User Manual

AIMB-588

Intel® 12th Gen Core™ i9/i7/i5/i3 LGA1700, MicroATX with 2 DP++/ HDMI/ eDP, 1 GbE LAN, 3 2.5GbE LANs, 8 USB 3.2, 1 USB 3.2 Type-C, 6 COM

ADVANTECH

Enabling an Intelligent Planet

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Declaration of Conformity

FCC Class B

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for assistance.

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Product Warranty (2 years)

Advantech warrants the original purchaser that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products that have been repaired or altered by persons other than repair personnel authorized by Advantech, or products that have been subject to misuse, abuse, accident, or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced free of charge during the warranty period. For out-of-warranty repairs, customers will be billed according to the cost of replacement materials, service time, and freight. Please consult your dealer for more details.

If you believe your product to be defective, follow the steps outlined below.

1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages displayed when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain a return merchandise authorization (RMA) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a completed Repair and Replacement Order Card, and a proof of purchase date (such as a photocopy of your sales receipt) into a shippable container. Products returned without a proof of purchase date are not eligible for warranty service.
5. Write the RMA number clearly on the outside of the package and ship the package prepaid to your dealer.

CPU Compatibility

CPUFamily	Cores Number (P+E)**	TDP(W)	Max. Speed	L3 Cache	Supports Model
i9-12900E	8P+8E	65W	5.0GHz	30 MB	Q/R/H
i9-12900TE	8P+8E	35W	4.8GHz	30 MB	Q/R/H
i7-12700E	8P+4E	65W	4.8GHz	25 MB	Q/R/H
i7-12700TE	8P+4E	35W	4.7GHz	25 MB	Q/R/H
i5-12500E	6P+0E	65W	4.5GHz	18 MB	Q/R/H
i5-12500TE	6P+0E	35W	4.3GHz	18 MB	Q/R/H
i3-12100E	4P+0E	60W	4.2GHz	12 MB	Q/R/H
i3-12100TE	4P+0E	35W	4.0GHz	12 MB	Q/R/H
G7400E	2P+0E	46W	3.6GHz	6 MB	Q/R/H
G7400TE	2P+0E	35W	3.0GHz	6 MB	Q/R/H
G6900E	2P+0E	46W	3.0GHz	4 MB	Q/R/H
G6900TE	2P+0E	35W	2.4GHz	4 MB	Q/R/H
i9-12900	8P+8E	65W	5.10GHz	30 MB	Q/R/H
i7-12700	8P+4E	65W	4.9GHz	25 MB	Q/R/H
i5-12500	6P+0E	65W	4.6GHz	18 MB	Q/R/H
i5-12400	6P+0E	65W	4.4GHz	18 MB	Q/R/H
i3-12100	4P+0E	60W	4.3GHz	12 MB	Q/R/H

** Performance-core and Efficient-core

Ordering Information

P/N	Chipset	USB 3.2 Gen 2	USB 3.2 Gen 1	USB Typc-C Gen 2x2	USB 2.0	PCIe x16* Gen5	PCIe x8* Gen4	PCIe x4 Gen3	PCIe x4 Gen4	GbE LAN	2.5Gb E LAN	DP	HDMI	eDP	SATA III	COM	M.2 M-key	TPM
AIMB-588Q	Q670E	4	4	1	4	1	0	1	1	1	1	2	1	1	8	6	1	1
AIMB-588R	R680E	5	3	1	4	1*	0 (1)*	1	1	1	3	2	1	1	8	6	1	1
AIMB-588H	H610E	2	2	0	4	1	0	1	0	1	0	2	1	1	4	6	0	1

() means BOM option.

* BOM option support: PCIe x8 Gen5 signals at PCIEX16 slot and PCIe x8 Gen4 signals at PCIEX8 slot.

Initial Inspection

Before you begin installing your motherboard, please make sure that the following materials have been shipped:

- 1 x AIMB-588 Intel LGA 1700 Micro ATX Motherboard
- 2 x SATA HDD cable
- 1 x I/O port bracket
- 1 x Startup manual
- 2 x M.2 screws (R/Q/H)

If any of these items are missing or damaged, contact your distributor or sales representative immediately. We have carefully inspected the AIMB-588 mechanically and electrically before shipment. It should be free of marks and scratches and in perfect working order upon receipt. As you unpack the AIMB-588, check it for signs of shipping damage. (For example, damaged box, scratches, dents, etc.) If it is damaged or it fails to meet the specifications, notify our service department or your local sales representative immediately. Also notify the carrier. Retain the shipping carton and packing material for inspection by the carrier. After inspection, we will make arrangements to repair or replace the unit.

Contents

Chapter 1

General Information

1.1 Introduction

AIMB-588 is designed with the Intel R680E/Q670E/H610E for industrial applications that require both performance computing and enhanced power management capabilities. The motherboard supports Inte Core i9/i7/i5/i3 processor up to 30 MB L3 cache and DDR5 4400 MHz up to 128GB, per slot up to 32 GB. A rich I/O connectivity of 6 serial ports, 3 USB 2.0, 5 USB 3.2 Gen2,1 USB 3.2 Gen2 type C and up to one GbE LAN and three 2.5GbE LAN, up to 8 SATA III ports.

1.2 Features

- **Rich I/O connectivity:** up to one GbE LAN and three 2.5 Gbe LANs via PCIe x1 bus, 1 x PCIe x16 slot (Gen 5) BOM option to 2 x PCIe x8 slot (Gen 4), 1 x PCIe x4 slot (Gen 3), 1 x PCIe x4 slot (Gen 4), 4 USB 2.0 ports and 5 USB 3.2 Gen 2, 1 USB 3.2 Gen 2 Type C (AIMB-588R SKU).
- **Standard Micro ATX form factor with industrial features:** The AIMB-588 is a full featured Micro ATX motherboard with balanced expandability and performance.
- **Diverse Storage Devices:** SATA HDD, M.2 M-key (2280) SSD
- **Optimized Integrated Graphics:** With Intel® Flexible Display Interface, it supports versatile display options and 32-bit 3D graphics engine.

1.3 Specifications

1.3.1 Processor

- **CPU:** Intel® 12th Gen Core™ i9/i7/i5/i3 processor
- **BIOS:** AMI EFI 256 Mbit SPI BIOS
- **System chipset:** Intel® Q670E/ R680E/ H610E
- **SATA hard disk drive interface:** On-board SATA connectors with data transmission rate up to 600 MB (Q:8 / R:8 / H:4)

1.3.2 Memory

- **RAM:** Up to 128 GB (32 GB per DIMM) in 4 slots 288-pin DIMM sockets. Supports dual-channel Dual Channel DDR5 up to 4400.
  - AIMB-588Q & AIMB-588H supports non-ECC unbuffered DIMMs and do not support any memory configuration that mixes non-ECC with ECC unbuffered DIMMs.
  - AIMB-588R supports ECC & non-ECC buffered DIMMs.

1.3.3 Input/Output

- **PCIe slot:** 1 PCIe x16 expansion slot BOM option to 2 PCIe x 8 expansion slot, 1 PCIe x4 Gen4 expansion slot, 1 PCIe x4 Gen3 expansion slot (If use PCIe x16 card to this slot, it has space limitation, USB 3.0 internal and USB type-A vertical connector can't be used).
- **Serial port:** Six serial ports, one is RS-232/422/485 with hardware auto-flow control and five are RS-232.
- **USB port:** Supports up to 4 USB 2.0 ports with transmission rates up to 480 Mbps, 3 USB 3.2 Gen1 ports with transmission rates up to 5 Gbps, 5 USB 3.2 Gen2 ports with transmission rates up to 10 Gbps and 1 USB Typc-C Gen 2x2 port with transmission rates up to 20 Gbps.
- **GPIO:** AIMB-588 supports 8-bit GPIO from super I/O for general purpose control application.

1.3.4 Graphics

- **Controller:** Intel® HD Graphics
- **Display memory:** 1 GB maximum shared memory with 2GB and above system memory installed
- **Display Port:** 2, supports max resolution 4096 x 2304 @60Hz
- **HDMI:** 1, supports max resolution 4096*2160@ 60Hz and supports HDR
- **eDP:** 1, supports max resolution 3840 x 2160 @ 60 Hz (Internal pin header)
- **Four Display:** DP + DP + HDMI + eDP (R/Q SKU)
- **Triple Display:** DP + DP + HDMI, DP + DP + eDP, DP + HDMI + eDP (R/Q/H*)

  * If users have four independent displays when using AIMB-588H SKU, users should disable one of the display which is unused and other three independent displays will be supported normally.
- **Dual Display:** DP + HDMI, DP + DP, DP + eDP, HDMI + eDP (R/Q/H)

1.3.5 Ethernet LAN

- **Controller:** LAN1: Intel I219LM (R/Q/H SKU); LAN2: Intel I226V(R/Q SKU); LAN3/ LAN4: Intel I226VLM (R SKU)
- Supports up to one 10/100/1000 Mbps Ethernet port via PCI Express x1 bus which provides 500 MB/s data transmission rate and up to three 10/100/1000/ 2500 Mbps Ethernet port (s) via PCI Express x1 bus which provides 500 MB/s data transmission rate

1.3.6 Industrial Features

- **Watchdog timer:** Can generate a system reset. The watchdog timer is programmable, with each unit equal to one second or one minute (255 levels)

1.3.7 Mechanical and Environmental Specifications

- **Operating temperature:** 0 ~ 60° C (14 ~ 158° F, Depending on CPU)
- **Storage temperature:** -40 ~ 85° C (-40 ~ 185° F)
- **Humidity:** 5 ~ 95% non-condensing
- **Power supply voltage:** +5 V, +3.3 V, +12 V, +12V_8P, 5 Vsb
- Power consumption:

+5 V	3.3 V	12 V	+12V_8P	5 Vsb
19.6 A	24.04 A	19 A	018.5 A	2.5 A

  Measure the maximum current value which system under maximum load (CPU: Top speed, RAM & Graphic: Full loading)
  Input Mode: ATX input

- **Board size:** 244 mm x 244 mm (9.6" x 9.6")
- **Board weight:** 0.5 kg

1.4 Jumpers and Connectors

Connectors on the AIMB-588 motherboard link it to devices such as hard disk drives and a keyboard. In addition, the board has a number of jumpers used to configure your system for your application.

The tables below list the function of each of the board jumpers and connectors. Later sections in this chapter give instructions on setting jumpers. Chapter 2 gives instructions for connecting external devices to your motherboard.

1.5 Board layout: Jumper and Connector Locations

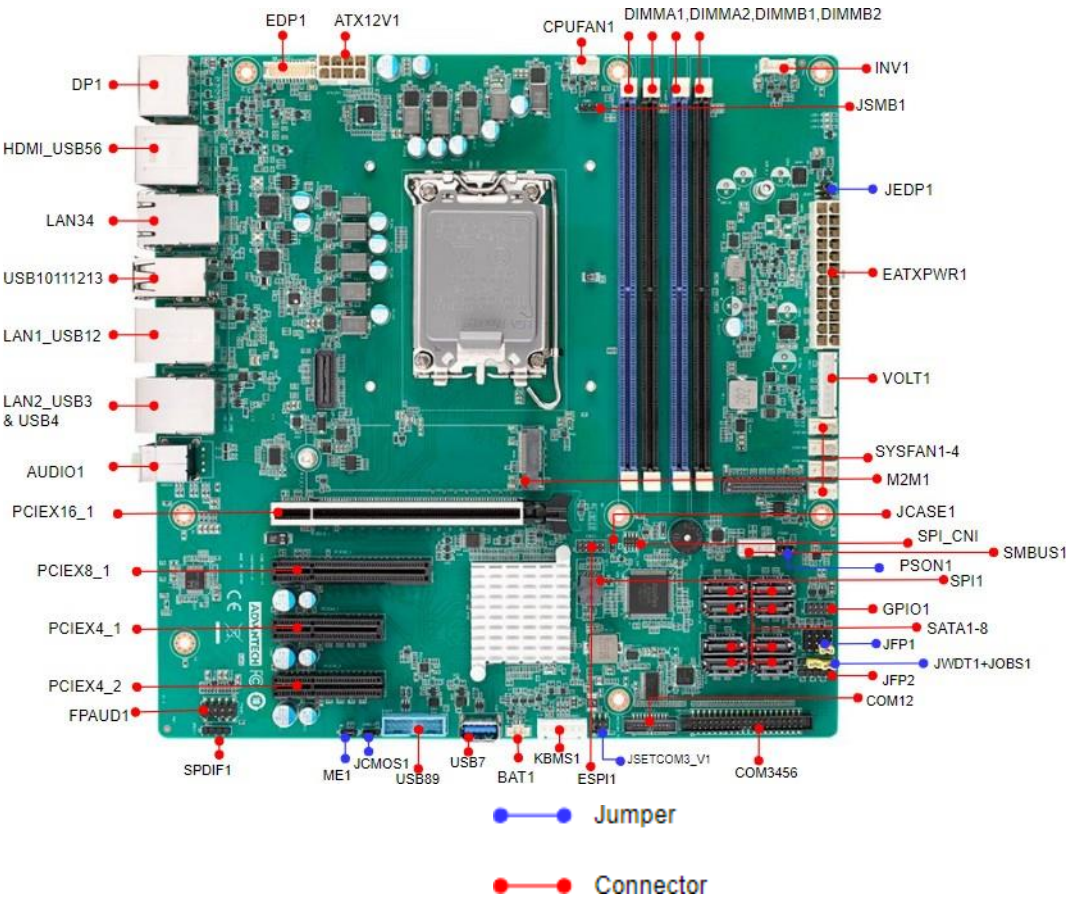


Figure 1.1 Jumper and Connector Location

Table 1.1: Jumper Setting List

	Description	Part Reference
1	Flash Descriptor Security Override setting Jumper	ME1
2	CMOS Clear Jumper	JCMOS1
3	COM3_RI# Pin RI#/5V/12V selection	JSETCOM3_V1
4	Watchdog Timer Output and OBS Beep (Front panel BEEP sound)	JWDT1+JOBS1
5	Power Switch/HDD LED/SMBUS/Speaker Pin Header	JFP1
6	ATX/AT Mode Selection	PSON1
7	eDP LCD POWER Selection	JEDP1

Table 1.2: Connector/Header List:

	Description	Part Reference
1	DisplayPort	DP1
2	High Definition Multimedia Interface+USB3.2	HDMI_USB56
3	RJ45 2 port	LAN34
4	USB2.0 4 port	USB10111213
5	RJ45 1 port+ USB3.2 Gen2 2port	LAN1_USB12
6	Type C USB	USB4
7	RJ45 1 port+ USB3.2 Gen2 1port	LAN2_USB3
8	Audio Jack	AUDIO1
9	PCI Express X16 Slot	PCIEX16_1
10	PCI Express X8 Slot	PCIEX8_1
11	PCI Express X4 Slot	PCIEX4_1
12	PCI Express X4 Slot	PCIEX4_2
13	Front panel audio pin header	FPAUD1
14	SPDIF interface pin header	SPDIF1
15	USB3 PH 2port	USB89
16	USB3 internal vertical 1port	USB7
17	ESPI debug card Pin Header	ESPI1
18	Battery Wafer Box	BAT1
19	SPI BIOS Flash Socket	SPI1
20	keyboard and mouse connector	KBMS1
21	Case open pin header	JCASE1
22	BIOS flash pin header	SPI_CN1
23	COM1 box header	COM12
24	Serial ATA interface connector	SATA1~8
25	COM2 box header	COM3456
26	Power LED Pin Header	JFP2
27	8-bits General Purpose I/O Pin Header	GPIO1
28	eDP Backlight inverter power connector	INV1
29	SMBUS Connector	SMBUS1
30	SYSTEM FAN Power Connector	SYSFAN4
31	SYSTEM FAN Power Connector	SYSFAN3
32	SYSTEM FAN Power Connector	SYSFAN2
33	SYSTEM FAN Power Connector	SYSFAN1
34	-V5/+V5/-V12/+V12/+V3.3/+V5_DUAL Power Supply Connector	VOLT1
35	ATX 12/5V/3V/5VSBV Power Supply Connector	EATXPWR1
36	DDR5 U-DIMM Socket	DIMMA1,DIMMA2, DIMMB1, DIMMB2
37	CPU FAN Power Connector	CPUFAN1
38	MPS's I2C/SMBUS Programming for +VCCIN Controller	JSMB1
39	NGFF M.2 M-Key connector for 2280 module	M2M1
40	ATX 12V Power Supply Connector	ATX12V1
41	eDP Panel Connector	EDP1

Figure 1.2 I/O Connectors

1.6 AIMB-588 Board Diagram

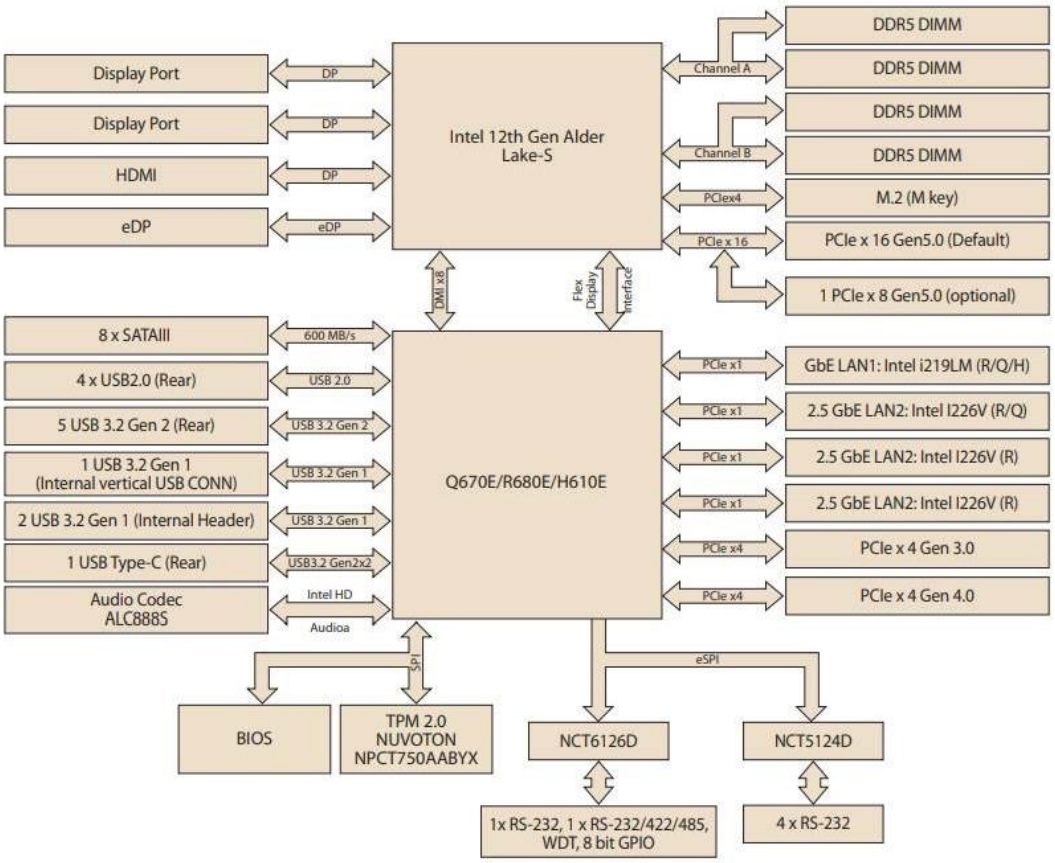


Figure 1.3 AIMB-588 Block Diagram

1.7 Safety Precautions

Warning! *Always completely disconnect the power cord from chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.*

Caution! *Always ground yourself to remove any static charge before touching the motherboard. Modern electronic devices are very sensitive to electro-static discharges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not in the chassis.*

Caution! *The computer is provided with a battery-powered real-time clock circuit. There is a danger of explosion if battery is incorrectly replaced. Replace only with same or equivalent type recommended by the manufacturer. Discard used batteries according to manufacturer's instructions.*

Caution! *There is a danger of a new battery exploding if it is incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.*

1.8 Jumper Settings

This section provides instructions on how to configure your motherboard by setting the jumpers. It also includes the motherboard's default settings and your options for each jumper.

1.8.1 How to Set Jumpers

Users can configure your motherboard to match the needs of your application by setting the jumpers. A jumper is a metal bridge that closes an electrical 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" (or turn ON) a jumper, you connect the pins with the clip. To "open" (or turn OFF) a jumper, you remove the clip. Sometimes a jumper consists of a set of three pins, labeled 1, 2, and 3. In this case you connect either pins 1 and 2, or 2 and 3. A pair of needle-nose pliers may be useful when setting jumpers.

1.8.2 Flash Descriptor Security Override Setting Jumper (ME1)

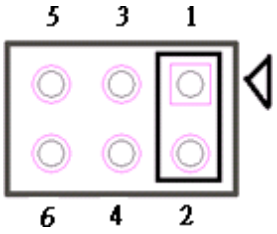
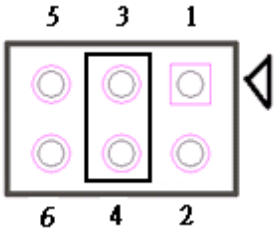
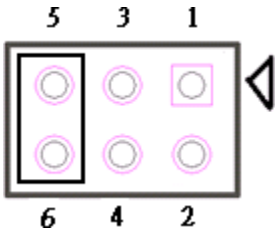
Function	Jumper Setting
Disable Flash Descriptor Security (Default)	1 2 3 
Enable Security measures defined in the Flash Descriptor.	1 2 3 

1.8.3 CMOS Clear Jumper (JCMOS1)

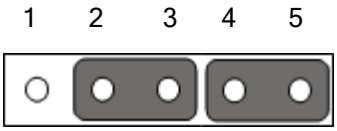
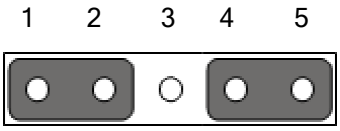
Pin	Signal Pin Definition
1	VBAT
2	RTC RESET#
3	GND

Function	Jumper Setting
Keep COMS Data (Default)	1 2 3 
Clear CMOS Date	1 2 3 

1.8.4 COM3_RI# Pin RI#/5V/12V Selection

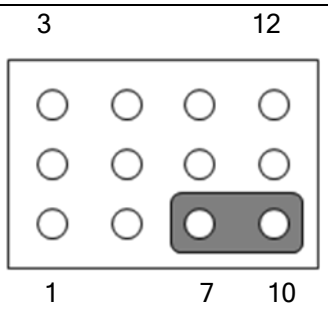
Function	Setting
Set COM3_RI# as RI# (Default)	
Set COM3_RI# as 5V	
Set COM3_RI# as 12V	

1.8.5 Watchdog Timer Output and OBS Beep (JOBS1+JWDT1)

Function	Setting
Watchdog Timer Output(2-3) (Default) OBS BEEP(4-5) (Default)	
Watchdog Timer Disable(1-2) OBS BEEP(4-5) (Default)	

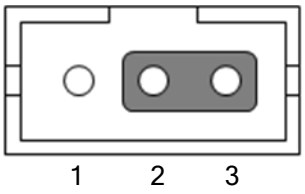
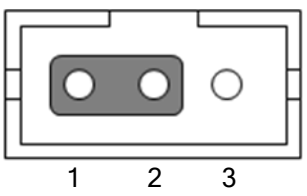
1.8.6 Power Switch/HDD LED/SMBUS/Speaker Pin Header (JFP1)

Pin	Signal Pin Definition	Pin	Signal Pin Definition
1	+V5	2	FP_HDD_LED
3	FP_PANSWIN#	4	FRP_SPK2
5	FP_HDD_LED#	6	GND
7	FRP_SPK3	8	SMBDAT_JFP
9	FP_SYS_RESET#	10	FRP_SPK4
11	SMBCLK_JFP	12	GND

Function	Jumper Setting
Internal Buzzer (Default)	

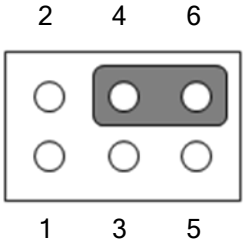
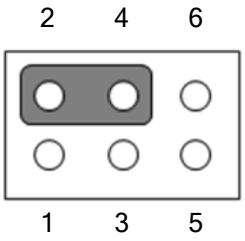
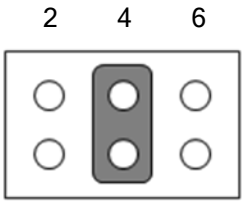
1.8.7 ATX/AT Mode Selection (PSON1)

Pin	Signal Pin Definition
1	ATX selection
2	+VCC
3	AT selection

Function	Jumper Setting
ATX Mode (Default)	
AT Mode	

1.8.8 eDP Panel Voltage Selection (JEDP1)

Pin	Signal Pin Definition	Pin	Signal Pin Definition
1	N/C	2	+5V
3	+12V	4	VDD_LVDS1
5	N/C	6	+3.3V

Function	Jumper Setting
Jumper position for +3.3V (Default)	
Jumper position for +5V	
Jumper position for +12V	

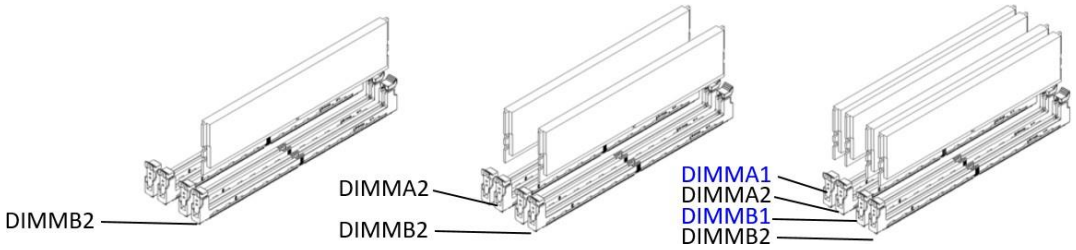
1.9 System Memory

AIMB-588 has four 288-pin DDR5 memory sockets for 3600/4000/4400 MHz memory mod ules with maximum capacity of 128 GB (Maximum 32 GB for each DIMM). AIMB- 588Q/H supports only non-ECC DDR5 memory modules. AIMB-588R can support ECC/non-ECC DDR5 memory module.

1.10 Memory Installation Procedures

To install DIMMs, first make sure the two handles of the DIMM socket are in the “open” position, i.e., the handles lean outward. Slowly slide the DIMM module along the plastic guides on both ends of the socket. Then firmly but gently (avoid pushing down too hard) press the DIMM module well down into the socket, until you hear a click when the two handles have automatically locked the memory module into the correct position of the DIMM socket. To remove the memory module, just push both handles outward, and the memory module will be ejected by the mechanism.

- DIMM installation
  Recommended UDIMM module installation guide, please use the same UDIMM memory module on the same channel and load the module from the 2nd slot if single module used as below picture.



Chapter 2

Connecting Peripherals

2.1 Introduction

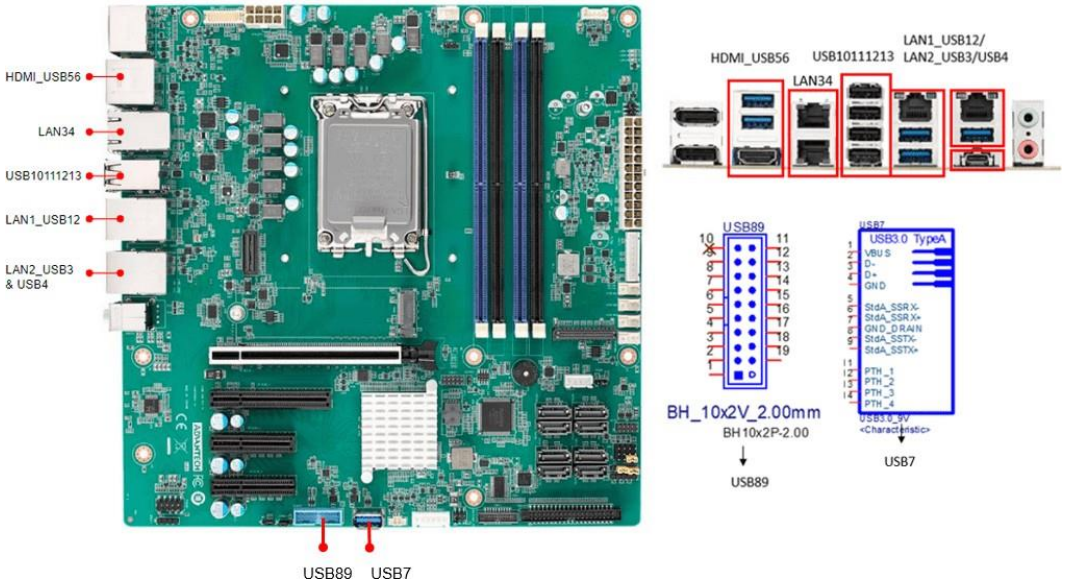
You can access most of the connectors from the top of the board as it is being installed in the chassis. If you have a number of cards installed or have a packed chassis, you may need to partially remove the card to make all the connections.

2.2 USB Ports (HDMI_USB56/LAN34/USB10111213/ LAN1_USB12/LAN2_USB3/USB4/USB89/USB7)

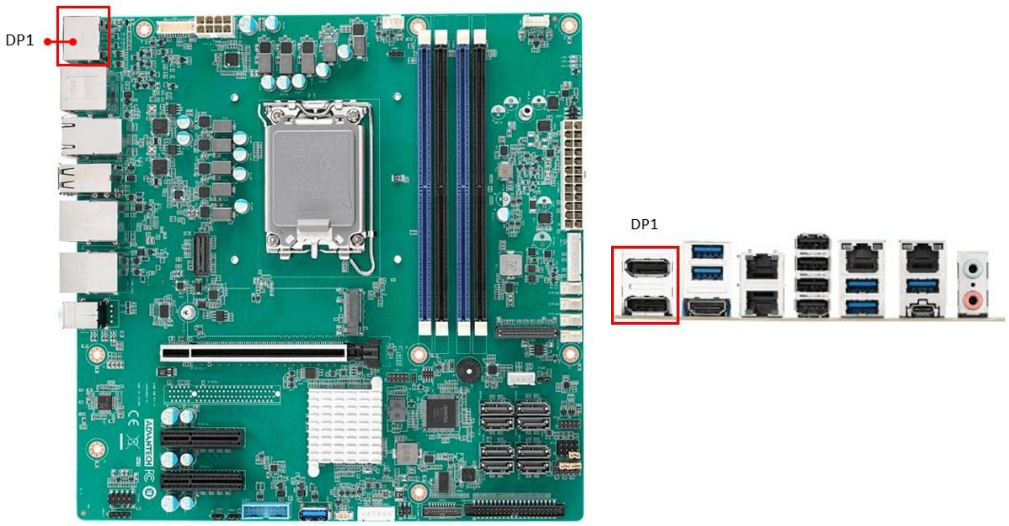
The AIMB-588 provides up to 13 USB ports. (5 x USB3.2 Gen2, 4 x USB2.0 type A and 1 x USB3.2 Gen2 type C on the rear side, 2 x USB 3.2 Gen1 via internal header and 1 x USB 3.2 Gen1 via vertical connector) The USB interface complies with USB Specification Rev 2.0 supporting transmission rates up to 480 Mbps and Rev 3.0 supporting transmission rate up to 5 Gbps, Rev 3.1 Gen2 supporting transmission rate up to 10 Gbps and is fuse protected. The USB interface can be disabled in the system BIOS setup.

The AIMB-588 is equipped with up to one high-performance 1000 Mbps Ethernet LAN adapters and two 2.5G Mbps Ethernet LAN adapters both of which are supported by all major network operating systems.

The RJ-45 jacks on the rear panel provides convenient LAN connection.

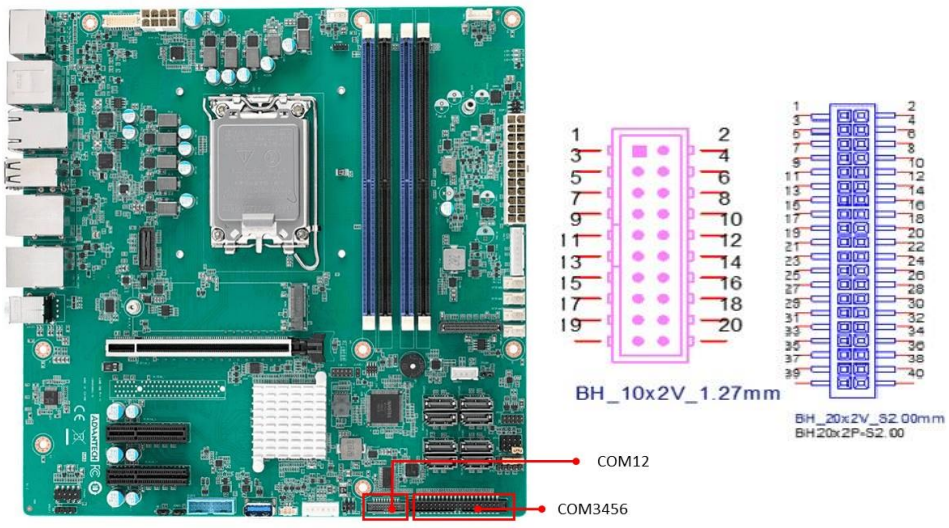


2.3 DP1 Connector (DP1)



AIMB-588 DP connector has max resolution support to 4096 x 2304 @ 30 Hz.

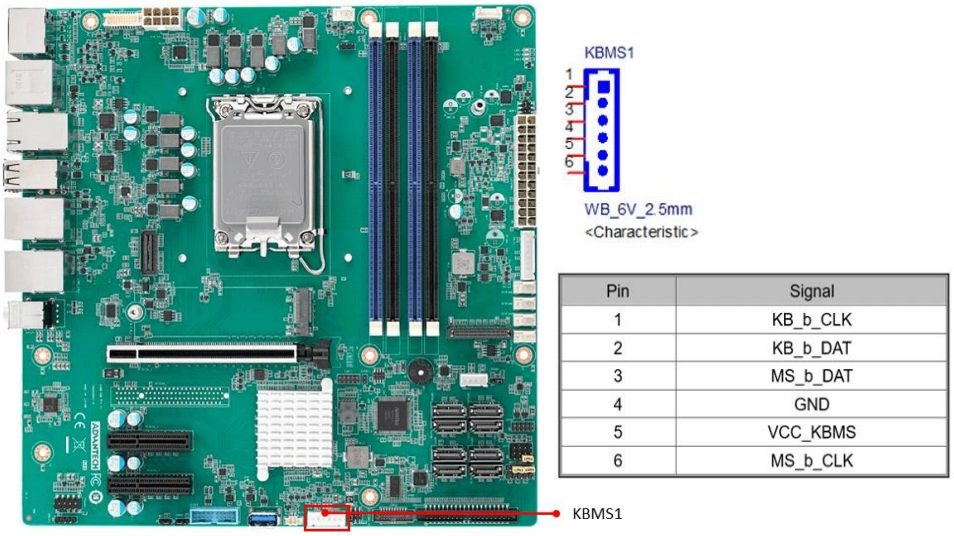
2.4 Serial Ports (COM12/COM3456)



AIMB-588 supports six serial ports. COM1, COM3-6 supports RS-232. COM2 supports RS-232/422/485.

These ports can connect to serial devices, such as a mouse or a printer, or to a communications network.

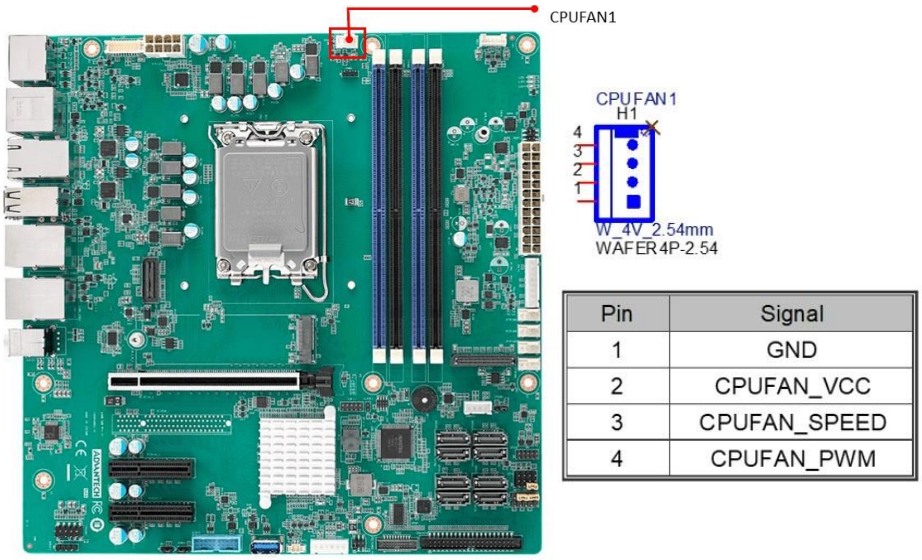
2.5 Keyboard and Mouse Connector (KBMS1)



Pin	Signal
1	KB_b_CLK
2	KB_b_DAT
3	MS_b_DAT
4	GND
5	VCC_KBMS
6	MS_b_CLK

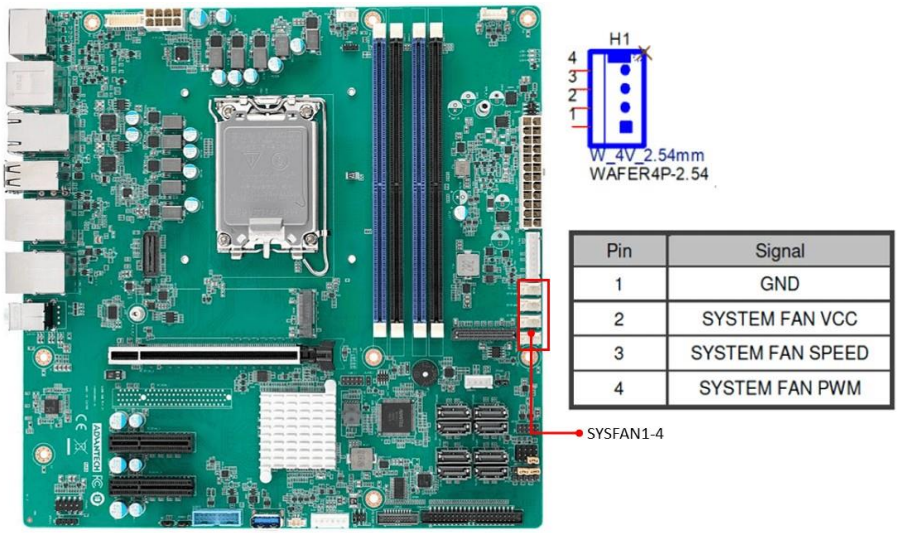
6-pin mini-DIN connectors (KBMS1, 2.54pitch) is for supporting the PS/2 keyboard and PS/2 mouse.

