MIG-1000 USER Manual

AMD Ryzen™ Embedded V1807B Processor AI Computing System with NVIDIA® Tesla®/Quadro®/GeForce®/AMD Graphics, High Performance

Vecow

1.0.0 Edition 20210507

Record of Revision

Version	Date	Page	Description	Remark
1.00	2021/05/07	All	Official Release	

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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	GigE LAN	SSD Tray	PCIe x8	USB 3.1	USB 2.0	COM	DP	System Fan
MIG-1000	2	1	1	2	2	2	4	Y

Optional Accessories

Part Number	Description
DDR4 32G	Certified DDR4 32GB 3200MHz RAM
DDR4 16G	Certified DDR4 16GB 3200MHz RAM
DDR4 8G	Certified DDR4 8GB 3200MHz RAM
DDR4 4G	Certified DDR4 4GB 3200MHz 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
PWS-1000W-24V	1000W, 24V, 90V AC to 264V AC Power Supply

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1

GENERAL INTRODUCTION

1.1 Overview

Vecow MIG-1000 Series is an AMD-based AI Computing System. Integrating Ryzen™ embedded V1807B APU and NVIDIA® Tesla®/Quadro®/GeForce®/AMD Radeon™ Graphics, Vecow MIG-1000 delivers outstanding computing and graphics performance.

Paired with AMD Radeon™ Vega 11 Graphics, MIG-1000 supports up to 4K resolution at 60fps on 4 DisplayPort displays and provides 3D graphics quality to deliver breakthrough performance. This compact AI Computing engine allows limitless scalability functionalities. It features 2 GigE LAN, 1 SSD Tray, 2 USB 3.1, 2 COM, and PCIe x16 expansion that supports up to 750W power budget for advanced graphics computing performance.

Featuring AMD "Zen" CPU and "Vega" GPU architectures in a SoC solution, industrial-grade reliability and smart power budget up to 750W, Vecow MIG-1000 is your ideal solution for Autonomous Vehicles, Medical Imaging, Smart Manufacturing, Deep Learning, Gaming, Traffic Vision and any AIoT/Industry 4.0 applications.

1.2 Features

- 4-core 8 threads AMD Ryzen™ Embedded V1807B APU running with integrated AMD Radeon™ Vega 11 Graphics serves the performance AMD Zen CPU and Vega GPU architectures in SoC solution
- 2 DDR4 3200MHz memory, up to 64GB
- 0°C to 60°C Operating Temperature with CPU fan
- 4 DisplayPort support up to 4 independent 4K/60 fps displays and 4K Decode & Encode
- 9V to 55V wide range DC Power Input
- PCIe x16 expansion supports up to 750W Power Budget for independent 2-slot graphics card
- When PCIe Graphic card is installed, internal APU will not be able to function.

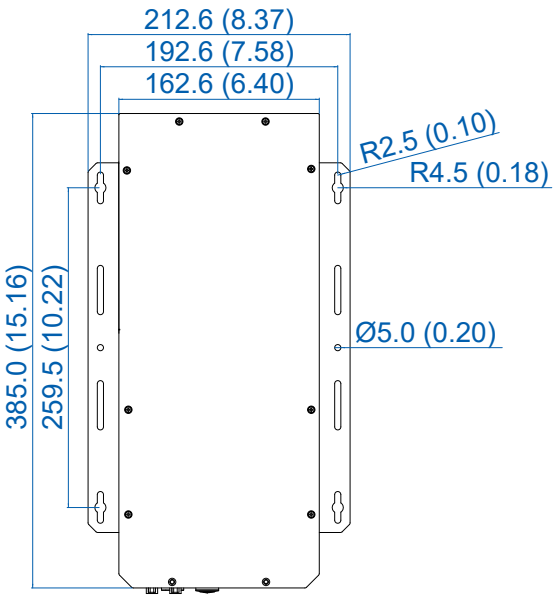
1.3 Specifications of MIG-1000

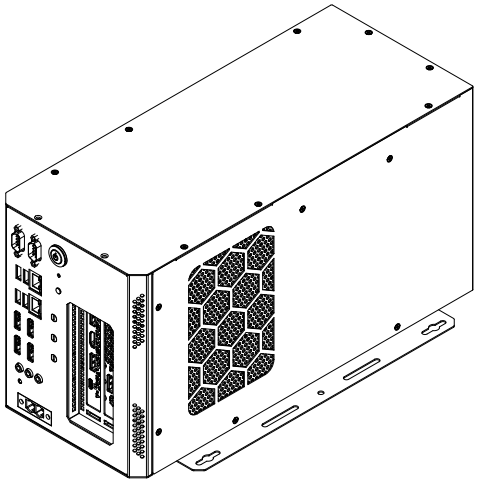
System	
Processor	AMD Ryzen™ Embedded V1807B APU
Chipset	SoC integrated
BIOS	AMI
SIO	F81865F
Memory	2 DDR4 3200MHz SO-DIMM, up to 64GB
I/O Interface	
Serial	2 COM RS-232
USB	• 2 USB 3.0 • 2 USB 2.0
LED	HDD, Power
Expansion	
PCIe	1 PCIe x16 Slot
Graphics	
Graphics Processor	AMD Radeon™ Vega 11 Graphics
Interface	4 DisplayPort : Up to 4096 x 2160 @60Hz
Storage	
SATA	1 SATA III (6Gbps)
M.2	1 M.2 Key M Socket (2280, PCIe x4)
Audio	
Audio Codec	Realtek® ALC662, 5.1 Channel HD Audio
Audio Interface	1 Mic-in, 1 Line-out, 1 Line-in
Ethernet	
LAN 1	Realtek RTL8111G GigE LAN
LAN 2	Realtek RTL8111G GigE LAN
Power	
Power Input	9V to 55V, DC-in
Power Interface	2-pin Terminal Block : V+, V-
Others	
HW Monitor	Monitoring temperature, voltages. Auto throttling control when CPU overheats.

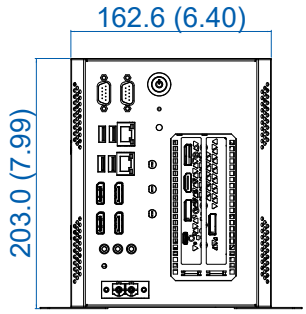
Software Support	
OS	Windows 10, Windows 7, Linux
Mechanical	
Dimension (W x D x H)	162.6mm x 203.6mm x 385.0mm (6.4" x 8.02" x 15.16")
Weight	5.3 kg (11.45 lb)
Mounting	Wallmount by mounting bracket
Environment	
Operating Temperature	0°C to 60°C (32°F to 147°F)
Storage Temperature	-40°C to 85°C (-40°F to 185°F)
Humidity	5% to 95% 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

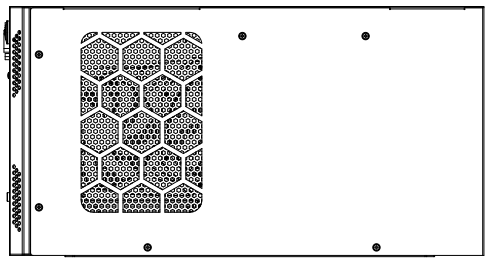
1.4 Mechanical Dimension

Unit : mm (inch)









2

GETTING TO KNOW YOUR MIG-1000

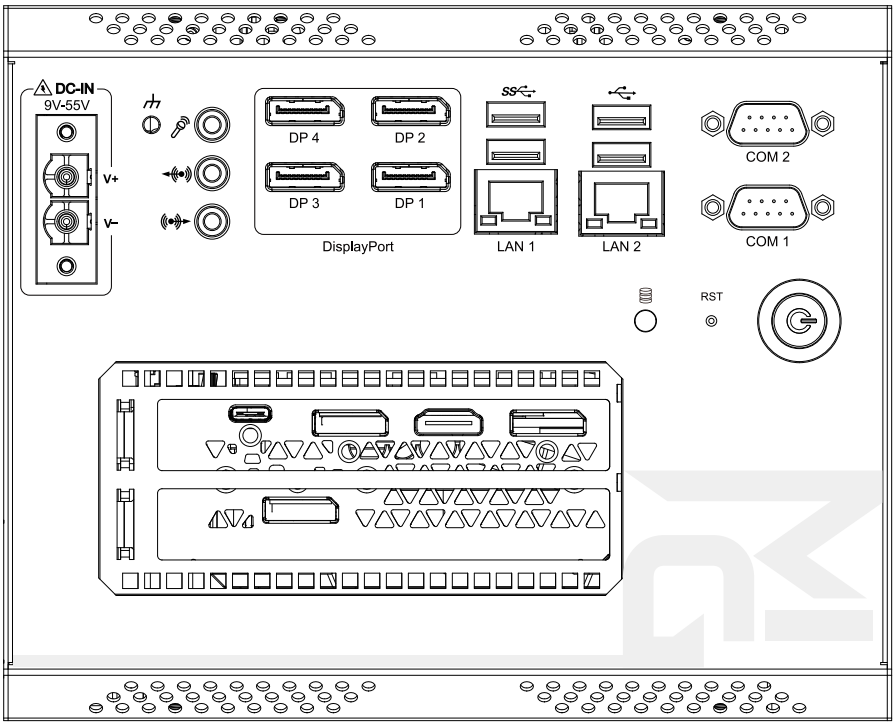
2.1 Packing List

Item	Description	Qty
1	MIG-1000	1

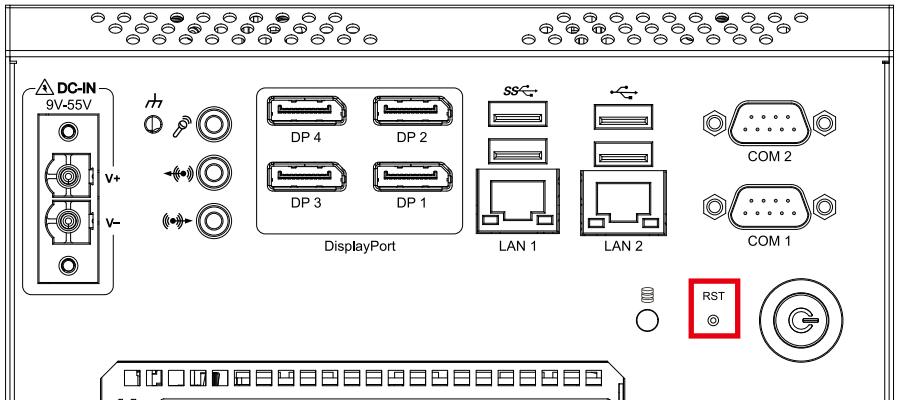
Item	Description	Outlook	Usage	P/N	Qty
1	PHILLPIS M4x16L with washer, Ni		Mount	53-24D6416-30B	4
2	M3x4 Screw		HDD	53-M006350-010	4
3	Phillips F-Head M3*5 Z.B+Ny		Wall mount	53-M004950-310	6
4	M3x4L, Ni		M.2 Slot	53-2426204-80B	1
5	Terminal block 2-pin (10.16mm)		Switch	51-2701R02-R1Q	1
6	MIG-1000 BP to GPU Cable		Cable	61-1400011-010	1

2.2 Front Panel I/O Functions

In Vecow MIG-1000 series family, all I/O connectors are located on front panel and rear panel. Most of the general connections to computer device, such as USB, LAN Jack, Audio, COM, DC-IN, Display Port and any additional Graphic Card, are placed on the front panel.

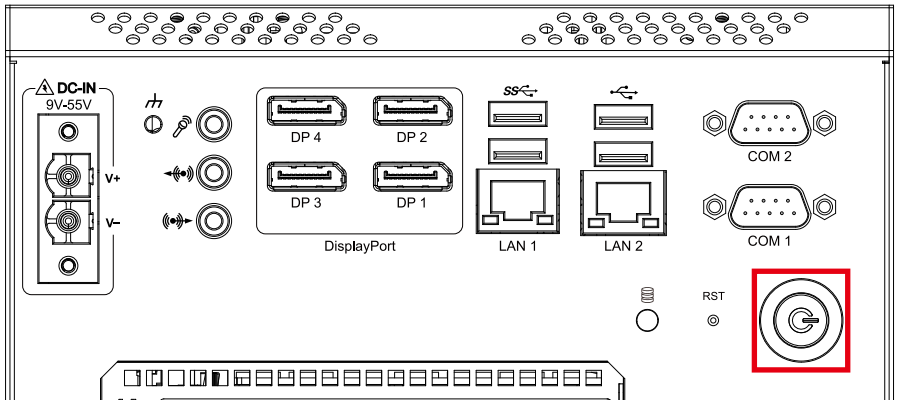


2.2.1 Reset Tact Switch



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.

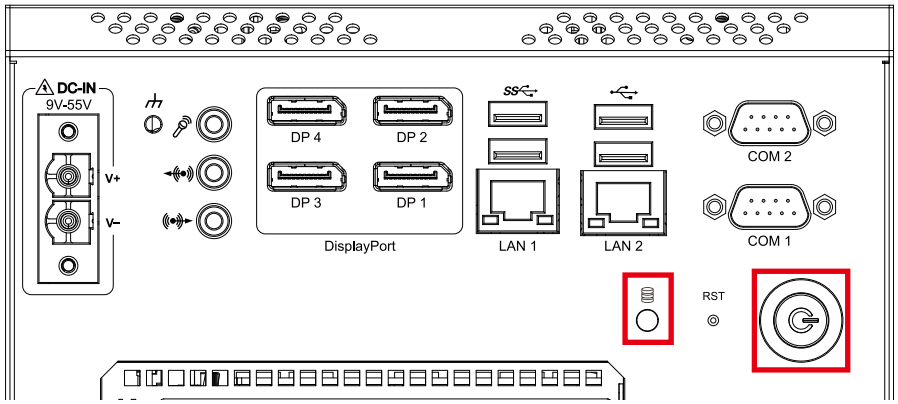
To power on the system, press the power button and then the Green LED is lightened.

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

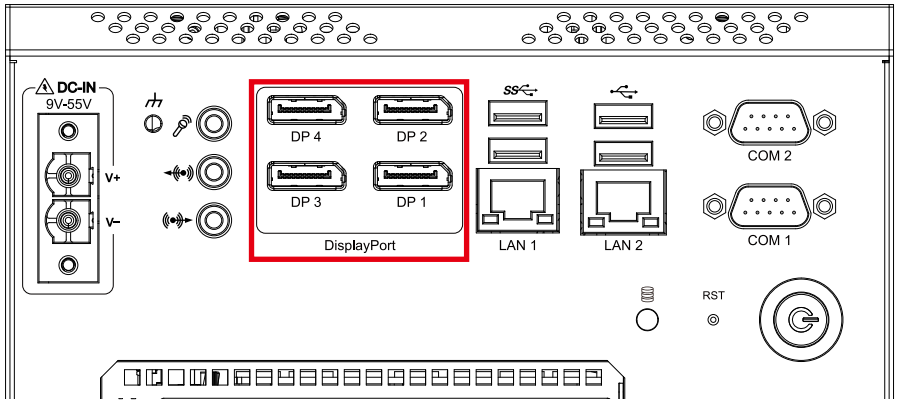


HDD LED/Green : A Hard Disk LED. If the LED is on, it indicates that the system's storage is functional. If it is off, it indicates that the system's storage is not functional. If it is flashing, it indicates data access activities.

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

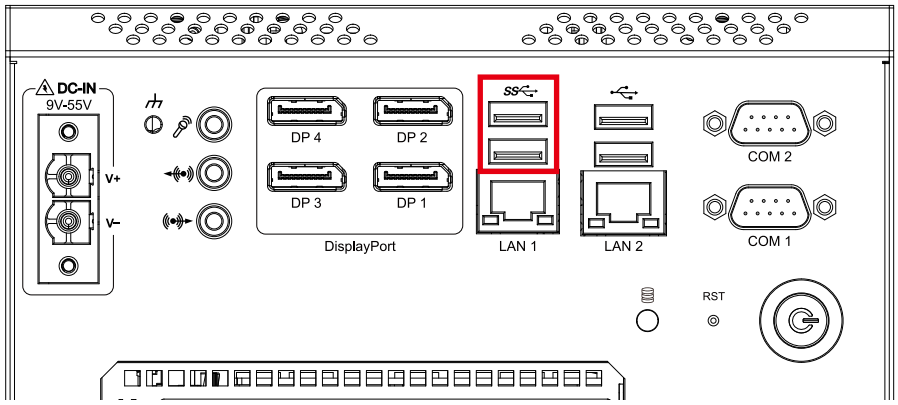
LED Color	Indication	System Status
Green	HDD	• On/Off : Storage status, function or not. • Twinkling : Data transferring.
Green	Power	System power status (on/off)

2.2.4 DisplayPort



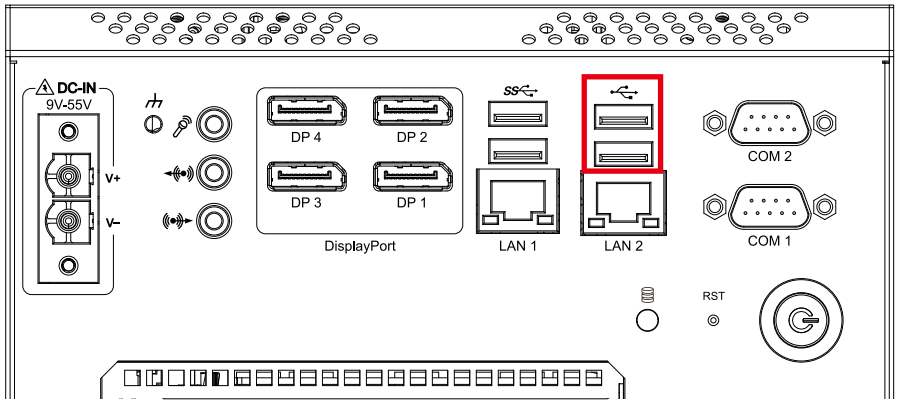
These DisplayPort are for DisplayPort monitor or other DisplayPort compatible devices.

2.2.5 USB 3.0



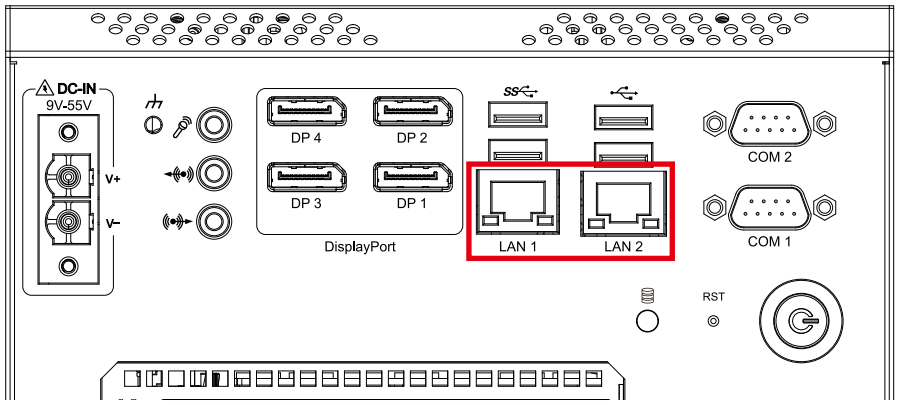
These 9-pin USB ports are for USB 3.0 devices.

2.2.6 USB 2.0



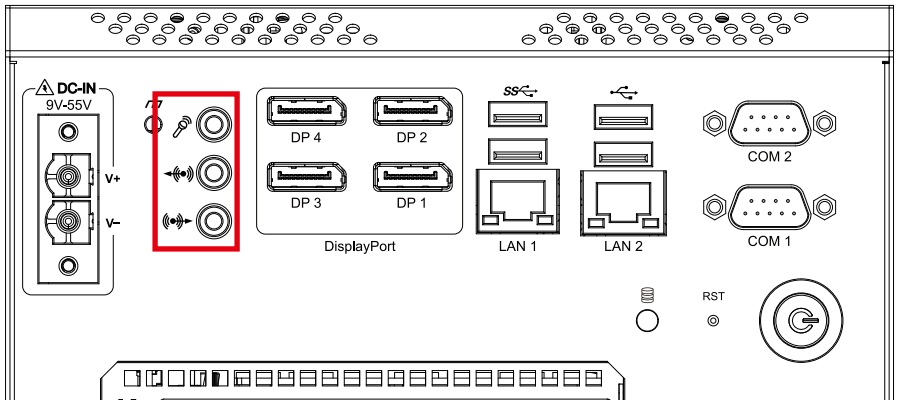
These 4-pin USB ports are for USB 2.0/1.1 devices.

2.2.7 Ethernet Port



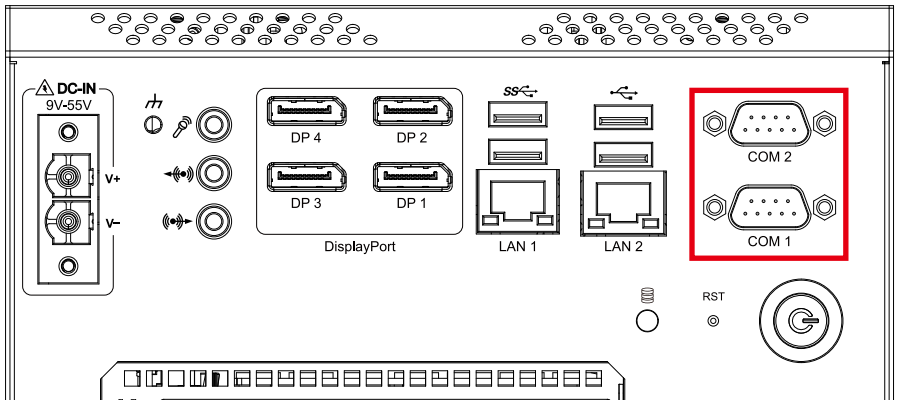
These ports allow Gigabit connection to Local Area Network (LAN) through a network hub.

2.2.8 Audio Connector

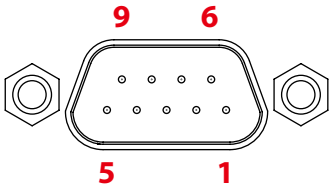


Line In port (light blue) : This port connects to the CD, DVD player, or other audio sources.
Line Out port (lime) : This port connects to a headphone or a speaker.
Microphone Port (pink) : This port connects to a microphone.

