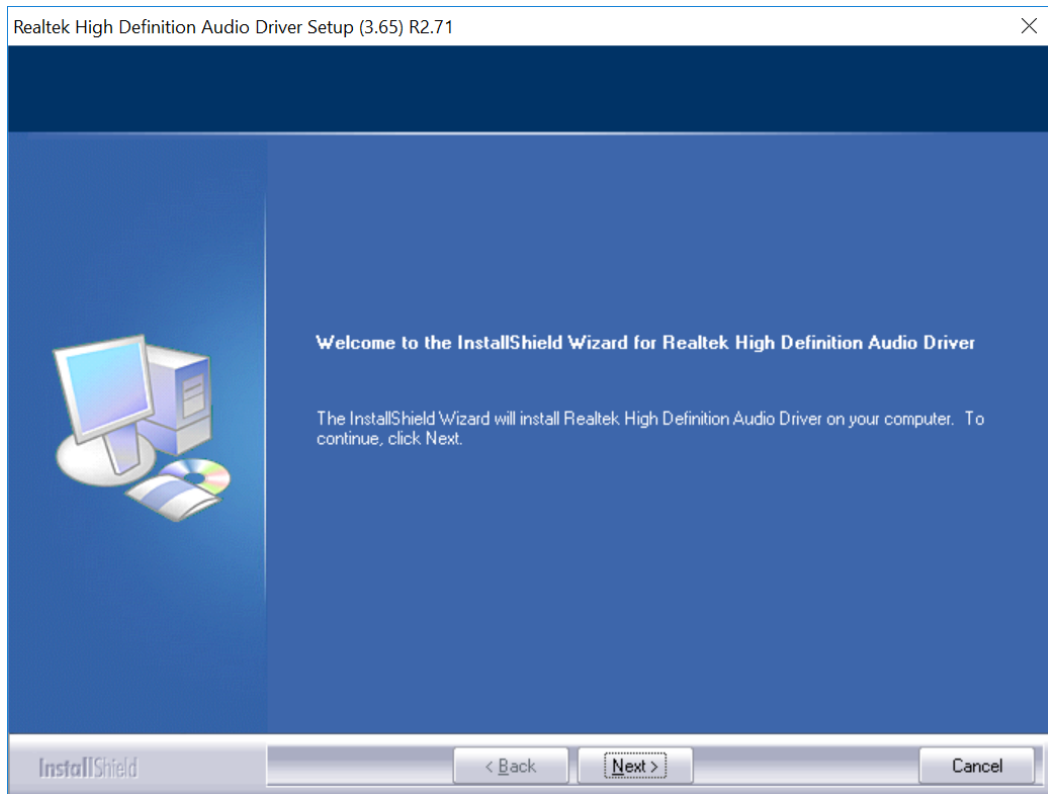


4. When the driver is completely installed, restart the computer for changes to take effect.



### 3.3 HD Audio Driver Installation

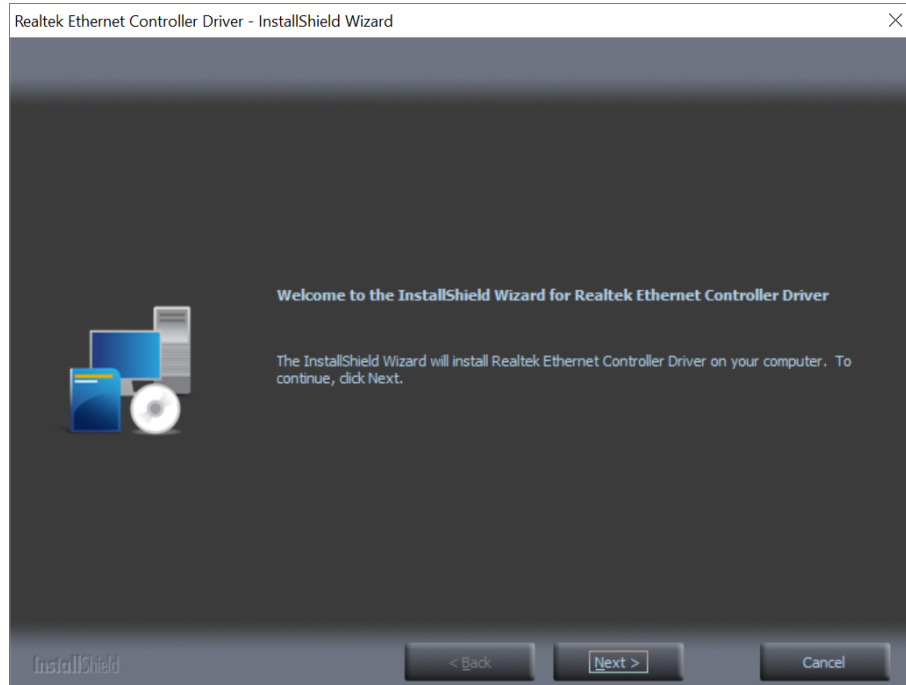
1. Run the **Setup.exe** file.
2. On the *Welcome* screen of the InstallShield Wizard, click **Next** for installation.



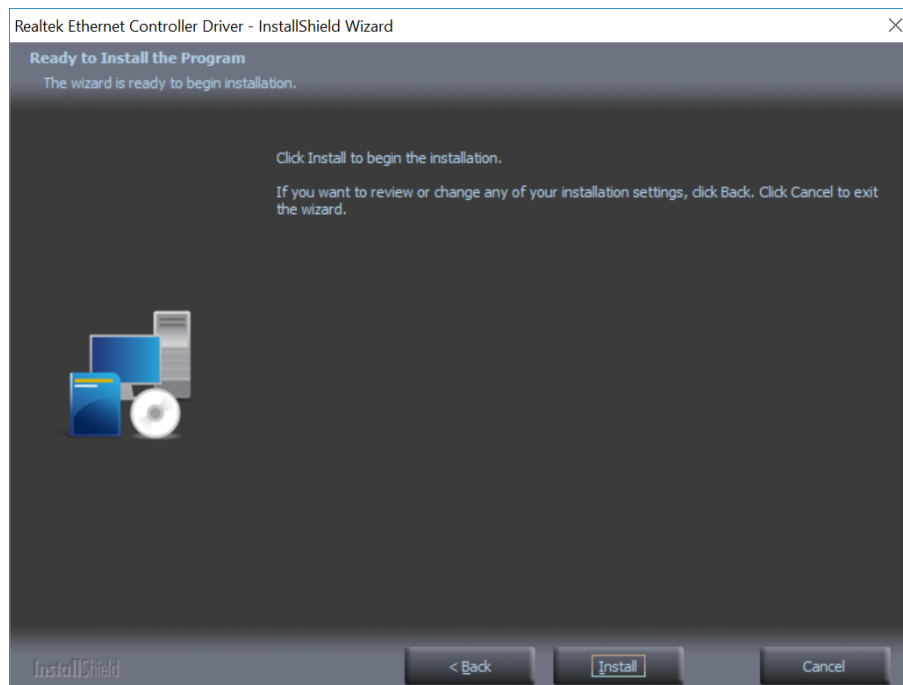
3. When the driver is completely installed, restart the computer for changes to take effect.

### 3.4 LAN Driver Installation

1. Run the **Setup.exe** file.
2. On the *Welcome* screen of the InstallShield Wizard, click **Next**.



3. Accept the license agreement and click **Next** to continue.



4. When the driver is completely installed, restart the computer for changes to take effect.

## Chapter 4

# BIOS Setup

This chapter describes the different settings available in the AMI BIOS that comes with the board. The topics covered in this chapter are as follows:

- Main Settings
- Advanced Settings
- Chipset Settings
- Security Settings
- Boot Settings
- Save & Exit

## 4.1 Introduction

The BIOS (Basic Input/Output System) installed in the ROM of your computer system supports Intel® processors. The BIOS provides critical low-level support for standard devices such as disk drives, serial ports and parallel ports. It also provides password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

## 4.2 BIOS Setup

The BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you turn on the computer, the BIOS is immediately activated. Press the <Del> key immediately allows you to enter the Setup utility. If you are a little bit late pressing the <Del> key, POST (Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup.

If you still need to enter Setup, restart the system by pressing the "Reset" button or simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys. You can also restart by turning the system Off and back On again.

The following message will appear on the screen:

```
Press <DEL> to Enter Setup
```

In general, press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help, and <Esc> to quit.

When you enter the BIOS Setup utility, the *Main Menu* screen will appear on the screen. The Main Menu allows you to select from various setup functions and exit choices.

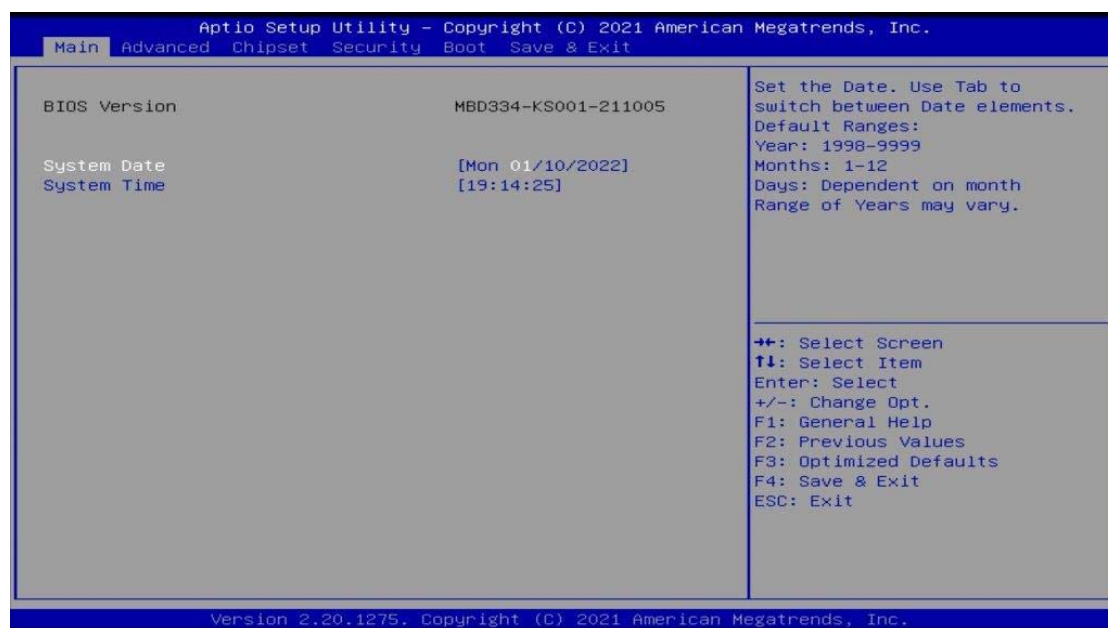
---

**Warning:** It is strongly recommended that you avoid making any changes to the chipset defaults.

These defaults have been carefully chosen by both AMI and your system manufacturer to provide the absolute maximum performance and reliability. Changing the defaults could make the system unstable and crash in some cases.

