

AIMB-588 B1

**Micro-ATX Motherboard with
12th/13th/14th Gen Intel® Core™
Processor (LGA1700), 2 x DP/
HDMI/eDP, 1 x GbE LAN, 3 x
2.5GbE LAN, 1 x USB 3.2 Type-C**

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5. Write the RMA number clearly on the outside of the package and ship the package prepaid to your dealer.

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

- 1 x AIMB-588 B1 Intel® Core™ (LGA 1700) Micro-ATX Motherboard
- 2 x SATA HDD cables
- 1 x I/O port bracket
- 1 x Startup Manual
- 2 x M.2 screws
- 1 x Warranty Card

If any of these items are missing or damaged, contact your distributor or sales representative immediately. We have carefully inspected the AIMB-588 B1 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 B1, 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.

CPU Compatibility

Processor Number	Code Name	Max TDP	Freq (GHz)	Lithography	Smart Cache (L3)	Package Type	Result
i9-14900	Raptor Lake-Refresh	65W	5.8GHz	Intel 7	36MB	LGA1700	PASS
i9-14900T	Raptor Lake-Refresh	35W	5.5GHz	Intel 7	36MB	LGA1700	PASS
i7-14700	Raptor Lake-Refresh	65W	5.4GHz	Intel 7	33MB	LGA1700	PASS
i7-14700T	Raptor Lake-Refresh	35W	5.2GHz	Intel 7	33MB	LGA1700	PASS
i5-14500	Raptor Lake-Refresh	65W	5.0GHz	Intel 7	24MB	LGA1700	PASS
i5-14500T	Raptor Lake-Refresh	35W	4.8GHz	Intel 7	24MB	LGA1700	PASS
i5-14400	Raptor Lake-Refresh	65W	4.7GHz	Intel 7	20MB	LGA1700	PASS
i5-14400T	Raptor Lake-Refresh	35W	4.5GHz	Intel 7	20MB	LGA1700	PASS
i3-14100	Raptor Lake-Refresh	60W	4.7GHz	Intel 7	12MB	LGA1700	PASS
i3-14100T	Raptor Lake-Refresh	35W	4.4GHz	Intel 7	12MB	LGA1700	PASS
i9-13900	Raptor Lake	65W	5.6GHz	Intel 7	36MB	LGA1700	PASS
i9-13900E	Raptor Lake	65W	5.2GHz	Intel 7	36MB	LGA1700	PASS
i9-13900TE	Raptor Lake	35W	5.0GHz	Intel 7	36MB	LGA1700	PASS
i7-13700	Raptor Lake	65W	5.2GHz	Intel 7	30MB	LGA1700	PASS
i7-13700E	Raptor Lake	65W	5.1GHz	Intel 7	30MB	LGA1700	PASS
i7-13700TE	Raptor Lake	35W	4.8GHz	Intel 7	30MB	LGA1700	PASS
i5-13500	Raptor Lake	65W	4.8GHz	Intel 7	24MB	LGA1700	PASS
i5-13500E	Raptor Lake	65W	4.6GHz	Intel 7	24MB	LGA1700	PASS
i5-13500TE	Raptor Lake	35W	4.5GHz	Intel 7	24MB	LGA1700	PASS
i5-13400	Raptor Lake	65W	4.8GHz	Intel 7	20MB	LGA1700	PASS
i3-13100	Raptor Lake	60W	4.5GHz	Intel 7	12MB	LGA1700	PASS
i3-13100E	Raptor Lake	60W	4.4GHz	Intel 7	12MB	LGA1700	PASS
i3-13100TE	Raptor Lake	35W	4.1GHz	Intel 7	12MB	LGA1700	PASS
i9-12900	Alder Lake	65W	5.1GHz	Intel 7	30MB	LGA1700	PASS
i9-12900E	Alder Lake	65W	5.0GHz	Intel 7	30MB	LGA1700	PASS

i9-12900TE	Alder Lake	35W	4.8GHz	Intel 7	30MB	LGA1700	PASS
i7-12700	Alder Lake	65W	4.9GHz	Intel 7	25MB	LGA1700	PASS
i7-12700E	Alder Lake	65W	4.8GHz	Intel 7	25MB	LGA1700	PASS
i7-12700TE	Alder Lake	35W	4.7GHz	Intel 7	25MB	LGA1700	PASS
i5-12500	Alder Lake	65W	4.6GHz	Intel 7	18MB	LGA1700	PASS
i5-12500E	Alder Lake	65W	4.5GHz	Intel 7	18MB	LGA1700	PASS
i5-12500TE	Alder Lake	35W	4.3GHz	Intel 7	18MB	LGA1700	PASS
i5-12400	Alder Lake	65W	4.4GHz	Intel 7	18MB	LGA1700	PASS
i3-12100	Alder Lake	60W	4.3GHz	Intel 7	12MB	LGA1700	PASS
i3-12100E	Alder Lake	60W	4.2GHz	Intel 7	12MB	LGA1700	PASS
i3-12100TE	Alder Lake	35W	4.0GHz	Intel 7	12MB	LGA1700	PASS
G7400E	Alder Lake	46W	3.6GHz	Intel 7	6MB	LGA1700	PASS
G7400TE	Alder Lake	35W	3.0GHz	Intel 7	6MB	LGA1700	PASS
G6900E	Alder Lake	46W	3.0GHz	Intel 7	4MB	LGA1700	PASS
G6900TE	Alder Lake	35W	2.4GHz	Intel 7	4MB	LGA1700	PASS

Memory Compatibility

Category	Speed	Capacity	Vendor	Module P/N	Chip P/N	Advantech P/N	ECC	Result
DDR5	4800	16GB	Advantech	SQR-UD5N16G4K8SNBB	SEC 149 K4RAH08 6VB BCQK	SQR-UD5N16G4K8SNBB	N	PASS
DDR5	4800	32GB	Advantech	SQR-UD5N32G4K8MNAB	2AA45 D8BNJ	SQR-UD5N32G4K8MNAB	N	PASS
DDR5	4800	32GB	Advantech	AQD-D5V32GN48-SB	SEC 210 K4RAH08 6VB BCQK	AQD-D5V32GN48-SB	N	PASS
DDR5	4800	16GB	Advantech	AQD-D5V16GN48-SB	SEC 213 K4RAH08 6VB BCQK	AQD-D5V16GN48-SB	N	PASS
DDR5	5600	32GB	ADATA	AD5U56003 2G-B	H5CG48AGBD X018 239A	N/A	N	PASS
DDR5	5600	24GB	Advantech	SQR-UD5N24G5K6M	3DB75 D8DCN	SQR-UD5N24G5K6M	N	PASS
DDR5	5600	48GB	Advantech	SQR-UD5N48G5K6M	3CB75 D8DCN	SQR-UD5N48G5K6M	N	PASS

ECC Memory Compatibility

Category	Speed	Capacity	Vendor	Module P/N	Chip P/N	Advantech P/N	ECC	Result
DDR5	4800	32GB	Advantech	SQR-UD5N32G4K8SEBB	SEC149 K4RAH08 6VBBBCQK	SQR-UD5N32G4K8SEBB	ECC	PASS
DDR5	4800	16GB	Advantech	AQD-D5V16GE48-SB	SEC 246 K4RAH08 6VB BCQK	AQD-D5V16GE48-S	ECC	PASS
DDR5	4800	32GB	Advantech	AQD-D5V32GE48-SB	SEC 246 K4RAH08 6VB BCQK	AQD-D5V32GE48-SB	ECC	PASS

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Chapter 1

General Information

1.1 Introduction

The Advantech AIMB-588 B1 utilizes Intel® R680E/Q670E/H610E chipsets for industrial applications that require both high-performance computing and enhanced power management capabilities. The AIMB-588 B1 supports Intel® Core™ i9/i7/i5/i3 processors with up to 36MB L3 cache and DDR5 5600 MHz up to 192GB (48GB per slot). It also provides extensive I/O connectivity.

1.2 Features

- **Diverse I/O connectivity:** 1 x GbE LAN and up to 3 x 2.5Gbe LAN via PCIe x1 bus; 1 x PCIe x16 slot (Gen5) with BOM option to 1 x PCIe x8 slot (Gen4), 1 x PCIe x4 slot (Gen3), 1 x PCIe x4 slot (Gen4), 4 x USB 2.0 ports, 5 x USB 3.2 Gen2, and 1 x USB 3.2 Gen2 Type C (AIMB-588RF, AIMB-588QM).
- **Standard Micro-ATX form factor with industrial features:** The AIMB-588 B1 is a full-featured Micro-ATX motherboard that optimizes 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 a 32-bit 3D graphics engine.

1.3 Specifications

1.3.1 Processor

- **CPU:** 12th/13th/14th Gen Intel® Core™ i9/i7/i5/i3 processor (LGA1700)
- **BIOS:** AMI BIOS UEFI 256 Mbits SPI
- **System chipset:** Intel® Q670E/ R680E/ H610E
- **SATA hard disk drive interface:** On-board SATA connectors with data transmission rate up to 600 MB/s (QM/RF:8/HL:4)

1.3.2 Memory

- **RAM:** Up to 192GB (48GB per DIMM) in 4 slots, 288-pin DIMM sockets. It supports dual-channel DDR5 up to 5600.
 - AIMB-588QM & AIMB-588HL support non-ECC unbuffered DIMMs and do not support any memory configuration that mixes non-ECC with ECC unbuffered DIMMs.
 - AIMB-588RF supports ECC & non-ECC buffered DIMMs.

1.3.3 Input/Output

- **PCIe slots:** 1 x PCIe x16 expansion slot, BOM optionally supports 1 x PCIe x8 expansion slots, 1 x PCIe x4 Gen4 expansion slot, and 1 x PCIe x4 Gen3 expansion slot (If using a PCIe x16 card in this slot, there are space limitations, and USB 3.0 internal and USB Type-A vertical connectors can't be used).
- **Serial ports:** 6 x serial ports — 1 x RS-232/422/485 with hardware auto-flow control and 5 x RS-232.
- **USB ports:** Supports up to 4 x USB 2.0 ports with transmission rates up to 480 Mbps, 4 x USB 3.2 Gen1 ports with transmission rates up to 5 Gbps, 5 x USB 3.2 Gen 2 ports with transmission rates up to 10 Gbps and 1 x USB Type-C Gen2x2 port with transmission rates up to 20 Gbps.
- **GPIO:** AIMB-588 B1 supports 8-bit GPIO from super I/O for general purpose control applications.

1.3.4 Graphics

- **Controller:** Intel® HD Graphics 770
- **Display memory:** 1GB maximum shared memory with 2GB and above system memory installed
- **DisplayPort:** 2, with max resolution of 4096 x 2304 @ 60Hz
- **HDMI:** 1, with max resolution of 4096*2160 @ 60Hz, supporting HDR
- **eDP:** 1, with max resolution 3840 x 2160 @ 60 Hz (internal pin header)
- **Four Displays:** DP + DP + HDMI + eDP (RF/QM SKU)
- **Triple Displays:** DP + DP + HDMI, DP + DP + eDP, DP + HDMI + eDP (RF/QM/HL*)
- **Dual Displays:** DP + HDMI, DP + DP, DP + eDP, HDMI + eDP

* If users adopt 4 independent displays when using the AIMB-588HL SKU, they should disable 1 unused display to support 3 independent displays normally.

1.3.5 Ethernet LAN

- **Controller:** LAN1: 1GbE Intel I219-LM (AIMB-588RF/AIMB-588QM/AIMB-588HL); LAN2: 2.5GbE Intel I226LM (AIMB-588RF); 2.5GbE Intel I226V (AIMB-588QM); LAN3: 2.5GbE Intel I226LM (AIMB-588RF); LAN4: 2.5GbE Intel I226LM (AIMB-588RF)
- 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 rates.

1.3.6 Industrial Features

- **Watchdog timer:** It 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:** +5V, 3.3V, 12V, 12V_8P
- **Power requirements:**

Operation	+5V	3.3V	12V	12V_8P
Configuration: Intel® Core™ i9-14900 24-Core Processor 2.00GHz with UDIMM DDR5 4800 48GB*4pcs	1.316A	0.856A	0.192A	24.29910A
Standby (5Vsb)	3A			

Input mode: Micro-ATX input

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

1.4 Jumpers and Connectors

Connectors on the AIMB-588 B1 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

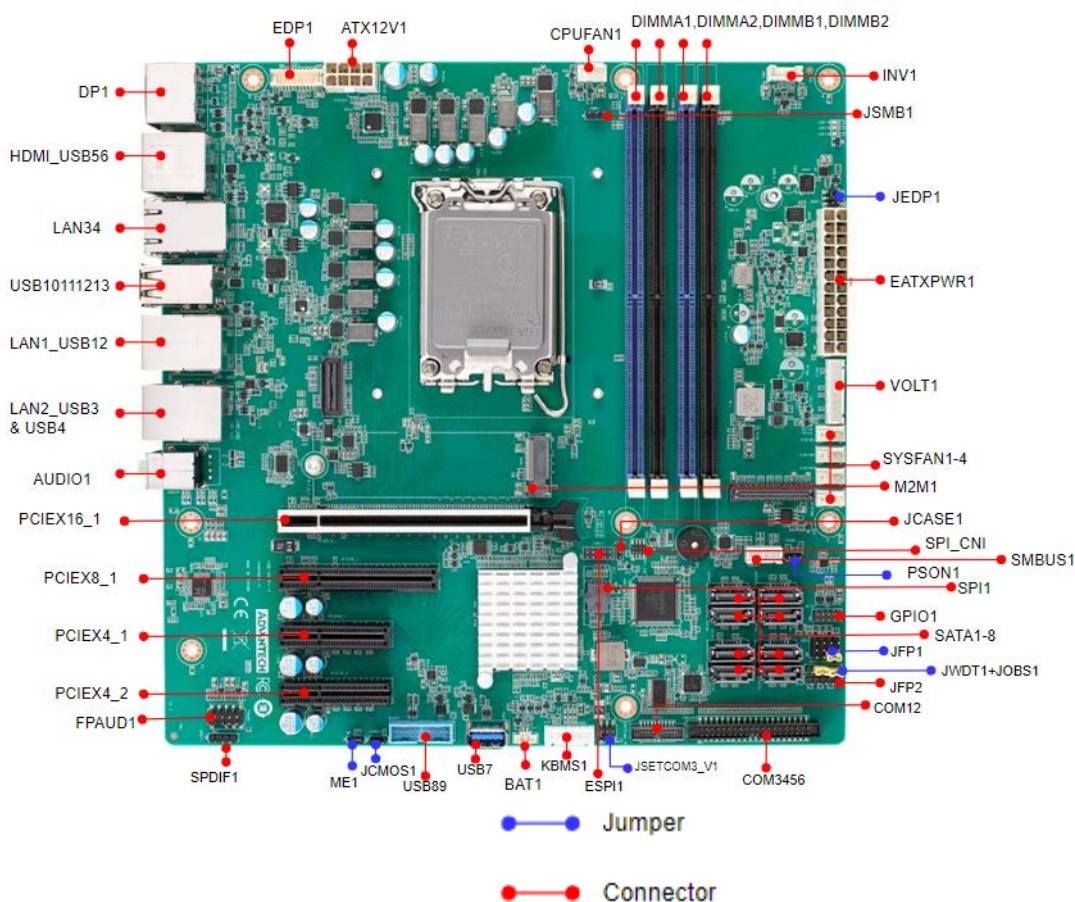


Figure 1.1 Jumper and Connector Locations

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)	JWD1+JOBS1
5	Power Switch / HDD LED / SMBUS / Speaker Pin Header	JFP1
6	ATX/AT Mode Selection	PSN1
7	eDP LCD POWER Selection	JEDP1

Table 1.2: Connector/Header List

	Description	Part Reference
1	DisplayPort	DP1
2	High Definition Multimedia Interface + USB 3.2	HDMI_USB56
3	RJ-45 2port	LAN34
4	USB 2.0 4port	USB10111213
5	RJ-45 1port+ USB 3.2 Gen2 2port	LAN1_USB12

Table 1.2: Connector/Header List

6	Type-C USB	USB4
7	RJ-45 1port+ USB 3.2 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-bit 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 12V/5V/3V/5VSBV power supply connector	EATXPWR1
36	DDR5 UDIMM socket	DIMMA1,DIMMA2, DIMMB1, DIMMB2
37	CPU FAN power connector	CPUFAN1
38	MPS 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

**AIMB-588RF****AIMB-588QM****AIMB-588HL****Figure 1.2 I/O Connectors**

1.6 AIMB-588 B1 Board Diagram

Block Diagram

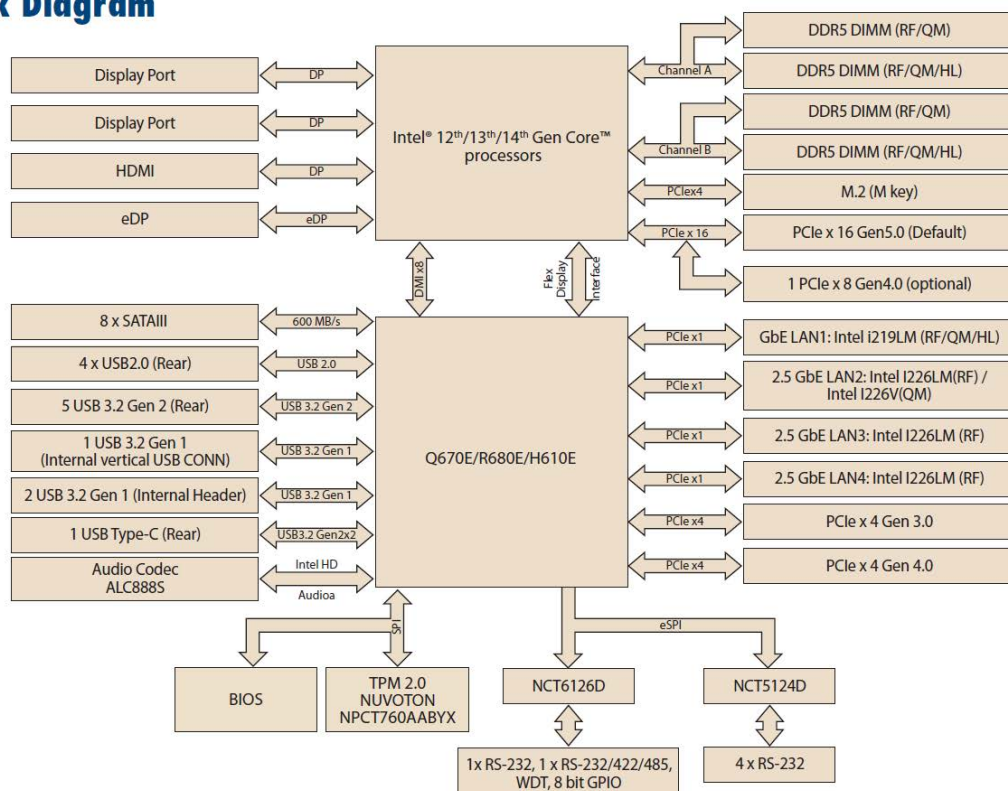


Figure 1.3 AIMB-588 B1 Block Diagram

1.7 Safety Precautions

Warning! *Always completely disconnect the power cord from the 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 electrostatic 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 the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the 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)

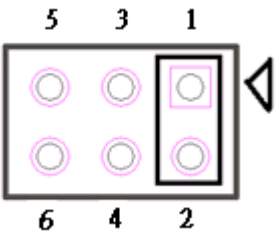
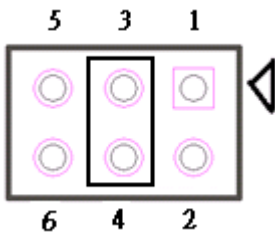
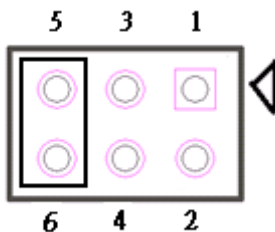
Function	Jumper Setting
	1 2 3
Disable Flash Descriptor Security (Default)	
	1 2 3
Enable Security measures defined in the Flash Descriptor.	

1.8.3 CMOS Clear Jumper (JCMOS1)

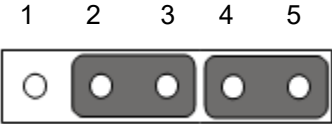
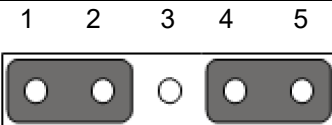
Pin	Signal Pin Definition
1	VBAT
2	RTC RESET#
3	GND

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

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

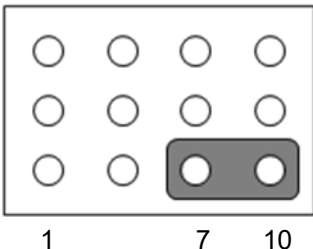
Function	Setting
Set COM3_RI# as RI# (Default)	
Set COM3_RI# as 5V	
Set COM3_RI# as 12V	

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)	

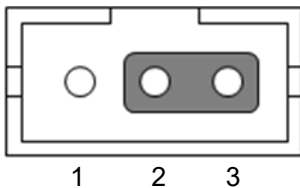
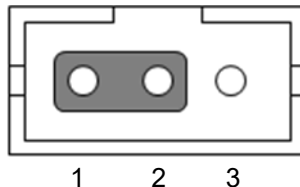
1.8.6 Pwr Switch / HDD LED / SMBUS / Speaker Pin Header (JFP1)

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)	

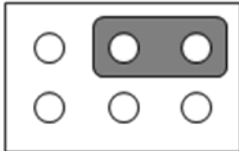
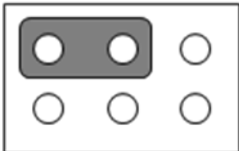
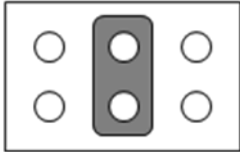
1.8.7 ATX/AT Mode Selection (PSON1)

Pin	Signal Pin Definition
1	AT selection
2	+VCC
3	ATX 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
	2 4 6
Jumper position for +3.3V (Default)	
	1 3 5
Jumper position for +5V	
	2 4 6
Jumper position for +12V	

1.9 System Memory

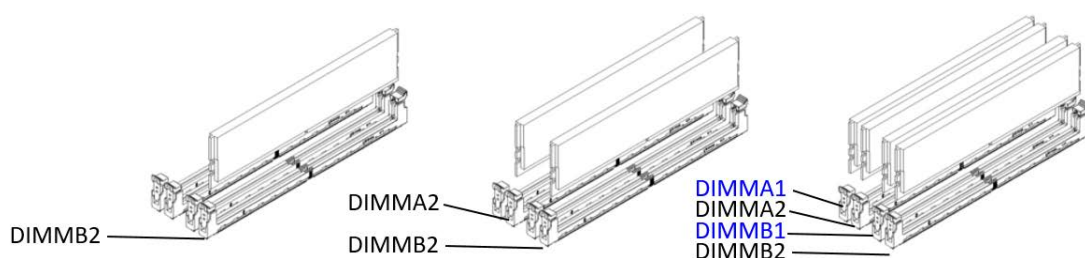
AIMB-588 B1 has four 288-pin DDR5 memory sockets for modules with maximum capacity of 192GB (maximum 48GB for each DIMM). AIMB-588QM/HL supports only non-ECC DDR5 memory modules. AIMB-588 RF can support ECC/non-ECC DDR5 memory modules.

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

It is recommended that you use the same UDIMM memory module on the same channel and load the module from the 2nd slot if a single module is used, as shown in the picture below.



Chapter 2

Connecting
Peripherals

2.1 Introduction

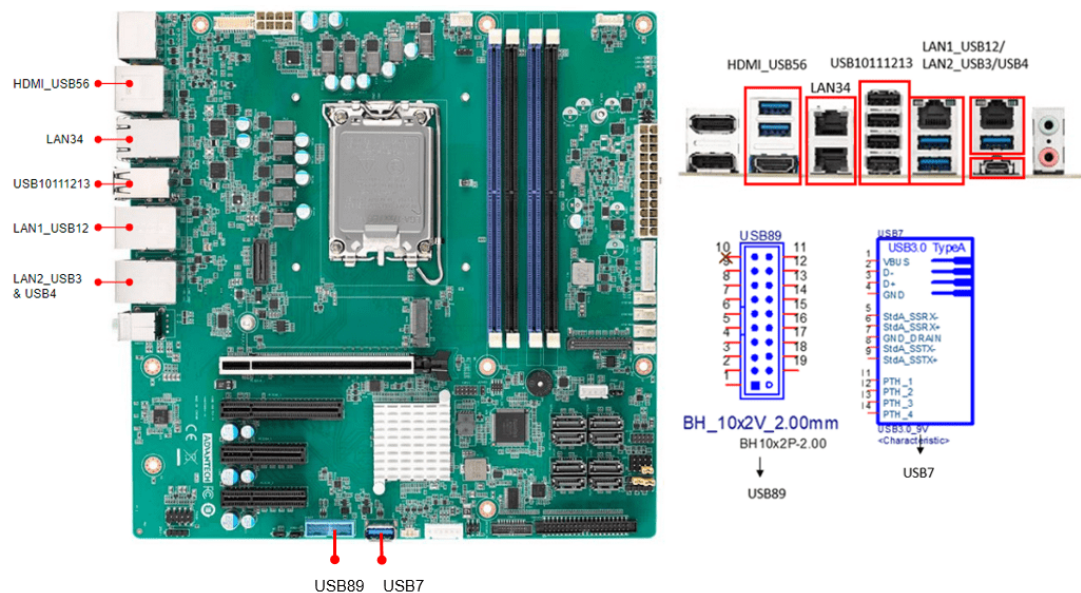
You can access most of the connectors from the top of the board as it is being installed in the chassis. If you have a number of cards installed or have a packed chassis, you may need to partially remove the card to make all the connections.

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

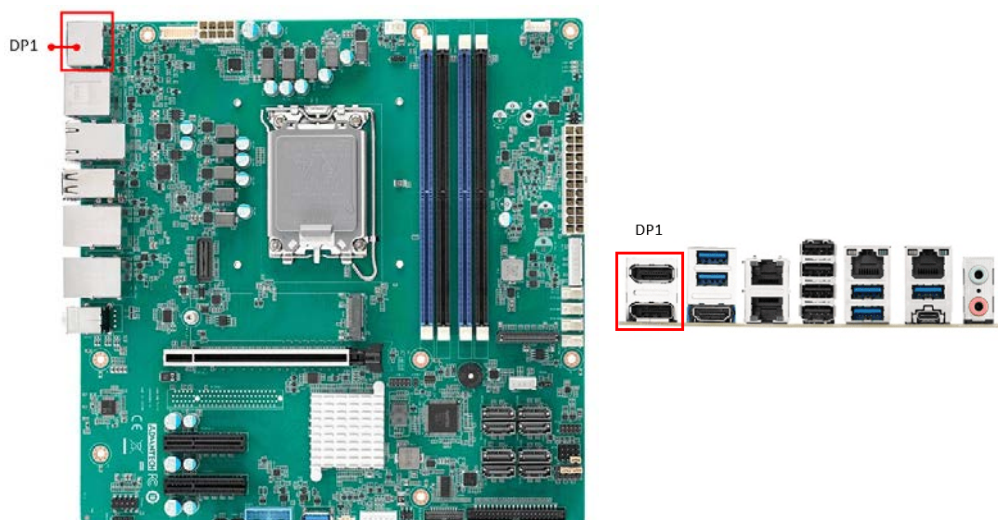
The AIMB-588 B1 provides up to 13 x USB ports (5 x USB 3.2 Gen2, 4 x USB 2.0 Type-A and 1 x USB 3.2 Gen2 Type-C on the rear side, 2 x USB 3.2 Gen1 via internal header and 1 x USB 3.2 Gen1 via vertical connector). The USB interface complies with USB Specification Rev 2.0 (up to 480 Mbps), Rev 3.0 (up to 5 Gbps), and Rev 3.1 Gen2 (up to 10 Gbps), and is fuse protected. The USB interface can be disabled in the system BIOS setup.

The AIMB-588 B1 is equipped with up to one high-performance 1000 Mbps Ethernet LAN adapter 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 provide convenient LAN connections.

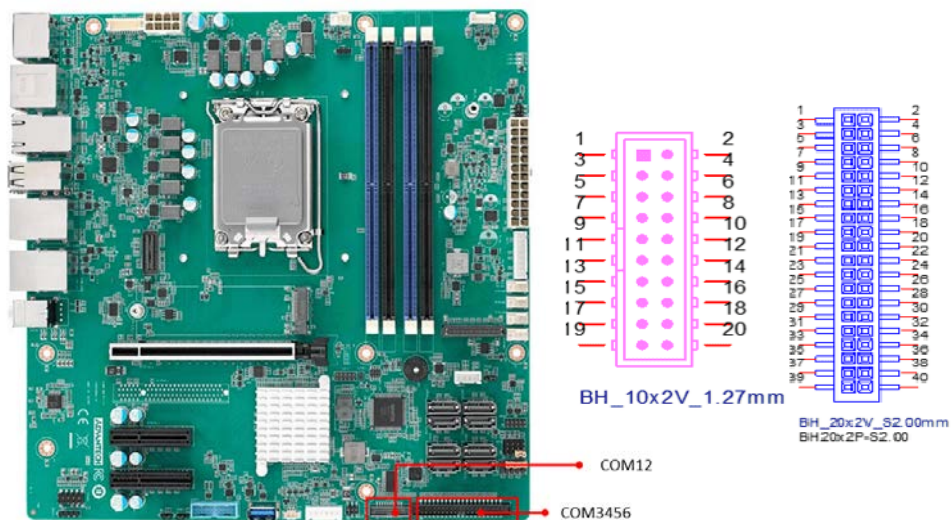


2.3 DP1 Connector (DP1)



The AIMB-588 B1 DP connector has max resolution support for 4096 x 2304 @ 30 Hz.

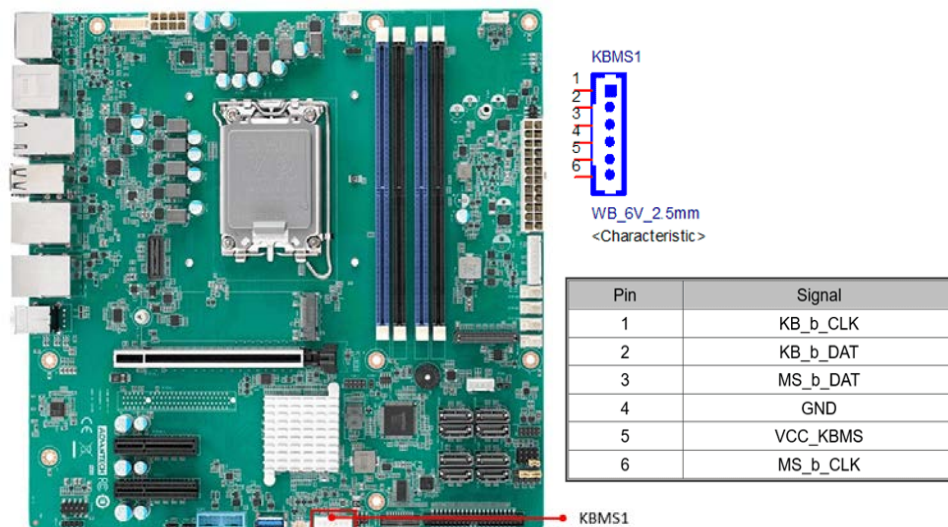
2.4 Serial Ports (COM12/COM3456)



AIMB-588 B1 supports 6 x serial ports. COM1, COM3-6 support RS-232. COM2 supports RS-232/422/485.

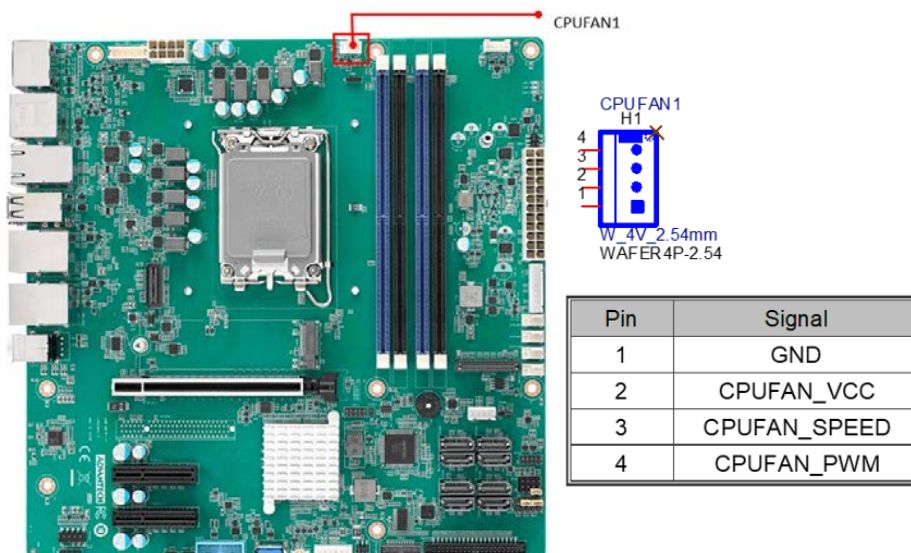
These ports can connect to serial devices, such as a mouse, printer, or to a communications network.

