SP-63ER

8th Gen Intel® Core™ Video Wall Player with MXM GTX1080 Graphics

User's Manual

Version 1.0a
(January 2022)

iBASE

iBASE

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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

CE

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

FC

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)

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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 VENTIILATION 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 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.

- **3rd-party parts:**

  12-month (1-year) warranty from delivery for the 3rd-party parts that are not manufactured by IBASE, such as CPU, CPU cooler, memory, storage devices, power adapter, 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 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.

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Chapter 1
General Information

The information provided in this chapter includes:

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

1.1 Introduction

The SP-63ER is an 8th Gen Intel® Core™ Desktop Processor Video Wall Player with Nvidia (GTX1080) MXM module and 16 HDMI outputs. It is the perfect system for displaying 8K/12K video wall or menu boards. The platform comes with built-in an MXM slot for installing the MXM GTX1080 graphics module to power 16x HDMI 1.3 outputs. Its rugged design features Intel® vPro™ and MARS technologies and advanced iSMART intelligent energy-saving & Observer remote monitoring technologies.

1.2 Features

- Perfect for displaying 8K/12K video wall or menu board contents
- Supports 8th Gen Intel® Core™ desktop processors
- Up to 16 x HDMI 1.3 (w/o audio) with built-in hardware EDID emulation function
- 1x MXM slot supports MXM GTX1080 16x HDMI 1.3
- Rugged design with Intel® vPro™ and MARS technologies
- iSMART intelligent energy-saving & Observer remote monitoring technologies
- Supports display monitoring functions

1.3 Packing List

Your product package should include the items listed below.

- SP-63ER Digital Signage Player

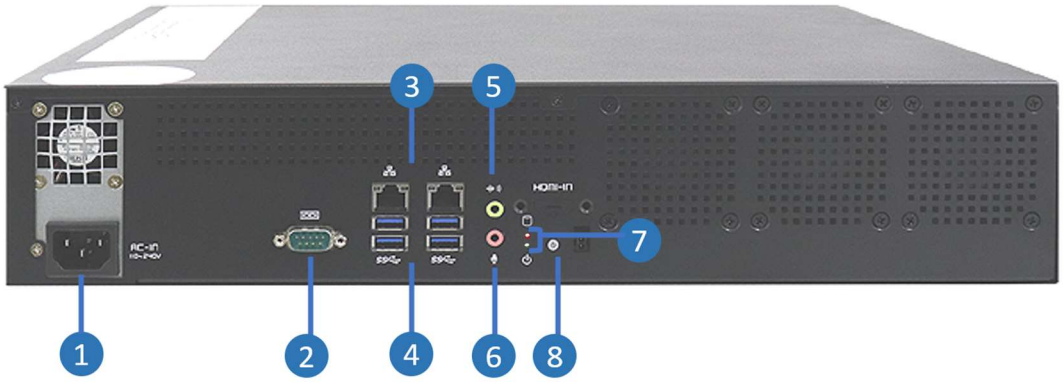
  Intel® Core™ i7-8700 Processor (12M cache, up to 3.2GHz), 1x MXM Nvidia GTX 1080 8G GDDR5X GPU card, 16x HDMI, 2x 8GB DDR4-2666/2400 SO-DIMM memory, 2x 128GB SATA III 2.5″ HDD Dock, 850W PSU
- Power Cord

1.4 Specifications

Product	SP-63ER
Mainboard	MBD63E
Operating System	Windows 10 IoT Enterprise 64-bit
CPU	Intel® Core™ i7-8700 Processor (12M cache, up to 3.2GHz)
Chipset	Intel® Q370PCH or Nvidia MXM Graphic card
Memory	2x 8GB DDR4-2666/2400 SO-DIMM memory
Graphics	MXM Nvidia GTX 1080 8G GDDR5X GPU card,
LAN Controller	1x Intel® I219LM GbE, 1x Intel® I210AT GbE
Expansion Slots	1x Mini PCI-E; 1x M.2 (M-key, type:2280) 1x M.2 (E-key, type:2230); 1x MXM slot (for NVDIA module)
I/O Interface	16x HDMI 1.3 with hardware EDID emulation 4x USB 3.1 ports; 2x RJ45 for Gigabit LAN; 1x D-Sub for RS232 2x Audio connectors for Line-out/Mic-in Power LED for power on/off & HDD 1x Power button 1x AC power inlet
Power Supply	AC 110V~220V
Operating Temperature	0°C~ 45°C (32°F~113°F)
Storage Temperature	-20°C ~ 80°C (-4°F~176°F)
Relative Humidity	5~90% @ 45°C, (non-condensing)
Vibration	mSATA: 5 grms / 5~500Hz / random operation
Certification	CE, FCC Class B, cULus,
Dimensions (W x H x D)	395mm(W) x 438mm(D) x 88mm(H) 15.5″ (W) x 17.2″ (D) x 3.46″ (H)

1.5 Product View

Front View



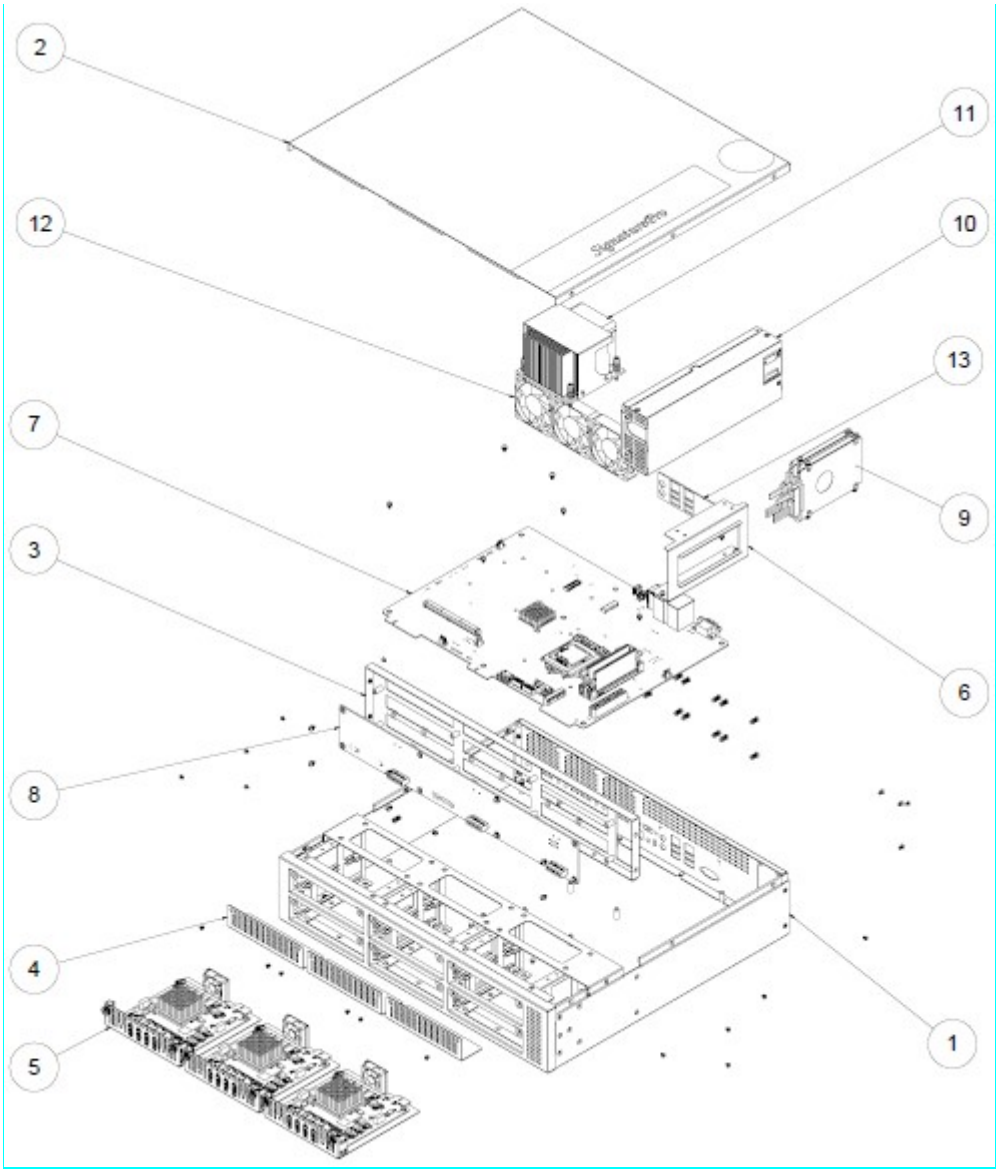
No.	Function	No.	Function
1	AC inlet (110V~220V)	5	Lin-out
2	1x D-Sub for RS232	6	Mic
3	2x GbE ports	7	HDD Activity and Power LED
4	4x USB 3.1 ports	8	Power button

* Listed from left to right.

Rear View

* The number of HDMI ports will depend on the number of HDMI module tray installed. This picture is for reference only.

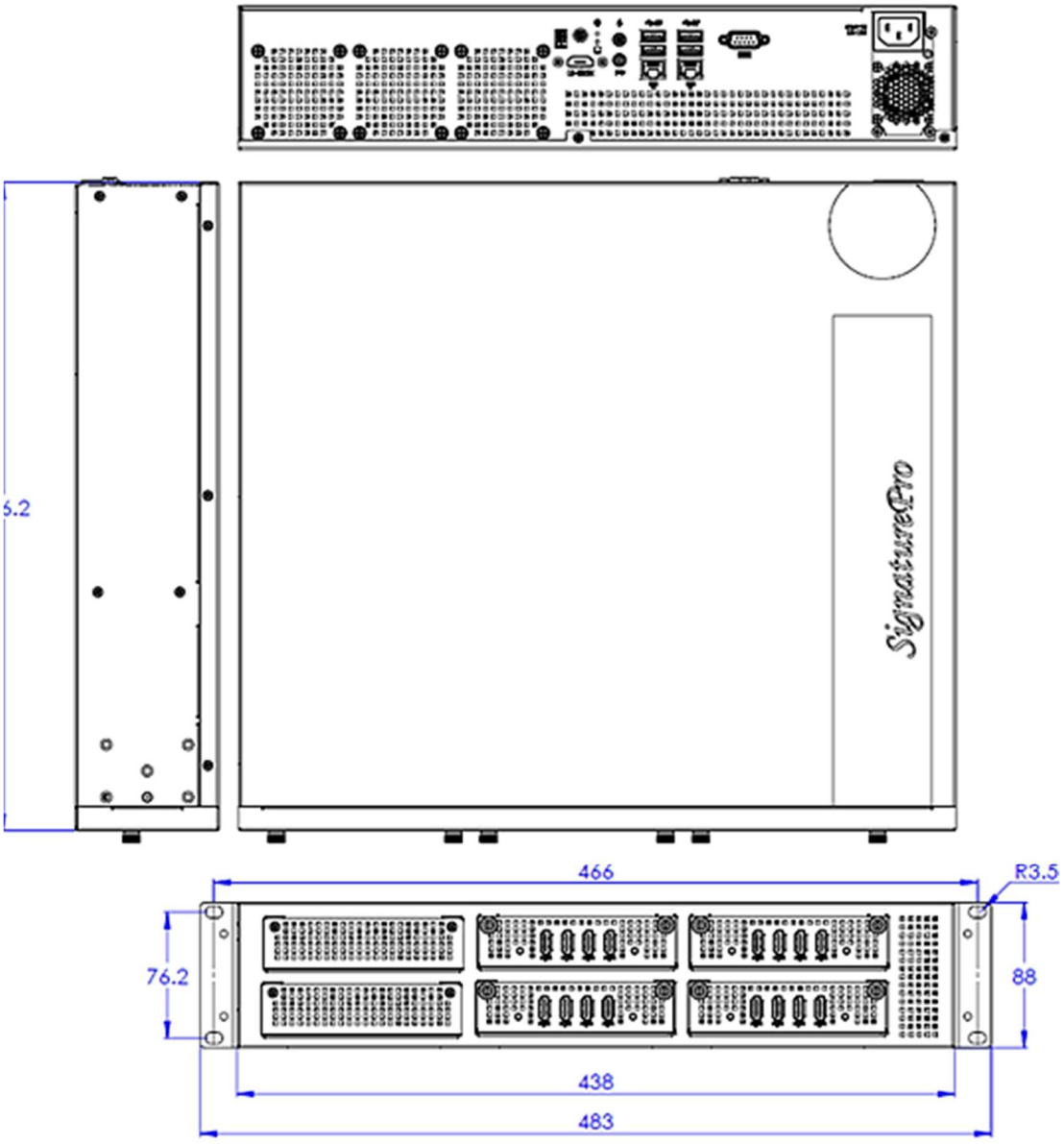
Rear View



No.	Part	No.	Part
1	Chassis Base	8	Backplance
2	Top Cover	9	2.5” SATA / HDD
3	Backplace Bracket	10	Power Supply
4	Base Cover Bracket	11	CPU Heatsink + Fan
5	4x HDMI Module Tray	12	12V Fan 60 x 60 x 15mm
6	2x 2.5” SATA Bracket	13	I/O Cobbecter Gasket
7	Motherboard		

1.6 Dimensions

Unit: mm



Chapter 2
Hardware Installation & Motherboard Information

The information provided in this chapter includes:

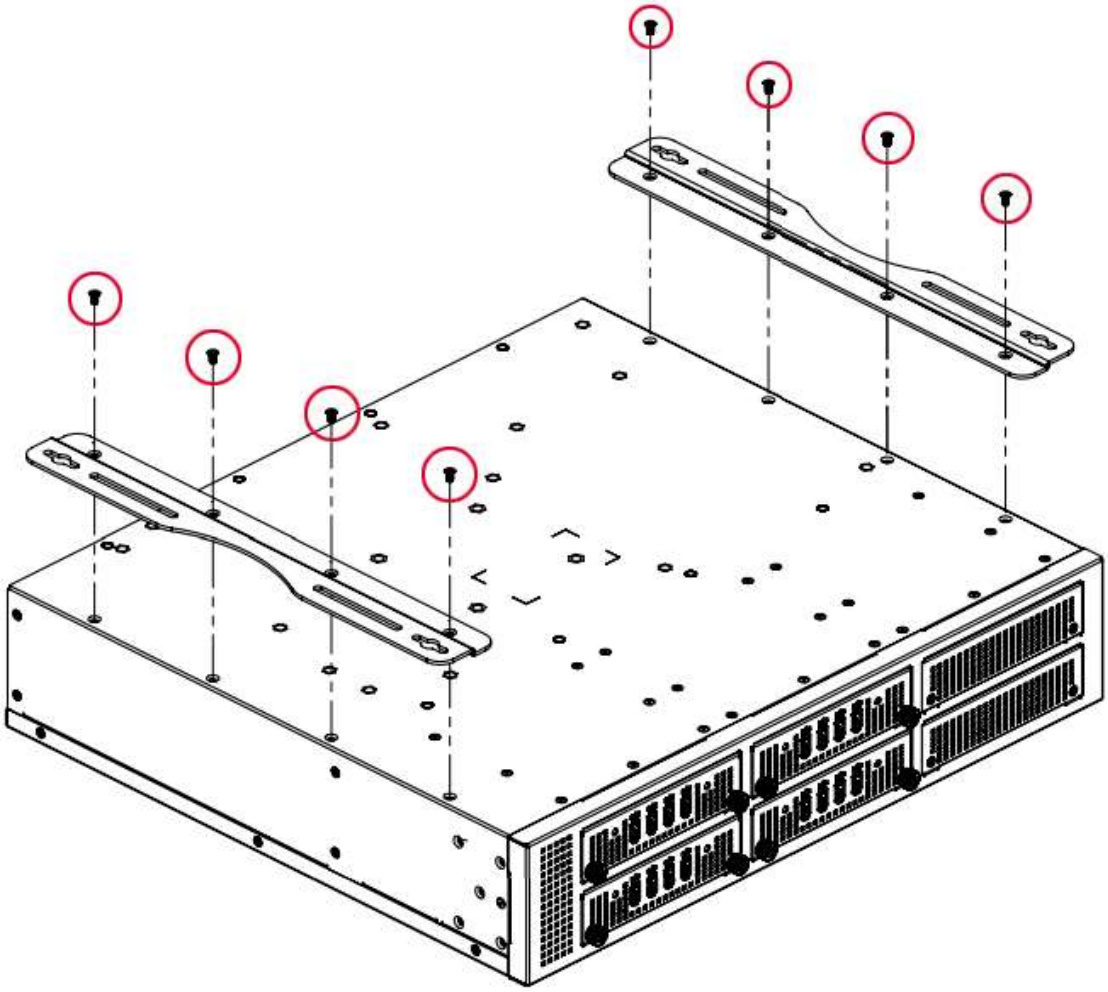
- Installations
  - Wall Mounting Bracket
  - Rack Mounting Ears
  - Top Cover
  - SSD Storage
  - Graphics Card
  - Memory
  - Mini-PCIe & M.2 Cards
- Information and locations of connectors

2.1 Installation / Replacement

To install or replace internal parts or external accessories, follow the instructions in the next pages.

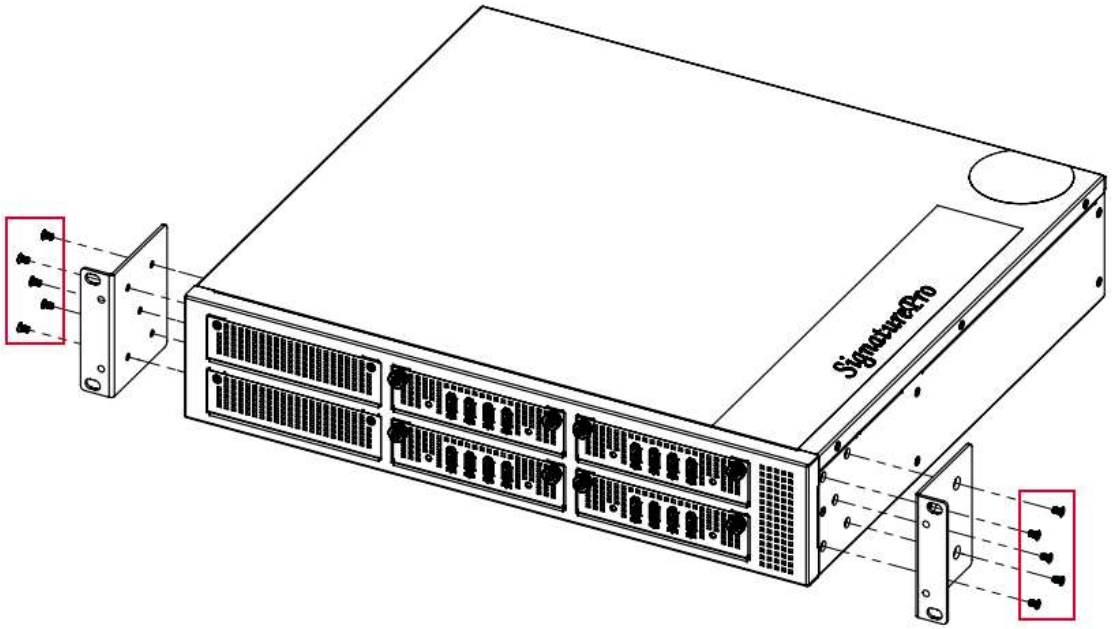
2.1.1 Wall Mounting Bracket

Use the eight (8) screws shown below to install/ remove the **wall mounting bracket**. The screw holes are located at the bottom of the system.



