MIG-3000 USER Manual

Intel® Core™ i9/i7/i5/i3 Processor (14th) Expandable AI Computing System With Discrete Graphics

Vecow

1.0.0 Edition 20250708

Record of Revision

Version	Date	Page	Description	Remark
1.00	2025/07/08	All	Official Release	

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Declaration of Conformity

FCC

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if it is not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CE

The products described in this manual comply with all applicable European Union (CE) directives if it has a CE marking. For computer systems to remain CE compliant, only CE-compliant parts may be used. Maintaining CE compliance also requires proper cable and cabling techniques.

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Order Information

Model	Ethernet		PCIe x16	SATA III	USB	COM	System Fan
	2.5G LAN	1G LAN					
MIG-3000	1	1	1	2	4	2	Y

Optional Accessories

Part Number	Description
DDR5 32G	Certified DDR5 32GB 4800MHz RAM
DDR5 16G	Certified DDR5 16GB 4800MHz RAM
DDR5 8G	Certified DDR5 8GB 4800MHz RAM
PWS-480W-WT	480W, 24V, 90V AC to 305V AC Power Supply, Wide-Temp, IP65
PWS-600W	600W, 24V, 90V AC to 305V AC Power Supply
PWS-600W-WT	600W, 28.8V, 90V to 305V AC Power Supply, Wide Temperature -40°C to +70°C
M.2 Storage Module	M.2 Key M Storage Module
WiFi & Bluetooth	WiFi & Bluetooth Module with Antenna

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GENERAL INTRODUCTION

1.1 Overview

The Vecow MIG-3000 is a high-performance, expandable AI computing system powered by Intel® Core™ i9/i7/i5/i3 processors (14th Gen) and Intel® H610E chipset. Designed for compute-intensive applications, it supports discrete GPU integration and delivers scalable performance for demanding AI workloads.

The system is equipped with up to 64GB of high-speed DDR5 memory and integrates Intel® UHD Graphics 770/730 driven by Intel® Xe Architecture, supporting 1 HDMI 4K display and advanced 3D graphics capabilities. With its robust PCIe 4.0 x16 slot supporting up to 900W of power, the MIG-3000 is built to accommodate 2-slot graphics card for next-generation AI acceleration.

Engineered for versatility and connectivity, the MIG-3000 supports 1 2.5G LAN, 1 GigE LAN, 4USB ports, and 2 COM ports—enabling seamless integration across diverse environments. Its wide-range 9V to 55V DC power input and 0°C to 60°C operating temperature ensure industrial-grade reliability in harsh conditions, making it ideal for applications such as autonomous vehicles, medical imaging, smart manufacturing, deep learning, gaming, traffic vision, and a broad range of AIoT and Industry 4.0 deployments.

1.2 Features

- Intel® Core™ i9/i7/i5/i3 Processors (12/13/14th Gen, Raptor/Alder Lake) running with Intel® H610E Chipset supports max 65W TDP CPU
- 2 DDR5 4800MHz Memory supports up to 64GB
- 1 M.2 2242/2280 NVMe slot and 2 SATA III ports for storage
- Expansion: 1 M.2 2230 Key E, 1 PCIe x16 expansion supports up to 900W power budget for independent 2-slot graphics card
- DC 9V to 55V wide range power input
- Operating Temperature from 0°C to 60°C

1.3 Specifications of MIG-3000

System	
Processor	• 24-core Intel® Core™ i9/i7/i5/i3 Processor (14th gen, Raptor Lake-S Refresh) • 24-core 13th Gen Intel® Core™ i9/i7/i5/i3 Processor (Raptor Lake-S) • 16-core 12th Gen Intel® Core™ i9/i7/i5/i3 Processor (Alder Lake-S)
Chipset	Intel® H610E
BIOS	AMI
SIO	NCT6126D
Memory	2 DDR5 4800MHz SO-DIMM, up to 64GB
I/O Interface	
Serial	2 COM RS-232/422/485
USB	• 2 USB 3.2 Type-A • 2 USB 2.0 Type-A
LED	HDD, Power
Expansion	
PCIe	1 PCIe 4.0 x16
M.2	1 M.2 Key E Socket (2230, PCIe x1/USB2)
Graphics	
Graphics Processor	• Intel® UHD Graphics 770/730 driven by Intel® Xe Architecture • Independent Graphics : By request
Interface	• 1 DP 1.2a: Up to 3840 x 2160 @60Hz • 1 HDMI 1.4: Up to 3840 x 2160 @30Hz
Storage	
SATA	2 SATA III (6Gbps)
M.2	1 M.2 Key M Socket (2242/2280, PCIe x4/SATA)
Audio	
Audio Codec	Realtek® ALC897, 7.1 Channel HD Audio
Audio Interface	1 Mic-in, 1 Line-out
Ethernet	
LAN 1	Intel® I219V GigE LAN
LAN 2	Intel® I225LM 2.5GigE LAN

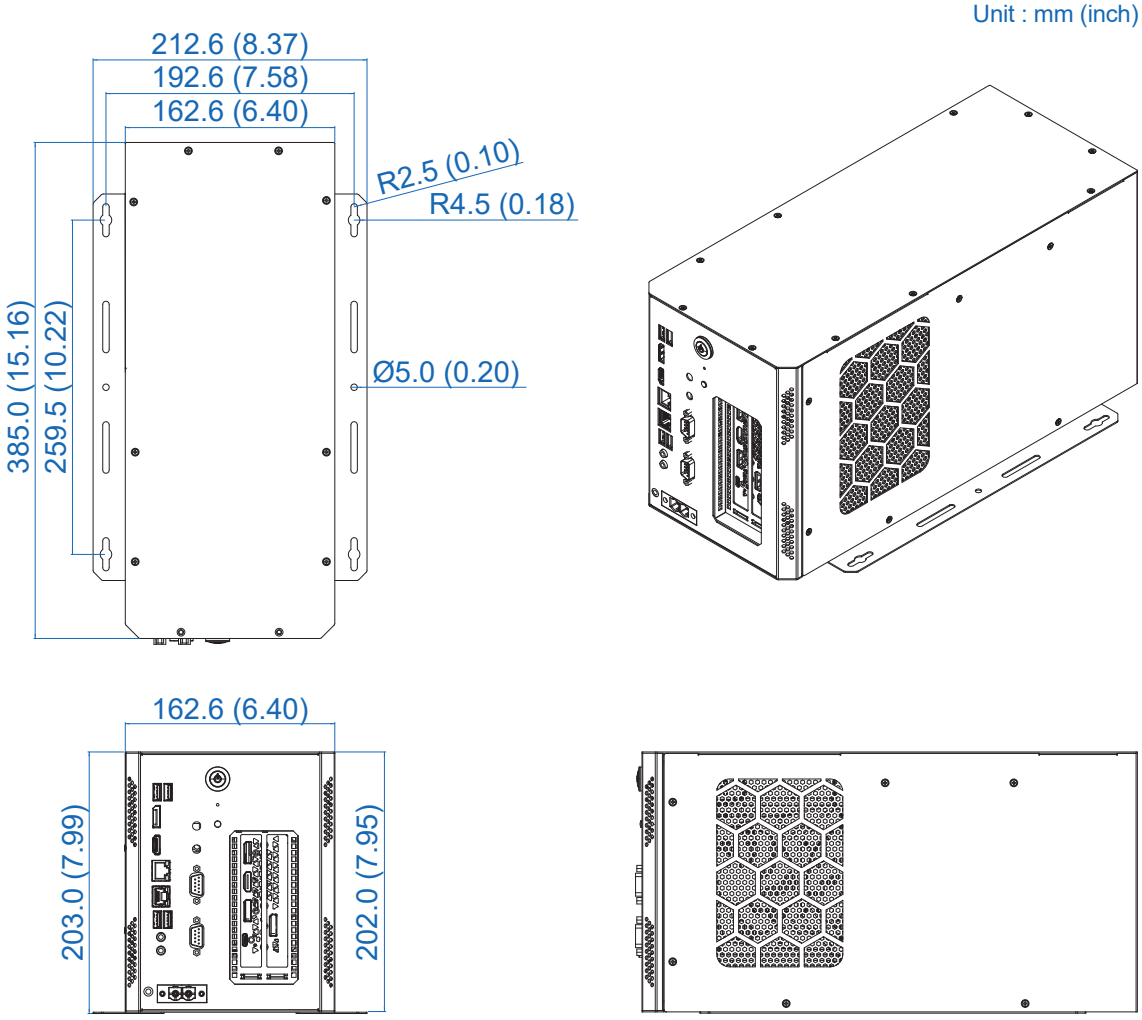
Power	
Power Input	DC 9V to 55V
Power Interface	2-pin Terminal Block : V+, V-
Others	
TPM	Infineon SLB9670 supports TPM 2.0, SPI Interface
Watchdog Timer	Reset : 5 to 255 sec./min. per step
Smart Mgmt	Wake on LAN supported (LAN1 only)
HW Monitor	Monitoring temperature, voltages. Auto throttling control when CPU overheats.
Mechanical	
Dimension (W x D x H)	243.5mm x 271.3mm x 390mm (9.58" x 10.68" x 15.35")
Weight	5.3 kg (11.45 lb)
Mounting	Wallmount by mounting bracket
Environment	
Operating Temperature	-0°C to 60°C (32°F to 147°F)
Storage Temperature	-20°C to 80°C (-4°F to 185°F)
Humidity	5% to 90% humidity, non-condensing
Relative Humidity	95% at 60°C
Shock	• IEC 61373 : 2010 • Railway Applications : Rolling Stock Equipment, Shock and Vibration Tests
EMC	CE, FCC, EN50155, EN50121-3-2

1.4 Supported CPU List

Series	CPU	Cores	GHz	TDP (W)
Intel® Core™	i9-14900	24	5.8	65
	i7-14700	20	5.4	
	i5-14500	14	5	
	i3-14100	4	4.7	
	i9-13900E	24	5.2	
	i7-13700E	16	5.1	
	i5-13500E	14	4.6	
	i3-13100E	4	4.4	
	i9-12900E	16	5	
	i7-12700E	12	4.8	
	i5-12500E	6	4.5	
	i3-12100E	4	4.2	
	i9-14900T	24	5.5	35
	i7-14700T	20	5.2	
	i5-14500T	14	4.8	
	i3-14100T	4	4.4	
	i9-13900TE	24	5	
	i7-13700TE	16	4.8	
	i5-13500TE	14	4.5	
	i3-13100TE	4	4.1	
	i9-12900TE	16	4.8	
	i7-12700TE	12	4.7	
	i5-12500TE	6	4.3	
	i3-12100TE	4	4	

1.5 Mechanical Dimension

Unit : mm (inch)



2

GETTING TO KNOW YOUR MIG-3000

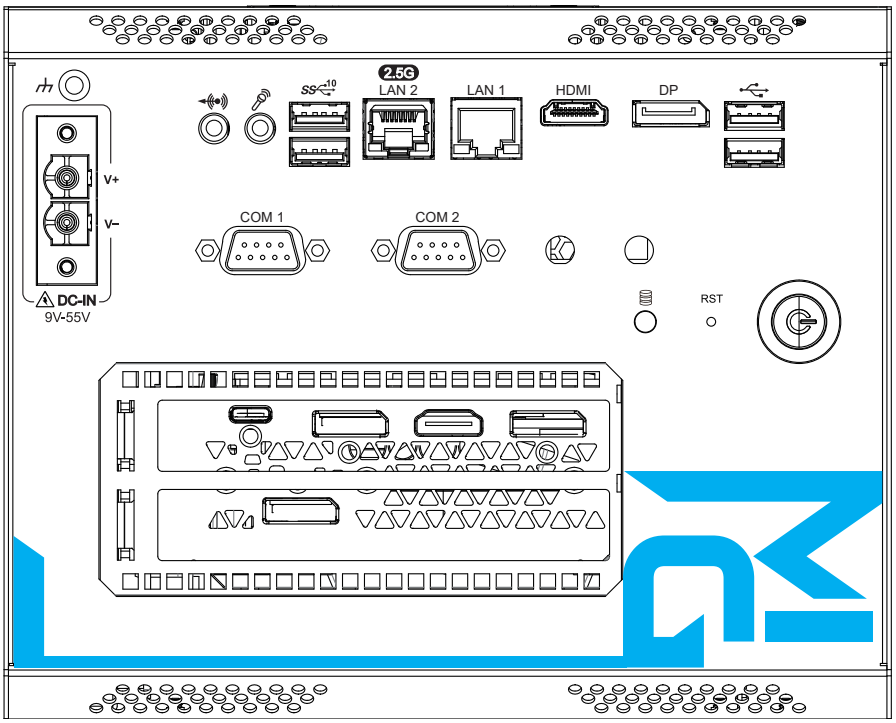
2.1 Packing List

Item	Description	Qty
1	MIG-3000	1

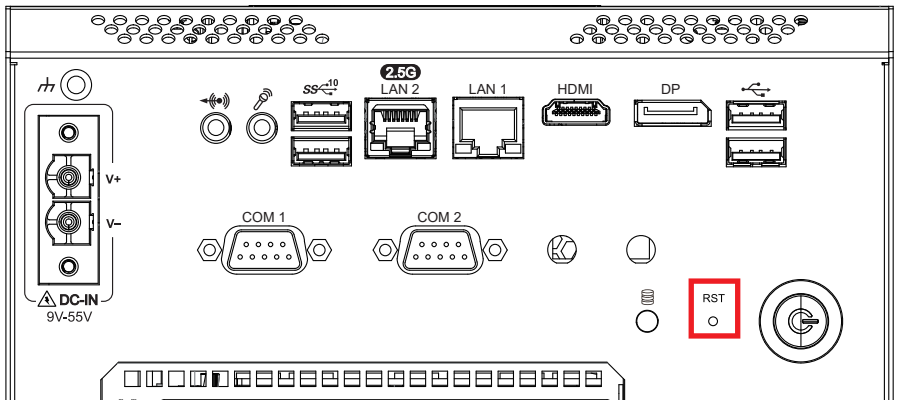
Item	Description	Outlook	Usage	P/N	Qty
1	PHILLPIS M4x16L with washer, Ni		Mount	53-24D6416-30B	4
2	M3x4 Screw		HDD	53-M006350-010	8
3	Phillips F-Head M3*5 Z.B+Ny		Wall mount	53-M004950-310	6
4	M3x4L, Ni		M.2 Slot	53-2426204-80B	1
5	Terminal block 2-pin (10.16mm)		Switch	51-2701R02-R1Q	1
6	MIG-3000 BP to GPU Cable		Cable	61-1400011-010	1
7	Wall-mounting bracket		Mount	62-03P0692-B00	2
8	27.8mm Foot pad		FOOT PAD	53-4029942-303	4

2.2 Front Panel I/O Functions

In Vecow MIG-3000 series family, all I/O connectors are located on front panel. Most of the general connections to computer device, such as USB, LAN Jack, Audio, COM, HDMI, DC-IN and any additional Graphic Card, are placed on the front panel.

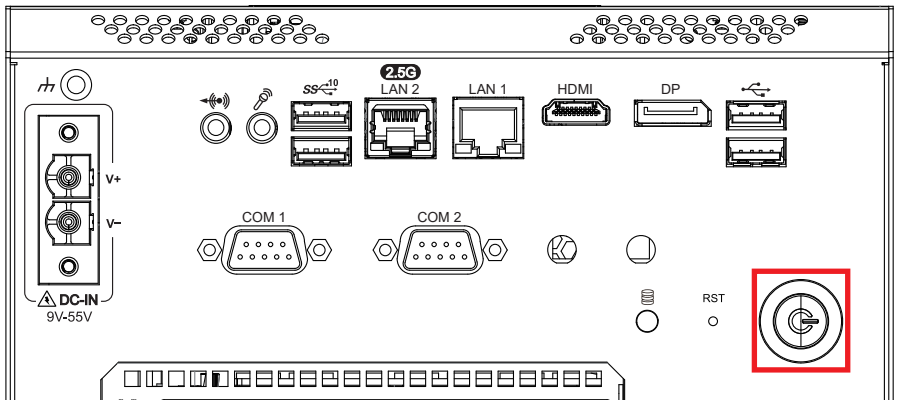


2.2.1 Reset Tact Switch



It is a hardware reset switch. Use this switch to reset the system without power off the system. Press the Reset Switch for a few seconds, then reset will be enabled.

2.2.2 Power Button



The Power Button is a non-latched switch with single color LED indication. It indicates power status S0.

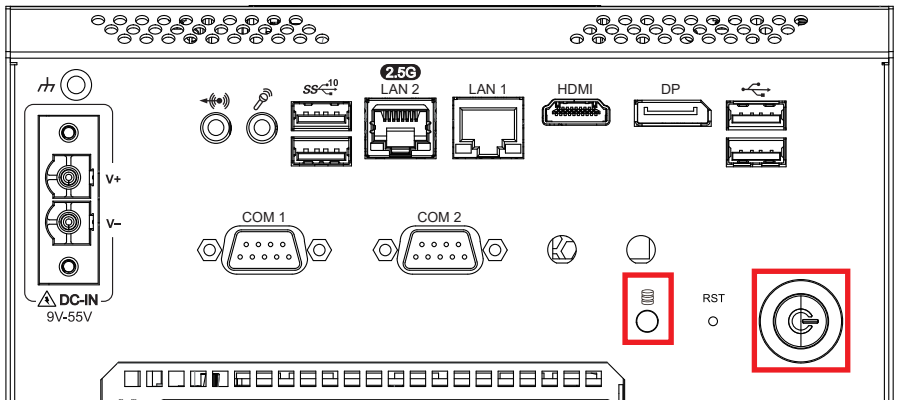
To power on the system, press the power button and then the Green LED is lightened.

To power off the system, you can either command shutdown by OS operation, or just simply press the power button.

If system error, you can just press the power button for 4 seconds to shut down the machine directly.

Please do note that a 4-second interval between each 2 power-on/ power-off operation is necessary in normal working status. (For example, once turning off the system, you have to wait for 4 seconds to initiate another power-on operation).

2.2.3 PWR & HDD LED Indicator

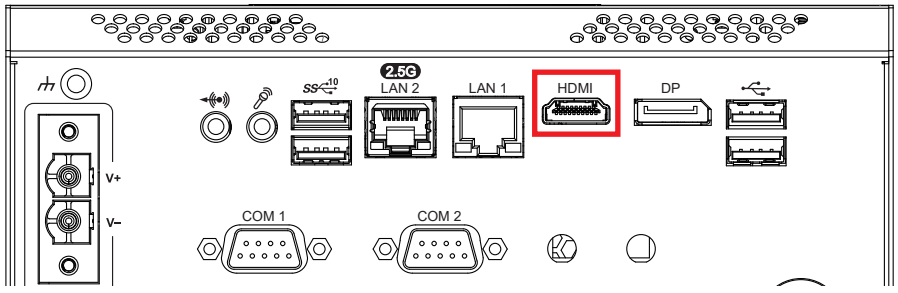


HDD LED/Green : A Hard Disk LED. If the LED is on, it indicates that the system's storage is functional. If it is off, it indicates that the system's storage is not functional. If it is flashing, it indicates data access activities.

Power LED/Green : If the LED is solid green, it indicates that he system is powered on.