---

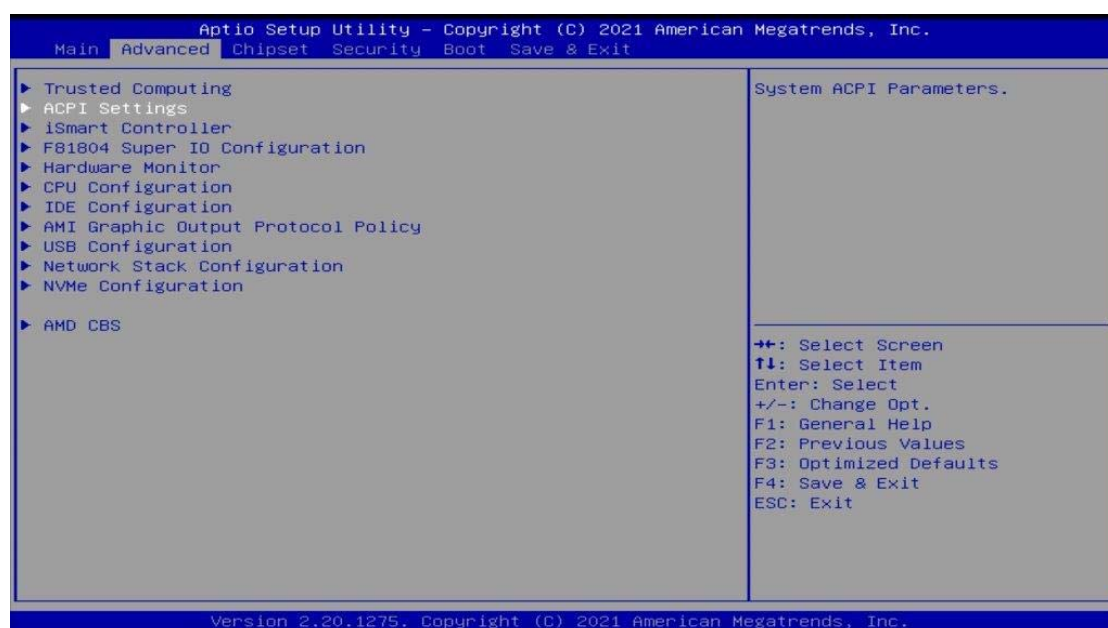
## 4.3 Main Settings



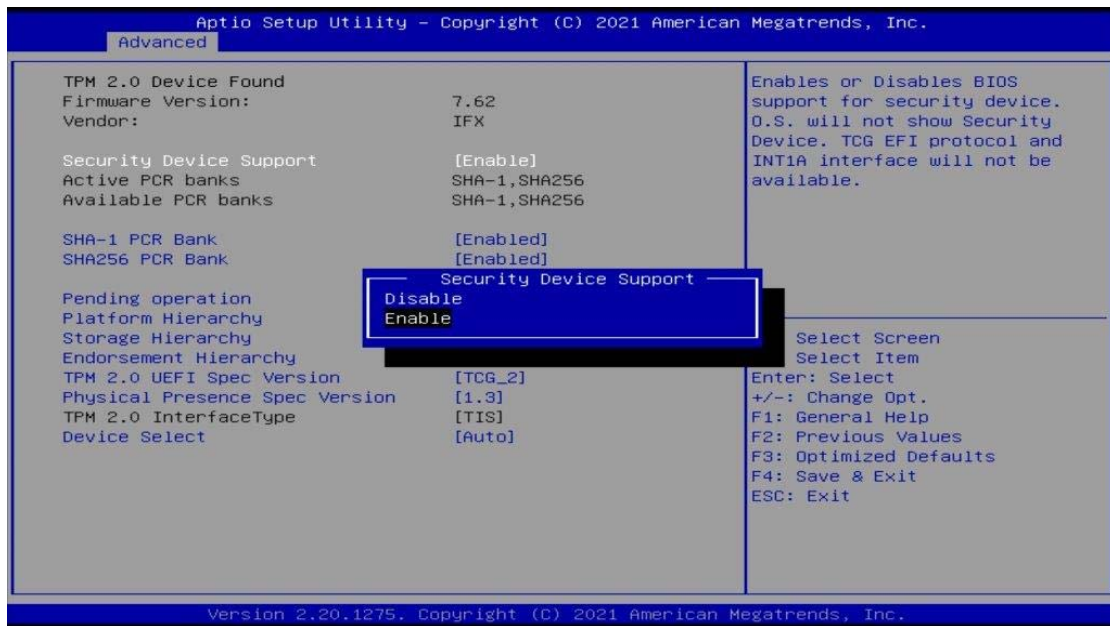
BIOS Setting	Description
System Date	Sets the date. Use the <Tab> key to switch between the data elements.
System Time	Set the time. Use the <Tab> key to switch between the data elements.

## 4.4 Advanced Settings

This section allows you to configure, improve your system and allows you to set up some system features according to your preference.

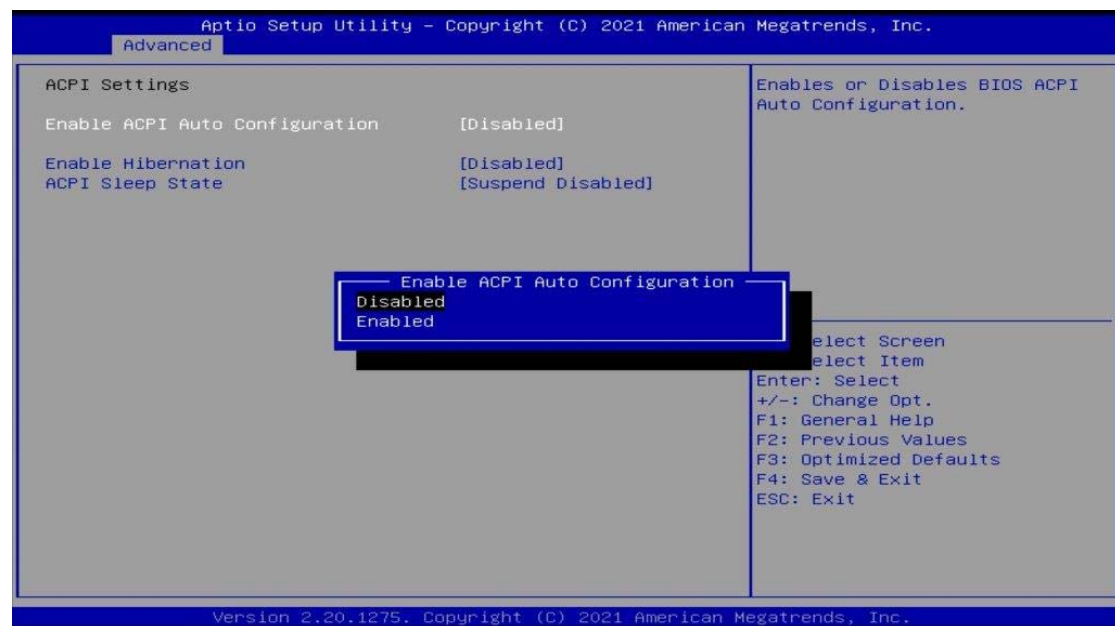


#### 4.4.1 Trusted Computing



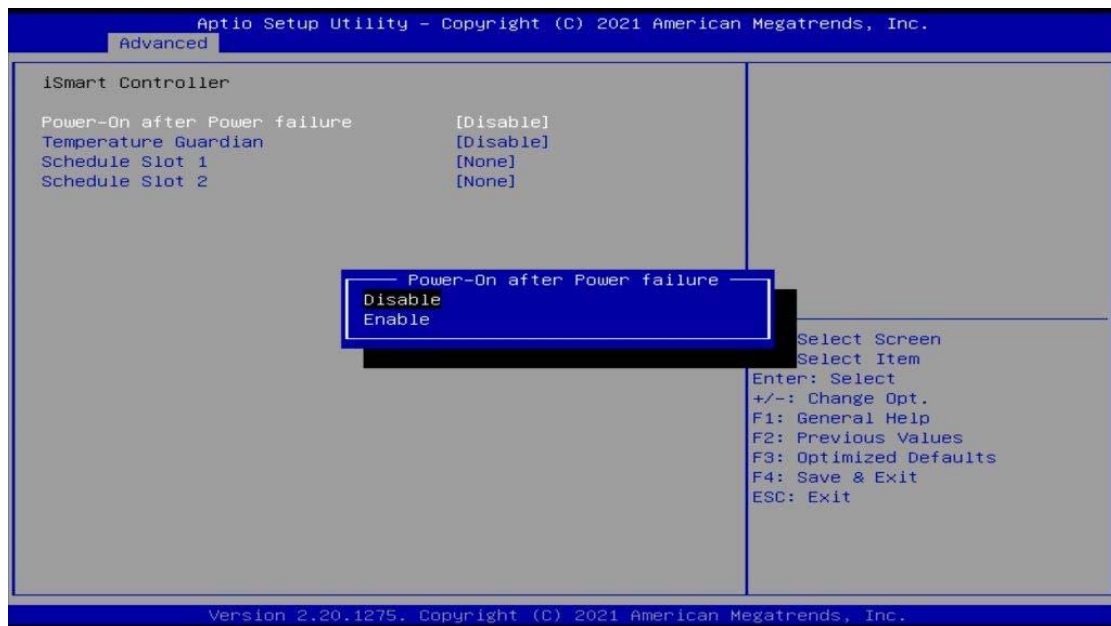
BIOS Setting	Description
Security Device Support	Enables / Disables BIOS support for security device. OS will not show security device. TCG EFI protocol and INT1A interface will not be available.
SHA-1 PCR Bank	Enables / Disables SHA-1 PCR Bank.
SHA256 PCR Bank	Enables / Disables SHA256 PCR Bank.
Pending operation	Schedule an operation for the security device. Note: Your computer will reboot during restart in order to change state of security device.
Platform Hierarchy	Enables / Disables platform hierarchy.
Storage Hierarchy	Enables / Disables storage hierarchy.
Endorsement Hierarchy	Enables / Disables endorsement hierarchy.
TPM2.0 UEFI Spec Version	Options: <ul style="list-style-type: none"> <li><b>TCG_1_2:</b> supports Win8/Win10.</li> <li><b>TCG_2:</b> supports new TCG2 protocol and event format for Windows 10 or later.</li> </ul>
Physical Presence Spec Version	Select to tell O.S. to support PPI Spec Version 1.2 or 1.3. Note some HCK tests might not support 1.3.
Device Select	TPM 1.2 will restrict support to TPM 1.2 devices. TPM 2.0 will restrict support to TPM 2.0 devices. Auto will support both with the default set to TPM 2.0 devices if not found, TPM 1.2 devices will be enumerated.

## 4.4.2 ACPI Settings



BIOS Setting	Description
Enable ACPI Auto Configuration	Enables / Disables BIOS ACPI auto configuration.
Enable Hibernation	Enables / Disables system ability to hibernate (OS/S4 Sleep State). This option may not be effective with some operating systems.
ACPI Sleep State	Selects the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.

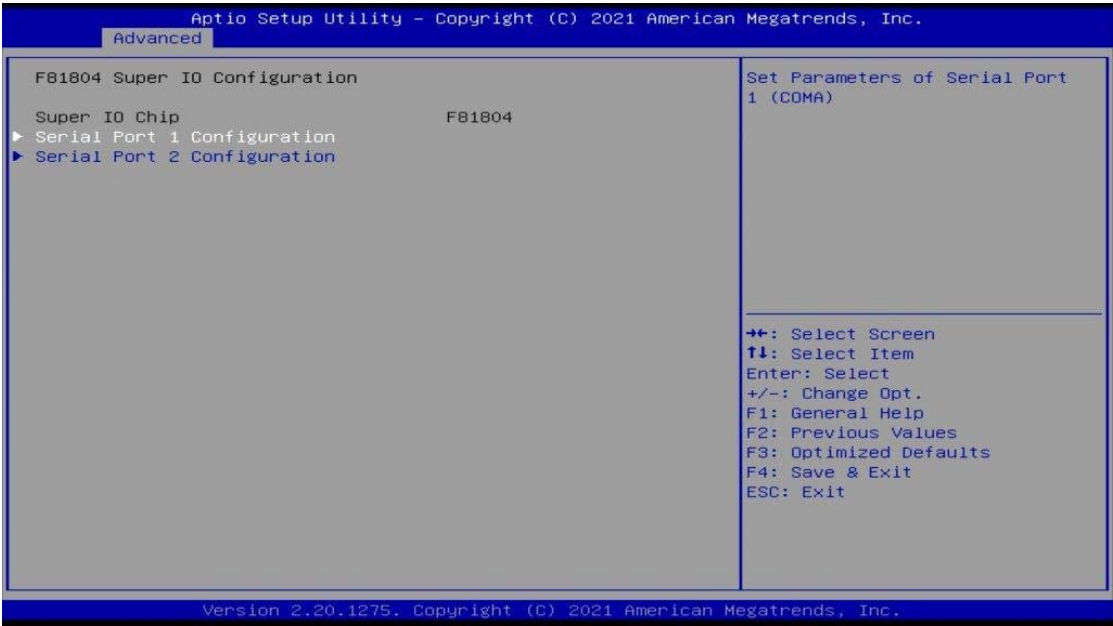
### 4.4.3 iSmart Controller



BIOS Setting	Description
Power-On after Power failure	Enables / Disables the system to be turned on automatically after a power failure.
Temperature Guardian	Enables / Disables the temperature guardian.
Schedule Slot 1 / 2	<p>Sets up the hour / minute for system powe-on.</p> <p><b>Important:</b> If you would like to set up a schedule between adjacent days, configure two schedule slots.</p> <p>For example, if setting up a schedule from Wednesday 5 p.m. to Thursday 2 a.m., configure two schedule slots. But if setting up a schedule from 3 p.m to 5 p.m. on Wednesday, configure only a schedule slot.</p>

