SUPERMICRO®

X13SRA-TF

USER'S MANUAL

Revision 1.1

Preface

About This Manual

This manual is written for system integrators, IT technicians and knowledgeable end users. It provides information for the installation and use of the X13SRA-TF motherboard.

About This Motherboard

The Supermicro X13SRA-TF supports a single Intel® Xeon® W-2500/-2400 (64L) or W-3500/-3400 (112L) series processor in Socket E1 LGA4677, with up to 60 CPU cores and a thermal design power (TDP) of up to 385W. Built with the Intel W790 chipset, the X13SRA-TF supports up to 512GB of ECC RDIMM and 2TB of 3DS RDIMM with speeds of up to 4800MT/s (1DPC) and 4400MT/s (2DPC) in eight ECC DDR5 (288-pin) SMD DIMM slots. This motherboard features superior IO expandability, which includes up to three PCIe 5.0 x16 slots with metal armor, six SATA 3.0 ports, two M.2 sockets, five USB ports, three USB headers and dual LAN ports (one 1GbE and one 10GbE). It also offers the most advanced data protection capabilities that encompasses support of Trust Platform Module (TPM). The X13SRA-TF is optimized for high-performance, high-end computing platforms and is ideal for media and entertainment, engineering, scientific computing, and AI development applications. Please note that this motherboard is intended to be installed and serviced by professional technicians only. For processor/memory updates, please refer to our website at https://www.supermicro. com/products/.

Note 1: The memory speed depends on the processor used in the system.

Note 2: The Intel Xeon W series processors only support TPM 2.0 standard.

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:

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

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

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

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

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Table of Contents

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.

In addition to the motherboard, several important parts that are included in the retail box are listed below. If anything listed is damaged or missing, please contact your retailer.

1.1 Checklist

Main Parts List		
Description	**Part Number**	**Quantity**
Supermicro Motherboard	X13SRA-TF	1
I/O Shield	MCP-260-00183-0B	1
SATA Cables	CBL-0044L	6 (single pack)
GPU to CPU Power Cable	CBL-PWEX-0663	1
E1A Carrier for Intel W-3500/-3400 (112L) XCC CPU	SKT-1333L-0001-LTS	1
E1B Carrier for Intel W-2500/-2400 (64L) MCC CPU	SKT-1424L-001B-LTS	1
Quick Reference Guide	MNL-2444-QRG	1

Important Links

For your motherboard to work properly, please 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/driver

- 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 at our website: https://www.supermicro.com/about/policies/disclaimer.cfm?url=/wdl/utility/Lot9_Secure_Data_Deletion_Utility/

- If you have any questions, please contact our support team at: support@supermicro.com

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

Figure 1-1. X13SRA-TF Motherboard Image
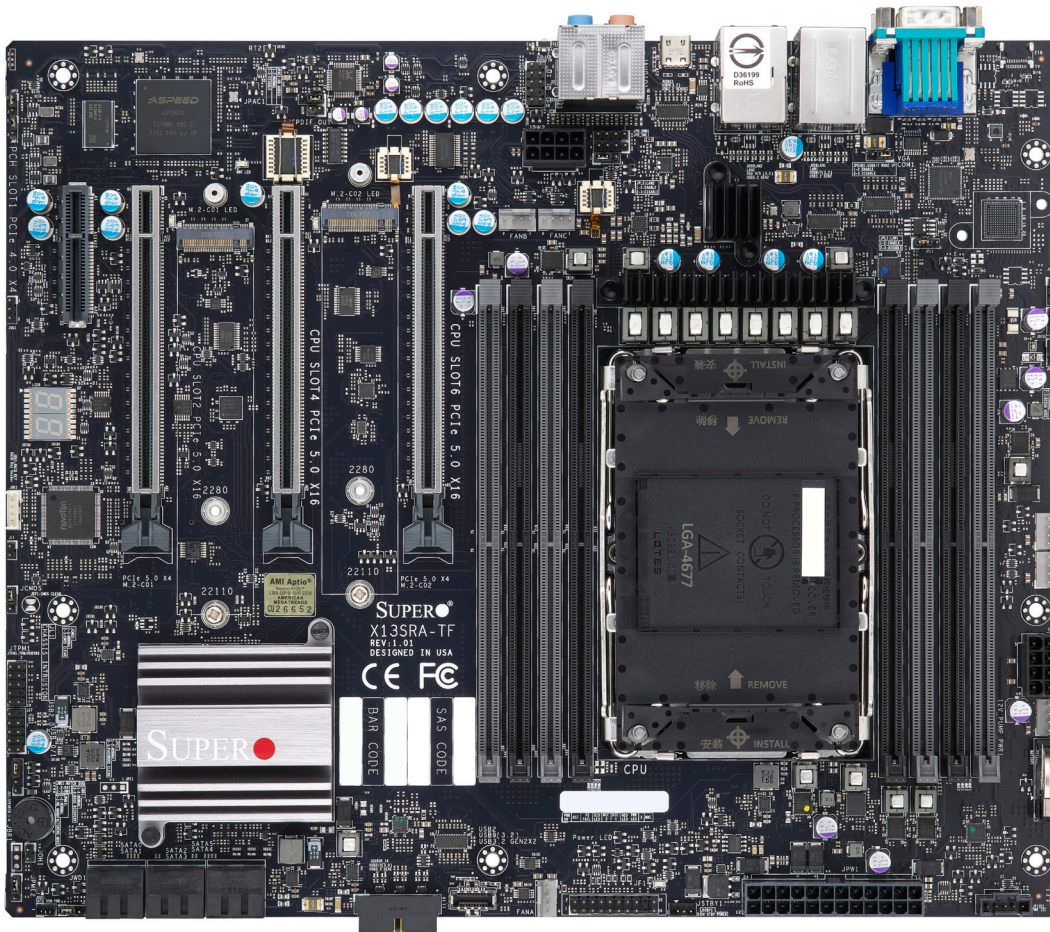
✎ **Note:** All graphics shown in this manual were based upon the latest PCB revision available at the time of publication of the manual. The motherboard you received may or may not look exactly the same as the graphics shown in this manual.

Figure 1-2. X13SRA-TF Motherboard Layout
(not drawn to scale)
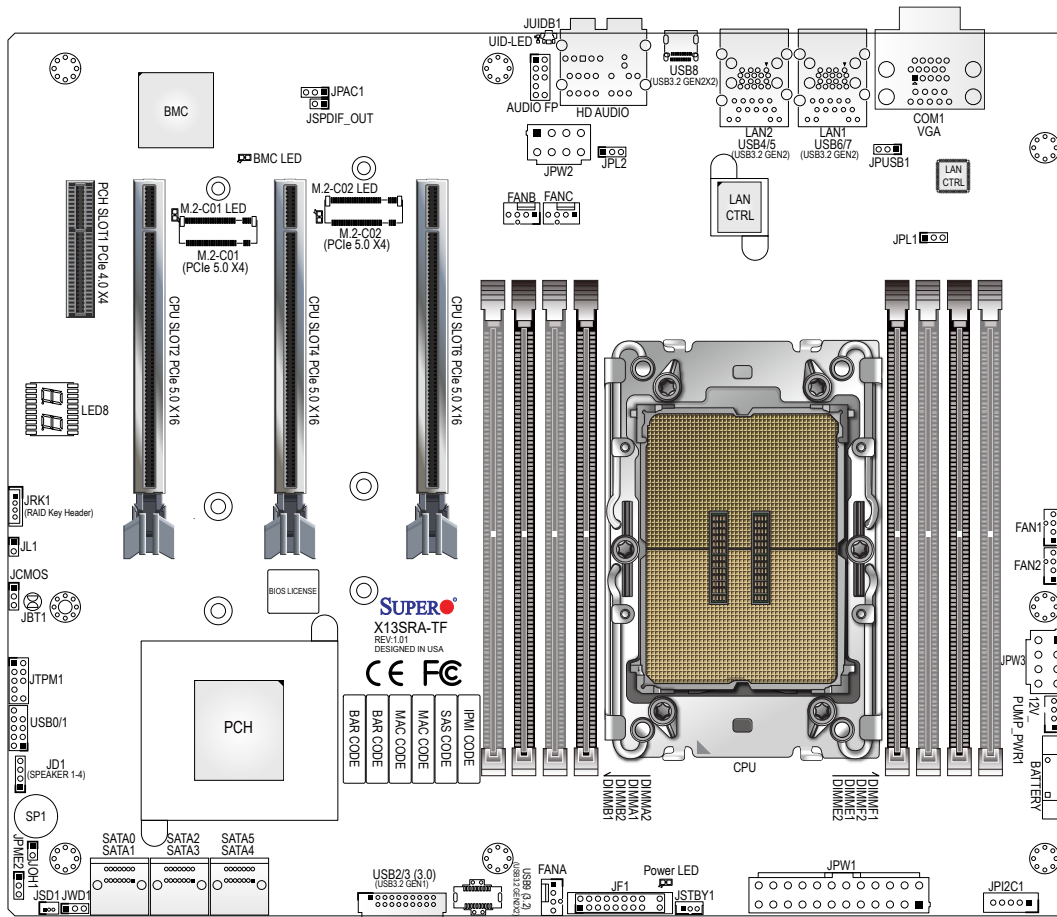
Note: Components not documented are for internal testing only.

Quick Reference
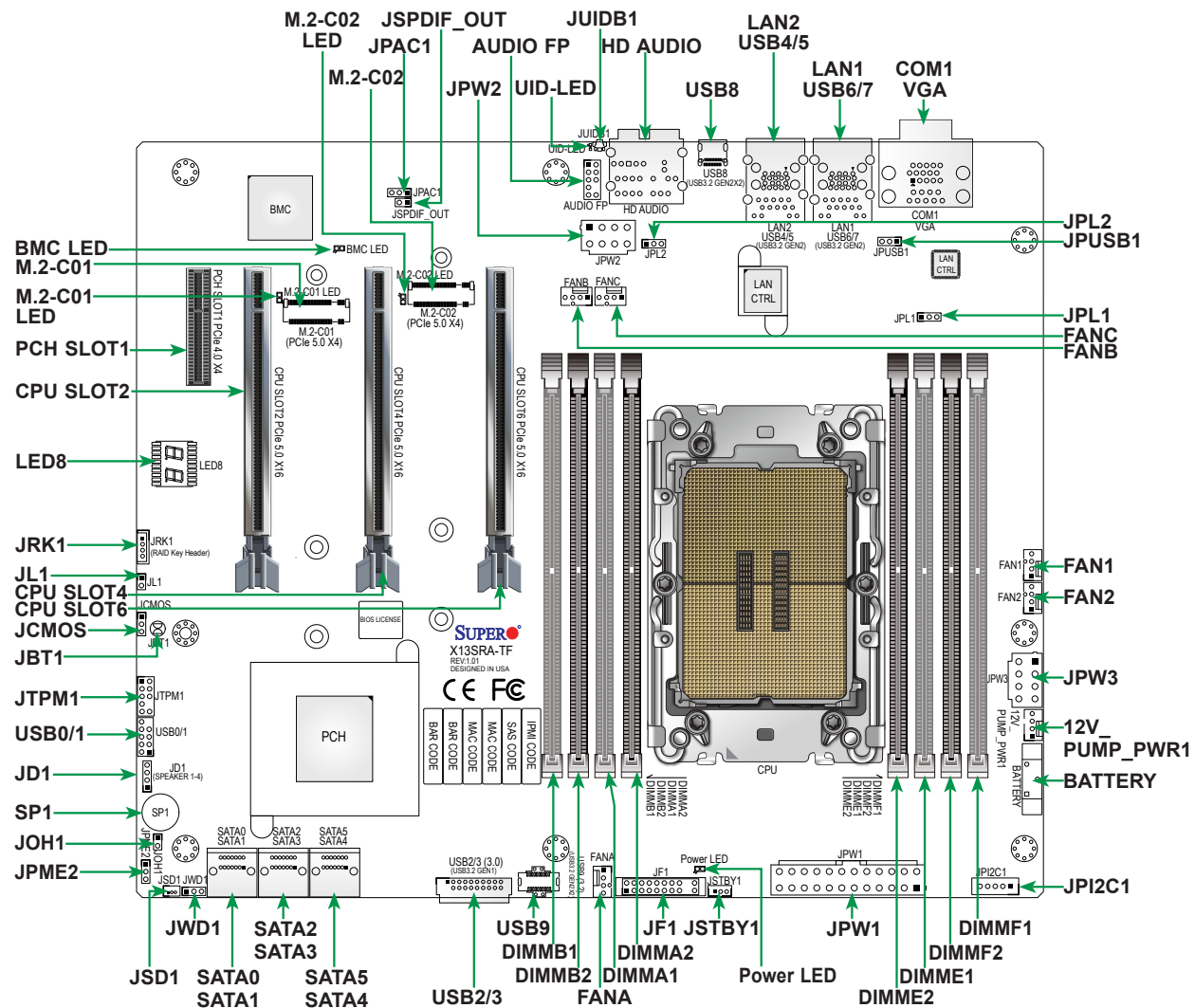
Notes:

• If PCH SLOT1 is to be installed with a 3/4-length PCIe card and/or CPU SLOT2 with a double-width 3/4-length PCIe card, the TPM module for JTPM1 should be a horizontal one to prevent mechanical conflict.

• See Chapter 2 for detailed information on jumpers, I/O ports, and JF1 front panel connections.

• " ■ " indicates the location of Pin 1.

• Jumpers/LED indicators not indicated are used for 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.

Quick Reference Table

Jumper	Description	Default Setting
JBT1	Clear CMOS (Onboard)	Short Pads to Clear CMOS
JCMOS	Clear CMOS (Onboard)	Pins 1-2 (Normal)
JPAC1	HD Audio Enable/Disable	Pins 1-2 (Enabled)
JPL1, JPL2	LAN1/LAN2 Enable/Disable	Pins 1-2 (Enabled)
JPME2	Intel Manufacturing Mode	Pins 1-2 (Normal)
JPUSB1	USB6/7 Standby Power	Pins 1-2 (Enabled)
JWD1	Watch Dog Function Enable	Pins 1-2 (Reset)

LED	Description	Status
BMC LED	BMC Heartbeat LED	Blinking Green: BMC Normal
LED8	Status Code LED	Digital Readout
M.2-C01/M.2-C02 LED	M.2 LEDs for M.2-C01/M.2-C02	Blinking Green: Device Working
Power LED	Onboard Power LED	Solid Green: Power On
UID-LED	Unit Identifier (UID) LED	Blue On: Unit Identified

Note: The table above is continued on the next page.

Connector	Description
12V_PUMP_PWR1	12V 4-pin Power Connector for CPU Liquid Cooling Pump
AUDIO FP	Front Panel Audio Header
BATTERY	Onboard Battery
COM1	COM Port (Back Panel)
CPU SLOT2/4/6	PCIe 5.0 x16 Slots
FAN1, FAN2	CPU Fan Headers
FANA – FANC	System Fan Headers
HD AUDIO	Back Panel High Definition Audio Port
JD1	Speaker/Buzzer Header
JF1	Front Control Panel Header
JL1	Chassis Intrusion Header
JOH1	Overheat LED Header
JPI2C1	Power Supply SMBus I^2C Header
JPW1	24-pin ATX Main Power Connector (Required)
JPW2, JPW3	+12V 8-pin CPU Power Connectors
JRK1	Intel VROC Key Header **Note:** A VROC hardware key is required for VROC RAID function.
JSD1	SATA DOM (Disk-On-Module) Power Connector
JSPDIF_OUT	Sony/Philips Digital Interface (S/PDIF) Out Header
JSTBY1	Standby Power Header (5V)
JTPM1	Trusted Platform Module (TPM)/Port 80 Header
JUIDB1	Unit Identifier (UID) Switch / BMC Reset Button
LAN1	RJ45 1GbE LAN Port (Shared IPMI Port)
LAN2	RJ45 10GbE LAN Port
M.2-C01, M.2-C02	PCIe 5.0 x4 M.2 M-key Sockets (Support 22110/2280 form factors and RAID 0/1)
SATA0 – SATA5	Intel Serial ATA (SATA 3.0) Ports 0 – 5 (6 Gb/second) (Support RAID 0/1/5/10)
PCH SLOT1	PCIe 4.0 x4 Slot
SP1	Internal Speaker/Buzzer
USB0/1	Front Access USB 2.0 Header
USB2/3	Front Access USB 3.2 Gen. 1 Header (5Gb, Type-A)
USB4, USB5	Back Panel USB 3.2 Gen. 2 Ports (10Gb, Type-A)
USB6, USB7	Back Panel USB 3.2 Gen. 2 Ports (10Gb, Type-A)
USB8	Back Panel USB 3.2 Gen. 2x2 Port (20Gb, Type-C)
USB9	Front Access USB 3.2 Gen. 2x2 Header (20Gb, Type-C)
VGA	VGA Port (IPMI only)

Note: For detailed instructions on how to configure VROC RAID settings, please refer to the VROC RAID Configuration User's Guide posted on the web page under the link: https://www.supermicro.com/support/manuals/.

Motherboard Features

Motherboard Features
CPU
• Supports a single Intel Xeon W-2500/-2400 (64L) or W-3500/-3400 (112L) series processor in Socket E1 LGA4677, with up to 60 CPU cores and a thermal design power (TDP) of up to 385W.
Memory
• Supports up to 512GB of ECC RDIMM and 2TB of 3DS RDIMM with speeds of up to 4800MT/s (1DPC) and 4400MT/s (2DPC) in eight ECC DDR5 (288-pin) SMD DIMM slots   **Note:** Memory speed and capacity support depends on the processors used in the system.
DIMM Size
• Up to 256GB at 1.1V   **Note:** For the latest CPU/memory updates, please refer to our website at https://www.supermicro.com/products/motherboard.
Chipset
• Intel PCH W790
Expansion Slots
• Three PCIe 5.0 x16 slots (CPU SLOT2/4/6) (support three single-width, two double-width, and two triple-width GPU cards) • One PCIe 4.0 x4 slot (PCH SLOT1) • Two PCIe 5.0 x4 M.2 sockets (support M-Key 2280 and 22110, RAID 0 and 1)
Network
• Intel i210AT for one 1Gb Ethernet LAN port (shared IPMI port) • Aquantia AQC113 for one 10Gb Ethernet LAN port
Audio
• Realtek ALC888S - HD Audio 7.1
Baseboard Management Controller (BMC)
• ASPEED AST2600 BMC
Graphics
• Graphics controller & VGA support via ASPEED AST2600 BMC
I/O Devices
• Serial (COM) Port   • One serial port on the rear I/O panel (COM1) • SATA 3.0   • Six SATA 3.0 ports at 6 Gb/s (SATA0 – 5) • Video Connection   • One VGA port on the rear I/O panel (VGA) • Audio   • One 7.1 HD audio port on the rear I/O panel

Peripheral Devices

- One front accessible USB 2.0 header for two USB connections (USB0/1)
- One front accessible USB 3.2 Gen 1 header for two USB connections (5Gb, USB2/3)
- Four USB 3.2 Gen 2x1 ports on the rear I/O panel (10Gb, USB4/5, USB6/7, Type A)
- One USB 3.2 Gen. 2x2 port on the rear panel (20Gb, USB8, Type C)
- One front accessible USB 3.2 Gen 2x2 20-pin header for one USB connection (20Gb, USB9)

BIOS

- AMI BIOS
- ACPI 3.0 or later, PCI firmware 4.0 support, BIOS rescue hot-key, SPI dual/quad speed support, Real Time Clock (RTC) wakeup, and SMBIOS 3.0 or later

Power Management

- ACPI power management
- Power button override mechanism
- Power-on mode for AC power recovery
- Wake-on-LAN
- Power supply monitoring

System Health Monitoring

- Onboard voltage monitoring for +/-12V, +5V/+5V standby, +3.3V, and +3.3V standby
- Onboard temperature monitoring for CPU, VRM, LAN, PCH, system, and memory
- 7+1 CPU switch phase voltage regulator
- CPU/System overheat control
- CPU thermal trip support
- Platform Environment Control Interface (PECI)

Fan Control

- Fan status monitoring via IPMI connections
- Dual cooling zones
- Low-noise fan speed control
- Ten 4-pin fan headers

System Management

- SuperDoctor® 5
- Chassis intrusion header and detection
- Intel Converged Security and Management Engine (CSME)

Firmware Integrity/System Security

- Trusted Platform Module (TPM) support

LED Indicators

- BMC Heartbeat LED
- Power LED
- Status Code LED
- UID/remote UID
- M.2 LEDs
- CPU/system Overheat LED
- LAN Activity LED

Dimensions

- CEB 12" (L) x 10" (W) (305 mm x 254mm), compatible with E-ATX (13" x 12")

Note 1: The CPU maximum thermal design power (TDP) is subject to chassis and heatsink cooling restrictions. For proper thermal management, please check the chassis and heatsink specifications.

Note 2: For IPMI configuration instructions, please refer to the Embedded IPMI Configuration User's Guide available at https://www.supermicro.com/support/manuals/.

Note 3: For proper BMC configuration, please refer to https://www.supermicro.com/products/nfo/files/IPMI/Best_Practices_BMC_Security.pdf.

Figure 1-3.
System Block Diagram
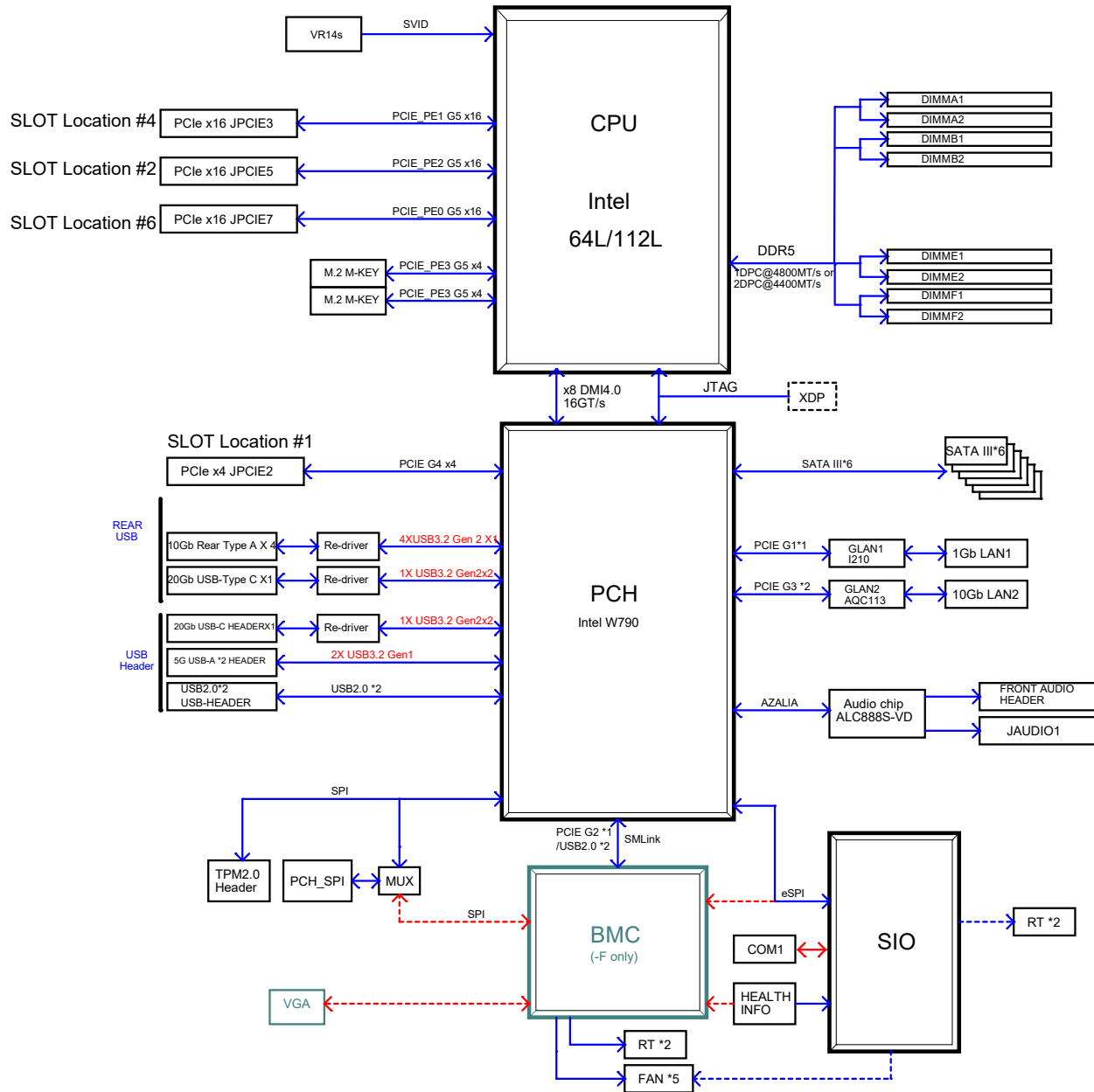
Note: This is a general block diagram and may not exactly represent the features on your motherboard. See the previous pages for the actual specifications of your motherboard.

1.2 Processor and Chipset Overview

Built upon the functionality and capability of the Intel Xeon W Processors (Socket E1) and the Intel W790 chipset, the X13SRA-TF motherboard increases energy efficiency, and system performance for a multitude of applications such as media and entertainment, engineering, scientific computing, and AI development applications.

Features Supported

- DDR5 288-pin memory support

- Vector Neural Network Instructions (VNNI) support to accelerate training

- SATA Controller (up to 6Gb/sec)

- PCIe 5.0 Interface (up to 32 GT/s)

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 the Advanced BIOS Setup section for this setting. The default setting is **Last State.**

1.4 System Health Monitoring

Onboard Voltage Monitors

An onboard voltage monitor will scan the voltages of the onboard chipset, memory, and CPU continuously. Once a voltage becomes unstable, a warning is given, or an error message is sent to the screen.

Fan Status Monitor with Firmware Control

The system health monitor embedded in the BMC chip can check the RPM status of the cooling fans. The CPU and chassis fans are controlled via IPMI.

Environmental Temperature Control

System Health sensors monitor temperatures and voltage settings of onboard processors and the system in real time via the IPMI interface. Whenever the temperature of the CPU or the system exceeds a user-defined threshold, system and CPU cooling fans will be turned on to prevent the CPU or the system from overheating.

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

System Resource Alert

This feature is available when used with SuperDoctor® 5 in the Windows OS or in the Linux environment. SuperDoctor 5 is used to notify the user of certain system events. For example, you can configure SuperDoctor 5 to provide you with warnings when the system temperature, CPU temperatures, voltages and fan speeds go beyond a predefined range.

1.5 ACPI Features

The Advanced Configuration and Power Interface (ACPI) 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 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, and 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, please 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. It is even more important for processors that have high CPU clock rates where noisy power transmission is present.

The X13SRA-TF motherboard accommodates a 24-pin ATX power connector. Although most power supplies generally meet the specifications required by the CPU, some are inadequate. Additional 12V 8-pin power connections will be required to ensure adequate power supply to the system.

> **Warning**! To avoid damaging the power supply on the motherboard, use a power supply that contains 24-pin and 8-pin power connectors. Be sure to connect the power supplies to the 24-pin power connector (JPW1) and 8-pin power connectors (JPW2 and JPW3) on the motherboard. Failure in doing so may void the manufacturer warranty on your power supply and motherboard.

It is strongly recommended that you use a high quality power supply that meets ATX power supply Specification 2.02 or above. It must also be SSI compliant.

1.7 Serial Port

The X13SRA-TF motherboard supports one serial communication connection. COM1 port can be used for input/output. The UART provides legacy speeds 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 high-speed serial communication devices.

Chapter 2

Installation

2.1 Static-Sensitive Devices

Electrostatic Discharge (ESD) can damage electronic components. To avoid damaging your motherboard, it is important to handle them 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 motherboard 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 Processor and Heatsink Installation

The processor (CPU) and processor carrier should be assembled together first to form the processor carrier assembly. This will be attached to the heatsink to form the processor heatsink module (PHM) before being installed into the CPU socket. Before installation, be sure to perform the following steps below:

* Please carefully follow the instructions given on the previous page to avoid ESD-related damages.

* Shut down the system and then unplug the AC power cord from all power supplies.

* Check that the plastic protective cover is on the CPU socket and none of the socket pins are bent. If they are, contact your retailer.

* When handling the processor, avoid touching or placing direct pressure on the LGA lands (gold contacts). Improper installation or socket misalignment can cause serious damage to the processor or CPU socket, which may require manufacturer repairs.

* Thermal grease is pre-applied on a new heatsink. No additional thermal grease is needed.

* Refer to the Supermicro website for updates on processor and memory support.

* All graphics in this manual are for illustrations only. Your components may look different.

The Intel Xeon W Processor
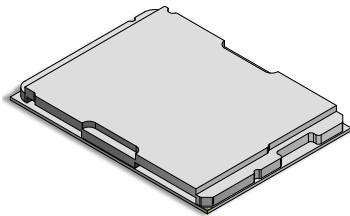
Intel Xeon W-2500/-2400 series CPU
(64L, MCC)
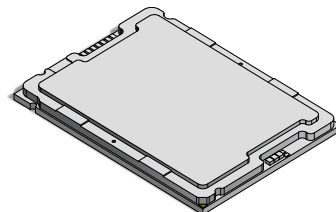
Intel Xeon W-3500/-3400 series CPU
(112L, XCC)

Note: The X13SRA-TF supports two CPU SKUs. Each SKU comes with a specific die and must use a specific carrier. The Intel Xeon W-2500/-2400 series processors come with High/Medium Core Count (MCC) die and must use the CPU carrier E1B; the Intel Xeon W-3500/-3400 series processors come with Extreme Core Count (XCC) die and must use the CPU carrier E1A.