2.5 Keyboard and Mouse Connector (KBMS1)

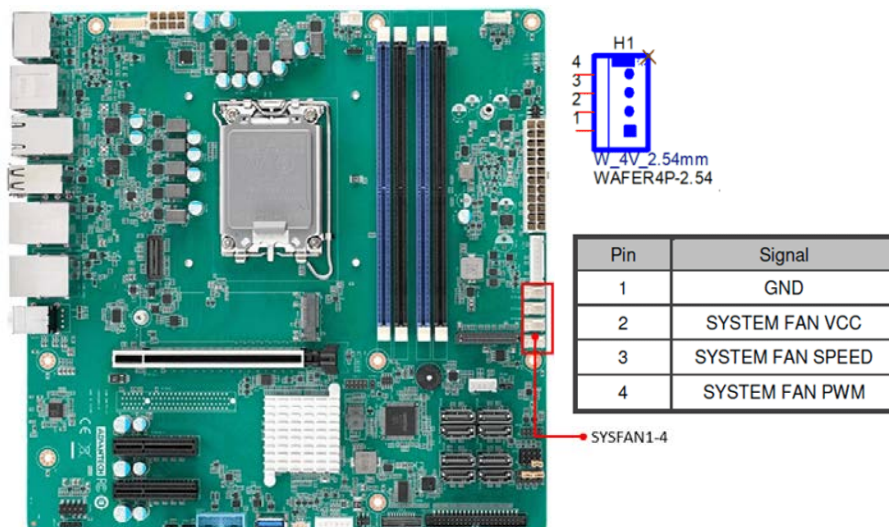


6-pin mini-DIN connectors (KBMS1, 2.54pitch) are to support a PS/2 keyboard and PS/2 mouse.

2.6 CPU Fan Connector (CPUFAN1)

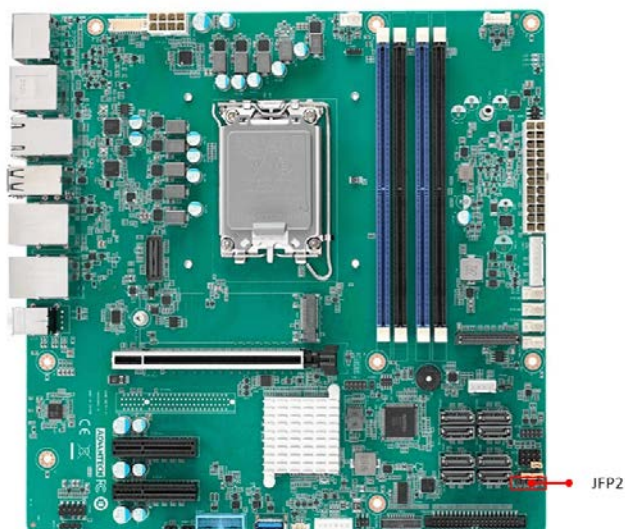


2.7 System FAN Connector (SYSFAN1/SYSFAN2/SYSFAN3/SYSFAN4)

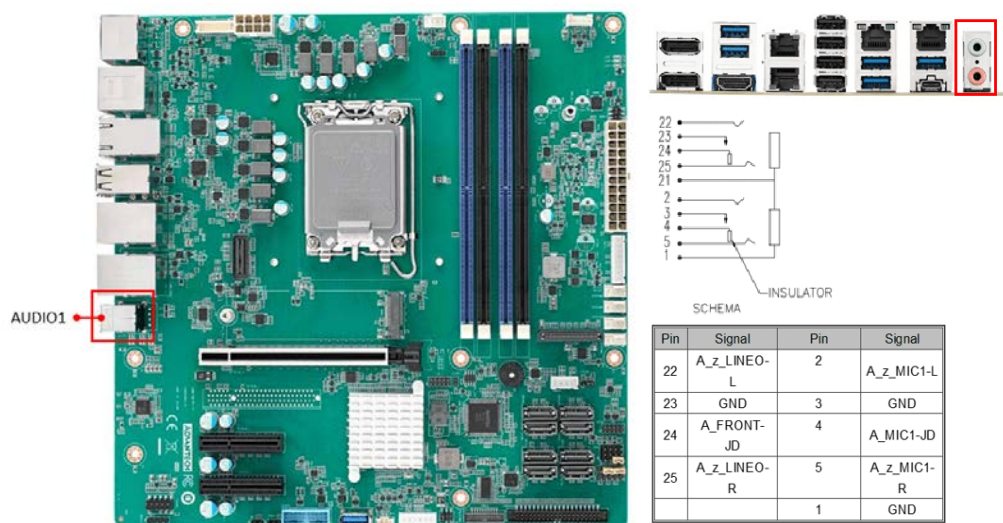


If a fan is used, this connector supports cooling fans of 1500 mA (18 W) or less.

2.8 Power LED and Keyboard Lock Pin Header (JFP2)

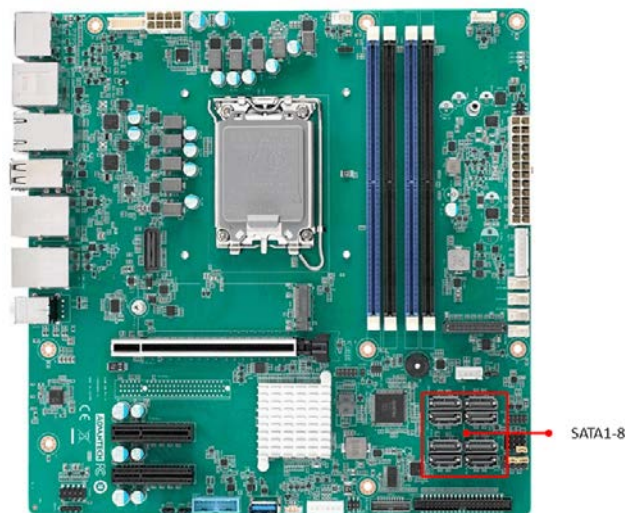


2.9 Audio Jack (AUDIO1)



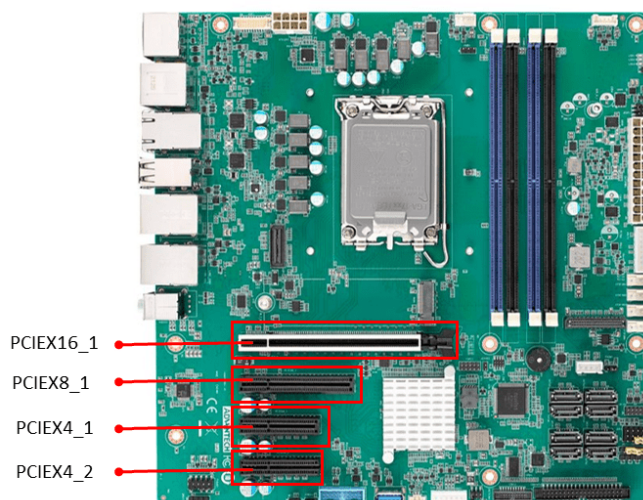
Note! Default audio supports 2 ports.
There is a BOM option to support 3 ports. (Line-in/Line-out/Mic-in)

2.10 Serial ATA Interface Connector (SATA1~8)



The AIMB-588 B1 features a high-performance Serial ATA III interface (up to 600 MB/s) which simplifies hard drive cabling with thin, space-saving cables.

2.11 PCI Express x16 Slot (PCIEX16_1) PCI Express x8 Slot (PCIEX8_1) PCI Express x4 Slot (PCIEX4_1/PCIEX4_2)

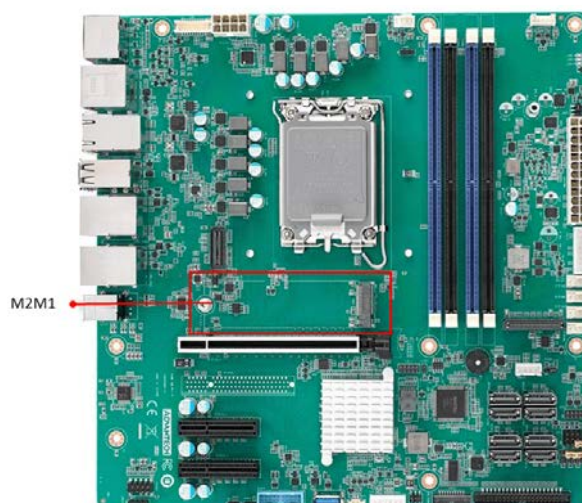


The AIMB-588 B1 provides a PCIe x16 slot, which offers a BOM option for 1 x PCIe x8 for users to install add-on cards when their applications require higher graphics performance than the CPU embedded graphics controller can provide.

Note! There is a BOM option for 1 x PCIe x8 when a PCIe x8 slot is used. The PCIe x16 slot only supports x8 bandwidth.

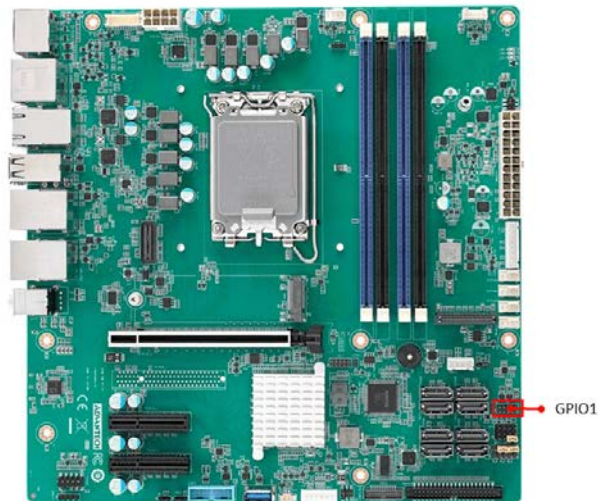


2.12 NGFF M.2 M-Key Connector for 2280 Module (M2M1)

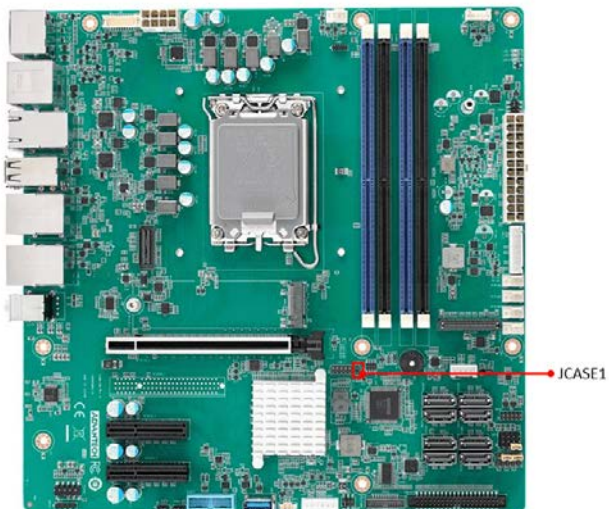


M.2 M-Key: 2280, PCIe x4 interface, which can support NVMe devices.

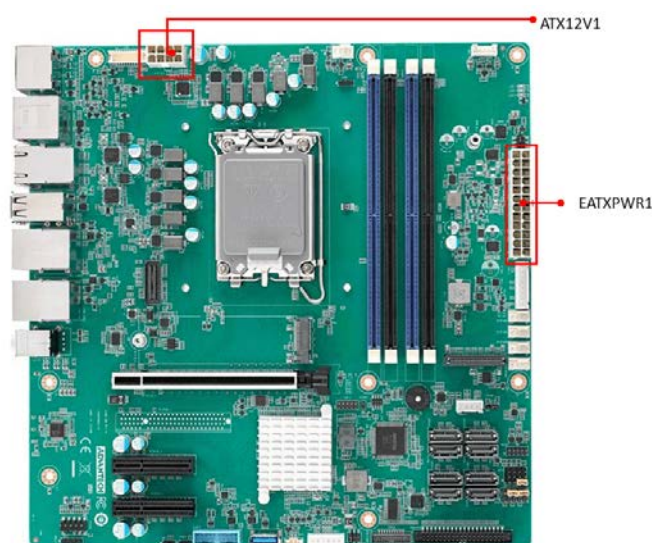
2.13 General Purpose I/O Connector (GPIO1)



2.14 Case Open Connector (JCASE1)



2.15 ATX Power Connector (EATXPWR1, ATX12V1)



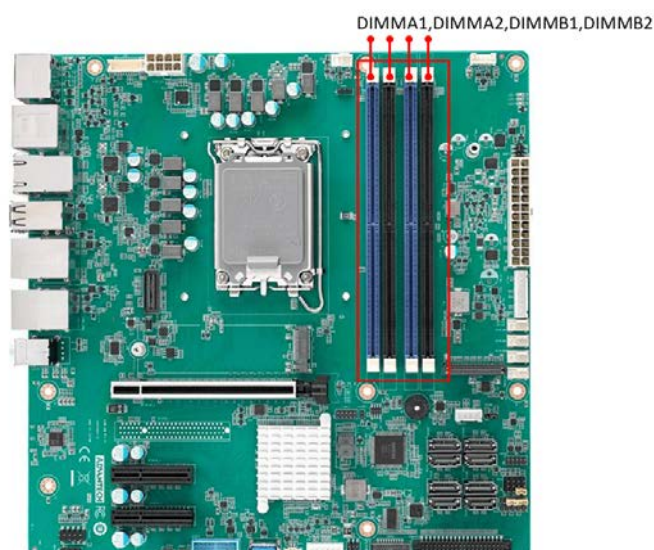
This connector is for an ATX Micro-Fit power supply. The plugs from the power supply are designed to fit these connectors in only one direction. Determine the proper orientation and push down firmly until the connectors mate completely.

Note!

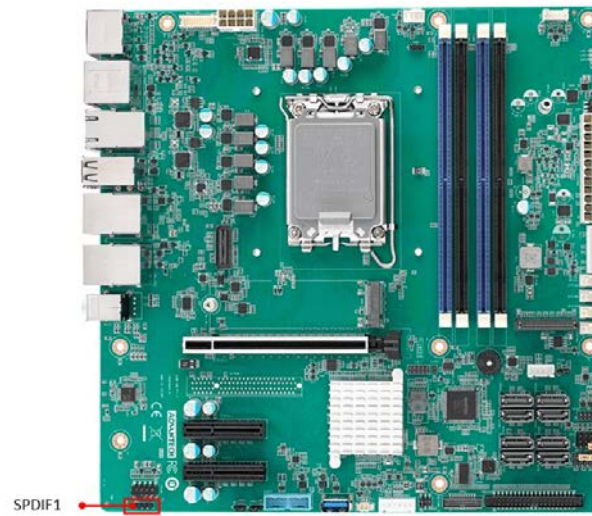


1. Please connect the ATX12V1 connector with the PSU ATX 12V 8-pin connector.
2. For a fully configured system, we recommend that you use a power supply unit (PSU) that complies with ATX 12V Specification 2.0 (or later version) and provides a minimum power of 180 W.

2.16 DDR5 UDIMM Socket (DIMMA1/DIMMA2/DIMMB1/DIMMB2)



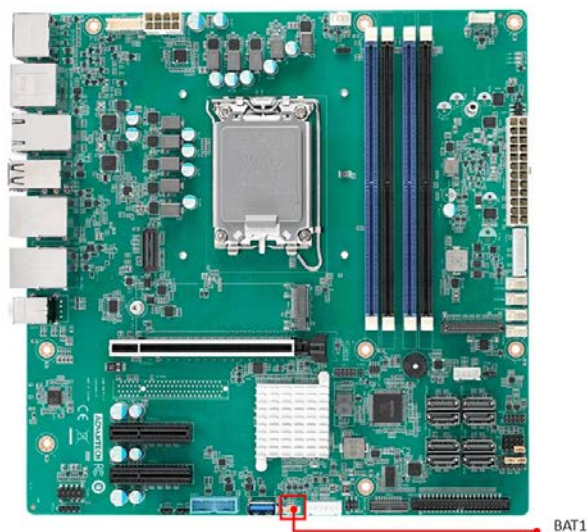
2.17 SPDIF Interface Connector (SPDIF1)



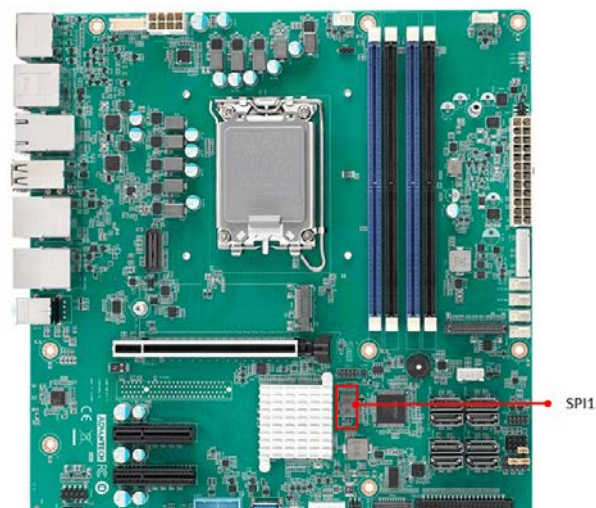
2.18 ESPI Debug Card Connector (ESPI1)



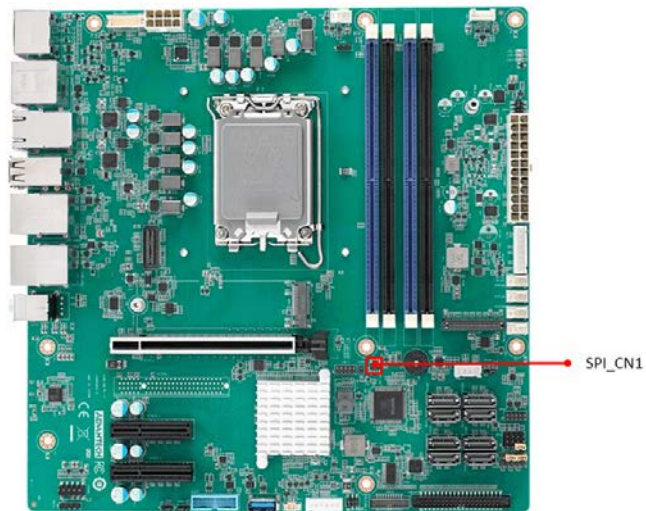
2.19 Battery Wafer Box (BAT1)



2.20 SPI BIOS Flash Socket (SPI1)



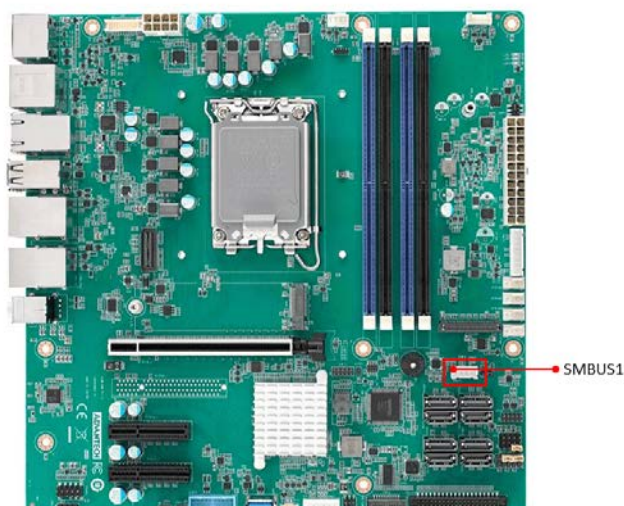
2.21 BIOS Flash Connector (SPI_CN1)



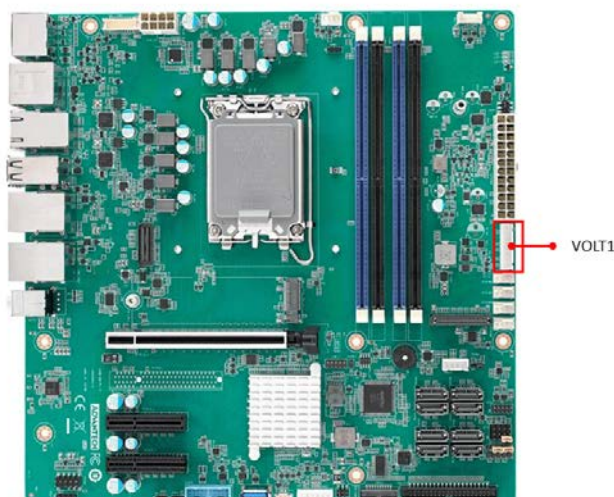
2.22 eDP Backlight Inverter Power Connector (INV1)



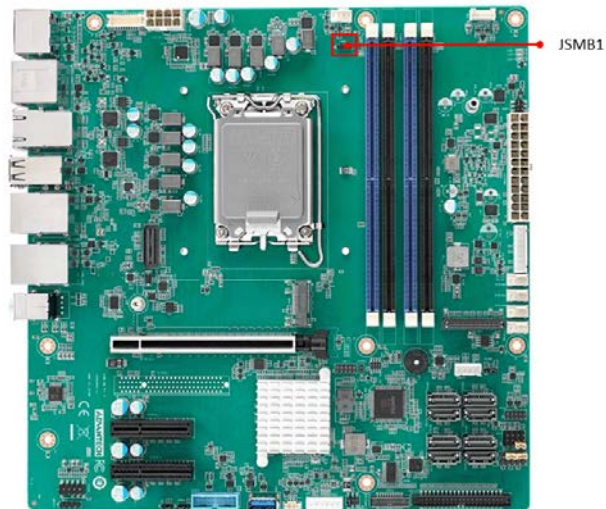
2.23 SMBUS Connector (SMBUS1)



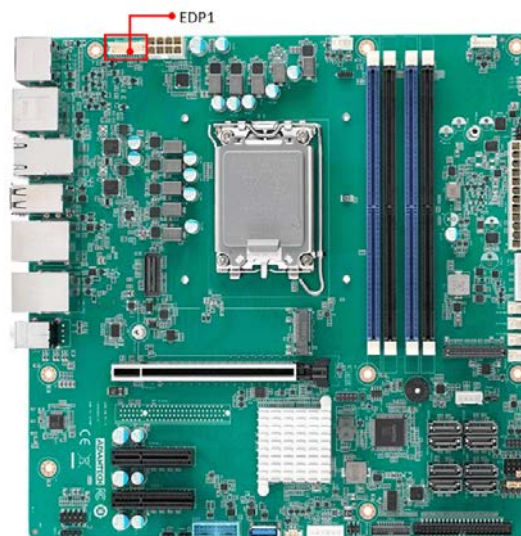
2.24 -V5/+V5/-V12/+V12/+V3.3/+V5_DUAL Power Supply Connector (VOLT1)



2.25 MPS I2C/SMBUS Programming for +VCCIN Controller (JSMB1)



2.26 eDP Panel Connector (EPD1)



Chapter 3

BIOS Operation

3.1 Introduction

AMI BIOS has been integrated into motherboards for over a decade. With the AMI BIOS Setup program, users can modify BIOS settings to control special features of their computers. The setup program uses a number of menus for making changes. This chapter describes the basic navigation of the AIMB-588 B1 setup screens.

3.2 BIOS Setup

The AIMB-588 B1 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 memory 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 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 or <Esc> to enter the AMI BIOS CMOS Setup Utility. The Main Menu will appear on the screen. Use the 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.

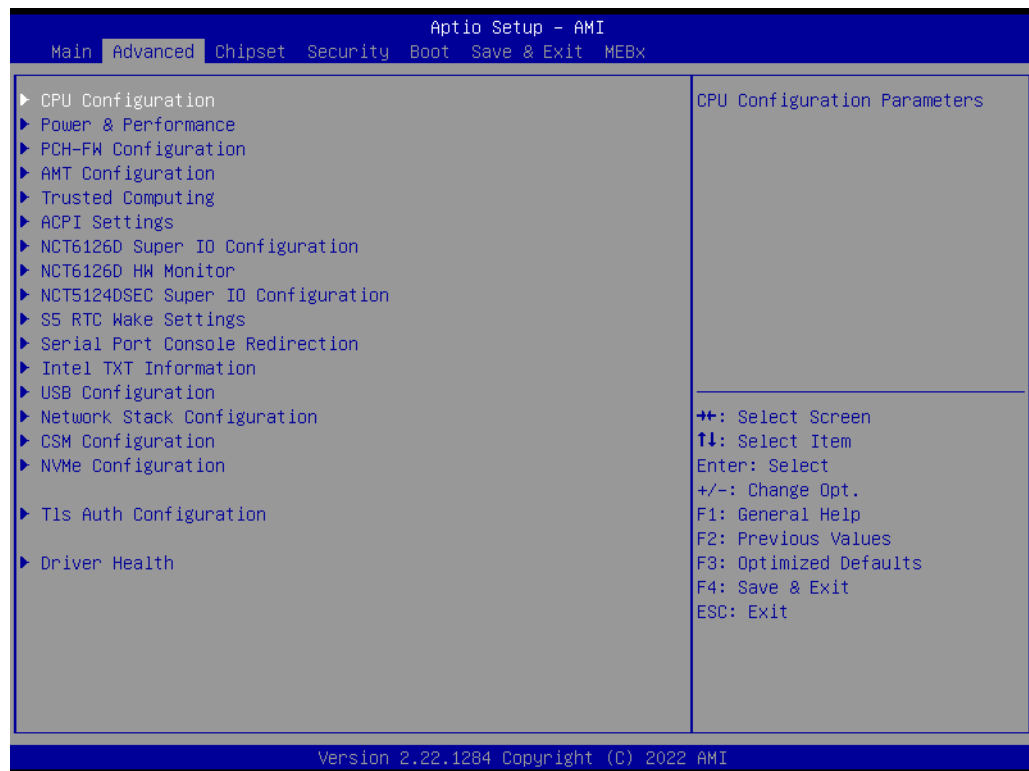
Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it.

■ System Time / System Date

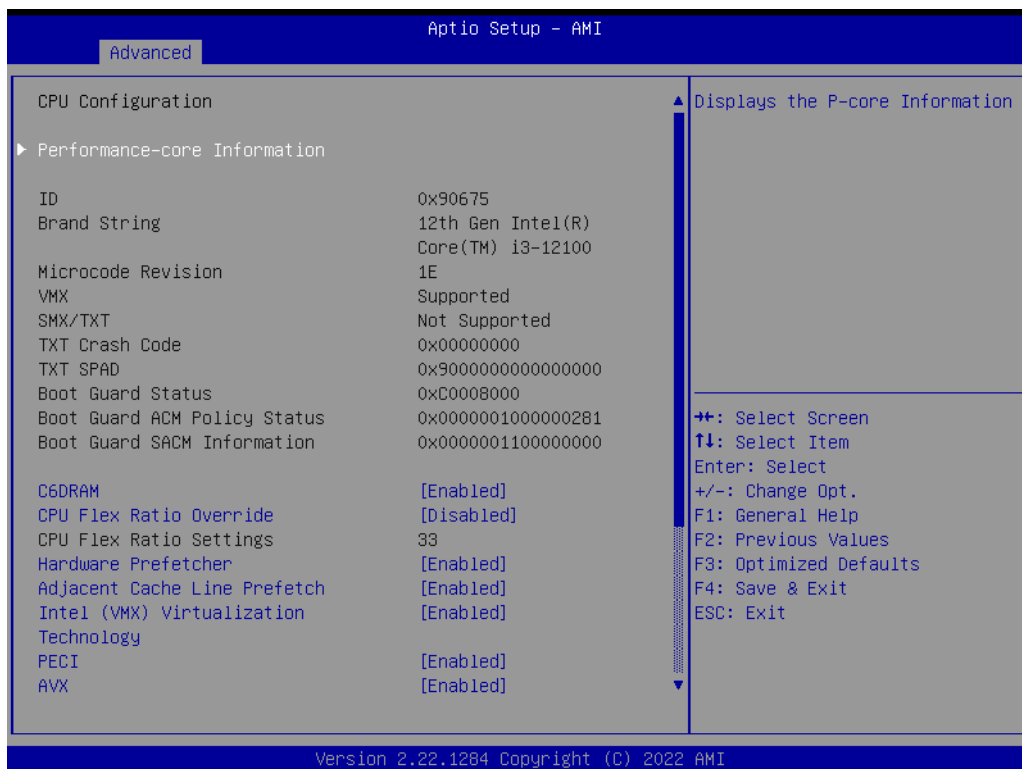
Use this option to change the system time and date. Highlight System Time or System Date using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in MM/DD/YY format. The time must be entered in HH:MM:SS format.

3.2.2 Advanced BIOS Features

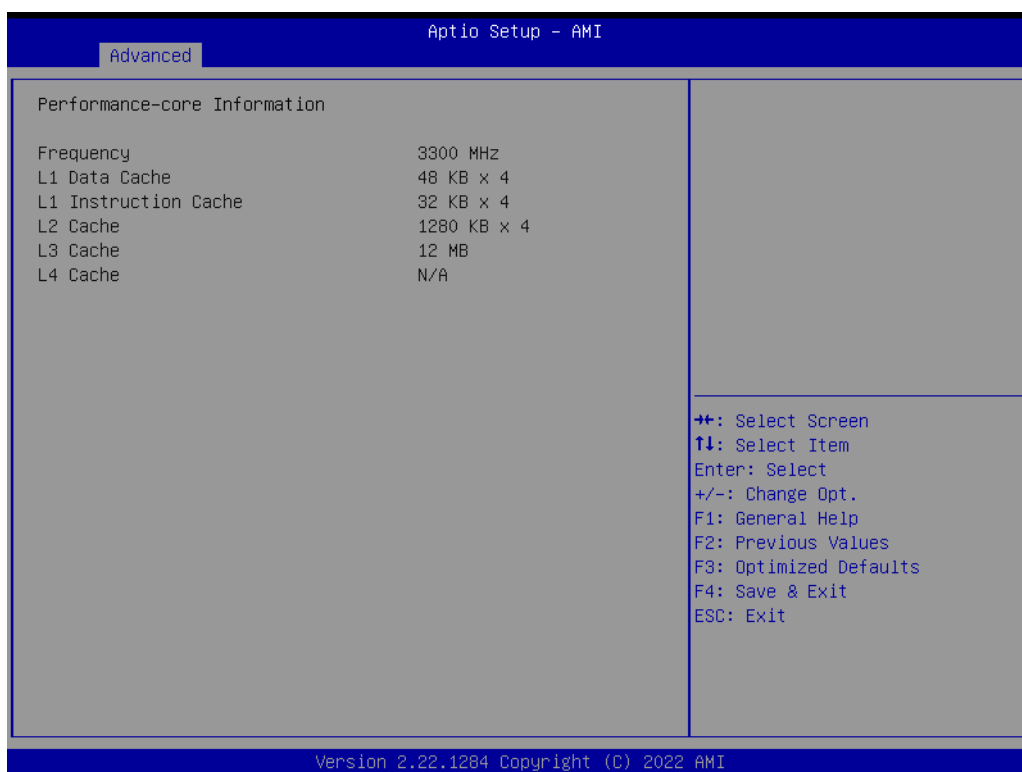
Select the Advanced tab from the AIMB-588 B1 setup screen to enter the Advanced BIOS Setup screen. You can select any of the items in the left frame of the screen, such as CPU Configuration and go to the sub-menu for that item. You can display an Advanced BIOS Setup option by highlighting it using the <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.