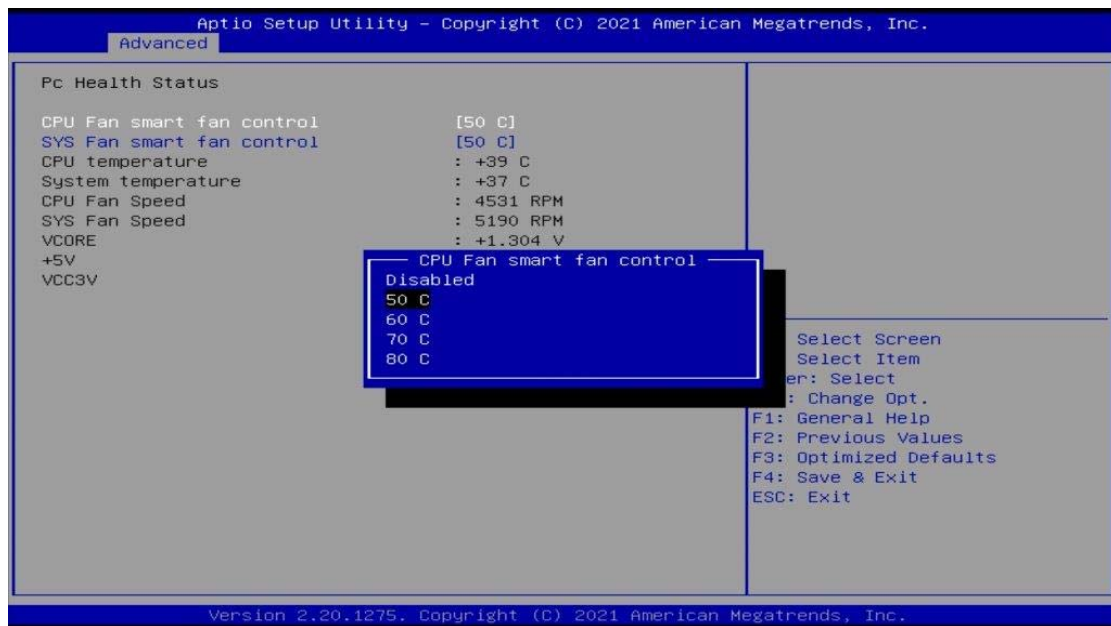


4.4.4 F81804 Super IO Configuration



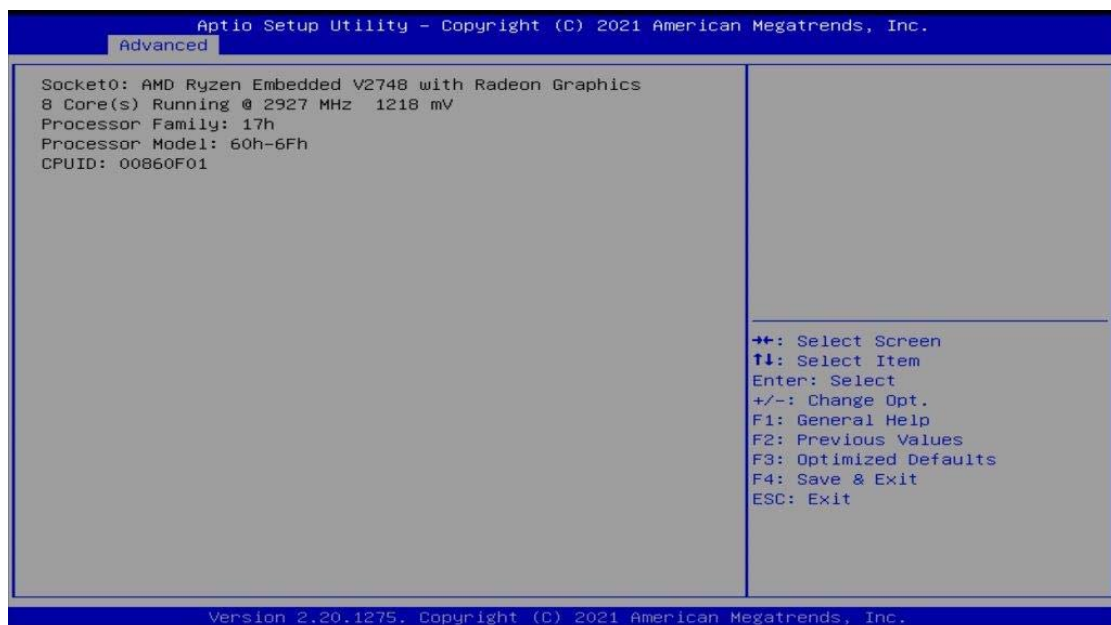
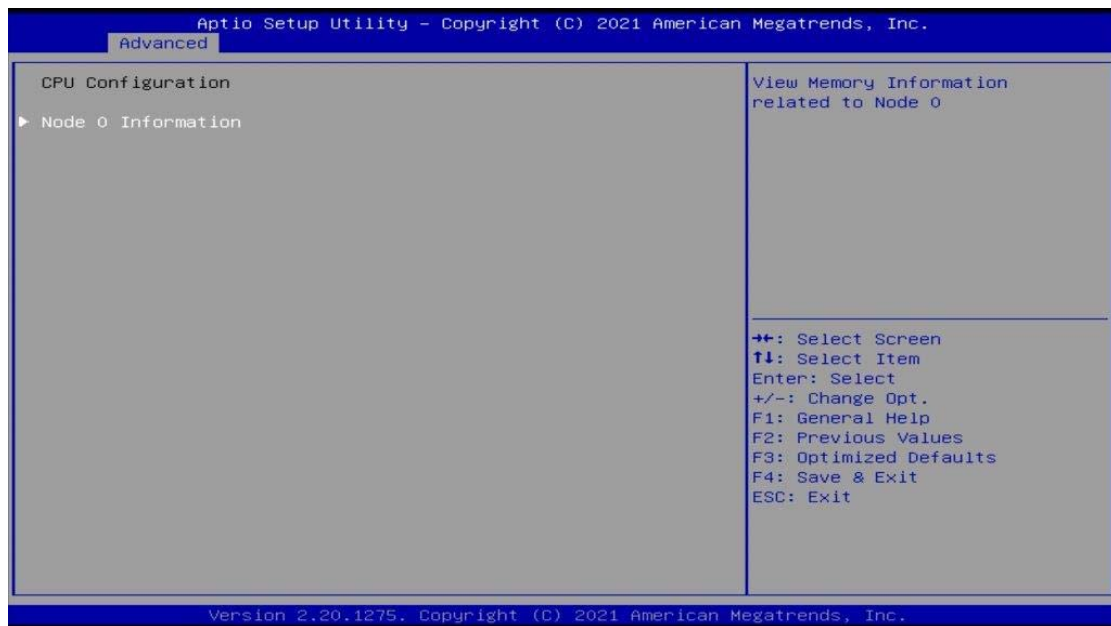
BIOS Setting	Description
Serial Ports Configuration	Sets parameters of Serial Port (COM). Enables / Disables the serial port and select an optimal setting for the Super IO device.

#### 4.4.5 PC Health Status



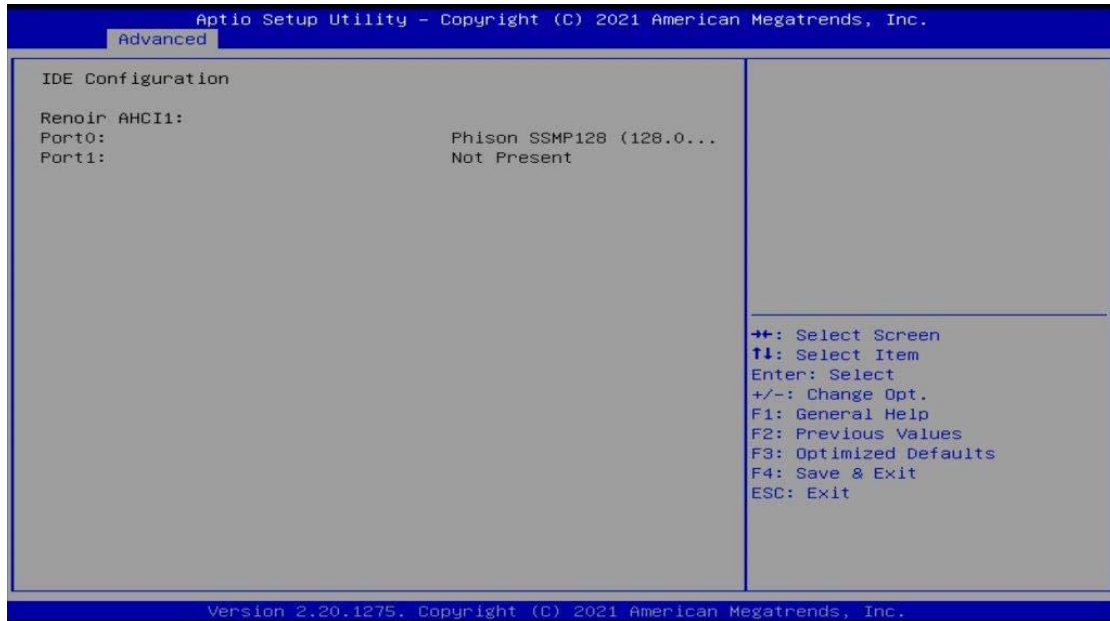
BIOS Setting	Description
CPU Fan Smart Fan Control	Disable or set fan control for CPU_FAN1 at 50°C, 60°C, 70°C or 80°C.
System Fan Smart Fan Control	Disable or set fan control for CPU_FAN2 at 50°C, 60°C, 70°C or 80°C.
Temperatures / Voltages	These fields are the parameters of the hardware monitoring function feature of the motherboard. The values are read-only values as monitored by the system and show the PC health status.

## 4.4.6 CPU Configuration

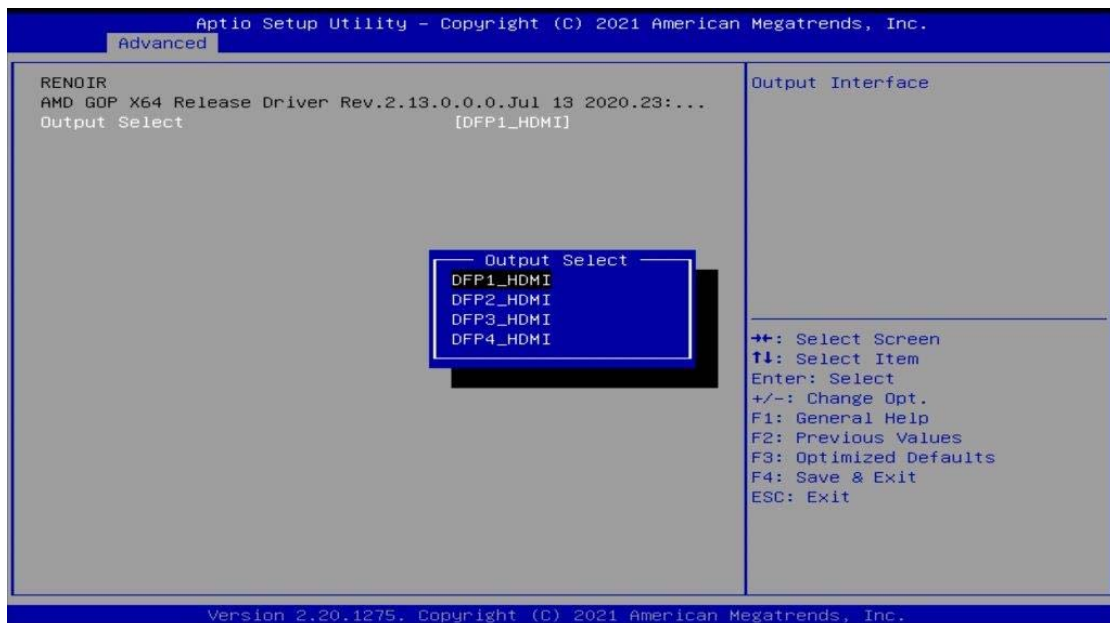


BIOS Setting	Description
Node 0 Information	Displays the memory information related to Node 0.

