

User Manual

ASMB-927 Series

Dual LGA4677 4th Gen Intel[®] Xeon[®] Scalable EATX Server Board with 16 DDR5, 4 PCIe x16, 9 SATA 3.0, 6 USB 3.2 (Gen1), Dual 10GbE, and IPMI



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Each and every Advantech product is built to the most exacting specifications to ensure reliable performance in the harsh and demanding conditions typical of industrial environments. Whether your new Advantech equipment is destined for the laboratory or the factory floor, you can be assured that your product will provide the reliability and ease of operation for which the name Advantech has come to be known. Your satisfaction is our primary concern. Here is a guide to Advantech's customer services. To ensure you get the full benefit of our services, please follow the instructions below carefully.

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FCC Class A

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

Initial Inspection

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

- 1 x ASMB-927 Startup Manual
- 1 x SATA data cable
- 1 x SATA power cable
- 2 x CPU power cables (8P)
- 2 x CPU carriers
- 1 x I/O port bracket
- 1 x M.2 screw

If any of these items are missing or damaged, contact distributor or sales representative immediately. We have carefully inspected the ASMB-927 mechanically and electrically before shipment. It should be free of marks and scratches and in perfect working order upon receipt. When unpacking the ASMB-927, 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 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.

Order Information

Part Number	Chipset	Memory	GbE/10GbE LAN	IPMI	Graphics
ASMB-927T2-00A1	C741	16 x DDR5 RDIMM	-/2	Yes	AST2600

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Overview

1.1 Introduction

The ASMB-927 serverboard is the most advanced 4th Gen Intel Xeon Scalable series board for industrial and medical equipment, as well as HPC applications that require high-performance computing power and multi-expansion slots. This serverboard supports the 4th Gen Intel Xeon Scalable series processor and DDR5 RDIMM 4800MHz memory up to 4TB. ASMB-927 provides four PCIe x16 slots and two PCIe x8 slots in Gen5 high speed. All of the PCIe x16 slots support Compute Express Link (CXL) as well. Additionally, the ASMB-927 features dual 10GbE Ethernet LAN ports that eliminate network bottlenecks.

Utilizing the Intel C741 chipset, the ASMB-927 boasts a variety of high-end features. With 6 USB3.2 Gen1 and 3 USB 2.0 ports, 9 onboard SATA III connectors, and 1 M.2 2280 connector, this board offers unparalleled I/O capabilities. Furthermore, it supports RAID 0, 1, 5, and 10, ensuring superior data storage and high-speed peripheral connectivity. These advanced features make the ASMB-927 the ideal choice for industrial and medical equipment, as well as HPC applications that require top-tier performance and reliability.

1.2 Features

General

- Intel Xeon processor scalable family support: The ASMB-927 is equipped with two CPU sockets, which enables it to support the 4th Gen Intel Xeon Scalable series processors.
- High performance I/O capability: 2 x 10GbE ports, 4 x PCIe x16 slots + 2 x PCIe x8 slots, 9 x SATA ports, 1 x M.2 connector, 6 x USB3.2 Gen1 and 3 x USB 2.0 ports.
- Standard EATX form factor with industrial features: The ASMB-927 provides industrial features like long product lifecycle, reliable operation under wide temperature range, watchdog timer, etc.
- IPMI 2.0 support: The ASMB-927 is equipped with an AST2600 BMC chip and supports IPMI 2.0 (Intelligent Platform Management Interface 2.0) via dedicated LAN port.
- KVM over IP: The KVM over IP function allows BIOS level remote control of the ASMB-927 through your own computer.

1.3 Specifications

Table 1.1: Specifications

Processor					
CPU	 Dual Intel LGA4677 Xeon processor sockets Supports 4th Gen Intel Xeon scalable family, up to 60 cores Supports the TDP of processor up to 225 W (please consider extended air thermal solution while using CPU> 205 W TDP) 				
System Memory					
Total Slots	16 (1 DIMM per channel)				
Capacity	Maximum 4TB ECC RDIMM				
Memory Type	DDR5 ECC-REG 3200/3600/4000/4400/4800 MHz				
Memory Size	Each memory slot supports 16GB, 32GB, 64GB, 128GB and 256GB memory modules				
Memory Voltage	1.2 V				
Error Detection	Corrects single-bit errorsDetects double-bit errors (using ECC memory)				
On-Board Devices					
Chipsets	Intel C741 PCH				
Network Controllers	Intel X710, supports dual 10GbE ports				
VGA	Aspeed AST2600 with 64 MB VGA memory provides basic 2D VGA function.				
EC	ITE IT5121VG provide motherboard keyboard mouse, RS-232, and hardware monitor functions				
BMC	Realtek RTL8211 for dedicated BMC LAN				
Input/Output					
Storage	 8 x SATA3.0 via mini SAS HD (SFF-8643), supports RAID 0, 1, 5,10 1 x SATA 3.0 1 x M.2 2242/2280 (SATA or PCIe) 				
LAN	 2 x RJ-45 LAN ports (2 x 10GbE LAN) 1 x RJ-45 dedicated IPMI LAN port(10/100/1000 base-T) for IPMI only, there is no regular LAN function 				
USB	 6 x USB3.2 Gen1 (4 rear/2 onboard) 3 x USB2.0 (2 onboard/1 type A) 				
Graphic	1 x VGA				
Keyboard/Mouse	PS/2 keyboard and mouse via internal header				
Serial Port	1 x RS232 port at rear window, 1 x internal header (2 x 5P pitch: 2.50 mm), both ports are RS-232 (5 V)				
Power Connector					
System Power	1 x 24-pin SSI EPS 12 V power connector (Input 12 V, 5 V, 3.3 V, 5 Vsb)				
CPU Power	4 x 8-pin SSI EPS 12 V power connector for CPU & memory power (12 V)				
PCIe Power	1 x 8-pin 12 V power connector for PCIe slot 12 V input				

Table 1.1: Specif	ications		
Expansion Slots			
PCI Express	 4 x PCIe Gen5 X16 slots Slot 1: PCIe X16 slot, signal from CPU0, CXL support Slot 3: PCIe X16 slot, signal from CPU0, CXL support Slot 5: PCIe X16 slot, signal from CPU0, CXL support Slot 6: PCIe X16 slot, signal from CPU1, CXL support 2 x PCIe Gen5 X8 slots Slot 2: PCIe X8 slot, signal from CPU1 Slot 4: PCIe X8 slot, signal from CPU1 		
System BIOS			
BIOS Type	256 Mb SPI Flash EEPROM with AMI BIOS		
PC Health Monitorin	g		
Voltage	Monitors for CPU Cores, +3.3 V, +5 V, +12 V, +5 VSB, VBAT		
FAN	 2 x 4-pin headers for CPU cooler 5 x 4-pin headers for system fans All fans with tachometer status monitoring Thermal control for all fan connectors 		
Temperature	Monitoring for CPUMonitoring for system external thermal sensor		
Other Features (Case Open)	Chassis intrusion detection		
Operating Environm	ent/Compliance		
RoHS RoHS Directive 2011/65/EU and (EU) 2015/863			
Environmental Spec.	 Operating Temperature: 0 ~ 40°C Non-operating Temperature: -40 ~ 85°C Operating Relative Humidity: 10 ~ 90% non-condensing Non-operating Relative Humidity: 10 ~ 95% non-condensing 		

Chapter 1 Overview

1.4 Board Layout, Jumpers, and Connectors

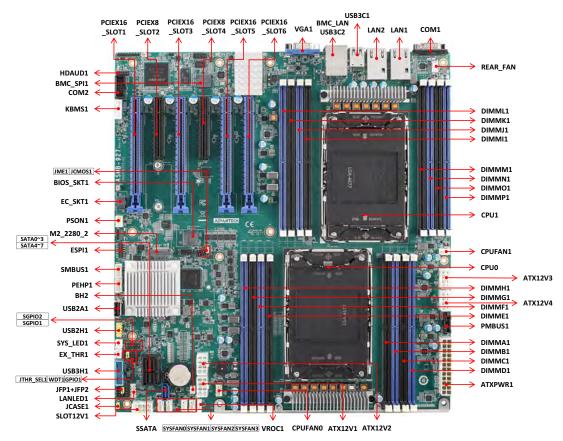
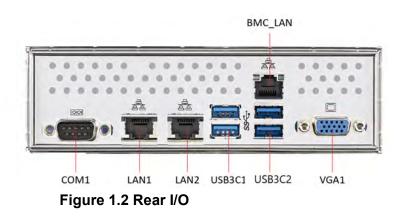


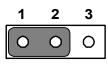
Figure 1.1 Board Layout



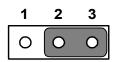
ASMB-927T2-00A1

	Sbps/10 Gbps LAN Link/	LAN1 & LAN 2	
	Left Right	Left LED	Right LED
100 Mbps	Link Active		
1 Gbps	Link Active	Amber Amber	Green Blinking green
10 Gbps	Link Active	Green Green	Green Blinking green

Table 1.3: Jumpers					
Label	Function	Default			
JCASE1	Chassis case open alarm	1-2			
JCMOS1	CMOS clear	1-2			
JME1	ME update	1-2			
PSON1	AT(1-2)/ATX(2-3)	2-3			
JTHR_SEL	Internal (1-2) and external (2-3) thermistor selection	1-2			
JWDT1	Watchdog reset	1-2			



Keep CMOS data/ Disable ME update/



Clear CMOS data/ Enable ME update/

Table 1.4: Connectors					
Label	Function				
ATXPWR1	ATX 24-pin main power connector				
ATX12V1, ATX12V3	Processor power connector (mandatory)				
ATX12V2, ATX12V4	Processor power connector (reserved)				
BH2	For optional battery kit				
BIOS_SKT1	BIOS SPI ROM				
BMC_SPI1	BMC SPI ROM				
BMC_LAN	IPMI dedicated LAN connector				
COM1	RS-232 connector				
COM2	RS-232 header				
CPUFAN0, CPUFAN1	CPU FAN connector				
DIMMA1, DIMMB1, DIMMC1, DIMMD1, DIMME1, DIMMF1, DIMMG1, DIMMH1 DIMMI1, DIMMJ1,	DDR5 from CPU0				
DIMMIT, DIMMJT, DIMMK1, DIMML1, DIMMM1, DIMMN1, DIMMO1, DIMMP1	DDR5 from CPU1				
DIMMA1, DIMMC1, DIMME1, DIMMG1, DIMMI1, DIMMK1, DIMMM1, DIMMO1	DCPMM slot				
EC_SKT1	EC EEPROM				
ESPI1	eSPI connector				
EX_THR1	Connector for external thermistor				
GPIO1	GPIO connector				
HDAUD1	Audio header				
JFP1, JFP2, JFP3	Front panel header				
KBMS2	External keyboard and mouse connector				
LAN1, LAN2	10 Gbps LAN connector				
LANLED1	LAN LED extension connector				
M2_2280_2	M.2 connector (SATA & PCle x4)				
PCIEX16_SLOT1	PCIe x16 slot (CPU0)				
PCIEX8_SLOT2	PCIe x8 slot (CPU1)				
PCIEX16_SLOT3	PCIe x16 slot (CPU0)				
PCIEX8_SLOT4 PCIEX16 SLOT5	PCIe x8 slot (CPU1) PCIe x16 slot (CPU0)				
PCIEX16_SLOT5 PCIEX16_SLOT6	PCIe x16 slot (CPU1)				
PEHP1	NVMe RAID LED control				
PMBUS1	PMBUS connector to communicate with the power supply				
SATA0~SATA3, SATA4~7	SATA via SFF-8643				
SGPI01	SATA0~3 SGPIO header				
SGPI02	SATA0-3 SGF10 header				
SLOT12V1	For PCIe slot 12V input only				
SMBUS1	SMBus header				
SSATA	SATA connector				

Table 1.4: Connectors					
SYSFAN0~SYSFAN3, REAR_FAN	System FAN connector				
SYS_LED1	System LED connector				
USB2H1	USB 2.0 port (9-pin header)				
USB2A1	USB 2.0 port (Type-A)				
USB3C1, USB3C2, USB3H1	USB 3.2 port 1, 2(rear I/O); USB 3.2 port 3, 4(rear I/O); USB 3.2 port 5, 6 (20-pin header)				
VGA1	VGA connector				

Table 1.5: Onboard LED						
LED	Description	LED Definition				
+5V_LED1	Power on LED	Off: Power off	On (green): System on			
+5V_SB_LED1	Standby LED	Off: No input AC power	On (green): System on, in sleep mode, or in soft-off mode			
BMC_HBLED1	BMC heartbeat LED	Blinking (green): Controller is working	g normally			

1.5 Block Diagram

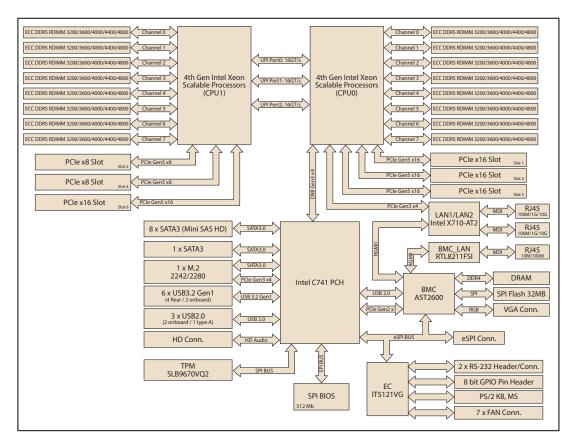


Figure 1.3 Block Diagram

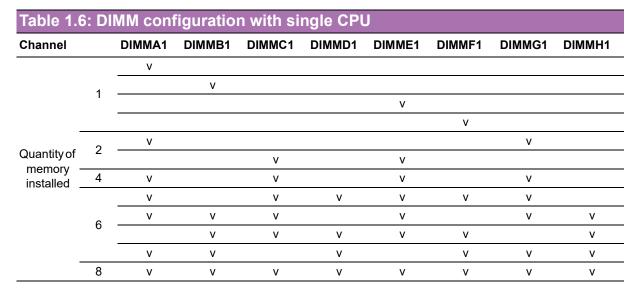
1.6 System Memory

The ASMB-927 has 16 288-pin memory slots for DDR5 3200/3600/4000/4400/4800 MHz memory modules with a maximum capacity of 4TB (maximum 256GB for each DIMM). The ASMB-927 supports registered DIMM memory modules.

1.7 Memory Installation

Memory performance is affected by different DIMM configurations. To reach optimal memory interleaving, be sure to install identical DIMM types with the same size, speed, and number of ranks on those memory slots corresponding to the correct processor.

The following table indicates recommended DIMM configurations with a single and dual processor, based on the guideline, you may adjust your memory configuration according to your PCIe expansion card configuration.