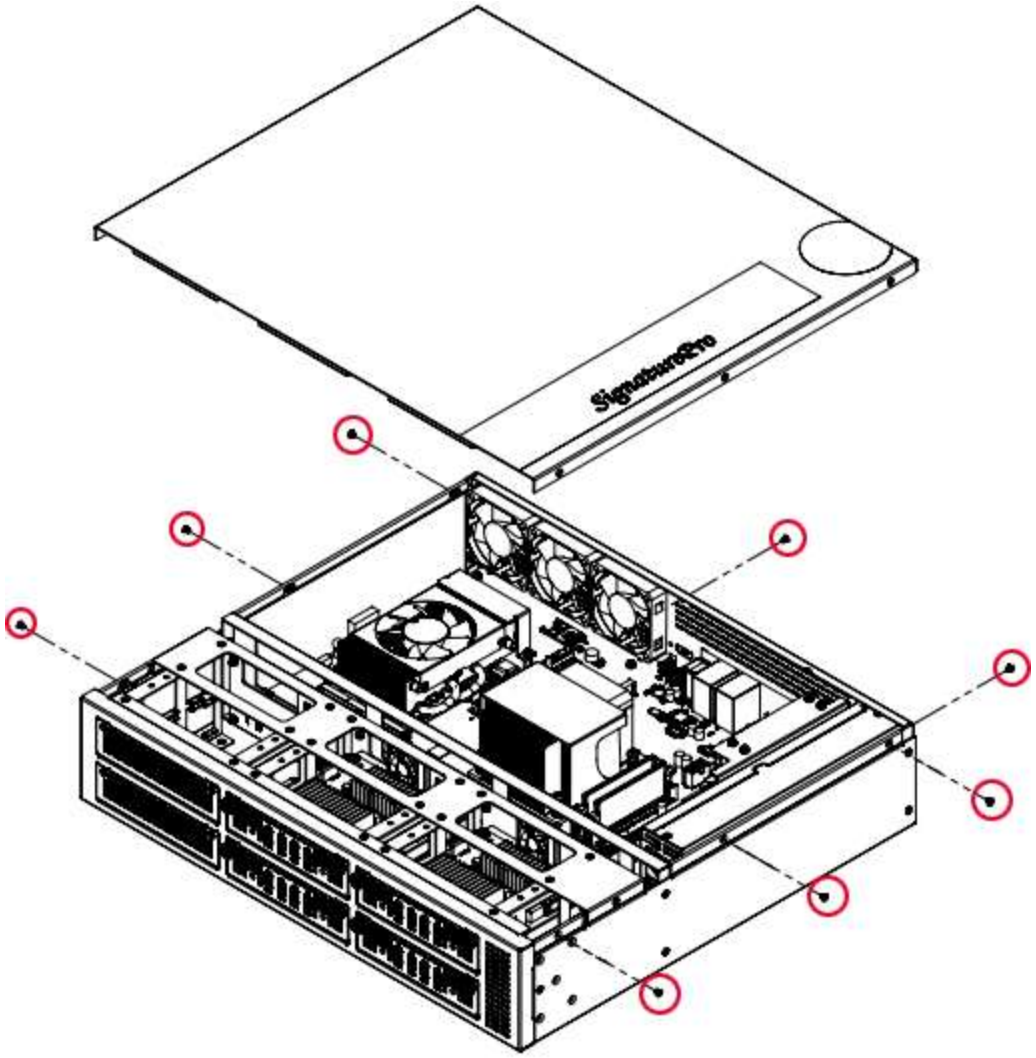
2.1.2 Rack Mounting Ears

Use the ten (10) screws shown below to install/ remove the **rack mounting ears**.



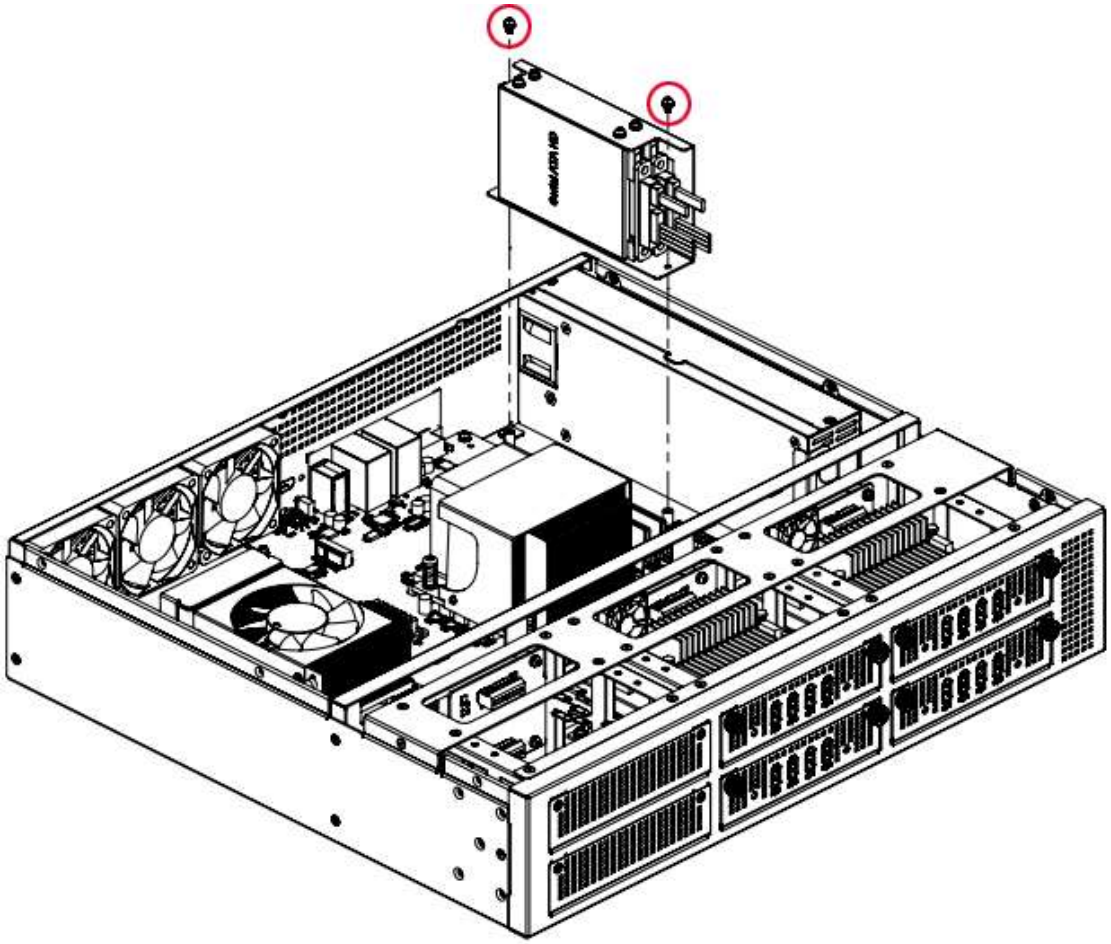
2.1.3 Top Cover

To remove the **top cover**, remove the eight (8) screws shown below. The top cover has to be removed when installing/replacing internal parts such as the SSD storage or graphics card.



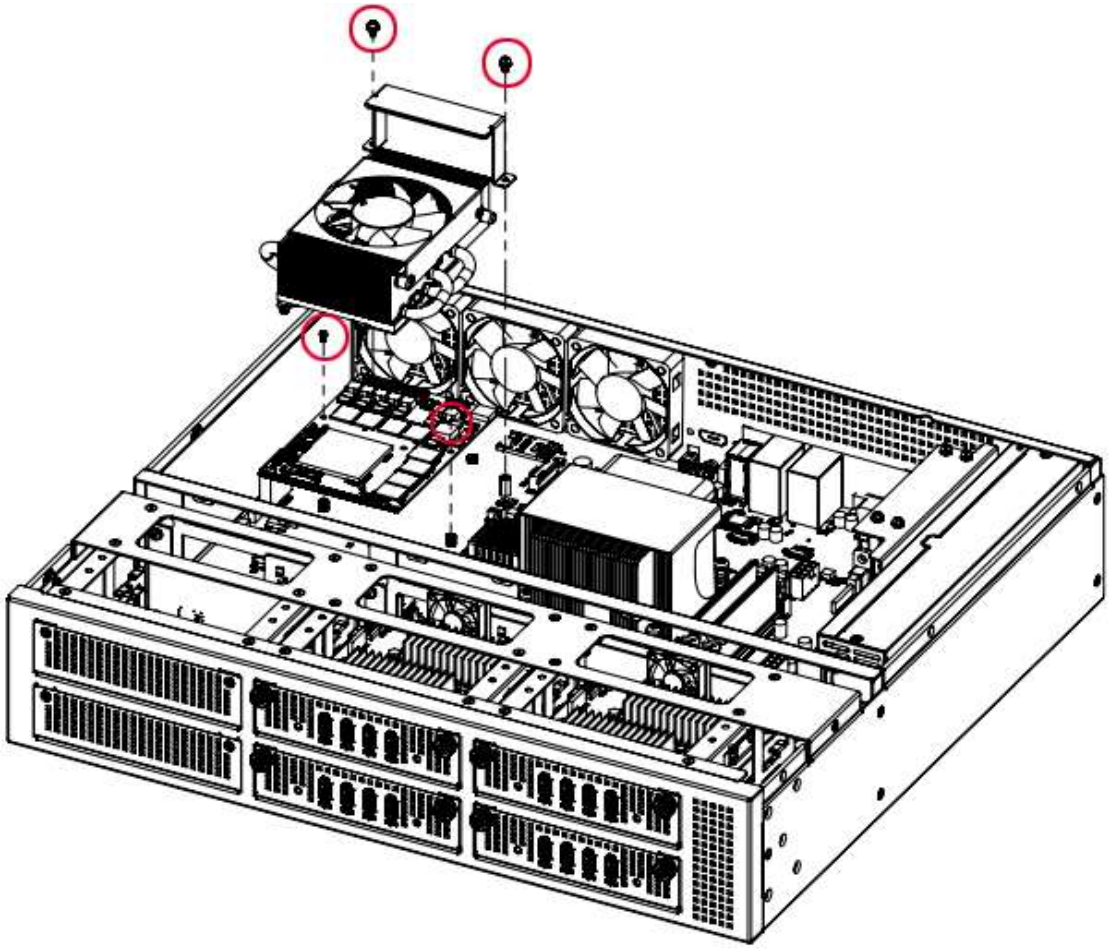
2.1.4 SSD Storage

To replace or install the **SSD storage**, remove the top cover as shown in the previous page and then remove the two (2) screws holding the SSD storage kit.



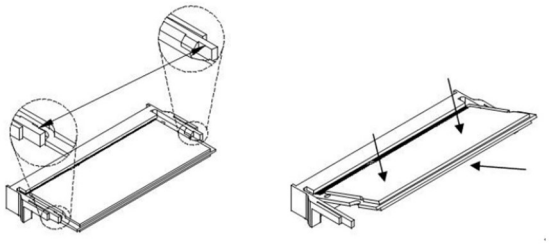
2.1.5 Graphics Card

To replace or install the **graphics card**, remove the top cover as shown in the previous page and then remove the four (4) screws holding the graphics card kit as shown below.



2.1.6 Memory

The MBD63E motherboard housed in the SP-63ER supports two DDR4 memory sockets situated right beside the processor. To install the memory modules, locate the memory slot on the board and perform the following steps:



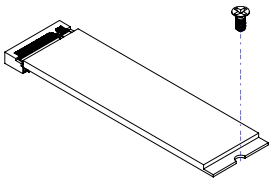
1. Align the key of the memory module with that on the memory slot and insert the module slantwise.
2. Gently push the module in an upright position until the clips of the slot close to hold the module in place when the module touches the bottom of the slot.

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

2.1.7 Mini-PCIe & M.2 Cards

1. Locate the M.2 slot inside the device.
2. Align the key of the M.2 card to the interface, and insert the card slantwise.
3. Fix the M.2 card with an M3 screw.

M.2:

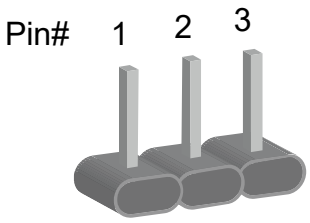


2.2 Setting the Jumpers

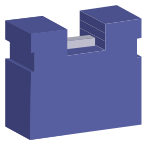
Set up and configure your SP-63ER by using jumpers for various settings and features according to your needs and applications. Contact your supplier if you have doubts about the best configuration.

1.3.1 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.

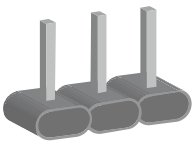
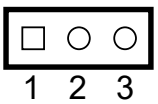
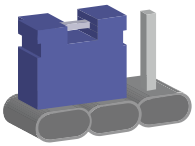
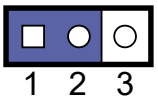
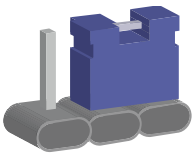
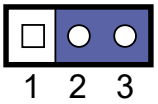


A 3-pin jumper



A jumper cap

Refer to the illustration below to set jumpers.

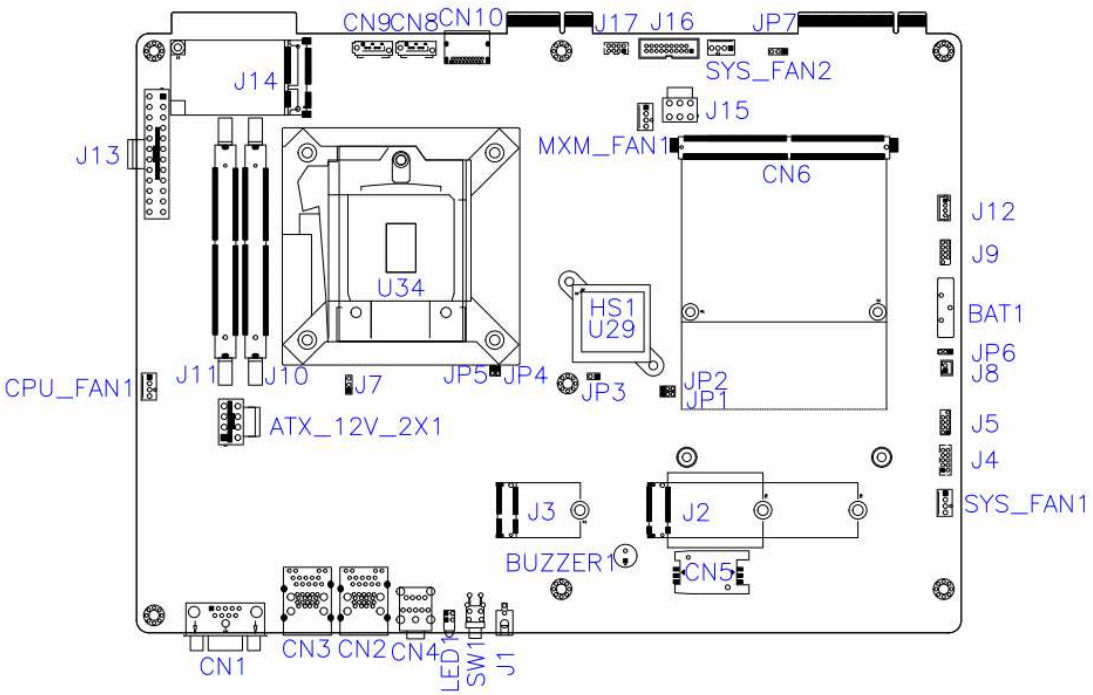
Pin closed	Oblique view	Illustration
Open		
1-2		
2-3		

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

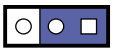
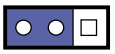
When a jumper cap is removed from two jumper pins, this jumper is **open**, i.e. turned **Off**.

2.3 Jumper & Connector Locations on Motherboard

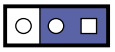
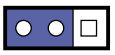
Motherboard: MBD63E



2.4.1 JP1: Clear CMOS

JP1	Function	Pin closed
	Normal (Default)	1-2
	Clear CMOS	2-3

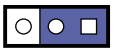
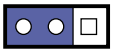
2.4.2 JP2: ME Contents

JP2	Function	Pin closed
	Normal (Default)	1-2
	Clear ME Contents	2-3

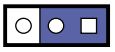
2.4.3 JP3: Flash Descriptor Security Override (Factory use only)

JP3	Pin	Function
	Open	Disabled (Default)
	Pin 1-2 Closed	Enabled

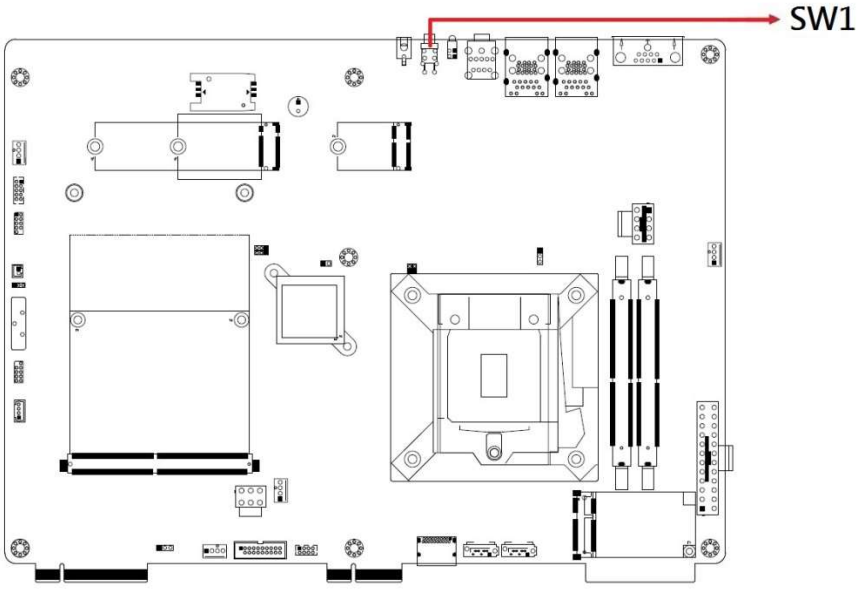
2.4.4 JP6: AT/ATX Mode Selection

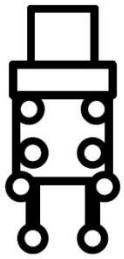
JP6	Function	Pin closed
 1	ATX	1-2
 1	AT	2-3

2.4.5 JP7: MXM GPU Selection

JP7	Function	Pin closed
 1	NVIDIA 2080 / NVIDIA 1080 (default)	1-2

2.4.6 SW1 / J1 : ATX Power ON Switch

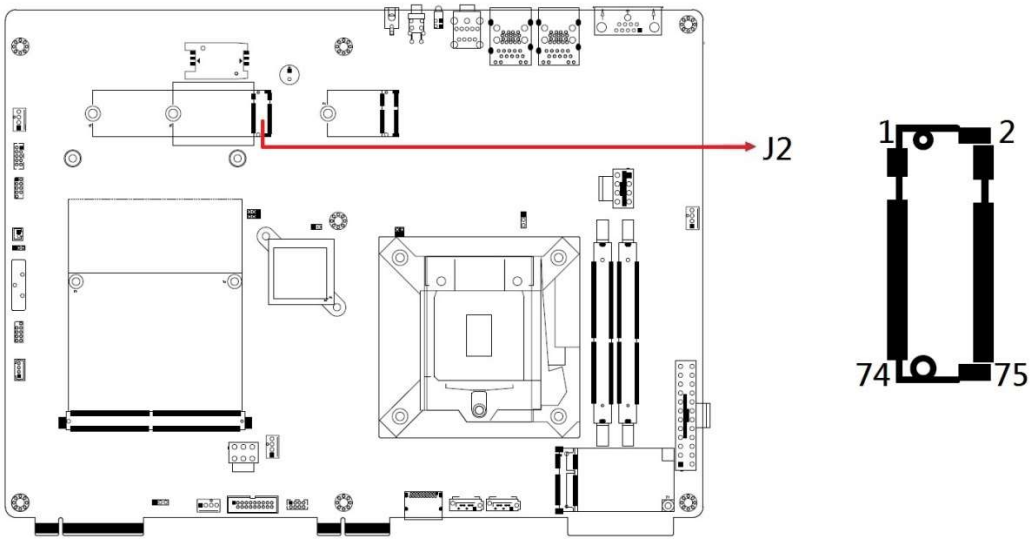




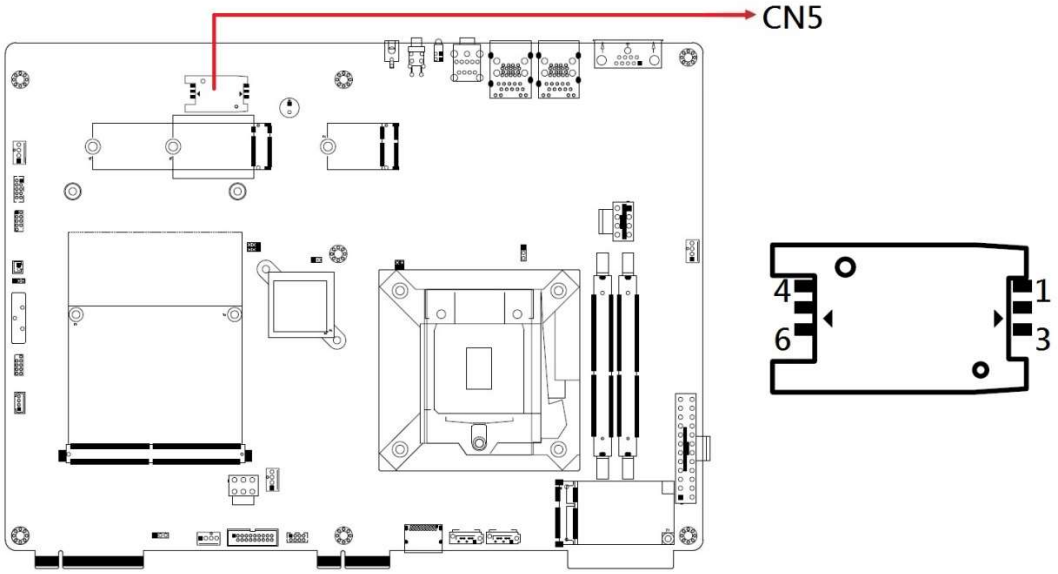
Signal Name	Pin #	Pin#	Function
Power BTN-	1	2	Power BTN+