Overview of the Processor Carrier Assembly

The processor carrier assembly contains the Intel Xeon processor and a processor carrier.

1. Intel Xeon Processor
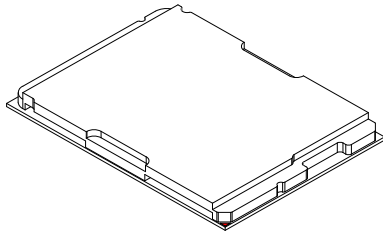
**Intel Xeon W-2500/-2400 series CPU
(64L, MCC)**
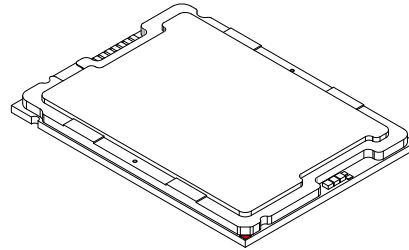
**Intel Xeon W-3500/-3400 series CPU
(112L, XCC)**

2. Processor Carrier
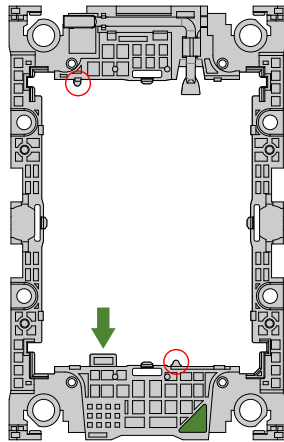
➡ **= Cutout** ▲ **= Pin 1** ◯ **= CPU Key**

**Carrier E1B (P/N: SKT-1424L-001B-LTS)
For MCC CPU**
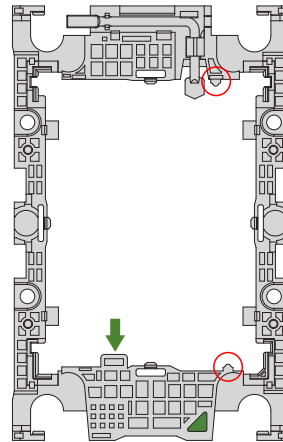
**Carrier E1A (P/N: SKT-1333L-0001-LTS)
For XCC CPU**

3. CPU Carrier Assembly (with CPU Seated inside the Carrier)
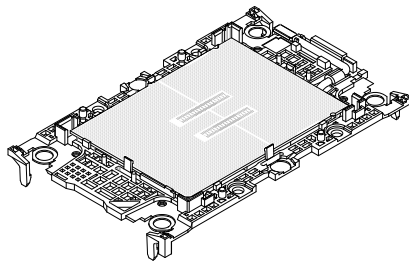
Carrier E1B with Intel Xeon W-2500/-2400 series CPU
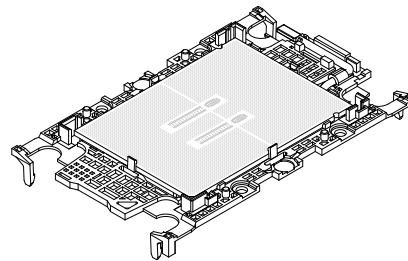
Carrier E1A with Intel Xeon W-3500/-3400 series CPU

Note 1: Be sure to use the correct CPU carrier as shown above. Using a wrong carrier can cause damage to the CPU.

Note 2: The process of CPU and heatsink installation is basically the same for the two CPU SKUs. If not otherwise specified, the graphics throughout the installation section will show the Intel Xeon W-2500/-2400 series CPU (64L) with carrier E1B as examples.

Overview of the CPU Socket

The CPU socket is protected by a plastic protective cover.

1. Plastic Protective Cover
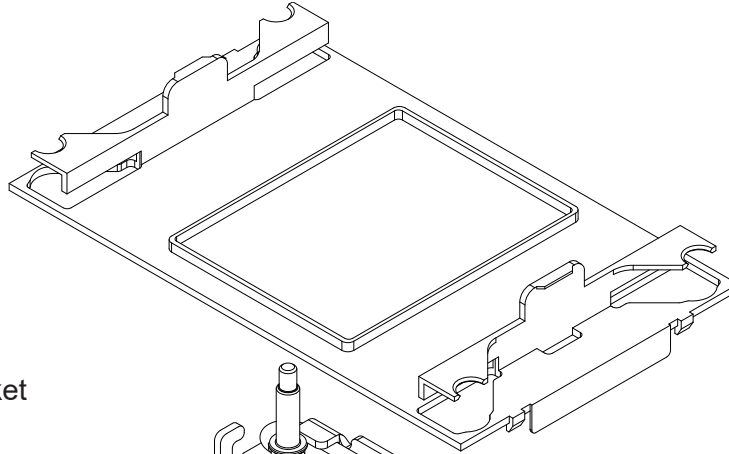
2. CPU Socket
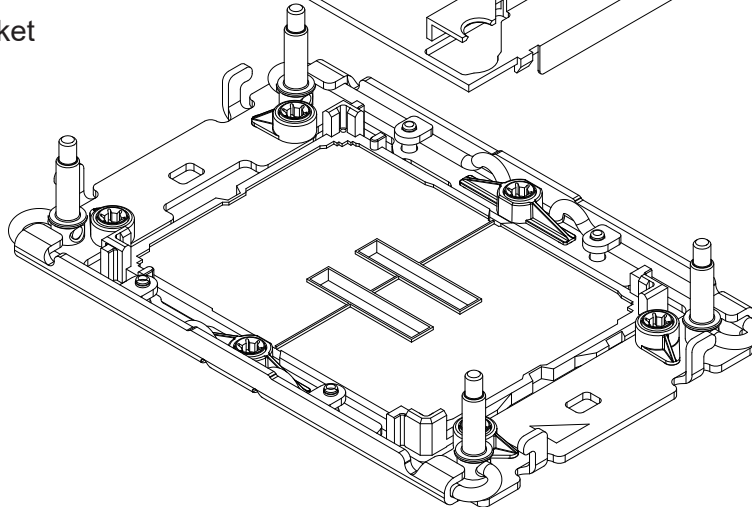
Overview of the Processor Heatsink Module

The Processor Heatsink Module (PHM) contains a heatsink, a processor carrier, and the Intel Xeon processor.

1. Heatsink with Thermal Grease
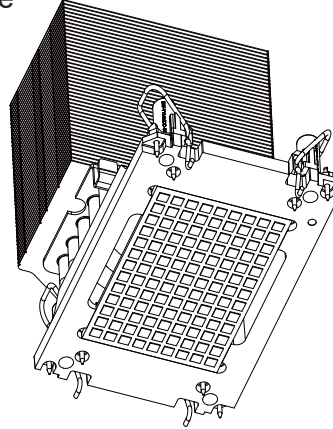
2. Processor Carrier
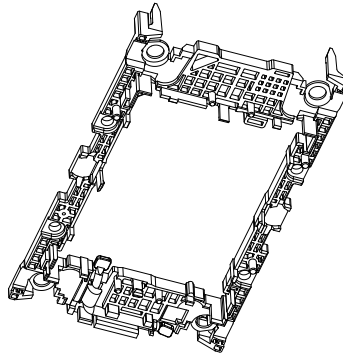
3. Intel Xeon Processor
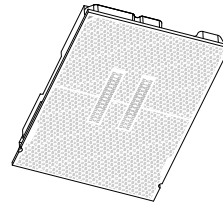
4. Processor Heatsink Module (PHM)
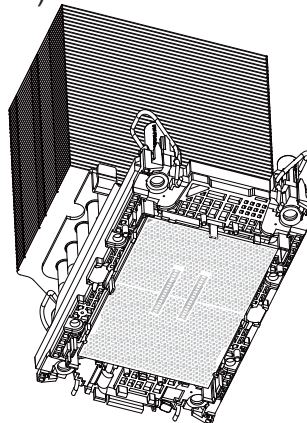
Bottom View

Creating the Processor Carrier Assembly

To install a processor into the processor carrier, follow the steps below:

1. Before installation, make sure the lever on the processor carrier is pressed down as shown below.

2. Hold the processor with the LGA lands (gold contacts) facing up. Locate the small, gold triangle in the corner of the processor and the corresponding hollowed triangle on the processor carrier. These triangles indicate pin 1. See the images below.

3. Use the triangles as a guide to carefully align and place one end of the processor into the latch marked A, and place the other end of processor into the latch marked B as shown below.

4. Examine all corners to ensure that the processor is firmly attached to the carrier.

CPU Pin 1 and
triangle on the carrier

A

B

Make sure the lever
is pressed down before
installing the processor.
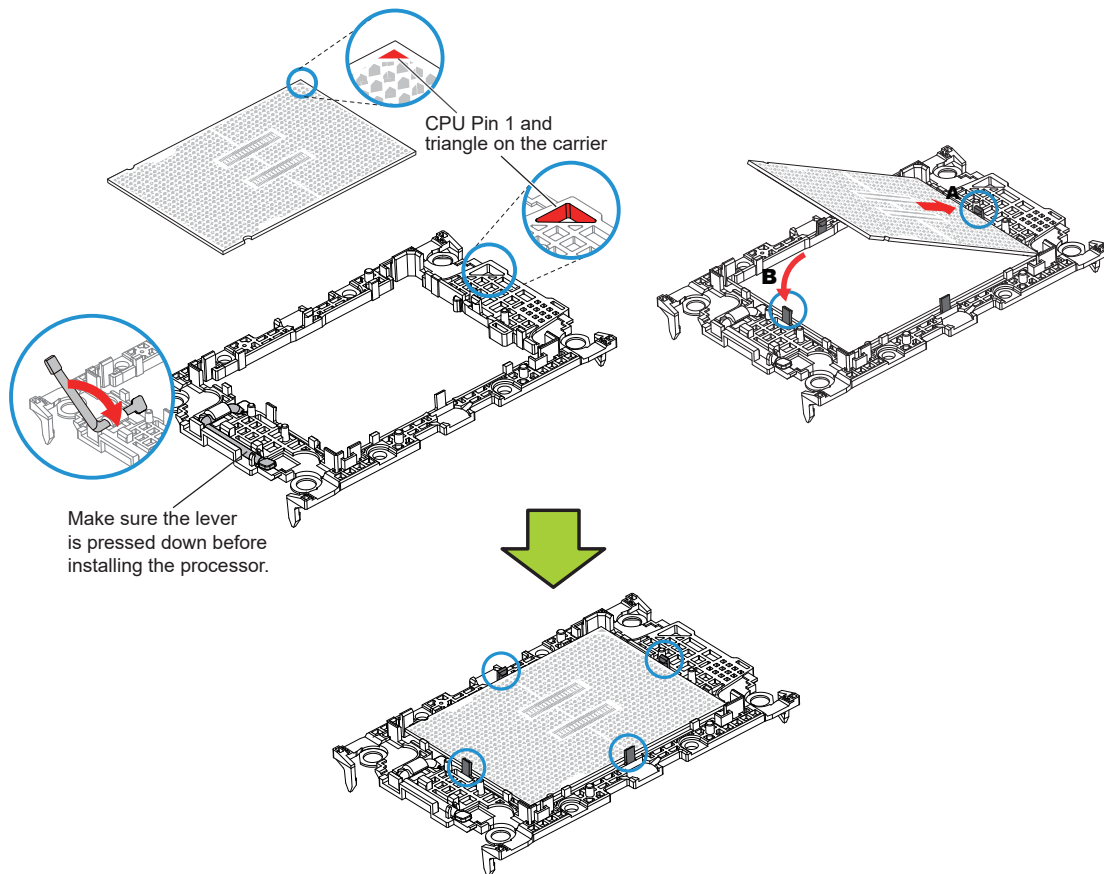
Processor Carrier Assembly

Assembling the Processor Heatsink Module

After creating the processor carrier assembly for the processor, mount it onto the heatsink to create the processor heatsink module (PHM):

1. Turn the heatsink over.
   If the heatsink is pre-installed with a fan, remove the fan from the heatsink. If this is a new heatsink, the thermal grease has been pre-applied. Otherwise, apply the proper amount of thermal grease.

2. Hold the processor carrier assembly so the processor's gold contacts are facing up.

3. Align the corner marked "a" on the processor carrier assembly with the corner of the heatsink marked "A", and align the corners marked "b", "c", "d" on processor assembly against the corners marked "B", "C", "D" on the heatsink.

4. Press the processor carrier assembly down until it snaps into place. The plastic clips of the processor carrier assembly will lock at the four corners.

5. Examine all corners to ensure that the plastic clips on the processor carrier assembly are firmly attached to the heatsink.

Processor Carrier Assembly
(Upside Down)
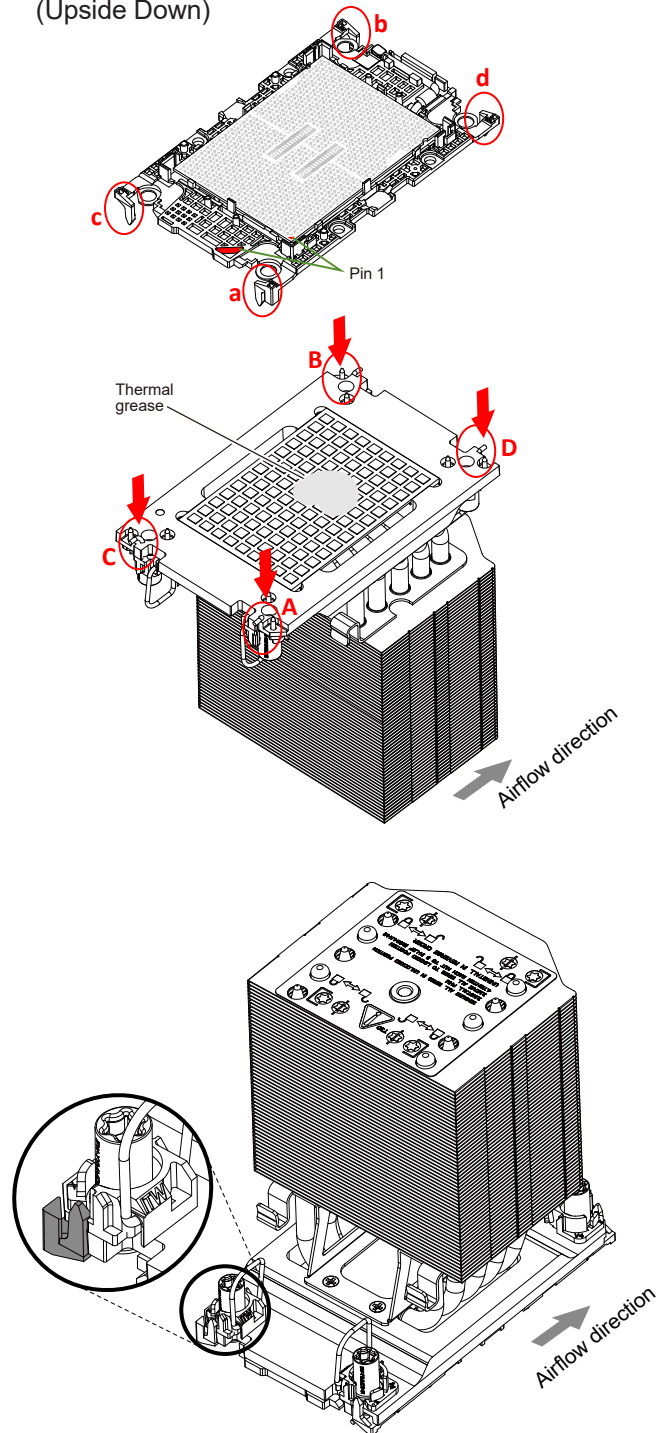
Check each corner to ensure that the processor carrier is firmly attached to the heatsink.

Preparing the CPU Socket for Installation

This motherboard comes with a plastic protective cover installed on the CPU socket. Remove it from the socket to install the Processor Heatsink Module (PHM). Gently pull up one corner of the plastic protective cover to remove it.
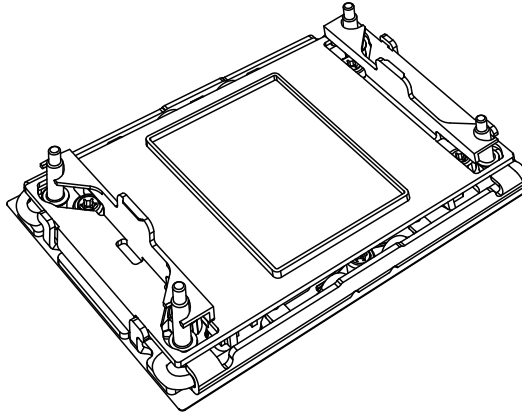
CPU Socket with Plastic Protective Cover

Remove the plastic protective
cover from the CPU socket.
Do not touch or bend
the socket pins.

Socket Pins
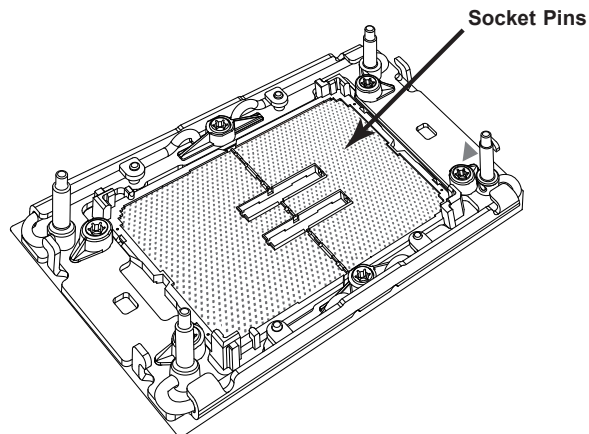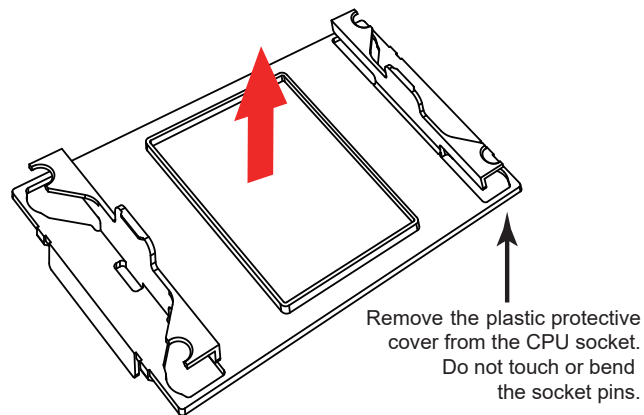
Installing the Processor Heatsink Module

After assembling the Processor Heatsink Module (PHM), install it onto the CPU socket:

1. Align pin 1 of the PHM with the printed triangle on the CPU socket. See the left image below.

2. Make sure all four holes of the heatsink are aligned with the socket, then gently place the heatsink on top of the CPU socket.

3. Press all four rotating wires outwards and make sure that the heatsink is securely latched into the CPU socket.

4. With a T30 Torx-bit screwdriver, gradually tighten the four screws to ensure even pressure. You can start with any screw, but make sure to tighten the screws in a diagonal pattern. To avoid damaging the processor or socket, do not use a force greater than 8 in-lbf (0.904 N-m) when tightening the screws.

5. Examine all corners to ensure that the PHM is firmly attached to the socket.

Airflow direction

Printed Triangle

Mount the Processor Heatsink Module onto the CPU socket (on the motherboard).

T30 Torx Screwdriver
Use a torque
of 8 in-lbf

Press the rotating wires outwards to latch the PHM and then tighten the four screws.
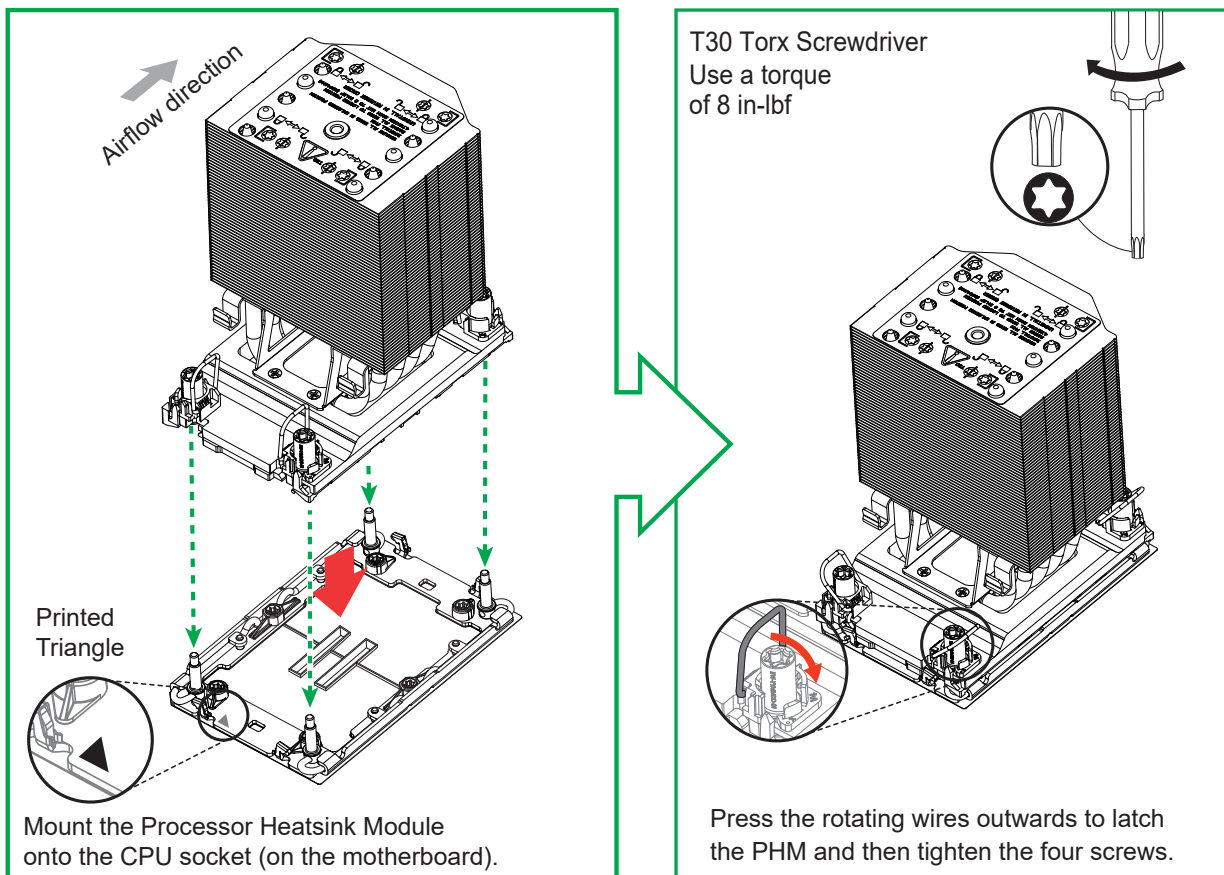
6. Place the fan on top of the heatsink so that the fan shroud and the top of the heatsink are properly aligned.

7. Insert the torx screw into the screw hole on top of the heatsink and use a Torx screwdriver to to tighten the screw.

8. Connect the fan power connector to a 4-pin fan header on the motherboard.

Torx screw
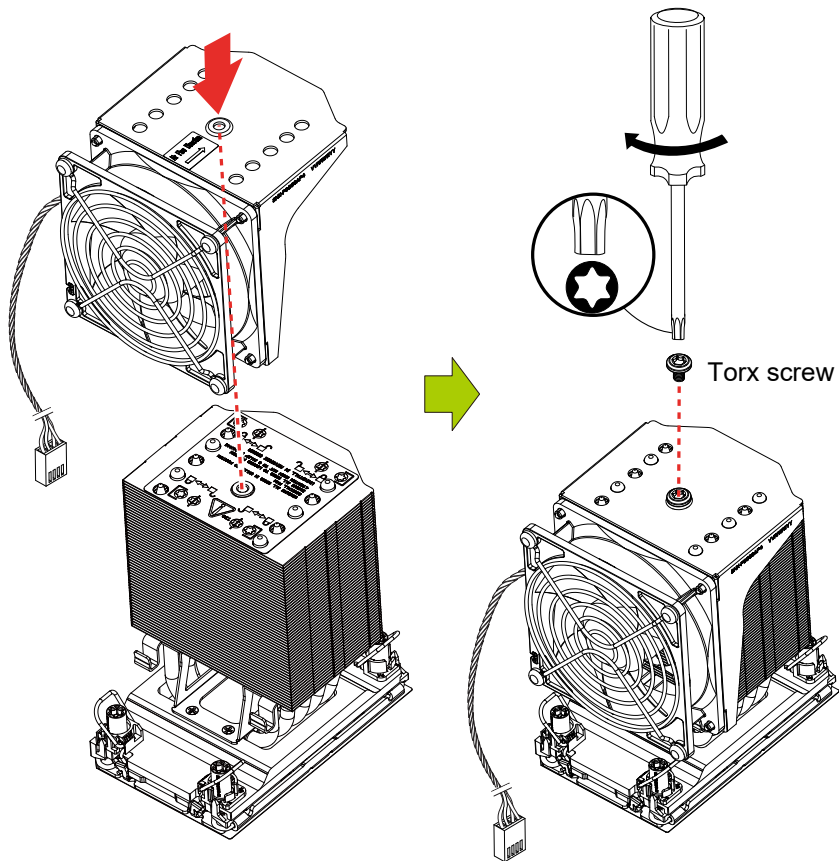
Uninstalling the Fan Before Removing the PHM

Before removing the processor heatsink module (PHM) from the motherboard, shut down the system and unplug the AC power cord from all power supplies.

Then follow the steps below to uninstall the fan:

1. Unplug the fan power connector from the fan header.

2. Loosen the torx screw from the heatsink.

3. Gently pull the heatsink fan upward to detach it from the heatsink.
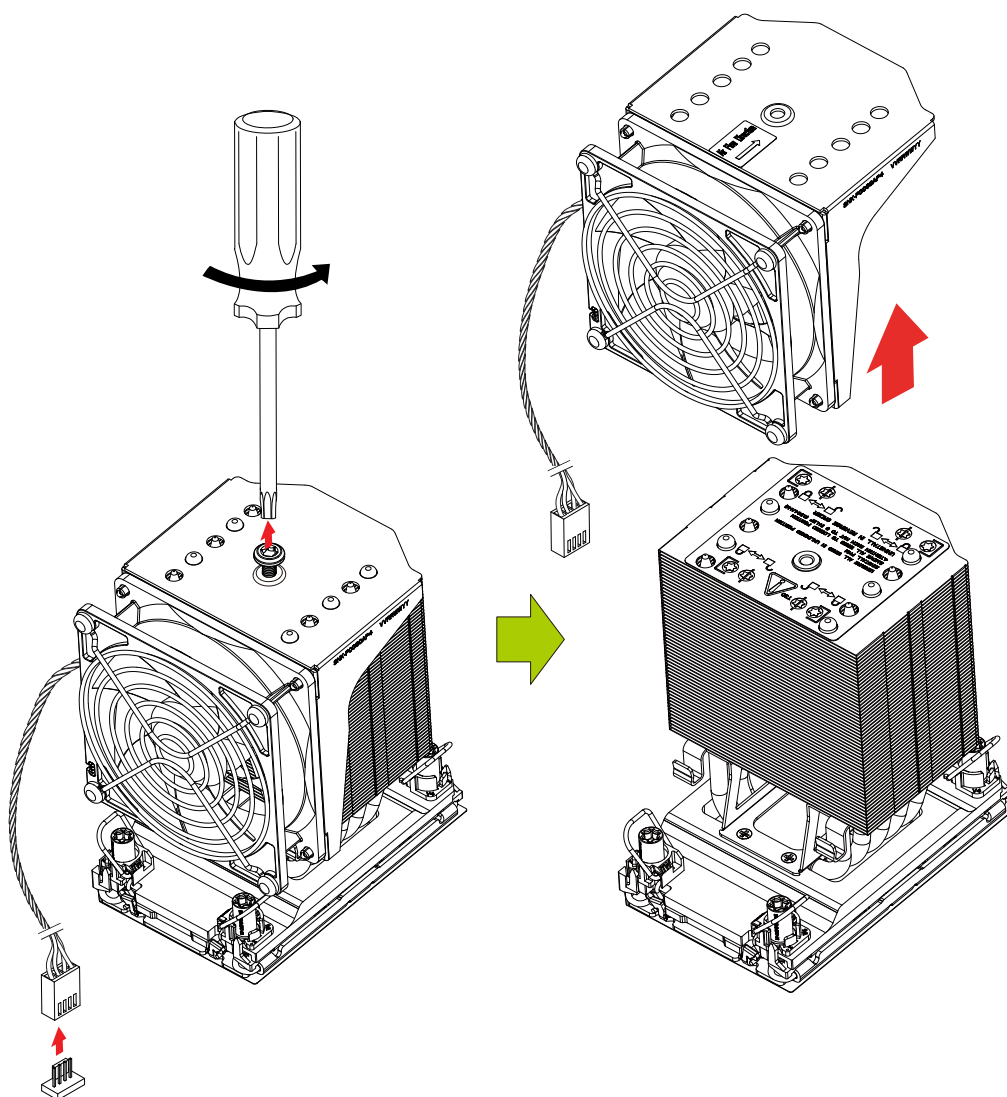
Removing the Processor Heatsink Module

1. Use a T30 Torx-bit screwdriver to loosen the four screws. You can start with any screw, but make sure to loosen the screws in a diagonal pattern.