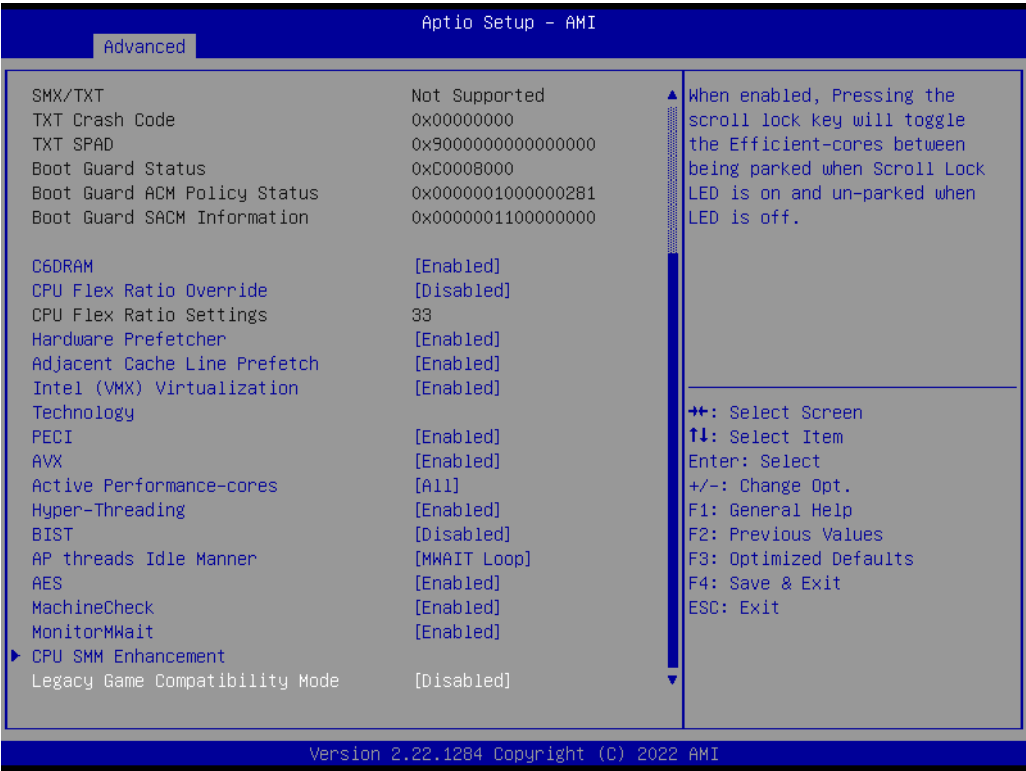
3.2.2.1 CPU Configuration



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



3.2.2.2 CPU SMM Enhancement



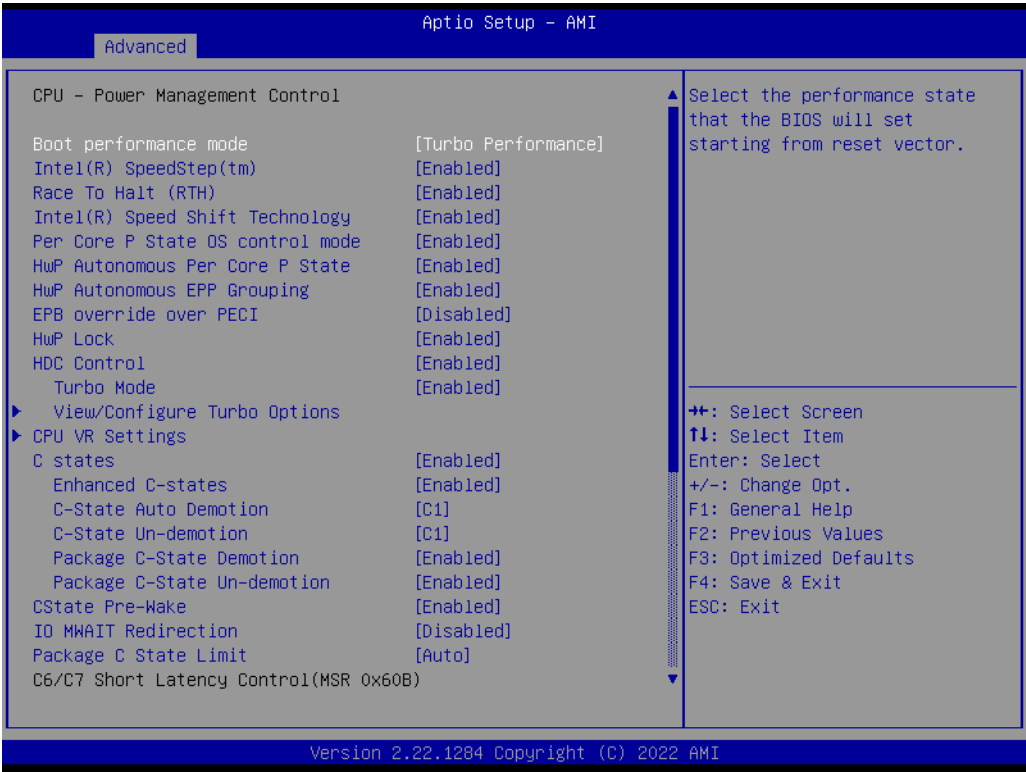
- **SMM Use Delay Indication [Enable]**
Enable/Disable usage of SMM_DELAYED MSR for MP sync in SMI.
- **SMM Use Block Indication [Enable]**
- **SMM Use SMM en-US Indication [Enable]**

3.2.2.3 Power & Performance

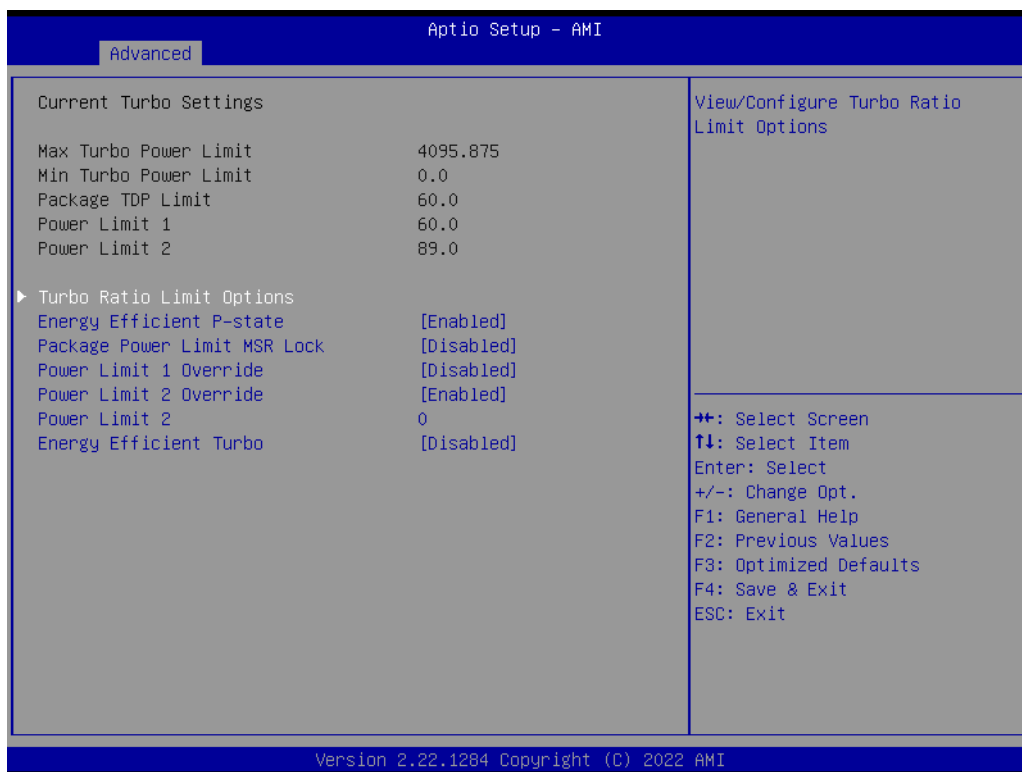


- **CPU – Power Management Control**
CPU – Power Management Control Options.
- **GT – Power Management Control**

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 the reset vector.

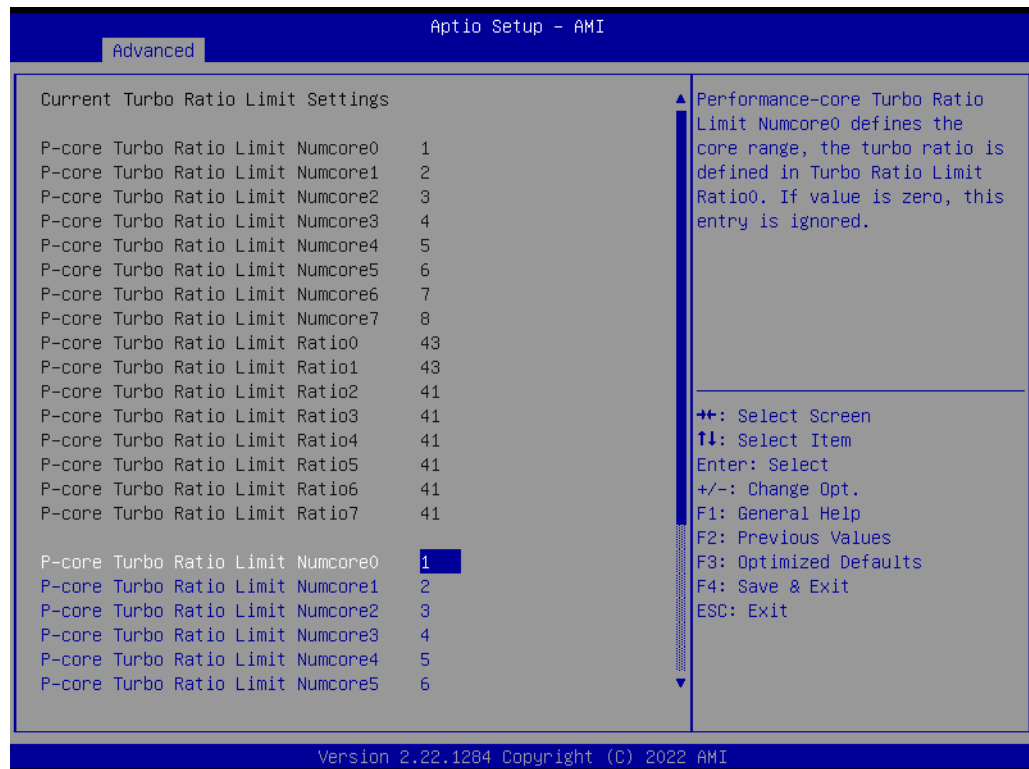


■ Turbo Ratio Limit Options

View/Configure Turbo Ratio Limit Options.

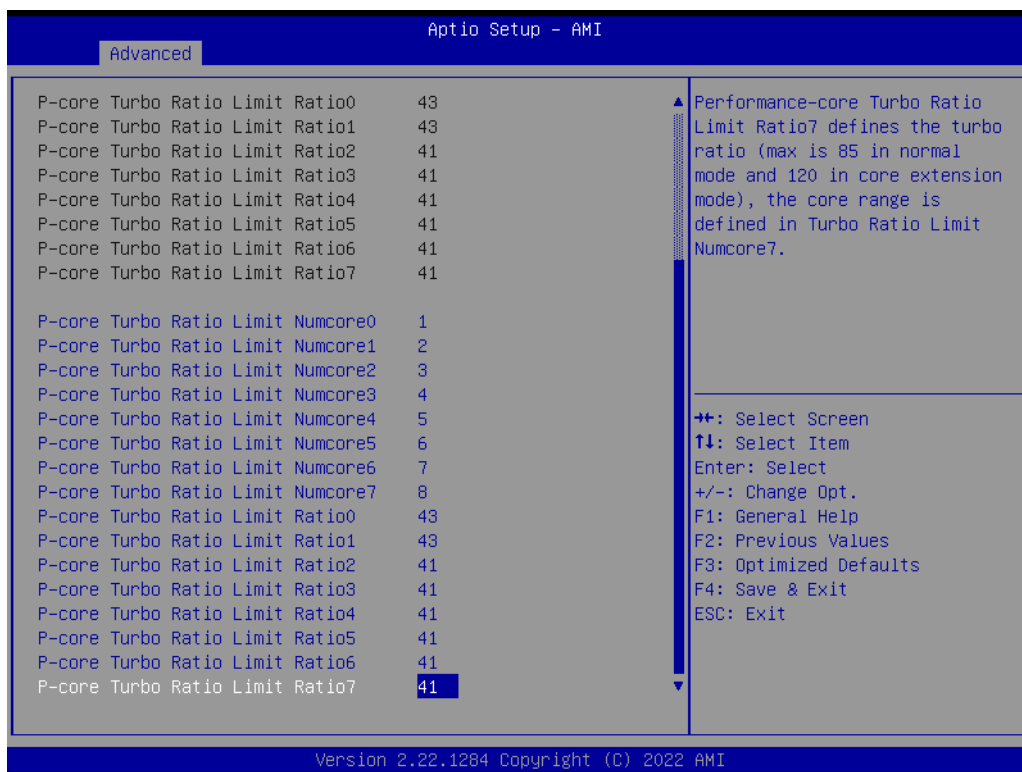
- **Energy Efficient P-state [Enable]**
- **Package Power Limit MSR Lock [Disabled]**
- **Power Limit 1 Override [Disabled]**
- **Power Limit 2 Override [Enabled]**
- **Power Limit 2**
- **Energy Efficient P-state [Disable]**

■ Current Turbo Ratio Limit Settings



– P-core Turbo Ratio Limit Numcore0 1

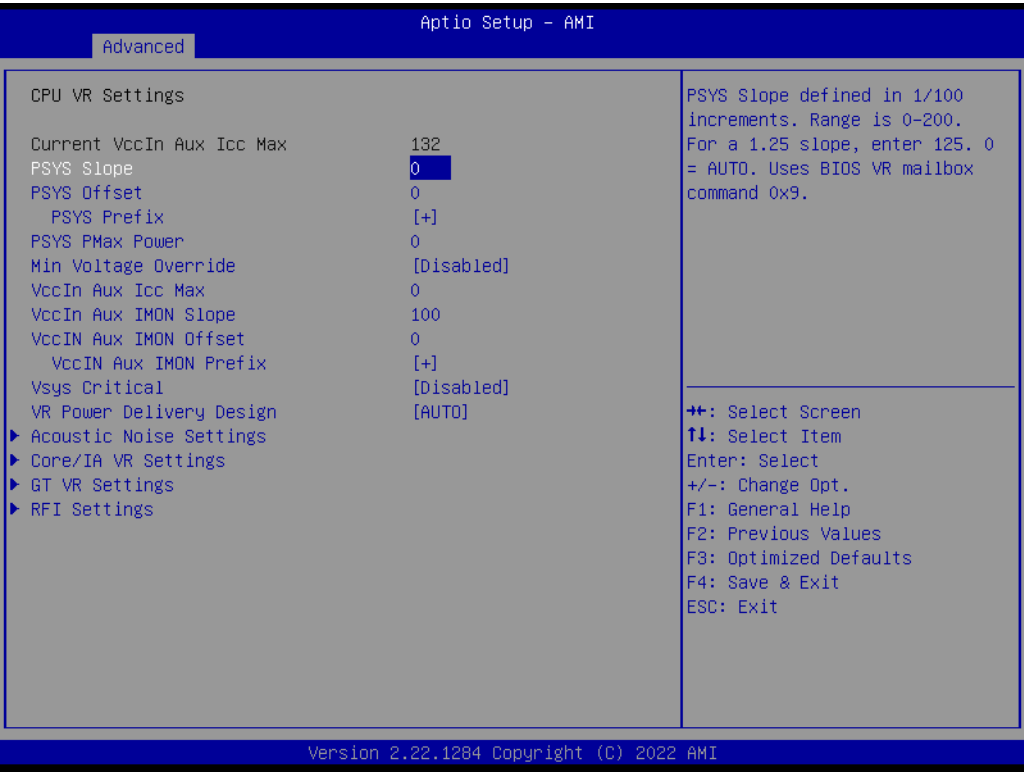
Performance-core Turbo Ratio Limit Numcore0 defines the core range, the turbo Ratio Limit Ratio0. If the value is zero, this entry is ignored.



– **P-core Turbo Ratio Limit Ratio7 41**

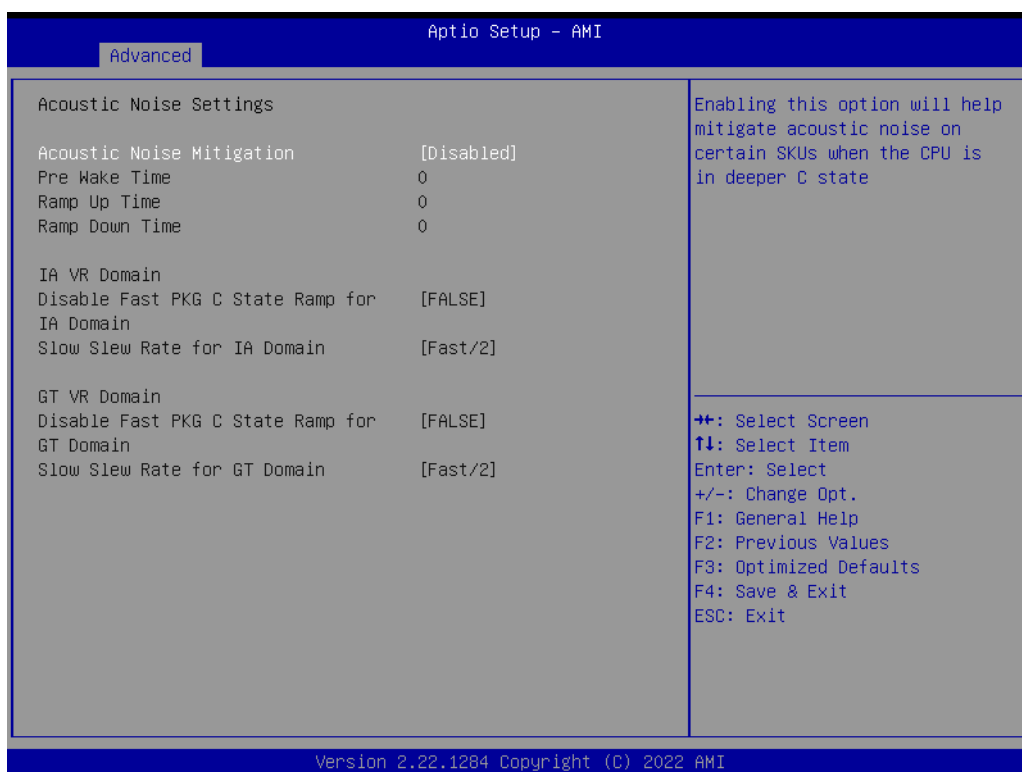
Performance-core Turbo Ratio Limit Ratio7 defines the turbo ratio (max is 85 in normal mode and 120 in core extension mode), the core range is defined in Turbo Ratio Limit Numcore7.

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.

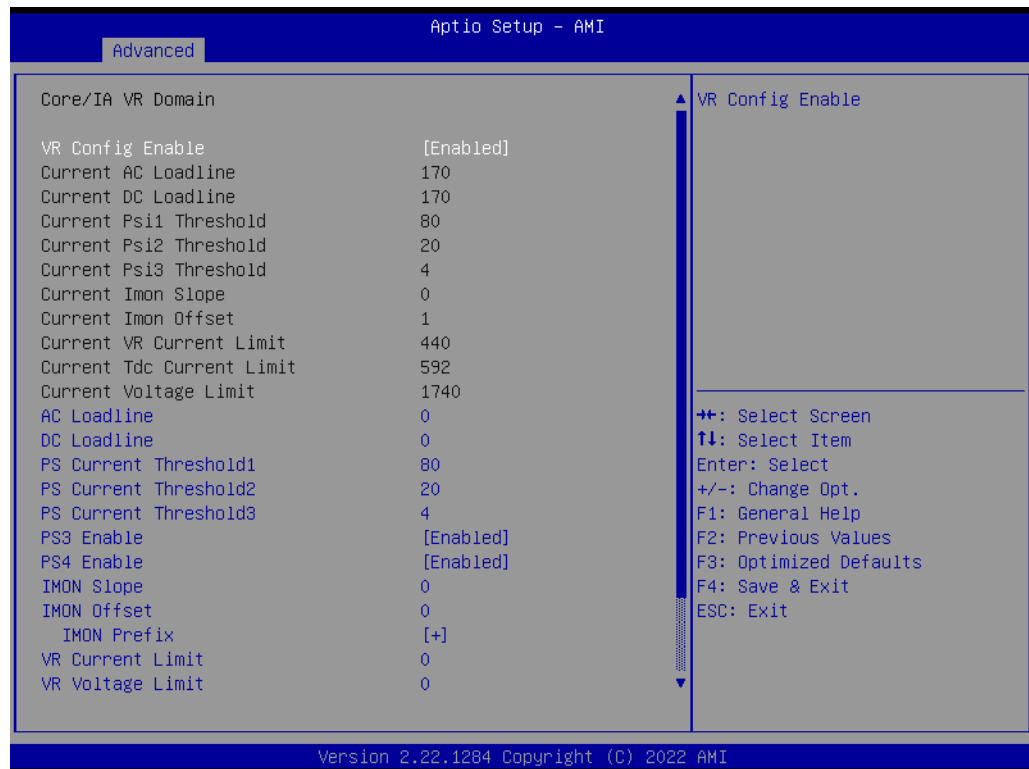
■ Acoustic Noise Settings



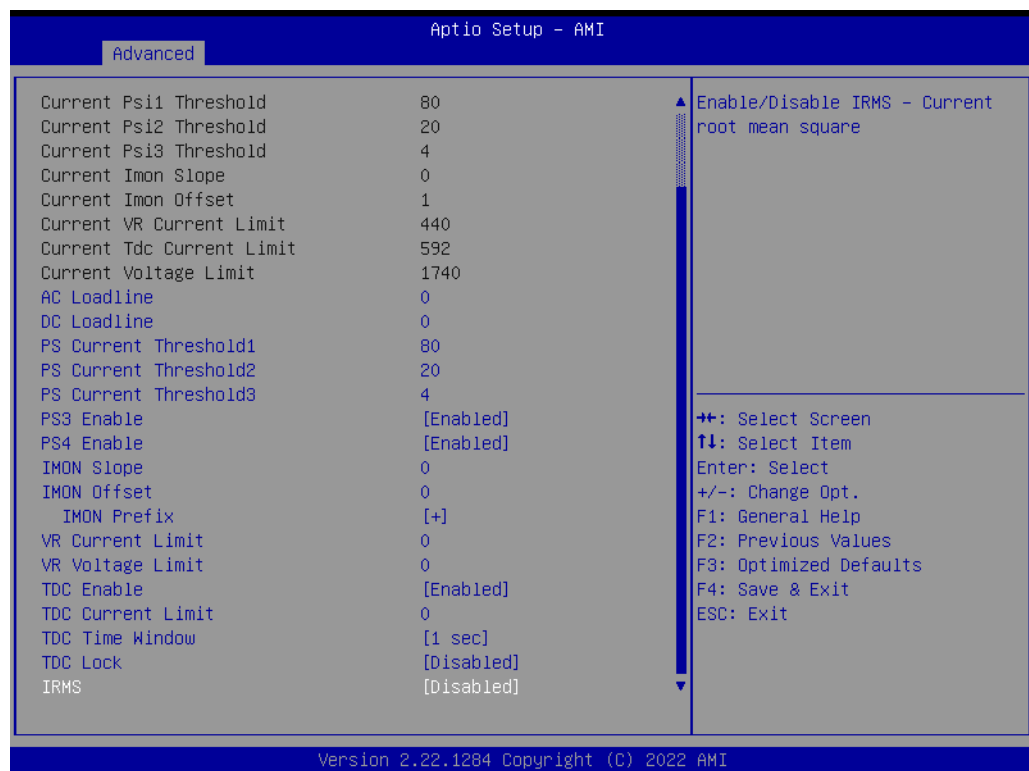
– Acoustic Noise Mitigation [Disabled]

Enabling this option will help mitigate acoustic noise on certain SKUs when the CPU is in a deeper C state.

■ Core/IA VR Domain

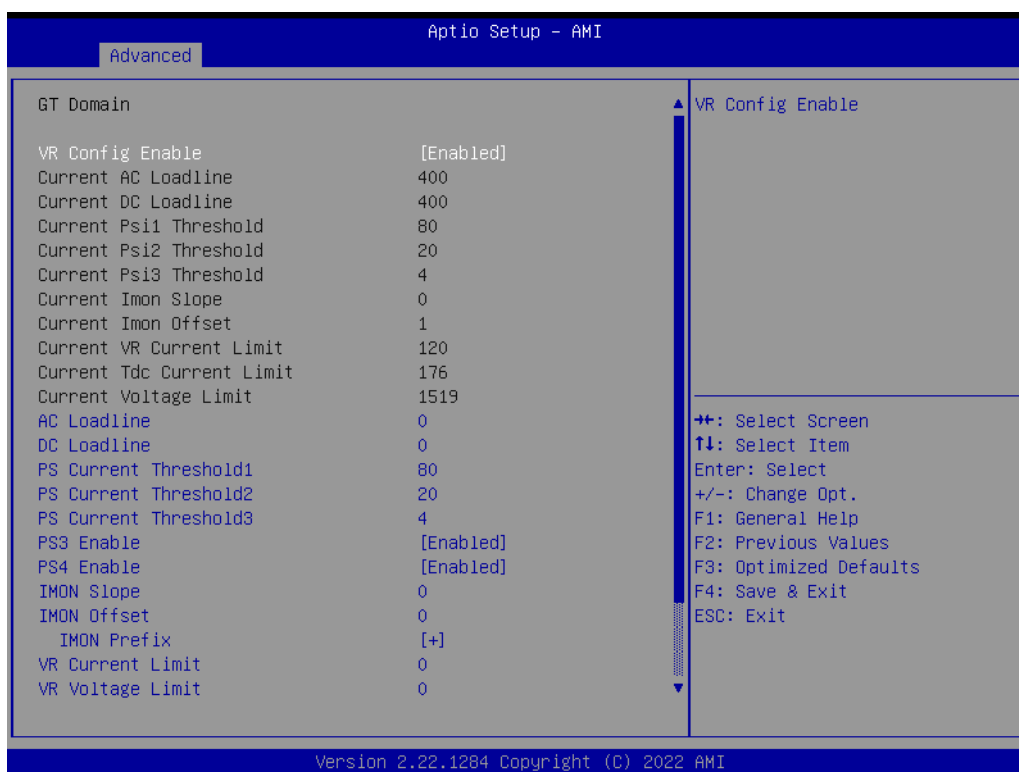
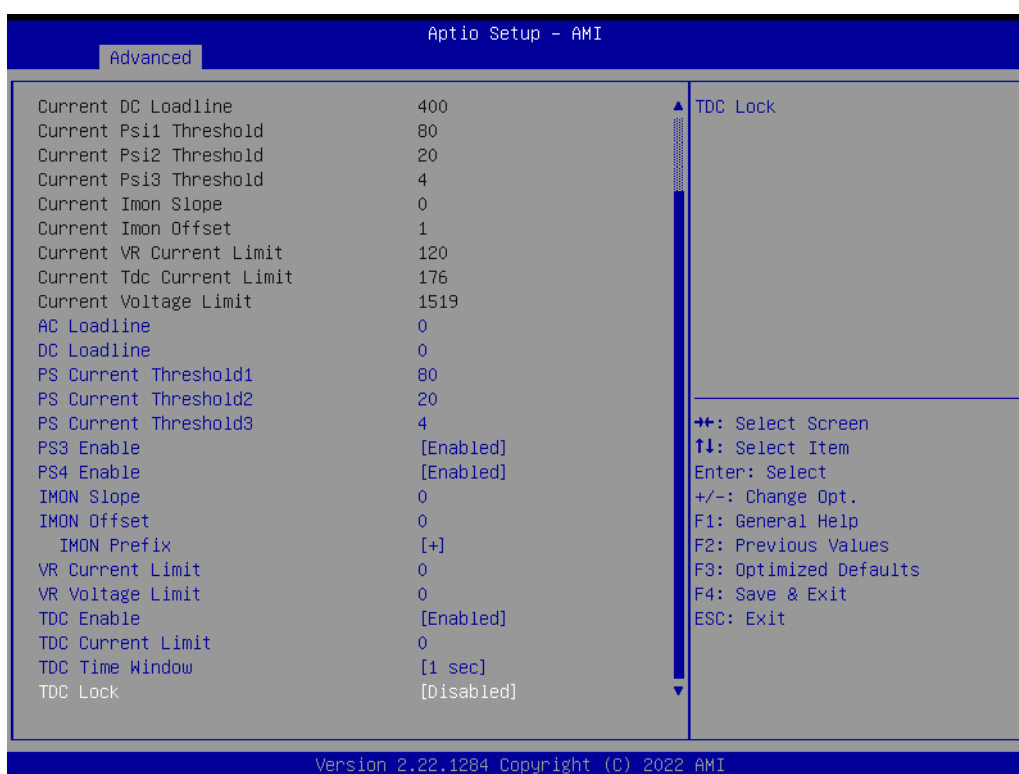


- **R Config Enable [Enabled]**
VR Config Enable.

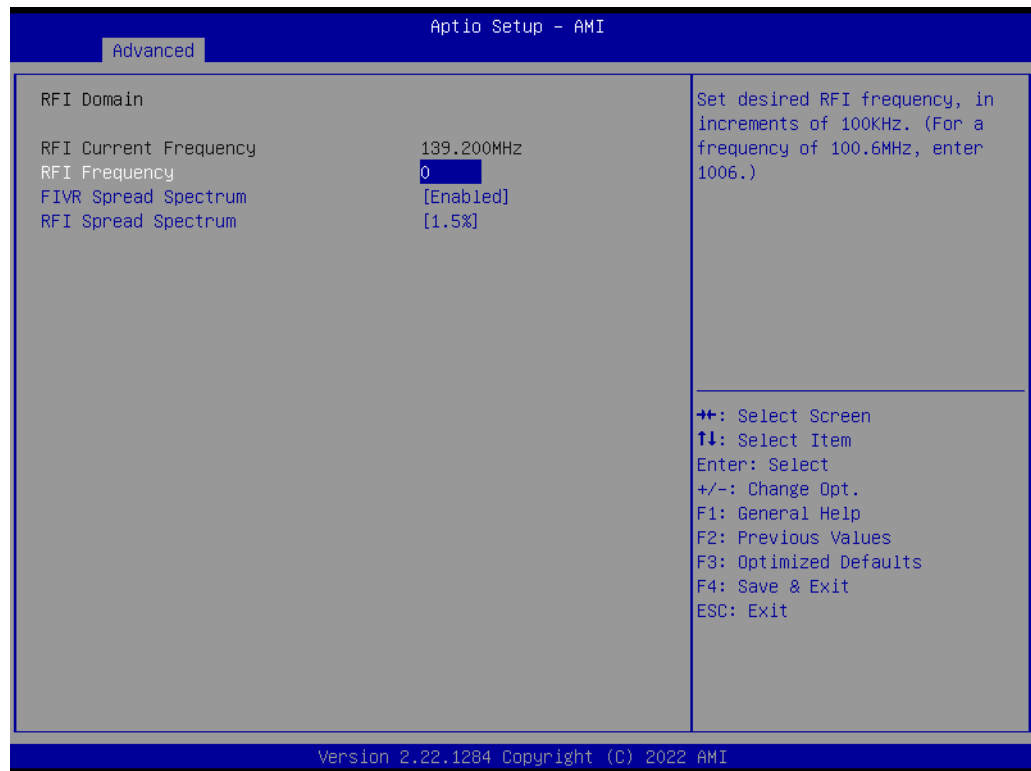


- **IRMS [Disabled]**
Enable/Disable IRMS – Current root mean square.

■ GT Domain


 ■ **VR Config Enable [Enabled]**
 VR Config Enable.