2.6 CPU Fan Connector (CPUFAN1)



Pin	Signal
1	GND
2	CPUFAN_VCC
3	CPUFAN_SPEED
4	CPUFAN_PWM

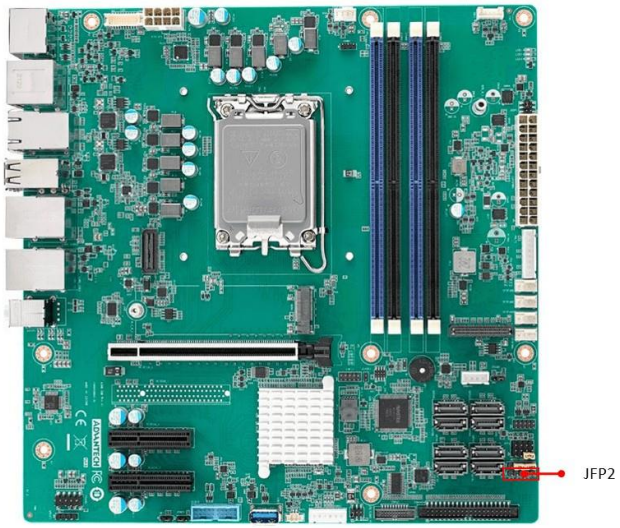
2.7 System FAN Connector (SYSFAN1/SYSFAN2/ SYSFAN3/SYSFAN4)



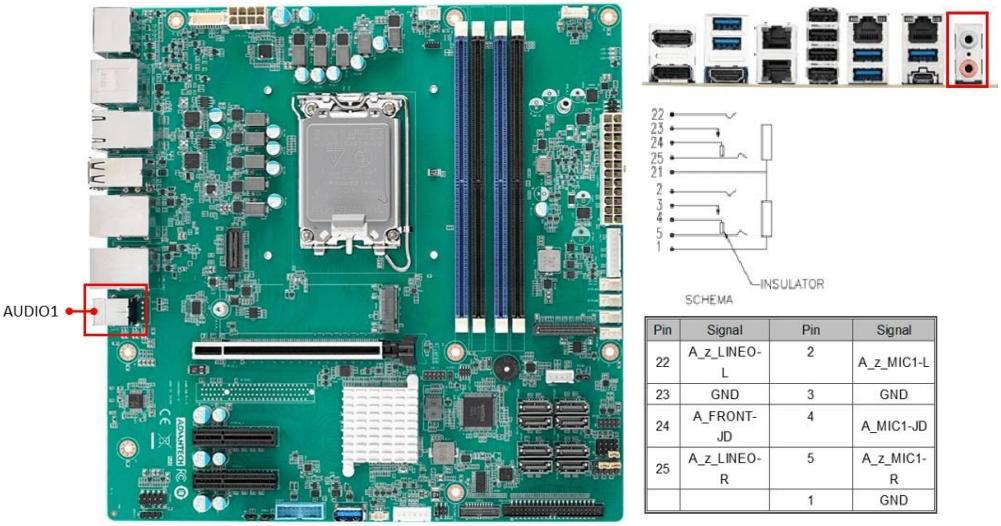
Pin	Signal
1	GND
2	SYSTEM FAN VCC
3	SYSTEM FAN SPEED
4	SYSTEM FAN PWM

If a fan is used, this connector supports cooling fans of 1500 mA (18 W) or less.

2.8 Power LED and Keyboard Lock Pin Header (JFP2)



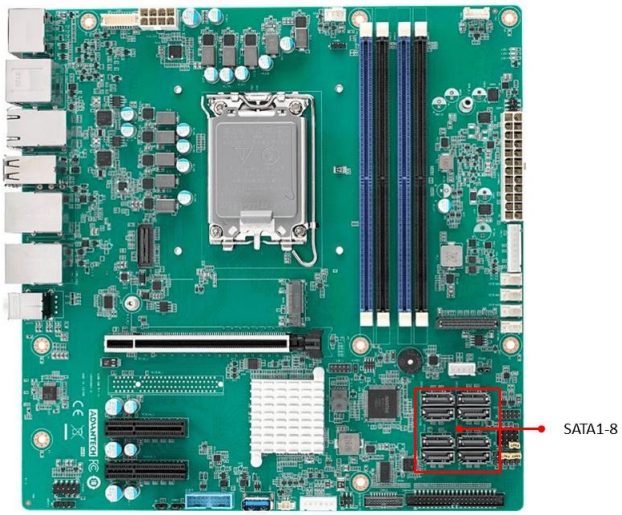
2.9 Audio Jack (AUDIO1)



Pin	Signal	Pin	Signal
22	A_z_LINEO-L	2	A_z_MIC1-L
23	GND	3	GND
24	A_FRONT-JD	4	A_MIC1-JD
25	A_z_LINEO-R	5	A_z_MIC1-R
		1	GND

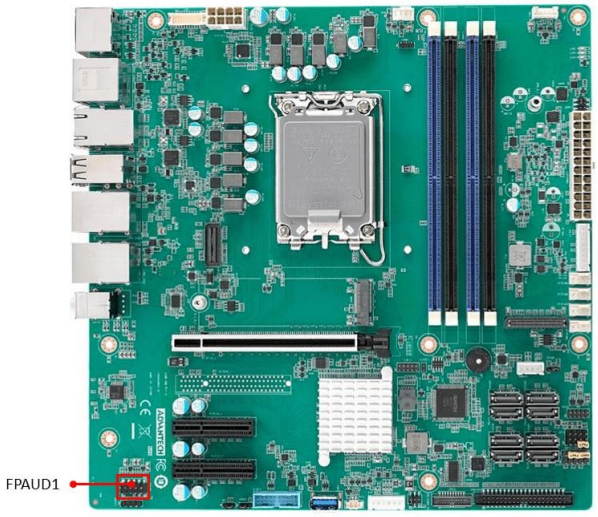
Note! *Default audio support 2 ports.*
But can BOM option to support 3 ports.(line-in/line out/ Mic in)

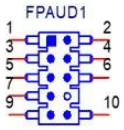
2.10 Serial ATA Interface Connector (SATA1~8)



AIMB-588 features a high performance Serial ATA III interface (up to 600 MB/s) which eases hard drive cabling with thin, space-saving cables. AIMB-588R-00A1 and AIMB-588Q-00A1 support SATA1~SATA8, AIMB-588H-00A1 supports SATA5~SATA8.

2.11 Front Panel Audio Connector (FPAUD1)

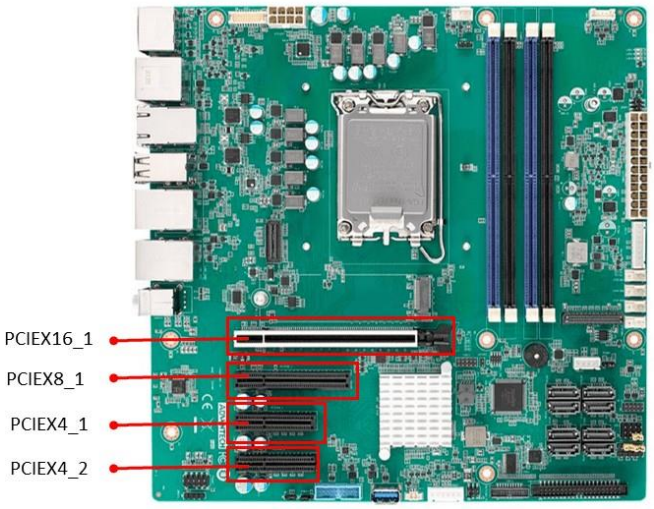




PH_5x2V_S2.54mm
PH5x2P-S2.54

Pin	Signal	Pin	Signal
1	VCC_USB0	5	VCC_USB1
2	USB-0_B	6	USB-1_B
3	USB+0_B	7	USB+1_B
4	GND_1	8	GND_2

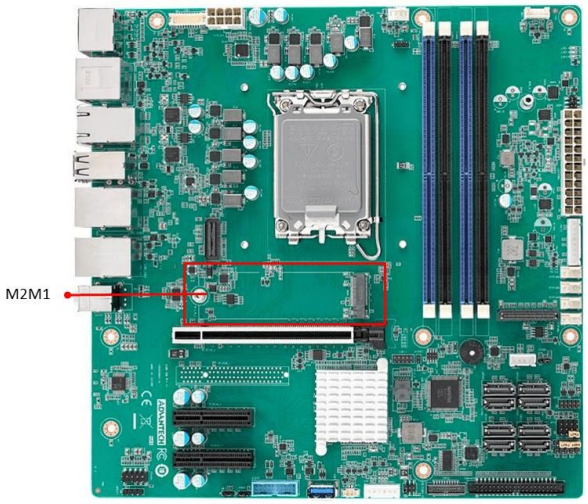
2.12 PCI Express x16 Slot (PCIEX16_1)
PCI Express x 8 Slot (PCIEX8_1)
PCI Express x 4 Slot (PCIEX4_1/PCIEX4_2)



AIMB-588 provides a PCIe x16 slot, which offers BOM option to 1 PCIex8 for users to install add-on cards when their applications require higher graphic performance than the CPU embedded graphics controller can provide.

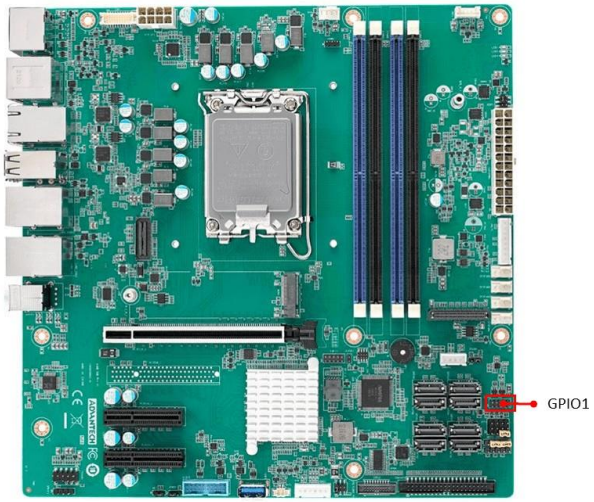
Note! *BOM option to 1 PCIex8, When PCIe x8 slot is used, PCIe x16 slot only supports x8 bandwidth.*

2.13 NGFF M.2 M-Key Connector for 2280 Module (M2M1)

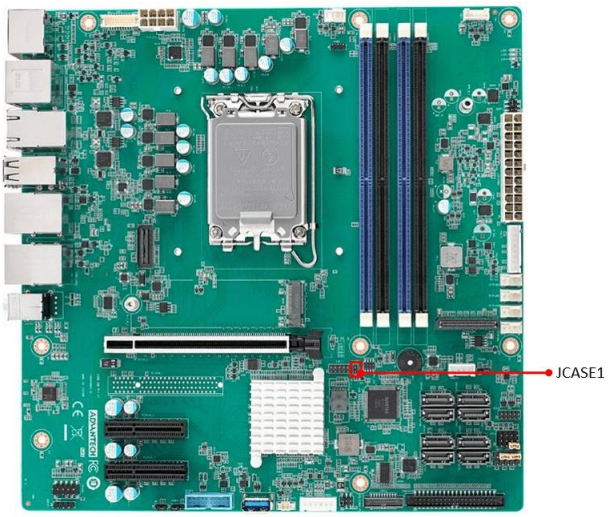


M.2 M-key: 2280, PCIex4 interface, and can support NVMe devices.

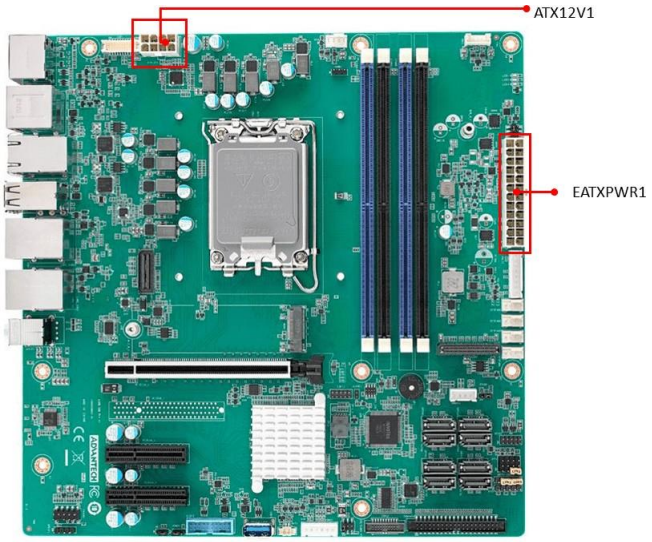
2.14 General Purpose I/O Connector (GPIO1)



2.15 Case Open Connector (JCASE1)



2.16 ATX Power Connector (EATXPWR1, ATX12V1)

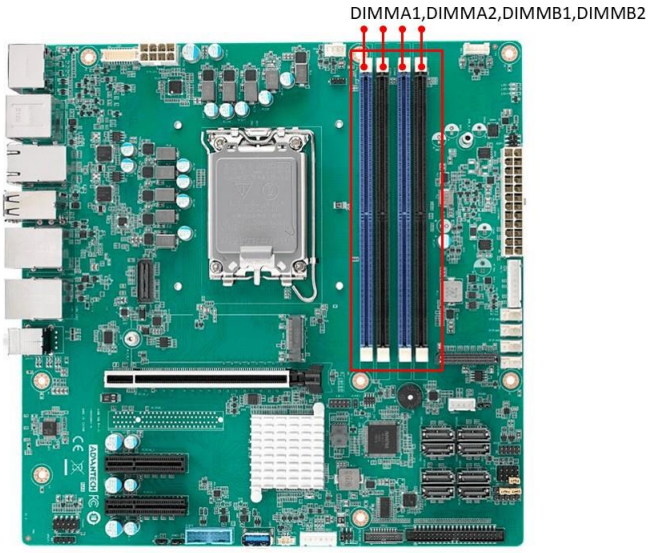


This connector is for an ATX Micro-Fit power supply. The plugs from the power supply are designed to fit these connectors in only one direction. Determine the proper orientation and push down firmly until the connectors mate completely.

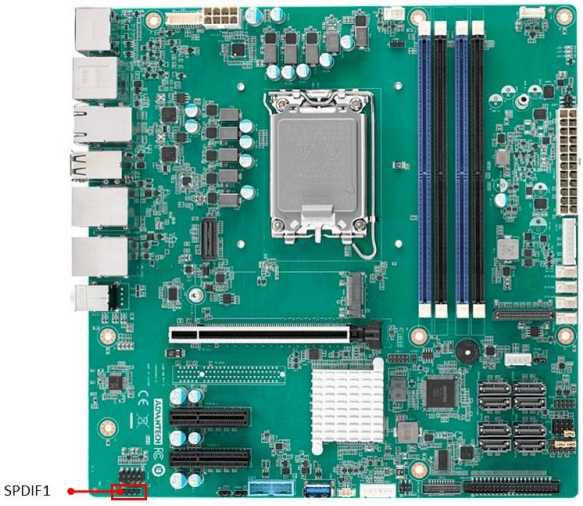
Note! *1. Please connect the ATX12V1 connector with the PSU ATX 12V 8- pin connector.*

2. For a fully configured system, we recommend that you use a power supply unit (PSU) that complies with ATX 12V Specification 2.0 (or later version) and provides a minimum power of 180 W.

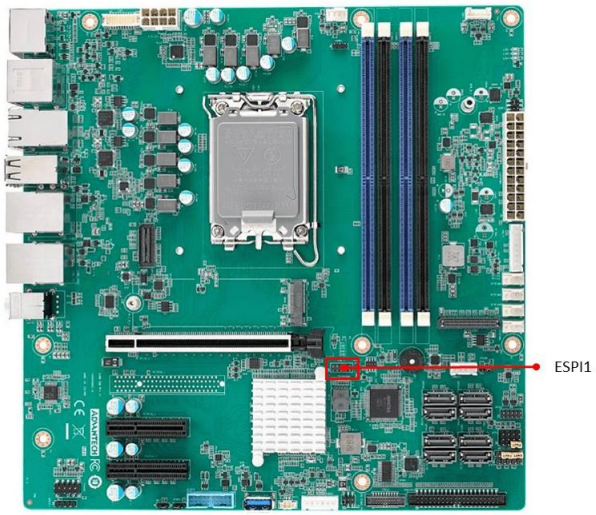
2.17 DDR5 U-DIMM Socket (DIMMA1/DIMMA2/ DIMMB1/DIMMB2)



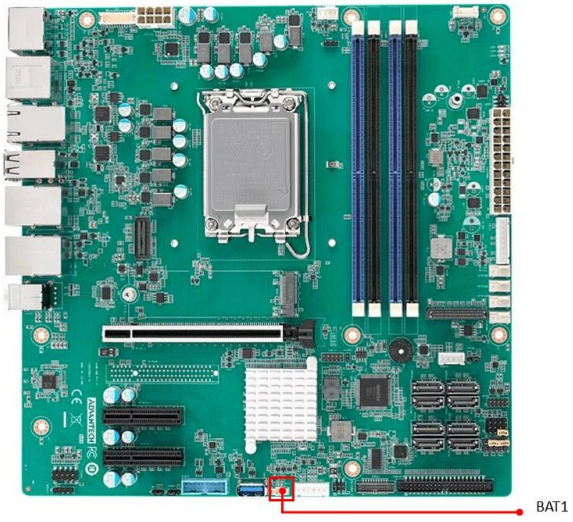
2.18 SPDIF Interface Connector (SPDIF1)



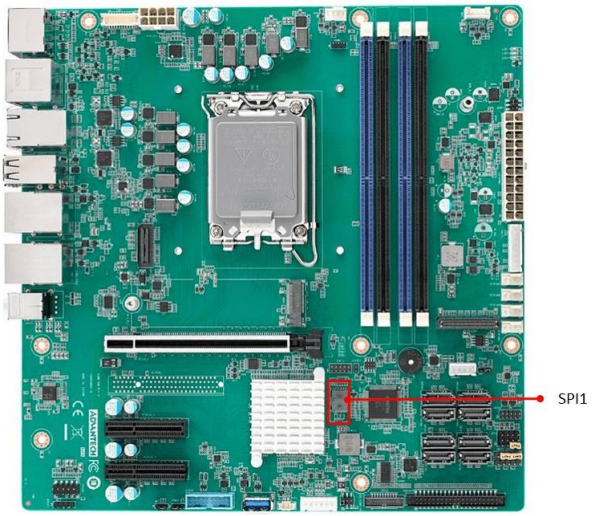
2.19 ESPI Debug Card Connector (ESPI1)



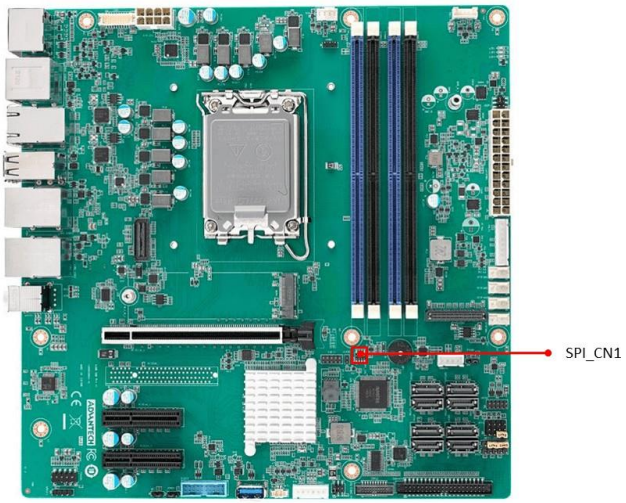
2.20 Battery Wafer Box (BAT1)



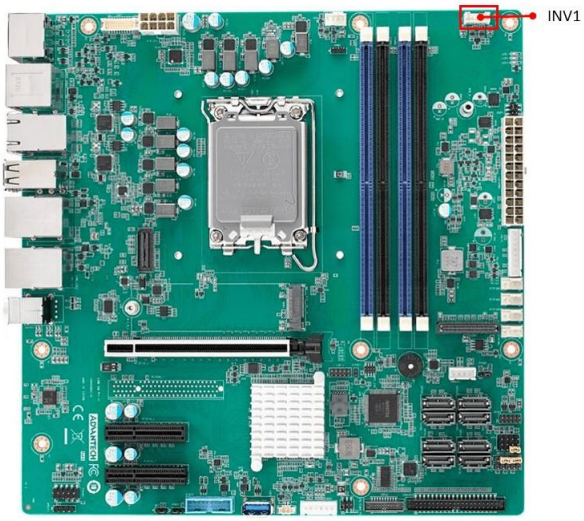
2.21 SPI BIOS Flash Socket (SPI1)



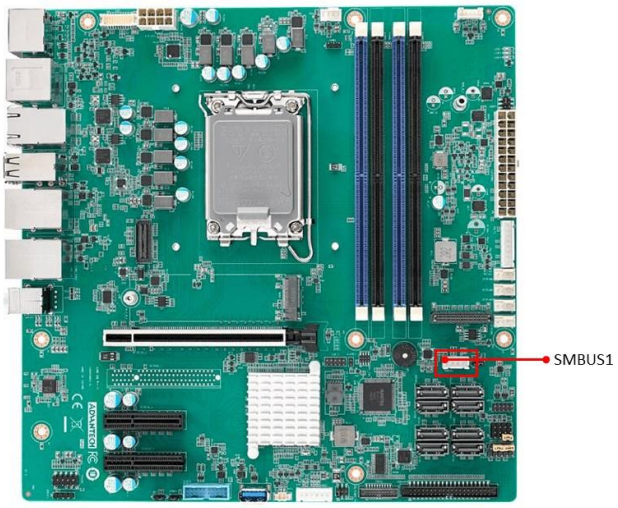
2.22 BIOS Flash Connector (SPI_CN1)



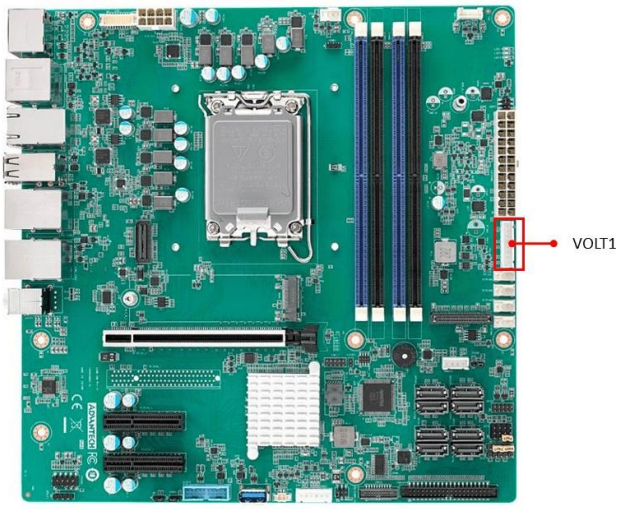
2.23 eDP Backlight Inverter Power Connector (INV1)



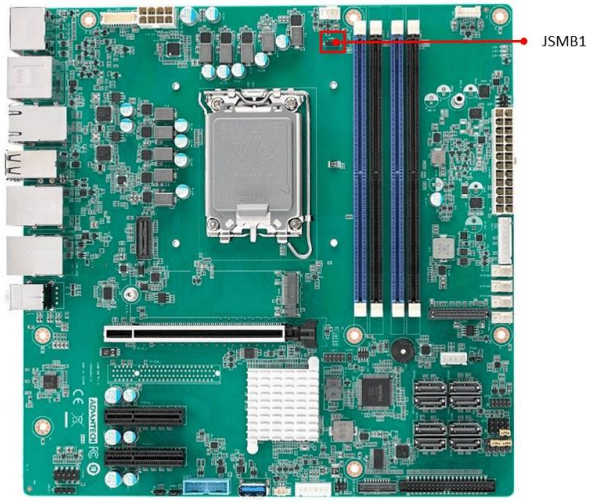
2.24 SMBUS Connector (SMBUS1)



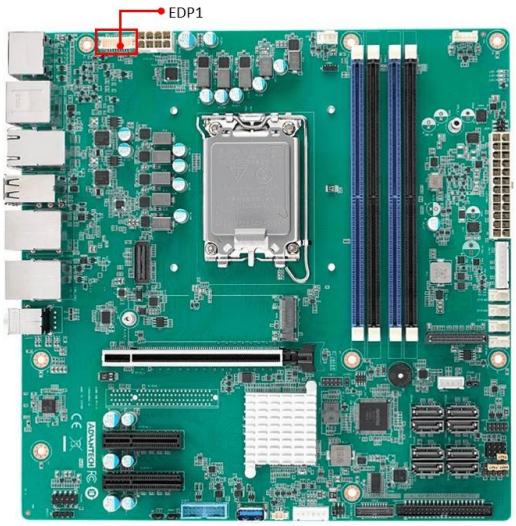
2.25 -V5/+V5/-V12/+V12/+V3.3/+V5_DUAL Power Supply Connector (VOLT1)



2.26 MPS's I2C/SMBUS Programming for +VCCIN Controller (JSMB1)



2.27 eDP Panel Connector (EPD1)



Chapter 3

BIOS Operation

3.1 Introduction

AMI BIOS has been integrated into many motherboards, and has been very popular for over a decade. With the AMI BIOS Setup program, you can modify BIOS settings to control the special features of your computer. The Setup program uses a number of menus for making changes. This chapter describes the basic navigation of the AIMB-588 setup screens.

3.2 BIOS Setup

The AIMB-588 Series system has AMI BIOS built in, with a SETUP utility that allows users to configure required settings or to activate certain system features.

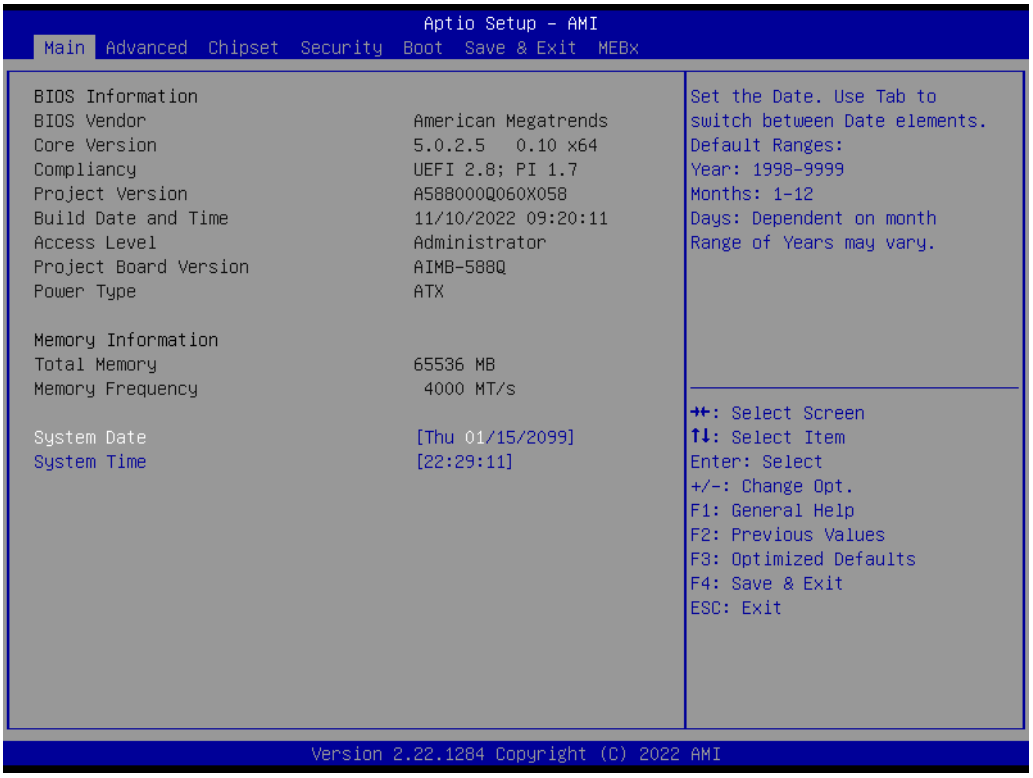
The SETUP saves the configuration in the FLASH of the motherboard. When the power is turned off, the battery on the board supplies the necessary power to preserve the FLASH.

When the power is turned on, press the <Del> or <Esc> button during the BIOS POST (Power-On Self Test) to access the CMOS SETUP screen.

Control Keys	
< ← >< → >	Select Screen
< ↑ >< ↓ >	Select Item
<Enter>	Select
<+/->	Change Opt
<F1>	General help
<F2>	Previous Values
<F3>	Optimized Defaults
<F4>	Save & Exit
<Esc>	Exit

3.2.1 Main Menu

Press <Del> or <Esc> to enter AMI BIOS CMOS Setup Utility, the Main Menu will appear on the screen. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.



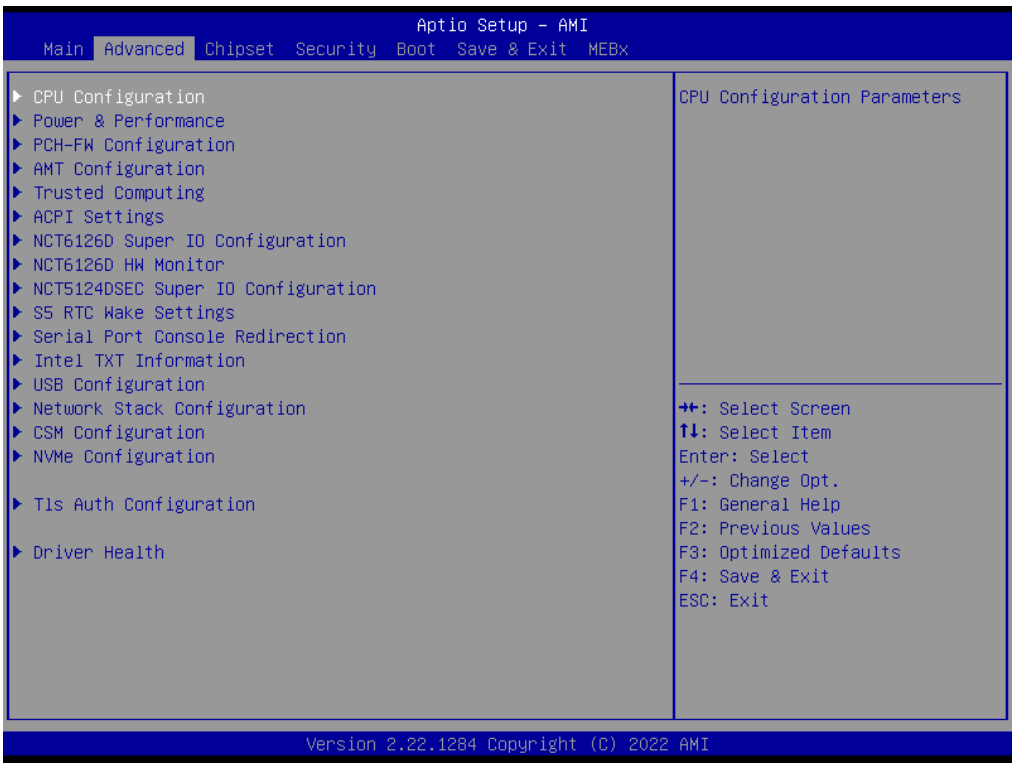
The Main BIOS setup screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured; options in blue can. The right frame displays the key legend.

Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it.

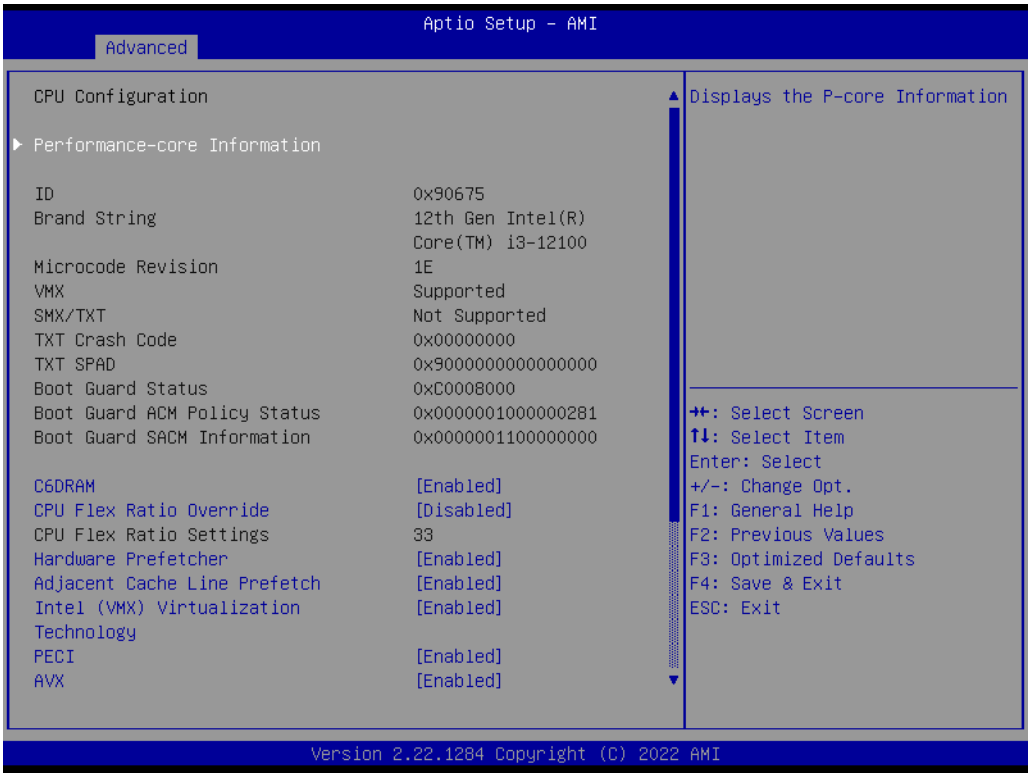
- **System time/System date**
  Use this option to change the system time and date. Highlight System Time or System Date using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in MM/DD/YY format. The time must be entered in HH:MM:SS format.

3.2.2 Advanced BIOS Features

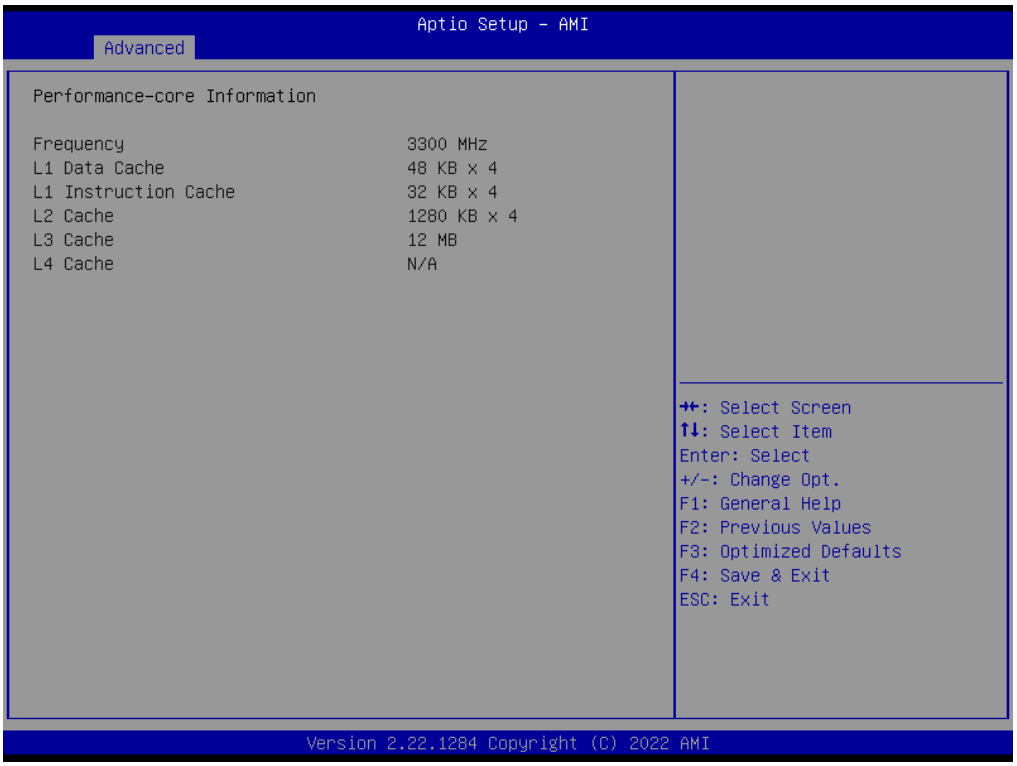
Select the Advanced tab from the AIMB-588 setup screen to enter the Advanced BIOS Setup screen. You can select any of the items in the left frame of the screen, such as CPU Configuration and go to the sub menu for that item. You can display an Advanced BIOS Setup option by highlighting it using the <Arrow> keys. All Advanced BIOS Setup options are described in this section. The Advanced BIOS Setup screen is shown below. The sub menus are described on the following pages.



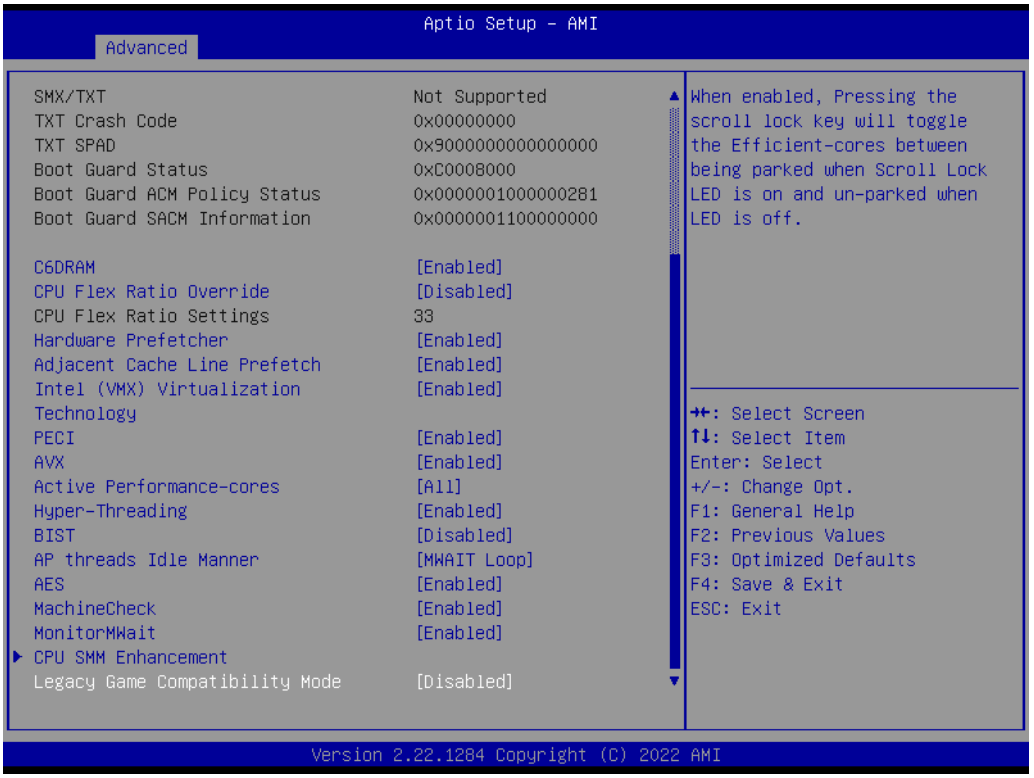
3.2.2.1 CPU Configuration



- **Performance-core Information**
  Displays the P-core information.