2.2.9 Serial Port

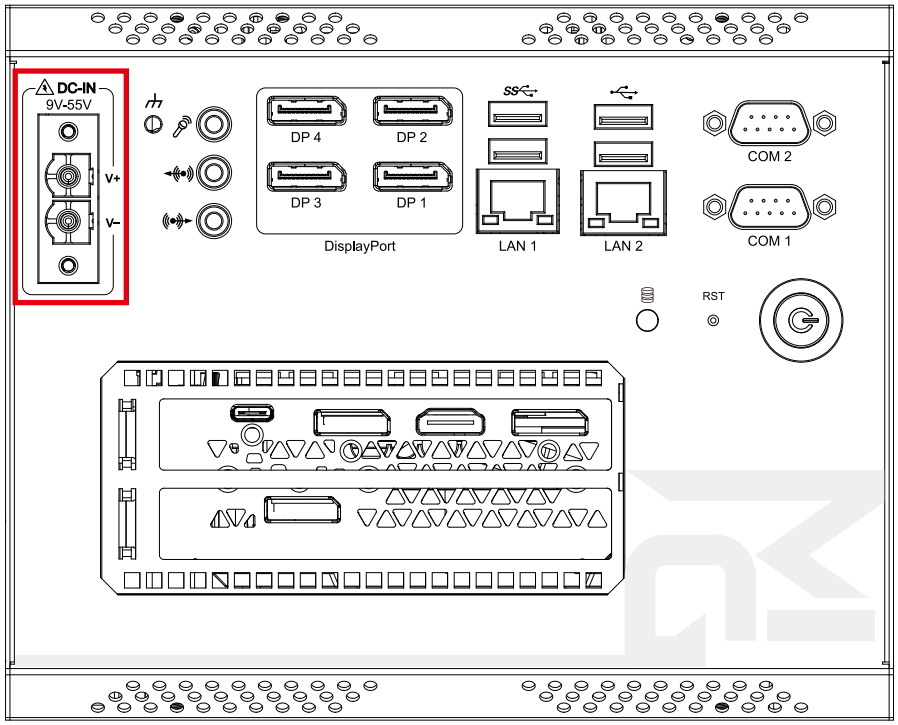


These 9-pin COM ports are for RS-232 devices.
The pin assignments are listed in the following :



Pin No.	Description	Pin No.	Description
1	Data carrier detect	2	Receive data
3	Transmit data	4	Data terminal ready
5	Signal ground	6	Data set ready
7	Request to send	8	Clear to send
9	Ring indicator		

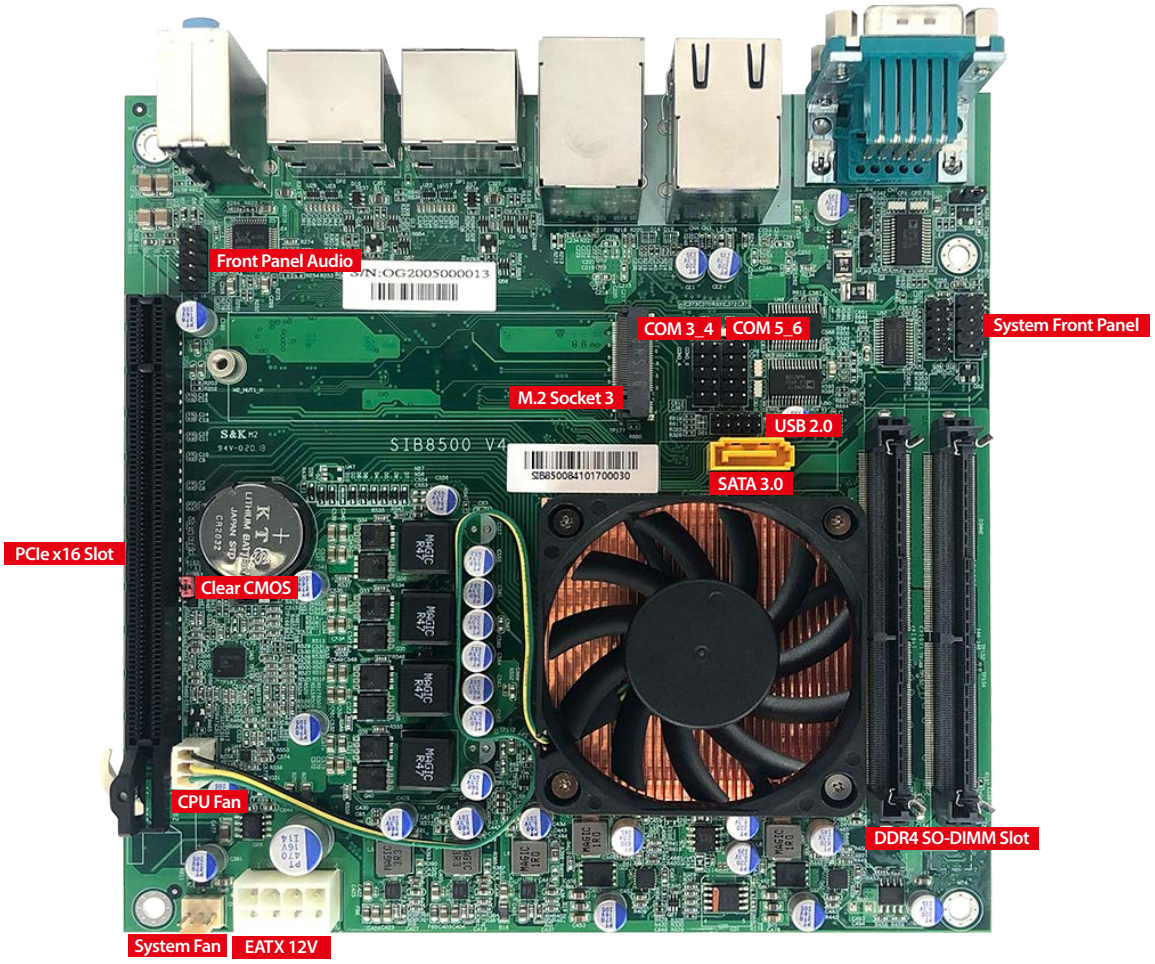
2.2.10 DC-in



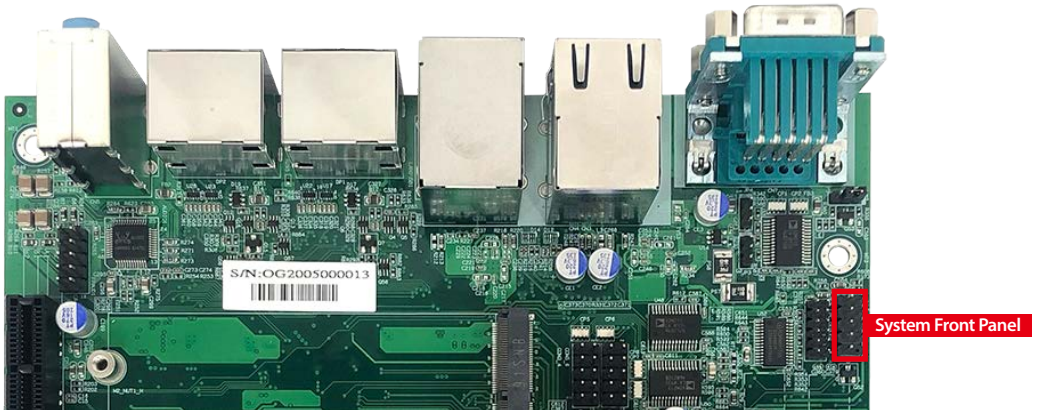
This 2-pin DC-in support 9V~55V DC power input.

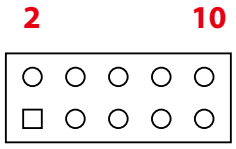
2.3 Main Board Expansion Connectors

2.3.1 Inside View of MIG-1000 Main Board with Connector Location



2.3.2 System Front Panel Connector (10-1pin)

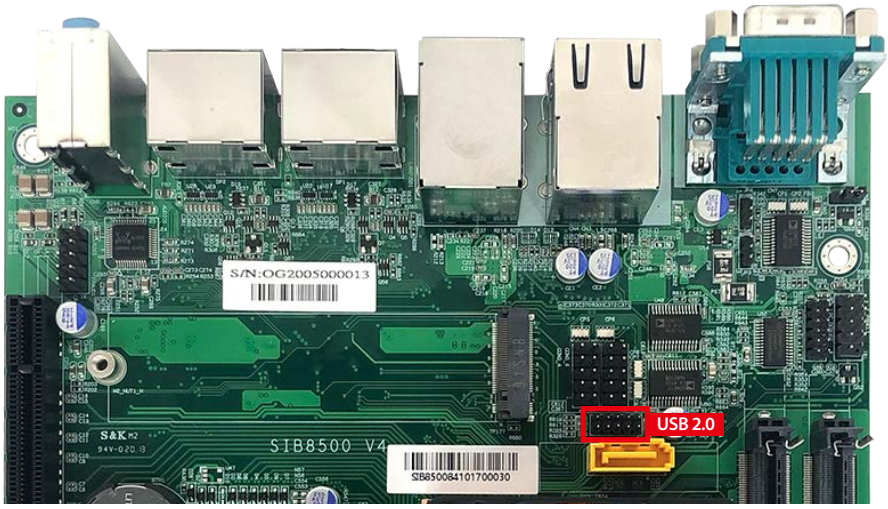


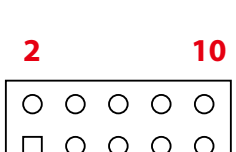


Pin No.	Description	Pin No.	Description
1	HDD LED +	2	Power LED +
3	HDD LED -	4	Power LED -
5	Reset	6	GND
7	GND	8	Power ON
9	NC	10	

2.3.3 USB 2.0 Pin Header (2.0mm pitch)

1 x USB 2.0 pin headers support additional 2 USB 2.0 ports

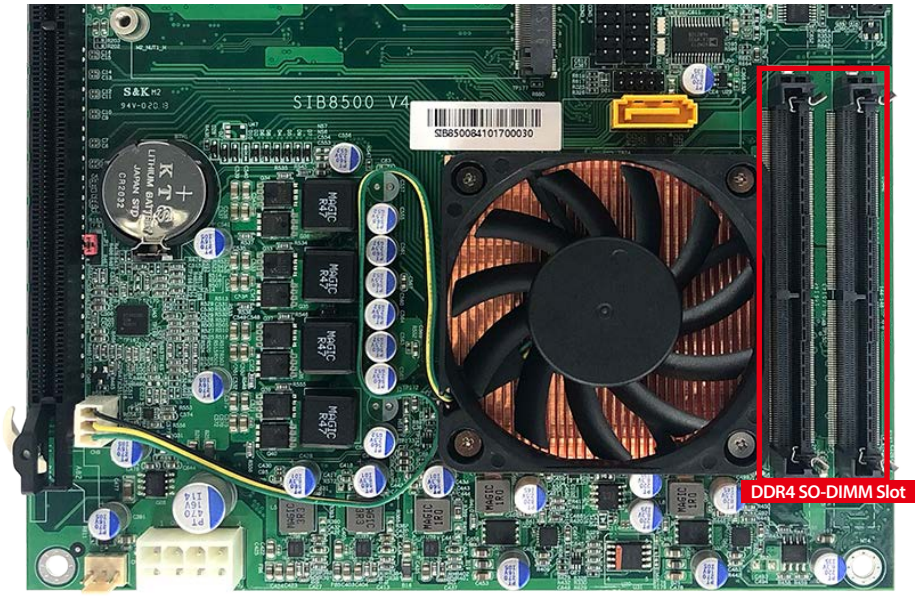




Pin No.	Description	Pin No.	Description
1	USB Power	2	USB Power
3	D-	4	D-
5	D+	6	D+
7	GND	8	GND
9	GND	10	GND

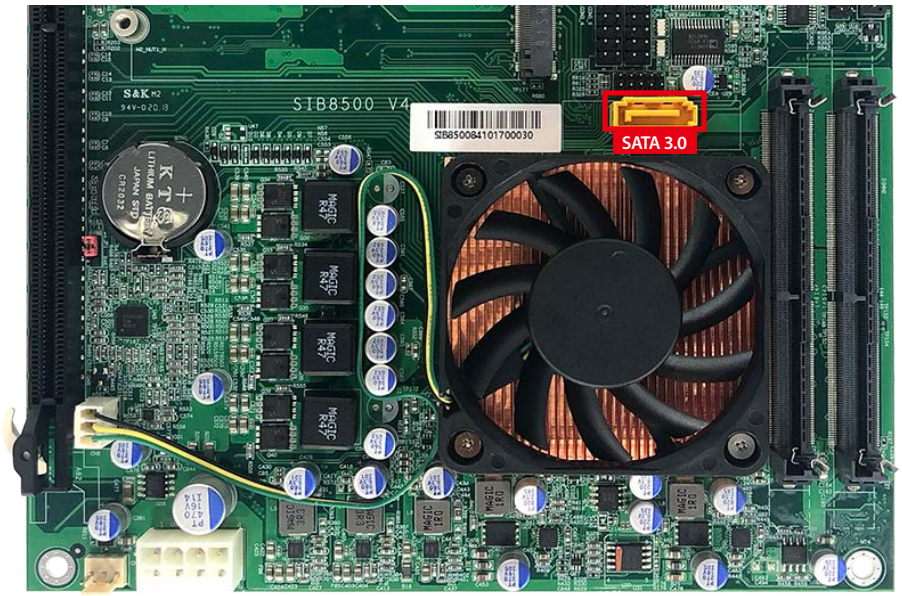
2.3.4 DDR4 SO-DIMM Slot

2 x SO-DIMMs, Max. 32GB, DDR4 3200MHz/2400MHz *
Support dual channel memory



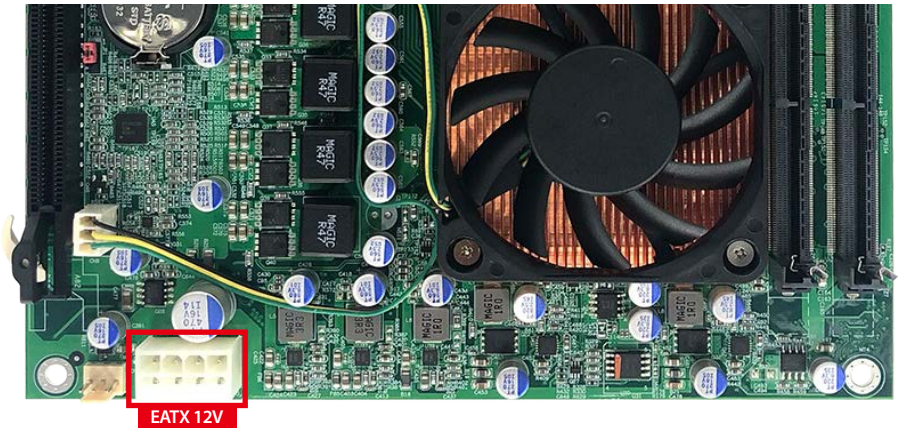
2.3.5 SATA 6.0Gb/s Connectors

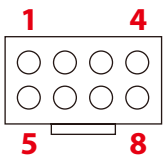
These connectors connect to Serial ATA 6.0 Gb/s Hard disk drives via Serial ATA 6.0 Gb/s signal cables.



2.3.6 ATX Power Connectors (8-pin EATX 12V)

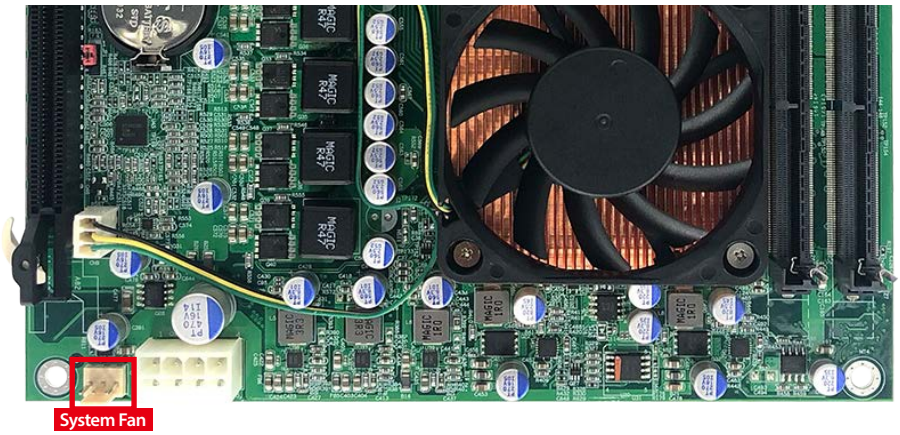
This port connects to power supply.
Power connector defined.

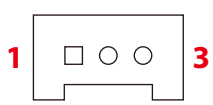




Pin No.	Signal	Pin No.	Signal
1	Ground	2	Ground
3	Ground	4	Ground
5	+12V	6	+12V
7	+12V	8	+12V

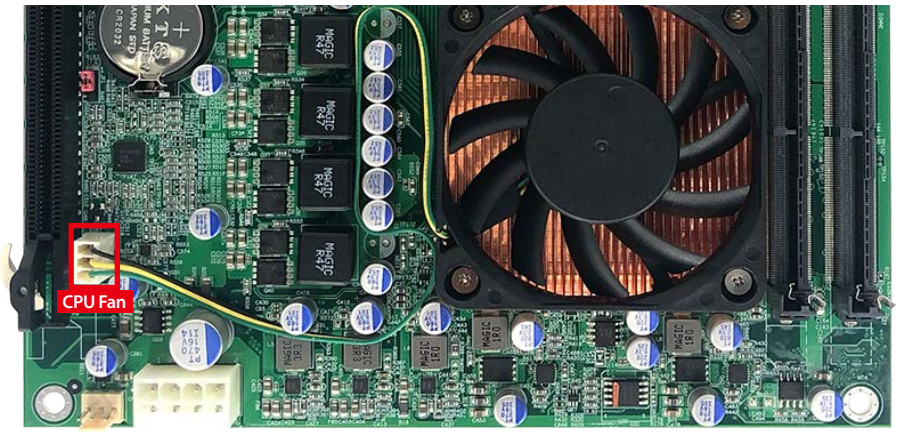
2.3.7 System Fan Connector (3-Pin)

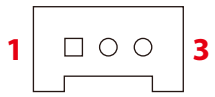




Pin No.	Description
1	GND
2	FAN_PWR
3	FAN_PWM

2.3.7 CPU Fan Connector (3-Pin)

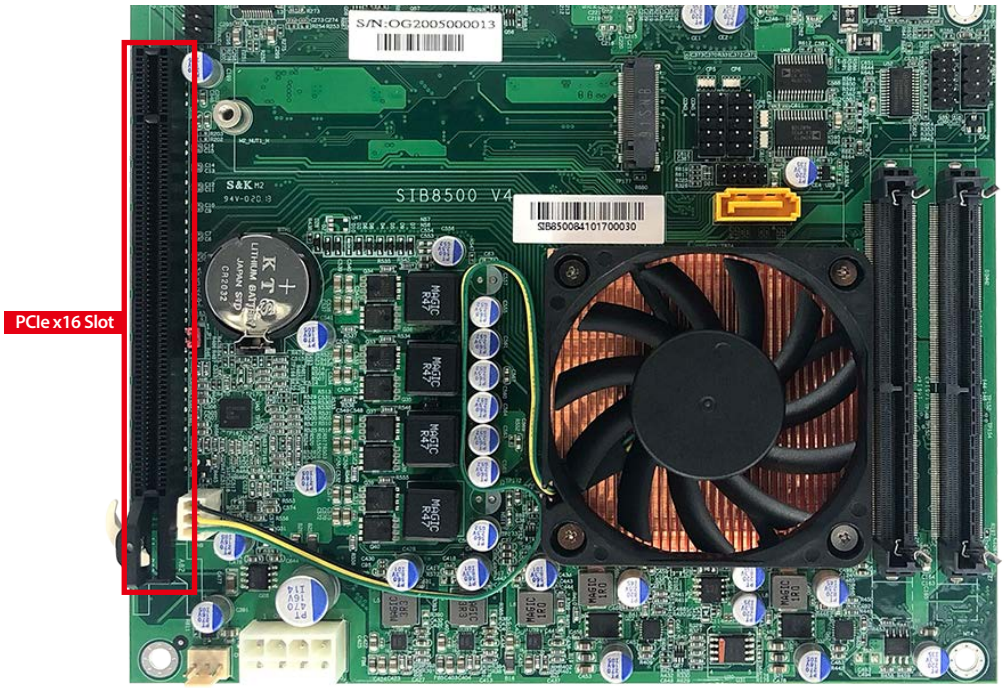




Pin No.	Description
1	GND
2	FAN_PWR
3	FAN_PWM

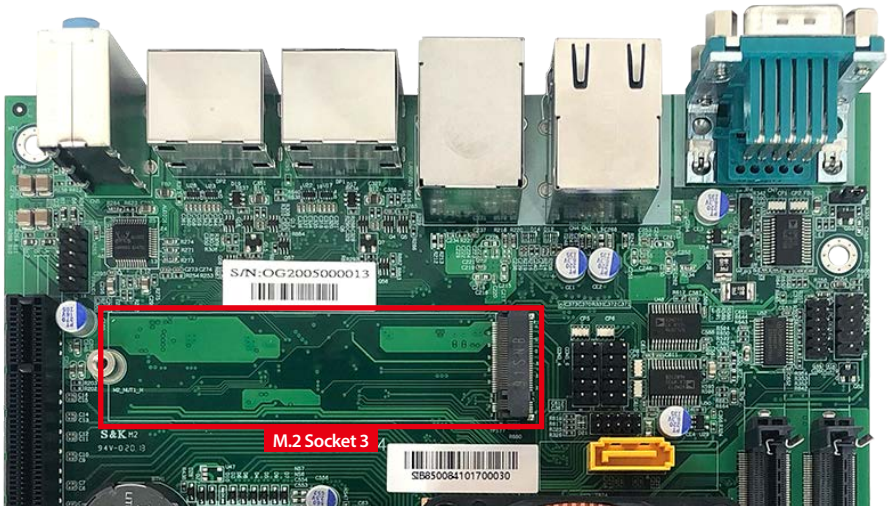
2.3.8 PCIe x16 Slot

This mainboard has one PCI Express 3.0/2.0 x16 slot (with PCIe Gen3 x8 lane) that supports PCI Express 3.0/2.0 x16 graphics cards complying with the PCI Express specifications.