■ RFI Domain



– FRI Frequency 0

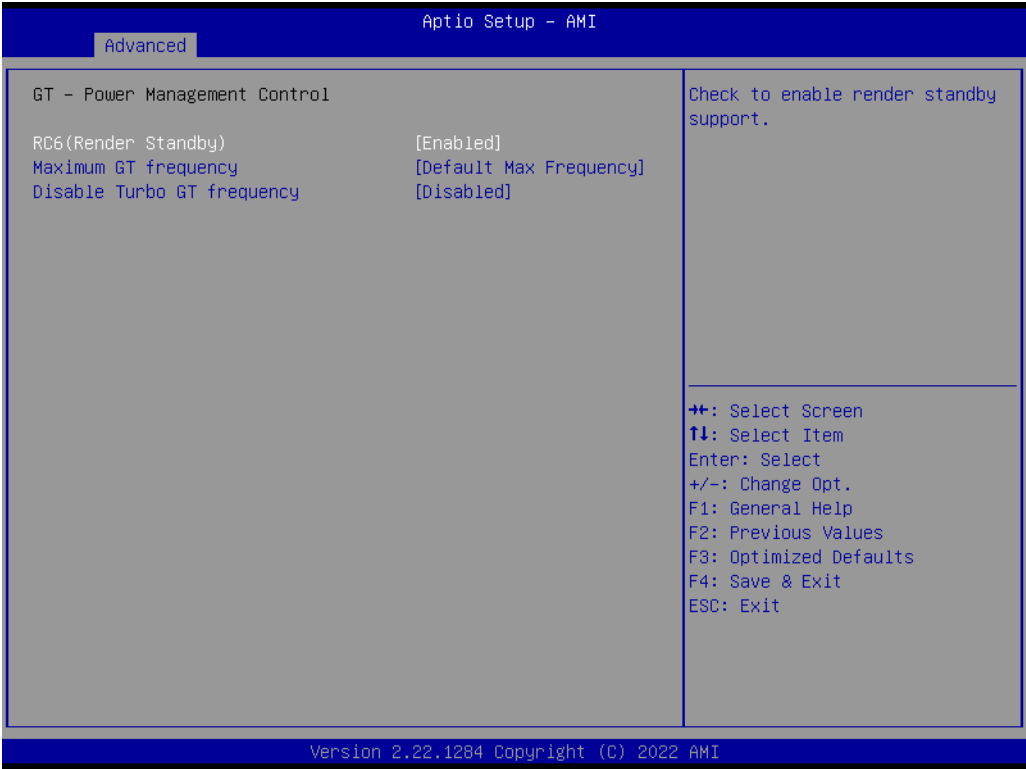
Set the desired RFI frequency, in increments of 100 kHz. (For a frequency of 100.6 MHz, enter 1006.)

3.2.2.3.3 Custom P-state Table



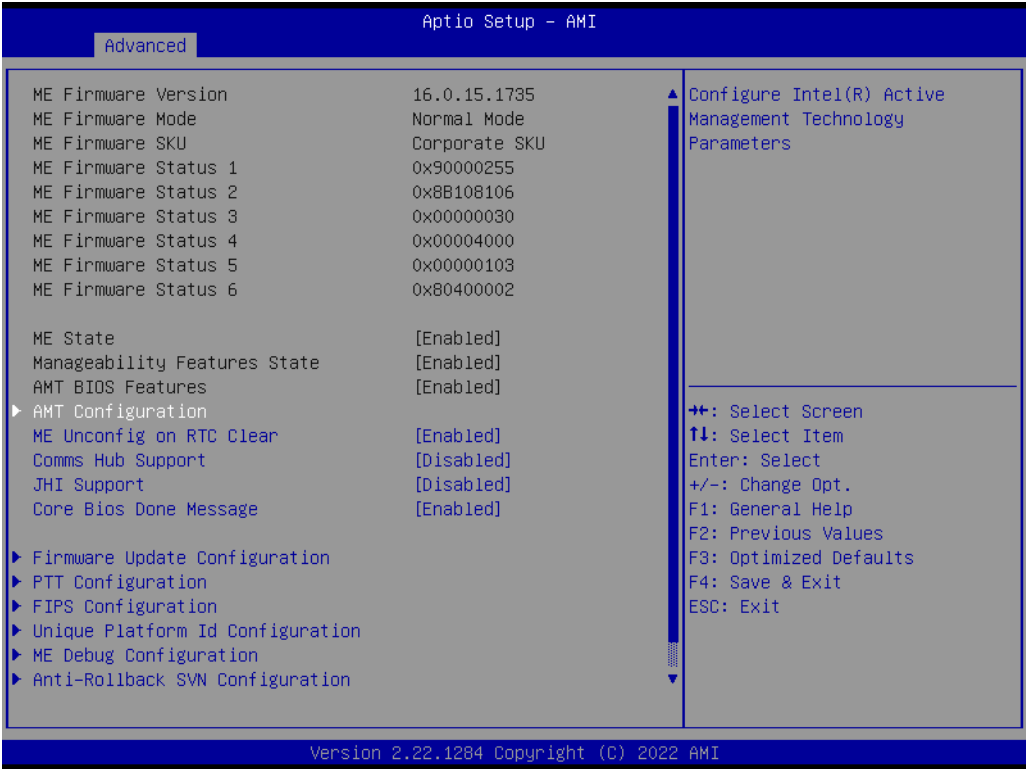
- **Number of P states 0**
Sets the number of custom P-states. At least 2 states must be present.

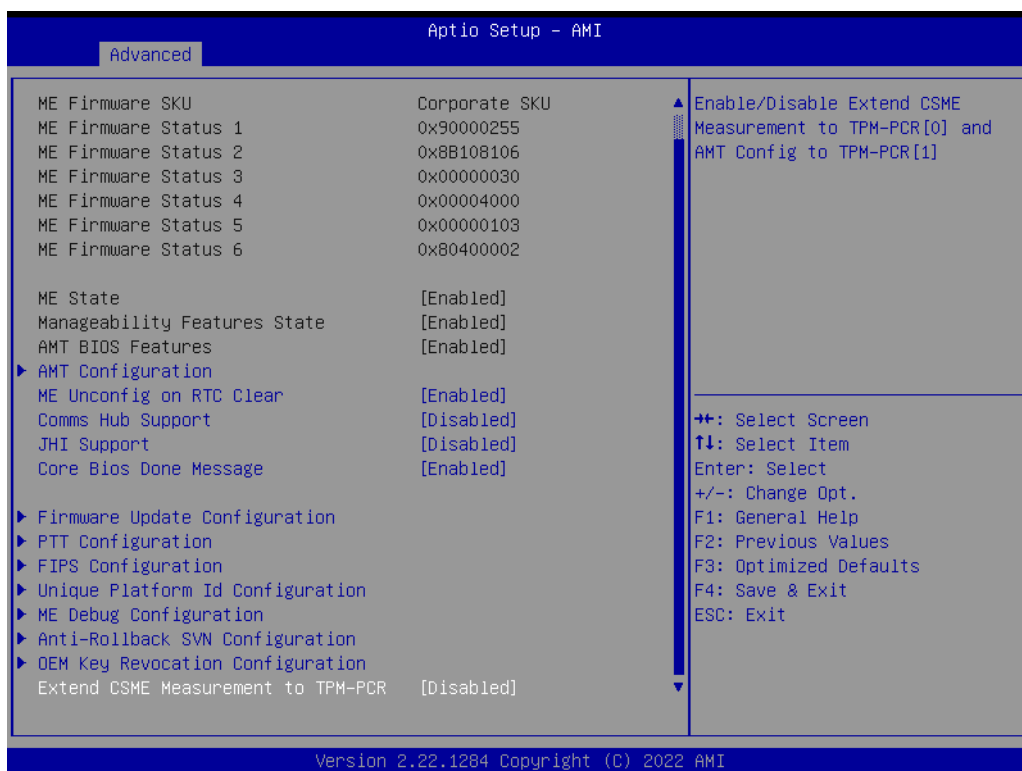
3.2.2.3.4 GT – Power Management Control



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

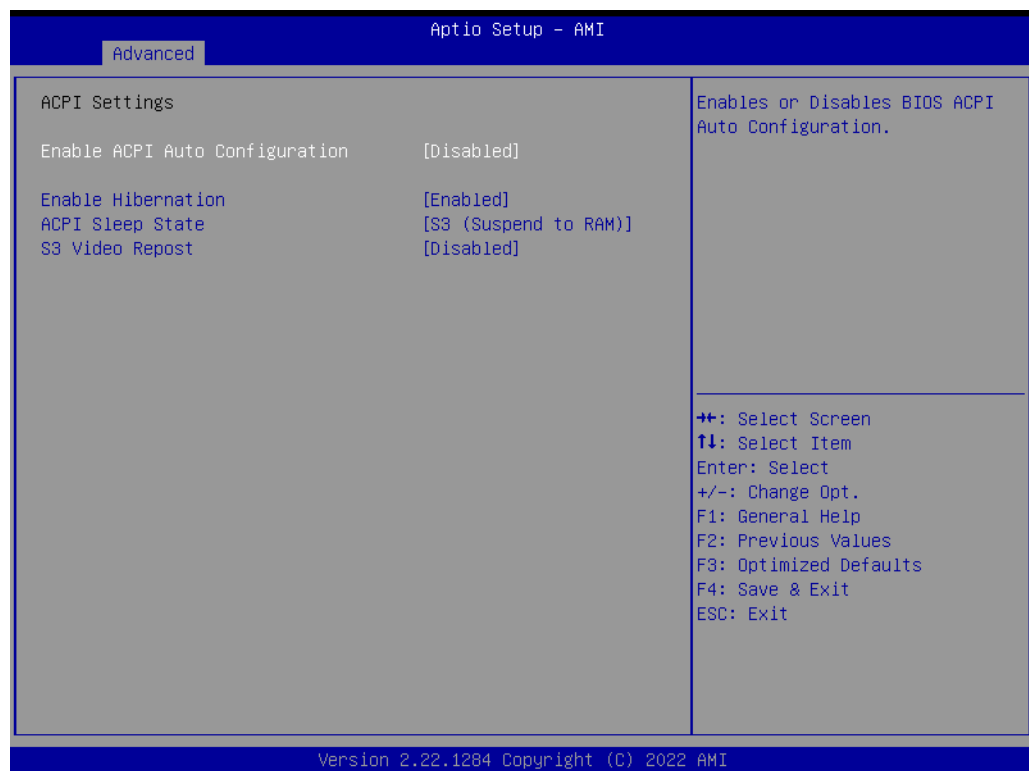
3.2.2.4 PCH-FW Configuration





3.2.2.5 ACPI Settings

Configure Intel(R) Active Management Technology Parameters

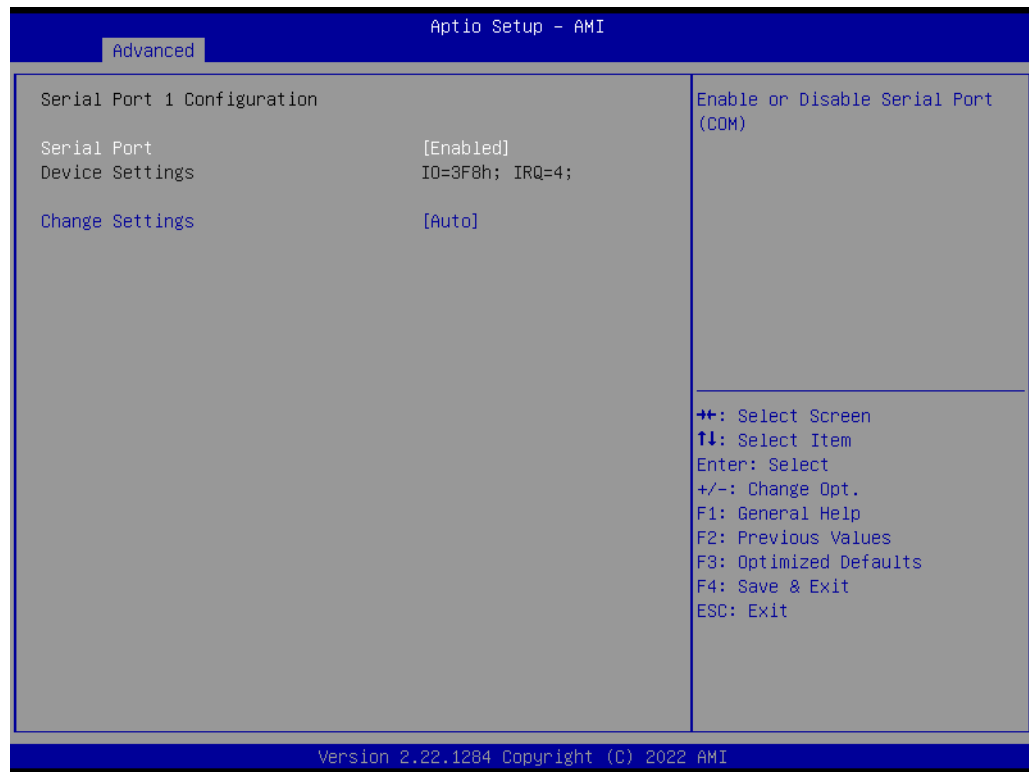


- **Enable ACPI Auto Configuration [Disabled]**
Enable/Disable BIOS ACPI auto configuration.
- **Enable Hibernation [Enabled]**
Enable/Disable system ability to hibernate (OS/S4 Sleep State). This option may not be effective with some OS.
- **ACPI Sleep State [S3 (Suspend to RAM)]**
Select the ACPI sleep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

3.2.2.6 NCT6126D Super IO Configuration



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



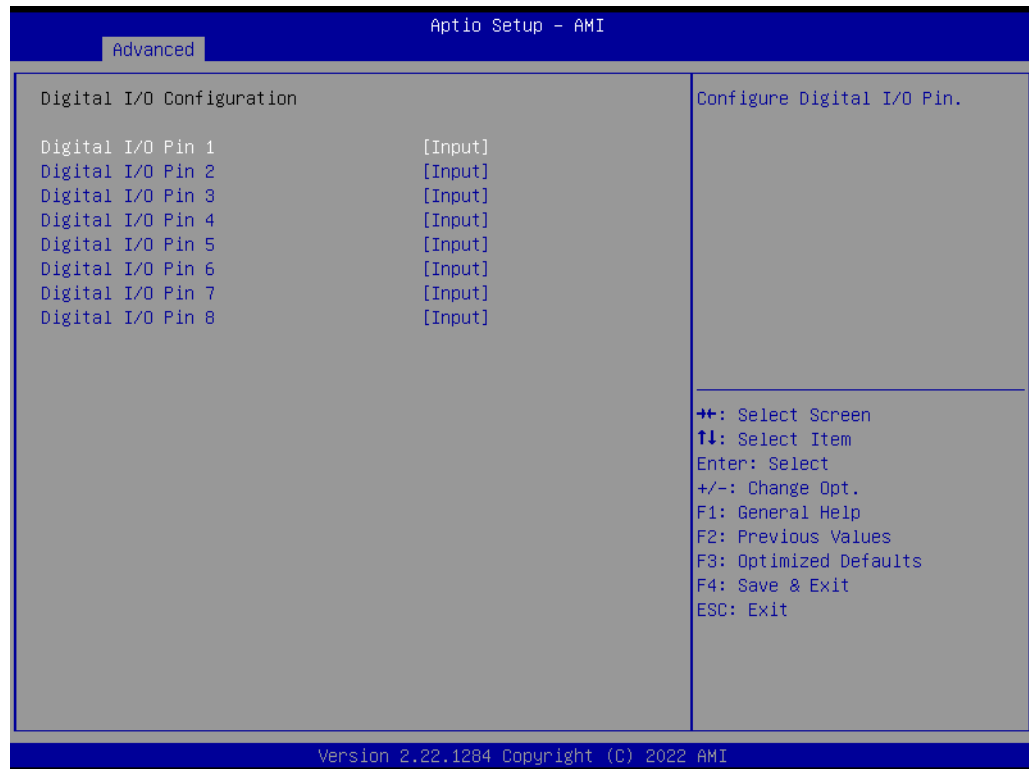
- **Serial Port [Enabled]**
Enable/Disable Serial Port (COM)
- **Device Settings: IO=3F8h; IRQ =4**
- **Change Settings [Auto]**
To select an optimal setting for serial port 1.

■ 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.

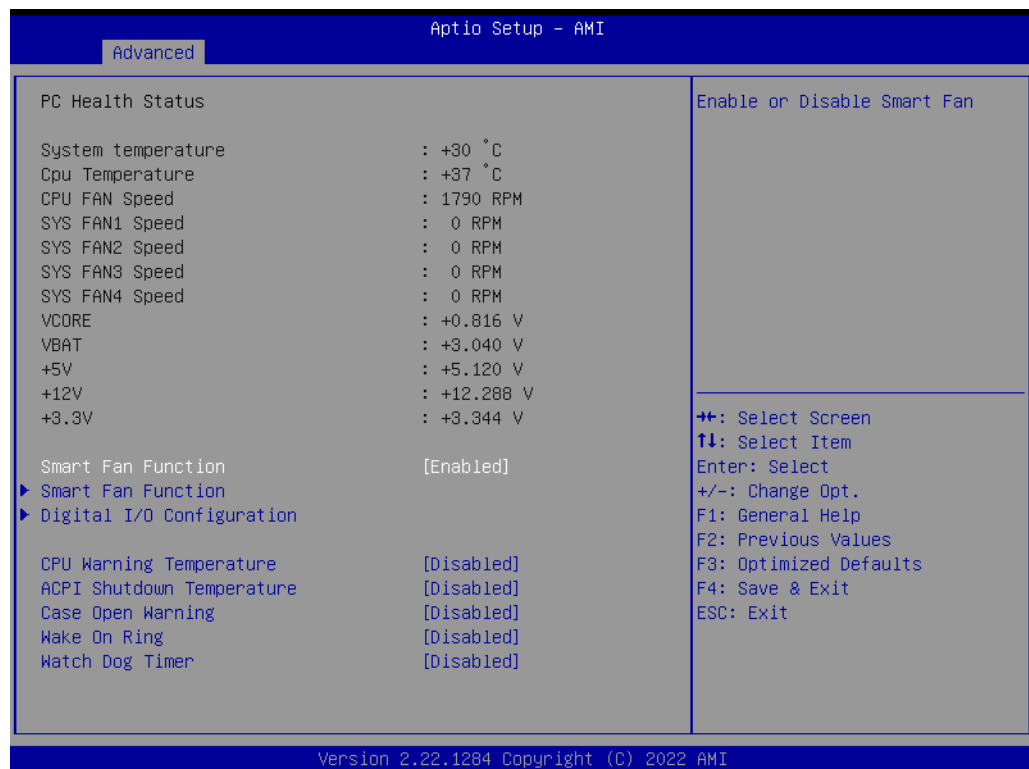
■ Digital I/O Configuration



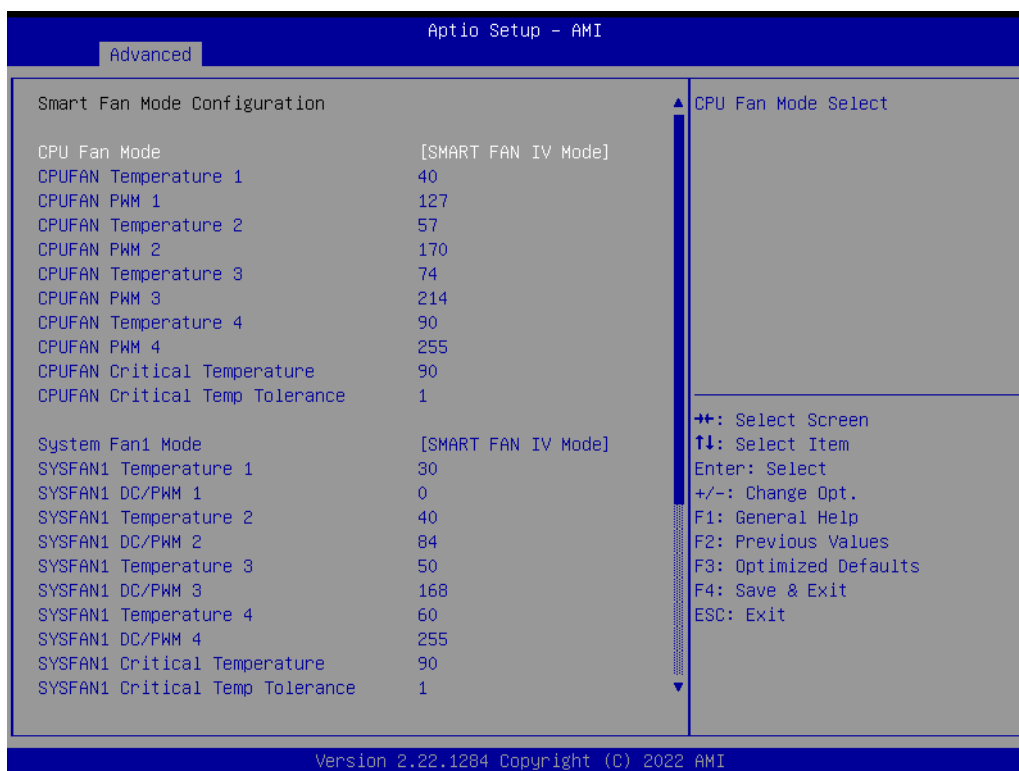
– Digital I/O Pin 1 - 8 [Input]

3.2.2.7 NCT6126D HW Monitor

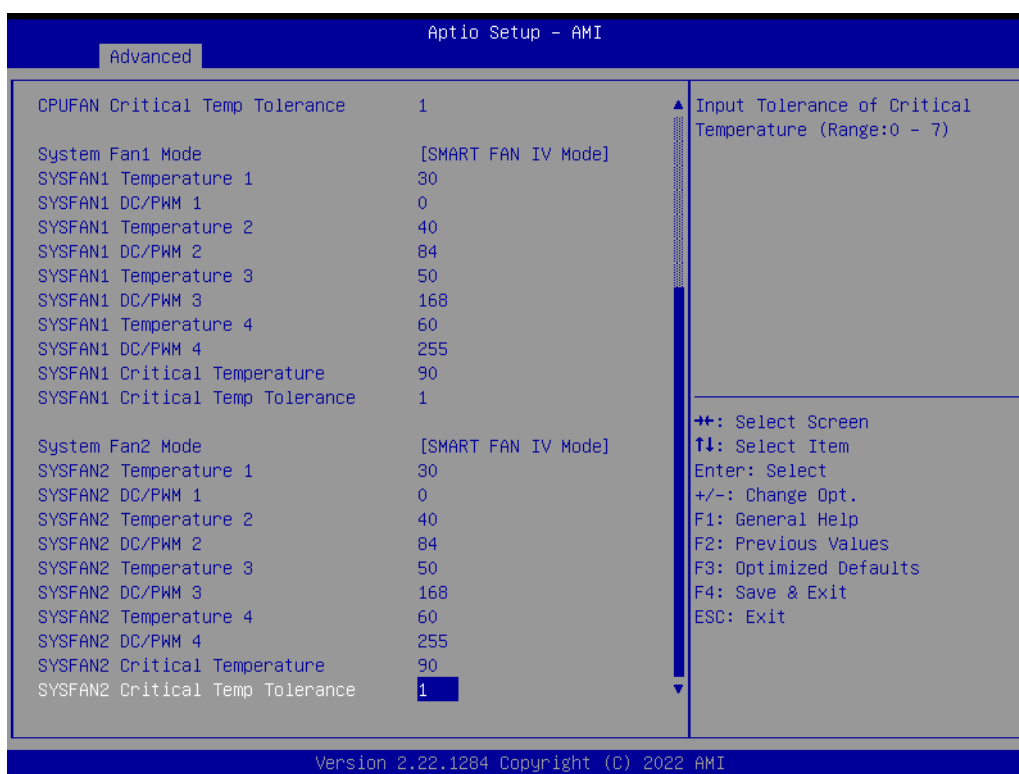
■ PC Health Status



■ Smart Fan Mode Configuration

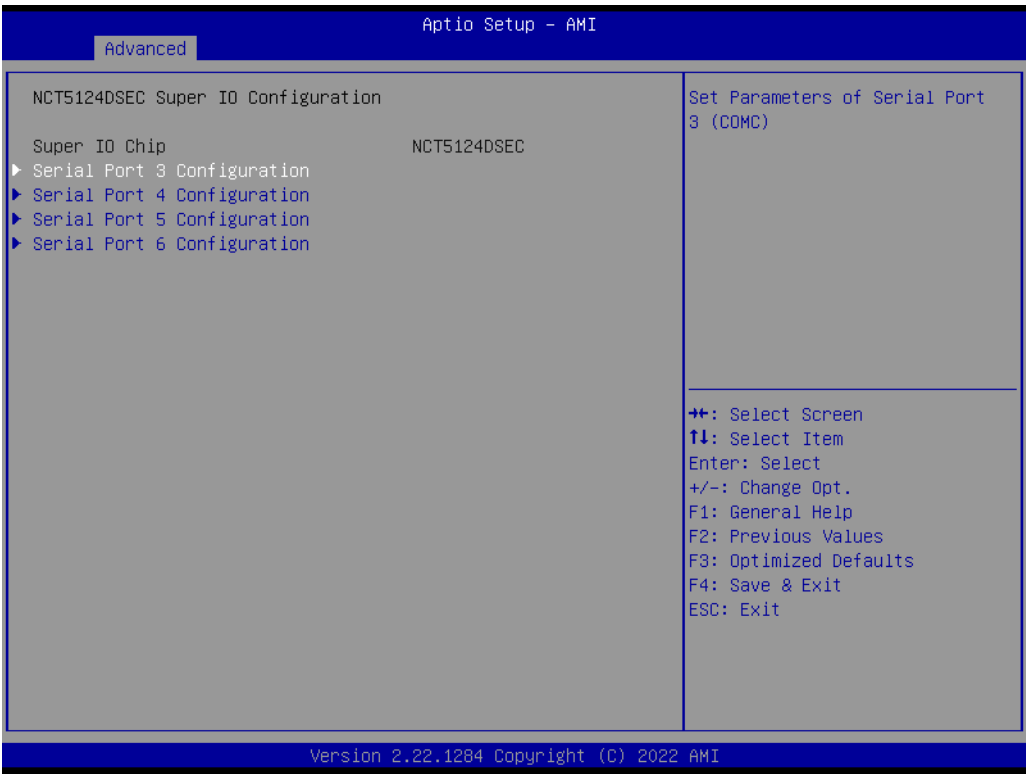


- CPU Fan Mode [SMART FAN IV Mode]
- System Fan1 Mode [SMART FAN IV Mode]

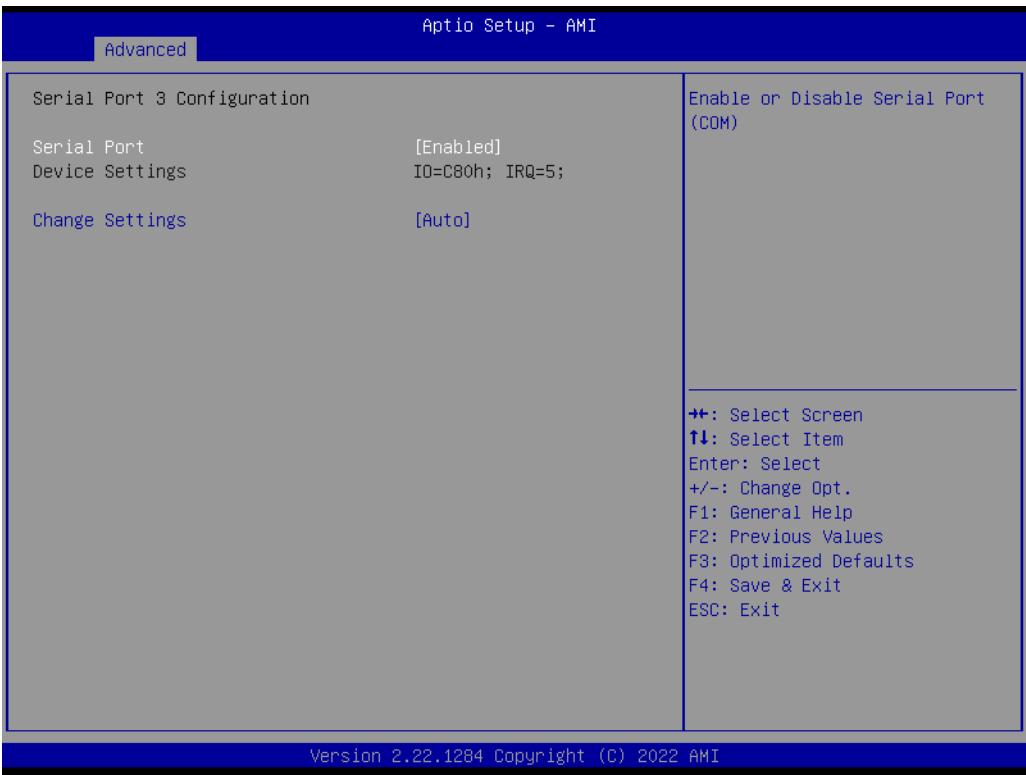


- System Fan2 Mode [SMART FAN IV Mode]

3.2.2.8 NCT5124DSEC Super IO Configuration

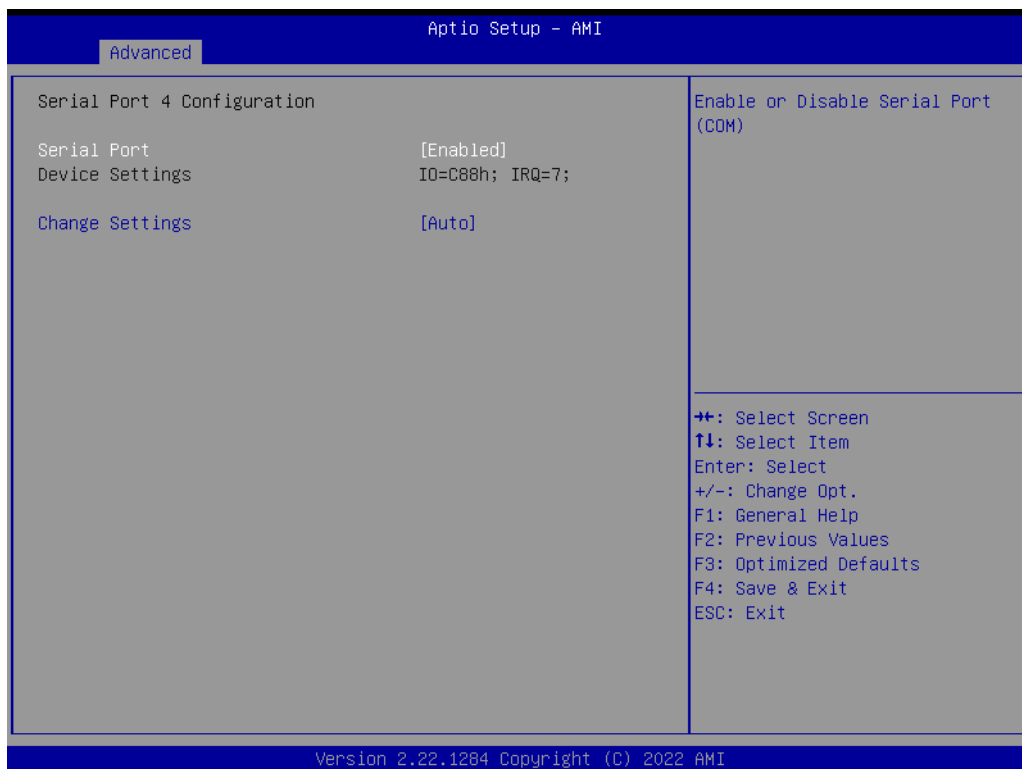


■ Serial Port 3 Configuration



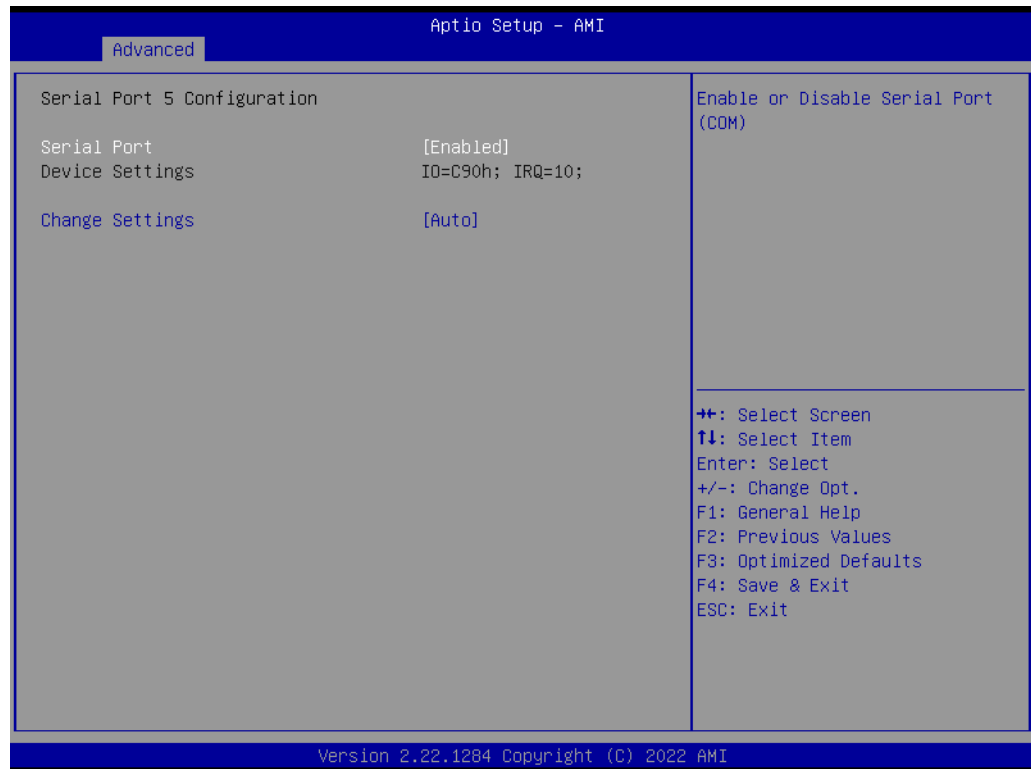
- **Serial Port [Enabled]**
- **Device Settings: IO=C80h; IRQ =5;**
- **Change Settings [Auto]**
To select an optimal setting for serial port 3.