2.4.7 J2: M.2 B-key / SIM card slot

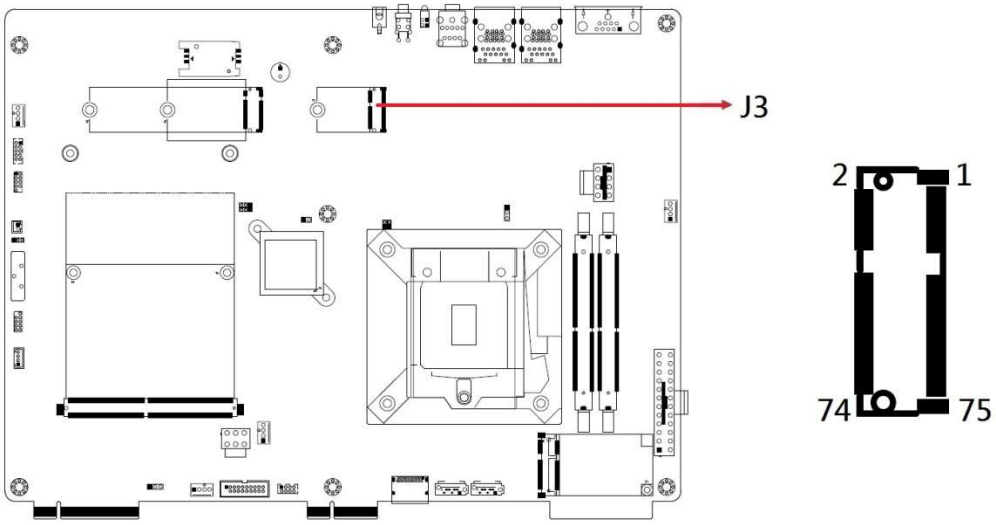
***Supports PCIe (1x), USB 2.0 and 3.0) default Sierra EM7455**



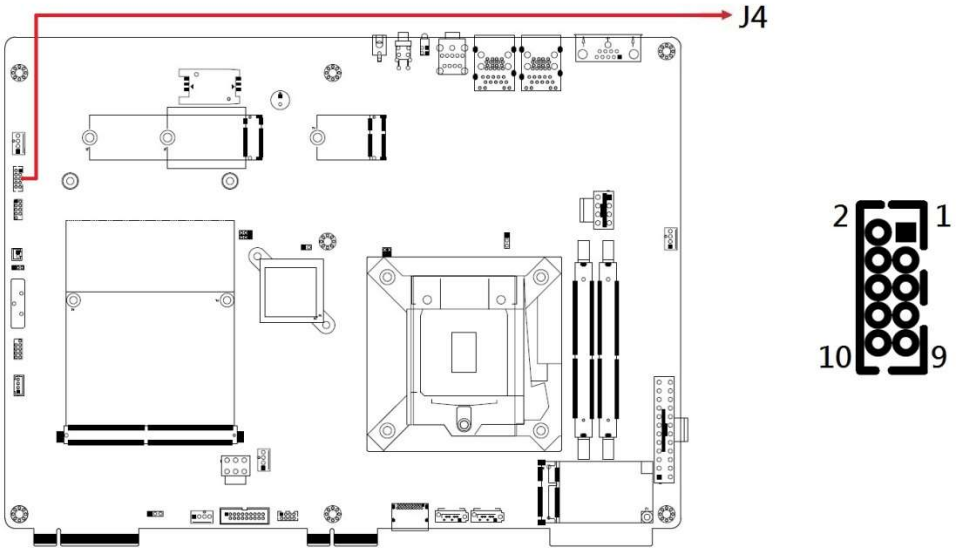
2.4.8 CN5 : SIM card SOCKET from J2 M.2 B-key



2.4.9 J3: M.2 E-key

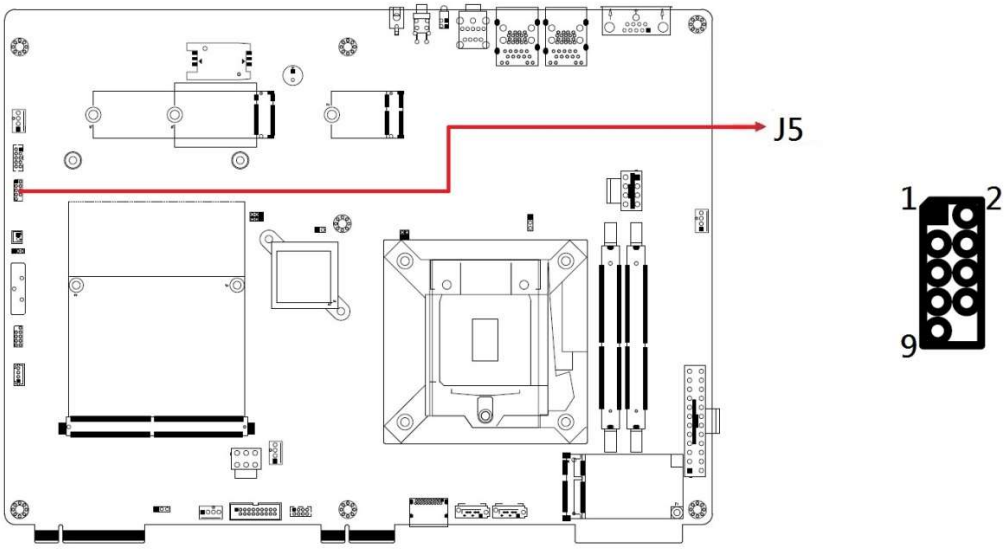


2.4.10 J4: Digital I/O Connector (DF11-10S-PA66H)



Signal Name	Pin #	Pin#	Function
Ground	1	2	+5V(1A)
OUT3	3	4	OUT1
OUT2	5	6	OUT0
IN3	7	8	IN1
IN2	9	10	IN0

2.4.11 J5: 80 Port

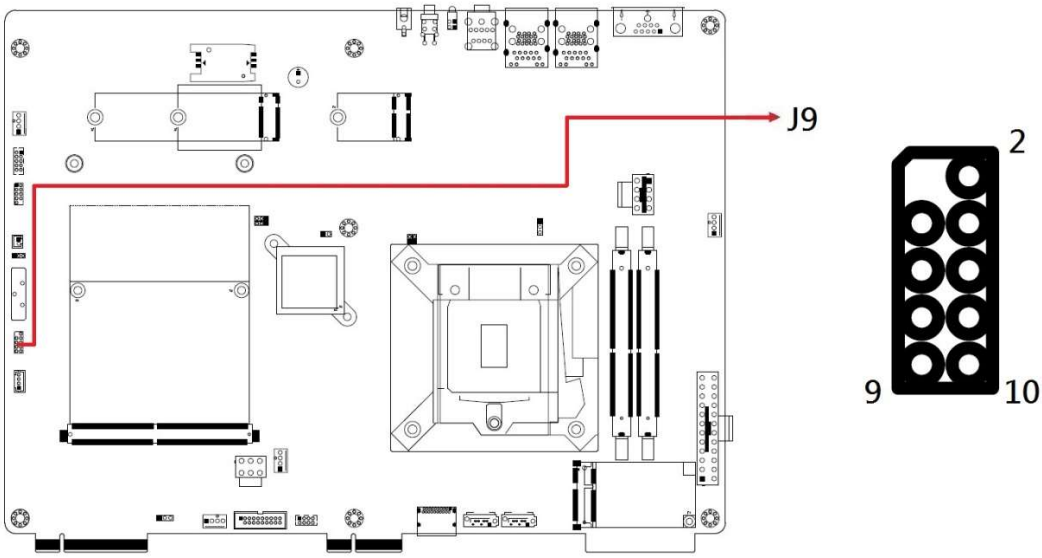


2.4.12 J7: For Debug Use

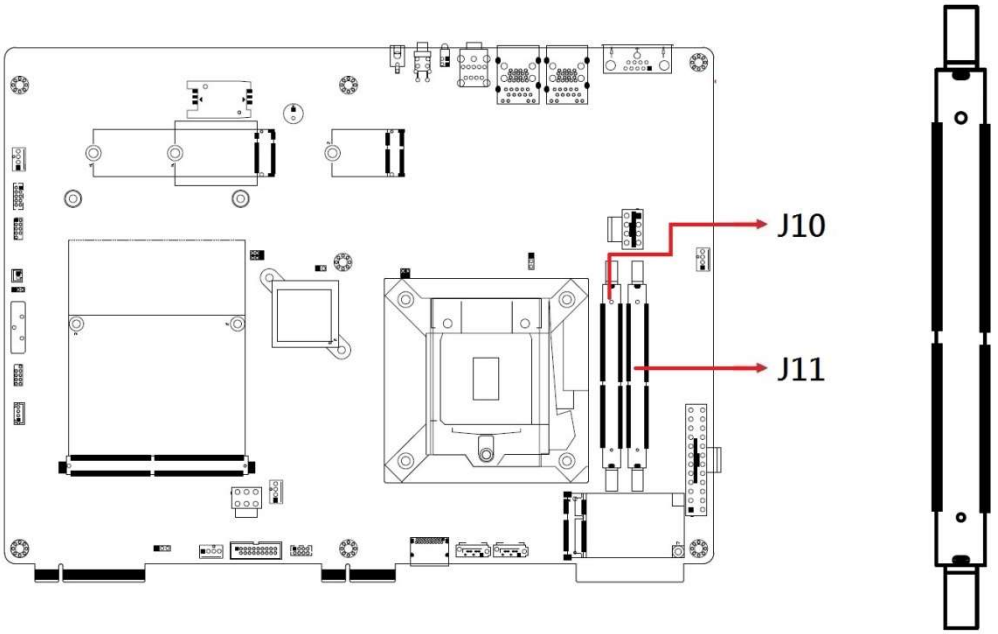
2.4.13 J8: Reset Button

Signal Name	Pin #	Pin#	Function
Reset BTN-	1	2	Reset BTN+

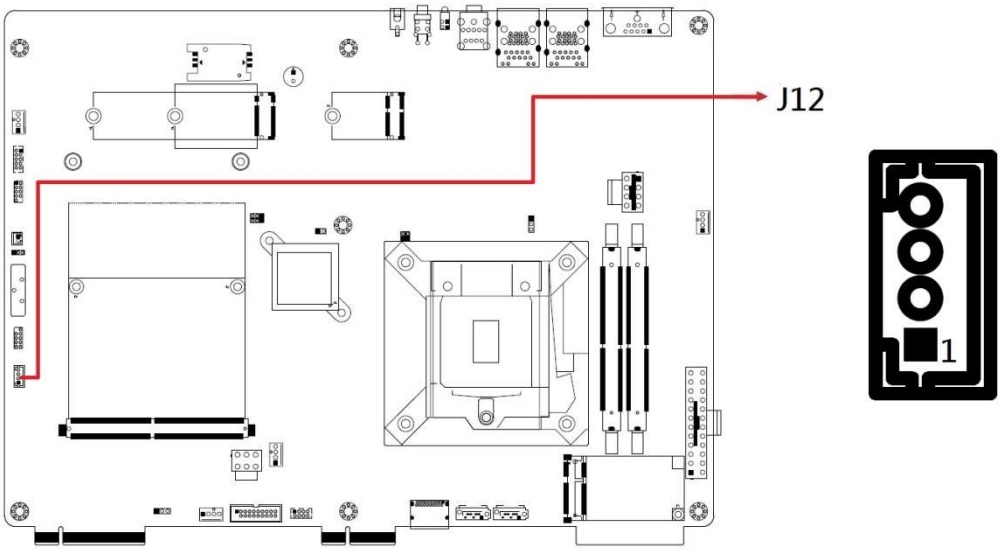
2.4.14 J9: For SPI Debug Tools Pin Header



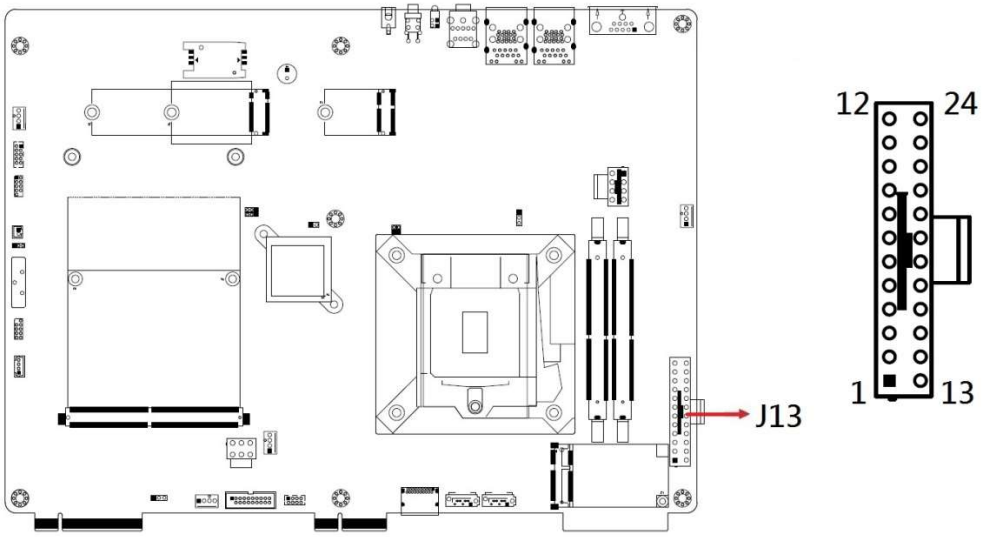
2.4.15 J10 / J11: DDR4 SO-DIMM Slots



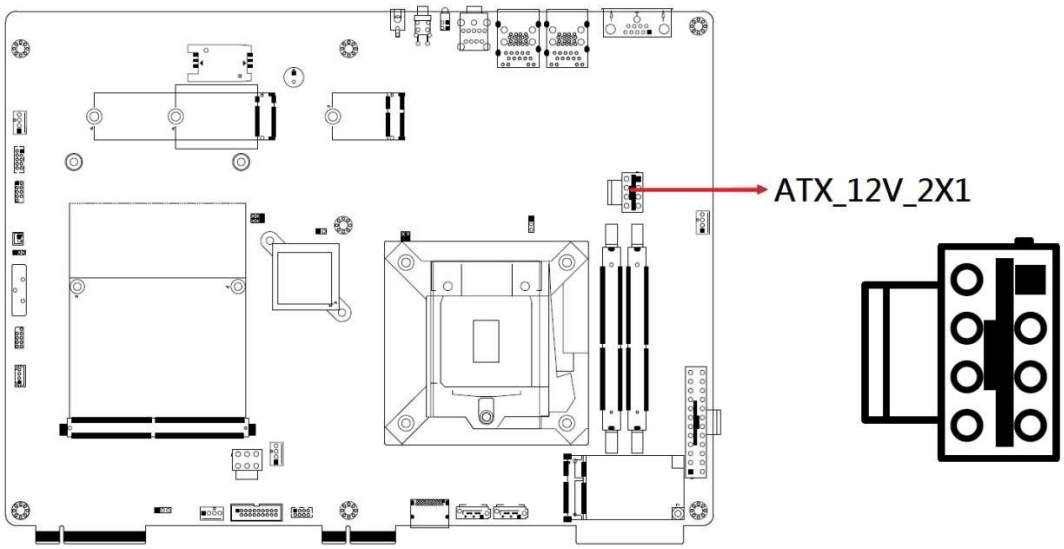
2.4.16 J12 : ISMART MCU Program Header



2.4.17 J13 : ATX Connector



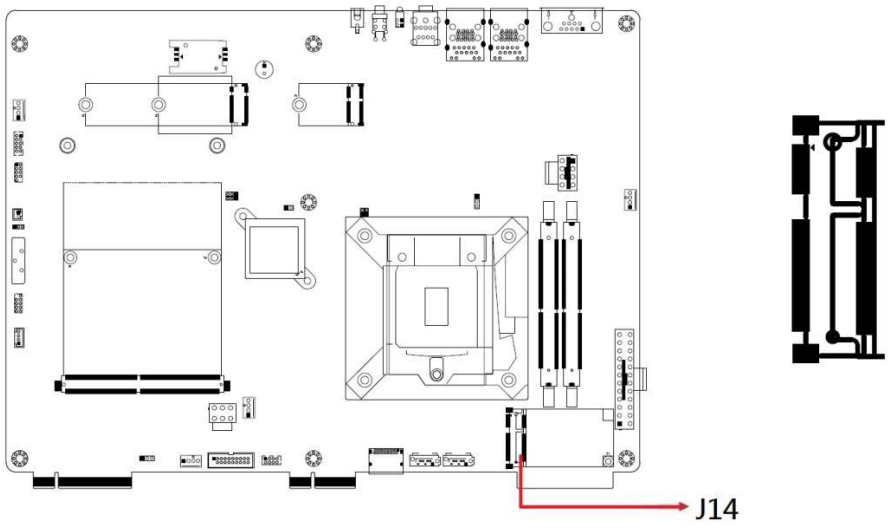
2.4.18 ATX_12V_2X1: ATX 12V Power Connector



*** This connector supplies the CPU operating voltage.**

Signal Name	Pin #	Pin#	Function
Ground	1	5	+12V
Ground	2	6	+12V
Ground	3	7	+12V
Ground	4	8	+12V

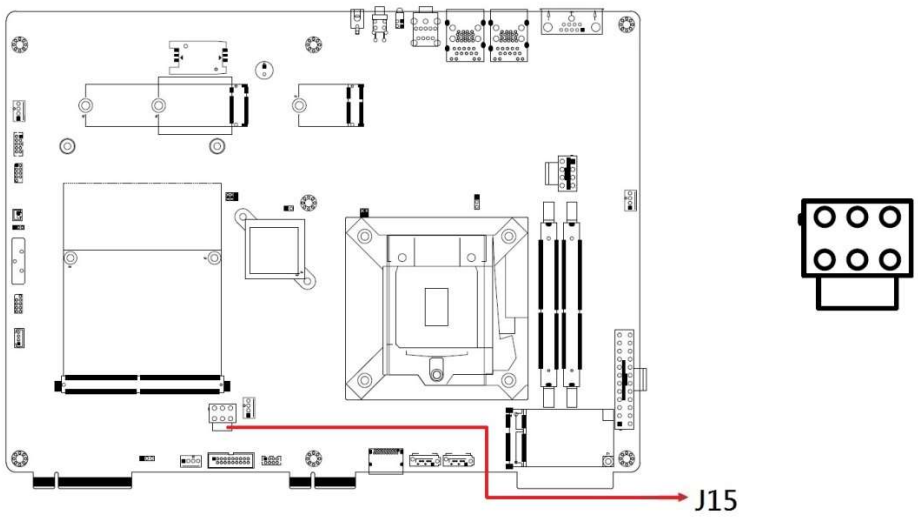
2.4.19 J14: Mini PCI-E Socket



2.4.20 CN7: SIM Card Socket

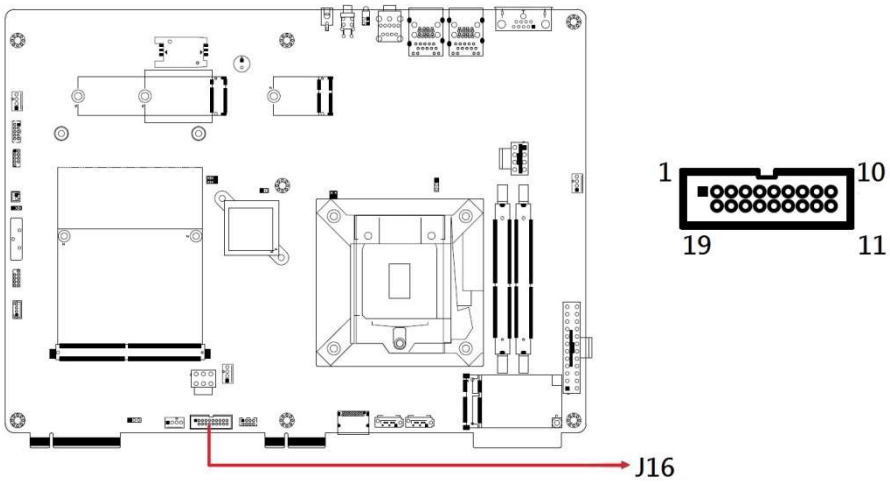
***Signal from J14 MINI PCI-E**

2.4.21 J15: MXM SRC Power (YIMTEX_576MWA2*03STR)



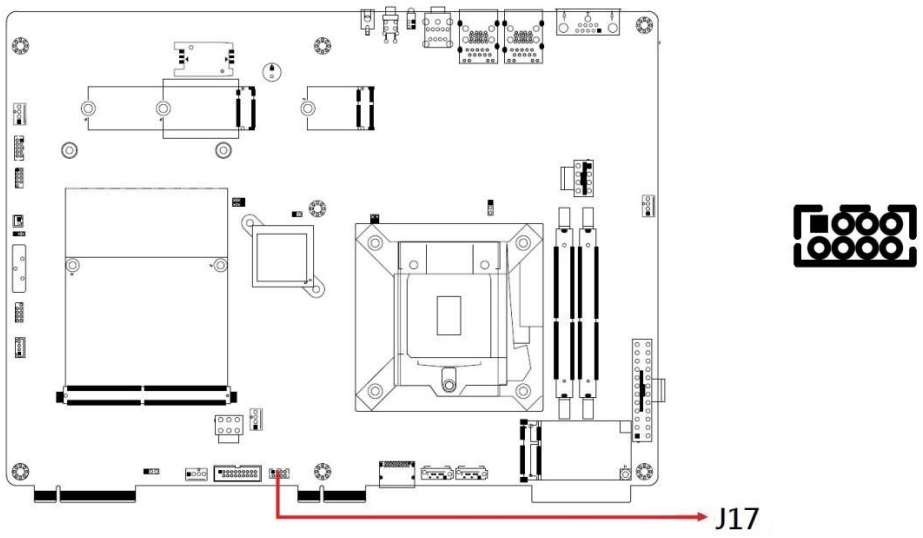
Signal Name	Pin #	Pin#	Function
Ground	1	4	+12V
Ground	2	5	+12V
Ground	3	6	+12V