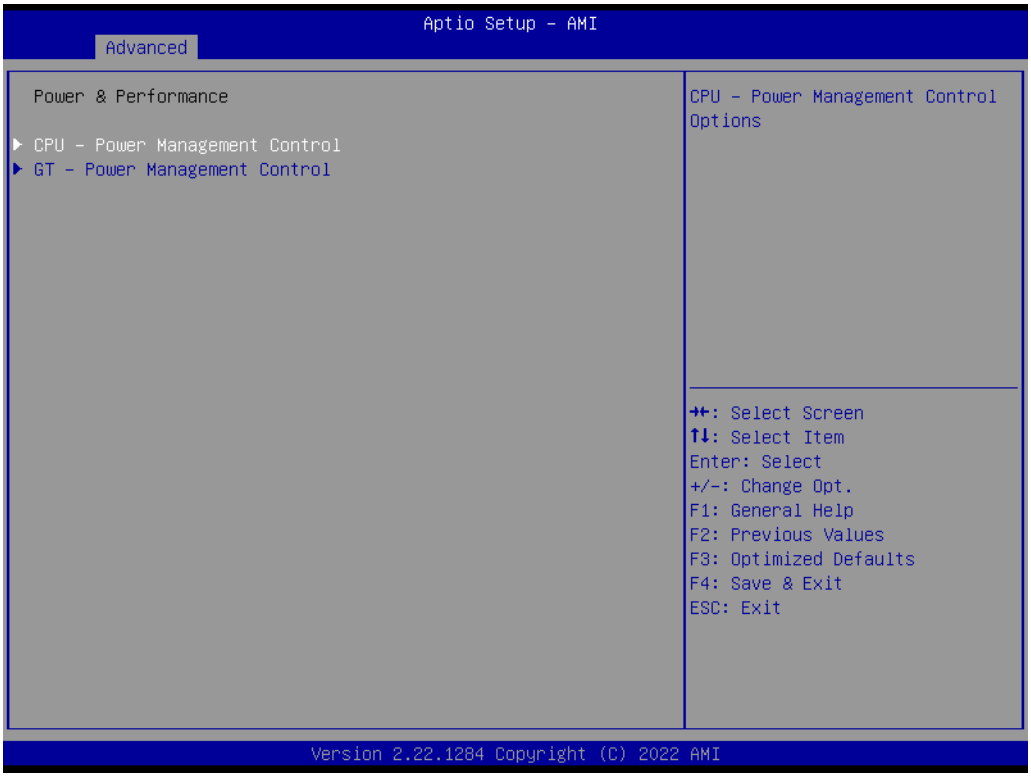


3.2.2.2 CPU SMM Enhancement



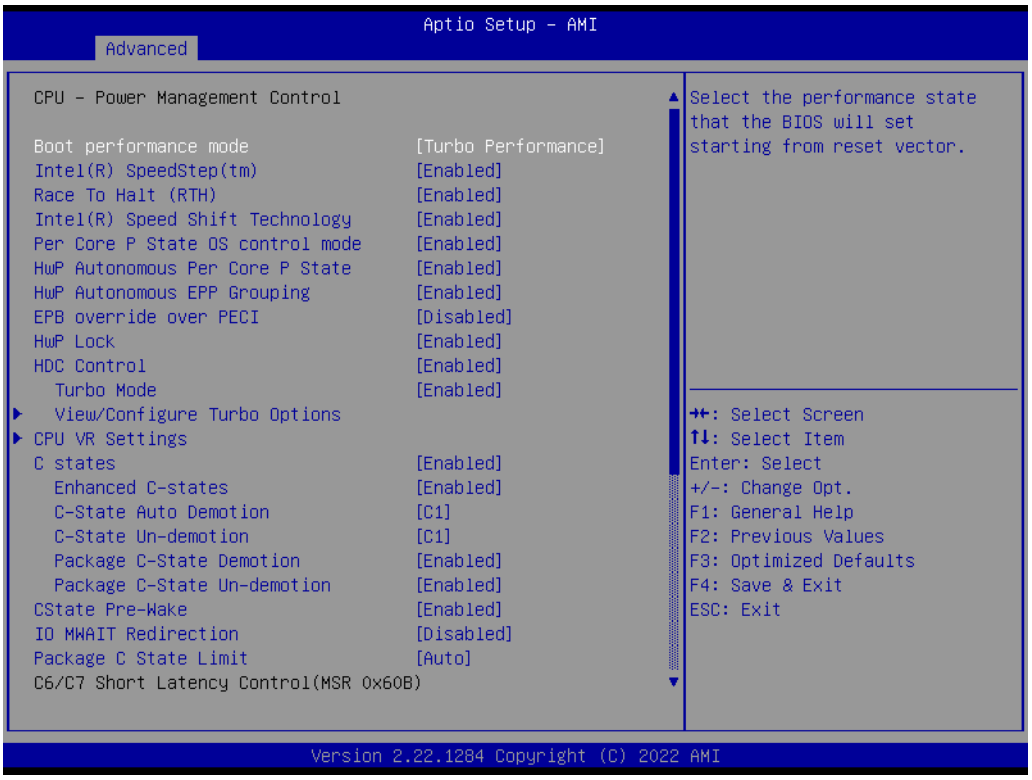
- **SMM Use Delay Indication [Enable]**
  Enable/disable usage of SMM_DELAYED MSR for MP sync in SMI.
- **SMM Use Block Indication [Enable]**
- **SMM Use SMM en-US Indication [Enable]**

3.2.2.3 Power & Performance

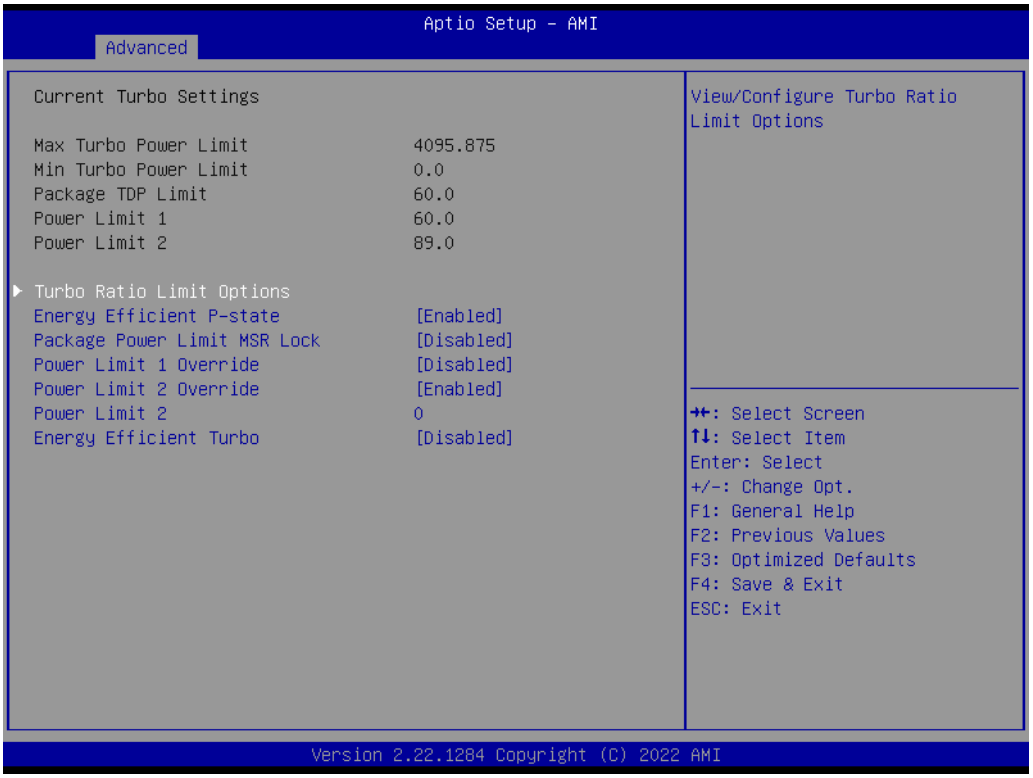


- **CPU – Power Management Control**
  CPU - Power Management Control Options.
- **GT – Power Management Control**

3.2.2.3.1 CPU – Power Management Control

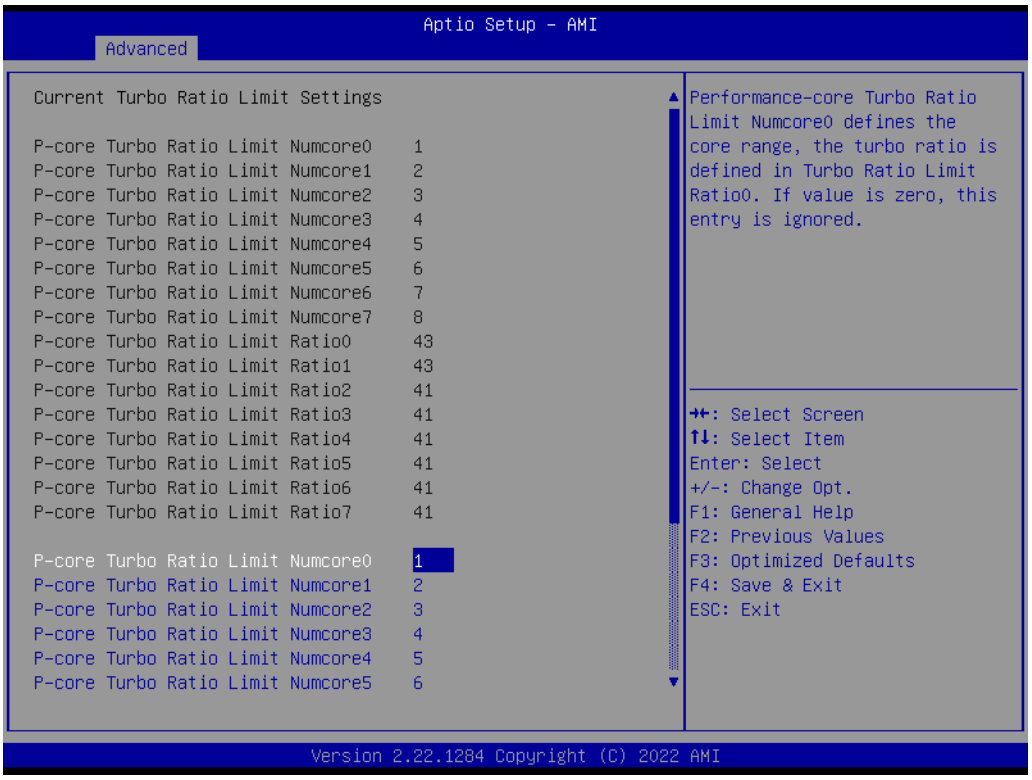


- **Boot performance mode [Turbo Performance]**
  Select the performance state that the BIOS will set starting from reset vector.

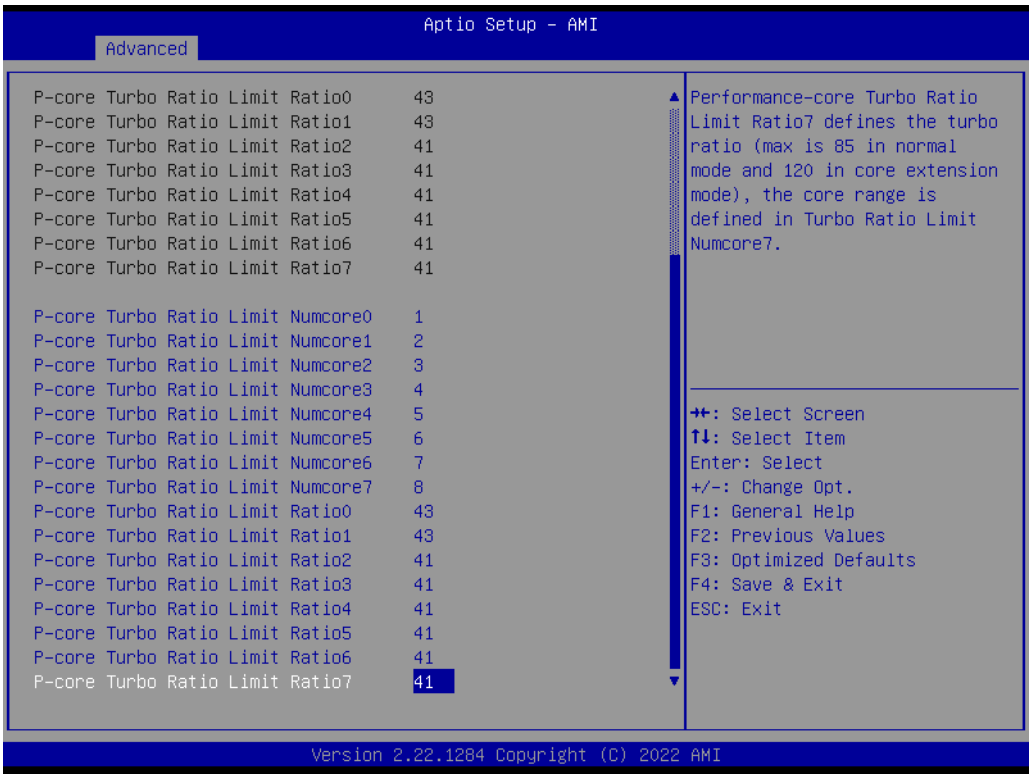


- **Turbo Ratio Limit Options**
  View/Configure Turbo Ratio Limit Options.
  - **Energy Efficient P-state [Enable]**
  - **Package Power Limit MSR Lock [Disabled]**
  - **Power Limit 1 Override [Disabled]**
  - **Power Limit 2 Override [Enabled]**
  - **Power Limit 2 0**
  - **Energy Efficient P-state [Disable]**

Current Turbo Ratio Limit Settings

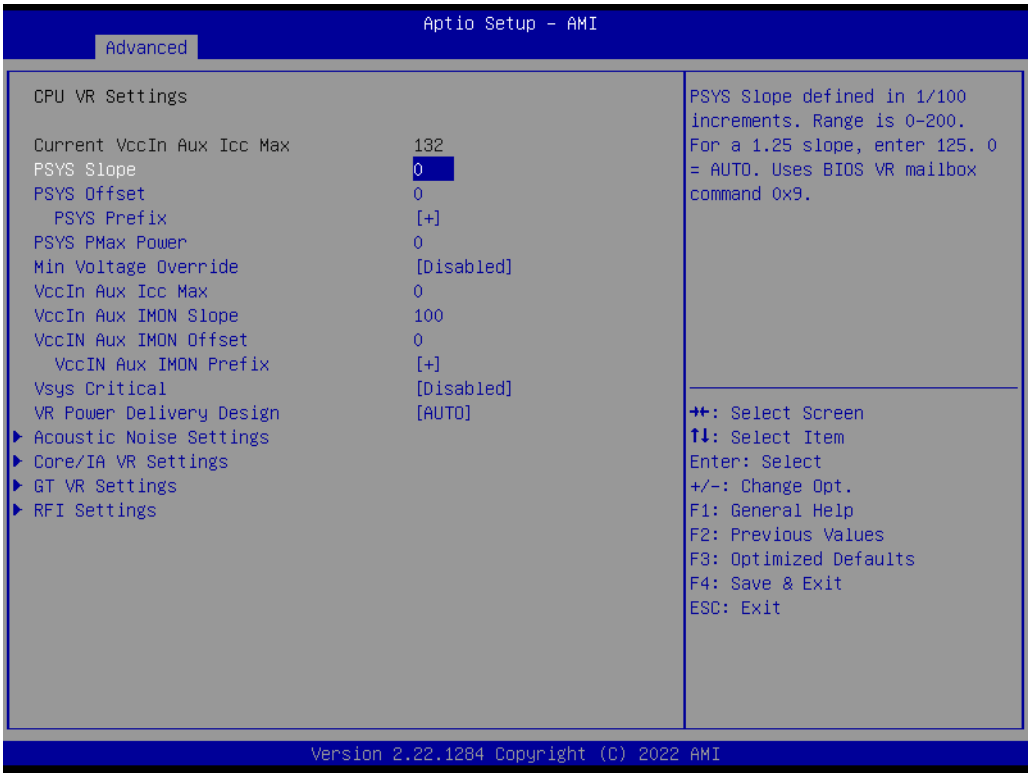


- **P-core Turbo Ratio Limit Numcore0 1**
  Performance-core Turbo Ratio Limit Numcore0 defines the core range, the turbo Ratio Limit Ratio0. If value is zero, this entry is ignored.



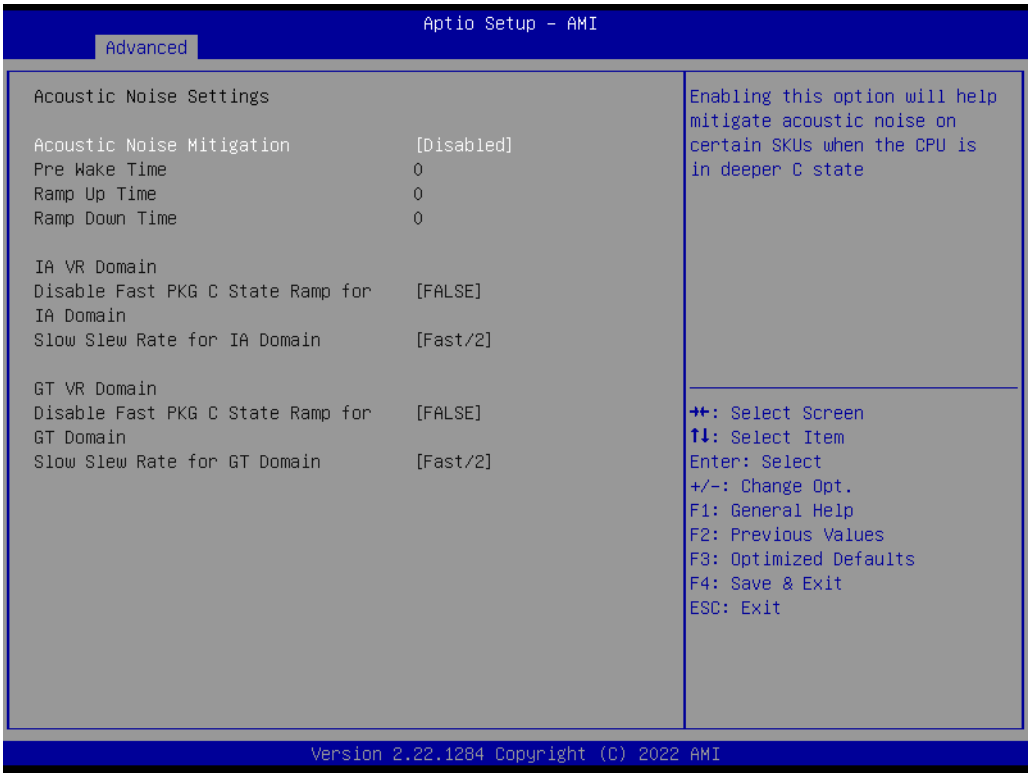
- **P-core Turbo Ratio Limit Ratio7 41**
  Performance-core Turbo Ratio Limit Ratio7 defines the turbo ratio (max is 85 in normal mode and 120 in core extension mode), the core range is defined in Turbo Ratio Limit Numcore7.

3.2.2.3.2 CPU VR Settings



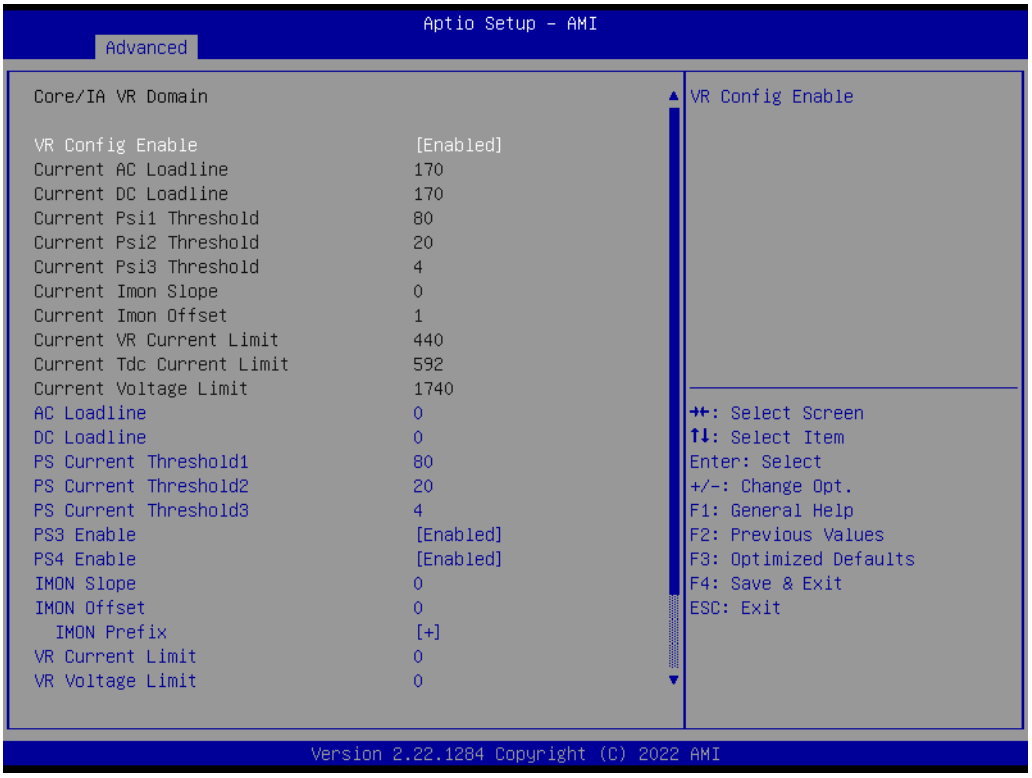
- **PSYS Slope**
  PSYS Slope defined in 1/100 increments. Range is 0-200.
  For a 1.25 slope, enter 125. 0=Auto. Users BIOS VR mailbox command 0x9.

Acoustic Noise Settings

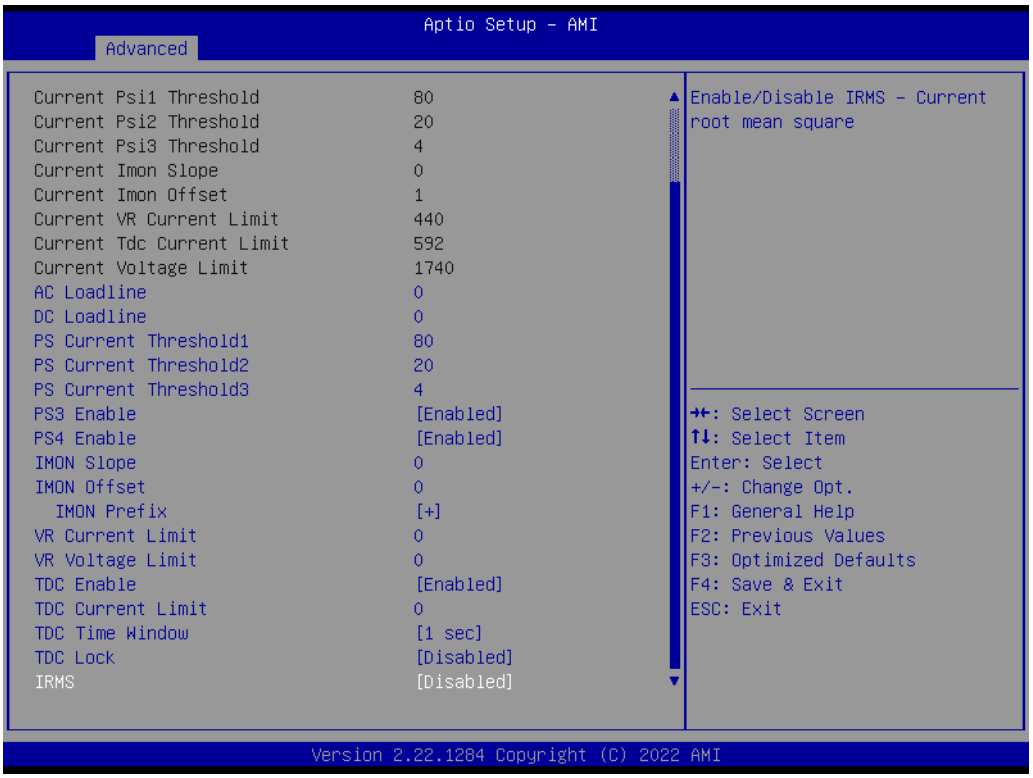


– **Acoustic Noise Mitigation [Disabled]**
  Enabling this option will help mitigate acoustic noise on certain SKUs when the CPU is in deeper C state.

Core/IA VR Domain

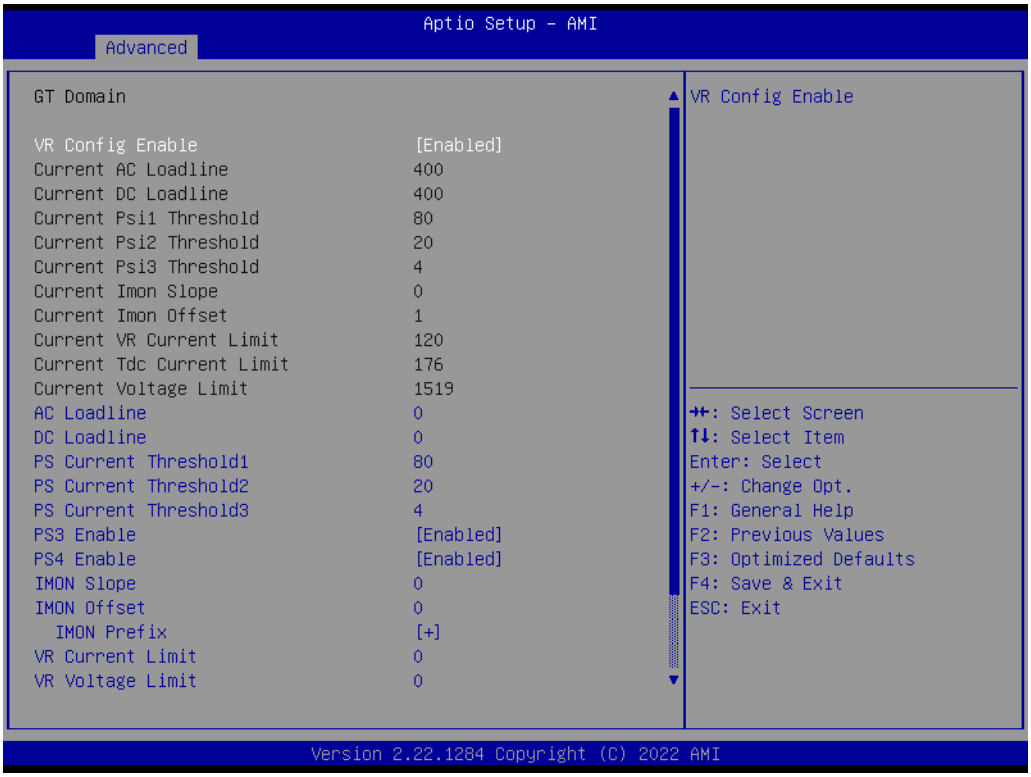


– **R Config Enable [Enabled]**
VR Config Enable.



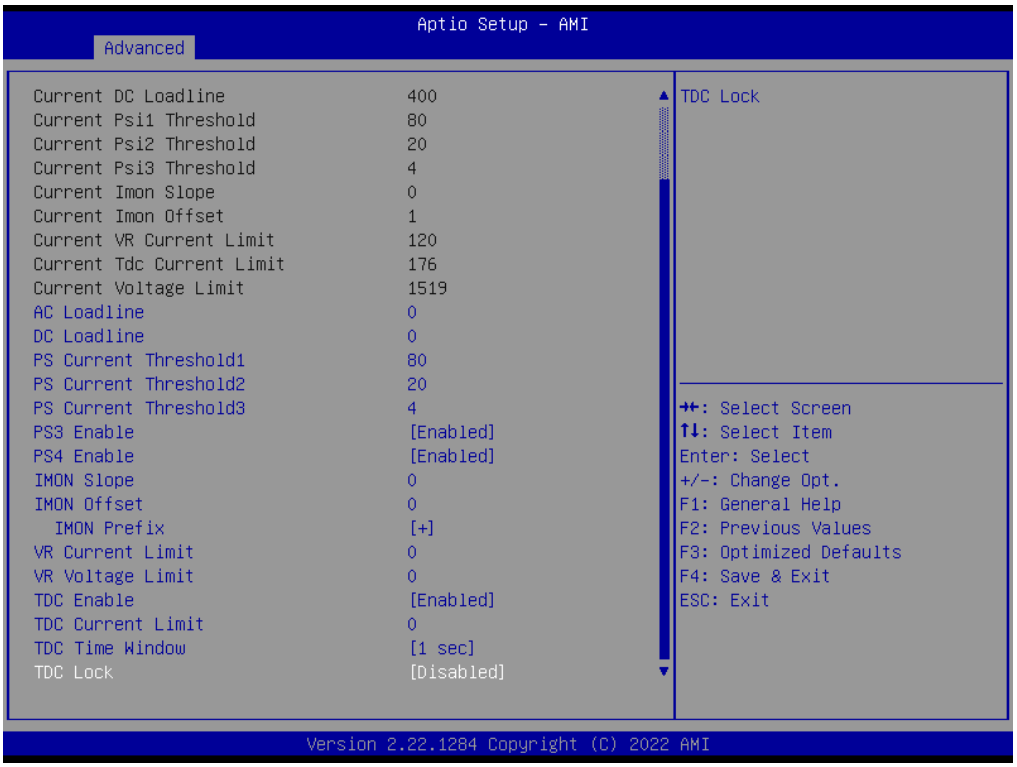
– **IRMS [Disabled]**
Enable/Disable IRMS – Current root mean square.

GT Domain

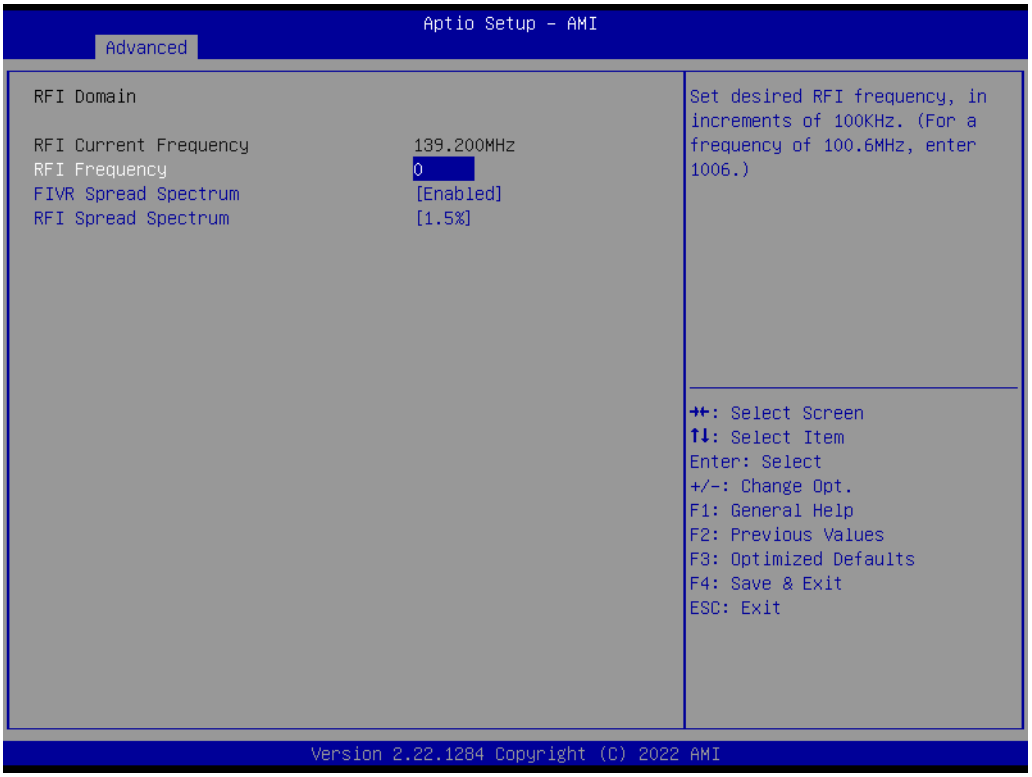


VR Config Enable [Enabled]

VR Config Enable.

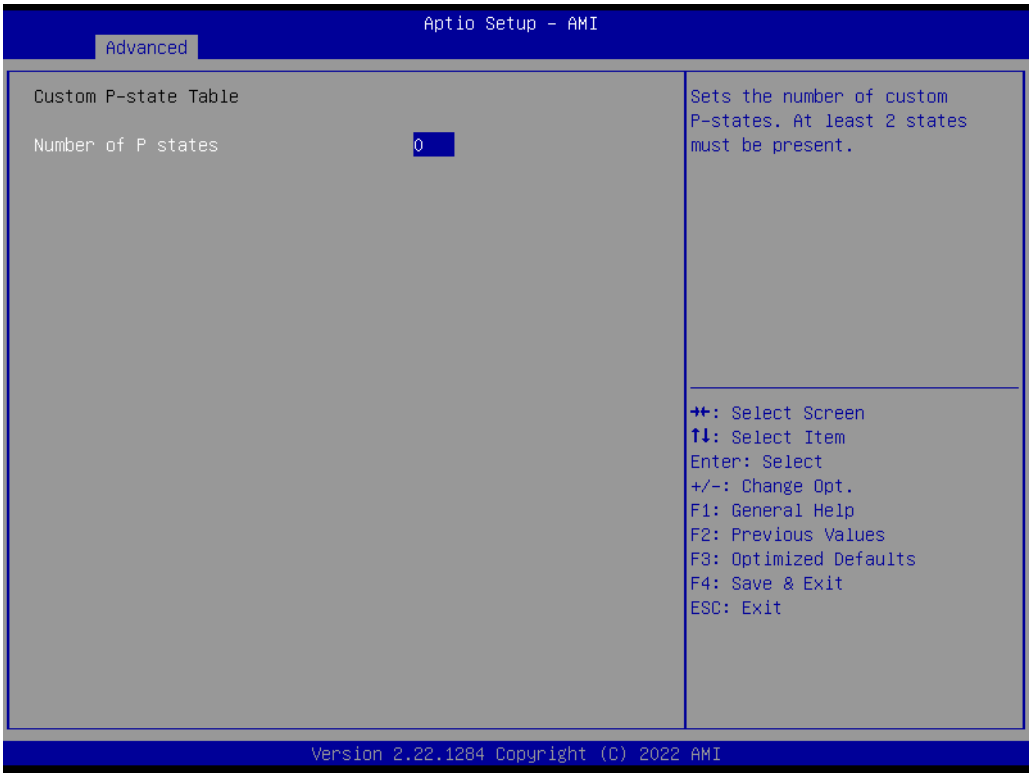


RFI Domain



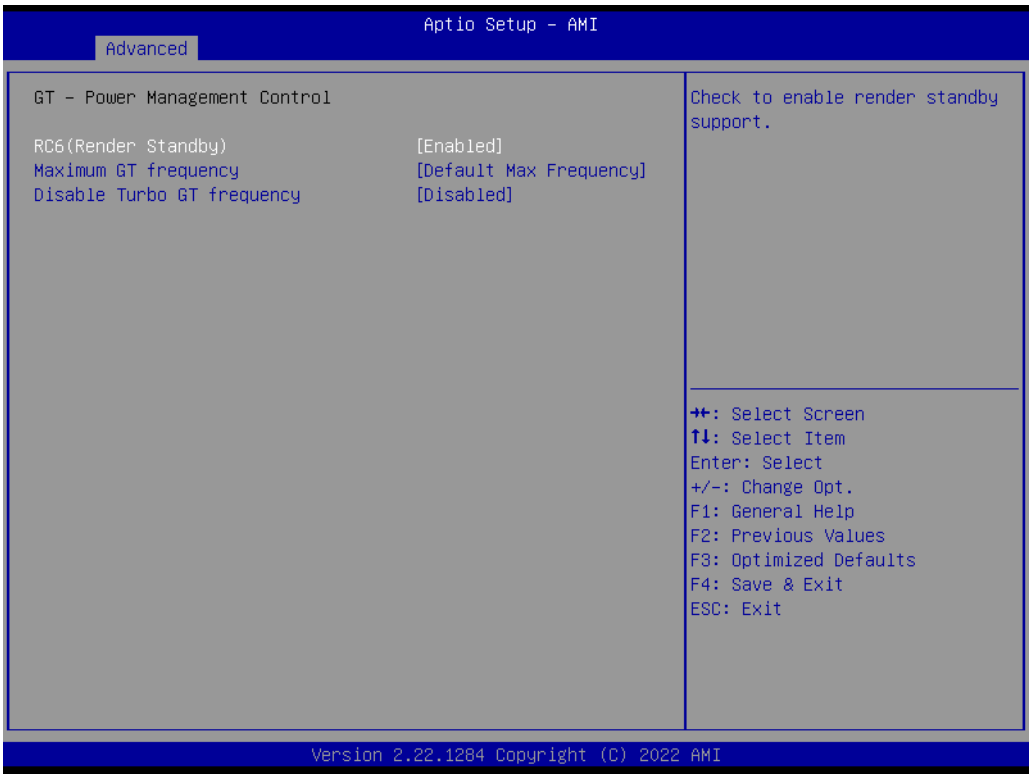
- **FRI Frequency 0**
  Set desired RFI frequency, in increments of 100KHZ. (For a frequency of 100.6MHZ, enter 1006.)

3.2.2.3.3 Custom P-state Table



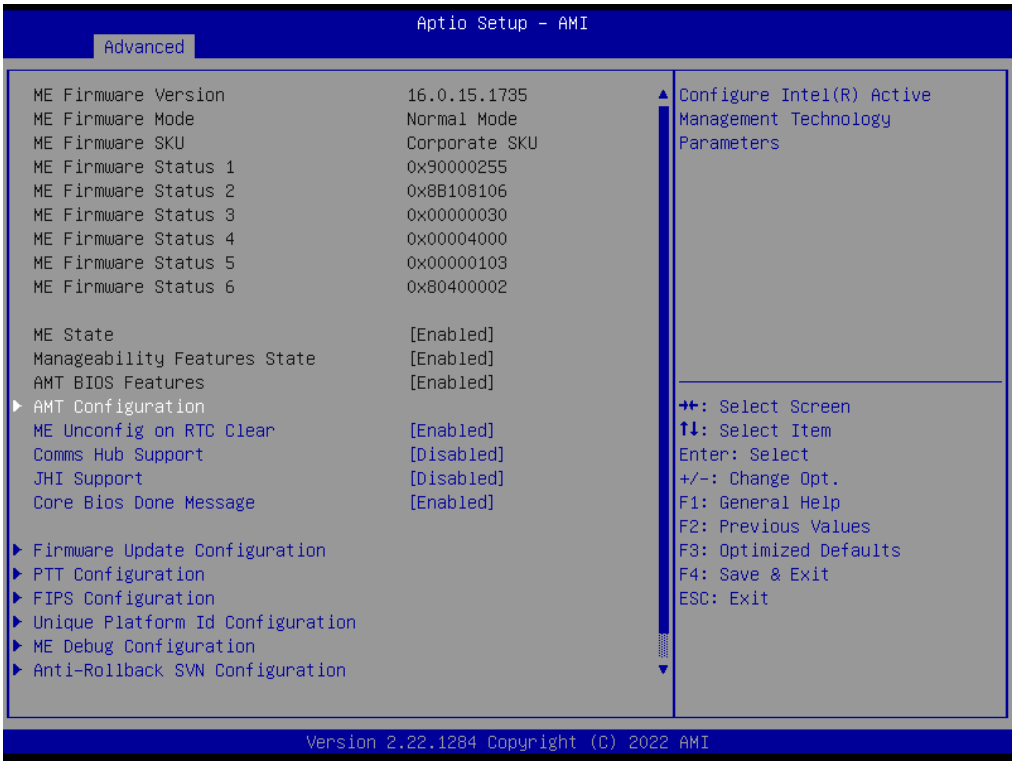
- **Number of P states 0**
  Sets the number of custom P-states. At least 2 states must be present.