■ Serial Port 4 Configuration



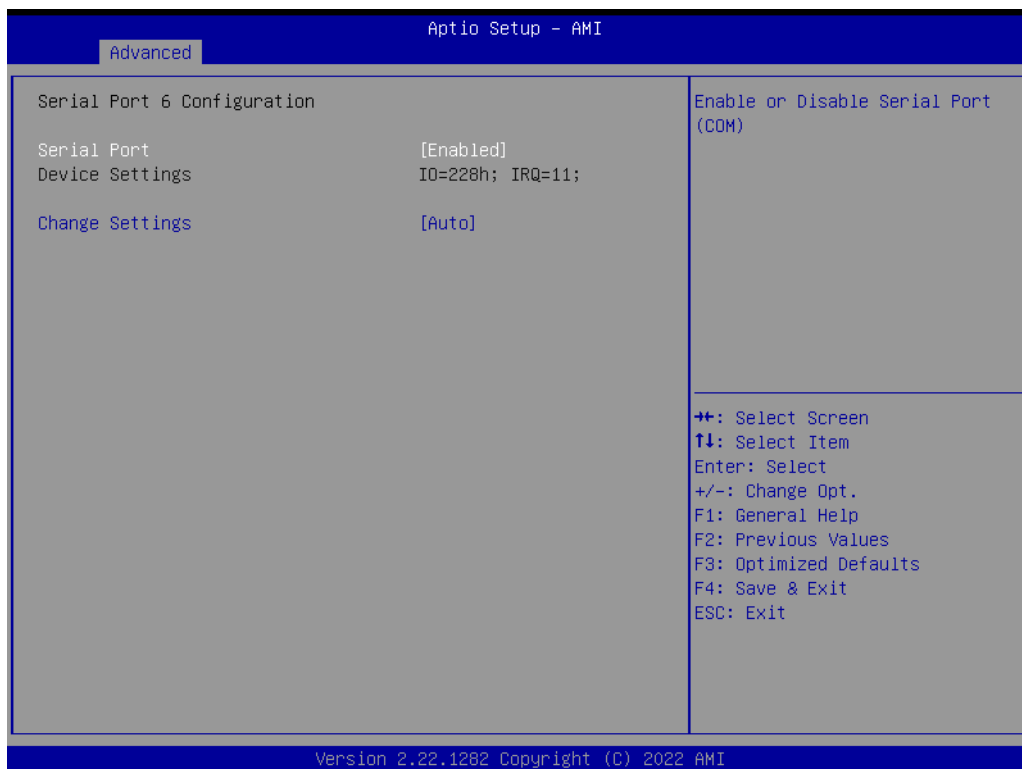
- **Serial Port [Enabled]**
- **Device Settings: IO=C88h; IRQ =7;**
- **Change Settings [Auto]**
To select an optimal setting for serial port 4.

■ Serial Port 5 Configuration



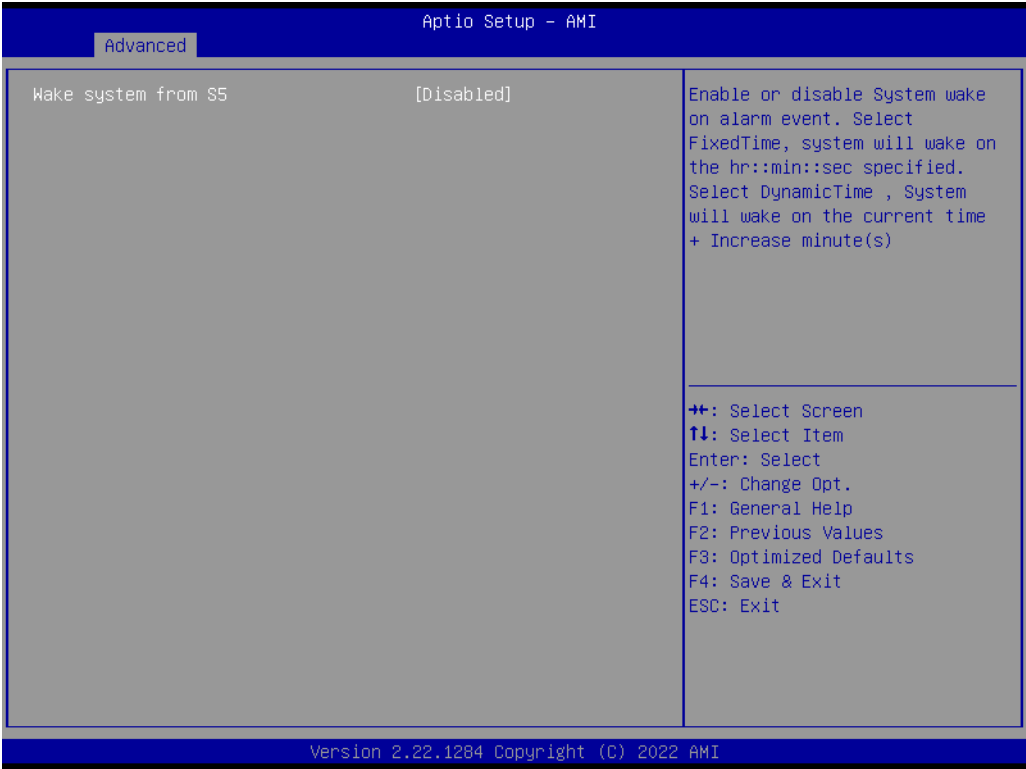
- **Serial Port [Enabled]**
- **Device Settings: IO=C90h; IRQ =10;**
- **Change Settings [Auto]**
To select an optimal setting for serial port 5.

■ Serial Port 6 Configuration



- **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

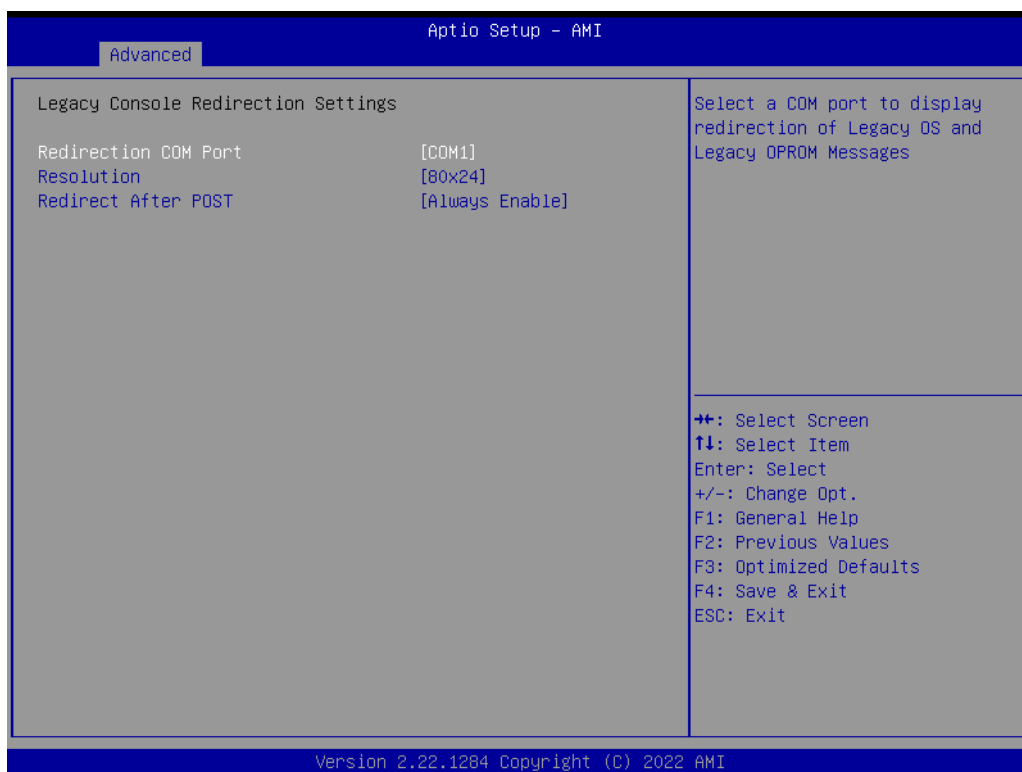


- **Wake system from S5 [Disabled]**
This item allows you to enable or disable a system wake on alarm event.

3.2.2.10 Serial Port Console Redirection

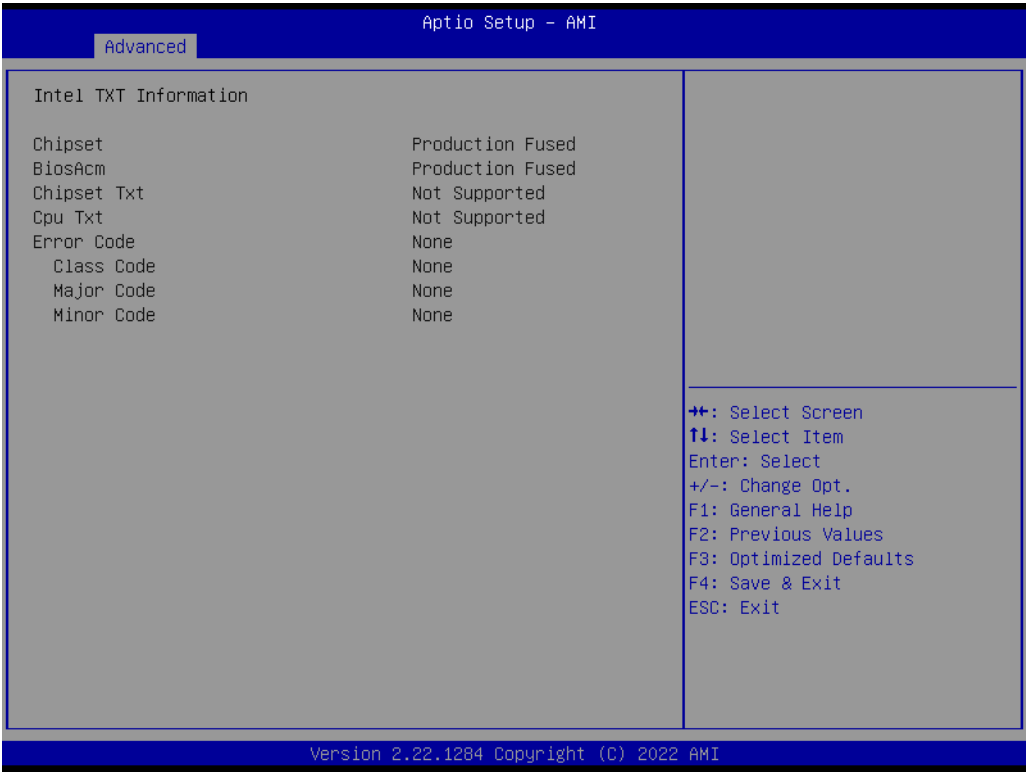


- **Console Redirection [Disabled]**
Enable/Disable the console redirection feature.

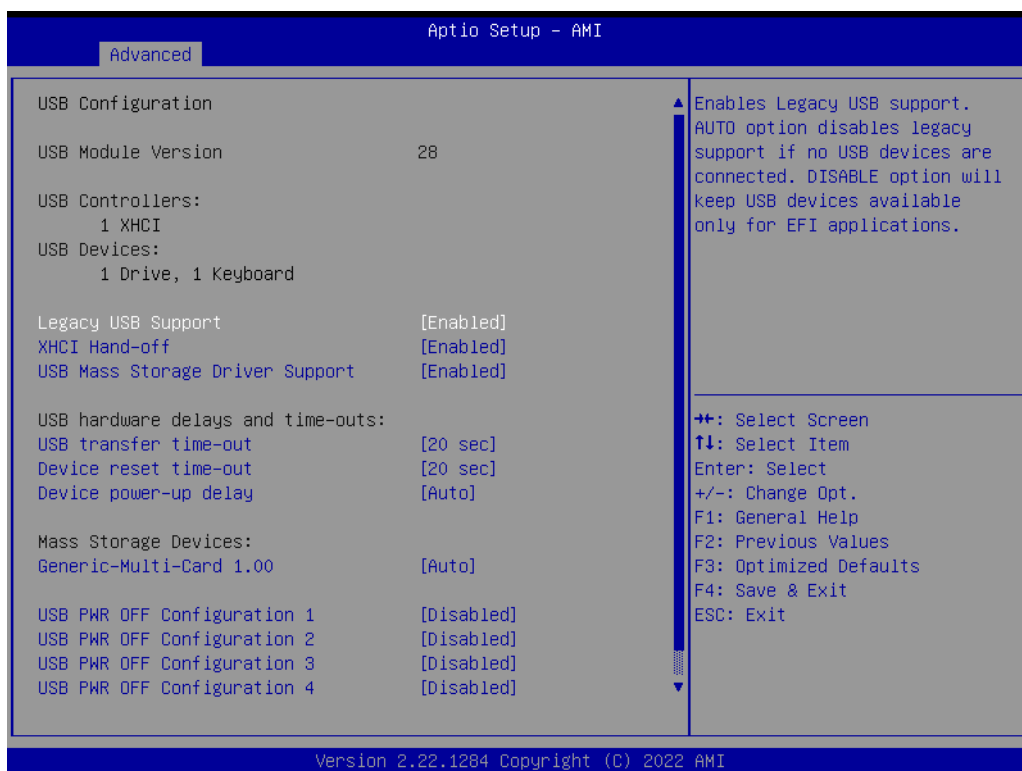


- **Redirection COM Port [COM1]**

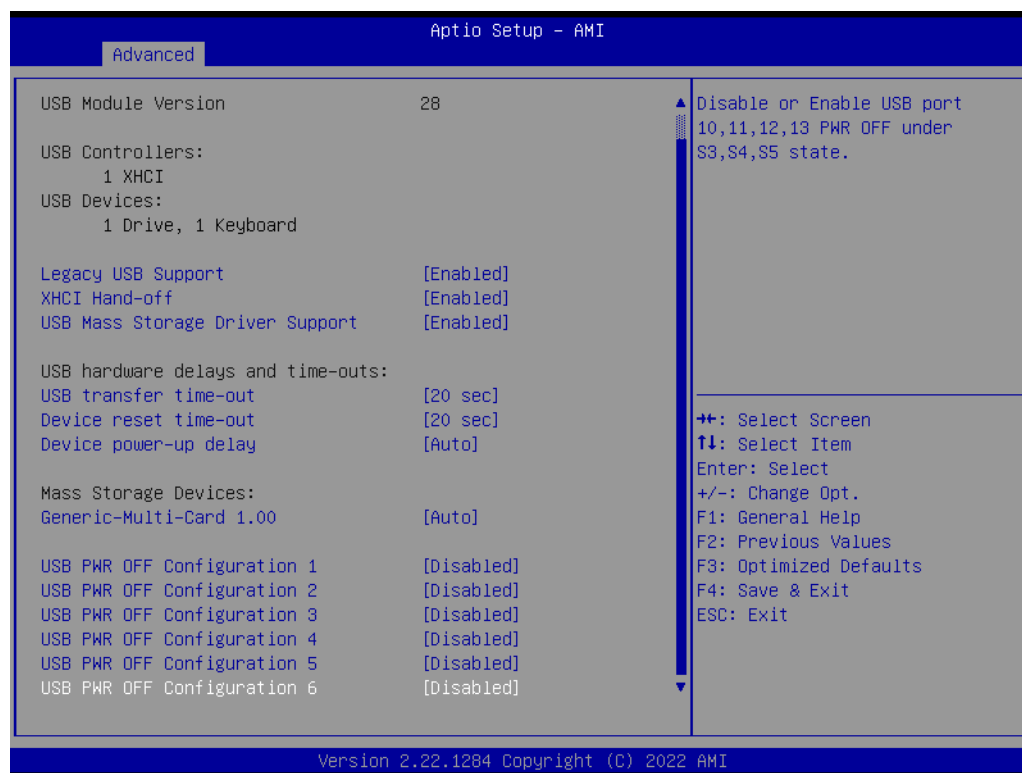
3.2.2.11 Intel TXT Information



3.2.2.12 USB Configuration

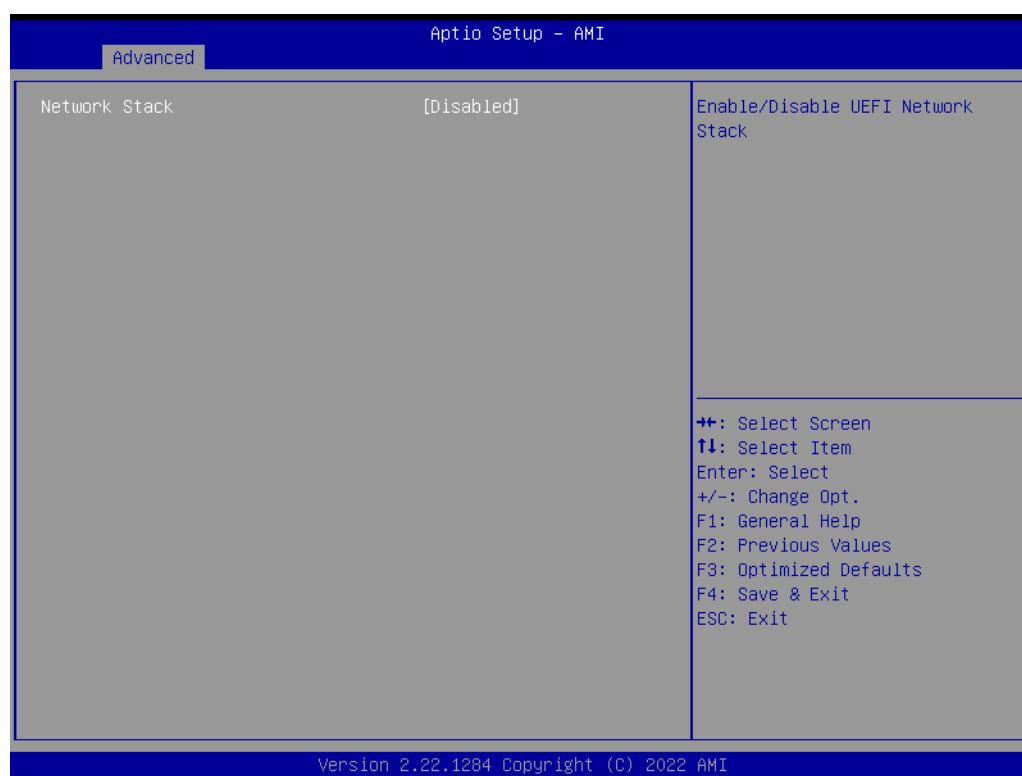


- **Legacy USB Support [Enabled]**
- **XHCI Hand-off [Enabled]**
- **USB Mass Storage Driver Support [Enabled]**
- **USB hardware delays and time-outs**
USB Device transfer & reset time-out and delay setting.
- **Mass Storage Devices [Auto]**
Shows USB mass storage device information.



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

3.2.2.13 Network Stack Configuration

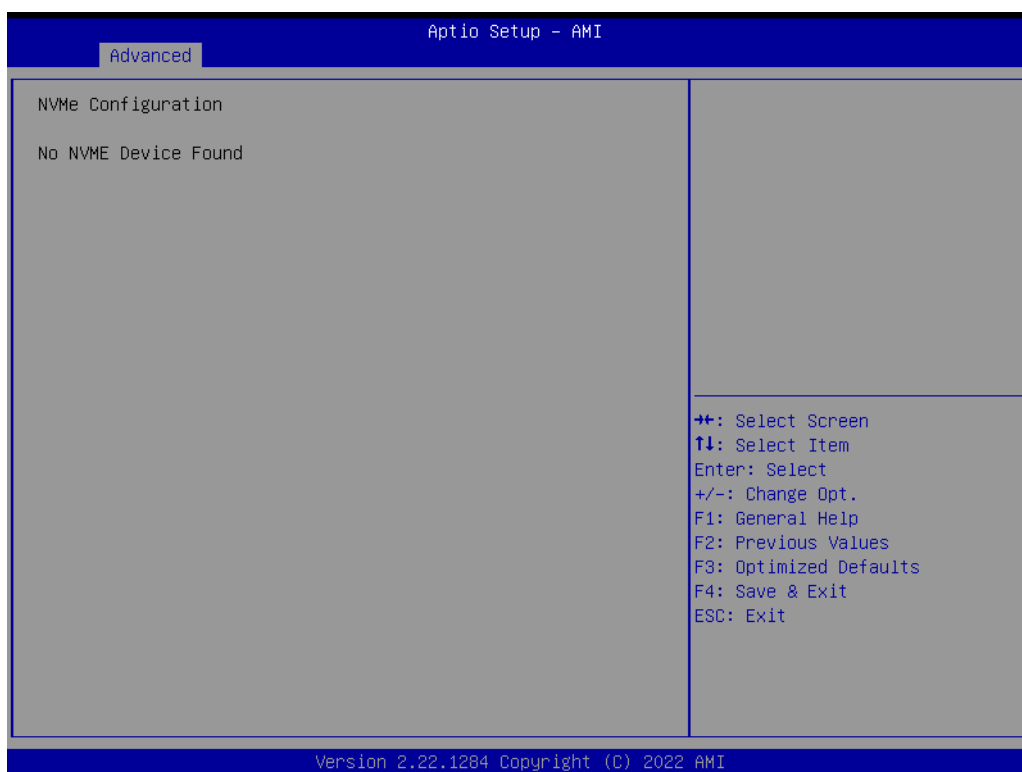


3.2.2.14 CSM Configuration



■ CSM Support [Disabled]

3.2.2.15 NVMe Configuration

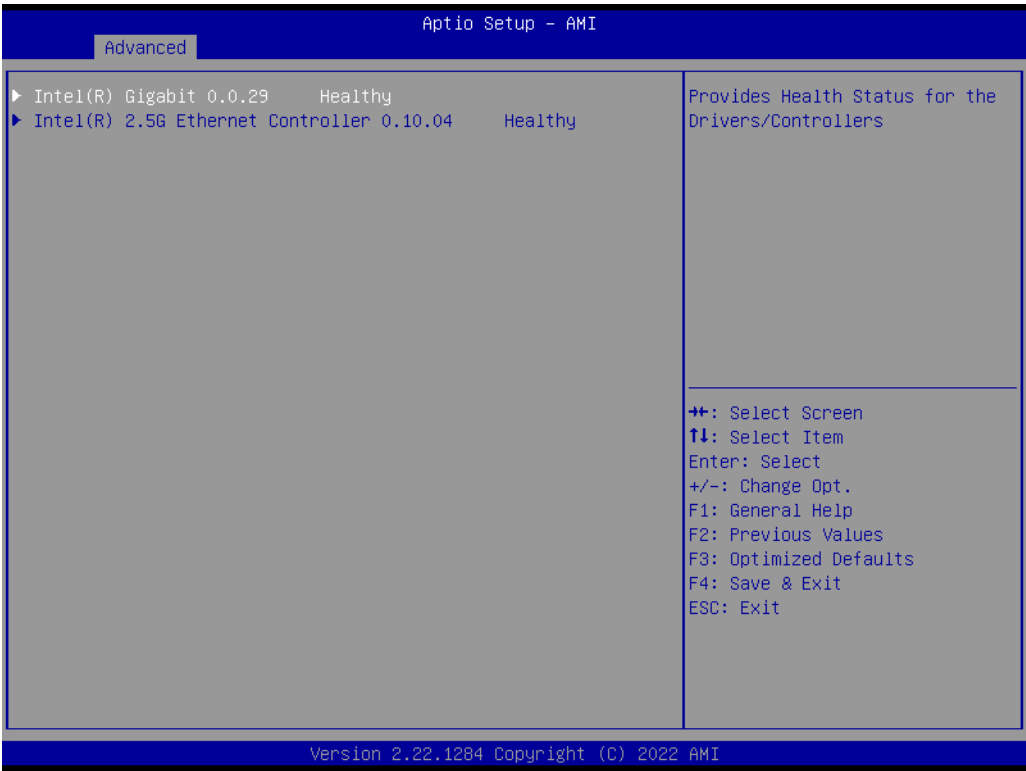


3.2.2.16 Tls Auth Configuration



- Server CA Configuration
- Client Cert Configuration

3.2.2.17 Driver Health

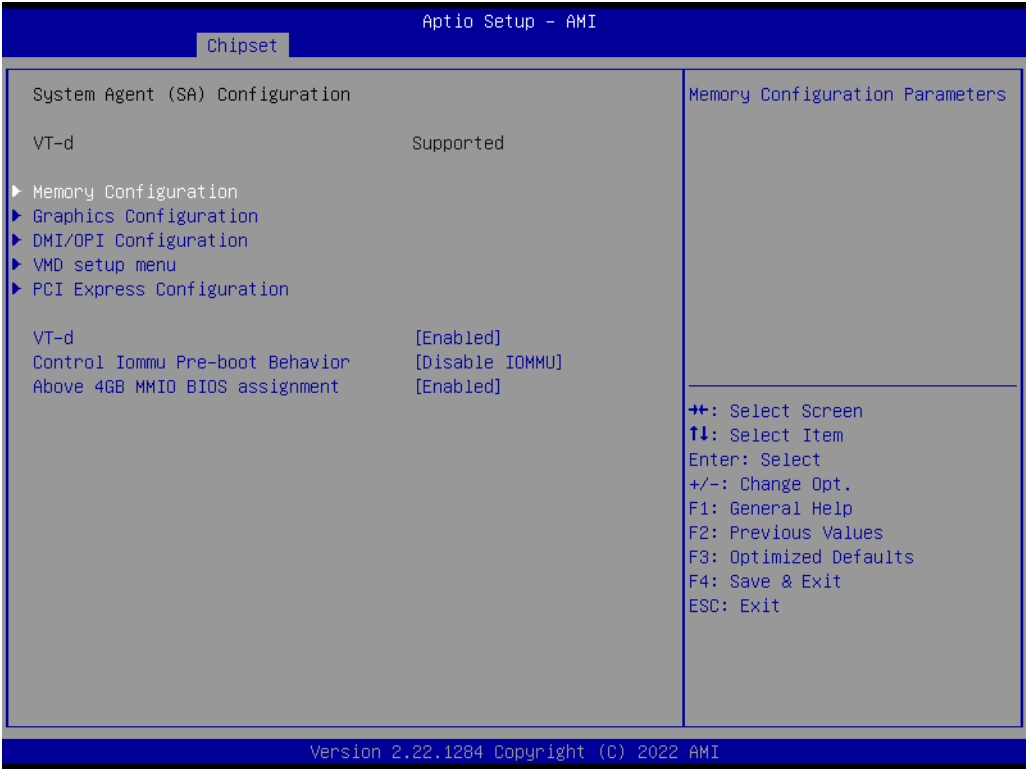


3.2.3 Chipset Configuration Settings

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.

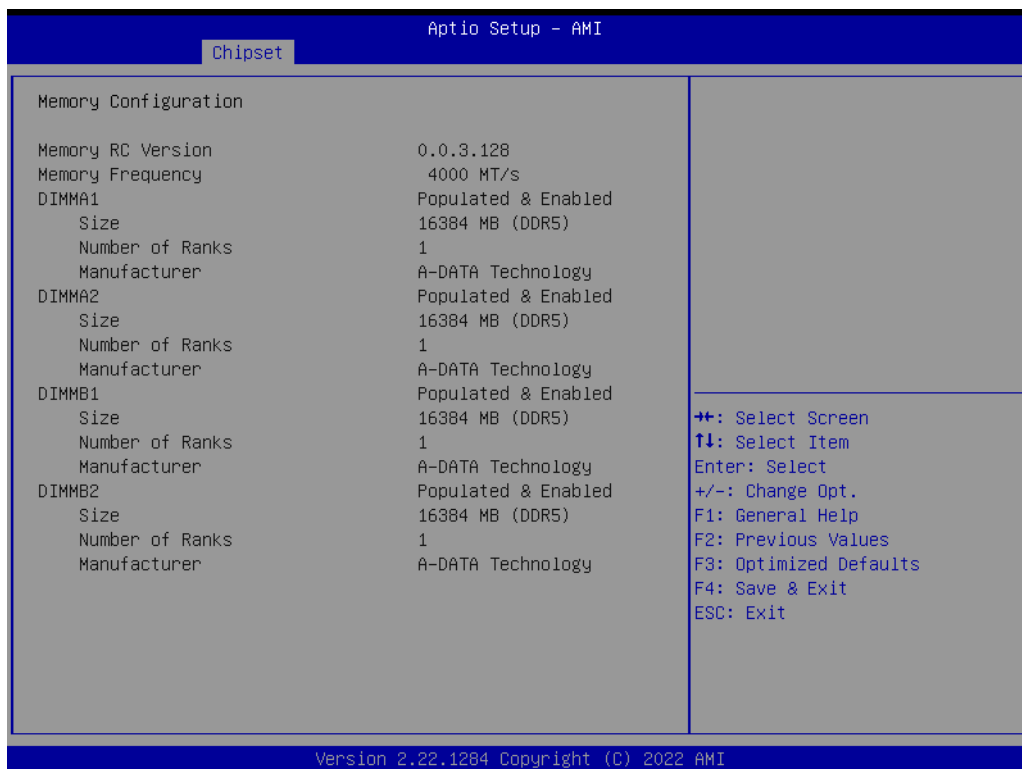


3.2.3.1 Chipset Configuration Settings - System Agent (SA) Configuration



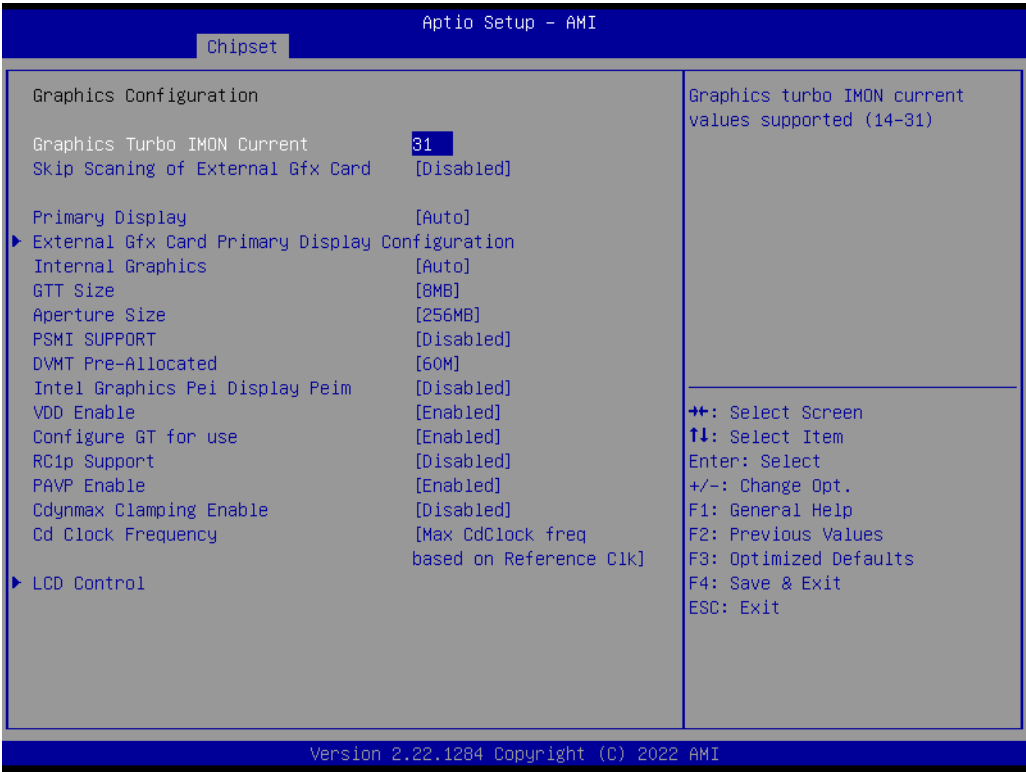
- **VT-d [Enabled]**
Enable/Disable VT-d function on MCH.