Note! 3, 5, 7 DIMMs are not recommended DIMM slots.



Table 1.7: DIMM configuration with dual CPUs																	
Channel		DIM MA1	DIM MB1	DIM MC1	DIM MD1	DIM ME1	DIM MF1	DIM MG1	DIM MH1	DIM MI1	DIM MJ1	DIM MK1	DIM ML1	DIM MM1	DIM MN1	DIM MO1	DIM MP1
Quantity	2	v								v							
			v								v						
						v								v			
							v								v		
	4	v						V		v						v	
of				v		v						v		v			
memory installed	8	v		v		v		V		v		v		v		v	
	12	v		v	v	v	v	V		v		v	v	v	v	v	
		V	v	v		v		V	v	v	v	v		v		v	v
			V	v	v	v	v		v		V	۷	v	۷	V		v
		v	V		v		v	V	v	v	V		v		V	V	v
	16	V	V	v	v	v	v	v	v	V	V	v	v	v	V	V	v

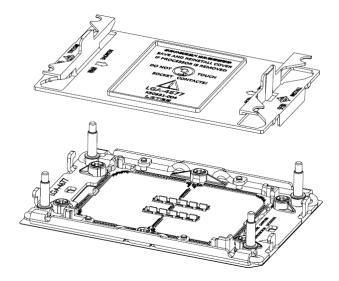


1, 3, 5, 7, 9, 11, 13, 15 DIMMs are not recommended	DIMM slots when
dual CPUs are installed.	

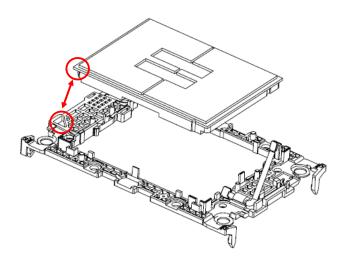
1.8 Processor Installation

The ASMB-927 is designed for the Intel Xeon processor scalable family.

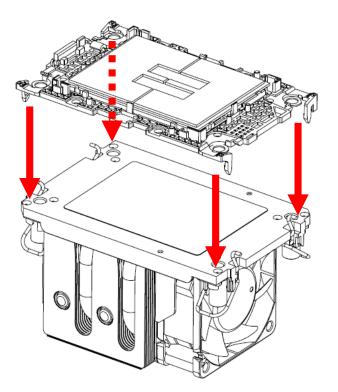
1. Remove dust cover.



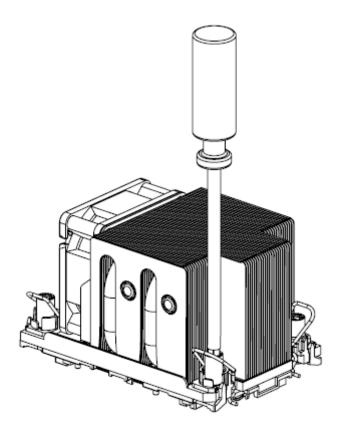
2. Install CPU on CPU clip and align with pin 1 mark.



3. Install the CPU clip assembly on the heatsink as a processor + heatsink module.



4. Put the processor heatsink module into the motherboard bolster plate by using a T-30 screwdriver (follow heatsink label directions 1 to 4). For best durability, 8.0 in-lbf torque is recommended.





Connections

2.1 Introduction

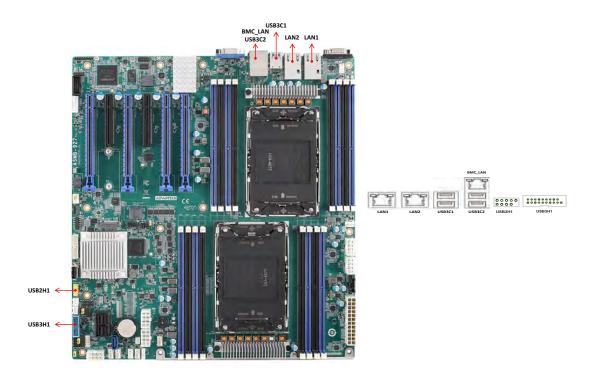
You can access most of the connectors from the top of the board as it is being installed in the chassis. If you have a large number of cards installed, you may need to partially remove a card to make all the connections.

2.2 USB Ports and LAN Port

The USB ports comply with USB 2.0 and USB 3.2 Gen1. Transmission rates of up to 480 Mbps (USB 2.0)/5Gbps (USB 3.2 Gen1) and fuse protection are supported. The USB interface can be disabled in the system BIOS setup.

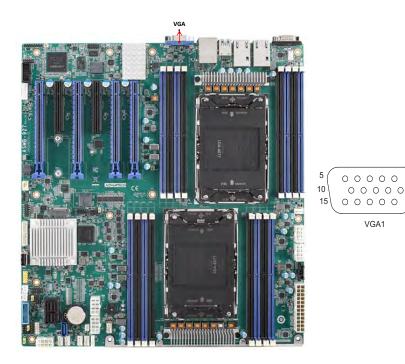
ASMB-927 is equipped with two 10GbE. They are all with RJ-45 jacks and supported by all major network operating systems. BMC_LAN is the dedicated BMC LAN, while LAN2 is the shared BMC LAN.

For the USB cable used by USB3H1 connector, please refer to the optional accessories in the ASMB-927 datasheet.



2.3 VGA Connector (VGA1)

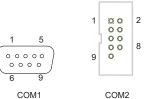
The ASMB-927 includes a VGA interface that can drive conventional CRT and LCD displays.



2.4 Serial Ports (COM1~2)

The ASMB-927 offers one serial port on the rear plate and one 2.50mm onboard with 2 x 5-pin pitches.



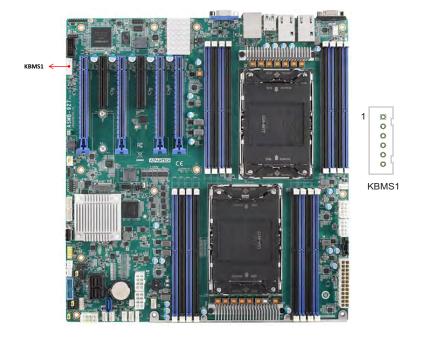


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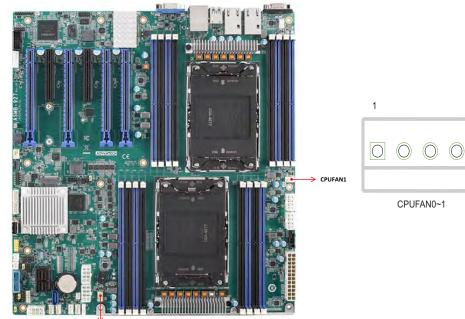
2.5 PS2 Keyboard and Mouse Connectors (KBMS1)

The 6-pin KBMS1 connector is for additional keyboard & mouse device usage.



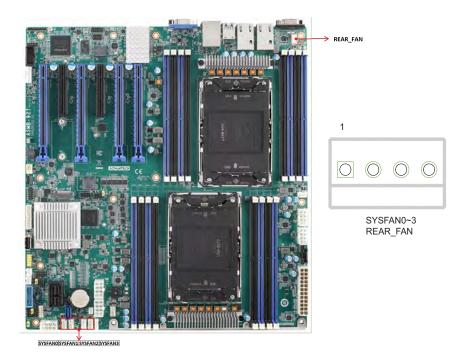
2.6 CPU Fan Connector (CPUFAN0~1)

If a fan is used, this connector supports cooling fans that draw up to 1.5A (18 W).



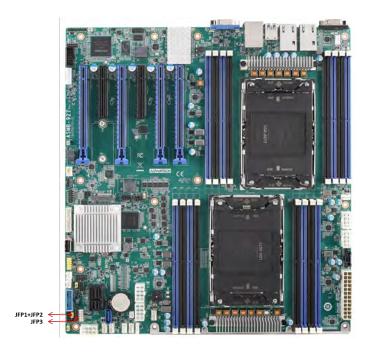
CPUFANO

2.7 System Fan Connector (SYSFAN0~3, REAR_FAN)



2.8 Front Panel Connector (JFP1, JFP2, JFP3)

There are several external switches and LEDs to monitor and control the ASMB-927.



JFP1	3	6	9	12		PWRSW	RESET
8	2(+)	5(-)	8	11		HDDLED	
JFP2	1(+)	4	7	10(-)		SPEAKER	
JFP3	1(+)	2	3(-)	4	5	PWRLED	KEYLOCK

2.8.1 Power LED (JFP3)

JFP3 pins 1 and 3 are for the power LED. Refer to Appendix B for detailed information on the pin assignments. If an ATX power supply is used, the system's power LED status will be as indicated.

Table 2.1: ATX power supply LED status					
ACPI Power Mode	LED (ATX power)				
System on (S0)	On				
System hibernation(S4)	Slow flashes				
System off (S5)	Off				



2.8.2 External Speaker (JFP2 Pins 1, 4, 7, 10)

JFP2 pins 1, 4, 7, and 10 connect to an external speaker. The ASMB-927 provides an onboard buzzer as an alternative. To enable the buzzer, set pins 7-10 closed.



2.8.3 HDD LED Connector (JFP1 Pins 2 & 5)

You can connect an LED to JFP1 to indicate when the HDD is active.



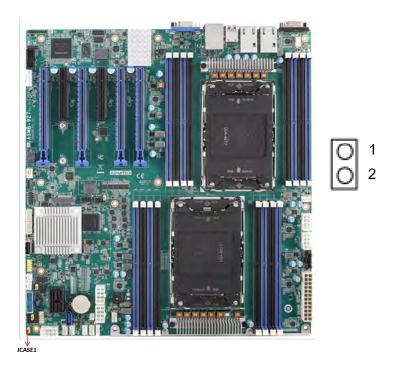
2.8.4 Reset Connector (JFP1 Pins 9 & 12)

Many computer cases offer the convenience of a reset button.



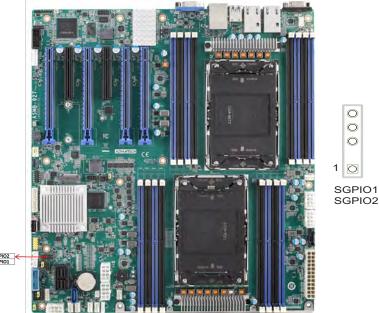
2.9 Case Open (JCASE1)

A chassis intrusion header is located at JCASE1 on the motherboard. Attach the appropriate cable from the chassis to be informed of a chassis intrusion when the chassis has been opened. The default function is disabled and pin 1-2 is bridged by a jumper cap.



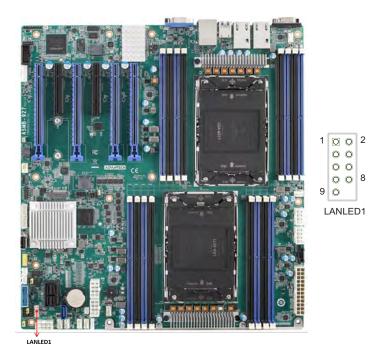
2.10 SATA SGPIO (SGPIO1)

SGPIO1 and SGPIO2 are connected to the hard drive backplane for interpreting hard drive LED signals.



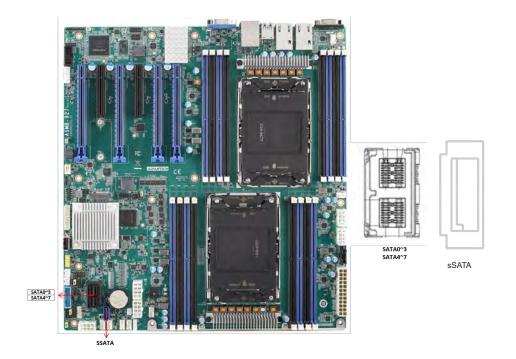
SGPIO2 SGPIO1

2.11 Front Panel LAN Indicator Connector (LANLED1)



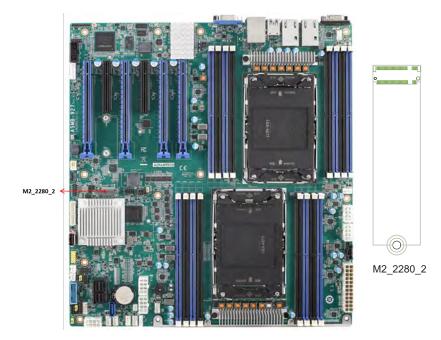
2.12 SATA and sSATA (SATA 0~3, SATA 4~7)

The ASMB-927 features eight SATA III ports (6 Gbps) via SFF-8643 connectors and one 7-pin SATA port.



2.13 M.2 Connector (M2_2280_2)

The M.2 2280 connector supports both SATA and PCIe SSD components.



2.14 PCIe Expansion Slots

The ASMB-927 provides six expansion slots that can support up to three doubledeck cards (with chassis HPC-7485). The riser card for 1U or 2U chassis can be used in slot 6 only, and the PCIe link is from CPU1.

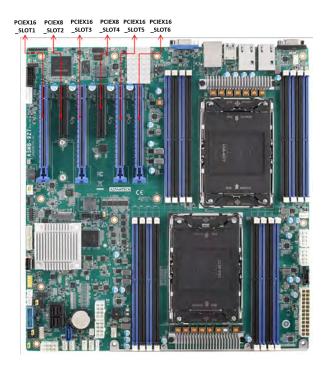
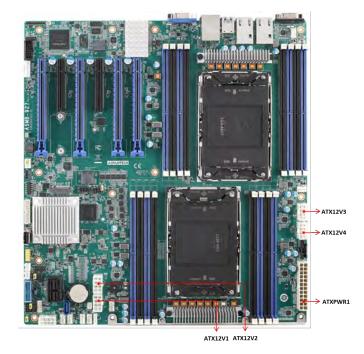


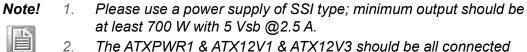
Table 2.2: PCIe slots							
	Slot length	Link	PCIe generation	PCIe link from			
SLOT1	PCI-E x16	PCI-E x16	5	CPU0			
SLOT2	PCI-E x8	PCI-E x8	5	CPU1			
SLOT3	PCI-E x16	PCI-E x16	5	CPU0			
SLOT4	PCI-E x8	PCI-E x8	5	CPU1			
SLOT5	PCI-E x16	PCI-E x16	5	CPU0			
SLOT6	PCI-E x16	PCI-E x16	5	CPU1			

Table 2.3: PCIe expansion slots									
	Part number Description Remarks								
	ASMB-RF28-20B1	ASMB-RF28 (2U Gen5 riser card)	2 x PCI-E x8						
Riser Card	ASMB-RF2F-10B1	ASMB-RF2F (2U Gen5 riser card)	1 x PCI-E x16						
	ASMB-RF1F-10B1	ASMB-RF1F (1U Gen5 riser card)	1 x PCI-E x16						

Note: Refer to page 67. BIOS setting [X8,X8] is required for slot 6 when using ASMB-RF28-20B1.