2.4.22 J16 : USB3.1 Connectors (PINREX_52X-40-20GU52)



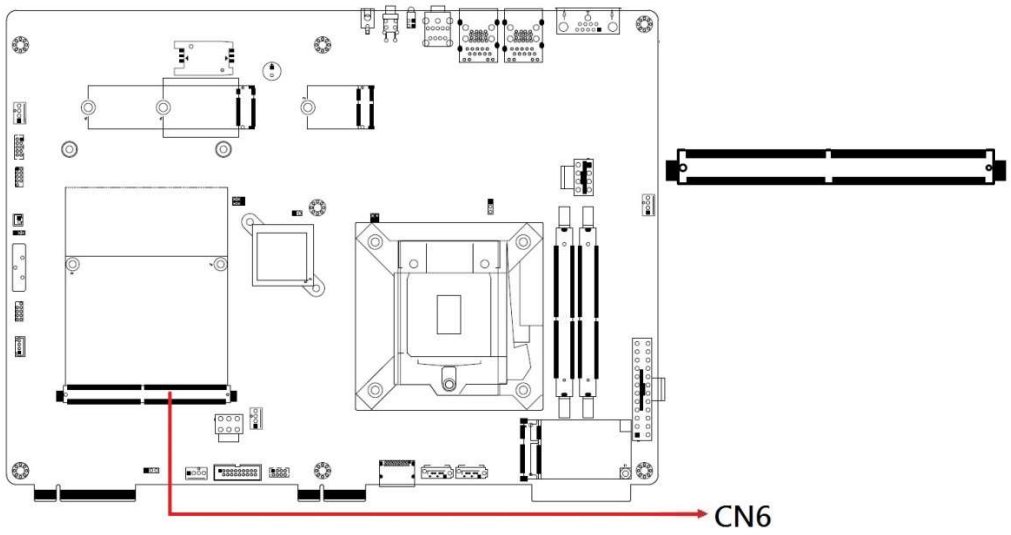
Signal Name	Pin #	Pin#	Function
VCC(900mA)	1	X	
P1_SSRX-	2	19	VCC(900mA)
P1_SSRX+	3	18	P2_SSRX-
GND	4	17	P2_SSRX+
P1_SSTX-	5	16	GND
P1_SSTX+	6	15	P2_SSTX-
GND	7	14	P2_SSTX+
P1_U2_D-	8	13	GND
P1_U2_D+	9	12	P2_U2_D-
NC	10	11	P2_U2_D+

2.4.23 J17 : USB 2.0 Connector (DF11-8S-PA66H)

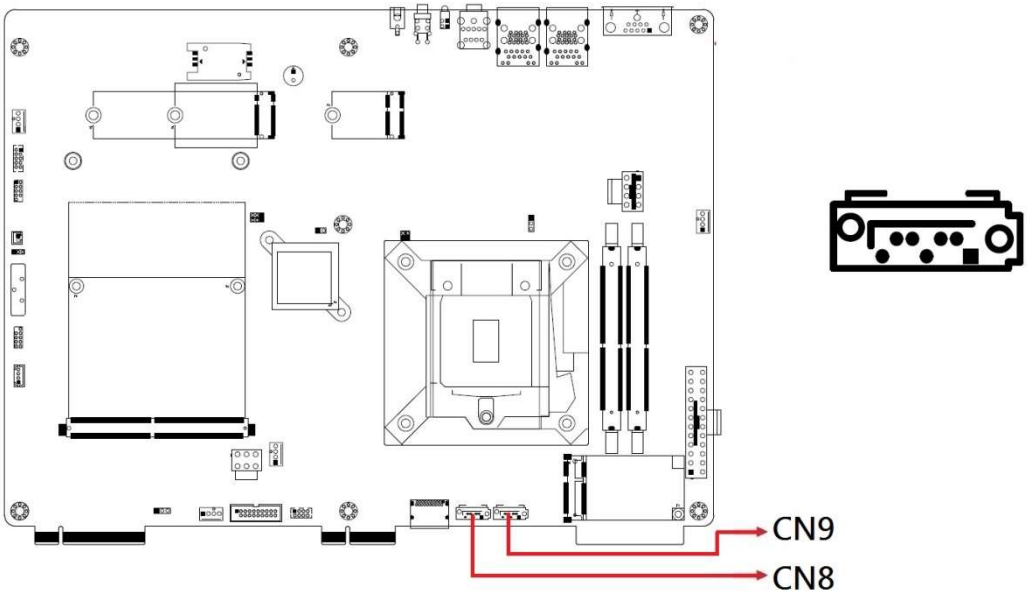


Signal Name	Pin #	Pin#	Function
Vcc(0.5A)	1	2	Ground
D0-	3	4	D1+
D0+	5	6	D1-
Ground	7	8	Vcc(0.5A)

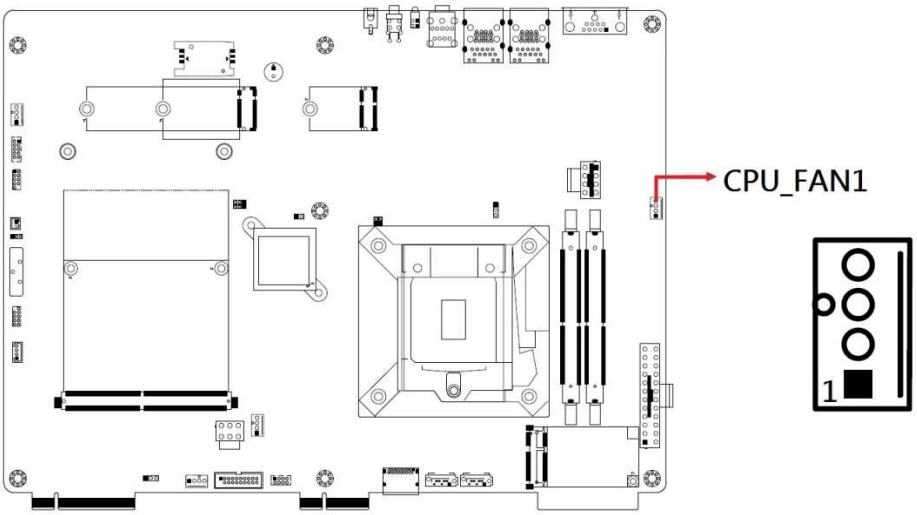
2.4.24 CN6: MXM Socket



2.4.25 CN8, CN9: SATA Connectors

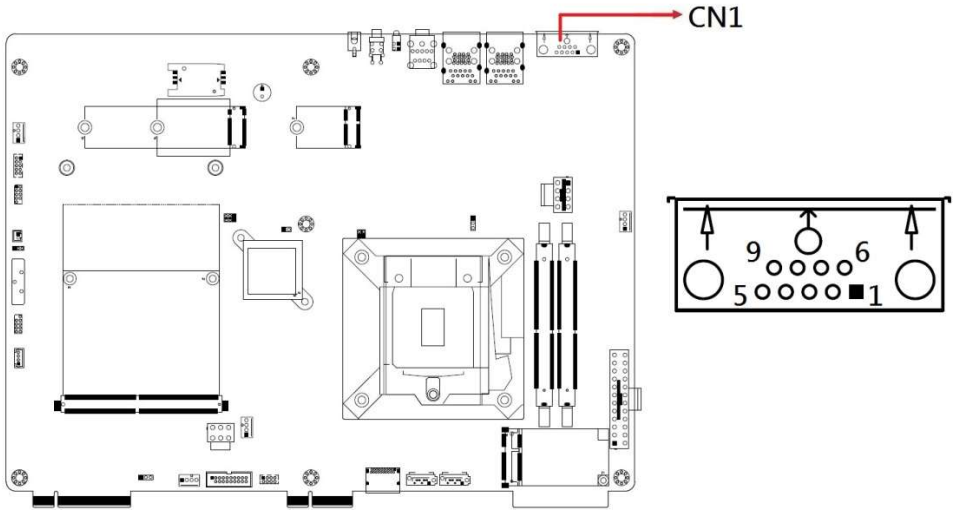


2.4.26 CPU_FAN1: CPU Fan Power Connector



Signal Name	Pin #	Pin#	Function
Ground	1	3	Rotation detection
+12V	2	4	Control

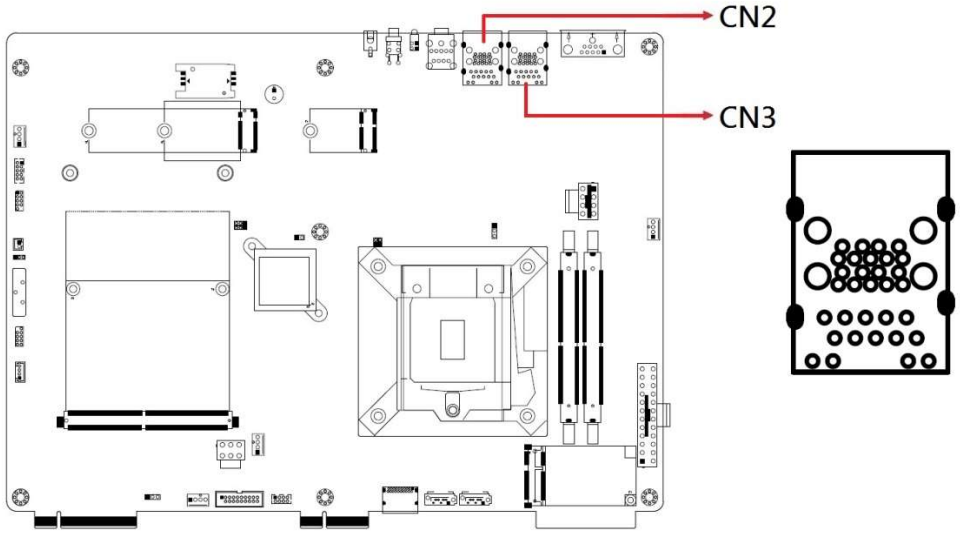
2.4.27 CN1: COM1 RS-232 Ports



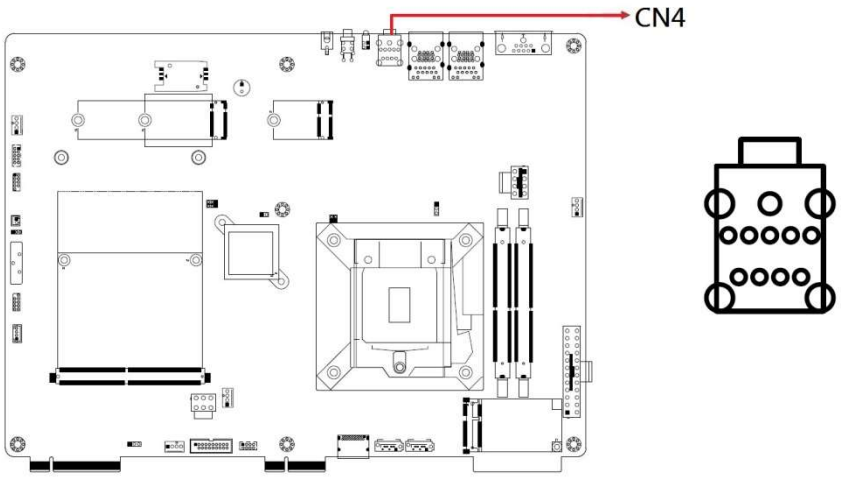
Signal Name	Pin #	Pin#	Function
DCD, Data carrier detect	1	6	DSR, Data set ready
RXD, Receive data	2	7	RTS, Request to send
TXD, Transmit data	3	8	CTS, Clear to send
DTR, Data terminal ready	4	9	RI, Ring indicator
Ground	5		

2.4.28 CN2 / CN3: GbE LAN Port and Dual USB 3.1 Ports

***CN3: Intel WGI219LM / CN2: Intel WGI211AT**

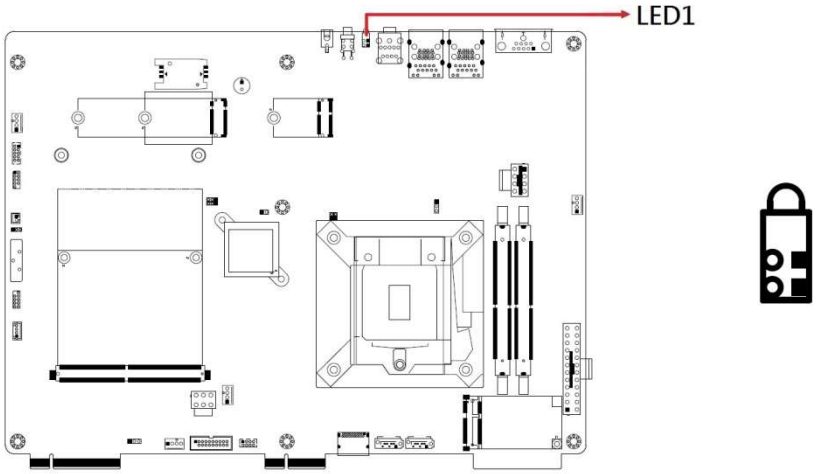


2.4.29 CN4: Audio Connector



2.4.30 LED1: Power LED / HDD LED

***Green for Power LED / Red for HDD LED**



Chapter 3
Driver Installation

The information provided in this chapter includes:

- Intel® Chipset Software Installation Utility
- HD Audio Driver
- LAN Driver
- Intel® Management Engine Drivers Installation
- Intel® Serial IO Drivers 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. Register as a member of our website to download all the necessary drivers and extract for installation.

Note: After installing your Windows operating system, you must install the Intel® Chipset Software Installation Utility first before proceeding with the drivers installation.

3.2 Intel® Chipset Software Installation Utility

The Intel® Chipset drivers should be installed first before the software drivers to install INF files for Plug & Play function for the chipset components. Follow the instructions below to complete the installation.

1. Insert the disk enclosed in the package with the board. Click **Intel** on the left pane and then **Intel(R) Coffeelake Chipset Drivers** on the right pane.

2. Click **Intel(R) Chipset Software Installation Utility**.

3. When the *Welcome* screen to the Intel® Chipset Device Software appears, click **Next** to continue.

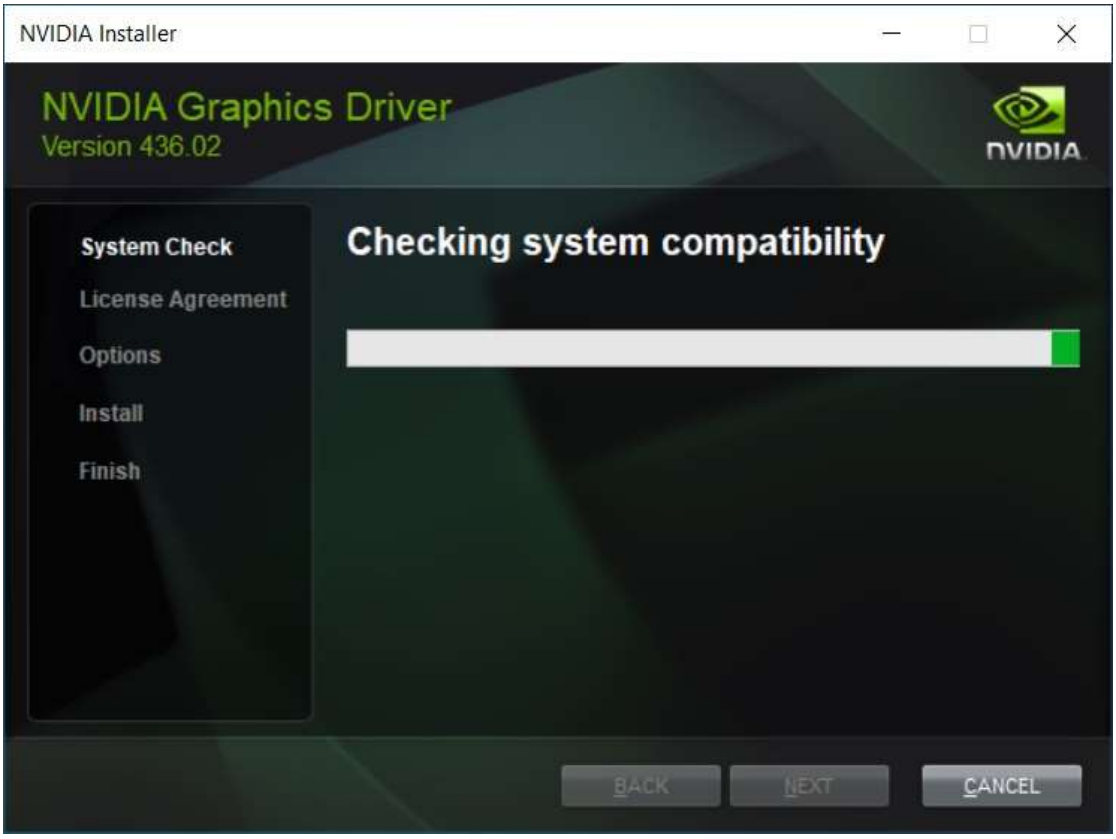
4. Accept the software license agreement and proceed with the installation process.