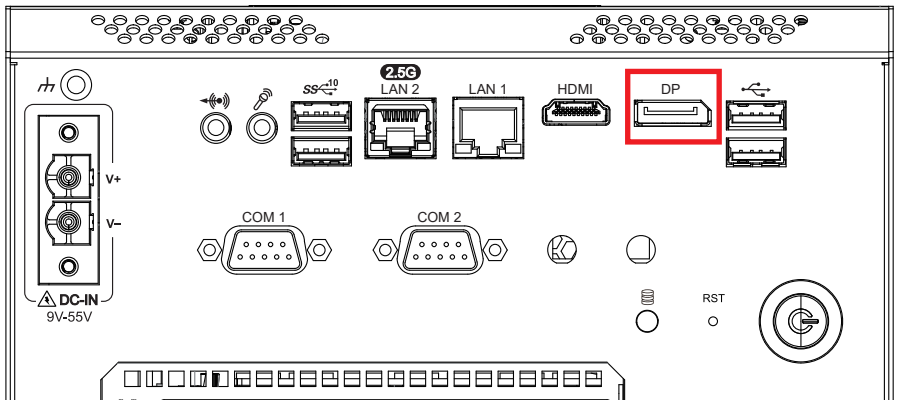
LED Color	Indication	System Status
Green	HDD	• On/Off : Storage status, function or not. • Twinkling : Data transferring.
Green	Power	System power status (on/off)

2.2.4 HDMI Port



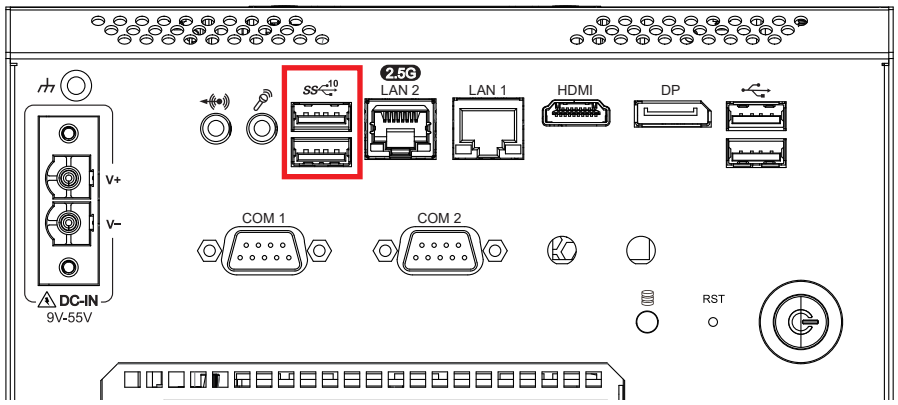
The HDMI port supports HDCP 1.4 and Dolby TrueHD and DTS HD Master Audio formats. It also supports up to 192KHz/16bit 8-channel LPCM audio output. You can use this port to connect your HDMI-supported monitor. The maximum supported resolution is 3840 x 2160 @30Hz, but the actual resolutions supported are dependent on the monitor being used.

2.2.5 DisplayPort



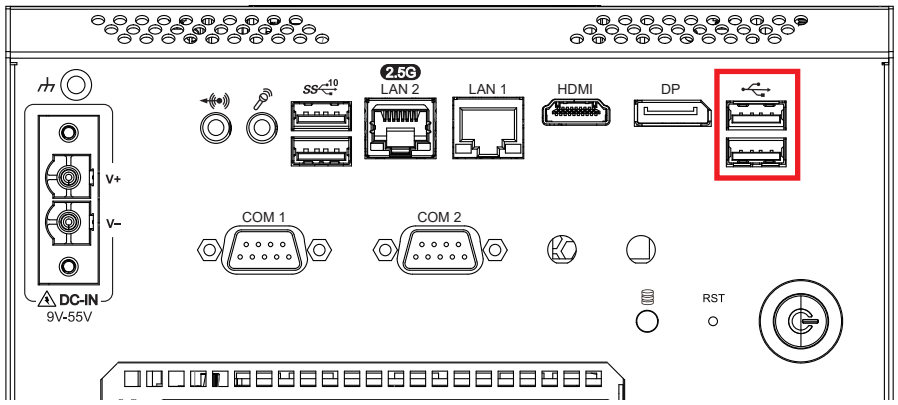
Onboard Display Port supports auxiliary channel dual mode, and the connection supports up to 3840 x 2160 resolution at 60 Hz.

2.2.6 USB 3.2



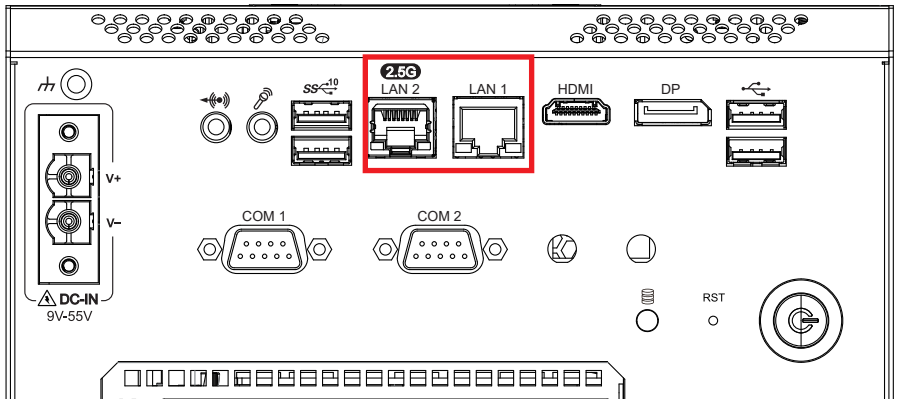
There are 2 USB 3.2 Gen2 Type A connections available supporting up to 10GB per second data rate in the front side of MIG-3000 series . It also compliant with the requirements of Super Speed (SS), high speed (HS), full speed (FS) and low speed (LS).

2.2.7 USB 2.0



There are 2 USB 2.0 ports available supporting up to 480Mbps per second data rate in the front side of MIG-3000. They are also compliant with the requirements of high speed (HS), full speed (FS) and low speed (LS).

2.2.8 Ethernet Port

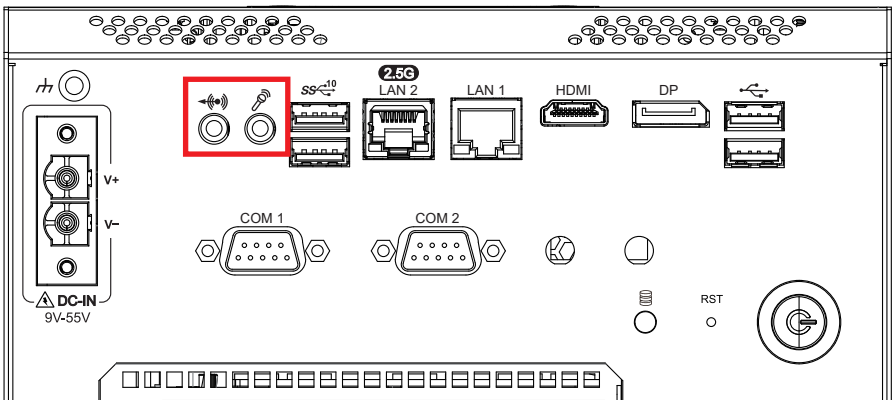


There are two 8-pin RJ-45 jacks supporting 10/100/1000/2500 Mbps Ethernet connections on the front side of MIG-3000. LAN 1 is powered by Intel® I219V Ethernet engine, and LAN 2 is powered by Intel I225LM Ethernet engine.

LAN Chip	Function	Connector
I219V_LAN1	RJ-45(10/100/1000)	LAN1
I225LM_LAN2	RJ-45(10/100/1000/2500)	LAN2

LED	Location	LED Color	10 Mbps	100 Mbps	1000 Mbps	2500 Mbps
CN_LAN1	Left	Green/ Orange	Off	Solid Green	Solid Orange	x
	Right	Yellow	Twinkling Yellow	Twinkling Yellow	Twinkling Yellow	x
CN_LAN2	Left	Green/ Orange	Off	Off	Solid Green	Solid Orange
	Right	Yellow	Twinkling Yellow	Twinkling Yellow	Twinkling Yellow	Twinkling Yellow

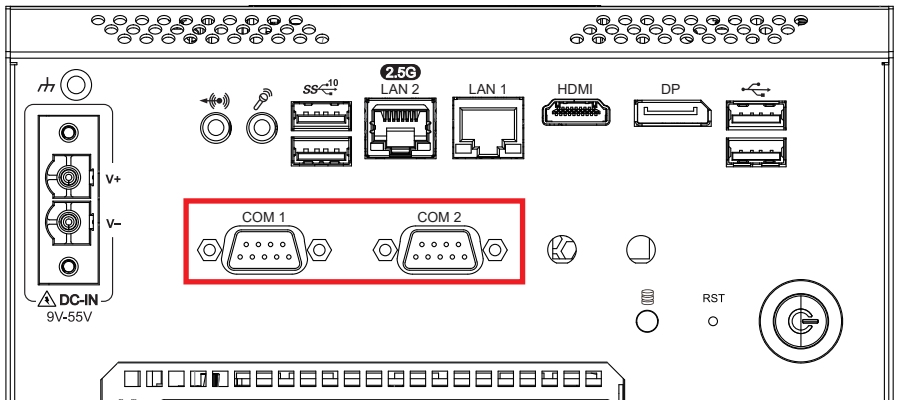
2.2.9 Audio Connector



There are 2 audio connectors, Mic-in and Line-out, in the front side of MIG-3000. Onboard Realtek ALC897 audio codec supports 7.1 channel HD audio and fully complies with Intel® High Definition Audio (Azalia) specifications.

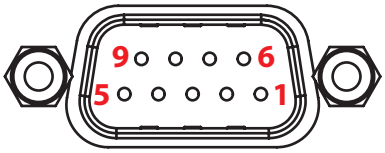
To utilize the audio function in Windows platform, you need to install corresponding drivers for both Intel Sunrise Point chipset and Realtek ALC897 codec.

2.2.10 Serial Port



Serial port can be configured for RS-232, RS-422, or RS-485 with auto flow control communication. The default definition is RS-232, but if you want to change to RS-422 or RS-485, you can find the settings in BIOS.

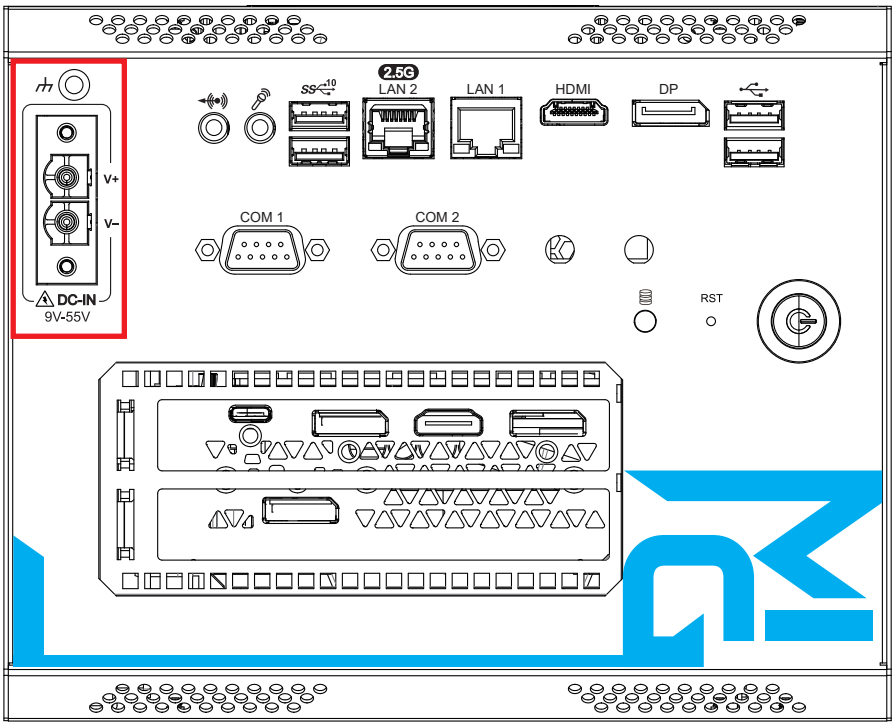
BIOS Setting	Function
COM 1,2	RS-232
	RS-422 (5-wire)
	RS-485 (3-wire)



The pin assignments are listed in the following table :

Serial Port	Pin No.	RS-232	RS-422 (5-wire)	RS-485 (3-wire)
1,2	1	DCD	TXD-	DATA-
	2	RXD	TXD+	DATA+
	3	TXD	RXD+	----------
	4	DTR	RXD-	----------
	5	GND	GND	GND
	6	DSR	----------	----------
	7	RTS	----------	----------
	8	CTS	----------	----------
	9	RI	----------	----------

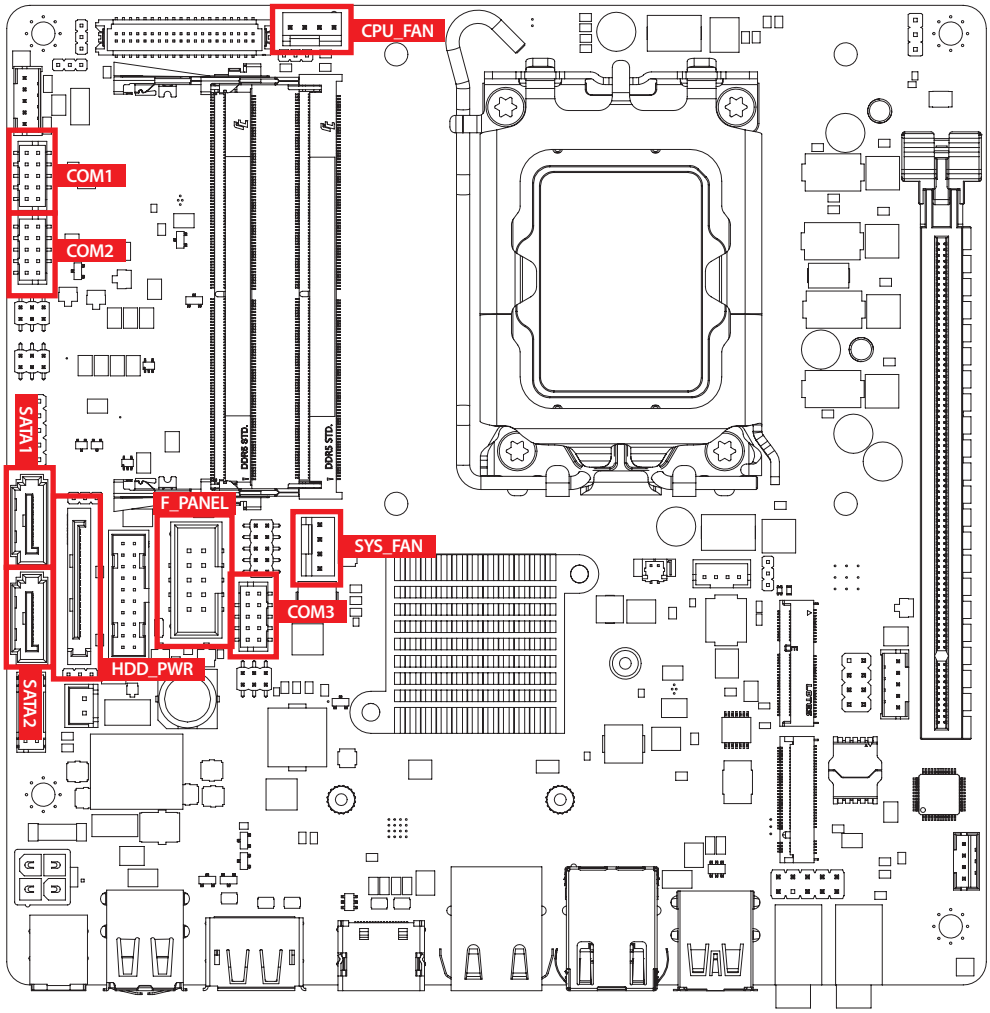
2.2.11 DC-in



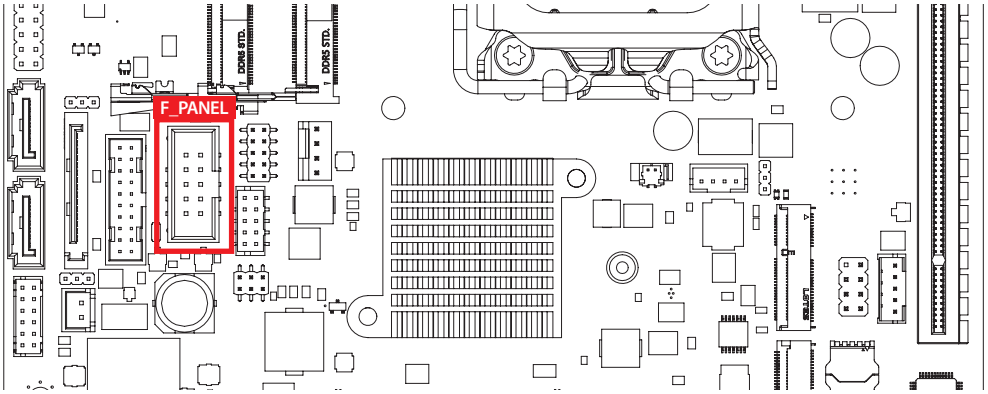
This system supports 9V to 55V DC power input by terminal block in the front side. In normal power operation, power LED lightens in solid green.

2.3 Main Board Expansion Connectors

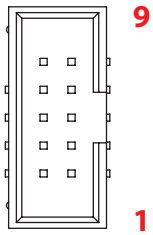
2.3.1 Inside View of MIG-3000 Main Board with Connector Location



2.3.2 F_PANEL: Front Panel Header

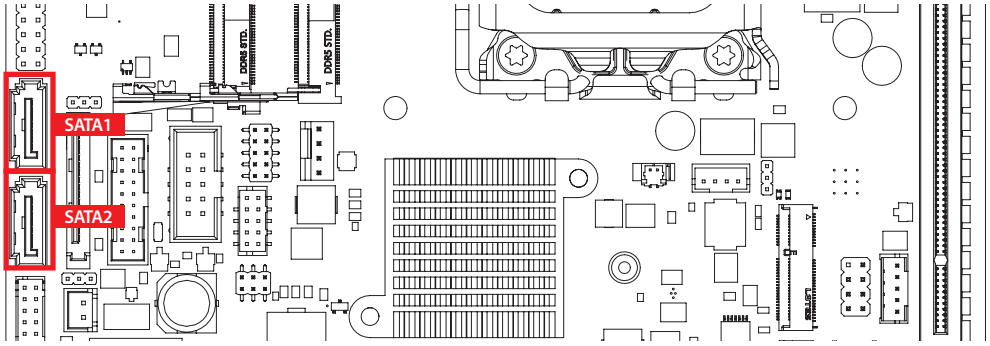


This pin header can be used as a backup for following functions, hard drive LED indicator, reset button, power LED indicator, and power-on/off button. The pin assignments of F_PANEL are listed in the following table:

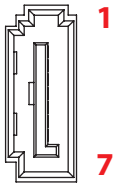


Pin No.	Pin No.	Description
HDD LED	1	HDD LED+
	3	HDD LED#
RESET BUTTON	5	Ground
	7	RST_BTN#
POWER LED	2	Power LED+
	4	Power LED#
POWER BUTTON	6	PANSWIN#
	8	Ground

2.3.3 SATA1,SATA2 : SATA III Connector

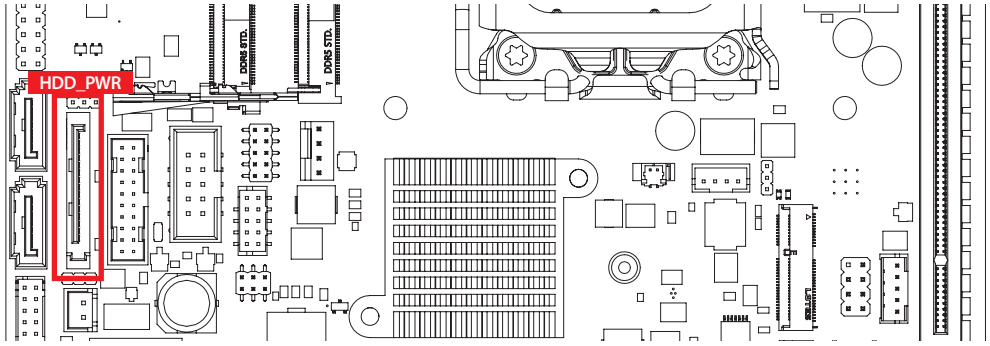


There are 2 onboard high performance Serial ATA III (SATA III) on MIG-3000. It supports higher storage capacity with less cabling effort and smaller required space. The pin assignments of SATA1 and SATA2 are listed in the following table :