#### 4.4.7 IDE Configuration

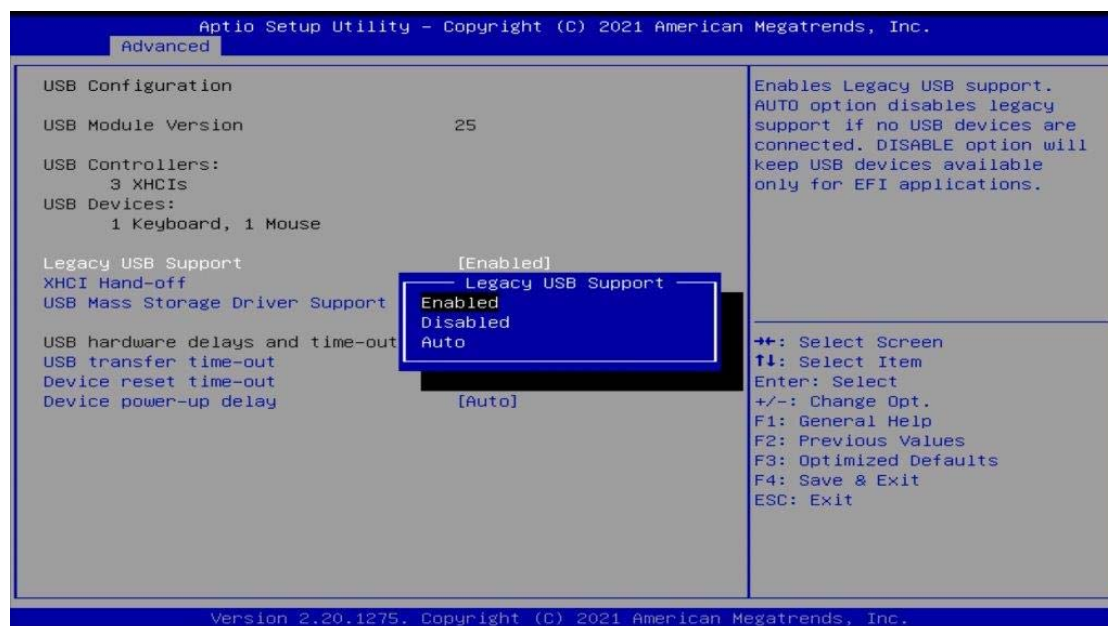


#### 4.4.8 AMI Graphics Output Protocol Policy



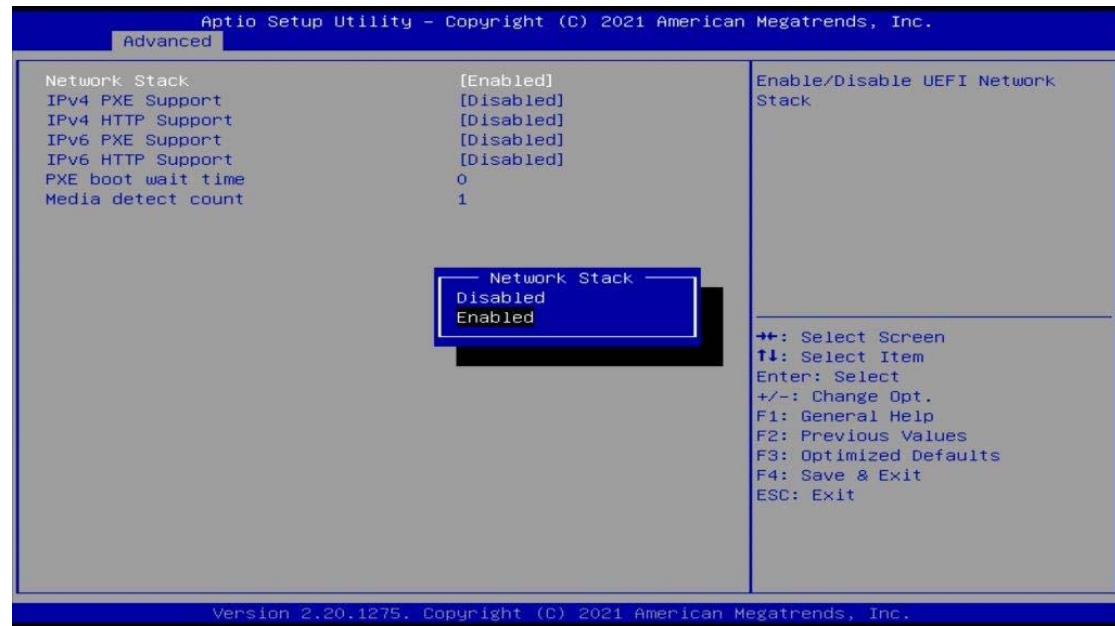
BIOS Setting	Description
Output Selection	Selects an output interface.

### 4.4.9 USB Configuration



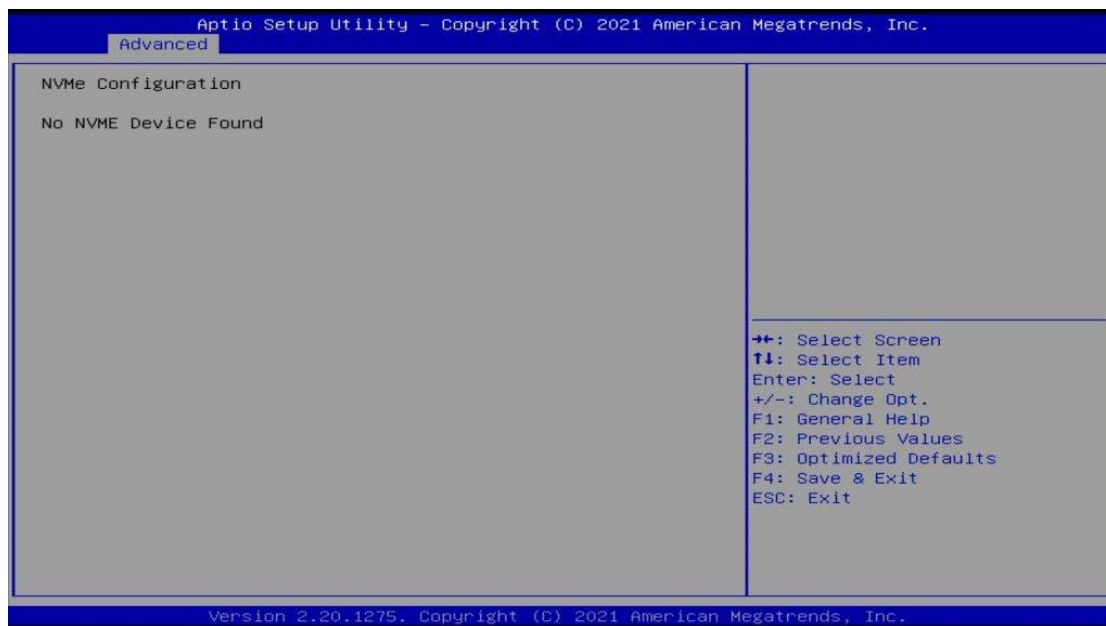
BIOS Setting	Description
Legacy USB Support	<ul style="list-style-type: none"> <li>• <b>Enable:</b> Enables Legacy USB Support.</li> <li>• <b>Auto:</b> Disables legacy support if no USB devices are connected.</li> <li>• <b>Disable:</b> Keeps USB devices available only for EFI applications.</li> </ul>
XHCI Hand-off	This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
USB Mass Storage Driver Support	Enables / Disables the support for USB mass storage driver.
USB Transfer time-out	The time-out value for Control, Bulk, and Interrupt transfers.
Device reset time-out	Seconds of delaying execution of start unit command to USB mass storage device.
Device power-up delay	The maximum time the device will take before it properly reports itself to the Host Controller. "Auto" uses default value for a Root port it is 100ms. But for a Hub port, the delay is taken from Hub descriptor.

#### 4.4.10 Network Stack Configuration

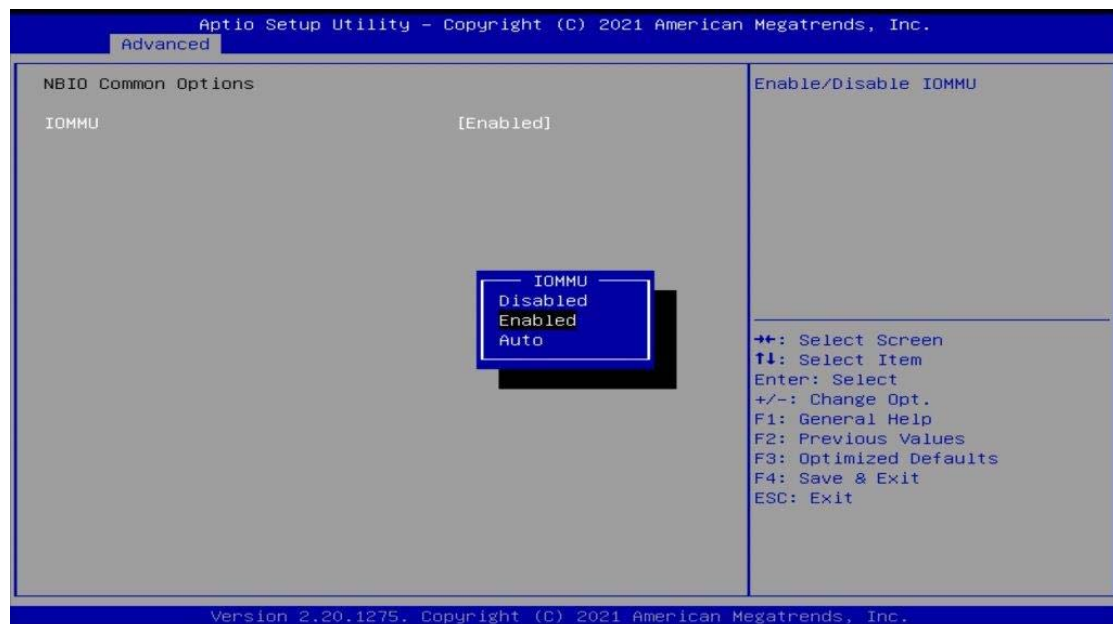


BIOS Setting	Description
Network Stack	Enables / Disables UEFI Network Stack.
Ipv4 PXE Support	Enable/Disable IPv4 PXE boot support. If disabled, IPv4 PXE boot support will not be available
Ipv4 HTTP Support	Enable/Disable IPv4 HTTP boot support. If disabled, IPv4 HTTP boot support will not be available
Ipv6 HTTP Support	Enable/Disable IPv6 HTTP boot support. If disabled, IPv4 HTTP boot support will not be available
Ipv6 PXE Support	Enable/Disable IPv6 PXE boot support. If disabled, IPv4 PXE boot support will not be available
PXE boot wait time	Wait time in seconds to press ESC key to abort the PXE boot. Use either +/- or numeric keys to set the value
Media detect count	Number of times the presence of media will be checked. Use either +/- or numeric keys to set the value

### 4.4.11 NVMe Configuration



#### 4.4.12 AMD CBS

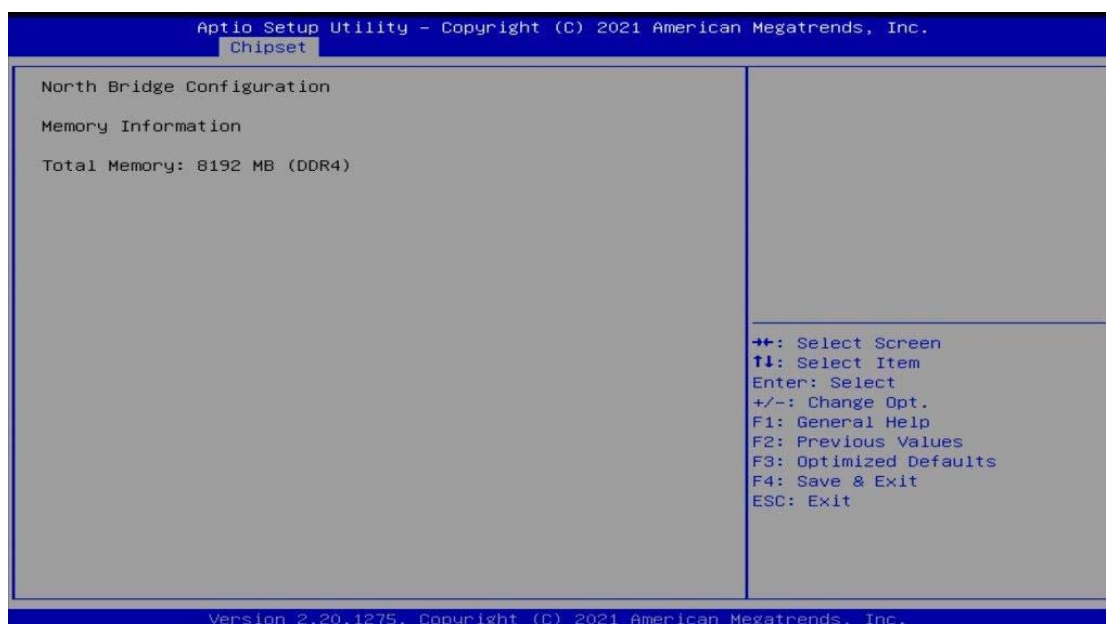




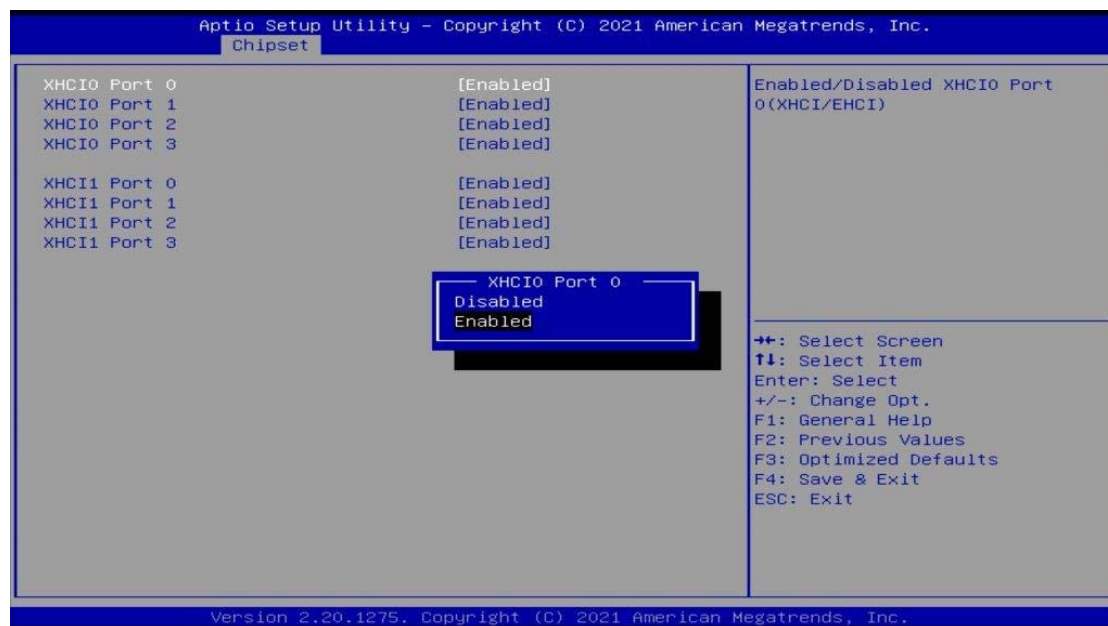
## 4.5 Chipset Settings



BIOS Setting	Description
South Bridge	South Bridge parameters
SB USB Configuration	Options for SB USB configuration.