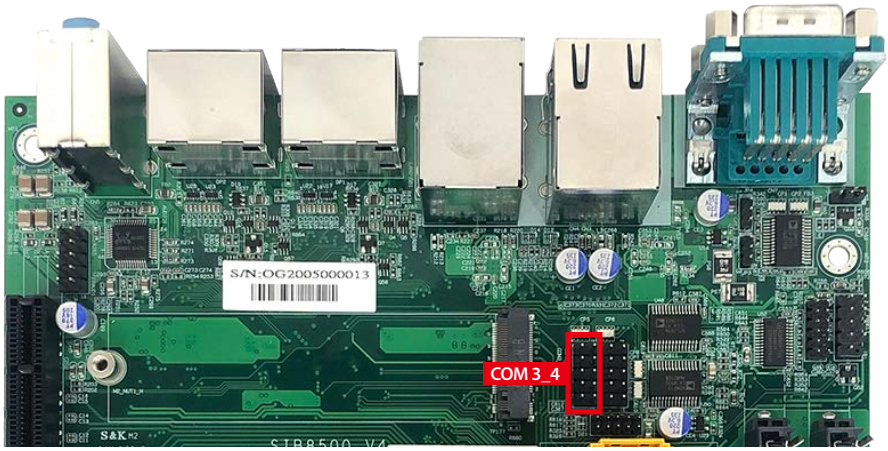
2.3.9 M.2 Socket3

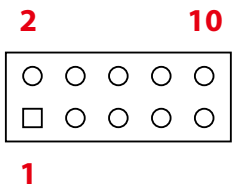
Support M Key type 2280 Storage devices. (PCIe x4 mode)



2.3.10 COM Ports Connectors (COM3_4)

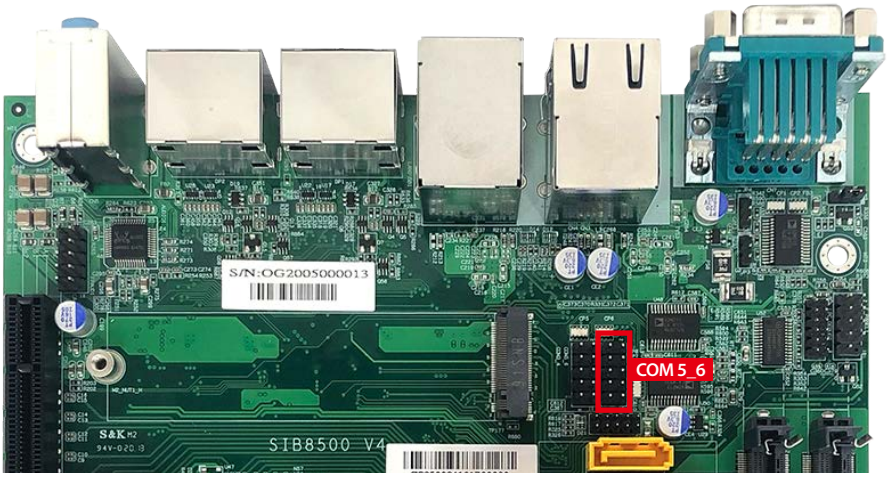
This port connects to power supply.
Power connector defined.

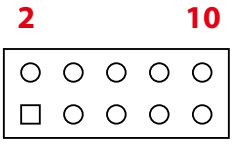




Pin No.	Description	Pin No.	Description
1	C3_CTSC#	2	C4_CTSD#
3	C3_RXC	4	C4_RXD
5	C3_TXC	6	C4_TXD
7	C3_RTSC#	8	C4_RTSD#
9	GND	10	GND

2.3.11 COM Ports Connectors (COM5_6)

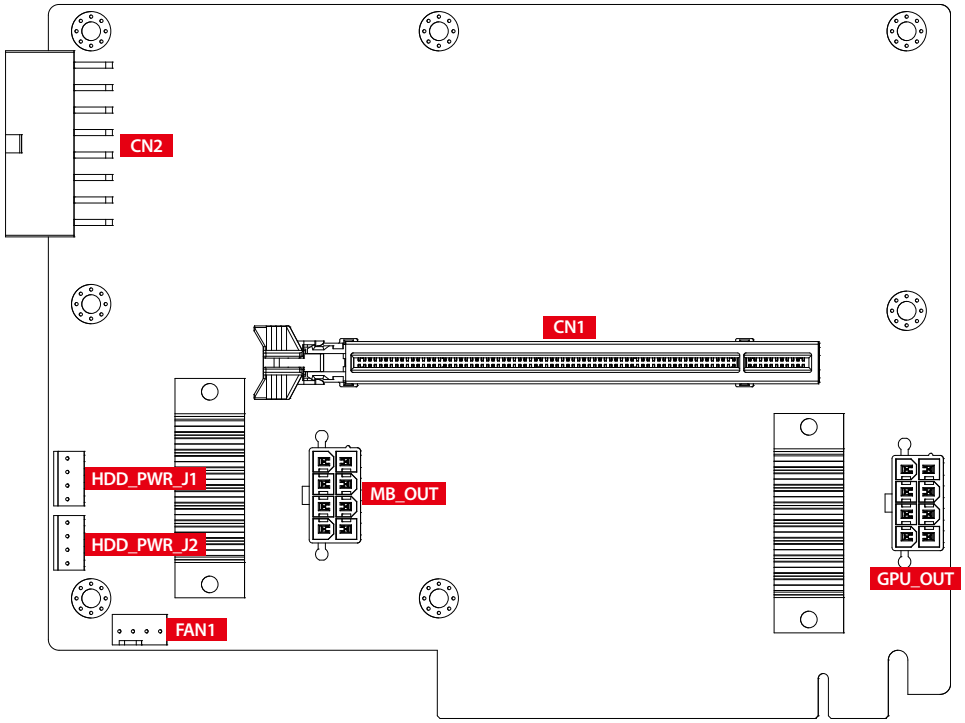




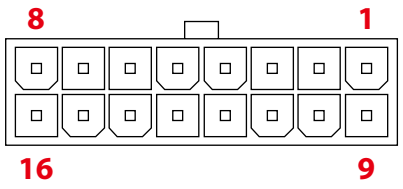
Pin No.	Description	Pin No.	Description
1	C5_CTSC#	2	C6_CTSD#
3	C5_RXC	4	C6_RXD
5	C5_TXC	6	C6_TXD
7	C5_RTSC#	8	C6_RTSD#
9	GND	10	GND

2.4 Main Board Expansion Connectors

2.4.1 Top View (Component Side) of MIG-1000-BP Backplane With Connector Location

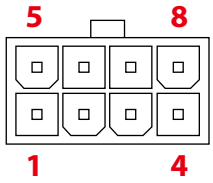


2.4.1.1 CN2 : DC Input Power Connector



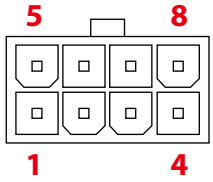
Pin No.	Definition	Pin No.	Definition
1	GND	2	GND
3	GND	4	GND
5	+12V	6	+12V
7	+12V	8	+12V
9	GND	10	GND
11	GND	12	GND
13	+12V	14	+12V
15	+12V	16	+12V

2.4.1.2 MB_OUT : DC Output for Motherboard Power Connector



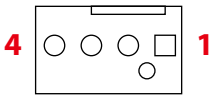
Pin No.	Definition	Pin No.	Definition
1	GND	2	GND
3	GND	4	GND
5	+12V	6	+12V
7	+12V	8	+12V

2.4.1.3 GPU_OUT : DC Output for Graphic Card Power Connector



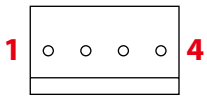
Pin No.	Definition	Pin No.	Definition
1	GND	2	GND
3	GND	4	GND
5	+12V	6	+12V
7	+12V	8	+12V

2.4.1.4 FAN1 : Fan Connector



Pin No.	Fuction
1	GND
2	+12V (2A max)
3	NC
4	NC

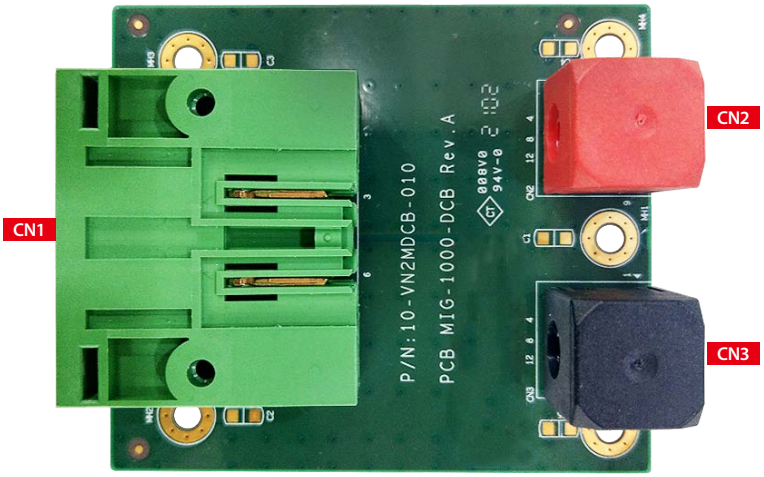
2.4.1.5 HDD_PWR_J1, HDD_PWR_J2 : SATA Power Connector



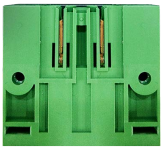
Pin No.	Definition	Pin No.	Definition
1	+12V	2	GND
3	GND	4	+5V

2.4.2 DC- in Board Connectors

MIG-1000-DCB support 9V~55V DC power input by wire-to-board connector on the top side.



2.4.2.1 CN1 : DC Input Power Connector



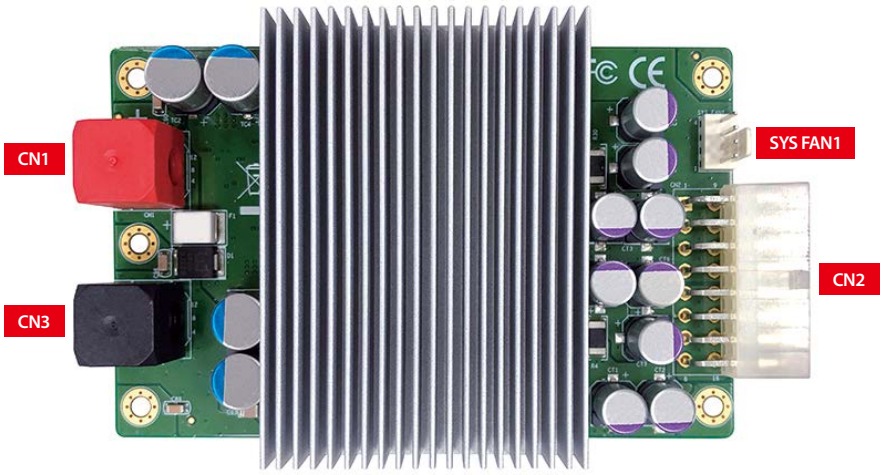
Pin No.	Definition
1	V+
2	V-

2.4.2.2 CN2 : DC Output Power Connector

Pin No.	Definition
CN2	DC_OUT
CN3	GND

2.4.3 Power Board Connectors

Wide range power module WPM-120 support 9V~55V DC Input power module, 12V output (750W).



2.4.3.1 CN1, CN3 : DC Input Power Connector

Connector	Description
CN1	VIN +
CN3	VIN -

2.4.3.2 CN2 : DC Output Power Connector

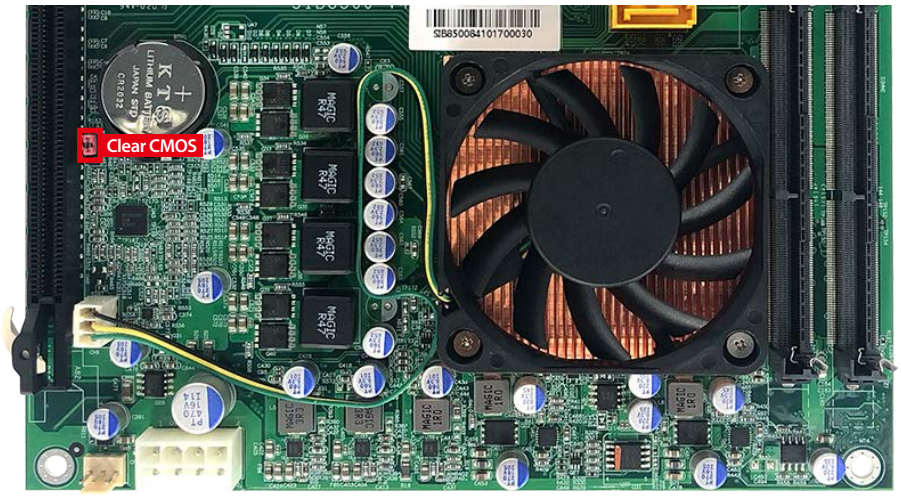
Pin No.	Definition	Pin No.	Definition
1	GND	2	GND
3	GND	4	GND
5	+12V	6	+12V
7	+12V	8	+12V
9	GND	10	GND
11	GND	12	GND
13	+12V	14	+12V
15	+12V	16	+12V

2.4.3.3 SYS FAN : Fan Connector

The pin assignments of SYS FAN is listed in the following table.

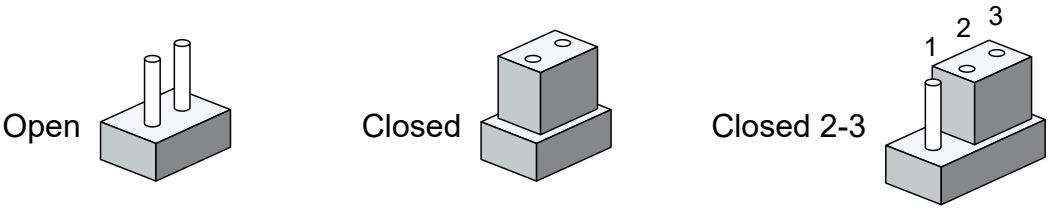
Pin No.	Definition	Pin No.	Definition
1	GND	2	NC
3	NC	4	+12V

2.5 Main Board Jumper Settings

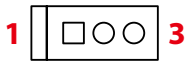


The figure below is the top view of the system main board which is the main board. It shows the location of the jumpers and the switches.

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.



Clear CMOS header (3pin)



Pin No.	Description
1	VBAT
2	VBAT_IN
3	GND

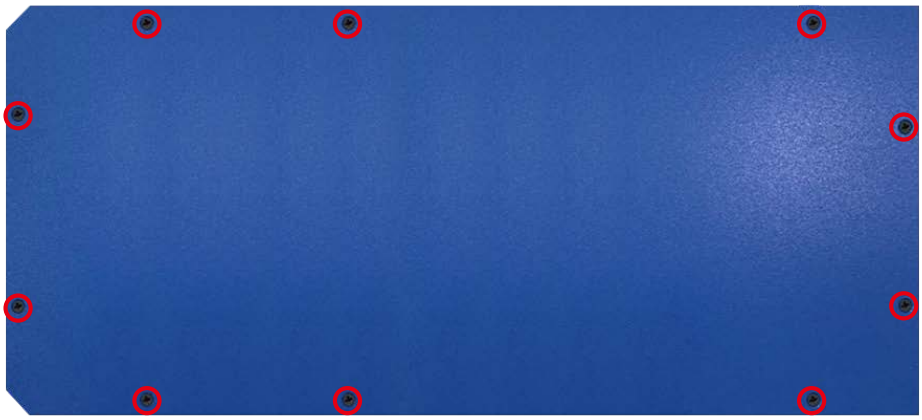
Jump Default 1-2

3

SYSTEM SETUP

3.1 How to Open Your MIG-1000

Step 1 Remove Top Cover ten M3x5L screws.



Step 2 Fisish.

3.2 Installing DDR4 SO-DIMM Modules

Step 1 Install DDR4 RAM module into SO-DIMM slot.

Step 2 Make sure the RAM module is locked by the memory slot.

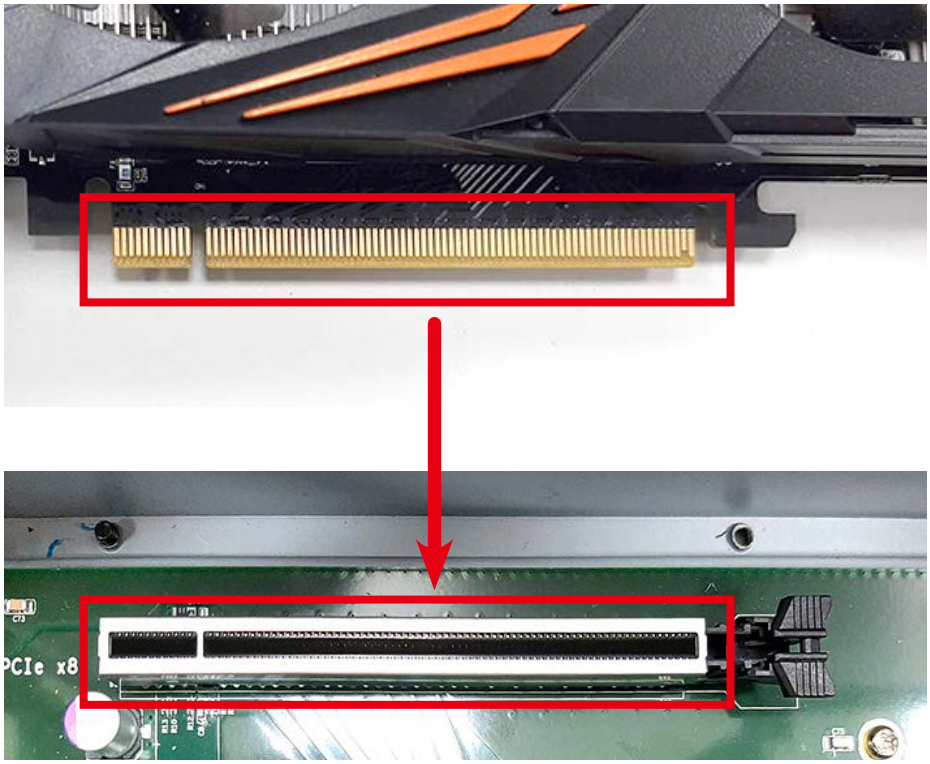
3.3 Installing M.2 (Key M)

Step 1 Install M.2 card into the M.2 slot.

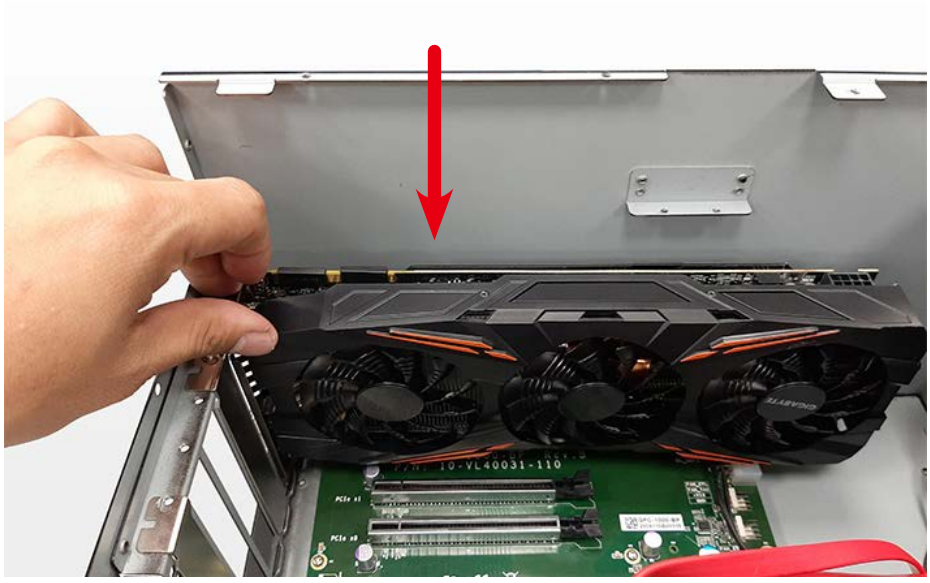
Step 2 Fasten one M3 screw.

3.4 Installing PCI/PCIe Card

Step 1 Please align the gold finger of the PCIe card with the slot.

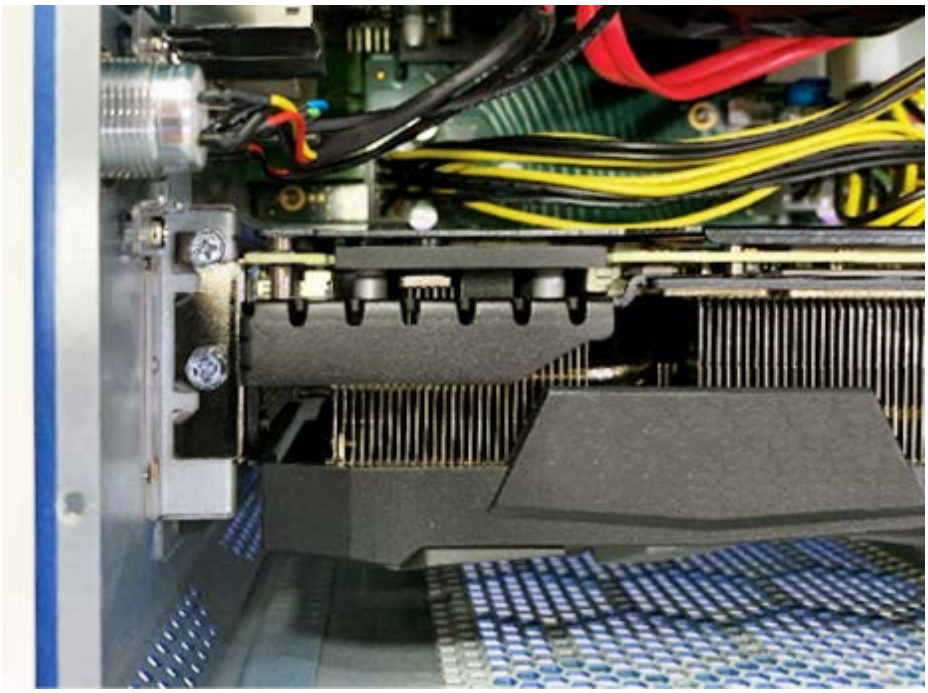


Step 2 Press down the graphics card.



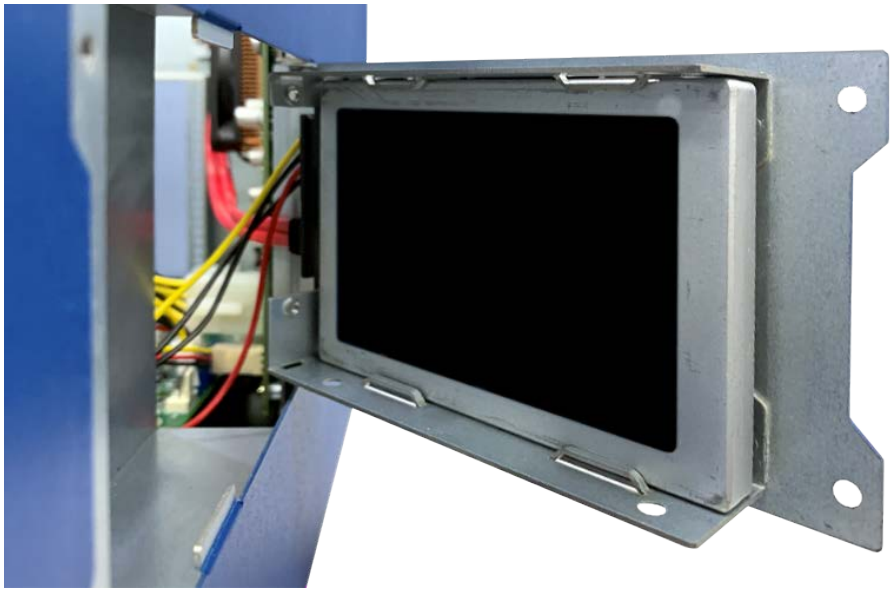
Step 3 Lock screw.

