

A4SAN-H/-E/-L
A4SAN-H/-E/-L-WOHS

USER'S MANUAL

Revision 1.0b (MNL-2690)

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Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the A4SAN Series motherboard. Installation and maintenance should be performed by certified service technicians only.

Notes

For your system to work properly, follow the links below to download all necessary drivers/utilities and the user's manual for your server.

- Supermicro product manuals: https://www.supermicro.com/support/manuals
- Product drivers and utilities: https://www.supermicro.com/wdl
- Product safety info: https://www.supermicro.com/about/policies/safety_information.cfm
- A secure data deletion tool designed to fully erase all data from storage devices can be found on our website: https://www.supermicro.com/about/policies/disclaimer.cfm?url=/wdl/utility/Lot9_Secure_Data_Deletion_Utility
- If you have any questions, contact our support team. Region-specific Technical Support email addresses can be found at: "Contacting Supermicro" on page 9
- If you have any feedback on Supermicro product manuals, contact our writing team at: Techwriterteam@supermicro.com

This manual may be periodically updated without notice. Check the Supermicro website for possible updates to the manual revision level.

Conventions Used in the Manual

Special attention should be given to the following symbols for proper installation and to prevent damage done to the components or injury to yourself.



Warning! Indicates important information given to prevent equipment/property damage or personal injury.



Warning! Indicates high voltage may be encountered while performing a procedure.

Important: Important information given to ensure proper system installation or to relay safety precautions.

Note: Additional Information given to differentiate various models or provides information for proper system setup.

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Chapter 1:

Introduction

Congratulations on purchasing your computer motherboard from an industry leader. Supermicro motherboards are designed to provide you with the highest standards in quality and performance.

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1.1 Quick Reference

For details on the A4SAN-H/-E/-L/-WOHS motherboard layout, features, and other quick reference information, refer to the content below.

Checklist

Main Parts List (Retail Single Package)		
Description	**Part Number**	**Quantity**
Supermicro Motherboard with Passive Heatsink (-WOHS SKU does not include a heatsink)	A4SAN-H/-E/-L	1
Audio Cable (line-out, mic-in)	CBL-OTHR-0986	1
COM Cable	CBL-CDAT-0665	2
USB Cable	CBL-CUSB-0983	1
DC IN Power Cable	CBL-PWEX-1029	1
Quick Reference Guide	MNL-2690-QRG	1

Main Parts List (Bulk Package)		
Description	**Part Number**	**Quantity**
Supermicro Motherboard with Passive Heatsink (-WOHS SKU does not include a heatsink)	A4SAN-H/-E/-L	1
DC IN Power Cable	CBL-PWEX-1029	1

Optional Parts List		
Description	**Part Number**	**Quantity**
Power Adapter	MCP-250-10134-0N	1
Heat Spreader	MCP-350-10105-0B	1
DC IN Power Cable (DC Jack)	CBL-PWEX-1110-15	1

Motherboard Layout

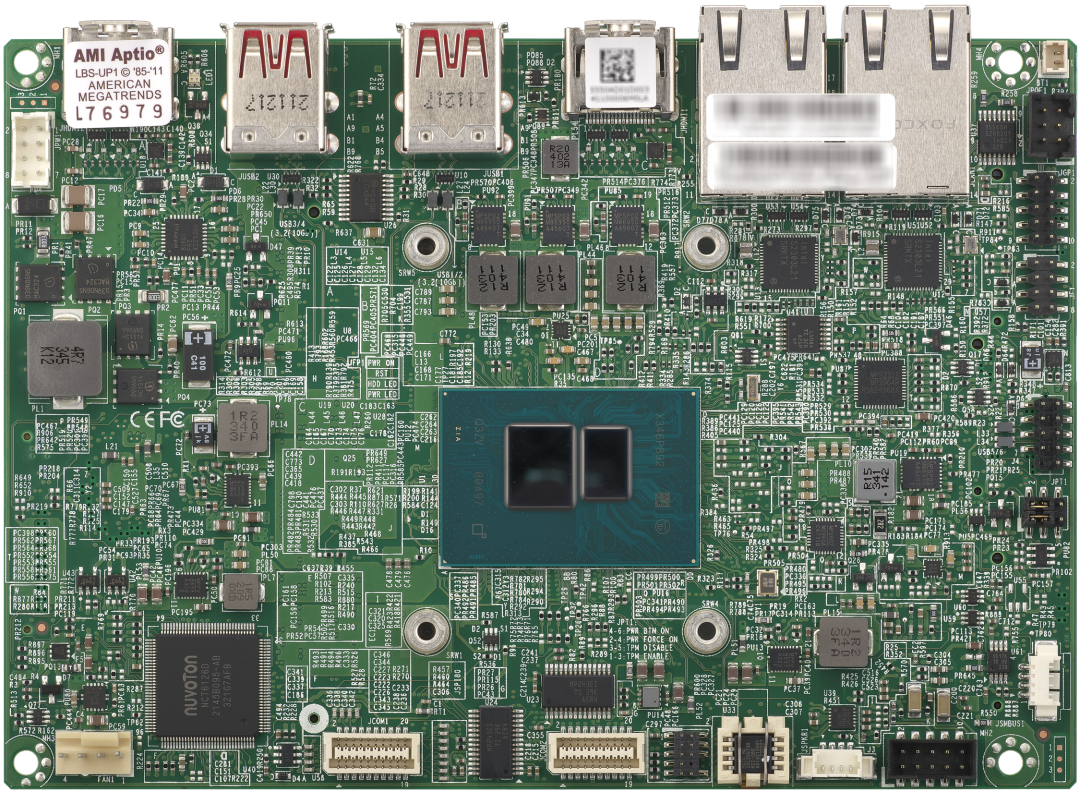


Figure 1-1. A4SAN-H/-E/-L/-WOHS Motherboard Top Photo

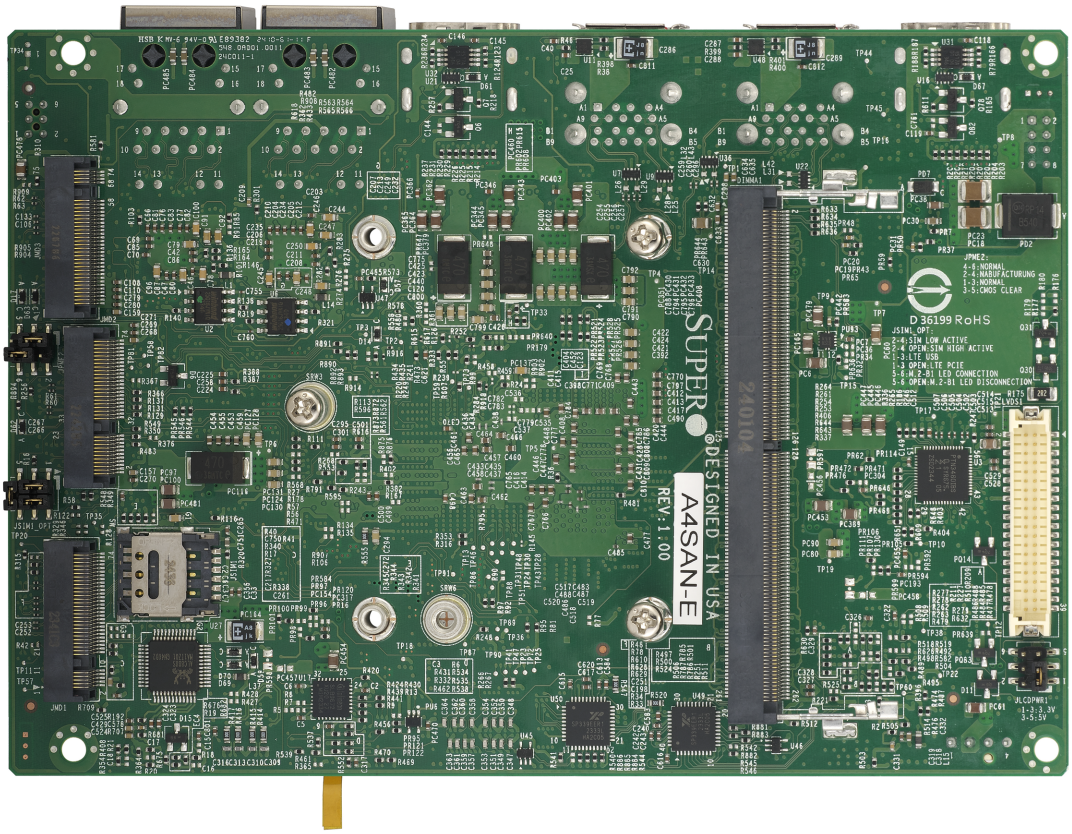


Figure 1-2. A4SAN-H/-E/-L-WOHS Motherboard Bottom Photo

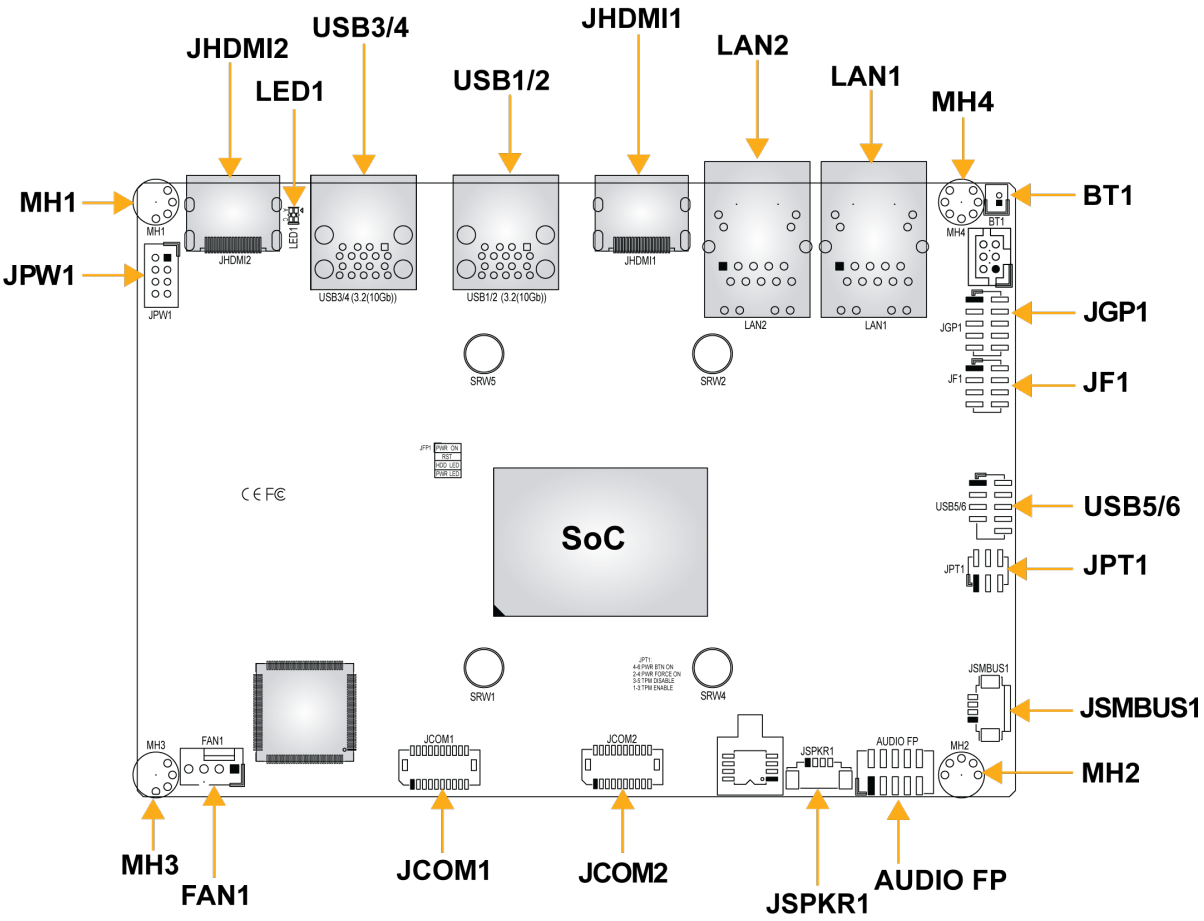


Figure 1-3. A4SAN-H/-E/-L/-WOHS Motherboard Top Layout

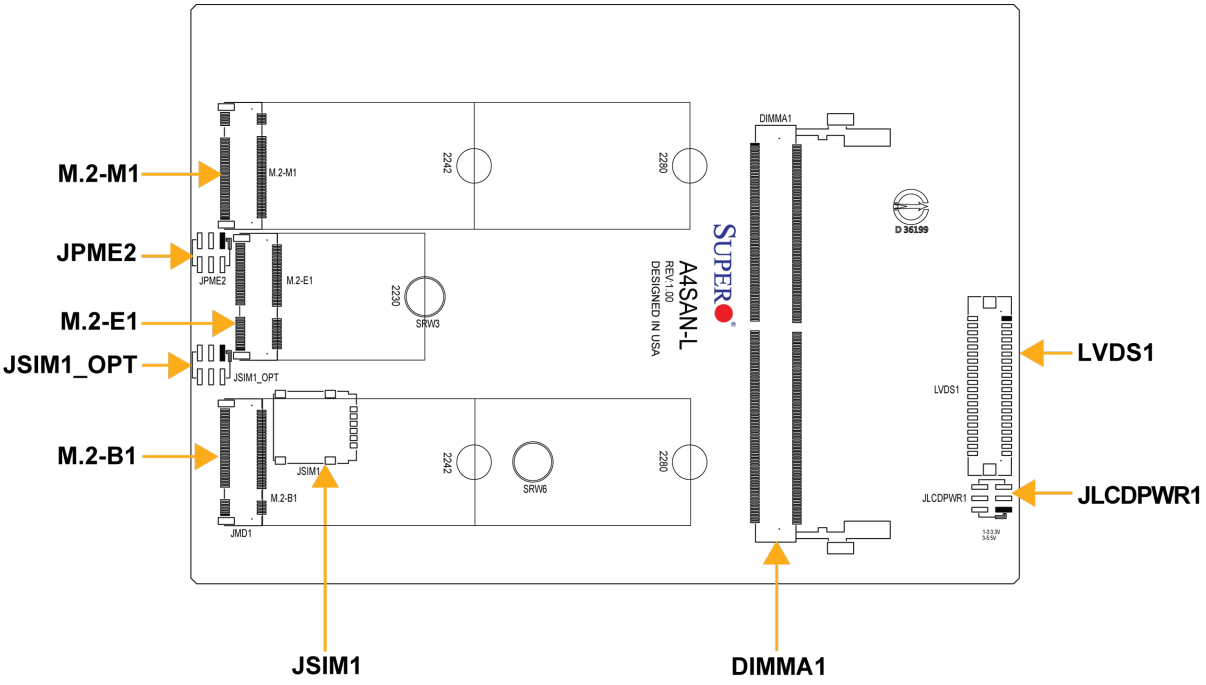


Figure 1-4. A4SAN-H/-E/-L/-WOHS Motherboard Bottom Layout

Notes:

- See "Component Installation" on page 32 for detailed information on jumpers, connectors, and LED indicators.
- "■" indicates the location of pin 1.
- Components not documented are for internal testing only.
- Use only the correct type of onboard CMOS battery as specified by the manufacturer. Do not install the onboard battery upside down to avoid possible explosion.

Motherboard Mechanical Drawings

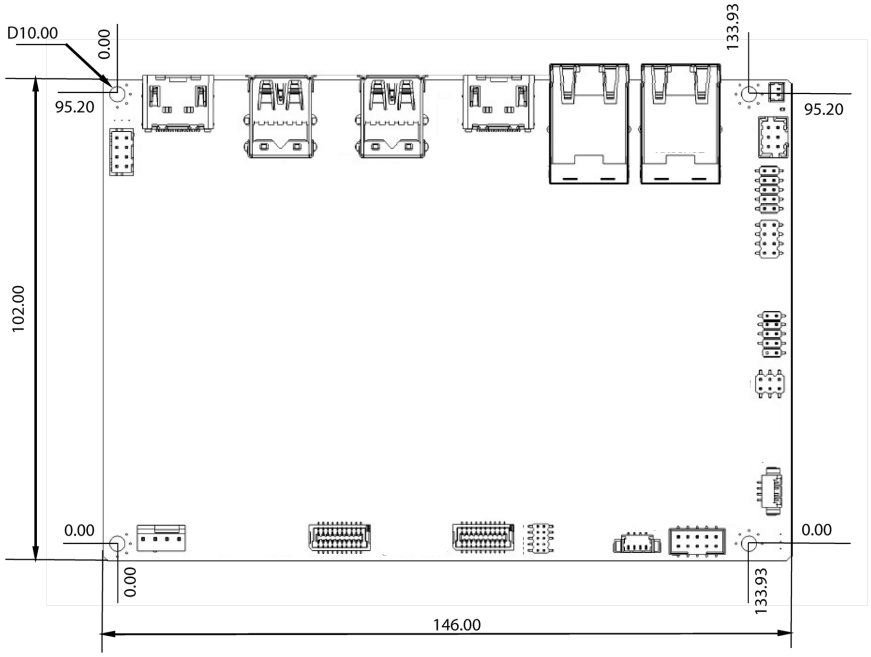


Figure 1-5. A4SAN-H/-E/-L Top Layout Mechanical Drawing

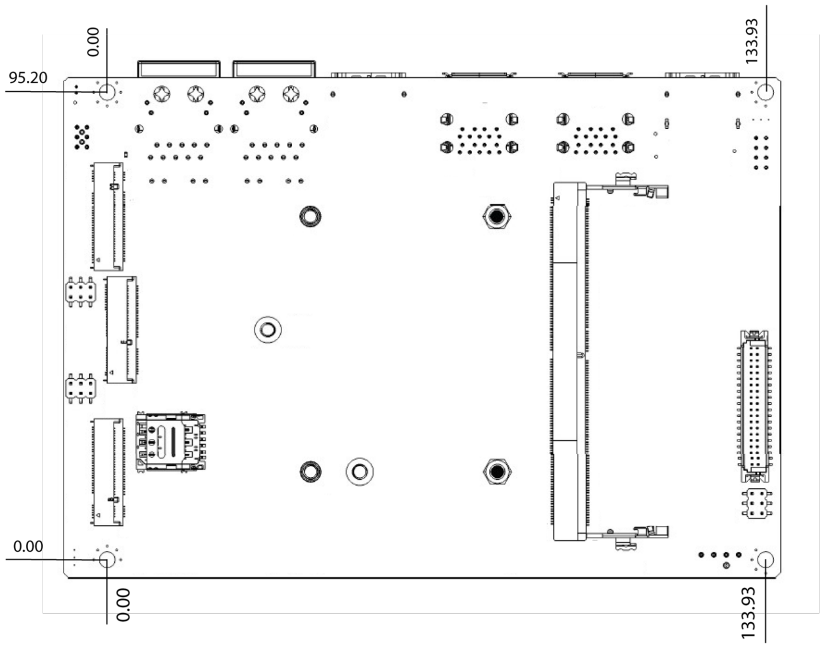


Figure 1-6. A4SAN-H/-E/-L Bottom Layout Mechanical Drawing

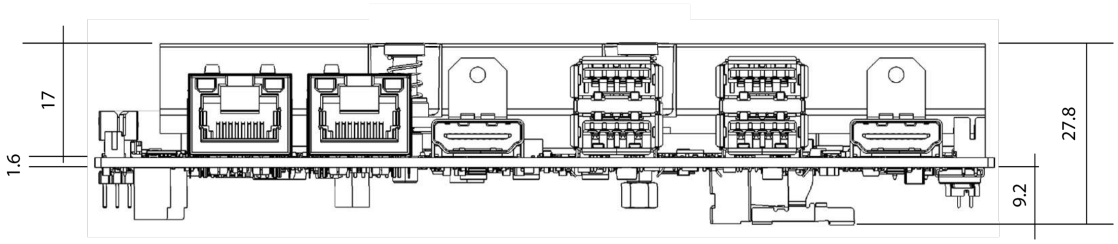


Figure 1-7. A4SAN-H/-E/-L Back Panel Mechanical Drawing

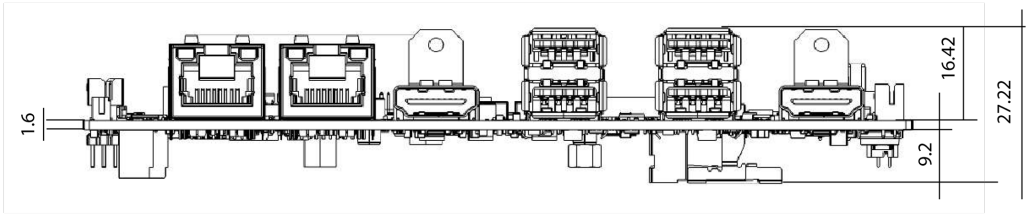


Figure 1-8. A4SAN-H/-E/-L/-WOHS Back Panel Mechanical Drawing

Quick Reference Table

Jumper	Description	Default Settings
JLCDPWR1	LVDS Panel VCC Power 3.3 V/5 V	Pins 1–3 (3.3 V)
JPME2	CMOS Clear ME Manufacturing Mode	Pins 1–3 (Normal) Pins 4–6 (Normal)
JPT1	Onboard TPM 2.0 Enable/Disable Force Power On	Pins 1–3 (Enabled) Pins 2–4 (Force Power On)
JSIM1_OPT	USB or PCIe Interface Optional SIM Detect M.2 B-Key Storage LED	Pins 1–3 Short (USB) Pins 2–4 Short (Low Active) Pins 5–6 Enable

Connector	Description
AUDIO FP	Front Panel Audio Header (Line-out, Mic-in)
BT1	CMOS Battery Header
FAN1	Fan Header
JCOM1, JCOM2	JCOM1: COM1/2 header for two RS232/422/485 JCOM2: COM3/4 header for two RS232
JHDMI1, JHDMI2	HDMI 1.4b Ports
JF1	Front Control Panel Header
JGP1	General Purpose I/O Header
JLAN1, JLAN2	2.5G LAN Ports
JPW1	9 V to 36 V Power-in Connector
JSIM1	Nano SIM Card Slot
JSMBUS1	SMBus/ I²C Header
JSPKR1	Speaker-out with 3 W Amplifier
LVDS1	Low Voltage Differential Signaling Connector (LVDS)
M.2-B1	M.2 B-Key 2242/2280/3052 Slot with Nano SIM and 5G support (PCIe 3.0 x1/SATA 3.0/USB 3.0/USB 2.0)
M.2-E1	M.2 E-Key 2230 Slot (PCIe 3.0 x1/USB 2.0/CNVi)

Connector	Description
M.2-M1	M.2 M-Key 2242/2280 Slot (SATA 3.0/PCIe 3.0 x1)
USB1/2, USB3/4	USB 3.2 (10 Gb/s) Type-A ports on the rear I/O ports
USB5/6	USB 2.0 Header

LED	Description	Status
LED1	Power LED	Green: System on Red: S5 or main power fail Off: System off

Motherboard Features
CPU
• A4SAN-H/-WOHS supports an Intel® Atom® Processor x7835RE • A4SAN-E/-WOHS supports an Intel Atom Processor x7433RE • A4SAN-L/-WOHS supports an Intel Processor N97
Memory
• Supports up to 16 GB of Non-ECC DDR5 SO-DIMM with speeds of up to 4800 MT/s in a single slot
DIMM Size
• 16 GB
Expansion Slots
• One Nano SIM Slot • One M.2 M-Key 2242/2280 Slot (PCIe 3.0 x1/SATA 3.0) • One M.2 E-Key 2230 Slot (PCIe 3.0 x1/USB 2.0/CNVi), CNVi interface only supported by A4SAN-L/-WOHS • One M.2 B-Key 2242/2280/3052 Slot with Nano SIM and 5G support (PCIe 3.0 x1/SATA 3.0/USB 3.0/USB 2.0)
Network
• Dual Intel i226-IT for dual 2.5G RJ45 LAN ports