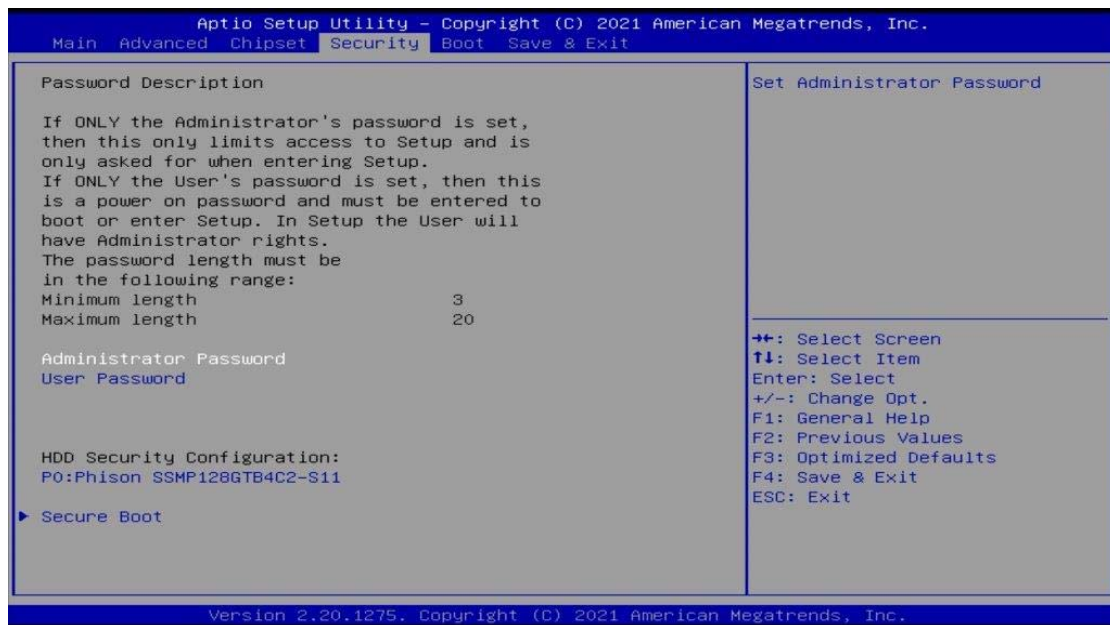


### 4.5.1 SB USB Configuration



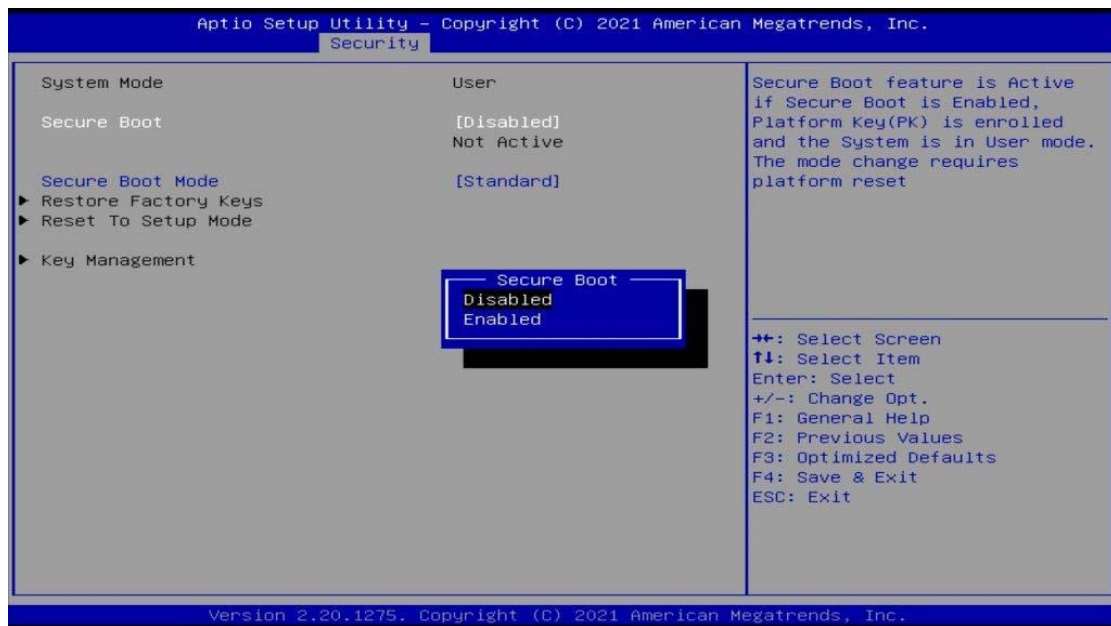
BIOS Setting	Description
XHCI0 / XHCI1 Ports	Enables / Disables XHCI0 / XHCI1 ports.

## 4.6 Security Settings



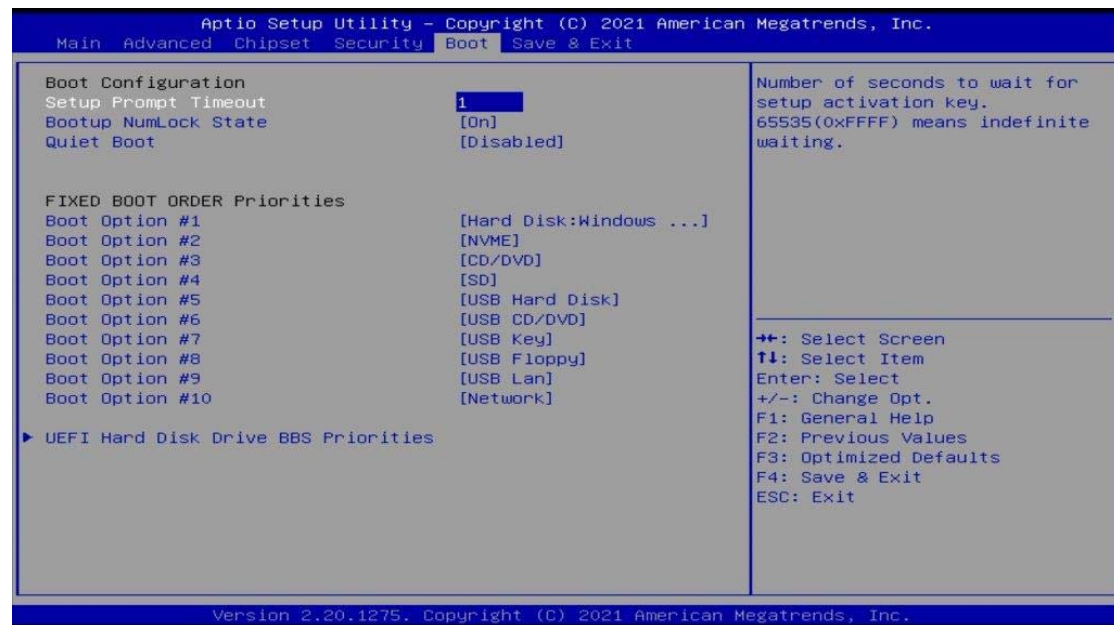
BIOS Setting	Description
Administrator Password	Sets an administrator password for the setup utility.
User Password	Sets a user password.
Secure Boot	Customizable secure boot settings.

#### 4.6.1 Secure Boot Configuration



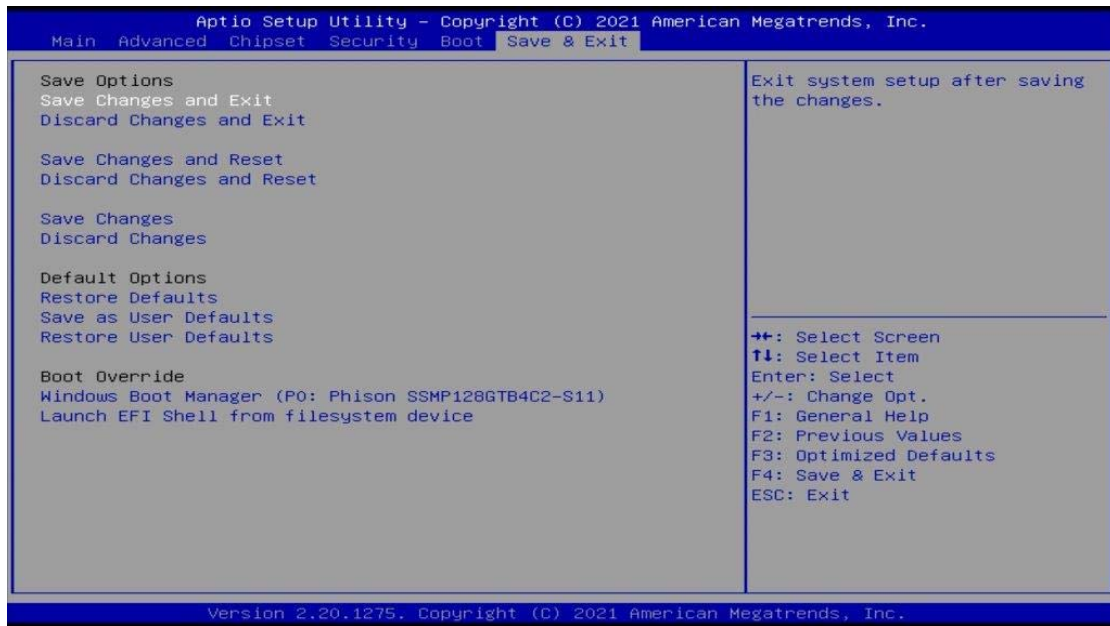
BIOS Setting	Description
Secure Boot	Secure Boot is activated when it is enabled, when the Platform Key (PK) is enrolled, the System mode is user deployed, and CSM is disabled.
Secure Boot Customization	Customizable Secure Boot mode: In Custom mode, Secure Boot policy variables can be configured by a physically present user without full authentication. Options: Standard, Custom

## 4.7 Boot Settings



BIOS Setting	Description
Setup Prompt Timeout	Number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.
Bootup NumLock State	Selects the keyboard NumLock state.
Quiet Boot	Enables / Disables Quiet Boot option.
Boot Order Priorities	Sets the system boot order.
UEFI Hard Disk Drive BBS Priorities	Specifies the Boot device priority sequence from available UEFI hard disk drives.

## 4.8 Save & Exit Settings



BIOS Setting	Description
Save Changes and Exit	Exits system setup after saving the changes.
Discard Changes and Exit	Exits system setup without saving any changes.
Save Changes and Reset	Resets the system after saving the changes.
Discard Changes and Reset	Resets system setup without saving any changes.
Save Changes	Saves changes done so far to any of the setup options.
Discard Changes	Discards changes done so far to any of the setup options.
Restore Defaults	Restores / Loads defaults values for all the setup options.
Save as User Defaults	Saves the changes done so far as user defaults.
Restore User Defaults	Restores the user defaults to all the setup options.

## Appendix

This section provides the following information:

- AMD Eyefinity Multiple Displays Configurations
- I/O Port Address Map
- Interrupt Request Lines (IRQ)
- Watchdog Timer Configuration
- AMD Eyefinity Mode Display Setting Configurations

## A. AMD Eyefinity Multiple Displays Configuration

AMD Eyefinity is applicable to SI-334; it is a technology that allows two or more displays to be grouped together to form a single large desktop. Once AMD Eyefinity is configured, the final resolution is the horizontal and/or vertical sum of the individual monitors.

The following AMD embedded configurations are used for the demonstration of AMD Eyefinity configuration in this section.

**Platform:** AMD Embedded V1000 Reference Platform

**APU:** AMD Embedded V1000 Processor with AMD Radeon Vega Graphics

**AMD Driver:** 17.40.3775.1003.180508a-328988C-AES

### A.1 Setting Up AMD Eyefinity Using Quick Setup

#### A.1.1 AMD Eyefinity Quick Setup with All Displays

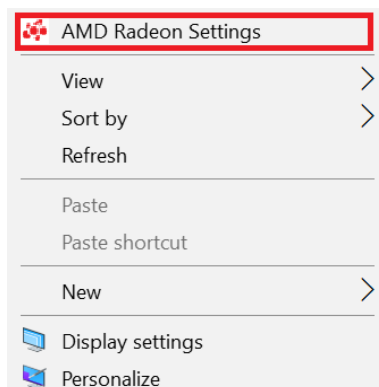
This section describes how to set up AMD Eyefinity with the Quick Setup option, where all the connected displays will be part of the AMD Eyefinity Display Group created.