2. Press the four rotating wires inwards to unlatch the PHM from the socket.

3. Gently lift the PHM upwards to remove it from the socket.

4. To remove the CPU, move the lever to its unlocked position and gently remove the CPU.

Press the four rotating wires inwards to unlatch the PHM.

CPU Socket
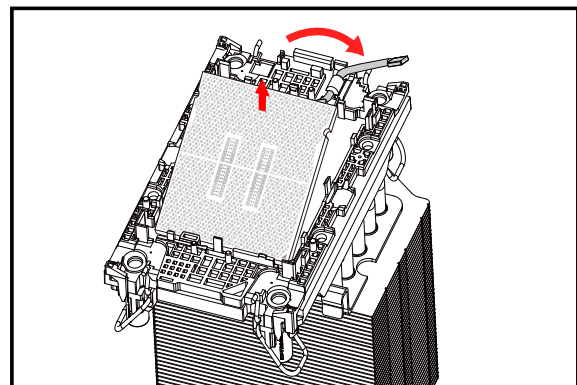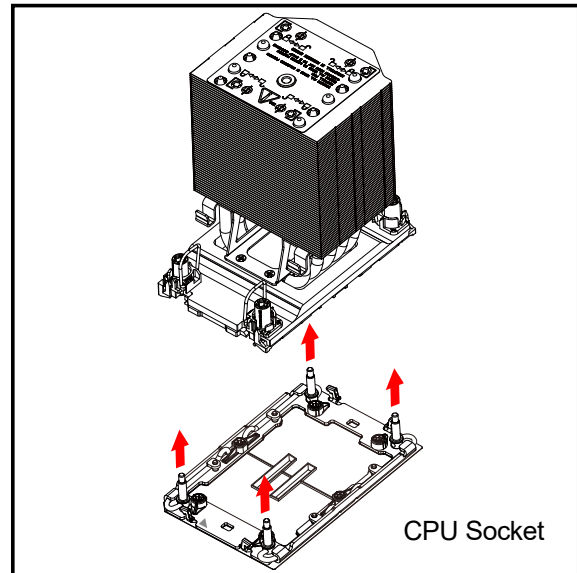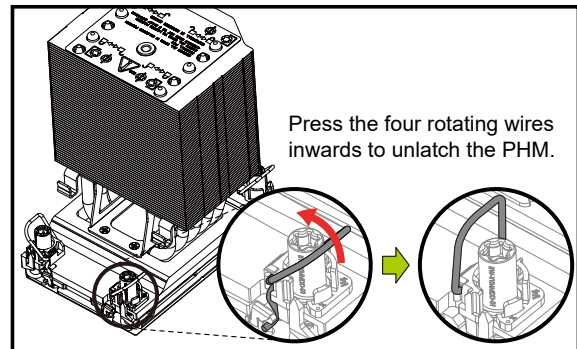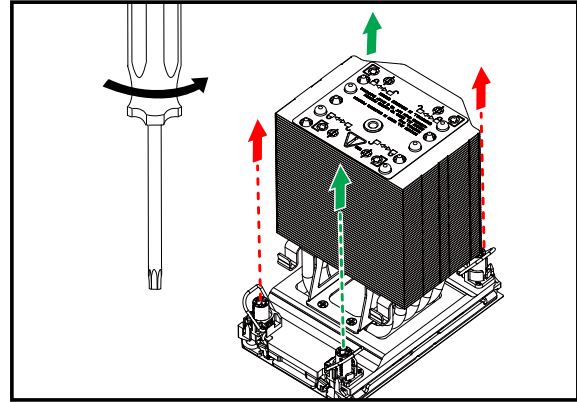
2.3 Motherboard Installation

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
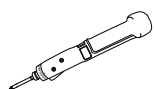
Torque Driver (1)	Phillips Screws (8)	Standoffs (8) Only if Needed

Location of Mounting Holes
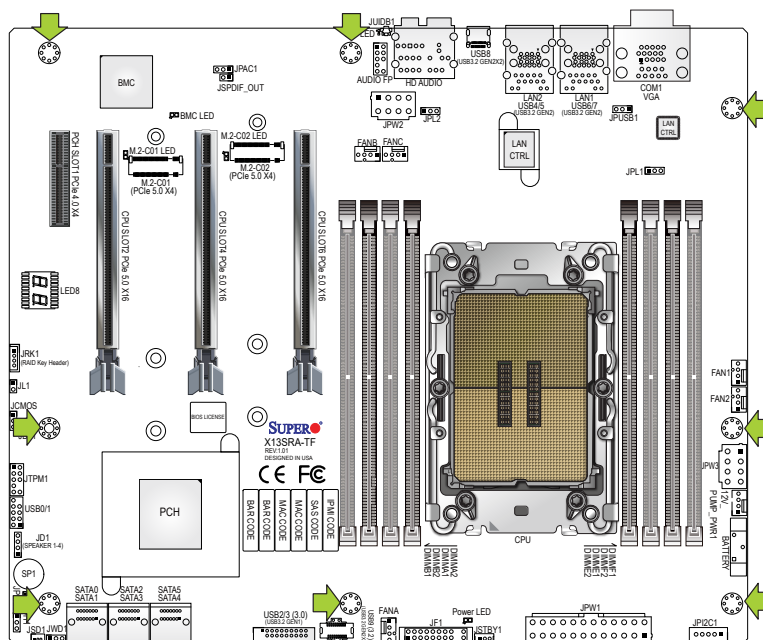
✎ **Note 1**: To avoid damaging the motherboard and its components, please do not use a force greater than 8 in-lbf (0.904 N-m) on each mounting screw during motherboard installation.

Note 2: Some components are very close to the mounting holes. Please take precautionary measures to avoid damaging these components when installing the motherboard to the chassis.

Installing the Motherboard

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

2. Locate the mounting holes on the motherboard. See the previous page for the location.
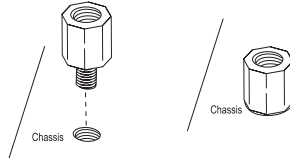
3. Locate the matching mounting holes on the chassis. Align the mounting holes on the motherboard against the mounting holes on the chassis.
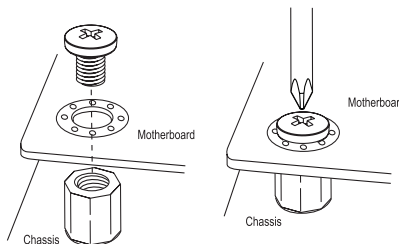
4. Install standoffs in the chassis as needed.

5. Install the motherboard into the chassis carefully to avoid damaging other motherboard components.

6. Using the torque driver, insert a pan head #6 screw into a mounting hole on the motherboard and its matching mounting hole on the chassis.

7. Repeat Step 6 to insert #6 screws into all mounting holes.

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

Note: Images displayed are for illustration only. Your chassis or components might look different from those shown in this manual.

2.4 Memory Support and Installation

> **Note:** Check the Supermicro website for recommended memory modules.

> **Important:** Exercise extreme care when installing or removing DIMM modules to pre-vent any possible damage.

Memory Support

This motherboard supports up to 512GB of ECC RDIMM and 2TB of 3DS RDIMM with speeds of up to 4800MT/s (1DPC) and 4400MT/s (2DPC) in eight ECC DDR5 (288-pin) SMD DIMM slots.

> **Note:** Memory speed support depends on the processors used in the system.

DDR5 Memory Support for the Intel Xeon W Processors

DDR5 Memory Support for the Intel Xeon W Processors				
Type	Ranks Per DIMM & Data Width	DIMM Capacity (GB)	Speed (MT/s); Voltage (V); DIMM Per Channel (DPC)	
			1DPC (Note)	2DPC
		16Gb (DRAM Density)	1.1V	
RDIMM	SRx8 (RC D)	16GB	4800	4400
	SRx4 (RC C)	32GB		
	DRx8 (RC E)	32GB		
	DRx4 (RC A)	64GB		
RDIMM 3DS	(4R/8R) x4 (RC A)	2H-128GB 4H-256GB		

Note: 1DPC applies to 1 SPC (Sockets Per Channel) or 2 SPC implementation.

Memory Population Table

DDR5 Memory Population Table									
DDR5	DIMMF1	DIMMF2	DIMME1	DIMME2		DIMMA2	DIMMA1	DIMMB2	DIMMB1
1					CPU		DDR5		
			DDR5						
2			DDR5				DDR5		
4	DDR5		DDR5				DDR5		DDR5
6	DDR5		DDR5	DDR5		DDR5	DDR5		DDR5
	DDR5	DDR5	DDR5				DDR5	DDR5	DDR5
8	DDR5	DDR5	DDR5	DDR5		DDR5	DDR5	DDR5	DDR5

General Guidelines for Optimizing Memory Performance

• It is recommended to use DDR5 memory of the same type, size, and speed.

• The motherboard will support odd-numbered modules (one module installed). However, to achieve the best memory performance, a balanced memory population is recommended.
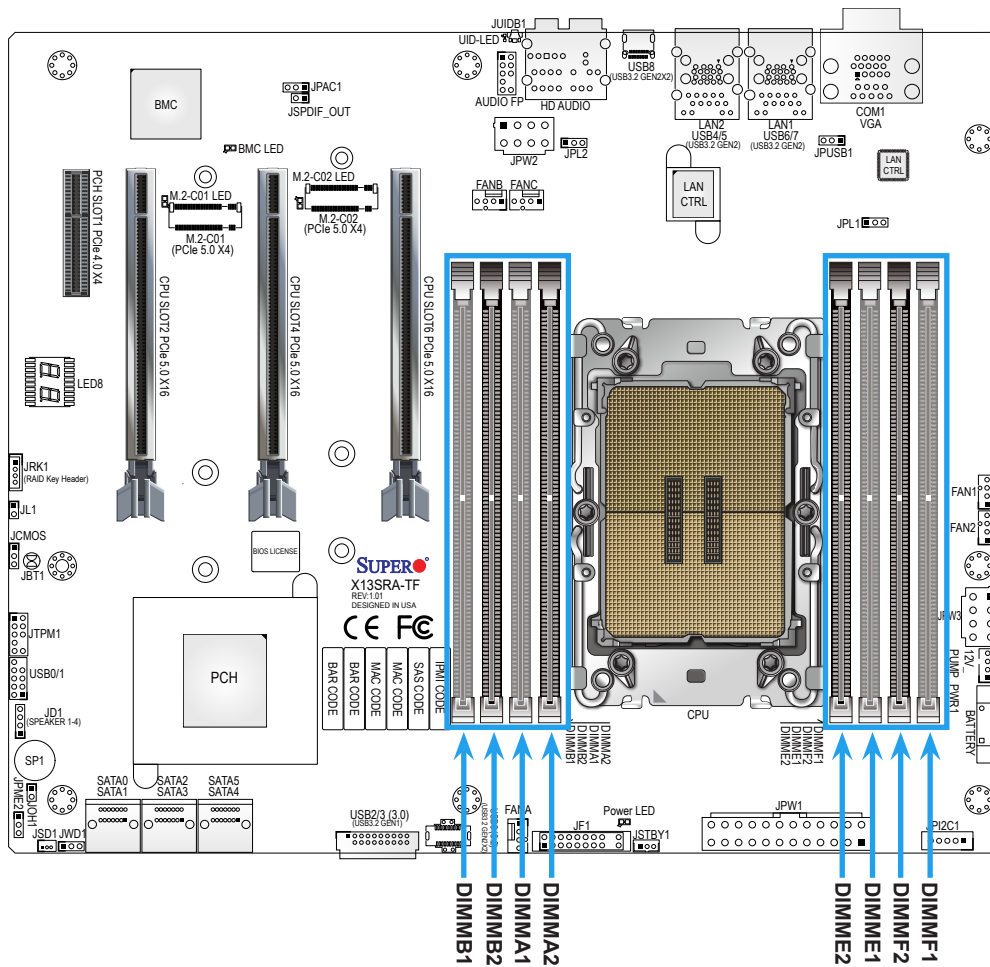
DIMM Installation

> **Note:** The DDR5 DIMM module is NOT hot-swappable and be sure to disconnect power for a minimum of twenty seconds before inserting or removing it.

1. Insert the desired number of DIMMs into the memory slots based on the recommended DIMM population tables in the previous section. Locate DIMM memory slots on the motherboard as shown on the right.
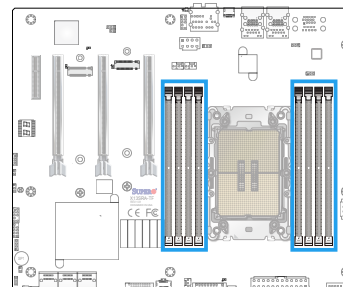
2. Align the DIMM module key with the receptive point on the single-latch DIMM slot.

3. Push the release tab outwards to unlock the slot.

4. Align the notch on the end of the module against the receptive point on the end of the slot.

5. Press both ends of the module straight down into the slot until the module snaps into place.

6. Push the release tab to the lock position to secure the module into the slot.

Key

Receptive Point

Notch
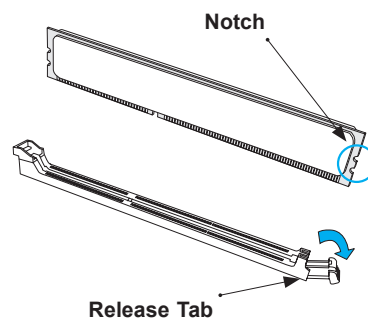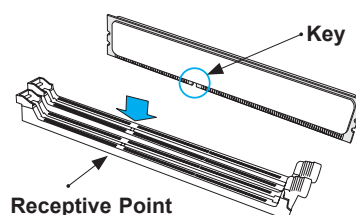
Release Tab

DIMM Removal

Press the release tab on one end of the DIMM module to unlock it. Once the DIMM module is loosened, remove it from the memory slot.

> **Note:** Removing a DDR5 DIMM module at a slant angle will cause module damages. It is strongly recommended that you lift the module straight up out of the slot.

Press both notches straight down into the memory slot.
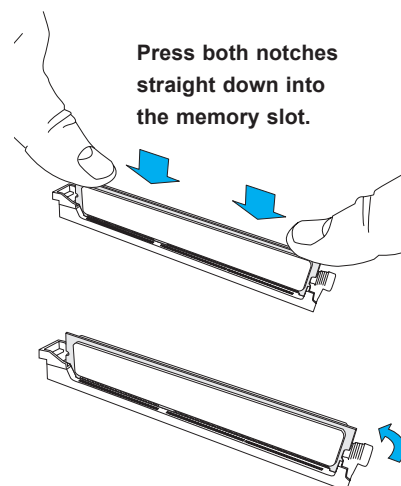
Warning! Please do not use excessive force when pressing the release tabs on the ends of the DIMM socket to avoid causing any damage to the DIMM module or the DIMM socket. Please handle DIMM modules with care. Carefully follow all the instructions given on Page 1 of this chapter to avoid ESD-related damages done to your memory modules or components.

2.5 M.2 Installation

This motherboard has two M.2 M-key sockets that support the 2280 and 22110 M.2 devices. One standoff is pre-installed into the position of 22110 mounting holes. Refer to the illustration on the right for the locations of M.2 sockets and mounting holes. Follow the steps below to install the M.2 device.

Note: It is strongly recommended that you install an optional Supermicro M.2 heatsink (p/n SNK-C0156L) on the M.2 device.
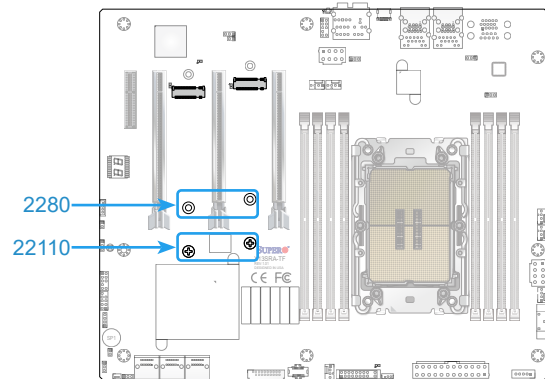
M.2 Heatsink Installation (Optional)

1. Remove the thermal pad protective films from the cover and the tray of the M.2 heatsink.
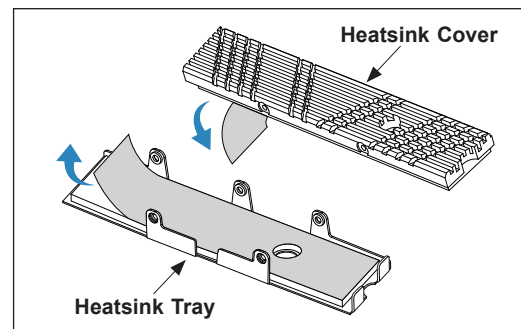
2. Place the M.2 device into the tray, then put the heatsink cover in place. Be careful to align the holes on the tray with the holes on the cover.
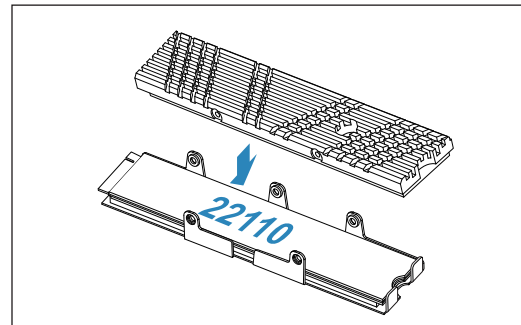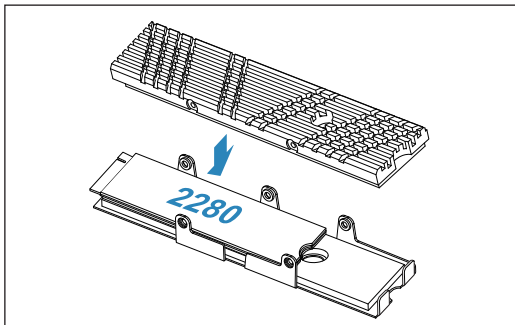
3. Tighten the screws to secure the heatsink assembly.
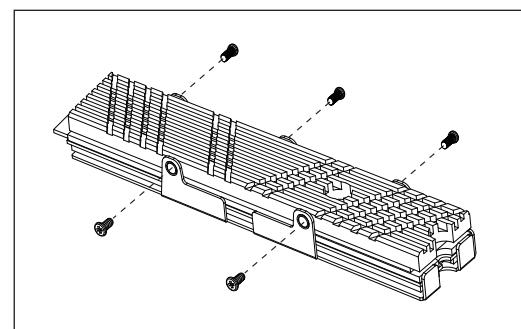
2280 M.2 Device Installation

1. Locate the pre-installed standoff on the 22110 mounting hole. Remove the standoff screw and set it aside.
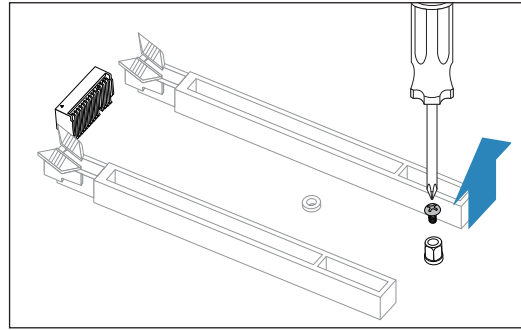
2. Using a hex socket screwdriver, remove and then re-install the standoff to the position of the 2280 mounting hole.
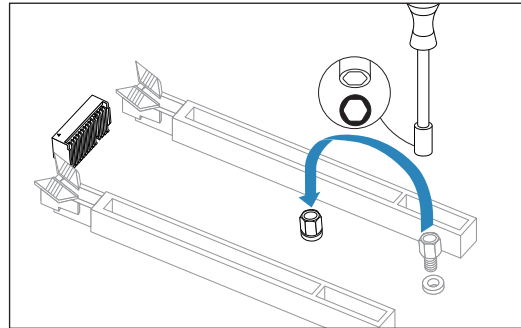
3. Insert the M.2 device or the heatsink assembly into the M.2 socket at a 30-degree angle and press it down.

Standard M.2 device

M.2 device with Supermicro heatsink

4. Tighten the standoff screw to secure the M.2 device or the heatsink assembly into place. Do not overtighten so as to avoid damaging the M.2 device.

Standard M.2 device

M.2 device with Supermicro heatsink
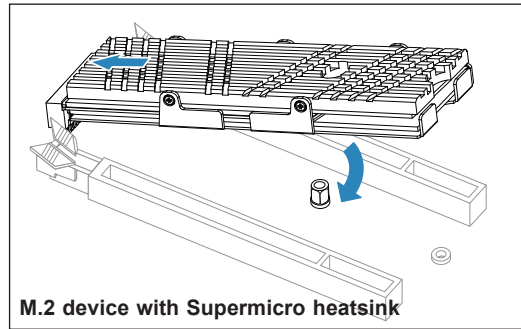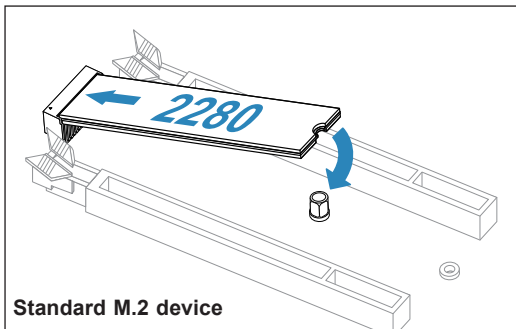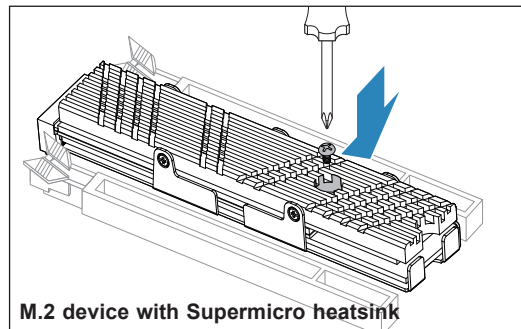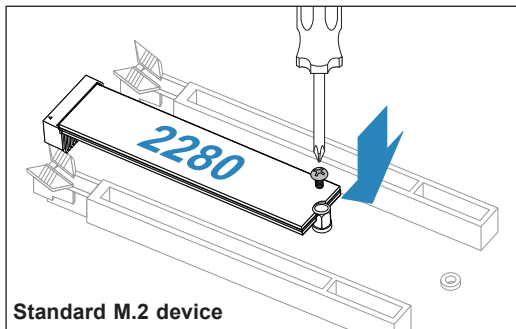
22110 M.2 Device Installation

1. Locate the pre-installed standoff. Remove the standoff screw and set it aside.
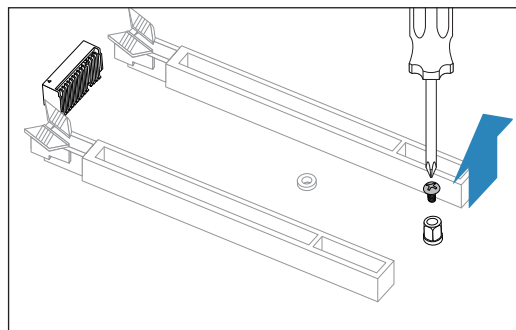
2. Insert the M.2 device or the heatsink assembly into the M.2 socket at a 30-degree angle and press it down.

Standard M.2 device

M.2 device with Supermicro heatsink

3. Tighten the standoff screw to secure the M.2 device or the heatsink assembly into place. Do not overtighten so as to avoid damaging the M.2 device.

Standard M.2 device

M.2 device with Supermicro heatsink
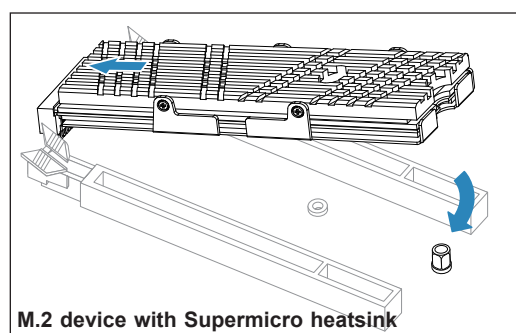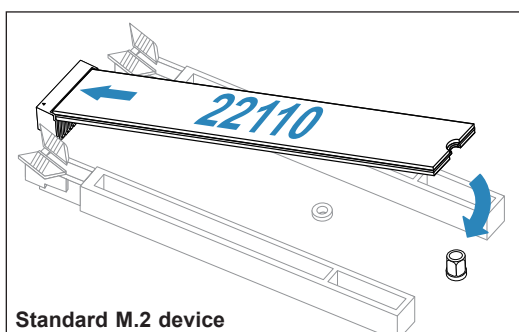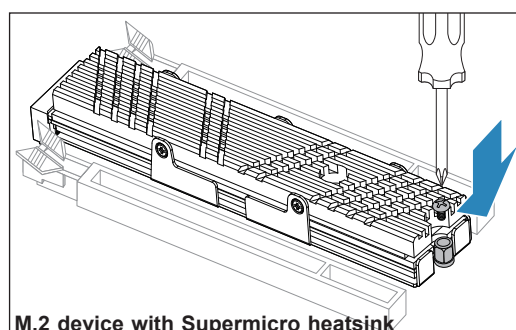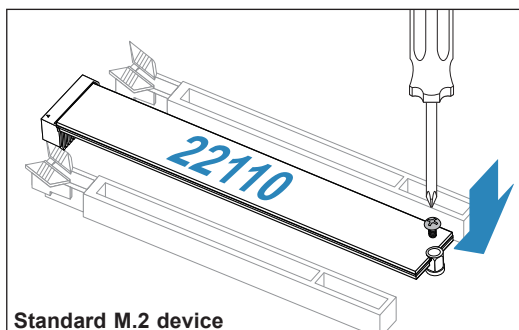
2.6 Rear I/O Ports

See Figure 2-1 below for the locations and descriptions of the various I/O ports on the rear of the motherboard.
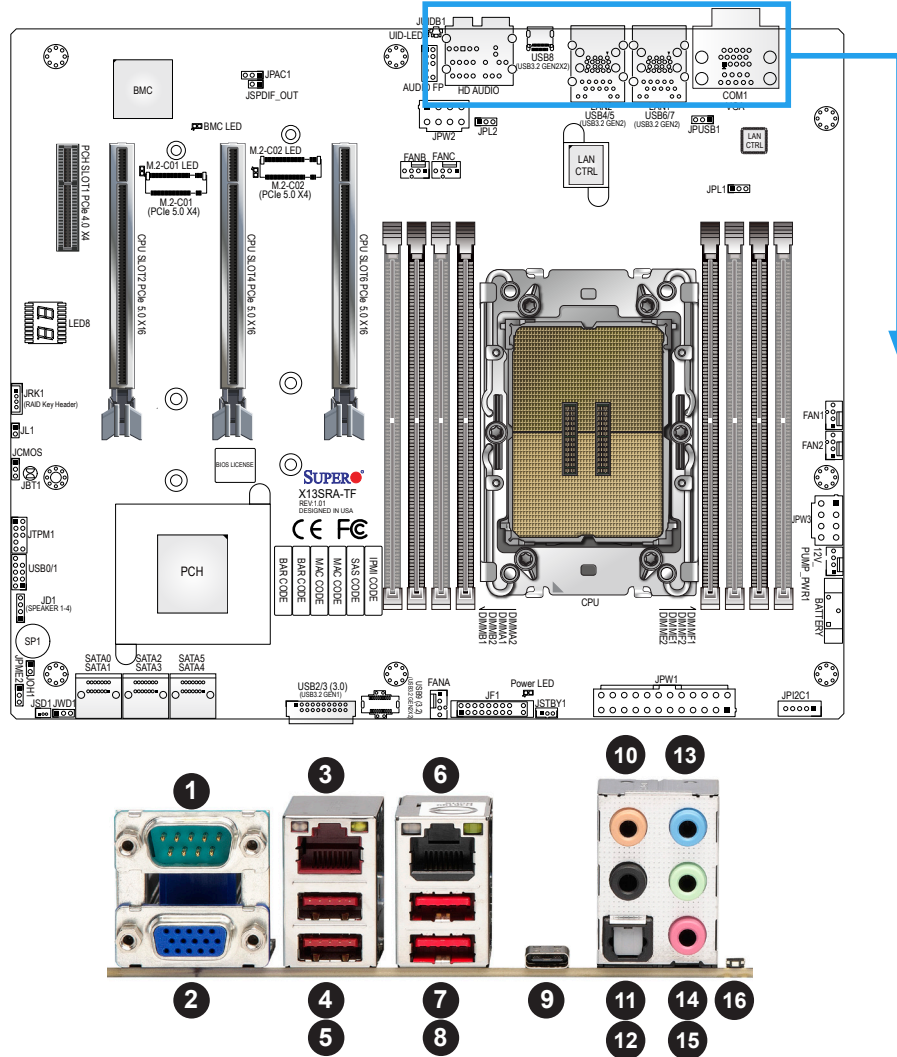
Figure 2-1. I/O Port Locations and Definitions

#	Description	#	Description	#	Description	#	Description
1	COM1 Port	6	LAN2 (10GbE)	11	Side Speaker Out	16	UID Switch / BMC Reset Button
2	VGA Port (IPMI only)	7	USB4 (3.2 Gen. 2)	12	S/PDIF Out		
3	LAN1 (1GbE)	8	USB5 (3.2 Gen. 2)	13	Line In / Rear Speaker Out		
4	USB6 (3.2 Gen. 2)	9	USB8 (3.2 Gen. 2x2)	14	Line Out / Front Speaker Out		
5	USB7 (3.2 Gen. 2)	10	Center / Subwoofer	15	Mic In		

Back Panel High Definition Audio (HD Audio)

This motherboard features a 7.1+2 Channel High Definition Audio (HDA) codec that provides 10 DAC channels. The HD Audio connections simultaneously support multiple-streaming 7.1 sound playback with 2 channels of independent stereo output through the front panel stereo out for front, rear, center, and subwoofer speakers. Use the Advanced software included in the CD-ROM with your motherboard to enable this function.