5. On the *Readme File Information* screen, click **Install**.

6. After the installation, click **Finish** to complete the setup process.

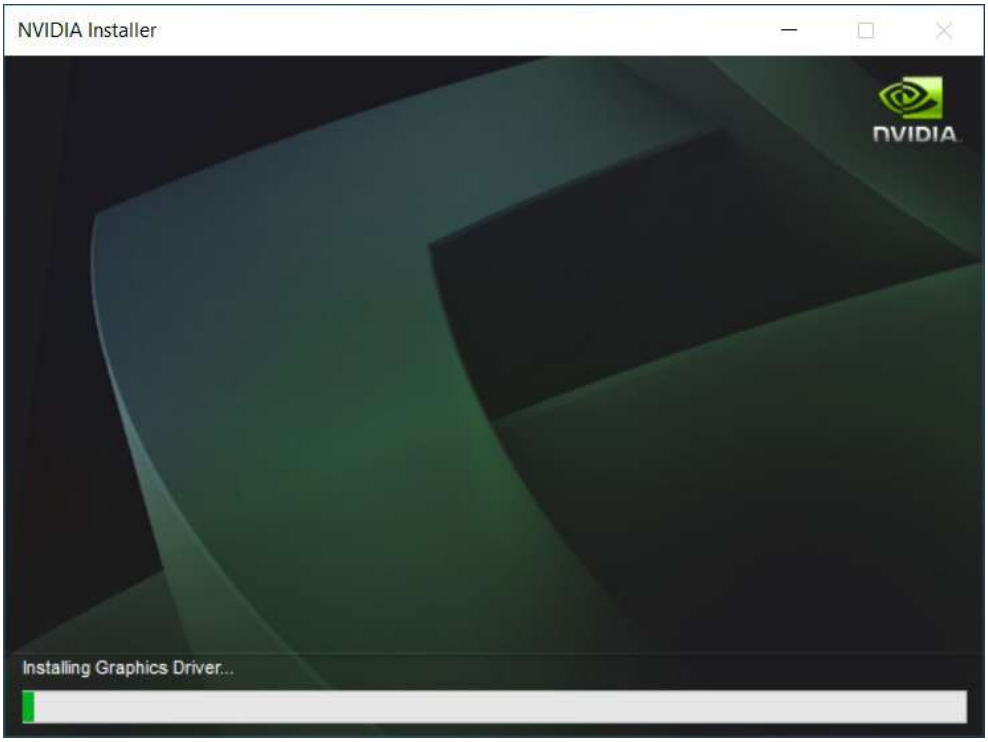
3.3 NVIDIA Graphics Driver Installation

1. Extract the NVIDIA Graphics Driver files. After extraction, the installation shall check the system compatibility.



2. After System Check is done, click **AGREE AND CONTINUE**.

3. On the next screen, choose **Express (Recommended)** and click **NEXT**.



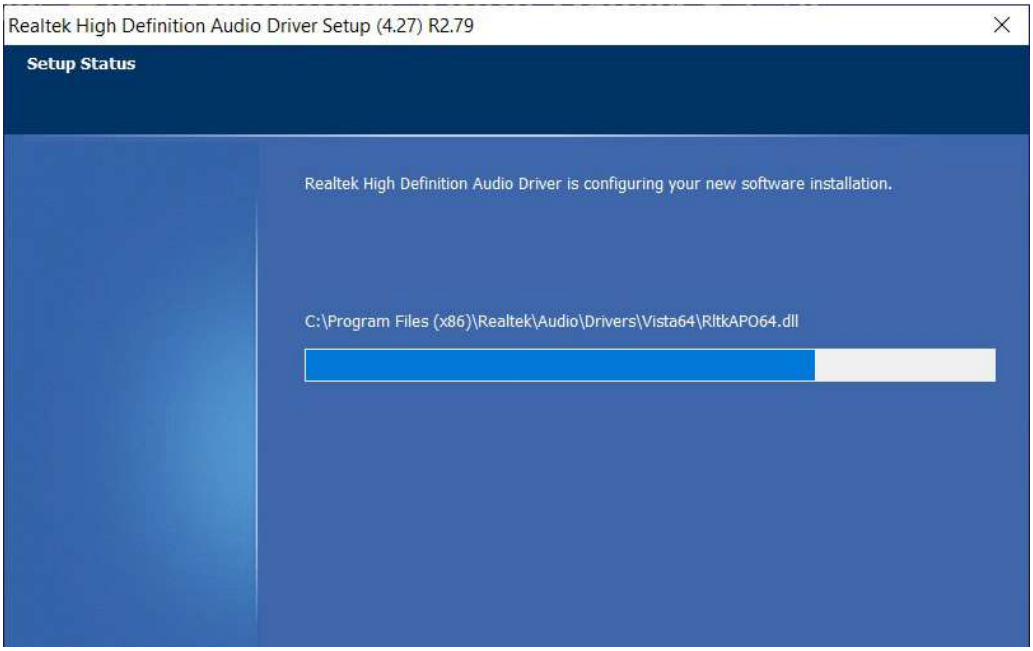
4. When the NVIDIA Installer has finished, click **RESTART NOW**.

3.4 Realtek High Definition Audio Driver Installation

1. Insert the disk enclosed in the package with the board. Click **Intel** on the left pane and then **Intel(R) Coffelake Chipset Drivers** on the right pane.

2. Click **Realtek High Definition Audio Driver**.

3. On the *Welcome* screen of the InstallShield Wizard, click **Next**. The InstallShield Wizard will install Realtek High Definition Audio Driver on your computer.

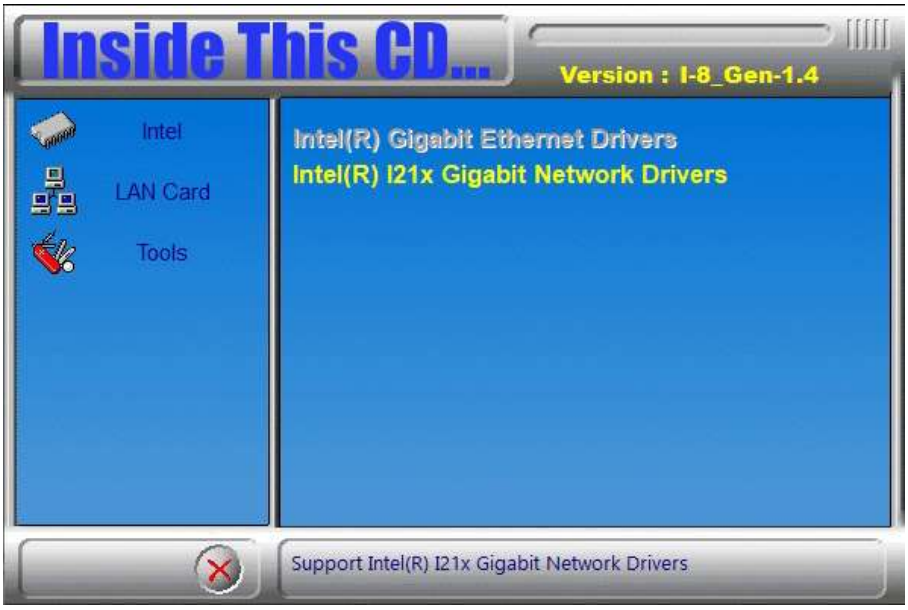


4. When the driver is completely installed, restart the computer for changes to take effect.

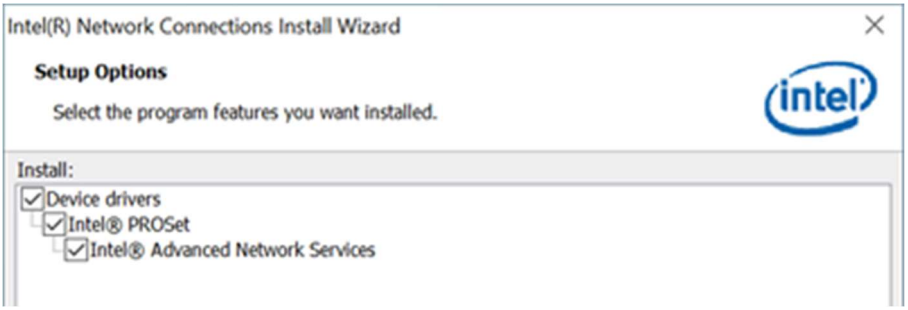
3.5 LAN Driver Installation

1. Insert the disk enclosed in the package with the board. Click **LAN Card** on the left pane and then **Intel LAN Controller Drivers** on the right pane.

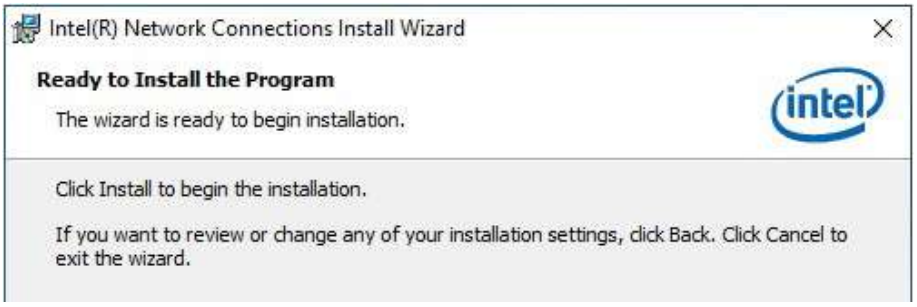
2. On the next screen, choose **Intel(R) 121x Gigabit Network Drivers**.



3. The next screen will show the files are being extracted to a temporary folder. When the *Welcome* screen appears, click **Next**.
4. Accept the license agreement and click **Next**.
5. On the *Setup Options* screen, select the desired features you want installed. Then click **Next** to continue.



6. On the *Ready to Install the Program* screen, click **Next** to start.



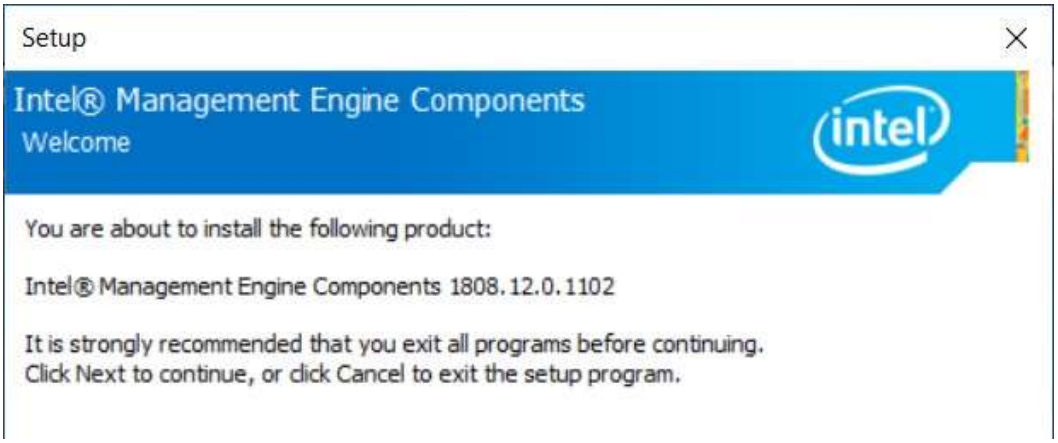
7. When the Install wizard has completed the installation, click **Finish**.

3.6 Intel® Management Engine Components Drivers Installation

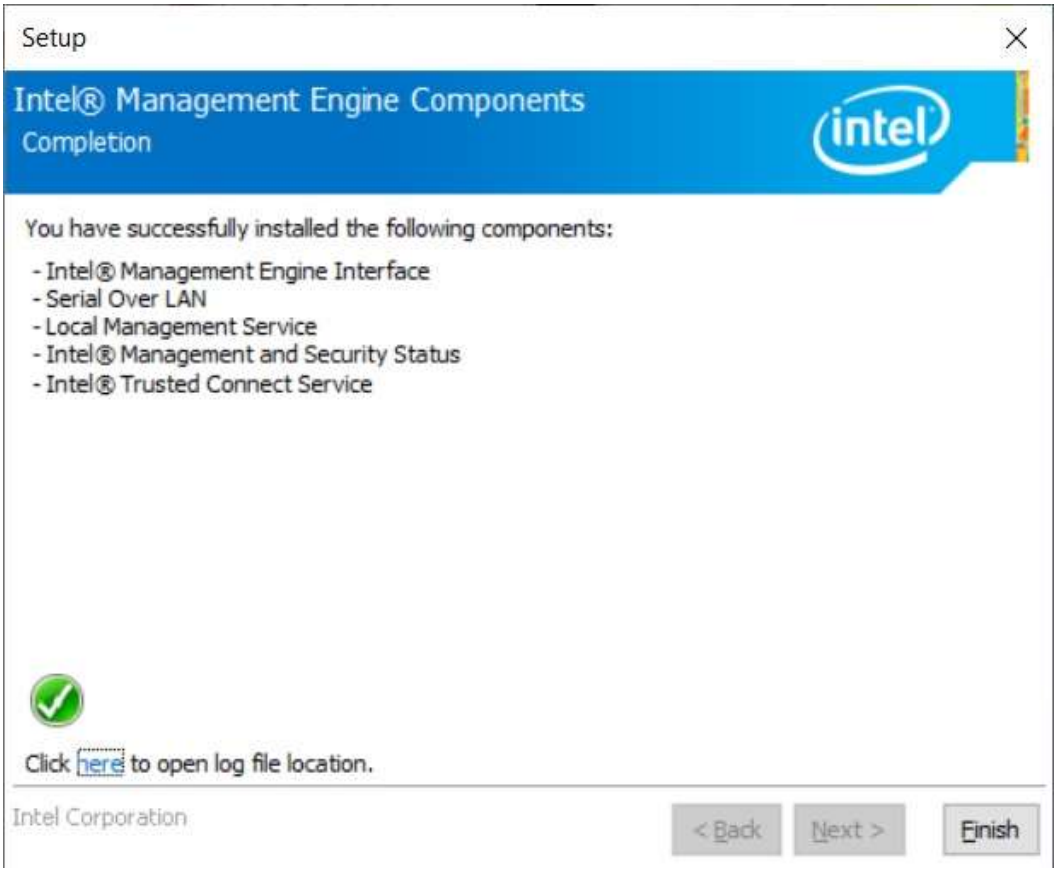
1. Insert the disk enclosed in the package with the board. Click **Intel** on the left pane and then **Intel(R) Coffelake Chipset Drivers** on the right pane.

2. Click **Intel(R) ME 12.x Drivers**.

3. When the *Welcome* screen appears, click **Next**.



4. Accept the license agreement and click **Next**.
5. On the next screen, click **Next** to accept the destination folder. Installatoin shall begin.
6. After Intel Management Engine Components have been installed, click **Finish**.