Step 4 Finish.

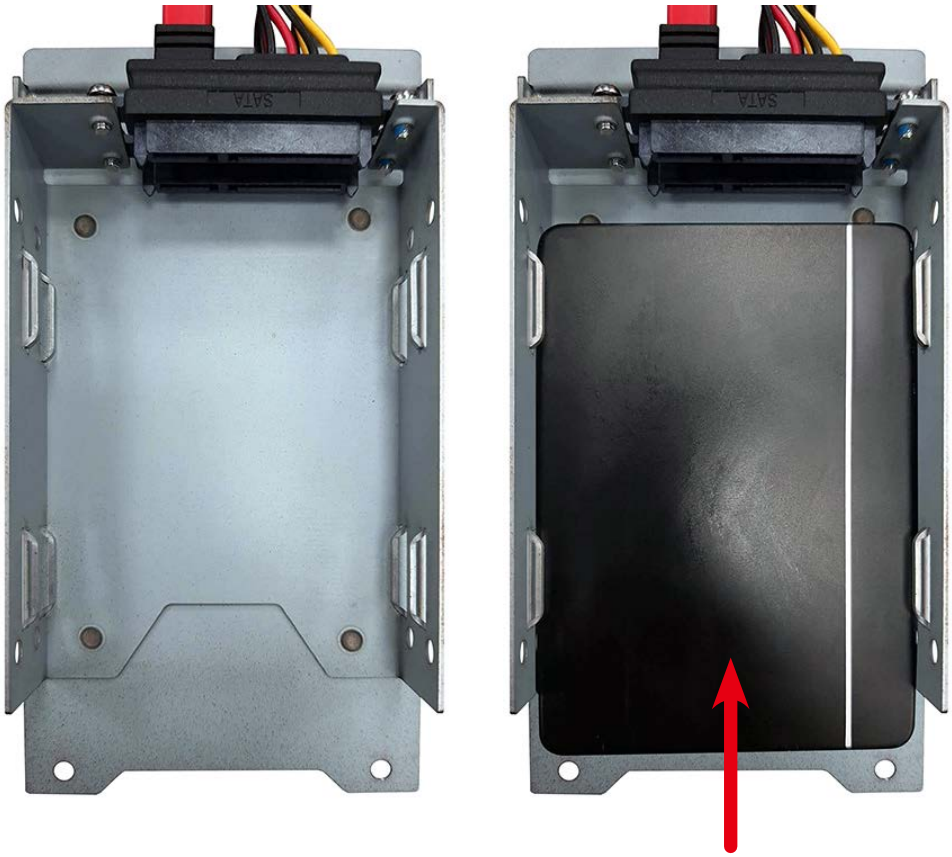


3.5 Installing SSD/HDD

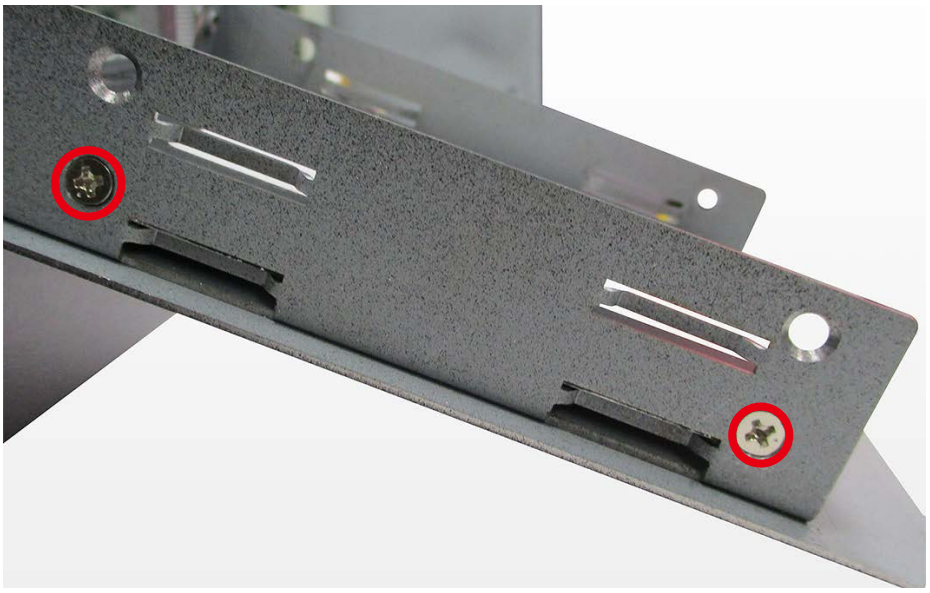
Step 1 Open HDD/SSD tray.



Step 2 Push the HDD/SSD into the slot.



Step 3 Fasten four M3 screw.



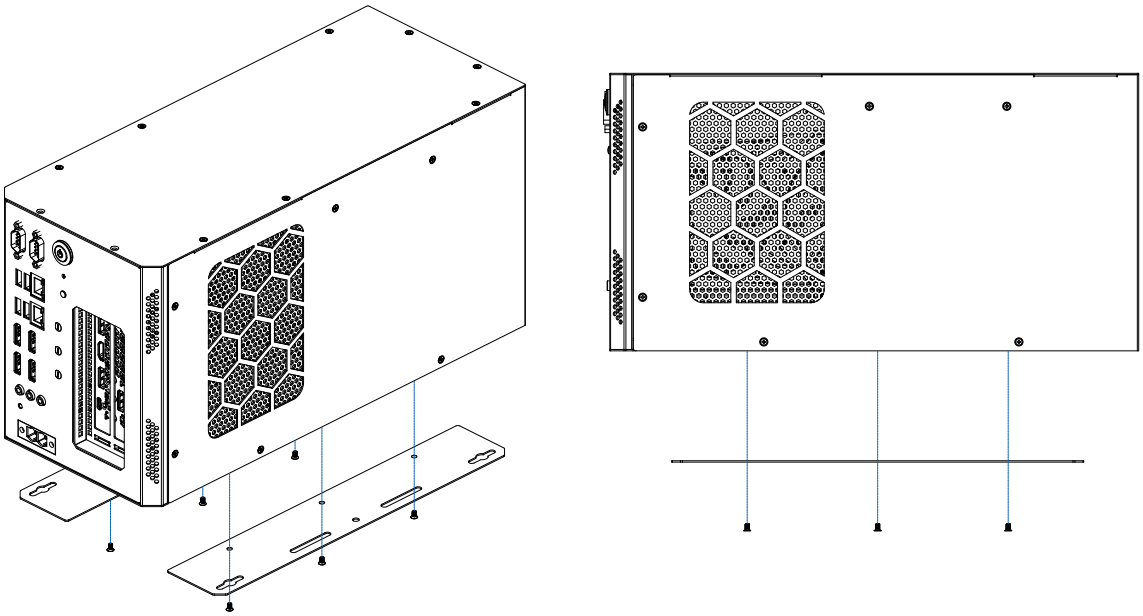
3.6 Installing Antenna Cable

Step 1 Check Antenna cable and washers.

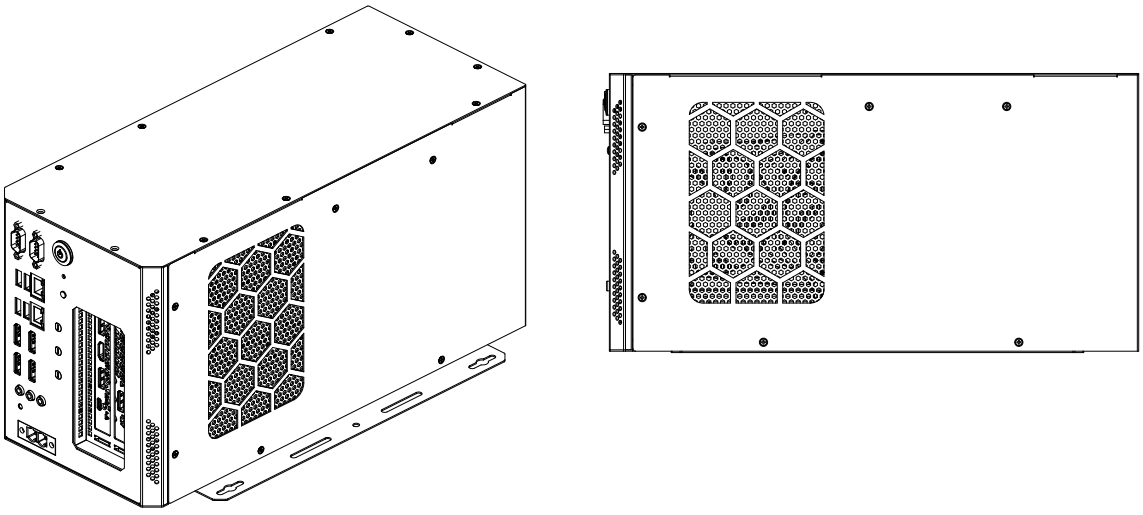
Step 2 Put Antenna cable connector into the hole on rear panel and fasten the washer 1, washer 2 and washer 3 on Antenna cable connector.

3.7 Mount Your MIG-1000

Step 1 Ensure the screw holes on the right and left side of upper case match the ones on MIG-1000 wall mount bracket.



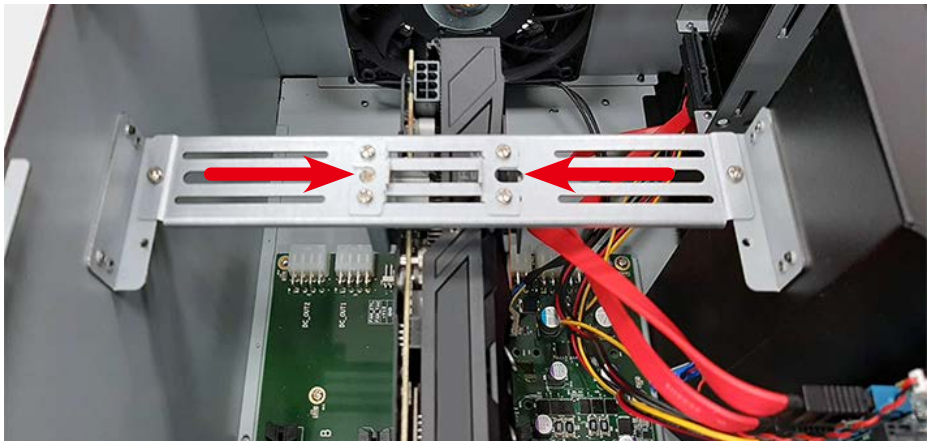
Step 2 Fasten Six M3 screws then finish.



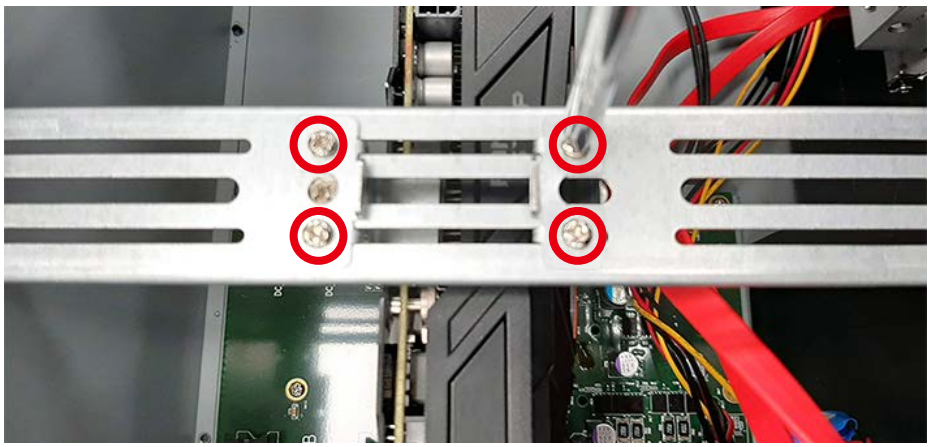
3.8 Installing Hold-down Kit

Hold-down Kit

Step 1 Hold two brackets to the graphics card.



Step 2 Fasten four M3 screws.



4

BIOS SETUP

4.1 Entering BIOS Setup

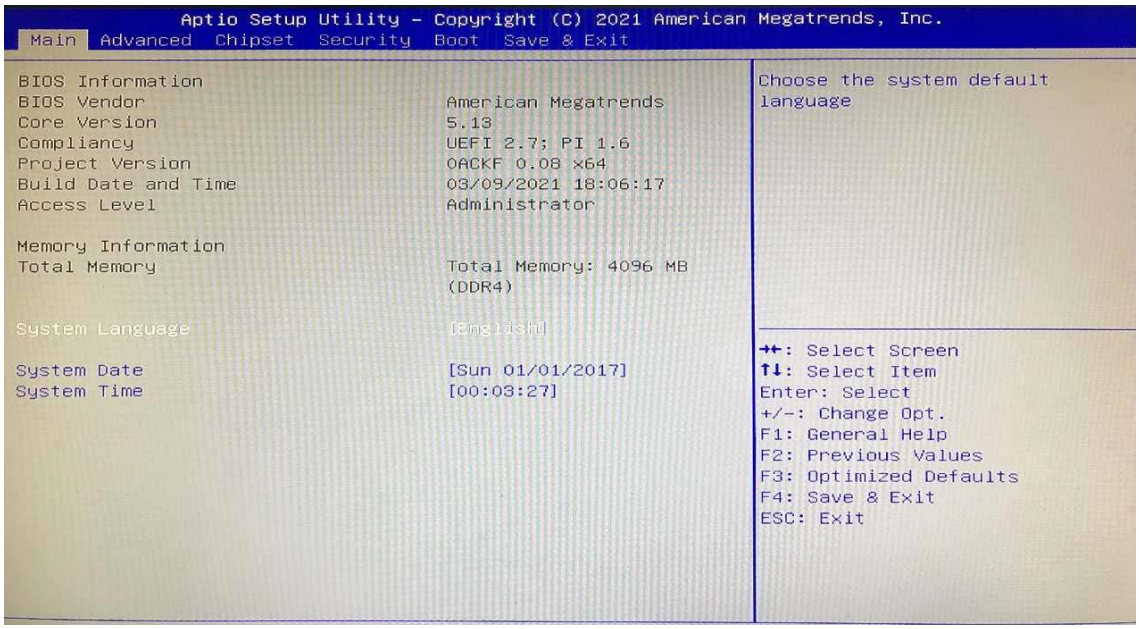


Figure 4-1 : Entering Setup Screen

BIOS provide an interface for user to check and change system configuration. The BIOS setup program is accessed by pressing the <Del> key when POST display output then main BIOS Setup menu screen is displayed.

4.2 Main Menu

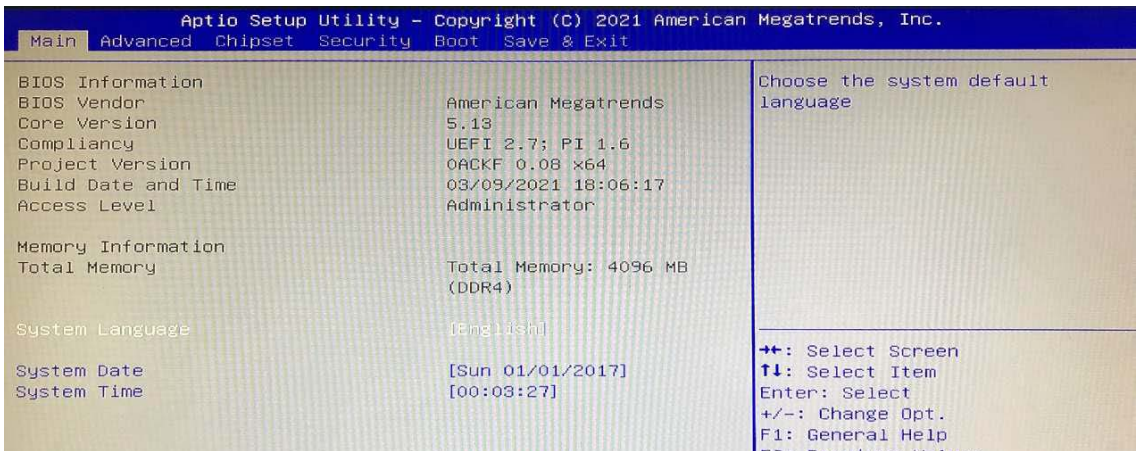


Figure 4-2 : BIOS Main Menu

The main menu displays BIOS version and system information. There are two options on Main menu.

System Date

Set the date. Use <Tab> to switch between date elements.

System Time

Set the time. Use <Tab> to switch between time elements.

4.3 Advanced

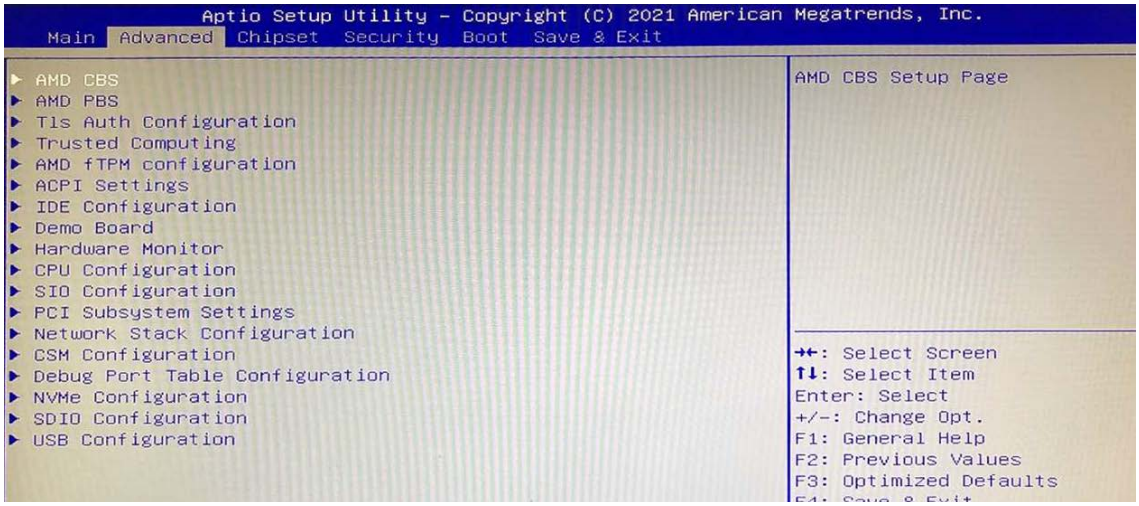


Figure 4-3 : BIOS Advanced Menu

Select advanced tab to enter advanced BIOS setup options, such as CPU configuration, SATA configuration, and USB configuration, or etc.

4.3.1 AMD CBS Related Information

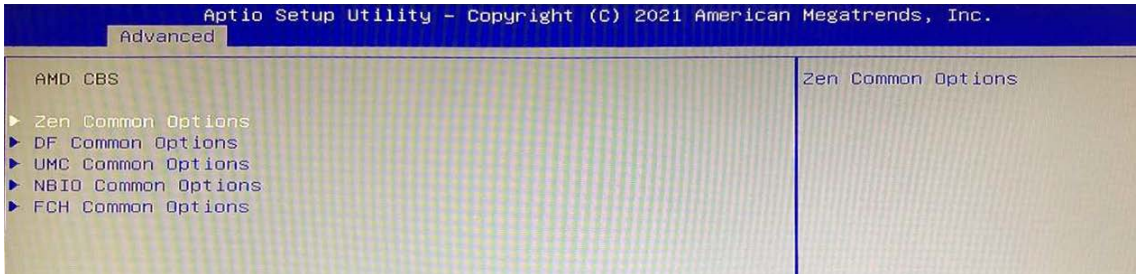


Figure 4-3-1 : AMD CBS Related Information Menu

4.3.1.1 Zen Common Options

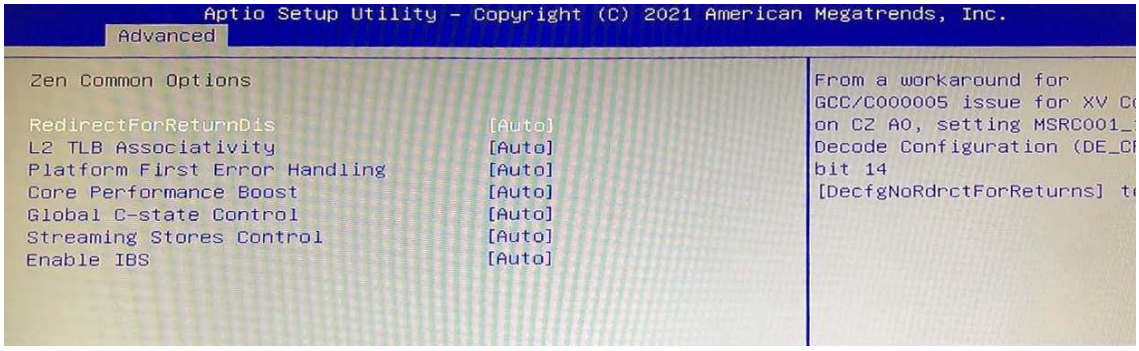


Figure 4-3-1-1 : Zen Common Options Menu

Redirect For ReturnDis
From a workaround for GCC/C000005 issue for XV Core on CZ A0, setting MSRC001_1029 Decode Configuration (DE_CFG) bit 14[DecfgnoRdrctForReturns] to 1.

L2 TLB Associativity
0-L2 TLB ways [11:8] are fully associative. 1- =L2 TLB ways [11:8] are 4K only.

Platform First Error Handing
Enable/disable PFEH, cloak individual banks, and mask deferred error interrupts from each bank.

Core Performance Boost
AMD Turbo Core Enable/disable.

Global C-state Control
Controls IO based C-state generation and DF C-State.

Streaming Stores Control
Enable or disables the streaming stores functionality.

Enable IBS
When IBS is enabled, SpecLockMap and Stack Engine are diableed.