	Audio Configuration				
		2 Channel	**4 Channel**	**5.1 Channel**	**7.1 Channel**
1	Orange (Center / Subwoofer)			Center / Subwoofer	Center / Subwoofer
2	Black (Side Speaker Out)				Side Speaker Out
3	Light Blue (Line In / Rear Speaker Out)	Line In	Rear Speaker Out	Rear Speaker Out	Rear Speaker Out
4	Lime (Line Out / Front Speaker Out)	Line Out	Front Speaker Out	Front Speaker Out	Front Speaker Out
5	Pink (Mic In)	Mic In	Mic In	Mic In	Mic In

COM Port

One COM port (COM1) that supports serial link interface is located on the rear I/O panel. Refer to the layout below for the location of COM1.

VGA Connection (IPMI only)

One VGA port (VGA) is located on the rear I/O panel. The VGA connection provides analog interface support between the computer and the video displays. Refer to the layout below for the location of VGA port.

1. COM1

2. VGA
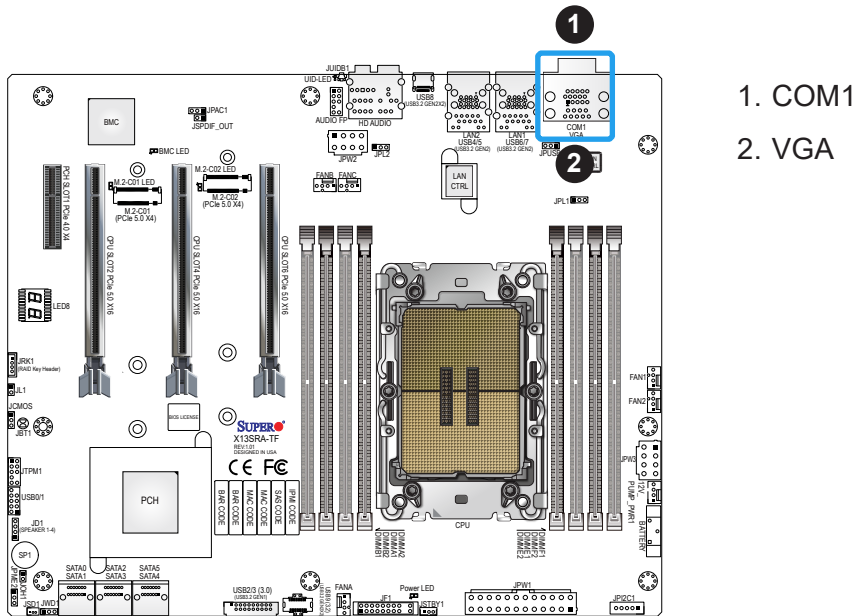
LAN Ports

Two LAN ports (LAN1 and LAN2) are located on the I/O back panel. LAN1 supports 1GbE LAN connection and shares with the IPMI port (via the Intel i210AT LAN controller). LAN2 supports 10GbE LAN connection (via the Aquantia AQC113 LAN controller). All of these LAN ports accept RJ45 cables. Please refer to the LED Indicator section (Section 2.10) for LAN LED information.
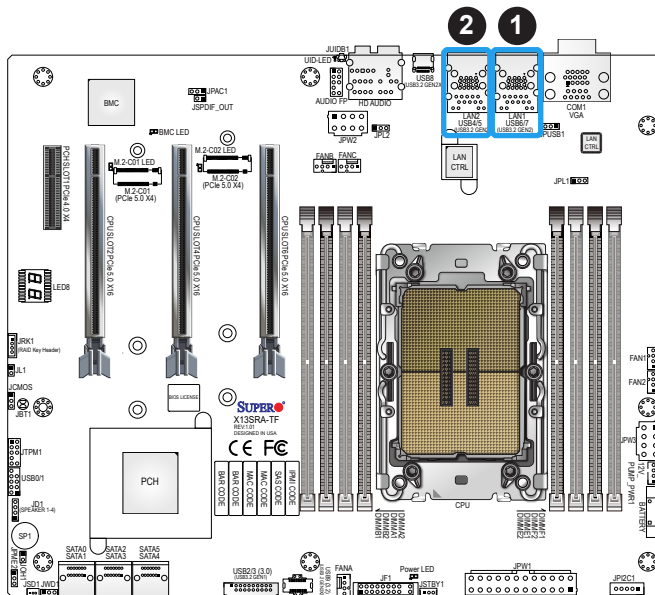
1. LAN1 (1GbE, shared IPMI port)

2. LAN2 (10GbE)

Universal Serial Bus (USB) Ports and Headers

The motherboard provides the following USB ports on the rear I/O panel:

* 4 x USB 3.2 Gen. 2 ports (USB4, USB5, USB6, USB7)

* 1 x USB 3.2 Gen. 2x2 port (USB8)

The motherboard also provides the following headers for front accessible USB connections with a cable (not provided):

* 1 x USB 2.0 header (USB0/1) for two Type-A connections

* 1 x USB 3.2 Gen. 1 header (USB2/3) for two Type-A connections

* 1 x USB 3.2 Gen. 2x2 header (USB9) for one Type-C connection
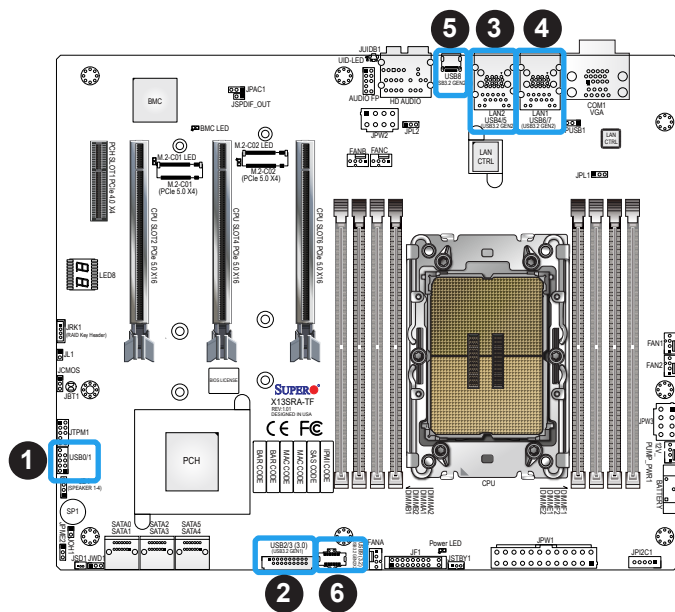
1. Front Access USB0/1

2. Front Access USB2/3

3. Rear I/O Panel USB4/5

4. Rear I/O Panel USB6/7

5. Rear I/O Panel USB8

6. Front Access USB9

UID (Unit Identifier)/BMC Reset Switch and UID/BMC Reset LED Indicators

A UID / BMC Reset switch (JUIDB1) is located on the rear side of the motherboard. This switch has dual functions. It can be used to identify a system unit that is in need of service, and it can also be used to reset the BMC settings.

When functioning as a BMC reset switch, JUIDB1 will trigger a cold reboot when you press and hold the switch for six seconds. It will also restore the BMC to the manufacturer's default when you press and hold the switch for 12 seconds.

When functioning as a UID LED switch, JUIDB1 will turn both rear UID LED (UID-LED) and front UID LED (Pin 7/Pin 8 of JF1) on and off when you press the switch on/off.

To achieve these dual purposes, the UID LED/BMC Reset switch works in conjunction with the BMC Heartbeat LED (BMC LED) and front/rear UID LEDs. Please note that UID can also be triggered via BMC on the motherboard. For more details on the UID LEDs and BMC LEDs, refer to the tables on next page. Also, refer to the BMC User's Guide posted on our website at https://www.supermicro.com for more information on BMC.

	1	2	
Power Button	○	○	Ground
Reset Button	○	○	Ground
3.3V	○	○	Power Fail (for LED6)
Red+ (Blue LED_Cathode_UID)	○	○	Blue+ (Red OH/Fan Fail/PWR Fail for LED5/Blue UID LED)
P3V3_STBY	○	○	NIC2 Active LED
P3V3_STBY	○	○	NIC1 Active LED
ID_UID/3.3V Stby	○	○	HDD LED
3.3V	○	○	FP PWR LED
Key	○	○	Key
NMI	○	○	Ground
	19	20	

1. UID Switch / BMC Reset (JUIDB1)

2. Rear UID LED (UID-LED)

3. Front UID LED

4. BMC Heartbeat LED (BMC LED)

(Continued to next page)

(Continued from previous page)

UID/BMC Reset Switch (JUIDB1)					
Features & Settings					
When Used as a UID LED Switch			**When Used as a BMC Reset Switch**		
Work w/Rear UID LED (UID-LED) & Front UID LED (JF1: Pins 7& 8)			**Work with BMC Heartbeat LED (LEDBMC)**		
Rear UID LED	UID-LED	Blue: Unit identified	BMC Heartbeat LED	LEDBMC	Green Blinking: BMC Normal
Front UID LED	Pins 7 & 8 (JF1)	Blue: Unit identified	BMC Reset: Press & hold the switch (JUIDB1) 6 seconds	LEDBMC: Solid green: during reboot	
Press the switch (JUIDB1) to turn on and off both rear and front UID LED indicators.				Triggering a cold reboot; LED: solid green on during cold reboot	
			BMC Reset: Press & hold the switch (JUIDB1) 12 seconds	LEDBMC: Solid green: during BMC reset	
				BMC: Reset to the manufacturer's default; LED solid on during BMC Reset	

UID/BMC Reset Switch (JUIDB1)	
Pin Definitions	
Pin#	**Definition**
1	Ground
2	Ground
3	Button In
4	Button In

	1	2	
Power Button	O	O	Ground
Reset Button	O	O	Ground
3.3V	O	O	Power Fail (for LED6)
Red+ (Blue LED_Cathode_UID)	O	O	Blue+ (Red OH/Fan Fail/PWR Fail for LED5/Blue UID LED)
P3V3_STBY	O	O	NIC2 Active LED
P3V3_STBY	O	O	NIC1 Active LED
ID_UID/3.3V Stby	O	O	HDD LED
3.3V	O	O	FP PWR LED
Key	O	O	Key
NMI	O	O	Ground
	19	20	

1. UID Switch / BMC Reset (JUIDB1)

2. Rear UID LED (UID-LED)

3. Front UID LED

4. BMC Heartbeat LED (BMC LED)

2.7 Front Control Panel

The front control panel header (JF1) 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 Supermicro chassis. Refer to the figure below for the descriptions of the front control panel buttons and LED indicators.

	1	2	
Power Button	○	○	Ground
Reset Button	○	○	Ground
3.3V	○	○	Power Fail (for LED6)
Red+ (Blue LED_Cathode_UID)	○	○	Blue+ (Red OH/Fan Fail/PWR Fail for LED5/Blue UID LED)
P3V3_STBY	○	○	NIC2 Active LED
P3V3_STBY	○	○	NIC1 Active LED
ID_UID/3.3V Stby	○	○	HDD LED
3.3V	○	○	FP PWR LED
Key	○	○	Key
NMI	○	○	Ground
	19	20	

Figure 2-2. JF1 Header Pins

Front Control Panel LEDs

	1	2	
Power Button	○	○	Ground
Reset Button	○	○	Ground
3.3V	○	○	Power Fail (for LED6)
Red+ (Blue LED_Cathode_UID)	○	○	Blue+ (Red OH/Fan Fail/PWR Fail for LED5/Blue UID LED)
P3V3_STBY	○	○	NIC2 Active LED
P3V3_STBY	○	○	NIC1 Active LED
ID_UID/3.3V Stby	○	○	HDD LED
3.3V	○	○	FP PWR LED
Key	○	○	Key
NMI	○	○	Ground
	19	20	

Front Control Panel (JF1) LED Indicators						
Event	Power (LED1)	HDD (LED2)	LAN (LED3/4)	UID (LED5)	Information (LED5)	Power Fail (LED6)
Power On	Solid On					
HDD Activity		Blinking				
NIC Activity			Blinking			
Overheat					Solid On	
Fan Fail					Blinking at 1Hz	
Power Fail					Blinking at 1/4Hz	Solid On
Local UID On				Solid On		
Remote UID On				Blinking 1Hz		
Checking	BMC/BIOS Blinking at 4HZ					
Recovering/Updating	BMC Blinking at 4HZ BMC 2 Blinks at 4Hz, 1 Pause at 2Hz (on-on-off-off)				BIOS/BMC Blinking at 10Hz	
Flash Not Detected or Golden Image Check Failed	BMC/BIOS Blinking at 1HZ					
CPLD Recovery Mode				Blinking at 10Hz (MB UID LED)	Blinking at 10Hz (FP Red LED)	

Power On & BMC/BIOS Status LED Button

The Power On and BMC/BIOS Status LED button is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system or display BMC/BIOS status. Refer to the tables below for more information.

Power Button & BIOS/BMC Status LED Indicator Pin Definitions (JF1)	
Pin#	**Definition**
1	Signal
2	Ground

Power Button Pin Definitions (Pin 1 & Pin 2 of JF1)	
Status	**Event**
Solid green	System power on
BMC/BIOS blinking green at 4Hz	BMC/BIOS checking
BIOS blinking green at 4Hz	BIOS recovery/update in progress
BMC blinking red x2 (2 blinks red) at 4Hz, 1 pause at 2Hz (on-on-off-off)	BMC recovery/update in progress
BMC/BIOS blinking green at 1Hz	Flash not detected or golden image checking failure

Reset Button

The Reset Button connection is located on pins 3 and 4 of JF1. Momentarily contacting both pins will reset the system. Refer to the table below for pin definitions.

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

	1	2	
① Power Button	○	○	Ground
② Reset Button	○	○	Ground
3.3V	○	○	Power Fail (for LED6)
Red+ (Blue LED_Cathode_UID)	○	○	Blue+ (Red OH/Fan Fail/PWR Fail for LED5/Blue UID LED)
P3V3_STBY	○	○	NIC2 Active LED
P3V3_STBY	○	○	NIC1 Active LED
ID_UID/3.3V Stby	○	○	HDD LED
3.3V	○	○	FP PWR LED
Key	○	○	Key
NMI	○	○	Ground
	19	20	

1. PWR Button

2. Reset Button

Power Fail LED

The Power Fail LED connection is located on pins 5 and 6 of JF1. When this LED turns solid red, it indicates a power failure. Refer to the table below for pin definitions.

Power Fail LED Pin Definitions (JF1)	
Pin#	Definition
5	3.3V
6	PWR Fail for LED6 (Solid red on: PWR failure)

Information LED (OH/Fan Fail/PWR Fail/UID LED)

The Information LED (OH/Fan Fail/PWR Fail/UID LED) connection is located on pins 7 and 8 of JF1. The LED on pin 7 is active when the UID button (JUIDB1) on the rear I/O panel is pressed. The LED on pin 8 provides warnings of overheat, power failure, or fan failure. Refer to the table below for more information.

Information LED-Blue+ (OH/Fan Fail/PWR Fail LED for LED5/blue UID LED) Pin Definitions (Pin 7 & Pin 8 of JF1)	
Status	Description
Solid red (on)	An overheat condition has occurred.
Blinking red at 1Hz	Fan failure: check for an inoperative fan.
Blinking red at 1/4Hz	Power failure: check for a non-operational power supply
Blinking red at 10Hz (FP red LED)	CPLD recovery mode error(s)
Solid blue	Local UID is activated. Use this function to locate a unit in a rack mount environment that might be in need of service.
Blinking blue at 1Hz	Remote UID is on. Use this function to identify a unit from a remote location that might be in need of service.
BIOS/BMC blinking blue at 10Hz	BIOS/BMC: recovery and/or update in progress
Red Info LED blinking at 10Hz and MB UID LED blue blinking at 10Hz	CPLD: recovery and/or update in progress

1. Power Fail LED
2. Information LED
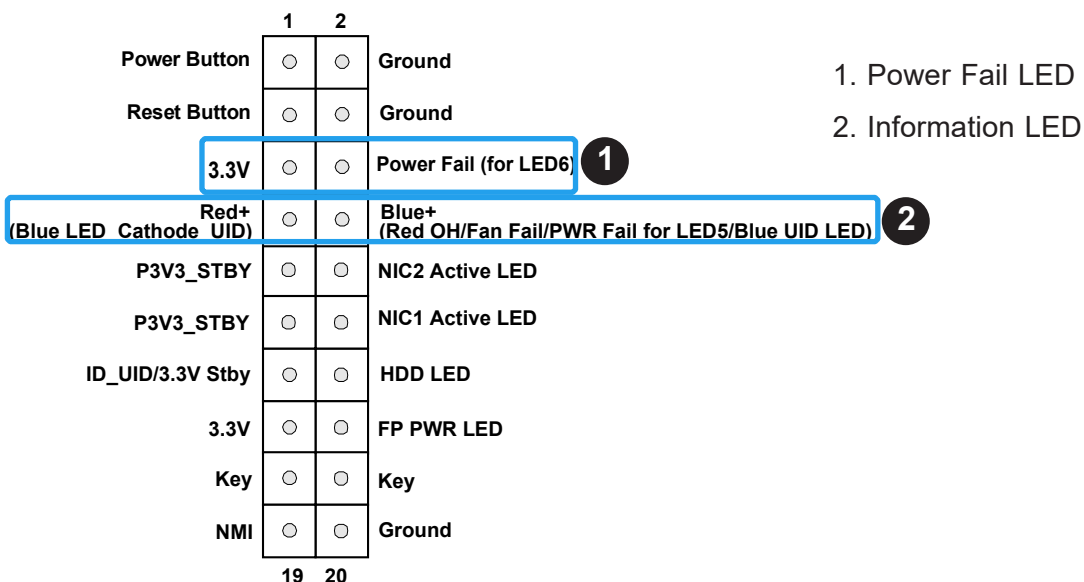
NIC1/NIC2 (LAN1/LAN2)

The Network Interface Controller (NIC) LED connection for LAN port 1 is located on pins 11 and 12 of JF1, and LAN port 2 is on pins 9 and 10. Attach the NIC LED cables here to display network activity. Refer to the table below for pin definitions.

LAN1/LAN2 LED Pin Definitions (JF1)	
Pin#	Definition
10	NIC 2 Activity LED
12	NIC 1 Activity LED

ID_UID Switch/HDD LED

The UID Switch/HDD LED connection is located on pins 13 and 14 of JF1. The UID switch is used for a chassis that supports a front UID switch. The front UID switch functions in the same way as the rear UID switch; both are for input only and cannot be used for output.

When this LED is blinking green, it indicates HDD is active. Attach a cable to pins 13 and 14 to show ID_UID status and hard drive activity. Refer to the tables below for pin definitions.

ID_UID/HDD LED Pin Definitions (JF1)	
Pins	Definition
13	ID_UID/3.3V Stdby
14	HDD Activity

ID_UID/HDD LED Pin Definitions (JF1)	
Color	State
Blinking Green	HDD Active

	1	2	
Power Button	○	○	Ground
Reset Button	○	○	Ground
3.3V	○	○	Power Fail (for LED6)
Red+ (Blue LED_Cathode_UID)	○	○	Blue+ (Red OH/Fan Fail/PWR Fail for LED5/Blue UID LED)
P3V3_STBY	○	○	NIC2 Active LED ❶
P3V3_STBY	○	○	NIC1 Active LED ❷
ID_UID/3.3V Stby	○	○	HDD LED ❸
3.3V	○	○	FP PWR LED
Key	○	○	Key
NMI	○	○	Ground
	19	20	

1. NIC2 (LAN 2) LED
2. NIC1 (LAN 1) LED
3. ID_UID/HDD LED
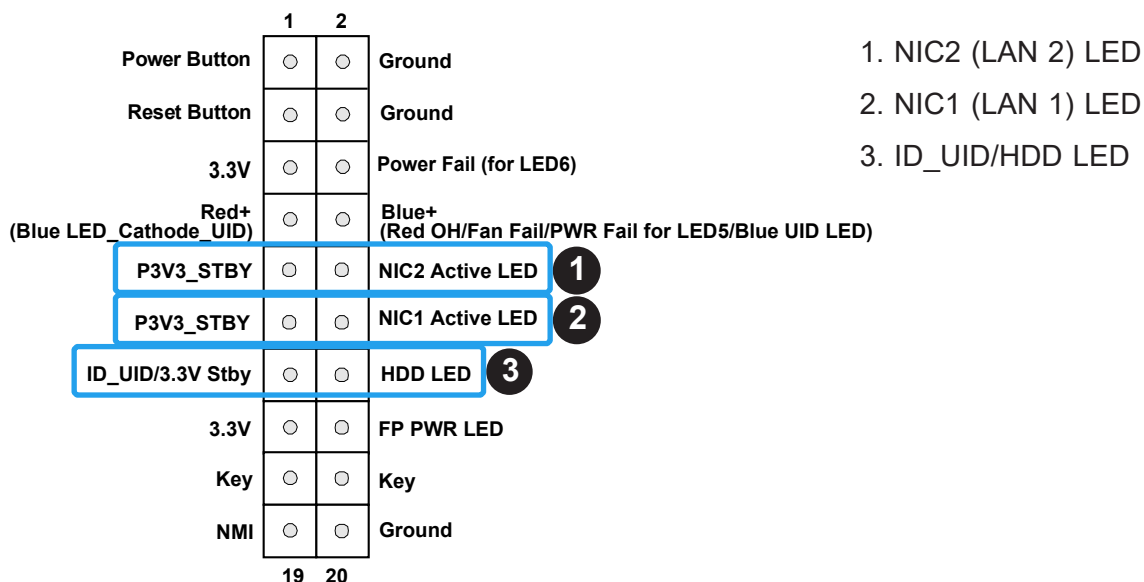
FP Power LED

The Front Panel Power LED connection is located on pins 15 and 16 of JF1. Refer to the table below for pin definitions.

FP Power LED Pin Definitions (JF1)	
Pins	**Definition**
15	3.3V
16	FP PWR LED

NMI Button

The non-maskable interrupt (NMI) button header is located on pins 19 and 20 of JF1. Refer to the table below for pin definitions.

NMI Button Pin Definitions (JF1)	
Pins	**Definition**
19	NMI
20	Ground

	1	2	
Power Button	○	○	Ground
Reset Button	○	○	Ground
3.3V	○	○	Power Fail (for LED6)
Red+ (Blue LED_Cathode_UID)	○	○	Blue+ (Red OH/Fan Fail/PWR Fail for LED5/Blue UID LED)
P3V3_STBY	○	○	NIC2 Active LED
P3V3_STBY	○	○	NIC1 Active LED
ID_UID/3.3V Stby	○	○	HDD LED
3.3V	○	○	FP PWR LED
Key	○	○	Key
NMI	○	○	Ground
	19	20	

1. FP PWR LED

2. NMI
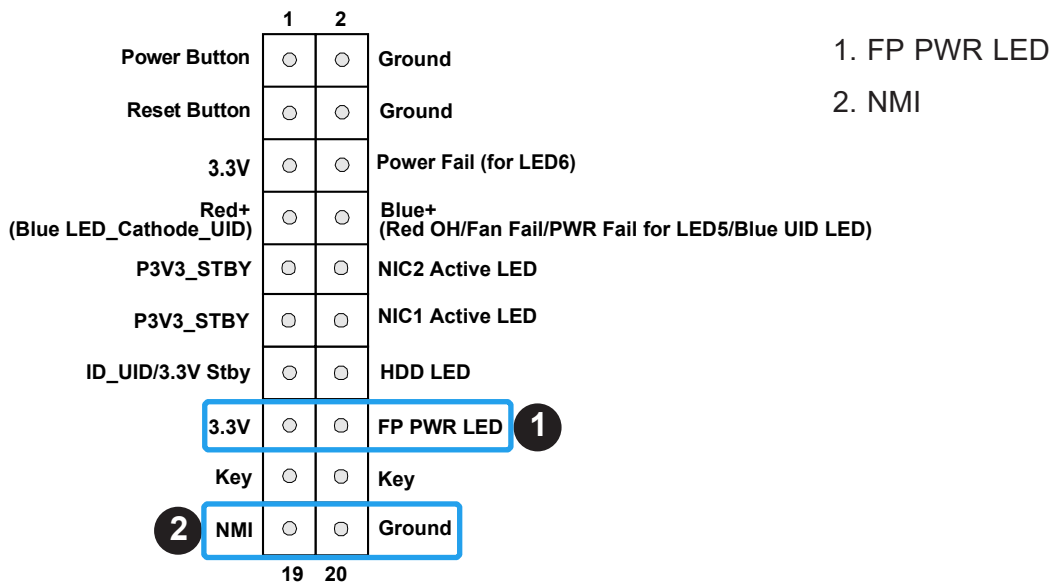
2.8 Connectors

Power Connections

ATX Power Supply Connector

The 24-pin power supply connector (JPW1) meets the ATX SSI EPS 12V specification. If required, you also need to connect the 8-pin 12V DC power connectors (JPW2 and JPW3) to the power supply to provide adequate power to your system.

ATX Power 24-pin Connector Pin Definitions (Required Connection)			
Pin#	Definition	Pin#	Definition
13	+3.3V	1	+3.3V
14	NC	2	+3.3V
15	Ground	3	Ground
16	PS_ON	4	+5V
17	Ground	5	Ground
18	Ground	6	+5V
19	Ground	7	Ground
20	Res (NC)	8	PWR_OK
21	+5V	9	5VSB
22	+5V	10	+12V
23	+5V	11	+12V
24	Ground	12	+3.3V

12V 8-pin Power Pin Definitions (Required Connection)	
Pin#	Definition
1 - 4	Ground
5 - 8	+12V
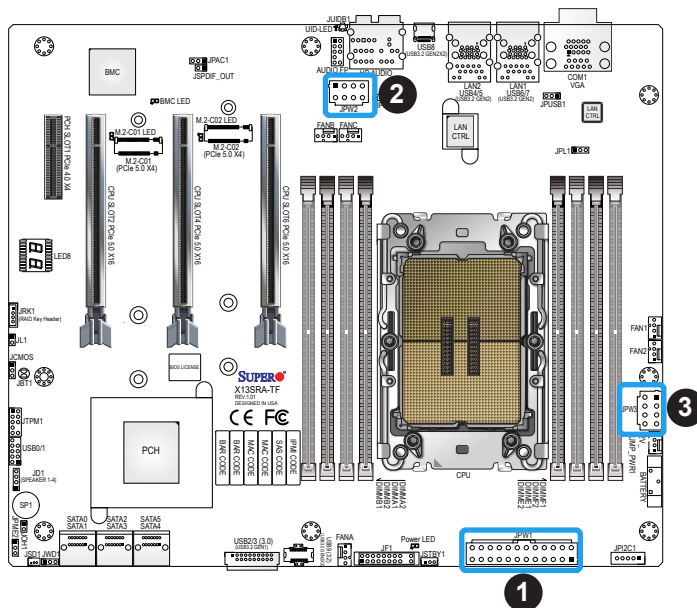
1. JPW1: 24-pin ATX PWR

2. JPW2: 8-pin PWR

3. JPW3: 8-pin PWR

(Continued to next page)

(Continued from previous page)

Important: To provide adequate power supply to the motherboard, be sure to connect the 24-pin ATX PWR and the required 8-pin PWR connectors to the power supply. Failure to do so may void the manufacturer warranty on your power supply and motherboard.

When installing multiple GPU cards, it is recommended that you connect the power supplies to the 24-pin ATX power connector and both 8-pin power connectors (JPW2 and JPW3) to the power supply.

GPU Cards and the Required Connectors				
Type of GPU	Number of GPU Cards	JPW1	JPW2	JPW3
Single-Width	GPU X 1	V	V	V
	GPU X 2	V	V	V
	GPU X 3	V	V	V
Double-Width	GPU X 1	V	V	V
	GPU X 2	V	V	V
Triple-Width	GPU X 1	V	V	V
	GPU X 2	V	V	V

Note 1 : When using heavy loading devices, it is strongly recommended that you connect the power supplies to the 24-pin ATX power connector and both 8-pin power connectors.

Note 2: To use the CPU overclocking feature, be sure to connect the power supplies to the 24-pin ATX power connector and both 8-pin power connectors.

Note 3: To avoid possible system overheating, be sure to provide adequate airflow to your system.

Headers

Fan Headers

There are five 4-pin fan headers (FAN1 – 2, FANA – C) on the motherboard. All these 4-pin fan headers are backwards compatible with the traditional 3-pin fans. However, fan speed control is available for 4-pin fans only by Thermal Management via the IPMI 2.0 interface. Refer to the table below for pin definitions.

Fan Header Pin Definitions	
Pin#	Definition
1	Ground
2	2.5A/+12V
3	Tachometer
4	PWM_Control

Pump Power Header

The motherboard has one +12V 4-pin header for optional CPU liquid cooling systems. When using a liquid cooling system, attach the pump power cable to the 12V_PUMP_PWR1 header.