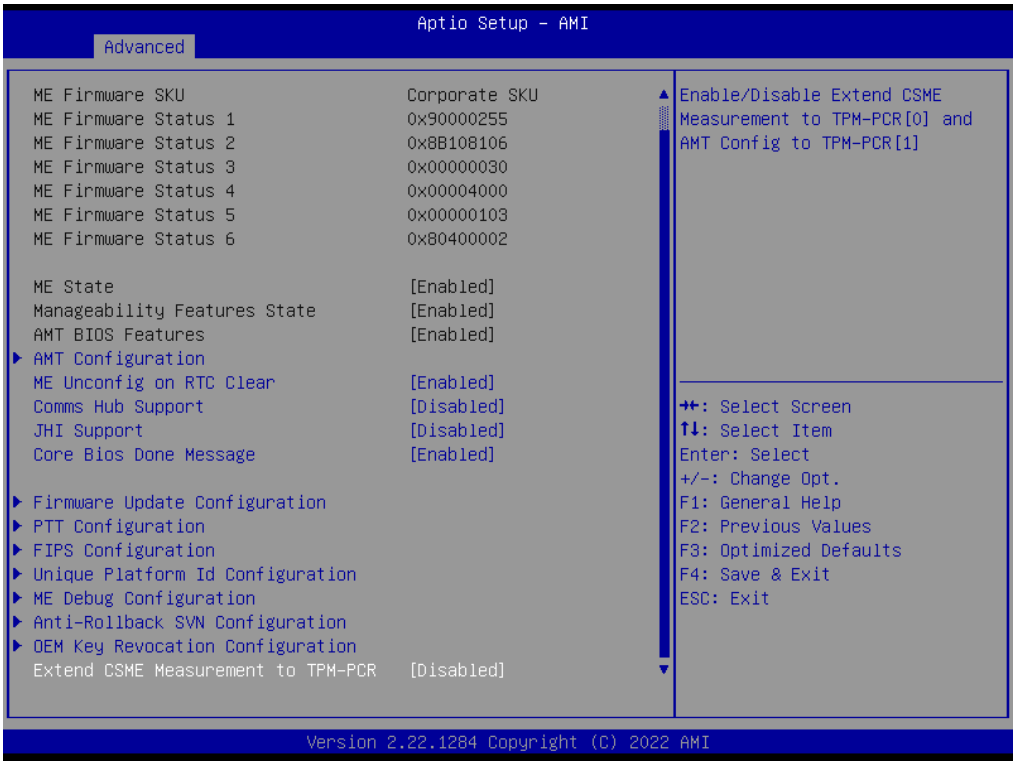
3.2.2.3.4 GT – Power Management Control



- **RC6 (Render Standby) [Enabled]**
  Check to enable render standby support.
- **Maximum GT frequency [Default Max Frequency]**
- **Disable Turbo GT frequency [Disabled]**

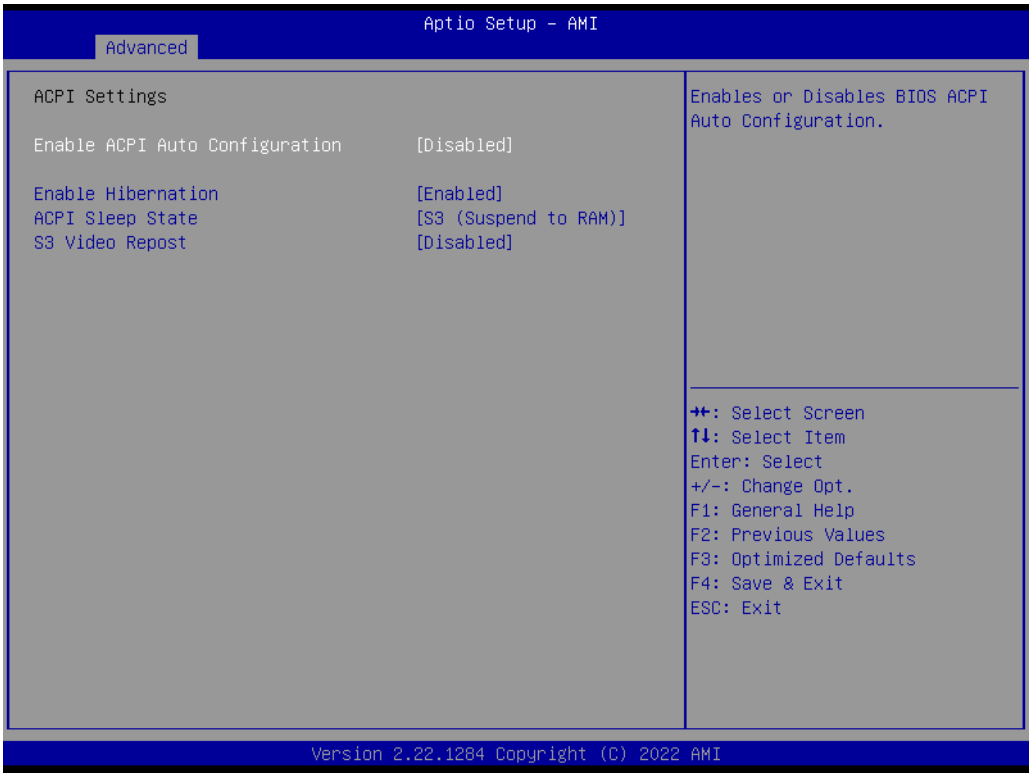
3.2.2.4 PCH-FW Configuration




Aptio Setup – AMI
Advanced
ME Firmware SKU Corporate SKU
ME Firmware Status 1 0x90000255
ME Firmware Status 2 0x8B108106
ME Firmware Status 3 0x00000030
ME Firmware Status 4 0x00004000
ME Firmware Status 5 0x00000103
ME Firmware Status 6 0x80400002
ME State [Enabled]
Manageability Features State [Enabled]
AMT BIOS Features [Enabled]
AMT Configuration
ME Unconfig on RTC Clear [Enabled]
Comms Hub Support [Disabled]
JHI Support [Disabled]
Core Bios Done Message [Enabled]
Firmware Update Configuration
PTT Configuration
FIPS Configuration
Unique Platform Id Configuration
ME Debug Configuration
Anti-Rollback SVN Configuration
OEM Key Revocation Configuration
Extend CSME Measurement to TPM-PCR [Disabled]
Enable/Disable Extend CSME Measurement to TPM-PCR[0] and AMT Config to TPM-PCR[1]
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.22.1284 Copyright (C) 2022 AMI

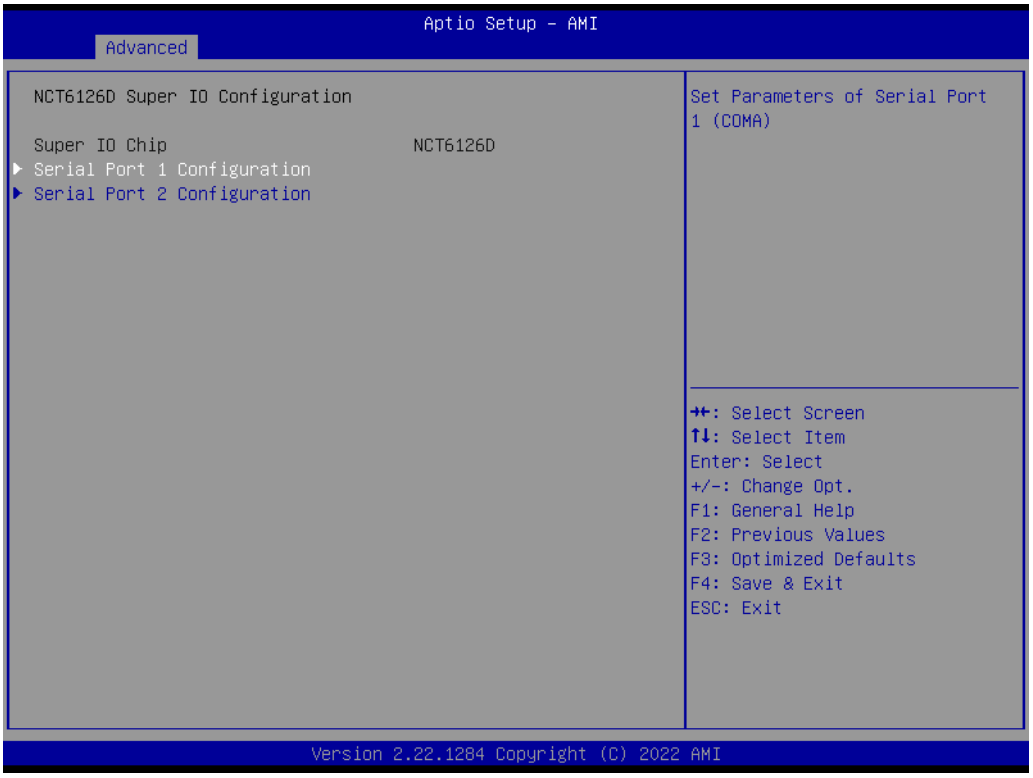
3.2.2.5 ACPI Settings

Configure Intel(R) Active Management Technology Parameters

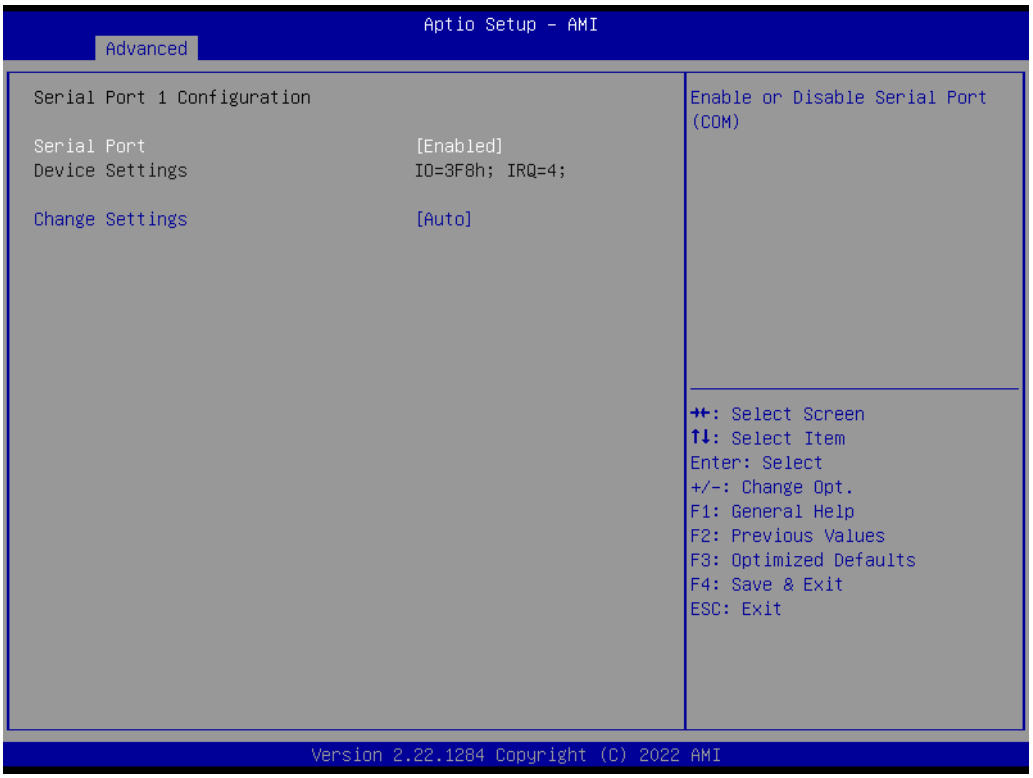


- **Enable ACPI Auto Configuration [Disabled]**
  Enable or disable BIOS ACPI auto configuration.
- **Enable Hibernation [Enabled]**
  Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.
- **ACPI Sleep State [S3 (Suspend to RAM)]**
  Select ACPI sleep state the system will enter when the SUSPEND button is pressed.
- **S3 Video Repost [Disabled]**
  Enable or Disable S3 Video Repost.

3.2.2.6 NCT6126D Super IO Configuration

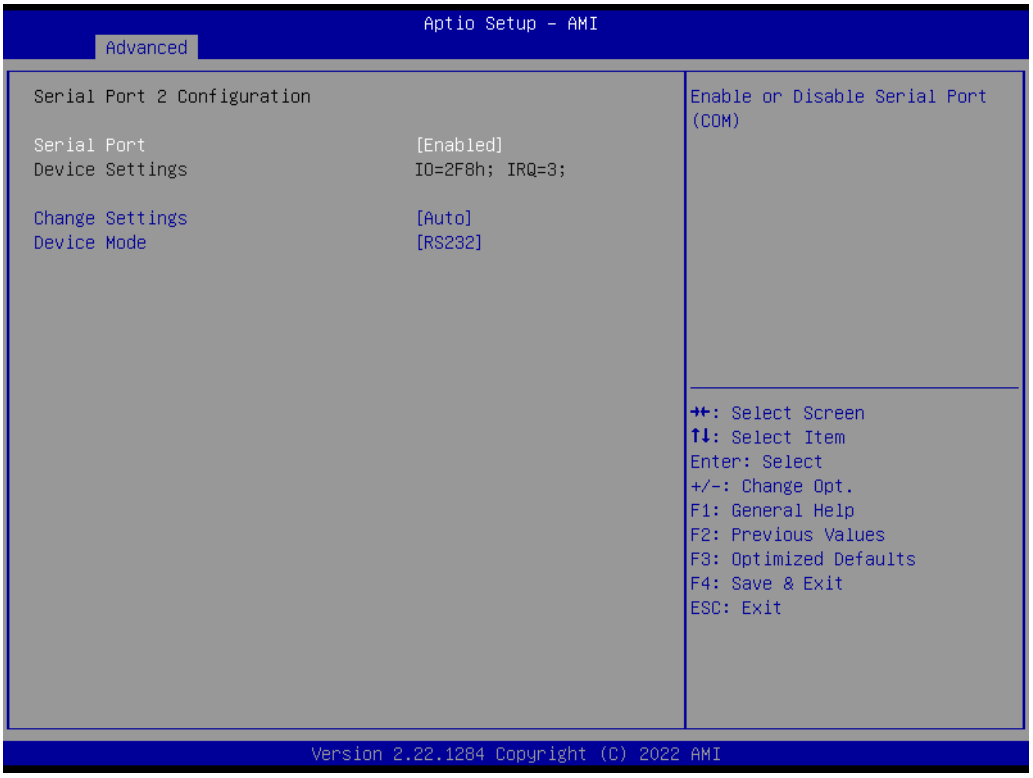


- **Serial Port 1 Configuration**
  Set Parameters of Serial Port 1 (COMA).



- **Serial Port [Enabled]**
  Enable or Disable Serial Port (COM)
- **Device Settings: IO=3F8h; IRQ =4**
- **Change Settings [Auto]**
  To select an optimal setting for serial port 1.

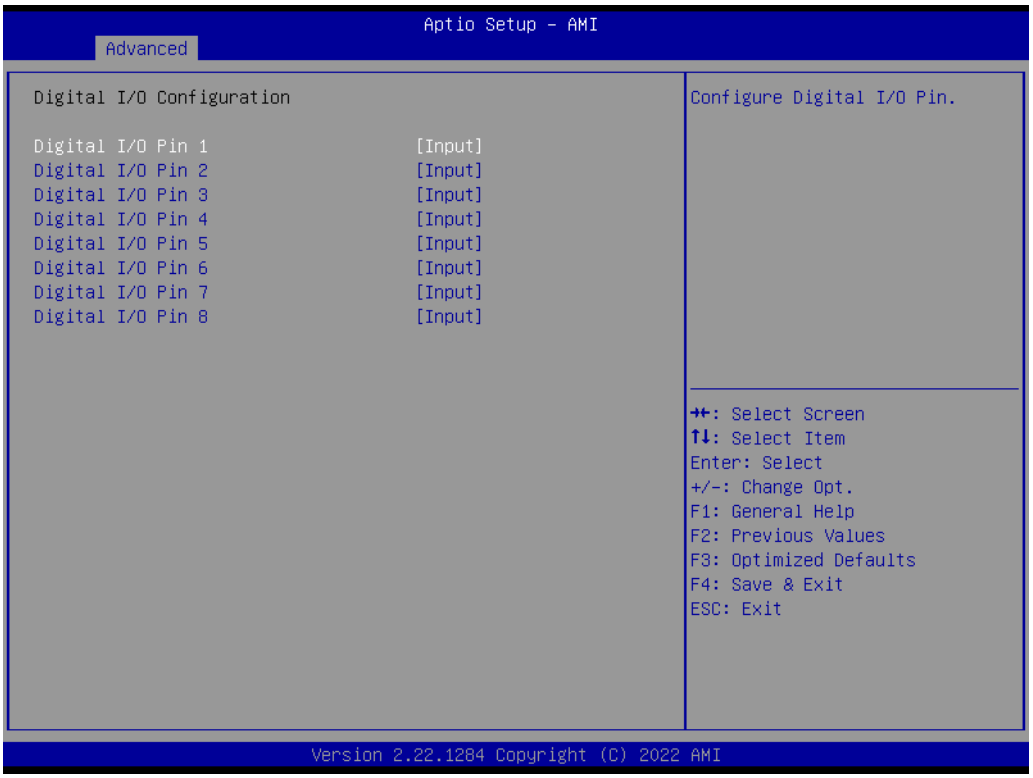
Serial Port 2 Configuration



- **Serial Port [Enable]**
- **Device Settings IO=2F8h; IRQ=3;**
- **Change Settings [Auto]**
- **COM Port Mode [RS-232]**

To select an optimal setting for serial port 2.

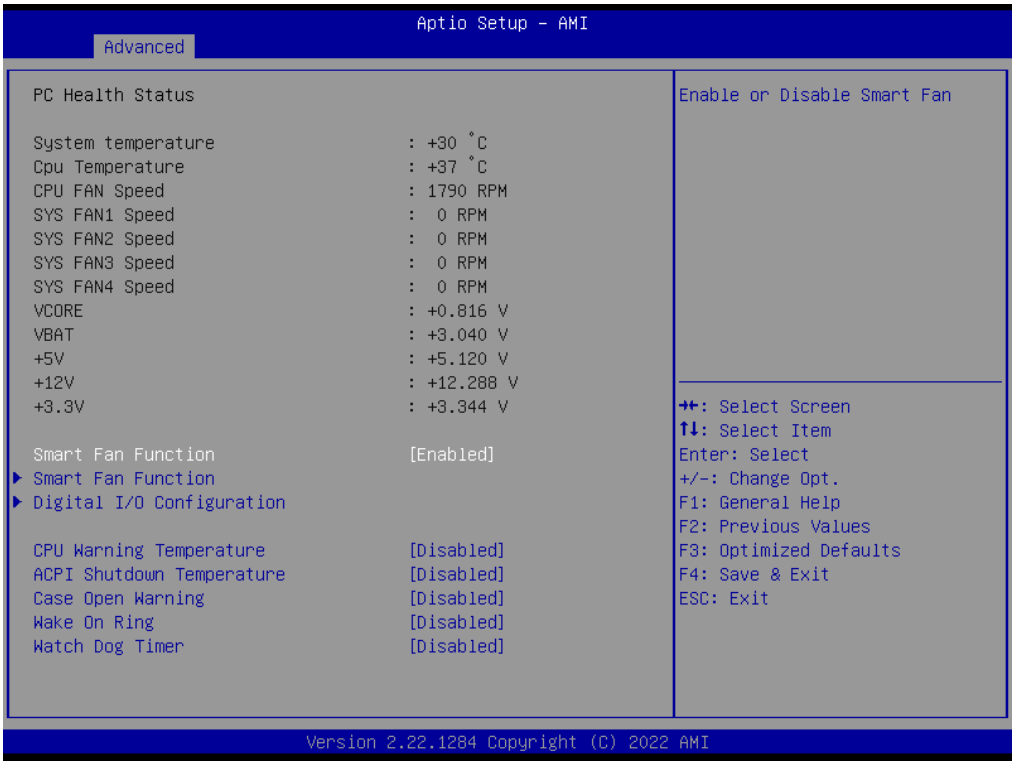
- **Digital I/O Configuration**



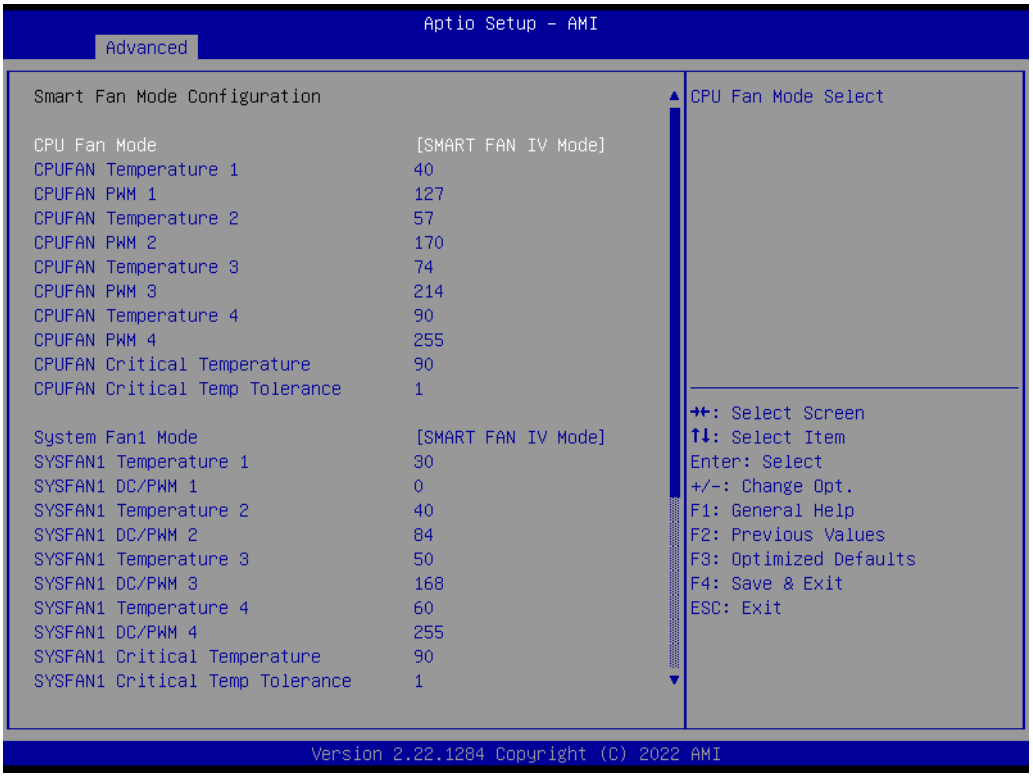
  - **Digital I/O Pin 1 - 8 [Input]**

3.2.2.7 NCT6126D HW Monitor

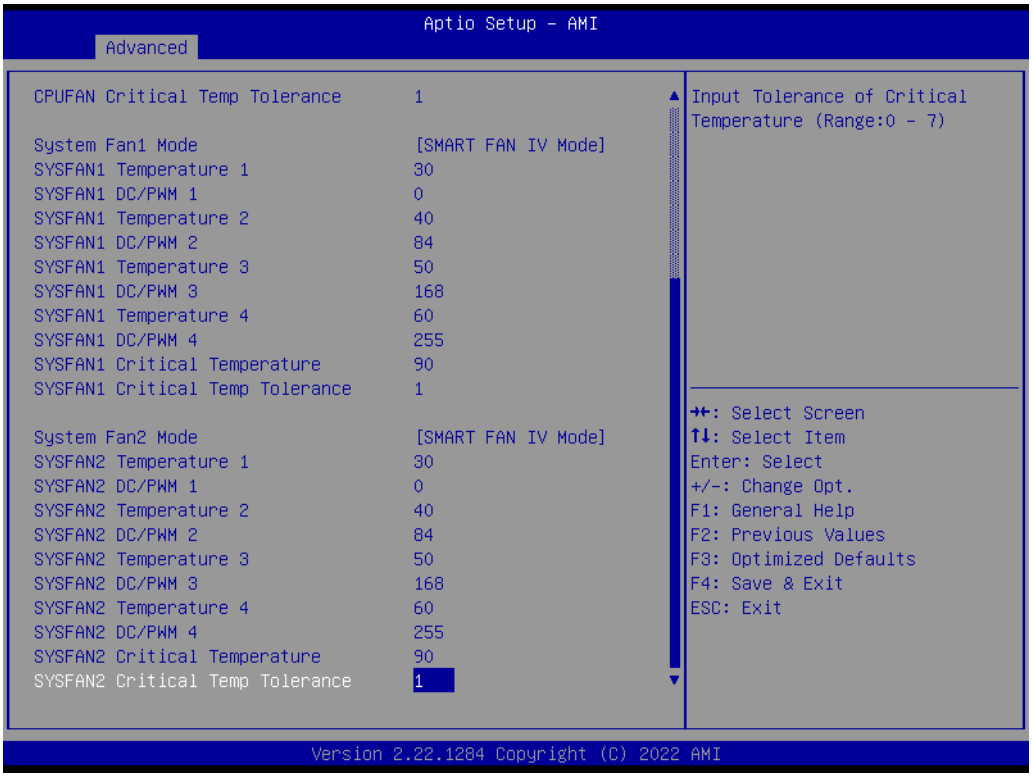
- **PC Health Status**



Smart Fan Mode Configuration

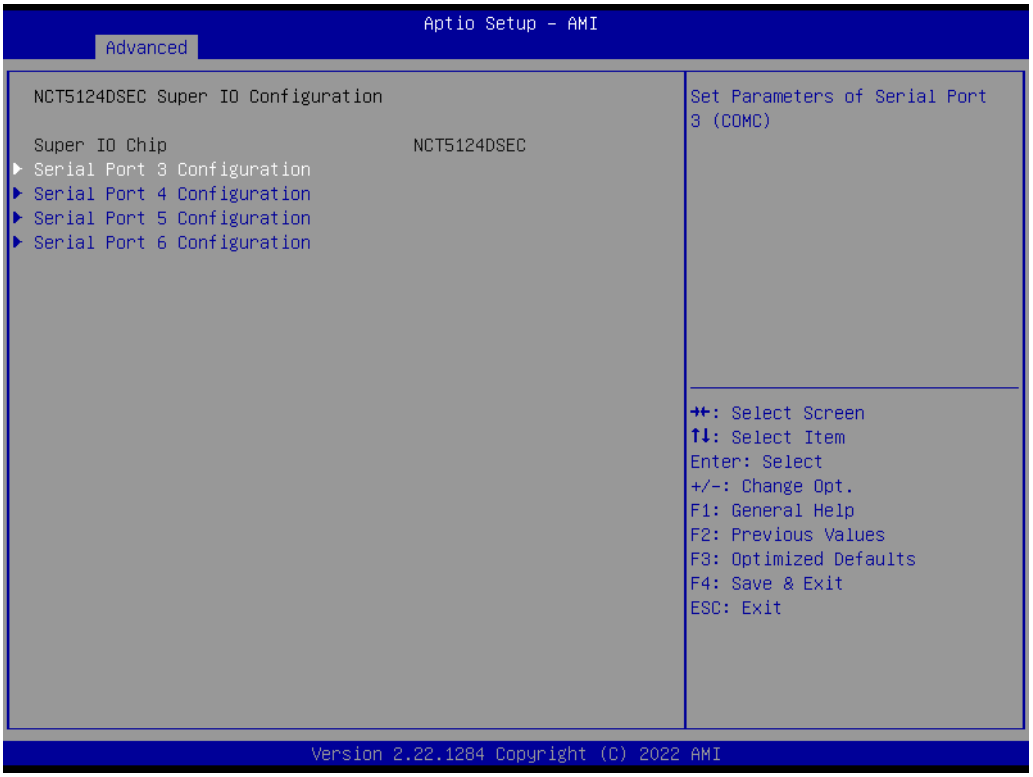


- **CPU Fan Mode [SMART FAN IV Mode]**
- **System Fan1 Mode [SMART FAN IV Mode]**

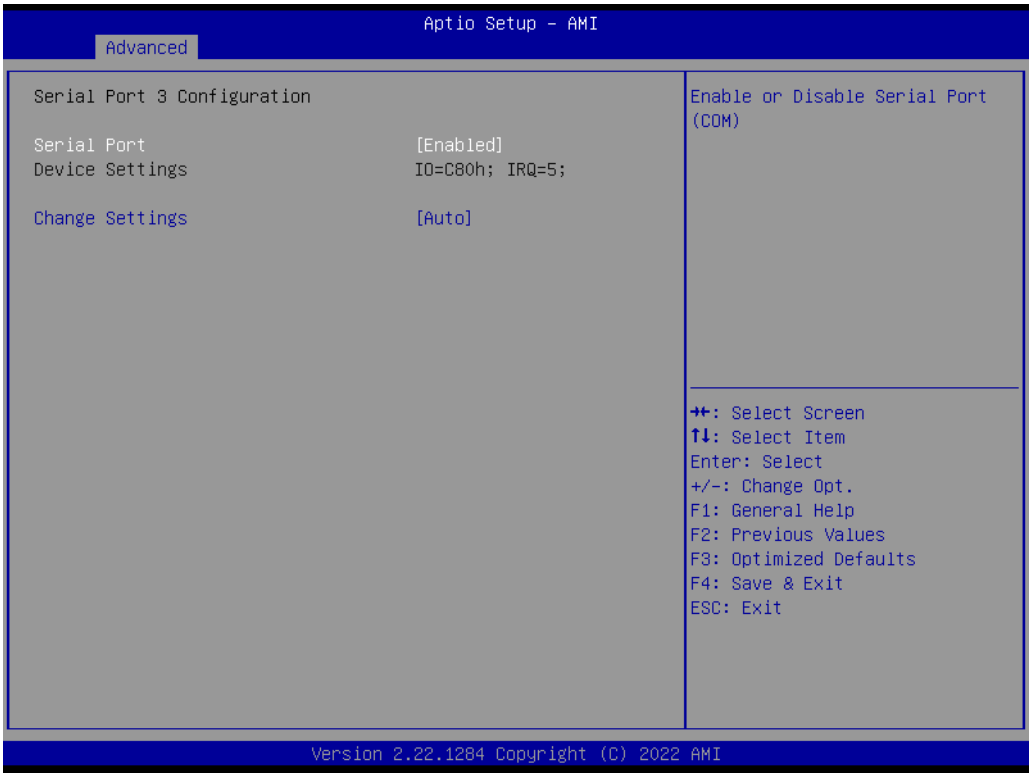


- **System Fan2 Mode [SMART FAN IV Mode]**

3.2.2.8 NCT5124DSEC Super IO Configuration

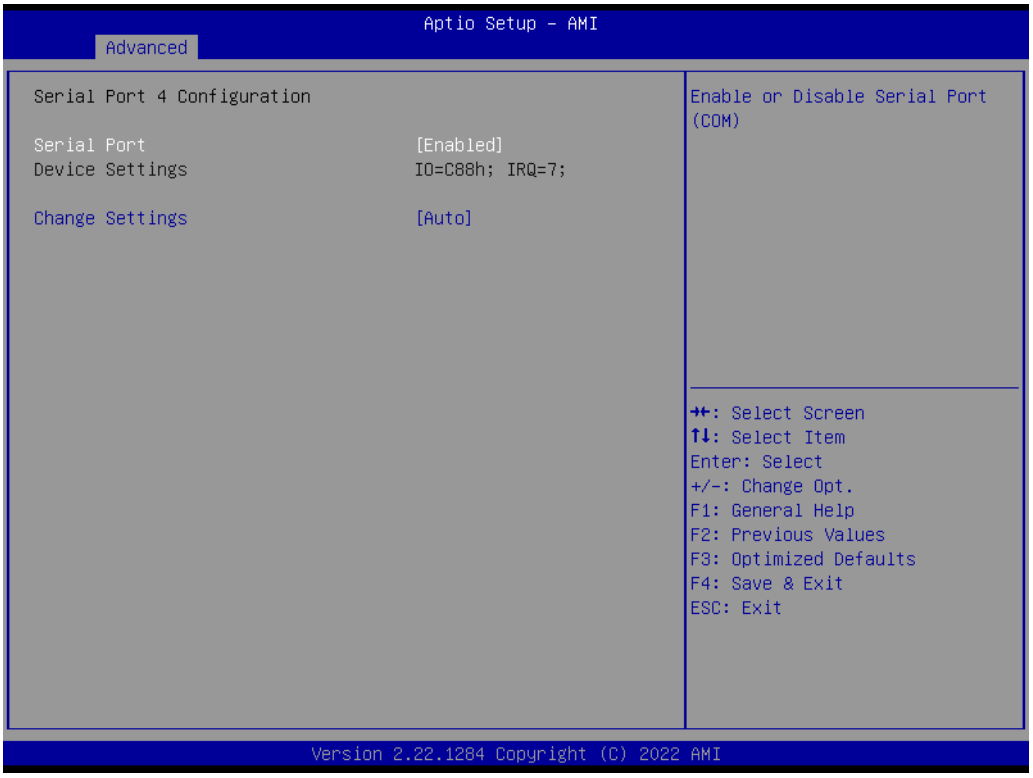


- **Serial Port 3 Configuration**



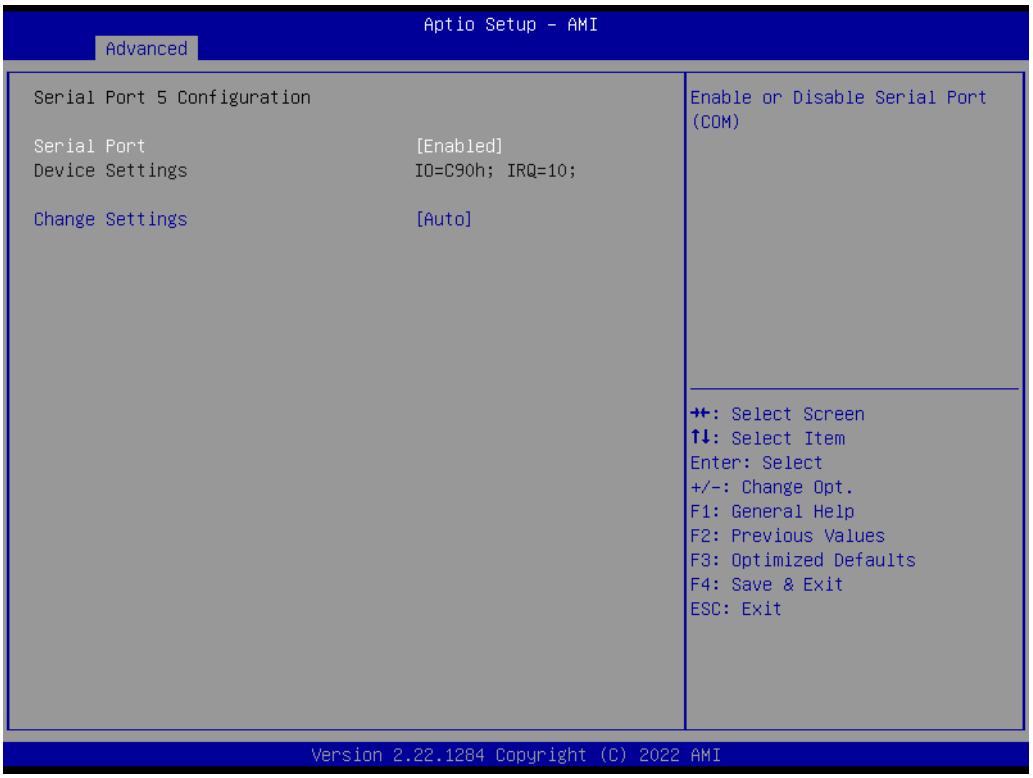
- **Serial Port [Enabled]**
- **Device Settings: IO=C80h; IRQ =5;**
- **Change Settings [Auto]**
  To select an optimal setting for serial port 3.

Serial Port 55



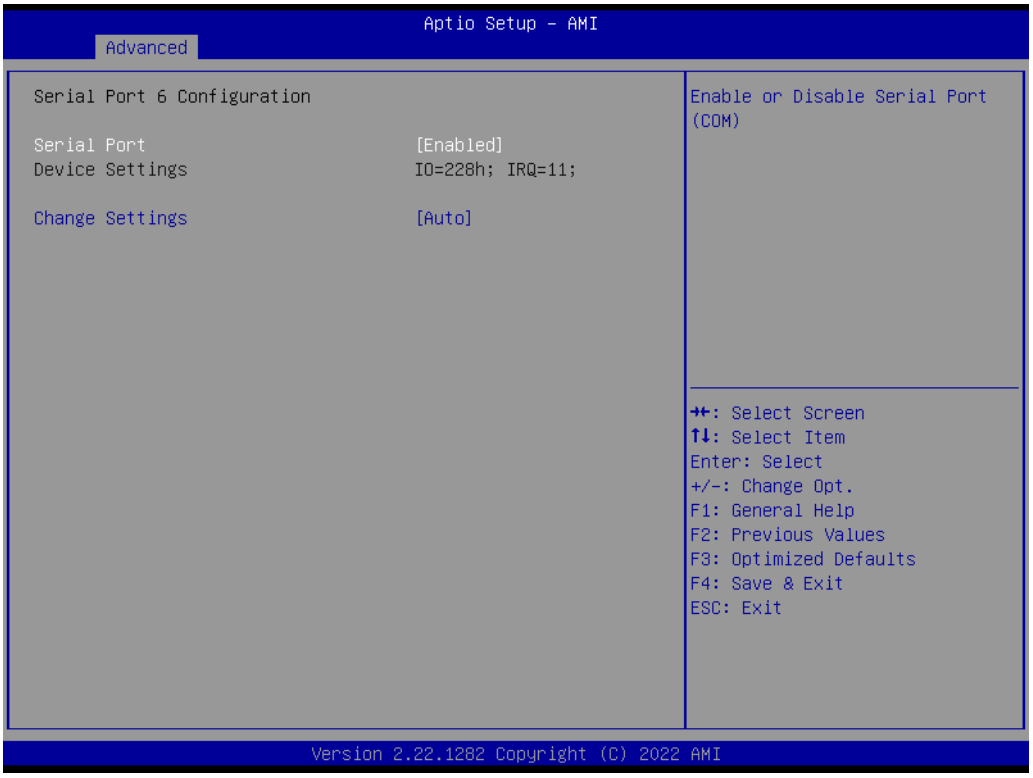
- **Serial Port [Enabled]**
- **Device Settings: IO=C88h; IRQ =7;**
- **Change Settings [Auto]**
  To select an optimal setting for serial port 4.

Serial Port 5 Configuration



- **Serial Port [Enabled]**
- **Device Settings: IO=C90h; IRQ =10;**
- **Change Settings [Auto]**
  To select an optimal setting for serial port 5.

Serial Port 57



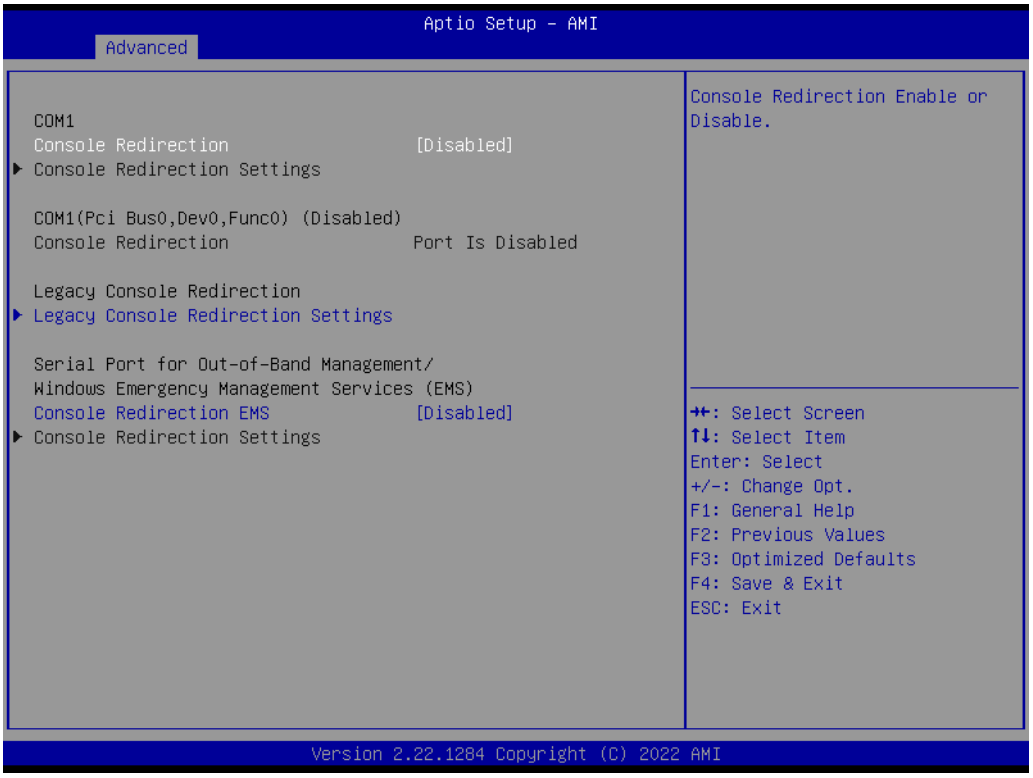
- **Serial Port [Enabled]**
- **Device Settings: IO=228h; IRQ =11;**

- **Change Settings [Auto]**
  To select an optimal setting for serial port 6.