3.2.3.1.1 Memory Configuration

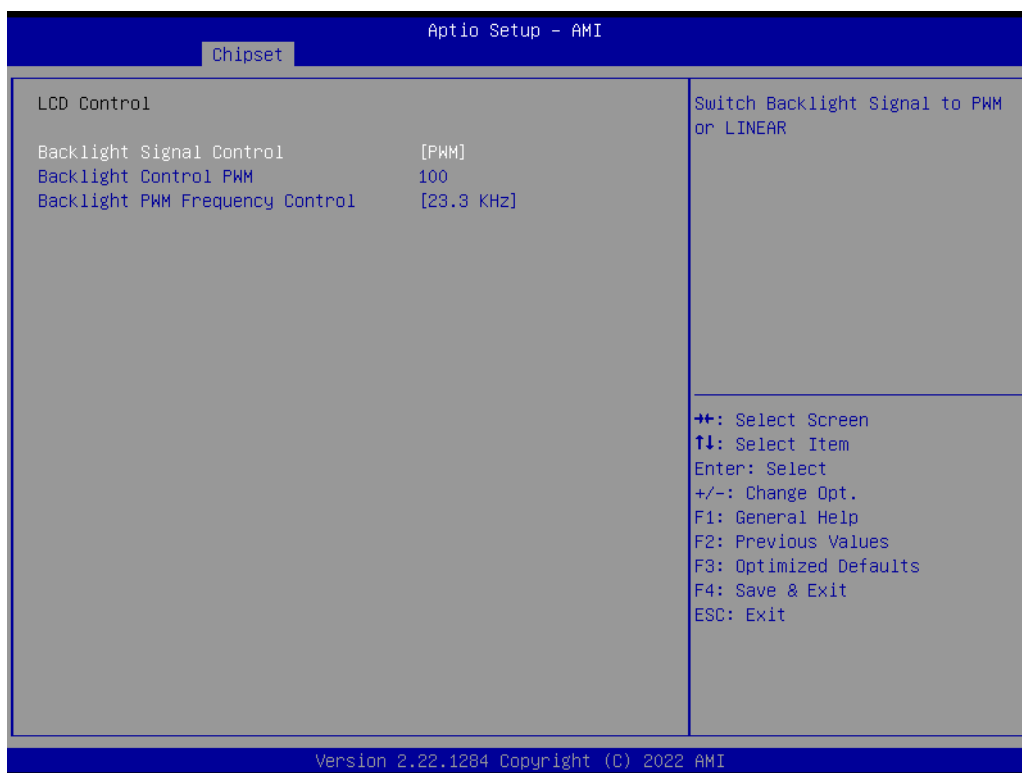


- SIO Port 80 Control [Disabled]
- CPU Warning Temperature [Disabled]
- ACPI Shutdown Temperature [Disabled]
- Case Open Warning [Disabled]
- Wake On Ring [Disabled]

3.2.3.1.2 Graphics Configuration



■ External Gfx Card Primary Display Configuration



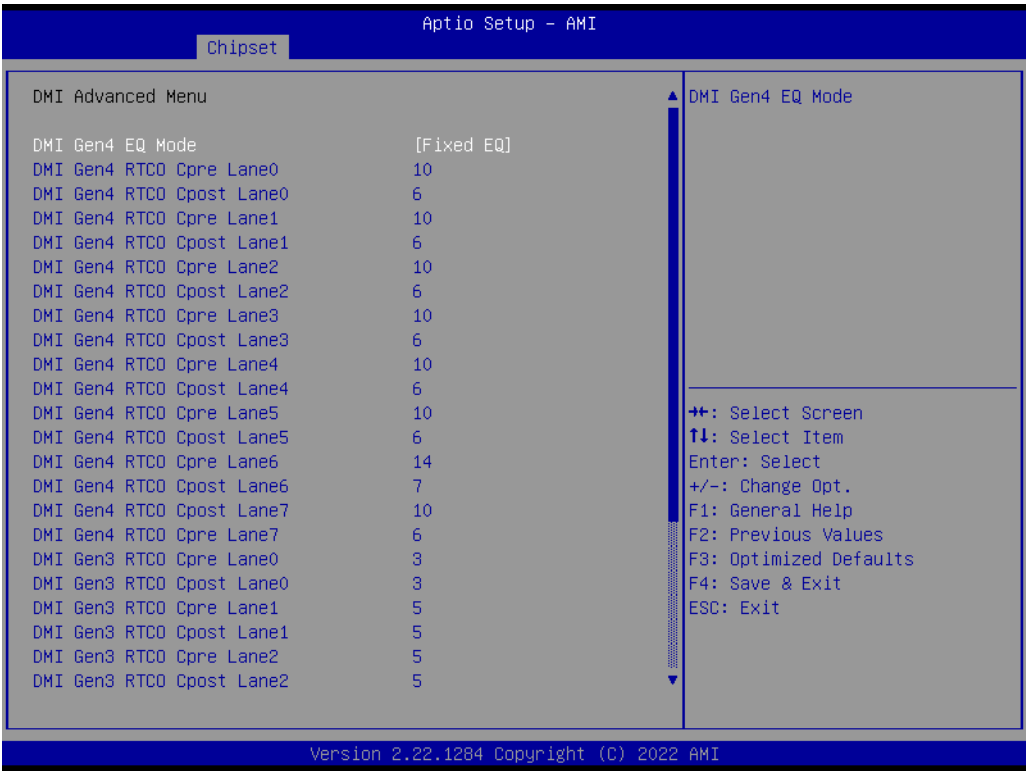
- **LCD Control**
 - **Backlight Signal Control [PWM]**
 - **Backlight Control PWM 100**
 - **Backlight PWM Frequency Control [23.3 kHz]**

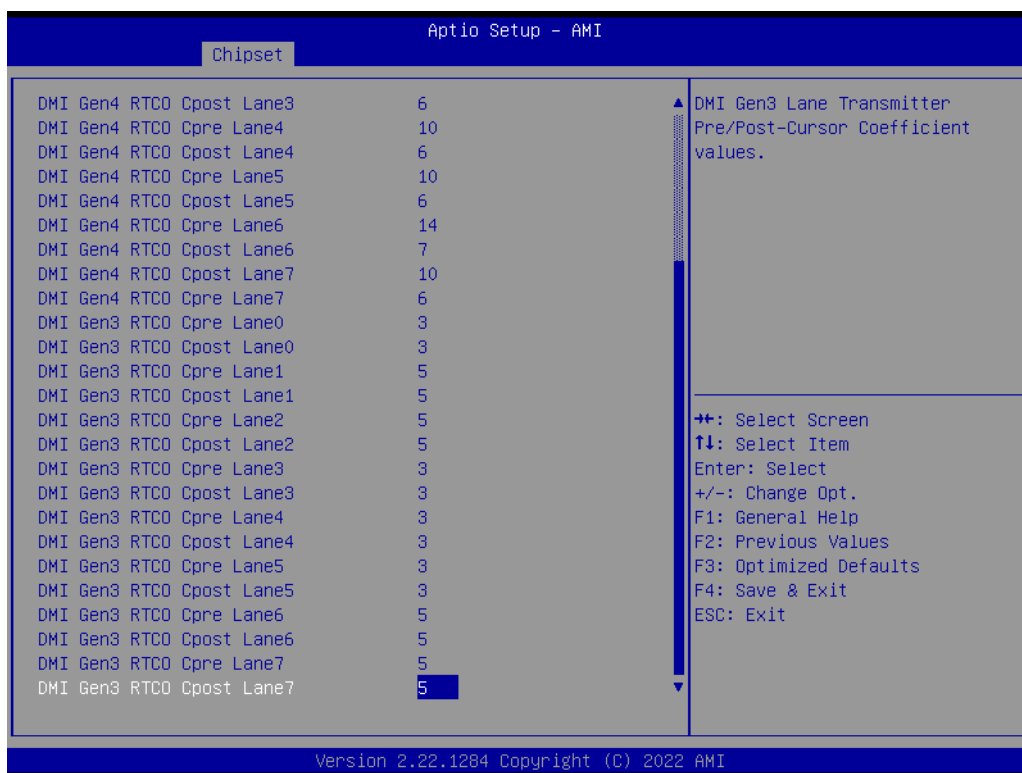
3.2.3.1.3 Graphics Configuration

■ DMI/OPI Configuration



■ DMI Advanced Menu



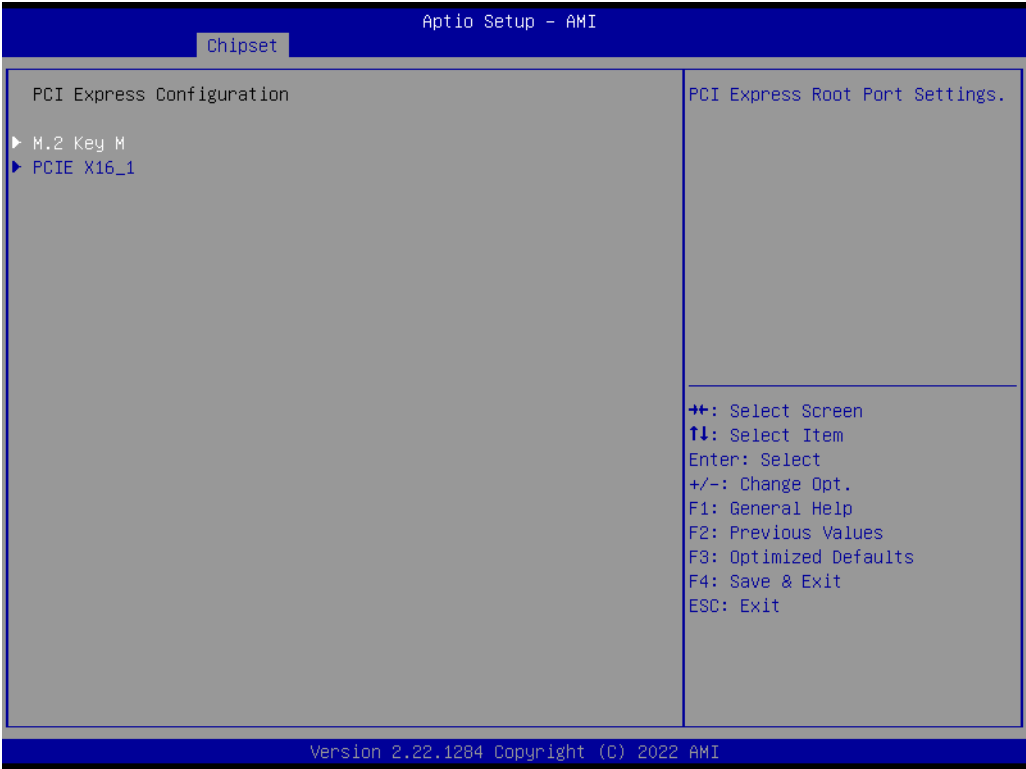


3.2.3.1.4 VMD Configuration



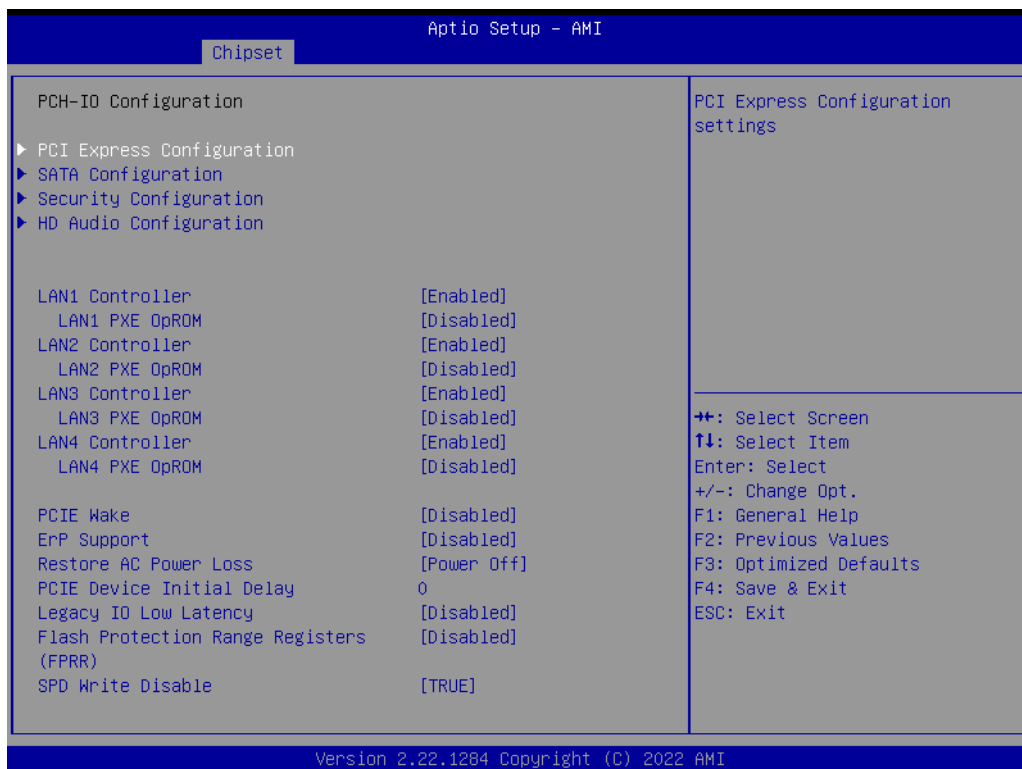
- **Enable VMD controller [Disabled]**

3.2.3.1.5 PCI Express Configuration



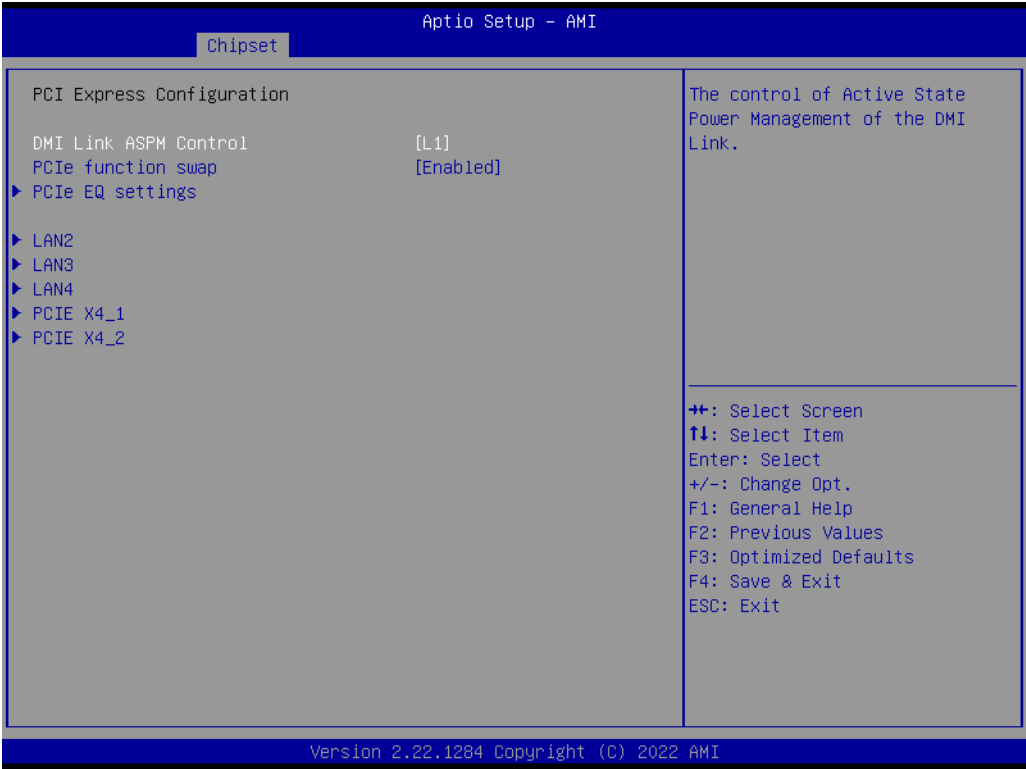
- M.2 Key M
- PCIe x16_1

3.2.3.2 Chipset Configuration Settings – PCH-IO Configuration

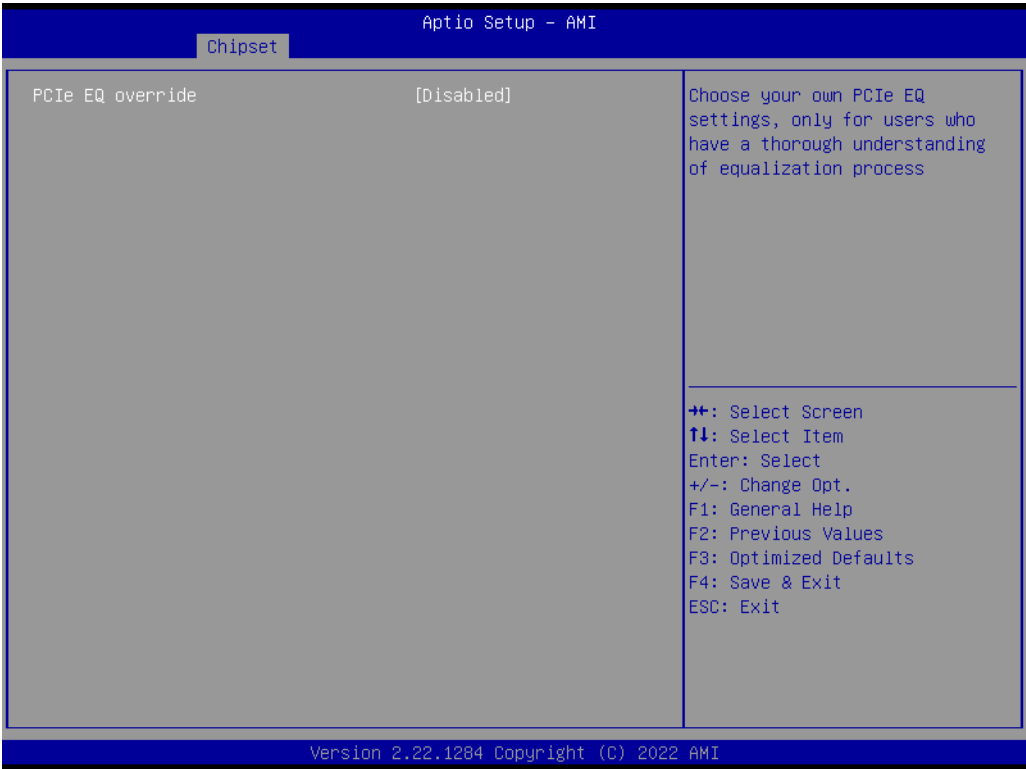


- **PCI Express Configuration**
- **SATA Configuration**
- **Security Configuration**
- **HD Audio Configuration**

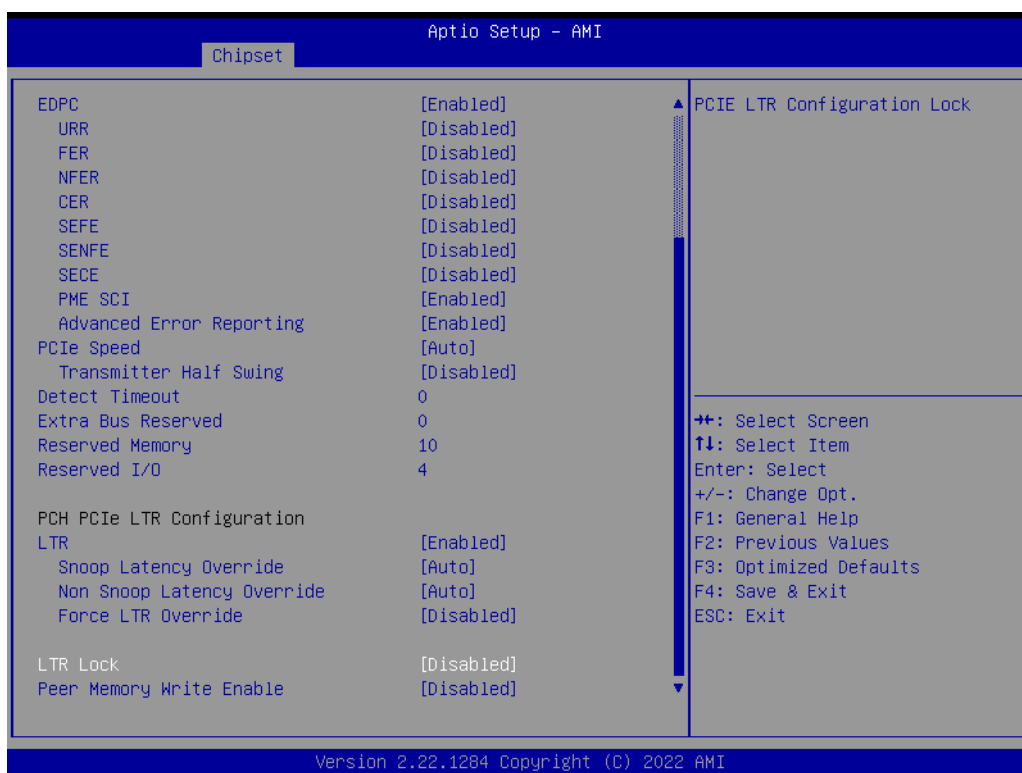
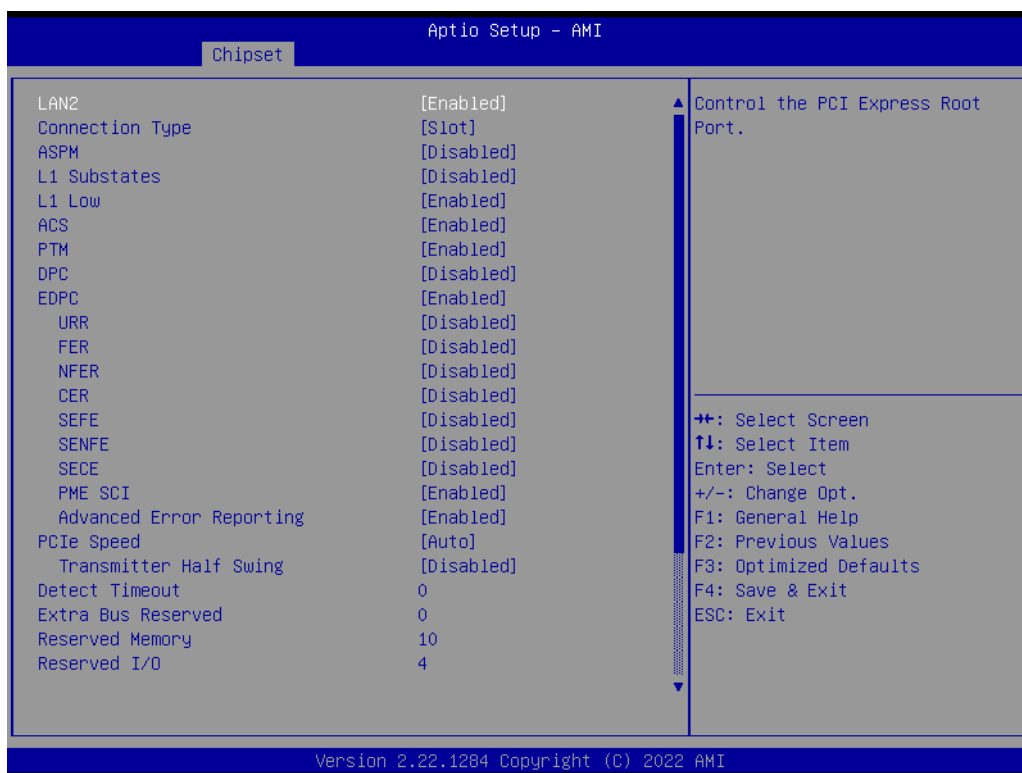
3.2.3.2.1 PCI Express Configuration



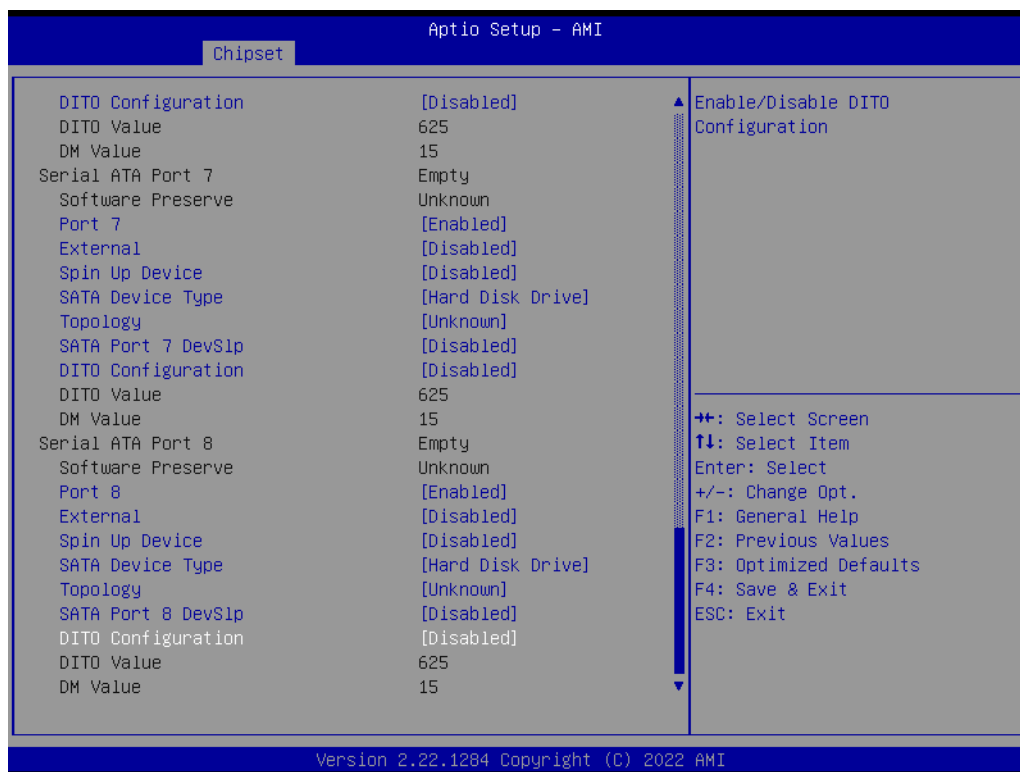
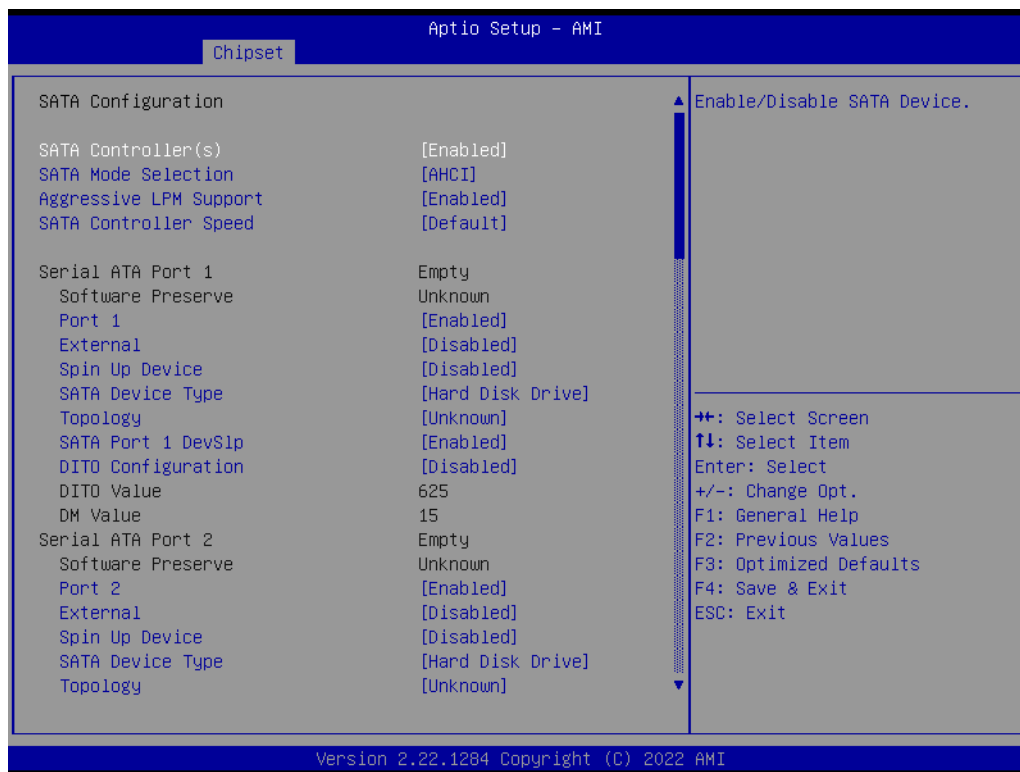
- DMI Link ASPM Control [L1]
- PCIe function swap [Enabled]
- PCIe EQ settings



- PCIe EQ override [Disabled]



3.2.3.2.2 SATA Configuration

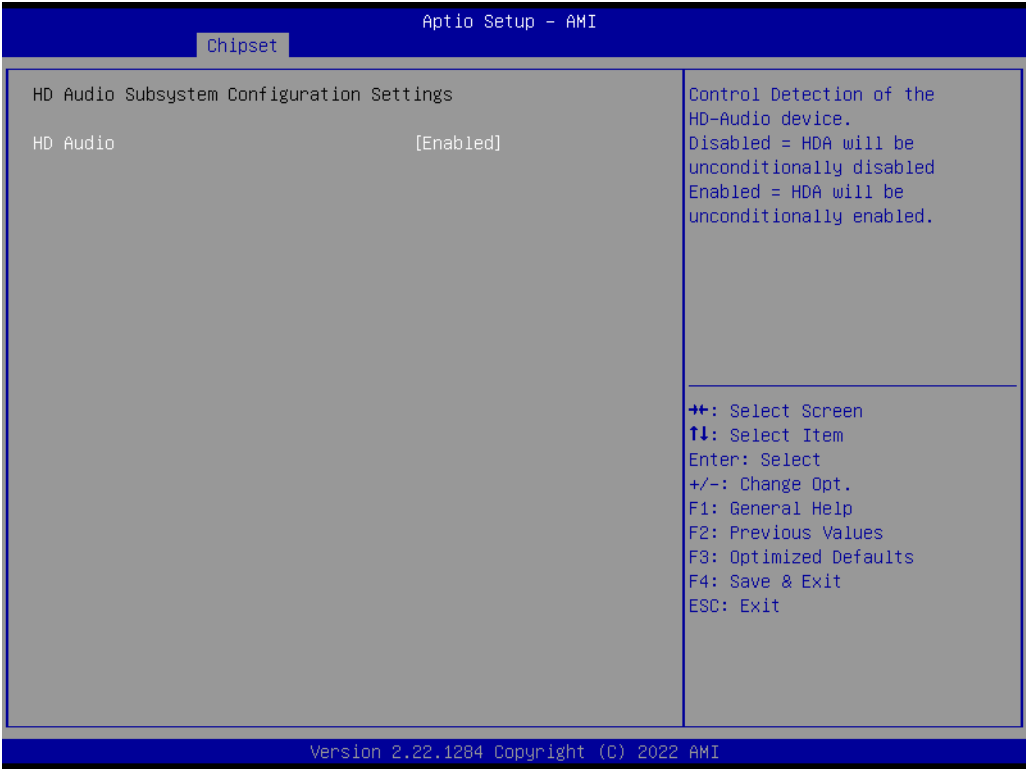


3.2.3.2.3 Security Configuration



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

3.2.3.2.4 HD Audio Subsystem Configuration Settings



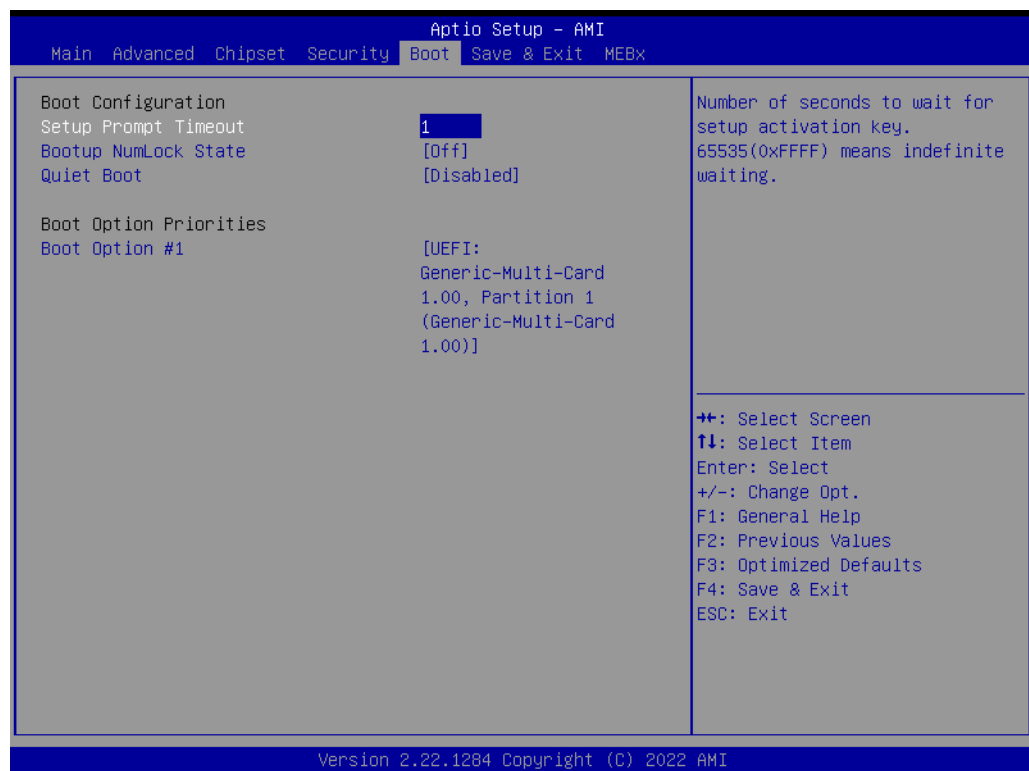
■ HD Audio [Enabled]