Pump Power Header Pin Definitions	
Pin#	Definition
1	Ground (Black)
2	2A/+12V (Red)
3	N/A
4	N/A
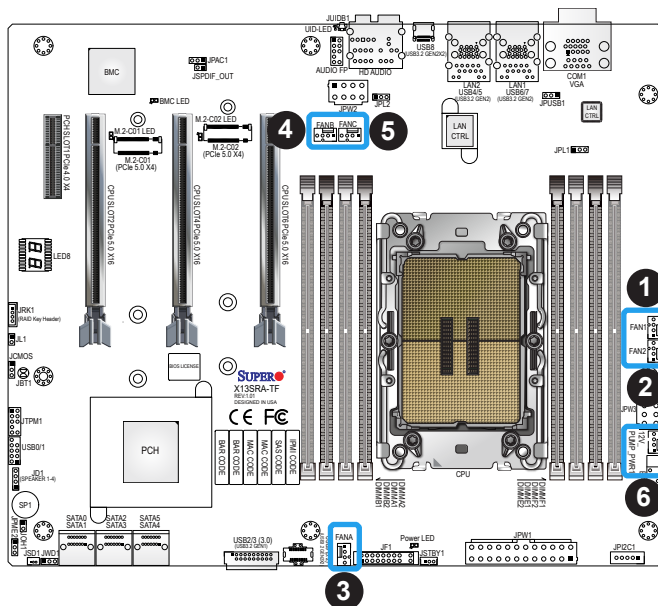
1. FAN1 (CPU Fan Header)

2. FAN2 (CPU Fan Header)

3. FANA (System Fan Header)

4. FANB (System Fan Header)

5. FANC (System Fan Header)

6. 12V_PUMP_PWR1 (Pump Power Header)

Front Panel Audio Header

A 10-pin audio header (AUDIO FP) located on the motherboard allows you to use the onboard sound chip (ALC888S) for audio function. Connect an audio cable to this header to use this feature. Refer to the table below for pin definitions

HD Front Panel Audio Pin Definitions			
Pin#	Definition	Pin#	Definition
1	Microphone_Left	2	Audio_Ground
3	Microphone_Right	4	Audio_Detect
5	Line_2_Right	6	Ground
7	Jack_Detect	8	Key
9	Line_2_Left	10	Ground

JSPDIF_OUT Header

The SPDIF OUT (JSPDIF_OUT) is used for digital audio output. You will also need the appropriate cable to use these features.

SPDIF OUT Pin Definitions	
Pin#	Definition
1	S/PDIF_OUT
2	Ground
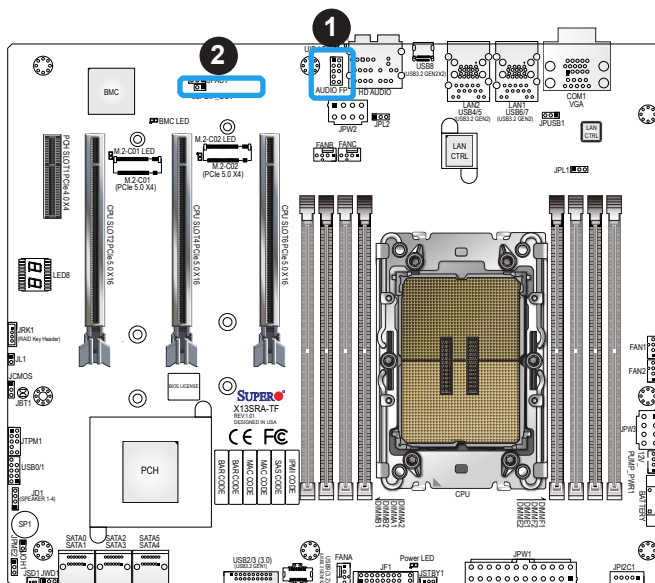
1. Front Panel Audio Header (AUDIO FP)

2. SPDIF OUT (JSPDIF_OUT)

Speaker/Buzzer Header

On the JD1 header, pins 1-4 are for the speaker and pins 3-4 are for the buzzer. If you wish to use an external speaker, connect its cable to pins 1-4.

Speaker Connector Pin Definitions	
Pin#	Signal
1-4	Speaker
3-4	Buzzer (Default)

Internal Speaker/Buzzer

The Internal Speaker/Buzzer (SP1) is used to provide audible indications for various beep codes. Refer to the table below for pin definitions.

Internal Buzzer Pin Definitions		
Pin#	Definition	
1	Pos (+)	Beep In
2	Neg (-)	Alarm Speaker
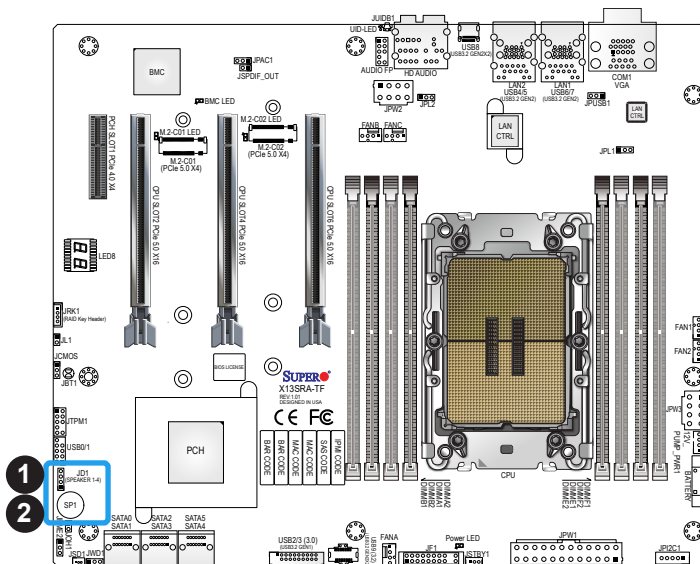
1. Speaker Conntector (JD1)

2. Internal Speaker/Buzzer (SP1)

TPM/Port 80 Header

The JTPM1 header is used to connect a Trusted Platform Module (TPM)/Port 80, which is available from Supermicro (optional). A TPM/Port 80 header is a security device that supports encryption and authentication in hard drives. It allows the motherboard to deny access if the TPM associated with the hard drive is not installed in the system. Refer to the layout below for the location of the TPM header. Please go to the following link for more information on the TPM: https://www.supermicro.com/manuals/other/AOM-TPM-9670V_9670H.pdf.

The motherboard supports two types of TPM: hardware-based discrete TPM (dTPM) and firmware-based TPM, the Intel Platform Trust Technology (PTT). By default, dTPM is the selected setting. To change the setting, please enter the BIOS Setup utility. Select Advanced -> PCH-FW Configuration -> PTT Configuration and set the TPM Device Selection feature to PTT. Refer to Chapter 4 for more information on TPM configurations.

> **Note:** If PCH SLOT1 is to be installed with a 3/4-length PCIe card and/or CPU SLOT2 with a double-width 3/4-length PCIe card, the TPM module for JTPM1 should be a horizontal one to prevent mechanical conflict.

Trusted Platform Module Header Pin Definitions			
Pin#	Definition	Pin#	Definition
1	+3.3V	2	SPI_CS#
3	RESET#	4	SPI_MISO
5	SPI_CLK	6	GND
7	SPI_MOSI	8	NC
9	+3.3V Stdby	10	SPI_IRQ#
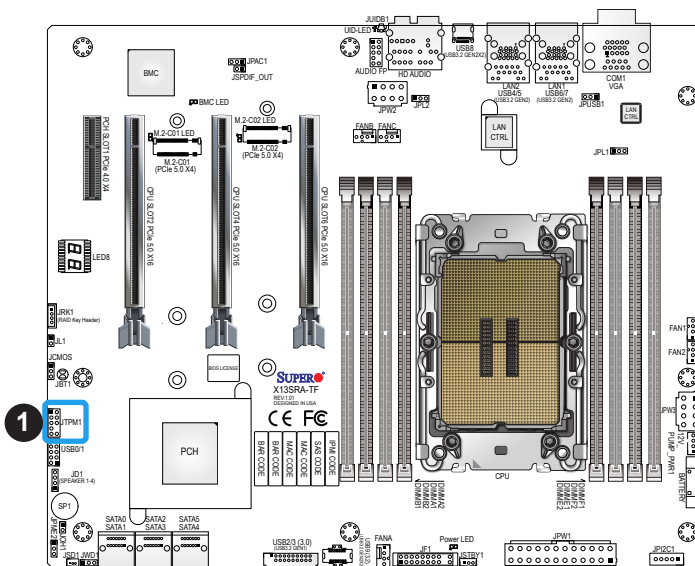
1. TPM/Port 80 Header (JTPM1)

VROC RAID Key Header

A VROC RAID Key header is located at JRK1 on the motherboard. Install a VROC RAID Key on JRK1 for NVMe RAID support as shown in the illustration below. Refer to the layout below for the location of JRK1.

Note: For detailed instructions on how to configure VROC RAID settings, please refer to the VROC RAID Configuration User's Guide posted on the web page under the link: https://www.supermicro.com/support/manuals/.

Intel VROC Key Pin Definitions	
Pin#	Definition
1	Ground
2	3.3V Standby
3	Ground
4	PCH RAID Key

VROC Key

VROC Key Header (JRK1)
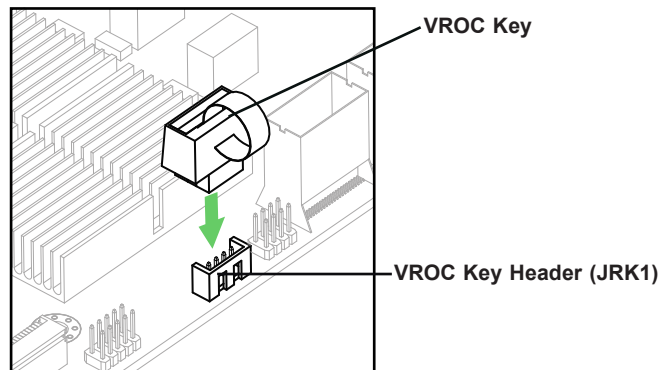
Note: The graphics contained in this user's manual are for illustration only. The components installed in your system may or may not look exactly the same as the graphics shown in the manual.
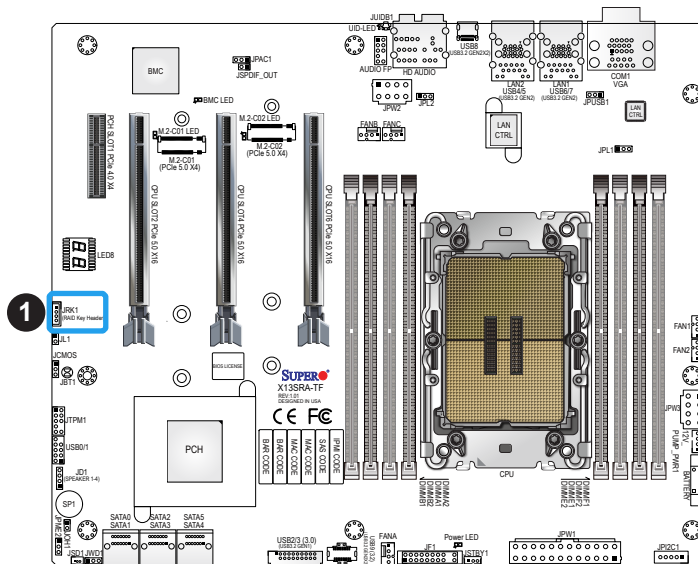
1. VROC RAID Key Header (JRK1)

Standby Power

The Standby Power header is located at JSTBY1 on the motherboard. You must have a card with a Standby Power connector and a cable to use this feature. Refer to the table below for pin definitions.

Standby Power Pin Definitions	
Pin#	Definition
1	+5V Standby
2	Ground
3	No Connection

Disk-On-Module Power Connector

The Disk-On-Module (DOM) power connector at JSD1 provides 5V power to a solid-state DOM storage devices connected to one of the SATA ports. Refer to the table below for pin definitions.

DOM Power Pin Definitions	
Pin#	Definition
1	5V
2	Ground
3	Ground
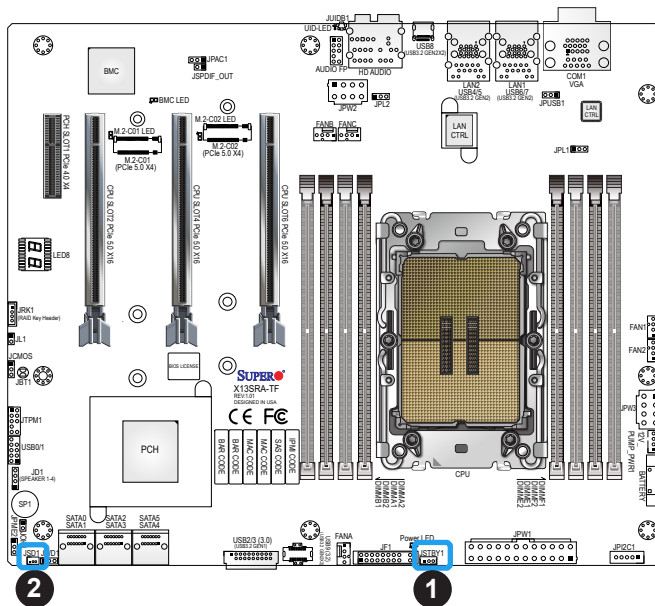
1. Standby Power Header (JSTBY1)

2. Disk-On-Module (DOM) Power Connector (JSD1)

Chassis Intrusion

A Chassis Intrusion header is located at JL1 on the motherboard. Attach the appropriate cable from the chassis to inform you when the chassis is opened. Refer to the table below for pin definitions.

Chassis Intrusion Pin Definitions	
Pin#	Definition
1	Intrusion Input
2	Ground

Power SMB (I²C) Header

The Power System Management Bus (I²C) connector (JPI2C1) monitors the power supply, fan, and system temperatures. Refer to the table below for pin definitions.

Power SMB Header Pin Definitions	
Pin#	Definition
1	Clock
2	Data
3	PMBUS_Alert
4	Ground
5	+3.3V
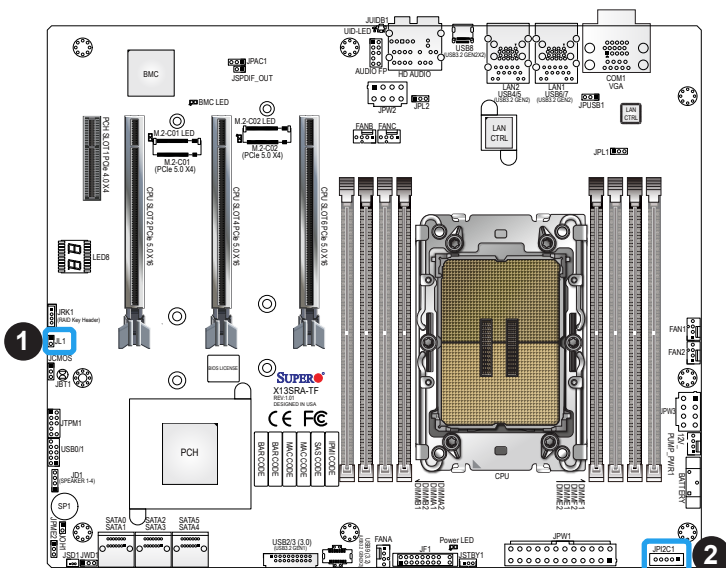
1. Chassis Intrusion Header (JL1)

2. Power SMB Header (JPI2C1)

PCIe 5.0 x4 M.2 Sockets

The motherboard has two PCIe 5.0 x4 M.2 sockets (M.2-C01 and M.2-C02). M.2 allows for a variety of card sizes, increased functionality, and spatial efficiency. The M.2 sockets on the motherboard support NVMe SSDs in the 2280 and 22110 form factors and RAID 0 and 1.
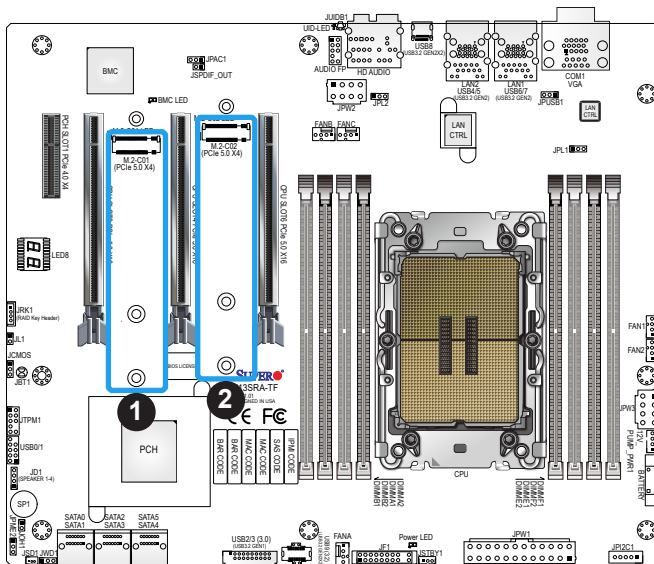
1. M.2 Socket (M.2-C01)

2. M.2 Socket (M.2-C02)

Overheat/Fan Fail LED Header

Header JOH1 is used to connect to an LED indicator to provide warnings of chassis overheating and fan failure. This LED will blink when a fan failure occurs. Refer to the tables below for pin definitions.

Overheat LED Header Status	
State	Definition
Solid	Overheat
Blinking	Fan Fail

Overheat LED Header Pin Definitions	
Pin#	Signal
1	Pull high to +3.3V power through 330-ohm resistor
2	OH Active
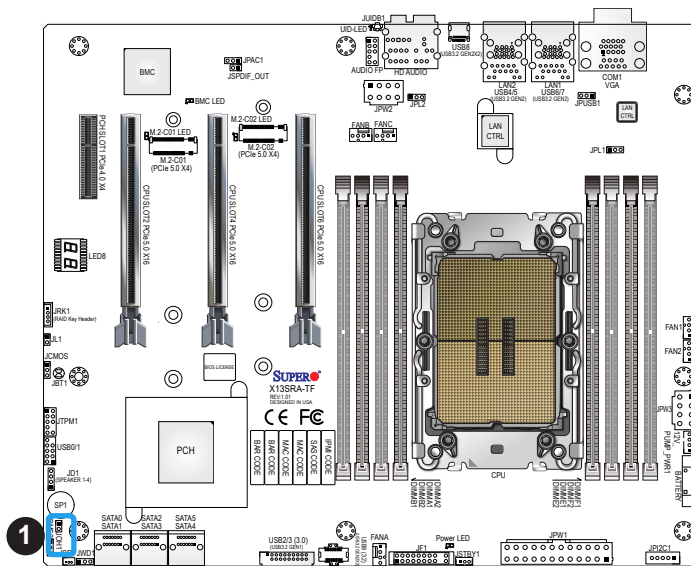
1. Overheat/Fan Fail LED Header (JOH1)

SATA Ports

Six SATA 3.0 ports (SATA0 – SATA5) are located on the motherboard, which are supported by the W790 chipset. These SATA ports support RAID 0, 1, 5, and 10.

1. SATA0/SATA1

2. SATA2/SATA3

3. SATA5/SATA4
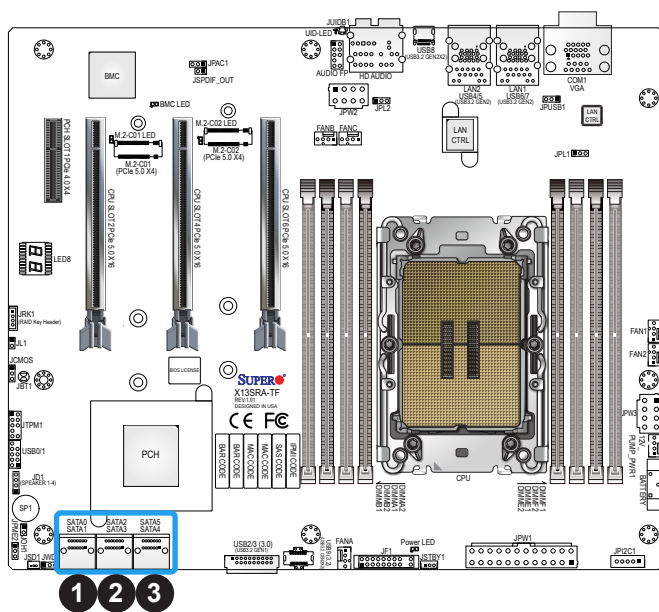
2.9 Jumper Settings

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

Note 2: Unplug the power cord from all power supplies before adjusting jumper settings.
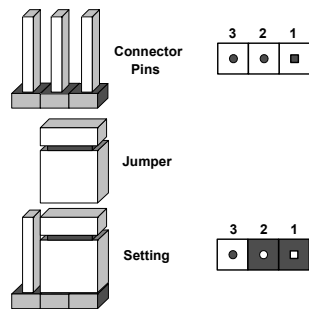
CMOS Clear

JBT1 and JCMOS are used to clear CMOS, which will also clear any passwords. Instead of pins, the JBT1 jumper consists of contact pads to prevent accidentally clearing the contents of CMOS.

To Clear CMOS

1. First power down the system and unplug the power cord(s).

2. Remove the cover of the chassis to access the motherboard and remove the battery from the motherboard.

3. To clear CMOS via JBT1: short the CMOS pads with a metal object such as a small screwdriver for at least four seconds. Then remove the screwdriver (or shorting device). To clear CMOS via JCMOS: close pins 2 and 3 of JCMOS. Then remove the jumper.

4. Replace the cover, reconnect the power cord(s), and power on the system.

   Note: Clearing CMOS will also clear all passwords.

JBT1 contact pads

JCMOS	
Jumper Settings	
Jumper Setting	**Definition**
Pins 1-2	Normal (Default)
Pins 2-3	CMOS Clear
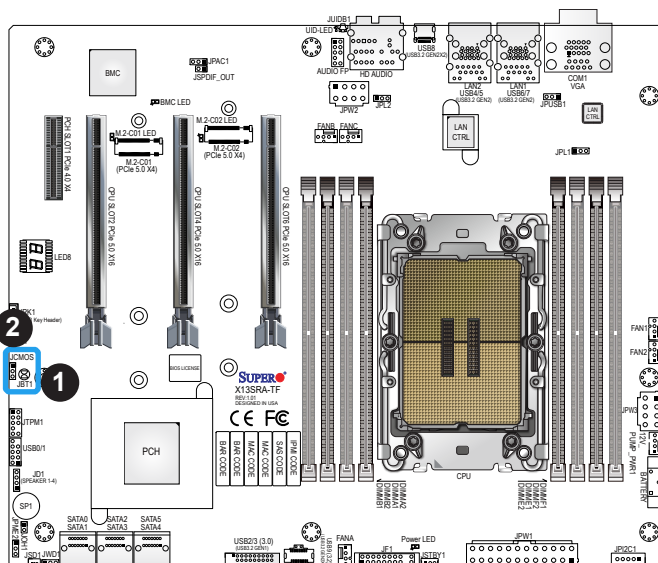
1. JBT1
2. JCMOS

LAN Port Enable/Disable

JPL1 and JPL2 allow you to enable the onboard LAN ports (LAN1 and LAN2). The default setting is pins 1-2 to enable the connections. Refer to the table below for jumper settings.

LAN Enable/Disable Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Enable
Pins 2-3	Disable

ME Manufacturing Mode

JPME2 is used for ME Firmware Recovery mode, which will limit system resource for essential function use only without putting restrictions on power use. In the single operation mode, online upgrade will be available via Recovery mode. Refer to the table below for jumper settings.

ME Recovery Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Normal (Default)
Pins 2-3	ME Manufacturing Mode
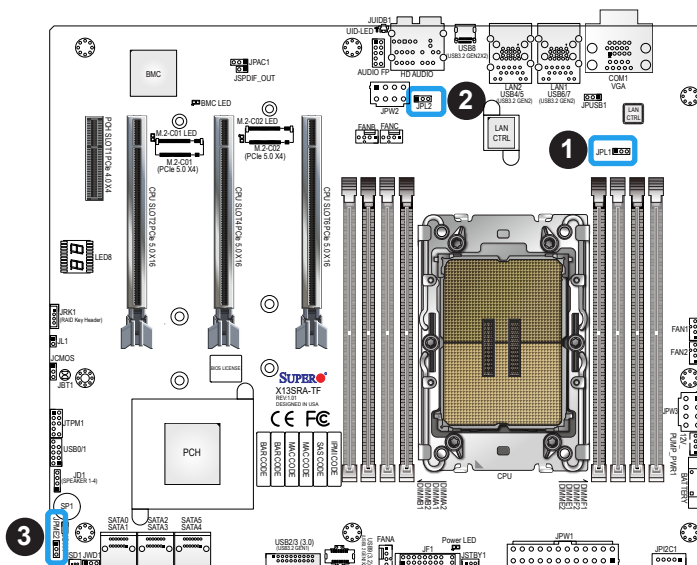
1. LAN1 Enable/Disable (JPL1)
2. LAN2 Enable/Disable (JPL2)
3. ME Manufacturing Mode (JPME2)

HD Audio Enable

JPAC1 allows you to enable or disable the onboard high definition audio support. The default position is on pins 1-2 to enable onboard audio connections. Refer to the table below for jumper settings.

Audio Enable/Disable Jumper Settings	
Jumper Setting	**Definition**
Pins 1-2	Enabled (Default)
Pins 2-3	Disabled
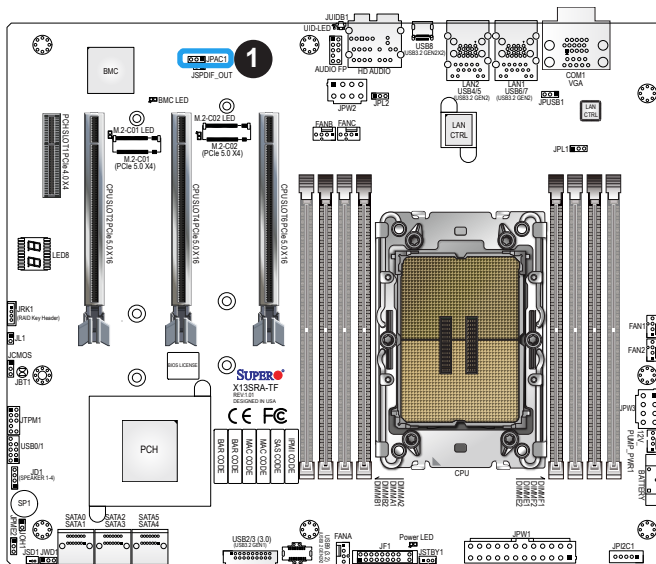
1. HD Audio Enable/Disable (JPAC1)

Watchdog

Watchdog (JWD1) is a system monitor that can reboot the system when a software application hangs. Close pins 1-2 to reset the system if an application hangs. Close pins 2-3 to generate a non-maskable interrupt (NMI) signal for the application that hangs. Refer to the table below for jumper settings. For this function to work properly, please also enable the Watchdog setting in the BIOS.

Watchdog Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Reset
Pins 2-3	NMI
Open	Disabled

USB6/7 Standby Power

JPUSB1 allows you to enable or disable the USB6/7 power in S5 standby mode. The default is on pins 1-2 to enable USB6/7 power in S5 standby mode. Refer to the table below for jumper settings.

USB6/7 Standy Power Enable/Disable Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Enabled (Default)
Pins 2-3	Disable
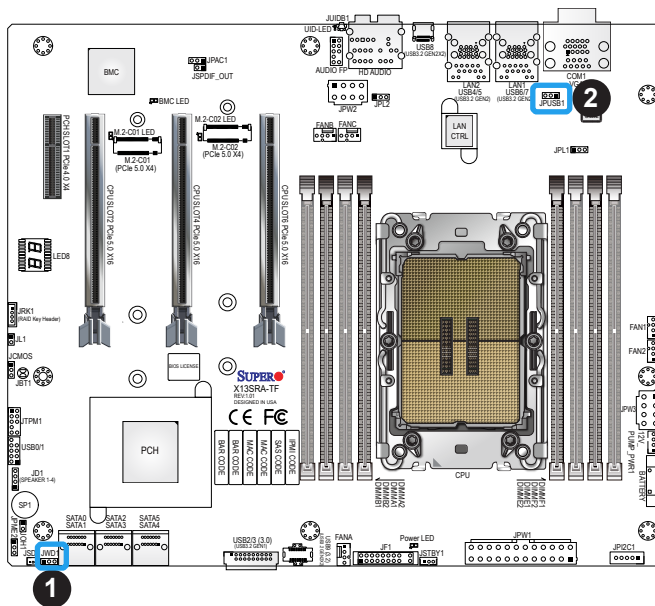
1. Watchdog (JWD1)
2. USB6/7 Standby Power (JPUSB1)

2.10 LED Indicators

LAN1/LAN2 LEDs

The LED on the left indicates the speed of the connection, and the LED on the right indicates activity. Refer to the tables below for more information.