4.3.1.2 DF Common Options

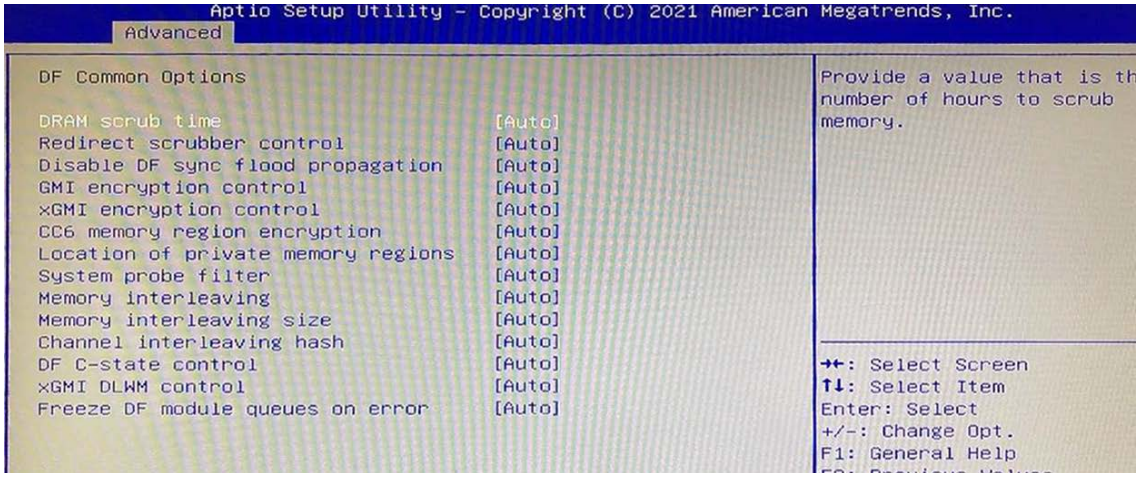


Figure 4-3-1-2 : DF Common Options Menu

DRAM scrub time
Provide a value that is the number of hours to scrub memory.

Redirect scrubber control
Control DF : RedirScrubCtrl [EnRedirScrub].

Disable DF sync flood propagation
Control DF : PIEConfig [DisSyncFloodProp].

GMI encryption control
Control GMI link encryption.

xGMI encryption control
Control xGmi link encryption.

CC6 memory region encryption
Control whether or not the CC6 save/restore memory is encrypted.

Location of private memory region
Controls whether, or not the private memory regions (PSP, SMU and CC6) are at the top of DRAM or distributed. Note that distributed requires memory on all dies. Note that it will always be the top of DRAM if some dies don't have memory regardless of this option's setting.

System probe filter
Controls whether, or not the probe filter is enabled. Has no effect on parts where the probe filter is fuse disabled.

Memory interleaving
Controls fabric level memory interleaving (AUTO, none, channel, die, socket). Note. That channel, die, and socket has requirement on memory populationsand it will be ignored if the memory doesn't support the selected option.

Memory interleaving size
Controls the memory interleaving size. The valid values are AUTO, 256 bytes, 512bytes, 1Kbytes or 2Kbytes. This determines the starting address of the interleave (bit8, 9, 10 or 11).

Channel interleaving hash
Controls whether or not the address bits are hashed during channel interleave mode. This field should not be used unless the interleaving is set to channel and the interleaving size is 256 or 512 bytes.

DF C-state control
Enable/Disable DF C-states (DF : CstateControl[DfCstateDisable])

xGMI DLWM control
Controls xGMI dynamic link width management feature.

Freeze DF module queues on error
Controls
DF : DfGlobalCtrl[DisImmSyncFloodOnFatalError].
Disabling this option sets
DF : DfGlobalCtrl[DisImmsyncFloodOnFatalError].

4.3.1.3 UMC Common Options

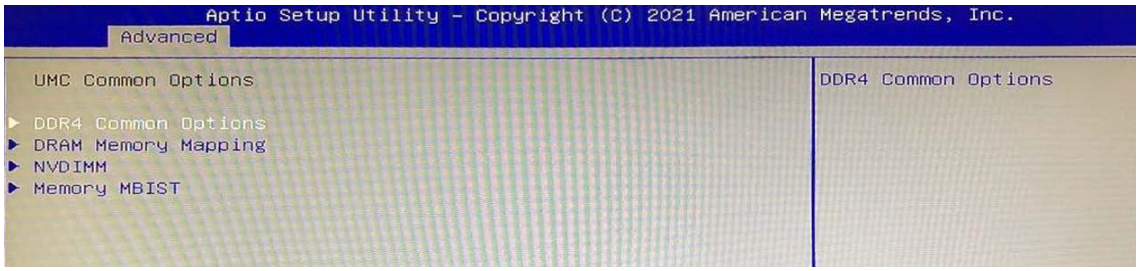


Figure 4-3-1-3 : UMC Common Options Menu

4.3.1.3.1 DDR4 Common Options

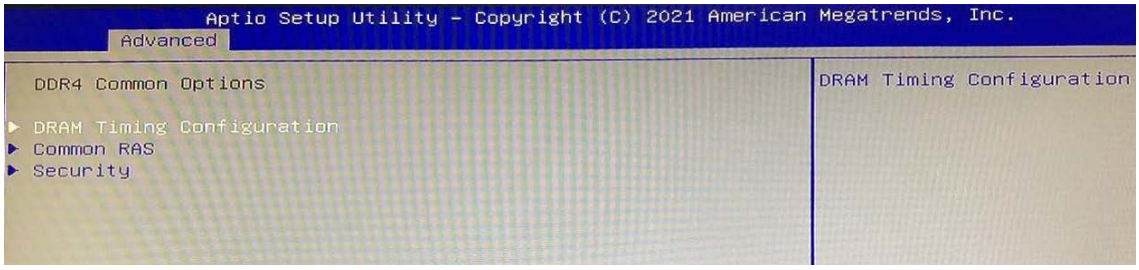


Figure 4-3-1-3-1 : DDR4 Common Options Menu

4.3.1.3.1.1 DRAM Timing Configuration

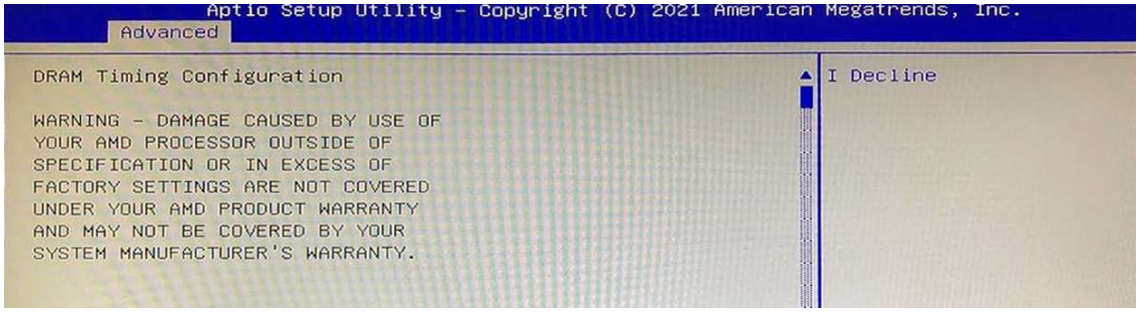


Figure 4-3-1-3-1-1 : DRAM Timing Configuration

Display DRAM related information and features supported.

4.3.1.3.1.2 Common RAS

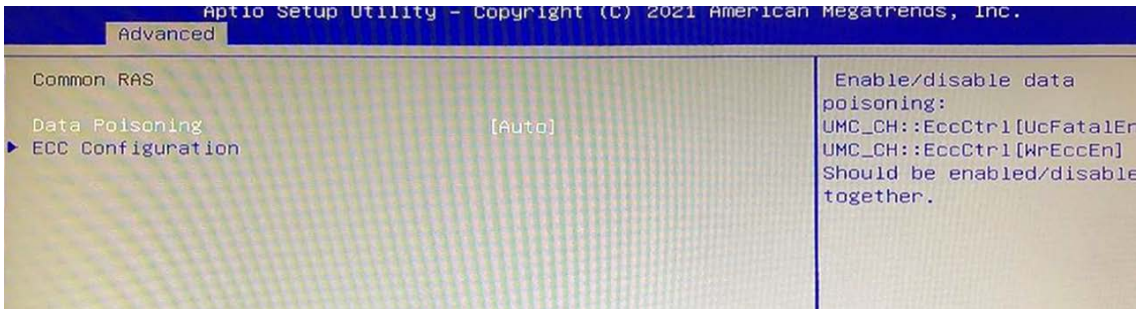


Figure 4-3-1-3-1-2 : Common RAS

Data Poisoning

Enable/disable data poisoning :
UMC_CH : EccCtrl [UcFataEn]
UMC_CH : EccCtrl [WreEccEN]
Should be enabled/disabled together.

4.3.1.3.1.3 ECC Configuration

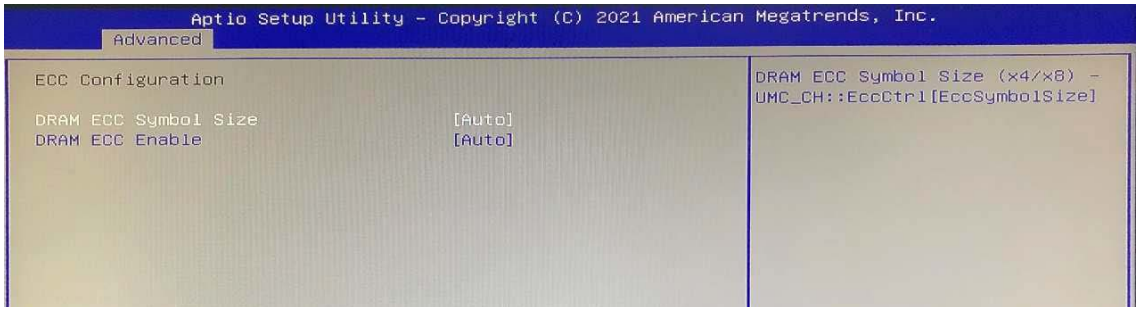


Figure 4-3-1-3-1-3 : ECC Configuration

DRAM ECC Symbol Size

DRAM ECC Symbol size (X4/X8)-UMC_CH : EccCtrl[EccSymbolSize]

DRAM ECC Enable

Use this option to enable/disable DRAM ECC. Auto will set ECC to enable.

4.3.1.3.2 Security

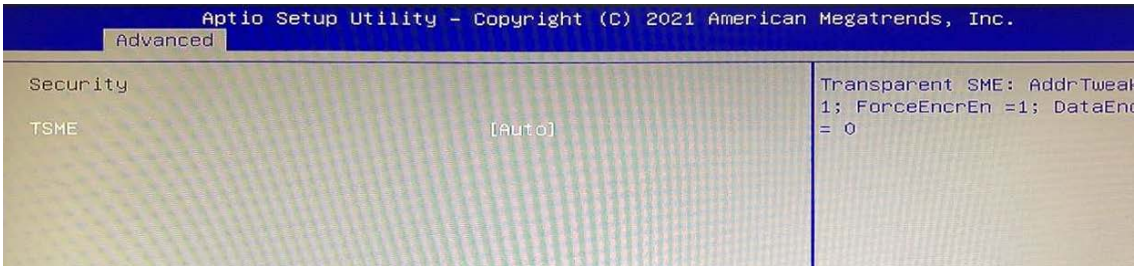


Figure 4-3-1-3-2 : Security

TSME
Transparent SME : AddrTweakEN =1; ForceEncrEN =1; DataEncrEn =0.

4.3.1.3.3 DRAM Memory Mapping

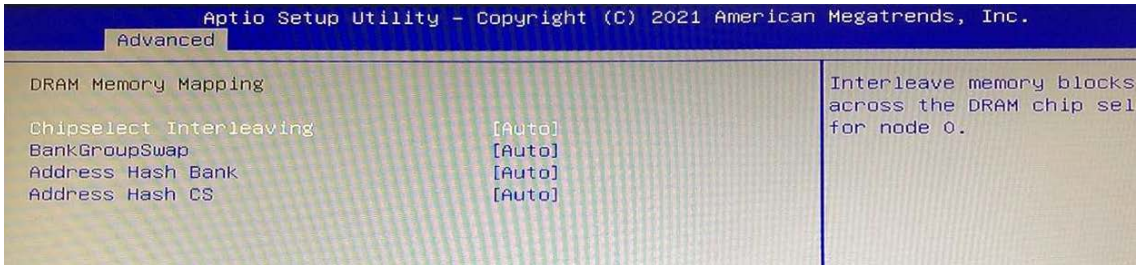


Figure 4-3-1-3-3 : DRAM Memory Mapping

Chipselect Interleaving
Interleave memory blocks across the DRAM chip selects for node 0.

BankGroupSwap
Enable or disable BankGroupSwap.

Address Hash bank
Enable or disable bank address hashing.

Address Hash CS
Enable or disable CS address hashing.

4.3.1.3.4 Memory MBIST

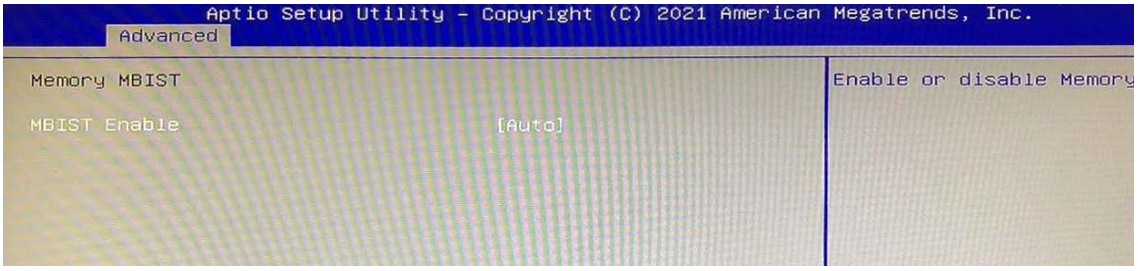


Figure 4-3-1-3-4 : Memory MBIST

MBIST Enable
Enable or disable Memory MBIST.

4.3.1.4 NBIO Common Options

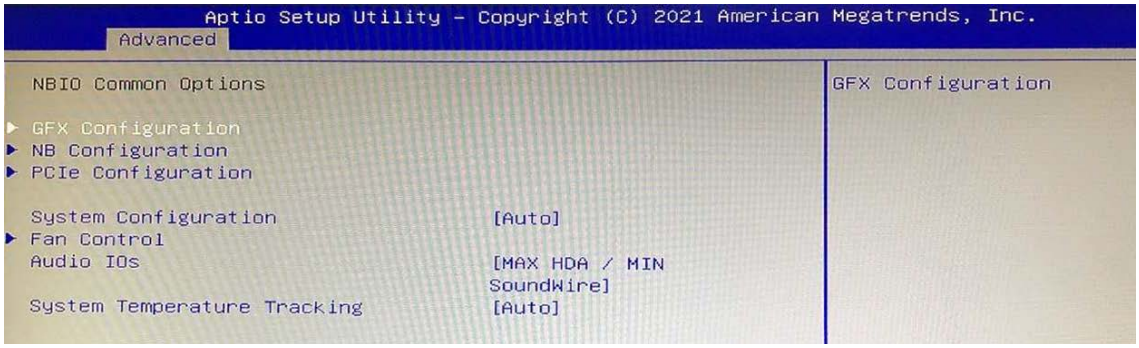


Figure 4-3-1-4 : NBIO Common Options

4.3.1.4.1 GFX Configuration

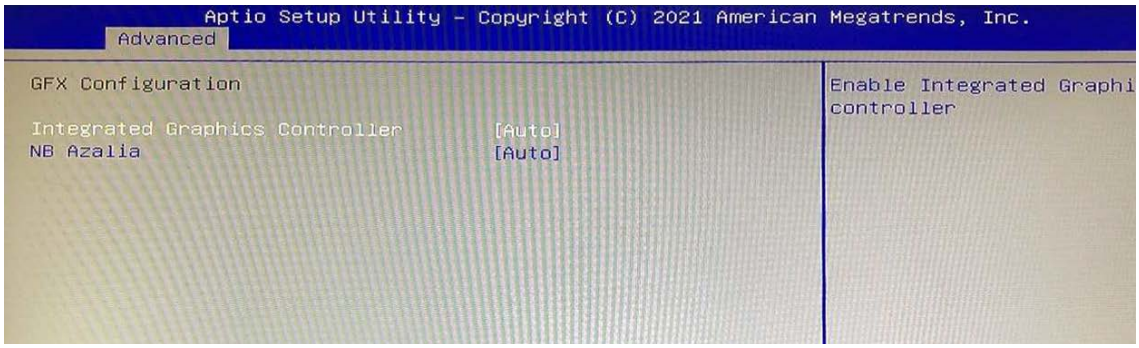


Figure 4-3-1-4-1 : GFX Configuration

Integrated Graphics Controller
Enable Integrated Graphics Controller.

NB Azalia
Enable Integrate HD Audio controller.

4.3.1.4.2 NB Configuration

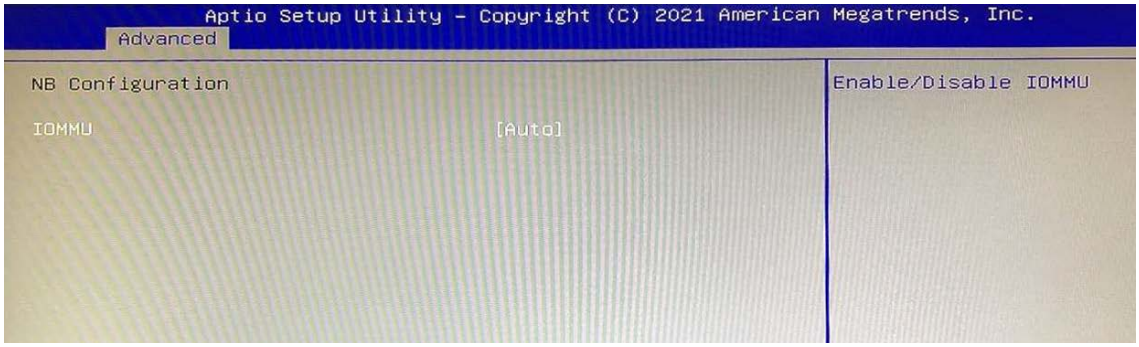


Figure 4-3-1-4-2 : NB Configuration

IOMMU
Enable/Disable IOMMU.

4.3.1.4.3 PCIe Configuration

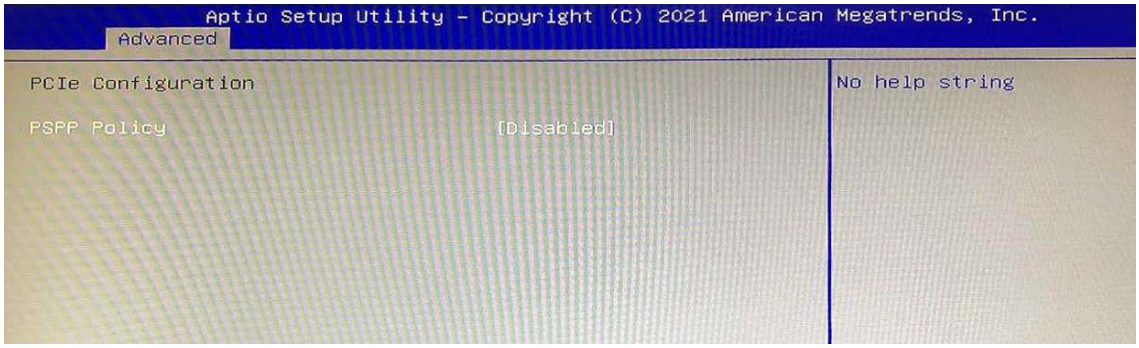


Figure 4-3-1-4-3 : PCIe Configuration

PSPP Policy
Select PCIe Speed Power Policy Mode.

4.3.1.4.4 System Configuration

Select System Configuration may cause the system to hang, as some system configuration may not be supported by your OPN.

4.3.1.4.5 Fan Control

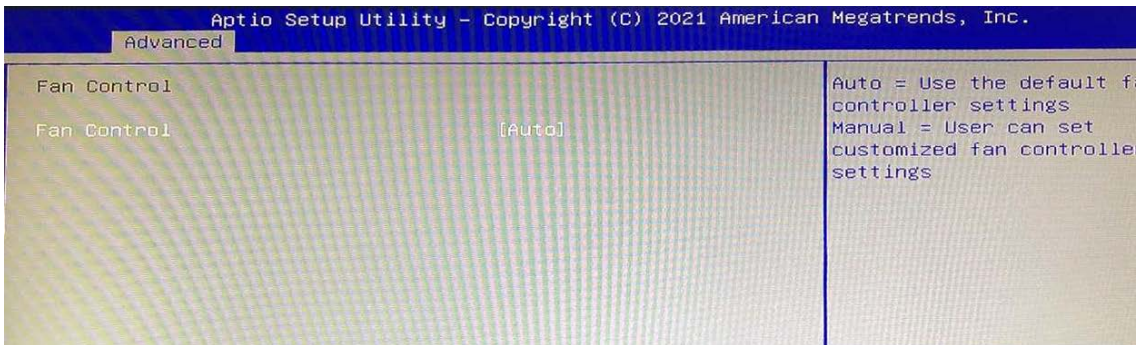


Figure 4-3-1-4-5 : FAN Configuration

Auto = Use the default fan controller settings.
Manual = User can set customized fan controller settings.
NOTE : There shows Fan Controller by APU.

4.3.1.4.6 Audio IOs

Audio IOs control. The default is MAX HDA/MIN Soundwire.

4.3.1.4.7 System Temperature Tracking

System Temperature Tracking [0 = Disabled; 1 = Enabled].

4.3.1.5 FCH Common Options

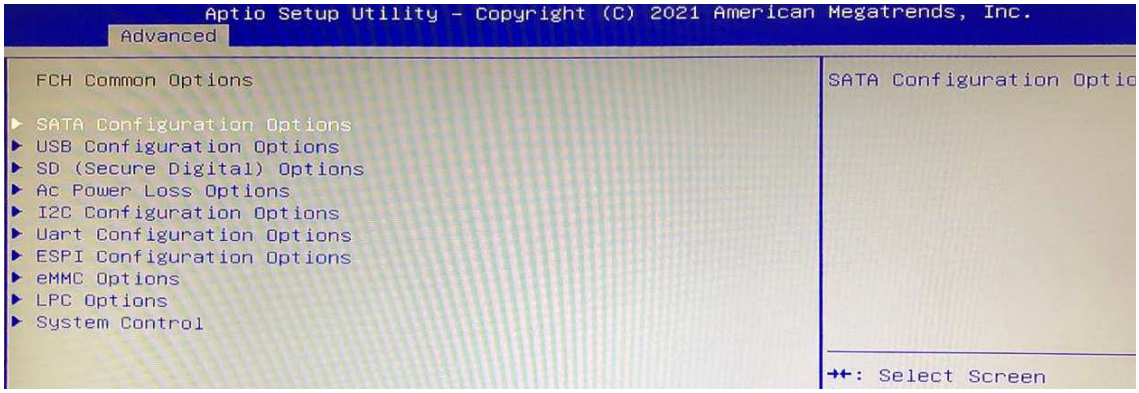


Figure 4-3-1-5 : FCH Common Options

4.3.1.5.1 SATA Configuration Options

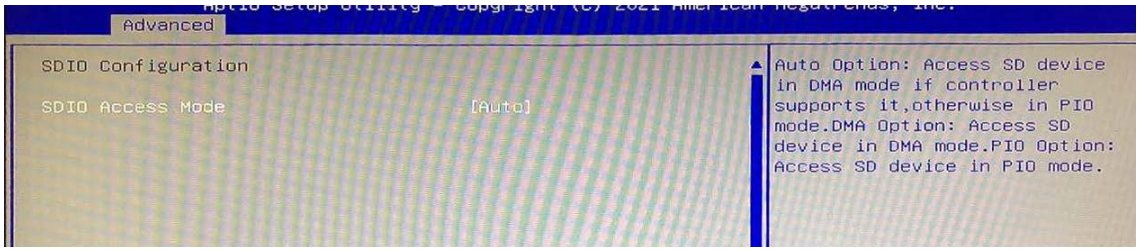


Figure 4-3-1-5-1 : SATA Configuration

SATA Controller
Disable or enable OnChip SATA controller.