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
```

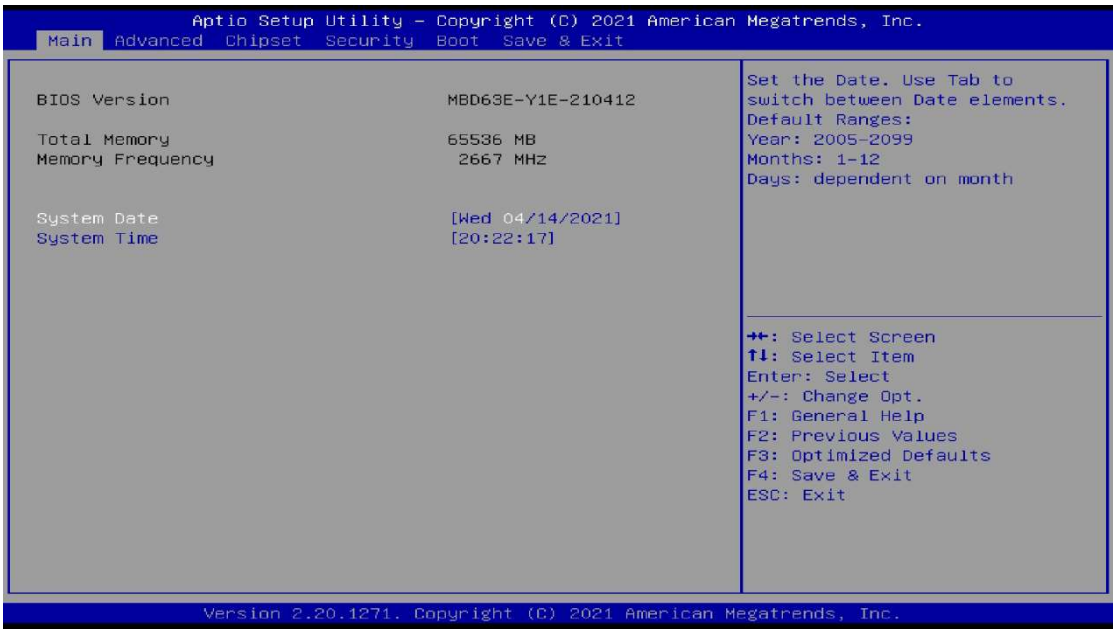
In general, press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help, and <Esc> to quit.

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.

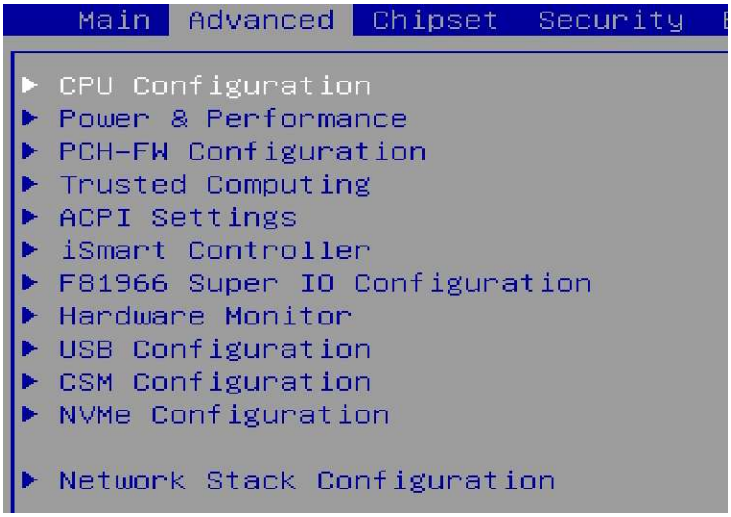
4.3 Main Settings



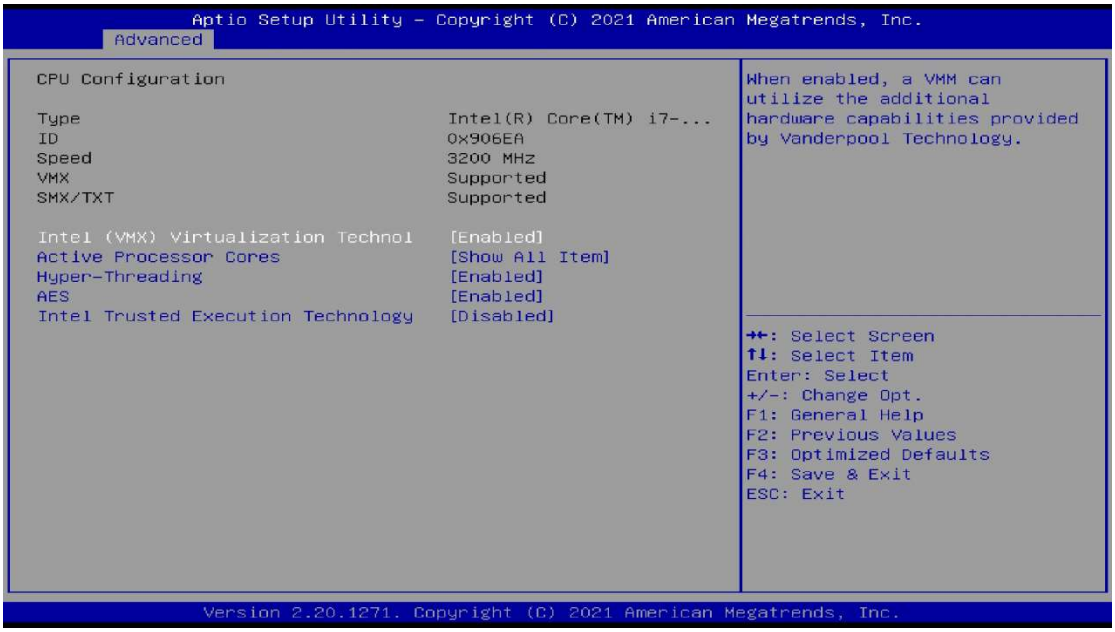
BIOS Setting	Description
System Date	Sets the date. Use the <Tab> key to switch between the data elements.
System Time	Set the time. Use the <Tab> key to switch between the data elements.

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.

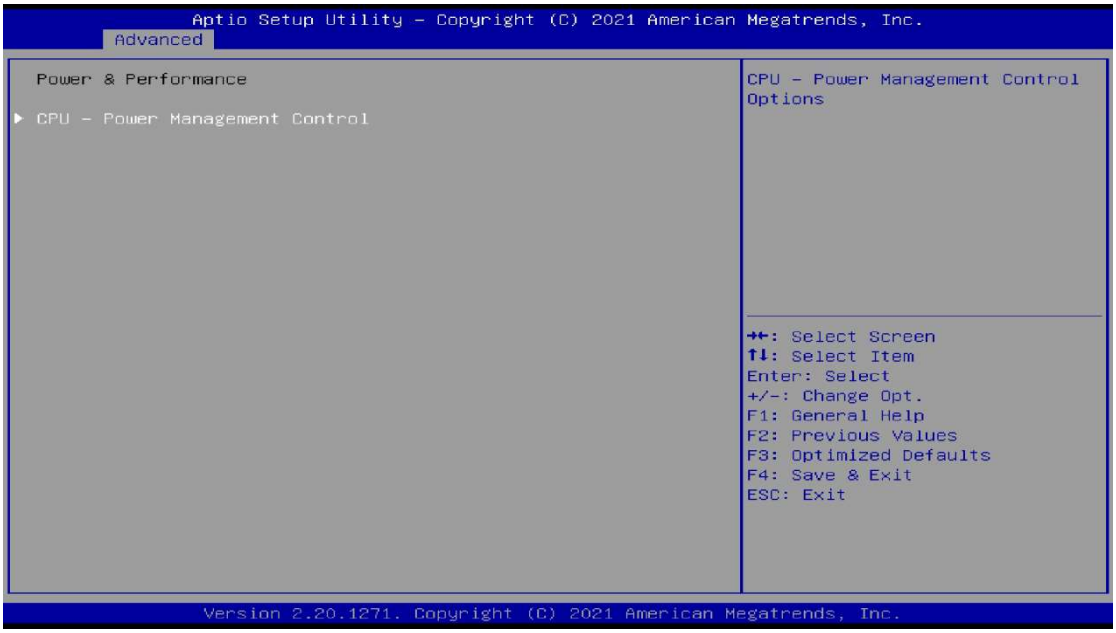


4.4.1 CPU Configuration



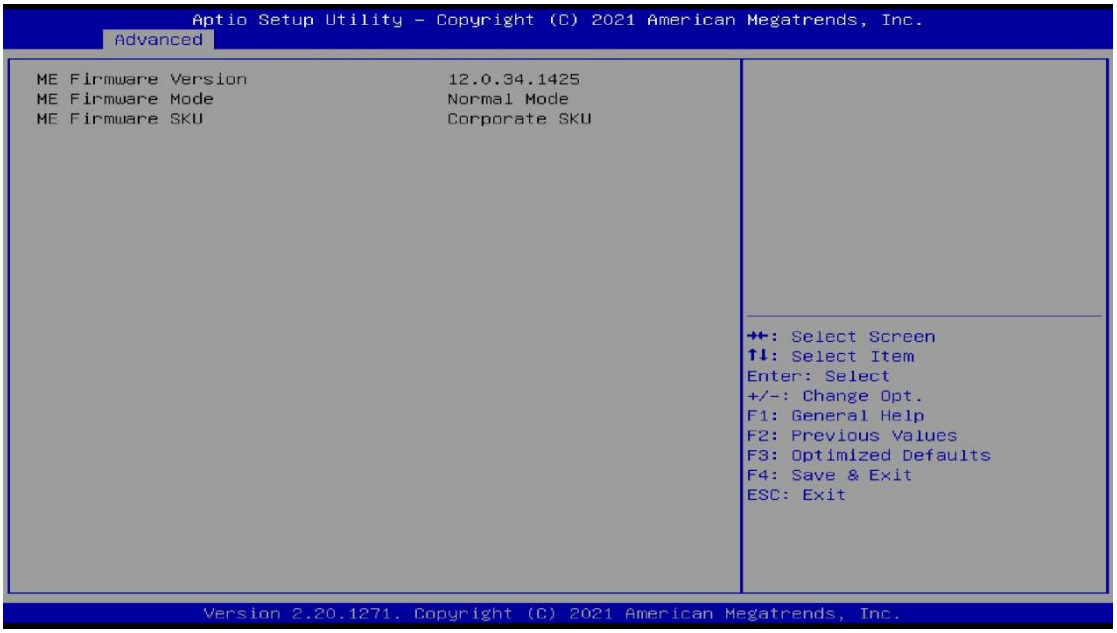
BIOS Setting	Description
Intel (VMX) Virtualization Technology	When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.
Active Procesor Cores	Number of cores to enable in each processor package.
Hyper-Threading	Enabled or Disabled
AES	Enable/Disable AES (Advanced Encryption Standard)
Intel Trusted Execution Technology	Enables / Disables utilization of additional hardware capabilities provided by Intel(R) Trusted Execution Technology. Changes require a full power cycle to take effect.

4.4.2 Power & Performance



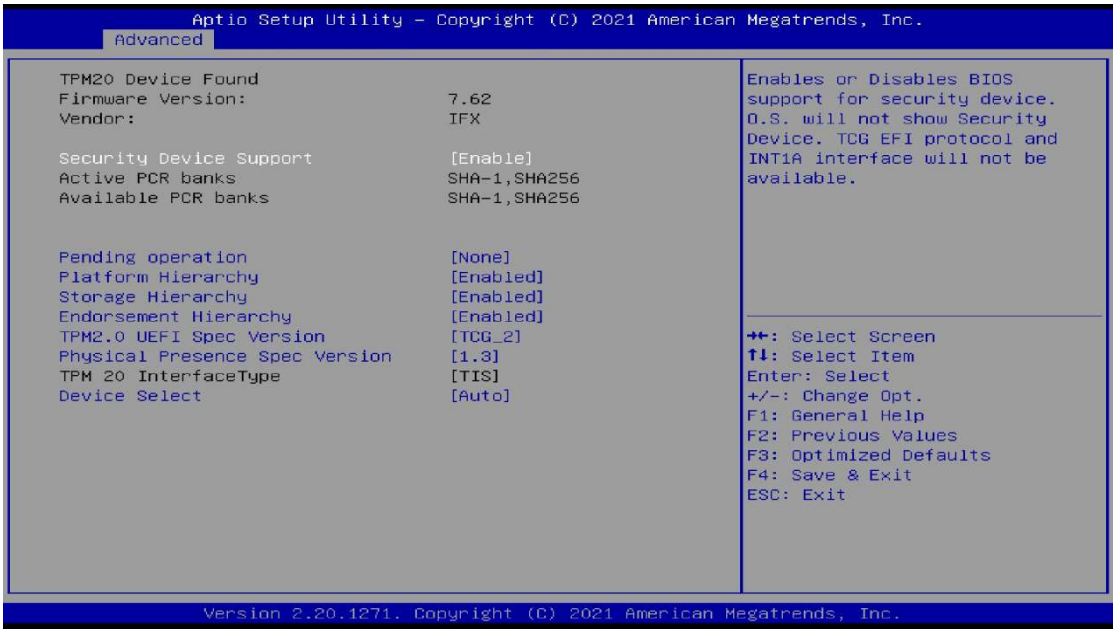
BIOS Setting	Description
CPU – Power Management Control	CPU power management control options.
Intel(R) SpeedStep(tm)	Allows more than two frequency ranges to be supported.
Intel(R) Speed Shift Technology	Enable/Disable Intel(R) Speed Shift Technology support. Enabling will expose the CPPC V2 interface to allow for hardware to allow for hardware controlled P states.
Turbo Mode	Enables/Disables processor Turbo Mode (requires Intel Speed Step or Intel Speed Shift to be available and enabled).

4.4.3 PCH-FW Configuration



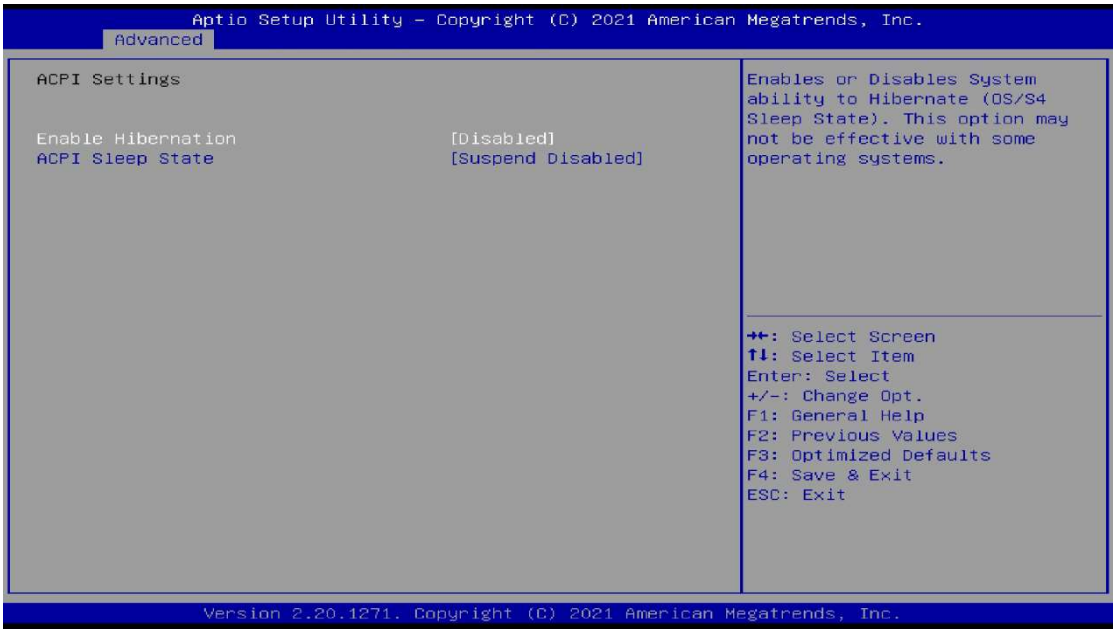
BIOS Setting	Description
ME State	When disable, ME will be put into ME Temporarily Disabled Mode.

4.4.4 ACPI Settings



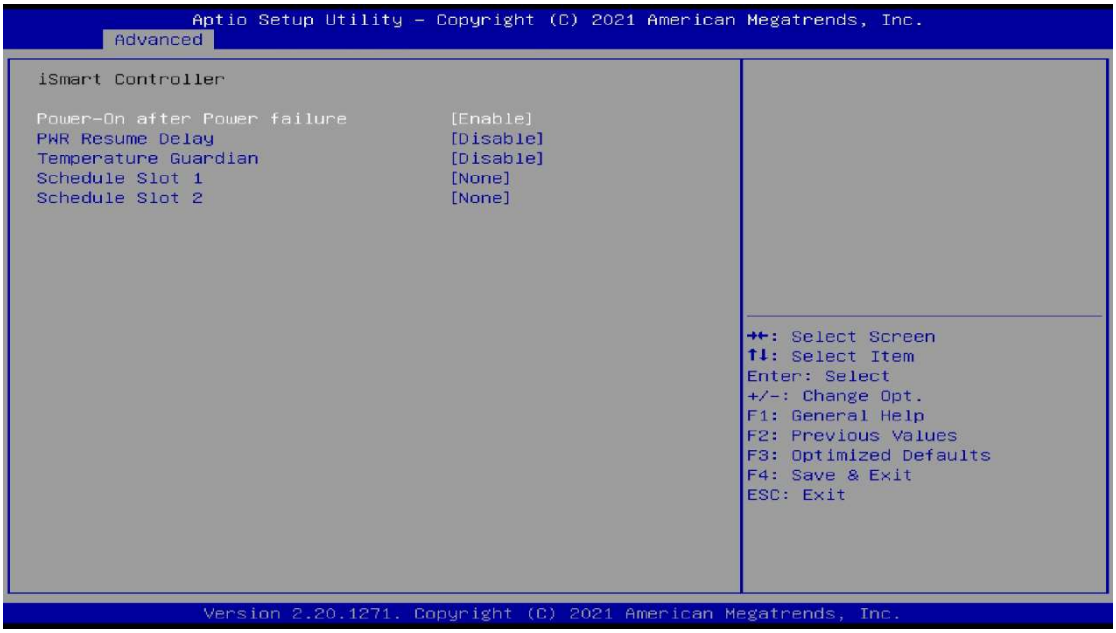
BIOS Setting	Description
Security Device Support	Enables / Disables BIOS support for security device. OS will not show security device. TCG EFI protocol and INTIA interface will not be available.
Pending operation	Schedule an operation for the security device. Note: Your computer will reboot during restart in order to change state of security device.
Platform Hierarchy Storage Hierarchy Enorsement Hierarchy	Options: Enable or Disable
TPM2.0 UEFI Spec Version	Select the TCG2 Spec Version Support. TCG_1_2: the compatible mode for Win8/Win10 TCG_2: Support new TCG2 protocol and event format for Win10 or later
Physical Presence Spec Version	Select to tell OS to support PPI Spect Version 1.2 or 1.3. 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.

4.4.5 ACPI Settings



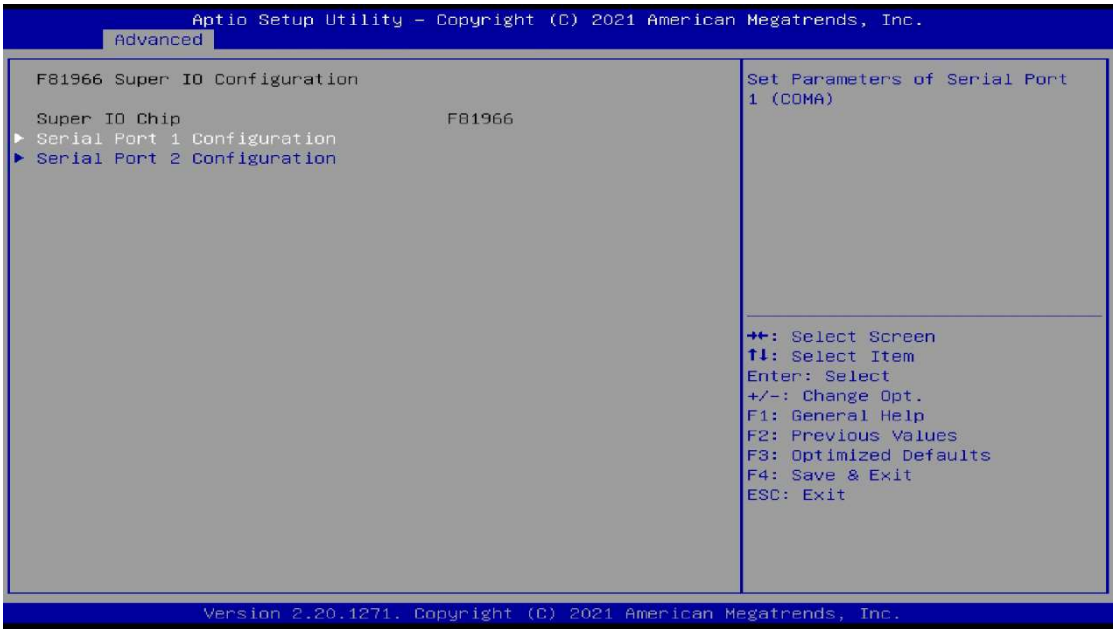
BIOS Setting	Description
Enable Hibernation	Enables / Disables system ability to hibernate (OS/S4 Sleep State). This option may not be effective with some operating systems.
ACPI Sleep State	Selects the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.

4.4.6 iSmart Controller



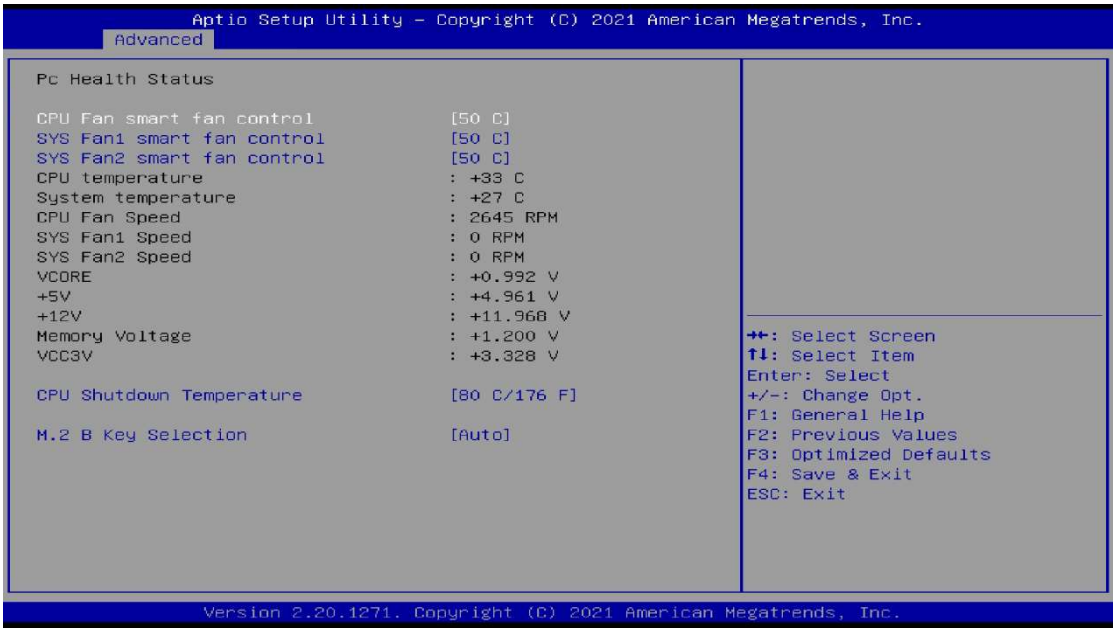
BIOS Setting	Description
Power-On after Power failure	Enables / Disables the system to be turned on automatically after a power failure.
PWR Resume Delay	Enabled or Disabled Power on resume delay
Temperature Guardian	Enabled or Disabled
Schedule Slot 1 / 2	Sets up the hour / minute for system powe-on. **Important:** If you would like to set up a schedule between adjacent days, configure two schedule slots. 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.

4.4.7 F81966 Super IO Configuration



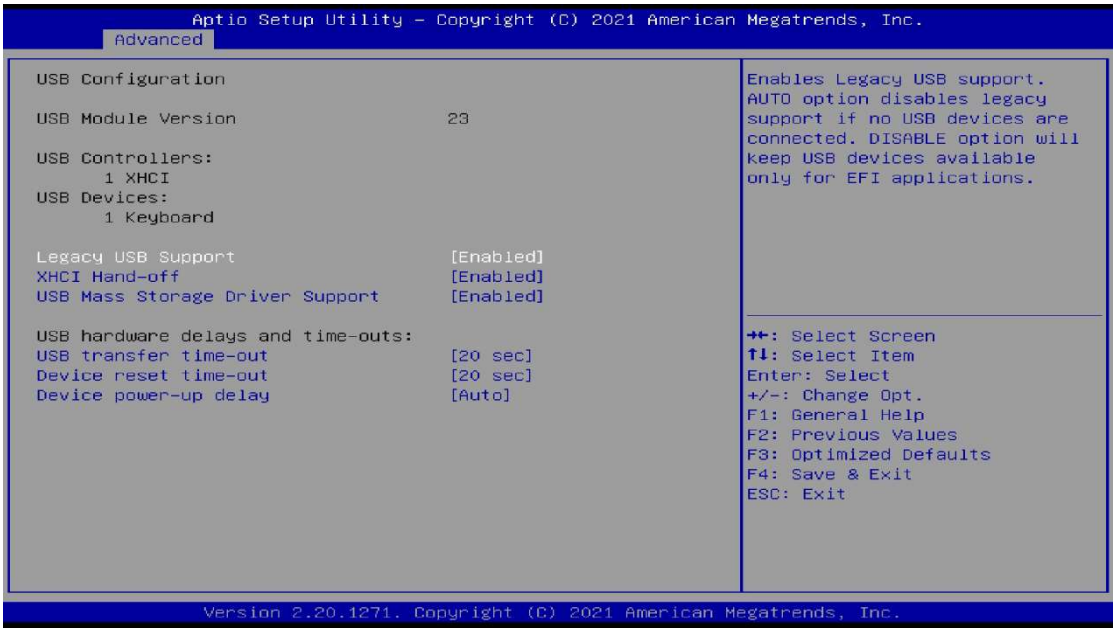
BIOS Setting	Description
Serial Port 1 Configuration	Sets parameters of Serial Port 1 (COMA).
Serial Port	Enable / Disable the serial port.
Change Settings	Select an optimal setting for the Super IO device.

4.4.8 Hardware Monitor



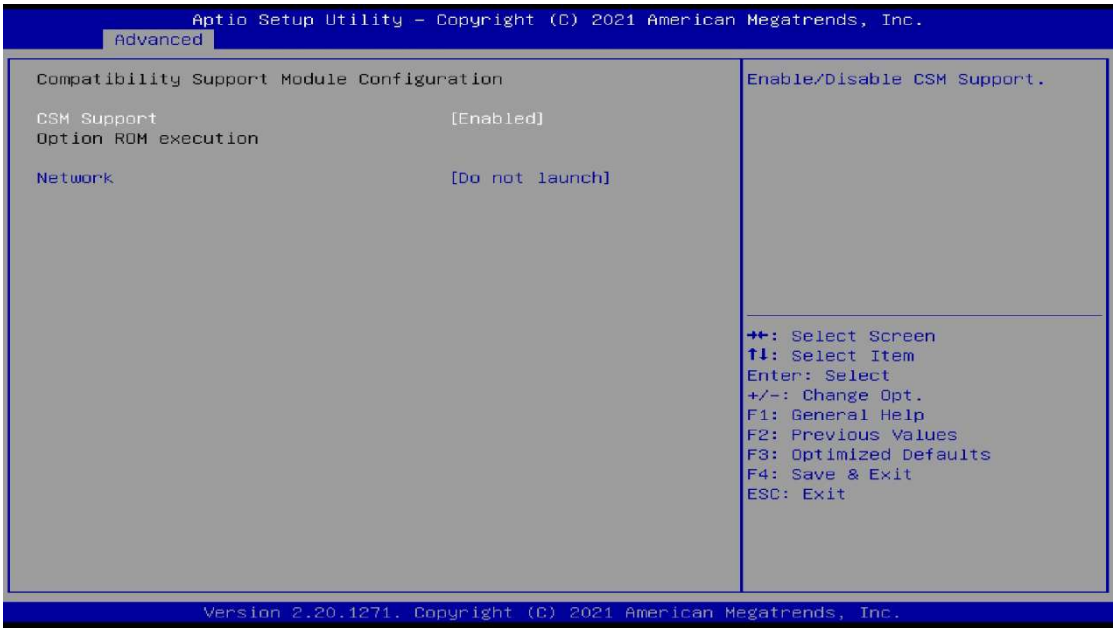
BIOS Setting	Description
Temperatures / Voltages	These fields are the parameters of the hardware monitoring function feature of the motherboard. The values are read-only values as monitored by the system and show the PC health status.
CPU Shutdown Temperature	Options: Disabled 70C / 158F 75C / 167F 80C / 176 F 85C / 185F 90C / 194F 95C / 203F
M.2 B Key Selection	Options: Auto Sata / USB 3.0 PCIe

4.4.9 USB Configuration



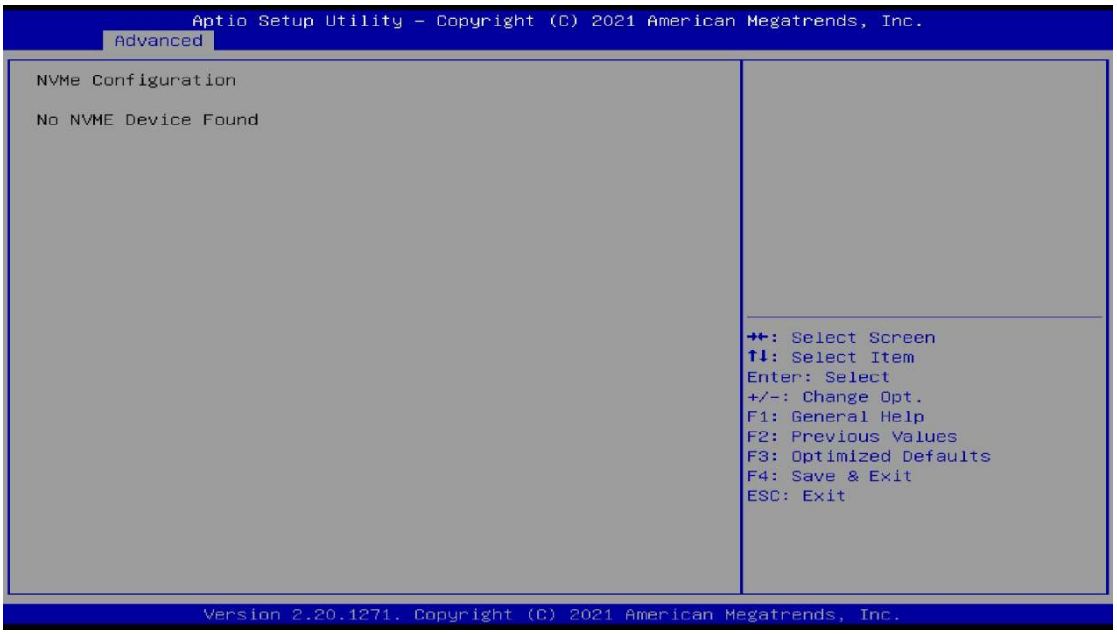
BIOS Setting	Description
Legacy USB Support	• **Enable:** Enables Ledacy USB Support. • **Auto:** Disables legacy support if no USB devices are connected. • **Disable:** Keeps USB devices available only for EFI applications.
XHCI Hand-off	This is a workaround for OSes without XHCI hand-off support. The 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	USB mass storage device Start Unit command time-out. Options: 10/20/30/40 sec
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 CSM Configuration

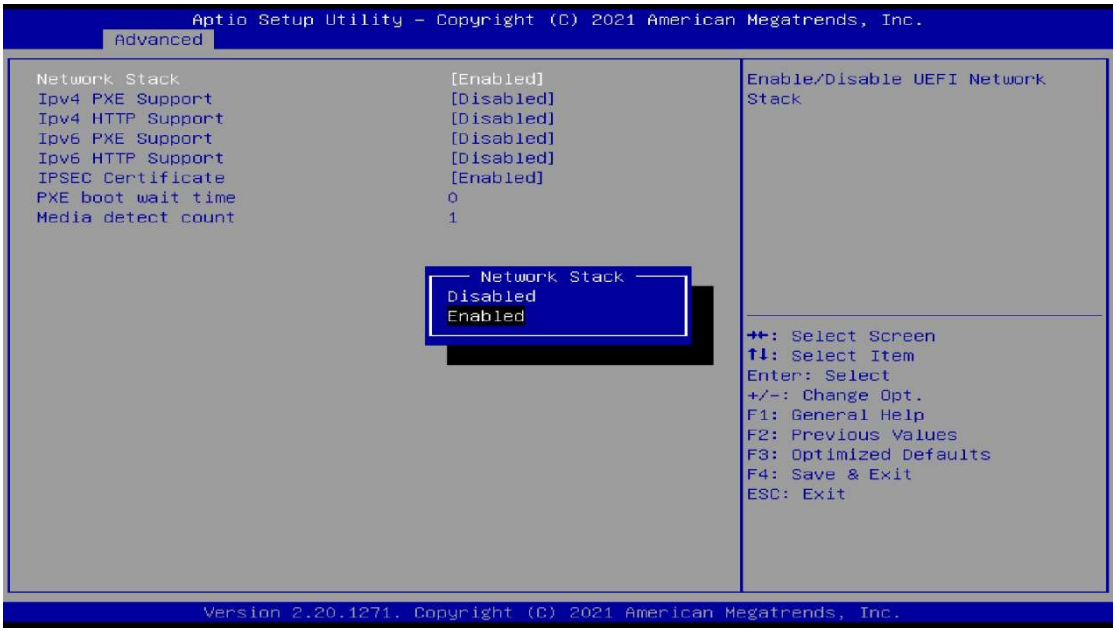


BIOS Setting	Description