Motherboard Features
Graphics
• Intel Gen12 UHD Graphics: up to 32EUs, GFX SR-IOV, 4K at 60Hz, Open GL 4.6, DirectX 12.1, Vulkan 1.2, Mesa 3D, Open GL 4.6 • Hardware Accelerated Video Decode: MPEG2, WMV9 (VC1), AVC/H264, JPEG/MJPEG, HEVC/H265, VP9, AV1 • Hardware Accelerated Video Encode: MPEG2, AVC/H264, JPEG, HEVC/H265, VP9 • Display: Dual HDMI 1.4b (resolution up to 4096 x 2160 at 24 Hz), LVDS (dual channel 48-bit, resolution up to 1920 x 1080 at 60 Hz)
I/O Devices
• LVDS (dual channel 48-bit, resolution up to 1920 x 1080 at 60 Hz) • COM Headers: Two COM Headers (JCOM1: COM1/2 Header for two RS232/422/485, JCOM2: COM3/4 Header for two RS232) • Audio Header: One HD Audio header with Line-out/Mic-in • Speaker Header: One Speaker Header (with 3 W audio amplifier) • SMBus or I2C Header: One SMBus or I2C Box Header • GPIO: One 8-bit General Purpose I/O (GPIO) header
Peripheral Devices
• Four USB 3.2 (10Gb/s) Type-A ports in the back panel • One USB 2.0 Header
BIOS
• 256 Mb SPI AMI BIOS® • ACPI 6.4, SMBIOS 3.3 or later, UEFI 2.7, PCI FW 3.0, Real Time Clock (RTC) wakeup, Watchdog

Motherboard Features
Power Management
• ACPI Power Management (S3, S4, S5 supported) • Power Button Override Mechanism • Power-on Mode for AC Power Recovery • Wake-on-LAN through the UEFI BIOS option • Force Power On by jumper • RTC Battery (typical voltage: 3.0 V, normal discharge capacity: 210 mAh) • Supply Input Voltage: DC 9 V to 36 V
System Health Monitoring
• Onboard voltage monitoring for +3.3 V, +5 V, +12 V, 3.3 V Standby, Vcore, Vmem, Vbat, CPU Temperature, PCH Temperature, and System Temperature • CPU Thermal Trip
Fan Control
• 4-pin Fan Header • Low-noise Fan Speed Control
System Management
• Trusted Platform Module (TPM 2.0) Support • SuperDoctor® 5 • Supermicro Update Manager SUM (InBand) • Watchdog Timer
LED Indicators
• Power/Suspend-state Indicator LED • HDD Activity LED
Dimensions
• 3.5" x 4" (L) x 5.75" (W) (102 mm x 146 mm) SBC • Total Height: 1.09" (27.8 mm) (A4SAN-H/-E/-L) • Total Height: 1.07" (27.22 mm) (A4SAN-H/-E/-L/-WOHS)

Motherboard Features
Environment
• Operating Temperature Range: • A4SAN-H/-E supports -40°C to 60°C (-40°F to 40°F) 70C support by request • A4SAN-L supports 0°C to 60°C (32°F to 140°F) • A4SAN-H/-E/-WOHS supports -40°C to 85°C (-22°F to 185°F) • A4SAN-L/-WOSH supports 0°C to 85°C (32°F to 185°F) • Non-Operating Temperature Range: -40°C to 85°C (-40°F to 185°F) • Operating Relative Humidity Range: 8% to 90% (non-condensing) • Non-Operating Relative Humidity Range: 10% to 95% (non-condensing)

A4SAN Series Specification Chart						
Model	**CPU**	**Base Frequency**	**Max Turbo**	**Core**	**EU**	**TDP**
A4SAN-H	X7835RE	1.3	3.6	8	32	12
A4SAN-E	X7433RE	1.5	3.4	4	32	9
A4SAN-L	N97	2.0	3.6	4	24	12
A4SAN-H-WOHS	X7835RE	1.3	3.6	8	32	12
A4SAN-E-WOHS	X7433RE	1.5	3.4	4	32	9
A4SAN-L-WOHS	N97	2.0	3.6	4	24	12

A4SAN Series Specification Chart				
Model	**CPU**	**Operating Temperature**	**Thermal Solution**	**Functions**
A4SAN-H	X7835RE	-40°C to 60°C Note: 70°C support by request	Passive	Two 2.5 GbE Two HDMI 1.4 One 48-bit LVDS Two RS-232/422/485 Two RS-232 Four USB 3.1 Gen2 Type-A Two USB 2.0 (Header) One 8-bit GPIO One Line-Out/Mic-In One Speak Out with 3 W AMP One TM 2.0 Onboard Three M.2 (B-key with SIM, E-key, M-key) One I^2C/SMBus
A4SAN-E	X7433RE			
A4SAN-L	N97	0°C to 60°C		
A4SAN-H-WOHS	X7835RE	-40°C to 85°C	Designed by the user	
A4SAN-E-WOHS	X7433RE			
A4SAN-L-WOHS	N97	0°C to 85°C		

System Block Diagram

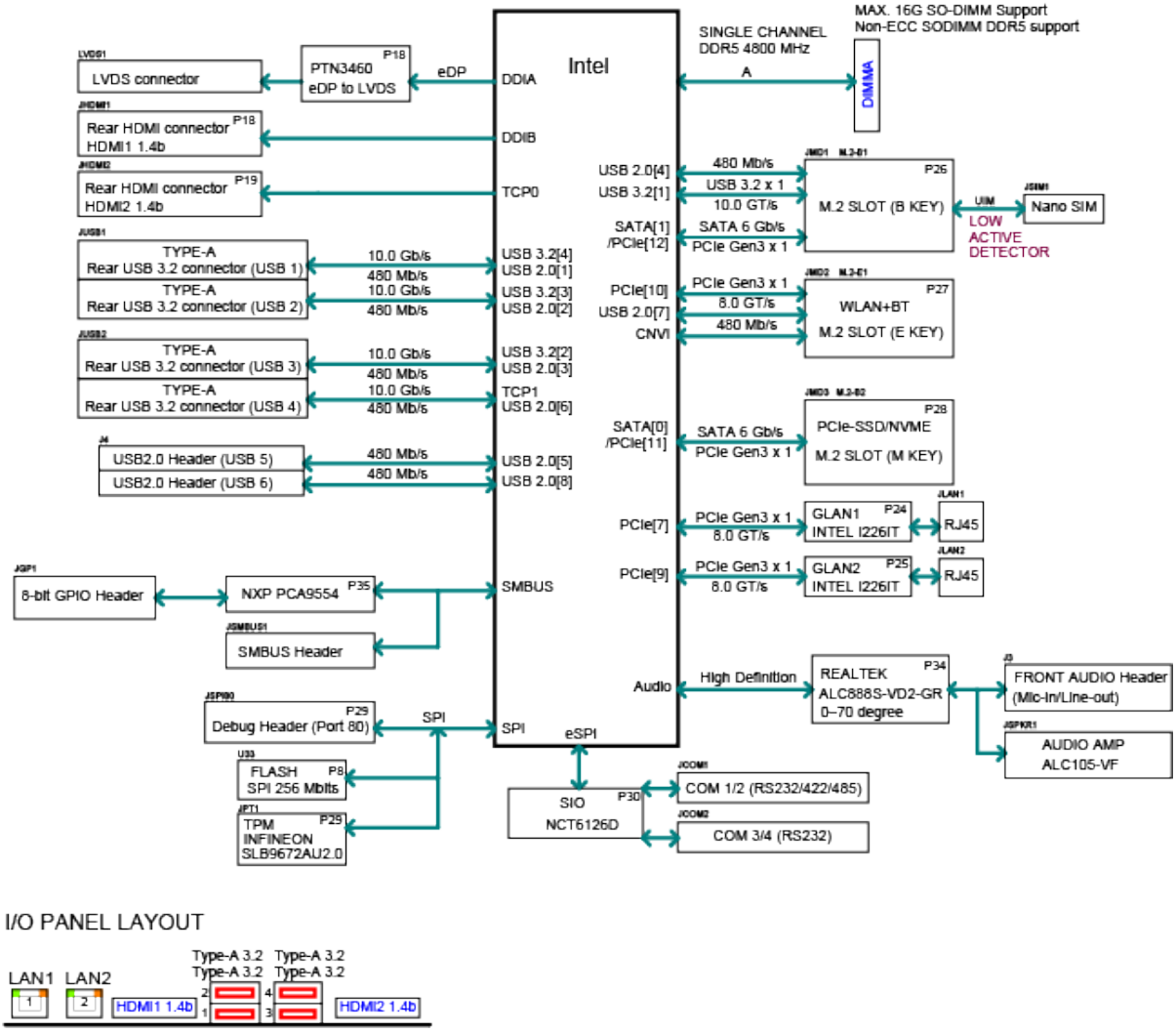


Figure 1-9. A4SAN System Block Diagram

1.2 Platform Overview

Built upon the functionality and capability of the Intel® Atom SoC series processor, the A4SAN-H/-E/-L/-WOHS motherboard offers maximum I/O expandability, energy efficiency, and data reliability in a 10-nm process architecture, and is optimized for embedded storage solutions, networking applications, or cloud-computing platforms. The A4SAN-H/-E/-L/-WOHS drastically increases system performance for a multitude of server applications.

The A4SAN-H/-E/-L/-WOHS supports the following features:

- 16 GB of Non-ECC DDR5 SO-DIMM memory with speeds of up to 4800 MT/s in a single DIMM slot
- AI Acceleration with Intel Deep Learning Boost (VNNI), INT8 support
- Enhanced Intel SpeedStep® Technology
- Intel Speed Shift Technology
- Adaptive Thermal Management/Monitoring
- System Management Bus (SMBus) Specification, Version 2.0
- Trusted Platform Module (TPM) 2.0 onboard with Disable/Enable jumper
- Intel Boot Guard, Intel Virtualization Technology (VT-x), Intel Virtualization Technology for Directed I/O (Intel VT-d)
- Intel Smart Sound Technology, Intel High-Definition Audio

The A4SAN-H/-E/-L motherboard is a 3.5" Single Board Computer (4.01" x 5.75") powered by the Intel Processor N Series and the Intel Atom X7000 series processors. These processors have a core configuration of up to 8 cores and an Intel UHD Graphics Gen12 with up to 32 EUs. DDR5 memory with support for In-Band Error Correction Code (IBECC) memory helps achieve reliable multitasking.

The A4SAN also features advanced technologies such as accelerated deep learning including Intel Deep Learning Boost (Intel DL Boost), Intel Advanced Vector Extensions (Intel AVX2) with INT8 support and media processing for IoT edge applications like digital signage, POS systems, and more. Support of the OpenVINO™ toolkit also delivers optimized performance while helping developers speed up time to market with pre-trained AI models for common use cases.

The A4SAN features a rich I/O interface including dual 2.5G LAN ports, one M.2 M-Key PCIe 3.0 x1/SATA 6Gb/s slot in the 2242/2280 form factor, one M.2 E-Key PCIe 3.0 x1/USB 2.0/Intel CNVi slot in the 2230 form factor, one M.2 B-Key SATA 6Gb/s or PCIe 3.0 x1/USB 3.0/USB 2.0

slot in the 2242/2280/3052 form factor with Nano SIM, four COM ports, four USB 3.2 ports in Type-A ports, and a speaker-out with a 3 W amplifier. The motherboard also features onboard TPM 2.0 without the TPM module.

The A4SAN supports a wide range of 9 V to 36 V DC input power to meet various embedded system requirements, such as transportation and medical applications. Based on numerous demands from embedded applications, Supermicro developed an optimized thermal solution for A4SAN, producing a fanless design on a rugged embedded system.

1.3 Special Features

Recovery from AC Power Loss

The Basic I/O System (BIOS) provides a setting that determines how the system will respond when AC power is lost and then restored to the system. You can choose for the system to remain powered off (in which case you must press the power switch to turn it back on), or for it to automatically return to the power-on state. See Advanced Setup Configurations under "UEFI BIOS" on page 70 for this setting. The default setting is **Last State**.

1.4 System Health Monitoring

Onboard Voltage Monitors

An onboard voltage monitor will continuously scan the voltages of the onboard chipset, memory, processor, and battery. Once a voltage becomes unstable, a warning is given or an error message is sent to the screen. You can adjust the voltage thresholds to define the sensitivity of the voltage monitor. Real time voltage levels are displayed in IPMI.

Fan Status Monitor with Firmware Control

The system health monitor chip can check the RPM status of a cooling fan. The fans are controlled by the BIOS Thermal Management.

Environmental Temperature Control

The thermal control sensor monitors the CPU temperature in real time and will turn on the thermal control fan whenever the CPU temperature exceeds a user-defined threshold. The overheat circuitry runs independently from the CPU. Once the thermal sensor detects that the CPU temperature is too high, it will automatically turn on the thermal fan to prevent the CPU from overheating. The onboard chassis thermal circuitry can monitor the overall system temperature and alert the user when the chassis temperature is too high.

Note: To avoid possible system overheating, provide adequate airflow to your system.

1.5 ACPI Features

ACPI stands for Advanced Configuration and Power Interface. The ACPI specification defines a flexible and abstract hardware interface that provides a standard way to integrate power management features throughout a computer system, including its hardware, operating system and application software. This enables the system to automatically turn on and off peripherals such as CD-ROMs, network cards, hard disk drives, and printers.

In addition to enabling operating system-directed power management, ACPI also provides a generic system event mechanism for Plug and Play, an operating system- independent interface for configuration control. ACPI leverages the Plug and Play BIOS data structures while providing a processor architecture-independent implementation that is compatible with appropriate Windows operating systems. For detailed information regarding OS support, refer to the Supermicro website.

1.6 Power Supply

As with all computer products, a stable power source is necessary for proper and reliable operation. This is even more important for processors that have high CPU clock rates. In areas where noisy power transmission is present, you may choose to install a line filter to shield the computer from noise. It is recommended that you also install a power surge protector to help avoid problems caused by power surges.

1.7 Super I/O

The Super I/O provides four high-speed, 16550 compatible universal asynchronous receiver-transmitter (UART) serial communication ports. Each UART includes a 128 byte send-receive FIFO, a programmable baud rate generator, complete modem control capability, and a processor interrupt system. UARTs provide legacy speed with a baud rate of up to 115.2 Kbps as well as an advanced speed with baud rates of 250 K, 500 K, or 1 Mb/s, which support higher speed modems.

The Super I/O provides functions that comply with ACPI, which includes support of legacy and ACPI power management through a SMI or SCI function pin. It also features auto power management to reduce power consumption.

The IRQs, DMAs and I/O space resources of the Super I/O can be flexibly adjusted to meet ISA PnP requirements, which support ACPI and Advanced Power Management (APM).

Chapter 2:

Component Installation

This chapter provides instructions on installing and replacing main system components for the A4SAN-H/-E/-L/-WOHS motherboard. To prevent compatibility issues, only use components that match the specifications and/or part numbers given.

Installation or replacement of most components require that power first be removed from the system. Follow the procedures given in each section.

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2.1 Static-Sensitive Devices

Electrostatic Discharge (ESD) can damage electronic components. To avoid damaging your motherboard, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from ESD.

Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Handle the motherboard by its edges only. Do not touch its components, peripheral chips, memory modules, or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure that your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners, and the motherboard.
- Use only the correct type of onboard CMOS battery. Do not install the onboard battery upside down to avoid possible explosion.

Unpacking

The motherboard is shipped in antistatic packaging to avoid static damage. When unpacking the motherboard, make sure that the person handling it is static protected.

2.2 Motherboard Installation

All motherboards have standard mounting holes to fit different types of chassis. Make sure that the locations of all the mounting holes for both the motherboard and the chassis match. Although a chassis may have both plastic and metal mounting fasteners, metal ones are highly recommended because they ground the motherboard to the chassis. Make sure that the metal standoffs click in or are screwed in tightly.

Tools Needed

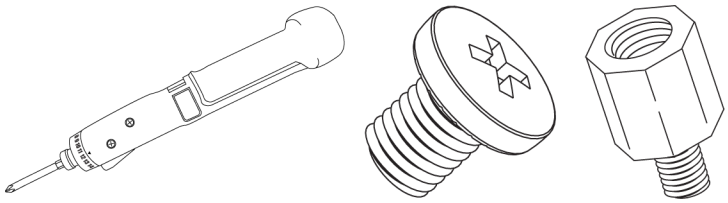


Figure 2-1. Torque Driver (1), Phillips Screws (4), Standoffs (4, only if needed)

Notes:

- To avoid damaging the motherboard and its components, do not use a force greater than 8 lbf-in on each mounting screw during motherboard installation.
- Some components are very close to the mounting holes. Take precautionary measures to avoid damaging these components when installing the motherboard to the chassis.

For a detailed diagram of the A4SAN-H/-E/-L/-WOHS motherboard, see the layout under "Quick Reference" on page 11.

Installing the Motherboard

1. Install the I/O shield into the back of the chassis, if applicable.

   Note: Images displayed are for illustration only. The components installed in your system may or may not look exactly the same as the graphics shown in the manual.

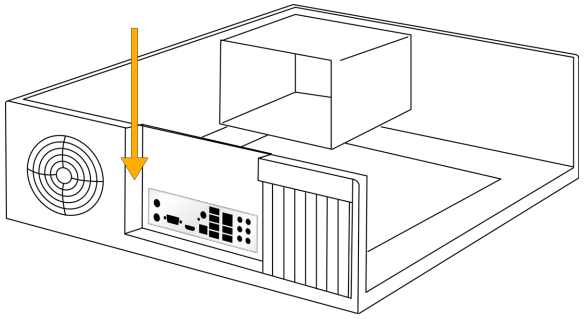


Figure 2-2. Install the I/O Shield

2. Locate the mounting holes on the motherboard. See Motherboard Installation for the location.

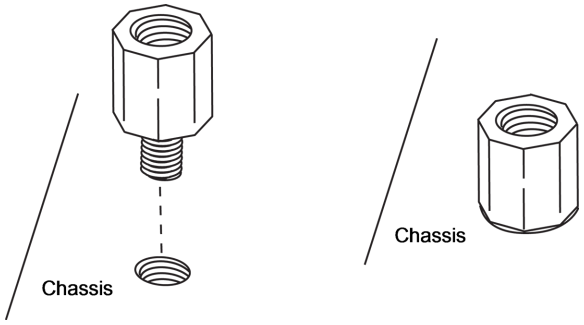


Figure 2-3. Locate the Mounting Holes

3. Locate the matching mounting holes on the chassis. Align the mounting holes on the motherboard against the mounting holes on the chassis.

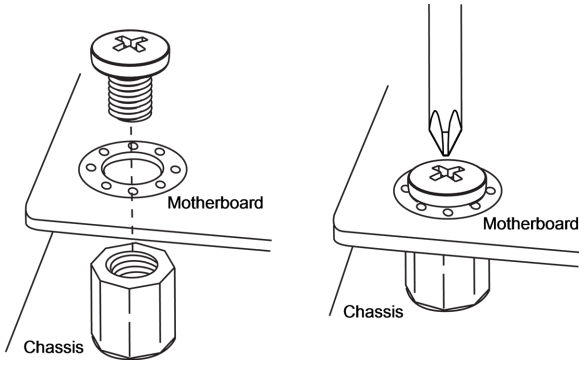


Figure 2-4. Align the Mounting Holes

4. Install standoffs in the chassis as needed.
5. Install the motherboard into the chassis carefully to avoid damaging other motherboard components.
6. Insert pan head #6 screws into the mounting holes on the motherboard and the matching mounting holes on the chassis.

7. Make sure that the motherboard is securely placed in the chassis.

2.3 Memory Support and Installation

Warning! Exercise extreme care when installing or removing memory modules to prevent any damage.

Note: Check the Supermicro website for recommended memory modules.

Memory Support

Note: Check the Supermicro website for recommended memory modules.

Warning! Exercise extreme care when installing or removing memory modules to prevent any damage.

The A4SAN-H/-E/-L/-WOHS motherboard supports up to 16 GB of Non-ECC DDR5 SO-DIMM memory with speeds of up to 4800 MT/s in a single slot.

SO-DIMM Installation

1. Position the SO-DIMM module's bottom key so it aligns with the receptive point on the slot.

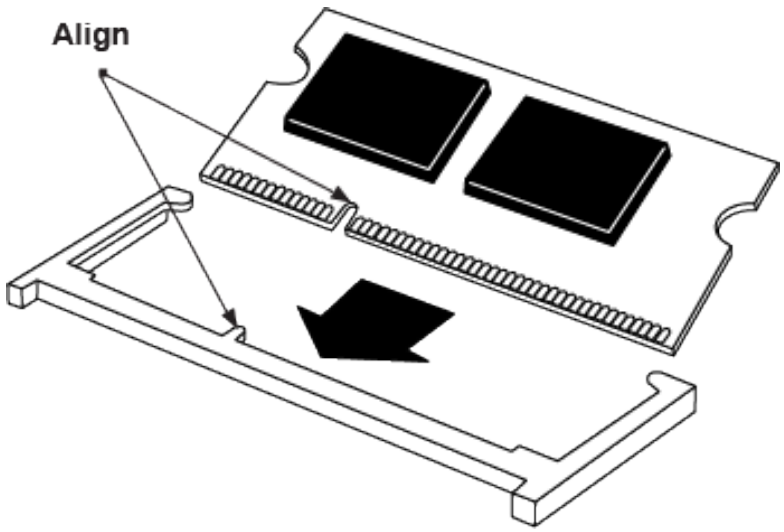


Figure 2-5. Insert the SO-DIMM

2. Insert the SO-DIMM module vertically at about a 45 degree angle. Press down until the module locks into place.

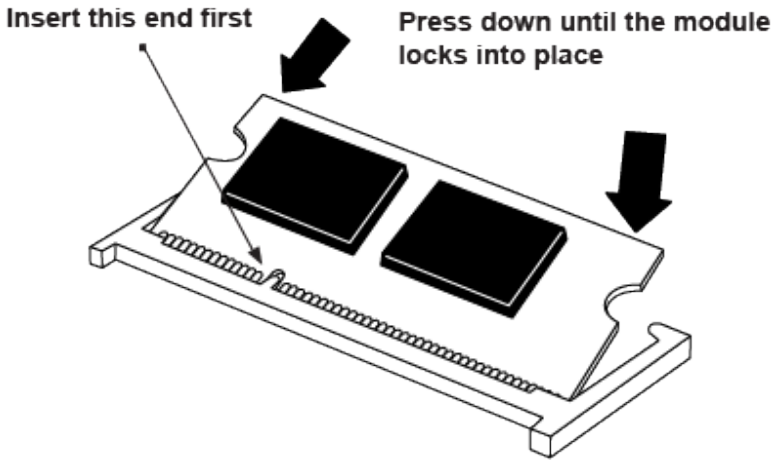


Figure 2-6. Insert at a 45 degree angle

3. The side clips will automatically secure the SO-DIMM module, locking it into place.

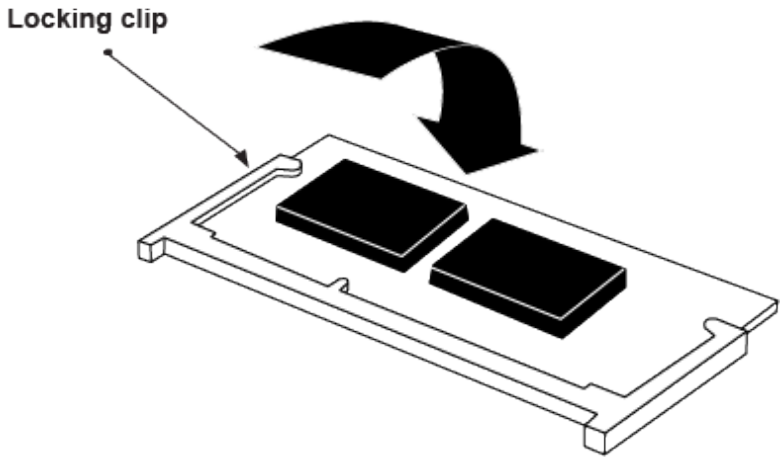


Figure 2-7. Secure the SO-DIMM

For a detailed diagram of the A4SAN-H/-E/-L/-WOHS motherboard, see the layout under "Quick Reference" on page 11.