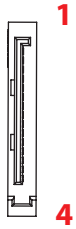


Pin No.	Description	Pin No.	Description
1	GND	2	TXP
3	TXN	4	GND
5	RXN	6	RXP
7	GND		

2.3.4 HDD_PWR : SATA Power Connector



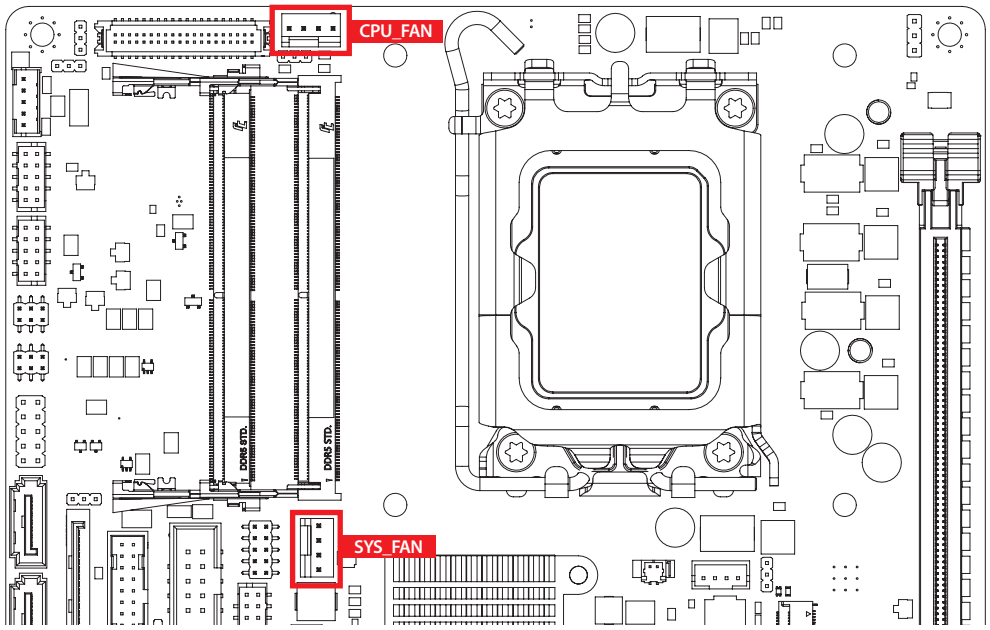
The MIG-3000 also equip with a SATA power connector. The one port supports 5V (Up to 3A) and 12V (Up to 3A) current to the hard drive or SSD. The pin assignments of HDD_PWR is listed in the following table:

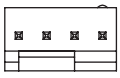


Pin No.	Description
1	GND
3	GND
2	GND
4	+5V

2.3.5 CPU_FAN/SYS_FAN: Fan Header

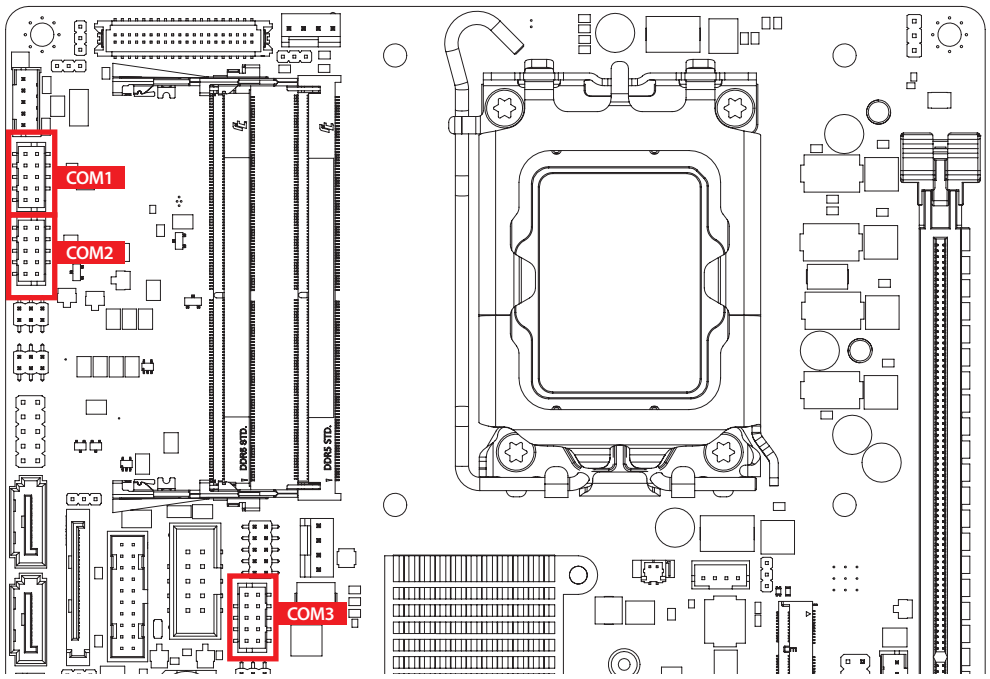
Fan power connector supports for additional thermal requirements. The pin assignments of CPU_FAN/SYS_FAN are listed in the following table.

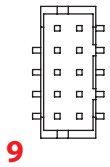




Pin No.	Description	Pin No.	Description
1	GND	2	+12V (2A max)
3	Fan speed sensor	4	Fan PWM

2.3.6 JCOM1,JCOM2,JCOM3 : Serial Port cable Connector



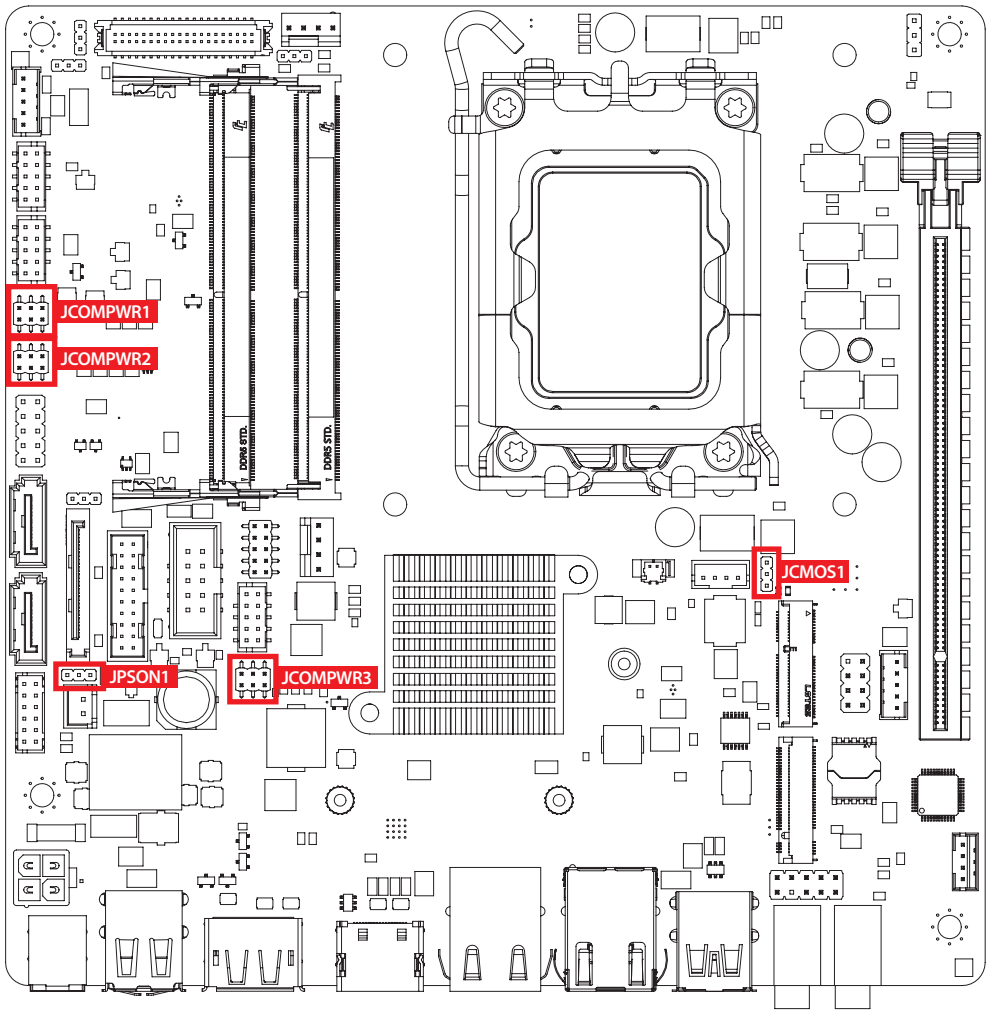


Pin No.	Description	Pin No.	Description
1	DCD#	2	RX
3	TX	4	DTR#
5	GND	6	DSR#
7	RTS#	8	CTS#
9	RI3xPOWERxJMP		

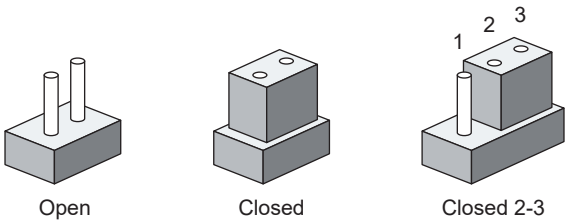
2.4 Main Board Jumper Settings

2.4.1 Board Top View of MIG-3000 Main Board with Jumper and DIP Switch

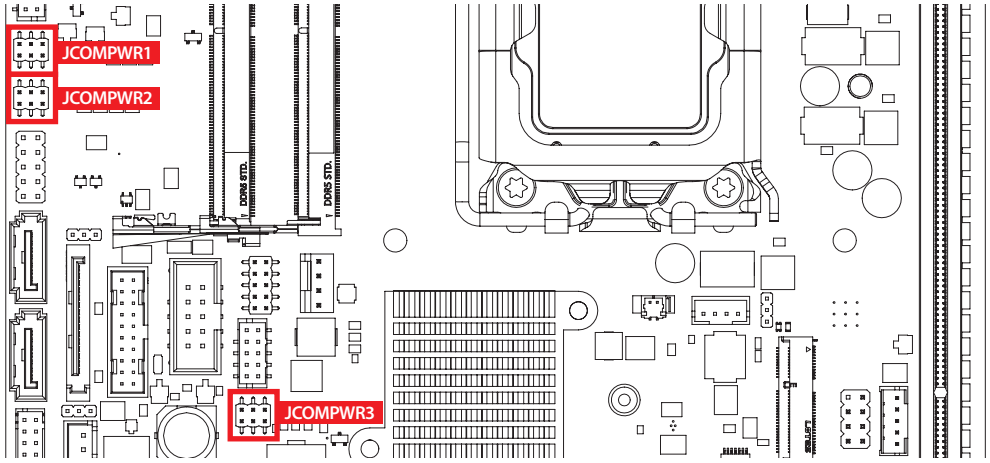
The figure below is the top view of the system main board. It shows the location of the jumpers and the switches.

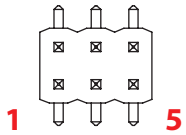


You may configure your card to match the needs of your application by setting jumpers. A jumper is a metal bridge used to close an electric circuit. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To “close” a jumper, you connect the pins with the clip. To “open” a jumper, you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2 and 3. In this case you would connect either pins 1 and 2, or 2 and 3.



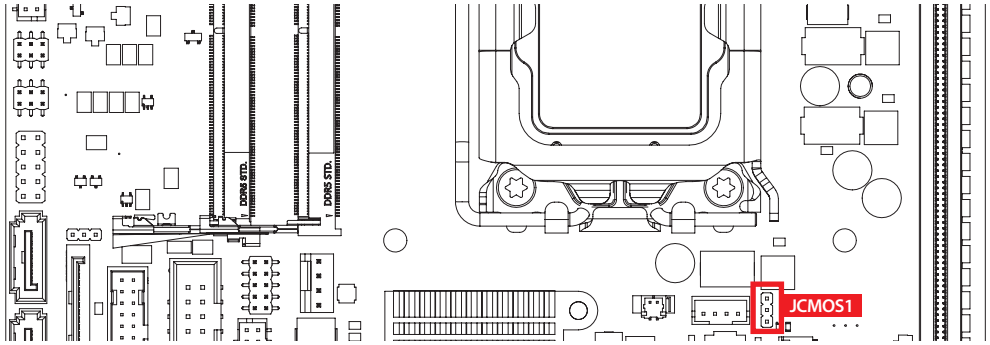
2.4.2 JCOMPWR1~3 : COM Port RI pin Select





Pin No.	COM Port	Description
(1-2)	COM1~3	12V
(3-4) Default		RI
(5-6)		5V

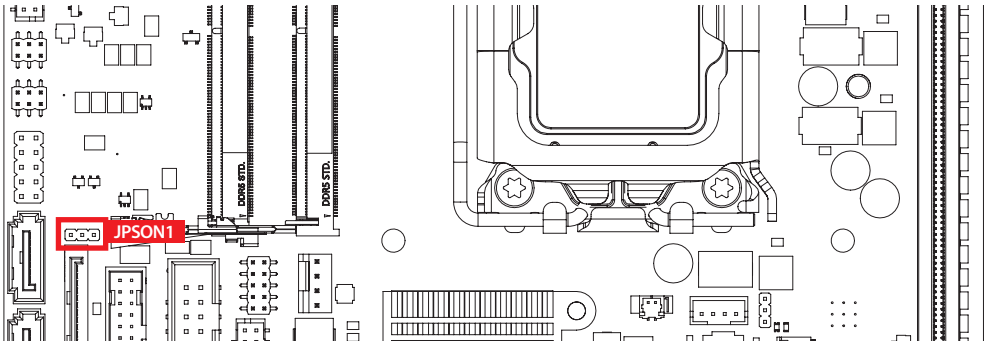
2.4.3 JCMOS1 : CMOS



Setting	Function
1 - 2	*Normal (Default)
2 - 3	Clear CMOS

2.4.4 AT/ATX Power Mode Select (JPSON1)

This jumper allows you to select ATX power mode



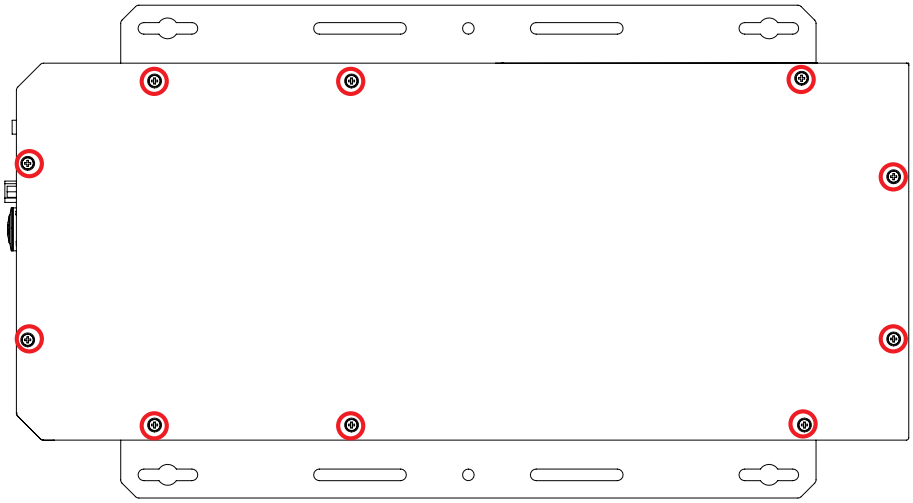
Setting	Function
1 - 2	AT mode
2 - 3	ATX mode(default)

3

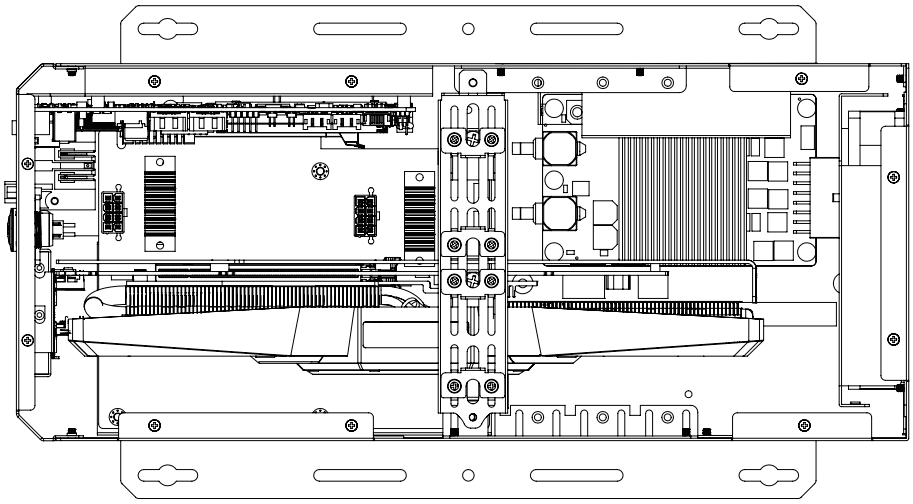
SYSTEM SETUP

3.1 How to Open Your MIG-3000

Step 1 Remove Top Cover ten M3x5L screws.

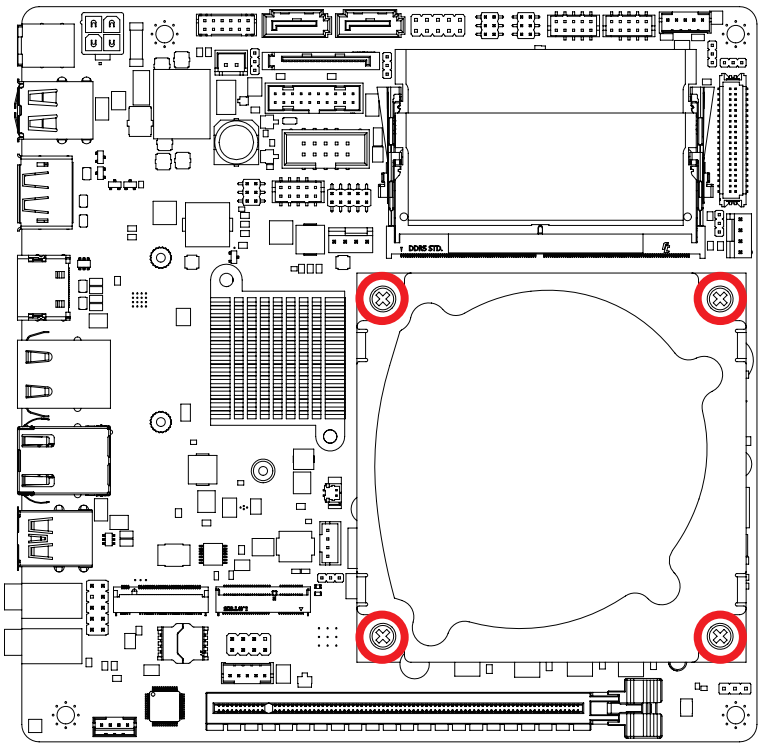


Step 2 Fisish.