CSM Support	Enables/Disables CSM Support.
Network	Controls the execution of UEFI and Legacy PXE OpROM.

4.4.11 NVMe Configuration

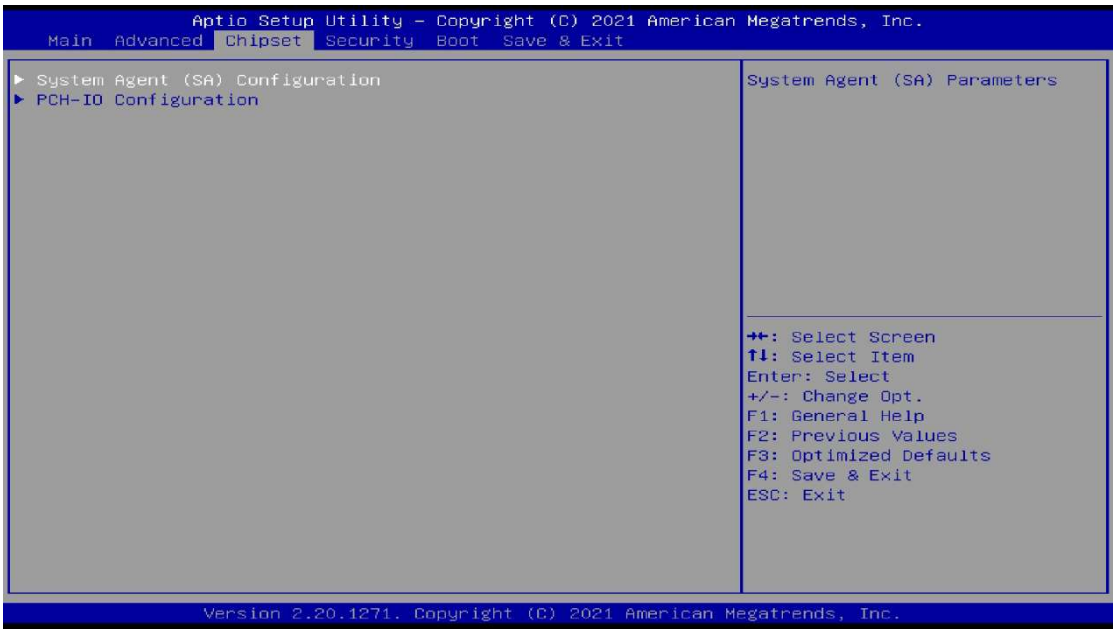


4.4.12 Network Stack Configuration



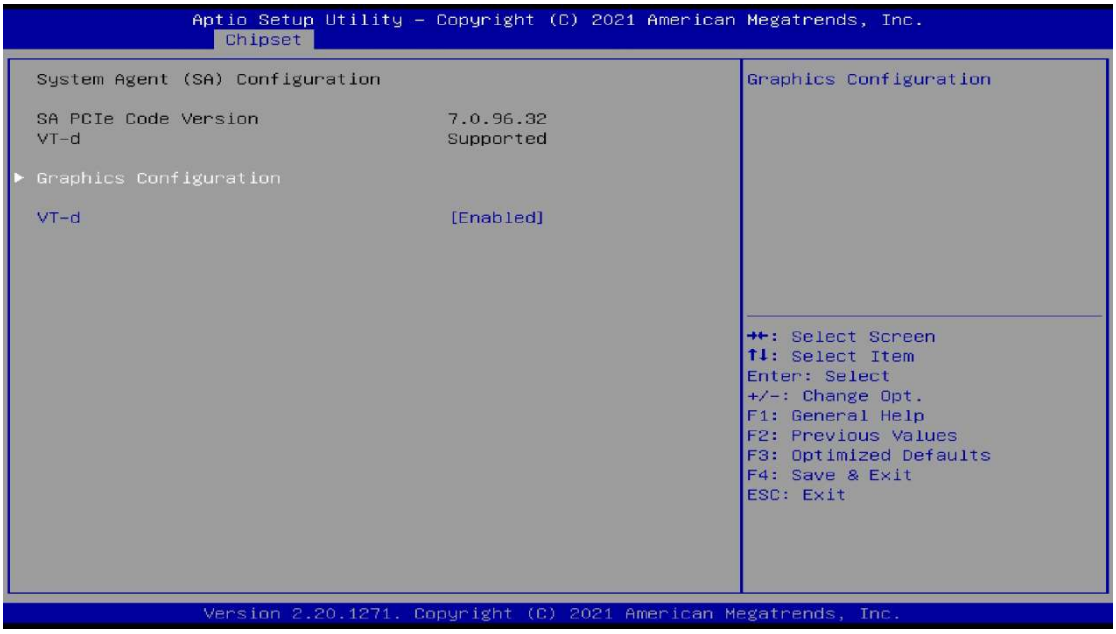
BIOS Setting	Description
Network Stack	Enables / Disables UEFI Network Stack.
Ipv4 PXE Support	Enable / Disable IPv4 PXE boot support. If disaabled, IPv4 PXE boot support will not be available.
Ipv4 HTTP Support	Enable / Disable IPv4 HTTP support. If disaabled, IPv4 HTTP boot support will not be available.
Ipv6 PXE Support	Enable / Disable IPv6 PXE boot support. If disaabled, IPv6 PXE boot support will not be available.
Ipv6 HTTP Support	Enable / Disable IPv6 HTTP boot support. If disaabled, IPv6 HTTP boot support will not be available.
IPSEC Certificate	Support to Enable/Disable IPSEC certificate for Ikev.
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 chcked. Use either +/- or numeric keys to set the value.

4.5 Chipset Settings



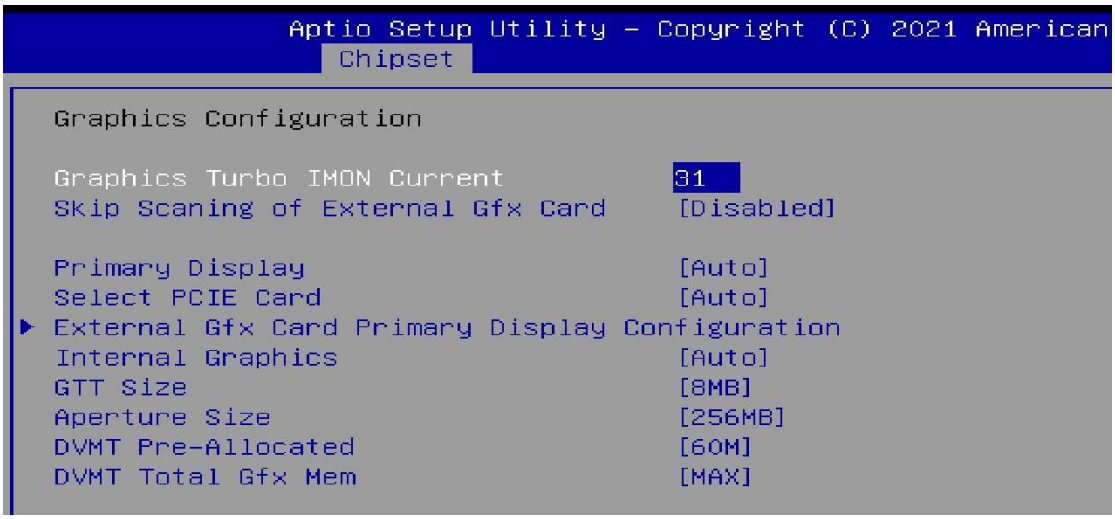
BIOS Setting	Description
System Agent (SA) Configuration	System Agent (SA) parameters
PCH-IO Configuration	PCH parameters

4.5.1 System Agent (SA) Configuration



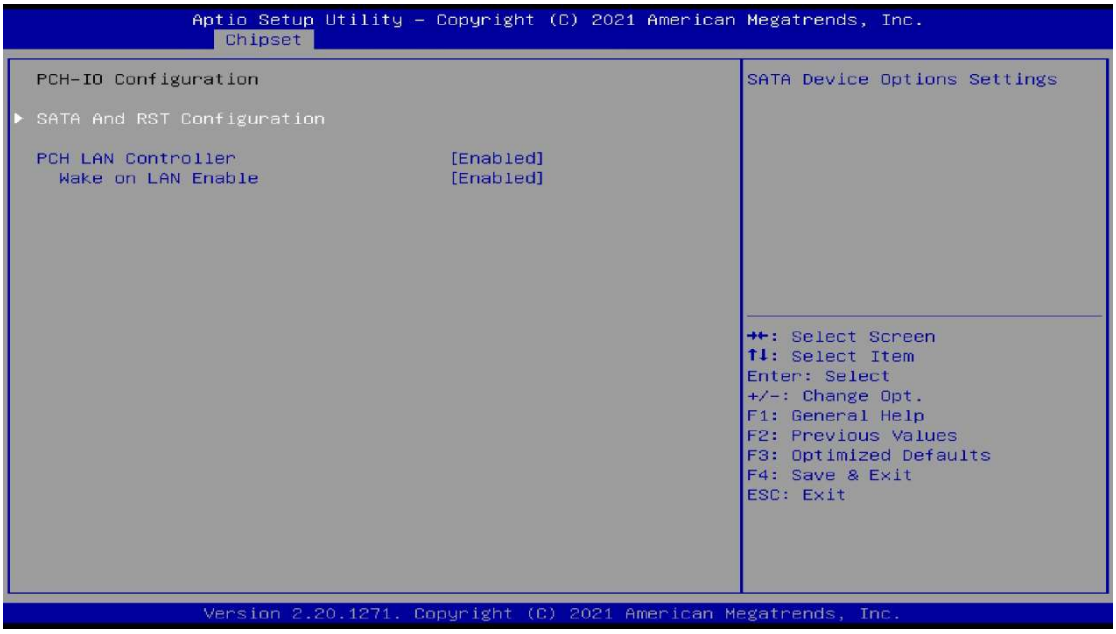
BIOS Setting	Description
Graphics Configuration	Configures the graphics settings.
VT-d	Checks if VT-d function on MCH is supported.

4.5.1.1. Graphics Configuration



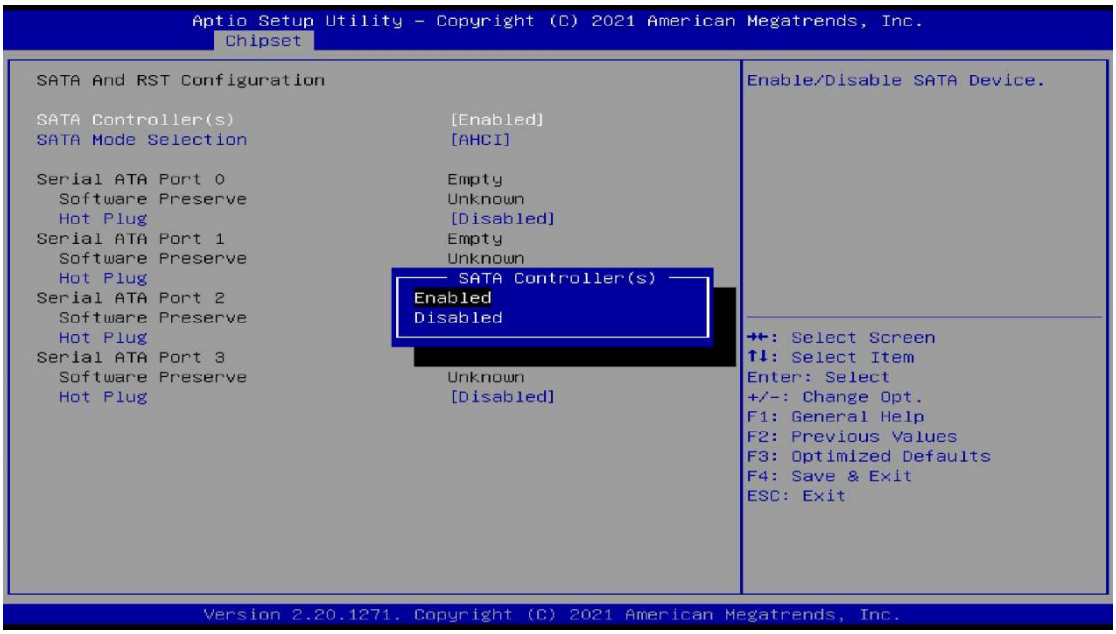
BIOS Setting	Description
Graphics Turbo IMON Current	Graphics turbo IMON current values supported (14-31)
Skip Scanning of External Gfx Card	If Enable, it will not scan for External Gfx Card on PEG and PCH PCIE Ports.
Primary Display	Select which of IGFX/PEG/PCI Graphics device should be primary display or select SG for switchable Gfx. Options: Auto, IGFX, PEG, PCI, SG
Select PCIE Card	Selects the card used on the platform. **Auto** skips GPIO based Power Enable to dGPU. **E1k Creek 4:** DGPU Power Enable = Active Low. **PEG Eva1:** DGPU Power Enable = Active High.
External Gfx Card Primiary Display Configuration	Primary PEG: Select PEG0/PEG1/PEG2/PEG3 Graphics device should be Primary PEG. Primary PCIE: Select Auto / PCIE1~7 of D28: F0~FF7, PCIE8~15 of D29: F0!F7, PCIE16~19 of D27: F0~F3, Graphics device should be Primary PCIE.
Internal Graphics	Keep IGFX enabled based on the setup options. Options: Auto, Disabled, Enabled
GTT Size	Sets the GTT size as 2 MB, 4 MB, or 8 MB.
Aperture Size	Sets the aperture size as 128 MB, 256 MB, 512 MB, 1024 MB or 2048 MB. **Note:** Above 4 GB MMIO BIOS assignment is automatically enabled when selecting 2048 MB aperture. To use this feature, disable CSM support.
DVMT Pre-Alocated	0M, 32M, 64M, 4M, 8M, 12M, 16M, 20M, 24M, 28M, 32M/F7, 36M, 40M, 44M, 48M, 52M, 56M, 60M
DVMT Total Gfx Mem	128M, 256M, MAX

4.5.2 PCH-IO Configuration



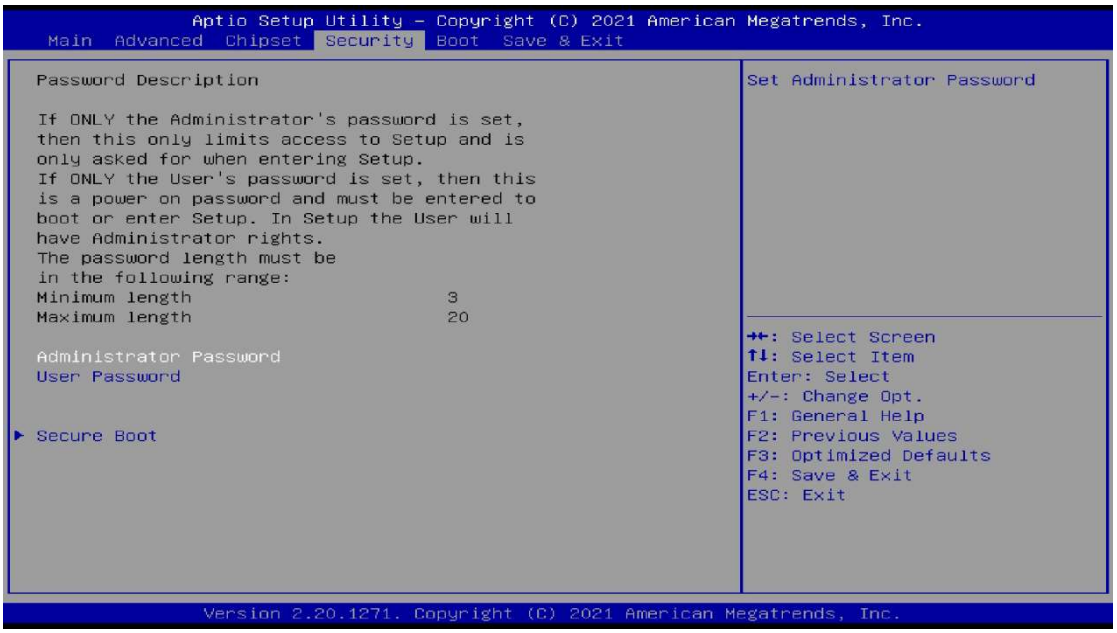
BIOS Setting	Description
SATA and RST Configuration	Configures SATA devices.
PCH LAN Controller	Enables / Disables the onboard NIC.
Wake on LAN Enable	Enables / Disables the integrated LAN to wake up the system.

4.5.2.1. SATA and RST Configuration:



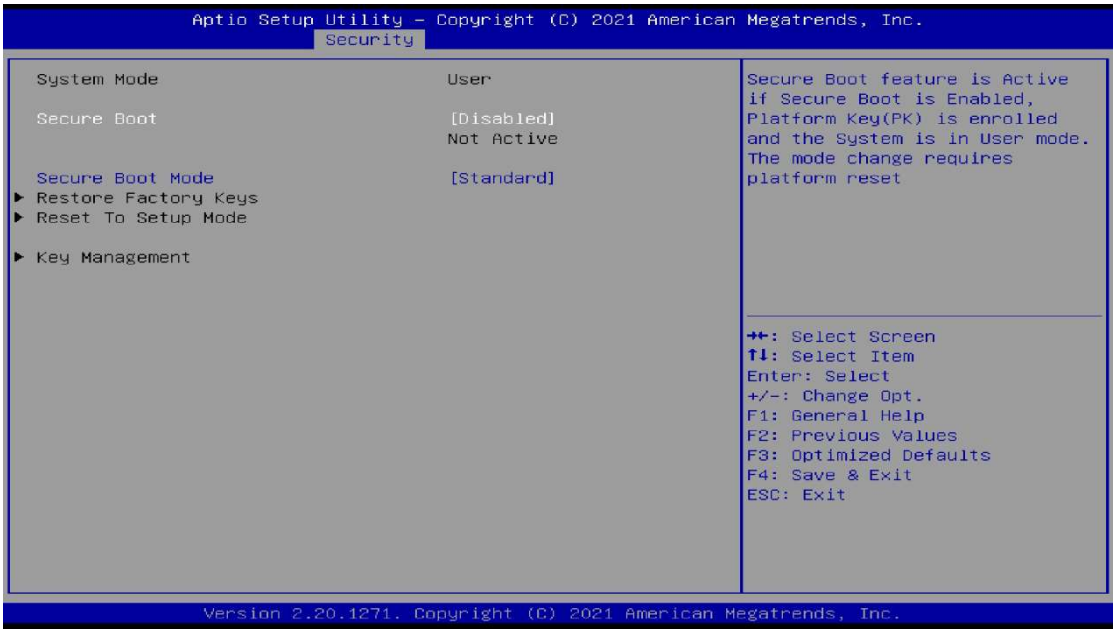
BIOS Setting	Description
SATA Controller(s)	Enables / Disables the SATA device.
SATA Mode Selection	Determines how SATA controller(s) operate. Options: AHCI / Intel RST Premium
Serial ATA Ports	Enables / Disables serial ports.
SATA Ports Hot Plug	Enables / Disables SATA Ports HotPlug.

4.6 Security Settings



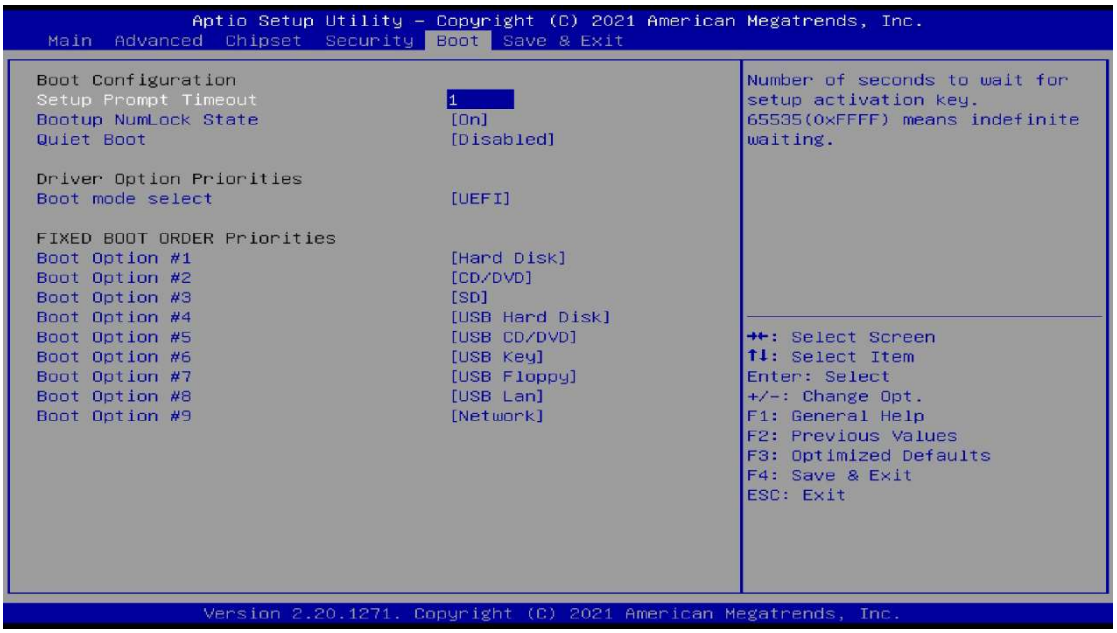
BIOS Setting	Description
Administrator Password	Sets an administrator password for the setup utility.
User Password	Sets a user password.
Secure Boot	Configures Secure Boot.

4.6.1 Secure Boot



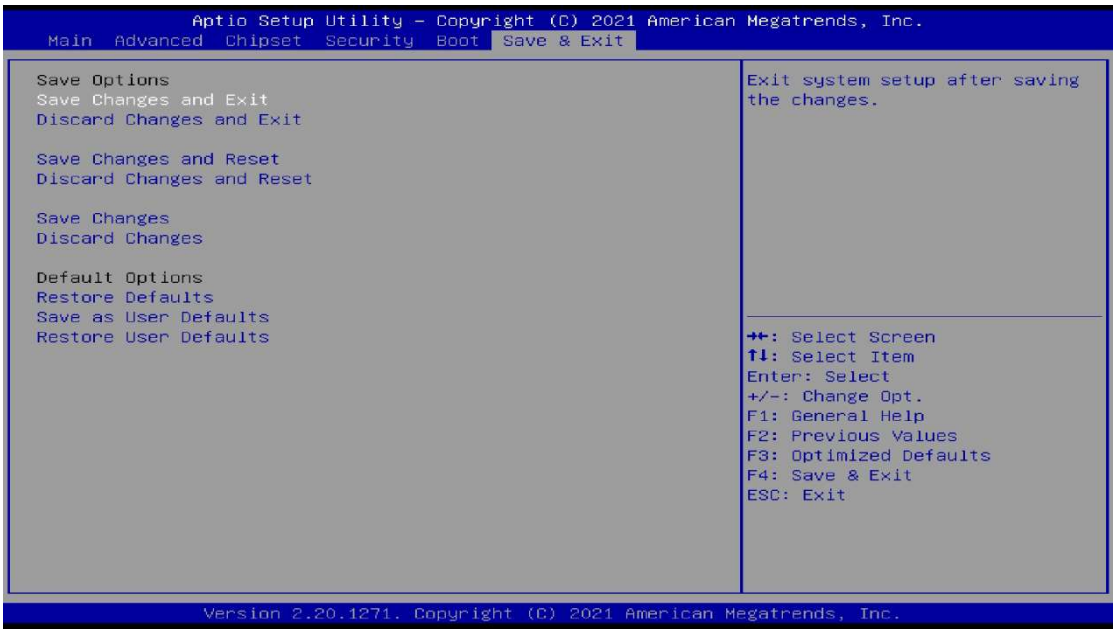
BIOS Setting	Description
Secure Boot	Secure Boot feature is Active if Secure Boot is enabled. Platform Key (PK) Is enrolled and the system is in User mode. The mode change requires platform reset.
Secure Boot Mode	Secure Boot mode options: Standard or Custom. In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication.
Restore Factory Keys	Forces system to user mode. Install factory default Secure Boot key databases.
Key Management	Enables expert users to modify Secure Boot Policy variables without full authentication.

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 mode select	Selects a Boot mode, Legacy / UEFI.
Boot Option Priorities	Sets the system boot order.

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 mapping addresses of peripheral devices and the sample code of watchdog timer configuration.

- I/O Port Address Map
- Interrupt Request Lines (IRQ)

A. 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
0x0000002E-0x0000002F	Motherboard resources
0x0000004E-0x0000004F	Motherboard resources
0x00000061-0x00000061	Motherboard resources
0x00000063-0x00000063	Motherboard resources
0x00000065-0x00000065	Motherboard resources
0x00000067-0x00000067	Motherboard resources
0x00000070-0x00000070	Motherboard resources