Warning! Do not use excessive force when pressing the release tabs on the ends of the DIMM socket to avoid causing any damage to the memory module or the DIMM socket. Handle memory modules with care. Carefully follow all the instructions given in "Static-Sensitive Devices" on page 33 to avoid ESD-related damages done to your memory modules or components.

SO-DIMM Removal

Push the side clips at the end of the slot to release the SO-DIMM module. Pull the SO-DIMM module up to remove it from the slot.

For a detailed diagram of the A4SAN-H/-E/-L/-WOHS motherboard, see the layout under "Quick Reference" on page 11.

2.4 Battery Removal and Installation

Battery Removal

To remove the battery, follow the steps below:

1. Power off your system and unplug your power cable.
2. Remove the battery cable at the BT1 connector on the board.
3. Remove the battery.

Proper Battery Disposal



Warning! Handle used batteries carefully. Do not damage the battery in any way; a damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Comply with the regulations set up by your local hazardous waste management agency to dispose of your used battery properly.

Battery Installation

To install the battery, follow steps 1 and 2 above and continue below:

1. Connect the battery cable into the battery connector (BT1) and push it down until you hear a click to ensure that the cable is securely locked.
2. Use the foam tape on the back side of the battery to secure it to a flat surface on the bottom of the motherboard or a proper location in the system. Do not place the battery on

the heatsink.



Warning! When replacing a battery, be sure to only replace it with the same type.

2.5 Connections, Jumpers, and LEDs

Refer to the following sections for information about connections, jumpers, and LEDs for the A4SAN-H/-E/-L/-WOHS motherboard.

Main Power Connector

JPW1 is the 9 V–36 V DC power connector that provides power to the motherboard.

For a detailed diagram of the A4SAN-H/-E/-L/-WOHS motherboard, see the layout under "Quick Reference" on page 11.

8-pin 9 V–36 V Power Pin Definitions: Eight Total	
Pin#	**Definition**
1–4	+9 V–36 V
5–8	GND

Headers and Connections

For information about the headers of the A4SAN-H/-E/-L/-WOHS motherboard, refer to the following content.

CMOS Battery

BT1 is a 2-pin header for an external battery. This connector is also used to clear the CMOS. To clear the CMOS, remove the battery, short pins 1–2 for more than 10 seconds and then install the battery.

For a detailed diagram of the A4SAN-H/-E/-L/-WOHS motherboard, see the layout under "Quick Reference" on page 11.

CMOS Battery Pin Definitions: Two Total	
Pin#	**Description**
1	P3V_BATTERY
2	GND

COM Headers

There are four COM ports: JCOM1 with support for two RS232/422/485 connections and JCOM2 with support for two RS232 connections. The manufacturer of the header is ACES Electronics, MPN 50419-02001. The mapping plug header for cable assembly is 50420-020KHK0-001. See the pin definition tables of the onboard headers and D-SUB of CBL-CDAT-0665. Refer to the corresponding table based on design requirements.

For a detailed diagram of the A4SAN-H/-E/-L/-WOHS motherboard, see the layout under "Quick Reference" on page 11.

COM Port Pin Definitions (JCOM1, JCOM2) Pin Definitions: 19 Total			
Pin#	**RS232**	**RS422/485 Full Duplex**	**RS485 Half Duplex**
1	SP_DCD1	TX-1	Data-1
2	SP_DSR1		
3	SP_RXD1	TX+1	Data+1
4	SP_RTS1		
5	SP_TXD1	RX+1	
6	SP_CTS1		
7	SP_DTR1	RX-1	
8	SP_RI1		
9	GND		
10	No Connection		
11	SP_DCD2	TX-2	Data-2
12	SP_DSR2		
13	SP_RXD2	TX+2	Data+2
14	SP_RTS2		
15	SP_TXD2	RX+2	
16	SP_CTS2		
17	SP_DTR2	RX-2	
18	SP_RI2		
19	SP_GND		

COM Port Pin Definitions (COM3/COM4) Pin Definitions: 20 Total	
Pin#	**RS232**
1	SP_DCD3
2	SP_DSR3
3	SP_RXD3
4	SP_RTS3
5	SP_TXD3
6	SP_CTS3
7	SP_DTR3
8	SP_RI3
9	GND
10	No Connection
11	SP_DCD4
12	SP_DSR4
13	SP_RXD4
14	SP_RTS4
15	SP_TXD4
16	SP_CTS4
17	SP_DTR4
18	SP_RI4
19	GND
20	No Connection

COM Port Pin Definitions (D-SUB from CBL-DAT-0665) Pin Definitions: 20 Total			
Pin#	**RS232**	**RS422/485 Full Duplex**	**RS485 Half Duplex**
1	SP_DCD1	TX-1	Data-1
2	SP_RXD1	TX+1	Data+1
3	SP_TXD1	RX+1	
4	SP_DTR1	RX-1	
5	GND		
6	SP_DSR1		
7	SP_RT1		
8	SP_CTS1		
9	SP_RI1		
10	No Connection		
11	SP_DCD2	TX-2	Data-2
12	SP_RXD2	TX+2	Data+2
13	SP_TXD2	RX+2	
14	SP_DTR2	RX-2	
15	GND		
16	SP_DSR2		
17	SP_RTS2		
18	SP_CTS2		
19	SP_RI2		
20	No Connection		

COM Port Pin Definitions (D-SUB from CBL-CDAT-0665) Pin Definitions: 20 Total	
Pin#	**RS232**
1	SP_DCD3
2	SP_RXD3
3	SP_TXD3
4	SP_DTR3
5	GND
6	SP_DSR3
7	SP_RTS3
8	SP_CTS3
9	SP_RI3
10	No Connection
11	SP_DCD4
12	SP_RXD4
13	SP_TXD4
14	SP_DTR4
15	GND
16	SP_DSR4
17	SP_RTS4
18	SP_CTS4
19	SP_RI4
20	No Connection

Fan Header

The A4SAN-H/-E/-L motherboard has one 4-pin fan header. Although pins 1-3 of the fan headers are backward compatible with the traditional 3-pin fans, we recommend you use 4-pin fans to take advantage of the fan speed control via Pulse Width Modulation through the thermal management. This allows the fan speeds to be automatically adjusted based on the motherboard temperature.

For a detailed diagram of the A4SAN-H/-E/-L/-WOHS motherboard, see the layout under "Quick Reference" on page 11.

4-pin Fan Header Pin Definitions: Four Total	
Pin#	**Definition**
1	GND (Black)
2	+12 V (Red)
3	Tachometer
4	PWM Control

Front Panel Audio Header

A 10-pin front panel audio header located at J3 on the motherboard allows you to use the onboard sound for audio playback and input. Connect an audio cable to the header to use this feature. This header functions only between 0–60°C.

For a detailed diagram of the A4SAN-H/-E/-L/-WOHS motherboard, see the layout under "Quick Reference" on page 11.

Audio Header Pin Definitions: 10 Total			
Pin#	**Defintion**	**Pin#**	**Definition**
1	Microphone_Left	2	Audio_Ground
3	Microphone_Right	4	Audio_Detect
5	Line_2_Right	6	GND
7	Jack_Detect	8	Key
9	Line_2_Left	10	GND

General Purpose I/O Header

One 8-bit General Purpose I/O (GPIO) header is located at JGP1. The GPIO header is a general purpose I/O expander on a pin header via the SMBus. Each pin can be configured to be an input pin or output pin in 2.54 mm pitch. The GPIO is controlled via the PCA9554APW 8-bit GPIO expansion from the PCH SMBus. The base address is 0xEFA0. The expander slace address is 0x4D for WRITE/READ.

For a detailed diagram of the A4SAN-H/-E/-L/-WOHS motherboard, see the layout under "Quick Reference" on page 11.

GPIO Header Pin Definitions: 10 Total			
Pin#	**Description**	**Pin#**	**Description**
1	P3V3SB	2	GND
3	GP_P3V3_GP0	4	GP_P3V3_GP4
5	GP_P3V3_GP1	6	GP_P3V3_GP5
7	GP_P3V3_GP2	8	GP_P3V3_GP6
9	GP_P3V3_GP3	10	GP_P3V3_GP7

Low Voltage Differential Signaling

LVDS1 on the bottom side of the motherboard is the LVDS connector. Low-voltage differential signaling (LVDS) is a high-speed digital interface that operates at low power. It is a type of connection that is mostly used with monitors.

For a detailed diagram of the A4SAN-H/-E/-L/-WOHS motherboard, see the layout under "Quick Reference" on page 11.

LVDS Connector Pin Definitions: 40 Total			
Pin#	**Description**	**Pin#**	**Descritption**
1	12 V	2	12 V
3	12 V	4	12 V
5	12 V	6	GND
7	3.3/5 V	8	GND
9	LCDVCC	10	LCDVCC
11	DDC CLK	12	DDC DATA
13	BKLTCTL	14	PVCCEN
15	BKLTEN	16	GND
17	LVDSA D0N	18	LVDSA D0P
19	LVDSA D1N	20	LVDSA D1P
21	LVDSA D2N	22	LVDSA D2P
23	LVDSA CLKN	24	LVDSA CLKP
25	LVDSA D3N	26	LVDSA D3P
27	GND	28	GND

LVDS Connector Pin Definitions: 40 Total			
Pin#	**Description**	**Pin#**	**Descritption**
29	LVDSB D0N	30	LVDSB D0P
31	LVDSB D1N	32	LVDSB D1P
33	LVDSB D2N	34	LVDSB D2P
35	LVDSB CLKN	36	LVDSB CLKP
37	LVDSB D3N	38	LVDSB D3P
39	GND	40	GND

M.2 Slots

The motherboard has three M.2 slots (JMD1, JMD2, JMD3). M.2 was formerly known as Next Generation Form Factor (NGFF) and serves to replace mini PCIe. M.2 allows for a variety of card sizes, increased functionality, and spatial efficiency. The M.2 M-Key slot on the motherboard supports SATA 3.0/PCIe 3.0 Gen 3 x1 devices in a 2242/2280 form factor. The M.2 B-Key slot supports Nano SIM/5G/PCIe x1/SATA 3.0/USB 3.0/USB 2.0 devices in a 2242/2280/3052 form factor. The M.2 E-Key slot supports PCIe x1/ USB 2.0/CNVi devices in a 2230 form factor. For B-Key 3052 support, use an MCP-410-00021-0N bracket.

For a detailed diagram of the A4SAN-H/-E/-L/-WOHS motherboard, see the layout under "Quick Reference" on page 11.

M.2 B-Key Pin Definitions: 75 Total			
Pin#	**Definition**	**Pin#**	**Definition**
1	No Connection	2	P3V3SB
3	GND	4	P3V3SB
5	GND	6	FULL_CARD_POWER_OFF# (PU to P1V8SB only)
7	USB_D+	8	W_DISABLE1#(PU to P3V3SB only)
9	USB_D-	10	LED_N
11	GND	12	KEY B
13	KEY B	14	KEY B
15	KEY B	16	KEY B
17	KEY B	18	KEY B
19	KEY B	20	PCIE_DIS

M.2 B-Key Pin Definitions: 75 Total			
Pin#	**Definition**	**Pin#**	**Definition**
21	No Connection	22	VBUS_SENSE
23	WAKE_ON_WWAN#(PU to P1V8SB)	24	No Connection
25	No Connection	26	W_DISABLE2#(PU to P1V8SB only)
27	GND	28	No Connection
29	USB3.0-Rx-	30	UIM-RESET
31	USB3.0-Rx+	32	UIM-CLK
33	GND	34	UIM-DATA
35	USB3.0-Tx-	36	UIM-PWR
37	USB3.0-Tx+	38	No Connection
39	GND	40	No Connection
41	SATA-B+/PERn0	42	No Connection
43	SATA-B-/PERp0	44	Alert# (PU to P1V8SB only)
45	GND	46	No Connection
47	SATA-A-/PETn0	48	No Connection
49	SATA-A+/PETp0	50	PERST#
51	GND	52	CLKRED#
53	REFCLKn	54	PEWAKE#
55	REFCLKp	56	No Connection
57	GND	58	No Connection
59	No Connection	60	CNV_PA_BLANKING
61	No Connection	62	CNV_MFUART2_TXD
63	No Connection	64	CNV_MFUART2_RXD
65	No Connection	66	SIM_DETECT
67	RESET#	68	No Connection
69	No Connection	70	P3V3SB
71	GND	72	P3V3SB
73	GND	74	P3V3SB
75	No Connection		

M.2 E-Key Pin Definitions: 75 Total			
Pin#	**Definition**	**Pin#**	**Definition**
1	GND	2	P3V3SB
3	USB_D+	4	P3V3SB
5	USB_D-	6	No Connection
7	GND	8	CNV_BT_I2C_SCLK
9	CNV_WR_LANE1_DN	10	CNV_RF_RESET_N
11	CNV_WR_LANE1_DP	12	CNV_BT_I2S_SDO
13	GND	14	MODEM_CLKREQ
15	CNV_WR_LANE0_DN	16	No Connection
17	CNV_WR_LANE0_DP	18	GND
19	GND	20	UART_BT_WAKE_N
21	CNV_WR_CLK_DN	22	CNV_BRI_RSP
23	CNV_WR_CLK_DP	24	KEY E
25	KEY E	26	KEY E
27	KEY E	28	KEY E
29	KEY E	30	KEY E
31	KEY E	32	CNV_RGI_DT
33	GND	34	CNV_RGI_RSP
35	PETp0	36	CNV_BRI_DT
37	PETn0	38	CLINK_RST_N
39	GND	40	CLINK_DATA
41	PERp0	42	CLINK_CLK
43	PERn0	44	CNV_PA_BLANKING
45	GND	46	CNV_MFUART2_TXD
47	REFCLKp0	48	CNV_MFUART2_RXD
49	REFCLKn0	50	SUSCLK
51	GND	52	PERST0#
53	CLKREQ0#	54	BT_DISABLE2#
55	PEWAKE0#	56	WIFI_DISABLE2#

M.2 E-Key Pin Definitions: 75 Total			
Pin#	**Definition**	**Pin#**	**Definition**
57	GND	58	No Connection
59	CNV_WT_LANE1_DN	60	No Connection
61	CNV_WT_LANE1_DP	62	No Connection
63	GND	64	No Connection
65	CNV_WT_LANE0_DN	66	No Connection
67	CNV_WT_LANE0_DP	68	No Connection
69	GND	70	No Connection
71	CNV_WT_CLK_DN	72	P3V3SB
73	CNV_WT_CLK_DP	74	P3V3SB
75	GND		

M.2 M-Key Pin Definitions: 75 Total			
Pin#	**Definition**	**Pin#**	**Definition**
1	GND	2	P3V3
3	GND	4	P3V3
5	No Connection	6	No Connection
7	No Connection	8	No Connection
9	GND	10	LED_N
11	No Connection	12	P3V3
13	No Connection	14	P3V3
15	GND	16	P3V3
17	No Connection	18	P3V3
19	No Connection	20	No Connection
21	GND	22	No Connection
23	No Connection	24	No Connection
25	No Connection	26	No Connection
27	GND	28	No Connection
29	No Connection	30	No Connection

M.2 M-Key Pin Definitions: 75 Total			
Pin#	**Definition**	**Pin#**	**Definition**
31	No Connection	32	No Connection
33	GND	34	No Connection
35	No Connection	36	No Connection
37	No Connection	38	No Connection
39	GND	40	No Connection
41	SATA-B+/PERn0	42	No Connection
43	SATA-B-/PERp0	44	No Connection
45	GND	46	No Connection
47	SATA-A-/PETn0	48	No Connection
49	SATA-A+/PETp0	50	PERST#
51	GND	52	CLKREQ#
53	REFCLKn	54	No Connection
55	REFCLKp	56	No Connection
57	GND	58	No Connection
59	KEY M	60	KEY M
61	KEY M	62	KEY M
63	KEY M	64	KEY M
65	KEY M	66	KEY M
67	No Connection	68	SUSCLK
69	PEDET	70	P3V3
71	GND	72	P3V3
73	GND	74	P3V3
75	GND		

Nano SIM Card Slot

The JSIM1 slot supports a Nano SIM card.

For a detailed diagram of the A4SAN-H/-E/-L/-WOHS motherboard, see the layout under "Quick Reference" on page 11.

SMBus Header

A System Management Bus header for additional slave devices or sensors is located at JSMBUS1.

For a detailed diagram of the A4SAN-H/-E/-L/-WOHS motherboard, see the layout under "Quick Reference" on page 11.

SMBus Header Pin Definitions: Four Total	
Pin#	**Definitions**
1	SMB_CLK
2	SMB_DATA
3	GND
4	5 V

Speaker Header

The speaker-out with a 3 W amplifier (JSPKR1) is used to amplify low-power electronic audio signals to a level that is high enough for current driving loudspeakers and headphones.

For a detailed diagram of the A4SAN-H/-E/-L/-WOHS motherboard, see the layout under "Quick Reference" on page 11.

Speaker Header Pin Definitions: Four Total	
Pin#	**Definition**
1	SPEAKER_LN_OUT
2	SPEAKER_LP_OUT
3	SPEAKER_RN_OUT
4	SPEAKER_RP_OUT

USB Header

The motherboard has one front-accessible USB 2.0 header (USB5/6). The onboard header provides front-side USB access with a cable.

For a detailed diagram of the A4SAN-H/-E/-L/-WOHS motherboard, see the layout under "Quick Reference" on page 11.

(USB 2.0) Header Pin Definitions: 10 Total			
Pin#	**Definition**	**Pin#**	**Definition**
1	+5 V	2	+5 V
3	USB_N	4	USB_N
5	USB_P	6	USB_P
7	GND	8	GND
9	Key	10	No Connection

USB 3.2 Port

There are four USB 3.2 (USB1/2, USB3/4) ports on the rear I/O ports.

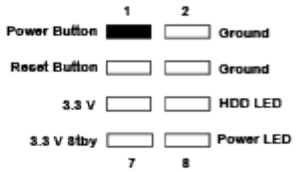
For a detailed diagram of the A4SAN-H/-E/-L/-WOHS motherboard, see the layout under "Quick Reference" on page 11.

USB1/2, USB3/4 (USB 3.2 Gen 1) Pin Definitions: 18 Total			
Pin#	**Definition**	**Pin#**	**Definition**
A1	VBUS	B1	VBUS
A2	D-	B2	D-
A3	D+	B3	D+
A4	GND	B4	GND
A5	Stda_SSRX-	B5	Stda_SSRX-
A6	Stda_SSRX+	B6	Stda_SSRX+
A7	GND	B7	GND
A8	Stda_SSTX-	B8	Stda_SSTX-
A9	Stda_SSTX+	B9	Stda_SSTX+

Front Control Panel

JF1 on the A4SAN-H/-E/-L/-WOHS motherboard contains header pins for various buttons and indicators that are normally located on a control panel at the front of the chassis. These connectors are designed specifically for use with the Supermicro chassis. See the figure below for the descriptions of the front control panel buttons and LED indicators.

For a detailed diagram of the A4SAN-H/-E/-L/-WOHS motherboard, see the layout under "Quick Reference" on page 11.



Power Button

The Power Button connection is located on pins 1 and 2 of JF1 on the A4SAN-H/-E/-L/-WOHS motherboard. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (with a setting in the BIOS). To turn off the power when the system is in suspend mode, press the button for four seconds or longer.

Power Button Pin Definitions (JF1)	
Pin#	**Definition**
1	Power Button
2	GND

Reset Button

The Reset Button connection is located on pins 3 and 4 of JF1 on the A4SAN-H/-E/-L/-WOHS motherboard. Attach it to a hardware reset switch on the computer case to reset the system.

Reset Button Pin Definitions (JF1)	
Pin#	**Definition**
3	Reset Button
4	GND

HDD LED

The HDD LED connection is located on pins 5 and 6 of JF1 on the A4SAN-H/-E/-L/-WOHS motherboard. Refer to the table below for pin definitions.

For a detailed diagram of the A4SAN-H/-E/-L/-WOHS motherboard, see the layout under "Quick Reference" on page 11.

HDD LED Pin Definitions (JF1)	
Pin#	**Definition**
5	3.3 V
6	HDD LED

Power LED

The Power LED connection is located at pins 7 and 8 of JF1. Refer to the table below for pin definitions.

Power LED Pin Definitions (JF1)	
Pin#	**Definition**
7	3.3 V Stby
8	Power LED

Rear I/O Ports

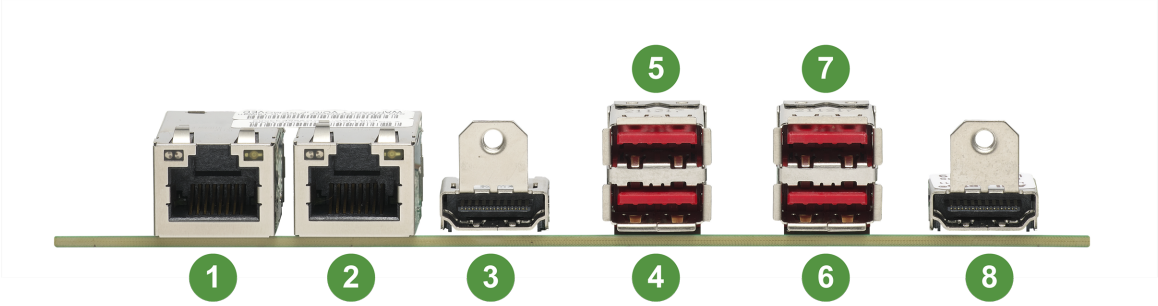


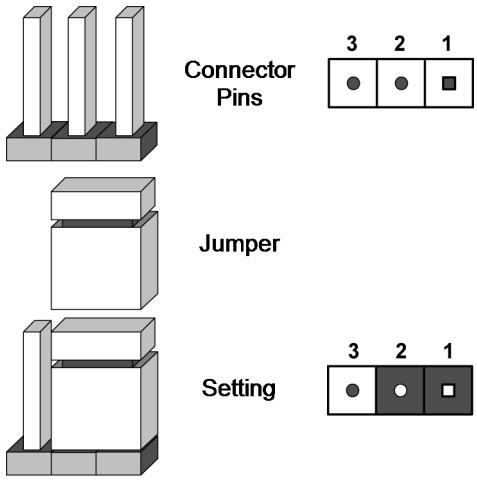
Figure 2-8. Rear I/O Ports

Rear I/O Ports			
#	**Description**	**#**	**Description**
1	LAN1	5	USB2 (3.2)
2	LAN2	6	USB3 (3.2)
3	JHDMI1	7	USB4 (3.2)
4	USB1 (3.2)	8	JHDMI2

Jumper Settings

To modify the operation of the motherboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the diagram below for an example of jumping pins 1 and 2. Refer to the motherboard layout page for jumper locations.