Link LED **Activity LED**

LAN1/2 Link LED (Left)	
LED State	
LED Color	**Definition**
Green	10Gbps
Yellow/Amber	1Gbps

LAN1/2 Activity LED (Right)		
LED State		
Color	**Status**	**Definition**
Green	Flashing	Active
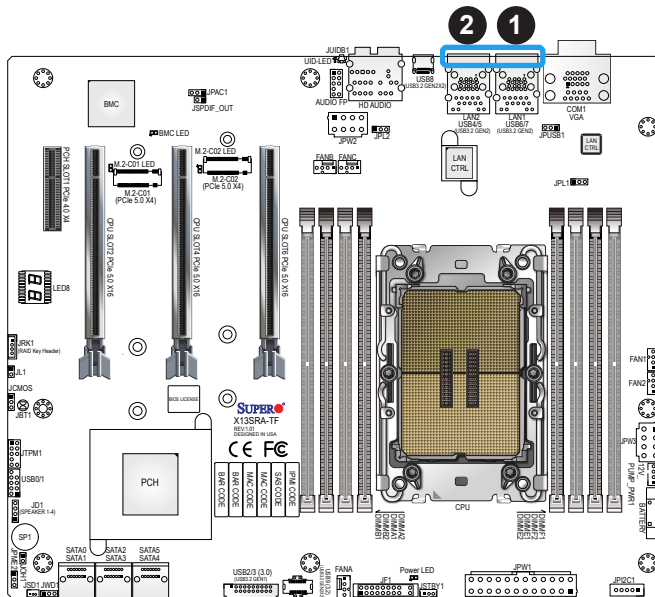
1. LAN1 LEDs (Shared IPMI port)

2. LAN2 LEDs

Onboard Power LED

The Onboard Power LED is located at Power LED on the 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 any component. Refer to the table below for more information.

Onboard Power LED Indicator	
LED Color	Definition
Off	System Off (power cable not connected)
Green	System On

M.2 LEDs

Two M.2 LEDs are located at M.2-C01 LED and M.2-C02 LED on the motherboard. When the M.2 LED is blinking, M.2 functions normally. Refer to the table below for more information.

M.2 LED State	
LED Color	Definition
Green: Blinking	Device Working
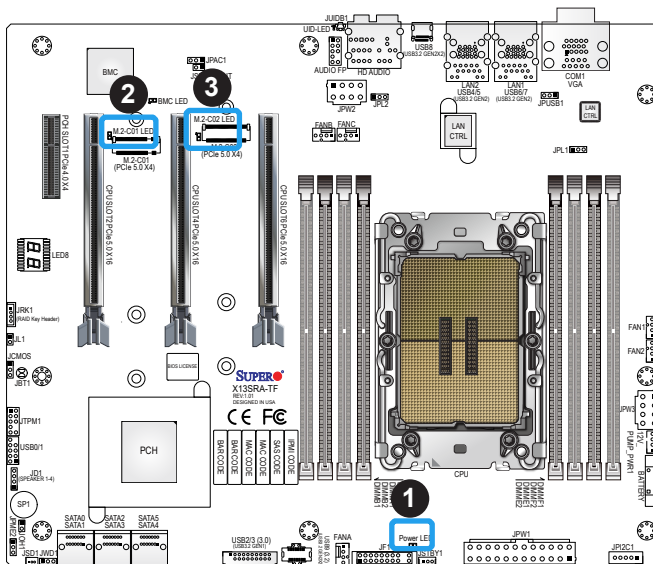
1. Power LED
2. M.2-C01 LED
3. M.2-C02 LED

Status Code LED

LED8 is an alphanumeric display with two LED digits to provide the status or POST code, when the motherboard is powered on. Please download the following AMI publication for a complete list of POST codes: https://www.supermicro.com/manuals/other/AMI_AptioV_BIOS_POST_Codes_for_SM_Motherboards.pdf
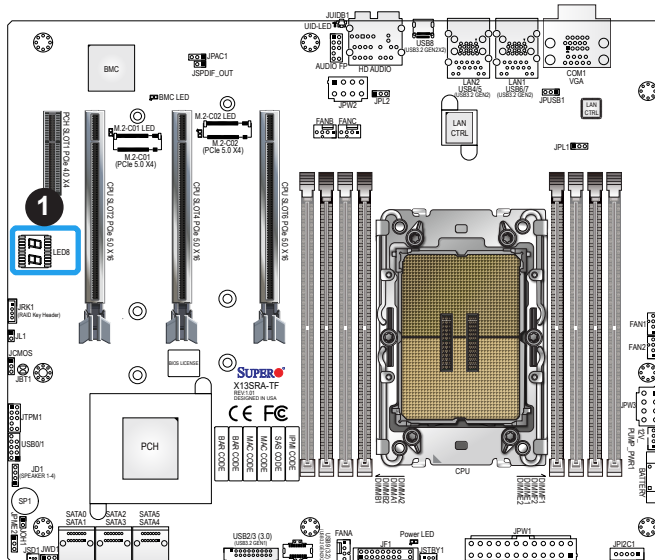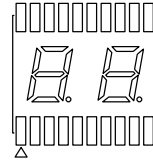
1. LED8

Chapter 3

Troubleshooting

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' and/ or 'Returning Merchandise for Service' section(s) in this chapter. <u>Always disconnect the AC power cord before adding, changing or installing any non hot-swap hardware components</u>.

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. Install the CPU (making sure it is fully seated) and connect the front panel connectors to the motherboard.

No Power

1. Make sure that there are no short circuits between the motherboard and the chassis.

2. Make sure that the ATX power connectors are properly connected.

3. Check that the 115V/230V 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. The battery on your motherboard may be old. Check to verify that it still supplies approximately 3VDC. If it does not, replace it with a new one.

No Video

1. If the power is on, but you do not have video, remove all add-on cards and cables.

2. Remove all memory modules and turn on the system (if the alarm is on, check the specs of memory modules, reset the memory, or try a different one).

System Boot Failure

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

1. Check for any error beep from the motherboard speaker.

- If there is no error beep, try to turn on the system without DIMM modules installed. If there is still no error beep, replace the motherboard.

- If there are error beeps, clear the CMOS settings by unplugging the power cord and contacting both pads on the CMOS clear jumper (JBT1). Refer to Section 2.9.

2. Remove all components from the motherboard, especially the DIMM modules. Make sure that system power is on and that memory error beeps are activated.

3. Turn on the system with only one DIMM module installed. If the system boots, check for bad DIMM modules or slots by following the Memory Errors Troubleshooting procedure in this chapter.

Memory Errors

When a no-memory beep code is issued by the system, check the following:

1. Make sure that the memory modules are compatible with the system and are properly installed. See Chapter 2 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 memory type and speed for all DIMM modules in the system.

3. Make sure that you are using the correct type of ECC DDR4 modules recommended by the manufacturer.

4. Check for bad DIMM modules or slots by swapping a single module among all memory slots and check the results.

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 Chapter 1 for details on recommended power supplies.

2. The battery on your motherboard may be old. Check to verify that it still supplies approximately 3VDC. 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. CPU/BIOS support: Make sure that your CPU is supported and that you have the latest BIOS installed in your system.

2. Memory support: Make sure that the memory modules are supported by testing 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. HDD support: Make sure that all hard disk drives (HDDs) work properly. Replace the bad HDDs with good ones.

4. System cooling: Check the system cooling to make sure that all heatsink fans and CPU/ system fans, etc., work properly. Check the hardware monitoring settings in the IPMI to make sure that the CPU 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. Please 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 USB flash or media drives.

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 CPU and a memory module installed) to identify the trouble areas. Refer to the steps listed in Section A above 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, please take the following steps. Also, please 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. Please go through the Troubleshooting Procedures and Frequently Asked Questions (FAQ) sections in this chapter 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/ResourceApps/BIOS_IPMI_Intel.html).

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. For immediate assistance, please have your account number ready when placing a call to our Technical Support department. We can be reached by email at support@supermicro.com.

5. For worldwide services and support, please visit our website at Worldwide Services & Support | Supermicro.

3.3 Frequently Asked Questions

Question: What type of memory does my motherboard support?

Answer: The motherboard supports up to 512GB of ECC RDIMM and 2TB of 3DS RDIMM with speeds of up to 4800MT/s (1DPC) and 4400MT/s (2DPC) in eight ECC DDR5 (288-pin) SMD DIMM slots. To enhance memory performance, do not mix memory modules of different speeds and sizes. Please follow all memory installation instructions given on Section 2.4.

Question: How do I update my BIOS?

Answer: 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/ResourceApps/BIOS_IPMI_Intel.html. Please 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.

> **Note:** The SPI BIOS chip used on this motherboard cannot be removed. Send your motherboard back to our RMA Department at Supermicro for repair. For BIOS Recovery instructions, please refer to the AMI BIOS Recovery Instructions posted at https://www.supermicro.com/support/manuals/.

To update your BIOS under UEFI Shell

> **Note:** We do not recommend that you update your BIOS if you are not experiencing a BIOS-related problem. If you need to update your BIOS, please follow the steps below to properly update your BIOS under UEFI Shell.

1. Download and save the BIOS update package to your computer.

2. Extract the BIOS package to a USB flash drive.

> **Note:** The USB flash drive doesn't have to be bootable; however, it has to be formatted to FAT16/FAT32 file system.

3. Insert the USB flash drive into a USB port, boot to the Build-In UEFI Shell, and enter the following commands to start the BIOS update:

   Shell> fs0:   (where 0 is the drive number of the USB flash drive)

   fs0:\> cd UEFI   (where UEFI is folder of the BIOS package)

   fs0:\UEFI> flash.nsh BIOSname#.###

4. Perform an A/C power cycle after the message indicating the BIOS update has completed.

3.4 Battery Removal and Installation

Battery Removal

To remove the onboard battery, follow the steps below:

1. Power off your system and unplug your power cable.

2. Locate the onboard battery as shown below.

3. Use a tool such as a pen or a small screwdriver, push the battery lock outwards to unlock it. Once unlocked, the battery will pop out from the holder.

4. Remove the battery.

Proper Battery Disposal

Warning: Please 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. Please comply with the regulations set up by your local hazardous waste management agency to dispose of your used battery properly.

Battery Installation

To install an onboard battery, follow the steps below:

1. Power off your system and unplug your power cable.

2. Locate the onboard battery as shown below

3. Identify the battery's polarity. The positive (+) side should be facing up.

4. Insert the battery into the battery holder and push it down until you hear a click to ensure that the battery is securely locked.

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

LITHIUM BATTERY

BATTERY HOLDER

OR

LITHIUM BATTERY

BATTERY HOLDER
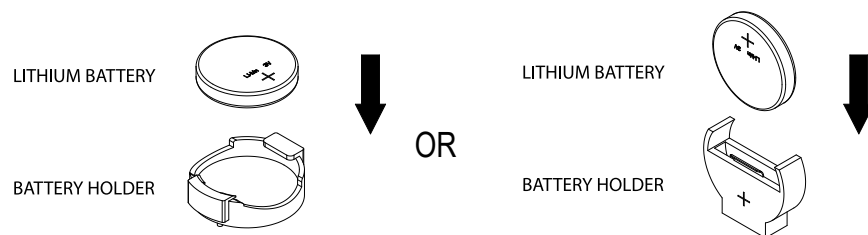
3.5 Returning Merchandise for Service

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, you can also request a RMA authorization online (https://www.supermicro.com/RmaForm/).

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.

Chapter 4

UEFI BIOS

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. Please refer to the Manual Download area of our website for any changes to the BIOS that may not be reflected in this manual.

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 will accompany it. (Note that the 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 will 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>, <F2>, <F3>, <Enter>, <ESC>, <Arrow> keys, etc.) can be used at any time during the setup navigation process.

4.2 Main Setup

When you first enter the AMI BIOS Setup utility, you will see the Main setup screen. You can always return to the Main setup screen by selecting the Main tab on the top of the screen. The Main BIOS Setup screen is shown below.

```
                          Aptio Setup - AMI
     Main  Advanced  Event Logs  BMC  Security  Boot  Save & Exit

                                                Set the Date. Use Tab to
  System Date              [Wed 01/11/2023]     switch between Date elements.
  System Time              [00:08:43]           Default Ranges:
                                                Year: 1998-9999
  Supermicro X13SRA-TF                          Months: 1-12
  BIOS Version             1.0a                 Days: Dependent on month
  Build Date               01/05/2023           Range of Years may vary.

  Memory Information
  Total Memory             32768 MB

                                                →←: Select Screen
                                                ↑↓: Select Item
                                                Enter: Select
                                                +/-: Change Opt.
                                                F1: General Help
                                                F2: Previous Values
                                                F3: Optimized Defaults
                                                F4: Save & Exit
                                                ESC: Exit

                   Version 2.22.1287 Copyright (C) 2023 AMI
```

System Date / System Time

Use the two features to change the system date and time. To change system date and time settings, please highlight *System Date* or *System Time* using the arrow keys and enter new values using the keyboard. Press the <Tab> key or the arrow keys to move between fields. The date must be entered in Day 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. The date's default value is the BIOS build date after the RTC (Real Time Clock) reset.