SATA RAS Support
Disable or enable OnChip SATA RAS Support.

SATA Disabled AHCI Prefetch
Disable or enable SATA Disabled AHCI Prefetch.

Aggressive SATA Device Sleep Port 0
Disable or enable Aggressive SATA Device Sleep Port 0.

Aggressive SATA Device Sleep Port 1
Disable or enable Aggressive SATA Device Sleep Port 1.

4.3.1.5.2 USB Configuration Options

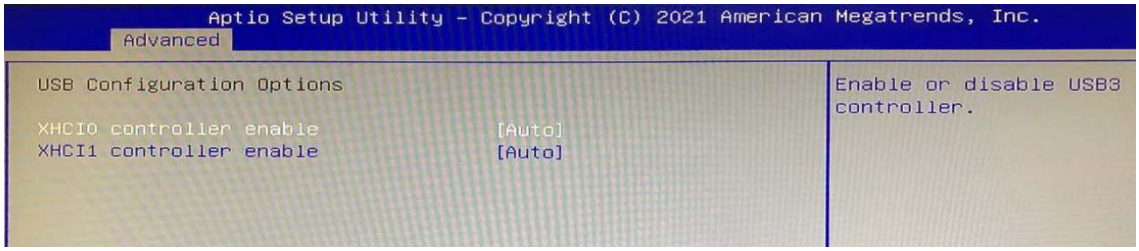


Figure 4-3-1-5-2 : USB Configuration

XHCI0 controller enable
Enable or Disable USB3 controller.

XHCI1 controller enable
Enable or Disable USB3 controller.

4.3.1.5.3 SD (Secure Digital) Options

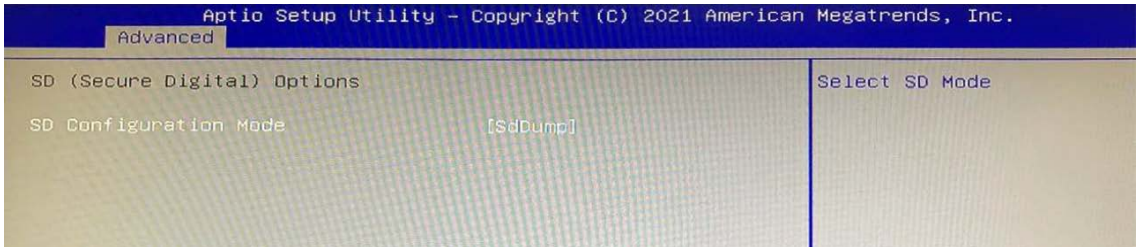


Figure 4-3-1-5-3 : SD Options

SD Configuration Mode
Select SD Mode.

4.3.1.5.4 AC Power Loss Options

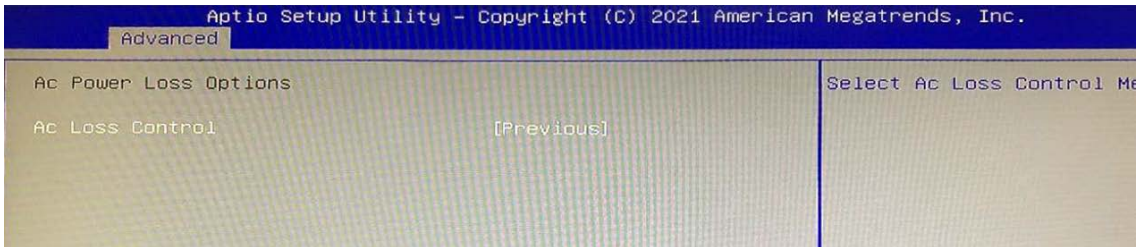


Figure 4-3-1-5-4 : AC Power Loss Options

AC Loss Control
Select Ac Loss Control Method.

4.3.1.5.5 I2C Configuration Options

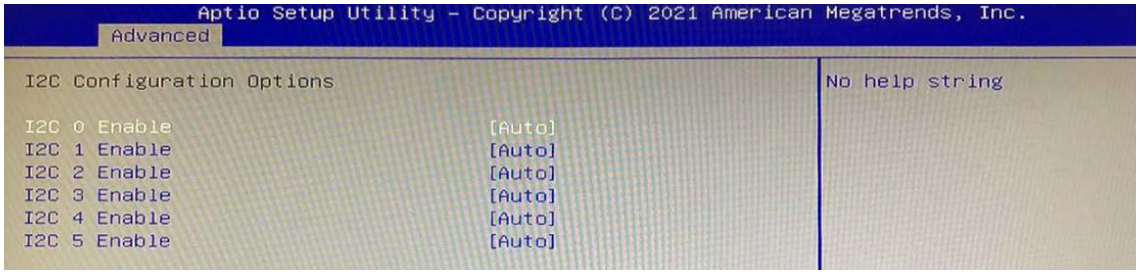


Figure 4-3-1-5-5 : I2C Configuration Option

I2C 0~5 Enable
Enable or Disable I2C 0~5

4.3.1.5.6 UART Configuration Options

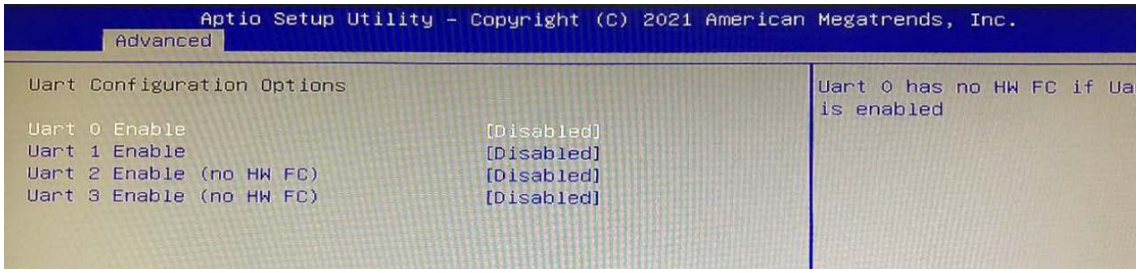


Figure 4-3-1-5-6 : UART Configuration Options

UART 0 Enable
UART 0 has no HW FC if UART 2 is enabled.

UART 1 Enable
UART 1 has no HW FC if UART 3 is enabled.

UART 2 Enable (no HW FC)
Enable/Disable UART2.

UART 3 Enable (no HW FC)
Enable/Disable UART3.

4.3.1.5.7 ESPI Configuration Options

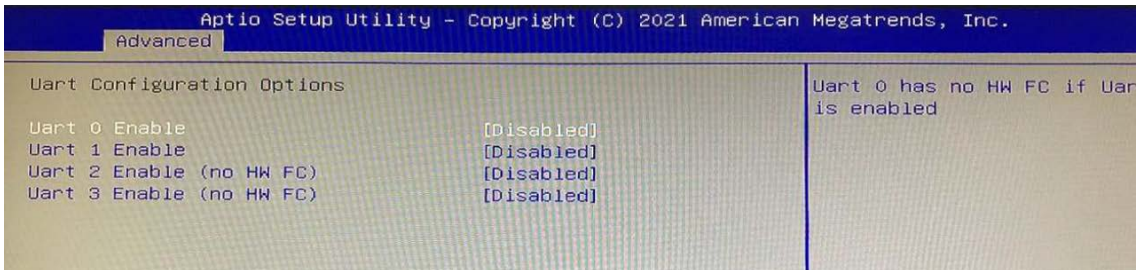


Figure 4-3-1-5-7 : ESPI Configuration Options

ESPI Enable
Enable/Disable ESPI.

4.3.1.5.8 eMMc Options

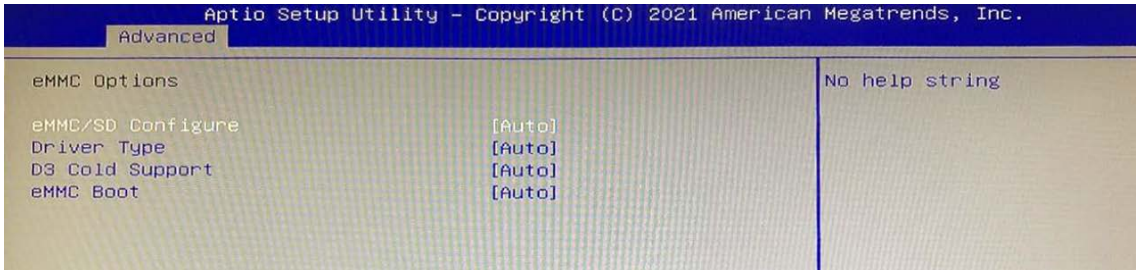


Figure 4-3-1-5-8 : eMMc Options

eMMc/SD Conguration
Select Emmc/SD Mode.

Driver Type
Bios will select MS driver for SD selections.

D3 Cold Support
Enable/Disable D3 Cold Support.

Emmc Boot
Enable/Disable Emmc Boot.

4.3.1.5.9 LPC Options

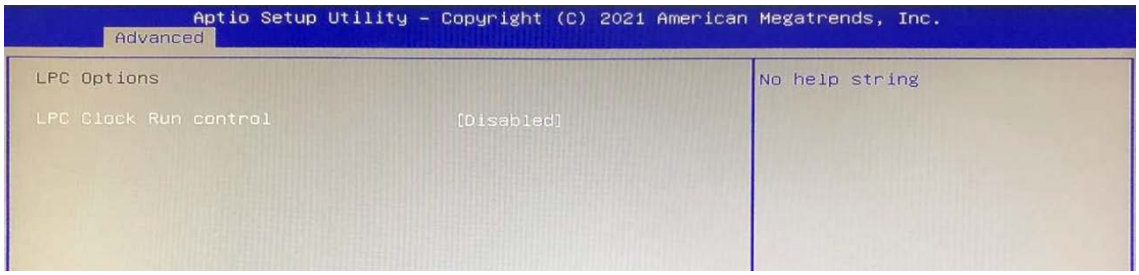


Figure 4-3-1-5-9 : LPC Options

LPC Clock Run control
Enable/Disable LPC Clock Run control.

4.3.1.5.10 System Control

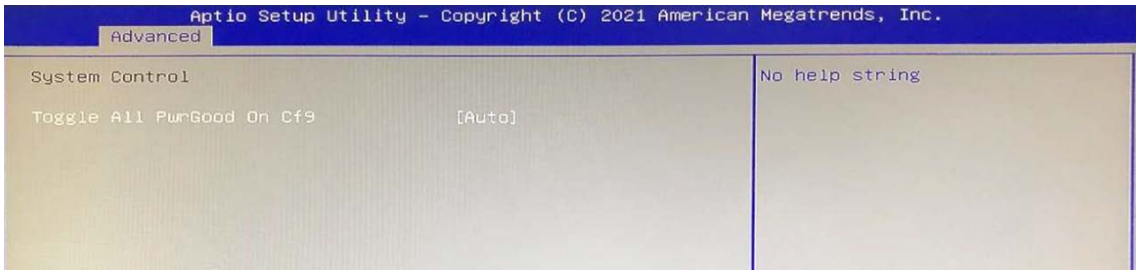


Figure 4-3-1-5-10 : System Control

Toggle All PwrGood On Cf9
Enable/Disable Toggle All PwrGood On Cf9.

4.3.2 AMD PBS

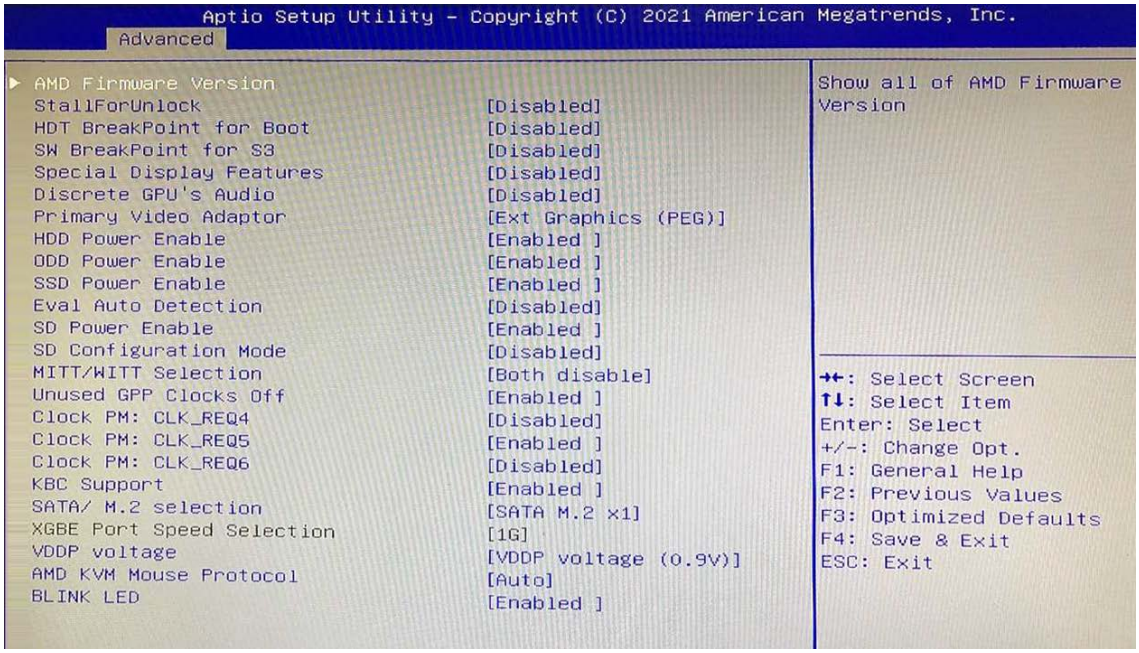


Figure 4-3-2 : AMD PBS

4.3.2.1 AMD Firmware Version

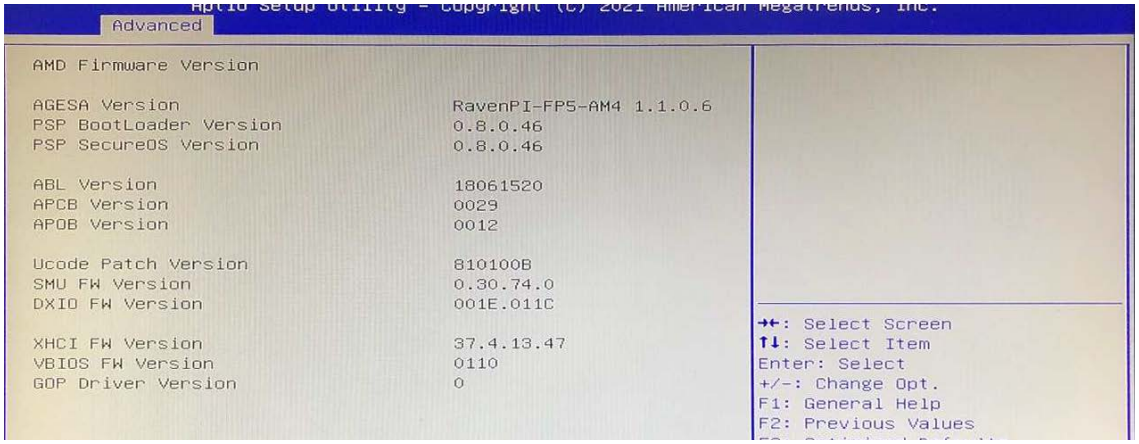


Figure 4-3-2-1 : AMD Firmware Version

StallForUnlock
Enable/Disable StallForUnlock.

HDT BreakPoint for Boot
Enable/Disable HDT BreakPoint for Boot.

SW BreakPoint for S3
Enable/Disable SW BreakPoint for S3.

Special Display Features.
Enable/Disable PowerXpress HybridGraphics.

Discrete GPU's Audio
Disable Discrete GPU's Audio is enabled or keep its HW default setting.

Primary Video Adaptor
Select Internal/External Graphics.

HDD Power Enable
Enable or disable the power of HDD.

ODD Power Enable
Enable or disable the power of ODD.

SSD Power Enable
Enable or disable the power of SDD.

Eval Auto Detection
Disable or enable EVAL card auto detection.

SD Power Enable
Enable or disable the power of SD.

SD Configuration Mode
Select SD Mode.

MITT/WITT Selection
MITT/WITT Selection.

Unused GPP Clocks off
Turn Unused GPP Clocks off.

Clock PM: CLK_REQ4
Enable or disable CLK_REQ4.

Clock PM: CLK_REQ5
Enable or disable CLK_REQ5.

Clock PM: CLK_REQ6
Enable or disable CLK_REQ6.

KBC Support
Enable or disable KBC Support under OS.

SATA/M.2 Selection
The System not supported.

VDDP Voltage
VDDP Voltage Setting.

AMD KVM Mouse Protocol
Switch KVM Mouse Protocol between Absolut/Simple.

BLINK LED
Enable/Disable BLINK LED to identify S3/S4 state.

4.3.3 Tls Auth Configuration

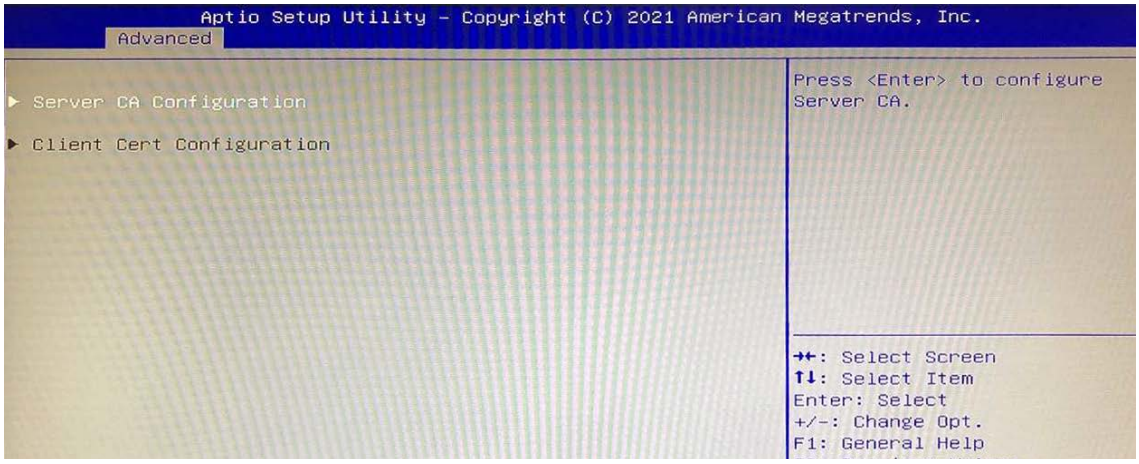


Figure 4-3-3 : Trusted Computing

4.3.3.1 Sever CA Configuration

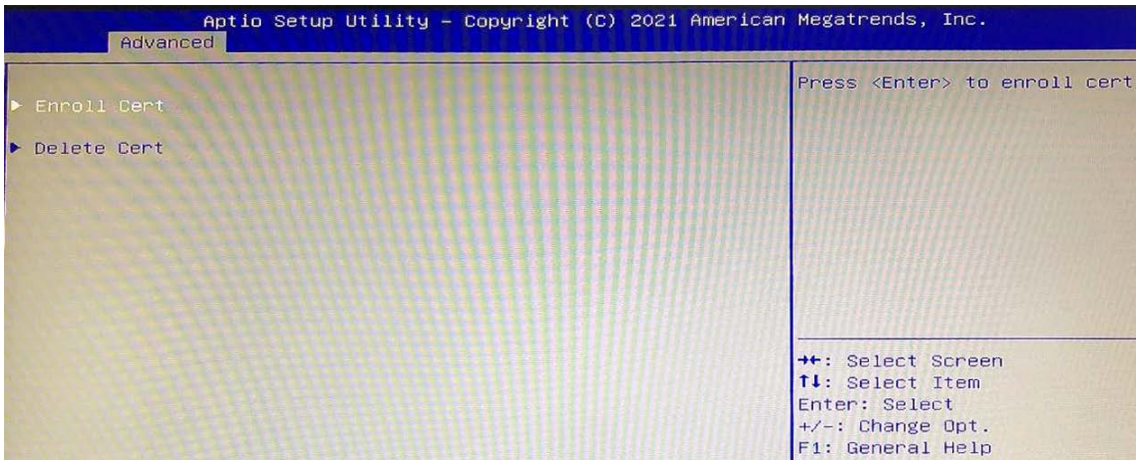


Figure 4-3-3-1 : Sever CA Configuration

Enroll Cert or Delete Cert
To Enroll Cert or Delete Cert.

4.3.3.2 Client Cert Configuration

Display Client Cert Configuration

4.3.4 Trusted Computing

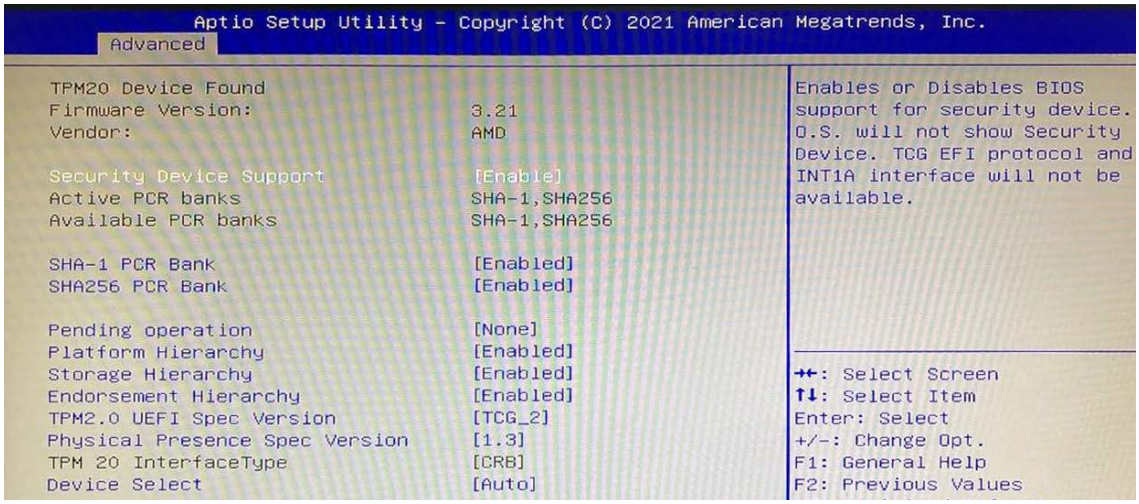


Figure 4-3-4 : Trusted Computing

Security Device Support
Enables or Disables BIOS support for security device.O.S. will not show security Device. TCG EFI protocol and INT1A interface will not be available.