0x00000080-0x00000080	Motherboard resources
0x00000092-0x00000092	Motherboard resources
0x000000B2-0x000000B3	Motherboard resources
0x00000680-0x0000069F	Motherboard resources
0x0000164E-0x0000164F	Motherboard resources
0x00000020-0x00000021	Programmable interrupt controller
0x00000024-0x00000025	Programmable interrupt controller
0x00000028-0x00000029	Programmable interrupt controller
0x0000002C-0x0000002D	Programmable interrupt controller
0x00000030-0x00000031	Programmable interrupt controller
0x00000034-0x00000035	Programmable interrupt controller
0x00000038-0x00000039	Programmable interrupt controller
0x0000003C-0x0000003D	Programmable interrupt controller
0x000000A0-0x000000A1	Programmable interrupt controller
0x000000A4-0x000000A5	Programmable interrupt controller
0x000000A8-0x000000A9	Programmable interrupt controller
0x000000AC-0x000000AD	Programmable interrupt controller
0x000000B0-0x000000B1	Programmable interrupt controller
0x000000B4-0x000000B5	Programmable interrupt controller
0x000000B8-0x000000B9	Programmable interrupt controller
0x000000BC-0x000000BD	Programmable interrupt controller
0x000004D0-0x000004D1	Programmable interrupt controller
0x00001854-0x00001857	Motherboard resources
0x000003F8-0x000003FF	Communications Port (COM1)
0x000002F8-0x000002FF	Communications Port (COM2)
0x00001800-0x000018FE	Motherboard resources

0x00000000-0x00000CF7	PCI Express Root Complex
0x00000D00-0x0000FFFF	PCI Express Root Complex
0x000000F0-0x000000F0	Numeric data processor
0x00005050-0x00005057	Standard SATA AHCI Controller
0x00005040-0x00005043	Standard SATA AHCI Controller
0x00005020-0x0000503F	Standard SATA AHCI Controller
0x0000FFF8-0x0000FFFF	Intel(R) Active Management Technology - SOL (COM3)
0x00002000-0x000020FE	Motherboard resources
0x00000040-0x00000043	System timer
0x00000050-0x00000053	System timer
0x00000060-0x00000060	Standard PS/2 Keyboard
0x00000064-0x00000064	Standard PS/2 Keyboard
0x00004000-0x0000407F	NVIDIA GeForce GTX 1080
0x00004000-0x0000407F	Intel(R) PCIe Controller (x16) - 1901
0x000003B0-0x000003BB	NVIDIA GeForce GTX 1080
0x000003B0-0x000003BB	Intel(R) PCIe Controller (x16) - 1901
0x000003C0-0x000003DF	NVIDIA GeForce GTX 1080
0x000003C0-0x000003DF	Intel(R) PCIe Controller (x16) - 1901
0x00003000-0x00003FFF	Intel(R) PCI Express Root Port #12 - A333
0x0000EFA0-0x0000EFBF	Intel(R) SMBus - A323

B. 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	0	System timer
IRQ	1	Standard PS/2 Keyboard
IRQ	3	Communications Port (COM2)
IRQ	4	Communications Port (COM1)
IRQ	11	Intel(R) SMBus - A323
IRQ	11	Intel(R) Thermal Subsystem - A379
IRQ	12	Microsoft PS/2 Mouse
IRQ	13	Numeric data processor
IRQ	14	Intel(R) Serial IO GPIO Host Controller - INT3450
IRQ	16	High Definition Audio Controller
IRQ	17	High Definition Audio Controller
IRQ	19	Intel(R) Active Management Technology - SOL (COM3)
IRQ	55-511	Microsoft ACPI-Compliant System
IRQ	4294967282	Intel(R) Management Engine Interface
IRQ	4294967283-290	Intel(R) I211 Gigabit Network Connection
IRQ	4294967291	Intel(R) USB 3.1 eXtensible Host Controller - 1.10 (Microsoft)
IRQ	4294967292	NVIDIA GeForce GTX 1080
IRQ	4294967293	Intel(R) Ethernet Connection (7) I219-LM
IRQ	4294967294	Standard SATA AHCI Controller

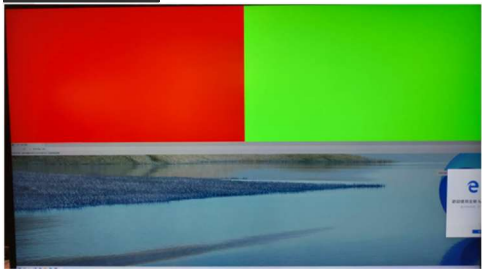
C. UMCC Quick Guide

On the desktop, right-click the  icon and select **UMCC** C from the menu to control the panel.

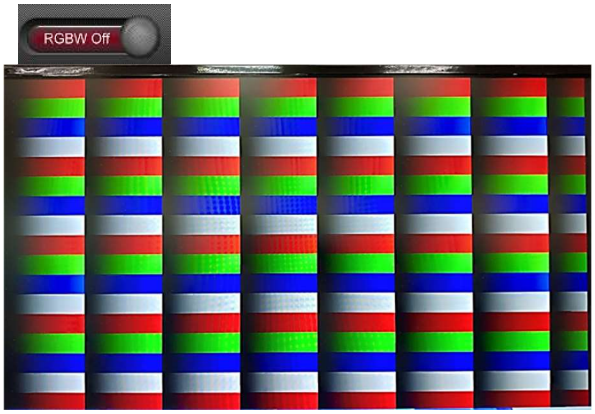
After modifying SP-63ER resolution with the AP, modify the Windows display setting again. Since the Windows "Apply" default value is 15 seconds, the user needs to set the Windows display setting to more than 15 seconds. Press "Tab" and "Enter" keys to confirm the setting.

Turn On: Switch the button to turn on or off the UMCC function

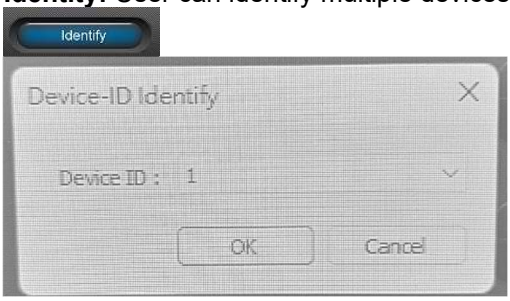
Pattern Off: Switch the button to inspect the embedded color pattern



RGBW Off: Embedded RGBW Pattern: Switch the button to check the RGBW

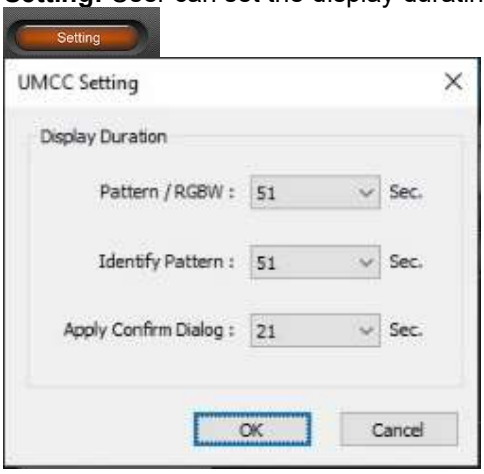


Identity: User can identify multiple devices by setting ID



HW Reset: User can reset all the advanced settings to the factory settings.

Setting: User can set the display durating in UMCC setting window.



Apply: Click "Apply" to confirm the setting

Device information: This shows Software version, device No. and device ID.

Device Setting Sync: User can write multi-device parameter

Horizon Polarity: Set the H SYNC Polarity

Vertical Polarity: Set the V SYNC Polarity ·

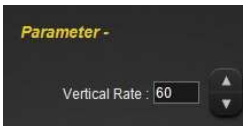
Color Depth: Set display color depth

Audio Support: Set HDMI Audio On or off

EDID Version: Set the EDID version.

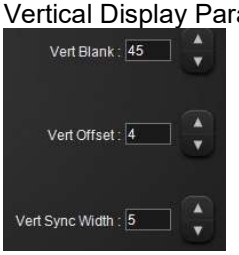
DP Port: Change the screen resolution by resolution table.

Vertical rate: Define the parameter for vertical rate.

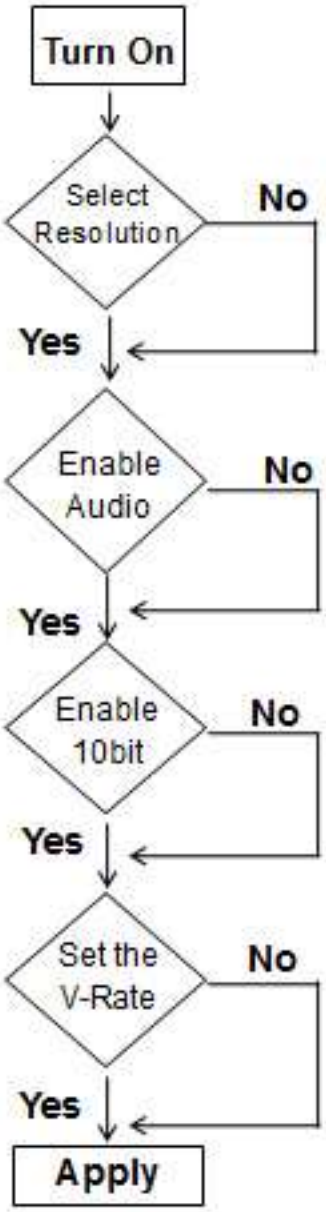


Horizon Display Parameter: Set the parameter for Horizon rate.

Vertical Display Parameter: Set the parameter for Vertical rate.



※ Normal Setting



※ Advanced Setting