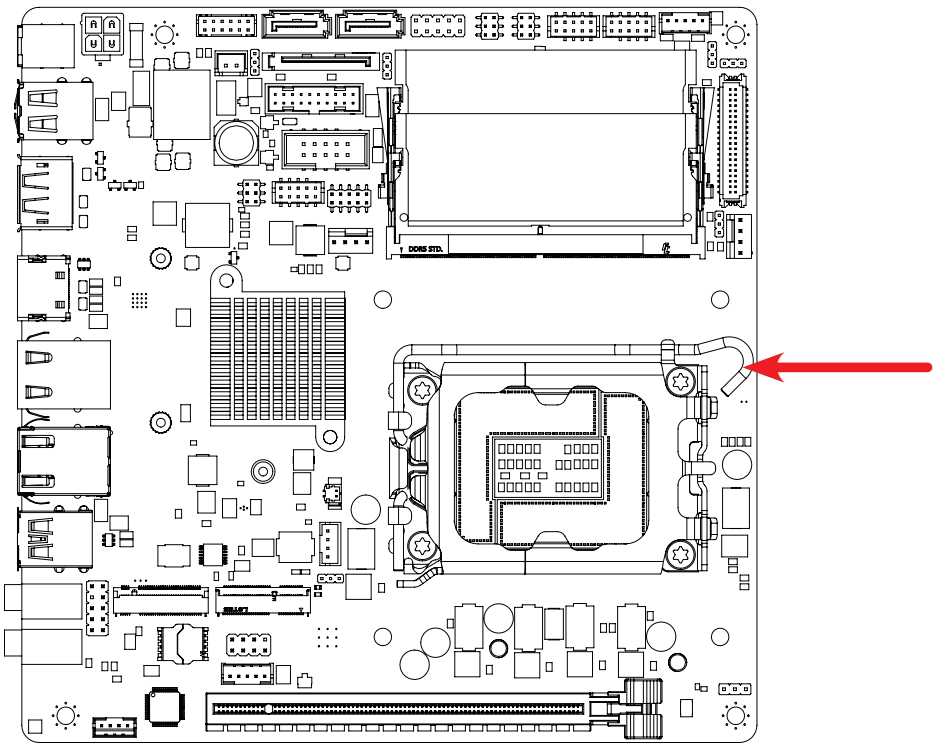


3.2 Installing CPU

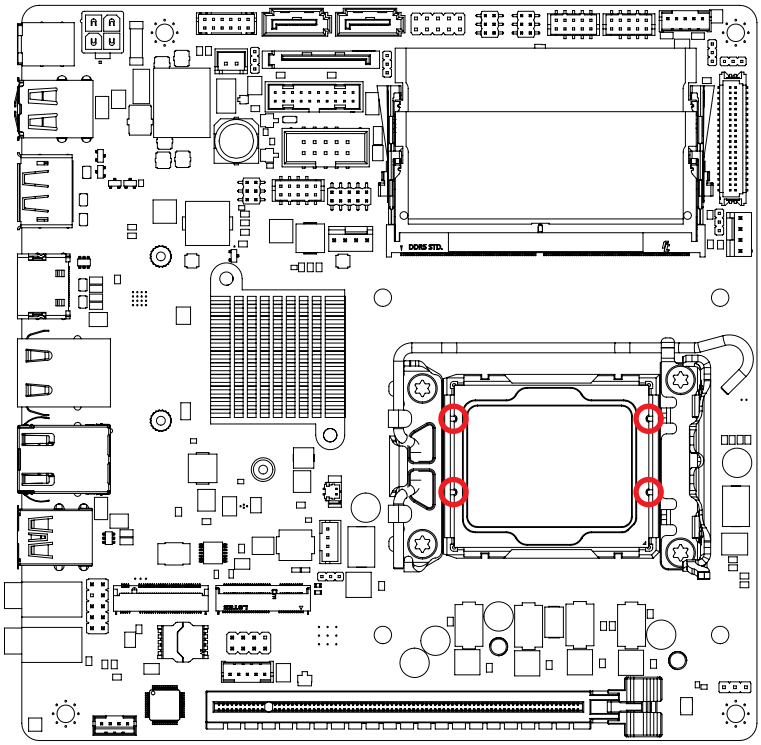
Step 1 remove cpu sink.



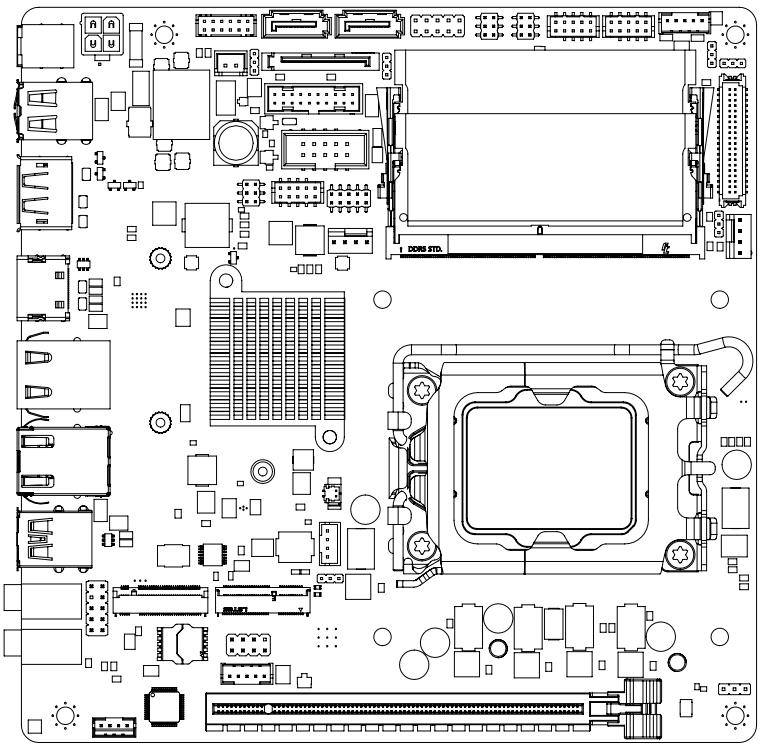
Step 2 Open the top cover.



Step 3 Make sure the notches on the CPU match the socket.

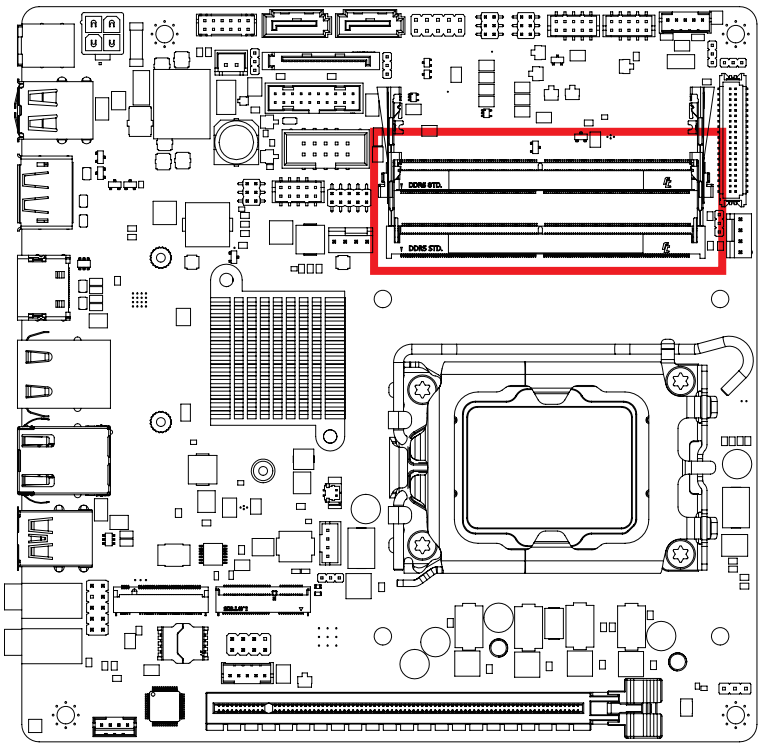


Step 4 Close the top cover.

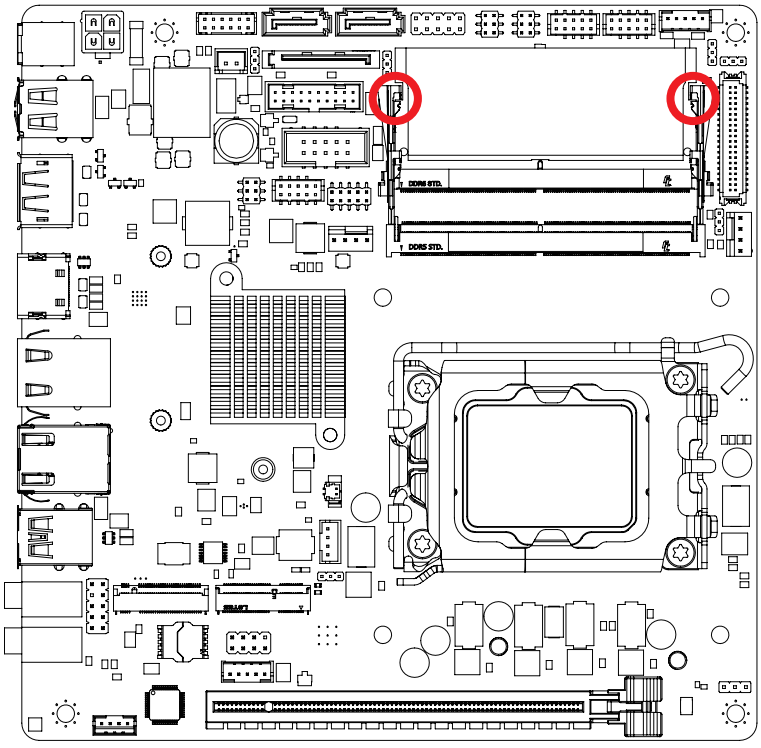


3.3 Installing DDR5 SO-DIMM Modules

Step 1 Check the position of the DDR5 module.

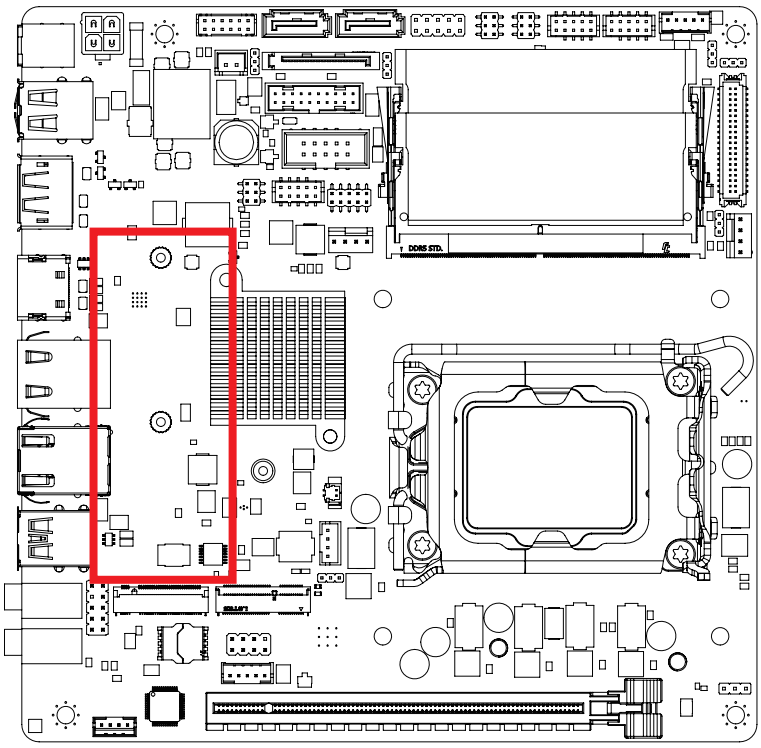


Step 2 Install the DDR module and make sure it is properly locked into the memory slot.

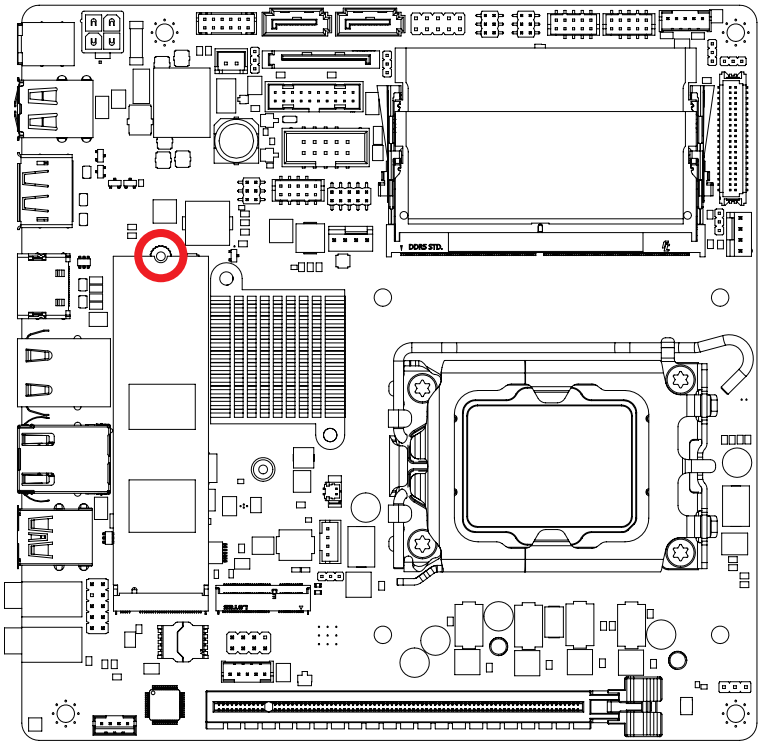


3.4 Installing M.2

Step 1 Check the position of the M.2 slot.

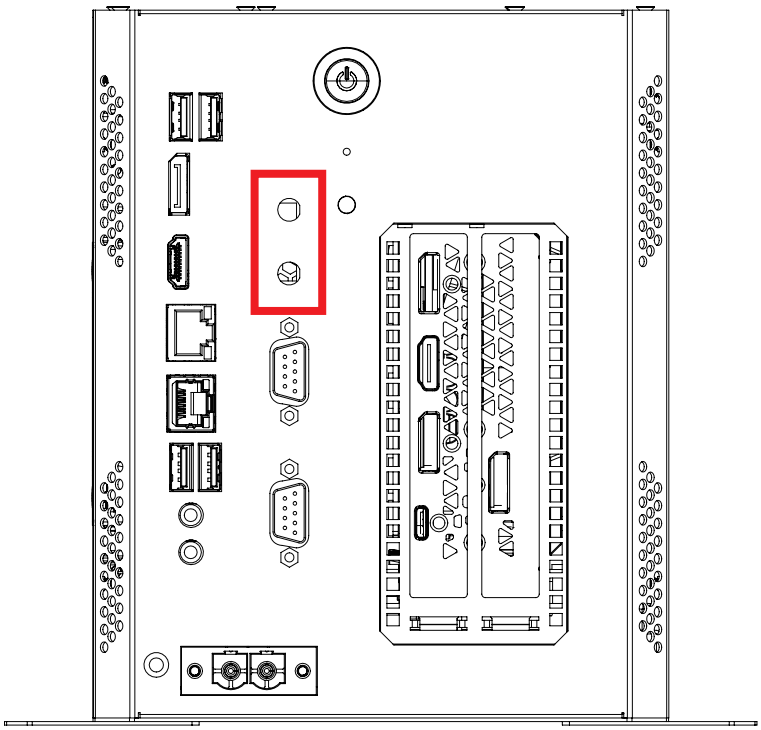


Step 2 Fasten one M3 screw.

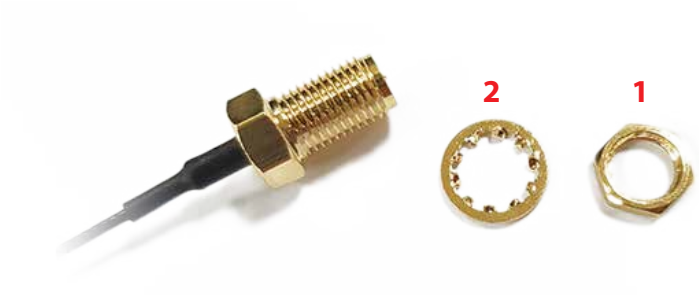


3.5 Installing Antenna Cable

Step 1 Check the antenna installation position.



Step 2 Installing Antenna Cable.

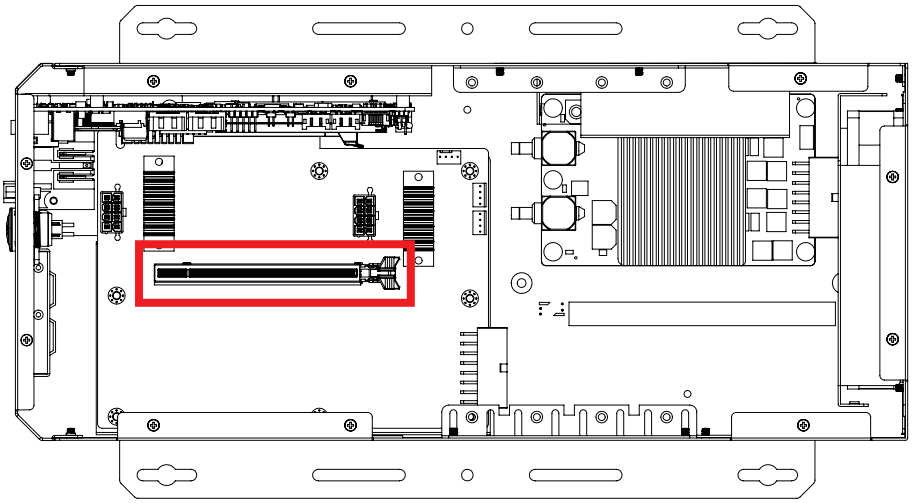


3.6 PCI Card

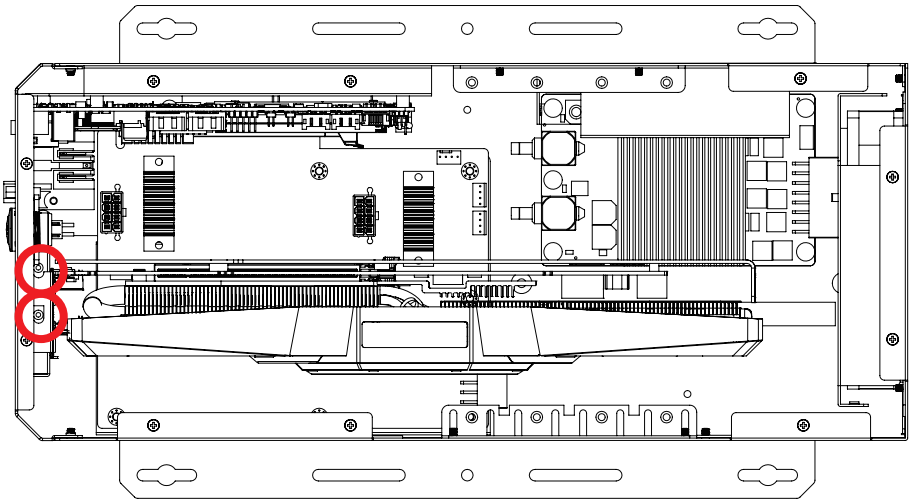
System designs will support 111.15 mm standard height, 312 mm maximum length (without the I/O bracket & power cable) expansion cards.

(*Based on the position of power connectors and the card sink/case design, not all expansion card within the maximum dimension can fit in to the system. Please consult the Vecow support team for confirmation.)

Step 1 Check the PCIe slot position.

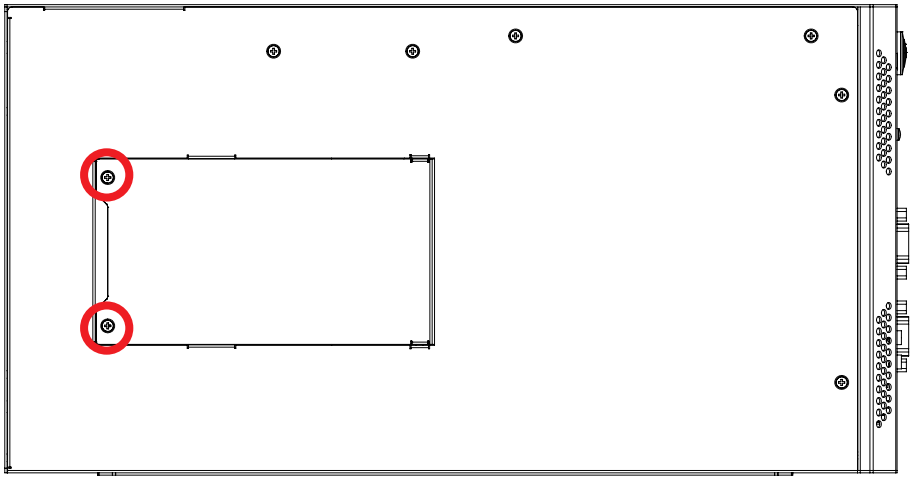


Step 2 Install the PCIe card and secure it with two screw.