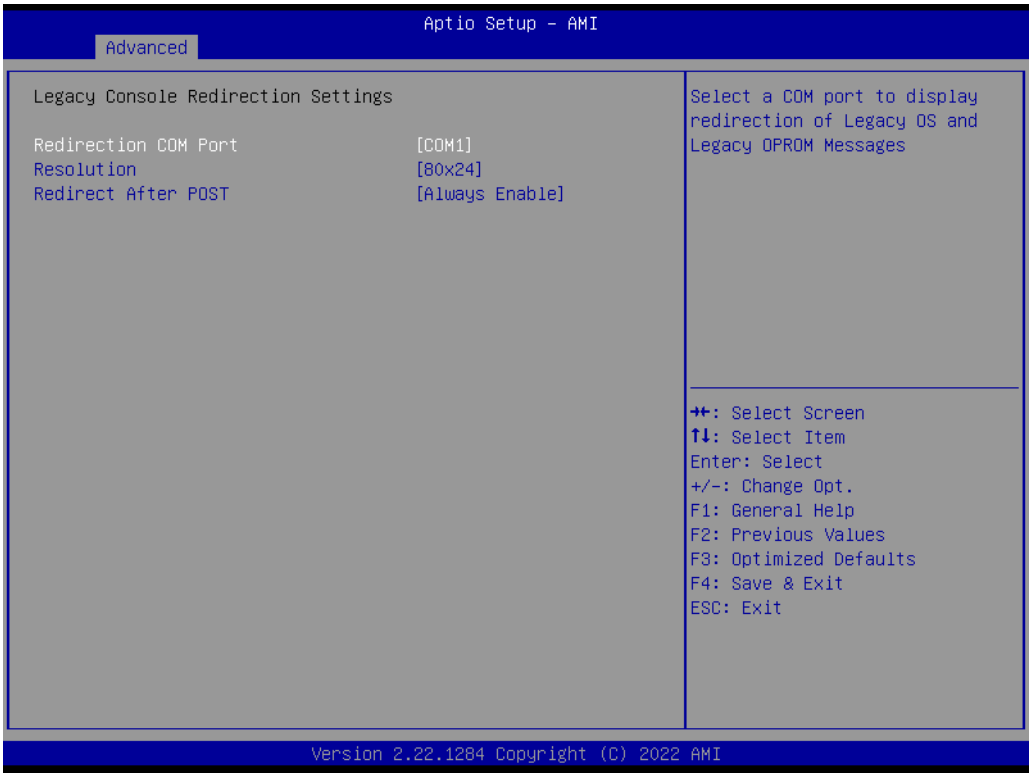
3.2.2.9 S5 RTC Wake Settings

- **Wake system from S5 [Disabled]**
  The item allows you enable or disable system wake up on alarm event.

3.2.2.10 Serial Port Console Redirection

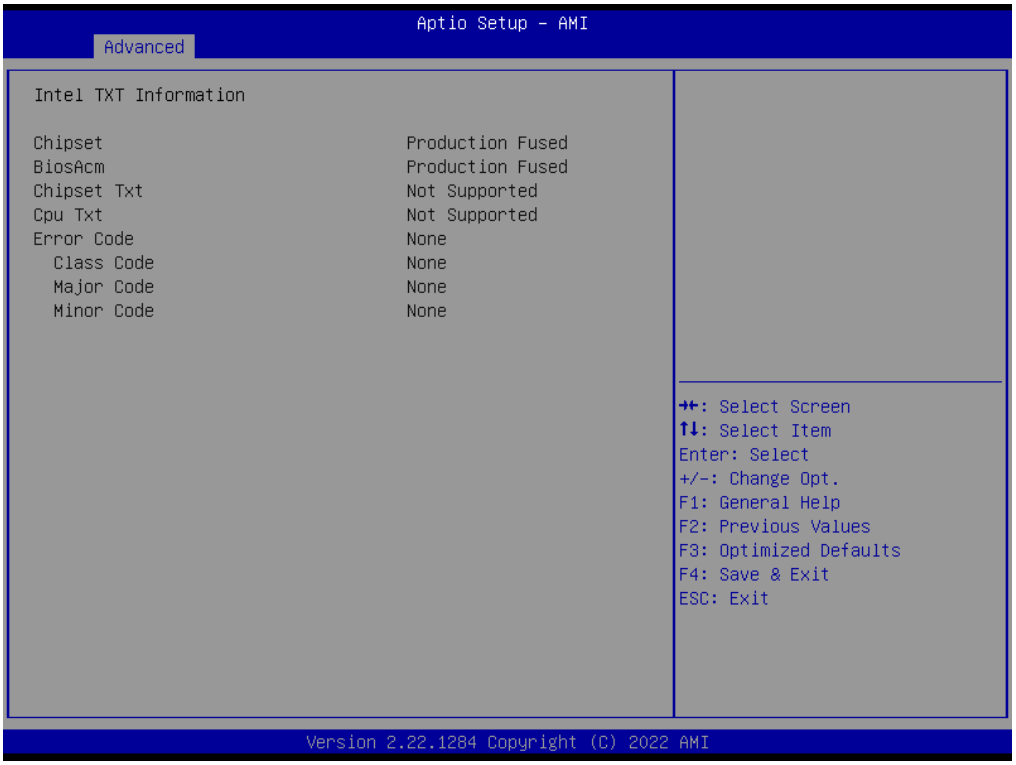


- **Console Redirection [Disabled]**
  Enable or disable the console redirection feature.

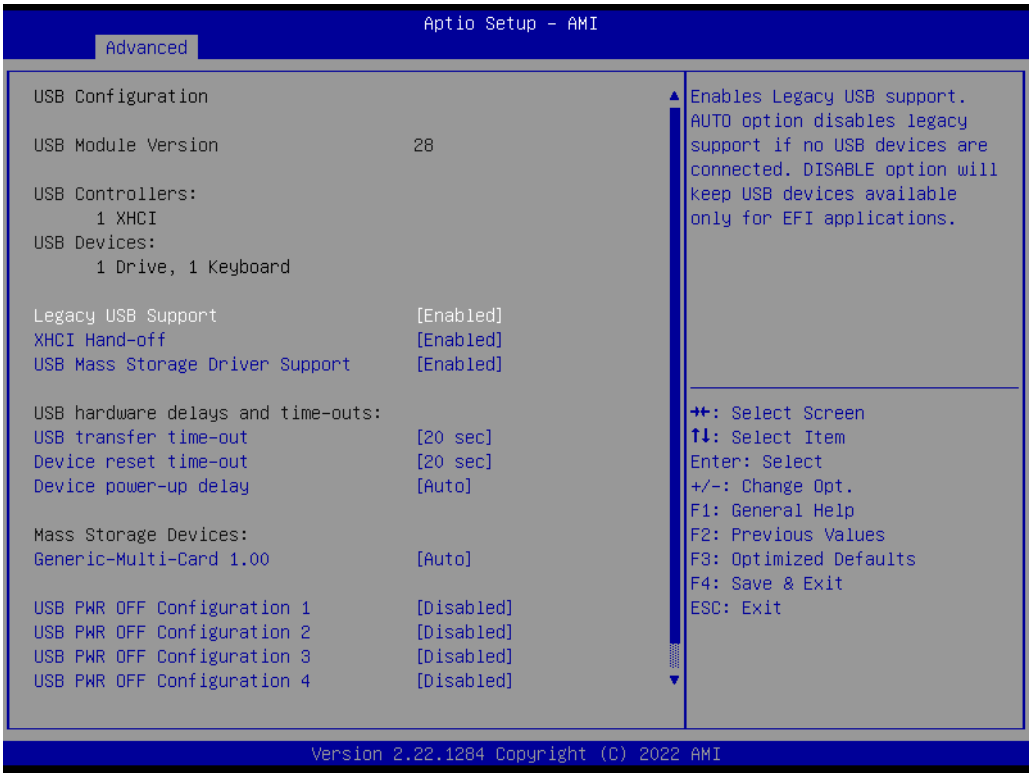


- **Redirection COM Port [COM1]**

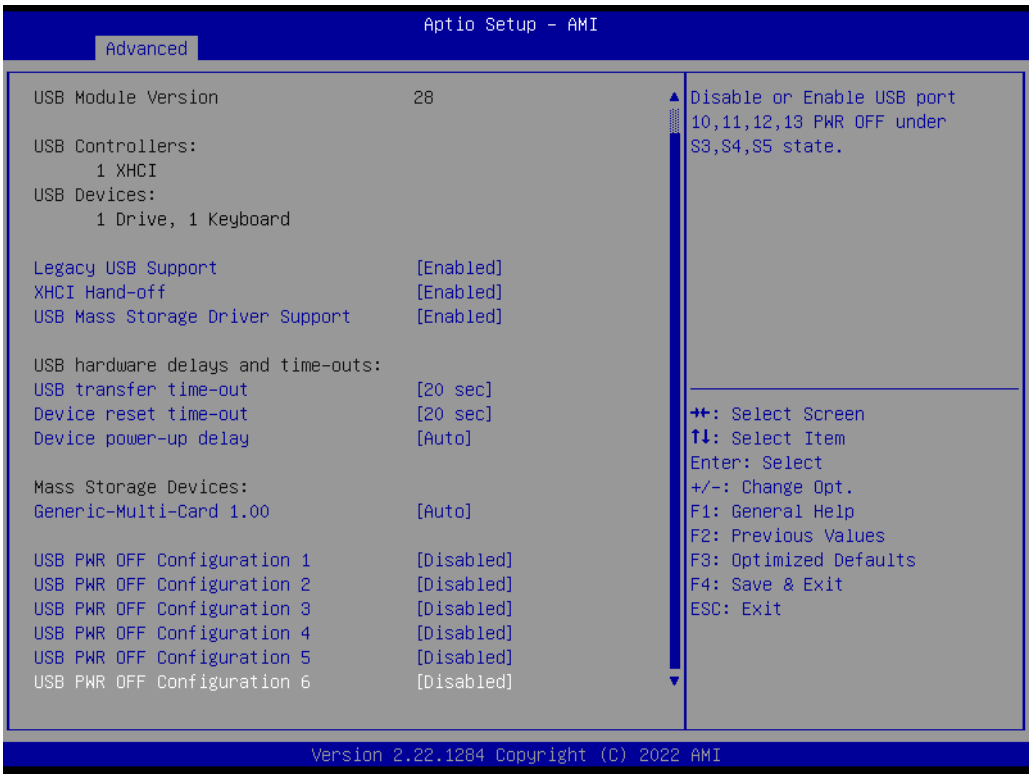
3.2.2.11 Intel TXT Information



3.2.2.12 USB Configuration

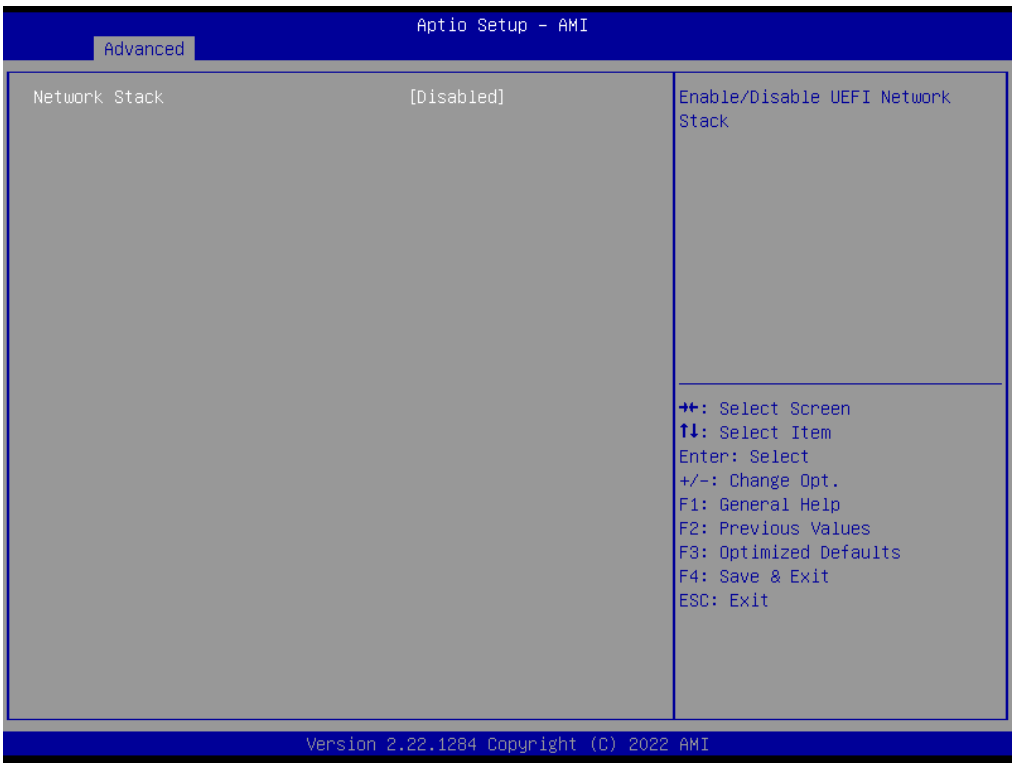


- **Legacy USB Support [Enabled]**
- **XHCI Hand-off [Enabled]**
- **USB Mass Storage Driver Support [Enabled]**
- **USB hardware delays and time-outs**
  USB Device transfer & reset time-out and delay setting.
- **Mass Storage Devices [Auto]**
  Shows USB mass storage device information.

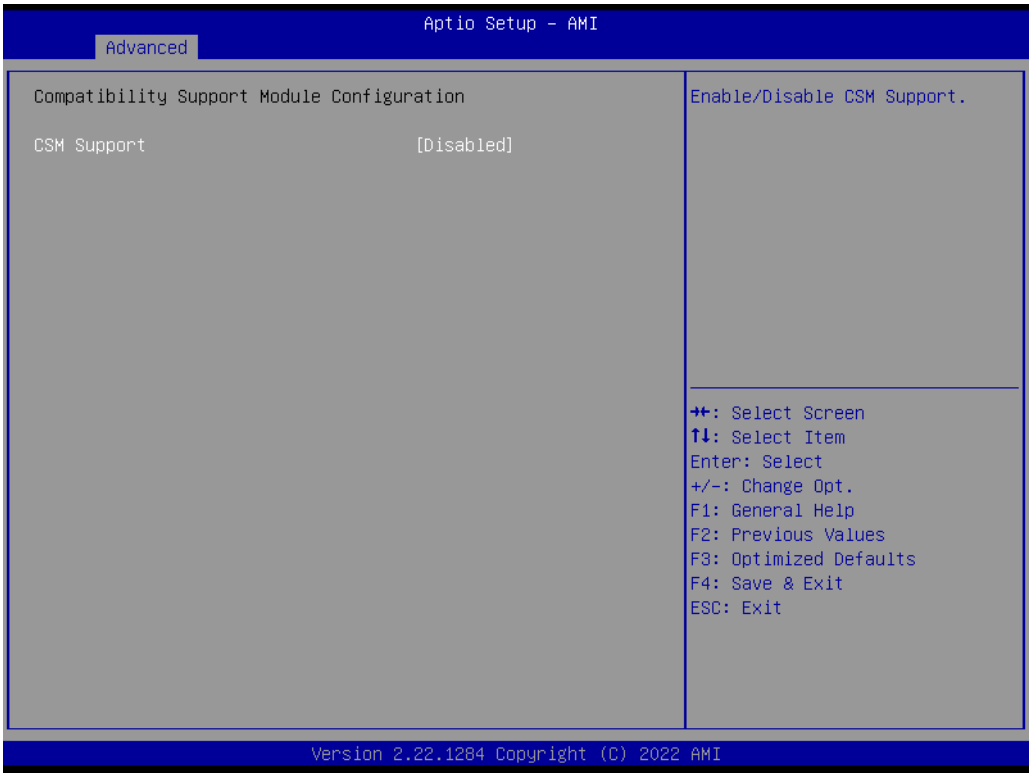


- **USB PWR OFF Configuration 1-6 [Disabled]**
  Power off USB port 1-6 via BIOS setting.

3.2.2.13 Network Stack Configuration

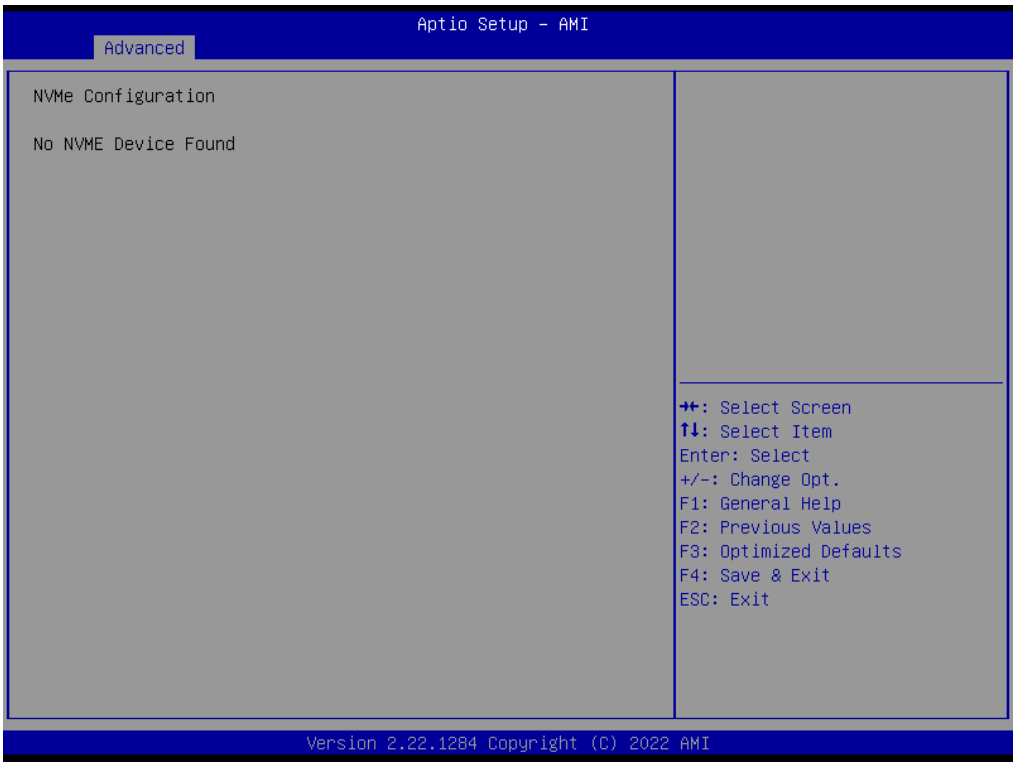


3.2.2.14 CSM Configuration

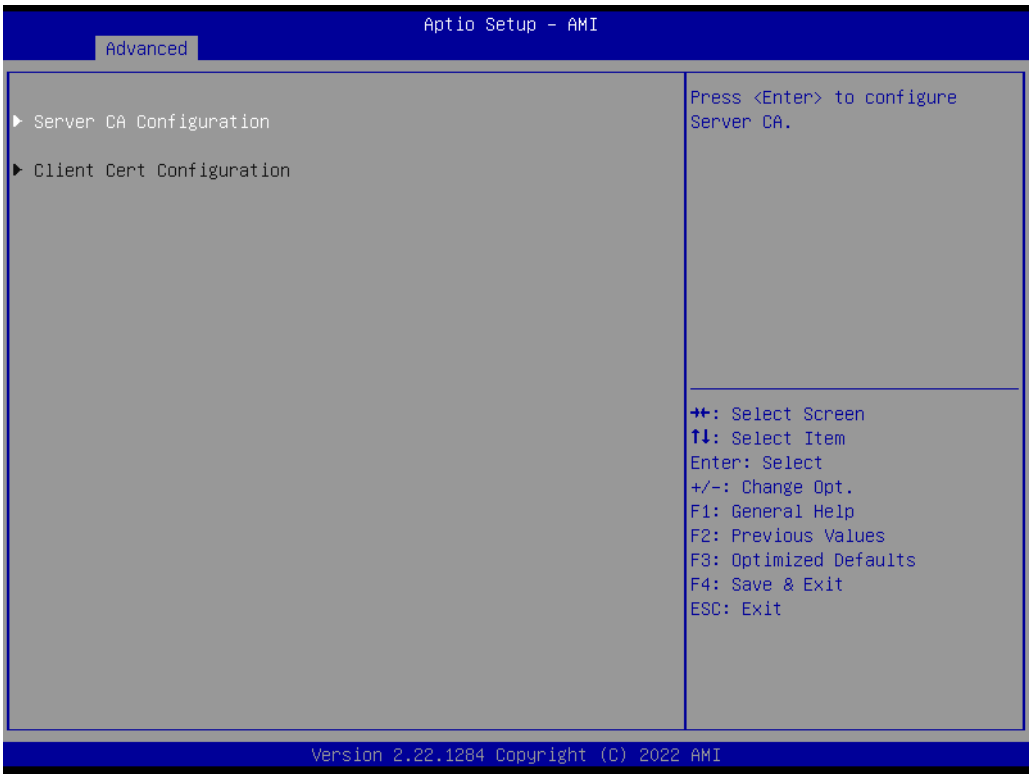


- **CSM Support [Disabled]**

3.2.2.15 NVMe Configuration

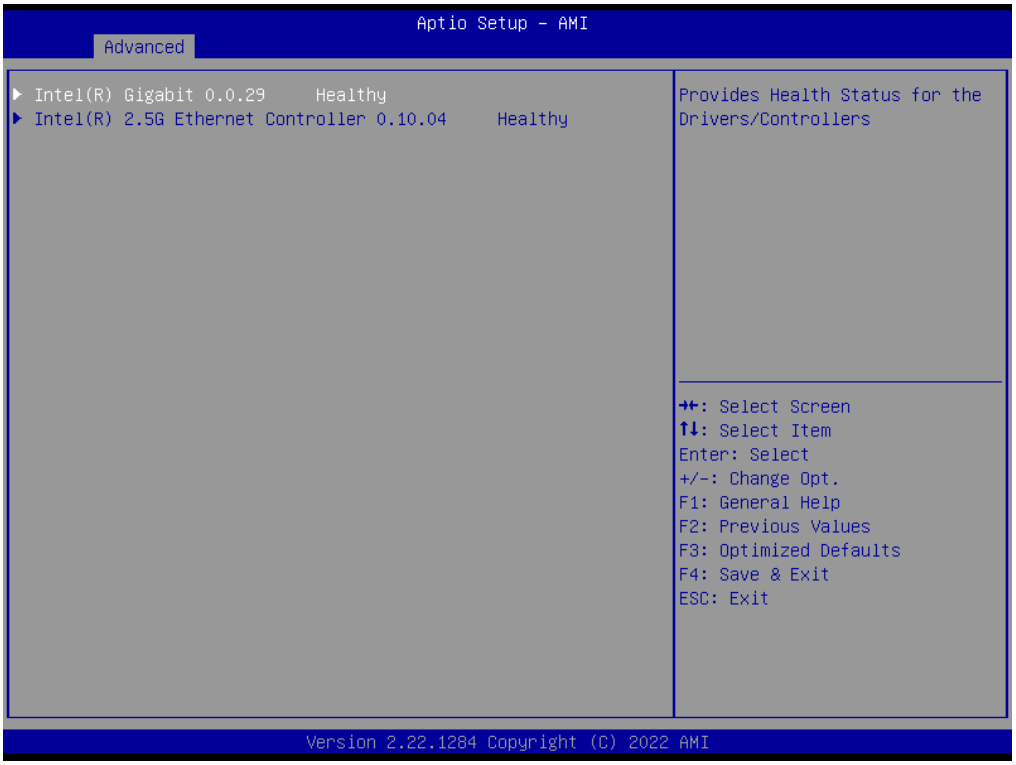


3.2.2.16 Tls Auth Configuration



- **Server CA Configuration**
- **Client Cert Configuration**

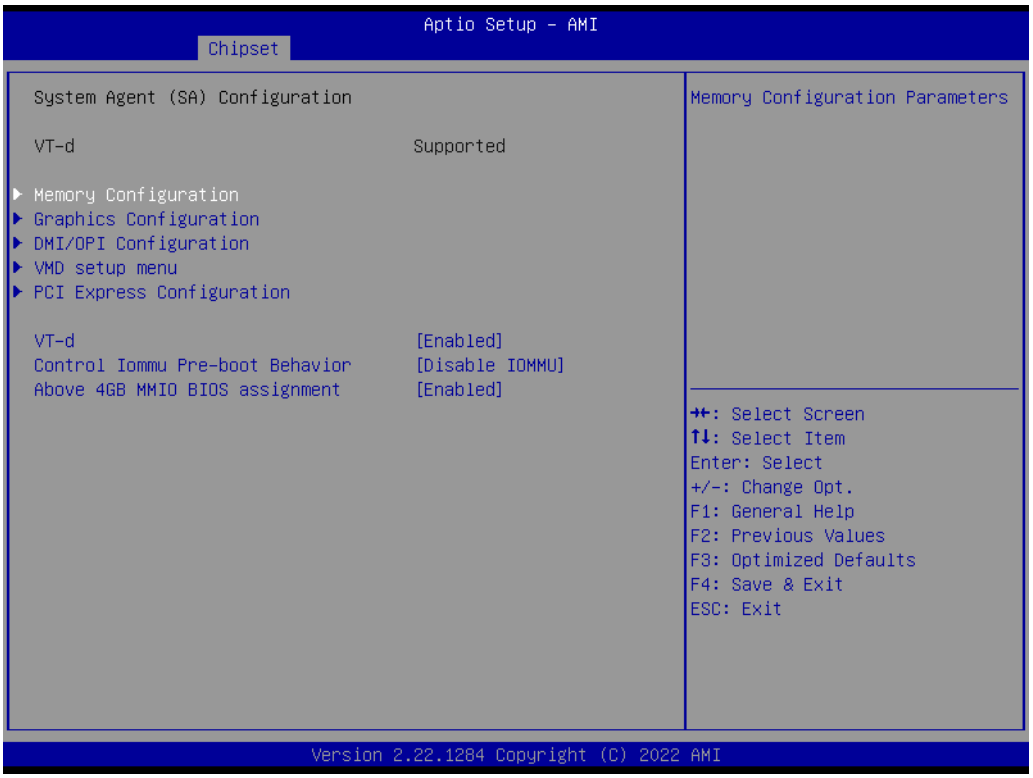
3.2.2.17 Driver Health



3.2.3 Chipset Configuration Setting

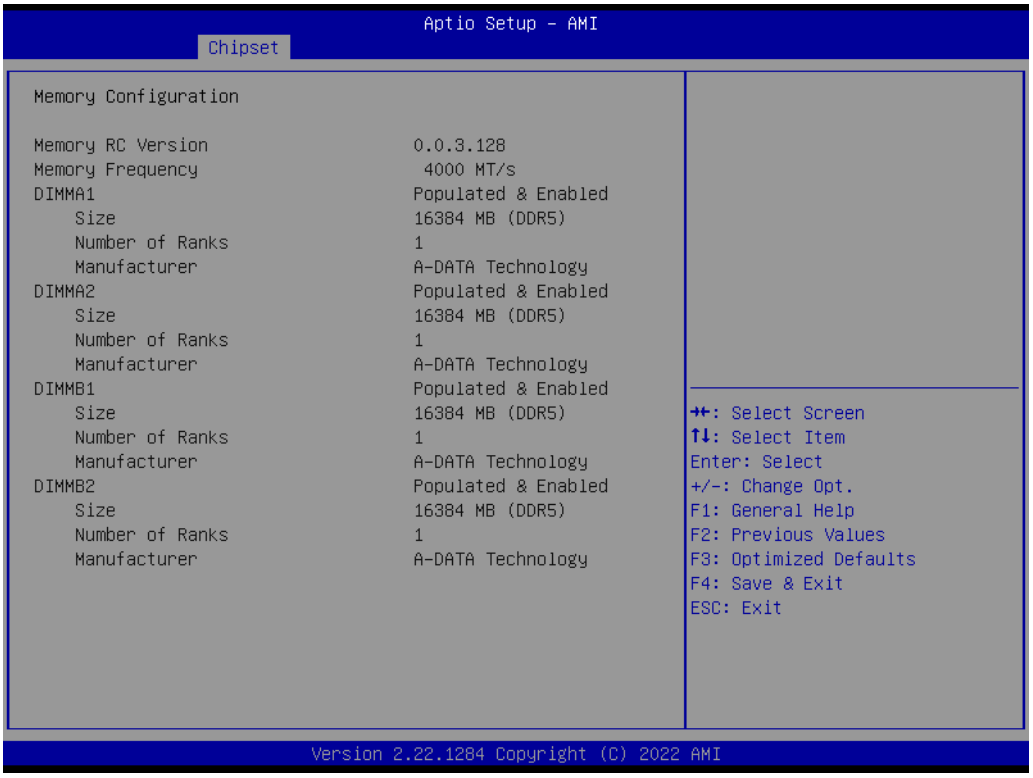
Select the chipset tab from the BIOS setup screen to enter the Chipset Setup screen. Users can select any item in the left frame of the screen, such as PCI express Configuration, to go to the sub menu for that item. Users can display a Chipset Setup option by highlighting it using the keys. All Chipset Setup options are described in this section. The Chipset Setup screens are shown below. The sub menus are described on the following pages.

3.2.3.1 Chipset Configuration Setting - System Agent (SA) Configuration



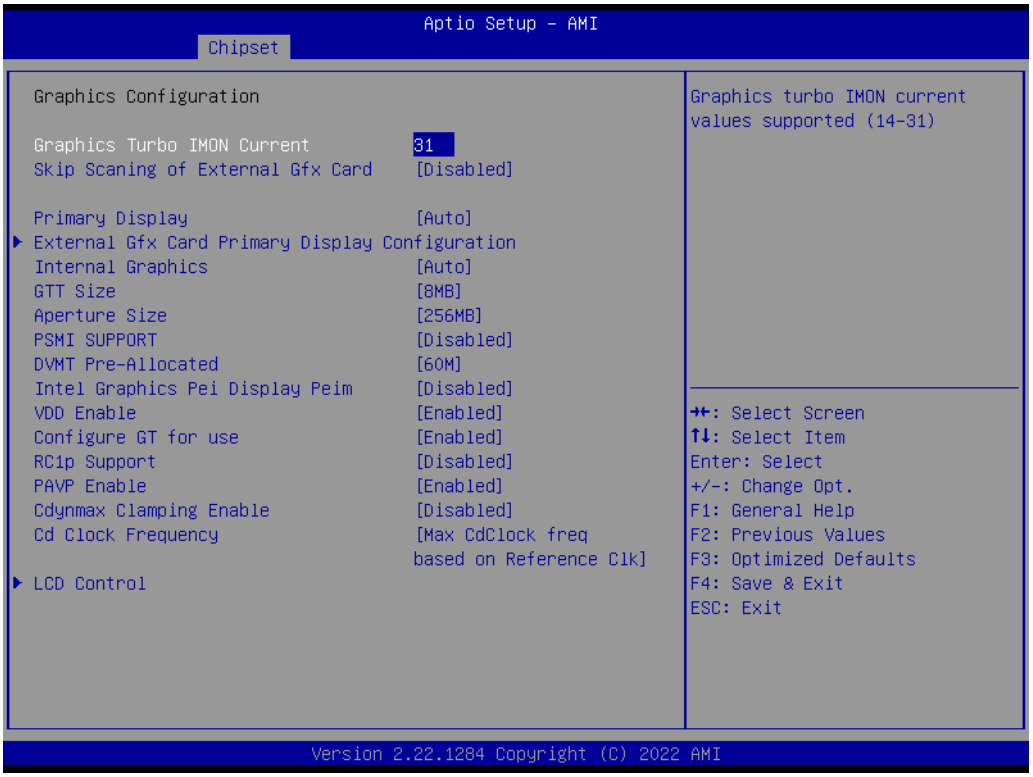
- **VT-d [Enabled]**
  Disable or enable VT-d function on MCH.

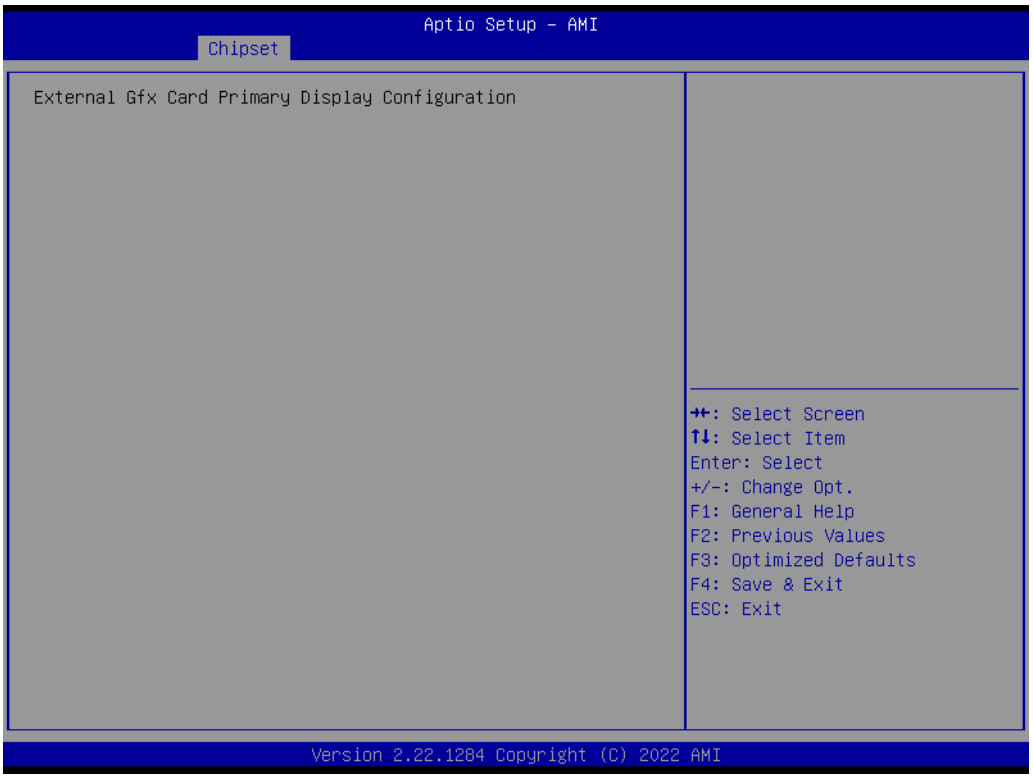
3.2.3.1.1 Memory Configuration



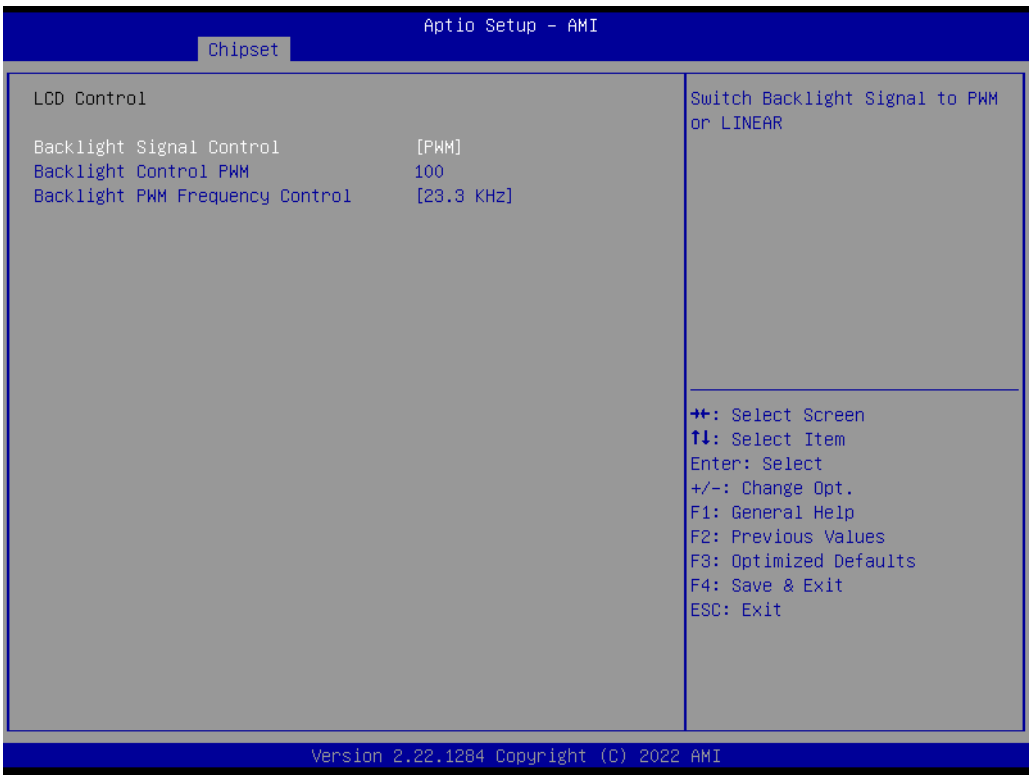
- **SIO Port 80 Control [Disabled]**
- **CPU Warning Temperature [Disabled]**
- **ACPI Shutdown Temperature [Disabled]**
- **Case Open Warning [Disabled]**
- **Wake On Ring [Disabled]**

3.2.3.1.2 Graphic Configuration





- **External Gfx Card Primary Display Configuration**

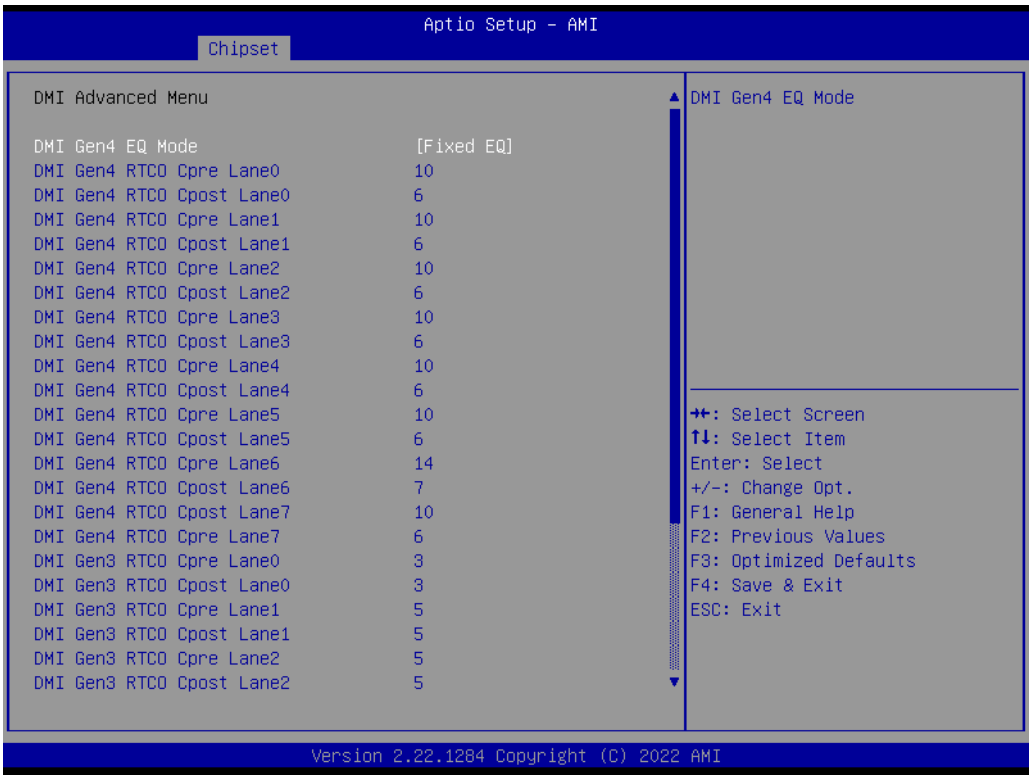


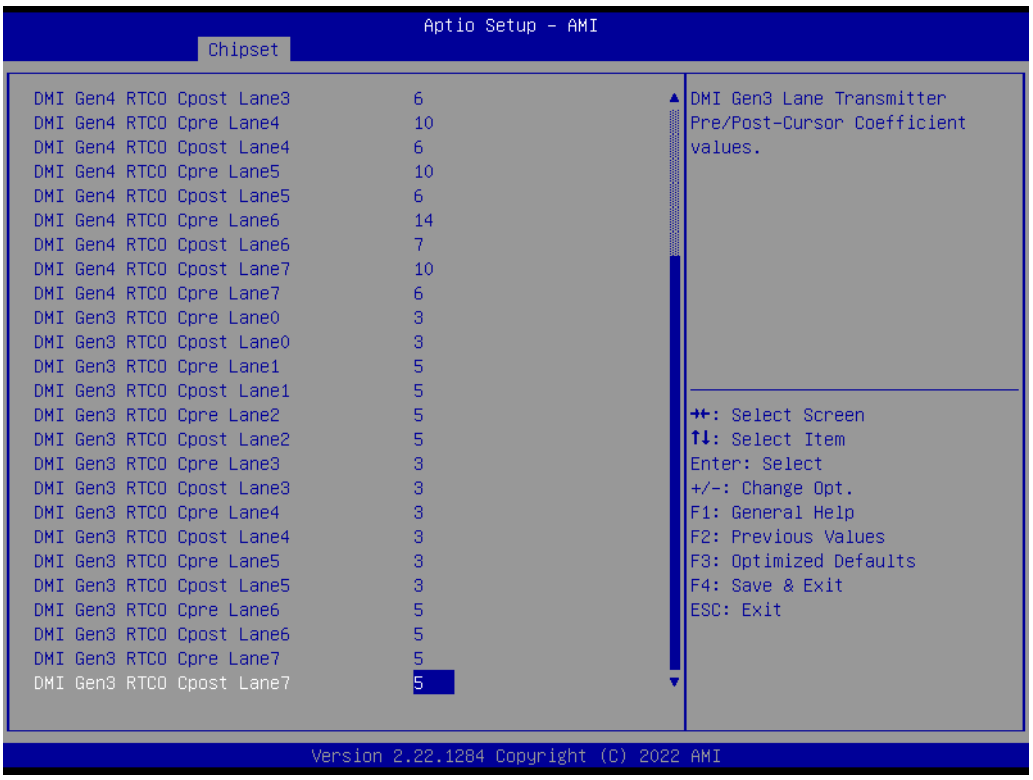
- **LCD Control**
  - **Backlight Signal Control [PWM]**
  - **Backlight Control PWM 100**
  - **Backlight PWM Frequency Control [23.3 KHz]**