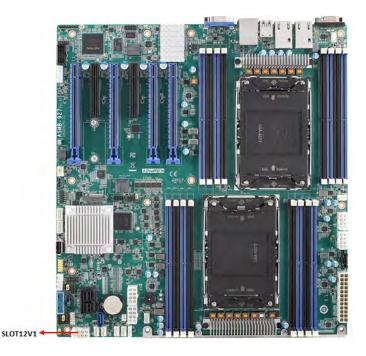
2.15 Auxiliary Power Connector (ATXPWR1/ ATX12V1/ATX12V2/ATX12V3/ATX12V4)





2. The ATXPWR1 & ATX12V1 & ATX12V3 should be all connected with the power supply, otherwise the ASMB-927 will not boot up normally.

2.16 PCIe Power Connector (SLOT12V1)

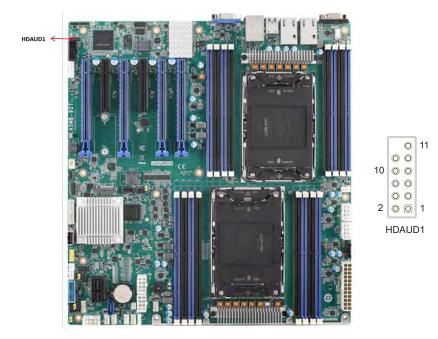




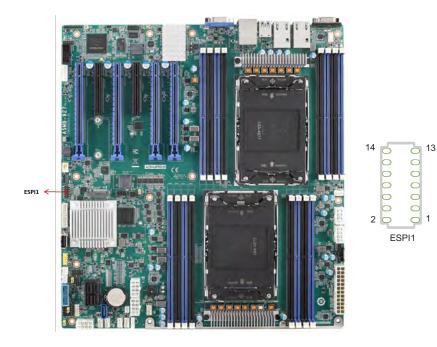
This SLOT12V1 connector is only necessary if PCIe cards that draw more than 70 watts from the PCIe bus are installed on the motherboard.

2.17 HD Audio Interface Connector (HDAUD1)

The ASMB-927 has one audio connector for Advantech's audio board (P/N: PCA-AUDIO-HDB1E) installation.

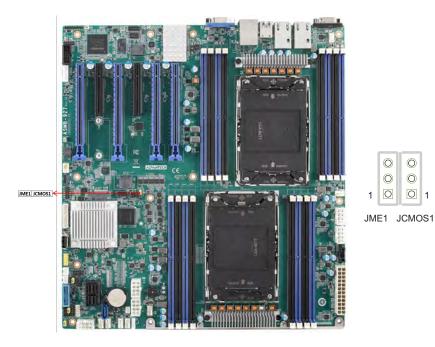


2.18 ESPI Connector (ESPI1)



2.19 CMOS Clear and ME Update Connector (JCMOS1, JME1)

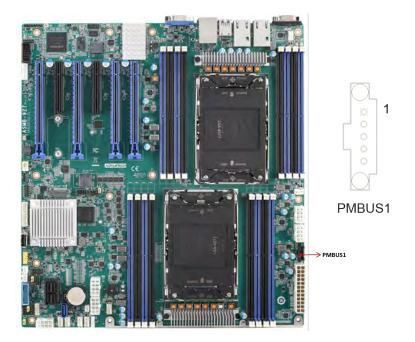
Setting jumpers from pin 1-2 to pin 2-3, then back to pin 1-2 to reset CMOS data and enable ME update.



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2.20 PMBUS Connector (PMBUS1)



2.21 Front Panel SMBUS Connector (SMBUS1)

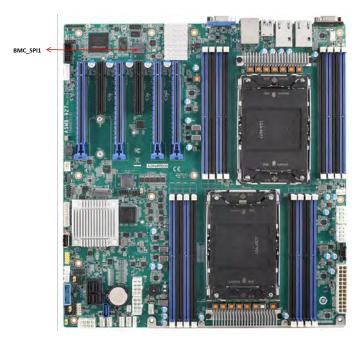




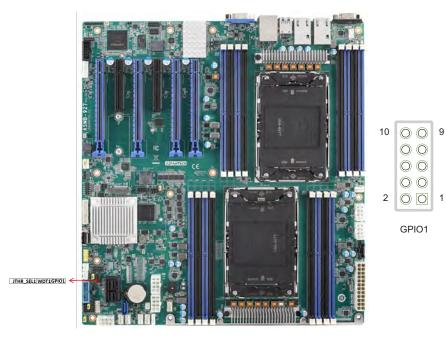
SMBUS1

2.22 BMC IC Socket (BMC_SPI1)

Enabling IPMI feature through BMC_SPI1. The BMC image has already been preinstalled on ASMB-927.

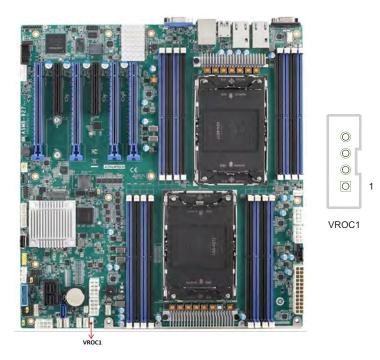


2.23 GPIO Connector (GPIO1)



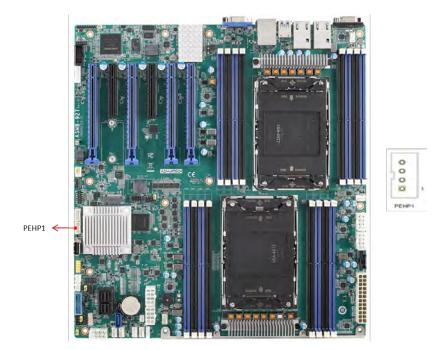
2.24 Intel Virtual RAID (VROC1)

The Intel VROC license key of VMD allows NVMe SSDs to connect via PCIe and directly manage the CPU for better RAID performance. Enable NVMe SSD RAID, hot-plug, and LED management features via VROC connector.



2.25 NVMe RAID LED Control (PEHP1)

Connect to storage chassis to enable the NVMe RAID LED control feature.





AMI BIOS

3.1 Introduction

With the AMI BIOS setup program, you can modify BIOS settings and control the special features of your computer. The setup program uses a number of menus for making changes and turning special features on or off. This chapter describes the basic navigation of the ASMB-927 setup screens.

Main Advanced Platform Configur	Aptio Setup – AMI	Server Mømt Securitu Boot 🔹
BIOS Information BIOS Vendor Core Version	American Megatrends 5.29 0.70 x64	Set the Date. Use Tab to switch between Date elements. Default Ranges:
Compliancy Project Version Build Date and Time Access Level	UEFI 2.8; PI 1.7 ASMB S927X025 03/31/2023 13:50:35 Administrator	Year: 1998–9999 Months: 1–12 Days: Dependent on month Range of Years may vary.
Memory Information Total Memory Main Board	32768 MB ASMB-92772	
Serial Number UUID	Default string 000000000000000 0000CC827F3476CB	<pre>++: Select Screen f↓: Select Item Enter: Select</pre>
System Date System Time	[Tue 11/21/2023] [15:15:05]	+/−: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Versior	2.22.1287 Copyright (C) 2023	AMI

AMI's BIOS ROM has a built-in setup program that allows users to modify the basic system configuration. This type of information is stored in a battery-backed up CMOS so it retains the setup information when the power is turned off.

Note!

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The BIOS setup screens shown in this chapter are for reference only, they may not exactly match what you see on your display.

3.2 BIOS Setup

3.2.1 Main Menu

Press during bootup to enter the 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.

Main Advanced Platform Configura	Aptio Setup – AMI	Popuon Mant Popunitu Popt
	CION SUCKET CONTIGURATION	Server Mgmit Security Boot
BIOS Information		Set the Date. Use Tab to
BIOS Vendor	American Megatrends	switch between Date elements.
Core Version Compliancy	5.29 0.70 x64 UEFI 2.8; PI 1.7	Default Ranges: Year: 1998–9999
Project Version	ASMB \$927X025	Months: 1-12
Build Date and Time	03/31/2023 13:50:35	Days: Dependent on month
Access Level	Administrator	Range of Years may vary.
Memory Information		
Total Memory	32768 MB	
Main Board	ASMB-927T2	
Serial Number	Default string	↔+: Select Screen
UUID	00000000000000	↑↓: Select Item
	0000CC827F3476CB	Enter: Select
		+/-: Change Opt.
System Date	[Tue 11/21/2023]	F1: General Help F2: Previous Values
System Time	[15:15:05]	F3: Optimized Defaults
	[10.10.00]	F4: Save & Exit
		ESC: Exit
Vencion	2 22 1227 Conuniabt (C) 2023	
version	2.22.1287 Copyright (C) 2023) HN1

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 be. 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 Date/System Time

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 Setup

Select the advanced tab from the ASMB-927 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, to 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 screens are shown below. The sub menus are described on the following pages.

	Setup – AMI ≪et Configuration Server Mgmt Security Boot →
 Trusted Computing ACPI Settings Redfish Host Interface Settings IT5121E Super IO Configuration IT5121E HN Monitor Serial Port Console Redirection PCI Subsystem Settings USB Configuration Network Stack Configuration CSM Configuration TIS Auth Configuration iSCSI Configuration 	**: Select Screen **: Select Screen **: Select Item Enter: Select */-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.22.1287	Copyright (C) 2023 AMI

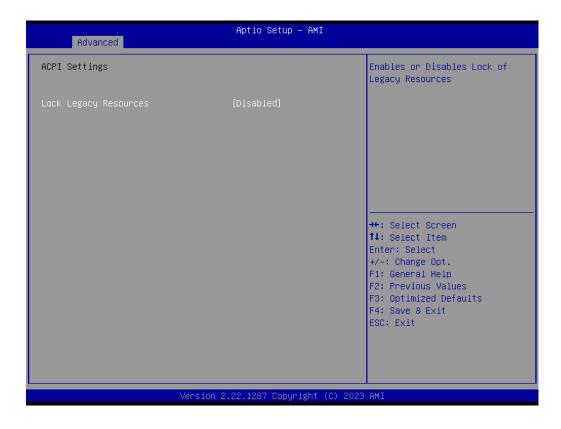
3.2.2.1 Trusted Computing

Advanced	Aptio Setup – AMI	
Advanced TPM 2.0 Device Found Firmware Version: Vendor: Security Device Support Active PCR banks Available PCR banks SHA256 PCR Bank Pending operation Platform Hierarchy Storage Hierarchy Endorsement Hierarchy Physical Presence Spec Version TPM 2.0 InterfaceType Device Select	7.85 IFX [Enable] SHA256 SHA256 [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [I.3] [TIS] [Auto]	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INTIA interface will not be available. ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version	2.22.1287 Copyright (C) 20	23 AMI

Security Device Support

Enables or disables BIOS support for security devices.

3.2.2.2 ACPI Settings



Lock Legacy Resources

Enable or disable the lock legacy resources feature.

3.2.2.3 Redfish Host Interface Settings

Advanced	Aptio Setup – AMI	
Redfish Host Interface Settings		Enable/Disable AMI Redfish
Redfish	[Enabled]	
BMC Redfish Version BIOS Redfish Version BIOS RTP Version Authentication mode	N/A 1.11.0 RB_1.0.16 [Basic Authentication]	
NUTLEATED TO THOUSE		
		<pre>++: Select Screen 1↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2	2.22.1287 Copyright (C) 2023	AMI

Redfish

Enable or disable the BMC Redfish feature.

3.2.2.4 IT5121E Super IO Configuration

Advanced	Aptio Setup – AMI	
IT5121E Super IO Configuration		Set Parameters of Serial Port 1 (COMA)
Super IO Chip ▶ Serial Port 1 Configuration ▶ Serial Port 2 Configuration	IT5121E	
		<pre>++: Select Screen t1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version	2.22.1287 Copyright (C) 2023	AMI

Serial Port 1 Configuration



Serial Port

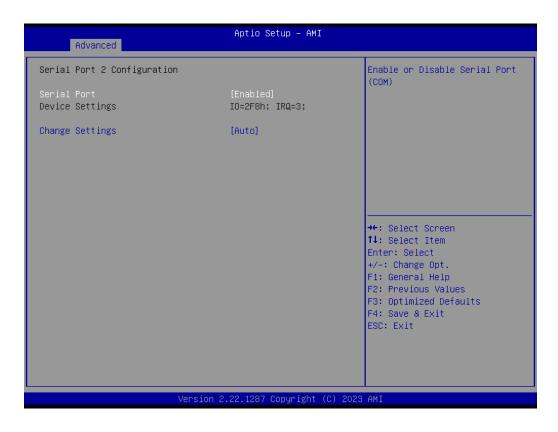
Enable or disable serial port 1.

- Change Settings

To select an optimal setting for serial port 1. Default setting is "Auto".

Chapter 3 AMI BIOS

Serial Port 2 Configuration



- Serial Port

Enable or disable serial port 2.

- Change Settings

To select an optimal setting for serial port 2. Default setting is "Auto".

3.2.2.5 IT5121E HW Monitor

Advanced	Aptio Setup – AMI	
IT5121E HW Monitor		▲ Enabled/Disabled Watchdog
Firmware Version	I21FBV0035	Timer.
Watchdog Timer CPU ACPI Shutdown Temperature CPU Warning Temperatrue ▶ FAN Configuration	[Disabled] [Disabled] [Disabled]	
System Temperature(TR1) CPU 0 Temperature CPU 1 Temperature	: +27 °C : +55 °C : +58 °C	
VBAT +12V +5V +3.3V	: +2.862 V : +11.700 V : +5.066 V : +3.348 V	<pre>++: Select Screen 1↓: Select Item Enter: Select +/-: Change Opt. F1: General Help</pre>
CPU Fan O Speed CPU Fan 1 Speed System Fan O Speed System Fan 1 Speed System Fan 2 Speed System Fan 3 Speed Rear Fan Speed	: 5629 RPM : 5674 RPM : N/A : N/A : N/A : N/A : N/A	F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
	.on 2.22.1287 Copyright (C)	2023 AMT

Watchdog Timer

Enable or disable the watchdog timer function.

CPU ACPI Shutdown Temperature

Enable or disable the ACPI shutdown temperature threshold. When the system reaches the shutdown temperature, it will be automatically shut down by the ACPI OS to protect the system from overheat damage.