3.2.4 Security Settings



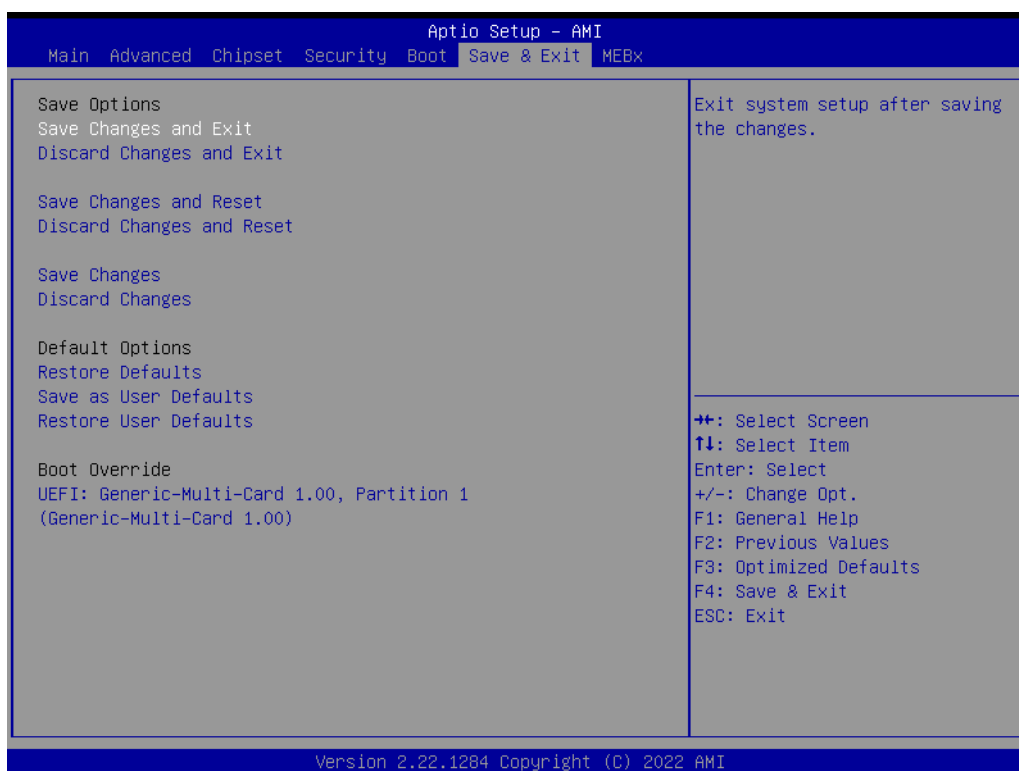
- **Administrator Password**
Select this option and press to access the sub-menu, and then type in the password. Set the Administrator password.
- **User Password**
Select this option and press to access the sub-menu, and then type in the password. Set the User Password.
- **Security Boot**

3.2.5 Boot Settings



- **Setup Prompt Timeout**
Use the and <-> keys to adjust the number of seconds to wait for the 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 devices.

3.2.6 Save & Exit Configuration



- **Save Changes and Exit**
When users have completed system configuration, select this option to save changes, exit the 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 will appear: 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 will appear: 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 the 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. Select 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, but 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 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
& Services

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. It provides the required underlying drivers and a diverse set of user-friendly, intelligent, and integrated interfaces. This speeds up 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 provides 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 with an 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



Use Intel SpeedStep® technology to reduce power consumption. The system will automatically adjust the CPU speed depending on the system loading.

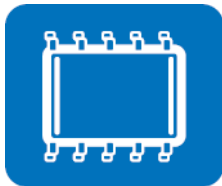
System Throttling



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 the customer's 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 that enables users to monitor system health — including voltage, fan speed, and CPU & system temperature. These items are important to a device as the emergence of critical errors can cause permanent damage.

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 2.0/3.2 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

You can find chipset drivers by visiting the Advantech website and searching for AIMB-588.

Win10 driver for AIMB-588

2023-01-11 | Driver | Document No.1-5065556948

Related Product:

AIMB-588

Solution:

Win10 driver for AIMB-588

Win10(64bit) driver for AIMB-588

AIMB-588_Graphic_Win10(64bit) 2023-01-10	Download
AIMB-588_LAN_Win10(64bit) 2023-01-10	Download
AIMB-588_ME_Win10(64bit) 2023-01-10	Download
AIMB-588_Audio_Win10(64bit) 2023-01-10	Download
AIMB-588_Intel_RAID_RST_Win10(64bit) 2023-01-10	Download
AIMB-588_Chipset_Win10(64bit) 2023-01-10	Download
AIMB-588_Other_Win10(64bit) 2023-01-10	Download

Chapter 6

LAN Configuration

6.1 Introduction

The Advantech AIMB-588 B1 provides 1 x Gigabit Ethernet LAN and 3 x 2.5 Gigabit Ethernet LAN via dedicated PCI Express x1 lanes, offering 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

You can find LAN drivers by visiting the Advantech website and searching for AIMB-588.

Win10 driver for AIMB-588

2023-01-11 | Driver | Document No.1-5065556948

Related Product:
AIMB-588

Solution:

The screenshot displays a webpage titled "Win10 driver for AIMB-588". Below the title, it lists several drivers for Win10(64bit) for the AIMB-588. The "AIMB-588_LAN_Win10(64bit)" driver is highlighted with a red rectangular box. Each driver entry includes the driver name, the date "2023-01-10", and a "Download" button.

Driver Name	Date	Action
AIMB-588_Graphic_Win10(64bit)	2023-01-10	Download
AIMB-588_LAN_Win10(64bit)	2023-01-10	Download
AIMB-588_ME_Win10(64bit)	2023-01-10	Download
AIMB-588_Audio_Win10(64bit)	2023-01-10	Download
AIMB-588_Intel_RAID_RST_Win10(64bit)	2023-01-10	Download
AIMB-588_Chipset_Win10(64bit)	2023-01-10	Download
AIMB-588_Other_Win10(64bit)	2023-01-10	Download

Appendix **A**

Pin Assignments

A.1 Flash Descriptor Security Override Jumper (ME1)

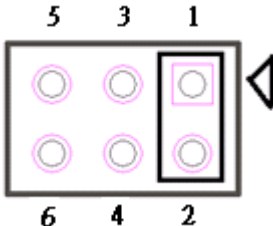
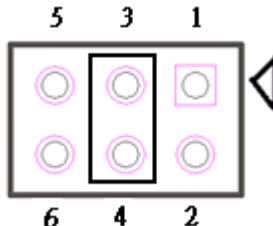
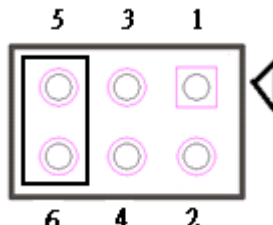
Function	Jumper Setting
	1 2 3
Disable Flash Descriptor Security (Default)	
Enable Security Measures Defined in the Flash Descriptor.	

A.2 CMOS Clear Jumper (JCMOS1)

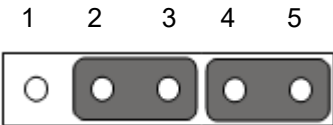
Function	Jumper Setting
	1 2 3
Keep COMS Data (Default)	
Clear CMOS Date	

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	

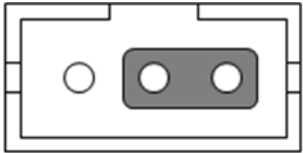
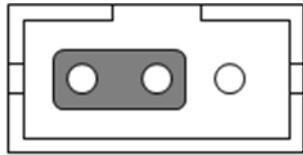
A.4 Watchdog Timer Output and OBS Beep (JOBS1+JWDT1)

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

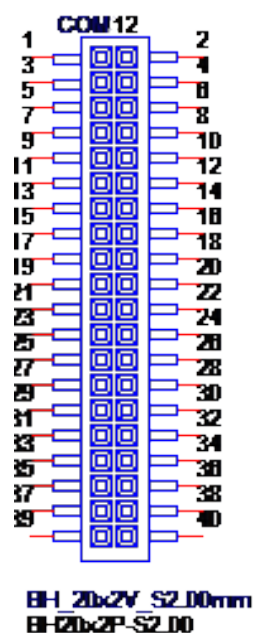
A.5 Power Switch / HDD LED / SMBUS / Speaker Pin Header (JFP1)

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

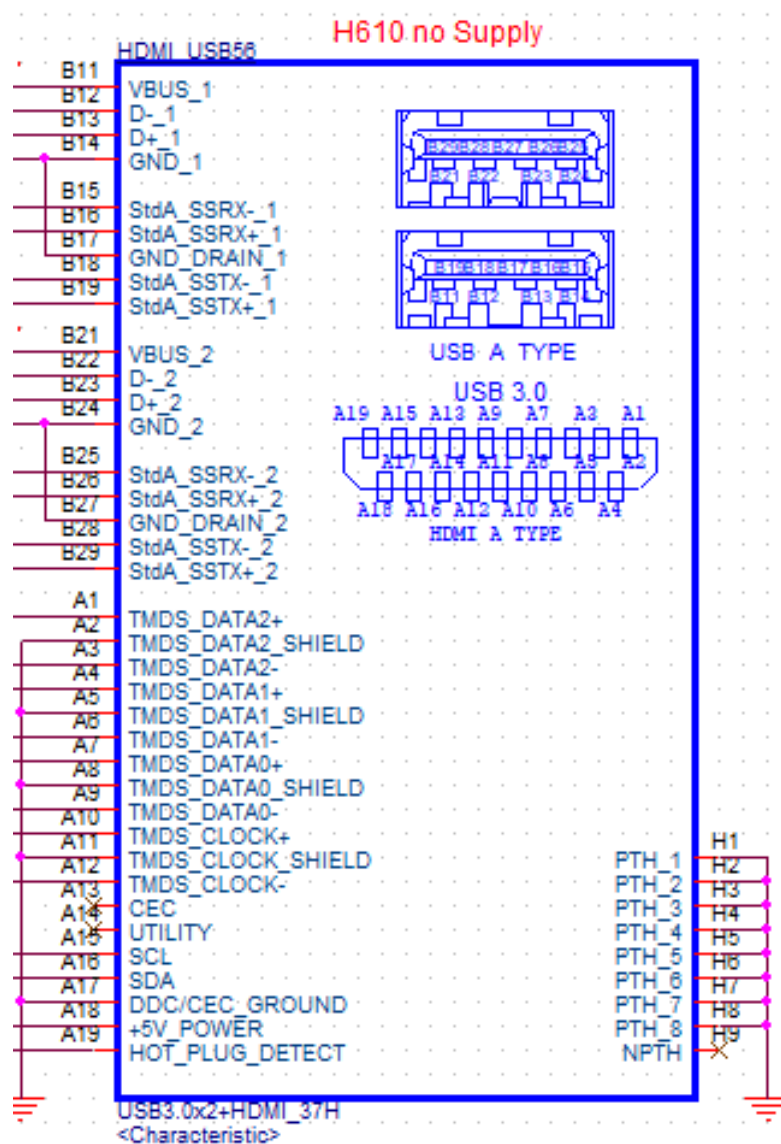
Pin	Signal	Pin	Signal
1	COM3_DCD#	2	COM3_DSR#
3	COM3_SIN	4	COM3_RTS#
5	COM3_SOUT	6	COM3_CTS#
7	COM3_DTR#	8	COM3_RI_V#
9	GND	10	GND
11	COM4_DCD#	12	COM4_DSR#
13	COM4_SIN	14	COM4_RTS#
15	COM4_SOUT	16	COM4_CTS#
17	COM4_DTR#	18	COM4_RI#
19	GND	20	GND
21	COM5_DCD#	22	COM5_DSR#
23	COM5_SIN	24	COM5_RTS#
25	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)



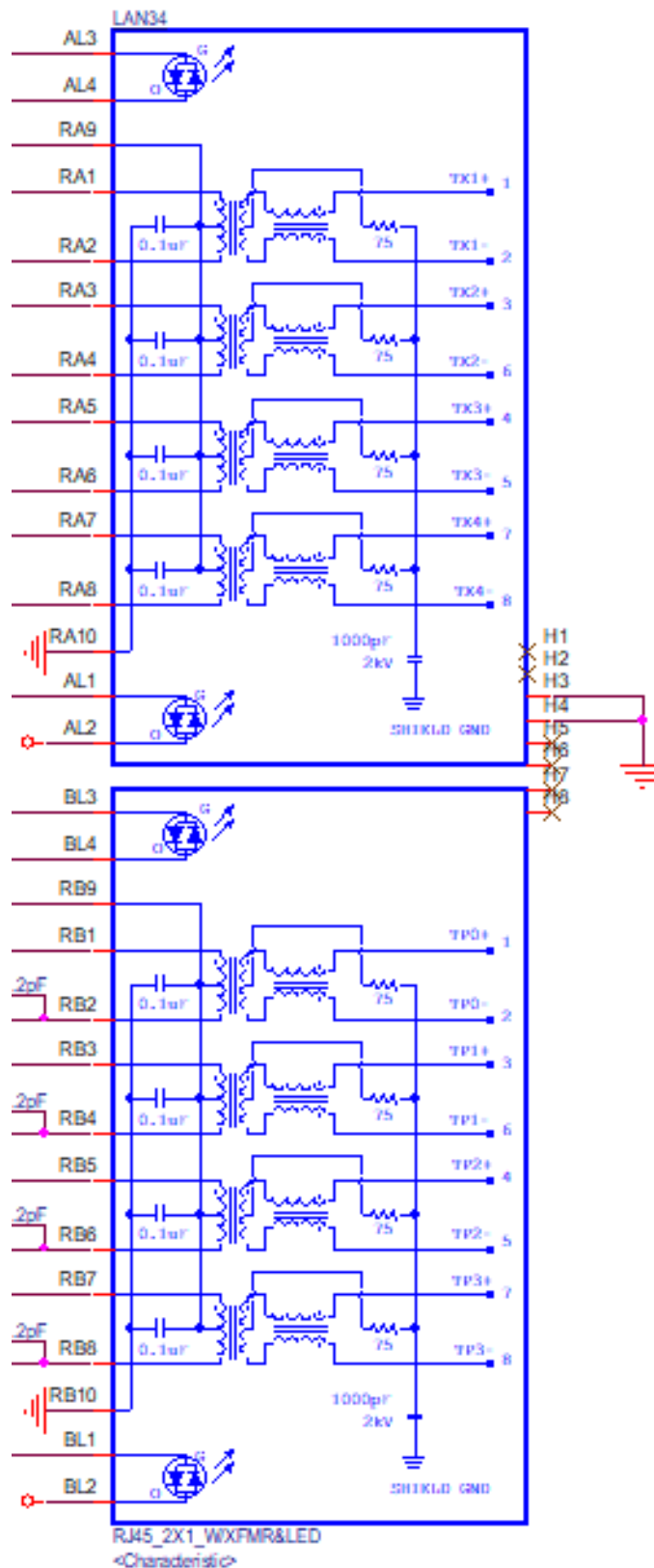
Pin	Signal Pin Definition
1	CASEOP
2	GND

A.9 USB Ports (HDMI_USB56/LAN34/USB1011213/LAN1_USB12/LAN2_USB3/USB4/USB89/USB7)

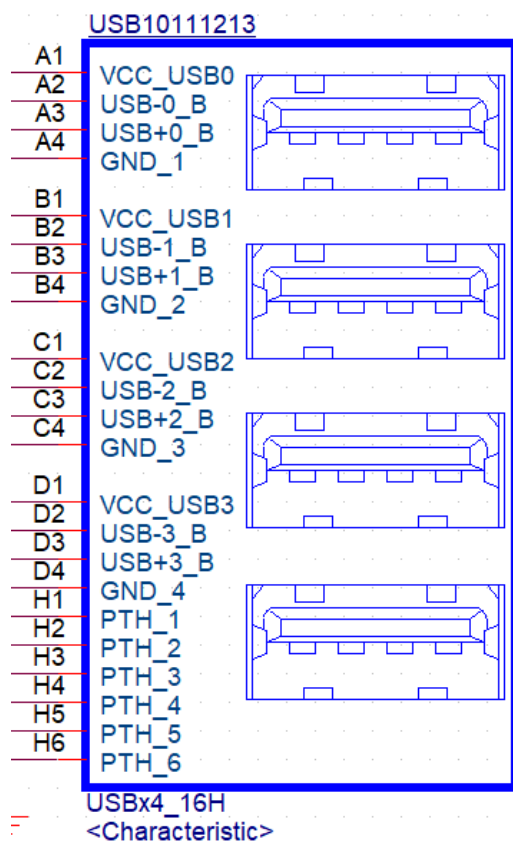


Pin	Signal	Pin	Signal
A1	HDMI1_z_D2+	B11	+USBV0910
A2	GND	B12	USB2_D3-
A3	HDMI1_z_D2-	B13	USB2_D3+
A4	HDMI1_z_D1+	B14	GND
A5	GND	B15	USB31_P9_z_RX-
A6	HDMI1_z_D1-	B16	USB31_P9_z_RX+
A7	HDMI1_z_D0+	B17	GND
A8	GND	B18	USB31_P9_z_TX-
A9	HDMI1_z_D0-	B19	USB31_P9_z_TX+
A10	HDMI1_z_CLK+	B20	X
A11	GND	B21	+USBV0910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

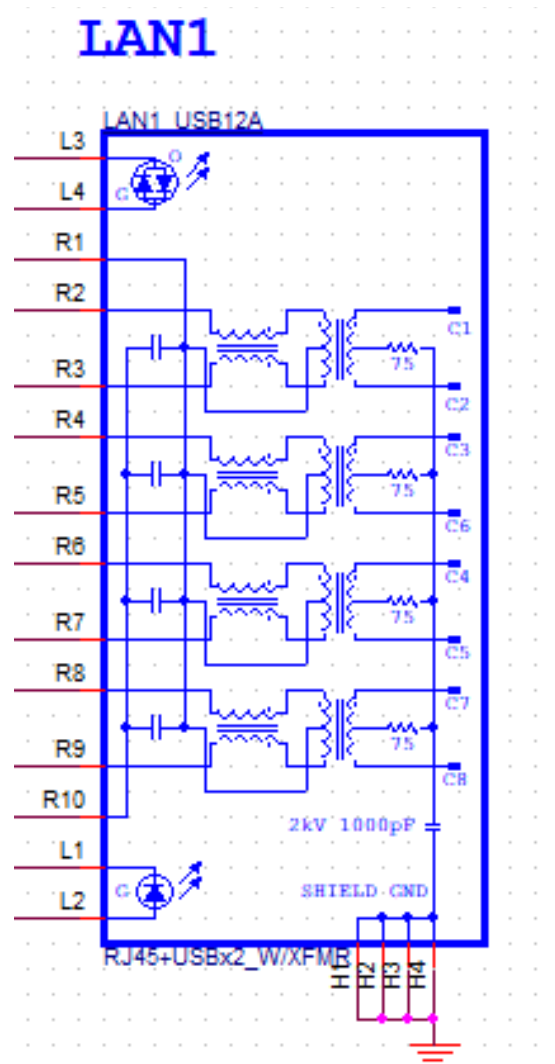
A14	X	B24	GND
A15	HDMI1_SCL	B25	USB31_P10_z_RX-
A16	HDMI1_SDA	B26	USB31_P10_z_RX+
A17	GND	B27	GND
A18	+V5_HDMI1	B28	USB31_P10_z_TX-
A19	HDMI1_HPD	B29	USB31_P10_z_TX+



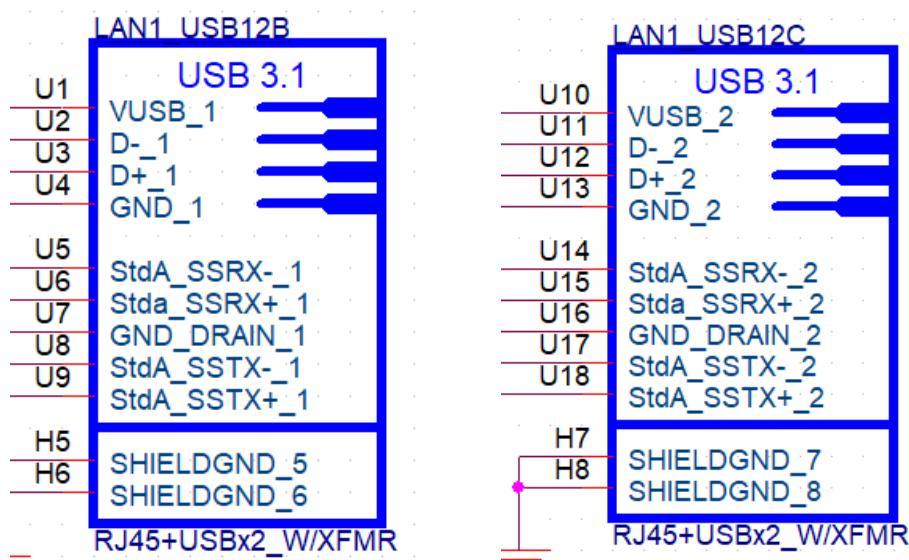
Pin	Signal	Pin	Signal
AL3	LAN4_LED2_R_1G#	BL3	LAN3_LED2_R_1G#
AL4	LAN4_LED0_R_100M#	BL4	LAN3_LED0_R_100M#
RA9	GND	RB9	GND
RA1	MDI_LAN4_P0	RB1	MDI_LAN3_P0
RA2	MDI_LAN4_N0	RB2	MDI_LAN3_N0
RA3	MDI_LAN4_P1	RB3	MDI_LAN3_P1
RA4	MDI_LAN4_N1	RB4	MDI_LAN3_N1
RA5	MDI_LAN4_P2	RB5	MDI_LAN3_P2
RA6	MDI_LAN4_N2	RB6	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



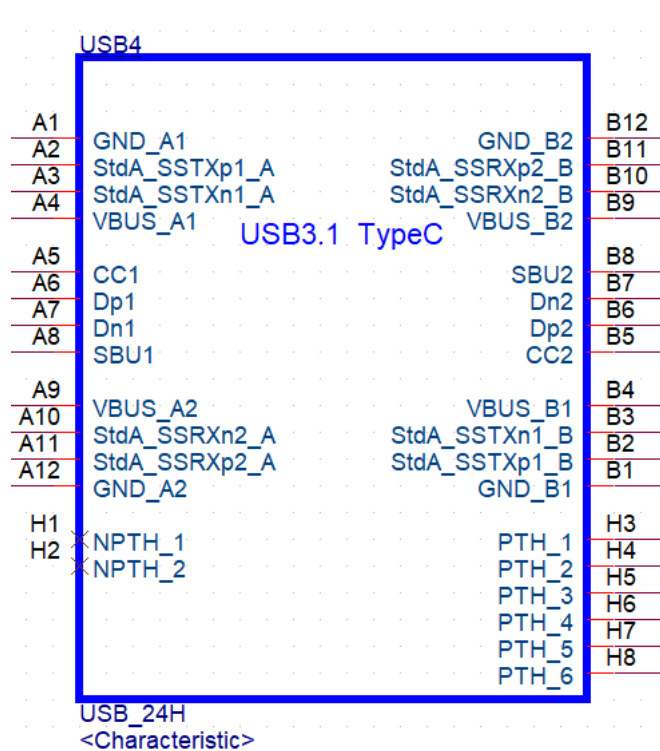
Pin	Signal
A1	+USB2V1234
A2	USB2_D8-
A3	USB2_D8+
A4	GND
B1	+USB2V1234
B2	USB2_D7-
B3	USB2_D7+
B4	GND
C1	+USB2V1234
C2	USB2_D6-
C3	USB2_D6+
C4	GND
D1	+USB2V1234
D2	USB2_D5-
D3	USB2_D5+
D4	GND
H1/H2/H3/H4/H5/H6	GND



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

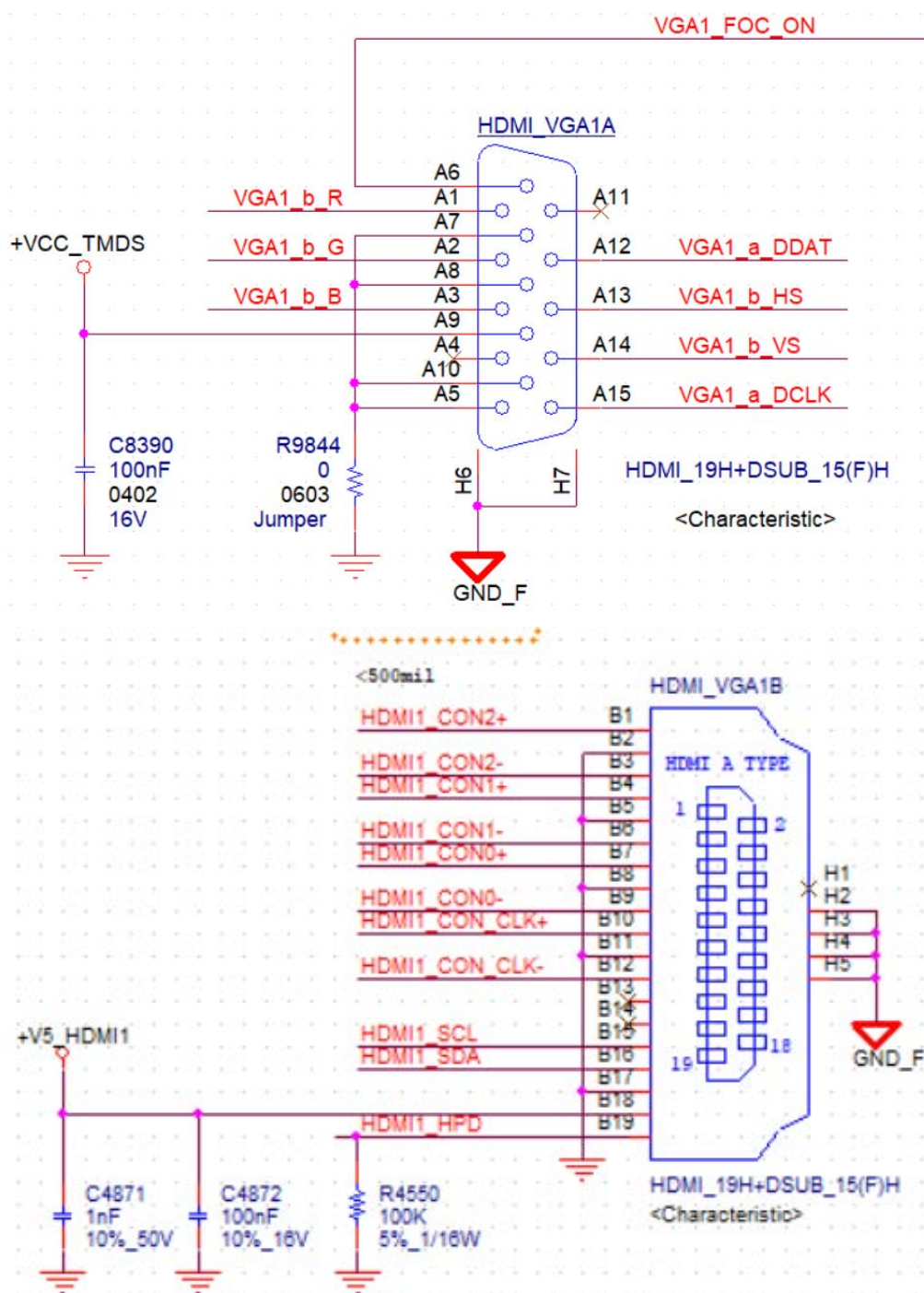


Pin	Signal	Pin	Signal
U1	+USBV12	U10	+USBV12
U2	USB2_D1-	U11	USB2_D2-
U3	USB2_D1+	U12	USB2_D2+
U4	GND	U13	GND
U5	USB31_P1_z_RX-	U14	USB31_P2_z_RX-
U6	USB31_P1_z_RX+	U15	USB31_P2_z_RX+
U7	GND	U16	GND
U8	USB31_P1_z_TX-	U17	USB31_P2_z_TX-
U9	USB31_P1_z_TX+	U18	USB31_P2_z_TX+
H5/H6	GND	H7/H8	GND



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

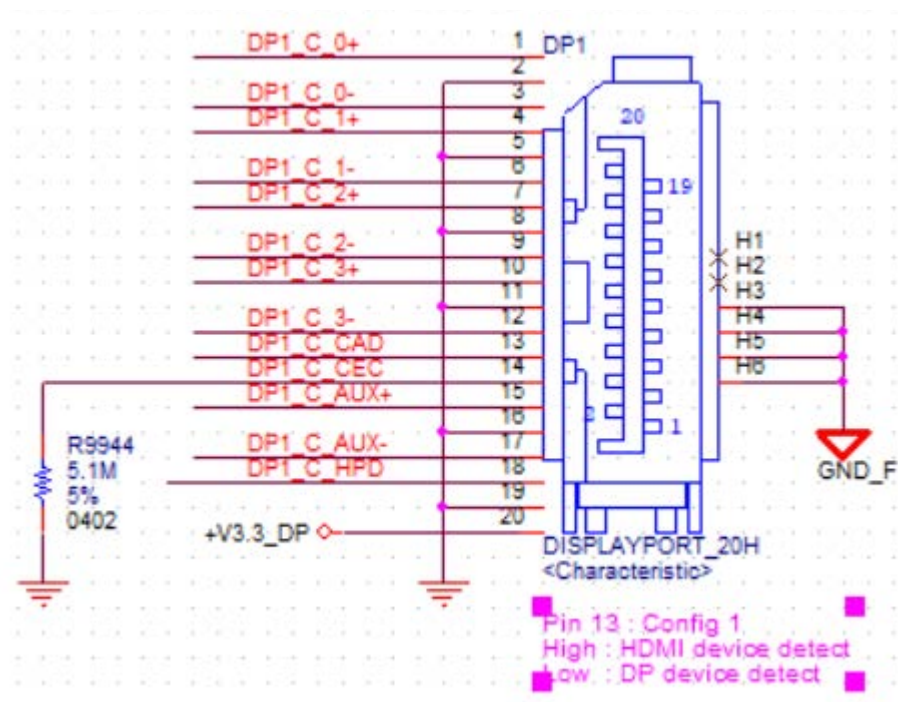
A.10 HDMI+VGA (HDMI_VGA1)