Supermicro X13SRA-TF

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:

```
                          Aptio Setup - AMI
         Main  Advanced  Event Logs  BMC  Security  Boot  Save & Exit

    ▶ Boot Feature                              Boot Feature Configuration Page
    ▶ CPU Configuration
    ▶ Chipset Configuration
    ▶ Overclocking feature
    ▶ PCH-FW Configuration
    ▶ SATA And RST Configuration
    ▶ Trusted Computing
    ▶ ACPI Settings
    ▶ NCT6796DE Super IO Configuration
    ▶ Serial Port Console Redirection
    ▶ Network Configuration
    ▶ PCIe/PCI/PnP Configuration
    ▶ HTTP Boot Configuration
                                                ▶←: Select Screen
    ▶ Intel(R) I210 Gigabit  Network Connection - ↑↓: Select Item
      3C:EC:EF:DA:B9:18                          Enter: Select
    ▶ TLS Authenticate Configuration            +/-: Change Opt.
    ▶ Intel(R) VROC SATA Controller             F1: General Help
    ▶ Intel(R) Virtual RAID on CPU              F2: Previous Values
                                                F3: Optimized Defaults
    ▶ Driver Health                             F4: Save & Exit
                                                ESC: Exit



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```

Warning: Take 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, restore the setting to the manufacturer default setting.

▶Boot Feature

Quiet Boot

Use this feature to select the screen between displaying Power-on Self Test (POST) messages or the OEM logo at 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 for 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.

INT19 Trap Response

Interrupt 19 is the software interrupt that handles the boot disk function. When this feature is set to Immediate, the ROM BIOS of the host adaptors will "capture" Interrupt 19 at bootup immediately and allow the drives that are attached to these host adaptors to function as bootable disks. If this feature is set to Postponed, the ROM BIOS of the host adaptors will not capture Interrupt 19 immediately to allow the drives attached to these adaptors to function as bootable devices at bootup. The options are **Immediate** and Postponed.

Re-try Boot

When Extensible Firmware Interface (EFI) Boot is selected, the system BIOS will automatically reboot the system from an EFI boot device after an initial boot failure. Select Legacy Boot to allow the BIOS to automatically reboot the system from a Legacy boot device after an initial boot failure. The options are **Disabled** and EFI Boot.

Quickly Boot Menu by F11 Support

Select Enabled to quickly invoke the boot menu by pressing the <F11> key at system bootup. 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.

Front USB Port(s) (Available when "Lockdown Mode" is set to Enabled with the DCMS key)

Select Enabled to allow the specific type of USB devices to be used in the front USB ports. Select Enabled (Dynamic) to allow or disallow this particular type of USB devices to be used in the front USB ports without rebooting the system. The options are **Enabled**, Disabled, and Enabled (Dynamic).

> **Note 1:** Supermicro DataCenter Management Suite per Node License Key (SFT-DCMS-SINGLE) is Supermicro's Data Center Management Suite license that enables server node to take full advantage of Supermicro Management Software and Utilities features. Contact us for more information.

> **Note 2:** Refer to submenu of Security -> Supermicro Security Erase Configuration to set "Lockdown Mode".

Rear USB Port(s) (Available when "Lockdown Mode" is set to Enabled with the DCMS key)

Select Enabled to allow the specific type of USB devices to be used in the rear USB ports. Select Enabled (Dynamic) to allow or disallow this particular type of USB devices to be used in the rear USB ports without rebooting the system. The options are **Enabled**, Disabled, and Enabled (Dynamic).

Restore on AC Power Loss

Use this feature to set the power state after a power outage. Select Power 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 the user presses the power button. The options are **Instant Off** and 4 Seconds Override**.**

▶CPU Configuration

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

Processor Configuration

The following CPU information is displayed:

- Processor BSP Revision

- Processor Socket

- Processor ID

- Processor Frequency

- Processor Max Ratio

- Processor Min Ratio

- Microcode Revision

- L1 Cache RAM (Per Core)

- L2 Cache RAM (Per Core)

- L3 Cache RAM (Per Package)

- Processor 0 Version

▶Advanced Power Management Configuration

Power Technology

Select Energy Efficient to support power-saving mode. Select Custom to customize system power settings. Select Disabled to disable power-saving settings. The options are Disable, Energy Efficient, and **Custom**.

Power Performance Tuning (Available when "Power Technology" is set to Custom)

Set this feature to allow either operating system (OS) or the BIOS to control the EPB. The options are **OS Controls EPB** and BIOS Controls EPB. (EPB is the abbreviation for Intel Performance and Energy Bias Hint.)

ENERGY_PERF_BIAS_CFG Mode (ENERGY PERFORMANCE BIAS CONFIGURATION Mode) (Available when "Power Performance Tuning" is set to BIOS Controls EPB)

Use this feature to configure the proper operation setting for your machine by achieving the desired system performance level and energy saving (efficiency) level at the same time. Select Maximum Performance to maximize system performance to its highest potential; however, this may consume maximal amount of power as energy is needed to fuel processor operation. Select Performance to enhance system performance; however, this may consume more power as energy is needed to fuel the processors for operation. The options are Extreme Performance, Maximum Performance, Performance, **Balanced Performance**, Balanced Power, Power, and Max Power Efficient. (Please note that the options of "Extreme Performance" and "Max Power Efficient" are motherboard-specific.)

Optimized Power Mode (Available when "Power Technology" is set to Custom)

Set this feature to Enable to reduce overall power consumption. The options are **Disable** and Enable. When this feature is set to Enable, the features below will be automatically set by the BIOS:

- "Power Performance Tuning" - BIOS controls EPB

- "ENERGY_PERF_BIAS_CFG Mode" - Performance

- "Enhanced Halt State (C1E)" - Enable

▶CPU P State Control (Available when "Power Technology" is set to Custom)

This feature allows you to configure the following CPU power settings:

AVX P1 (Available when "SpeedStep (P-States)" is set to Enable)

Use this feature to set the appropriate TDP level for the system. The Intel Advanced Vector Extensions (Intel AVX) P1 feature allows you to set the base P1 ratio for Stream-

ing SIMD Extensions (SSE) and AVX workloads. Each P1 ratio has the corresponding AVX Impressed Current Cathodic Protection (ICCP) pre-grant license level, which refers to the selection between different AVX ICCP transition levels. The options are **Nominal**, Level 1, and Level 2.

SpeedStep (P-States)

Enhanced Intel SpeedStep Technology (EIST) allows the system to automatically adjust processor voltage and core frequency in an effort to reduce power consumption and heat dissipation. Please refer to Intel's website for detailed information. The options are Disable and **Enable**.

EIST PSD Function (Available when "SpeedStep (P-States)" is set to Enable)

This feature reduces the latency that occurs when one P-state changes to another, thus allowing the transitions to occur more frequently. This will allow for more demand-based P-state switching to occur based on the real-time energy needs of applications so that the power-to-performance balance can be optimized for energy efficiency. The options are **HW_ALL** and SW_ALL.

Turbo Mode (Available when "SpeedStep (P-States)" is set to Enable)

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

▶**Hardware PM State Control (Available when "Power Technology" is set to Custom)**

Hardware P-States

If this feature is set to Disable, system hardware will choose a P-state setting for the system based on an OS request. If this feature is set to Native Mode, hardware will choose a P-state setting based on the OS guidance. If this feature is set to Native Mode with No Legacy Support, system hardware will choose a P-state setting independently without OS guidance. The options are Disable, **Native Mode**, Out of Band Mode, and Native Mode with No Legacy Support.

▶**CPU C State Control (Available when "Power Technology" is set to Custom)**

Enable Monitor MWAIT

Select Enable 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 Disable, Enable, and **Auto**.

CPU C6 Report

Select Enable to allow the BIOS to report the CPU C6 State (ACPI C3) to the operating system. During the CPU C6 State, the power to all cache is turned off. The options are Disable, Enable, and **Auto**. (ACPI is the abbreviation for Advanced Configuration and Power Interface.)

Enhanced Halt State (C1E)

Select Enable to enable "Enhanced Halt State" support, which will significantly reduce the CPU's power consumption by minimizing CPU's clock cycles and reduce voltage during a "Halt State". The options are Disable and **Enable**.

▶**Package C State Control (Available when "Power Technology" is set to Custom)**

Package C State

Use this feature to optimize and reduce CPU package power consumption in the idle mode. Please note that the changes you've made in this setting will affect all CPU cores or the circuits of the entire system. The options are C0/C1 state, C2 state, C6 (non Retention) state, C6 (Retention) state, No Limit, and **Auto**.

▶**Package Current Config**

Current Limit Override

Use this feature to enable current limitation overriding in 1/8 A increments. The options are **Disable** and Enable.

Current Limitation (Available when "Current Limit Override" is set to Enable)

Use this feature to specify the current limitation in 1/8 A increments.

Lock Indication

Use this feature to enable lock for package current configurations. The options are **Disable** and Enable.

▶**Socket RAPL Config**

Package RAPL Limit CSR Lock

Use this feature to enable or disable locking of the PACKAGE RAPL LIMIT CSR register. Enabled. If disabling the locking, a reset will be required to unlock the register. The options are **Disable** and Enable.

PL1 Power Limit

Use this feature to configure PL1 power limit. If the value is 0, the fused value will be programmed. A value greater than fused TDP value will no be programmed. The default is **0**.

PL2 Power Limit

Use this feature to configure PL2 power limit. If the value is 0, BIOS will program the value as 120% x TDP. The default is **0**.

▶CPU Core Disable Bitmap

Available Bitmap

This feature displays the available bitmap.

Disable Bitmap

Enter 0 to enable this feature for all CPU cores. Enter FFFFFFFFFFFF to disable this feature for all CPU cores. Please note that at least one core per CPU must be enabled. Disabling all cores is not allowed. The default setting is **0**.

Hyper-Threading [ALL]

Select Enable to use Intel Hyper-Threading Technology to enhance CPU performance. The options are **Enable** and Disable.

Hardware Prefetcher

If this feature is set to Enable, 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 **Enable** and Disable.

Adjacent Cache Prefetch

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

DCU Streamer Prefetcher

If this feature is set to Enable, the Data Cache Unit (DCU) streamer prefetcher will prefetch data streams from the cache memory to the DCU to speed up data accessing and processing to enhance CPU performance. The options are **Enable** and Disable.

DCU IP Prefetcher

This feature allows the system to use the sequential load history, which is based on the instruction pointer of previous loads, to determine whether the system will prefetch additional lines. The options are **Enable** and Disable.

LLC Prefetch

If this feature is set to Enable, LLC (hardware cache) prefetching on all threads will be supported. The options are **Disable** and Enable.

Homeless Prefetch

Use this feature to enable or disable homeless prefetch on all threads. If Auto is selected, it will map to haredware default settings. The options are Disable, Enable, and **Auto**.

Extended APIC

Based on the Intel Hyper-Threading technology, each logical processor (thread) is assigned 256 APIC IDs (APIDs) in 8-bit bandwidth. When this feature is set to Enable, the APIC ID will be expanded from 8 bits to 16 bits to provide 512 APIDs to each thread to enhance CPU performance. The options are **Disable** and Enable. (APIC is the abbreviation for Extended Advanced Programmable Interrupt Controller.)

Intel Virtualization Technology

Select Enable to enable the Intel Vanderpool Technology for Virtualization platform support, which will allow multiple operating systems to run simultaneously on the same computer to maximize system resources for performance enhancement. The options are Disable and **Enable**.

Note: Please reboot the system for any change of the setting to take effect.

Enable SMX

Select Enable to support Safer Mode Extensions (SMX) which provides a programming interface for system software to establish a controlled environment to support the trusted platform configured by the end user and to verify a virtual machine monitor before it is allowed to run. The options are **Disable** and Enable.

PPIN Control

Select Unlock/Enable to use the Protected Processor Inventory Number (PPIN) in the system. The PPIN is a unique number set for tracking a given Intel Xeon server processor. The options are Lock/Disable and **Unlock/Enable**.

AES-NI

Select Enable to use the Intel Advanced Encryption Standard (AES) New Instructions (NI) to ensure data security. The options are Disable and **Enable**.

Limit CPU PA to 46 Bits

Select Enable to limit CPU physical address to 46 bits to support the older Hyper-V CPU platform. The options are Disable and **Enable**.

TME, TME-MT, TDX

Memory Encryption (TME)

Select Enabled for Intel Total Memory Encryption (TME) support to enhance memory data security. The options are **Disabled** and Enabled.

Total Memory Encryption (TME) Bypass (Available when "Memory Encryption (TME)" is set to Enabled)

Use this feature to disable/enable the TME function for physical memory protection. The options are **Auto**, Disabled, and Enabled.

Total Memory Encryption Multi-Tenant (TME-MT) (Available when "Memory Encryption (TME)" is set to Enabled and when "Limit CPU PA to 46 Bits" is set to Disable)

Use this feature to support tenant-provided (SW-provided) keys. The options are **Disabled** and Enabled.

Memory Integrity (Available when both "Memory Encryption (TME)" and "Total Memory Encryption Multi-Tenant (TME-MT)" are set to Enabled and when "Limit CPU PA to 46 Bits" is set to Disable)

Use this feature to enable TME-MT memory integrity protection for memory transactions. The options are **Disabled** and Enabled.

The following information is displayed:

- Key Stock Amount

- TME-MT Key ID bits

Trust Domain Extension (TDX) (Available when your CPU supports Intel TDX)

Use this feature to enable Intel Trust Domain Extension (TDX) technology support to enhance control of data security. The options are **Disabled** and Enabled.

TDX Secure Arbitration Mode Loader (SEAM Loader) (Available when your CPU supports Intel TDX)

The SEAM Loader (SEAMLDR) is used to load and update Intel TDX modules into the SEAM memory range by verifying the digital signature. The options are **Disabled** and Enabled.

►Chipset Configuration

Warning: Setting the wrong values in the following features may cause the system to malfunction.

►North Bridge

This feature allows you to configure the following North Bridge settings.

►Uncore Configuration

The following information is displayed.

- Number of CPU

- Global MMIO Low Base / Limit

- Global MMIO High Base / Limit

- Pci-e Configuration Base / Size

SNC

Sub NUMA Clustering (SNC) is a feature that breaks up the Last Level Cache (LLC) into clusters based on address range. Each cluster is connected to a subset of the memory controller. Enable this feature to improve average latency and reduce memory access congestion for higher performance. The options are **Auto**, Disable, Enable SNC2 (2-clusters), and Enable SNC4 (4-clusters).

Stale AtoS (A to S)

The in-memory directory has three states: I, A, and S states. The I (-invalid) state indicates that the data is clean and does not exist in the cache of any other sockets. The A (-snoop All) state indicates that the data may exist in another socket in an exclusive or modified state. The S state (-Shared) indicates that the data is clean and may be shared in the caches across one or more sockets. When the system is performing "read" on the memory and if the directory line is in A state, we must snoop all other sockets because another socket may have the line in a modified state. If this is the case, a "snoop" will return the modified data. However, it may be the case that a line "reads" in an A state, and all the snoops come back with a "miss". This can happen if another socket reads the line earlier and then has silently dropped it from its cache without modifying it. If "Stale AtoS" is enabled, a line will transition to the S state when the line in the A state returns only snoop misses. That way, subsequent reads to the line will encounter it in the S state and will not have to snoop, saving the latency and snoop bandwidth. Stale "AtoS" may be beneficial in a workload where there are many cross-socket reads. The options are Disable, Enable, and **Auto**.

LLC Dead Line Alloc

Select Enable to opportunistically fill the dead lines in the LLC. The options are Disable, **Enable**, and Auto.

►**Memory Configuration**

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

Enforce DDR Memory Frequency POR

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

Memory Frequency

Use this feature to set the maximum memory frequency for onboard memory modules. The options are **Auto**, 3200, 3600, 4000, 4400, 4800, 5200, and 5600. Please note that the available options are CPU dependent.

Data Scrambling for DDR5

Select Enable to enable data scrambling for DDR5 modules to enhance memory data security. The options are Disable and **Enable**.

DDR 2X Refresh Enable

Select Enable for memory 2X refresh support to enhance memory performance. The options are **Auto**, Disable, and Enable.

►**Memory Topology**

This feature displays the information of onboard memory modules as detected by the BIOS, for example:

P1-DIMMA1: 4800MT/s Hynix DRx8 32GB RDIMM

►**Memory RAS Configuration**

Use this submenu to configure the following Memory Reliability_Availability_Service-ability (RAS) settings.

Mirror Mode (Available when "ADDDC Sparing" is set to Disabled)

Use this feature to configure the mirror mode settings for all 1LM/2LM memory modules in the system which will create a duplicate copy of data stored in the memory to increase memory security, but it will reduce the memory capacity into half. The options are **Disabled** and Full Mirror Mode.

Correctable Error Threshold

Use this feature to specify the threshold value for correctable memory-error logging, which sets a limit on the maximum number of events that can be logged in the memory error log at a given time. The default setting is **512**.

ADDDC Sparing (Available when populating 1Rx4, 2Rx4, and 4Rx4 DIMM)

Select Enabled for Adaptive Double Device Data Correction (ADDDC) support, which will not only provide memory error checking and correction but will also prevent the system from issuing a performance penalty before a device fails. Please note that virtual lockstep mode will only start to work for ADDDC after a faulty DRAM module is spared. The options are Disabled and **Enabled**.

Patrol Scrub

Patrol Scrubbing is a process that allows the CPU to correct correctable memory errors detected in a memory module and send the corrections to the requestor (the original source). When this feature is set to Enable, the IO hub will read and write back one cache line every 16K cycles if there is no delay caused by internal processing. By using this method, roughly 64 GB of memory behind the IO hub will be scrubbed every day. The options are Disabled and **Enable at End of POST**. (POST is the abbreviation for Power On Self Test.)

DDR PPR Type

Post Package Repair (PPR) is a new feature available for the DDR4/DDR5 technology. PPR provides additional spare capacity within a DDR4/DDR5 DRAM module that is used to replace faulty cell areas detected during system boot. PPR offers two types of memory repairs. Soft Post Package Repair (sPPR) provides a quick, temporary fix on a raw element in a bank group of a DDR4/DDR5 DRAM device, while hard Post Package Repair (hPPR) will take a longer time to provide a permanent repair on a raw element. The options are PPR Disabled, **Hard PPR**, and Soft PPR.

Enhanced PPR

Use this feature to set advanced memory test. Select Enabled to always execute for every boot. Select Once to execute only one time. The options are **Disabled**, Enabled, and Once.

Memory PFA Support (Available when the DCMS key is activated)

Select Enabled to enable memory Predictive Failure Analysis (PFA) support. PFA can be used to avoid uncorrectable faults in the same memory page. The options are **Disabled** and Enabled.

▶IIO Configuration

▶CPU Configuration

IOU0 (IIO PCIe Port 1) / IOU1 (IIO PCIe Port 2) / IOU2 (IIO PCIe Port 3) / IOU3 (IIO PCIe Port 4)

This feature is CPU dependent. Use this feature to configure the PCIe Bifurcation setting for a PCIe port specified by the user. The options are **Auto**, x4x4x4x4, x4x4x8, x8x4x4, x8x8, and x16.

▶CPU SLOT6/4/2 PCIe 5.0 X16 / M.2 C02 / M.2 C01

Link Speed

Use this feature to select the link speed for the PCIe port specified by the user. The options are **Auto,** Gen 1 (2.5 GT/s), Gen 2 (5 GT/s), Gen 3 (8 GT/s), Gen 4 (16 GT/s), and Gen 5 (32 GT/s).

The following information is displayed:

- PCIe Port Link Status

- PCIe Port Link Max

- PCIe Port Link Speed

Data Link Feature Exchange

Use this feature to enable/disable the PCIe port to enter PCIe 4.0 DL_Feature negotiation state. The options are Disable and **Enable.**

PCIe Port Max Payload Size

Use this feature to set the maximum payload size supported in Direct Media Interface (DMI) device capabilities register for the device installed in the PCIe port. The options are 128B, 256B, 512B, and **Auto.**

▶IOAT Configuration

Relaxed Ordering

Select Yes to allow certain transactions to be processed and completed before other transactions that have already been enqueued. The options are **No** and Yes.

▶Intel VT for Directed I/O (VT-d)

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

Select Enable to use Intel Virtualization Technology for Direct I/O VT-d support by reporting the I/O device assignments to the Virtual Machine Monitor (VMM) through the DMAR ACPI tables. This feature offers fully-protected I/O resource sharing across Intel platforms, providing greater reliability, security and availability in networking and data-sharing. The options are **Enable** and Disable. (DMA is the abbreviation for Direct Memory Access. DMAR is the abbreviation for DMA Remapping Reporting.)

Interrupt Remapping (Available when "Intel VT for Directed I/O (VT-d)" is set to Enable)

Select Enable to support I/O DMA transfer remapping and device-generated interrupts. The options are **Auto**, Enable, and Disable.

PCIe ACSCTL (Available when "Intel VT for Directed I/O (VT-d)" is set to Enable)

Select Enable to program ACS control to Chipset PCIe Root Port bridges. Select Disable to program ACS control to all PCIe Root Port bridges. The options are Enable and **Disable**.

IIO-PCIe Express Global Options

PCIe ASPM Support (Global)

Use this feature to disable the Active State Power Management (ASPM) support for all PCIe root ports. The options are **Disable** and Auto.

IIO eDPC Support

Use this feature to configure the setting for IIO Enhanced Downstream Port Containment (eDPC) support for your system in an effort to improve the error containment capacity within the PCIe subsystem when an uncorrected error is detected either at the root port or at the switch downstream port. Select Disable to disable IIO eDPC support. Select On Fatal Error to enable IIO eDPC support in your system when a fatal error occurs. Select On Fatal and Non-Fatal Error to enable IIO eDPC support when an error, fatal or non-fatal, has occurred. The options are **Disable**, On Fatal Error, and On Fatal and Non-Fatal Errors.

IIO eDPC Interrupt (Available when your system supports this feature and when "IIO eDPC Support" is set to On Fatal Error/On Fatal and Non-Fatal Errors)

Select Enable to enable IIO eDPC Interrupt support. The options are **Enable** and Disable.

IIO eDPC ERR_COR Message (Available when your system supports this feature and when "IIO eDPC Support" is set to On Fatal Error/On Fatal and Non-Fatal Errors)

If this feature is set to Enable, an IIO eDPC error correction message will be displayed. The options are **Enable** and Disable.

CXL Security Level

By defining security protocols, CXL standards provide protection against the data security threats. Use this feature to set the CXL security level for data transiting the CXL link. The options are Fully Trusted, Partially Trusted, Untrusted, and **Auto**.

- Fully Trusted: This option allows the CXL device to access CXL.$ for both host-attached and device-attached memory ranges in the write-back (WB) address space.

- Partially Trusted: This option allows the CXL device to access CXL.$ for device-attached memory ranges only.

- Untrusted: If this option is selected, the host (your system) will abort all requests on CXL.$.

- Auto: This option is based on Si Compatibility.

CXL Header Bypass

Set this feature to enable or disable the CXL header bypass. The options are **Disable** and Enable.

▶**Intel VMD Technology**

This section describes the configuration settings for the Intel VMD technology.

Note 1: After you've enabled VMD in the BIOS on a PCIe slot, this PCIe slot will be dedicated for VMD use only, and it will no longer support any PCIe device. To re-activate this slot for PCIe use, please disable VMD in the BIOS.

Note 2: The number of PCIe slots and the slot naming can differ depending on the PCIe devices connected to your motherboard.

▶**Intel VMD for Volume Management Device on CPU**

VMD Config for PCH ports

Enable/Disable VMD

Select Enable to enable the Intel Volume Management Device (VMD) technology support for the root port specified. The options are **Disable** and Enable.

VMD Config for IOU 0 - 3

Enable/Disable VMD

Select Enable to enable the Intel VMD technology for the PCH port or IOU. The options are **Disable** and Enable.

***Root Port* VMD (Available when "Enable/Disable VMD" above is set to Enable)**

If VMD is enabled for a PCH port or IOU, use this feature to enable the Intel VMD technology support for the corresponding root port. The options are **Disable** and Enable.

PCH / IOU VMD	Root Port VMD
PCH port	PCH SLOT1 PCIe 5.0 x4 VMD
IOU 0	CPU SLOT6 PCIe 5.0 x16 VMD
IOU 1	CPU SLOT4 PCIe 5.0 x16 VMD
IOU 2	CPU SLOT2 PCIe 5.0 x16 VMD
IOU 3	M.2 C02, M.2 C01 VMD

Hot Plug Capable (Available when "Enable/Disable VMD" above is set to Enable)

Select Enable to enable Hot Plug support for the root ports specified, which allows you to change the devices on those root ports without shutting down the system. The options are **Disable** and Enable.

IIO-PCIe Express Global Options

PCIe ASPM Support (Global)

Use this feature to disable the Active State Power Management (ASPM) support for all PCIe root ports. The options are **Disable** and Auto.

IIO eDPC Support

Use this feature to configure the setting for IIO Enhanced Downstream Port Containment (eDPC) support for your system in an effort to improve the error containment capacity within the PCIe subsystem when an uncorrected error is detected either at the root port or at the switch downstream port. Select Disable to disable IIO eDPC support. Select On Fatal Error to enable IIO eDPC support in your system when a fatal error occurs. Select On Fatal and Non-Fatal Error to enable IIO eDPC support when an error, fatal or non-fatal, has occurred. The options are **Disable**, On Fatal Error, and On Fatal and Non-Fatal Errors.

IIO eDPC Interrupt (Available when your system supports this feature and when "IIO eDPC Support" is set to On Fatal Error/On Fatal and Non-Fatal Errors)

Select Enable to enable IIO eDPC Interrupt support. The options are **Enable** and Disable.

IIO eDPC ERR_COR Message (Available when your system supports this feature and when "IIO eDPC Support" is set to On Fatal Error/On Fatal and Non-Fatal Errors)

If this feature is set to Enable, an IIO eDPC error correction message will be displayed. The options are **Enable** and Disable.

▶South Bridge

The following information is displayed:

- 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 options are **Enabled** and Disabled.

Port 60/64 Emulation

Select Enabled for I/O port 60h/64h emulation support, which in turn, provides complete legacy USB keyboard support for the operating systems that do not support legacy USB devices. The options are Disabled and **Enabled**.

▶PCI Express Configuration

DMI Link ASPM Control

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** and L1.

Peer Memory Write Enable

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

▶PCH SLOT1 PCIe 4.0 X4

ASPM

Use this feature to activate the Active State Power Management (ASPM) level for a PCI-E 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 and **L1**.

L1 Substates

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

PCIe Speed

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

▶Overclocking Feature (Available for CPU supporting overclocking)

Overclocking Feature

This feature enables the CPU overclocking. The options are Enabled and **Disabled**.

If the feature of Overclocking is set to Enabled, the following feature will become available for configuration:

▶Processor

VF Configuration Scope

Use this feature to configure the VF curve. The options are **All-core** and Per-core.

If "VF Configuration Scope" is set to All-core, the following settings will apply to all cores. if "VF Configuration Scope" is set to Per-core, then you will be allowed to specify the following settings for each core.

Core Voltage Mode

This feature controls the core voltage mode. The options are **Adaptive** and Override.

Core Extra Turbo Voltage (Available when "Core Voltage Mode" is set to Adaptive)

Enter a value for the extra turbo voltage (in mV) that will be applied while performance-core is operating in turbo mode. The range is 0 – 2050. The default is **0**.

Core Voltage Override (Available when "Core Voltage Mode" is set to Override)

Use this feature to specify the override voltage (in mV) applied to the performance-core domain. The range is 0 – 2050. The default is **0**.

Core Max OC Ratio

This feature controls the general maximum overclocking ratio for the CPU cores. The range is 0 – 255. The default is **0**.

Core Voltage Offset

Enter a value for the offset voltage (in mV) that will be applied to global performance-core domain. The range is -500 – 500. The default is **0** (no offset).

Offset Prefix

Use this feature to set the prefix value as a positive (+) or a negative (-). The options are "**+**" and "**-**".

TMUL Ratio Offset

Enter a value for TMUL ratio offset. The range is 0 – 31.The default is **0** (no offset).

TjMax Override

Enter a value for TjMax ratio override. The range is 105 – 115.The default is **0** (no override).

Per Core Ratio Override

This feature enables CPU per core ratio overriding. When enabled, it sets the maximum overclocking ratio to specific core by OCMB 0x1D command. When disabled, it sets the ratio to all cores by OCMB command 0x11. Please note that you should manually change the "Turbo Ratio Limit (TRL) MSR 0x1AD / 0x1AE" setting based on the setting here. The options are **Disabled** and Enabled.

▶Mesh/Ring

Mesh (Ring) Max OC Ratio

Enter a value for the maximum overclock ratio for CPU Mesh (Ring) domain. The default is **0**.

Mesh (Ring) Min OC Ratio

Enter a value for the minimum overclock ratio for CPU Mesh (Ring) domain. The default is **0**.

Mesh (Ring) Voltage Mode

Use this feature to select the CPU Mesh (Ring) voltage mode. In adaptive mode, the voltage is interpolated only in turbo mode. In override mode, the voltage selected will be applied over all operating frequencies. The options are **Adaptive** and Override.

Mesh (Ring) Extra Turbo Voltage (Available when "Mesh [Ring] Voltage Mode is set to Adaptive)

Use this feature to specify the extra turbo voltage applied (in mV) while Mesh (Ring) is operating in turbo mode. The range is 0 – 2050 and the default is **0**.

Mesh Ring Voltage Override (Available when "Mesh [Ring] Voltage Mode is set to Override)

Use this feature to specify the override voltage applied to the Mesh (Ring) domain (in mV). The range is 0 – 2050 and the default is **0**.

Mesh (Ring) Voltage Offset

Enter a value for the offset voltage (in mV) that will be applied to the Mesh (Ring) domain. The default is **0**.

Offset Prefix

Use this feature to set the prefix value as a positive (+) or a negative (-). The options are "**+**" and "**-**".

▶Uncore

Domain VCC Voltage Override

This feature controls the Domain VCC voltage mode. The options are Disable and **Override**.

*If the feature above is set to Override, the following features will be available:

VCCCFN Voltage Override

Use this feature to specify the override voltage applied to the VCCCFN domain (in mV). The range is 0 – 2050. The default is **0** (no override).

VCCIO Voltage Override

Use this feature to specify the override voltage applied to the VCCIO domain (in mV). The range is 0 – 2050. The default is **0** (no override).

VCCMDFIA Voltage Override

Use this feature to specify the override voltage applied to the VCCMDFIA domain (in mV). The range is 0 – 2050. The default is **0** (no override).

VCCMDFI Voltage Override

Use this feature to specify the override voltage applied to the VCCMDFI domain (in mV). The range is 0 – 2050. The default is **0** (no override).

VCCDDRD Voltage Override

Use this feature to specify the override voltage applied to the VCCDDRD domain (in mV). The range is 0 – 2050. The default is **0** (no override).

VCCDDRA Voltage Override

Use this feature to specify the override voltage applied to the VCCDDRA domain (in mV). The range is 0 – 2050. The default is **0** (no override).

▶SVID/FIVR

SVID Support

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

SVID Voltage Override (VccIn) (Available when "SVID Support" is set to Enabled)

Use this feature to specify the voltage (in mV) that will override the VccIn input voltage. This feature controls the input voltage to the CPU and will affect all CPU domains. The range is 0 – 3000. The default is **0**.

CPU Vccin Voltage Level (Available when "SVID Support" is set to Disabled)

Use this feature to specify the VID value for CPU VccIn voltage level. The range is 500mV to 3040mV. The default is **1800**.

FIVR Faults

Use this feature to enable or disable Fully-Integrated Voltage Regulators (FIVR) faults. When FIVR faults are disabled, OVP and OCP protection mechanisms will be masked. The options are Disabled and **Enabled**.

Warning: There is a risk of disabling this setting and you shall be solely responsible for disabling this settings.

FIVR Efficiency Management

Use this feature to enable or disable FIVR efficiency management. Enabling this feature is good for power delivery efficiency, but it may be an impediment to proper power delivery control under overclocking, particularly BCLK overclocking. The options are Disabled and **Enabled**.

▶Voltage PLL Trim Controls

Core PLL Voltage Offset / RING PLL Voltage Offset / Memory Controller PLL Voltage Offset

Enter a desired value for each feature. This feature can be used to increase the range of this domain frequency in extreme overclocking conditions. The range is 0 – 63 in the units of 17.5mV. The default is **0**.

▶Overclocking

Extreme Edition

Use this feature to enable extreme edition support. The options are Disabled and **Enabled.**

Overclocking Clock

This feature enables overclocking lock. The options are **Disabled** and Enabled.

CurrentTurboRatioLimit#

Current turbo ratio limit is displayed.

TurboRatioLimit#

This feature allows you to specify the turbo ratio limit. The range is 0 – 255. The default is **0**.

CurrentTurboRatioCores#

Current turbo ratio of the core is displayed.

TurboRatioCores#

This feature allows you to specify the turbo ratio limit of the core. The default is **255**.

Quick Steps for CPU Overclocking

The overclocking fearure is disabled by default. For a quick and easy CPU overclocking process, you can take the following steps as a reference.

In this example, we are using the Intel Xeon W9-3495X CPU, a 56-core processor with a base frequency of 1.9GHz. The steps below illustrate how to overclock the CPU to 3.1GHz.

1. Before overclocking, the maximum CPU frequency can reach around 2.9Ghz when performing a CPU stress test. (The example utilizes the stress-ng tool within a Linux environment.)

2. Enter the BIOS Setup utility, select Save & Exit -> Restore Optimized Defaults for the changes to take effect. Then re-enter the BIOS Setup utility.

3. Select Advanced -> Overclocking Feature and set the Overclocking Feature to "Enabled".
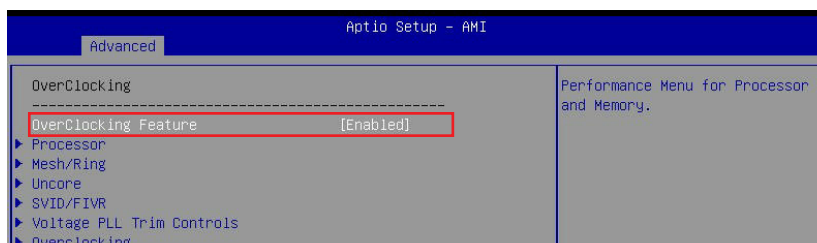
4. Select Advanced -> Overclocking Feature -> Processor -> Core Max OC Ratio and set the value to desired value. The valid range is 0 – 255. In this example, it is set to 31 in order to overclock the CPU to 3.1GHz.
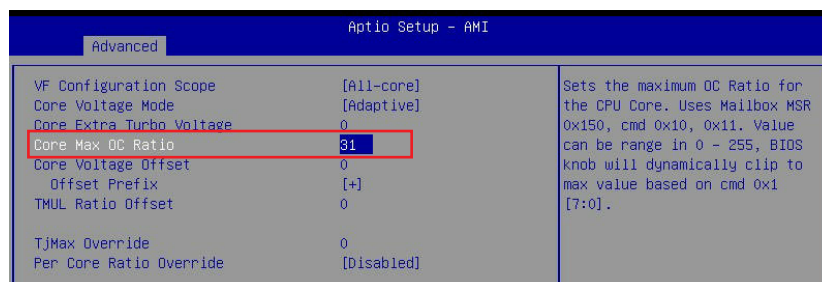
5. Select Advanced -> Overclocking Feature -> Processor - > Per Core Ratio Override and set it to "Enabled".
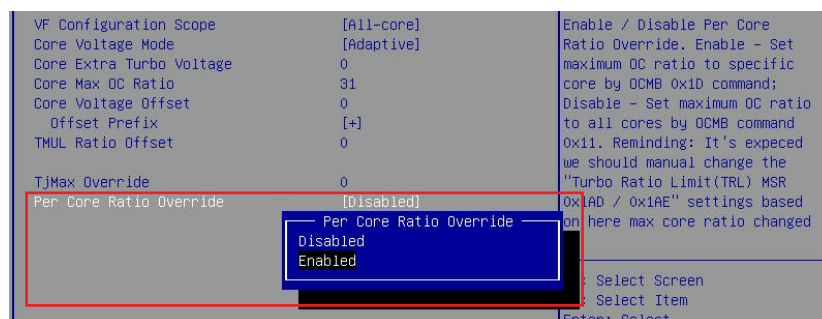
After enabling the Per Core Ratio Override feature, the Core 0 – 56 Max Ratio features will be available. Just leave the settings as defaults.
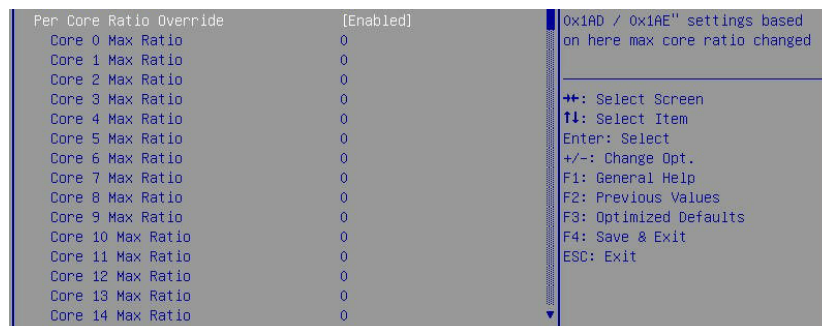
6. Select Save & Exit -> Save Changes and Reset. Reboot for the settings to take effect and re-enter the BIOS Setup utility.
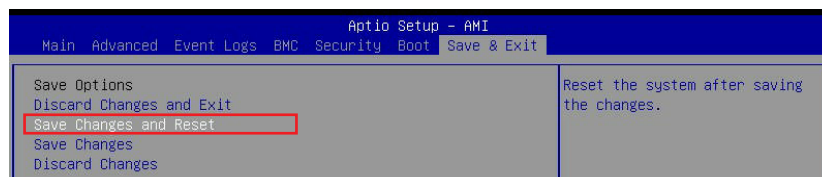
7. Select Advanced -> Overclocking Feature -> Overclocking and set all the values of TurboRatioLimit0 – 7 to desired values. The valid range is 0 – 255. In this example, it is set to 31 in order to overclock the CPU to 3.1GHz.
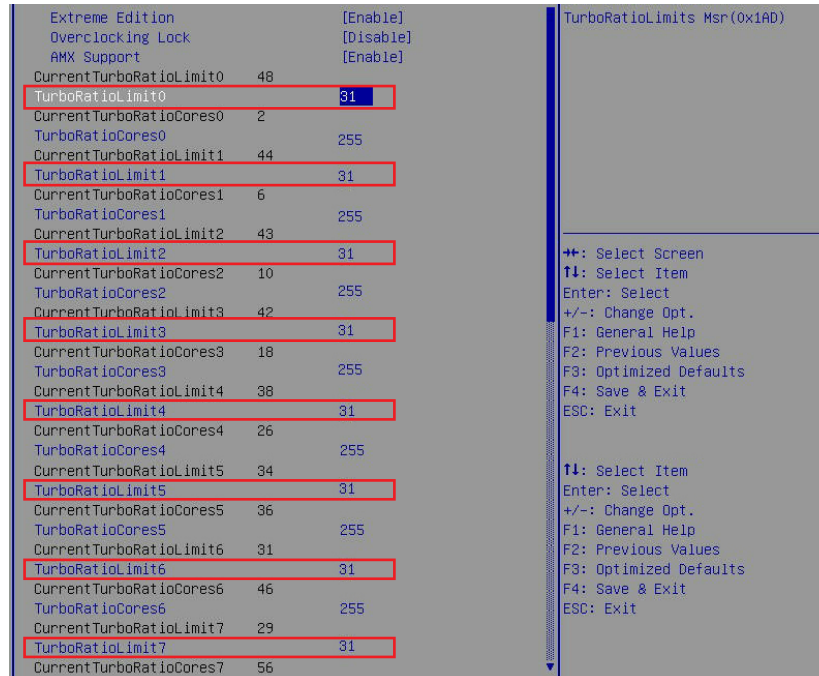
8. Save the settings and reboot the system to your OS.

9. Run the CPU stress tool to see if the CPU can reach the desired frequency. If not, decrease the target value and repeat the steps above. In our example, the result shows that the CPU frequency can reach 3.1GHz.

Warning: Please be aware that overclocking performance is not guaranteed by Intel and Supermicro, and it carries inherent risks, including potential hardware damage. Neither company provides warranties or support for systems overclocked beyond factory specifications. Exercise caution and understand the consequences before proceeding. If you have questions, please contact us for more information.

▶PCH-FW Configuration

The following firmware information will display:

- 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 Enabled and **Disabled**.

▶PTT Configuration

PTT Capability / State

This features displays the information of Intel Platform Trust Technology (PTT) capability and state.

TPM Device Selection

Use this feature to select the type of TPM device. Select PTT to enable PTT in SkuMgr. Selecting dTPM will disable PTT in SkuMgr. The options are **dTPM** and PTT. (Warning! PTT/dTPM will be disabled and all saved data will be lost.)

▶SATA and RST Configuration

When this submenu is selected, the AMI BIOS automatically detects the presence of the SATA devices that are supported by the Intel PCH chip and displays the following features.

SATA Configuration

This feature enables or disables the onboard SATA controller(s) supported by the Intel PCH chip. The options are Disabled and **Enabled**.

SATA Mode Selection (Available when "SATA Configuration" is set to Enabled)

Use this feature to select the mode of installed SATA drives. The options are **AHCI** and RAID.

Note 1: After changing the SATA mode, please be sure to reboot the system for the changes to take effect. Then the Intel(R) VROC SATA Controller feature will appear under the Advanced menu.

Note 2: To create RAID for the SATA drives, refer to the Intel(R) VROC SATA Controller section for more information.

Support Aggressive Link Power Management (Available when "SATA Configuration" is set to Enabled)

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

SATA SGPIO Enable (Available when "SATA Configuration" is set to Enabled)

Use this feature to change the serial GPIO mode for SATA controller. The options are **Disabled** and Enabled**.**

SATA Port 0 – SATA Port 5 (Available when "SATA Configuration" is set to Enabled)

Note: The SATA port naming may vary based on the related configuration.

Hot Plug

Select Enabled to support Hot-plugging for the device installed on a selected SATA port to allow you to replace the device installed in the slot without shutting down the system. The options are Disabled and **Enabled.**

Spin Up Device

Select Enabled for Staggered Spin Up support to allow the SATA devices specified by the user to spin up one at a time at boot up in an effort to prevent all hard drive disks from spinning up at the same time, causing a power surge. The options are **Disabled** and Enabled.

SATA Device Type

Use this feature to specify if the device installed on the SATA port specified by the user should be connected to a solid state drive or a hard disk drive. The options are **Hard Disk Drive** and Solid State Drive.

▶Trusted Computing (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 Enable to enable BIOS support for onboard security devices, which are not displayed in the OS. If this feature is set to Enable, TCG EFI protocol and INT1A interface will not be available. The options are Disable and **Enable**.

*When "Security Device Support" is set to Enable, the following information is displayed:

- Active PCR banks

- Available PCR banks

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

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

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

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

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

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 Enable) (for TPM version 2.0 and above)

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 Enable)

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 Enable)

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 (for TPM version 2.0 and above)

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.

Supermicro BIOS-Based TPM Provision Support

If this feature is set to Enabled, Supermicro BIOS-based TPM provision will be supported. The options are Disabled and **Enabled**.

> **Note:** Enabling this feature will lock your TPM on the production platform, and you will not be able to delete the NV indexes.

TXT Support

Select Enabled to enable Intel Trusted Execution Technology (TXT) support to enhance system integrity and data security. The options are **Disabled** and Enabled.

> **Note 1:** If this feature is set to Enabled, be sure to disable Device Function On-Hide (EV DFX) support when it is present in the BIOS for the system to work properly.

> **Note 2:** For more information on TPM, please refer to the TPM manual at https://www.supermicro.com/manuals/other/AOM-TPM-9670V_9670H.pdf.

▶ACPI Settings

UMA-Based Clustering

When this feature is set to Hemisphere, Uniform Memory Access (UMA)-based clustering will support 2-cluster configuration for system performance enhancement. The options are Hemisphere (2-clusters) and **Quadrant (4-clusters)**.

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 HPET is used to replace the 8254 Programmable Interval Timer. The options are Disabled and **Enabled**.

▶NCT6796DE Super IO Configuration (Available when your system supports this feature)

The following information is displayed.

- Super IO Chip

▶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" is set to Enabled)

This feature displays the base I/O port address and the Interrupt Request address of serial port 1.

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

This feature specifies the base I/O port address and the Interrupt Request address of serial port 1. Select Auto for the BIOS to automatically assign the base I/O and IRQ address to serial port 1. The options are **Auto**, (IO=3F8h; IRQ=4;), (IO=3F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;), (IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;), (IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;), and (IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;).

▶Serial Port Console Redirection

COM1 (Available when your system supports serial port of COM1)

Console Redirection

Select Enabled to enable COM port 1 for Console Redirection, which allows a client machine to be connected to a host machine at a remote site for networking. The options are **Disabled** and Enabled.

> **Note:** This feature will be set to Enabled if there is no BMC support.

▶Console Redirection Settings (Available when "Console Redirection" above is set to Enabled)

Terminal Type

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

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).

Data Bits

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

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.

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.

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.

VT-UTF8 Combo Key Support

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

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.

Resolution 100x31

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

Putty KeyPad

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

Legacy OS Redirection Resolution

Use this feature to select the numbers of rows and columns used in Console Redirection for Legacy OS support. The options are 80x24 and **80x25**.

Redirection After BIOS POST

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

SOL/COM2

> **Note:** This feature is available when your system supports serial port of SOL and/or COM2. The "SOL/COM2" here indicates a shared serial port, and SOL is used as the default.

Console Redirection

Select Enabled to use the SOL/COM2 port for Console Redirection. The options are Disabled and **Enabled.**

▶Console Redirection Settings (Available when "Console Redirection" above is set to Enabled)

Use this feature to specify how the host computer will exchange data with the client computer.

Terminal Type

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

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).

Data Bits

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

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.

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.

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.

VT-UTF8 Combo Key Support

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

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.

Resolution 100x31

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

Putty KeyPad

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

Legacy OS Redirection Resolution

Use this feature to select the numbers of rows and columns used in Console Redirection for Legacy OS support. The options are 80x24 and **80x25**.

Redirection After BIOS POST

Use this feature to enable or disable legacy console redirection after BIOS POST. When the option - BootLoader is selected, legacy console redirection is disabled before booting the OS. When the option - Always Enable is selected, legacy console redirection remains enabled upon OS bootup. 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 (Available when "Console Redirection EMS" above 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

▶Network 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 option. 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 "+" or "-" on your keyboard to change the value. The default setting is **0**.

Media Detect Count

Use this feature to select 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 "+" or "-" on your keyboard to change the value. The default setting is **1**.

▶MAC:(MAC address)-IPv4 Network Configuration

Configured

Select Enabled to show whether the network address has been successfully configured. 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. The options are **Yes** and No.

▶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

This feature displays 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 (Available when "Policy" is set to manual)

New IPv6 address

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

New Gateway address

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

New DNS address

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

Commit Changes and Exit

Press <Enter> to save changes and exit. The options are **Yes** and No.

Discard Changes and Exit

Press <Enter> to discard changes and exit. The options are **Yes** and No.

Save Changes and Exit

Press <Enter> to save changes and exit. The options are **Yes** and No.

▶PCIe/PCI/PnP Configuration

The following information is displayed:

- PCI Bus Driver Version

PCI Devices Common Settings:

Above 4G Decoding (Available when 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 Disabled and **Enabled**.

MMCFG Base

This feature determines how the lowest Memory Mapped Configuration (MMCFG) base is assigned to onboard PCI devices. The options are 1G, 1.5G, 1.75G, 2G, 2.25G, 3G, and **Auto**.

MMCFG Size

Use this feature to set the MMCFG size. The options are 64M, 128M, 256M, 512M, 1G, 2G, and **Auto**. Please note that the MMCFG size is based on the memory populated.

MMIO High Base

Use this feature to select the base memory size according to memory-address mapping for the IO hub. The options are 56T, 40T, **32T**, 24T, 16T, 4T, 2T, 1T, 512G, and 3584T.

MMIO High Granularity Size

Use this feature to select the high memory size according to memory-address mapping for the IO hub. The options are 1G, 4G, 16G, **64G**, 256G, and 1024G.

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

Select Enabled for Single-Root IO Virtualization support. The options are Disabled and **Enabled**.

ARI Support

Select Enabled for Alternative Routing-ID Interpretation (ARI) support. The options are Disabled and **Enabled**.

Bus Master Enable

If it is set to Enabled, the PCI Bus Driver will enable the Bus Master Attribute for DMA transactions. If it is set to Disabled, the PCI Bus Driver will disable the Bus Master Attribute for Pre-Boot DMA protection. The options are **Disabled** and Enabled.

Consistent Device Name Support

Select Enabled for ACPI_DSM (DSM: Device Specific Method) device name support for onboard devices and slots. The options are **Disabled** and Enabled.

NVMe Firmware Source

Use this feature to select the NVMe firmware to support system boot. The options are **Vendor Defined Firmware** and AMI Native Support. The default option, Vendor Defined Firmware, is pre-installed on the drive and may resolve errata or enable innovative functions for the drive. The other option, AMI Native Support, is offered by the BIOS with a generic method.

VGA Priority

Use this feature to select the graphics device to be used as the primary video display for system boot. The options are Onboard and **Offboard**.

Onboard Video Option ROM

Select EFI to allow you to boot the computer using the Extensible Firmware Interface (EFI) device installed on the onboard video port. The options are Disabled and **EFI**.

PCH SLOT1 PCIe 5.0 X4 OPROM / CPU SLOT2 PCIe 5.0 X16 OPROM / CPU SLOT4 PCIe 5.0 X16 OPROM / CPU SLOT6 PCIe 5.0 X16 OPROM / M.2 C01 OPROM / M.2 C02 OPROM

Select EFI to allow you to boot the computer using the EFI device installed on the PCIe slot specified. The options are Disabled and **EFI**.

Onboard LAN1 Option ROM

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

▶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.

HTTPS Boot Checks Hostname

Enable this feature for HTTPS boot to check the hostname of the TLS certificates to see if it matches the host name provided by the remote server. The options are **Enabled** and Disabled (WARNING: Security Risk!!).

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 your motherboard supports this feature)

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

Select IPv4 or IPv6 (Unavailable when "Instance of Priority x:" is set to 0)

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

Boot Description (Unavailable when "Instance of Priority x:" is set to 0)

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 (Unavailable when "Instance of Priority x:" is set to 0)

Enter a Boot 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.

▶Intel(R) VROC SATA Controller

> **Note:** This feature is available when you configure Advanced -> SATA And RST Con-figuration -> "SATA Mode Selection" to RAID, save the settings and reboot the system to apply the changes.

The following information is displayed.

- Intel VROC SATA driver version

▶Create RAID Volume

Name:

This feature allows you to enter the unique name of RAID volume.

RAID Level:

This feature allows you to select the RAID level. The options are **RAID0(Stripe)**,

RAID1(Mirror), RAID5(Parity), and RAID10(RAID0+1). Available RAID levels are based on the number of disks connected to the system.

Select Disks:

Select the desired RAID disks one by one by setting them to **X**. The options are **(not selected)** and X (selected).

Strip Size: (Available for RAID0/RAID5/RAID10 Only)

Use this feature to select the RAID strip size. The options are 4KB, 8KB, 16KB, 32KB, 64KB, and **128KB**. The available options are based on the setting of "RAID Level" above.

Capacity (GB):

This feature allows you to enter the desired RAID capacity (in GB).

RWH Policy (Available for RAID5 Only)

Select a desired RAID Write Hole (RWH) policy when RWH occurs. If no disk has been set as a journaling drive, the options are Distributed PPL and **Disable**. If any disk has been set as a journaling drive, the options are Distributed PPL, Journaling Drive, and **Disable**. For details on creating a journaling drive, refer to the Non-RAID Physical Disks section.

Note 1: A RWH occurs when a drive failure and power failure happen simultaneously or close to each other during the write. The events of a drive failure and power failure are connected and can lead to irrecoverable data or silent data corruption. This is caused by the lack of atomicity of write operations across the disks in the RAID.

Note 2: Partial parity logging (PPL) can be defined as the result of XOR calculation of old data and old parity. PPL is a feature available only for RAID5 volumes. While a power/drive-failure/crash occurring, PPL information helps rebuild the RAID volume and reduce the potential data loss.

Select RWH Journaling Drive (Available for RAID5 Only)

If a journaling drive has been created and RWH Policy is set to Journaling Drive, select a desired journaling drive.

▶Create Volume

Use this feature to create a RAID volume with the settings above. The options are **Yes** and No. After selecting Yes, you will return to the previous screen displaying the information about the created RAID volume. You can click the created RAID volume to view more information.

Delete (a RAID Volume)

To delete a RAID volume you have created, take the steps below:

1. Select Advanced -> Intel(R) VROC SATA Controller.

2. Select the RAID volume to be deleted and then select Delete.

3. When asked to confirm deletion of the RAID volume, select Yes to delete the RAID volume.

Note: When deleting a RAID volume, all data on the disks will be deleted as well.

Rebuild (a RAID Volume)

To rebuild a degraded RAID volume, take the steps below after replacing a failed hard drive:

1. Select Advanced -> Intel(R) VROC SATA Controller.

2. Select the RAID volume to be rebuilt and then select Rebuild.

3. Select a disk from the list. Then you will return to the previous screen displaying the volume in rebuilding mode.

▶Non-RAID Physical Disks

After selecting Advanced -> Intel(R) VROC SATA Controller, the Non-RAID Physical Disks section lists the disks which have not been added to a RAID volume. Select a non-RAID physical disk and you can take the following actions.

Mark as Spare

A spare disk is used for automatic RAID volume rebuilds when the status of "failed", "missing", or "at risk" is detected on the array disk. For a RAID0 volume, only the status of "at risk" will trigger automatic RAID volume rebuilds. Marking a disk as a spare one will remove all data on the disk.

Mark as Journaling Drive

A journaling drive is used as an error event log to record an event when an error occurs to a RAID5 volume. Marking a disk as a journaling drive will remove all data on the disk.

Locate LED

The feature is not applicable to this motherboard. Please ignore this feature.

Reset to Non-RAID

For a spare or journaling disk or a disk which has been added to a RAID array, you can reset it to a non-RAID disk by taking the steps below:

1. Select Advanced -> Intel(R) VROC SATA Controller.

2. To reset a spare or journaling drive, select the desired drive from the disk list.
   To reset a RAID member disk, select the RAID volume which contains the disk to be reset and then select the desired member disk.

3. Select Reset. When asked to remove the RAID structure on the disk, select Yes to reset the disk.

> **Note:** When resetting a disk, all data on the disk will be deleted as well.

▶Intel(R) I210 Gigabit Network Connection - (MAC address)

> **Note:** The Ethernet controller and MAC addresses shown above are based on you system features.

▶Firmware Image Properties

The following information is displayed:

- Option ROM Version

- Unique NVM/EEPROM ID

- NVM Version

- Family Firmware Version

- EFI Version

▶NIC Configuration

Legacy Boot Protocol

Selects the non-UEFI boot protocol. Options are **None**, PXE, iSCSI Primary, and iSCSI Secondary.

Link Speed

This feature displays the connection speed of the LAN port

Wake On LAN

Set this feature to support system wake-up via the selected LAN device. If this feature is set to Enabled, the LAN port selected will be enabled when the system is powered on. The options are **Disabled** and Enabled.

Legacy Virtual LAN ID

Specifies the VLAN ID used for PXE VLAN mode. The valid VLAN ID range is from 0 to 4049. PXE VLAN is disabled if the VLAN ID is set to 0. Note that this settings is only applicable when the system ROM boots in Legacy BIOS mode.

PCI Virtual Functions Advertised

This feature displays the base PCI virtual functions advertised.

▶ISCSI Configuration

▶iSCSI General Parameters

TCP/IP Parameters via DHCP

Use this feature to acquire TCP/IP configuration from DHCP. Options are **Disabled** and Enabled.

iSCSI Parameters via DHCP (Available when "TCP/IP Parameters via DHCP" is set to Enabled)

Use this feature to acquire iSCSI configuration from DHCP. Options are **Disabled** and Enabled.

CHAP Authentication

Use this feature to enable or disable CHAP authentication. Options are **Disabled** and Enabled.

CHAP Mutual Authentication (Available when "CHAP Authentication" is set to Enabled)

Use this feature to enable or disable mutual CHAP authentication. Options are **Disabled** and Enabled. If enabled, enter the CHAP ID and password in the iSCSI Initiator Parameters page.

IP Version

This feature controls whether IPv4 or IPv6 network address will be used for iSCSI initiator and targets. Currently only IPv4 is supported.

▶ **iSCSI Initiator Parameters**

IP Address

Use this feature to configure the iSCSI initiator IP address.

Subnet Mask

Use this feature to set the netmask for the iSCSI initiator.

Default Gateway

Use this feature to set the gateway address for the iSCSI initiator.

iSCSI Name

Use this feature to enter the unique initiator name in iSCSI qualified name (IQN) format.

CHAP ID (Available when "CHAP Authentication" is set to Enabled)

Use this feature to enter the iSCSI initiator CHAP ID is displayed.

CHAP Secret (Available when "CHAP Authentication" is set to Enabled)

Use this feature to enter the iSCSI initiator CHAP secret (password) is displayed.

▶ **iSCSI First Target Parameters**

IP Address

Use this feature to configure the iSCSI target IP address.

TCP Port

Use this feature to configure the iSCSI target TCP port number (1 – 65535). The default value is **3260**.

Boot LUN

Use this feature to configure the boot LUN number (0 – 255). The default value is **0**.

iSCSI Name

Highlight the feature and press enter to create an iSCSI name.

CHAP Secret (Available when "CHAP Mutual Authentication" is set to Enabled)

Use this feature to specify the iSCSI storage target CHAP secret (password).

▶Device Level Configuration

Virtualization Mode

This feature is not supported.

Shared Memory Features

Use this feature to disable the usage of reserved memroy regions to allow direct assignment of the device to guest virtual machines. Options are Disabled and **Enabled**.

Active physical Functions

Use this feature to specify which physical functions are enabled. Disabled functions will not be exposed and their associated ports will be completely shut down. Options are PF0 Only, "PF0 and PF1", "PF0, PF1 and PF2", "PF0, PF1, PF2 and PF3", "PF0, PF1, PF2, PF3 and PF4", "PF0, PF1, PF2, PF3, PF4 and PF5", "PF0, PF1, PF2, PF3, PF4, PF5 and PF6", and **All**.

Blink LEDs

Use this feature to identify the physical network port by blinking the associated LED. The default setting is **0** (up to 15 seconds).

The following information is displayed:

- UEFI Driver

- Adapter PBA

- Device Name

- Chip Type

- PCI Device ID

- PCI Address

- Link Status

- Link Speed Status

- MAC Address

- Virtual MAC Address

▶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 it has been enrolled in the system. The options are **Disabled** and Enabled.

►Client Certification Configuration

This feature allows you to configure the client certificate 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 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.

►Intel(R) Virtual RAID on CPU

Note 1: It is available when a device is connected to the PCIe or M.2 slots, and VMD support is enabled for the slot.

Note 2: To enable a slot for VMD Support, go to Advanced -> Chipset Configuration -> North Bridge -> IIO Configuration -> Intel VMD Technology -> Intel VMD for Volume Management Device on CPU. After making changes on VMD configuration, reboot the system for the changes to take effect. Then this feature will be available under the Advanced menu.

The following information is displayed:

• Intel(R) VROC with VMD Technology x.x.x.xxxx

• Upgrade key:

• Intel VROC Managed Controllers

►All Intel VMD Controllers

The device information will be displayed in the Non-RAID Physical Disks.

Note: For detailed instructions on how to configure VROC RAID settings, please refer to the VROC RAID Configuration User's Guide posted on the web page under the link: https://www.supermicro.com/support/manuals/.

►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.

4.4 Event Logs

Use this feature to configure Event Logs settings.

> **Note:** After you've made any changes in this section, please be sure to reboot the system for the changes to take effect.