SHA-1 PCR Bank
Enable or Disable SHA-1 PCR Bank.

SHA256 PCR Bank
Enable or Disable SHA256 PCR Bank.

Pending operation
Schedule an Operation for the Security Device.
NOTE : Your Computer will reboot during restart in order to change State of Security Device.

Platform Hierarchy
Enable or Disable Platform Hierarchy.

Storage Hierarchy
Enable or Disable Storage Hierarchy.

Endorsement Hierarchy
Enable or Disable Endorsement Hierarchy.

TPM 2.0 UEFI Spec Version
Select the TCG2 Spec Version Support, TCG_1_2 : the Compatible mode for Win8/Win10, TCG2 : Support new TCG2 protocol and event format for Win10 or later.

Physical Presence Spec Version
Select to Tell O.S. to support PPI Spec Version 1.2 or 1.3.
Note some HCK tests might not support 1.3.

Device Select
TPM 1.2 will restrict support to TPM 1.2 devices, TPM 2.0 will restrict support to TPM 2.0 devices, Auto will support both with the default set to TPM 2.0 devices if not found, TPM 1.2 devices will be enumerated.

4.3.5 AMD fTPM Configuration

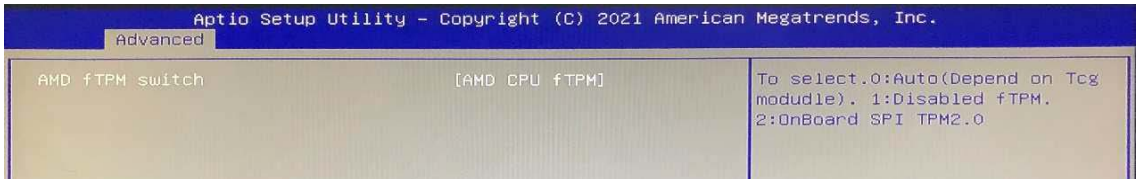


Figure 4-3-5 : AMD fTPM Configuration

AMD fTPM switch [AMD CPU fTPM]
To select.
0 : Auto (Depend on Tcgmodudle).
1 : Disabled fTPM.
2 : Onboard SPI TPM2.0.

4.3.6 ACPI Settings

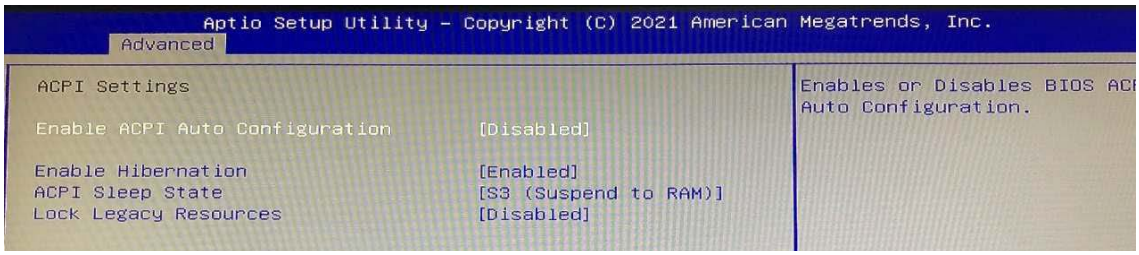


Figure 4-3-6 : ACPI Setting

Enable ACPI Auto Configuration
Enable/Disable BIOS ACPI Auto Configuration.

Enable Hibernation
Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.

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

Lock Legacy Resources
Enables or Disables Lock of Legacy Resources.

4.3.7 IDE Configuration

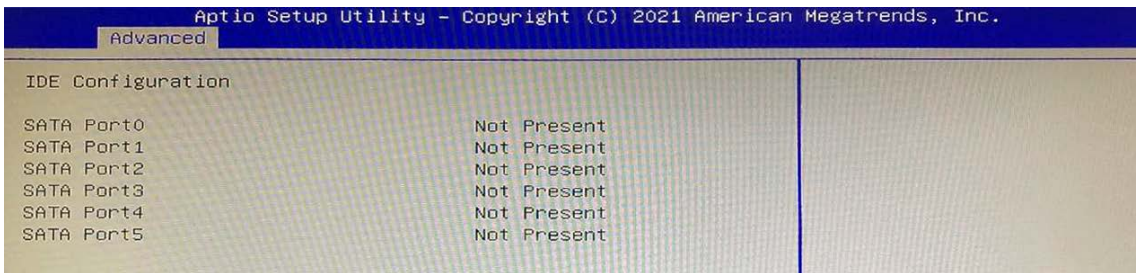


Figure 4-3-7 : IDE Configuration

IDE Devices Configuration. Shows SATA ports are present state.

4.3.8 Demo Board

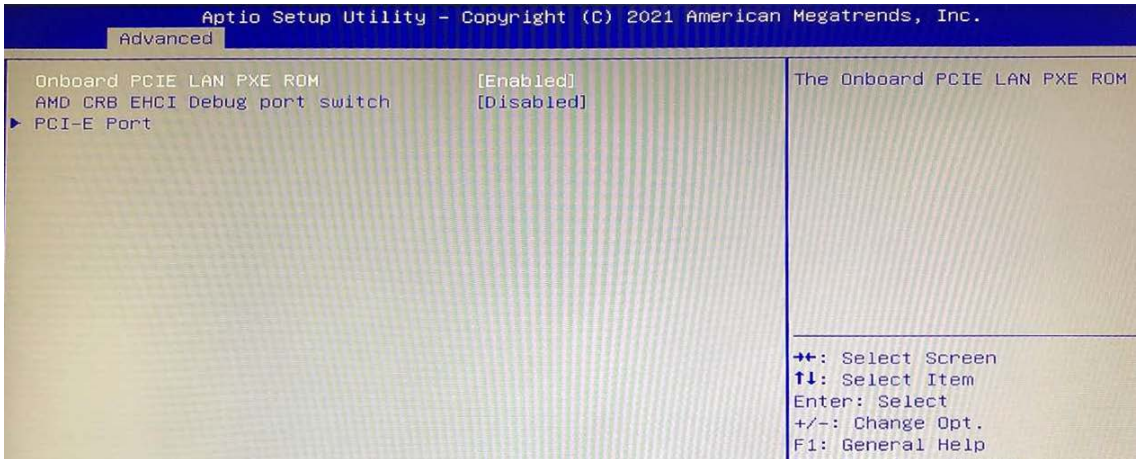


Figure 4-3-8 : Demo Board

Onboard PCIE LAN PXE ROM
The System not supported.

AMD CRB EHCI Debug port Switch
To select 0- disable debug port. 1 -enable EHCI debug port for WHCK –DEBUG Capability test.

4.3.8.1 PCI-E Port

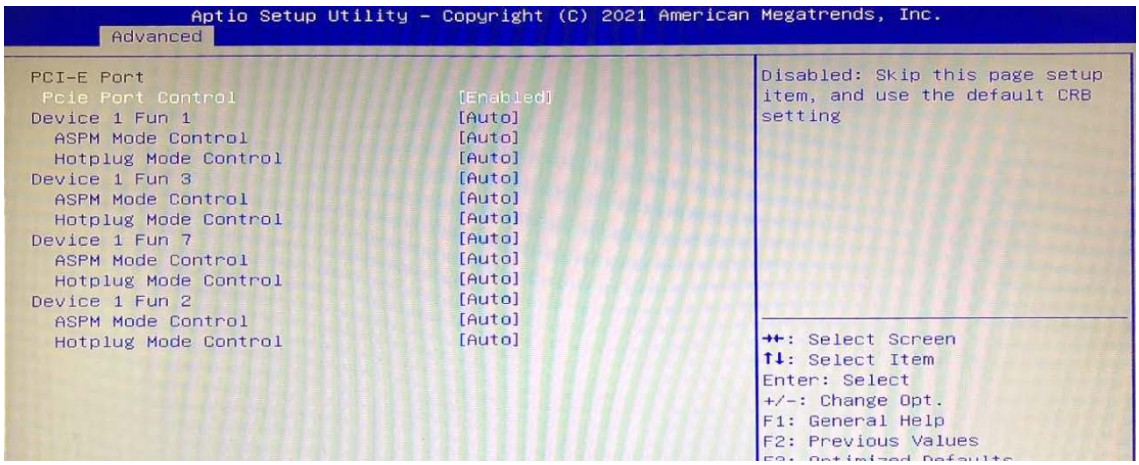


Figure 4-3-8.1 : PCI-E Port

PCIe port Control
Disabled or Enabled PCIe Port.

ASPM Mode Control
NB Root Port ASPM Mode Control.

Hotplug Mode Control
NB Root Port Hotplug Mode Control.

4.3.9 Hardware Monitor

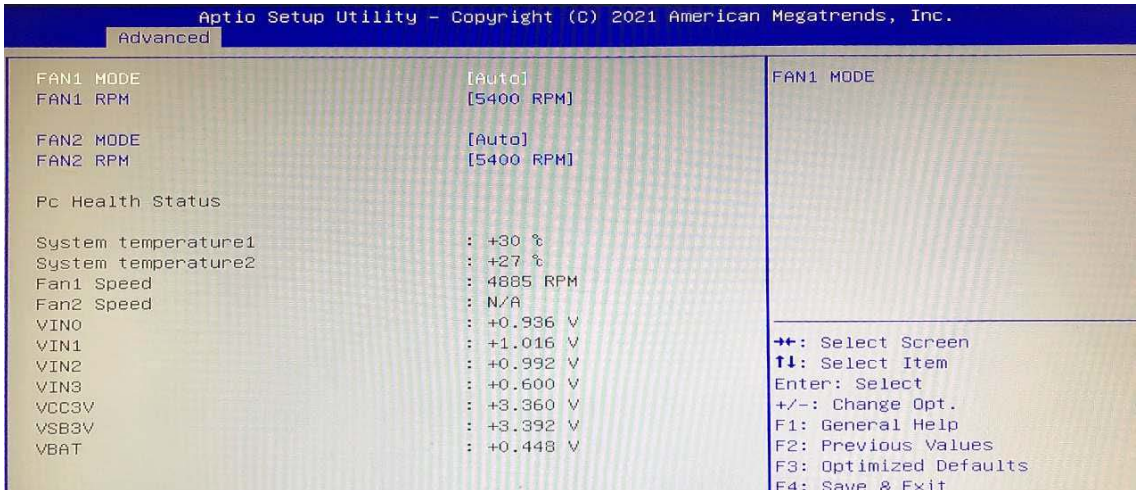


Figure 4-3-9 : Hardware Monitor

The F81865 SIO features an enhanced hardware monitor providing thermal, fan speed and system voltages status monitoring.

FAN MODE
Auto = Use the default fan controller settings.
Manual = User can set customized fan controller settings.

FAN RPM
There are 5 segments of FAN PRM.

4.3.10 CPU Configuration

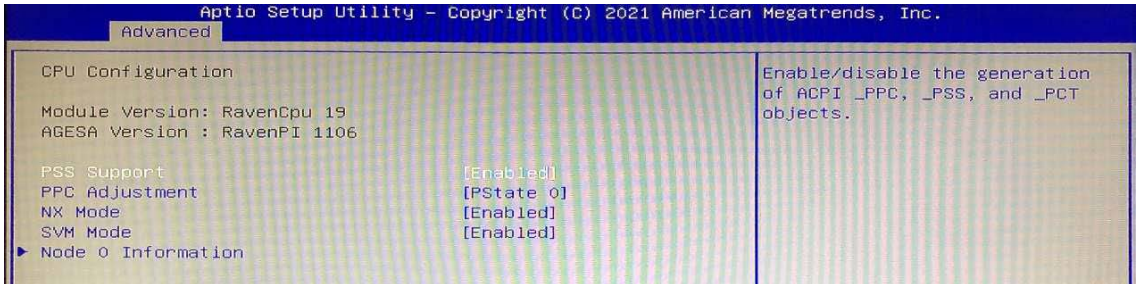


Figure 4-3-10 : CPU Configuration

CPU Configuration Parameters.

PSS Support
Enable/disable the generation of ACPI_PPC, _PSS, and _PCT objects.

PPC Adjustment
Provide to adjust _PPC object.

NX Mode
Enable/disable No-execute page protection Function.

SVM Mode
Enable/disable CPU Virtualization.

Node 0 Information
Display CPU related information

4.3.11 SIO Configuration

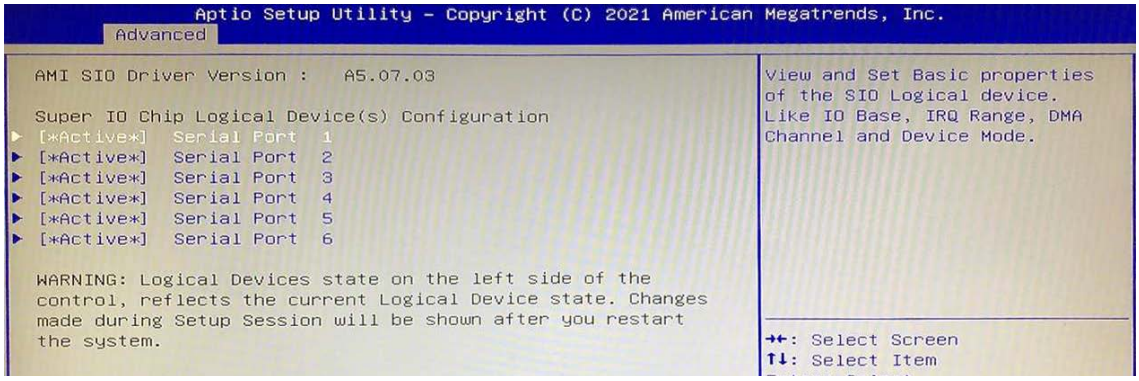


Figure 4-3-11 : SIO Configuration

Serial Port 1 Configuration
Set Parameters of Serial Port 1 (COM1).

Serial Port 2 Configuration
Set Parameters of Serial Port 2 (COM2).

Serial Port 3 Configuration
Set Parameters of Serial Port 3 (COM3).

Serial Port 4 Configuration
Set Parameters of Serial Port 4 (COM4).

Serial Port 5 Configuration
Set Parameters of Serial Port 5 (COM5).

Serial Port 6 Configuration
Set Parameters of Serial Port 6 (COM6).

4.3.12 PCI Subsystem Settings

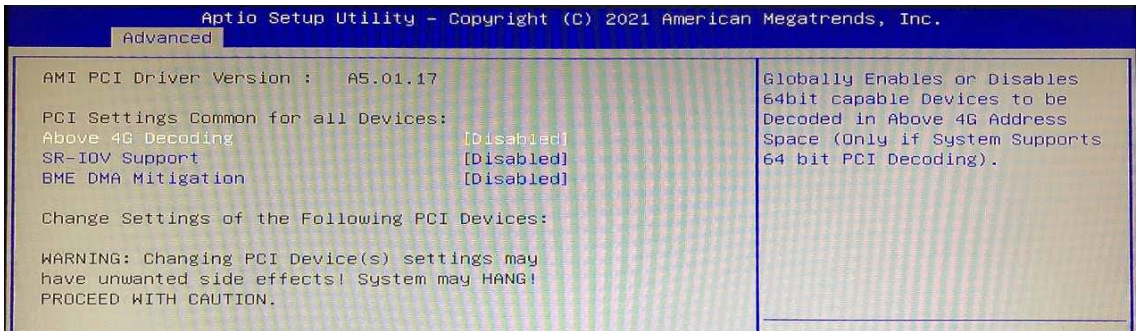


Figure 4-3-12 : PCI Subsystem Settings

Above 4G Decoding
Globally Enables or Disables 64bit capable Devices to be Decoded in Above 4G Address Space (Only if System Supports 64 bit PCI Decoding).

SR-I0V Support
If system has SR-I0V capable PCIe Devices, this option Enables or disables Single Root IO Virtualization Support.

BME DMA Mitigation
Re-enable Bus Attribute disabled during Pci enumeration for PCI Bridges after SMM Locked.

4.3.13 Network Stack Configuration

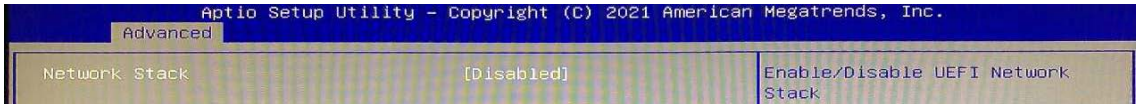


Figure 4-3-13 : Network Stack Configuration

Network Stack
Enable/Disable UEFI Network Stack.

4.3.14 CSM Configuration

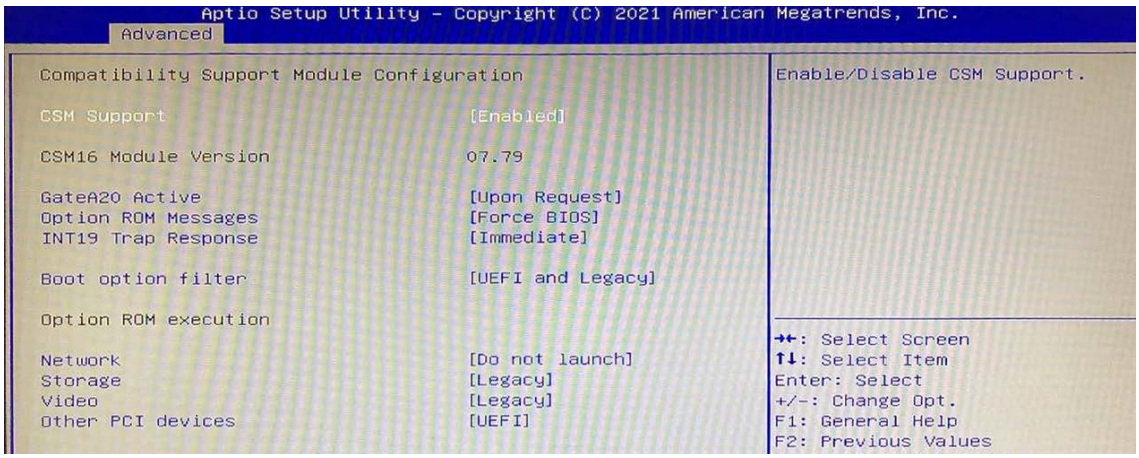


Figure 4-3-14 : CSM Configuration

CSM Support
Enable/Disable CSM Support.

GateA20 Active
UPON REQUEST - GA20 can be disabled using BIOS services.
ALWAYS - do not allow disabling GA20; this option is useful when any RT code is executed above 1MB.

Option ROM Messages
Set display mode for Option ROM.

INT19 Trap Response
BIOS reaction on INT19 trapping by Option ROM :
IMMEDIATE - execute the trap right away;
POSTPONED - execute the trap during legacy boot.

Boot option filter
This option controls Legacy/UEFI ROMs priority.

Network
Controls the execution of UEFI and Legacy PXE OpROM.

Storage
Controls the execution of UEFI and Legacy Storage OpROM.

Video
Controls the execution of UEFI and Legacy Video OpROM.

Other PCI devices
Determines OpROM execution policy for devices other than Network, Storage, or Video.

4.3.15 Debug Port Table Configuration

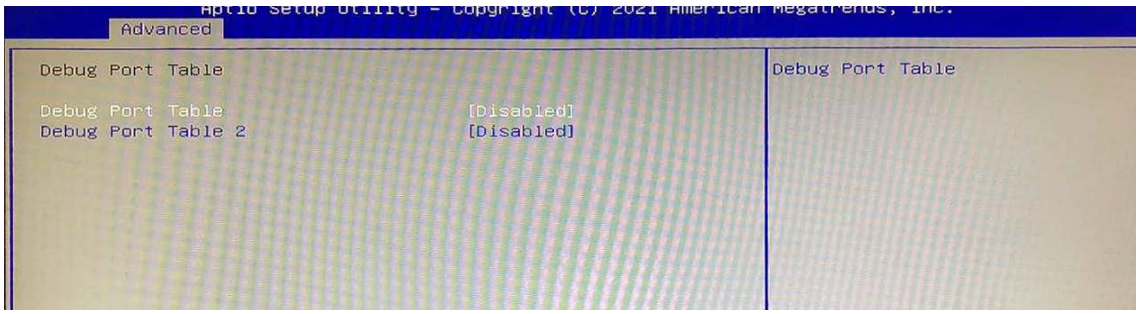


Figure 4-3-15 : Debug Port Table Configuration

Debug Port Table

Enable/Disable Debug Port Table.

4.3.16 NVMe Configuration

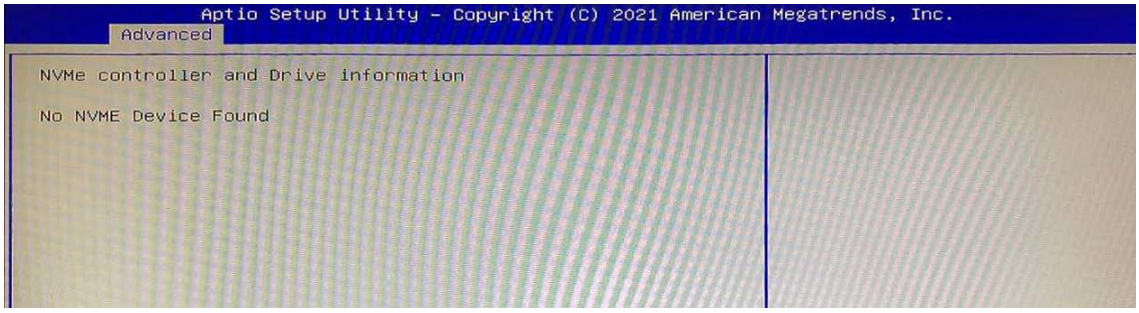


Figure 4-3-16 : NVMe Configuration

Display NVMe Controller and drive information.

4.3.17 SDIO Configuration

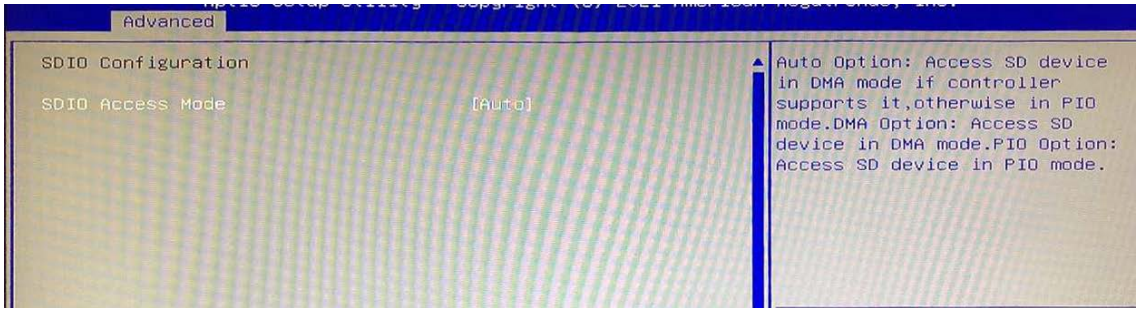


Figure 4-3-17 : SDIO Configuration

SDIO Access Mode

Auto Option : Access SD device in DMA mode if controller supports it, otherwise in PIO mode. DMA Option : Access SD device in DMA mode.
PIO Option : Access SD device inPIO mode.