Note: On two-pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.



LVDS Panel VCC Power

Use the JCLDPWR1 jumper to select the power voltage for the LVDS panel. Make sure that the specifications of the cable are compatible with the panel to prevent damage.

For a detailed diagram of the A4SAN-H/-E/-L/-WOHS motherboard, see the layout under "Quick Reference" on page 11.

LVDS Voltage Selection Jumper Settings	
Jumper Setting	**Definition**
Pins 1–3	3.3 V (Default)
Pins 3–5	5 V

ME Manufacturing Mode

Close pins 2–4 of jumper JPME2 to bypass SPI flash security and force the system to operate in the manufacturing mode, which will allow the user to flash the system firmware from a host server for system setting modifications. Refer to the table below for jumper settings. The default

setting is Normal.

For a detailed diagram of the A4SAN-H/-E/-L/-WOHS motherboard, see the layout under "Quick Reference" on page 11.

ME Manufacturing Mode Jumper Settings	
Jumper Setting	**Definition**
Pins 2–4	Manufacturing Mode
Pins 4–6	Normal (Default)

SIM Detect Option

Pins 2 and 4 on the JSIM1_OPT jumper are for SIM card detection. Since each SIM card vendor sets a different condition for detection, check with the vendor for the correct detection type and set the JSIM1_OPT jumper before installing the SIM card. Pins 1 and 3 on the JSIM1_OPT jumper are for 5G/LTE USB/PCIe module detection. Check with the vendor for the correct detection type and set the JSIM1_OPT jumper before installing the module. Pins 5 and 6 on the JSIM1_OPT jumper are for enabling or disabling M.2 B-Key storage module LED signal to the front panel HDD LED. Disconnect pins 5 and 6 to disable the LED signal.

For a detailed diagram of the A4SAN-H/-E/-L/-WOHS motherboard, see the layout under "Quick Reference" on page 11.

SIM Detect Option Jumper Settings	
Jumper Settings	**Definition**
Pins 1–3	USB (Default)
Pins 1–3 Open	PCIe Low Active
Pins 2–4	SIM Detect Low Active (Default)
Pins 2–4 Open	SIM Detect High Active
Pins 5–6	M.2 B-Key Storage LED Enabled (Default)
Pins 5–6 Open	M.2 B-Key Storage LED Disabled

Onboard TPM Enable/Disable

The JPT1 jumper has two functions. Use it to enable or disable the onboard TPM. It can also be used as a force power on feature.

For a detailed diagram of the A4SAN-H/-E/-L/-WOHS motherboard, see the layout under "Quick Reference" on page 11.

TPM Enable/Disable Jumper Settings	
Jumper Setting	**Definition**
1–3	Enabled (Default)
3–5	Disabled

Force Power On Jumper Settings	
Jumper Setting	**Definition**
2–4	Force Power On
4–6	Power On by power button

LED Indicators

For information about the LED indicators on the A4SAN-H/-E/-L/-WOHS motherboard, refer to the following content.

Onboard Power LED

The Onboard Power LED is located at LED1 on the A4SAN-H/-E/-L/-WOHS motherboard. When this LED is on, the system is on. Be sure to turn off the system and unplug the power cord before removing or installing components.

For a detailed diagram of the A4SAN-H/-E/-L/-WOHS motherboard, see the layout under "Quick Reference" on page 11.

Onboard Power LED Indicator	
LED Color	**Definition**
Green	System On
Red	S5 or Main Power Fail
Off	System Off (power cable not connected)

Chapter 3:

Troubleshooting

The following content contains information on common issues and how to resolve them.

3.1 Troubleshooting Procedures **61**
Before Power On 61
No Power 61
No Video 61
System Boot Failure 62
Memory Errors 62
Losing the System's Setup Configuration 62
When the System Becomes Unstable 63
3.2 Technical Support Procedures **65**
3.3 Motherboard Battery **66**
3.4 Where to Get Replacement Components **67**
3.5 Returning Merchandise for Service **68**
3.6 Feedback **69**

3.1 Troubleshooting Procedures

Use the following procedures to troubleshoot your system. If you have followed all of the procedures below and still need assistance, refer to the "Technical Support Procedures" on page 65 or "Returning Merchandise for Service" on page 68 section(s) in this chapter. Always disconnect the AC power cord before adding, changing or installing any non hot-swap hardware components. If the below steps do not fix the setup configuration problem, contact your vendor for repairs.

Before Power On

1. Make sure that there are no short circuits between the motherboard and chassis.
2. Disconnect all ribbon/wire cables from the motherboard, including those for the keyboard and mouse.
3. Remove all add-on cards.
4. Connect the front panel connectors to the motherboard.

No Power

This motherboard features an Onboard Power LED at LED1. Before following the procedures in this section, check if LED1 is off. If LED1 is off, refer to this procedure:

1. Make sure that there are no short circuits between the motherboard and the chassis.
2. Make sure that the power connectors are properly connected.
3. Check that the 115 V/230 V switch, if available, on the power supply is properly set.
4. Turn the power switch on and off to test the system, if applicable.
5. Check the processor socket for bent pins and make sure the processor is fully seated.
6. The battery on your motherboard may be old. Check to verify that it still supplies approximately 3 VDC. If it does not, replace it with a new one.

No Video

1. See if the Onboard Power LED at LED1 is green. If the LED is off, check the "No Power" section of this chapter. If the LED is red, check the "System Boot Failure" section of this chapter.
2. If the power is on, but you do not have video, remove all add-on cards and cables.
3. Make sure the video cables are properly connected.

System Boot Failure

If the system does not display Power-On-Self-Test (POST) or does not respond after the power is turned on, or LED1 is red, do the following:

1. Check the screen for an error message.
2. Clear the CMOS settings by unplugging the power cord and contacting both pads on the CMOS clear jumper. Restart the system. Refer to CMOS Clear.
3. Remove all components from the motherboard, especially the DIMMs. Power on the system and check if the power-on LED and system fans are spinning.
4. Turn on the system with only one DIMM installed. If the system boots, check for bad DIMMs or slots by following the Memory Errors Troubleshooting procedure in this chapter.

Memory Errors

When suspecting faulty memory is causing the system issue, check the following:

1. Make sure that the memory modules are compatible with the system and are properly installed. See "Component Installation" on page 32 for installation instructions. (For memory compatibility, refer to the "Tested Memory List" link on the motherboard's product page to see a list of supported memory.)
2. Check if different speeds of DIMMs have been installed. It is strongly recommended that you use the same RAM type and speed for all DIMMs in the system.
3. Make sure that you are using the correct type of DIMMs recommended by the manufacturer.
4. Check for bad DIMMs or slots by swapping a single module among all memory slots and check the results.
5. Make sure that all memory modules are fully seated in their slots. Folow the instructions given in Section 2-4 in Chapter 2.
6. Follow the instructions given in the DIMM population tables listed in Section 2-4 to install your memory modules.

Losing the System's Setup Configuration

1. Make sure that you are using a high-quality power supply. A poor-quality power supply may cause the system to lose the CMOS setup information. Refer to "Introduction" on page 10 for details on recommended power supplies.

2. The battery on your motherboard may be old. Check to verify that it still supplies approximately 3 VDC. If it does not, replace it with a new one.

When the System Becomes Unstable

A. If the system becomes unstable during or after OS installation, check the following:

1. Processor/BIOS support: Make sure that your processor is supported and that you have the latest BIOS installed in your system.
2. Memory support: Make sure that the memory modules are supported. Refer to the product page on our website at https://www.supermicro.com. Test the modules using memtest86 or a similar utility.

   Note: Click on the "Tested Memory List" link on the motherboard's product page to see a list of supported memory.

3. Storage Drive support: Make sure that all storage drives work properly. Replace the failed storage drives with good ones.
4. System cooling: Check the system cooling to make sure that all heatsink fans and processor/system fans, etc., work properly. Check the hardware monitoring settings in the IPMI to make sure that the processor and system temperatures are within the normal range. Also, check the front panel Overheat LED and make sure that it is not on.
5. Adequate power supply: Make sure that the power supply provides adequate power to the system. Make sure that all power connectors are connected. Refer to our website for more information on the minimum power requirements.
6. Proper software support: Make sure that the correct drivers are used.

B. If the system becomes unstable before or during OS installation, check the following:

1. Source of installation: Make sure that the devices used for installation are working properly, including boot devices such as a USB flash or media device.
2. Cable connection: Check to make sure that all cables are connected and working properly.
3. Use the minimum configuration for troubleshooting: Remove all unnecessary components (starting with add-on cards first), and use the minimum configuration (but with the processor and a memory module installed) to identify the trouble areas. Refer to the steps listed above in this section for proper troubleshooting procedures.

4. Identify bad components by isolating them: If necessary, remove a component in question from the chassis, and test it in isolation to make sure that it works properly. Replace a bad component with a good one.
5. Check and change one component at a time instead of changing several items at the same time. This will help isolate and identify the problem.
6. To find out if a component is good, swap this component with a new one to see if the system will work properly. If so, then the old component is bad. You can also install the component in question in another system. If the new system works, the component is good and the old system has problems.

3.2 Technical Support Procedures

Before contacting Technical Support, take the following steps. Also, note that as a motherboard manufacturer, Supermicro also sells motherboards through its channels, so it is best to first check with your distributor or reseller for troubleshooting services. They should know of any possible problems with the specific system configuration that was sold to you.

1. Refer to Troubleshooting Procedures or see the FAQs on our website (https://www.supermicro.com/FAQ/index.php) before contacting Technical Support.
2. BIOS upgrades can be downloaded from our website (https://www.supermicro.com/support/resources/bios_ipmi.php).
3. If you still cannot resolve the problem, include the following information when contacting Supermicro for technical support:
   - Motherboard model and PCB revision number
   - BIOS release date/version (This can be seen on the initial display when your system first boots up.)
   - System configuration
4. An example of a Technical Support form is on our website at https://webpr3.supermicro.com/SupportPortal.
5. Distributors: For immediate assistance, have your account number ready when placing a call to our Technical Support department. For Supermicro contact information, refer to "Contacting Supermicro" on page 9.

3.3 Motherboard Battery

For information on removing, disposing of, and replacing the motherboard battery of your system, refer to "Battery Removal and Installation" on page 40.

3.4 Where to Get Replacement Components

If you need replacement parts for your A4SAN-H/-E/-L/-WOHS motherboard, to ensure the highest level of professional service and technical support, purchase exclusively from our Supermicro Authorized Distributors/System Integrators/Resellers. A list can be found at https://www.supermicro.com. Under the "Buy" menu, click the "Where to Buy" link.

3.5 Returning Merchandise for Service

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service will be rendered. You can obtain service by calling your vendor for a Returned Merchandise Authorization (RMA) number. When returning the motherboard to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and the shipping package is mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

For faster service, RMA authorizations may be requested online (https://www.supermicro.com/RmaForm).

Whenever possible, repack the motherboard in the original Supermicro carton, using the original packaging material. If these are no longer available, be sure to pack the motherboard securely, using packaging material to surround the motherboard so that it does not shift within the carton and become damaged during shipping.

This warranty only covers normal consumer use and does not cover damages incurred in shipping or from failure due to the alternation, misuse, abuse or improper maintenance of products.

During the warranty period, contact your distributor first for any product problems.

3.6 Feedback

Supermicro values your feedback as we strive to improve our customer experience in all facets of our business. Email us at Techwriterteam@supermicro.com to provide feedback on our manuals.

Chapter 4:

UEFI BIOS

The following content contains information on BIOS configuration with the A4SAN-H/-E/-L/-WOHS motherboard.

4.1 Introduction **71**
4.2 Main Setup **73**
4.3 Advanced Setup Configurations **76**
4.4 Event Logs **111**
4.5 Thermal & Fan **113**
4.6 Security **116**
4.7 Boot **122**
4.8 Save & Exit **124**

4.1 Introduction

This chapter describes the AMIBIOS™ Setup utility for the motherboard. The BIOS is stored on a chip and can be easily upgraded using a flash program.

Note: Due to periodic changes to the BIOS, some settings may have been added or deleted and might not yet be recorded in this manual. Refer to the Manual Download area of our website for any changes to BIOS that may not be reflected in this manual.

Updating BIOS



Warning! Do not shut down or reset the system while updating the BIOS to prevent possible system boot failure! Read the motherboard README file carefully before you perform the BIOS update.

It is recommended that you do not upgrade your BIOS if you are not experiencing any problems with your system. Updated BIOS files are located on our website at https://www.supermicro.com/support/resources/bios_ ipmi.php. Check our BIOS warning message and the information on how to update your BIOS on our website. Select your motherboard model and download the BIOS file to your computer. Also, check the current BIOS revision to make sure that it is newer than your BIOS before downloading.

Unzip the BIOS file onto a bootable USB device and then boot into the built-in UEFI Shell and type "flash.nsh <BIOS filename><BMC Username><BMC Password>" to start the BIOS update. The flash script will invoke the SCC (EFI) tool automatically to perform the BIOS update, beginning with uploading the BIOS image to BMC. After uploading the firmware, the system will reboot to continue the process. The BMC will take over and continue the BIOS update in the background. The process will take 3–5 minutes.

Starting the Setup Utility

To enter the BIOS Setup Utility, hit the Delete key while the system is booting-up. In most cases, the <Delete> key is used to invoke the BIOS setup screen. There are a few cases when other keys are used, such as <F1>, <F2>, etc. Each main BIOS menu option is described in this manual.

The Main BIOS screen has two main frames. The left frame displays all the options that can be configured. “Grayed-out” options cannot be configured. 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 accompany it. (Note that BIOS has default text messages built in. We retain the option to include, omit, or change any of these text messages.) Settings printed in Bold are the default values.

A "►" indicates a submenu. Highlighting such an item and pressing the <Enter> key open the list of settings within that submenu.

The BIOS setup utility uses a key-based navigation system called hot keys. Most of these hot keys (<F1>, <F10>, <Enter>, <ESC>, Arrow keys, etc.) can be used at any time during the setup navigation process.

4.2 Main Setup

The Main setup screen appears when the AMI BIOS Setup utility is first entered. To return to the Main setup screen, select the Main tab at the top of the screen. The Main BIOS setup screen is shown below.

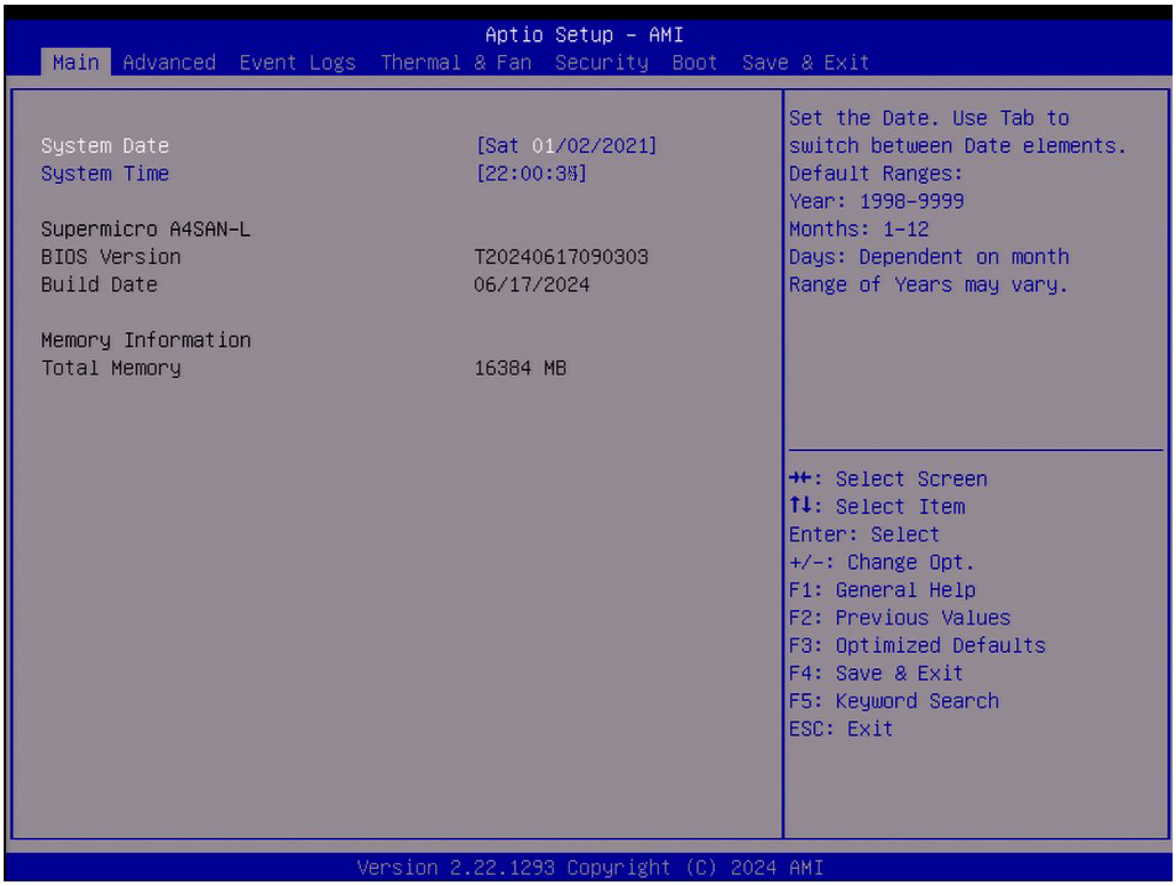


Figure 4-1. Main Setup

System Date/System Time

Use the two features to change the system date and time. Highlight **System Date** or **System Time** using the arrow keys. Enter new values using the keyboard. Press the <Tab> key or the arrow keys to move between fields. The date must be entered in MM/DD/YYYY format. The time is entered in HH:MM:SS format.

Note: The time is in the 24-hour format. For example, 5:30 P.M. appears as 17:30:00.

Supermicro A4SAN-H/-E/-L/-WOHS

BIOS Version

This feature displays the version of the BIOS ROM used in the system.

Build Date

This feature displays the date when the version of the BIOS ROM used in the system was built.

Memory Information

Total Memory

This feature displays the total size of memory available in the system.

4.3 Advanced Setup Configurations

Use the arrow keys to select the Advanced submenu and press <Enter> to access the submenu items.

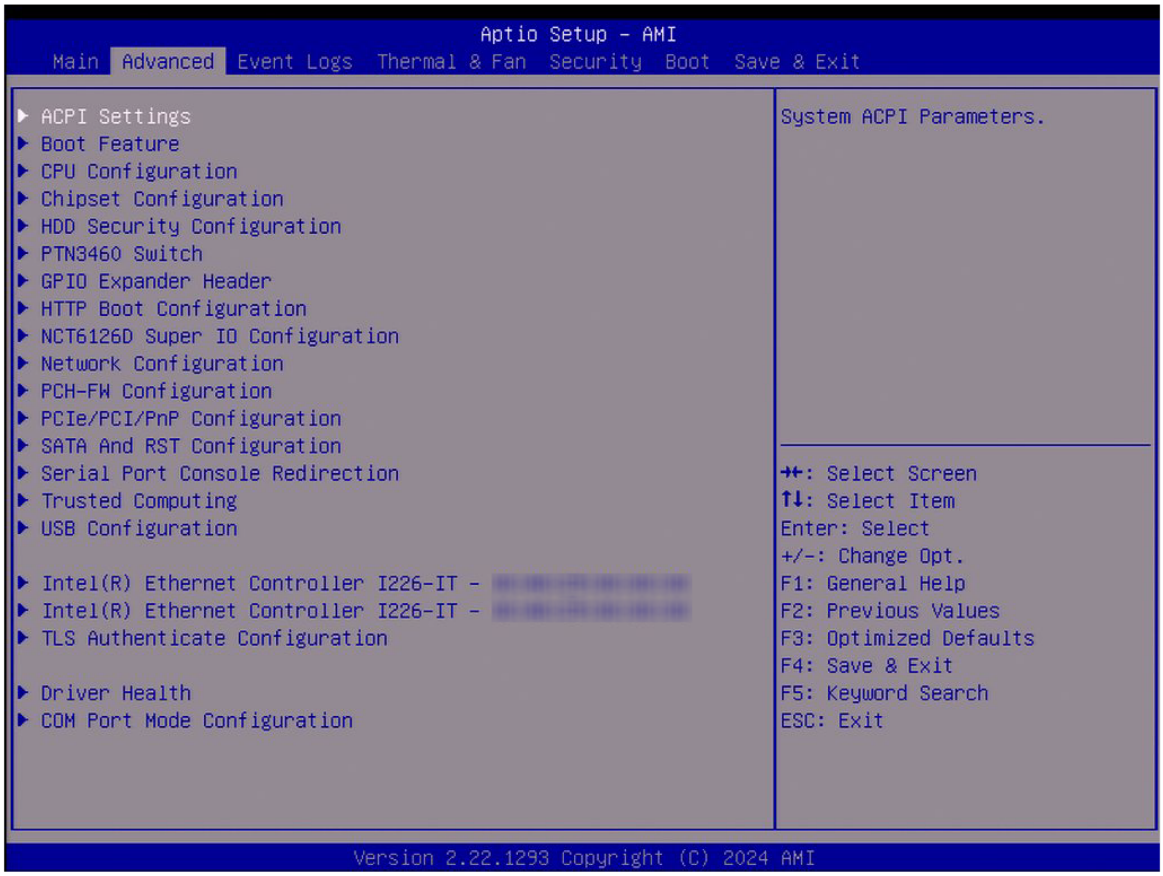


Figure 4-2. Advanced Setup Configurations

Warning! Use caution when changing the Advanced settings. An incorrect value, an improper DRAM frequency, or a wrong BIOS timing setting may cause the system to malfunction. When this occurs, revert the setting to the manufacture default settings.

ACPI Settings Menu

►ACPI Settings

ACPI Sleep State

Use this feature to select the ACPI Sleep State that the system will enter into when the suspend button is activated. The options are Suspend Disabled and **S3 (Suspend to RAM)**.

WHEA Support

Select Enabled to support the Windows Hardware Error Architecture (WHEA) platform and provide a common infrastructure for the system to handle hardware errors within the Windows OS environment to reduce system crashes and to enhance system recovery and health monitoring. The options are Disabled and **Enabled**.

High Precision Event Timer

Select Enabled to activate the High Precision Event Timer (HPET) that produces periodic interrupts at a much higher frequency than a Real-time Clock (RTC) does in synchronizing multimedia streams, providing smooth playback and reducing the dependency on other timestamp calculation devices, such as an x86 RDTSC Instruction embedded in the CPU. The High Performance Event Timer is used to replace the 8254 Programmable Interval Timer. The options are Disabled and **Enabled**.

Native PCIe Enable

Enable this feature to grant control of PCI Express Native hot plug, PCI Express Power Management Events, and PCI Express Capability Structure Control. The options are Disabled and **Enabled**.

Native ASPM

Select Enabled for the operating system to control the ASPM, or Disabled for the BIOS to control the ASPM. The options are Auto, Enabled, and **Disabled**.

Smart Battery Support

Use this feature to enable or disable the BIOS Smart Battery polling. The options are **Disabled** and Enabled.