CPU Warning Temperature

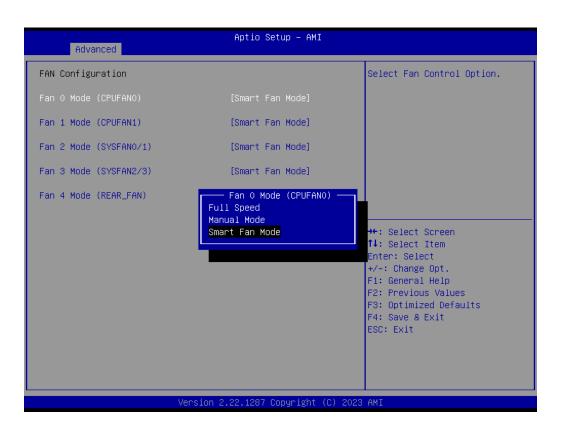
Enable or disable the CPU warning temperature threshold. When the system reaches the warning temperature, the speaker will beep.

Fan Configuration

Fan 0 mode controls CPUFAN0, Fan 1 mode controls CPUFAN1, FAN 2 mode controls SYSFAN0 and SYSFAN1, FAN 3 mode controls SYSFAN2 and SYSFAN3; and FAN4 mode controls REAR_FAN.

The default of CPU/System FAN is Smart FAN mode and the BIOS will automatically control the FAN speed by CPU temperature.

When set to manual mode, fan duty settings can be changed in the range of 20 \sim 100%. The default setting is 50%.



Advanced	Aptio Setup – AMI	
FAN Configuration		Input expect PWM output value.(Range: 20 ~ 100)
Fan O Mode (CPUFANO) PWM Output Value	[Manual Mode]	Varael (Hallige: Lo 100)
Fan 1 Mode (CPUFAN1)	[Smart Fan Mode]	
Fan 2 Mode (SYSFANO/1)	[Smart Fan Mode]	
Fan 3 Mode (SYSFAN2/3)	[Smart Fan Mode]	
Fan 4 Mode (REAR_FAN)	[Smart Fan Mode]	
		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Ver	rsion 2.22.1287 Copyright (C)	2023 AMI

3.2.2.6 Serial Port Console Redirection

Advanced	Aptio Setup – AMI	
Serial Communication via IPMI COM Console Redirection ▶ Console Redirection Settings	[Disabled]	Console Redirection Enable or Disable.
COM1 Console Redirection ▶ Console Redirection Settings	[Disabled]	
Legacy Console Redirection ▶ Legacy Console Redirection Settings		
Serial Port for Out-of-Band Managemen Windows Emergency Management Services Console Redirection EMS ▶ Console Redirection Settings		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.	22.1287 Copyright (C) 2023	AMI

Serial Communication via IPMI COM

Serial Communication via IPMI COM Console Redirection Settings Terminal Type [VT100Plus] Bits per second [115200] Data Bits [8] Parity [None] Stop Bits [1] Flow Control [None] VT-UTF8 Combo Key Support [Enabled]	Emulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100Plus: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more
Recorder Mode (Disabled) Resolution 100x31 [Disabled] Putty KeyPad [LINUX]	<pre>bytes. ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

COM1 Console Redirection Settings

Advanced	Aptio Setup – AMI	
COM1 Console Redirection Settings Terminal Type Bits per second Data Bits Parity Stop Bits Flow Control VT-UTF8 Combo Key Support Recorder Mode Resolution 100x31 Putty KeyPad	[ANSI] [115200] [8] [None] [1] [None] [Enabled] [Disabled] [Disabled] [VT100]	Emulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100Plus: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.
	n 2.22.1287 Copyright (C) ;	<pre>tl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

Terminal Type

Select a terminal type to be used for console redirection. Options available: VT100 / VT100+ / ANSI / VT-UTF8.

- Bits Per Second

Select the baud rate for console redirection.

Options available: 9600 / 19200 / 38400 / 57600 / 115200.

Data Bits

Parity

A parity bit can be sent with the data bits to detect some transmission errors. Even: parity bit is 0 if the number of 1's in the data bits is even.

Odd: parity bit is 0 if number of 1's the data bits is odd.

Mark: parity bit is always 1. Space: Parity bit is always 0.

Mark and Space Parity do not allow for error detection.

Options available: None/Even/Odd/Mark/Space.

Stop Bits

Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.

Options available: 1/2.

Flow Control

Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.

Options available: None/Hardware RTS/CTS.

- VT-UTF8 Combo Key Support

Enable VT-UTF8 combination key support for ANSI/VT100 terminals

- Recorder Mode

When this mode enabled, only text will be sent; this is to capture terminal data.

Options available: Enabled/Disabled.

- Resolution 100 x 31

Enables or disables the extended terminal resolution.

- Putty Keypad

Select function key and keypad on putty, default setting is "VT100".

Legacy Console Redirection Settings

Select a COM port to display redirection of Legacy OS and Legacy OPROM messages.



Console Redirection Settings

Advanced	Aptio Setup – AMI	
Out-of-Band Mgmt Port Terminal Type EMS Bits per second EMS Flow Control EMS Data Bits EMS Parity EMS Stop Bits EMS	[Serial Communication via IPMI COM] [VT-UTF8] [115200] [None] 8 None 1	Microsoft Windows Emergency Management Services (EMS) allows for remote management of a Windows Server OS through a serial port.
		<pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Ver	rsion 2.22.1287 Copyright (C) 20	23 AMI

- Out-of-Band Mgmt Port

To select the com port user would like to set for having console redirection feature.

- Terminal Type

Set as "VT100", "VT100+", "VT-UTF8", or "ANSI". "VT-UTF8" is the default setting.

Bits Per Second

To select serial port transmission. Speed must be matched on the other side. It can be set as "9600", "19200", "57600", or "115200". "115200" is the default setting.

Flow Control

Flow control can prevent data loss from buffer overflow. It can be set as "None", "Hardware RTS/CTS", or "Software Xon/Xoff". "None" is the default setting.

- Data Bits
- Parity
- Stop Bits

3.2.2.7 PCI Subsystem Settings



Above 4G Decoding

Enable or disables 64-bit capable devices to be decoded in above 4G address space (only if system supports 64-bit PCI decoding).





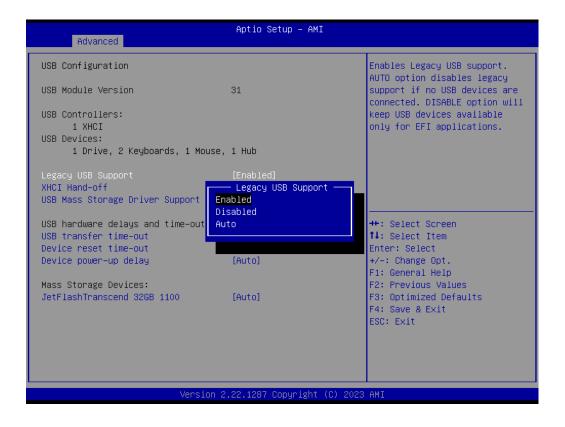
Chapter 3 AMI BIOS

3.2.2.8 USB Configuration

Advanced	Aptio Setup – AMI	
USB Configuration		Enables Legacy USB support.
USB Module Version	31	AUTO option disables legacy support if no USB devices are connected. DISABLE option will
USB Controllers: 1 XHCI		keep USB devices available only for EFI applications.
USB Devices: 1 Drive, 2 Keyboards, 1 Mouse,	1 Hub	
Legacy USB Support	[Enabled]	
XHCI Hand-off	[Enabled]	
USB Mass Storage Driver Support	[Enabled]	
USB hardware delays and time-outs:		↔: Select Screen
USB transfer time-out	[20 sec]	↑↓: Select Item
Device reset time-out	[20 sec]	Enter: Select
Device power-up delay	[Auto]	+/-: Change Opt.
		F1: General Help
Mass Storage Devices:		F2: Previous Values
JetFlashTranscend 32GB 1100	[Auto]	F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit
Version 2	.22.1287 Copyright (C) 20	23 AMT

Legacy USB Support

This is for supporting USB device under a legacy OS such as DOS. When choosing "Auto", the system will automatically detect if any USB device is plugged into the computer and enable USB legacy mode when a USB device is plugged, or disable USB legacy mode when no USB device is attached. "Enabled" is the default setting.



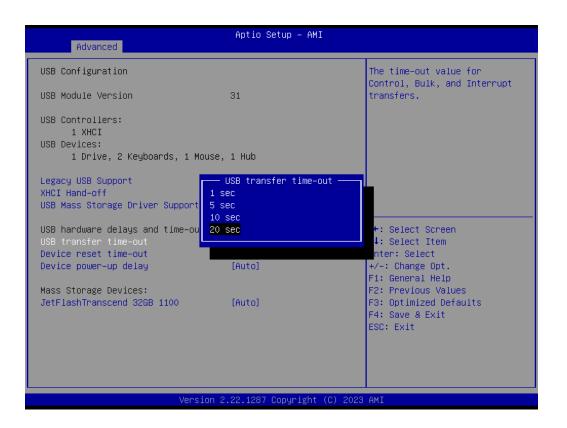
XHCI Hand-off

This is a workaround for OS without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver. "Enabled" is the default setting.

USB Mass Storage Driver Support Enable or disable USB mass storage driver support.

USB Transfer Time-Out

Selects the USB transfer time-out value. [1,5,10, 20 seconds]



Device Reset Time-Out

Selects the USB device reset time-out value. [10, 20, 30, 40 seconds]

USB Module Version 17 USB Controllers: 1 XHCI USB Devices: 1 Drive, 1 Keyboard Legacy USB Support XHCI Hand-off USB Mass Storage Driver Support USB handware delays and time-out USB transfer time-out Device reset time-out USB transfer time-out Device reset time-out USB transfer time-out Device power-up delay Mass Storage Devices: JetFlashTranscend 16GB 1100 [Auto] IT Command Time-out Device reset time-out Legacy USB Support *: Select Screen 1: Select Item nter: Select F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	SB Configuration		USB mass storage device Start Unit command time-out.
1 XHCI JSB Devices: 1 Drive, 1 Keyboard Legacy USB Support KHCI Hand-off JSB Mass Storage Driver Support U sec 20 sec 30 sec 40 sec 10 sec 20 sec 30 sec 40 sec 10 sec 20 sec 30 sec 40 sec 10 sec 20 sec 30 sec 40 sec 11 select Screen 12 Select Item Inter: Select Item Inter: Select 12 Select Item Inter: Select 13 Sec 14 Sec 15 Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit	ISB Module Version	17	Unit command time-out.
1 Drive, 1 Keyboard egacy USB Support HCI Hand-off SB Mass Storage Driver Support SB hardware delays and time-out evice reset time-out evice reset time-out evice reset time-out evice power-up delay ass Storage Devices: etFlashTranscend 16GB 1100 [Auto] Auto] Auto] F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit			
egacy USB Support HCI Hand-off SB Mass Storage Driver Support SB hardware delays and time-out SB transfer time-out evice reset time-out evice power-up delay ass Storage Devices: etFlashTranscend 16GB 1100 [Auto] F4: Select time-out evice power-up delay f4: Select Screen f5: Select Screen f5: Select Screen f5: Select Item nter: Select f7: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit			
HCI Hand-off ISB Mass Storage Driver Support ISB hardware delays and time-out ISB transfer time-out Ise reset time-out Ievice reset time-out Ievice power-up delay IAuto] IAuto] F1: General Help F2: Previous Values IetFlashTranscend 16GB 1100 [Auto] F4: Save & Exit	1 Drive, 1 Keyboard		
SB Mass Storage Driver Support 20 sec 30 sec 40 sec 40 sec 41 select Screen 41 sec 42 sec 42 sec 43 sec 43 sec 44 sec 44 sec 45 select Screen 45 sec 46 sec 46 sec 47 select Screen 47 sec 48 sec 48 sec 49 sec 49 sec 40 sec 49 sec 40 sec 40 sec 40 sec 40 sec 41 select Item 41 select Item 15 select 42 sec 41 select Item 43 sec 42 sec 44 sec 44 sec 45 select Item 15 select 46 sec 44 sec 47 sec 44 sec 48 sec 44 sec 49 sec 44 sec 40 sec 44 sec 40 sec 44 sec 44 sec 44 sec	egacy USB Support	Device reset time-ou	ut —
30 sec 40 sec 40 sec 41 sec 40 sec 42 sec 41 sec 43 sec 42 sec 43 sec 43 sec 44 sec 44 sec 45 sec 45 sec 45 sec 46 sec 45 sec 47 sec 46 sec 48 sec 46 sec 49 sec 47 sec 49 sec 48 sec 49 sec 48 sec 40 sec 48 sec 41 sec 48 sec 41 sec 48 sec 42 sec 48 sec 44 sec 48 sec 45 sec 48 sec 46 sec 48 sec 47 sec 48 sec 48 sec 48 sec 49 sec 44 sec 40 sec 44 sec 40 sec 44 sec 41 sec 44 sec 42 sec 48 sec <td< td=""><td></td><td>The second se</td><td></td></td<>		The second se	
SB hardware delays and time-out 40 sec +: Select Screen SB transfer time-out 1: Select Item evice reset time-out nter: Select evice power-up delay [Auto] ass Storage Devices: F2: Previous Values etFlashTranscend 16GB 1100 [Auto] F4: Save & Exit	SB Mass Storage Driver Support		
SB transfer time-out 4: Select Item evice reset time-out nter: Select evice power-up delay [Auto] ass Storage Devices: F1: General Help etFlashTranscend 16GB 1100 [Auto] F4: Save & Exit			
evice reset time-out evice power-up delay [Auto] +/-: Change Opt. F1: General Help ass Storage Devices: etFlashTranscend 16GB 1100 [Auto] F3: Optimized Defaults F4: Save & Exit		40 sec	
evice power-up delay [Auto] +/-: Change Opt. F1: General Help expression of the second			The proceeding of the second
Ass Storage Devices: etFlashTranscend 16GB 1100 [Auto] F3: Optimized Defaults F4: Save & Exit		[Auto]	
ass Storage Devices: F2: Previous Values etFlashTranscend 16GB 1100 [Auto] F3: Optimized Defaults F4: Save & Exit	extre home -ob derag	Indial	
etFlashTranscend 16GB 1100 [Auto] F3: Optimized Defaults F4: Save & Exit	ass Storage Devices:		and the second se
	the state of the state of the state	[Auto]	
ESC: Exit			F4: Save & Exit
			ESC: Exit

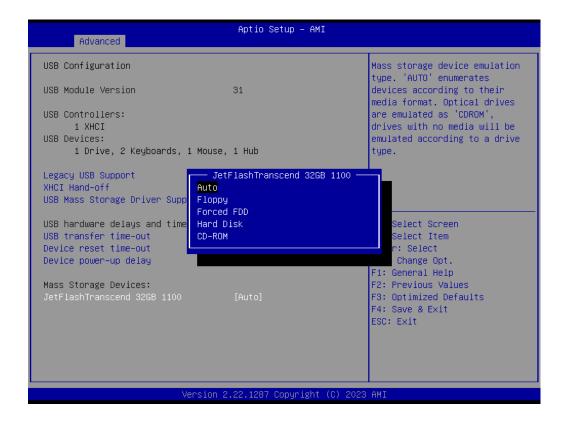
Device Power-up Delay

This item appears only when the device power-up delay item is set to [manual]. "Auto" is the default setting.