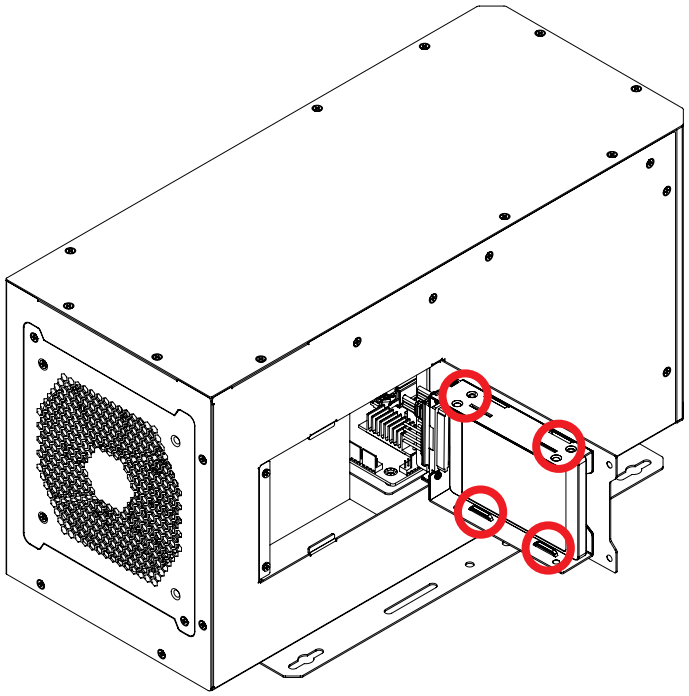


3.7 Installing SSD/HDD

Step 1 Please check the position of the SSD tray and remove the screw marked with two red circle.

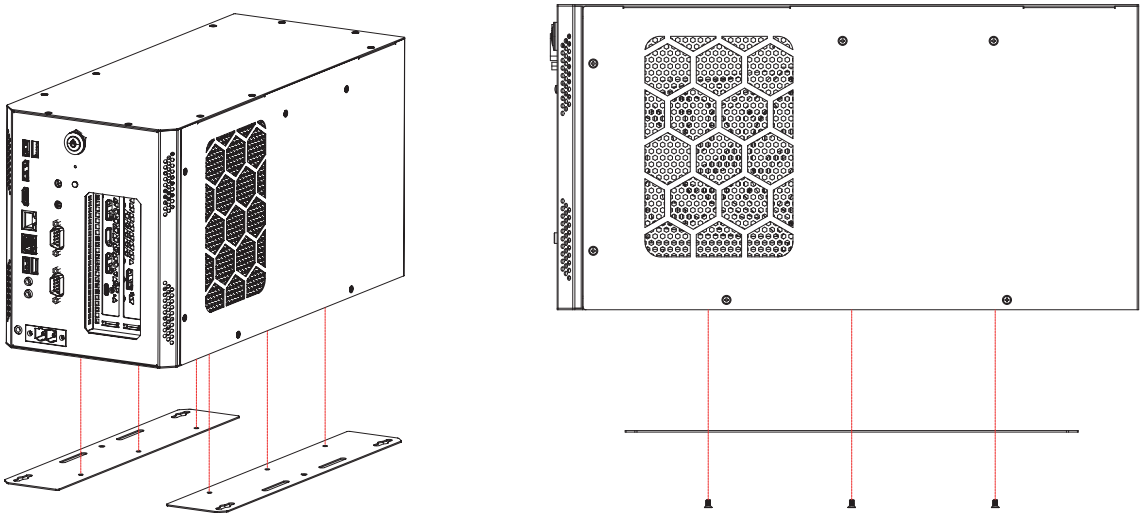


Step 2 Install the SSD and tighten the four screws in the direction indicated.

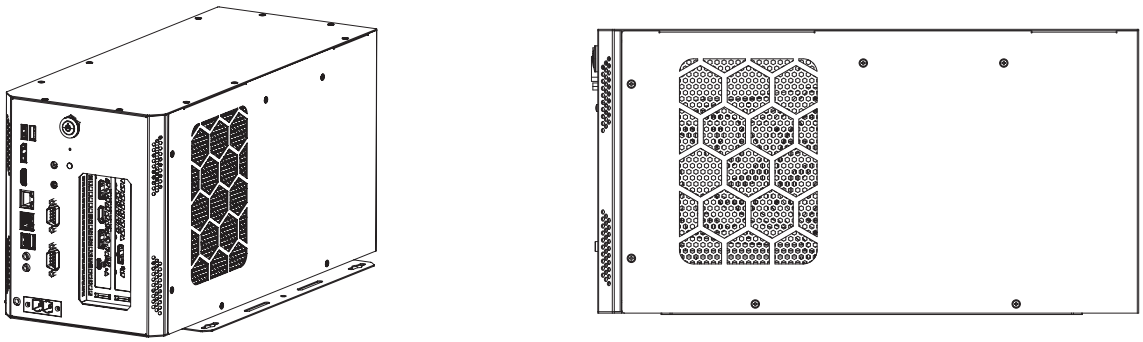


3.8 Mount Your MIG-3000

Step 1 Ensure the screw holes on the right and left side of upper case match the ones on MIG-3000 wall mount bracket.

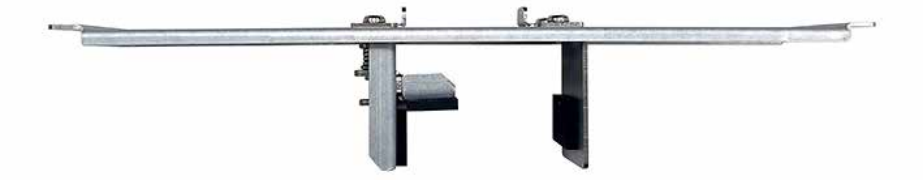


Step 2 Fasten Six M3 screws then finish.



3.9 Installing Hold-down Kit

Step 1 Check the hold-down kit.



Hold-down Kit

Step 2 Hold two brackets to the graphics card.

Step 3 Fasten four M3 screws.

4

BIOS SETUP

4.1 BIOS Setting

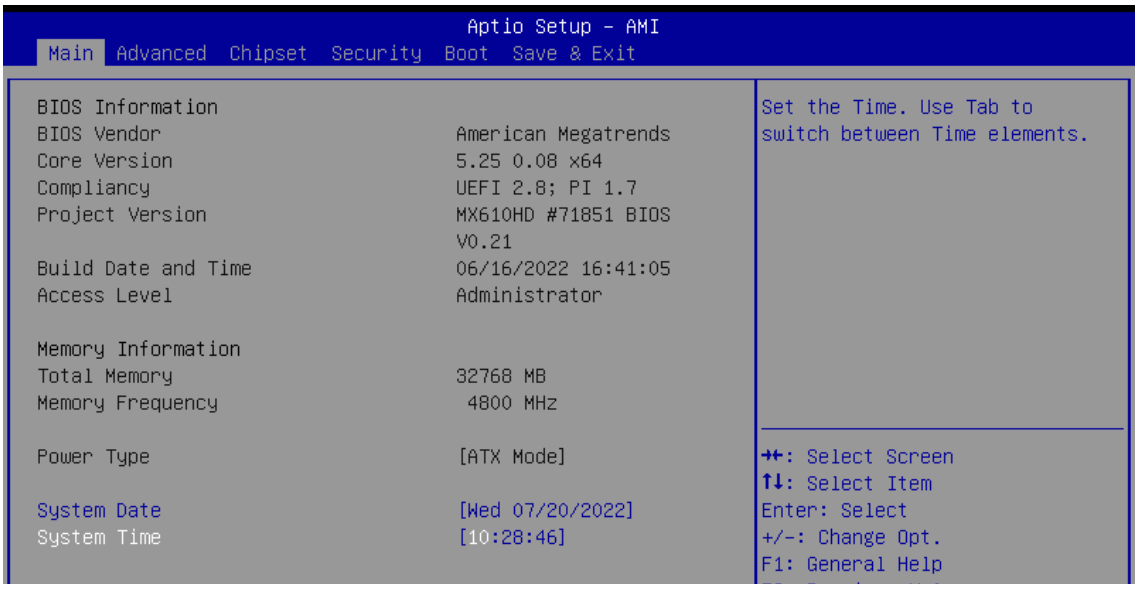


Figure 4-1 : Entering BIOS Setup

BIOS provides an interface for users to check and change system configuration. The BIOS setup program is accessed by pressing the <Del> key when POST display output is shown

4.2 Main Menu

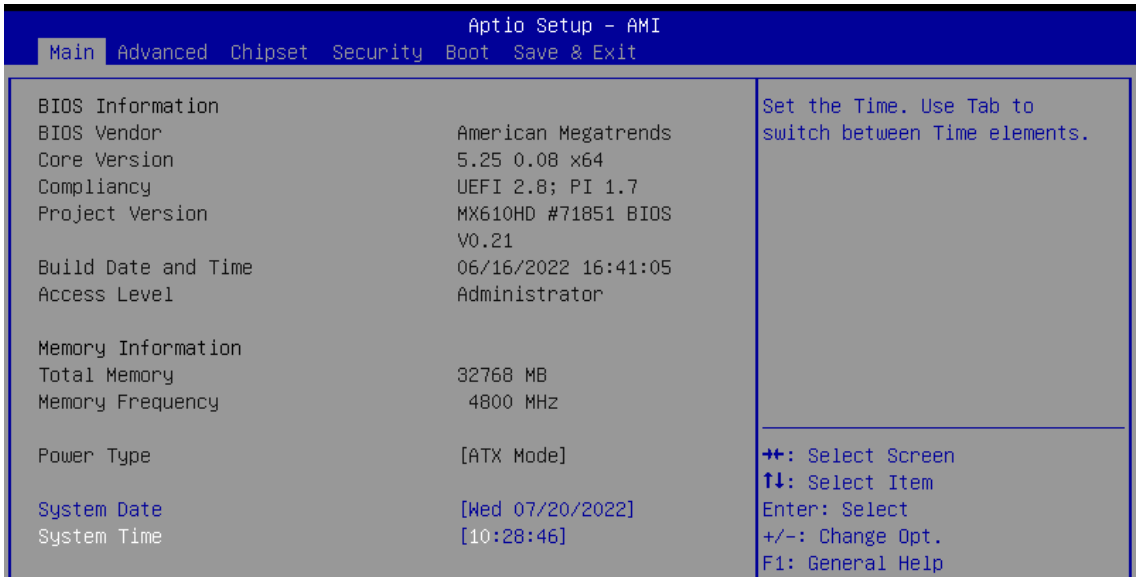


Figure 4-2 : BIOS Main Menu

This section allows you to record some basic hardware configurations in your computer and set the system clock.

System Date

Use the system date option to set the system date. Manually enter the day, month and year.

System Time

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

4.3 Advanced Function

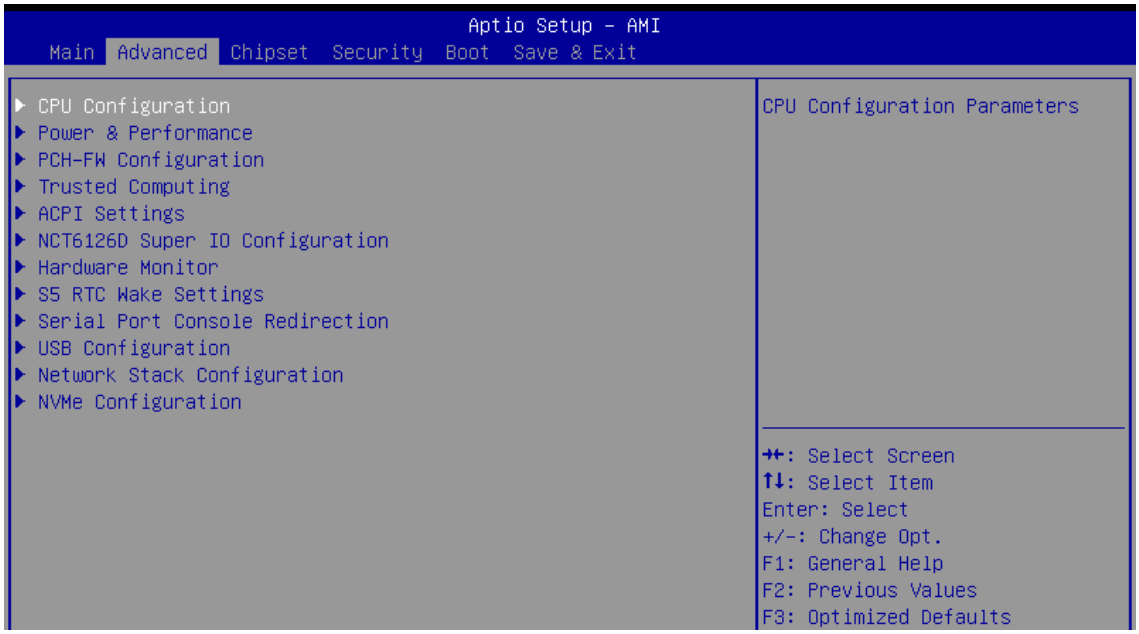


Figure 4-3 : BIOS Advanced Function

Select the Advanced tab from the setup screen to enter the Advanced BIOS Setup screen.

You can select any of the items in the left frame of the screen, such as CPU configuration, ACPI settings, and Super IO configuration.

4.3.1 CPU Configuration

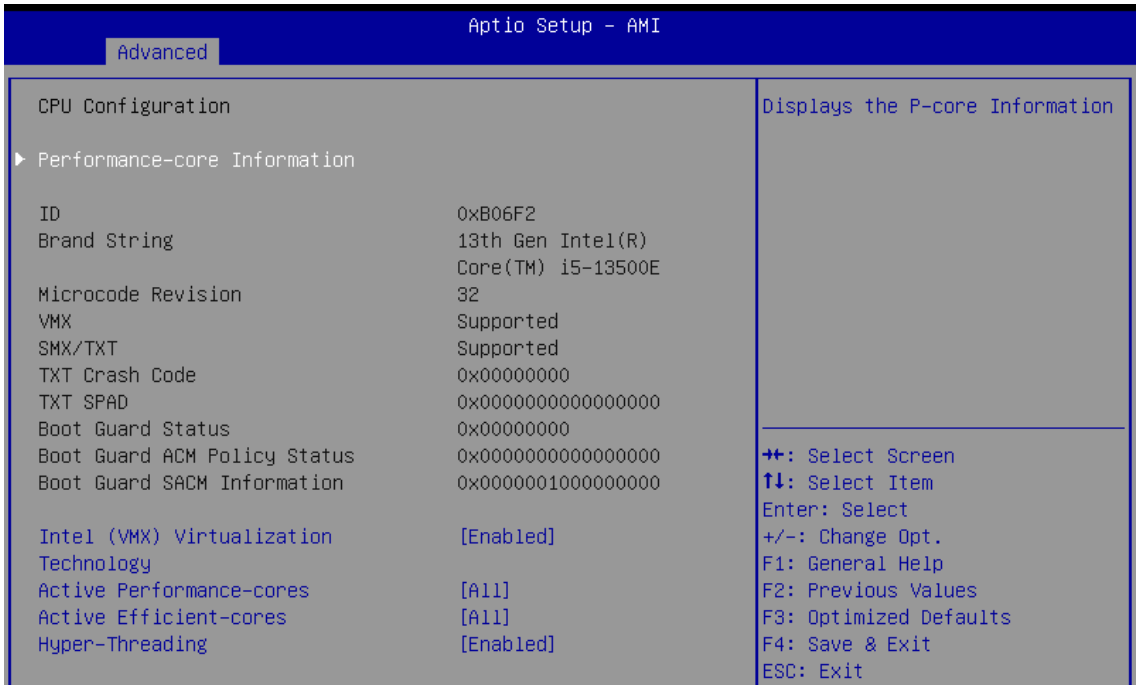


Figure 4-3-1 : CPU Configuration

Intel (VMX) Virtualization Technology
When enabled, a VMM can utilize the additional hardware compatibilities provided by Vandorpool Technology

Active Performance –cores
Number of P-core to enable in each processor package

Active Efficient –cores
Number of E-core to enable in each processor package

Hyper-Threading
Enable or Disable Hyper-Threading Technology

4.3.2 Power & Performance

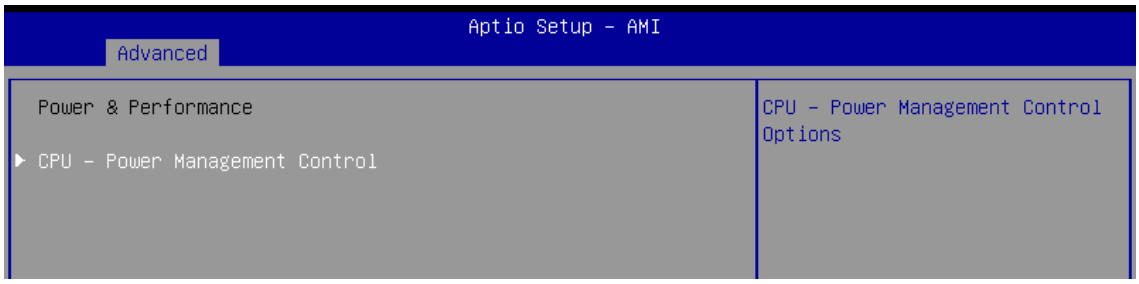


Figure 4-3-2 : Power & Performance

4.3.2.1 CPU - Power Management Control

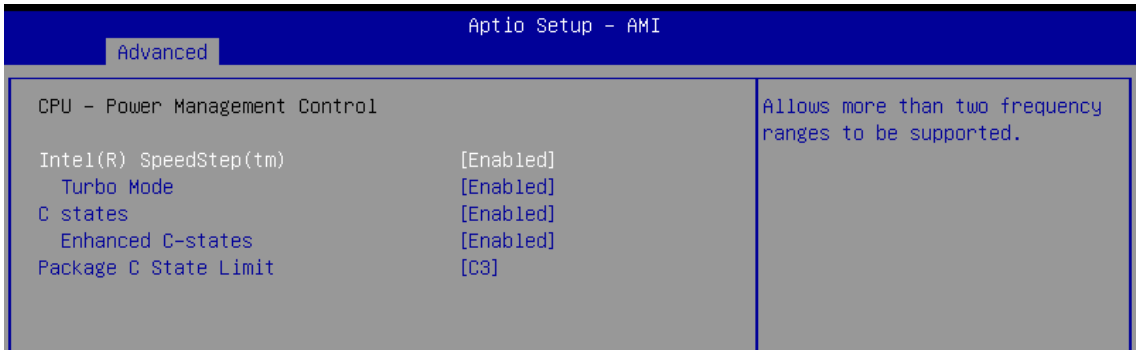


Figure 4-3-2-1 : CPU - Power Management Control

Intel® Speedstep™ [Enabled]
Allows more than two frequency ranges to be supported

Turbo Mode
Enable / Disable processor Turbo Mode

C states
Enable / Disable CPU power management. Allows CPU to go to C states when it's not 100% utilized

Enhance C states
When enabled, CPU will switch to minimum speed when all cores enter C-State