Wake System From S5

Use this feature to enable or disable the system wake on an alarm event. If enabled, the system will wake on the time specified. The options are **Disabled** and Enabled

Boot Feature Menu

►Boot Feature

Fast Boot

Enable this feature to reduce the time the computer takes to boot up. The computer will boot with a minimal set of required devices. This feature does not have an effect on BBS boot options in the Boot tab. The options are Disabled and **Enabled**.

Quiet Boot

Use this feature to select the screen between displaying the Power-on Self Test (POST) messages or the OEM logo upon bootup. Select Disabled to display the POST messages. Select Enabled to display the OEM logo instead of the normal POST messages. The options are Disabled and **Enabled**.

Note: BIOS POST messages are always displayed regardless of the setting of this feature.

Bootup NumLock State

Use this feature to set the Power-on state for the <Numlock> key. The options are **On** and Off.

Wait For "F1" If Error

Select Enabled to force the system to wait until the <F1> key is pressed if an error occurs. The options are **Disabled** and Enabled.

Re-try Boot

If this feature is set to Enabled, the system BIOS will automatically reboot the system from an Extensible Firmware Interface (EFI) boot device after an initial boot failure. The options are **Disabled** and Enabled.

Power Configuration

Watch Dog Function

Select Enabled to allow the Watch Dog timer to reboot the system when it is inactive for more than five minutes. The options are **Disabled** and Enabled.

Restore on AC Power Loss

Use this feature to set the power state after a power outage. Select Stay Off for the system power to remain off after a power loss. Select Power On for the system power to be turned on after a power loss. Select Last State to allow the system to resume its last power state before a power loss. The options are Stay Off, Power On, and **Last State**.

Power Button Function

This feature controls how the system shuts down when the power button is pressed. Select 4 Seconds Override to power off the system after pressing and holding the power button for four seconds or longer. Select Instant Off to instantly power off the system as soon as you press the power button. The options are **Instant Off** and 4 Seconds Override.

DeepSx Power Policies

Use this feature to configure the Advanced Configuration and Power Interface (ACPI) settings for the system. Enable S4 to use Hibernation mode (Suspend to Disk) so that all data stored in the main memory can be saved in a non-volatile memory area such as in a hard drive and then

power down the system. Enable S5 to power off the whole system except the power supply unit (PSU) and keep the power button alive so that you can wake up the system by using a USB keyboard or mouse. The options are **Disabled**, Enabled In S4-S5, and Enabled in S5.

CPU Configuration Menu

►CPU Configuration



Warning! Setting the wrong values for the features included in the following sections may cause the system to malfunction.

The following processor information is displayed.

- Processor Model
- CPU Signature
- Microcode Patch
- Max CPU Speed
- Min CPU Speed
- CPU Speed
- Number of Performance-cores
- Number of Efficient-cores
- Hyper Threading Technology
- VMX
- SMX/TXT
- 64-bit
- EIST Technology
- CPU C3 state
- CPU C6 state

  CPU C7 state
- CPU C8 state
- CPU C9 state
- CPU C10 state

- Performance L1 Data Cache
- Performance L1 Instruction Cache
- Performance L2 Cache
- Performance L3 Cache
- Efficient L1 Data Cache
- Efficient L1 Instruction Cache
- Efficient L2 Cache
- Efficient L3 Cache

C6DRAM

Use this feature to enable or disable the moving of DRAM contents to PRM memory when the CPU is in the C6 state. The options are Disabled and **Enabled**.

Hardware Prefetcher

If this feature is set to Enabled, the hardware prefetcher will prefetch data from the main system memory to Level 2 cache to help expedite data transaction to enhance memory performance. The options are **Enabled** and Disabled.

Note: This feature is NOT available when "Workload Profile" is set to HPC, I/O, or Virtualization.

Adjacent Cache Prefetch

Select Enabled for the CPU to prefetch both cache lines for 128 bytes as comprised. Select Disabled for the CPU to prefetch both cache lines for 64 bytes. The options are **Enabled** and Disabled.

Note: This feature is NOT available when "Workload Profile" is set to HPC, I/O, or Virtualization.

Intel Virtualization Technology

Select Enabled to enable the Intel Vanderpool Technology for Virtualization platform support, which allows multiple operating systems to run simultaneously on the same computer to maximize system resources for performance enhancement. The options are Disabled and **Enabled**. Changes take effect after you save settings and reboot the system.

Notes:

- This feature is NOT available when "TXT Support" is set to Enabled.
- This feature is NOT available when "Workload Profile" is set to Virtualization, Telco NFVI, Telco NFVI-FP, or Telco FlexRAN.

Active Efficient-cores

This feature determines how many efficient cores will be activated for each processor package. When all is selected, all cores in the processor will be activated. The options are **All**, 3, 2, 1, and 0.

Boot Performance Mode

This feature allows you to select the performance state that the BIOS will set before the operating system handoff. The options are **Max Non-Turbo Performance** and Turbo Performance.

Intel® SpeedStep™

Intel SpeedStep Technology allows the system to automatically adjust processor voltage and core frequency to reduce power consumption and heat dissipation. The options are Disabled and **Enabled**.

Intel® Speed Shift Technology

Use this feature to enable or disable Intel Speed Shift Technology support. When this feature is enabled, the Collaborative Processor Performance Control (CPPC) version 2 interface will be available to control CPU P-States. The options are Disabled and **Enabled**.

Turbo Mode (Available when "SpeedStep (P-States)" is set to Enabled and when "Workload Profile" is set to Disabled)

Select Enabled to allow the CPU to operate at the manufacturer-defined turbo speed by increasing CPU clock frequency. This feature is available when it is supported by the processors used in the system. The options are Disabled and **Enabled**.

Power Limit 1 Override

Select Enabled to support average power limit (PL1) override. The options are **Disabled** and Enabled.

Power Limit 1

Use this feature to configure the value for Power Limit 1. The value is in milliwatts, and the step size is 125 mW. Use the number keys on your keyboard to enter the value. Enter 0 to use the manufacture default setting. If the value is 0, the BIOS will set PL2 as 1.25* TDP.

Power Limit 1 Time Window

This feature determines how long the time window over which the TDP value is maintained. Use the number key on your keyboard to enter the value. The default setting is 8. This value can be between 0–128.

Power Limit 2 Override

Select Enabled to support rapid power limit (PL2) override. The options are Disabled and **Enabled**.

Power Limit 2

Use this feature to configure the value for Power Limit 2. The value is in milliwatts and the step size is 125 mW. Use the number keys on your keyboard to enter the value. Enter 0 to use the manufacture default setting. If the value is 0, the BIOS will set PL2 as 1.25* TDP.

C-States

Use this feature to enable the C-State of the CPU. The options are Disabled and **Enabled**.

Enhanced C-States

Use this feature to enable the enhanced C-State of the CPU. The options are Disabled and **Enabled**.

C-State Auto Demotion

Use this feature to prevent unnecessary excursions into the C-states to improve latency. The options are Disabled and **C1**.

C-State Auto Demotion

Use this feature to prevent unnecessary excursions into the C-states to improve latency. The options are Disabled and **C1**.

Package C-State Un-Demotion

Use this feature to enable or disable the Package C-State un-demotion. The options are Disabled and **Enabled**.

Package C-State Demotion

Use this feature to enable or disable the Package C-State demotion. The options are Disabled and **Enabled**.

C-State Pre-Wake

This feature allows you to enable or disable the C-State Pre-Wake. The options are Disabled and **Enabled**.

Package C-State Limit

Use this feature to set the Package C-State limit. The options are C0/C1, C2, C3, C6, C7, C7s, C8, C9, C10, Cpu Default, and **Auto**.

Monitor MWAIT

Select Enabled to support Monitor and Mwait, which are two instructions in Streaming SIMD Extension 3 (SSE3) to improve synchronization between multiple threads for CPU performance enhancement. The options are Disabled and **Enabled**.

Note: This feature is NOT available when "Workload Profile" is set to Telco NFVI, Telco NFVI-FP, or Telco FlexRAN.

Intel® TCC Mode

Use this feature to enable or disable the Intel Time Coordinated Computing (TCC) Mode. When enabled, this feature will modify the system settings to improve the real-time performance. The options are **Disabled** and Enabled.

Chipset Configuration Menu

►System Agent (SA) Configuration

Warning! Setting the wrong values in this section may cause system to malfunction.

System Agent (SA) Configuration

VT-D Supported

VT-d

Select Enabled to activate Intel Virtualization Technology support for Direct I/O VT-d by reporting the I/O device assignments to VMM through the DMAR ACPI Tables. This feature offers fully-protected I/O resource-sharing across the Intel platforms, providing the user with greater reliability, security and availability in networking and data-sharing. The options are **Enabled** and Disabled.

GNA Device (B0:D8:F0)

Use this feature to enable SA GNA device. The options are Enabled and **Disabled**.

Memory Configuration Menu

►Memory Configuration

This submenu allows you to configure the Integrated Memory Controller (iMC) settings.

Enforce DDR Memory Frequency POR

Select Enforce POR to enforce Plan of Record (POR) restrictions for DDR memory frequency and voltage programming. The options are Disabled and **POR**.

Maximum Memory Frequency

Use this feature to set the maximum memory frequency for onboard memory modules. The options are **Auto**, 1600, 1800, 2000, 2200, 2400, 2600, 2800, 3000, 3200, 3600, 4000, 4200, 4400, 4600, and 4800.

Max TOLUD

This feature sets the maximum TOLUD value, which specifies the "Top of Low Usable DRAM" memory space to be used by internal graphics devices, GTT Stolen Memory, and TSEG, respectively, if these devices are enabled. The options are **Dynamic**, 1 GB, 1.25 GB, 1.5 GB, 1.75 GB, 2 GB, 2.25 GB, 2.5 GB, 2.75 GB, 3 GB, 3.25 GB, and 3.5 GB.

Memory Scrambler

Use this feature to enable or disable memory scrambler support. The options are Disabled and **Enabled**.

Force ColdReset

Use this feature to enable or disable a cold boot during a MRC execution. The options are Enabled and **Disabled**.

Force Single Rank

Select enabled to use only Rank 0 in each DIMM. The options are **Disabled** and Enabled.

Memory Remap

Use this feature to enable or disable memory remap above 4 GB. The options are **Enabled** and Disabled.

MRC Fast Boot

Use this feature to enable or disable fast path through the memory reference code. The options are Disabled and **Enabled**.

In-Band ECC Support

Use this feature to enable or disable In-Band ECC. The options are **Disabled** and Enabled.

In-Band ECC Operation Mode (Available when In-Band ECC Support is Enabled)

Use this feature to select the In-Band ECC Operation Mode. The options are 0, 1, and 2.

Graphics Configuration Menu

►Graphics Configuration

This submenu allows you to configure the graphics configuration settings.

Graphics Configuration

IGFX GOP Version

Graphics Turbo IMON Current

Use this feature to set the graphics turbo IMON value. The default is **31**.

Skip Scanning of External Gfx Card

If this feature is enabled, the system will not scan for an external graphics card on PEG and PCIe slots. The options are **Disabled** and Enabled.

Primary Display

Use this feature to select the primary video display. The options are **Auto**, IGFX, and PCH PCI.

Internal Graphics

Select Auto to keep an internal graphics device installed on an expansion slot supported by the CPU to be automatically enabled. The options are **Auto**, Disabled, and Enabled.

GTT Size

Use this feature to set the memory size to be used by the graphics translation table (GTT). The options are 2MB, 4MB, and **8MB**.

Aperture Size

Use this feature to set the Aperture size, which is the size of system memory reserved by the BIOS for graphics device use. The options are 128MB, **256MB**, 512MB, 1024MB, and 2048MB.

DVMT Pre-Allocated

Dynamic Video Memory Technology (DVMT) allows dynamic allocation of system memory to be used for video devices to ensure best use of available system memory based on the DVMT 5.0 platform. The options are 0M, 32M, 64M, 96M, 128M, 160M, 4M, 8M, 12M, 16M, 20M, 24M, 28M, 32M/F7, 36M, 40M, 44M, 48M, 52M, 56M, and **60M**.

PM Support

Enable this feature to activate Power Management BIOS support. The options are **Enabled** and Disabled.

PAVP Enable

Use this feature to enable or disable PAVP support. The options are Disabled and **Enabled**.

Cdynmax Clamping Enable

Enable this feature to activate Cdynmax Clamping. The options are Enabled and **Disabled**.

Graphics Clock Frequency

Use this feature to set the internal graphics clock frequency. The options are 192 Mhz, 307.2 Mhz, 556.8 Mhz, 652.8 MHZ, and **Max CdClock freq based on Reference Clk**.

DMI/OPI Configuration Menu

►DMI/OPI Configuration

This submenu allows you to configure the DMI/OPI configuration settings.

DMI Gen3 ASPM

Use this feature to set the Active State Power Management (ASPM) state on the System Agent (SA) side of the DMI Link. The options are Disabled, Auto, ASPM L0s, **ASPM L1**, and ASPM L0sL1.

GT - Power Management Control

RC6 (Render Standby)

Use this feature to enable render standby support. The options are Disabled and **Enabled**.

Maximum GT frequency

Use this feature to define the Maximum GT frequency. Choose between 33MHz (RPN) and 1200Mhz (RP0). Any value beyond this range will be clipped to its min/max supported by the CPU. The options are **Default Max Frequency**, 100Mhz, 150Mhz, 200Mhz, 250Mhz, 300Mhz, 350Mhz, 400Mhz, 450Mhz, 500Mhz, 550Mhz, 600Mhz, 650Mhz, 700Mhz, 750Mhz, 800Mhz, 850Mhz, 900Mhz, 950Mhz, 1000Mhz, 1050Mhz, 1100Mhz, 1150Mhz, and 1200Mhz.

Disable Turbo GT frequency

Use this feature to disable Turbo GT frequency. If set to Enabled, Turbo GT frequency becomes disabled. If set to Disabled, GT frequency limiters will be removed. The options are Enabled and **Disabled**.

PCH-IO Configuration

The following information is displayed.

- PCH SKU
- Stepping

►PCI Express Configuration

PCI Express Configuration

►PCIe M.2-E1

PCIe M.2-E1 ASPM

Use this feature to activate the Active State Power Management (ASPM) level for a PCIe device. Select Auto for the system BIOS to automatically set the ASPM level based on the system configuration. Select Disabled to disable ASPM support. The options are Disabled, **L1**, and Auto.

PCIe M.2-E1 L1 Substates

Use this feature to set the PCI Express L1 Substates. The options are Disabled, L1.1, and **L1.1 & L1.2**.

PCIe M.2-E1 Speed

Use this feature to select the PCI Express port speed. The options are **Auto**, Gen1, Gen2, and Gen3.

PCIe M.2-E1 Peer Memory Write Enable

Use this feature to enable or disable Peer Memory Write. The options are **Disabled** and Enabled.

►PCIe M.2-M1

PCIe M.2-M1 ASPM

Use this feature to activate the Active State Power Management (ASPM) level for a PCIe device. Select Auto for the system BIOS to automatically set the ASPM level based on the system configuration. Select Disabled to disable ASPM support. The options are Disabled, **L1**, and Auto.

PCIe M.2-M1 L1 Substates

Use this feature to set the PCI Express L1 Substates. The options are Disabled, L1.1, and **L1.1 & L1.2**.

PCIe M.2-M1 Speed

Use this feature to select the PCI Express port speed. The options are **Auto**, Gen1, Gen2, and Gen3.

PCIe M.2-M1 Peer Memory Write Enable

Use this feature to enable or disable Peer Memory Write. The options are **Disabled** and Enabled.

►PCIe M.2-B1

PCIe M.2-B1 ASPM

Use this feature to activate the Active State Power Management (ASPM) level for a PCIe device. Select Auto for the system BIOS to automatically set the ASPM level based on the system configuration. Select Disabled to disable ASPM support. The options are Disabled, **L1**, and Auto.

PCIe M.2-B1 L1 Substates

Use this feature to set the PCI Express L1 Substates. The options are Disabled, L1.1, and **L1.1 & L1.2**.

PCIe M.2-B1 Speed

Use this feature to select the PCI Express port speed. The options are **Auto**, Gen1, Gen2, and Gen3.

PCIe M.2-B1 Peer Memory Write Enable

Use this feature to enable or disable Peer Memory Write. The options are **Disabled** and Enabled.

HDD Security Configuration

The settings in this submenu are configurable if media drives are detected.

PTN3460 Switch

LVDS Panel Support

Use this feature to select the supported IGFX graphics device ouput to the LVDS panel. The options are **Disabled** and Non-EDID Panel.

Panel select (Available when LVDS Panel Support is set to Non-EDID Panel)

Use this feature to select the panel resolution. The options are **Use EDID in SPI ROM**, 800x 600, 1024x 768, 1280x1024, 1366x 768, 800x 480, 1900x1080, and OEM Define.

Single/Dual LVDS mode

Use this feature to select the LVDS bus mode. The options are **Disabled**, Single LVDS Bus mode, and Dual LVDS Bus mode.

Panel Channel Type

Use this feature to select the panel channel type. The options are **Disabled**, Odd Channel, Even Channel, and Both Channel.

Panel Color Depth

Use this feature to select the LFP panel color depth. The options are **Disabled**, VESA and JEIDA18 bpp, VESA 24 bpp, and JEIDA 24 bpp.

Backlight Brightness

Use this feature to select panel backlight brightness. The options are from 7% to **100%**.

GPIO Expander Header

GPIO Expander Header Control

Use this feature enable or disable the General Purpose I/O expander header. The options are **Disabled** and Enabled.

Pin 1 (Available when "GPIO Expander Header Control" is set to Enabled)

Use this feature to set the output for Pin 1 to low or high. The options are **Output Low**, Output High, and Input.

Pin 2 (Available when "GPIO Expander Header Control" is set to Enabled)

Use this feature to set the output for Pin 2 to low or high. The options are **Output Low**, Output High, and Input.

Pin 3 (Available when "GPIO Expander Header Control" is set to Enabled)

Use this feature to set the output for Pin 3 to low or high. The options are **Output Low**, Output High, and Input.

Pin 4 (Available when "GPIO Expander Header Control" is set to Enabled)

Use this feature to set the output for Pin 4 to low or high. The options are **Output Low**, Output High, and Input.

Pin 5 (Available when "GPIO Expander Header Control" is set to Enabled)

Use this feature to set the output for Pin 5 to low or high. The options are **Output Low**, Output High, and Input.

Pin 6 (Available when "GPIO Expander Header Control" is set to Enabled)

Use this feature to set the output for Pin 6 to low or high. The options are **Output Low**, Output High, and Input.

Pin 7 (Available when "GPIO Expander Header Control" is set to Enabled)

Use this feature to set the output for Pin 7 to low or high. The options are **Output Low**, Output High, and Input.

Pin 8 (Available when "GPIO Expander Header Control" is set to Enabled)

Use this feature to set the output for Pin 8 to low or high. The options are **Output Low**, Output High, and Input.

HTTP Boot Configuration Menu

►HTTP Boot Configuration

HTTP Boot Policy

Use this feature to set the HTTP boot policy. The options are Apply to all LANs, **Apply to each LAN**, and Boot Priority #1 instantly.
(missing or bad snippet)

Priority of HTTP Boot

Instance of Priority 1: (Available when your motherboard supports this feature)

This feature sets the rank target port. The default setting is **1**.

Select IPv4 or IPv6

This feature specifies which connection the target LAN port should boot from. The options are **IPv4** and IPv6.

Boot Description

Use this feature to enter a boot description, which cannot be longer than 75 characters. Please be sure to enter a boot description; otherwise, the boot option for the URI cannot be created.

Boot URI

Enter a Boot Uniform Research Identifier (URI) with 128 characters or shorter. This Boot URI determines how IPv4 Boot Option and IPv6 Boot Option will be created. This feature is only supported on Dual or EFI Boot Mode.

Instance of Priority 2: (Available when "HTTP Boot Policy" is set to Apply to each LAN or Boot Priority #1 instantly)

This feature sets the rank target port. The default setting is **0**.

NCT6126 Super IO Configuration

NCT6126D Super IO Configuration

The following information is displayed.

- Super IO Chip

Serial Port 1 Configuration Menu

►Serial Port 1 Configuration

Serial Port 1

Select Enabled to enable serial port 1. The options are Disabled and **Enabled**.

Device Settings (Available when "Serial Port 1" above is set to Enabled)

This feature shows the base I/O port address and the Interrupt Request address of serial port 1. The option isIO=3F8h; IRQ=4;.

Serial Port 2 Configuration Menu

►Serial Port 2 Configuration

Serial Port 2

Select Enabled to enable serial port 2. The options are Disabled and **Enabled**.

Device Settings (Available when "Serial Port 2" above is set to Enabled)

This feature shows the base I/O port address and the Interrupt Request address of serial port 2. The option is IO=2F8h; IRQ=3;.

Serial Port 3 Configuration Menu

►Serial Port 3 Configuration

Serial Port 3

Select Enabled to enable serial port 3. The options are Disabled and **Enabled**.

Device Settings (Available when "Serial Port 3" above is set to Enabled)

This feature shows the base I/O port address and the Interrupt Request address of serial port 2. The option is IO=3E8h; IRQ=6;.

Serial Port 4 Configuration Menu

►Serial Port 4 Configuration

Serial Port 4

Select Enabled to enable serial port 4. The options are Disabled and **Enabled**.

Device Settings (Available when "Serial Port 4" above is set to Enabled)

This feature shows the base I/O port address and the Interrupt Request address of serial port 2. The option is IO=2E8h; IRQ=7;.

Network Stack Configuration Menu

►Network Stack Configuration

Network Stack

Select Enabled to enable Preboot Execution Environment (PXE) or Unified Extensible Firmware Interface (UEFI) for network stack support. The options are Disabled and **Enabled**.

IPv4 PXE Support (Available when "Network Stack" is set to Enabled)

Select Enabled to enable IPv4 PXE boot support. If this feature is disabled, it will not create the IPv4 PXE boot option. The options are Disabled and **Enabled**.

IPv4 HTTP Support (Available when "Network Stack" is set to Enabled)

Select Enabled to enable IPv4 HTTP boot support. If this feature is disabled, it will not create the IPv4 HTTP boot option. The options are **Disabled** and Enabled.

IPv6 PXE Support (Available when "Network Stack" is set to Enabled)

Select Enabled to enable IPv6 PXE boot support. If this feature is disabled, it will not create the IPv6 PXE boot option. The options are Disabled and **Enabled**.

IPv6 HTTP Support (Available when "Network Stack" is set to Enabled)

Select Enabled to enable IPv6 HTTP boot support. If this feature is disabled, it will not create the IPv6 HTTP boot optiont. The options are **Disabled** and Enabled.

PXE Boot Wait Time (Available when "Network Stack" is set to Enabled)

Use this feature to set the wait time (in seconds) upon which the system BIOS will wait for you to press the <ESC> key to abort PXE boot instead of proceeding with PXE boot by connecting to a network server immediately. Press the <+> or <-> key on your keyboard to change the value. The default setting is **0**.

Media Detect Count (Available when "Network Stack" is set to Enabled)

Use this feature to set the wait time (in seconds) for the BIOS ROM to detect the presence of a LAN media either via the Internet connection or via a LAN port. Press the <+> or <-> key on your keyboard to change the value. The default setting is **1**.

MAC:(MAC address)-IPv4 Network Configuration Menu

►MAC:(MAC address)-IPv4 Network Configuration

Configured

Enable this feature to configure network addresses for DHCP, local IP address, local netmask, local gateway, and local DNS server. The options are **Disabled** and Enabled.