Advanced	Aptio Setup — AMI	
USB Configuration		Maximum time the device will take before it properly
USB Module Version	31	reports itself to the Host Controller. 'Auto' uses
USB Controllers: 1 XHCI		default value: for a Root port it is 100 ms, for a Hub port
USB Devices: 1 Drive, 2 Keyboards	s, 1 Mouse, 1 Hub	the delay is taken from Hub descriptor.
Legacy USB Support XHCI Hand-off USB Mass Storage Driver Su	[Enabled] Device power-up delay	
USB hardware delays and ti	me-ou	+: Select Screen ↓: Select Item
Device reset time-out	[20 sec]	Enter: Select
Device power–up delay	[Auto]	+∕–: Change Opt. F1: General Help
Mass Storage Devices: JetFlashTranscend 32GB 110	0 [Auto]	F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
	Version 2.22.1287 Copyright (C) 202	3 AMI

Mass Storage Devices

Default is "Auto" to enumerate mass storage devices according to media format.



3.2.2.9 Network Stack Configuration

AMI
Enable/Disable UEFI Network Stack →+: Select Screen
<pre>fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
pyrig

Network Stack

Enable or disable UEFI network stack.

3.2.2.10 CSM Configuration

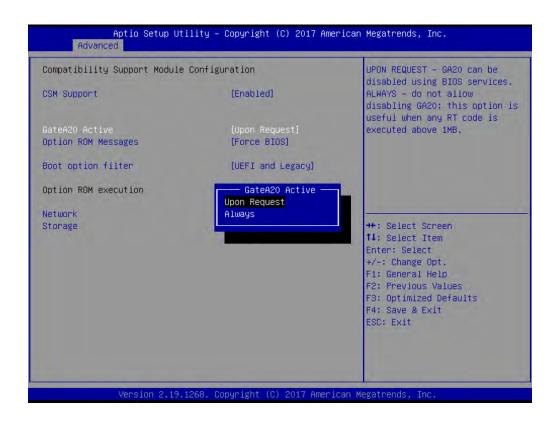
Advanced	Aptio Setup – AMI	
Compatibility Support Module	Configuration	Enable/Disable CSM Support.
CSM Support	[Enabled]	
CSM16 Module Version	00.00	
GateA20 Active Option ROM Messages INT19 Trap Response HDD Connection Order	[Upon Request] [Force BIOS] [Immediate] [Adjust]	
Boot option filter	[UEFI and Legacy]	
Option ROM execution		++: Select Screen 1↓: Select Item
Network Storage Video Other PCI devices	[Legacy] [Legacy] [Legacy] [Legacy]	Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Ve	rsion 2.22.1287 Copyright (C)	2023 AMI

CSM Support

Enable or disable UEFI CSM (Compatibility Support Module) to support a legacy PC boot process.

GateA20 Active

This items is useful when RT code is executed above 1MB. When it's set as "Upon Request" GA20 can be disabled using BIOS services. When it's set as "Always" it does not allow disabling GA20.

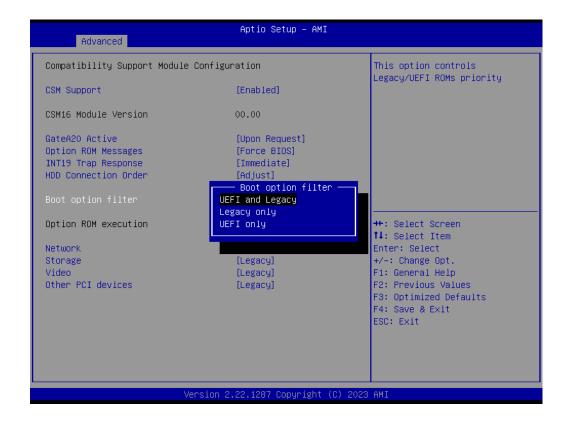


Option ROM Messages

Use "Force BIOS or keep current" to set the display mode for option ROM.

Boot Option Filter

Change UEFI/legacy ROM priority for boot option. "UEFI and Legacy" is the default setting.



Network

Control the execution of UEFI and legacy PXE OpROM.

Storage

Control the execution of UEFI and legacy storage OpROM.

Video

Control the execution of UEFI and legacy video OpROM.

Other PCI Devices

Control the execution of UEFI and legacy other PCI devices OpROM.

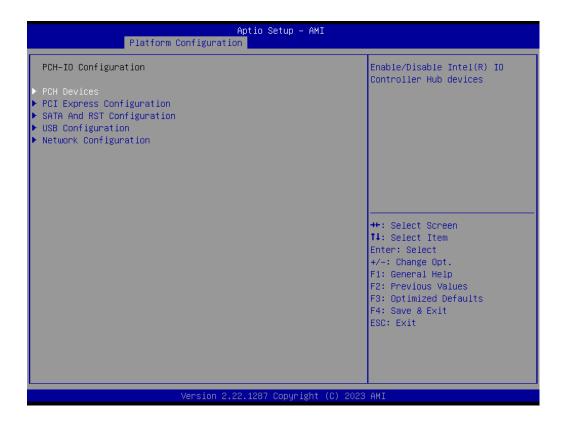
Chapter 3 AMI BIOS

3.2.3 Platform Configuration

Aptio Setup – AMI Main Advanced Platform Configuration Socket Configuration	Server Mgmt Security Boot 🔹 🕨
 ▶ PCH-IO Configuration ▶ Server ME Configuration 	PCH Parameters
Setup Warning: Setting items on this Screen to incorrect values may cause system to malfunction!	
	<pre>++: Select Screen f↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
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3.2.3.1 PCH Configuration

Aptio Setup – AMI Main Advanced Platform Configuration Socket Configurat	tion Server Mgmt Security Boot →
 PCH-IO Configuration Server ME Configuration 	PCH Parameters
Setup Warning: Setting items on this Screen to incorrect values may cause system to malfunction!	
	<pre>++: Select Screen f↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
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PCH Devices

This item is to set up IO controller hub devices.

Chapter 3 AMI BIOS

Restore AC Power Loss

Specify what state to go to when power is re-applied after a power failure (G3 state). It can be set to "Power on", "Power Off", and "Last State" states.



- Case Open Warning

Enable or disable the chassis intrusion monitoring function. When enabled and the case is opened, the warning message will show in POST screen.

– HD Audio

Enable or disable HD audio devices.

- VGA Priority

Determines priority between onboard and 1st off-board video device found. "Auto" is the default setting.

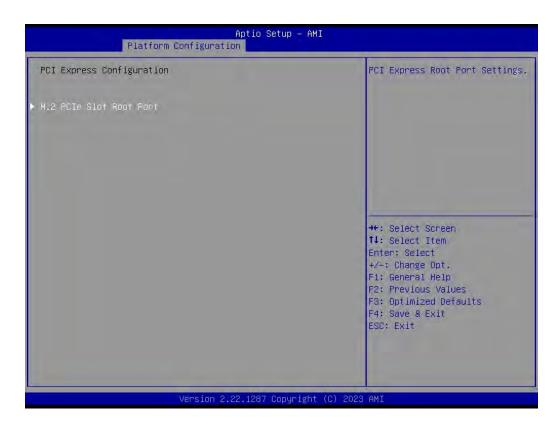
Platform Confi	Aptio Setup – AMI guration	
Restore AC Power Loss Case Open Warning HD Audio VGA Priority Onboard VGA Controller RTC Wake system from S5 BIOS Lock	[Power Off] [Disabled] [Enabled] [Auto] [Enabled] [Disable] [Enabled] VGA Priority Auto Onboard Device PCIE Device	Select active Video type **: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Vers	ion 2.22.1287 Copyright (C)	2023 AMI

- Onboard VGA Controller
 Enable or disable onboard VGA controller.
- RTC Wake System from S5

Enable or disable system wake on alarm event.

Chapter 3 AMI BIOS

PCI Express Configuration

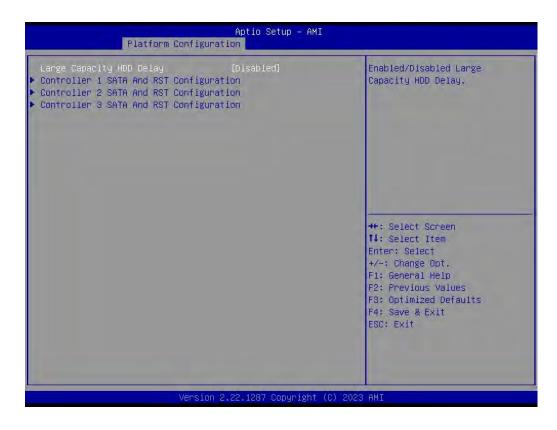


M.2 PCle Slot Root Port PCle root port settings.

Platform Confi	Aptio Setup – AMI guration	
M.2 PCIe Slot Root Port PCIe Speed PCI-E Port Link Speed PCI-E Port Link Max	[Enabled] [Auto] Link Training Error Link Training Error	Control the PCI Express Root Port. ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Vers	ion 2.22.1287 Copyright (C) 2	023 AMI



SATA RST Configuration



Platform Con	Aptio Setup – AMI figuration	
Controller 1 SATA And RST Con	figuration	▲ SATA test settings
SATA Configuration SATA Mode Selection	(Enabled) [AHCI]	
Support ALPM	[Enabled]	
SATA 0	[Not Installed]	
SATA O	[Enabled]	
Hot Plug Spin Up Device	[Disabled] [Disabled]	
SATA Device Type	[Hard Disk Drive]	
SATA 1	[Not Installed]	
SATA 1	[Enabled]	
Hot Plug	[Disabled]	++: Select Screen
Spin Up Device	[Disabled]	14: Select Item
SATA Device Type SATA 2	[Hard Disk Drive] [Not Installed]	Enter: Select +/-: Change Opt.
SATA 2	[Not installed]	F1: General Help
Hot Plug	[Disabled]	F2: Previous Values
Spin Up Device	[Disabled]	F3: Optimized Defaults
SATA Device Type	[Hard Disk Drive]	F4: Save & Exit
SATA 3	[Not Installed]	ESC: Exit
SATA 3 Hot Plug	[Enabled] [Disabled]	
Spin Up Device	[Disabled]	58
Spin Up Device		2023 AMI
Spin Up Device	[Disabled]	2023 AMI
Spin Up Device	[Disabled] rsion 2.22.1287 Copyright (C) Aptio Setup – AMI	2023 AMI
Spin Up Device Ve Platform Con	[Disabled] msion 2.22.1287 Copyright (C) Aptio Setup – AMI ifiguration	2023 AMI SATA test settings
Spin Up Device Ve Platform Con Controller 2 SATA And RST Con SATA Configuration	[Disabled] msion 2.22.1287 Copyright (C) Aptio Setup – AMI ifiguration	
Spin Up Device Ve Platform Con Controller 2 SATA And RST Con SATA Configuration Support ALPM	[Disabled] msion 2.22.1287 Copyright (C) Aptio Setup - AMI figuration figuration [Enabled] [Enabled]	
Spin Up Device Ve Platform Con Controller 2 SATA And RST Con SATA Configuration Support ALPM SSATA	[Disabled] msion 2.22.1287 Copyright (C) Aptio Setup - AMI figuration (Enabled) [Enabled] [Not Installed]	
Spin Up Device Ve Platform Con Controller 2 SATA And RST Con SATA Configuration Support ALPM SSATA SSATA	[Disabled] msion 2.22.1287 Copyright (C) Aptio Setup - AMI figuration [Enabled] [Enabled] [Not Installed] [Enabled]	
Spin Up Device V∈ Platform Con Controller 2 SATA And RST Con SATA Configuration Support ALPM SSATA	[Disabled] msion 2.22.1287 Copyright (C) Aptio Setup - AMI figuration (Enabled) [Enabled] [Not Installed]	
Spin Up Device Ve Platform Con Controller 2 SATA And RST Con SATA Configuration Support ALPM SSATA SSATA Hot Plug	[Disabled] msion 2.22.1287 Copyright (C) Aptio Setup - AMI figuration [Enabled] [Enabled] [Enabled] [Enabled] [Disabled]	
Spin Up Device Ve Platform Con Controller 2 SATA And RST Con SATA Configuration Support ALPM SSATA Hot Plug Spin Up Device SATA Device Type 4.2 SATA	[Disabled] rsion 2.22.1207 Copyright (C) Aptio Setup - AMI ifiguration (Enabled) [Enabled] [Enabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled]	
Spin Up Device Ve Platform Con Controller 2 SATA And RST Con SATA Configuration Support ALPM SSATA Hot Plug Spin Up Device SATA Device Type M.2 SATA	[Disabled] rsion 2.22.1287 Copyright (C) Aptio Setup - AMI ifiguration (Enabled) [Enabled] [Enabled] [Disabled] [Disabled] [Disabled] [Hard Disk Drive]	
Spin Up Device Ve Platform Con Controller 2 SATA And RST Con SATA Configuration Support ALPM SSATA Hot Plug Spin Up Device SATA Device Type M.2 SATA	[Disabled] rsion 2.22.1207 Copyright (C) Aptio Setup - AMI ifiguration (Enabled) [Enabled] [Enabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled]	SATA test settings
Spin Up Device Ve Platform Con Controller 2 SATA And RST Con SATA Configuration Support ALPM SSATA Hot Plug Spin Up Device SATA Device Type M.2 SATA	[Disabled] rsion 2.22.1207 Copyright (C) Aptio Setup - AMI ifiguration (Enabled) [Enabled] [Enabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled]	
Spin Up Device Ve Platform Con Controller 2 SATA And RST Con SATA Configuration Support ALPM SSATA Hot Plug Spin Up Device SATA Device Type M.2 SATA	[Disabled] rsion 2.22.1207 Copyright (C) Aptio Setup - AMI ifiguration (Enabled) [Enabled] [Enabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled]	SATA test settings ++: Select Screen
Spin Up Device Ve Platform Con Controller 2 SATA And RST Con SATA Configuration Support ALPM SSATA Hot Plug Spin Up Device SATA Device Type M.2 SATA	[Disabled] rsion 2.22.1207 Copyright (C) Aptio Setup - AMI ifiguration (Enabled) [Enabled] [Enabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled]	SATA test settings ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt.
Spin Up Device Ve Platform Con Controller 2 SATA And RST Con SATA Configuration Support ALPM SSATA Hot Plug Spin Up Device SATA Device Type M.2 SATA	[Disabled] rsion 2.22.1207 Copyright (C) Aptio Setup - AMI ifiguration (Enabled) [Enabled] [Enabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled]	SATA test settings ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help
Spin Up Device Ve Platform Con Controller 2 SATA And RST Con SATA Configuration Support ALPM SSATA Hot Plug Spin Up Device SATA Device Type M.2 SATA	[Disabled] rsion 2.22.1207 Copyright (C) Aptio Setup - AMI ifiguration (Enabled) [Enabled] [Enabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled]	SATA test settings ++: Select Screen 11: Select Item Enter: Select +/: Change Opt. F1: General Help F2: Previous Values
Spin Up Device Ve Platform Con Controller 2 SATA And RST Con SATA Configuration Support ALPM SSATA SSATA Hot Plug Spin Up Device	[Disabled] rsion 2.22.1207 Copyright (C) Aptio Setup - AMI ifiguration (Enabled) [Enabled] [Enabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled]	SATA test settings ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help