3.2.3.1.3 Graphic Configuration

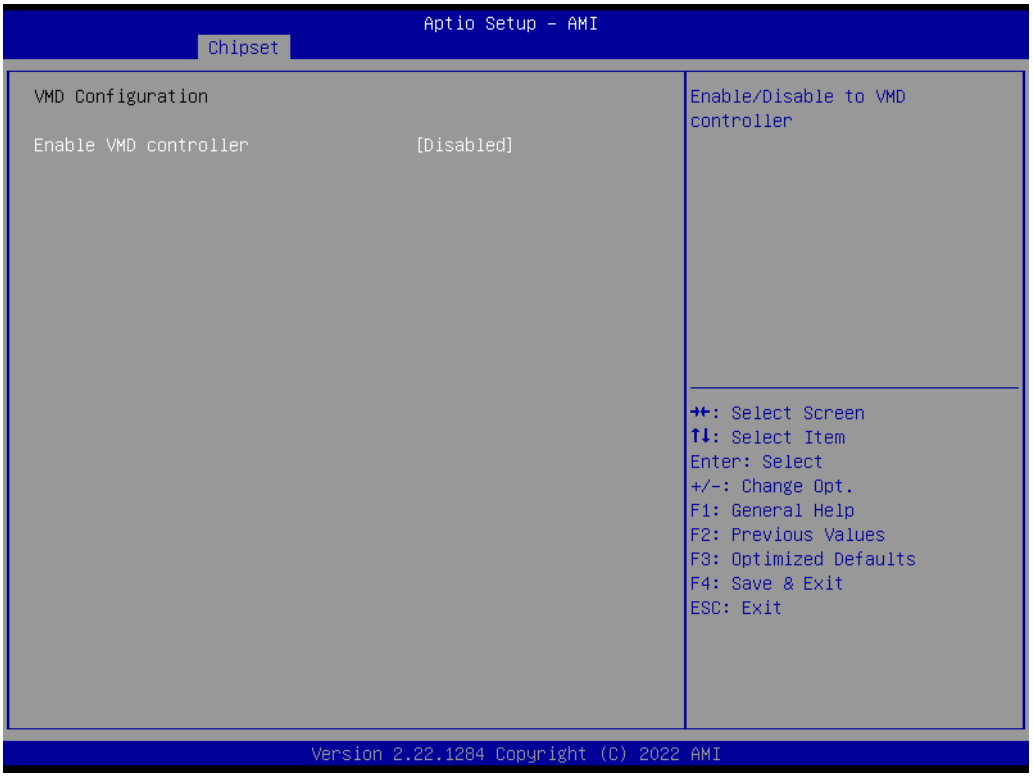
- **DMI/OPI Configuration**

- **DMI Advanced Menu**





3.2.3.1.4 VMD Configuration

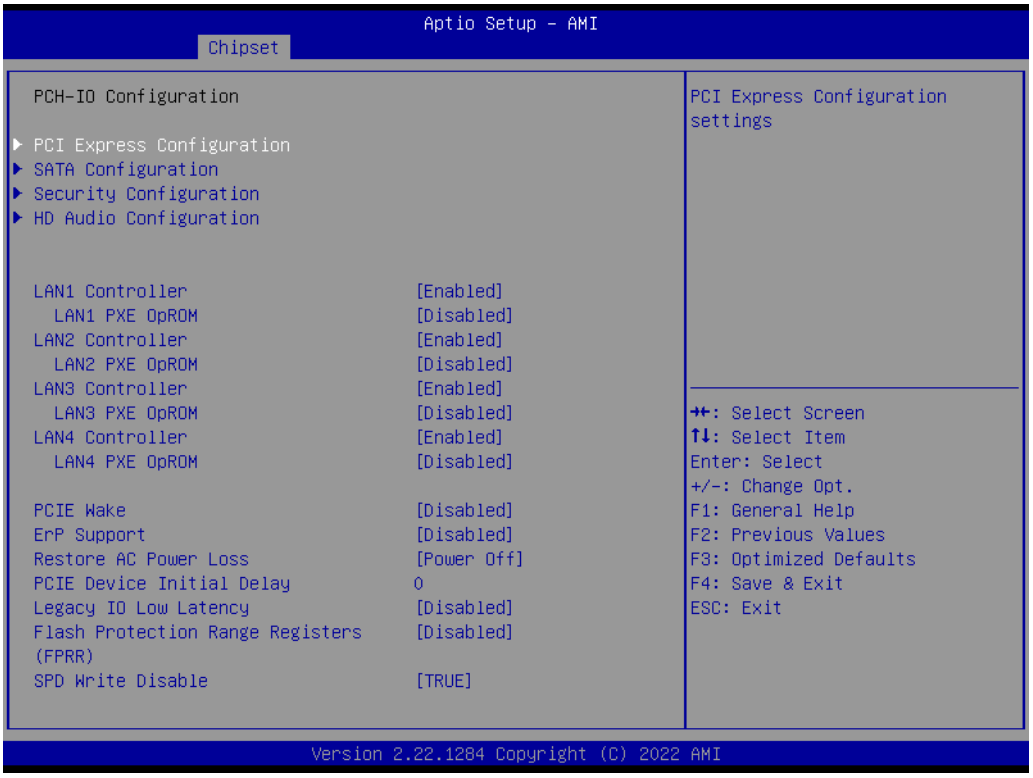


- **Enable VMD controller [Disabled]**

3.2.3.1.5 PCI Express Configuration

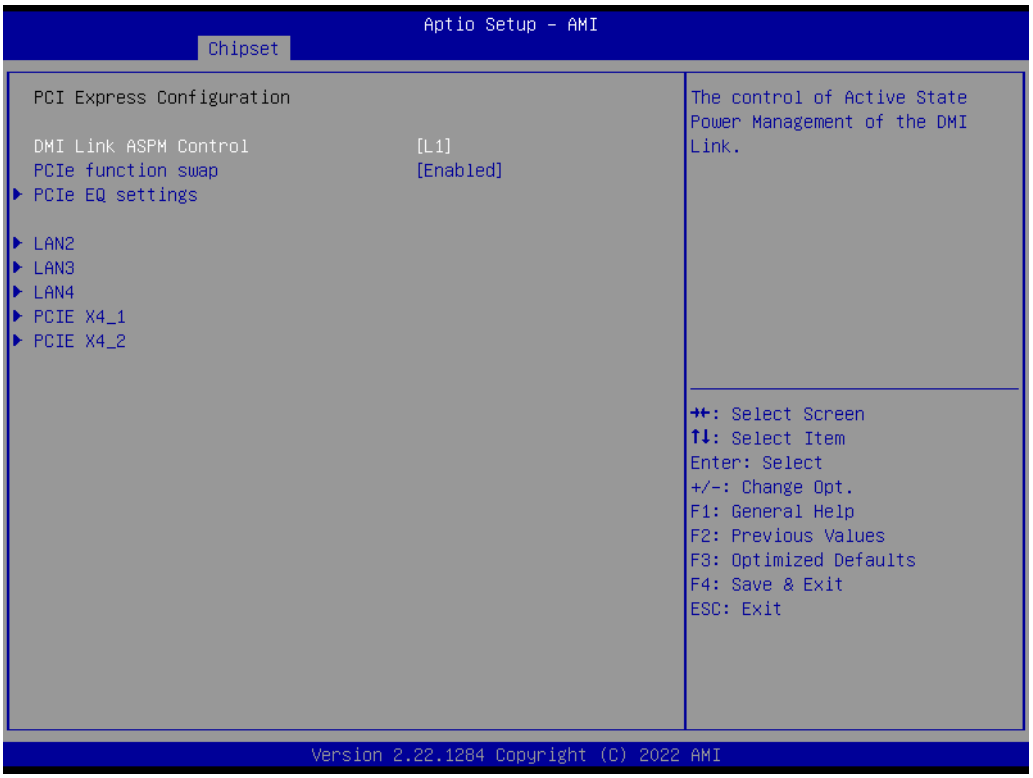
- **M.2 Key M**
- **PCIE X16_1**

3.2.3.2 Chipset Configuration Setting – PCH-IO Configuration

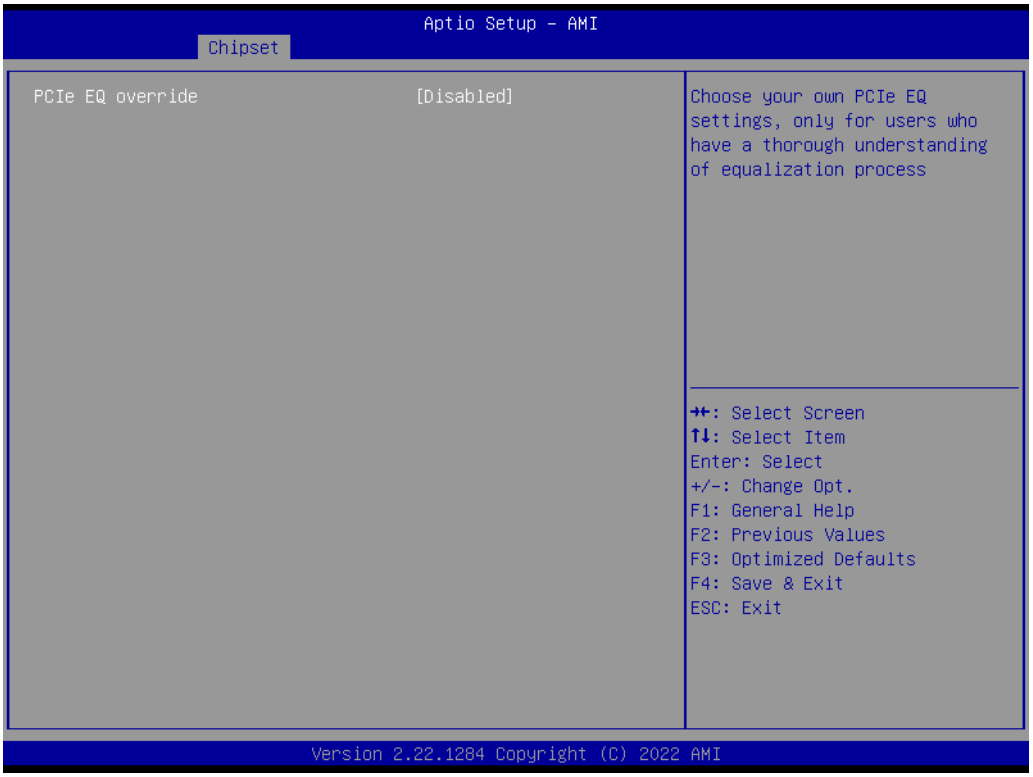


- **PCI Express Configuration**
- **SATA Configuration**
- **Security Configuration**
- **HD Audio Configuration**

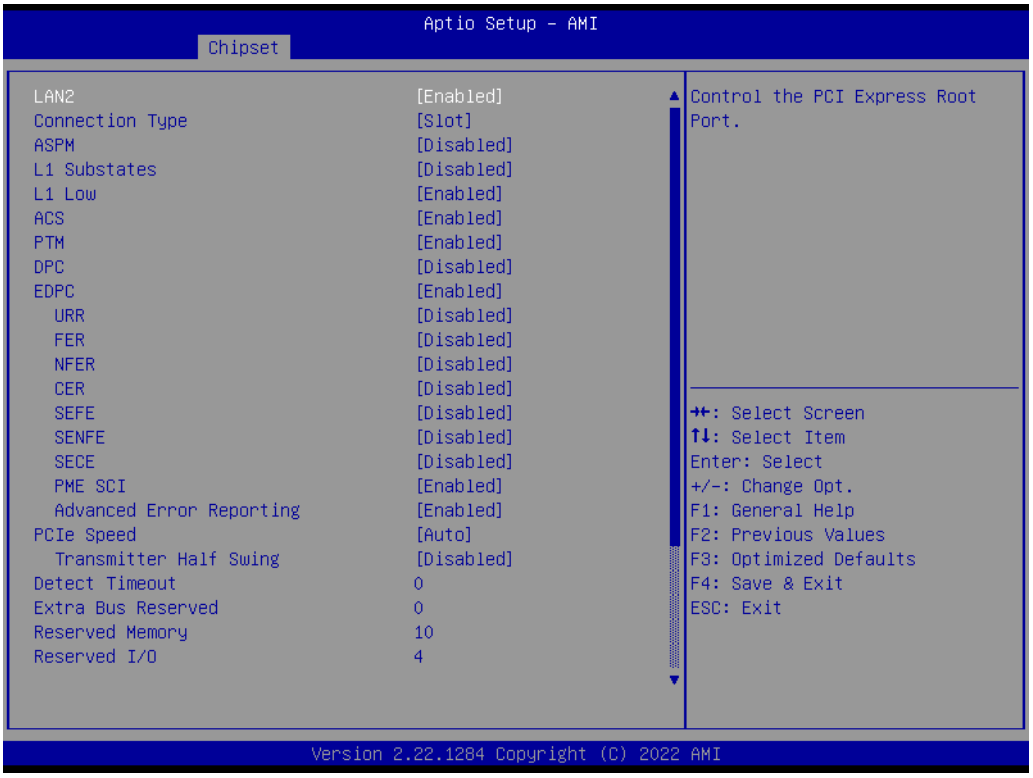
3.2.3.2.1 PCI Express Configuration



- **DMI Link ASPM Control [L1]**
- **PCIe function swap [Enabled]**
- **PCIe EQ settings**



- **PCIe EQ override [Disabled]**


Aptio Setup – AMI
Chipset
LAN2 [Enabled]
Connection Type [Slot]
ASPM [Disabled]
L1 Substates [Disabled]
L1 Low [Enabled]
ACS [Enabled]
PTM [Enabled]
DPC [Disabled]
EDPC [Enabled]
URR [Disabled]
FER [Disabled]
NFER [Disabled]
CER [Disabled]
SEFE [Disabled]
SENFE [Disabled]
SECE [Disabled]
PME SCI [Enabled]
Advanced Error Reporting [Enabled]
PCIe Speed [Auto]
Transmitter Half Swing [Disabled]
Detect Timeout 0
Extra Bus Reserved 0
Reserved Memory 10
Reserved I/O 4
Control the PCI Express Root Port.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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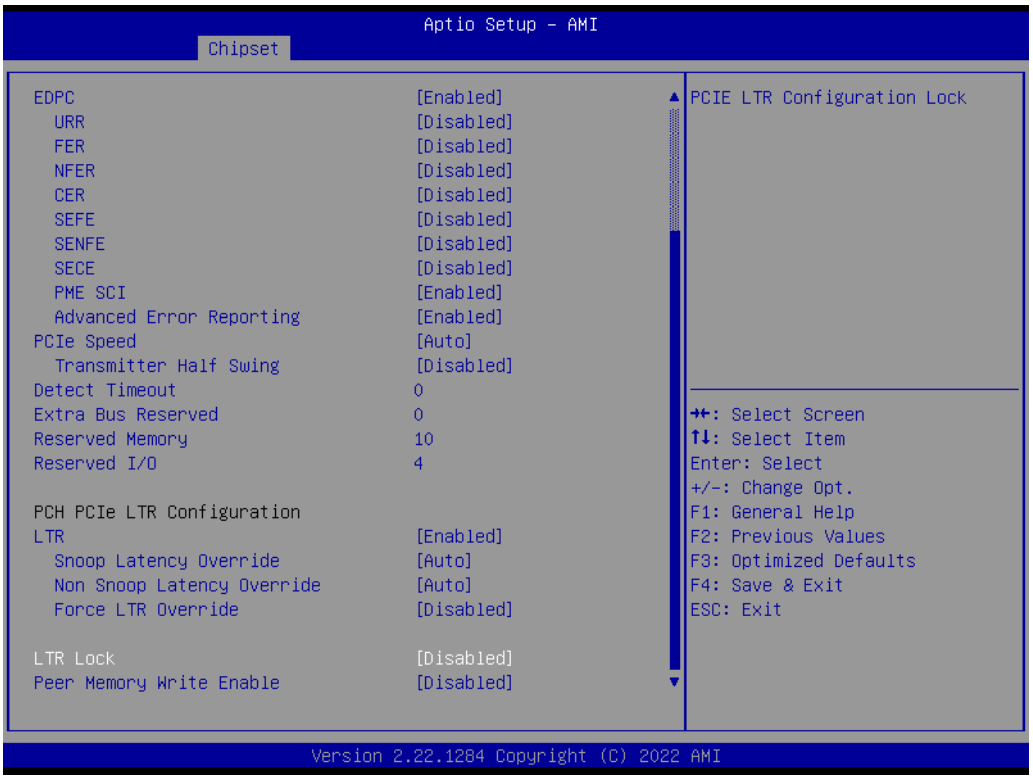
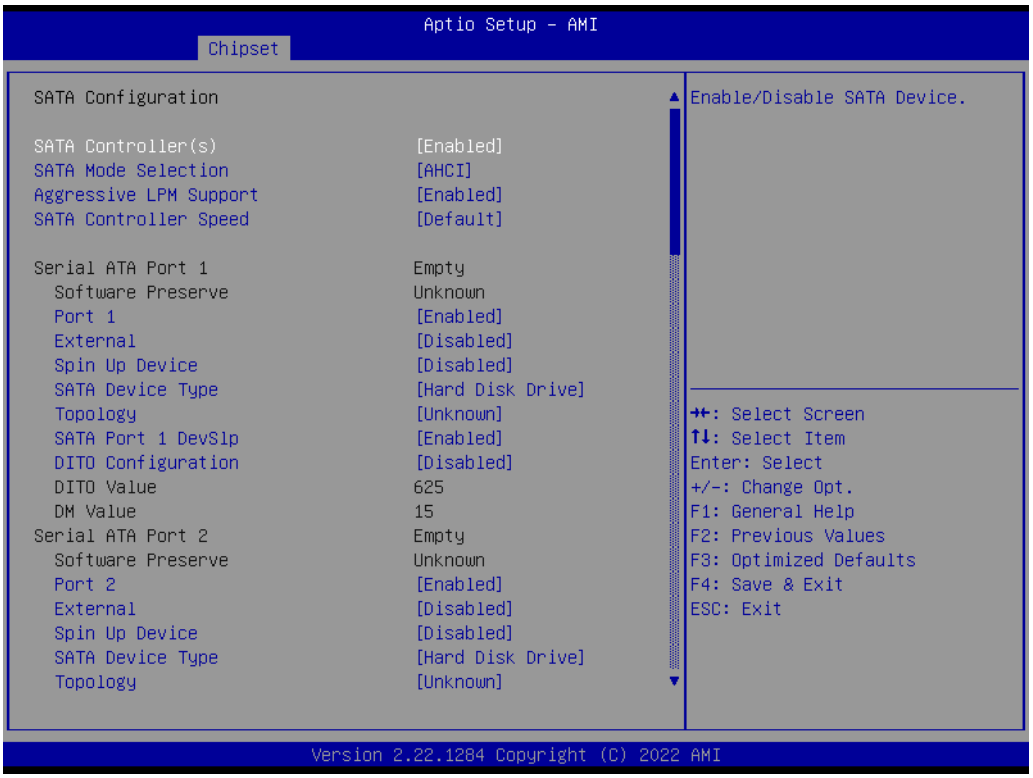
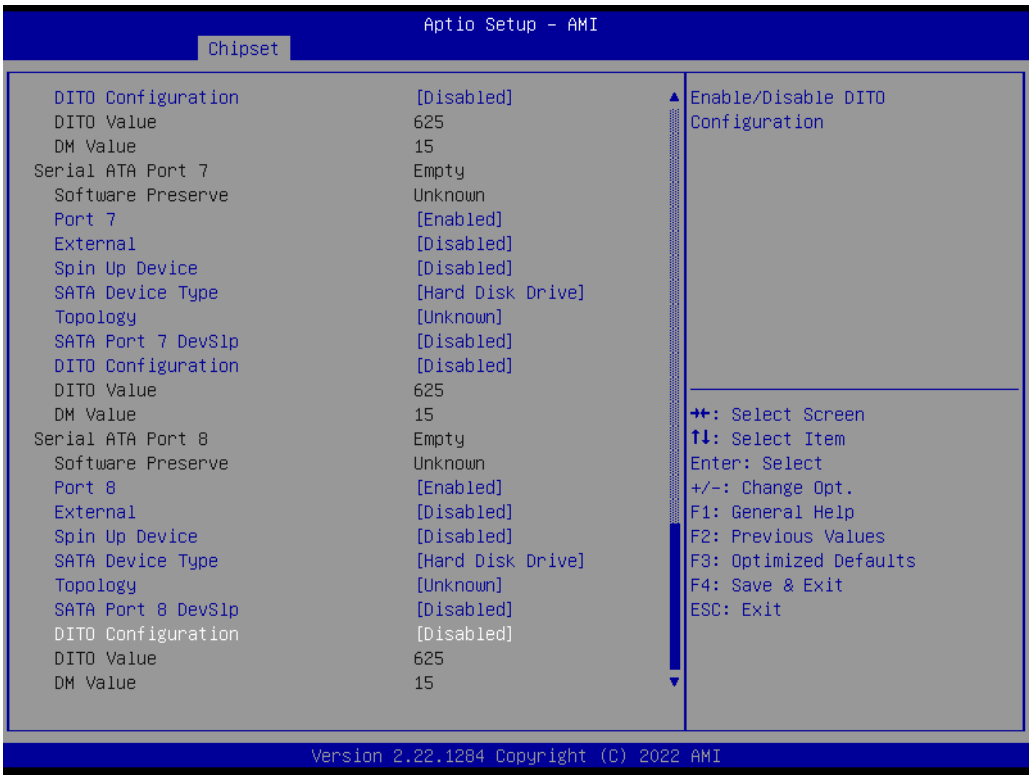
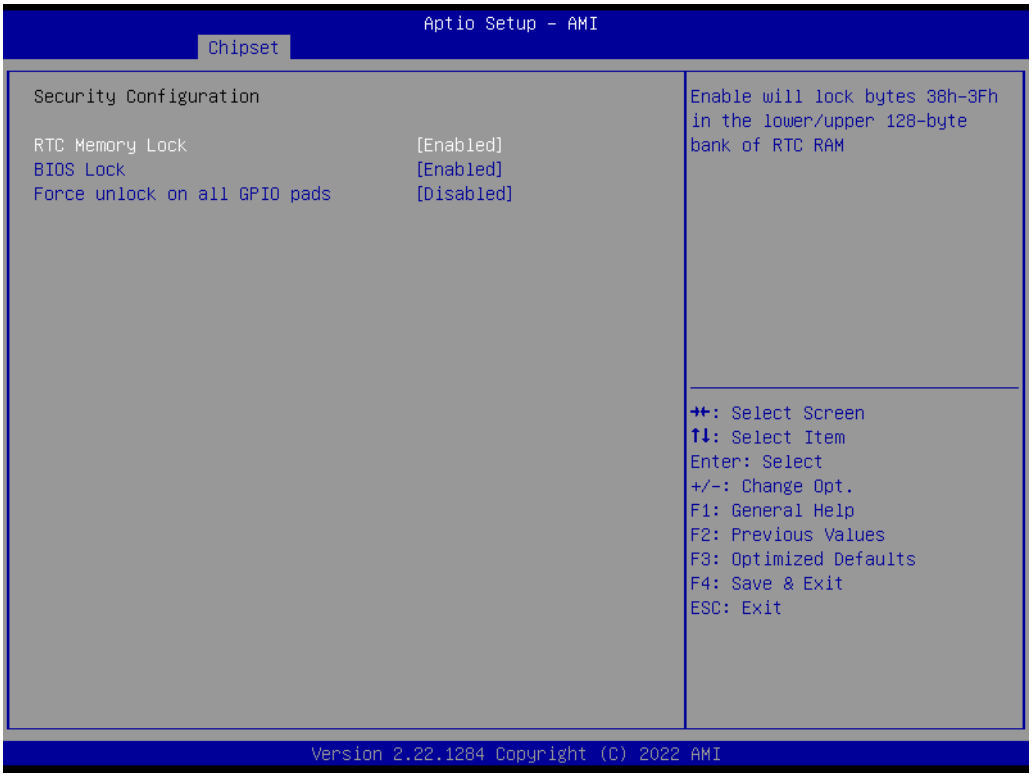

Aptio Setup – AMI
Chipset
EDPC [Enabled]
URR [Disabled]
FER [Disabled]
NFER [Disabled]
CER [Disabled]
SEFE [Disabled]
SENFE [Disabled]
SECE [Disabled]
PME SCI [Enabled]
Advanced Error Reporting [Enabled]
PCIe Speed [Auto]
Transmitter Half Swing [Disabled]
Detect Timeout 0
Extra Bus Reserved 0
Reserved Memory 10
Reserved I/O 4
PCH PCIe LTR Configuration
LTR [Enabled]
Snoop Latency Override [Auto]
Non Snoop Latency Override [Auto]
Force LTR Override [Disabled]
LTR Lock [Disabled]
Peer Memory Write Enable [Disabled]
PCIE LTR Configuration Lock
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.22.1284 Copyright (C) 2022 AMI

3.2.3.2.2 SATA Configuration



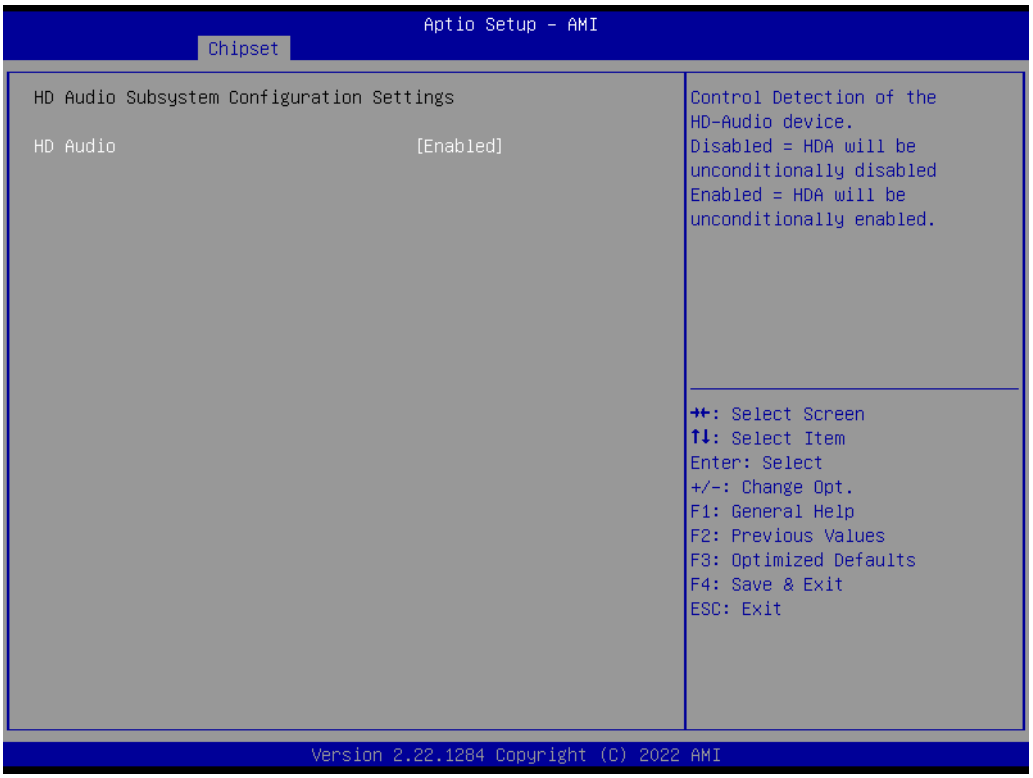


3.2.3.2.3 Security Configuration



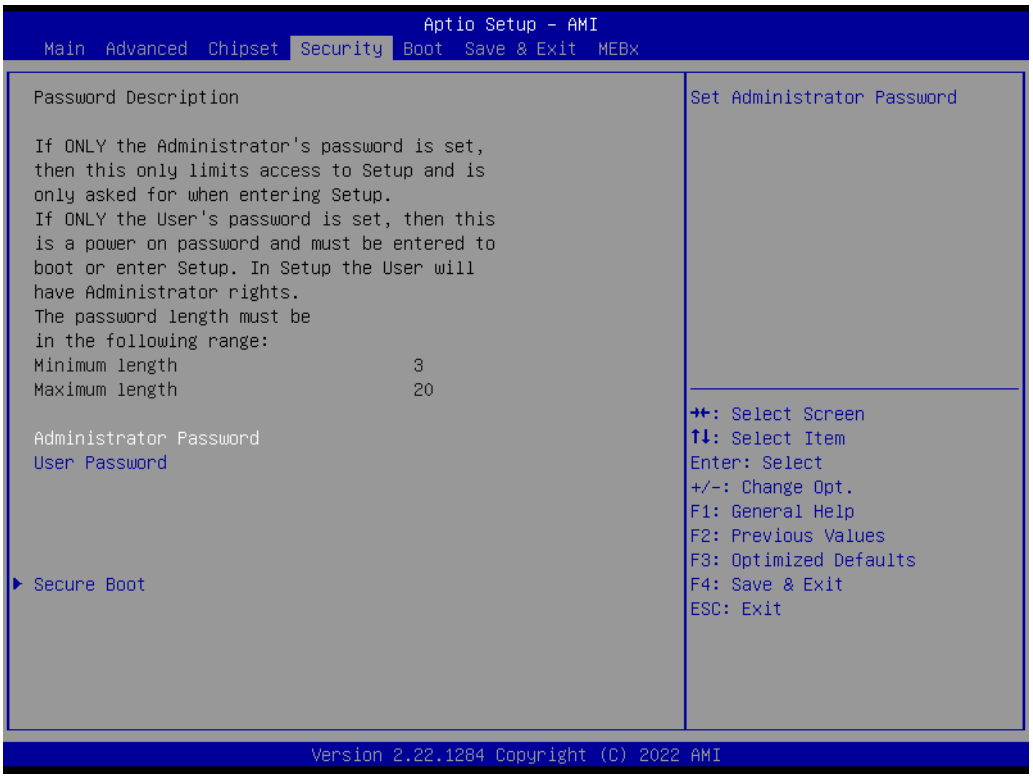
- **RTC Memory Lock [Enabled]**
- **BIOS Lock [Enabled]**
- **Force unlock on all GPIO pads [Disabled]**

3.2.3.2.4 HD Audio Subsystem Configuration Settings



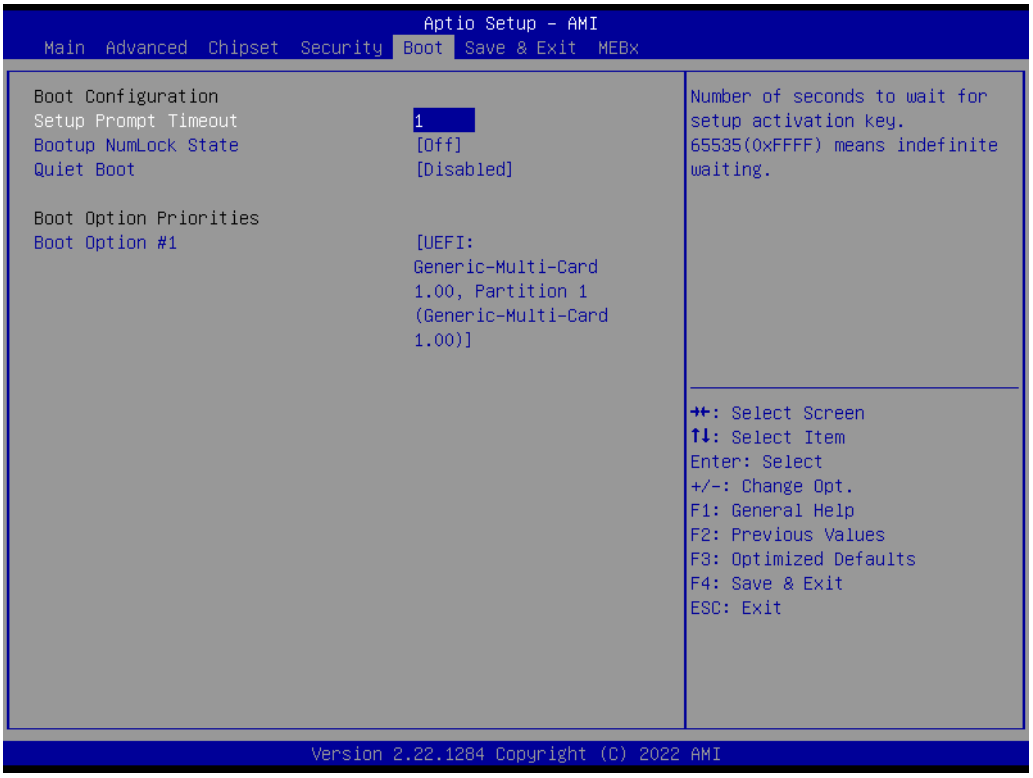
- **HD Audio [Enabled]**

3.2.4 Security Setting



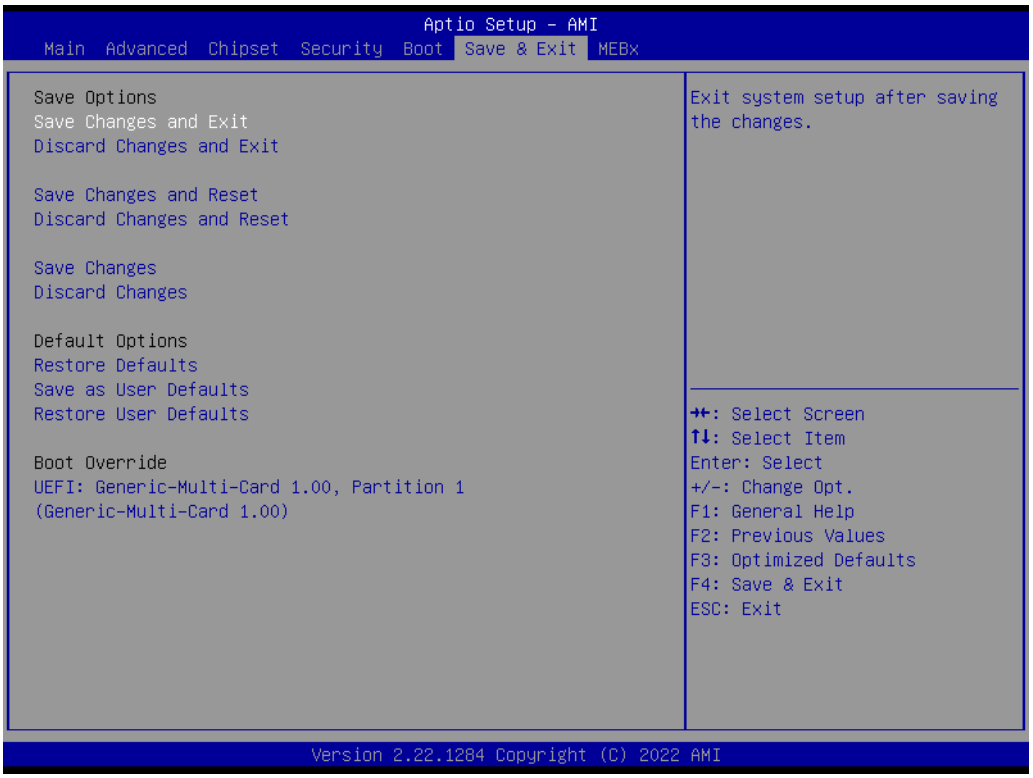
- **Administrator Password**
  Select this option and press to access the sub menu, and then type in the password. Set the Administrator password.
- **User Password**
  Select this option and press to access the sub menu, and then type in the password. Set the User Password.
- **Security Boot**

3.2.5 Boot Setting



- **Setup Prompt Timeout**
  User the and <-> keys to adjust the number of seconds to wait for setup activation key.
- **Bootup NumLock State [Off]**
  On or Off power on state for the NumLock.
- **Quiet Boot [Disabled]**
  If this option is set to disabled, the BIOS displays normal POST messages. If enabled, an OEM logo is shown instead of POST messages.
- **Boot Option #1**
  Choose boot priority from boot device.

3.2.6 Save & Exit Configuration



- **Save Changes and Exit**
  When users have completed system configuration, select this option to save changes, exit BIOS setup menu and reboot the computer to take effect of all system configuration parameters.
  1.Select Exit Saving Changes from the Exit menu and press <Enter>.
  The following message appears: Save Configuration Changes and Exit Now? [Ok] [Cancel] 2. Select Ok or cancel.
- **Discard Changes and Exit**
  Select this option to quit Setup without making any permanent changes to the system configuration.
  1. Select Exit Discarding Changes from the Exit menu and press <Enter>. The following message appears: Discard Changes and Exit Setup Now? [Ok] [Cancel]
  2. Select Ok to discard changes and exit. Discard Changes Select Discard Changes from the Exit menu and press <Enter>.
- **Save Changes and Reset**
  When users have completed system configuration, select this option to save changes, exit BIOS setup menu and reboot the computer to take effect of all system configuration parameters.
  1. Select Exit Saving Changes from the Exit menu and press <Enter>. The Following message appears: Save Configuration Changes and Exit Now? [Ok] [Cancel]
  2. Select Ok or cancel.
- **Discard Changes and Reset**
  Select this option to quit Setup without making any permanent changes to the system configuration.
  1. Select Reset Discarding Changes from the Exit menu and press <Enter>.
  The following message appears: Discard Changes and Exit Setup Now? [Ok] [Cancel]

2. Select Ok to discard changes and reset. Discard Changes Select Discard Changes from the Exit menu and press <Enter>.

- **Restore Defaults**
  The BIOS automatically configures all setup items to optimal settings when users select this option. Defaults are designed for maximum system performance, ut may not work best for all computer applications. In particular, do not use the Defaults if the user's computer is experiencing system configuration problems. Select Restore Defaults from the Exit menu and press <Enter>.
- **Save as User Default**
  Save the all current settings as a user default.
- **Restore User Default**
  Restore all settings to user default values.

3.2.7 MEBx

Chapter 4

Software Introduction & Service

4.1 Introduction

The mission of Advantech Embedded Software Services is to "Enhance quality of life with Advantech platforms and Microsoft® Windows® embedded technology." We enable Windows® Embedded software products on Advantech platforms to more effectively support the embedded computing community. Customers are freed from the hassle of dealing with multiple vendors (hardware suppliers, system integrators, embedded OS distributors) for projects. Our goal is to make Windows® Embedded Software solutions easily and widely available to the embedded computing community.

4.2 Value-Added Software Services

Software API: An interface that defines the ways by which an application program may request services from libraries and/or operating systems. Provides not only the underlying drivers required but also a rich set of user-friendly, intelligent and integrated interfaces, which speeds development, enhances security and offers add-on value for Advantech platforms. It plays the role of catalyst between developer and solution, and makes Advantech embedded platforms easier and simpler to adopt and operate with customer applications.