Enable DHCP (Available when "Configured" is set to Enabled)

Select Enabled to support Dynamic Host Configuration Protocol (DHCP), which allows the BIOS to search for a DHCP server attached to the network and request the next available IP address for this computer. The options are **Disabled** and Enabled.

Local IP Address (Available when "Configured" is set to Enabled and "Enabled DHCP" is set to Disabled)

Use this feature to enter an IP address for the local machine.

Local NetMask (Available when "Configured" is set to Enabled and "Enabled DHCP" is set to Disabled)

Use this feature to set the netmask for the local machine.

Local Gateway (Available when "Configured" is set to Enabled and "Enabled DHCP" is set to Disabled)

Use this feature to set the gateway address for the local machine.

Local DNS Servers (Available when "Configured" is set to Enabled and "Enabled DHCP" is set to Disabled)

Use this feature to set the Domain Name System (DNS) server address for the local machine.

Save Changes and Exit

Press <Enter> to save changes and exit.

MAC:(MAC address)-IPv6 Network Configuration Menu

►MAC:(MAC address)-IPv6 Network Configuration

►Enter Configuration Menu

The following information is displayed.

- Interface Name
- Interface Type
- MAC address
- Host address
- Route Table
- Gateway addresses
- DNS addresses

Interface ID

Use this feature to change/enter the 64-bit alternative interface ID for the device. The string format is colon separated. The default setting is the MAC address above.

DAD Transmit Count

Use this feature to set the number of consecutive neighbor solicitation messages have been sent while performing duplicate address detection on a tentative address. The default setting is **1**.

Policy

Use this feature to select how the policy is to be configured. The options are **automatic** and manual.

►Advanced Configuration

Note: This submenu is available when "Policy" is set to manual.

New IPv6 address - Use this feature to enter the IPv6 address for the local machine.

New Gateway addresses - Use this feature to set the gateway address for the local machine.

New DNS addresses - Use this feature to set the DNS server address for the local machine.

Commit Changes and Exit - Press <Enter> to save changes and exit.

Discard Changes and Exit - Press <Enter> to discard changes and exit.

Save Changes and Exit

Press <Enter> to save changes and exit.

PCH-FW Configuration Menu

The following information is displayed.

- ME Firmware Version
- ME Firmware Mode
- ME Firmware SKU

ME FW Image Re-Flash

Use this feature to update the Management Engine firmware. The options are **Disabled** and Enabled.

TPM Device Selection

Use this feature to select dTPM or PTT for the TPM device. dTPM is discrete Trusted Platform Module and PTT is Platform Trusted Technology. The options are **dTPM** and PTT.

PCIe/PCI/PnP Configuration Menu

Option ROM execution

Video

Use this feature to select the execution of the video OpROM. The options are Do not launch and **EFI**.

PCI PERR/SERR Support

Use this feature to enable or disable the runtime event for PCI errors. The options are **Disabled** and Enabled.

Above 4G MMIO BIOS Assignment (Available if the system supports 64-bit PCI decoding)

Select Enabled to decode a PCI device that supports 64-bit in the space above 4G Address. The options are **Enabled** and Disabled.

Re-Size BAR Support

Use this feature to enable the Resizable BAR support. Resizable BAR is a PCIe interface technology that allows the CPU to access to the entire frame buffer. With this technology, your system will be able to handle multiple CPU to GPU transfers simultaneously rather than queuing, which can improve the frame rate performance. The options are **Disabled** and Enabled.

SR-IOV Support

Use this feature to enable or disable Single Root IO Virtualization Support. The options are **Disabled** and Enabled.

BME DMA Mitigation

Enable this feature to help block DMA attacks. The options are **Disabled** and Enabled.

NVMe Firmware Source

The feature determines which type of NVMe firmware should be used in your system. The options are **Vendor Defined Firmware** and AMI Native Support.

Consistent Device Name Support

This feature controls the device naming for network devices and slots. The options are **Disabled** and Enabled.

SMBus/I2C Selection

Use this feature to select the SMBus or I2C on the PCIe bus. The options are **SMBus** and I2C.

PCIe/PCI/PnP Configuration

PCI / PCIX / PCIe Slot 1 OPROM

Use this feature to enable or disable the PCI/PCIX/PCIe slot 1 OPROM option. The options are Disabled and **EFI**.

PCI / PCIX / PCIe Slot 2 OPROM

Use this feature to enable or disable the PCI/PCIX/PCIe slot 2 OPROM option. The options are Disabled and **EFI**.

PCI / PCIX / PCIe Slot 3 OPROM

Use this feature to enable or disable the PCI/PCIX/PCIe slot 3 OPROM option. The options are Disabled and **EFI**.

PCI / PCIX / PCIe Slot 4 OPROM

Use this feature to enable or disable the PCI/PCIX/PCIe slot 4 OPROM option. The options are Disabled and **EFI**.

PCI / PCIX / PCIe Slot 5 OPROM

Use this feature to enable or disable the PCI/PCIX/PCIe slot 5 OPROM option. The options are Disabled and **EFI**.

PCI / PCIX / PCIe Slot 6 OPROM

Use this feature to enable or disable the PCI/PCIX/PCIe slot 6 OPROM option. The options are Disabled and **EFI**.

PCI / PCIX / PCIe Slot 7 OPROM

Use this feature to enable or disable the PCI/PCIX/PCIe slot 7 OPROM option. The options are Disabled and **EFI**.

PCI / PCIX / PCIe Slot 8 OPROM

Use this feature to enable or disable the PCI/PCIX/PCIe slot 8 OPROM option. The options are Disabled and **EFI**.

PCI / PCIX / PCIe Slot 9 OPROM

Use this feature to enable or disable the PCI/PCIX/PCIe slot 9 OPROM option. The options are Disabled and **EFI**.

PCIe M.2-E1 OPROM

Use this feature to enable or disable the PCIe M.2-E1 OPROM option. The options are Disabled and **EFI**.

PCIe M.2-M1 OPROM

Use this feature to enable or disable the PCIe M.2-M1 OPROM option. The options are Disabled and **EFI**.

PCIe M.2-B1 OPROM

Use this feature to enable or disable the PCIe M.2-M1 OPROM option. The options are Disabled and **EFI**.

Onboard LAN1 Support

Use this feature to enable or disable LAN1. The options are Disabled and **Enabled**.

Onboard LAN2 Support

Use this feature to enable or disable LAN2. The options are Disabled and **Enabled**.

Onboard LAN1 Option ROM

Use this feature to select which firmware function to be loaded for LAN1 used for system boot. The options are Disabled and **EFI**.

Wake On LAN

Use this feature to enable or disable the wake on LAN function. The options are Disabled and **Enabled**.

SATA and RST Configuration Menu

SATA And RST Configuration

SATA Controller(s)

Use this feature to enable or disable the onboard SATA controller supported by the Intel PCH chip. The options are **Enabled** and Disabled.

Storage Option ROM/UEFI Driver

Select UEFI to load the EFI driver for system boot. Select Legacy to load a legacy driver for system boot. The options are Do not Launch and **EFI**.

Support Aggressive Link Power Management

When this feature is set to Enabled, the SATA AHCI controller manages the power usage of the SATA link. The controller will put the link in a low power mode during extended periods of I/O inactivity and will return the link to an active state when I/O activity resumes. The options are Disabled and **Enabled**.

M.2-M1 – M.2-B1

This feature displays the information detected on the installed SATA drive on the particular SATA port.

- Software Preserve Support

Hot Plug

Set this feature to Enable for hot plug support, which allows you to replace a SATA drive without shutting down the system. The options are **Disabled** and Enabled.

Spin Up Device

Set this feature to enable or disable the PCH to initialize the device. The options are **Disabled** and Enabled.

SATA Device Type

Use this feature to specify if the SATA port should be connected to a Solid State Drive or a Hard Disk Drive. The options are **Hard Disk Drive** and Solid State Drive.

Serial Port Console Redirection Menu

COM1

COM1 Console Redirection

Select Enabled to enable console redirection support for a serial port. The options are Enabled and **Disabled**.

►COM1 Console Redirection Settings

COM1 Console Redirection Settings

COM1 Console Redirection Settings (Available if "COM1 Console Redirection" is set to Enabled.)

Use this feature to specify how the host computer will exchange data with the client computer, which is the remote computer.

COM1 Terminal Type

This feature allows you to select the target terminal emulation type for Console Redirection. Select VT100 to use the ASCII Character set. Select VT100+ to add color and function key support. Select ANSI to use the Extended ASCII Character Set. Select VT-UTF8 to use UTF8 encoding to map Unicode characters into one or more bytes. The options are VT100, **VT100+**, VT-UTF8, and ANSI.

COM1 Bits Per Second

Use this feature to set the transmission speed for a serial port used in Console Redirection. Make sure that the same speed is used in the host computer and the client computer. A lower transmission speed may be required for long and busy lines. The options are 9600, 19200, 38400, 57600, and **115200** (bits per second).

COM1 Data Bits

Use this feature to set the data transmission size for Console Redirection. The options are 7 Bits and **8** Bits.

COM1 Parity

A parity bit can be sent along with regular data bits to detect data transmission errors. Select Even if the parity bit is set to 0, and the number of 1's in data bits is even. Select Odd if the parity bit is set to 0, and the number of 1's in data bits is odd. Select None if you do not want to send a parity bit with your data bits in transmission. Select Mark to add a mark as a parity bit to be sent along with the data bits. Select Space to add a Space as a parity bit to be sent with your data bits. The options are **None**, Even, Odd, Mark, and Space.

COM1 Stop Bits

A stop bit indicates the end of a serial data packet. Select 1 Stop Bit for standard serial data communication. Select 2 Stop Bits if slower devices are used. The options are **1** and 2.

COM1 Flow Control

Use this feature to set the flow control for Console Redirection to prevent data loss caused by buffer overflow. Send a "Stop" signal to stop sending data when the receiving buffer is full. Send a "Start" signal to start sending data when the receiving buffer is empty. The options are **None** and Hardware RTS/CTS.

COM1 VT-UTF8 Combo Key Support

Select Enabled to enable VT-UTF8 Combination Key support for ANSI/VT100 terminals. The options are Disabled and **Enabled**.

COM1 Recorder Mode

Select Enabled to capture the data displayed on a terminal and send it as text messages to a remote server. The options are **Disabled** and Enabled.

COM1 Resolution 100x31

Select Enabled for extended-terminal resolution support. The options are Disabled and **Enabled**.

COM1 Putty KeyPad

This feature selects the settings for Function Keys and KeyPad used for Putty, which is a terminal emulator designed for the Windows OS. The options are **VT100**, LINUX, XTERMR6, SC0, ESCN, and VT400.

COM1 Redirection After BIOS POST

Use this feature to enable or disable legacy console redirection after BIOS POST. When set to Bootloader, legacy console redirection is disabled before booting the OS. When set to Always Enable, legacy console redirection remains enabled when booting the OS. The options are **Always Enable** and BootLoader.

COM2

COM2 Console Redirection

Select Enabled to enable console redirection support for a serial port. The options are Enabled and **Disabled**.

►COM2 Console Redirection Settings

COM2 Console Redirection Settings

COM2 Console Redirection Settings (Available if "COM2 Console Redirection" is set to Enabled.)

Use this feature to specify how the host computer will exchange data with the client computer, which is the remote computer.

COM2 Terminal Type

This feature allows you to select the target terminal emulation type for Console Redirection. Select VT100 to use the ASCII Character set. Select VT100+ to add color and function key support. Select ANSI to use the Extended ASCII Character Set. Select VT-UTF8 to use UTF8 encoding to map Unicode characters into one or more bytes. The options are VT100, **VT100+**, VT-UTF8, and ANSI.

COM2 Bits Per Second

Use this feature to set the transmission speed for a serial port used in Console Redirection. Make sure that the same speed is used in the host computer and the client computer. A lower transmission speed may be required for long and busy lines. The options are 9600, 19200, 38400, 57600, and **115200** (bits per second).

COM2 Data Bits

Use this feature to set the data transmission size for Console Redirection. The options are 7 Bits and **8** Bits.

COM2 Parity

A parity bit can be sent along with regular data bits to detect data transmission errors. Select Even if the parity bit is set to 0, and the number of 1's in data bits is even. Select Odd if the parity bit is set to 0, and the number of 1's in data bits is odd. Select None if you do not want

to send a parity bit with your data bits in transmission. Select Mark to add a mark as a parity bit to be sent along with the data bits. Select Space to add a Space as a parity bit to be sent with your data bits. The options are **None**, Even, Odd, Mark, and Space.

COM2 Stop Bits

A stop bit indicates the end of a serial data packet. Select 1 Stop Bit for standard serial data communication. Select 2 Stop Bits if slower devices are used. The options are **1** and 2.

COM2 Flow Control

Use this feature to set the flow control for Console Redirection to prevent data loss caused by buffer overflow. Send a "Stop" signal to stop sending data when the receiving buffer is full. Send a "Start" signal to start sending data when the receiving buffer is empty. The options are **None** and Hardware RTS/CTS.

COM2 VT-UTF8 Combo Key Support

Select Enabled to enable VT-UTF8 Combination Key support for ANSI/VT100 terminals. The options are Disabled and **Enabled**.

COM2 Recorder Mode

Select Enabled to capture the data displayed on a terminal and send it as text messages to a remote server. The options are **Disabled** and Enabled.

COM2 Resolution 100x31

Select Enabled for extended-terminal resolution support. The options are Disabled and **Enabled**.

COM2 Putty KeyPad

This feature selects the settings for Function Keys and KeyPad used for Putty, which is a terminal emulator designed for the Windows OS. The options are **VT100**, LINUX, XTERMR6, SC0, ESCN, and VT400.

COM2 Redirection After BIOS POST

Use this feature to enable or disable legacy console redirection after BIOS POST. When set to Bootloader, legacy console redirection is disabled before booting the OS. When set to Always Enable, legacy console redirection remains enabled when booting the OS. The options are **Always Enable** and BootLoader.

COM3

COM3 Console Redirection

Select Enabled to enable console redirection support for a serial port. The options are Enabled and **Disabled**.

►Console Redirection Settings

COM3 Console Redirection Settings

COM3 Console Redirection Settings (Available if "COM1 Console Redirection" is set to Enabled.)

Use this feature to specify how the host computer will exchange data with the client computer, which is the remote computer.

COM3 Terminal Type

This feature allows you to select the target terminal emulation type for Console Redirection. Select VT100 to use the ASCII Character set. Select VT100+ to add color and function key support. Select ANSI to use the Extended ASCII Character Set. Select VT-UTF8 to use UTF8 encoding to map Unicode characters into one or more bytes. The options are VT100, **VT100+**, VT-UTF8, and ANSI.

COM3 Bits Per Second

Use this feature to set the transmission speed for a serial port used in Console Redirection. Make sure that the same speed is used in the host computer and the client computer. A lower transmission speed may be required for long and busy lines. The options are 9600, 19200, 38400, 57600, and **115200** (bits per second).

COM3 Data Bits

Use this feature to set the data transmission size for Console Redirection. The options are 7 Bits and **8** Bits.

COM3 Parity

A parity bit can be sent along with regular data bits to detect data transmission errors. Select Even if the parity bit is set to 0, and the number of 1's in data bits is even. Select Odd if the parity bit is set to 0, and the number of 1's in data bits is odd. Select None if you do not want to send a parity bit with your data bits in transmission. Select Mark to add a mark as a parity bit to be sent along with the data bits. Select Space to add a Space as a parity bit to be sent with your data bits. The options are **None**, Even, Odd, Mark, and Space.

COM3 Stop Bits

A stop bit indicates the end of a serial data packet. Select 1 Stop Bit for standard serial data communication. Select 2 Stop Bits if slower devices are used. The options are **1** and 2.

COM3 Flow Control

Use this feature to set the flow control for Console Redirection to prevent data loss caused by buffer overflow. Send a "Stop" signal to stop sending data when the receiving buffer is full. Send a "Start" signal to start sending data when the receiving buffer is empty. The options are **None** and Hardware RTS/CTS.

COM3 VT-UTF8 Combo Key Support

Select Enabled to enable VT-UTF8 Combination Key support for ANSI/VT100 terminals. The options are Disabled and **Enabled**.

COM3 Recorder Mode

Select Enabled to capture the data displayed on a terminal and send it as text messages to a remote server. The options are **Disabled** and Enabled.

COM3 Resolution 100x31

Select Enabled for extended-terminal resolution support. The options are Disabled and **Enabled**.

COM3 Putty KeyPad

This feature selects the settings for Function Keys and KeyPad used for Putty, which is a terminal emulator designed for the Windows OS. The options are **VT100**, LINUX, XTERMR6, SC0, ESCN, and VT400.

COM3 Redirection After BIOS POST

Use this feature to enable or disable legacy console redirection after BIOS POST. When set to Bootloader, legacy console redirection is disabled before booting the OS. When set to Always Enable, legacy console redirection remains enabled when booting the OS. The options are **Always Enable** and BootLoader.

COM4

COM4 Console Redirection

Select Enabled to enable console redirection support for a serial port. The options are Enabled and **Disabled**.

►COM4 Console Redirection Settings

COM4 Console Redirection Settings

COM4 Console Redirection Settings (Available if "COM1 Console Redirection" is set to Enabled.)

Use this feature to specify how the host computer will exchange data with the client computer, which is the remote computer.

COM4 Terminal Type

This feature allows you to select the target terminal emulation type for Console Redirection. Select VT100 to use the ASCII Character set. Select VT100+ to add color and function key

support. Select ANSI to use the Extended ASCII Character Set. Select VT-UTF8 to use UTF8 encoding to map Unicode characters into one or more bytes. The options are VT100, **VT100+**, VT-UTF8, and ANSI.

COM4 Bits Per Second

Use this feature to set the transmission speed for a serial port used in Console Redirection. Make sure that the same speed is used in the host computer and the client computer. A lower transmission speed may be required for long and busy lines. The options are 9600, 19200, 38400, 57600, and **115200** (bits per second).

COM4 Data Bits

Use this feature to set the data transmission size for Console Redirection. The options are 7 Bits and **8** Bits.

COM4 Parity

A parity bit can be sent along with regular data bits to detect data transmission errors. Select Even if the parity bit is set to 0, and the number of 1's in data bits is even. Select Odd if the parity bit is set to 0, and the number of 1's in data bits is odd. Select None if you do not want to send a parity bit with your data bits in transmission. Select Mark to add a mark as a parity bit to be sent along with the data bits. Select Space to add a Space as a parity bit to be sent with your data bits. The options are **None**, Even, Odd, Mark, and Space.

COM4 Stop Bits

A stop bit indicates the end of a serial data packet. Select 1 Stop Bit for standard serial data communication. Select 2 Stop Bits if slower devices are used. The options are **1** and 2.

COM4 Flow Control

Use this feature to set the flow control for Console Redirection to prevent data loss caused by buffer overflow. Send a "Stop" signal to stop sending data when the receiving buffer is full. Send a "Start" signal to start sending data when the receiving buffer is empty. The options are **None** and Hardware RTS/CTS.

COM4 VT-UTF8 Combo Key Support

Select Enabled to enable VT-UTF8 Combination Key support for ANSI/VT100 terminals. The options are Disabled and **Enabled**.

COM4 Recorder Mode

Select Enabled to capture the data displayed on a terminal and send it as text messages to a remote server. The options are **Disabled** and Enabled.

COM4 Resolution 100x31

Select Enabled for extended-terminal resolution support. The options are Disabled and **Enabled**.

COM4 Putty KeyPad

This feature selects the settings for Function Keys and KeyPad used for Putty, which is a terminal emulator designed for the Windows OS. The options are **VT100**, LINUX, XTERMR6, SC0, ESCN, and VT400.

COM4 Redirection After BIOS POST

Use this feature to enable or disable legacy console redirection after BIOS POST. When set to Bootloader, legacy console redirection is disabled before booting the OS. When set to Always Enable, legacy console redirection remains enabled when booting the OS. The options are **Always Enable** and BootLoader.

Serial Port for Out-of-Band Management/Windows Emergency Management Services (EMS)

The feature allows you to configure Console Redirection settings to support Out-of-Band Serial Port management.

Console Redirection EMS

Select Enabled to use the SOL port for Console Redirection. The options are **Disabled** and Enabled.

►Console Redirection Settings

Note: This submenu is available when "Console Redirection EMS" is set to Enabled.

Out-of-Band Mgmt Port

The feature selects a serial port in a client server to be used by the Microsoft Windows Emergency Management Services (EMS) to communicate with a remote host server. The options are **COM1** and SOL/COM2. Please note that the option of SOL/COM2 indicates a shared serial port. SOL is available with BMC support.

Terminal Type EMS

Use this feature to select the target terminal emulation type for Console Redirection. Select VT100 to use the ASCII character set. Select VT100+ to add color and function key support. Select ANSI to use the extended ASCII character set. Select VT-UTF8 to use UTF8 encoding to map Unicode characters into one or more bytes. The options are VT100, VT100+, **VT-UTF8**, and ANSI.

Bits Per Second EMS

This feature sets the transmission speed for a serial port used in Console Redirection. Make sure that the same speed is used in the host computer and the client computer. A lower transmission speed may be required for long and busy lines. The options are 9600, 19200,

57600, and **115200** (bits per second).

Flow Control EMS

Use this feature to set the flow control for Console Redirection to prevent data loss caused by buffer overflow. Send a "Stop" signal to stop sending data when the receiving buffer is full. Send a "Start" signal to start sending data when the receiving buffer is empty. The options are **None**, Hardware RTS/CTS, and Software Xon/Xoff.

The following information is displayed.

- **Data Bits EMS**
- **Parity EMS**
- **Stop Bits EMS**

Trusted Computing Menu

►Trusted Computing

Note: This submenu is available when a TPM device is installed and detected by the BIOS.

When a Trusted Platform Module (TPM) device is detected by your system, the following information is displayed.

- TPM 2.0 Device Found
- Firmware Version:
- Vendor:

Security Device Support

Select Enabled to enable BIOS support for onboard security devices, which are not displayed in the OS. If this feature is set to Enabled, TCG EFI protocol and INT1A interface will not be available. The options are Disabled and **Enabled**.

When "Security Device Support" is set to Enabled and a TPM 2.0 device is detected by the BIOS, the following information is displayed.

- Active PCR banks
- Available PCR banks

* The following features are available when a TPM 2.0 device is detected by the BIOS.

SHA-1 PCR Bank (Available when "Security Device Support" is set to Enabled)

Select Enabled to enable SHA-1 PCR Bank support to enhance system integrity and data security. The options are Disabled and **Enabled**.

SHA256 PCR Bank (Available when "Security Device Support" is set to Enabled)

Select Enabled to enable SHA256 PCR Bank support to enhance system integrity and data security. The options are Disabled and **Enabled**.

SHA384 PCR Bank (Available when "Security Device Support" is set to Enabled)

Select Enabled to enable SHA384 PCR Bank support to enhance system integrity and data security. The options are **Disabled** and Enabled.

Pending Operation (Available when "Security Device Support" is set to Enabled)

Use this feature to schedule a TPM-related operation to be performed by a security (TPM) device at the next system boot to enhance system data integrity. The options are **None** and TPM Clear.

Note: Your system will reboot to carry out a pending TPM operation.

Platform Hierarchy (Available when "Security Device Support" is set to Enabled)

Select Enabled for TPM Platform Hierarchy support, which allows the manufacturer to utilize the cryptographic algorithm to define a constant key or a fixed set of keys to be used for initial system boot. These early boot codes are shipped with the platform and are included in the list of "public keys." During system boot, the platform firmware uses the trusted public keys to verify a digital signature in an attempt to manage and control the security of the platform firmware used in a host system via a TPM device. The options are Disabled and **Enabled**.