As AMD Eyefinity Quick Setup creates an Eyefinity Display Group based on the current (default) display configuration, ensure that the displays are arranged in the desired supported order first under extended desktop in the Operating System's display settings.

In the below example, Eyefinity Quick Setup is used to create a 3x1 AMD Eyefinity Display Group. So, arrange the displays in a 3x1 configuration in extended desktop before configuring AMD Eyefinity with Quick Setup.

To set up AMD Eyefinity with Quick Setup:

1. Open AMD Radeon Settings: Right-click on the desktop and select **AMD Radeon Settings**.

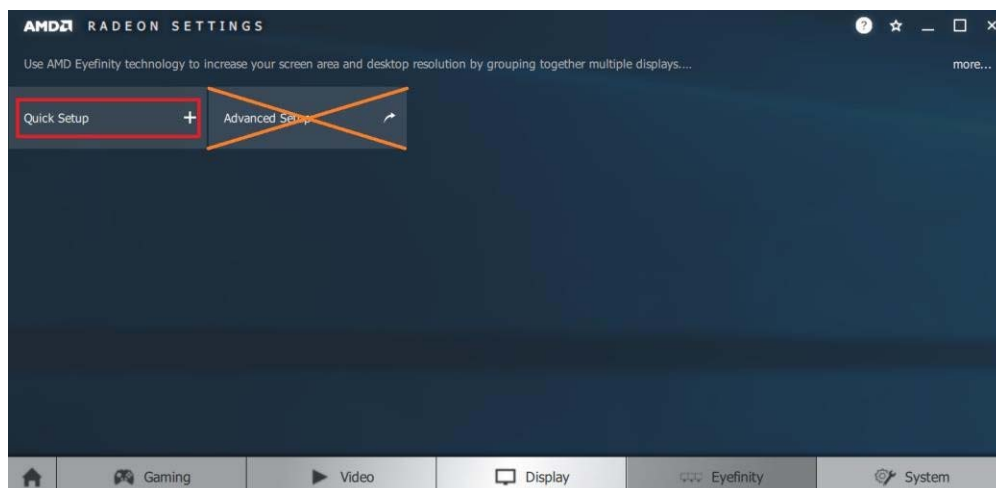




2. Click **Eyefinity** once **AMD Radeon Settings** opens.



3. Click **Quick Setup** to automatically create an AMD Eyefinity Display Group based on the current (default) display configuration.

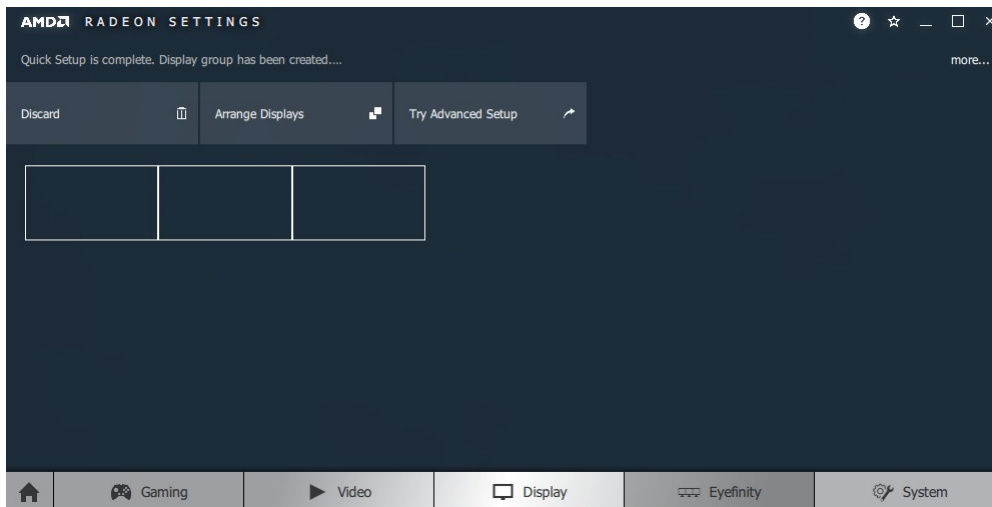


---

**Note:** At the time of writing, **Advanced Setup** for configuring Eyefinity is available. However, this feature is not supported. Do not confuse with **Try Advanced Setup** (see below picture), which becomes available after Eyefinity Quick Setup is complete. The **Try Advanced Setup** option is used to customize the Eyefinity Display Group created after Eyefinity Quick Setup is complete.

---

4. In this example, a 3x1 Eyefinity Display Group is created as shown below.

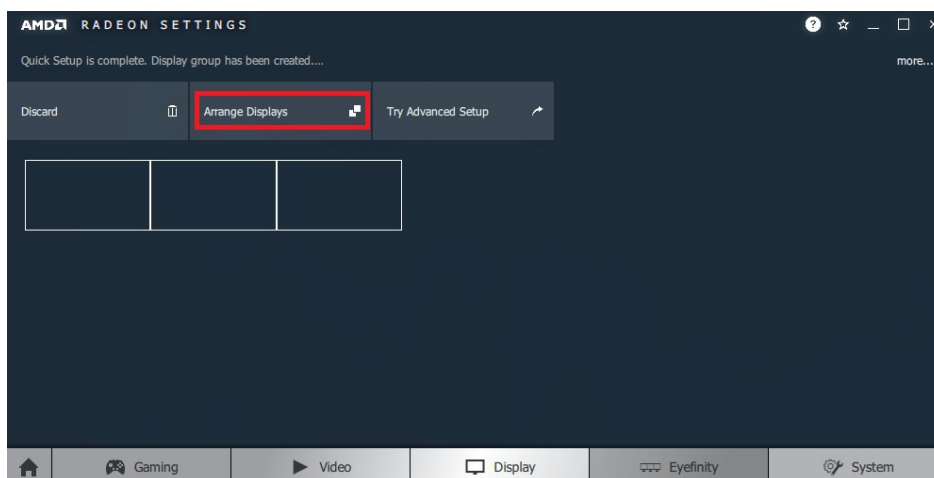


5. Once the AMD Eyefinity Display Group is created, the following options become available:
- **Discard** – Removes the AMD Eyefinity setup and restores the previous display configuration.
  - **Arrange Displays** – Arrange the position of each display in the AMD Eyefinity Display Group. Refer to the next section *Arrange Displays after Eyefinity Quick Setup* for details.
  - **Try Advanced Setup** – Additional settings to customize the AMD Eyefinity Display Group. Refer to *A.2 Customizing AMD Eyefinity Using Try Advanced Setup* for details.

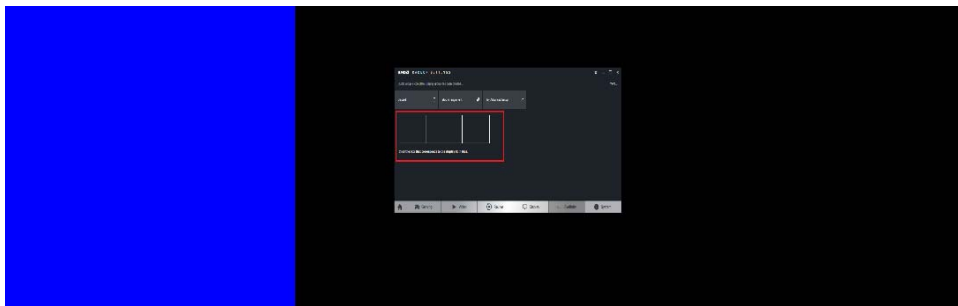
### Arrange Displays after Eyefinity Quick Setup

To arrange displays in desired positions (optional):

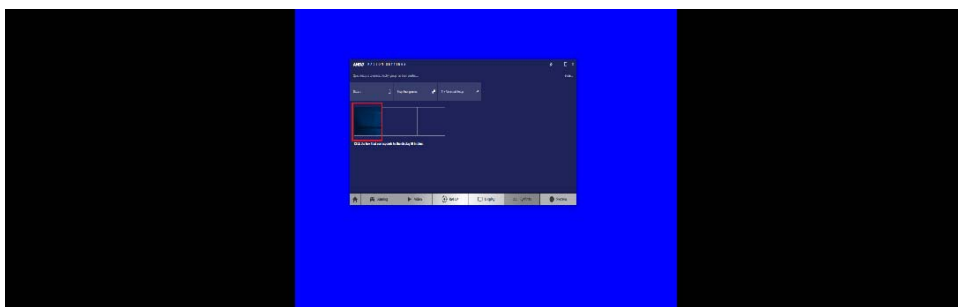
1. Click **Arrange Displays** after Eyefinity Quick Setup is complete.



2. The onscreen guide will show a grid representation of the Eyefinity Display Group and one of the physical displays will have a blue background.



3. Click on the box in the grid that matches the desired location of the highlighted display in blue.



4. Repeat Step #3 with the rest of displays to complete the **Arrange Displays** setup.

### A.1.2 AMD Eyefinity Quick Setup with Part of All Displays

As mentioned previously, since Eyefinity Quick Setup uses the current (default) display configuration which involves all the connected displays, configuring Eyefinity with only a portion of the connected displays is not allowed.

For example, setting up 3 x 1 Eyefinity with 4 connected displays is not possible with Eyefinity Quick Setup.

The following example, which sets up 3 x 1 Eyefinity (Quick Setup) with a total of 4 x 4k connected displays, demonstrates the method to work around the limitation:

1. Physically connect the displays to be used for the Eyefinity Display Group. In this setup, the number of displays for Eyefinity should be less than the total number of displays to be used in the overall setup (i.e. Eyefinity Display Group + Extended Desktop Displays).

In this example, physically connect 3 of the 4 displays first and arrange them in 3 x 1 extended desktop in the Operating System's display settings.

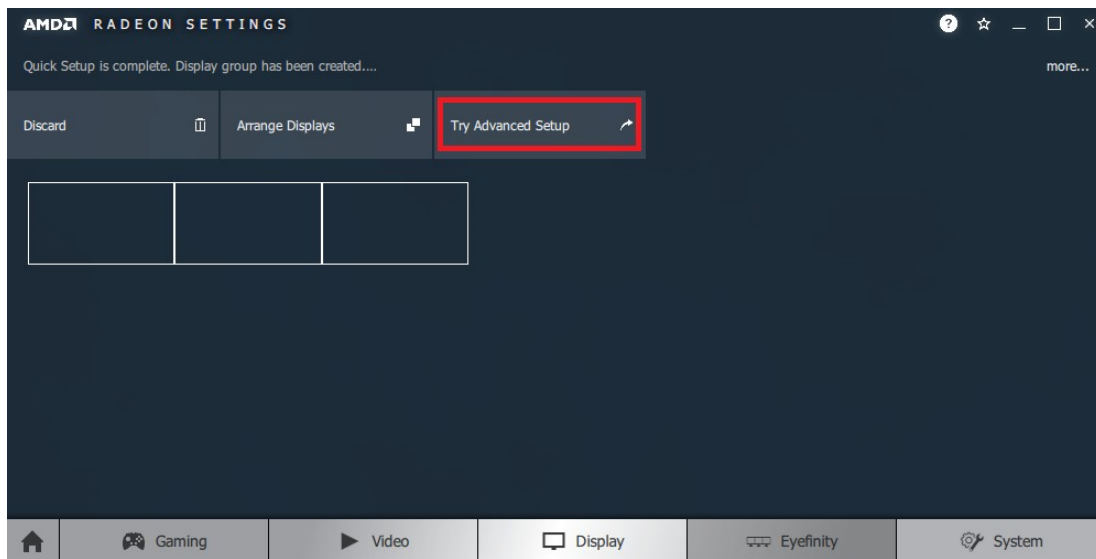
2. Follow the steps in Section 2.1, “AMD Eyefinity Quick Setup with All Displays” to configure Eyefinity.

In this example, a 3 x 1 Eyefinity Display Group has been created with 3 x 4k displays after Eyefinity Quick Setup is complete.

3. Once the 3 x 1 Eyefinity Display Group is created, connect (hotplug) the fourth display to the AMD graphics device.

The resulting setup consists of a 3 x 1 Eyefinity Display Group (11520 x 2160 resolution) + 1 x 4k (3840 x 2160 resolution) (in extended desktop).