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Controller 3 SATA And RST Co	nfiguration	SATA test settings
SATA Configuration SATA Mode Selection Support ALPM SATA 4 Hot Plug Spin Up Device SATA Device Type SATA 5 SATA 5 Hot Plug Spin Up Device SATA A SATA 6 Hot Plug Spin Up Device SATA 6 SATA 6 Hot Plug Spin Up Device SATA 7 SATA 7 Hot Plug Spin Up Device	[Enabled] [AHCI] [Enabled] [Enabled] [Disabled] [Disabled] [Disabled] [Hard Disk Drive] [Not Installed] [Disabled] [Disabled] [Hard Disk Drive] [Not Installed] [Enabled] [Disabled] [Disabled] [Hard Disk Drive] [Not Installed] [Enabled] [Enabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled]	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

- SATA Configuration
 Enable or disable SATA devices.
- SATA Mode Selection

Set as AHCI or RAID when SATA controllers are enabled.

- Support ALPM

Enable or disable Aggressive Link Power Management (ALPM) protocol for Advanced Host controller Interface-compliant (AHCI) Serial ATA (SATA) devices.

 SATA Port 0~7(SATA port 0~3 are for Controller 1, SATA port 4~7 are for Controller 3)

Enable or disable SATA port 0~7.

 Hot Plug Port 0~7 (SATA port 0~3 are for Controller 1, SATA port 4~7 are for Controller 3)

Designates SATA port 0~7 as hot pluggable. "Disabled" is the default setting.

SATA Port 0~7 Spin Up Device (SATA port 0~3 are for Controller 1, SATA ports 4~7 are for Controller 3)
 On an edge detect from 0 to 1, the PCH starts a COM RESET initialization

On an edge detect from 0 to 1, the PCH starts a COM RESET initialization sequence to the device. "Disabled" is the default setting.

SATA Port 0~7 Device Type (SATA port 0~3 are for Controller 1, SATA port 4~7 are for Controller 3)

To identify the SATA is connected to Solid State Drive or Hard Disk Drive.

- PCH sSATA/M.2 Configuration (sSATAO and M.2 are for Controller 2)
 - sSATA/M.2 controller
 - Enable or disable sSATA/M.2 controller.
 - SATA M.2 Port
 Enable or disable SATA port.

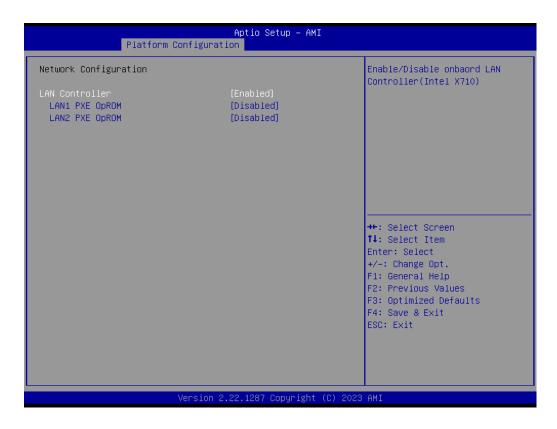
Chapter 3 AMI BIOS

USB Configuration

Enable/disable this USB physical connector (physical port). Once disabled, any USB devices plugged into the connector will not be detected by BIOS or OS.

USB Configuration		Enable/Disable this USB Physical Connector (physical port). Once disabled, any USB devices plug into the
USB 3.0 Port #4	[Enabled]	connector will not be detected
USB 3.0 Port #5	[Enabled]	by BIOS or DS.
USB 3.0 Port #6	[Enabled]	and the second s
USB 3.0 Port #7	[Enabled]	
USB 3.0 Port #8	[Enabled]	
USB 3.0 Port #9	[Enabled]	
JSB 2.0 Port #4	[Enabled]	
JSB 2.0 Port #5	[Enabled]	
JSB 2.0 Port #6	[Enabled]	and the state of the second
JSB 2.0 Port #7	[Enabled]	++: Select Screen
USB 2.0 Port #8	[Enabled]	14: Select Item
USB 2.0 Port #9	[Enabled]	Enter: Select
USB 2.0 Port #10	[Enabled]	+/−: Change Opt.
USB 2.0 Port #11(BMC)	[Enabled]	F1: General Help
USB 2.0 Port #12	[Enabled]	F2: Previous Values
USB 2.0 Port #13	(Enabled)	F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit
		ESC: Exit

Networking



- LAN Controller

Enable or disable Intel X710 controller support.

– LAN1 PXE OpROM

Enable or disable boot option for Intel X710 controller.

– LAN2 PXE OpROM

Enable or disable boot option for Intel X710 controller.

3.2.3.2 Server ME Configuration

This page shows the server ME configuration information.

Platform	Aptio Setup – AMI Configuration	
General ME Configuration Oper. Firmware Version Current State Error Code	18:6.0.4.2 Operational No Error	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
	Version 2.22.1287 Copyright (C) 2023	AMI

3.2.4 Socket Configuration

ays and provides options ange the Processor ngs
elect Screen elect Item : Select Change Opt. eneral Help revious Values otimized Defaults ave & Exit Exit
Sa

3.2.4.1 Processor Configuration

Processor Configuration		Change Per-Socket Settings
Per-Socket Configuration Processor BSP Revision Processor Socket Processor ID Processor Frequency Processor Max Ratio Processor Min Ratio Microcode Revision L1 Cache RAM(Per Core) L2 Cache RAM(Per Core)	806F7 - SPR-SP S2 Socket 0 Socket 1 000806F7* N/A 2.7006Hz N/A 18H N/A 08H N/A 28000130 N/A 80KB N/A 2048KB N/A	
L3 Cache RAM(Per Package) Processor 0 Version	26880KB N/A Intel(R) Xeon(R) Sliver 4410T	++: Select Screen †4: Select Item
Hyper-threading [All] Handware Prefetcher Adjacent Cache Prefetch DCU Streamer Prefetcher DCU IP Prefetcher VMX Enable SMX AES-NI	(Enable) (Enable) (Enable) (Enable) (Enable) (Enable) (Disable) (Enable)	Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Per-Socket Configuration

Use this to select how many processor cores you want to activate when you are using a dual or quad core processor.

Aptio Setup – AMI Socket Configur	ration
CPU Socket 0 Configuration	0: Enable all cores. FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF cores. NOTE: At least one core
Available Bitmap: 0000003B7B3DEF4 Disable Bitmap: 0	per CPU must be enabled. Disabling all cores is an invalid configuration.
	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
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Hyper-Threading [All]

Enable or disable Intel Hyper Threading technology.

Hardware Prefetcher

Hardware Prefetcher is a technique that fetches instructions and/or data from memory into the CPU cache memory well before the CPU needs it, so that it can improve the load-to-use latency. "Enable" is the default setting.

Adjacent Cache Prefetch

The Adjacent Cache-Line prefetch mechanism, like automatic hardware prefetch, operates without programmer intervention. When enabled through the BIOS, two 64-byte cache lines are fetched into a 128-byte sector, regardless of whether the additional cache line has been requested or not. "Enable" is the default setting.

DCU Streamer Prefetcher

Enable prefetch of next L1 data line based upon multiple loads in same cache line.

DCU IP Prefetcher

Enable prefetch of next L1 line based upon sequential load history.

VMX

Enable or disable Intel Virtual Machine Extensions (VMX) for IA-32 processors that supports Intel® Vanderpool Technology.

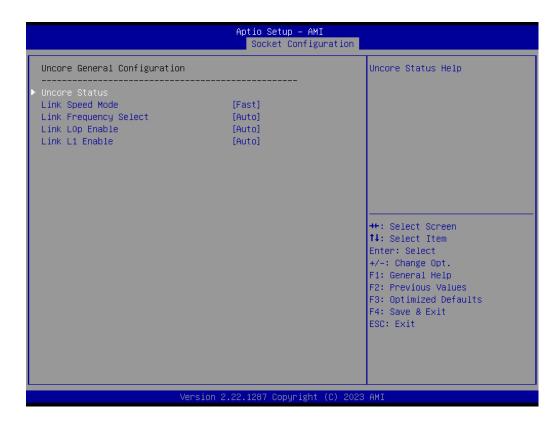
Enable SMX

Enable or disable Safer Mode Extensions. Safer Mode Extensions (SMX) provide a means for system software to launch an MLE and establish a measured environment within the platform to support trust decisions by end users.

AES-NI

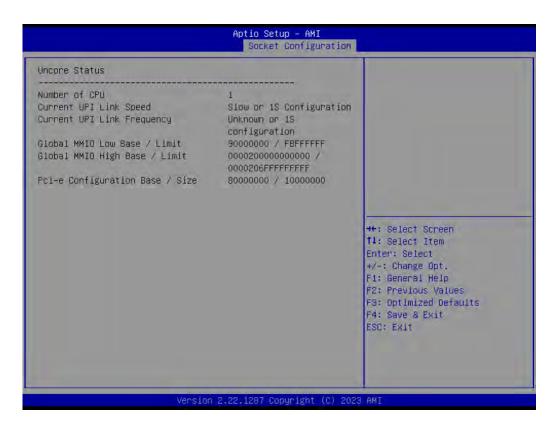
This item is to enable or disable CPU advanced encryption standard instructions. "Enable" is the default setting.

3.2.4.2 Uncore General Configuration



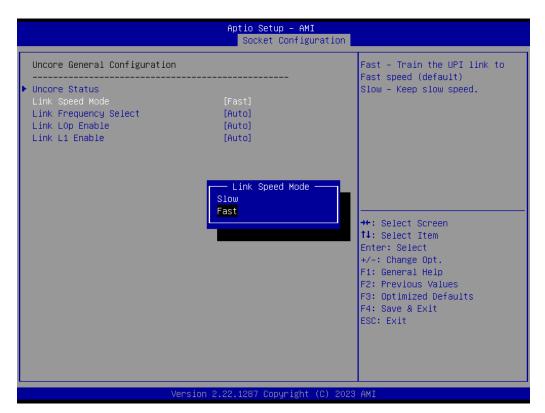
Uncore Status

Display information of Intel UltraPath Interconnect (UPI).



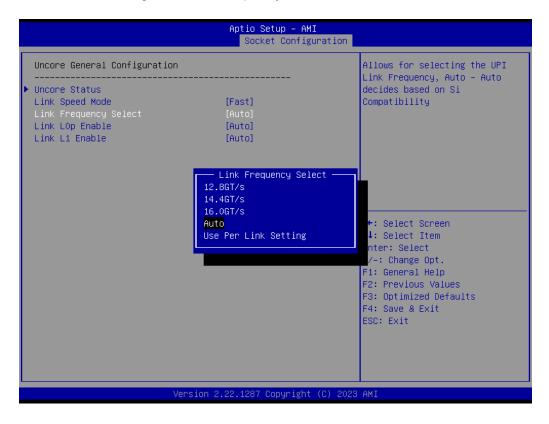
Link Speed Mode

Select the UPI link speed as either fast mode or slow mode.



Link Frequency Select

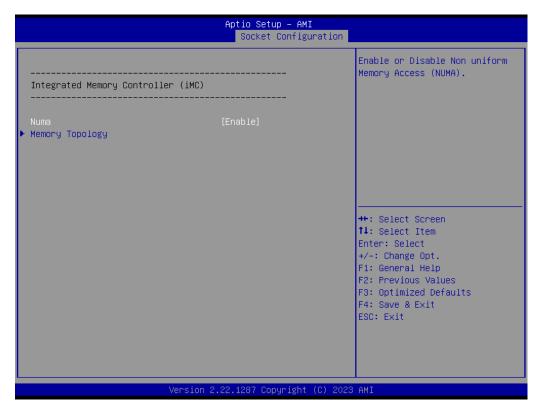
Allows for selecting the UPI link frequency.



- Link L0p Enable

- Enable or disable UPI Link0p. "Auto" is the default setting.
- Link L1 Enable
 - Enable or disable UPI Link1. "Auto" is the default setting.

3.2.4.3 Memory Configuration



Numa

Enable or disable non uniform memory access (NUMA). The Numa function is used by dual CPUs.

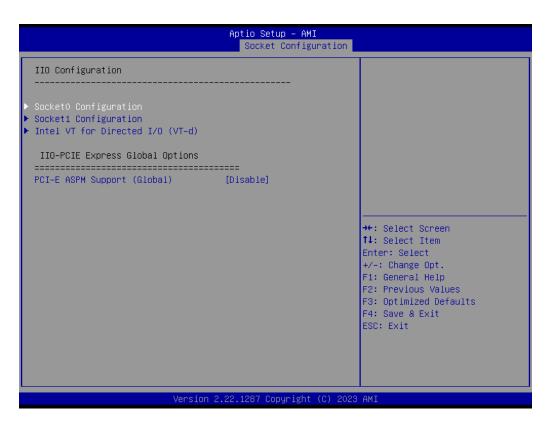
Memory Technology

Display memory topology with DIMM population information.