Storage Hierarchy (Available when "Security Device Support" is set to Enabled)

Select Enabled for TPM Storage Hierarchy support that is intended to be used for non-privacy-sensitive operations by a platform owner such as an IT professional or the end user. Storage Hierarchy has an owner policy and an authorization value, both of which can be set and are held constant (-rarely changed) through reboots. This hierarchy can be cleared or changed independently of the other hierarchies. The options are Disabled and **Enabled**.

Endorsement Hierarchy (Available when "Security Device Support" is set to Enabled)

Select Enabled for Endorsement Hierarchy support, which contains separate controls to address the user's privacy concerns because the primary keys in the hierarchy are certified by the TPM key or by a manufacturer with restrictions on how an authentic TPM device that is attached to an authentic platform can be accessed and used. A primary key can be encrypted and certified with a certificate created by using TPM2_ActivateCredential, which allows the user to independently enable "flag, policy, and authorization values" without involving other

hierarchies. A user with privacy concerns can disable the endorsement hierarchy while still using the storage hierarchy for TPM applications, permitting the platform software to use the TPM. The options are Disabled and **Enabled**.

PH Randomization

Select Enabled for Platform Hierarchy (PH) Randomization support, which is used only during the platform developmental stage. This feature cannot be enabled in the production platforms. The options are **Disabled** and Enabled.

USB Configuration Menu

The following information is displayed.

- USB Module Version
- USB Controllers:
- USB Devices:

XHCI Hand-off

This is a work-around solution for operating systems that do not support Extensible Host Controller Interface (XHCI) hand-off. The XHCI ownership change should be claimed by the XHCI driver. The settings are **Enabled** and Disabled.

USB Mass Storage Driver Support

Select Enabled for USB mass storage device support. The options are Disabled and **Enabled**.

USB S5 Wakeup Support

Use this feature to enable or disable USB S5 Wakeup support. The options are Disabled and **Enabled**.

Intel(R) Ethernet Controller Menu

►Intel(R) Ethernet Controller (I226-IT) - (XX:XX:XX:XX:XX:XX)

Notes:

- The Ethernet controller and MAC addresses shown above are based on you system features.

The following information is displayed.

- UEFI Driver
- Device Name

- Link Status
- MAC Address
- Link Auto-Negotiation Timeout

Intel(R) Ethernet Controller Menu

►Intel(R) Ethernet Controller (I226-IT) - (XX:XX:XX:XX:XX:XX)

Notes:
- The Ethernet controller and MAC addresses shown above are based on you system features.

The following information is displayed.

- UEFI Driver
- Device Name
- Link Status
- MAC Address
- Link Auto-Negotiation Timeout

TLS Authenticate Configuration Menu

►TLS Authenticate Configuration

This submenu allows you to configure Transport Layer Security (TLS) settings.

►Server CA Configuration

This feature allows you to configure the client certificate that is to be used by the server.

►Enroll Certification

This feature allows you to enroll the certificate in the system.

►Enroll Certification Using File

This feature allows you to enroll the security certificate in the system by using a file.

Certification GUID

Press <Enter> and input the certification Global Unique Identifier (GUID).

►Commit Changes and Exit

Use this feature to save all changes and exit TLS settings.

►Discard Changes and Exit

Use this feature to discard all changes and exit TLS settings.

►Delete Certification

This feature is used to delete the certificate if a certificate has been enrolled in the system.

►Client Certification Configuration

Driver Health Menu

►Driver Health

This feature displays the health information of the drivers installed in your system, including LAN controllers, as detected by the BIOS. Select one and press <Enter> to see the details.

Note: This section is provided for reference only, for the driver health status will differ depending on the drivers installed in your system. It's also based on your system configuration and the environment that your system is operating in.

COM Port Mode Configuration Menu

COM1/COM2 Mode Selection

COM1 Mode

Use this feature to select the serial mode standard. The options are **RS-23**2, RS-485/422 Full Duplex, RS-485 Half Duplex.

COM2 Mode

Use this feature to select the serial mode standard. The options are **RS-23**2, RS-485/422 Full Duplex, RS-485 Half Duplex.

4.4 Event Logs

Use this menu to configure Event Logs settings.

Note: After making any changes in this section, please be sure to reboot the system for the changes to take effect.



Figure 4-3. Event Logs

►Change SMBIOS Event Log Settings

Note: Please reboot the system for the changes in this section to take effect.

Enabling/Disabling Options

SMBIOS Event Log

Select Enabled to enable System Management BIOS (SMBIOS) Event Logging during system boot. The options are Disabled and **Enabled**.

Erasing Settings

Erase Event Log (Available when "SMBIOS Event Log" is set to Enabled)

Select No to keep the event log without erasing it upon next system bootup. Select (Yes, Next reset) to erase the event log upon next system reboot. The options are **No**, (Yes, Next reset), and (Yes, Every reset).

When Log is Full (Available when "SMBIOS Event Log" is set to Enabled)

Select Erase Immediately to immediately erase all errors in the SMBIOS event log when the event log is full. Select Do Nothing for the system to do nothing when the SMBIOS event log is full. The options are **Do Nothing** and Erase Immediately.

SMBIOS Event Log Standard Settings

Log System Boot Event (Available when "SMBIOS Event Log" is set to Enabled)

Select Enabled to log system boot events. The options are Enabled and **Disabled**.

MECI (Available when "SMBIOS Event Log" is set to Enabled)

Enter the increment value for the multiple event counter. Enter a number between 1 and 255. The default setting is **1**. (MECI is the abbreviation for Multiple Event Count Increment.)

METW (Available when "SMBIOS Event Log" is set to Enabled)

Use this feature to determine how long (in minutes) should the multiple event counter wait before generating a new event log. Enter a number between 0 and 99. The default value is **60**. (METW is the abbreviation for Multiple Event Count Time Window.)

►View SMBIOS Event Log

Use this feature to view the event in the system event log. Select this feature and press <Enter> to view the status of an event in the log. The following information is displayed: DATE / TIME / ERROR CODE / SEVERITY.

4.5 Thermal & Fan

Use this menu to configure Fan settings.

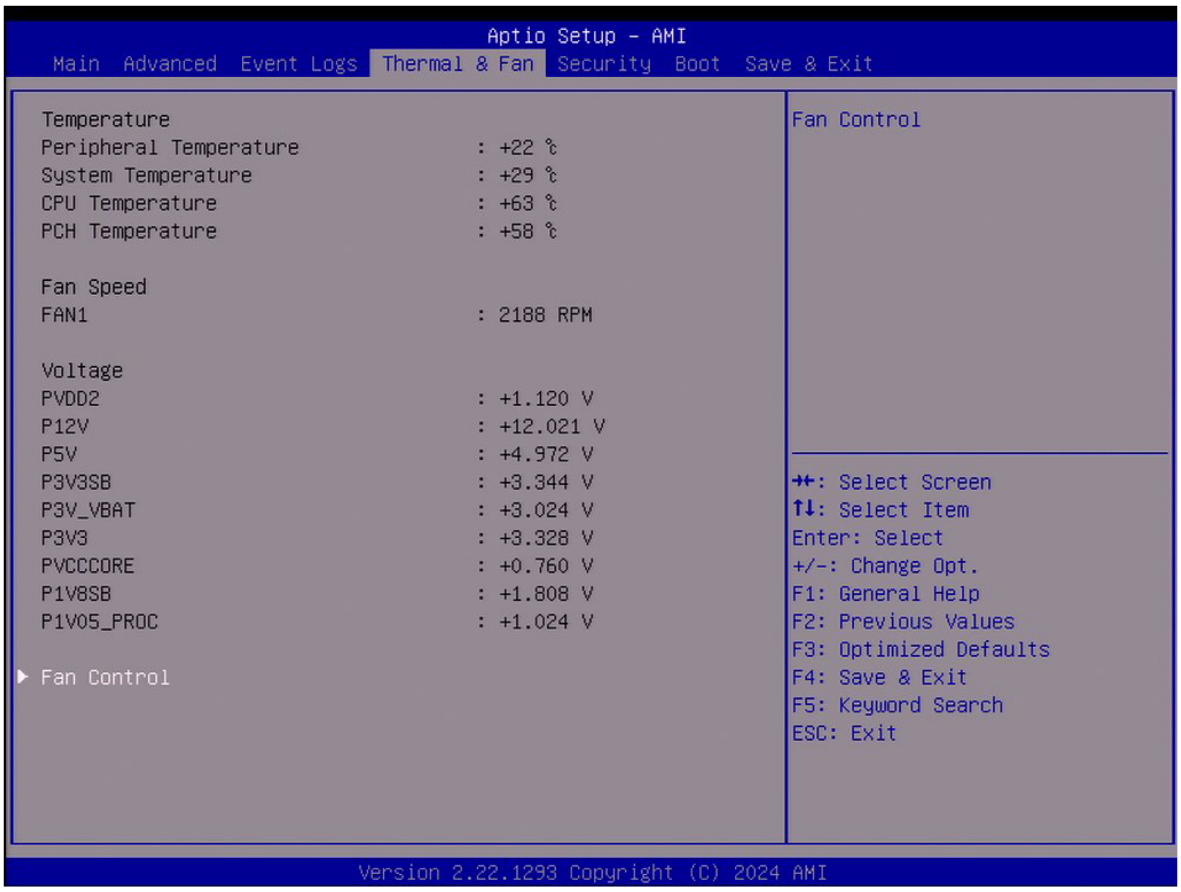


Figure 4-4. Thermal & Fan

The following information is displayed.

- Temperature
- Peripheral Temperature
- System Temperature
- CPU Temperature
- PCH Temperature
- Fan Speed
- FAN1
- Voltage

- PVDD2
- P12V
- P5V
- P3V3SB
- P3V_BAT
- P3V3
- PVCCCORE
- P1V8SB
- P1V05_PROC

►Fan Control

Fan Control Settings

Fan Speed Control Mode

Use this feature to select the fan speed control mode. The options are Quiet, **Stable**, Full Speed, and Customize.

FAN1 Control

FAN1 Reference sensor (Available when "Fan Speed Control Mode" is set to Customize)

This feature displays the FAN 1 reference sensor. The option is **PECIO**.

Temperature 1 (Available when "Fan Speed Control Mode" is set to Customize)

Use this feature to set the value for Temperature 1. The default selection is **20**.

PWM1 (Available when "Fan Speed Control Mode" is set to Customize)

Use this feature to set the value for PWM1. The default selection is **20**.

Temperature 2 (Available when "Fan Speed Control Mode" is set to Customize)

Use this feature to set the value for Temperature 2. The default selection is **100**.

PWM2 (Available when "Fan Speed Control Mode" is set to Customize)

Use this feature to set the value for PWM2. The default selection is **100**

The following information is displayed:

- Temperature 3
- PWM3

- Temperature 4
- PWM4

4.6 Security

Use this menu to configure the following security settings for the system.

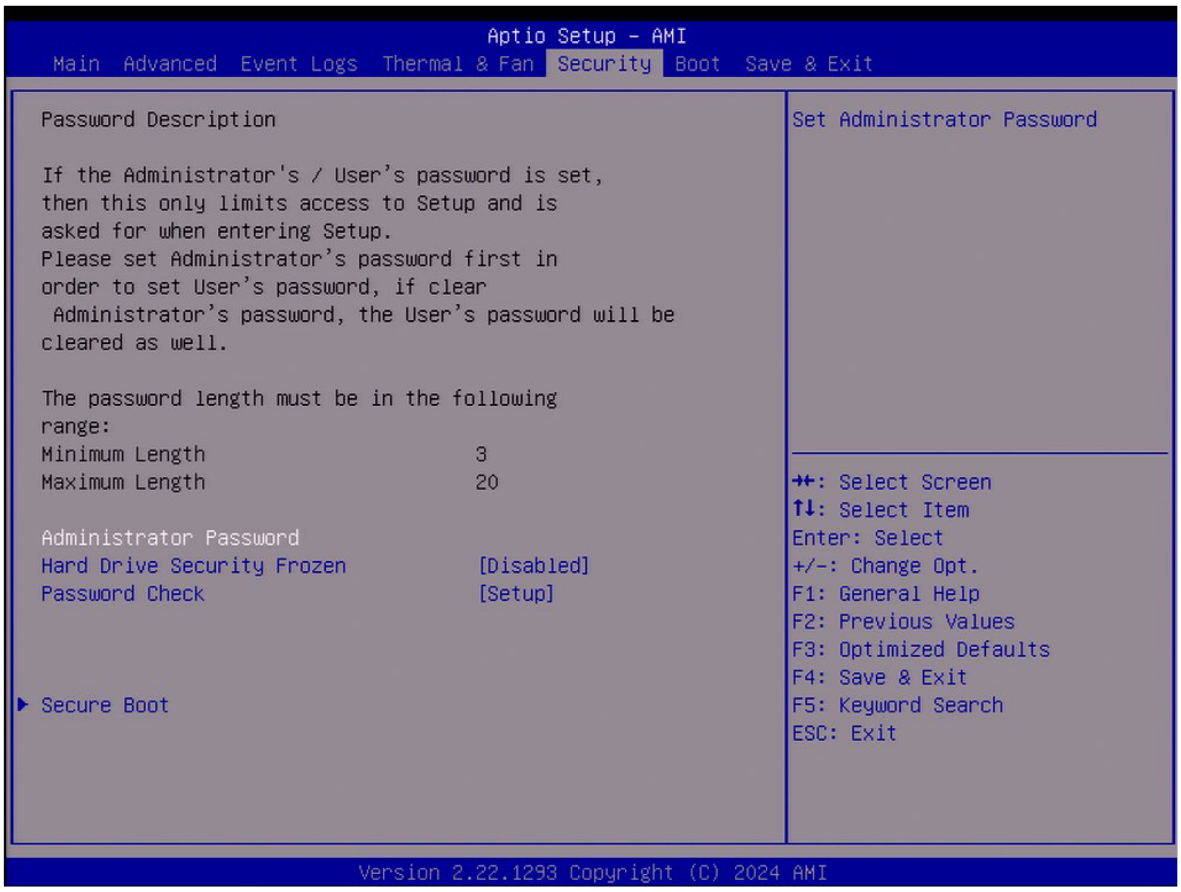


Figure 4-5. Security

Disable Block Sid and Freeze Lock (Available when your storage devices support TCG)

Select Enabled to allow SID authentication to be performed in TCG storage devices. The options are **Disabled** and Enabled.

The following information is displayed:

- Administrator Password
- User Password
- Password Description

Administrator Password

This feature indicates if an administrator password has been installed. Use this feature to set the administrator password, which is required to enter the BIOS Setup utility. The length of the password can be between three and 20 characters long.

User Password (Available when "Administrator Password" has been set)

This feature indicates if a user password has been installed. Use this feature to set the user password which is required to enter the BIOS Setup utility. The length of the password can be between three and 20 characters long.

Hard Drive Security Frozen

Select Enabled to freeze the Lock Security feature for HDD to protect key data in hard drives from being altered. The options are **Disabled** and Enabled.

Password Check

Select Setup for the system to check for a password at Setup. Select Always for the system to check for a password at bootup and upon entering the BIOS Setup utility. The options are **Setup** and Always.

Supermicro Security Erase Configuration Menu

►Supermicro Security Erase Configuration

Note: This submenu is available when any storage device is detected by the BIOS. For more information about this feature, please refer to our website.

Use this submenu to configure the Supermicro-proprietary Security Erase settings. When this submenu is selected, the following information is displayed. Please note that the order of the following information may differ based on the storage devices being detected.

- HDD Name: This feature displays the name of the storage device that is detected by the BIOS.
- HDD Serial Number: This feature displays the serial number of the storage device that is detected by the BIOS.
- Security Mode: This feature displays the security mode of the storage device that is detected by the BIOS.
- Estimated Time: This feature displays the estimate time needed to perform the selected Security Erase features.
- HDD User Pwd Status: This feature indicates if a password has been set as a storage device user password which enables configuring Supermicro Security Erase settings on the storage device by using this user password.
- TCG Device Type: This feature displays the TCG device type detected by the system.

- Admin Pwd Status: This feature indicates if a password has been set as a storage device administrator password which enables configuring Supermicro Security Erase settings on the storage device by using this administrator password.

Security Function

Select Set Password to set a storage device password which enables configuring the security settings of the storage device. Select Security Erase - Password to enter a storage device user password to enable erasing the password and the contents previously stored in the storage device. Select Security Erase - Without Password to use the manufacturer default password "111111111" as the storage device user password and enable erasing the contents of the storage device by using this default password. The options are **Disabled**, Set Password, Change Password, Clear Password, Security Erase - Password, Security Erase - PSID, and Security Erase - Without Password.

Notes:

- The option of Security Erase - PSID is based on the storage device support. PSID is the abbreviation for Physical Security Identification.
- The options of Change Password and Clear Password are available when "Password" below has been set.
- The option of Set Password is not available when "Password" below has been set.

Password

Use this feature to set the storage device user password, which enables configuring the Supermicro Security Erase settings by using this user password.

New Password (Available when "Password" above has been set)

Use this feature to set the new user password for the storage device, which enables configuring the Supermicro Security Erase settings by using this new user password.

Secure Boot Menu

►Secure Boot

Note: For detailed instructions on configuring Security Boot settings, please refer to the Security Boot Configuration User's Guide at https://www.supermicro.com/support/manuals.

The following information is displayed:

- System Mode
- Secure Boot

Secure Boot

Select Enabled to configure Secure Boot settings. The options are **Disabled** and Enabled.

Secure Boot Mode

Use this feature to select the desired secure boot mode for the system. The options are Standard and **Custom**.

►Enter Audit Mode

Note: This submenu is available when "Secure Boot Mode" is set to Custom.

Select Ok to enter the Audit Mode workflow. It will result in erasing the Platform Key (PK) variables and resetting the system to the Setup/Audit Mode.

►Key Management

Note: This submenu is available when "Secure Boot Mode" is set to Custom.

The following information is displayed:

- Vendor Keys

Provision Factory Defaults

Select Enabled to install provision factory default settings after a platform reset while the system is in the Setup Mode. The options are **Disabled** and Enabled.

►Restore Factory Keys

Note: This submenu is available when any secure keys have been installed.

Select Yes to restore manufacturer default keys to ensure system security. The options are **Yes** and No. Selecting Yes will reset system to the Deployed mode.

►Reset To Setup Mode

Note: This submenu is available when any secure keys have been installed.

This feature resets the system to the Setup Mode. The options are **Yes** and No.

►Enroll Efi Image

This feature allows the Efi image to run in the secure boot mode, which will enroll the SHA256 Hash certificate of a PE image into the Authorized Signature Database (DB).

►Export Secure Boot Variables

Note: This submenu is available when any secure keys have been installed.

This feature exports the NVRAM contents of secure boot variables to a storage device. The options are **Yes** and No.

Secure Boot variable / Size / Keys / Key Source

►Platform Key (PK)

Use this feature to enter and configure a set of values to be used as platform firmware keys for the system. These values also indicate the sizes, key numbers, and the sources of the authorized signatures. Select Update to update the platform key.

►Key Exchange Keys (KEK)

Use this feature to enter and configure a set of values to be used as Key Exchange Keys for the system. These values also indicate the sizes, key numbers, and the sources of the authorized signatures. Select Update to update the Key Exchange Keys. Select Append to append the Key Exchange Keys.

►Authorized Signatures (db)

Use this feature to enter and configure a set of values to be used as Authorized Signatures for the system. These values also indicate the sizes, key numbers, and sources of the authorized signatures. Select Update to update the Authorized Signatures. Select Append to append the new Authorized Signatures.

►Forbidden Signatures (dbx)

Use this feature to enter and configure a set of values to be used as Forbidden Signatures for the system. These values also indicate sizes, key numbers, and key sources of the forbidden signatures. Select Update to update the Forbidden Signatures. Select Append to append the Forbidden Signature.

►Authorized TimeStamps (dbt)

Use this feature to set and save the timestamps for the Authorized Signatures, which will indicate the time when these signatures are entered into the system. These values also indicate sizes, keys, and key sources of the authorized timestamps. Select Update to update the Authorized TimeStamps. Select Append to append the Authorized TimeStamps.

►OsRecovery Signatures (dbr)

Use this feature to set and save the Authorized Signatures used for OS recovery. Select Update to update the OsRecovery Signatures. These values also indicate sizes, keys, and key sources of the OsRecovery Signatures. Select Append to append the OsRecovery Signatures.

4.7 Boot

Use this menu to configure Boot settings.

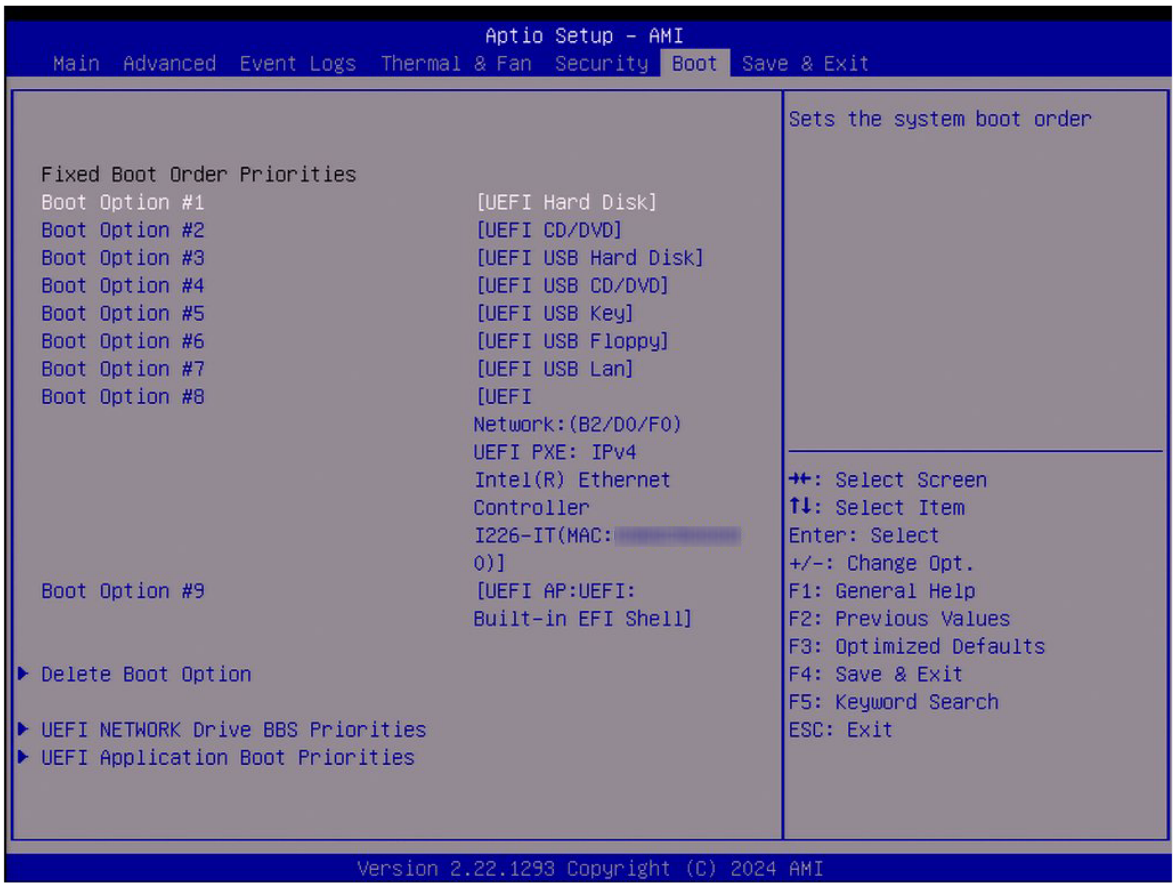


Figure 4-6. Boot

FIXED BOOT ORDER Priorities

Use this feature to prioritize the order of a bootable device from which the system will boot. Press <Enter> on each item sequentially to select the device.