4.2.1 Software API

4.2.1.1 Control

GPIO

General Purpose Input/Output is a flexible parallel interface that allows a variety of custom connections. It allows users to monitor the level of signal input or set the output status to switch on/off the device. Our API also provide Programmable GPIO, which allows developers to dynamically set the GPIO input or output status.

SMBus

SMBus is the System Management Bus defined by Intel Corporation in 1995. It is used in personal computers and servers for low-speed system management communications. The SMBus API allows a developer to interface a embedded system environment and transfer serial messages using the SMBus protocols, allowing multiple simultaneous device control.

4.2.1.2 Display

Brightness Control

The Brightness Control API allows a developer to access embedded devices and easily control brightness.

Backlight

The Backlight API allows a developer to control the backlight (screen) on/off in embedded devices.

4.2.1.3 Monitor

Watchdog

A watchdog timer (WDT) is a device that performs a specific operation after a certain period of time if something goes wrong and the system does not recover on its own. A watchdog timer can be programmed to perform a warm boot (restarting the system) after a certain number of seconds.

Hardware Monitor

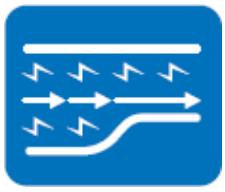
The Hardware Monitor (HWM) API is a system health supervision API that inspects certain condition indexes, such as fan speed, temperature and voltage.

4.2.1.4 Power Saving

CPU Speed

Makes use of Intel SpeedStep technology to save power consumption. The system will automatically adjust the CPU speed depending on the system loading.

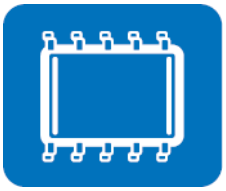
System Throttling



Refers to a series of methods for reducing power consumption in computers by lowering the clock frequency. This API allows the user to adjust the clock from 87.5% to 12.5%.

4.2.2 Software Utility

BIOS Flash



The BIOS Flash utility allows customers to update the flash ROM BIOS version, or use it to back up current BIOS by copying it from the flash chip to a file on customers' disk. The BIOS Flash utility also provides a command line version and an API for fast implementation into customized applications.

Monitoring

Monitoring is a utility for customers to monitor system health, like voltage, CPU and system temperature and fan speed. These items are important to a device, if critical errors occur and are not solved immediately, permanent damage may be caused.

Chapter 5

Chipset Software Installation Utility

5.1 Before You Begin

To ensure problem-free installation of the enhanced display drivers and utility software, read the instructions in this chapter carefully. The drivers for AIMB-588 can be downloaded from the Advantech website. Updates are provided via Microsoft service packs.

5.2 Introduction

The Intel® Chipset Software Installation (CSI) utility installs the Windows INF files that outline to the operating system how the chipset components will be configured. This is needed for the proper functioning of the following features:

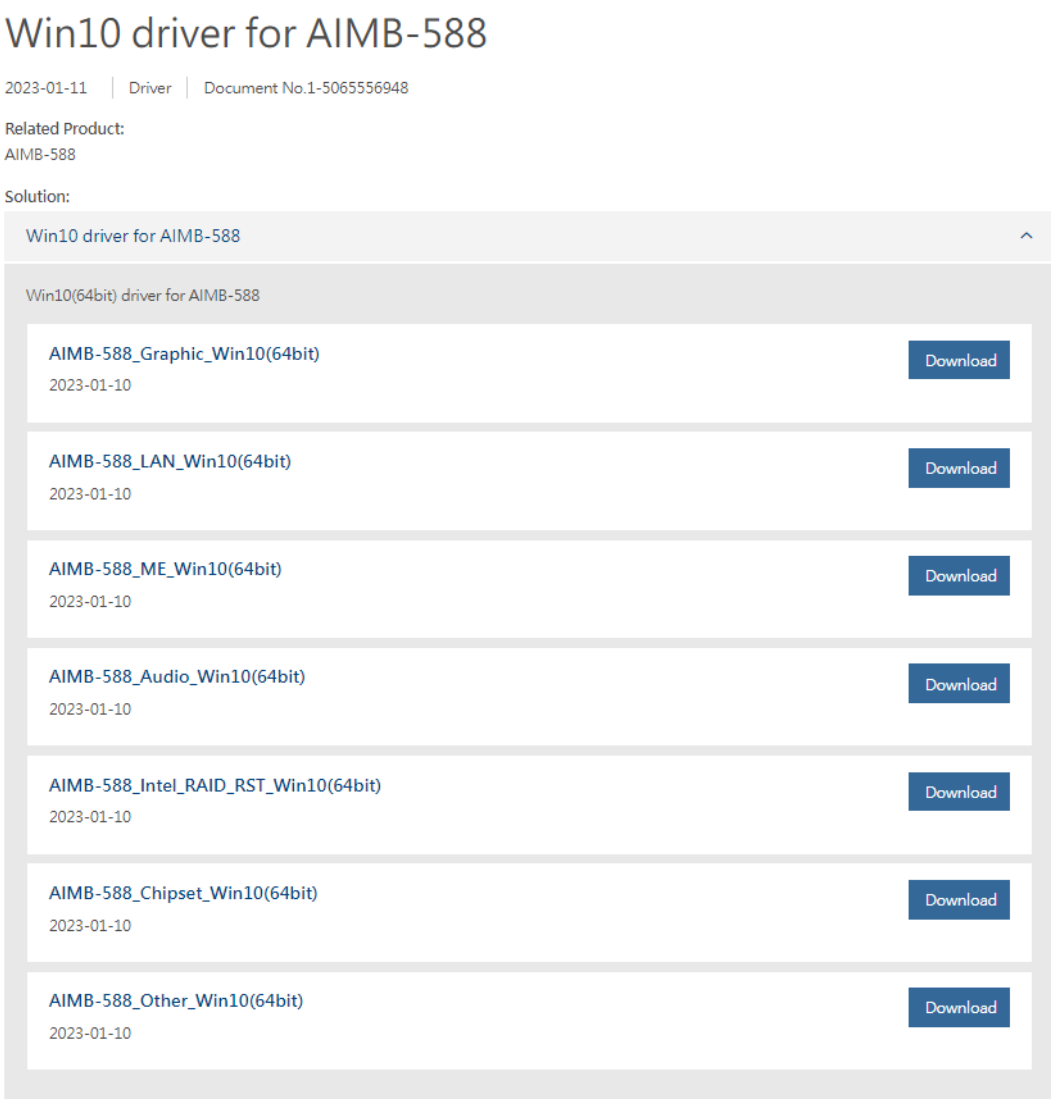
- Serial ATA interface support
- USB 2.0/3.1 support
- Identification of Intel® chipset components in the Device Manager

Note! *This utility is used for the following versions of Windows, and it has to be installed before installing all the other drivers:*

- *Windows 10 (64 bit)*

5.3 Windows 10 Driver Setup

When enter the website of Advantech, then search product AIMB-588. There is "Chipset" driver inside.



Chapter 6

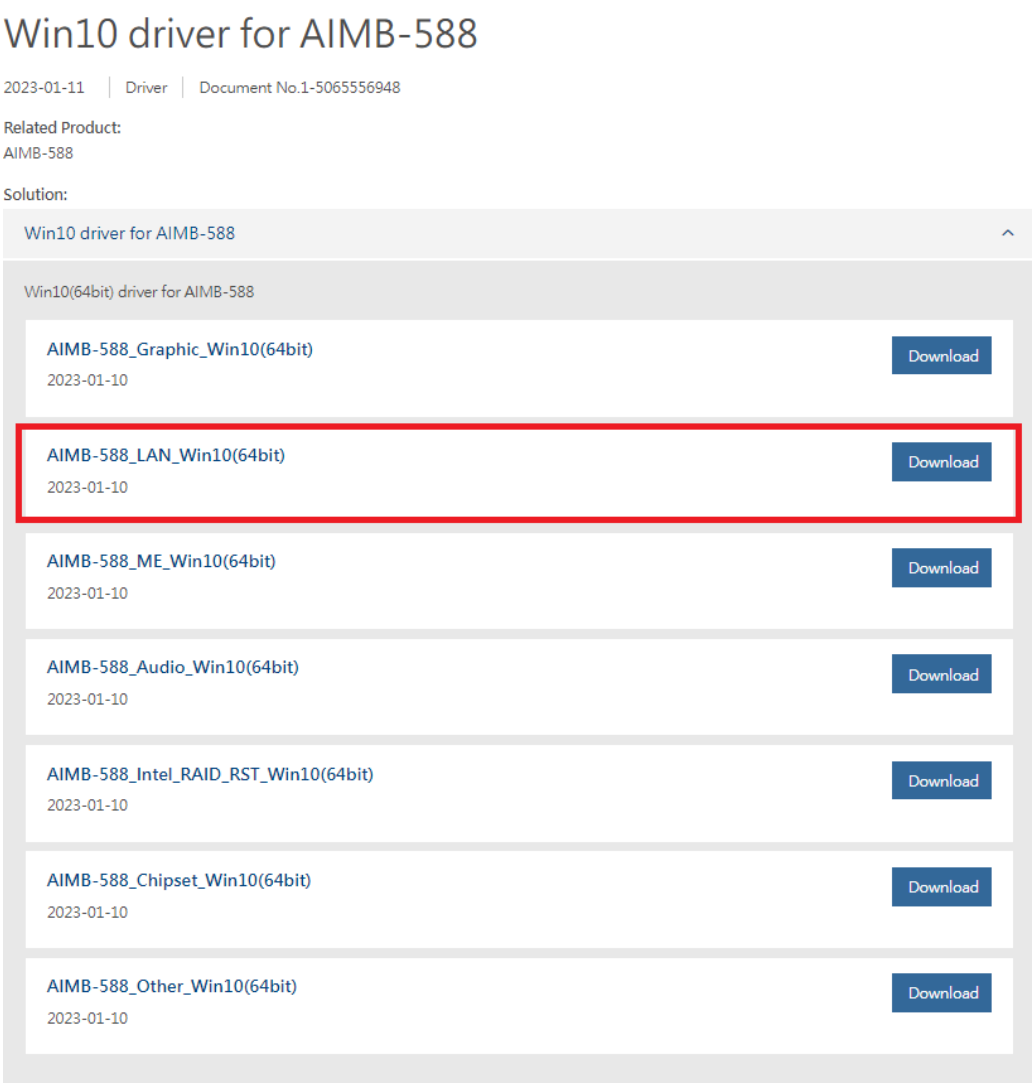
LAN Configuration

6.1 Introduction

The AIMB-588 has one Gigabit Ethernet LAN and three 2.5 Gigabit Ethernet LAN via dedicated PCI Express x1 lanes (Intel I219LM (LAN1), I226V (LAN2), I226V (LAN3/4 for R SKU)), offer bandwidth of up to 500 MB/sec, eliminating the bottleneck of network data flow and incorporating Gigabit Ethernet at 1000 Mbps.

6.2 Windows 10 Driver Setup

When enter the website of Advantech, then search product AIMB-588. There is "LAN" driver inside.



Appendix A

Pin Assignments

A.1 Flash Descriptor Security Override Setting Jumper (ME1)

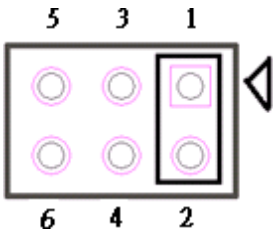
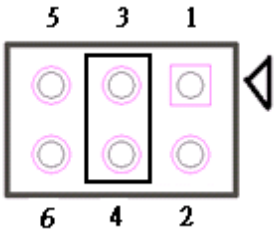
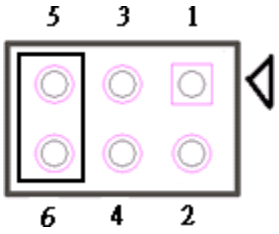
Function	Jumper Setting
Disable Flash Descriptor Security (Default)	1 2 3 
Enable Security measures defined in the Flash Descriptor.	1 2 3 

A.2 CMOS Clear Jumper (JCMOS1)

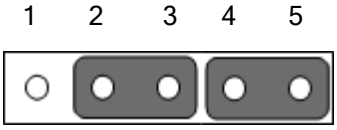
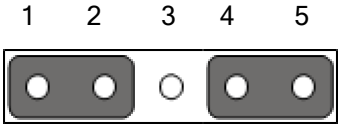
Function	Jumper Setting
Keep COMS Data (Default)	1 2 3 
Clear CMOS Date	1 2 3 

Pin	Signal Pin Definition
1	VBAT
2	RTC RESET#
3	GND

A.3 COM3_RI# Pin RI#/5V/12V Selection

Function	Setting
Set COM3_RI# as RI# (Default)	
Set COM3_RI# as 5V	
Set COM3_RI# as 12V	

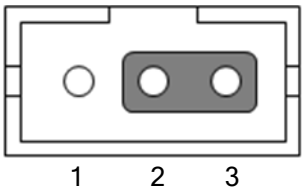
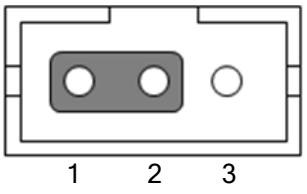
A.4 Watchdog Timer Output and OBS Beep (JOBS1+JWDT1)

Function	Setting
Watchdog Timer Output (2-3) (Default) OBS BEEP (4-5) (Default)	
Watchdog Timer Disable (1-2) OBS BEEP (4-5) (Default)	

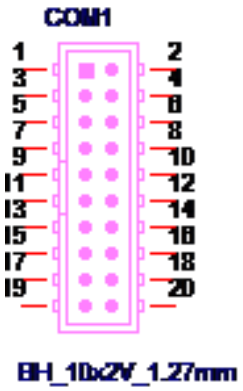
A.5 Power Switch/HDD LED/SMBUS/Speaker Pin Header (JFP1)

Pin	Signal Pin Definition	Pin	Signal Pin Definition
1	+V5	2	FP_HDD_LED
3	FP_PANSWIN#	4	FRP_SPK2
5	FP_HDD_LED#	6	GND
7	FRP_SPK3	8	SMBDAT_JFP
9	FP_SYS_RESET#	10	FRP_SPK4
11	SMBCLK_JFP	12	GND

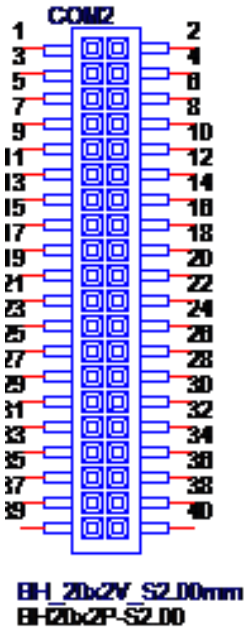
A.6 ATX/AT Mode Selection (PSON1)

Function	Jumper Setting
ATX Mode (Default)	
AT Mode	

Pin	Signal Pin Definition
1	ATX selection
2	+VCC
3	AT selection



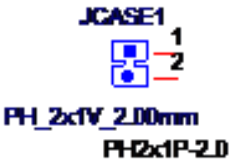
A.7 COM1/2, COM3/4/5/6 (COM12/COM3456)



Pin	Signal	Pin	Signal
1	COM1_DCD#	2	COM1_DSR#
3	COM1_SIN	4	COM1_RTS#
5	COM1_SOUT	6	COM1_CTS#
7	COM1_DTR#	8	COM1_RI#
9	GND	10	GND
11	COM2_422_485_TX-	12	COM2_DSR#
13	COM2_422_485_TX+	14	COM2_RTS#
15	COM2_422_RX+	16	COM2_CTS#
17	COM2_422_RX-	18	COM2_RI#
19	GND	20	GND

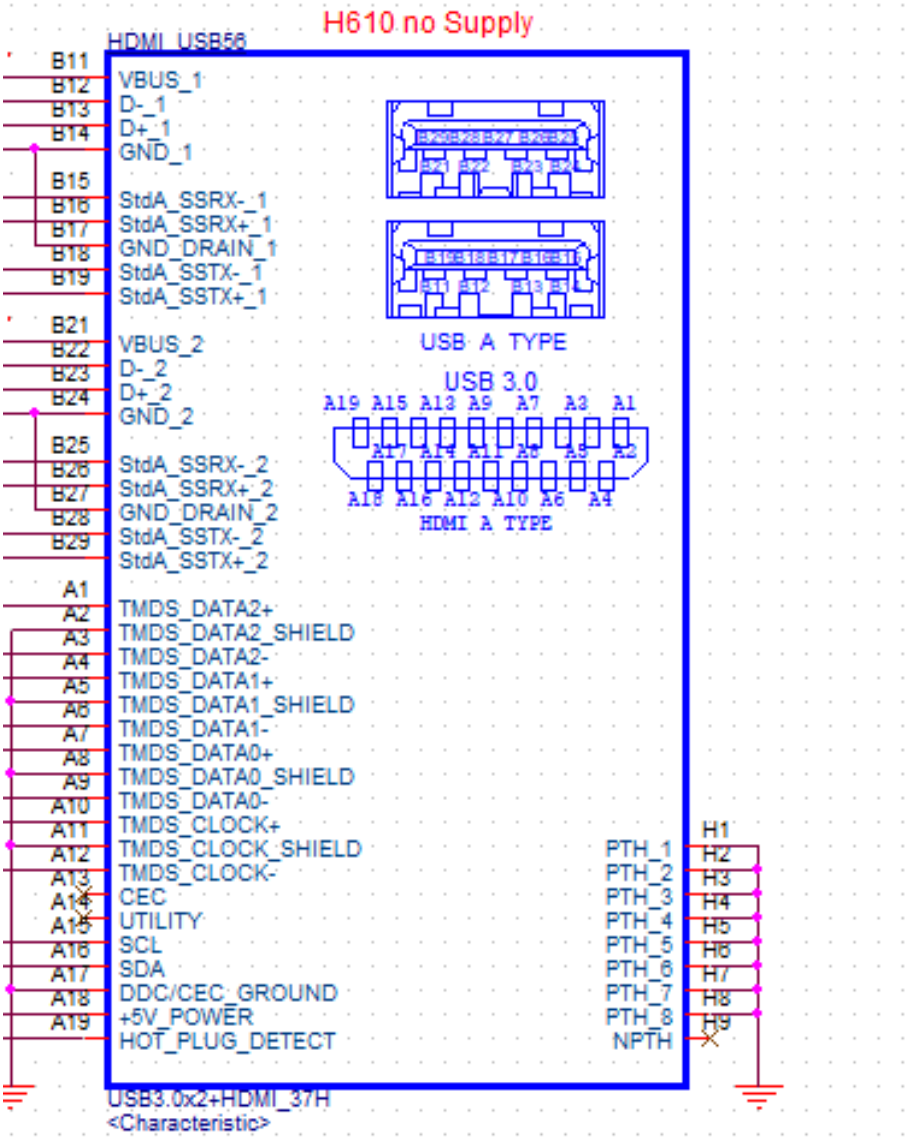
Pin	Signal	Pin	Signal
1	COM3_DCD#	2	COM3_DSR#
3	COM3_SIN	4	COM3_RTS#
5	COM3_SOUT	6	COM3_CTS#
7	COM3_DTR#	8	COM3_RI_V#
9	GND	10	GND
11	COM4_DCD#	12	COM4_DSR#
13	COM4_SIN	14	COM4_RTS#
15	COM4_SOUT	16	COM4_CTS#
17	COM4_DTR#	18	COM4_RI#
19	GND	20	GND
21	COM5_DCD#	22	COM5_DSR#
23	COM5_SIN	24	COM5_RTS#
25	COM5_SOUT	26	COM5_CTS#
27	COM5_DTR#	28	COM5_RI#
29	GND	30	GND
31	COM6_DCD#	32	COM6_DSR#
33	COM6_SIN	34	COM6_RTS#
35	COM6_SOUT	36	COM6_CTS#
37	COM6_DTR#	38	COM6_RI#
39	GND	40	GND

A.8 Case Open Pin Header (JCASEOP_SW1)



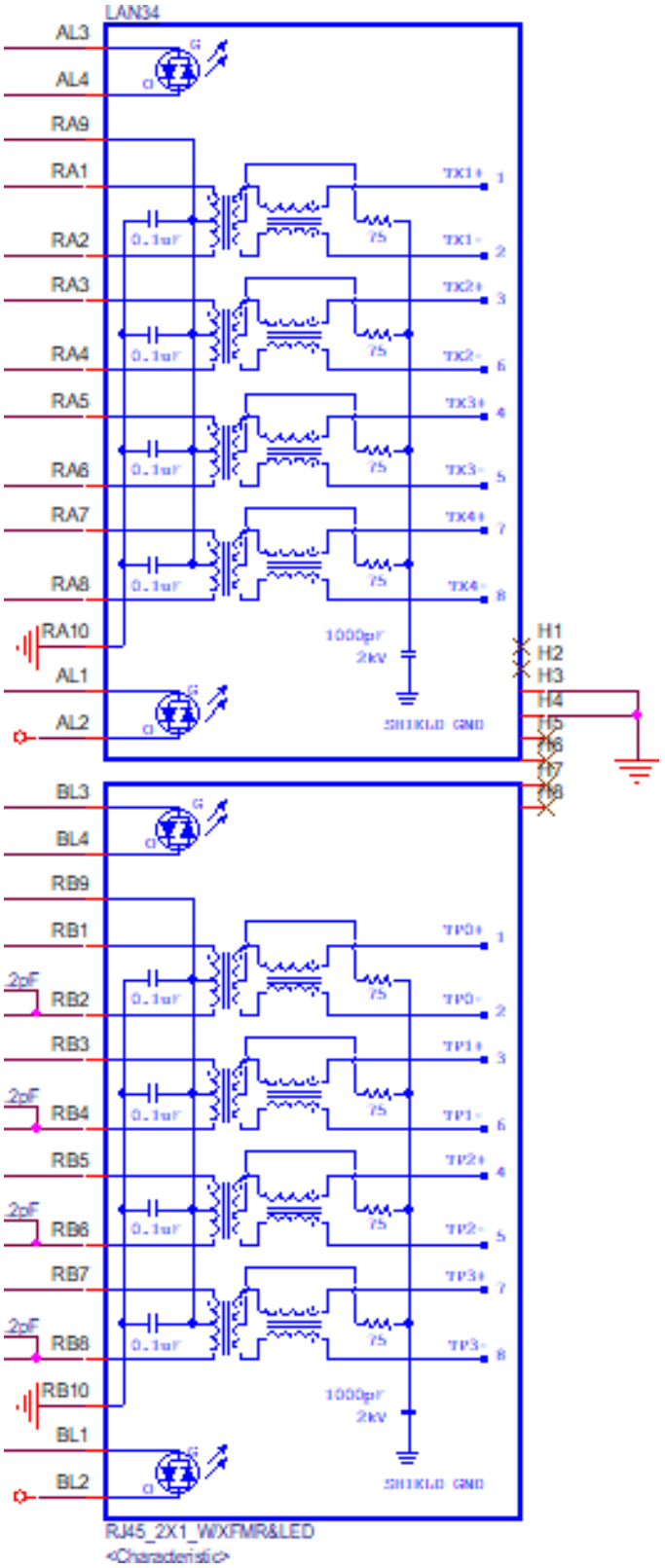
Pin	Signal Pin Definition
1	CASEOP
2	GND

A.9 USB Ports (HDMI_USB56/LAN34/USB10111213/ LAN1_USB12/LAN2_USB3/USB4/USB89/USB7)

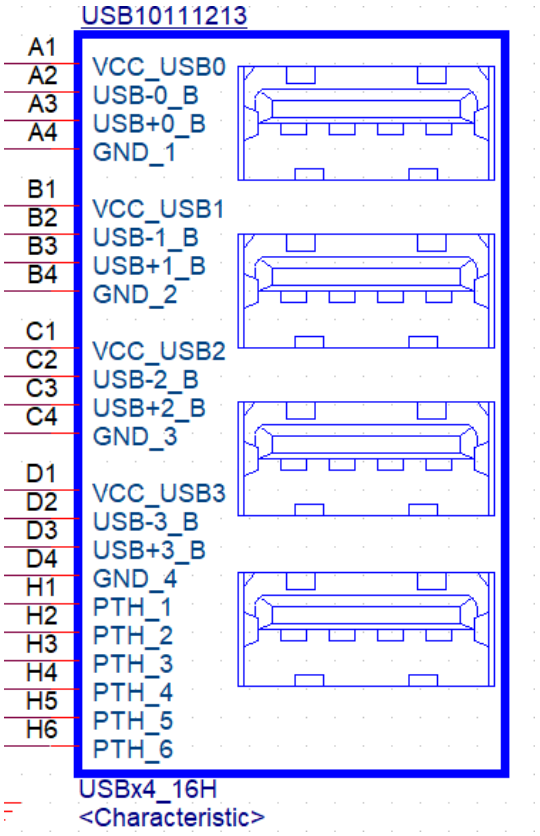


Pin	Signal	Pin	Signal
A1	HDMI1_z_D2+	B11	+USBV0910
A2	GND	B12	USB2_D3-
A3	HDMI1_z_D2-	B13	USB2_D3+
A4	HDMI1_z_D1+	B14	GND
A5	GND	B15	USB31_P9_z_RX-
A6	HDMI1_z_D1-	B16	USB31_P9_z_RX+
A7	HDMI1_z_D0+	B17	GND
A8	GND	B18	USB31_P9_z_TX-
A9	HDMI1_z_D0-	B19	USB31_P9_z_TX+
A10	HDMI1_z_CLK+	B20	X
A11	GND	B21	+USBV0910
A12	HDMI1_z_CLK-	B22	USB2_D4-
A13	X	B23	USB2_D4+

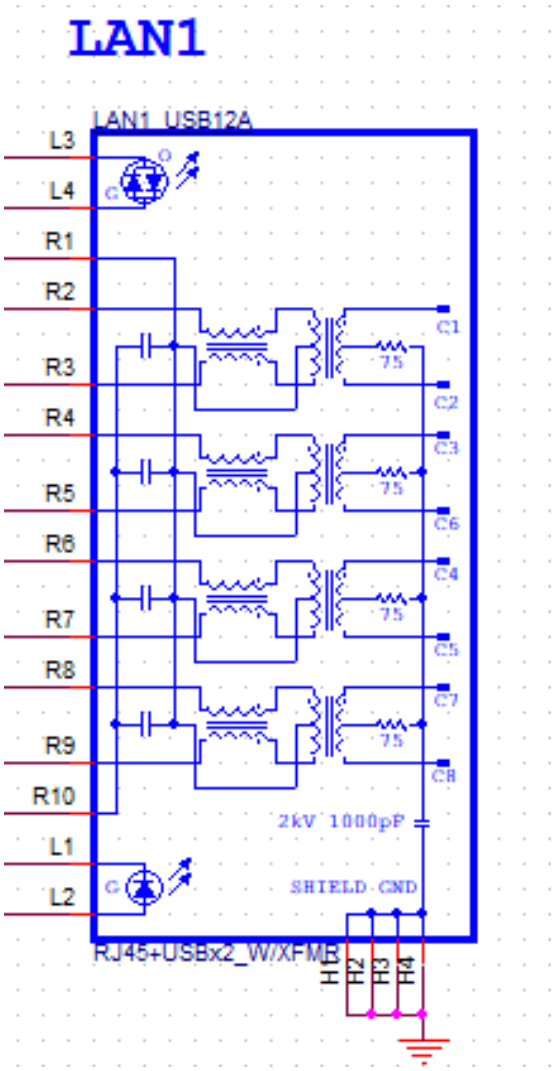
A14	X	B24	GND
A15	HDMI1_SCL	B25	USB31_P10_z_RX-
A16	HDMI1_SDA	B26	USB31_P10_z_RX+
A17	GND	B27	GND
A18	+V5_HDMI1	B28	USB31_P10_z_TX-
A19	HDMI1_HPD	B29	USB31_P10_z_TX+



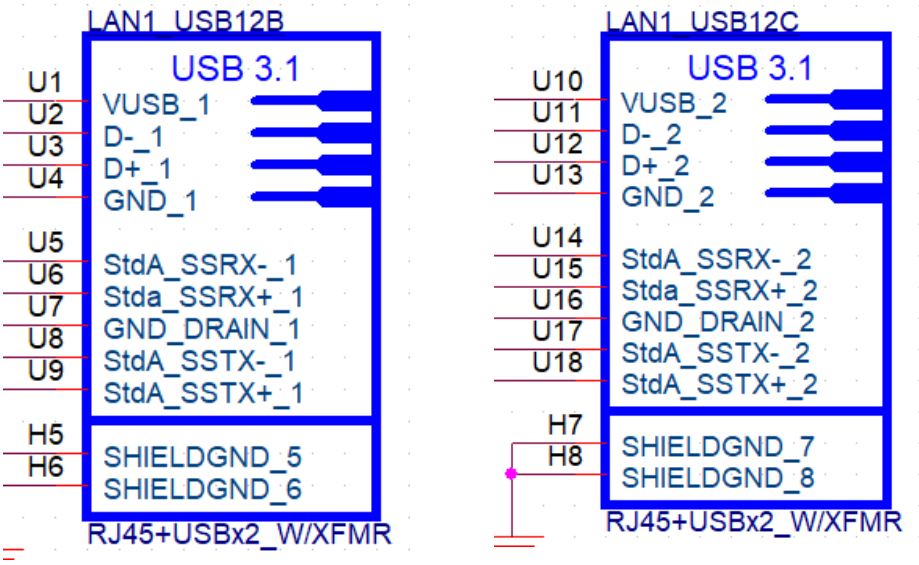
Pin	Signal	Pin	Signal
AL3	LAN4_LED2_R_1G#	BL3	LAN3_LED2_R_1G#
AL4	LAN4_LED0_R_100M#	BL4	LAN3_LED0_R_100M#
RA9	GND	RB9	GND
RA1	MDI_LAN4_P0	RB1	MDI_LAN3_P0
RA2	MDI_LAN4_N0	RB2	MDI_LAN3_N0
RA3	MDI_LAN4_P1	RB3	MDI_LAN3_P1
RA4	MDI_LAN4_N1	RB4	MDI_LAN3_N1
RA5	MDI_LAN4_P2	RB5	MDI_LAN3_P2
RA6	MDI_LAN4_N2	RB6	MDI_LAN3_N2
RA7	MDI_LAN4_P3	RB7	MDI_LAN3_P3
RA8	MDI_LAN4_N3	RB8	MDI_LAN3_N3
RA10	GND	RB10	GND
AL1	LAN4_LED1_ACT#	BL1	LAN3_LED1_ACT#
AL2	+V3.3_DUAL	BL2	+V3.3_DUAL



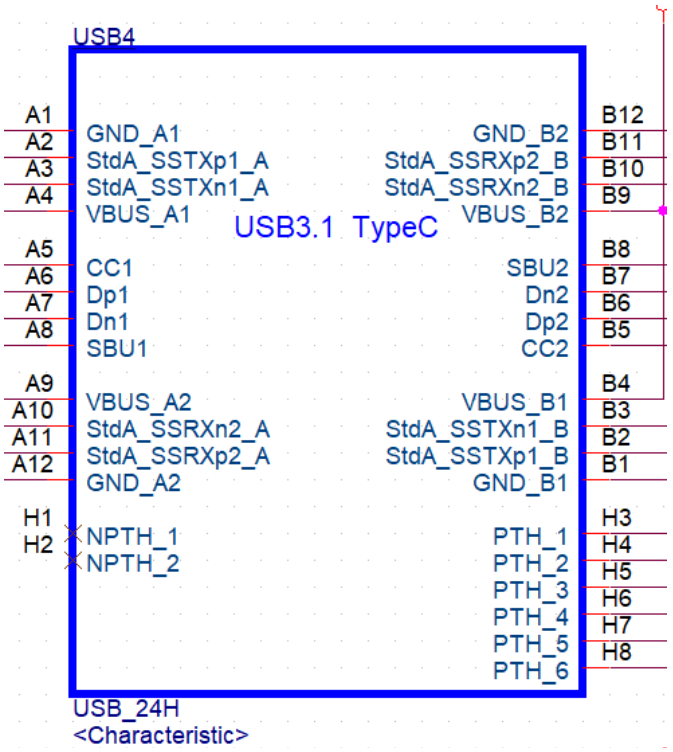
Pin	Signal
A1	+USB2V1234
A2	USB2_D8-
A3	USB2_D8+
A4	GND
B1	+USB2V1234
B2	USB2_D7-
B3	USB2_D7+
B4	GND
C1	+USB2V1234
C2	USB2_D6-
C3	USB2_D6+
C4	GND
D1	+USB2V1234
D2	USB2_D5-
D3	USB2_D5+
D4	GND
H1/H2/H3/H4/H5/H6	GND



Pin	Signal
L3	LAN1_LED1_1G#_R
L4	LAN1_LED2_100M#_R
R1	GND
R2	LAN1_MDI0+
R3	LAN1_MDI0-
R4	LAN1_MDI1+
R5	LAN1_MDI1-
R6	LAN1_MDI2+
R7	LAN1_MDI2-
R8	LAN1_MDI3+
R9	LAN1_MDI3-
R10	GND
L1	LAN1_LED0_ACT#_R
L2	+V3.3_LAN1_R

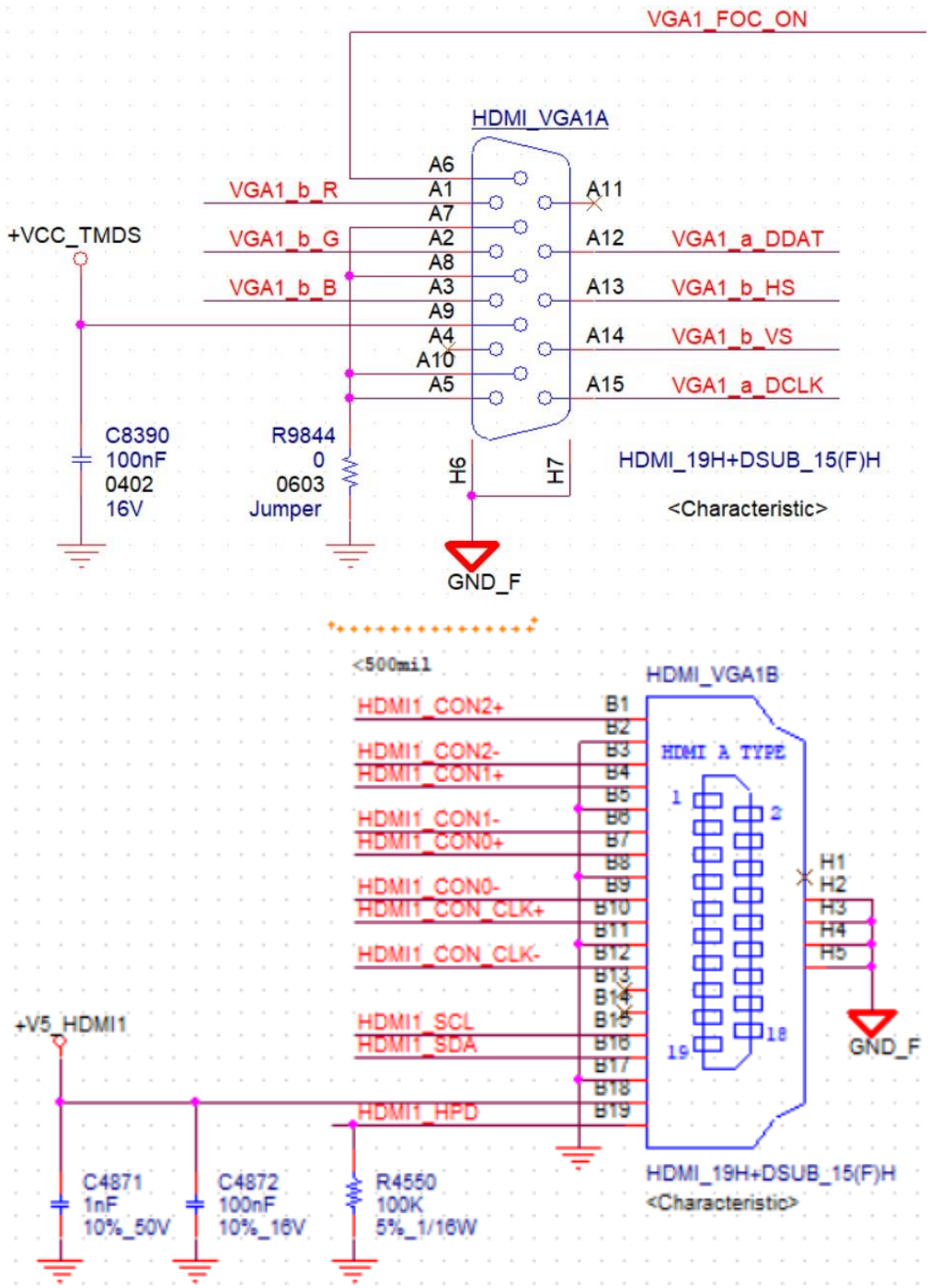


Pin	Signal	Pin	Signal
U1	+USBV12	U10	+USBV12
U2	USB2_D1-	U11	USB2_D2-
U3	USB2_D1+	U12	USB2_D2+
U4	GND	U13	GND
U5	USB31_P1_z_RX-	U14	USB31_P2_z_RX-
U6	USB31_P1_z_RX+	U15	USB31_P2_z_RX+
U7	GND	U16	GND
U8	USB31_P1_z_TX-	U17	USB31_P2_z_TX-
U9	USB31_P1_z_TX+	U18	USB31_P2_z_TX+
H5/H6	GND	H7/H8	GND



Pin	Signal	Pin	Signal
A1	GND	B1	GND
A2	USBC1_R_CONN_TX1+	B2	USBC1_R_CONN_TX2+
A3	USBC1_R_CONN_TX1-	B3	USBC1_R_CONN_TX2-
A4	+VUSB_C1	B4	+VUSB_C1
A5	USBC1_CONN_CC1	B5	USBC1_CONN_CC2
A6	USBC1_CONN_DP+	B6	USBC1_CONN_DP+
A7	USBC1_CONN_DM-	B7	USBC1_CONN_DM-
A8	USBC1_CONN_SBU1	B8	USBC1_CONN_SBU2
A9	+VUSB_C1	B9	+VUSB_C1
A10	USBC1_R_CONN_RX1-	B10	USBC1_R_CONN_RX2-
A11	USBC1_R_CONN_RX1+	B11	USBC1_R_CONN_RX2+
A12	GND	B12	GND

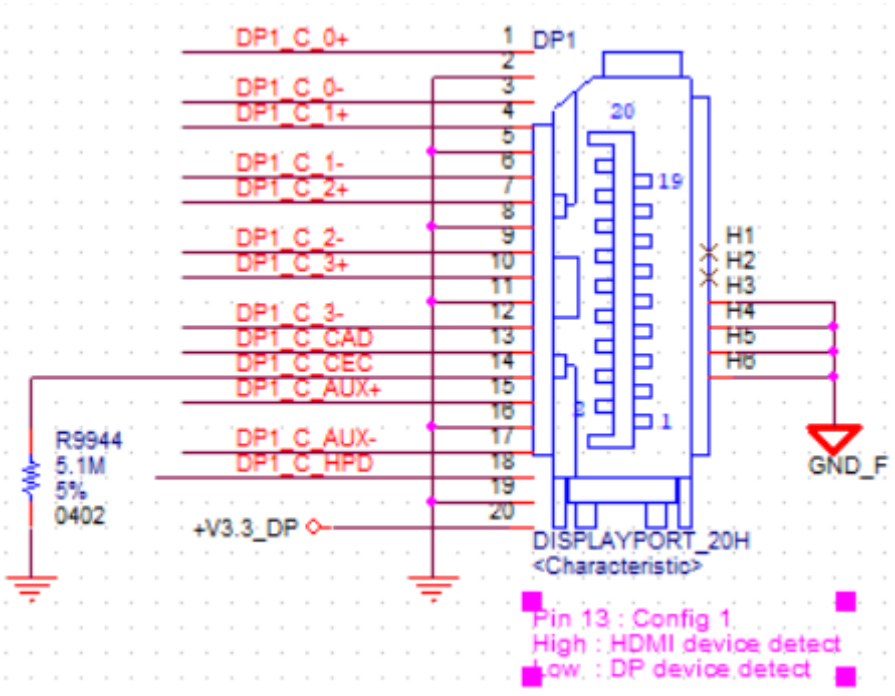
A.10 HDMI+VGA (HDMI_VGA1)