4.3.18 USB Configuration

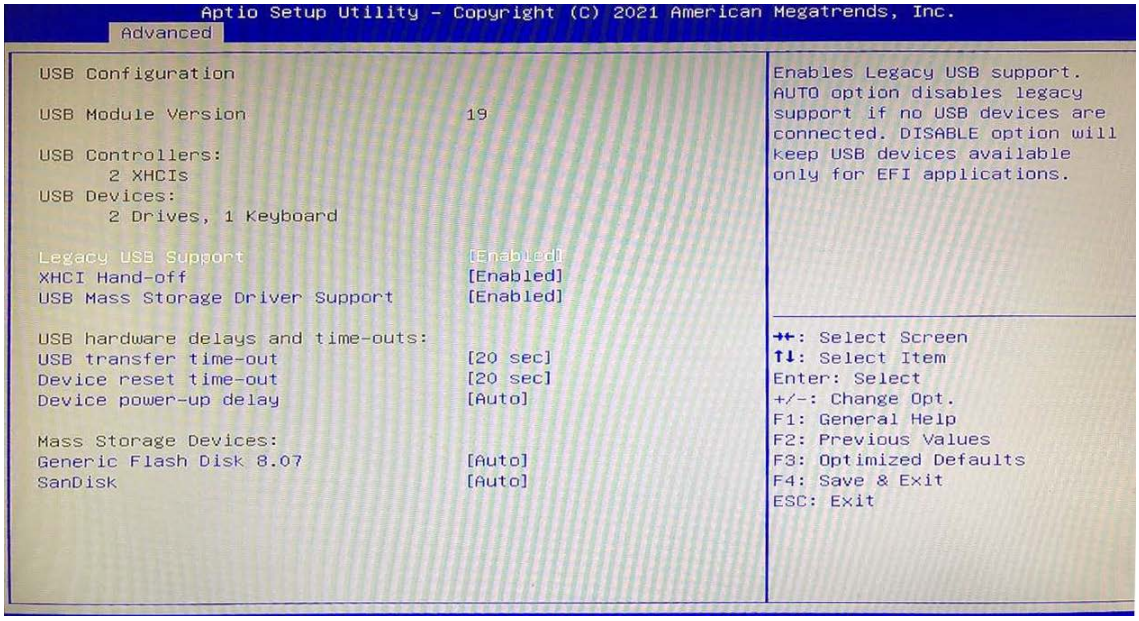


Figure 4-3-18 : USB Configuration

Legacy USB Support
Enables Legacy USB support.
AUTO option disables legacy support if no USB devices are connected.
ISABLE option will keep 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
Enable/Disable USB Mass Storage Driver Support.

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.

Device power-up delay
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 100 ms, for a Hub port the delay is taken from Hub descriptor.

4.4 Chipset Function

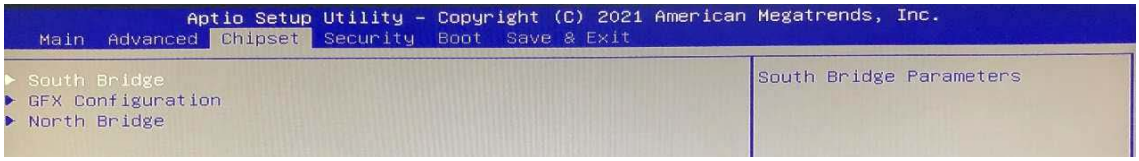


Figure 4-4 : Chipset Function

4.4.1 South Bridge

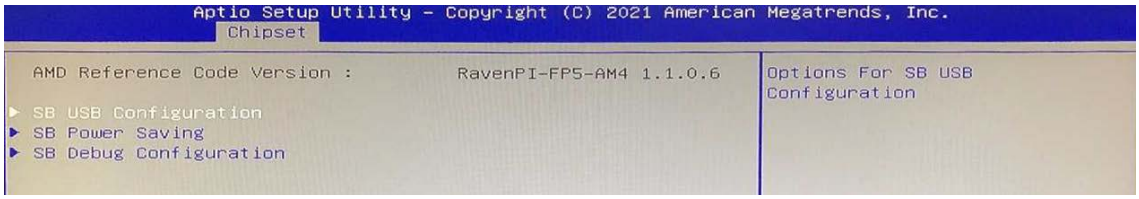


Figure 4-4-1 : South Bridge

4.4.1.1 SB USB Configuration

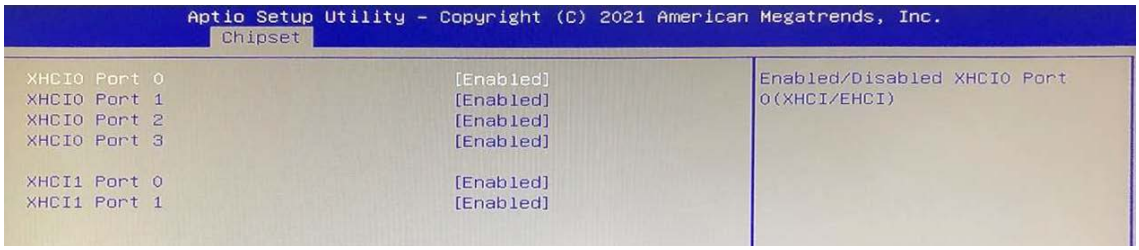


Figure 4-4-1-1 : SB USB Configuration

XHCI Port 0~3
Enable/Disabled XHCI0 Port0 (XHCI/EHCI).

XHCI port 0~1
Enable/Disabled XHCI0 Port0 (XHCI/EHCI).

4.4.1.2 SB Power Saving

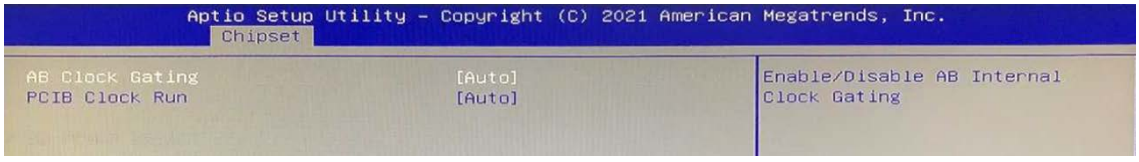


Figure 4-4-1-2 : SB Power Saving

AB Clock Gating
Enable/Disable AB Internal Clock Gating.

PCIB Clock Rum
Enable The Auto Clkrun Functionality.

4.4.1.3 SB Debug Configuration

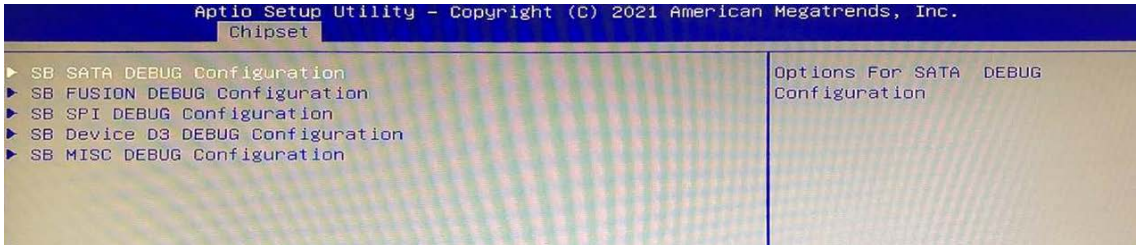


Figure 4-4-1-3 : SB Debug Configuration

SB SATA DEBUG Configuration
Options For SATA DEBUG Configuration.

SB FUSTION DEBUG Configuration
Options For SB FUSTION DEBUG Configuration.

SB SPI DEBUG Configuration
Options For SB SPI DEBUG Configuration.

SB Device D3 DEBUG Configuration
Options For Device D3 DEBUG Configuration.

SB MISC DEBUG Configuration
Options For SB MISC DEBUG Configuration.

4.4.2 GFX Configuration

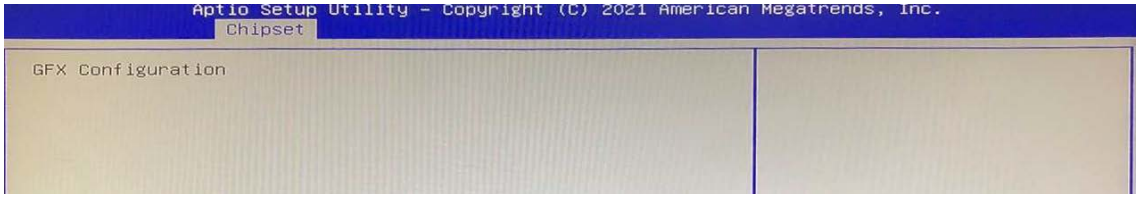


Figure 4-4-2 : GFX Configuration

4.4.3 North Bridge

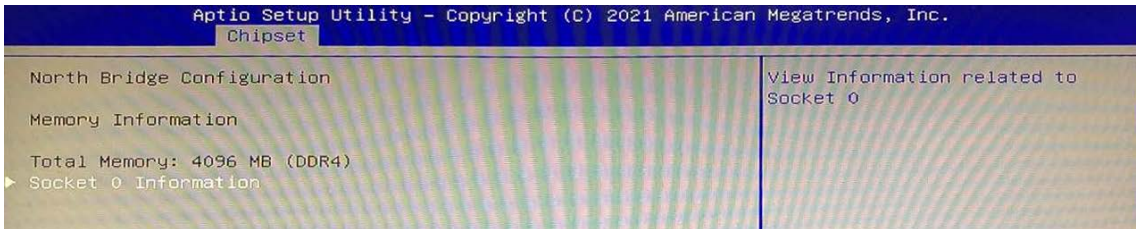


Figure 4-4-3 : GFX Configuration

View Information related to Socket 0.

4.5 Security

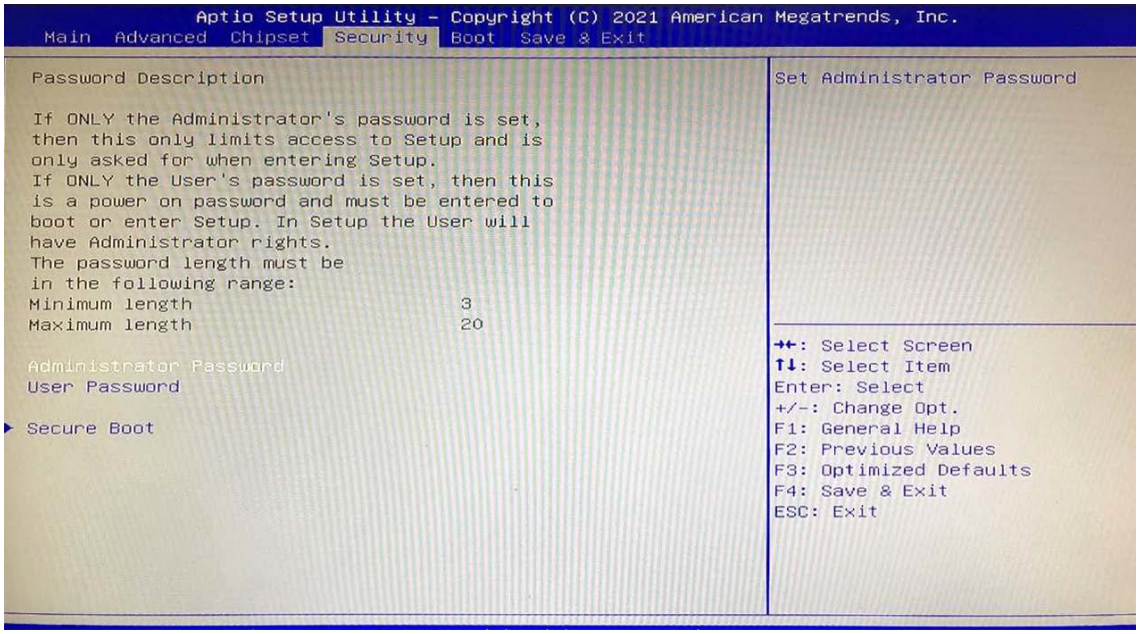


Figure 4-5 : Security

Administrator Password
Set administrator password.

User Password
Set user password.

Secure Boot
Secure Boot configuration.

4.6 Boot Functions

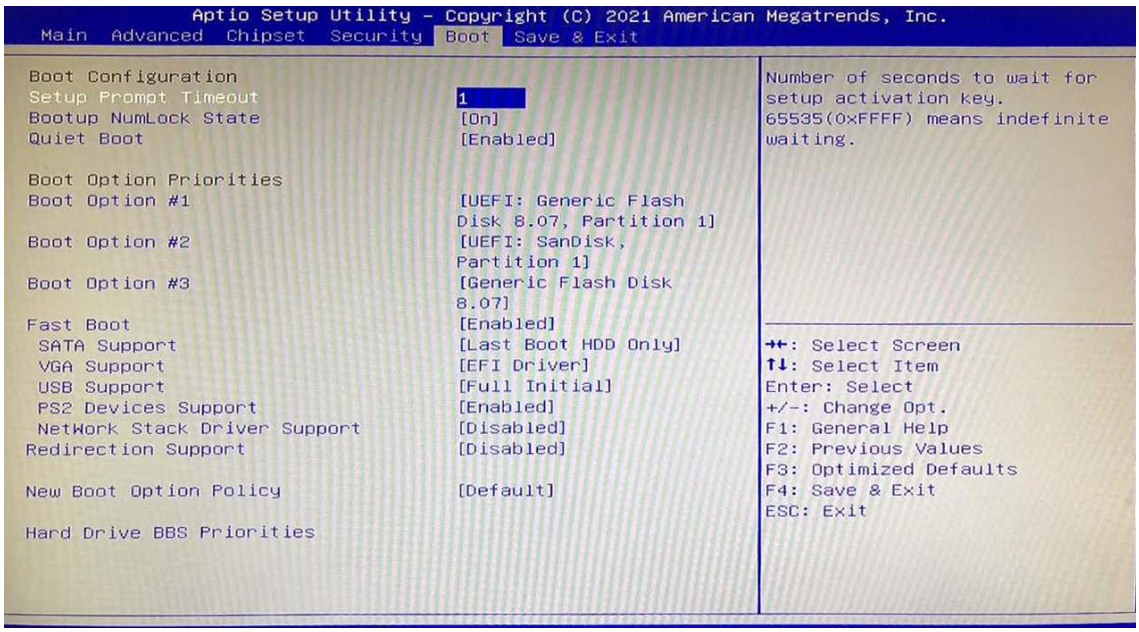


Figure 4-6 : Boot Functions

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.

Quiet Boot

Enables or disables Quiet Boot option.

Boot Option #x

Sets the system boot order.

Hard Drive BBS Priorities

Set the order of the legacy devices in this group.

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.

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

Save Changes
Save Changes done so far to any of the setup options.

Discard Changes
Discard Changes done so far to any of the setup options.

Default Options :

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

Save as User Defaults
Save the changes done so far as User Defaults.

Restore User Defaults
Restore the User Defaults to all the setup options.

A

APPENDIX A : Power Consumption

Testing Board	MIG-1000
RAM	16GB * 2
USB 1	USB Micsoft Wired Keyboard 600
USB 2	USB Mouse HP G1K28AA
USB 3	USB Flash Transecnd 3.0 8GB
USB 4	USB Flash Transecnd 3.0 16GB
SATA 0	Transcend SATA SSD420 128GB
LAN 1 (RTL8111G)	1.0 Gbps
LAN 2 (RTL8111G)	1.0 Gbps
Graphics output	DP
Power Plan	Balance (Windows10 Power plan)
Power Source	Chroma 62006P-100-25
Test Program 1	BurnInTest
Test Program 2	FurMark

A.1 AMD Ryzen™ Embedded V1807B (2M Cache, up to 3.80GHz)

Power on and boot to Win 10 64-bit

CPU	Power Input	Standby Mode		Power on and boot to Win10 64-bit			
				Sleep Mode		idle status CPU usage less 3%	
		Max Current	Max Consumption	Max Current	Max Consumption	Max Current	Max Consumption
AMD Embedded V1807B	9V	0.157A	01.89W	0.180A	02.16W	0.975A	11.70W
	12V	0.108A	02.59W	0.104A	02.50W	0.532A	12.77W
	24V	0.067A	02.40W	0.073A	02.64W	0.371A	13.36W
	55V	0.054A	02.94W	0.052A	02.87W	0.256A	14.08W

CPU	Power Input	Power on and boot to Win10 64-bit			
		Run 100% CPU usage with 2D		Run 100% CPU usage with 3D	
		Max Current	Max Consumption	Max Current	Max Consumption
AMD Ryzen™ V1807B	9V	5.054A	60.64W	5.158A	61.90W
	12V	2.720A	65.28W	2.812A	67.49W
	24V	1.961A	70.60W	1.990A	71.64W
	55V	1.125A	61.88W	1.216A	66.86W

A.2 AMD Ryzen™ Embedded V1807B Add GeForce RTX 3090

Power on and boot to Win 10 64-bit

CPU	Power Input	Standby Mode		Power on and boot to Win10 64-bit			
				Sleep Mode		idle status CPU usage less 3%	
		Max Current	Max Consumption	Max Current	Max Consumption	Max Current	Max Consumption
AMD Ryzen™ V1807B	9V	0.168A	02.02W	0.195A	02.34W	5.524A	66.28W
	12V	0.106A	02.55W	0.110A	02.63W	2.961A	71.06W
	24V	0.071A	02.57W	0.076A	02.74W	1.941A	69.89W
	55V	0.053A	02.93W	0.055A	03.00W	1.216A	66.87W

CPU	Power Input	Power on and boot to Win10 64-bit			
		Run 100% CPU usage with 2D		Run 100% CPU usage with FurMark	
		Max Current	Max Consumption	Max Current	Max Consumption
AMD Ryzen™ V1807B	9V	7.976A	95.71W	41.258A	495.10W
	12V	4.041A	96.99W	20.535A	492.84W
	24V	2.535A	91.26W	13.965A	502.74W
	55V	1.833A	100.79W	9.125A	501.88W

B

APPENDIX B : Supported Memory & Storage List

B.1 Supported Memory List

Testing Board	MIG-1000
Memory Test	MemTest86 V8.4
BurnInTest	BurnInTest Pro V8.1 (build 1025)

Tset Item

Channel	Memtest	Bunin	Flash BIOS	Remove Battery
*2	PASS	PASS	PASS	PASS
*1 (Socket 1)	PASS	PASS	N/A	PASS
*1 (Socket 2)	PASS	PASS	N/A	PASS

B.2 Supported Non-ECC Memory List

Brand	Info	Test Temp.(Celsius)
innodisk 32G DDR4-3200 SO-DIMM	M4S0-BGS2OCEM-H03	25ºC
innodisk 32G DDR4-3200 SO-DIMM	M4S0-BGS2O5EM-H03	25ºC
innodisk 16G DDR4-3200 SO-DIMM	M4S0-AGS1O5EM-H03	25ºC
SL-Link 16GB DDR4-3200 SODIMM	J4AGSH1G8TMFC	25ºC
SL-Link 32GB DDR4-3200 SODIMM	J4BGSH2G8TMFC	25ºC
SL-Link 8GB DDR4-3200 SODIMM	J4AGSH1G8TMEC	25ºC
innodisk 16GB DDR4-2666 SODIMM	M4S0-AGS1O5IK-H03	25ºC
SL-Link 16GB DDR4-2666 SODIMM	J4AGSH1G8QHFC	25ºC
SL-Link 32GB DDR4-2666 SODIMM	J4BGSS2G8QHXI	25ºC

B.3 Supported Storage Device List

Type	Brand	Model	Capacity
SATA SSD	Kingston	SUV500/120G	120GB
	Intel	540s SSDSC2KW120H6	120GB
	Intel	E5400s SSDSC2KR120H6	120GB
	FORESEE	S903S128G	128GB
	WD	GREEN WDS240G2G0A	240GB
	SAMSUNG	860 EVO MZ-76E250	250GB
	FORESEE	S903S256G	256GB
	LITE-ON	K8-L1256	256GB
	LITE-ON	K8-L1512	512GB
M.2 PCIe SSD	Innodisk	M.2 (P80) 3TE6 DEM28-01TDD1ECAQF-H03	1TB
		M.2 (P80) 3TG3-P DGM28-02TDA1ECBEH-H03	2TB
	Intel	760P SSDPEKKW128G8	128GB
	SAMSUNG	970 EVO PLUS MZ-V7S250	250GB
	FORESEE	FSGPMMC-256G	256GB
	TOSHIBA	KXG50ZNV512G	512GB
	Kingston	SA1000M8	240GB
		SA2000MB	500GB

APPENDIX C : Graphics Benchmark

C.1 Performance Test

3DMARK (v2-16-7117)		RTX 2080	RTX 3090
Time Spy Extreme (V1.2)	Time Spy Extreme Score	3578	5023
	Graphics Score	3893	9465
	CPU Score	1419	1373
	Resolution (screen)	3840 x 2160	3840 x 2160
Time Spy (V1.2)	Time Spy Score	7690	9823
	Graphics Score	10236	15136
	CPU Score	3193	3287
	Resolution (screen)	3840 x 2160	3840 x 2160
PORT ROYAL (V1.2)	Port Royal Score	5976	6909
	Resolution (screen)	3840 x 2160	3840 x 2160
Fire Strike Ultra (V1.1)	Fire Strike Extreme Score	6067	9882
	Graphics score	6199	11370
	Physics score	9979	9768
	Combined score	3474	5033
	Resolution (screen)	3840 x 2160	3840 x 2160
Fire Strike Extreme (V1.1)	Fire Strike Ultra Score	10420	14483
	Graphics Score	12304	21561
	Physics Score	9870	9696
	Combined Score	5047	5322
	Resolution (screen)	3840 x 2160	3840 x 2160
Fire Strike (V1.1)	Fire Strike Score	15636	17609
	Graphics Score	24291	32788
	Physics Score	9951	9702
	Combined Score	5554	5419
	Resolution (screen)	3840 x 2160	3840 x 2160
Wild Life Unlimited (V1.0)	Wild Life Unlimited Score	45608	48776
	Resolution (screen)	3840 x 2160	3840 x 2160
Night Raid (V1.1)	Night Raid Score	22126	21927
	Graphics Score	52119	51653
	CPU Score	5193	5146
	Resolution (screen)	3840 x 2160	3840 x 2160

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

Vecow

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

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