Package C state limit
Maximum Package C State Limit Setting

4.3.3 PCH-FW Configuration

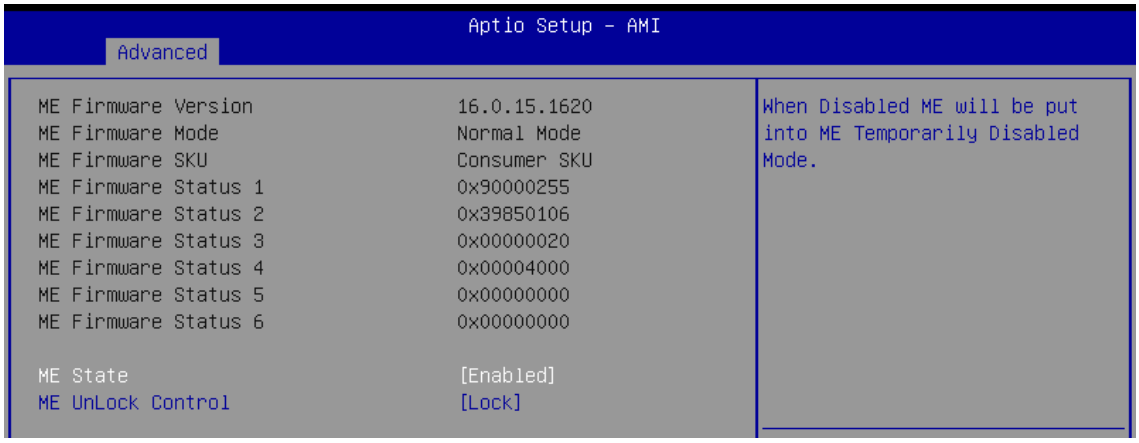


Figure 4-3-3 : PCH-FW Configuration

ME State
When Disabled ME will be put into ME Temporarily Disabled Mode

ME Unlock Control
When Set unlock, system will shutdown for active function

4.3.4 Trusted Computing

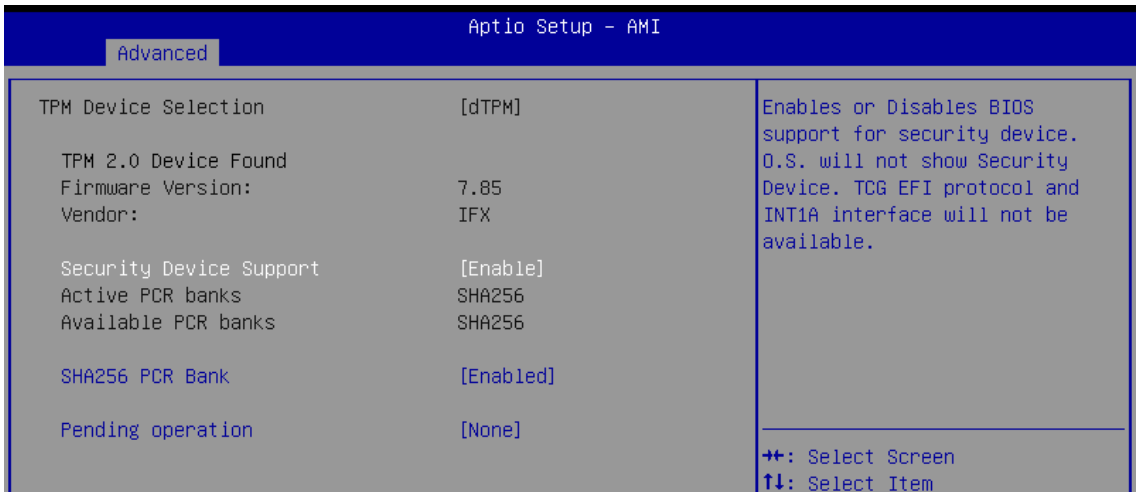


Figure 4-3-4 : Trusted Computing

TPM Device Selection
Selects TPM device: PTT or discrete TPM

Security Device support
Enables or Disables BIOS support security device

4.3.5 ACPI Settings

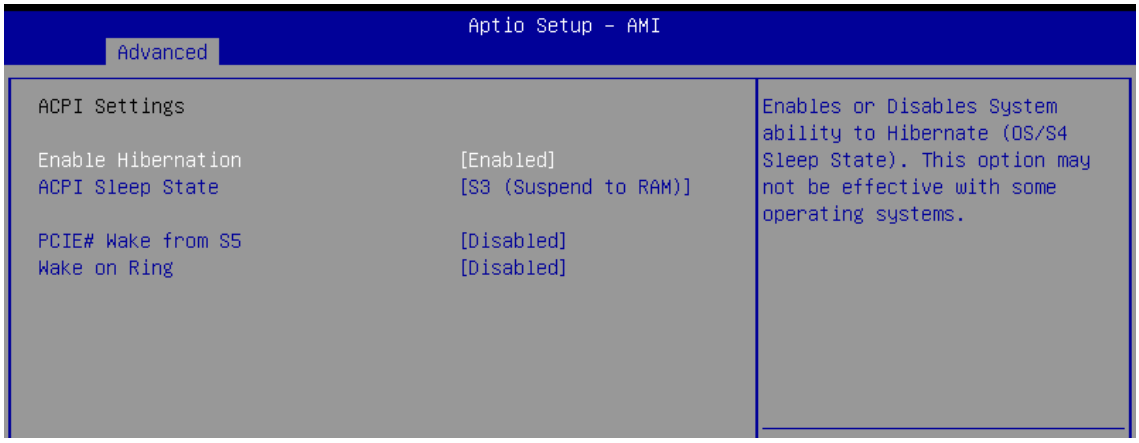


Figure 4-3-5 : ACPI Settings

Enable Hibernation
Enables or Disables System ability to Hibernate.

ACPI Sleep State
Select the highest ACPI sleep state the system will enter the SUSPEND button is pressed.

PCIE# Wake from S5
Enable or disable PCIE wake the system from S5.

Wake on Ring
Enable / Disable wake on ring function under ACPI S3/S4/S5.

4.3.6 NCT6126D Super IO configuration

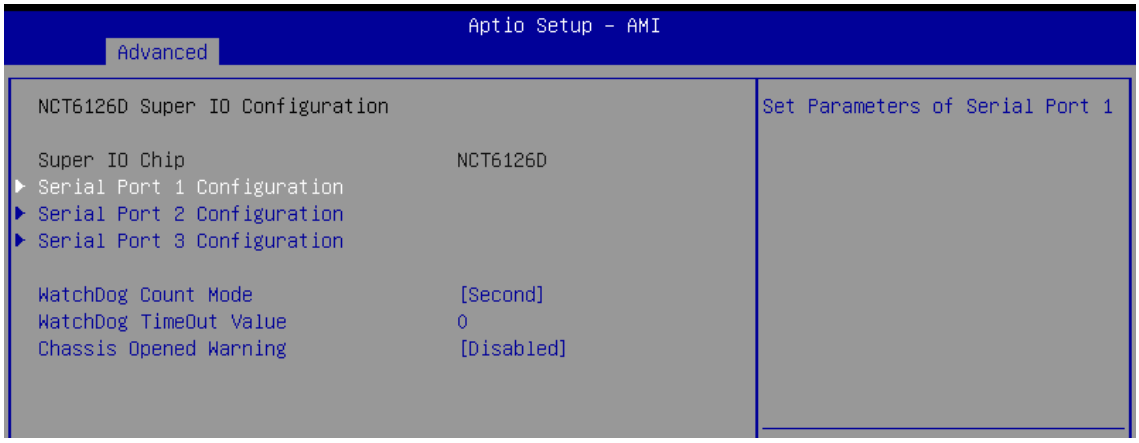


Figure 4-3-6 : NCT6126D Super IO Configuration

WatchDog Count Mode
WatchDog count mode Selection

WatchDog TimeOut Value
Fill Watchdog TimeOut Value, 0 means disabled

Chassis Opened Warning
Select whether to enable Chassis Intrusion Detection. Chassis Intrusion Detection is a utility that can tell whether someone has opened the case.

4.3.6.1 Serial Port X Configuration

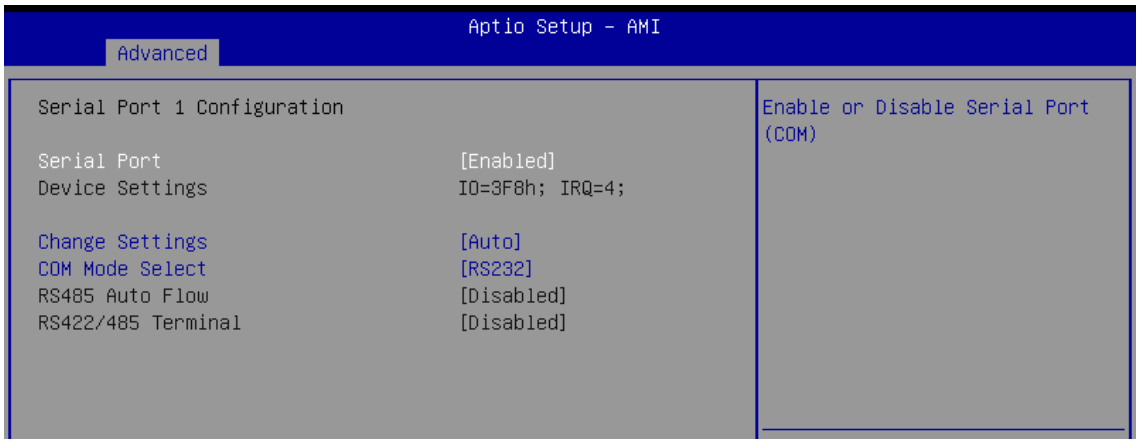


Figure 4-3-6 : Serial Port X Configuration

Serial Port
Enable or Disable Serial Port (COM)

Change Settings
Select an optimal settings for super IO Device

COM Mode Select
Configure the COM port Mode

4.3.7 Hardware Monitor

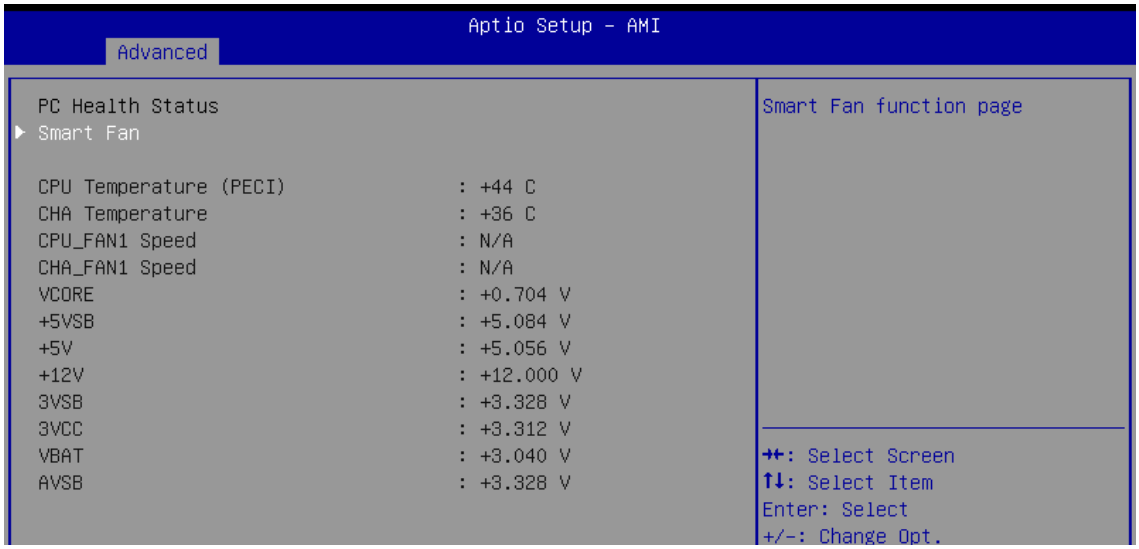


Figure 4-3-7 : Hardware Monitor

Display Hardware monitor information such as thermal, fan speed, and system voltage status monitoring.

4.3.7.1 Smart FAN

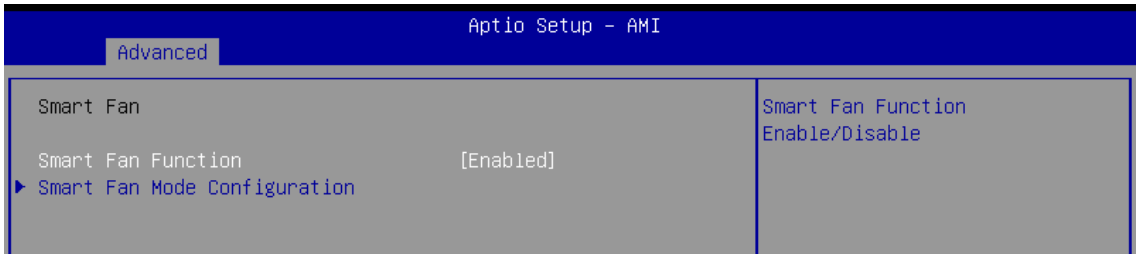


Figure 4-3-7-1 : Smart FAN

Smart FAN Function

Smart fan function Enable / Disable

4.3.7.2 Smart FAN mode Configuration

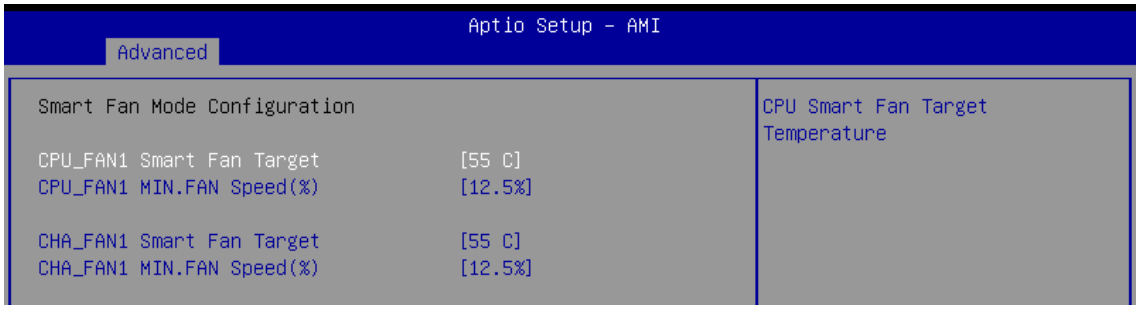


Figure 4-3-7-2 : Smart FAN mode Configuration

CPU_FAN1/CHA_FAN1 Smart FAN Target
Smart Fan Target Temperature

CPU_FAN1/CHA_FAN1 MIN.FAN Speed (%)
Smart Fan minimum settings

4.3.8 S5 RTC Wake Settings

Figure 4-3-8 : S5 RTC Wake Settings

Wake system from S5
Enable or disable System wake on alarm event.

4.3.9 Serial Port Console Redirection

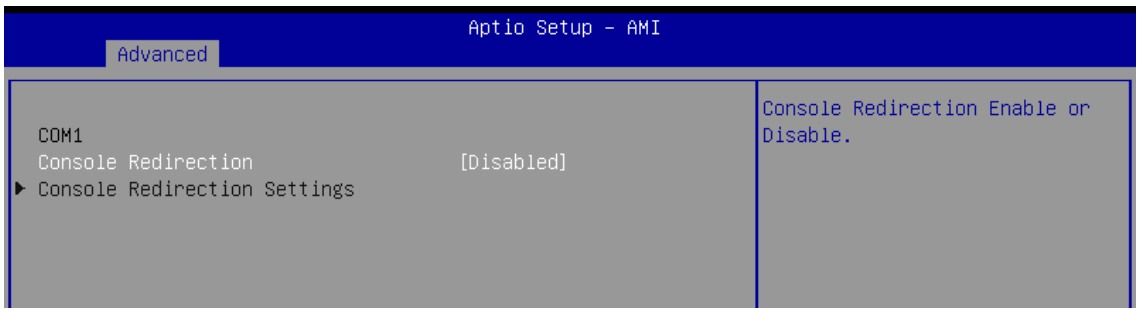


Figure 4-3-9 : Serial Port Console Redirection

Console Redirection
Console Redirection Enable or Disable.

4.3.9.1 Console Redirection settings

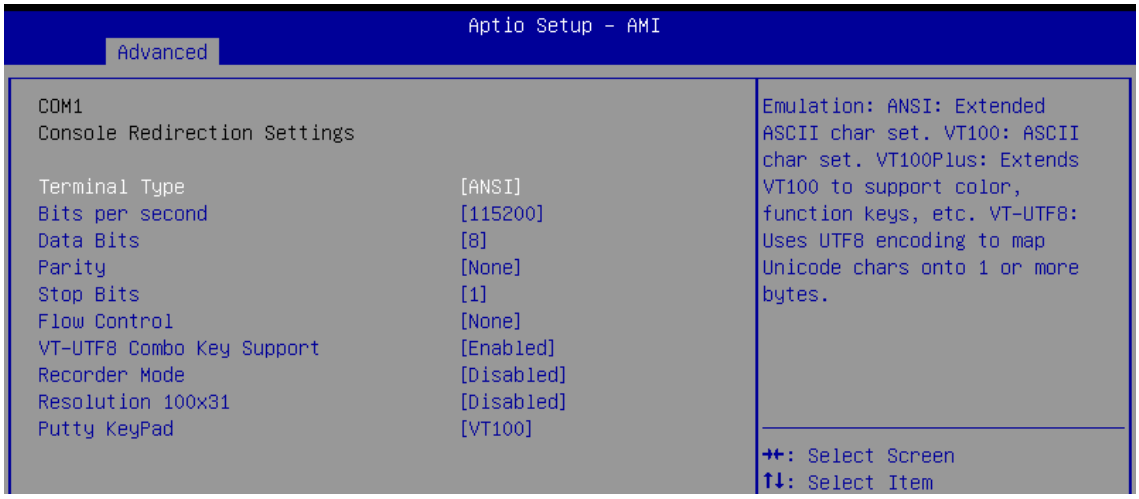


Figure 4-3-9-1 : Console Redirection settings

Terminal Type
Select Terminal Type

Bits per second
Select serial port transmission speed

Data Bits
Select Data Bits

Parity
A parity bit can be sent with the data bits to detect some transmission errors

Stop Bits
Stop bits indicate the end of a serial data package

Flow Control
Flow control can prevent data loss from buffer overflow.

VT-UTF8 Combo Key Support
Enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals

Recorder Mode
With this mode enabled only text will be sent.