Pin	Signal	Pin	Signal
A1	VGA1_b_R	B1	HDMI1_CON2+
A2	VGA1_b_G	B2	GND
A3	VGA1_b_B	B3	HDMI1_CON2-
A4	NA	B4	HDMI1_CON1+
A5	GND	B5	GND
A6	VGA1_FOC_ON	B6	HDMI1_CON1-
A7	GND	B7	HDMI1_CON0+
A8	GND	B8	GND

A9	+VCC_TMDS	B9	HDMI1_CON0-
A10	GND	B10	HDMI1_CON_CLK+
A11	NA	B11	GND
A12	VGA1_a_DDAT	B12	HDMI1_CON_CLK-
A13	VGA1_b_HS	B13	NA
A14	VGA1_b_VS	B14	NA
A15	VGA1_a_DCLK	B15	HDMI1_SCL
		B16	HDMI1_SDA
		B17	GND
		B18	+V5_HDMI1
		B19	HDMI1_HPD

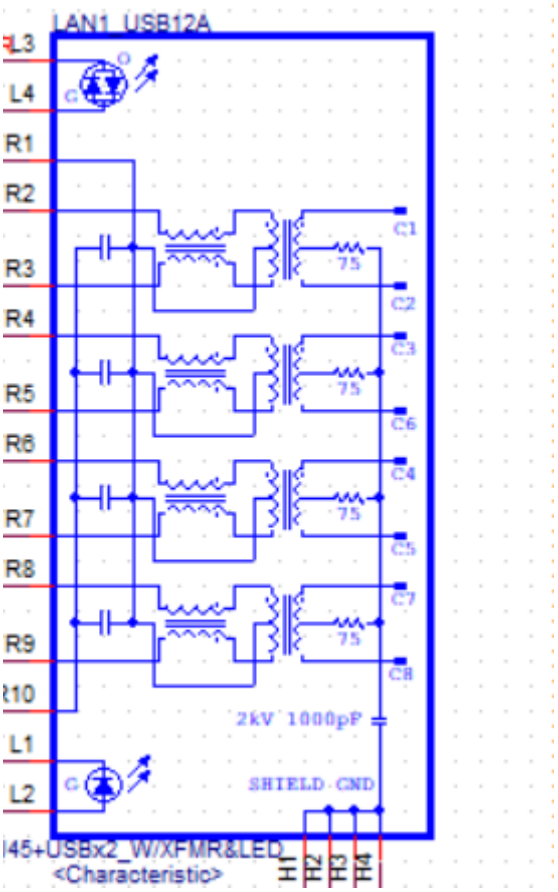
A.11 Display Port (DP1)



Pin	Signal
P1	DP1_C_0+
P2	GND
P3	DP1_C_0-
P4	DP1_C_1+
P5	GND
P6	DP1_C_1-
P7	DP1_C_2+
P8	GND
P9	DP1_C_2-
P10	DP1_C_3+
P11	GND
P12	DP1_C_3-
P13	DP1_C_CAD

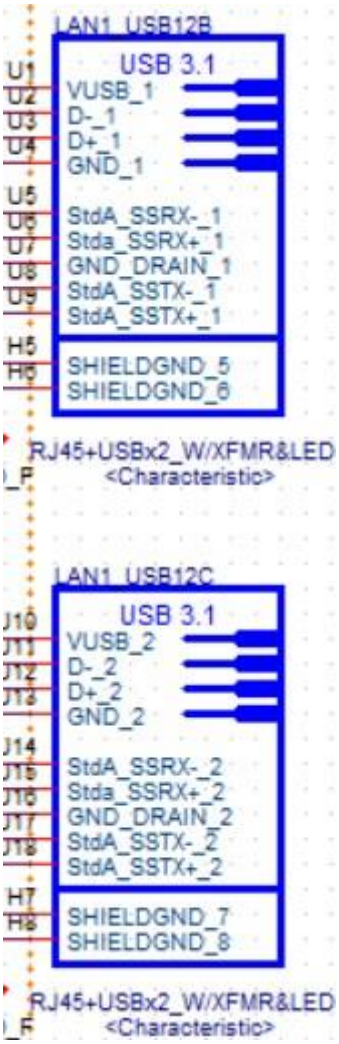
P14	DP1_C_CEC
P15	DP1_C_AUX+
P16	GND
P17	DP1_C_AUX-
P18	DP1_C_HPD
P19	GND
P20	+V3.3_DP

A.12 RJ45 1 port+ USB3 2port (LAN1_USB12, LAN2_USB34, LAN3_USB56, LAN4_USB78)

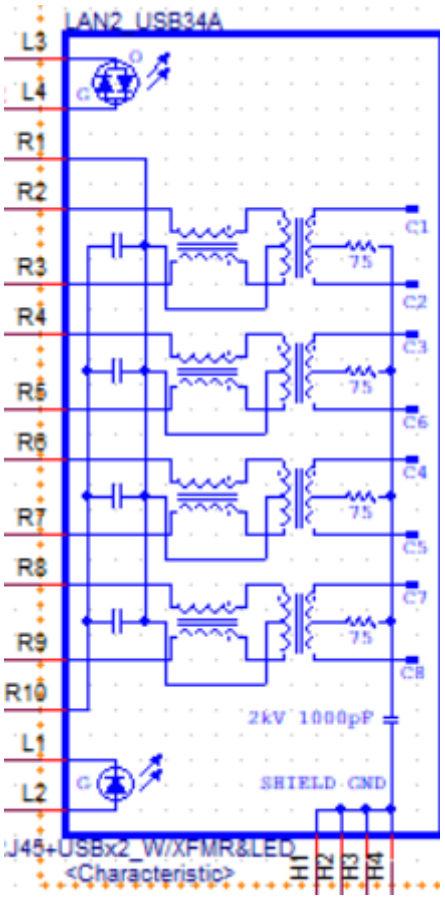


Pin	Signal
L3	LAN1_LED0_2.5G#_R
L4	LAN1_LED1_1G#_R
R1	GND
R2	LAN1_MDI0+
R3	LAN1_MDI0-
R4	LAN1_MDI1+
R5	LAN1_MDI1-
R6	LAN1_MDI2+
R7	LAN1_MDI2-
R8	LAN1_MDI3+
R9	LAN1_MDI3-

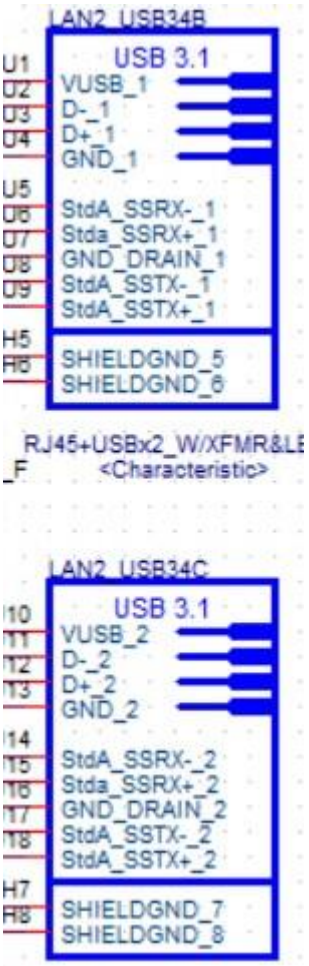
R10	GND
L1	LAN1_LED0_ACT#_R
L2	+V3.3LAN1



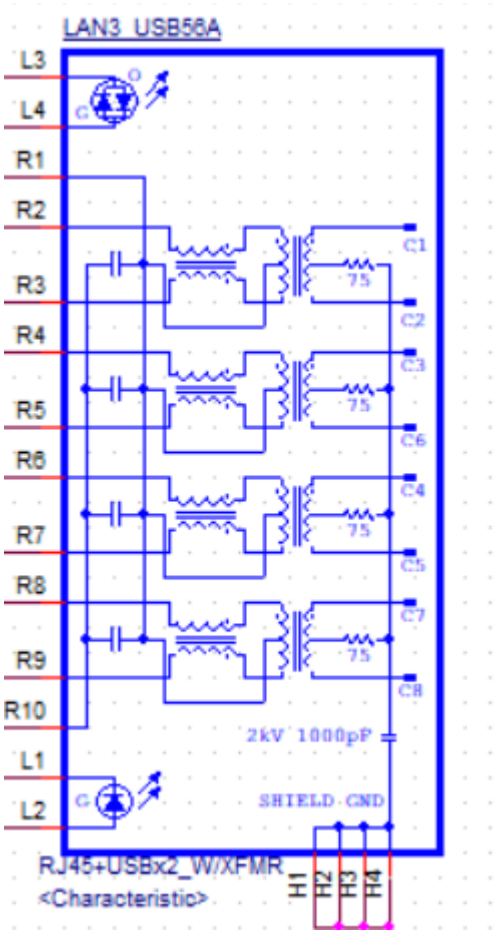
Pin	Signal	Pin	Signal
U1	+V5_USB3C1	U10	+V5_USB3C1
U2	USB2_0-	U11	USB2_1-
U3	USB2_0+	U12	USB2_1+
U4	GND	U13	GND
U5	USB3_RX0-	U14	USB3_RX1-
U6	USB3_RX0+	U15	USB3_RX1+
U7	GND	U16	GND
U8	USB3_TX0-	U17	USB3_TX1-
U9	USB3_TX0+	U18	USB3_TX1+
H5/H6	GND	H7/H8	GND



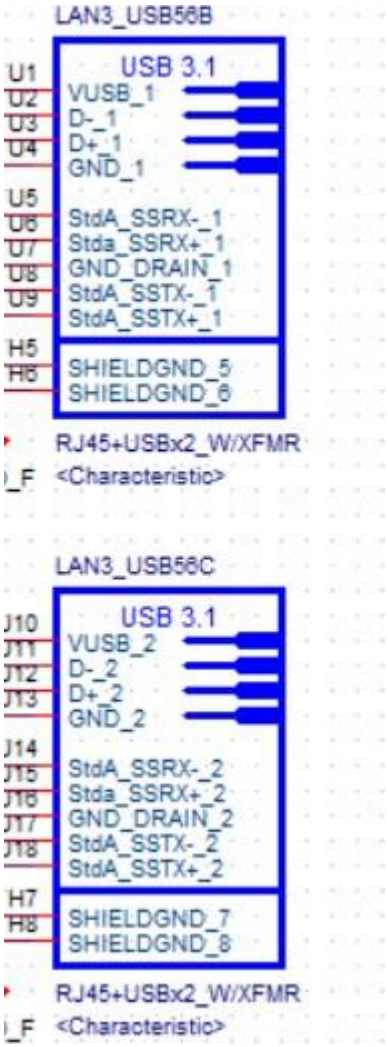
Pin	Signal
L3	LAN2_LED0_2.5G#_R
L4	LAN2_LED1_1G#_R
R1	GND
R2	LAN2_MDI0+
R3	LAN2_MDI0-
R4	LAN2_MDI1+
R5	LAN2_MDI1-
R6	LAN2_MDI2+
R7	LAN2_MDI2-
R8	LAN2_MDI3+
R9	LAN2_MDI3-
R10	GND
L1	LAN2_LED0_ACT#_R
L2	+V3.3LAN2



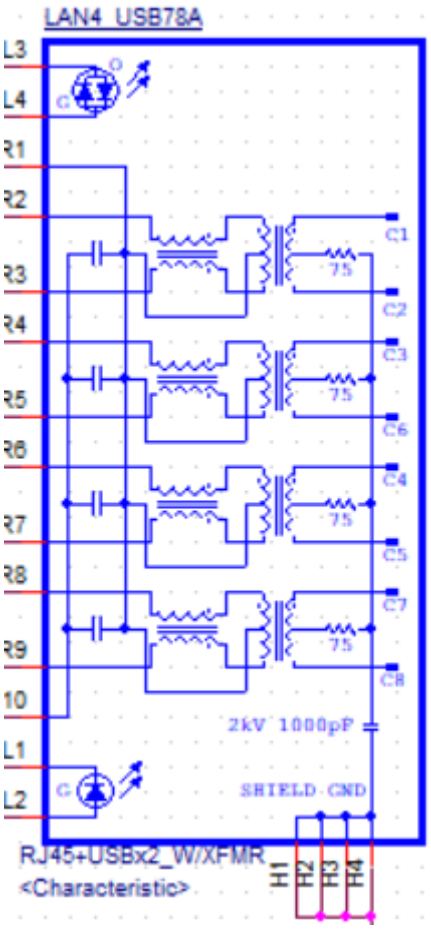
Pin	Signal	Pin	Signal
U1	+V5_USB3C2	U10	+V5_USB3C2
U2	USB2_2-	U11	USB2_3-
U3	USB2_2+	U12	USB2_3+
U4	GND	U13	GND
U5	USB3_RX2-	U14	USB3_RX3-
U6	USB3_RX2+	U15	USB3_RX3+
U7	GND	U16	GND
U8	USB3_TX2-	U17	USB3_TX3-
U9	USB3_TX2+	U18	USB3_TX3+
H5/H6	GND	H7/H8	GND



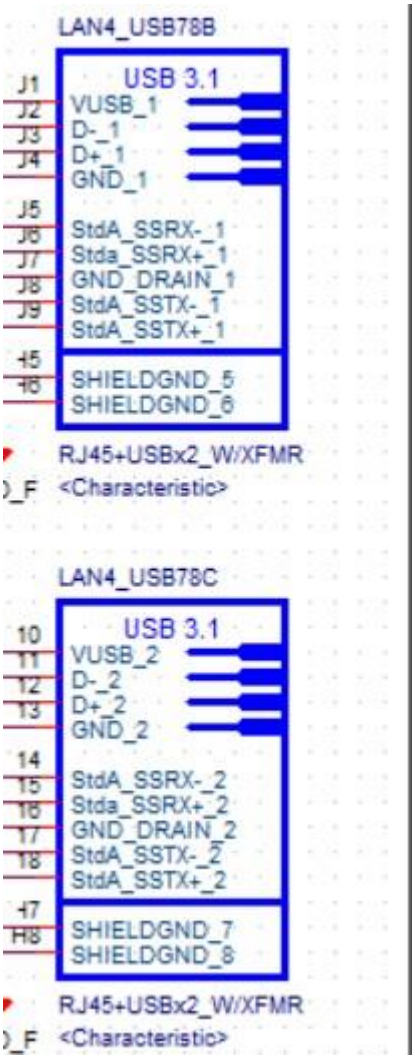
Pin	Signal
L3	LAN3_LED1_1G#_R
L4	LAN3_LED2_100M#_R
R1	GND
R2	LAN3_MDI0+
R3	LAN3_MDI0-
R4	LAN3_MDI1+
R5	LAN3_MDI1-
R6	LAN3_MDI2+
R7	LAN3_MDI2-
R8	LAN3_MDI3+
R9	LAN3_MDI3-
R10	GND
L1	LAN3_LED0_ACT#_R
L2	+V3.3LAN3



Pin	Signal	Pin	Signal
U1	+V5_USB3C3	U10	+V5_USB3C3
U2	USB2_FCH_C_0-	U11	USB2_FCH_C_1-
U3	USB2_FCH_C_0+	U12	USB2_FCH_C_1+
U4	GND	U13	GND
U5	USB3_FCH_C_RX0-	U14	USB3_FCH_C_RX1-
U6	USB3_FCH_C_RX0+	U15	USB3_FCH_C_RX1+
U7	GND	U16	GND
U8	USB3_FCH_C_TX0-	U17	USB3_FCH_C_TX1-
U9	USB3_FCH_C_TX0+	U18	USB3_FCH_C_TX1+
H5/H6	GND	H7/H8	GND

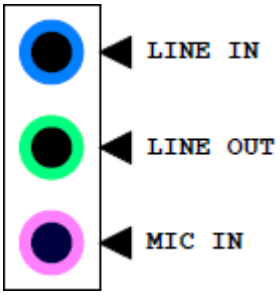


Pin	Signal
L3	LAN4_LED1_1G#_R
L4	LAN4_LED2_100M#_R
R1	GND
R2	LAN4_MDI0+
R3	LAN4_MDI0-
R4	LAN4_MDI1+
R5	LAN4_MDI1-
R6	LAN4_MDI2+
R7	LAN4_MDI2-
R8	LAN4_MDI3+
R9	LAN4_MDI3-
R10	GND
L1	LAN4_LED0_ACT#_R
L2	+V3.3LAN4



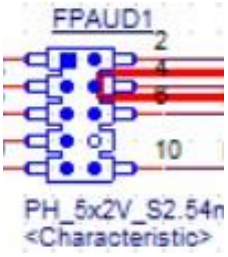
Pin	Signal	Pin	Signal
U1	+V5_USB3C4	U10	+V5_USB3C4
U2	USB2_FCH_C_2-	U11	USB2_FCH_C_3-
U3	USB2_FCH_C_2+	U12	USB2_FCH_C_3+
U4	GND	U13	GND
U5	USB3_FCH_C_RX2-	U14	USB3_FCH_C_RX3-
U6	USB3_FCH_C_RX2+	U15	USB3_FCH_C_RX3+
U7	GND	U16	GND
U8	USB3_FCH_C_TX2-	U17	USB3_FCH_C_TX3-
U9	USB3_FCH_C_TX2+	U18	USB3_FCH_C_TX3+
H5/H6	GND	H7/H8	GND

A.13 Audio Jack (AUDIO1)



Pin	Signal
1	MIC IN
2	LINE OUT
3	LINE IN

A.14 Front Panel Audio Header (FPAUD1)



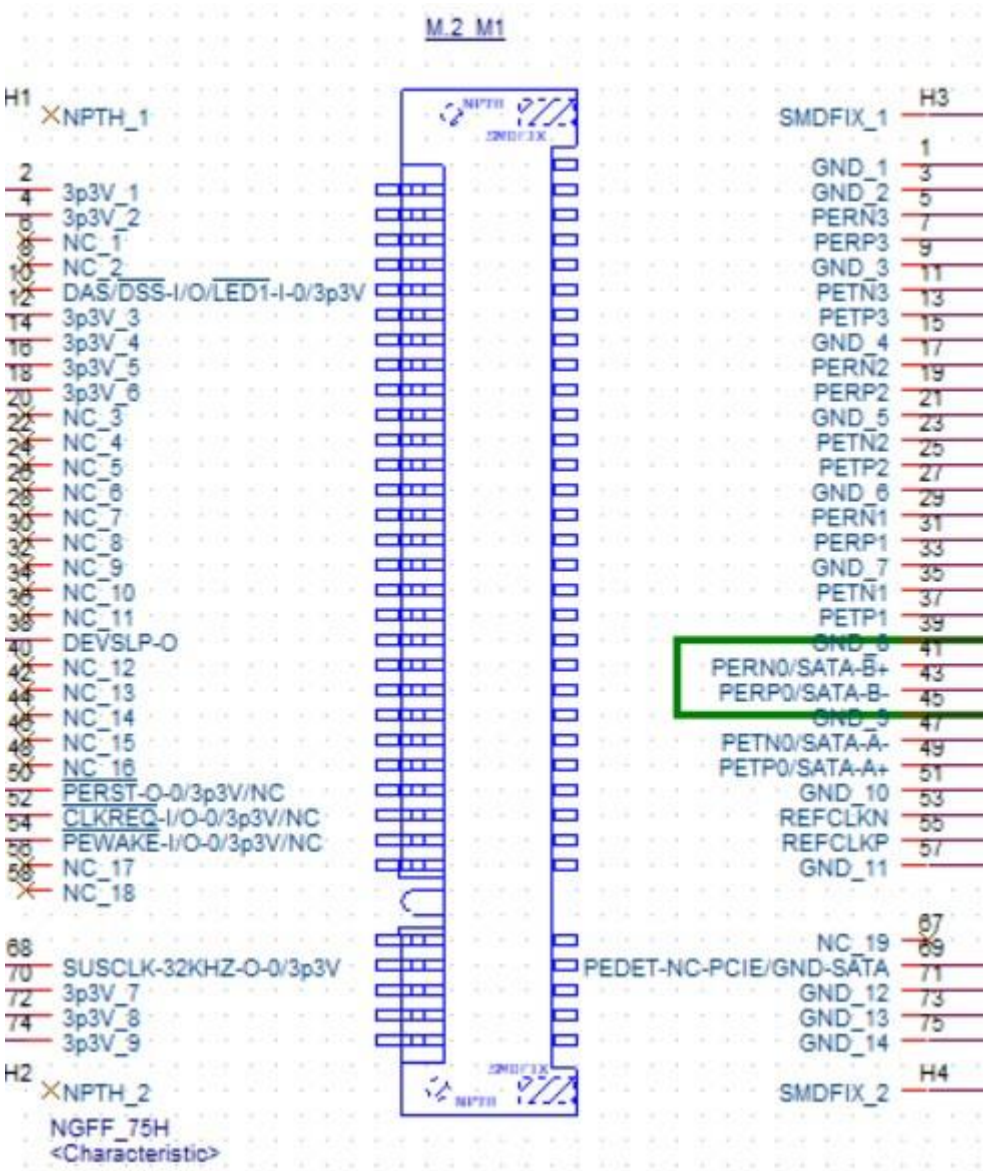
Pin	Signal	Pin	Signal
1	MIC IN-L	2	GND
3	MIC IN-R	4	FPAUD_DETECT#
5	LINE OUT-R	6	MIC2-JD
7	FRONT-IO-SENSE	8	NA
9	LINE OUT-L	10	LINE2-JD

A.15 PCI Express X16 Slot (PCIEX16_1)

Pin	Signal	Pin	Signal
B1	+12V	A1	PRSNT1#
B2	+12V	A2	+12V
B3	+12V	A3	+12V
B4	GND	A4	GND
B5	SMB_CLK	A5	Reserved
B6	SMB_DATA	A6	Reserved
B7	GND	A7	Reserved
B8	+3.3V	A8	Reserved
B9	Reserved	A9	+3.3V
B10	+3.3VAUX	A10	+3.3V
B11	WAKE#	A11	PWRGD
B12	Reserved	A12	GND
B13	GND	A13	REFCLK+
B14	TX0+	A14	REFCLK-
B15	TX0-	A15	GND
B16	GND	A16	RX0+
B17	Reserved	A17	RX0-
B18	DETECT#	A18	GND
B19	TX1+	A19	NA
B20	TX1-	A20	GND
B21	GND	A21	RX1+
B22	GND	A22	RX1-
B23	TX2+	A23	GND
B24	TX2-	A24	GND
B25	GND	A25	RX2+
B26	GND	A26	RX2-
B27	TX3+	A27	GND
B28	TX3-	A28	GND
B29	GND	A29	RX3+
B30	Reserved	A30	RX3-
B31	Reserved	A31	GND
B32	GND	A32	NA
B33	TX4+	A33	Reserved
B34	TX4-	A34	GND
B35	GND	A35	RX4+
B36	GND	A36	RX4-
B37	TX5+	A37	GND
B38	TX5-	A38	GND
B39	GND	A39	RX5+
B40	GND	A40	RX5-
B41	TX6+	A41	GND
B42	TX6-	A42	GND
B43	GND	A43	RX6+
B44	GND	A44	RX6-
B45	TX7+	A45	GND
B46	TX7-	A46	GND

B47	GND	A47	RX7+
B48	Reserved	A48	RX7-
B49	GND	A49	GND
B50	TX8+	A50	Reserved
B51	TX8-	A51	GND
B52	GND	A52	RX8+
B53	GND	A53	RX8-
B54	TX9+	A54	GND
B55	TX9-	A55	GND
B56	GND	A56	RX9+
B57	GND	A57	RX9-
B58	TX10+	A58	GND
B59	TX10-	A59	GND
B60	GND	A60	RX10+
B61	GND	A61	RX10-
B62	TX11+	A62	GND
B63	TX11-	A63	GND
B64	GND	A64	RX11+
B65	GND	A65	RX11-
B66	TX12+	A66	GND
B67	TX12-	A67	GND
B68	GND	A68	RX12+
B69	GND	A69	RX12-
B70	TX13+	A70	GND
B71	TX13-	A71	GND
B72	GND	A72	RX13+
B73	GND	A73	RX13-
B74	TX14+	A74	GND
B75	TX14-	A75	GND
B76	GND	A76	RX14+
B77	GND	A77	RX14-
B78	TX15+	A78	GND
B79	TX15-	A79	GND
B80	GND	A80	RX15+
B81	Reserved	A81	RX15-
B82	Reserved	A82	GND

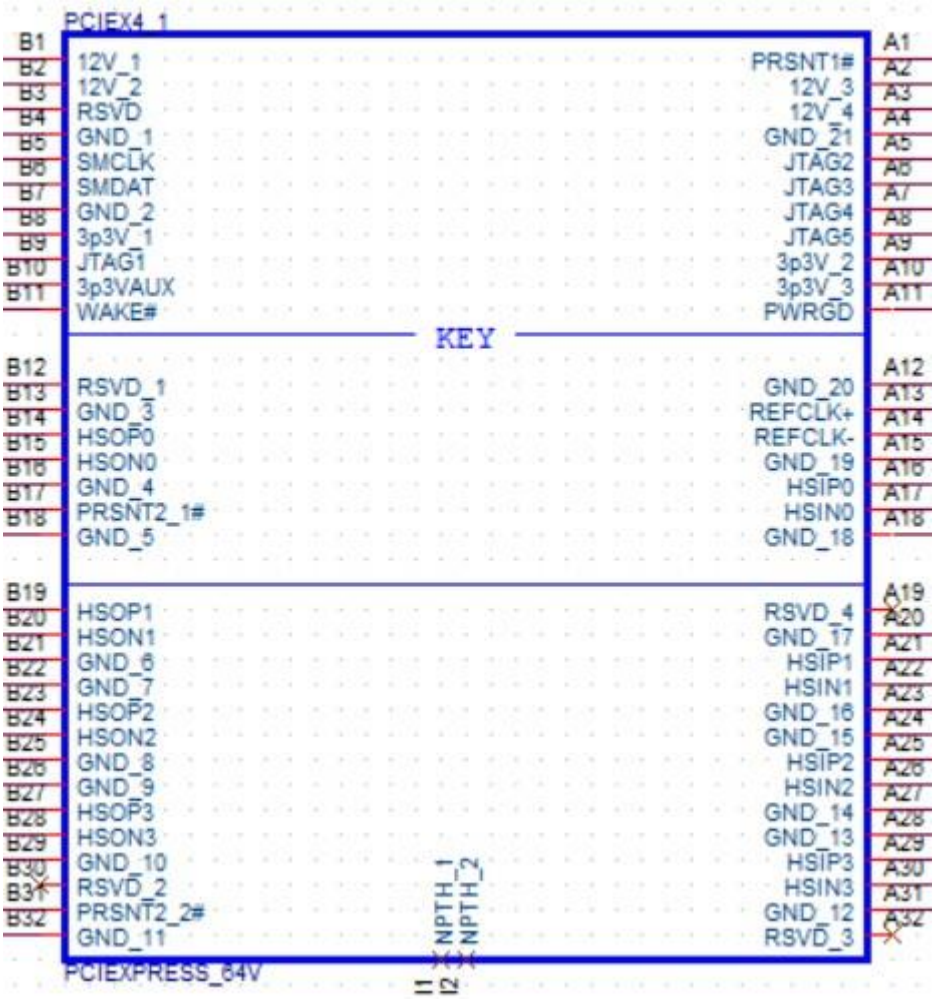
A.16 NGFF M.2 M-Key Connector for 2280 Module (M.2_M1)



Pin	Signal	Pin	Signal
1	GND_1	2	3p3V_1
3	GND_2	4	3p3V_2
5	PERN3	6	NC_1
7	PERP3	8	NC_2
9	GND_3	10	DAS/DSS-I/O/LED1-I-03p3V
11	PETN3	12	3p3V_3
13	PETP3	14	3p3V_4
15	GND_4	16	3p3V_5
17	PERN2	18	3p3V_6
19	PERP2	20	NC_3
21	GND_5	22	NC_4
23	PETN2	24	NC_5
25	PETP2	26	NC_6

27	GND_6	28	NC_7
29	PERN1	30	NC_8
31	PERP1	32	NC_9
33	GND_7	34	NC_10
35	PETN1	36	NC_11
37	PETP1	38	DEVSLP-O
39	GND_8	40	NC_12
41	PERN0/SATA-B+	42	NC_13
43	PERP0/SATA-B-	44	NC_14
45	GND_9	46	NC_15
47	PETN0/SATA-A-	48	NC_16
49	PETP0/SATA-A+	50	PERST-O-0/3p3V/NC
51	GND_10	52	CLKREQ-I/O-0/3p3V/NC
53	REFCLKN	54	PEWAKE-I/O-0/3p3V/NC
55	REFCLKP	56	NC_17
57	GND_11	58	NC_18
59		60	
61		62	
63		64	
65		66	
67	NC_19	68	SUSCLK-32KHZ-O-0/3p3V
69	PEDET-NC-PCIE/GND-SATA	70	3p3V_7
71	GND_12	72	3p3V_8
73	GND_13	74	3p3V_9
75	GND_14		
B62	TX11+	A62	GND
B63	TX11-	A63	GND
B64	GND	A64	RX11+
B65	GND	A65	RX11-
B66	TX12+	A66	GND
B67	TX12-	A67	GND
B68	GND	A68	RX12+
B69	GND	A69	RX12-
B70	TX13+	A70	GND
B71	TX13-	A71	GND
B72	GND	A72	RX13+
B73	GND	A73	RX13-
B74	TX14+	A74	GND
B75	TX14-	A75	GND

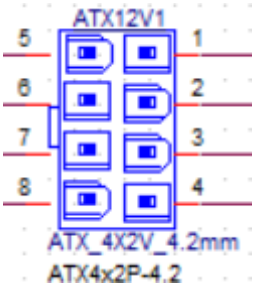
A.17 PCI Express Slot (PCIEX4_1, PCIEX4_2)



Pin	Signal	Pin	Signal
B1	12V_1	A1	PRSNT1
B2	12V_2	A2	12V_4
B3	12V_3	A3	12V_5
B4	GND_1	A4	GND_20
B5	SMCLK	A5	JTAG2
B6	SMDAT	A6	JTAG3
B7	GND_2	A7	JTAG4
B8	3_3V_1	A8	JTAG5
B9	JTAG1	A9	3_3V_2
B10	3_3VAUX	A10	3_3V_3
B11	WAKE	A11	PWRGD
B12	RSVD_1	A12	GND_21
B13	GND_3	A13	REFCLK+
B14	HSOP0	A14	REFCLK-
B15	HSON0	A15	GND_22
B16	GND_4	A16	HSIP0
B17	PRSNT2_1	A17	HSIN0
B18	GND_5	A18	GND_23

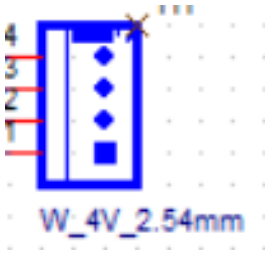
B19	HSOP1	A19	RSVD_3
B20	HSON1	A20	GND_24
B21	GND_6	A21	HSIP1
B22	GND_7	A22	HSIN1
B23	HSOP2	A23	GND_25
B24	HSON2	A24	GND_26
B25	GND_8	A25	HSIP2
B26	GND_9	A26	HSIN2
B27	HSOP3	A27	GND_27
B28	HSON3	A28	GND_28
B29	GND_10	A29	HSIP3
B30	RSVD_2	A30	HSIN3
B31	PRSNT2_2	A31	GND_29
B32	GND_11	A32	RSVD_4

A.18 ATX 12V Power Supply Connector (ATX12V1)



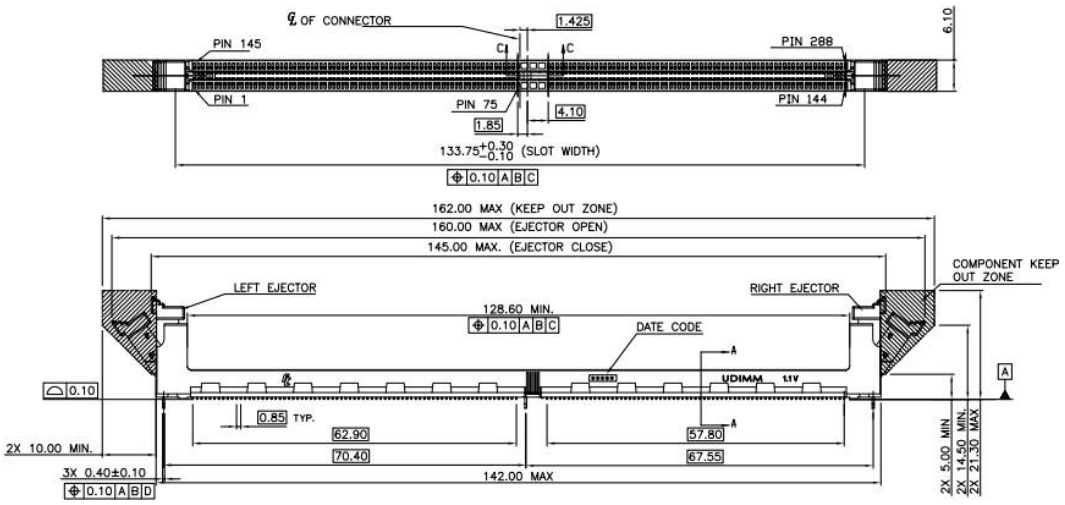
Pin	Signal
1	GND
2	GND
3	GND
4	GND
5	+12V
6	+12V
7	+12V
8	+12V

A.19 System FAN (SYSFAN1~4)

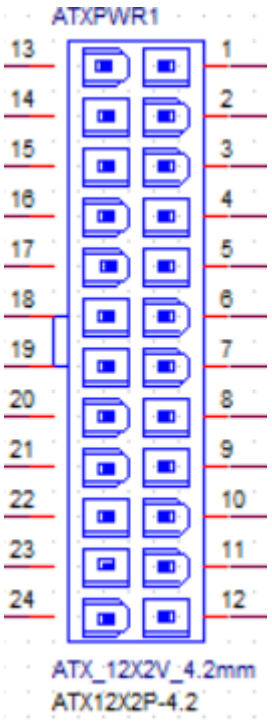


Pin	Signal
1	GND
2	SYSTEM FAN VCC
3	SYSTEM FAN SPEED
4	SYSTEM FAN PWM

A.20 DDR5 U-DIMM Socket (DIMMA1, DIMMA2, DIMMB1, DIMMB2)

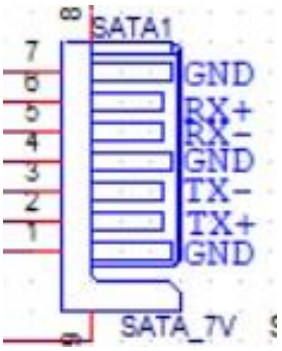


A.21 ATX 12/5V/3V/5VSBV Power Supply Connector (ATXPWR1)



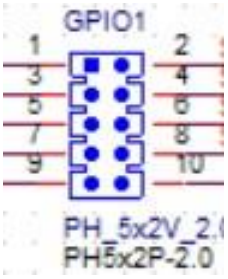
Pin	Signal	Pin	Signal
1	+3.3V_1	13	+3.3V_4
2	+3.3V_2	14	-12V
3	GND	15	GND
4	+5V_1	16	PS_ON#
5	GND	17	GND
6	+5V_2	18	GND
7	COM_3	19	GND
8	PWR_OK	20	NC
9	+5VSB	21	+5V_3
10	+12V1_1	22	+5V_4
11	+12V1_2	23	+5V_5
12	+3.3V_3	24	GND

A.22 Serial ATA Interface Connector (SATA1~4)



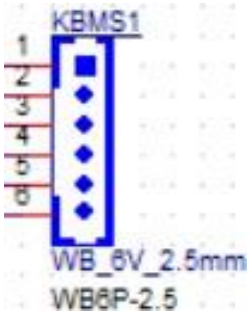
Pin	Signal
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

A.23 8-bits General Purpose I/O Pin Header (GPIO1)



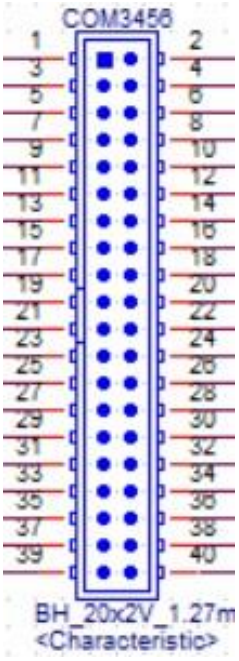
Pin	Signal	Pin	Signal
1	GPIO0	2	GPIO4
3	GPIO1	4	GPIO5
5	GPIO2	6	GPIO6
7	GPIO3	8	GPIO7
9	+V5A_GPIO	10	GND

A.24 Keyboard and Mouse Box Header (KBMS1)



Pin	Signal
1	KB_CLK#
2	KB_DAT#
3	MS_DAT#
4	GND
5	VCC (+5VSB)
6	MS_CLK#

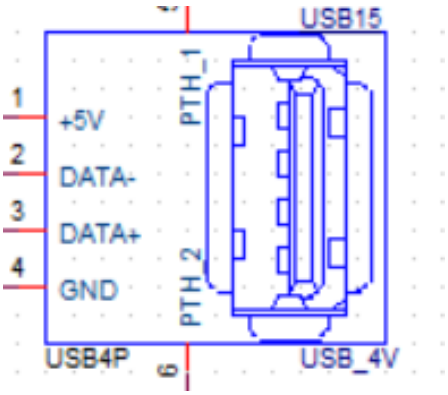
A.25 COM3,4,5,6 Box Header (COM3456)



Pin	Signal	Pin	Signal
1	DCD# [3]	2	DSR# [3]
3	RXD [3]	4	RST# [3]
5	TXD [3]	6	CTS# [3]
7	DTR# [3]	8	RI# [3]
9	GND	10	GND
11	DCD# [4]	12	DSR# [4]

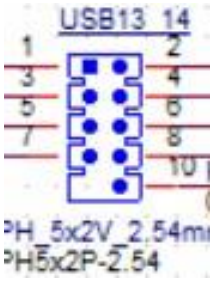
13	RXD [4]	14	RST# [4]
15	TXD [4]	16	CTS# [4]
17	DTR# [4]	18	RI# [4]
19	GND	20	GND
21	DCD# [5]	22	DSR# [5]
23	RXD [5]	24	RST# [5]
25	TXD [5]	26	CTS# [5]
27	DTR# [5]	28	RI# [5]
29	GND	30	GND
31	DCD# [6]	32	DSR# [6]
33	RXD [6]	34	RST# [6]
35	TXD [6]	36	CTS# [6]
37	DTR# [6]	38	RI# [6]
39	GND	40	GND

A.26 Vertical USB2 Connector(USB15)



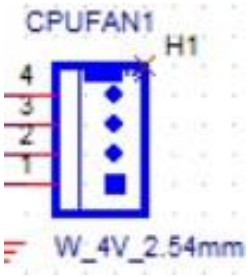
Pin	Signal
1	+V5_USB2C2
2	R_USB2_FCH_10-
3	R_USB2_FCH_10+
4	GND
5	GND
6	GND

A.27 USB2 Pin Header 2port (USB13_14)



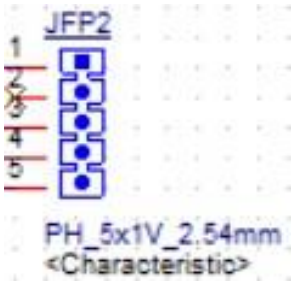
Pin	Signal	Pin	Signal
1	+V5_USB2C1	2	+V5_USB2C1
3	R_USB2_FCH_4-	4	R_USB2_FCH_5-
5	R_USB2_FCH_4+	6	R_USB2_FCH_5+
7	GND	8	GND
		10	NA

A.28 CPU FAN Connector (CPUFAN1)



Pin	Signal
1	GND
2	CPU FAN VCC
3	CPU FAN SPEED
4	CPU FAN PWM

A.29 Power LED and Keyboard Lock Pin Header (JFP2)



Pin	Signal	Pin	Signal
1	LED Power	4	Keyboard Lock
2	NC	5	GND
3	SIO_SUSLED		

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