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

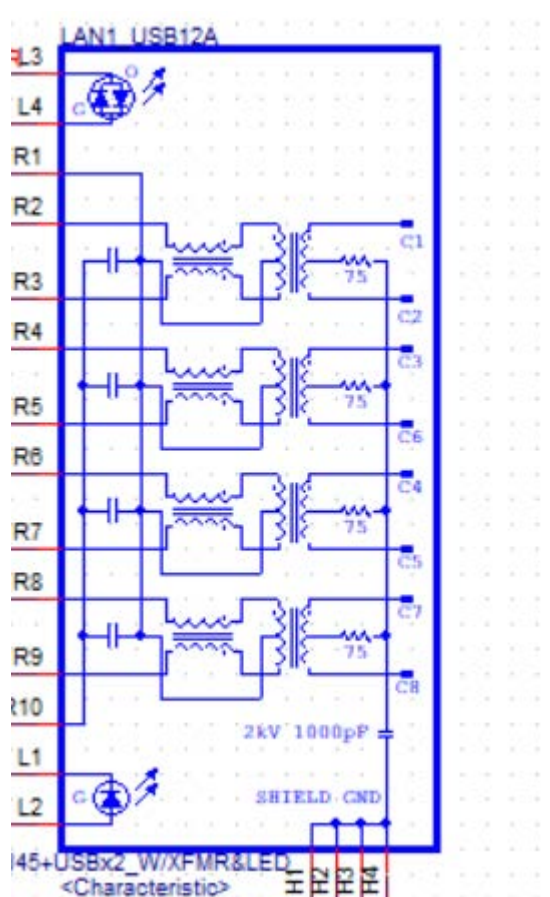
A.11 DisplayPort (DP1)



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

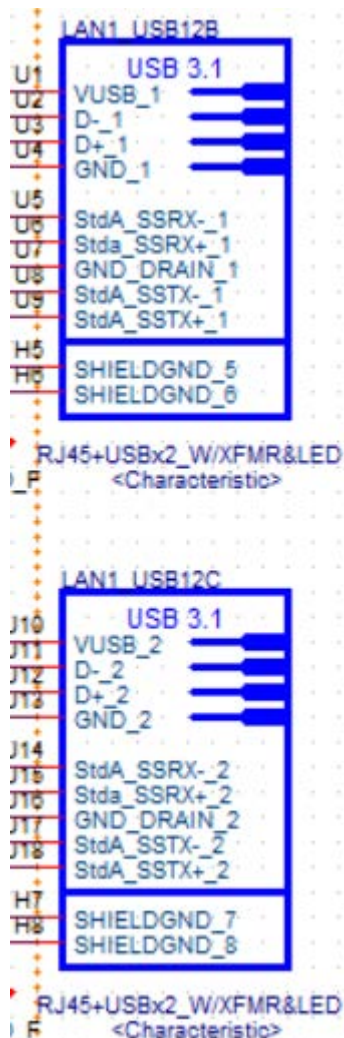
P14	DP1_C_CEC
P15	DP1_C_AUX+
P16	GND
P17	DP1_C_AUX-
P18	DP1_C_HPD
P19	GND
P20	+V3.3_DP

A.12 RJ-45 (1 Port) + USB 3 (2 Ports) (LAN1_USB12, LAN2_USB34, LAN3_USB56, LAN4_USB78)

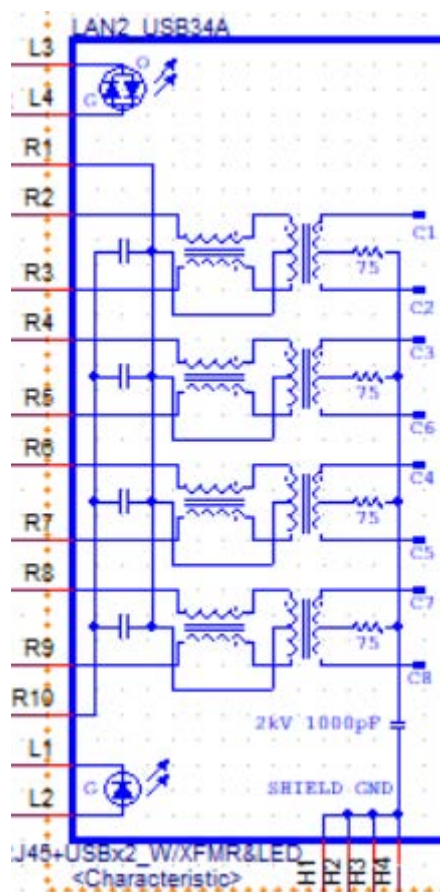


Pin	Signal
L3	LAN1_LED0_2.5G#_R
L4	LAN1_LED1_1G#_R
R1	GND
R2	LAN1_MDIO+
R3	LAN1_MDIO-
R4	LAN1_MDII+
R5	LAN1_MDII-
R6	LAN1_MDI2+
R7	LAN1_MDI2-
R8	LAN1_MDI3+
R9	LAN1_MDI3-

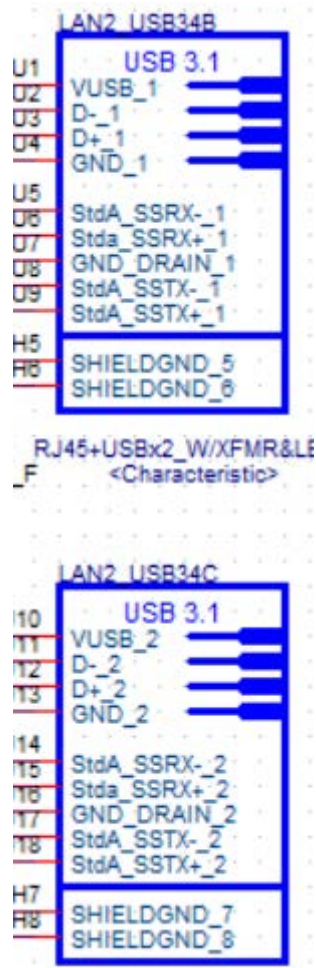
R10	GND
L1	LAN1_LED0_ACT#_R
L2	+V3.3LAN1



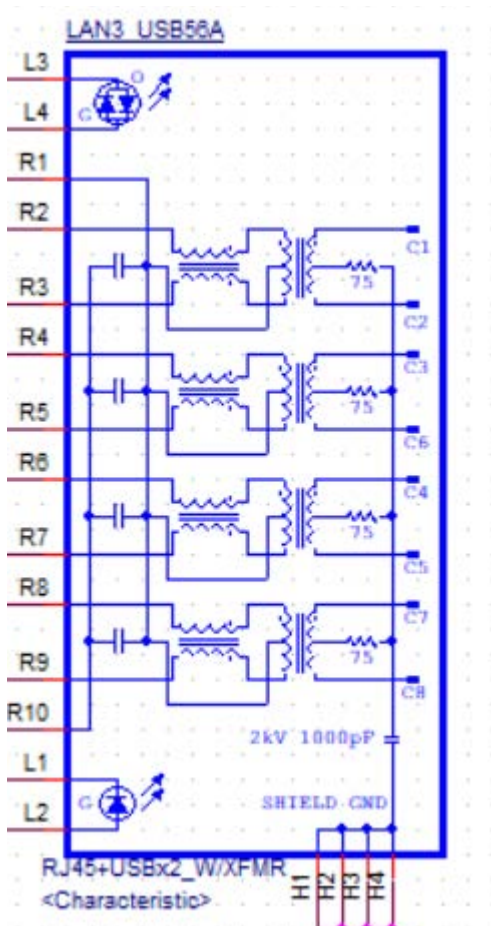
Pin	Signal	Pin	Signal
U1	+V5_USB3C1	U10	+V5_USB3C1
U2	USB2_0-	U11	USB2_1-
U3	USB2_0+	U12	USB2_1+
U4	GND	U13	GND
U5	USB3_RX0-	U14	USB3_RX1-
U6	USB3_RX0+	U15	USB3_RX1+
U7	GND	U16	GND
U8	USB3_TX0-	U17	USB3_TX1-
U9	USB3_TX0+	U18	USB3_TX1+
H5/H6	GND	H7/H8	GND



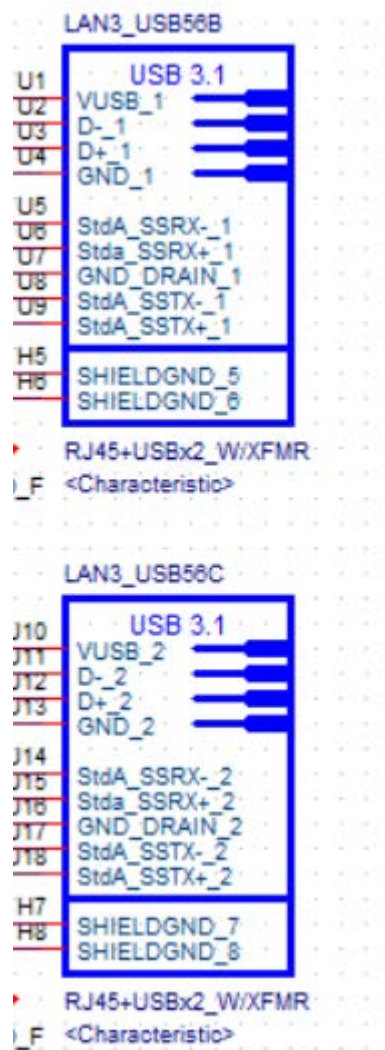
Pin	Signal
L3	LAN2_LED0_2.5G#_R
L4	LAN2_LED1_1G#_R
R1	GND
R2	LAN2_MD10+
R3	LAN2_MD10-
R4	LAN2_MD11+
R5	LAN2_MD11-
R6	LAN2_MD12+
R7	LAN2_MD12-
R8	LAN2_MD13+
R9	LAN2_MD13-
R10	GND
L1	LAN2_LED0_ACT#_R
L2	+V3.3LAN2



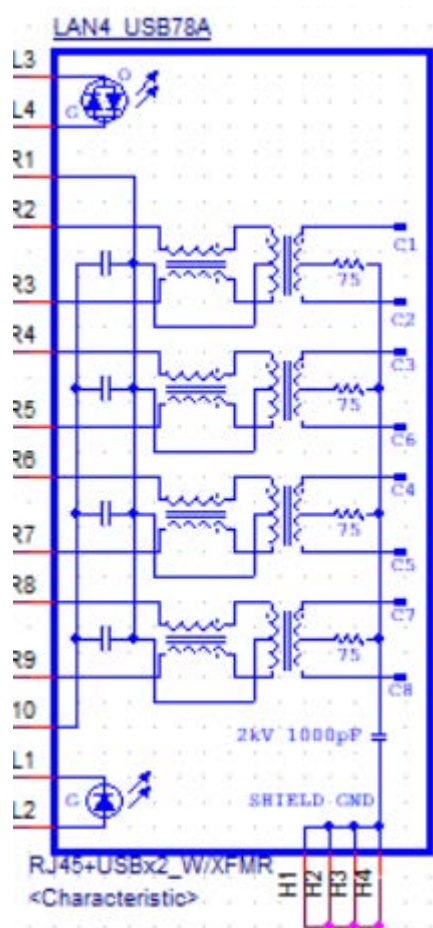
Pin	Signal	Pin	Signal
U1	+V5_USB3C2	U10	+V5_USB3C2
U2	USB2_2-	U11	USB2_3-
U3	USB2_2+	U12	USB2_3+
U4	GND	U13	GND
U5	USB3_RX2-	U14	USB3_RX3-
U6	USB3_RX2+	U15	USB3_RX3+
U7	GND	U16	GND
U8	USB3_TX2-	U17	USB3_TX3-
U9	USB3_TX2+	U18	USB3_TX3+
H5/H6	GND	H7/H8	GND



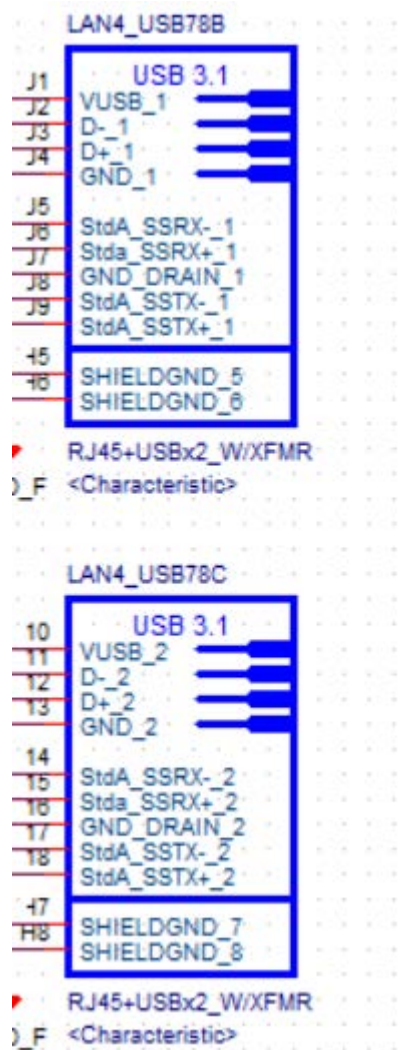
Pin	Signal
L3	LAN3_LED1_1G#_R
L4	LAN3_LED2_100M#_R
R1	GND
R2	LAN3_MDI0+
R3	LAN3_MDI0-
R4	LAN3_MDI1+
R5	LAN3_MDI1-
R6	LAN3_MDI2+
R7	LAN3_MDI2-
R8	LAN3_MDI3+
R9	LAN3_MDI3-
R10	GND
L1	LAN3_LED0_ACT#_R
L2	+V3.3LAN3



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

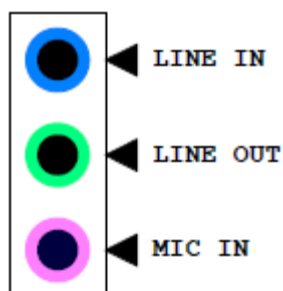


Pin	Signal
L3	LAN4_LED1_1G#_R
L4	LAN4_LED2_100M#_R
R1	GND
R2	LAN4_MDIO+
R3	LAN4_MDIO-
R4	LAN4_MDII+
R5	LAN4_MDII-
R6	LAN4_MDI2+
R7	LAN4_MDI2-
R8	LAN4_MDI3+
R9	LAN4_MDI3-
R10	GND
L1	LAN4_LED0_ACT#_R
L2	+V3.3LAN4



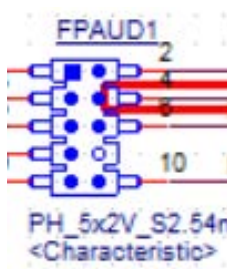
Pin	Signal	Pin	Signal
U1	+V5_USB3C4	U10	+V5_USB3C4
U2	USB2_FCH_C_2-	U11	USB2_FCH_C_3-
U3	USB2_FCH_C_2+	U12	USB2_FCH_C_3+
U4	GND	U13	GND
U5	USB3_FCH_C_RX2-	U14	USB3_FCH_C_RX3-
U6	USB3_FCH_C_RX2+	U15	USB3_FCH_C_RX3+
U7	GND	U16	GND
U8	USB3_FCH_C_TX2-	U17	USB3_FCH_C_TX3-
U9	USB3_FCH_C_TX2+	U18	USB3_FCH_C_TX3+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

A.13 Audio Jack (AUDIO1)



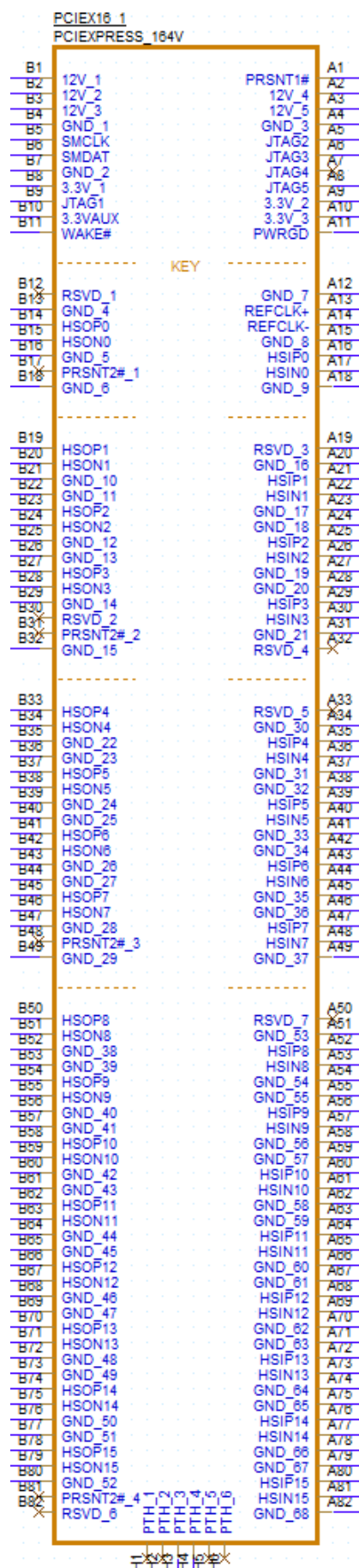
Pin	Signal
1	MIC IN
2	LINE OUT
3	LINE IN

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

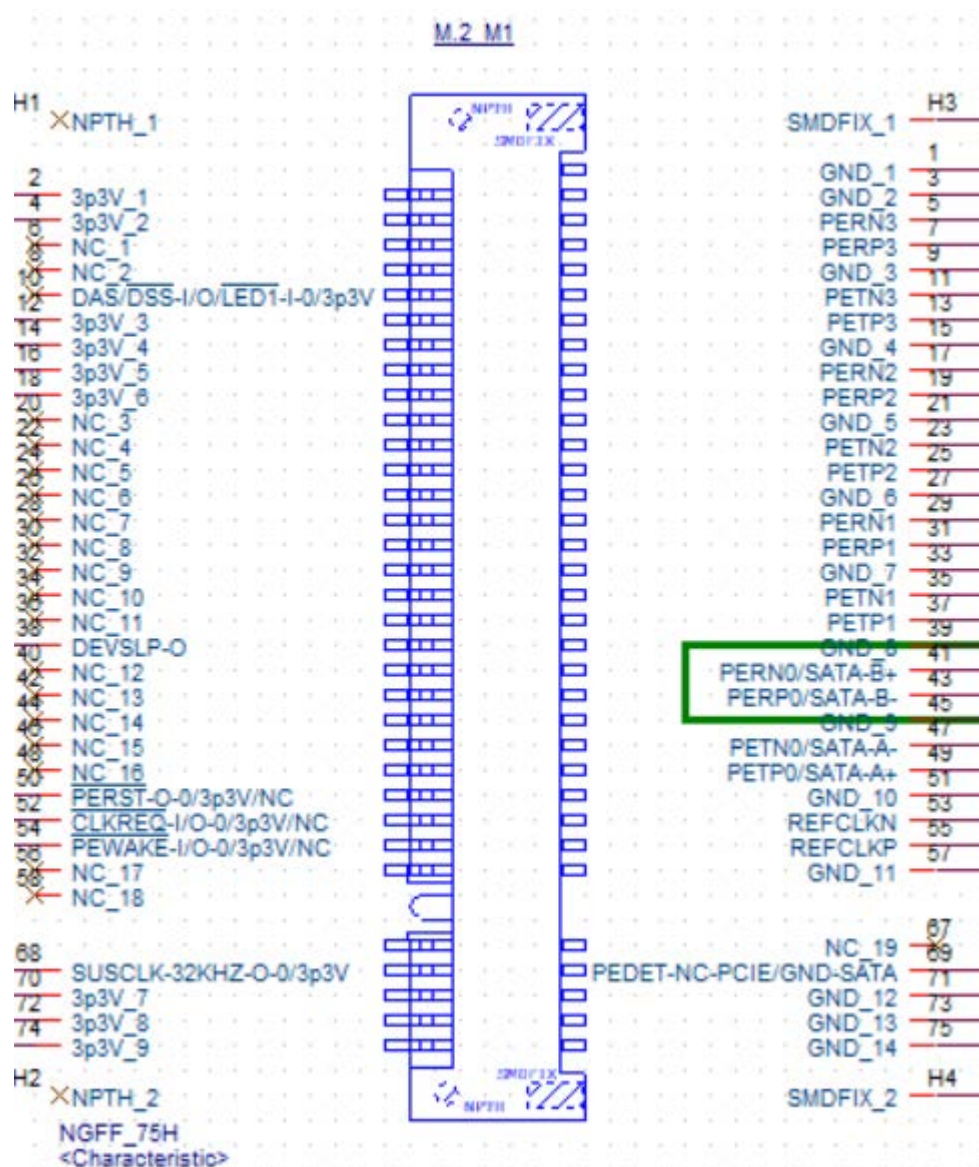
A.15 PCI Express x16 Slot (PCIEX16_1)



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

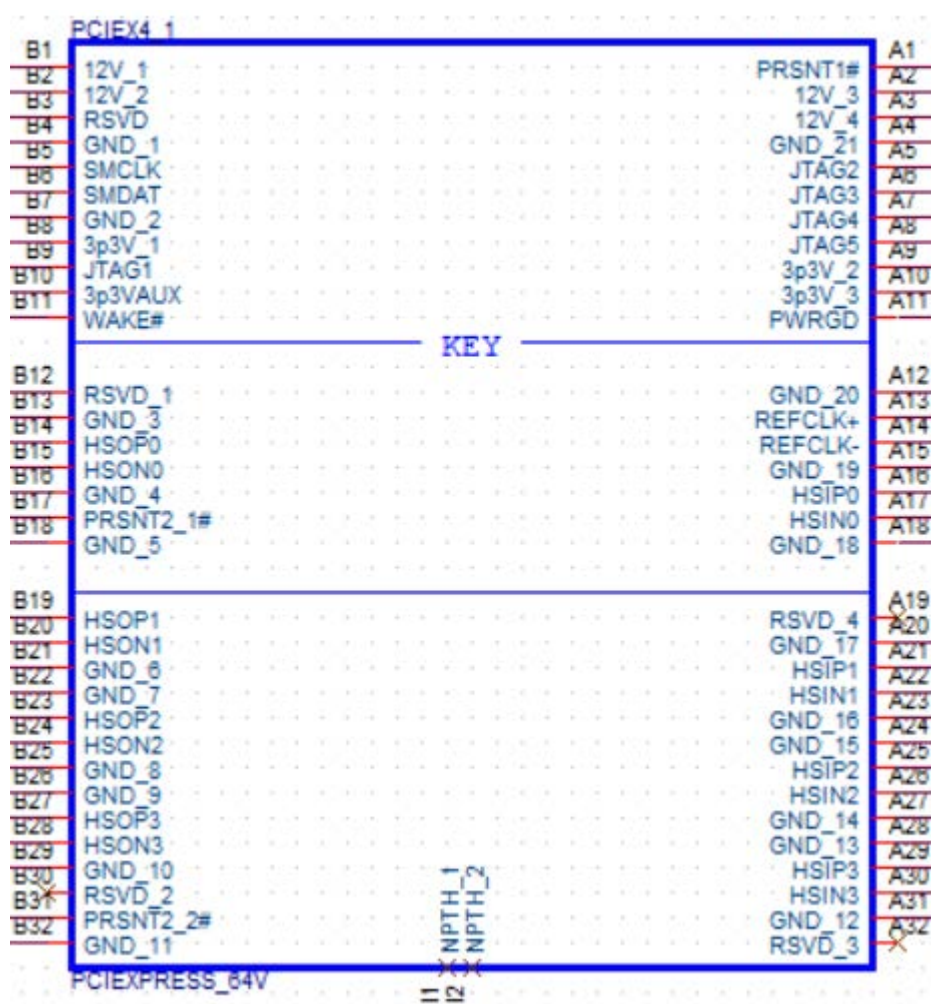
A.16 NGFF M.2 M-Key Connector for 2280 Module (M.2_M1)



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-O/3p3V
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

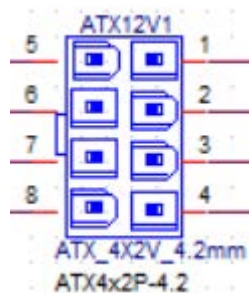
A.17 PCI Express Slot (PCIEX4_1, PCIEX4_2)



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

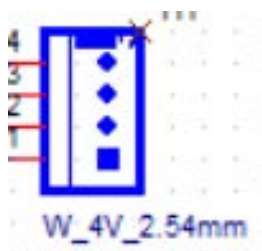
B19	HSOP1	A19	RSVD_3
B20	HSOP1	A20	GND_24
B21	GND_6	A21	HSIP1
B22	GND_7	A22	HSIN1
B23	HSOP2	A23	GND_25
B24	HSOP2	A24	GND_26
B25	GND_8	A25	HSIP2
B26	GND_9	A26	HSIN2
B27	HSOP3	A27	GND_27
B28	HSOP3	A28	GND_28
B29	GND_10	A29	HSIP3
B30	RSVD_2	A30	HSIN3
B31	PRSENT2_2	A31	GND_29
B32	GND_11	A32	RSVD_4

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



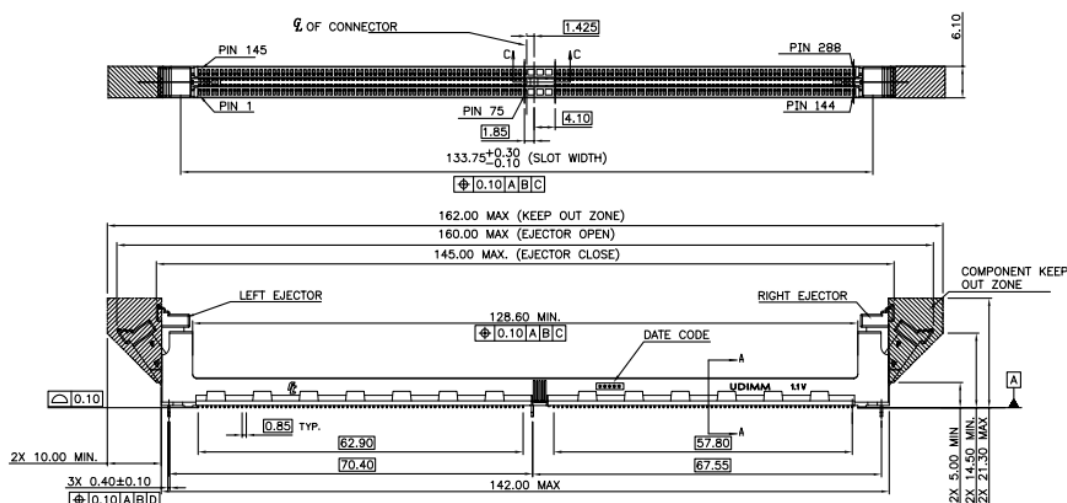
Pin	Signal
1	GND
2	GND
3	GND
4	GND
5	+12V
6	+12V
7	+12V
8	+12V

A.19 System FAN (SYSFAN1~4)

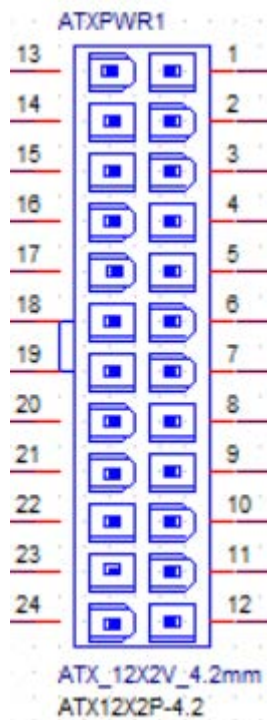


Pin	Signal
1	GND
2	SYSTEM FAN VCC
3	SYSTEM FAN SPEED
4	SYSTEM FAN PWM

A.20 DDR5 UDIMM Socket (DIMMA1, DIMMA2, DIMMB1, DIMMB2)

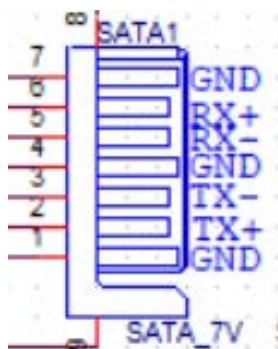


A.21 ATX 12/5V/3V/5VSBV Power Supply Connector (ATXPWR1)



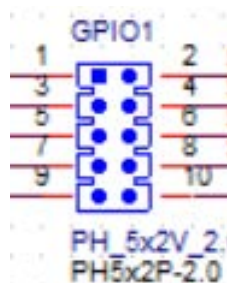
Pin	Signal	Pin	Signal
1	+3.3V_1	13	+3.3V_4
2	+3.3V_2	14	-12V
3	GND	15	GND
4	+5V_1	16	PS_ON#
5	GND	17	GND
6	+5V_2	18	GND
7	COM_3	19	GND
8	PWR_OK	20	NC
9	+5VSB	21	+5V_3
10	+12V1_1	22	+5V_4
11	+12V1_2	23	+5V_5
12	+3.3V_3	24	GND

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



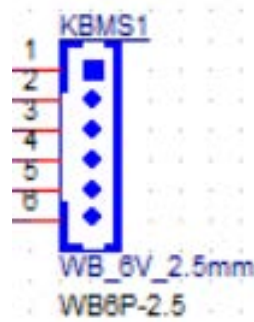
Pin	Signal
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

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



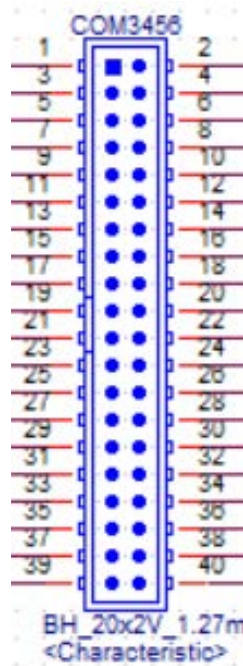
Pin	Signal	Pin	Signal
1	GPIO0	2	GPIO4
3	GPIO1	4	GPIO5
5	GPIO2	6	GPIO6
7	GPIO3	8	GPIO7
9	+V5A_GPIO	10	GND

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#

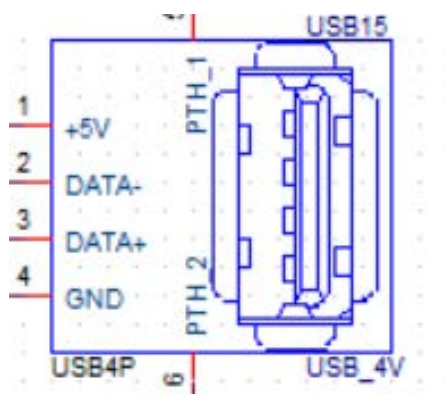
A.25 COM3,4,5,6 Box Header (COM3456)



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]

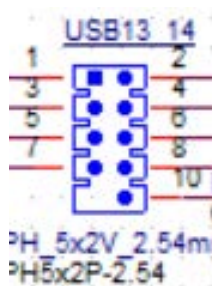
13	RXD [4]	14	RST# [4]
15	TXD [4]	16	CTS# [4]
17	DTR# [4]	18	RI# [4]
19	GND	20	GND
21	DCD# [5]	22	DSR# [5]
23	RXD [5]	24	RST# [5]
25	TXD [5]	26	CTS# [5]
27	DTR# [5]	28	RI# [5]
29	GND	30	GND
31	DCD# [6]	32	DSR# [6]
33	RXD [6]	34	RST# [6]
35	TXD [6]	36	CTS# [6]
37	DTR# [6]	38	RI# [6]
39	GND	40	GND

A.26 Vertical USB 2 Connector (USB15)



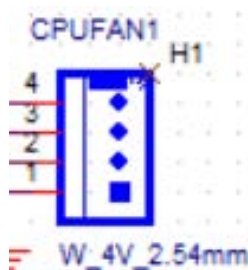
Pin	Signal
1	+V5_USB2C2
2	R_USB2_FCH_10-
3	R_USB2_FCH_10+
4	GND
5	GND
6	GND

A.27 USB 2-Pin Header (2 Ports) (USB13_14)



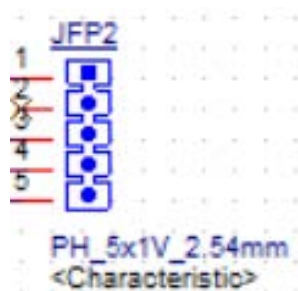
Pin	Signal	Pin	Signal
1	+V5_USB2C1	2	+V5_USB2C1
3	R_USB2_FCH_4-	4	R_USB2_FCH_5-
5	R_USB2_FCH_4+	6	R_USB2_FCH_5+
7	GND	8	GND
		10	NA

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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