Resolution 100x31
Enables or disables extended terminal resolution

Putty Keypad
Selects FunctionKey and KeyPad on Putty

4.3.10 USB Configuration

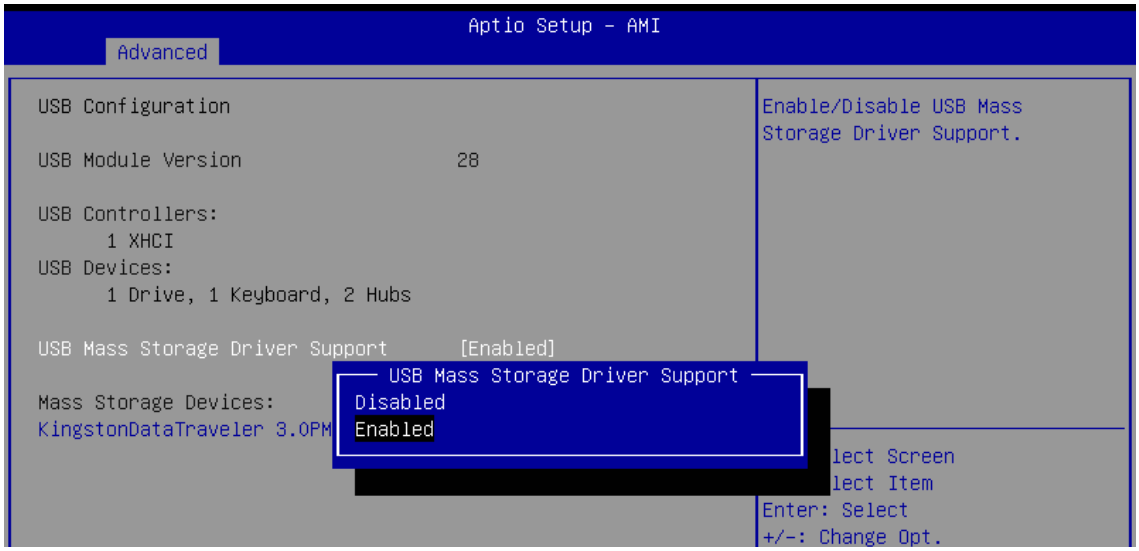


Figure 4-3-10 : USB Configuration

USB Mass Storage Driver Support
Enable / Disable USB Mass Storage Driver Support

4.3.11 Network Stack Configuration

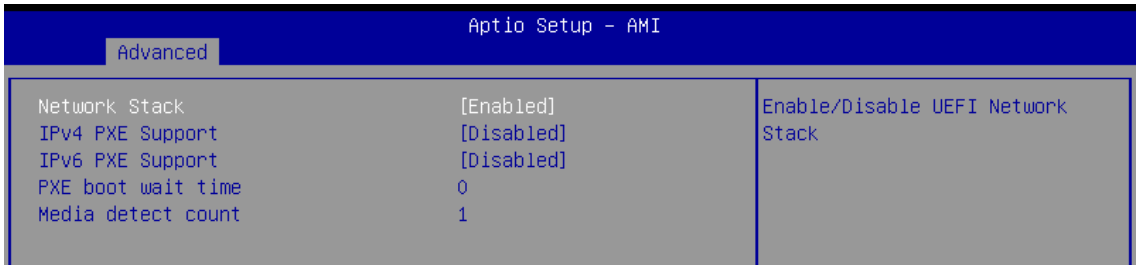


Figure 4-3-11 : Network Stack Configuration

Network Stack
Enabled/Disabled UEFI Network Stack

IPv4 PXE Support
Enable / Disable IPv4 PXE boot support

IPv6 PXE Support
Enable / Disable IPv6 PXE boot support

PXE boot wait time
Wait time in seconds to press ESC key to abort the PXE boot.

Media detect count
Number of times the presence of media will be checked

4.3.12 NVMe Configuration

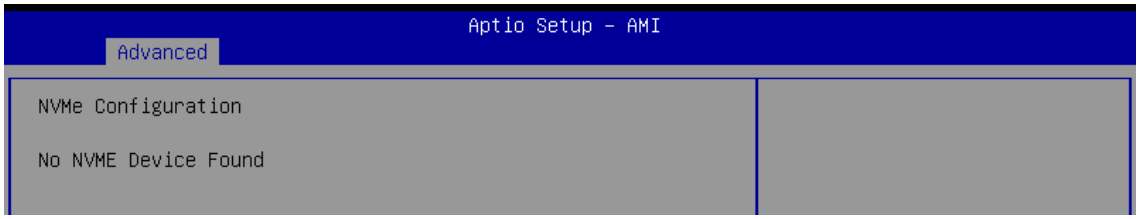


Figure 4-3-12 : NVMe Configuration

Display NVMe controller and Drive information.

4.4 Chipset

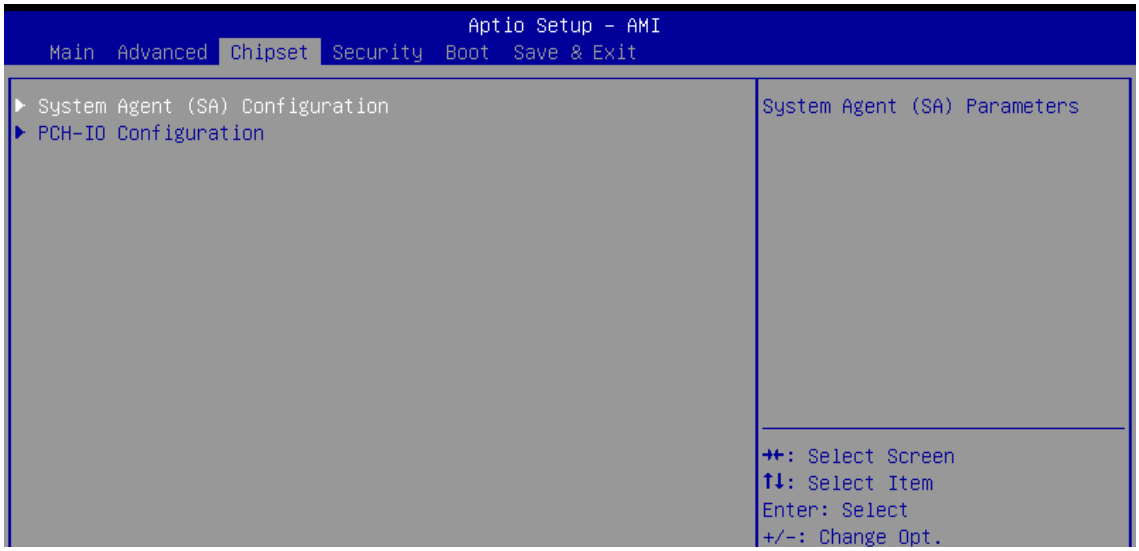


Figure 4-4 : Chipset

Select Chipset tab to enter chipset BIOS setup options, such as System Agent (SA) Configuration and PCH-IO Configuration.

4.4.1 System Agent (SA) Configuration

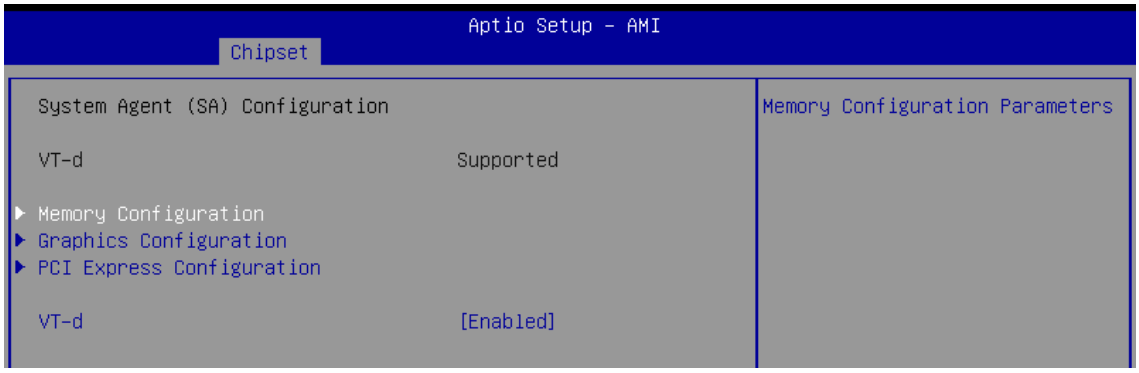


Figure 4-3-14 : System Agent (SA) Configuration

VT-d
VT-d capability

4.4.1.1 Memory Configuration

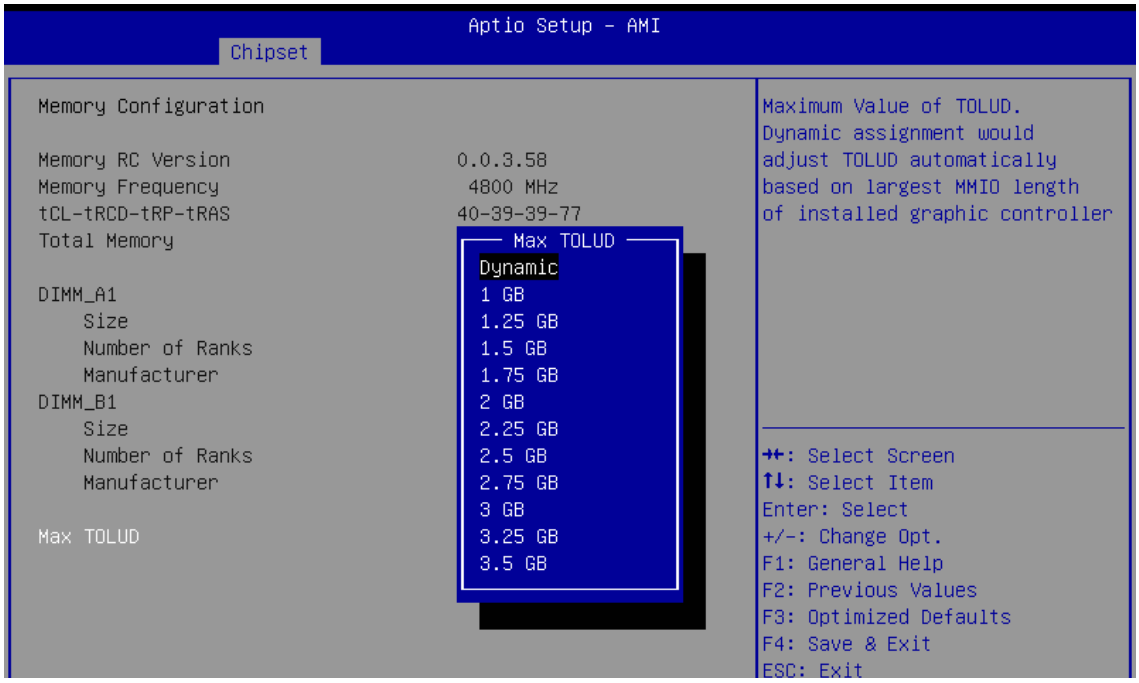


Figure 4-4-1-1 : Memory Configuration

Displays memory information.

Max TOLUD

Maximum Value of TOLUD. Dynamic assignment would adjust TOLUD automatically based on largest MMIO length of installed graphic controller.

4.4.1.2 Graphics Configuration

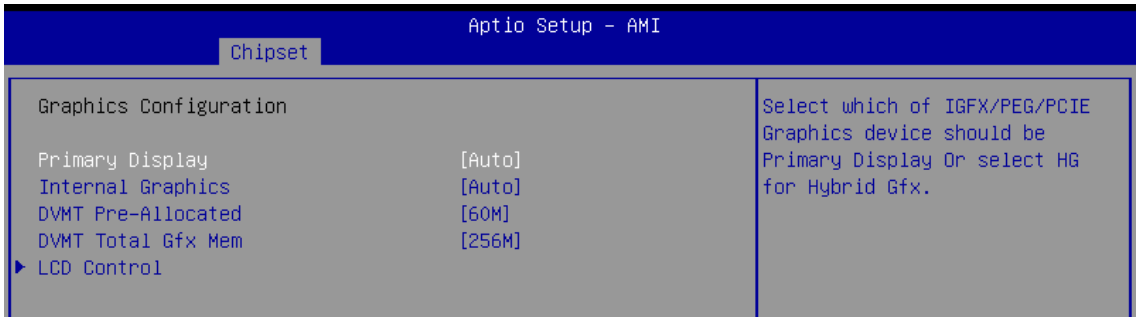


Figure 4-4-1-2 : Graphics Configuration

Primary Display
Select which of IGFX/PEG/PCIE Graphic device should be Primary Display or select HG for Hybrid Gfx.

Internal Graphics
Keep IGFX enabled based on the setup options

DVMT Pre-allocated
Select DVMT 5.0 Pre-allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.

DVMT Total Gfx Mem
Select DVMT 5.0 Total Graphics Memory size used by the Internal Graphics Device.

LCD Control
Enable / Disable LCD. LCD is LVDS or eDP panel

4.4.1.3 PCI Express Configuration

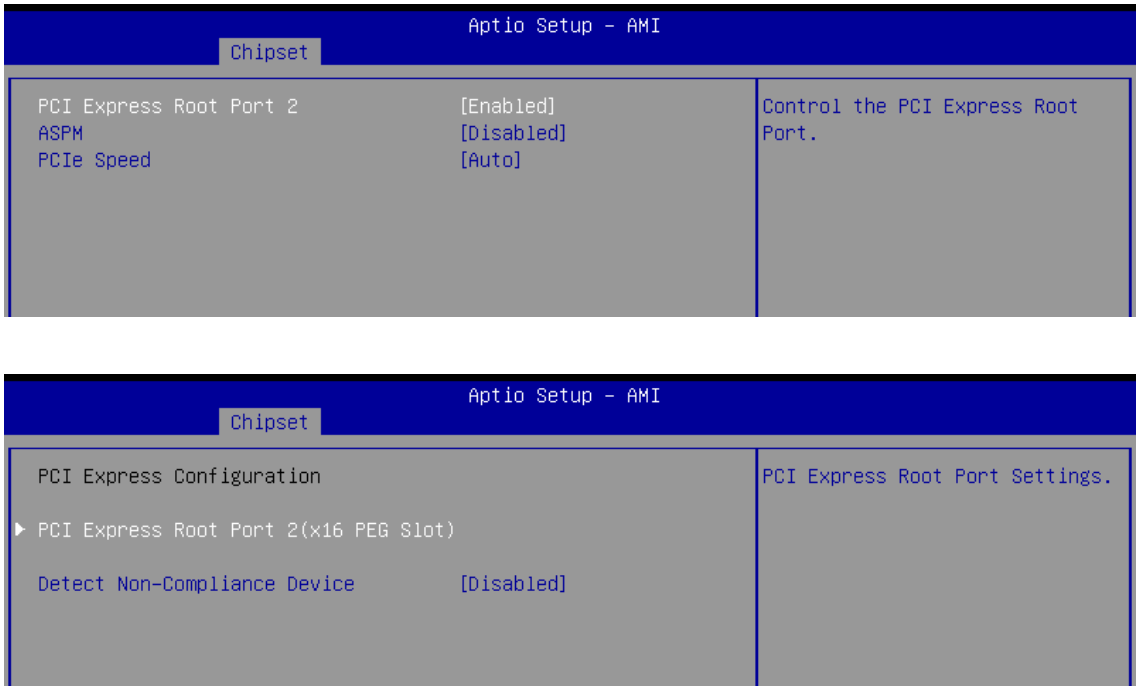


Figure 4-4-1-3 : PCI Express Configuration

Detect Non-compliance Device
Detect Non-compliance PCI Express Device in PEG

PCI Express Root Port 2
Control the PCI Express Root Port

ASPM
Set the ASPM level

PCIe Speed
Configure PCIe Speed

4.4.2 PCH-IO Configuration

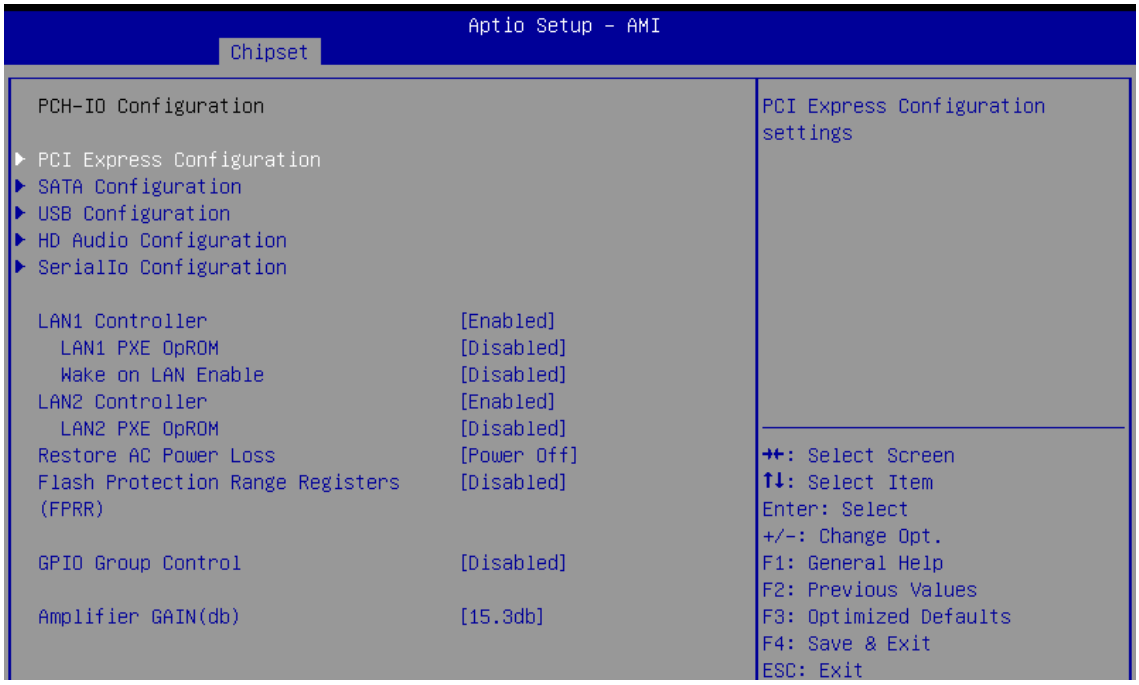


Figure 4-4-2 : PCH-IO Configuration

Lan Controller
Enable / Disable onboard LAN

Lan PXE OpROM
Enable or disable boot option for LAN controller

Wake on LAN Enabled
Enable / Disable integrated LAN to wake the system

Restore AC Power Loss
Specify what state to go to when power is re-applied after a power failure (G3 state)

Flash Protection Range Registers(FPRR)
Enable Flash Protection Range Registers

GPIO Group Control
Configure the digital GPIO pins

Amplifier GAIN(db)
Select Amplifier GAIN value

4.4.2.1 PCI Express Configuration

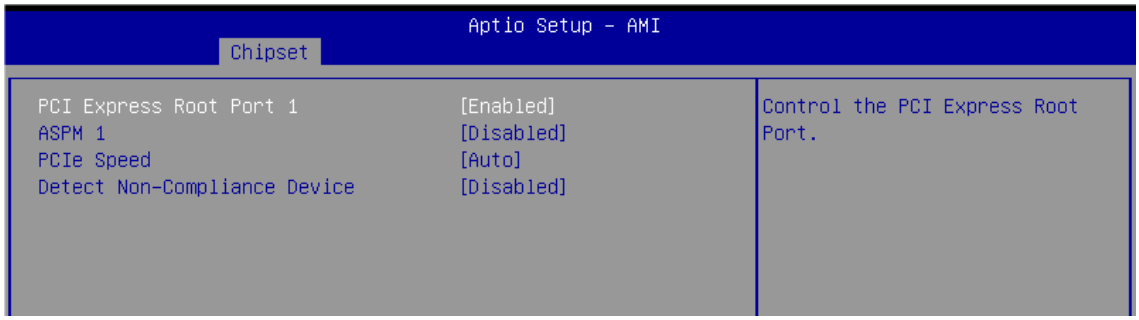


Figure 4-4-2-1 : PCI Express Configuration

PCI Express Root Port
Control the PCI Express Root Port

ASPM
Set the ASPM Level

PCIe Speed
Configure PCI Speed

Detect Non-Compliance Device
Detect Non-Compliance PCI Express Device. If enable, it will take more time at POST time.