Aptio Setup – AMI Socket Configuration	
Socket0.DIMMA1: 4800MT/s Micron SRx4 32GB RDIMM	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
VENSION 2.22.1207 COPYING (C) 2020	

Chapter 3 AMI BIOS

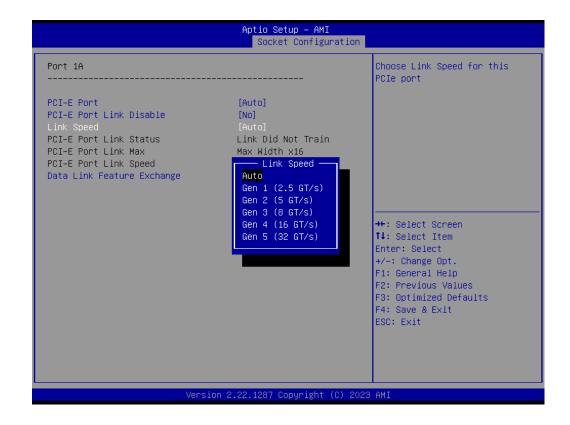
3.2.4.4 IIO Configuration



Socket0 PCIe Configuration

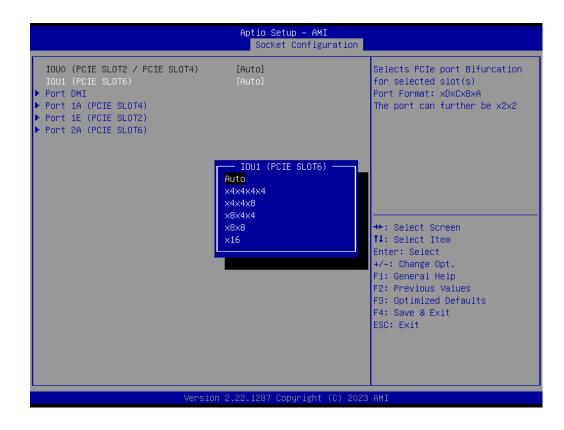
PCIe port bifurcation control and select target link speed as Gen1, Gen2, Gen3,Gen4, or Gen5. "Auto" is the default setting.

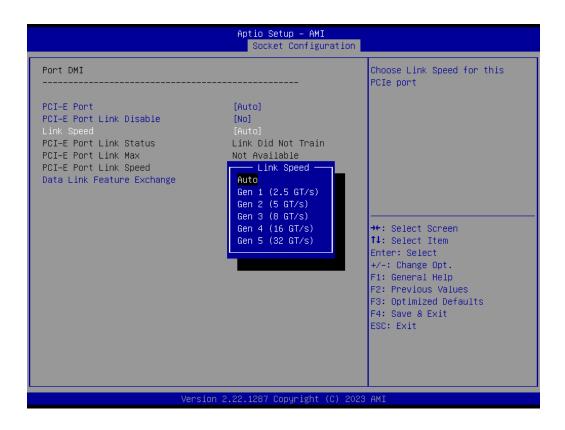
	Aptio Setup – AMI Socket Configuration	
IOU0 (PCIE SLOT5) IOU1 (PCIE SLOT3) IOU2 (PCIE SLOT1) Port 1A (PCIE SLOT5) Port 2A (PCIE SLOT3) Port 3A (PCIE SLOT1)	[Auto] [Auto] [Auto]	Selects PCIe port Bifurcation for selected slot(s) Port Format: xDxCxBxA The port can further be x2x2
	10U0 (PCIE SLOT5) Auto x4x4x4x4 x4x4x8 x8x4x4 x8x8 x16	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
	Version 2.22.1287 Copyright (C) 20	23 AMI



Socket1 PCIe Configuration

PCIe port bifurcation control and select target link speed as Gen1, Gen2, Gen3, Gen4, or Gen5. "Auto" is the default setting.





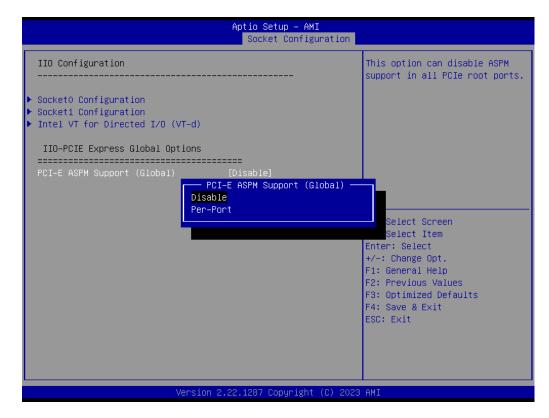
Intel VT for Directed I/O (VT-d)

Enable or disable Intel Virtualization Technology for directed I/O.

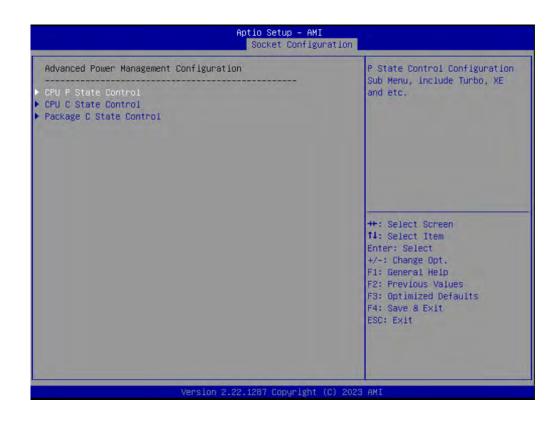
	Aptio Setup – AMI Socket Configurat:	ion
Intel VT for Directed I/O (VT-d)		Enable/Disable Intel Virtualization Technology for Directed I/O (VT–d) by
Intel VT for Directed I/O PCIe ACSCTL Source Validation Translation Blocking P2P Request Redirect P2P Completion Redirect Upstream Forwarding Enable	[Enable] [Disable] [Disabled] [Disabled] [Enabled] [Enabled] [Enabled]	reporting the I/O device assignment to VMM through DMAR ACPI Tables. To disable VT-d, X2APIC must also be disabled.
		<pre> ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
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PCI-E ASPM Support (Global)

Sets the ASPM level to disable or per-port.



3.2.4.5 Advanced Power Management Configuration



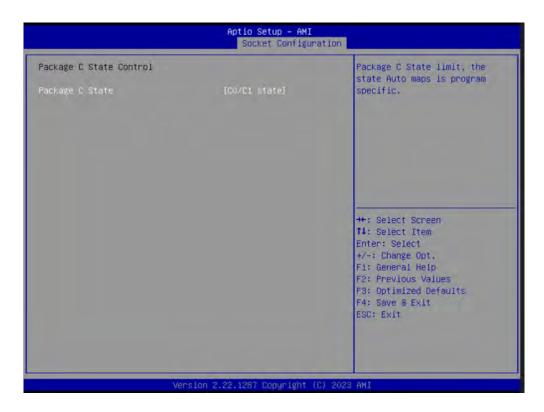
Chapter 3 AMI BIOS

CPU P State Control



Aptio Setup – AMI Socket Configuration		
CPU P State Control SpeedStep (Pstates) Boot performence ndde Energy Efficient Turbo Turbo Mode	[Enable] (Nax Performance] [Enable] [Enable]	Select the performance state that the BIOS will set before OS hand off.
	Boot performance mode - Max Performance Max Efficient	<pre>+: Select Screen 4: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Ve	ersion 2.22.1287 Copyright (C)	2023 AMI

Package C State Control



Chapter 3 AMI BIOS

3.2.5 Server Management

Main Advanced Platform Configura	Aptio Setup – AMI ation Socket Configuration	Server Mgmt <u>Security Boot</u> ▶
BMC Self Test Status BMC Device ID BMC Device Revision BMC Firmware Revision IPMI Version IPMI BMC Interface BMC configuration Version Wait For BMC OS Watchdog Timer OS Wtd Timer Timeout OS Wtd Timer Policy	PASSED 203 81 0.48 2.0 KCS 1.00 0000009 [Disabled] [Disabled] 10 [Reset]	Wait For BMC response for specified time out. In PILOTII, BMC starts at the same time when BIOS starts during AC power ON. It takes around 30 seconds to initialize Host to BMC interfaces.
 System Event Log Bmc self test log BMC network configuration BMC Sensor Event Configuration 		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version	2.22.1287 Copyright (C) 2023	B AMI

Wait for BMC

If enabled, motherboard will wait $30 \sim 60$ seconds until BMC module boots up completely. After that, the normal BIOS post screen will be displayed.

If disabled, motherboard will not wait for BMC module's response.

Wait for BMC counter
 Initialize host to BMC interfaces. The MB beeps per 5 seconds to check it.

OS Watchdog Timer

If enabled, starts a BIOS timer which can only be shut off by management software after the OS loads. "Disabled" is the default setting.

3.2.5.1 System Event Log



SEL Components

Enable or disable all features of system event logging during boot.

Erase SEL

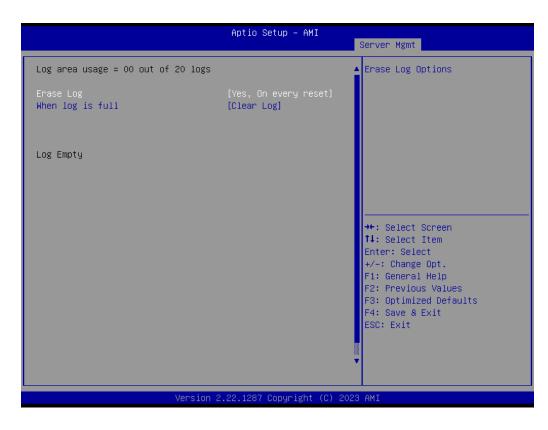
Choose options for erasing SEL. "No" is the default setting.

Log EFI Status Codes

Disable the logging of EFI status codes or log only error code or only progress code or both.

Chapter 3 AMI BIOS

3.2.5.2 BMC Self Test Log



Erase Log

Erase log options.

When Log Is Full

Select the action to be taken when log is full.

	Aptio Setup – AMI	Server Mgmt
Log area usage = 00 out of 20 Erase Log When log is full	logs [Yes, On every reset] [Clear Log]	▲ Select the action to be taken when log is full
Log Empty	When log is full Clear Log Do not log any more	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Ver	sion 2.22.1287 Copyright (C) 2	023 AMI

3.2.5.3 BMC Network Configuration

	Aptio Setup – AMI	Server Mgmt
BMC network configuration		Select to configure LAN
жжжжжжжжжжжжжж		channel parameters statically
Configure IPv4 support жижжжжжжжжжжжжж		or dynamically(by BIOS or BMC). Unspecified option will not modify any BMC network
Lan channel 1		parameters during BIOS phase
Configuration Address source	[Unspecified]	pur une cer s' dur Thg B100 phuse
Current Configuration Address	StaticAddress	
Station IP address	192.168.0.1	
Subnet mask	255.255.255.0	
Station MAC address	CC-82-7F-34-76-CD	
Router IP address	0.0.0	
Router MAC address	00-00-00-00-00-00	↔+: Select Screen
		↑↓: Select Item
Lan channel 2		Enter: Select
Configuration Address source	[Unspecified]	+/-: Change Opt.
Current Configuration Address	StaticAddress	F1: General Help
sounce		F2: Previous Values
Station IP address	192.168.1.1	F3: Optimized Defaults
Subnet mask	255.255.255.0	F4: Save & Exit
Station MAC address	CC-82-7F-34-76-CE	ESC: Exit
Router IP address	0.0.0.0	
Router MAC address	00-00-00-00-00-00	
Nouter MHG audi ess	00-00-00-00-00	
Versio	n 2.22.1287 Copyright (C)	2023 AMI

Configuring Address Source

Select to configure LAN channel parameters statically or dynamically (by BMC). Unspecified options will not modify any BMC network parameters during BIOS phase.

3.2.5.4 BMC Sensor Event Configuration

	Aptio Setup – AMI	Server Mgmt
BMC Sensor Event Configuration		Enable/Disable Fan Sensor Event.
Fan Sensor Event Setting		Event.
CPUFANO	[Enabled]	
CPUFAN1	[Enabled]	
SYSFANO	[Enabled]	
SYSFAN1	[Enabled]	
SYSFAN2	[Enabled]	
SYSFAN3	[Enabled]	
SYSFAN4	[Enabled]	
		++: Select Screen
		↑↓: Select Item
		Enter: Select
		+/-: Change Opt. F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit
		Loos Entr
Version	n 2.22.1287 Copyright (C)	2023 AMI

3.2.6 Security

	Aptio Setup – Al	
Main Huvanceu Plattori	CONTIGURATION SOCKET CONTIN	guration Server Mgmt Security Boot ▶
Password Description		Set Administrator Password
If ONLY the Administrator then this only limits acc only asked for when enter If ONLY the User's passur is a power on password an boot or enter Setup. In S have Administrator rights The password length must in the following range:	cess to Setup and is ring Setup. and is set, then this nd must be entered to Setup the User will s. be	
Minimum length	3	
Maximum length	20	++: Select Screen ↑↓: Select Item
Administrator Password		Enter: Select
User Password		+/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit
▶ Secure Boot		ESC: Exit
	Version 2.22.1287 Copyrigh	t (C) 2023 AMI

Note!

With AC power & Battery. Short CMOS1 Jumper: Date/Time & Password: Keep Setting: reset to default AC power and CMOS battery are removed. Short CMOS1 Jumper: Date/Time: reset to default Password: Keep Setting: reset to default

3.2.6.1 Secure Boot



3.2.7 Boot

Main Advanced Platform Confi	Aptio Setup – AMI guration Socket Configuration	Server Mgmt Security Boot
Boot Configuration Setup Prompt Timeout Bootup NumLock State Quiet Boot	<mark>1</mark> [On] [Disabled]	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
Boot Option Priorities Boot Option #1 Boot Option #2	[UEFI: JetFlashTranscend 32GB 1100, Partition 1 (JetFlashTranscend 32GB 1100)] [Disabled]	
Optimized Boot	[Disabled]	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Vers	ion 2.22.1287 Copyright (C) 20	23 AMI

- Setup Prompt Timeout Number of seconds to wait for setup activation key. "1" is the default setting.
- Bootup NumLock State
 Select the keyboard NumLock state as "On" or "Off".
- Quiet Boot
 Enable or disable quiet boot option.
- Boot Option Priorities
 Sets the system boot priorities.

3.2.8 Save & Exit

Save Options Save Changes and Exit	Exit system setup after savin the changes.
Discard Changes and Exit	the changes.
Save Changes and Reset	
Discard Changes and Reset	
Save Changes	
Discard Changes	
Default Options Restore Defaults	
Save as User Defaults	
Restore User Defaults	<pre>++: Select Screen f↓: Select Item</pre>
Boot Override	Enter: Select
UEFI: Built–in EFI Shell UEFI: JetFlashTranscend 32GB 1100, Partition 1	+/−: Change Opt. F1: General Help
(JetFlashTranscend 32GB 1100)	F2: Previous Values
	F3: Optimized Defaults F4: Save & Exit
	ESC: Exit

Save Changes and Exit
Exit system setup after saving the changes.
Discard Changes and Exit
Exit system setup without saving any changes.
Save Changes and Reset
Reset the system after saving changes.
Discard Changes and Reset
Reset system setup without saving any changes.
Save Changes
Save changes done so far to any of the setup options.
Discard Changes
Discard changes done so far to any of the setup options.
Restore Defaults
Restore/Load default values for all the setup options.