## A.2 Customizing AMD Eyefinity Using Try Advanced Setup



**Try Advanced Setup** becomes available after Eyefinity Quick Setup is complete (see above picture). It offers customization for the Eyefinity Display Group created, with options such as:

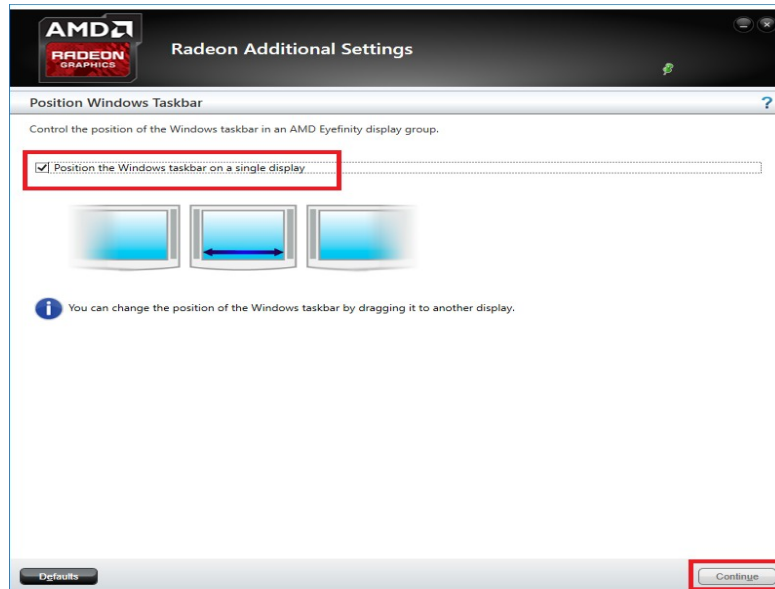
- Position Windows Taskbar
- Arrange Eyefinity Display Group
- Resize Desktop
- Disable Eyefinity Display Group
- Adjust Bezel Compensation
- Customize Eyefinity Desktop Resolution

### A.2.1 Position Windows Taskbar

The **Position Windows Taskbar** option allows adjusting the Taskbar across all displays in the Eyefinity Display Group or in one preferred display. By default, the Taskbar extends across all displays in a single row AMD Eyefinity Display Group. In a multi-row AMD Eyefinity Display Group, it extends across the bottom row of displays.

To set the Taskbar position:

1. Click **Try Advanced Setup** (under **Eyefinity** tab in AMD Radeon Settings) after Eyefinity Quick Setup is complete.
2. Click **Position Windows Taskbar** once Radeon Additional Settings launches.
3. Check the **Position the Windows taskbar on a single display** option and click **Continue**.



4. To move the Taskbar, simply drag and drop it to the desired display. Ensure that the Taskbar setting is not set to “locked”.
5. To have the Taskbar running across multiple displays again, uncheck the **Position the Windows taskbar on a single display** option and click **Continue**.



### A.2.2 Arrange Eyefinity Display Group

The **Arrange Eyefinity Display Group** option allows re-arranging the order of the displays in an AMD Eyefinity Display Group if needed.

To re-arrange the displays in an Eyefinity Display Group:

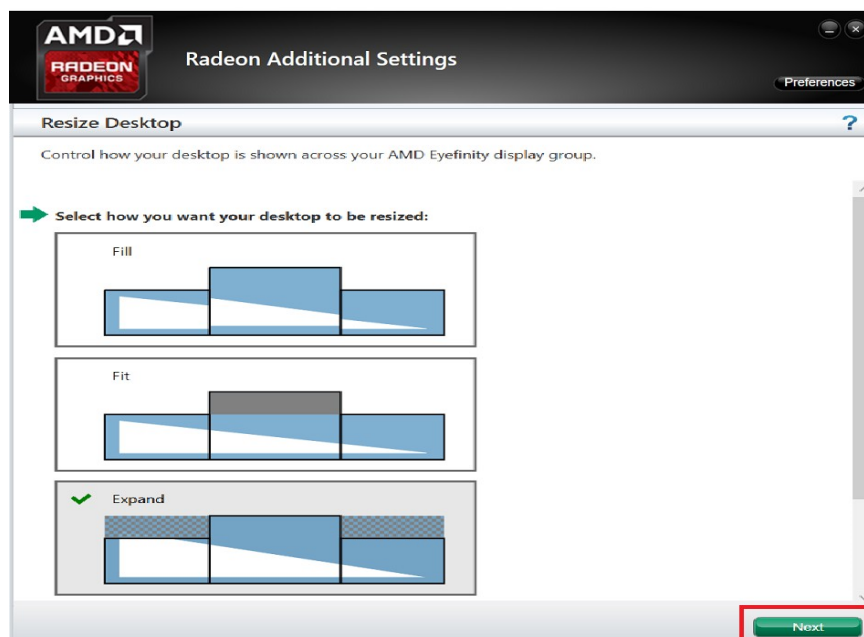
1. Click **Try Advanced Setup** (under **Eyefinity** tab in AMD Radeon Settings) after Eyefinity Quick Setup is complete.
2. Click **Arrange Eyefinity Display Group** once Radeon Additional Settings launches.
3. Use the same method as described in Section 2.1.1, “Arrange Displays after Eyefinity Quick Setup” (Step #2 to #4) to complete re-arranging the displays in an Eyefinity Display Group.

### A.2.3 Resize Desktop

When displays in an AMD Eyefinity Display Group are configured to use different resolutions, rotations, or alignments, the desktop image may appear stretched or cropped. In an AMD Eyefinity Group consisting of displays with mixed dimensions (different sizes, resolutions, orientations), the **Resize Desktop** option changes how the desktop image is shown across the displays by resizing it.

To resize the desktop:

1. Click **Try Advanced Setup** (under **Eyefinity** tab in AMD Radeon Settings) after Eyefinity Quick Setup is complete.
2. Click **Resize Desktop** once Radeon Additional Settings launches.



3. Choose one of the following options:
  - **Fill** - Fill the entire area of each display with its portion of the desktop. The desktop may appear stretched on certain displays.
  - **Fit** - Resize the desktop to the height of the shortest display. Show the entire desktop across all displays without cropping or stretching the desktop. Certain areas of your displays may appear blank.
  - **Expand** - Resize the desktop to the height of the tallest display. Portions of the desktop, for example, the Taskbar, may appear cropped or missing on certain displays.
4. Click **Next** to complete and save the setup.

#### A.2.4 Disable Eyefinity Display Group

The **Disable Eyefinity Display Group** option disables an already configured Eyefinity Display Group to return all displays in the group to the original display configuration.

To disable the Eyefinity Display Group:

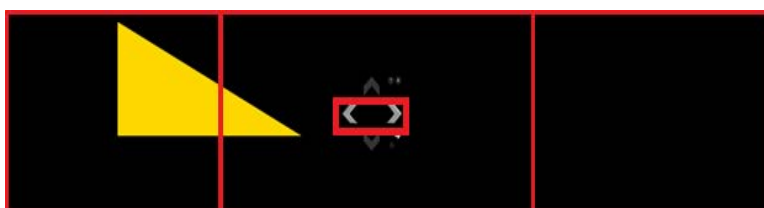
1. Click **Try Advanced Setup** (under **Eyefinity** tab in AMD Radeon Settings) after Eyefinity Quick Setup is complete.
2. Click **Disable Eyefinity Display Group** once Radeon Additional Settings launches.

#### A.2.5 Adjust Bezel Compensation

In an AMD Eyefinity Display Group the edges (bezels) of the displays may cause the image to appear disjointed or not continuous. The **Adjust Bezel Compensation** feature provides alignment functions that allow the desktop to appear continuous across all displays in an Eyefinity Display Group.

To adjust bezel compensation:

1. Click **Try Advanced Setup** (under **Eyefinity** tab in AMD Radeon Settings) after Eyefinity Quick Setup is complete.
2. Click **Adjust Bezel Compensation** once Radeon Additional Settings launches.
3. Use the Chevrons (arrow heads) to move the triangle test pattern until it is properly aligned (as shown in below picture).



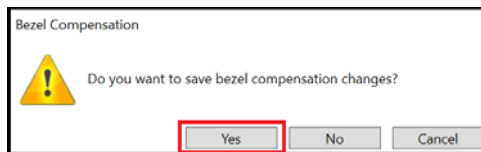
- Click on the directional arrow:



Then click **No** for the “Are the test patterns correct?” box to repeat Step #3 for the next set of bezels.



- When complete, click the **X** button and Yes to save the changes and close the tool.



### A.2.6 Customize Eyefinity Desktop Resolution

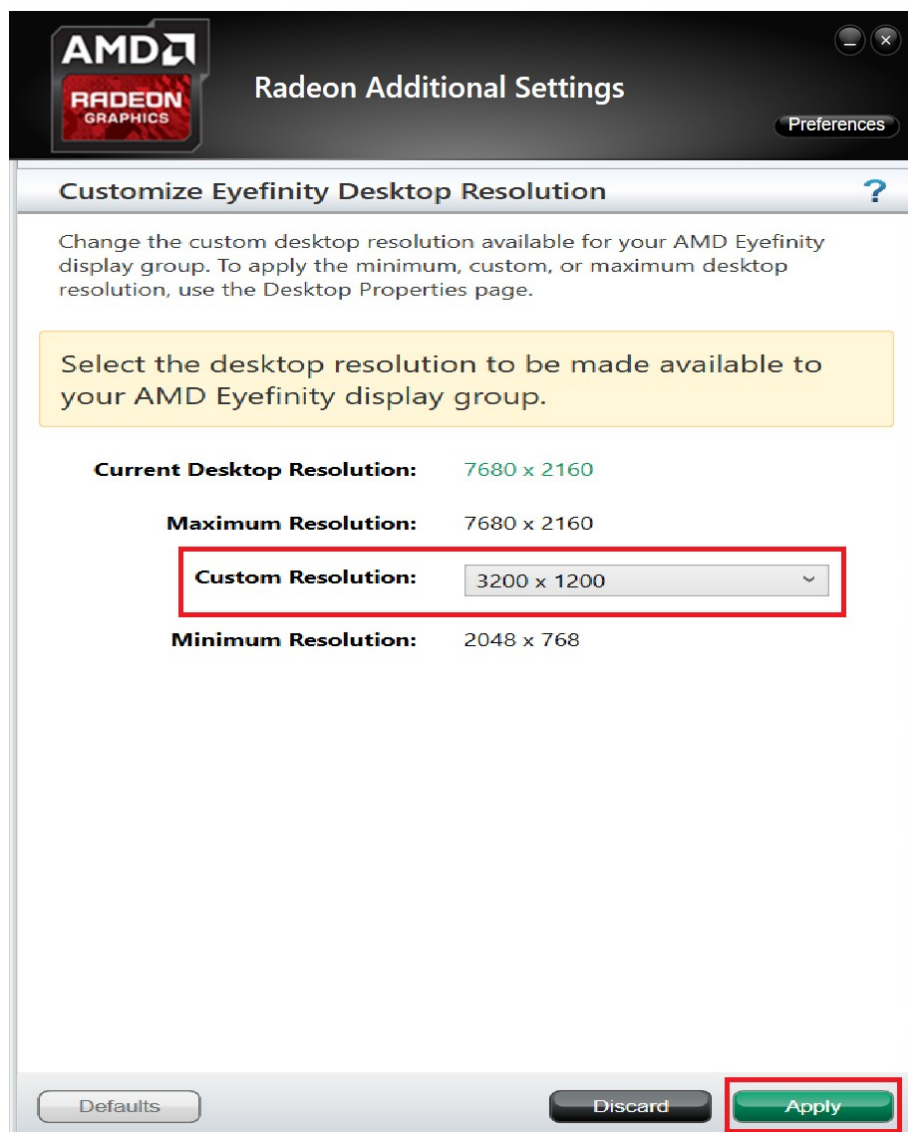
The **Customize Eyefinity Desktop Resolution** option allows the desktop size of an AMD Eyefinity Display Group to be changed to any resolution that is listed in the Custom Resolution drop-down menu. Once the desired Custom Resolution is chosen in **Customize Eyefinity Desktop Resolution**, this particular resolution becomes available in the Operating System’s display settings menu for selection.

To customize Eyefinity desktop resolution:

- Click **Try Advanced Setup** (under **Eyefinity** tab in AMD Radeon Settings) after Eyefinity Quick Setup is complete.
- Click **Customize Eyefinity Desktop Resolution** once Radeon Additional Settings launches.



3. In the **Customize Eyefinity Desktop Resolution** menu, the minimum and maximum resolutions are automatically determined based on your displays and cannot be changed. Use the **Custom Resolution** drop-down menu to select from a list of supported resolutions.



4. Select the preferred resolution from the **Custom Resolution** drop-down menu, and click **Apply** to save the setting.
5. Open the Operating System's display settings menu to change the resolution to the Custom Resolution selected in Step #4.

## B. I/O Port Address Map

Each peripheral device in the system is assigned a set of I/O port addresses which also becomes the identity of the device. The following table lists the I/O port addresses used.