- Boot Option #1 – Boot Option #9

►Delete Boot Option

Use this feature to select a boot device to delete from the boot priority list.

Delete Boot Option

Use this feature to remove an EFI boot option from the boot priority list.

►UEFI NETWORK Drive BBS Priorities

Use this feature to set the system boot order of detected devices.

►UEFI Application Boot Priorities

Use this feature to set the system boot order of detected devices.

4.8 Save & Exit

Select Save & Exit from the BIOS Setup screen to configure the settings below.

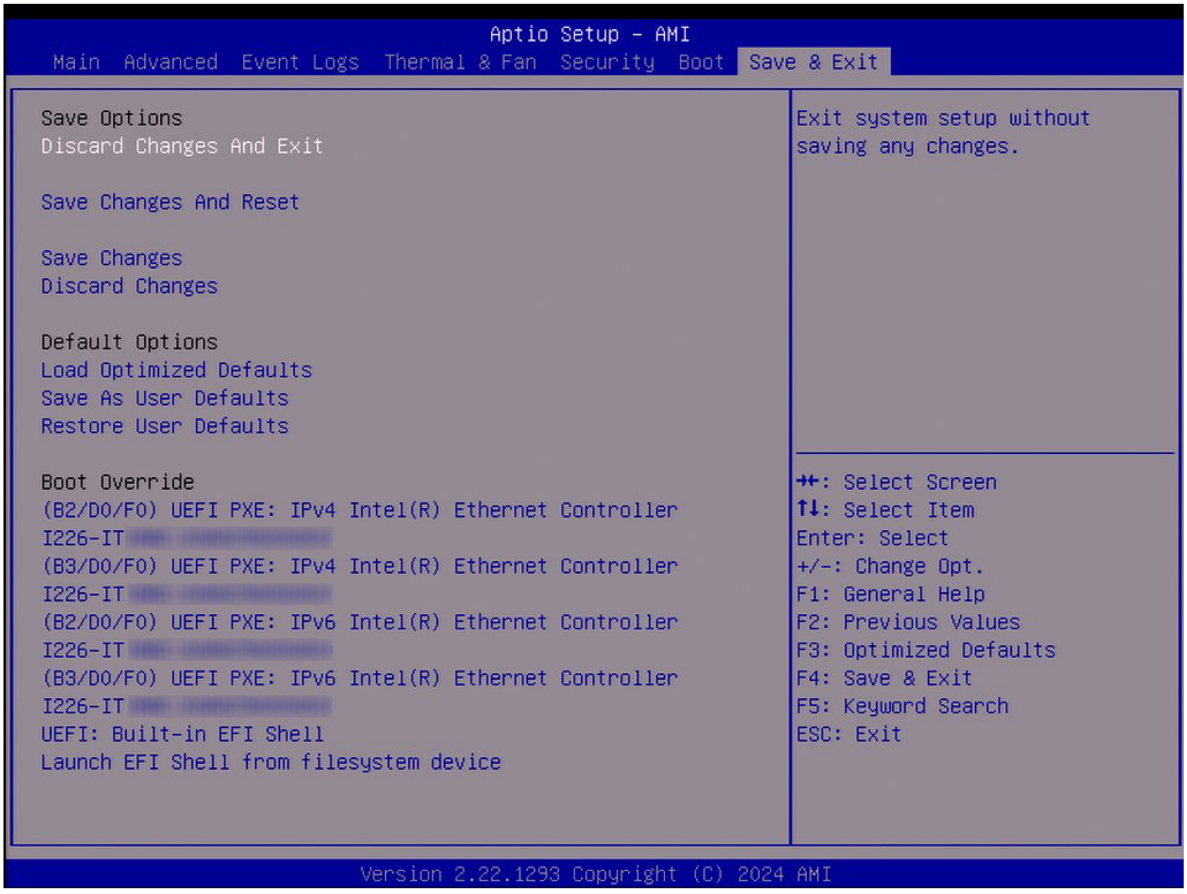


Figure 4-7. Save & Exit

Save Options

Discard Changes and Exit

Use this feature to exit from the BIOS Setup utility without making any permanent changes to the system configuration and reboot the computer.

Save Changes and Reset

On completing the system configuration changes, use this feature to exit the BIOS Setup utility and reboot the computer for the new system configuration parameters to take effect.

Save Changes

On completing the system configuration changes, use this feature to save all changes made. This will not reset (reboot) the system.

Discard Changes

Select this feature and press <Enter> to discard all changes made and return to the BIOS Setup utility.

Default Options

Restore Optimized Defaults

Select this feature and press <Enter> to load manufacturer optimized default settings, which are intended for maximum system performance but not for maximum stability.

Note: Please reboot the system for the changes to take effect, which ensures that this system has the optimized default settings.

Save As User Defaults

Select this feature and press <Enter> to save all changes as the default values specified to the BIOS Setup utility for future use.

Restore User Defaults

Select this feature and press <Enter> to retrieve user-defined default settings that have been saved previously.

Boot Override

Note: Use this section to override the Boot priorities sequence in the Boot menu, and immediately boot the system with a device specified here instead of the one specified in the boot list. This is a one-time boot override.

Launch EFI Shell from filesystem device

Use this feature to launch the EFI shell application (Shell.efi) from one of the available filesystem devices. A filesystem is a virtual, logical, or physical system for organizing, managing, and accessing the files and directories on devices such as SSDs, HDDs, or other storage devices.

Appendix A:

BIOS Codes

For information about BIOS codes for the A4SAN-H/-E/-L/-WOHS motherboard, refer to the following content.

BIOS Codes

For information about BIOS codes for the A4SAN-H/-E/-L/-WOHS motherboard, refer to the following content.

BIOS Error POST (Beep) Codes

During the Power-On Self-Test (POST) routines, which are performed each time the system is powered on, errors may occur.

Non-fatal errors are those which, in most cases, allow the system to continue the boot up process. The error messages normally appear on the screen.

Fatal errors are those which will not allow the system to continue the boot up process. If a fatal error occurs, you should consult with your system manufacturer for possible repairs.

These fatal errors are usually communicated through a series of audible beeps that can be heard on an external buzzer connected to JD1. The table shown below lists some common errors and their corresponding beep codes encountered by users.

BIOS Beep (POST) Codes		
Beep Code	**Error Message**	**Description**
1 beep	Refresh	Circuits have been reset (Ready to power up)
5 short, 1 long	Memory error	No memory detected in system
5 short, 2 long	Display memory read/write error	Video adapter missing or with faulty memory
1 long continuous	System OH	System overheat condition

Additional BIOS POST Codes

The AMI BIOS supplies additional checkpoint codes, which are documented online at https://www.supermicro.com/support/manuals ("AMI BIOS POST Codes User's Guide").

For information on AMI updates, refer to https://www.ami.com/products.

Appendix B:

Software

After the A4SAN-H/-E/-L/-WOHS motherboard has been installed, you can install the Operating System (OS), configure RAID settings and install the drivers.

Microsoft Windows OS Installation

If you will be using RAID, you must configure RAID settings before installing the Windows OS and the RAID driver. Refer to the RAID Configuration User Guides posted on our website at https://www.supermicro.com/support/manuals.

Installing the OS

1. Create a method to access the Microsoft Windows installation ISO file. That might be a Media drive, using a USB flash or media drive, or the BMC KVM console.
2. Retrieve the proper drivers. Go to the Supermicro web page for your motherboard and click on "Download the Latest Drivers and Utilities," select the proper driver, and copy it to a USB flash drive.
3. Boot from a bootable device with Windows OS installation. You can see a bootable device list by pressing <F11> during the system bootup.

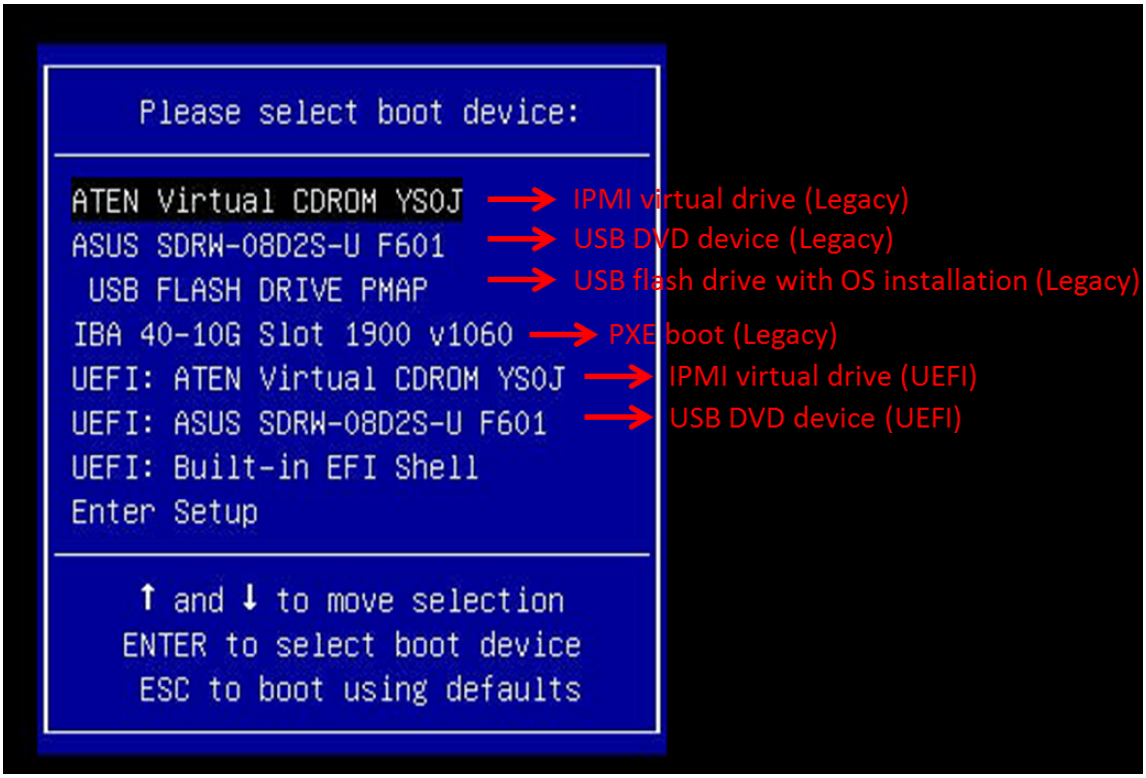


Figure B-1. Select Boot Device

4. During Windows Setup, continue to the dialog box where you select the drives on which to install Windows. If the disk you want to use is not listed, click on the “Load driver” link at the bottom left corner.

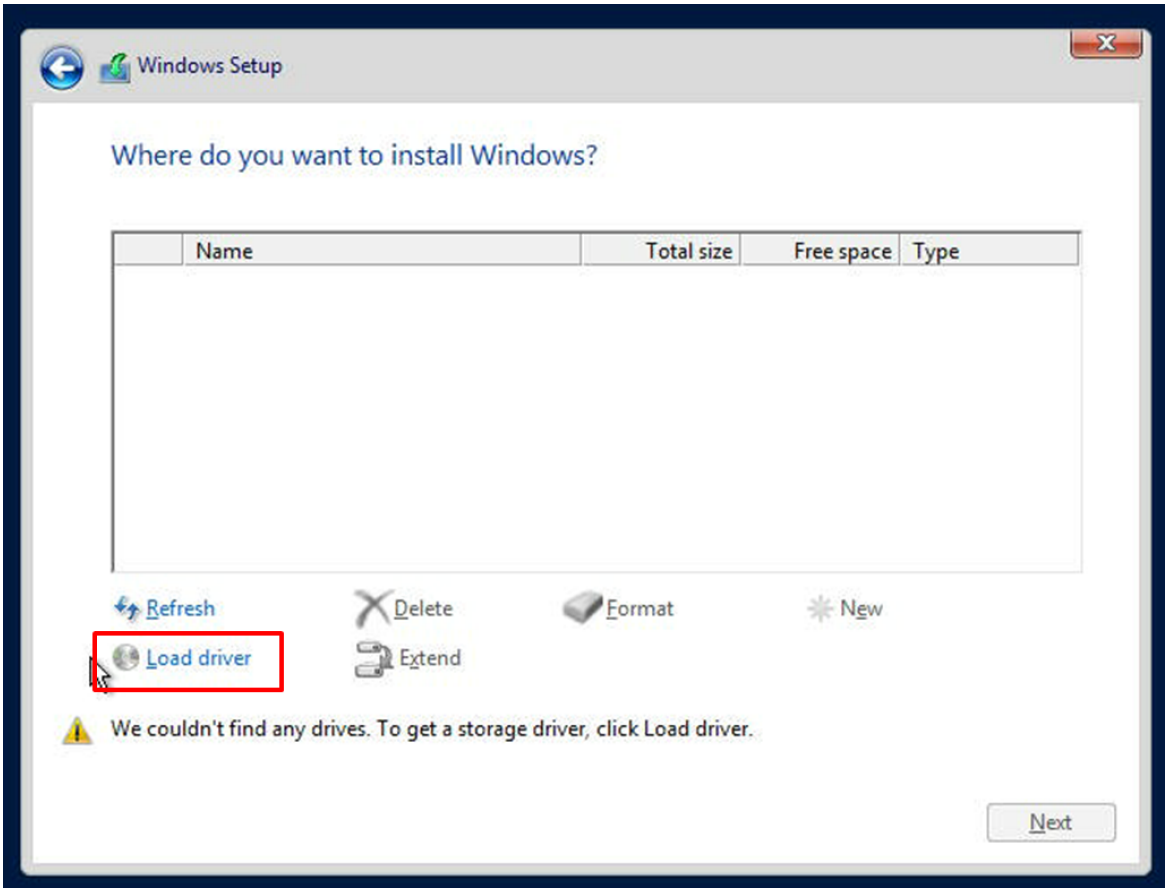


Figure B-2. Load Driver Link

To load the driver, browse the USB flash drive for the proper driver files.

5. Once all devices are specified, continue with the installation.
6. After the Windows OS installation has completed, the system will automatically reboot multiple times for system updates.

The Supermicro website that contains drivers and utilities for your system is at https://www.supermicro.com/wdl. Some of these must be installed, such as the chipset driver.

After accessing the website, go into the CDR_Images (in the parent directory of the above link) and locate the ISO file for your motherboard. Download this file to a USB flash or media drive. You may also use a utility to extract the ISO file if preferred.

Another option is to go to the Supermicro website at https://www.supermicro.com. Find the product page for your motherboard and download the latest drivers and utilities.

Insert the flash drive or disk, and the screenshot shown below should appear.

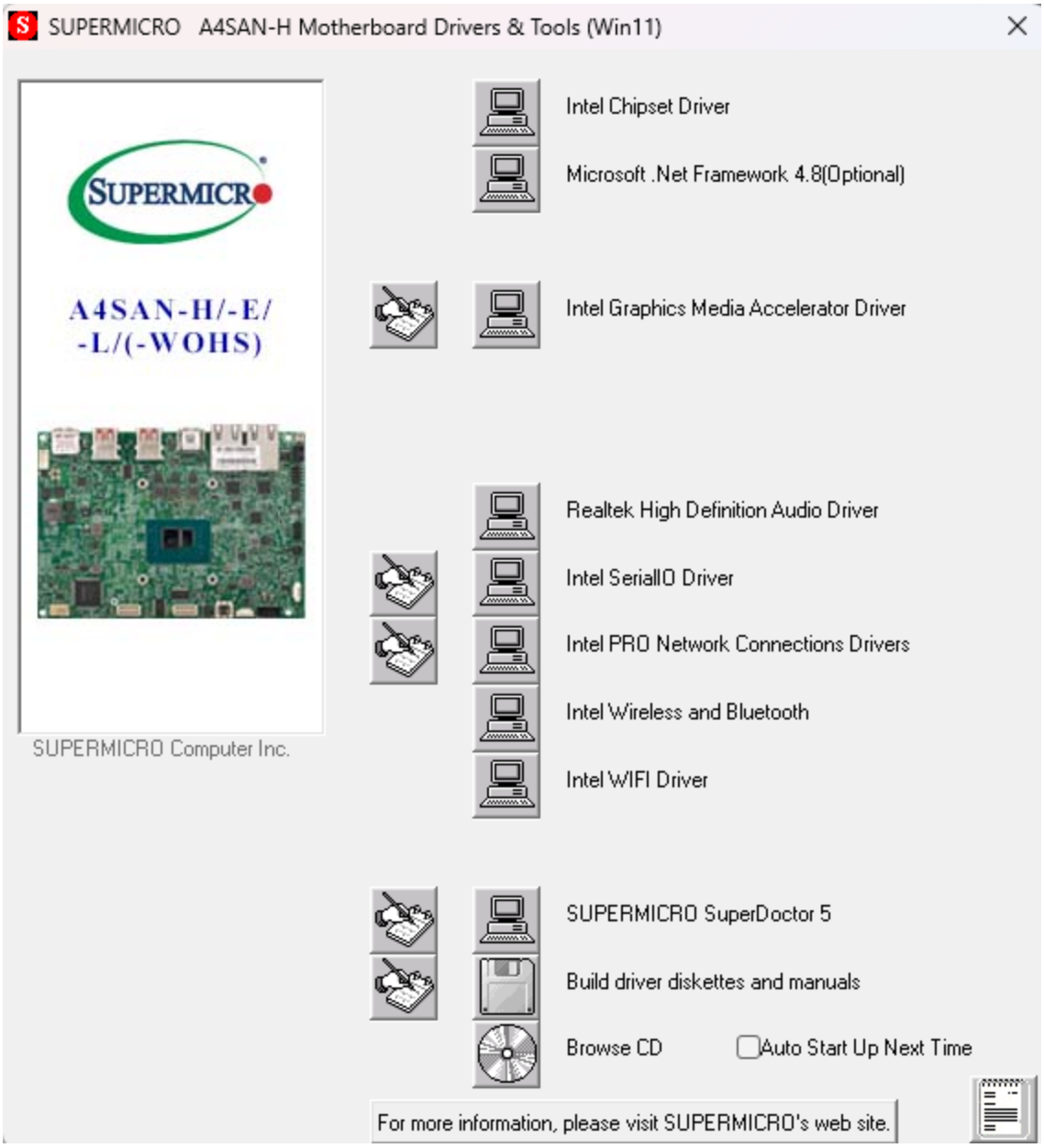


Figure B-3. Driver Installation Screenshot

Note: Click the icons showing a hand writing on paper to view the readme files for each item. Click the computer icons to the right of these items to install each item (from top to bottom) one at a time. *After installing each item, you must reboot the system before moving on to the next item on the list.* The bottom icon with a CD on it allows you to view the entire contents.

Appendix C:

Standardized Warning Statements

The following statements are industry standard warnings, provided to warn the user of situations which have the potential for bodily injury. Should you have questions or experience difficulty, contact Supermicro's Technical Support department for assistance. Only certified technicians should attempt to install or configure components.

Read this section in its entirety before installing or configuring components in the Supermicro A4SAN-H/-E/-L/-WOHS motherboard.

These warnings may also be found on our website at https://www.supermicro.com/about/policies/safety_information.cfm.

Battery Handling



CAUTION There is risk of explosion if the battery is replaced by an incorrect type. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

電池の取り扱い

バッテリーを間違ったタイプに交換すると爆発の危険があります。交換する電池はメーカーが推奨する型、または同等のものを使用下さい。使用済電池は製造元の指示に従って処分して下さい。

警告

如果更换的电池类型不正确。请只使用同类电池或制造商推荐的功能相当的电池更换原有电池。请按制造商的说明处理废旧电池。

警告

如果更換的電池類型不正確。請使用製造商建議之相同或功能相當的電池更換原有電池。請按照製造商的說明指示處理廢棄舊電池。

WARNUNG

Es besteht Explosionsgefahr, wenn die Batterie durch einen falschen Typ ersetzt wird. Ersetzen Sie die Batterie nur durch den gleichen oder vom Hersteller empfohlenen Batterietyp. Entsorgen Sie die benutzten Batterien nach den Anweisungen des Herstellers.

ADVERTENCIA

Existe riesgo de explosión si la batería se reemplaza por un tipo incorrecto. Reemplazar la batería exclusivamente con el mismo tipo o el equivalente recomendado por el fabricante. Desechar las baterías gastadas según las instrucciones del fabricante.

ATTENTION

Il existe un risque d'explosion si la batterie est remplacée par un type incorrect. Ne la remplacer que par une pile de type semblable ou équivalent, recommandée par le fabricant. Jeter les piles usagées conformément aux instructions du fabricant.

אזהרה!

קיימת סכנת פיצוץ אם הסוללה תוחלף בסוג שגוי. יש להחליף

את הסוללה בסוג התואם מחברת יצרן מומלצת.

סילוק הסוללות המשומשות יש לבצע לפי הוראות היצרן.

.هناك خطر الانفجار إذا تم استبدال البطارية بنوع غير صحيح

اسحبذال البطارية

فقط بنفس النىع أو ما يعادلها مما أوصث به الشرمة المصنعة

جخلص من البطاريات المسحعملة وفقا لحعليمات الشرمة الصانعة

경고!

배터리를 잘못된 종류로 교체하면 폭발의 위험이 있습니다. 기존 배터리와 동일하거나 제조사에서 권장하는 동등한 종류의 배터리로만 교체해야 합니다. 제조사의 안내에 따라 사용된 배터리를 처리하여 주십시오.

WAARSCHUWING

Er bestaat explosiegevaar als de batterij wordt vervangen door een verkeerd type. Vervang de batterij slechts met hetzelfde of een equivalent type die door de fabrikant aanbevolen wordt. Gebruikte batterijen dienen overeenkomstig fabrieksvoorschriften afgevoerd te worden.

Product Disposal



Warning! Ultimate disposal of this product should be handled according to all national laws and regulations.

製品の廃棄

この製品を廃棄処分する場合、国の関係する全ての法律・条例に従い処理する必要があります。

警告

本产品的废弃处理应根据所有国家的法律和规章进行。

警告

本產品的廢棄處理應根據所有國家的法律和規章進行。

Warnung

Die Entsorgung dieses Produkts sollte gemäß allen Bestimmungen und Gesetzen des Landes erfolgen.

¡Advertencia!

Al deshacerse por completo de este producto debe seguir todas las leyes y reglamentos nacionales.

Attention

La mise au rebut ou le recyclage de ce produit sont généralement soumis à des lois et/ou directives de respect de l'environnement. Renseignez-vous auprès de l'organisme compétent.

סילוק המוצר

אזהרה!

סילוק סופי של מוצר זה חייב להיות בהתאם להנחיות וחוקי המדינה.

عند التخلص النهائي من هذا المنتج ينبغي التعامل معه وفقا لجميع القانين واللائح البطنية

경고!

이 제품은 해당 국가의 관련 법규 및 규정에 따라 폐기되어야 합니다.

Waarschuwing

De uiteindelijke verwijdering van dit product dient te geschieden in overeenstemming met alle nationale wetten en reglementen.