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

Restore User Defaults

Restore the user defaults to all the setup options.



Chipset Software Installation Utility

4.1 Before Beginning

To facilitate the installation of the enhanced display drivers and utility software, read the instructions in this chapter carefully. The drivers for the ASMB-927 are available online for download from the Advantech support website.

Before beginning, it is important to note that most display drivers need to have the relevant software application already installed on the system prior to installing the enhanced display drivers. In addition, many of the installation procedures assume that you are familiar with both the relevant software applications and operating system commands. Review the relevant operating system commands and the pertinent sections of your application software's user manual before performing the installation.

4.2 Introduction

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

- Core PCI PnP services
- Serial ATA interface support
- USB 1.1/2.0/3.2 gen1 support
- Identification of Intel chipset components in the device manager

Note! The chipset driver is used for the following versions of Windows, and it has to be installed before installing all the other drivers:

Windows Server 2022 DataCenter x64	x64
Windows Server 2019 DataCenter x64	x64
Windows 11 Enterprise x64	x64
Windows 10 Enterprise x64	x64



It is necessary to update all the latest Microsoft hot fix files when using this OS.





Graphics Setup

5.1 Introduction

Install the ASPEED VGA driver to enable this function, which includes the following features:

- 32-bit 2D graphics engine on board for normal use.
- 64 MB RAM for this chip, the highest resolution is 1920x1200.

5.2 Windows Series Driver Setup

When the folder is displayed, navigate to the "Graphic" folder and click the executable file to complete the installation of the drivers for the OS that you need.



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- 1. If ASMB-927 carries an additional graphics card for VGA output, please set this additional graphic card as "major output" under the "Display properties" of OS.
- 2. The WDDM driver can support for the following OS versions:
 - Windows 10 x64 version
 - Windows 11 x64 version
 - Windows Server 2012R2 version (WHQL
 - Windows Server 2016 version (WHQL)
 - Windows Server 2019 version (WHQL)
 - Windows Server 2022 version (WHQL)
- 3. ASPEED Graphics WDDM Driver Limitation on Microsoft Windows OS.
 - It is a non-WHQL certified driver because ASPEED VGA is a 2D VGA, it cannot meet the WHQL requirement of WDDM drivers which require 3D VGA functions.
 - Because it is a non-WHQL certified driver, it may have some compatibility issues with some specific applications



LAN Configuration

6.1 LAN Configuration

6.1.1 Introduction

The ASMB-927 has two ten Gigabit Ethernet LAN connections, LAN1 and LAN2 - $Intel^{\$}$ X710-AT2. They eliminate bottlenecks of network data flow and incorporate Gigabit Ethernet at 10 Gbps.

6.1.2 Features

- 100/1000 & 10G Base-T Ethernet controller
- 100/1000 & 10G Base-T triple-speed MAC
- Full duplex at 100/1000 Mbps or 10 Gbps and half duplex at 10/100/1000 Mbps
- Wake-on-LAN (WOL) support

6.1.3 Installation

The integrated Intel gigabit Ethernet controller supports all major network operating systems. However, the installation procedure varies with different operating systems. In the following sections, refer to the one that provides the driver setup procedure for the operating system you are using.

6.1.4 Windows Series Driver Setup

Select folder "LAN" then click the proper LAN driver for the OS.



Programming the Watchdog Timer

The ASMB-927's watchdog timer can be used to monitor system software operation and take corrective action if the software fails to function within the programmed period. This section describes the operation of the watchdog timer and how to program it.

A.1 Watchdog Timer Overview

The watchdog timer is built in to the EC controller IT5121VG. It provides the following functions for user programming:

- Can be enabled and disabled by user's program
- Timer can be set from 1 to 255 seconds
- Generates an interrupt or reset signal if the software fails to reset the timer before time-out

A.2 Programming the Watchdog Timer

The I/O port address of the watchdog timer is as below:

Table A.1: Adsresses			
Address	Description		
0x57	Event - Warm Reset: 0x04		
0x5E	Warm Reset Timer (High BYTE)	Warm Reset Timer (High BYTE)	
0x5F	Warm Reset Timer (Low BYTE)		

Here is an example to step by step program the Watchdog Timer.

Table A.2: Steps			
Steps	Action	Description	
00	Read 0x299 port Clear I/O port		
	Wait IBF clear	0x29A, BIT1, = 0	
01	Write 0x89 to 0x29A		
	Wait IBF clear	0x29A, BIT1, = 0	
02	Write 0x5E to 0x299 port		
	Wait IBF clear	0x29A, BIT1, = 0	
03	Write 0x00 to 0x299 port	Set 10 sec (high byte)	
	Wait IBF clear	0x29A, BIT1, = 0	
04	Write 0x89 to 0x29A		
	Wait IBF clear	0x29A, BIT1, = 0	
05	Write 0x5F to 0x299 port		
	Wait IBF clear	0x29A, BIT1, = 0	
06	Write 0x64 to 0x299 port	Set 10 sec (low byte)	
	Wait IBF clear	0x29A, BIT1, = 0	
07	Write 0x89 to 0x29A		
	Wait IBF clear	0x29A, BIT1, = 0	
08	Write 0x57 to 0x299 port	Watchdog Event	
	Wait IBF clear	0x29A, BIT1, = 0	
09	Write 0x04 to 0x299 port	(Warm) Reset event	
	Wait IBF clear	0x29A, BIT1, = 0	
10	Write 0x28 to 0x29A	Start watchdog	
	Wait 1 ~ 9 sec		
	Wait IBF clear	0x29A, BIT1, = 0	
11	Write 0x29 to 0x29A	Stop watchdog	
	Wait IBF clear	0x29A, BIT1, = 0	
12	Go to Step 07		



I/O Pin Assignments

B.1 USB2.0 Header (USB2H1)

2				10
0	0	0	0	0
0	0	0	0	
1			7	

Table B.1: USB Header (USB2_78, USB2_910)			
Pin	Signal	Pin	Signal
1	USB_VCC5	2	USB_VCC5
3	USB_D-	4	USB_D-
5	USB_D+	6	USB_D+
7	GND	8	GND
9	Кеу	10	GND

B.2 USB 3.2 Gen1 Header (USB3H1)

11	19
	000000
10	1

Table B.2: USB Header (USB5_6, USB7_8)			
Pin	Signal	Pin	Signal
1	+5 V	2	STDA_SSRX-
3	STDA_SSRX+	4	GND
5	STDA_SSTX-	6	STDA_SSTX+
7	GND	8	D-
9	D+	10	OC#
11	D+	12	D-
13	GND	14	STDA_SSTX+
15	STDA_SSTX-	16	GND
17	STDA_SSRX+	18	STDA_SSRX-
19	+5 V	20	

B.3 VGA Connector (VGA1)

5 (´ o o o o o `) 1
10	00000	6
15	\ 0 0 0 0 0 /	11

Table B.3: VGA Connector (VGA1)				
Pin	Signal	Pin	Signal	
1	RED	9	VCC	
2	GREEN	10	GND	
3	BLUE	11	N/C	
4	N/C	12	SDT	
5	GND	13	H-SYNC	
6	GND	14	V-SYNC	
7	GND	15	SCK	
8	GND			

B.4 RS-232 Interface (COM1)

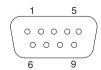


Table B.4: RS-232 Connector (COM1)			
Pin	Signal		
1	DCD		
2	RXD		
3	TXD		
4	DTR		
5	GND		
6	DSR		
7	RTS		
8	CTS		
9	RI		

B.5 RS-232 Interface (COM2)



Table B.5: RS-232 header (COM2)		
Pin	Signal	
1	DCD	
2	DSR	
3	RXD	
4	RTS	
5	TXD	
6	CTS	
7	DTR	
8	RI	
9	GND	

B.6 External Keyboard Connector (KBMS1)



Table B.6: External keyboard connector (KBMS2)			
Pin	Signal		
1	KB CLK		
2	KB DATA		
3	MS DATA		
4	GND		
5	VCC		
6	MS CLK		

B.7 System & CPU Fan Power Connector (CPUFAN0~1, SYSFAN0~3, REAR_FAN)



Table B.7: CPU FAN connector (CPUFAN0~1)			
	CPUFAN0	CPUFAN1	
1	GND	GND	
2	+12 V	+12 V	
3	FAN0 MODE_TACH	FAN1 MODE_TACH	
4	FAN0 MODE_PWM	FAN1 MODE_PWM	

Table B.8	Table B.8: SYS FAN connector (SYSFAN0~3, REAR_FAN)				
	SYS FAN0	SYS FAN1	SYS FAN2	SYSFAN3	REAR_FAN
1	GND	GND	GND	GND	GND
2	+12 V	+12 V	+12 V	+12 V	+12 V
3	FAN2 MODE_TACH	FAN2 MODE_TACH	FAN3 MODE_TACH	FAN3 MODE_TACH	FAN4 MODE_TACH
4	FAN2 MODE_PWM	FAN2 MODE_PWM	FAN3 MODE_PWM	FAN3 MODE_PWM	FAN4 MODE_PWM

B.8 Power LED (JFP3)

1	2	3
0	0	0

Table B.9: Power LED connector (JFP1)		
Pin	Function	
1	LED power (3.3 V)	
2	NC	
3	Ground	

B.9 External Speaker Connector (JFP2)

1	4	7	10
C	\mathbf{c})(0

Table B.10: External speaker connector (JFP2)			
Pin	Function		
1	SPK+		
4	NC		
7	BZ-		
10	SPK-		

B.10 Reset Connector (JFP1)



Table B.11: Reset connector (JFP1)			
Pin	Signal		
9	RESET		
12	GND		

B.11 HDD LED Connector (JFP1)



Table B.12: HDD LED connector (JFP1)		
Pin	Signal	
2	HDD_LED+	
5	HDD_LED-	

B.12 ATX Soft Power Switch (JFP1)

36

Table B.13: ATX soft power switch (JFP1)		
Pin	Signal	
3	PWR-BTN	
6	GND	

B.13 SMBus Connector (SMBUS1)



Table B.14: Front panel SMBus connector (SMBUS1)		
Pin	Signal	
1	+3.3V_AUX	
2	SMB_SCL_FRU	
3	SMB_SDA_FRU	
4	GND	

B.14 USB & LAN Ports (LAN1, LAN2, USB3C1, BMC_LAN_USB3C2)

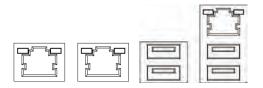


Table B.15: USB port				
Pin	Signal	Pin	Signal	
1	VCC_DUAL	3	Data0+	
2	Data0-	4	GND	

Table B.16: Giga LAN 10/100/1000 Base-T RJ-45 port				
Pin	Signal	Pin	Signal	
1	MID0+	4	MID2+	
2	MID0-	5	MID2-	
3	MID1+	7	MID3+	
6	MID1-	8	MID3-	

B.15 Audio Connector (HDAUD1)

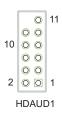


Table B.17: Front panel audio connector (HDAUD1)		
Signal	Pin	Signal
+V5_AUDIO	2	GND
ACZ_SYNC	4	ACZ_BITCLK
ACZ_SDOUT	6	ACZ_SDIN0
ACZ_SDIN1	8	ACZ_RST#
ACZ_12V	10	GND
GND	12	N/C
	Signal +V5_AUDIO ACZ_SYNC ACZ_SDOUT ACZ_SDIN1 ACZ_12V	Signal Pin +V5_AUDIO 2 ACZ_SYNC 4 ACZ_SDOUT 6 ACZ_SDIN1 8 ACZ_12V 10

B.16 Case Open Connector (JCASE1)

0 1 0 2

Table B.18: Case open connector (JFP1)		
Pin	Signal	
1	CASEOP	
2	GND	

B.17 Front Panel LAN LED Connector (LANLED1)



Table B.19: LAN LED connector (LANLED1)			
Pin	Signal	Pin	Signal
1	LAN1_ACT#	2	LAN2_ACT#
3	+3V3_LAN1LED	4	+3V3_LEN2LED
5	LAN3_ACT#	6	LAN4_ACT#
7	+3V3_LAN3LED	8	+3V3_LEN4LED
9	NC	10	NC

B.18 SATA SGPIO Connector (SGPIO1, SGPIO2)



Table B.20: SATA SGPIO connector (SGPIO1, SGPIO2)		
Pin	Signal	
1	SCLOCK_PCH	
2	NC	
3	SLOAD_PCH	
4	SDATAOUT0_PCH	
5	SDATAOUT1_PCH	

B.19 ESPI Connector (ESPI1)

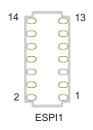


Table B.	Table B.21: ESPI connector (ESPI1)			
Pin	Signal	Pin	Signal	
1	IO1	2	CLK	
3	IO0	4	RST	
5	+V3.3	6	CS	
7	GND	8	IO3	
9	+V3.3_AUX	10	IO2	
11	+V1.8_AUX	12	SMB_CLK	
13	ALARM	14	SMB_DATA	

B.20 Clear CMOS Connector (JCMOS1, JME1)



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Table B.22: Clear CMOS connector (JCMOS1, JME1)			
Pin	Signal	Signal	
	JCMOS1	JME1	
1	NC	NC	
2	RTC_RST_PCH	HDA_SDOUT_PCH	
3	GND	+3.3V	

B.21 PMBUS Connector (PMBUS1)

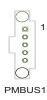


Table B.23: PMBUS connector (PMBUS1)		
Pin	Signal	
1	SMB_SCL_PM	
2	SMB_SDA_PM	
3	SMB_ALT_PM	
4	GND	
5	+3.3V	

B.22 GPIO Connector (GPIO1)

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	$\bigcirc \bigcirc$	
	$\bigcirc \bigcirc$	
2	$\bigcirc \bigcirc$	1
	GPIO1	
2	00	1

Table B.24: GPIO connector (GPIO1)				
Pin	Signal	Pin	Signal	
1	SIO_GPIO0	2	SIO_GPIO4	
3	SIO_GPIO1	4	SIO_GPIO5	
5	SIO_GPIO2	6	SIO_GPIO6	
7	SIO_GPIO3	8	SIO_GPIO7	
9	VCC_GPIO0	10	GND	

B.23 PEHP Connector



Table B.25: PEHP connector		
Pin	Signal	
1	ALERT	
2	CLK	
3	DATA	
4	GND	



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