Address	Device Description
0x00000A00-0x00000A0F	Motherboard resources
0x00000A10-0x00000A1F	Motherboard resources
0x00000A10-0x00000A1F	Motherboard resources
0x00000070-0x00000071	System CMOS/real time clock
0x0000D000-0x0000DFFF	PCI Express Root Port
0x0000D000-0x0000DFFF	AMD Radeon(TM) Vega 11 Graphics
0x000003F8-0x000003FF	Communications Port (COM1)
0x000002F8-0x000002FF	Communications Port (COM2)
0x00000020-0x00000021	Programmable interrupt controller
0x000000A0-0x000000A1	Programmable interrupt controller
0x00000000-0x000003AF	PCI Express Root Complex
0x00000000-0x000003AF	Direct memory access controller
0x000003E0-0x00000CF7	PCI Express Root Complex
0x000003B0-0x000003DF	PCI Express Root Complex
0x00000D00-0x0000FFFF	PCI Express Root Complex
0x0000F000-0x0000F0FF	Realtek PCIe GBE Family Controller #2
0x0000F000-0x0000F0FF	PCI Express Root Port
0x0000E000-0x0000EFFF	PCI Express Root Port
0x0000E000-0x0000EFFF	Realtek PCIe GBE Family Controller
0x00000040-0x00000043	System timer
0x00000010-0x0000001F	Motherboard resources
0x00000022-0x0000003F	Motherboard resources
0x00000063-0x00000063	Motherboard resources
0x00000065-0x00000065	Motherboard resources
0x00000067-0x0000006F	Motherboard resources
0x00000072-0x0000007F	Motherboard resources
0x00000080-0x00000080	Motherboard resources
0x00000084-0x00000086	Motherboard resources

Address	Device Description
0x00000088-0x00000088	Motherboard resources
0x0000008C-0x0000008E	Motherboard resources
0x00000090-0x0000009F	Motherboard resources
0x000000A2-0x000000BF	Motherboard resources
0x000000B1-0x000000B1	Motherboard resources
0x000000E0-0x000000EF	Motherboard resources
0x000004D0-0x000004D1	Motherboard resources
0x0000040B-0x0000040B	Motherboard resources
0x000004D6-0x000004D6	Motherboard resources
0x00000C00-0x00000C01	Motherboard resources
0x00000C14-0x00000C14	Motherboard resources
0x00000C50-0x00000C51	Motherboard resources
0x00000C52-0x00000C52	Motherboard resources
0x00000C6C-0x00000C6C	Motherboard resources
0x00000C6F-0x00000C6F	Motherboard resources
0x00000CD0-0x00000CD1	Motherboard resources
0x00000CD2-0x00000CD3	Motherboard resources
0x00000CD4-0x00000CD5	Motherboard resources
0x00000CD6-0x00000CD7	Motherboard resources
0x00000CD8-0x00000CDF	Motherboard resources
0x00000800-0x0000089F	Motherboard resources
0x00000B00-0x00000B0F	Motherboard resources
0x00000B20-0x00000B3F	Motherboard resources
0x00000900-0x0000090F	Motherboard resources
0x00000910-0x0000091F	Motherboard resources
0x00000061-0x00000061	System speaker
0x00000081-0x00000083	Direct memory access controller
0x00000087-0x00000087	Direct memory access controller
0x00000089-0x0000008B	Direct memory access controller
0x0000008F-0x0000008F	Direct memory access controller
0x000000C0-0x000000DF	Direct memory access controller

### C. Interrupt Request Lines (IRQ)

Peripheral devices use interrupt request lines to notify CPU for the service required. The following table shows the IRQ used by the devices on board.

Level	Function
IRQ 4294967292	PCI Express Root Port
IRQ 0	High precision event timer
IRQ 0	System timer
IRQ 8	High precision event timer
IRQ 7	AMD GPIO Controller
IRQ 4294967282	AMD USB 3.10 eXtensible Host Controller - 1.10 (Microsoft)
IRQ 4294967281	AMD USB 3.10 eXtensible Host Controller - 1.10 (Microsoft)
IRQ 4294967280	AMD USB 3.10 eXtensible Host Controller - 1.10 (Microsoft)
IRQ 4294967279	AMD USB 3.10 eXtensible Host Controller - 1.10 (Microsoft)
IRQ 4294967278	AMD USB 3.10 eXtensible Host Controller - 1.10 (Microsoft)
IRQ 4294967277	AMD USB 3.10 eXtensible Host Controller - 1.10 (Microsoft)
IRQ 4294967276	AMD USB 3.10 eXtensible Host Controller - 1.10 (Microsoft)
IRQ 4294967275	AMD USB 3.10 eXtensible Host Controller - 1.10 (Microsoft)
IRQ 4	Communications Port (COM1)
IRQ 3	Communications Port (COM2)
IRQ 53	High Definition Audio Controller
IRQ 53	AMD Audio CoProcessor
IRQ 54	AMD High Definition Audio Controller
IRQ 54	Microsoft ACPI-Compliant System
IRQ 4294967285	AMD Radeon(TM) Vega 11 Graphics
IRQ 4294967284	AMD Radeon(TM) Vega 11 Graphics
IRQ 4294967283	AMD Radeon(TM) Vega 11 Graphics
IRQ 55	Microsoft ACPI-Compliant System

Level	Function
IRQ 55	AMD SFH KMDf I2C
IRQ 56 ~ IRQ 204	Microsoft ACPI-Compliant System
IRQ 256 ~ IRQ 511	Microsoft ACPI-Compliant System
IRQ 4294967287	Realtek PCIe GBE Family Controller #2
IRQ 4294967294	PCI Express Root Port
IRQ 4294967293	PCI Express Root Port
IRQ 4294967291	PCI Express Root Port
IRQ 4294967290	Standard SATA AHCI Controller
IRQ 4294967286	Realtek PCIe GBE Family Controller
IRQ 4294967274	AMD USB 3.10 eXtensible Host Controller - 1.10 (Microsoft)
IRQ 4294967273	AMD USB 3.10 eXtensible Host Controller - 1.10 (Microsoft)
IRQ 4294967272	AMD USB 3.10 eXtensible Host Controller - 1.10 (Microsoft)
IRQ 4294967271	AMD USB 3.10 eXtensible Host Controller - 1.10 (Microsoft)
IRQ 4294967270	AMD USB 3.10 eXtensible Host Controller - 1.10 (Microsoft)
IRQ 4294967269	AMD USB 3.10 eXtensible Host Controller - 1.10 (Microsoft)
IRQ 4294967268	AMD USB 3.10 eXtensible Host Controller - 1.10 (Microsoft)
IRQ 4294967267	AMD USB 3.10 eXtensible Host Controller - 1.10 (Microsoft)
IRQ 4294967289	AMD PSP 10.0 Device
IRQ 4294967288	AMD PSP 10.0 Device

## D. Watchdog Timer Configuration

The Watchdog Timer (WDT) is used to generate a variety of output signals after a user programmable count. The WDT is suitable for the use in the prevention of system lock-up, such as when software becomes trapped in a deadlock. Under these sorts of circumstances, the timer will count to zero and the selected outputs will be driven.

Under normal circumstance, you will need to restart the WDT at regular intervals before the timer counts to zero.

### Sample Code:

```
//-----
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//-----
#include <dos.h>
#include <conio.h>
#include <stdio.h>
#include <stdlib.h>
#include "F81846.H"
//-----
int main (int argc, char *argv[]); void EnableWDT(int);
void DisableWDT(void);
//-----
int main (int argc, char *argv[])
{
    unsigned char bBuf; unsigned char bTime; char **endptr;

    char SIO;
    printf("Fintek 81846 watch dog program\n"); SIO = Init_F81846();
    if (SIO == 0)
    {
        printf("Can not detect Fintek 81846, program abort.\n"); return(1);
    }/if (SIO == 0)

    if (argc != 2)
    {
        printf(" Parameter incorrect!!\n"); return (1);
    }

    bTime = strtol (argv[1], endptr, 10);
    printf("System will reset after %d seconds\n", bTime);

    if (bTime)
    {
        EnableWDT(bTime); } else
    {
        DisableWDT(); } return 0;
```

```

}
//-----
void EnableWDT(int interval)
{
    unsigned char bBuf;

    bBuf = Get_F81846_Reg(0x2B); bBuf &= (~0x20);
    Set_F81846_Reg(0x2B, bBuf); //Enable WDTO

    Set_F81846_LD(0x07); //switch to logic device 7
    Set_F81846_Reg(0x30, 0x01); //enable timer

    bBuf = Get_F81846_Reg(0xF5); bBuf &= (~0x0F);
    bBuf |= 0x52;
    Set_F81846_Reg(0xF5, bBuf); //count mode is second Set_F81846_Reg(0xF6,
    interval); //set timer
    bBuf = Get_F81846_Reg(0xFA); bBuf |= 0x01;
    Set_F81846_Reg(0xFA, bBuf); //enable WDTO output

    bBuf = Get_F81846_Reg(0xF5); bBuf |= 0x20;
    Set_F81846_Reg(0xF5, bBuf); //start counting
}
//-----
void DisableWDT(void)
{
    unsigned char bBuf;
    Set_F81846_LD(0x07); //switch to logic device 7 bBuf = Get_F81846_Reg(0xFA);
    bBuf &= ~0x01;
    Set_F81846_Reg(0xFA, bBuf); //disable WDTO output

    bBuf = Get_F81846_Reg(0xF5); bBuf &= ~0x20;
    bBuf |= 0x40;
    Set_F81846_Reg(0xF5, bBuf); //disable WDT
}
//-----

//-----
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//-----
#include "F81846.H"
#include <dos.h>
//-----
unsigned int F81846_BASE; void Unlock_F81846 (void); void Lock_F81846 (void);
//-----
unsigned int Init_F81846(void)
{
    unsigned int result; unsigned char ucDid;

```

```
F81846_BASE = 0x4E;  
result = F81846_BASE;
```

```
ucDid = Get_F81846_Reg(0x20);  
if (ucDid == 0x07)    //Fintek 81846  
{    goto Init_Finish; }
```

```
F81846_BASE = 0x2E;  
result = F81846_BASE;
```

```
ucDid = Get_F81846_Reg(0x20);  
if (ucDid == 0x07)    //Fintek 81846  
{    goto Init_Finish; }
```

```
F81846_BASE = 0x00;  
result = F81846_BASE;
```

```
Init_Finish:  
return (result);  
}
```

```
//-----  
void Unlock_F81846 (void)  
{  
    outportb(F81846_INDEX_PORT, F81846_UNLOCK); outportb(F81846_INDEX_PORT,  
    F81846_UNLOCK);  
}
```

```
//-----  
void Lock_F81846 (void)  
{  
    outportb(F81846_INDEX_PORT, F81846_LOCK);  
}
```

```
//-----  
void Set_F81846_LD( unsigned char LD)  
{  
    Unlock_F81846();  
    outportb(F81846_INDEX_PORT, F81846_REG_LD);  
    outportb(F81846_DATA_PORT, LD); Lock_F81846();  
}
```

```
//-----  
void Set_F81846_Reg( unsigned char REG, unsigned char DATA)  
{  
    Unlock_F81846(); outportb(F81846_INDEX_PORT, REG); outportb(F81846_DATA_PORT,  
    DATA); Lock_F81846();  
}
```

```
//-----  
unsigned char Get_F81846_Reg(unsigned char REG)  
{  
    unsigned char Result; Unlock_F81846();  
    outportb(F81846_INDEX_PORT, REG); Result = inportb(F81846_DATA_PORT);  
    Lock_F81846();  
    return Result;  
}  
//-----
```



```

//-----
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//-----
#ifndef    F81846_H
#define    F81846_H    1
//-----
#defineF81846_INDEX_PORT    (F81846_BASE)
#defineF81846_DATA_PORT    (F81846_BASE+1)
//-----
#defineF81846_REG_LD    0x07
//-----
#define F81846_UNLOCK 0x87
#defineF81846_LOCK    0xAA
//-----
unsigned int Init_F81846(void);
void Set_F81846_LD( unsigned char);
void Set_F81846_Reg( unsigned char, unsigned char); unsigned char
Get_F81846_Reg( unsigned char);
//-----
#endif //    F81846_H

```

## E. AMD Eyefinity Mode Display Setting Configurations

Driver Name and Version: 25.20.15023.1001

OS and Version: (for example: Windows 10 64bit Version 1809 (OS Build 17763.2268))

vBIOS/GOP Version and Type: AMD GOP X64 Release Driver Rev.2.5.0.0.0

### Remarks:

MB: MBD334-V1807B / MBD334-V1605B

Memory: Innodisk M4S0-8GM1NCEM-A35 DDR4-3200 8GB\*8

SSD: Transcend TS128XBTME16-I

Display mode	Orientation	Resolution		
		4K 60Hz	4K 30Hz	Full HD 60Hz
1 x 2	Landscape	V	V	V
1 x 3		V	V	V
1 x 4		V	V	V
2 x 1		V	V	V
2 x 2		V	V	V
3 x 1		V	V	V
4 x 1		V	V	V
1 x 2	Portrait	V	V	V
1 x 3		V	V	V
1 x 4		V	V	V
2 x 1		V	V	V
2 x 2		V	V	V
3 x 1		V	V	V
4 x 1		V	V	V