4.4.2.2 SATA Configuration

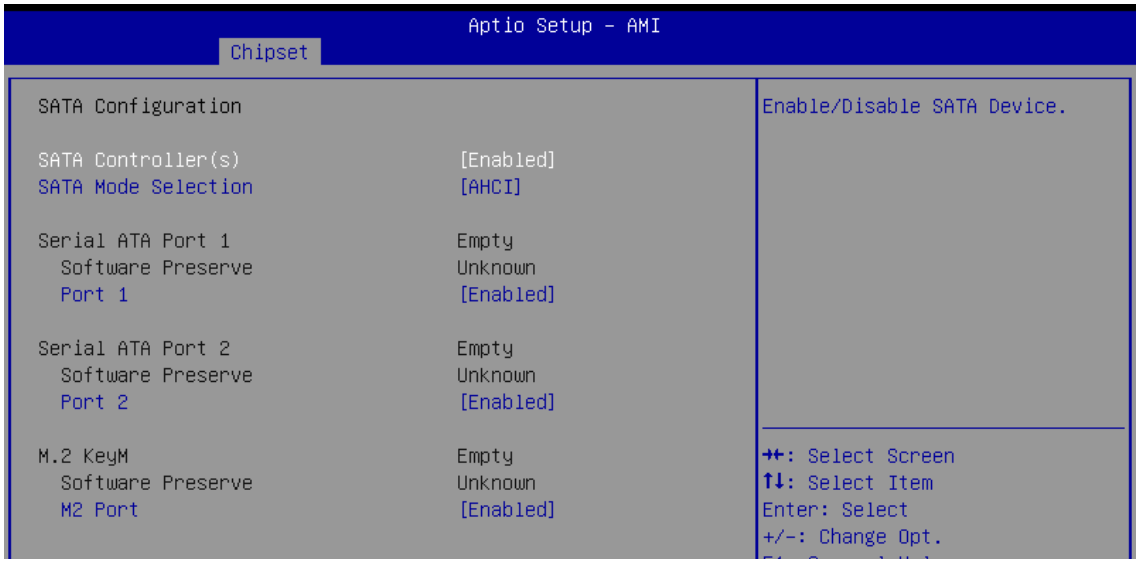


Figure 4-4-2-2 : SATA Configuration

SATA Controller(s)
Enable / Disable SATA Device

SATA Mode Selection
Determines how SATA controller(s) operate

Port X
Enable or Disable SATA Port

4.4.2.3 USB Configuration

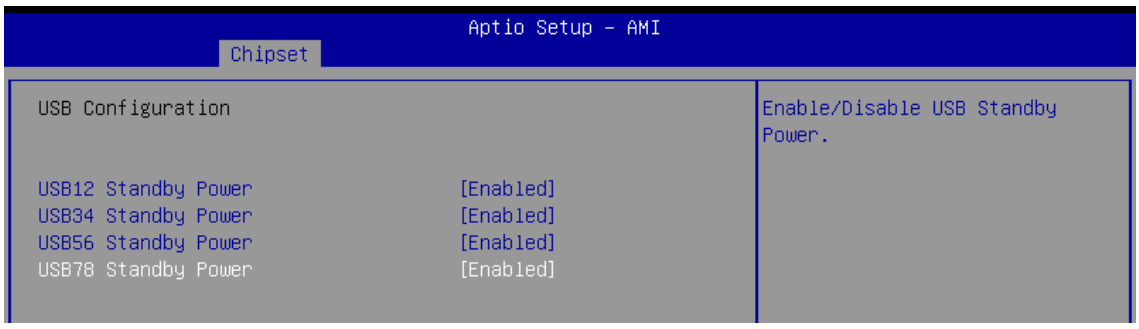


Figure 4-4-2-3 : USB Configuration

USB Standby Power
Enable / Disable USB Standby Power

4.4.2.4 HD Audio Configuration

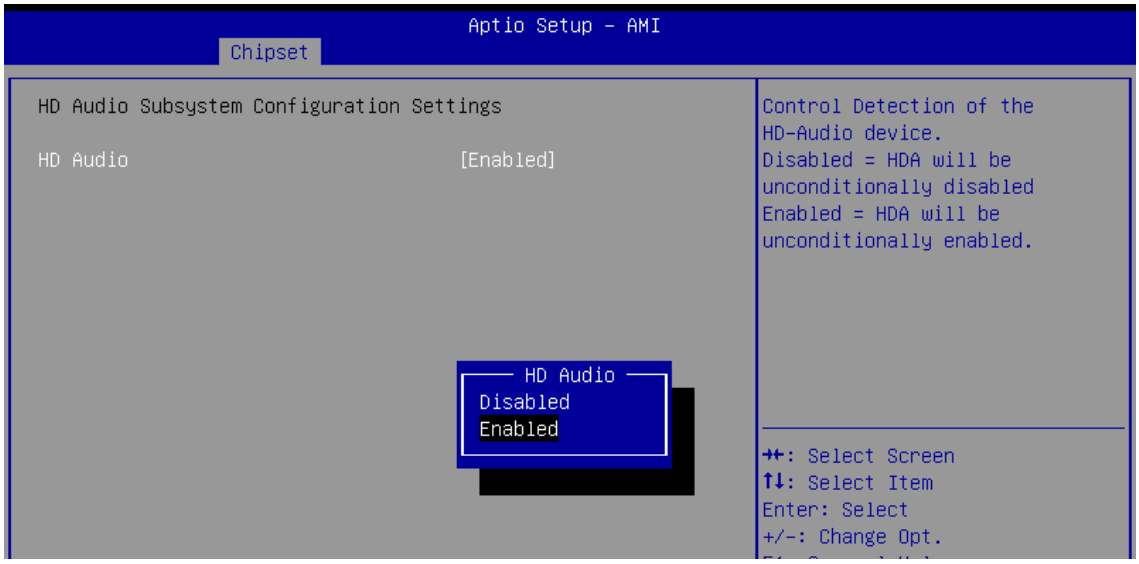


Figure 4-4-2-4 : HD Audio Configuration

HD Audio
Control Detection of the HD-Audio device

4.4.2.5 Serial IO Configuration

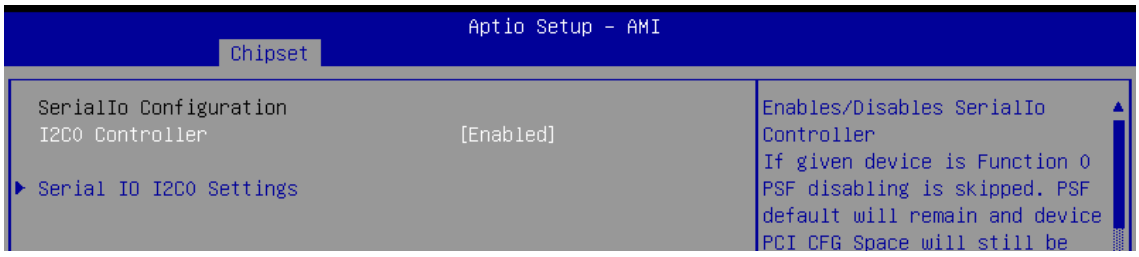


Figure 4-4-2-5 : Serial IO Configuration

I2C0 Controller
Enables/Disables Seriallo Controller

4.5 Security

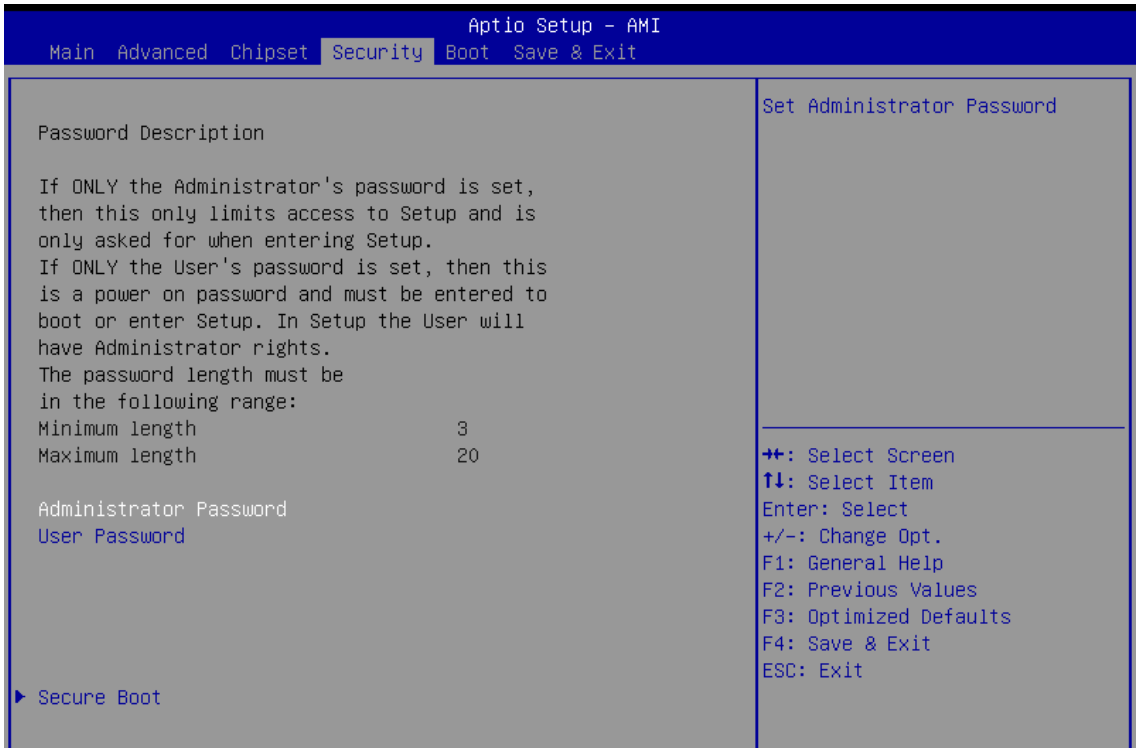


Figure 4-5 : Security

Administrator Password
Set Administrator Password

User Password
Set User Password

4.5.1 Secure Boot

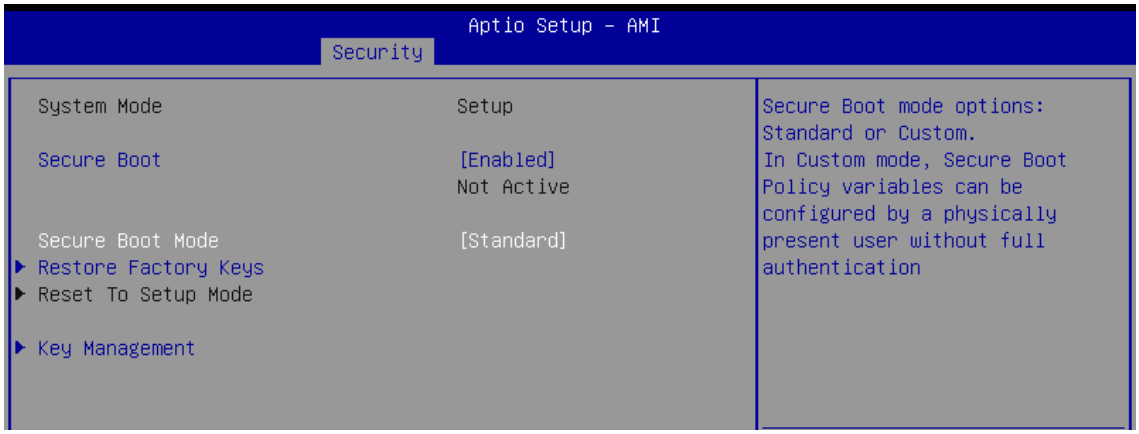


Figure 4-5-1 : Secure Boot

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
Force System to User Mode. Install factory default Secure Boot key databases

Reset To Setup Mode
Delete all Secure Boot key databases from NVRAM

Key Management
Enables expert users to modify Secure Boot Policy variables without variable authentication

4.6 Boot

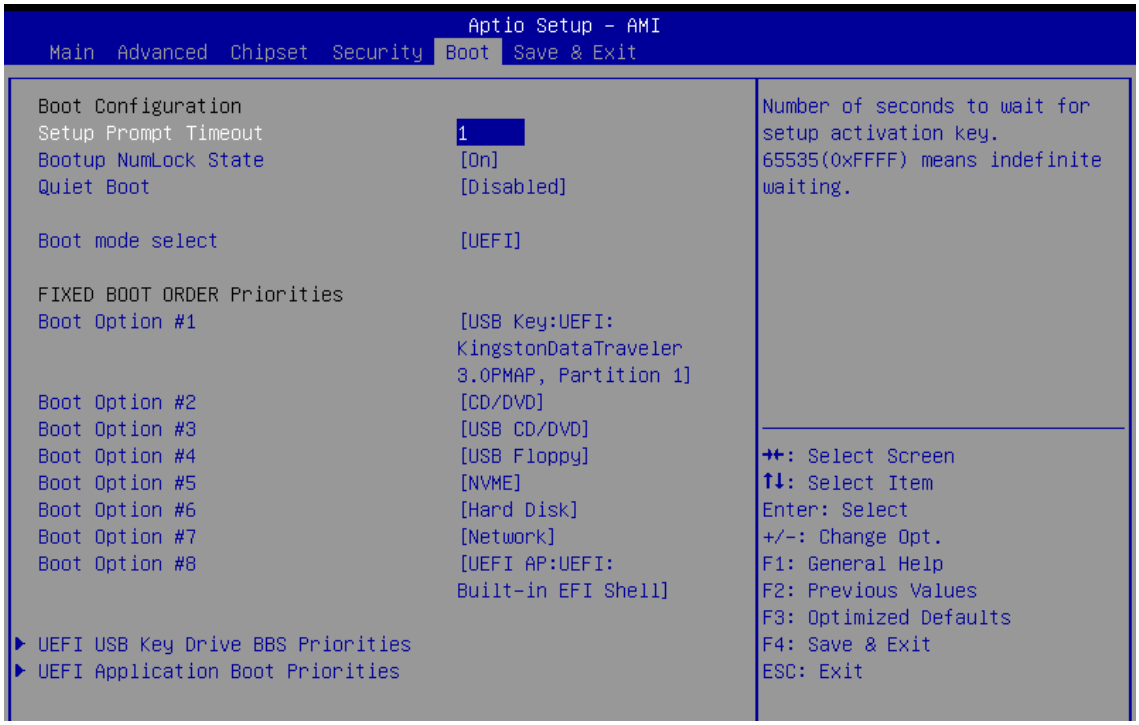


Figure 4-6 : Boot

Setup Prompt Timeout

Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.

Bootup NumLock State

Select the keyboard NumLock state

Quick Boot

Enable or disables Quick Boot option

4.7 Save & Exit

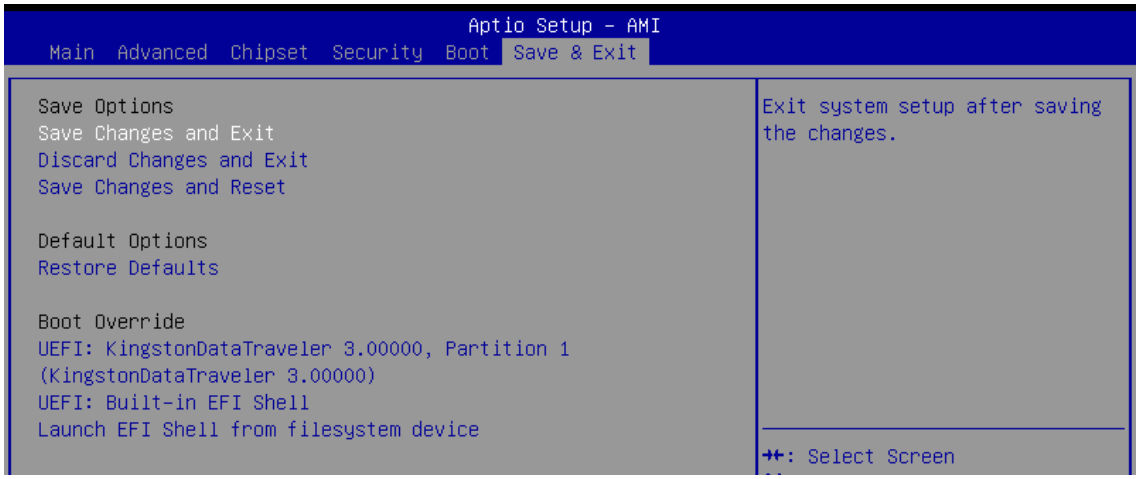


Figure 4-7 : Save & Exit

Save Changes and Exit
Exit system setup after saving the changes.

Discard Changes and Exit
Exit system setup without saving any changes.

Save Changes and Reset
Reset the system after saving the changes.

Restore Defaults
Restore/Load Default values for all the setup options.

A

APPENDIX A : Power Consumption

Testing Board	MIG-3000
RAM	32GB * 2
USB-1	USB Micsoft Wired Keyboard 600
USB-2	USB Mouse ASUS TUF GAMING MINI WL MOUSE MIKU
SATA 0	Innodisk M.2(P42) 3TE6 512GB
LAN1 (i219)	1.0 Gbps
LAN2 (i225)	2.5 Gbps
Graphics output	HDMI
Power plan	Balance(Windows11 Power plan)
Power Source	Chroma 62006P-100-25
Test Program -1	BurnInTest V10.2
Test Program -2	FurMark V2.4.0.0

A.1 Intel® Core™ i7-13700E (30M Cache, up to 5.10 GHz)

Power on and boot to Win 11 64-bit

CPU	Power Input	Standby Mode		Power on and boot to Win11 64bit			
				Sleep Mode		idle status CPU usage less 3%	
		Max Current	Max Consumption	Max Current	Max Consumption	Max Current	Max Consumption
Core™ i7-13700E	9V	0.41A	03.70W	02.731A	24.579W	02.89A	26.01W
	12V	0.326A	03.91W	02.135A	25.62W	02.23A	26.76W
	24V	0.178A	04.27W	01.13A	27.12W	01.444A	27.46W
	55V	0.072A	04.35W	0.509A	27.99W	0.527A	28.99W

CPU	Power Input	Power on and boot to Win11 64bit			
		Run 100% CPU usage with 2D		Run 100% CPU usage with 3D	
		Max Current	Max Consumption	Max Current	Max Consumption
Core™ i7-13700E	9V	14.953A	134.58W	15.781A	142.03W
	12V	11.244A	134.94W	11.856A	142.28W
	24V	05.814A	139.54W	05.975A	143.44W
	55V	02.671A	146.91W	02.78A	152.94W

B

APPENDIX B : Supported Memory & Storage List

B.1 Supported Memory List

Testing Board	MIG-3000
Memory Test	MemTest86 V11.0
BurnInTest	BurnInTest Pro V10.2(build 1006)

Tset Item

Channel	Memory Test	OS internal info	Hibernate	Sleep	Reboot
SODIMM_1 SODIMM_2	PASS	PASS	PASS	PASS	PASS

B.2 Supported Non-ECC Memory List

Brand	Info	Test Temp.(Celsius)
Transcend 8G DDR5-5600 SO-DIMM	TS1GSA64V6G	25ºC
Samsung 16G DDR5-5600 SO-DIMM	M425R2GA3P80-CWM0D	25ºC
Innodisk 32G DDR5-5600 SO-DIMM	M5S0-BGG2OCZQ-H03	25ºC

B.3 Supported ECC Memory List

Brand	Info	Test Temp.(Celsius)
Innodisk 16G DDR5-5600 ECC SO-DIMM	M5D0-AGS2PCZQ-H03	25ºC
Transcend 16G DDR5-4800 EC4 SO-DIMM	TS2GSA72V8E	25ºC
Innodisk 32G DDR5-4800 ECC SO-DIMM	M5D0-AGS2PCVP-H03	25ºC
Innodisk 32G DDR5-4800 ECC SO-DIMM	M5D0-BGS2Q5VP-H03	25ºC
TEAMGROUP 48G DDR5-5600 ECC SO-DIMM	TE48GFSEV2TH-V	25ºC

B.4 Supported Storage Device List

Type	Brand	Model	Capacity
SATA SSD	Innodisk	DES25-C12DK1KCCQL-H03 2.5" SATA 512GB	512GB
	Transcend	TS512GSSD460K 2.5" SATA 512GB	512GB
M.2 SSD SATA	SMART	FDM28256GTCYC282 256GB	256GB
	Innodisk	3TE7 M.2 (S80) DEM28-C12DK1KCAQL-H03 M.2-BM	512GB
M.2 PCIe SSD	Innodisk	4TG2-P DGM28-C12DP1KCAEF-H03 G4X4	512GB
		3TE6 DEM28-C12DD1KCCQF-H03 G3X2	512GB
	Transcend	TS512GMTE720T G4X4	512GB
		TS512GMTE460T G3X2	512GB

** If more help is needed, please contact Vecow Technical Support.

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For further support information, please visit www.vecow.com