```
                              Aptio Setup - AMI
      Main  Advanced  Event Logs  BMC  Security  Boot  Save & Exit

  ▶ Change SMBIOS Event Log Settings              Press <Enter> to change the
  ▶ View SMBIOS Event Log                         Smbios Event Log configuration.




                                                  ↔: Select Screen
                                                  ↑↓: Select Item
                                                  Enter: Select
                                                  +/-: Change Opt.
                                                  F1: General Help
                                                  F2: Previous Values
                                                  F3: Optimized Defaults
                                                  F4: Save & Exit
                                                  ESC: Exit




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```
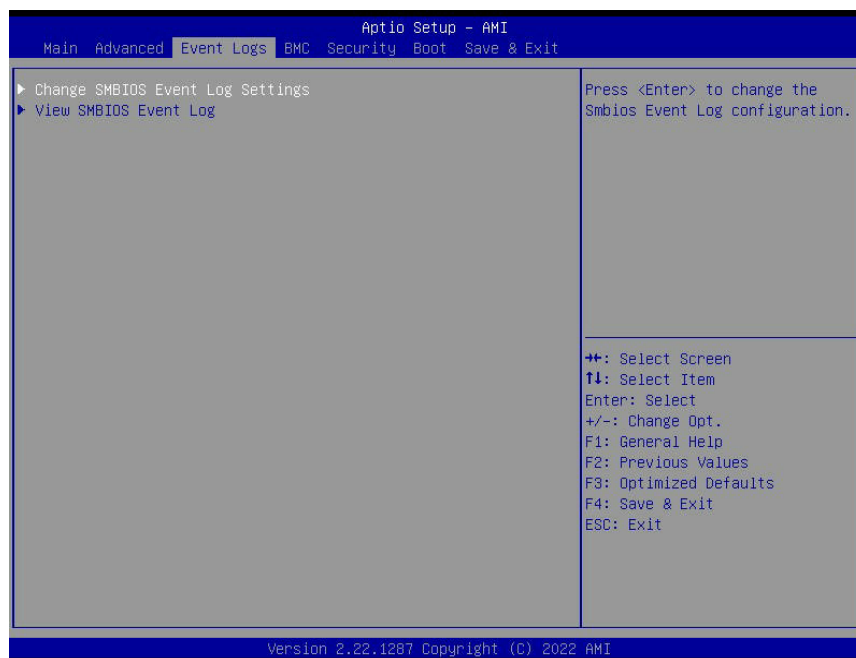
▶Change SMBIOS Event Log Settings

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 to 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)

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

Note: Please reboot the system for the changes above to take effect.

▶**View SMBIOS Event Log**

This feature allows you 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 categories is displayed: DATE / TIME / ERROR CODE / SEVERITY.

4.5 BMC

Use this feature to configure BMC settings.

```
                              Aptio Setup – AMI
         Main  Advanced  Event Logs  BMC  Security  Boot  Save & Exit

    BMC Firmware Revision          01.01.14           Press <Enter> to change the
    IPMI STATUS                    Working            SEL event log configuration.

  ▶ System Event Log
  ▶ BMC Network Configuration



                                                      →←: Select Screen
                                                      ↑↓: Select Item
                                                      Enter: Select
                                                      +/-: Change Opt.
                                                      F1: General Help
                                                      F2: Previous Values
                                                      F3: Optimized Defaults
                                                      F4: Save & Exit
                                                      ESC: Exit



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```

BMC Firmware Revision

This feature indicates the BMC firmware revision used in your system.

IPMI STATUS

This feature indicates the status of the IPMI/BMC firmware installed in your system.

▶System Event Log

Enabling/Disabling Options

SEL Components

Select Enabled to enable all system event logging upon system boot. The options are Disabled and **Enabled**.

Erasing Settings

Erase SEL (Available when "SEL Components" is set to Enabled)

Select (Yes, On next reset) to erase all system event logs upon next system boot. Select (Yes, On every reset) to erase all system event logs upon each system reboot. Select No to keep all system event logs after each system reboot. The options are **No,** (Yes, On next reset), and (Yes, On every reset).

When SEL is Full (Available when "SEL Components" is set to Enabled)

This feature allows you to determine what the BIOS should do when the system event log is full. Select Erase Immediately to erase all events in the log when the system event log is full. The options are **Do Nothing** and Erase Immediately.

> **Note**: After making changes on a setting, be sure to reboot the system for the changes to take effect.

▶BMC Network Configuration

Update BMC LAN Configuration

Select Yes for the BIOS to implement all IP/MAC address changes upon next system boot. The options are **No** and Yes.

****

Configure IPv4 Support

****

IPMI LAN Selection

This feature displays the type of the IPMI LAN.

IPMI Network Link Status:

This feature displays the status of the IPMI network link for this system.

Configuration Address Source (Available when "Update BMC LAN Configuration" is set to Yes)

Use this feature to select the source of the IPv4 connection. If Static is selected, you will need to know the IP address of IPv4 connection and enter it to the system manually in the field. If DHCP is selected, the BIOS will search for a Dynamic Host Configuration Protocol (DHCP) server in the network that is attached to and request the next available IP address for this computer. The options are Static and **DHCP**.

Station MAC Address (Available when "Configuration Address Source" is set to Static)

This feature displays the Station MAC address for this computer. Mac addresses are six two-digit hexadecimal numbers.

Station IP Address (Available when "Configuration Address Source" is set to Static)

This feature displays the Station IP address in decimal and in dotted quad form (i.e., 172.29.176.131).

Subnet Mask (Available when "Configuration Address Source" is set to Static)

This feature displays the sub-network that this computer belongs to. The value of each three-digit number separated by dots should not exceed 255.

Gateway IP Address (Available when "Configuration Address Source" is set to Static)

This feature displays the Gateway IP address for this computer. This should be in decimal and in dotted quad form (i.e., 172.29.0.1).

VLAN (Available when "Update BMC LAN Configuration" is set to Yes)

This feature displays the status of virtual LAN (VLAN) support. The options are **Disable** and Enable.

VLAN ID (Available when "VLAN" is set to Enable)

Use this feature to create a new VLAN ID by using an existing VLAN or creating a new VLAN ID. Enter a valid value between 1 – 4094. The default setting is **1**.

****

Configure IPv6 Support

****

IPv6 Address Status

This feature displays the status of the IPv6 address.

IPv6 Support

Use this feature to enable IPv6 support. The options are **Enabled** and Disabled.

Configuration Address Source (Available when "IPv6 Support" is set to Enabled)

Use this feature to select the source of the IPv6 connection. If Static Configuration is selected, you will need to know the IP address of IPv6 connection and enter it to the system manually in the field. If the other two options are selected, the BIOS will search for a DHCP server in the network that is attached to and request the next available IP address for this computer. The options are Static Configuration, **DHCPv6 Stateless**, and DHCPv6 Stateful.

Station IPv6 Address ("Static", "DHCPv6 Stateless", or "DHCPv6 Stateful", depending on the option you selected for "Configuration Address Source" above)

This feature displays the station IPv6 address. Press <Enter> to change the setting.

Prefix Length (Available when "Configuration Address Source" is set to Static Configuration)

This feature displays the prefix length. Press <Enter> to change the setting.

IPv6 Router1 IP Address (Available when "Configuration Address Source" is set to Static Configuration)

Use this feature to enter the IPv6 router IP address. Press <Enter> to change the setting.

4.6 Security

This feature allows you to configure the following security settings for the system.

```
                              Aptio Setup - AMI
     Main  Advanced  Event Logs  BMC  Security  Boot  Save & Exit

                                              ▲ Set Administrator Password

     Administrator Password          Not Installed
     User Password                   Not Installed

     Password Description

     If the Administrator's / User's password is set,
     then this only limits access to Setup and is
     asked for when entering Setup.
     Please set Administrator's password first in order
     to set User's password, if clear Administrator's
     password, the User's password will be cleared as well.
                                                ➔←: Select Screen
     The password length must be in the following  ↑↓: Select Item
     range:                                        Enter: Select
     Minimum length                  3             +/-: Change Opt.
     Maximum length                  20            F1: General Help
                                                   F2: Previous Values
     Administrator Password                        F3: Optimized Defaults
     Password Check                  [Setup]       F4: Save & Exit
     Hard Drive Security Frozen      [Disabled]    ESC: Exit

   ▶ Supermicro Security Erase Configuration     ▼

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```

The following information is displayed:

- Administrator Password

- User Password

- Password Description

Administrator Password

This feature indicates if an administrator password has been installed. It also allows you to set the administrator password which is required to enter the BIOS Setup utility. The length of the password should be from three characters to 20 characters long.

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

This feature indicates if a user password has been installed. It also allows you to set the user password which is required to enter the BIOS Setup utility. The length of the password should be from three characters to 20 characters long.

> **Note:** For detailed instructions on how to configure Security Boot settings, please refer to the Security Boot Configuration User's Guide posted on the web page under the link: https://www.supermicro.com/support/manuals/.

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.

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.

▶Secure Boot

▶Supermicro Security Erase Configuration (Available when any storage device is detected by the BIOS)

This section allows you to configure the Supermicro-proprietary Security Erase settings. When this section 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 allows you to configure 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 allows you to configure Supermicro Security Erase settings on the storage device by using this administrator password.

Security Function

Select Set Password to set an HDD/SATA password which allows you to configure the security settings of the HDD/SATA device. Select Security Erase - Password to enter a SATA user password to allow you to erase the password and the contents previously stored in the HDD/SATA device. Select Security Erase - Without Password to use the manufacturer default password "111111111" as the SATA user password and allow you to erase the contents of the HDD/SATA device by using this default password. The options are **Disable**, Set Password, Security Erase - Password, Security Erase - PSID, and Security Erase - Without Password.

> **Note:** The option of Security Erase - PSID is based on the storage device support. PSID is the abbreviation for Physical Security Identification.

Password

Use this feature to set the SATA user password which allows you to configure the Supermicro Security Erase settings by using the SATA 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 allows you to configure the Supermicro Security Erase settings by using this new user password.

Lockdown Mode (Available when the DCMS key is activated)

Select Enabled to support Lockdown Mode that will prevent the existing data or keys stored in the system from being altered or changed in an effort to preserve system integrity and security. The options are **Disabled** and Enabled.

HDD Security Configuration:

▶Px: (Storage Device Name)

This section is available when the storage device is detected by the BIOS. Select this device. Press <Enter> and the following information is displayed:

- HDD Password Description:

- HDD PASSWORD CONFIGURATION:

  - Security Supported:

  - Security Enabled:

  - Security Locked:

  - Security Frozen:

  - HDD User Pwd Status:

  - HDD Master Pwd Status:

Set User Password (Available when "Security Frozen:" above is No)

Press <Enter> to set the HDD user password.

▶Secure Boot

> **Note:** For detailed instructions on how to configure Security Boot settings, please refer to the Security Boot Configuration User's Guide posted on the web page under the link: 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 (Available when "Secure Boot Mode" is set to Custom)

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

▶Enter Deployed Mode / Exit Deployed Mode (Available when "Secure Boot Mode" is set to Custom)

Select Ok to reset system to the User Mode or to the Deployed Mode.

▶Key Management (Available when "Secure Boot Mode" is set to Custom)

▶Restore Factory Keys (Available when any secure keys have been installed)

Select Yes to restore manufacturer default keys used to ensure system security. The options are **Yes** and No.

▶Reset To Setup Mode (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 (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, keys 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, keys numbers, and the sources of the authorized signatures. Select Update to update your "Key Exchange Keys". Select Append to append your "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, keys numbers, and the sources of the authorized signatures. Select Update to update your "Authorized Signatures". Select Append to append your "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 your "Forbidden Signatures". Select Append to append your "Forbidden Signatures".

▶Authorized TimeStamps (dbt)

This feature allows you 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 your "Authorized TimeStamps". Select Append to append your "Authorized TimeStamps".

▶OsRecovery Signature (dbr)

This feature allows you to set and save the authorized signatures used for OS recovery. Select Update to update your "OS Recovery Signatures". These values also indicate sizes, keys, and key sources of the OsRecovery signatures. Select Append to append your "OS Recovery Signatures".

TCG Storage Security Configuration:

▶(Storage Device Name) (Available when the storage device is compliant with TCG specifications)

Select this device. Press <Enter> and the following information is displayed:

• TCG Storage Security Password Description:

• PASSWORD CONFIGURATION:

  • Security Subsystem Class:

  • Security Supported:

  • Security Enabled:

  • Security Locked:

  • Security Frozen:

  • Admin Pwd Status:

Set Admin Password

Use this feature to set the administrator password for this storage device.

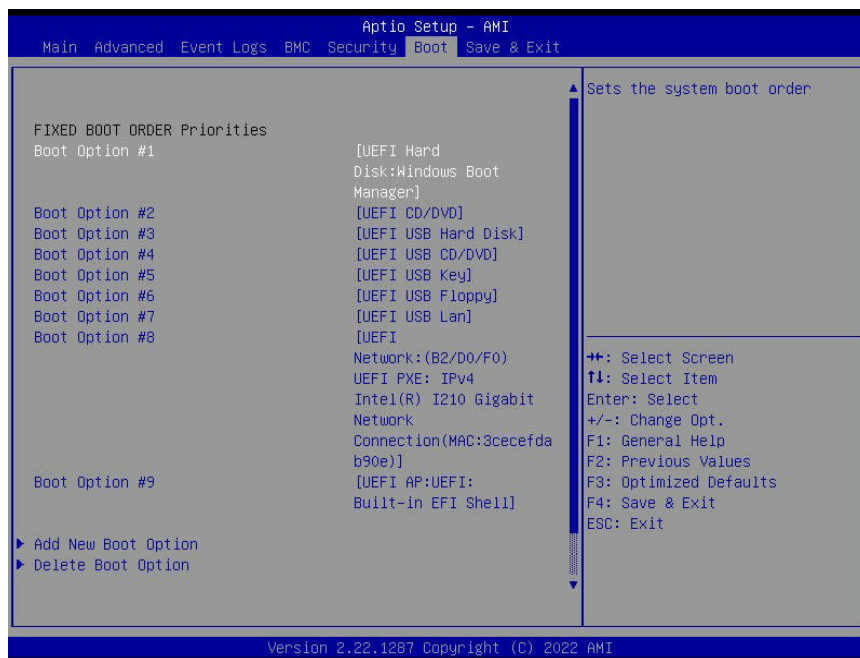**Set User Password (Available when the administrator password has been set)**

Use this feature to set the user password for this storage device.

Device Reset

Use this feature to reset the password configuration for this storage device.

4.7 Boot

Use this feature to configure Boot settings:

```
                        Aptio Setup - AMI
     Main  Advanced  Event Logs  BMC  Security  Boot  Save & Exit

                                                    ▲ Sets the system boot order

     FIXED BOOT ORDER Priorities
     Boot Option #1                [UEFI Hard
                                   Disk:Windows Boot
                                   Manager]
     Boot Option #2                [UEFI CD/DVD]
     Boot Option #3                [UEFI USB Hard Disk]
     Boot Option #4                [UEFI USB CD/DVD]
     Boot Option #5                [UEFI USB Key]
     Boot Option #6                [UEFI USB Floppy]
     Boot Option #7                [UEFI USB Lan]
     Boot Option #8                [UEFI
                                   Network:(B2/D0/F0)   ↔: Select Screen
                                   UEFI PXE: IPv4       ↑↓: Select Item
                                   Intel(R) I210 Gigabit  Enter: Select
                                   Network              +/-: Change Opt.
                                   Connection(MAC:3cecefda  F1: General Help
                                   b90e)]               F2: Previous Values
     Boot Option #9                [UEFI AP:UEFI:        F3: Optimized Defaults
                                   Built-in EFI Shell]  F4: Save & Exit
                                                        ESC: Exit
    ▶ Add New Boot Option
    ▶ Delete Boot Option                               ▼

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```

FIXED BOOT Option Priorities

This feature prioritizes the order of a bootable device from which the system will boot. Press <Enter> on each item sequentially to select devices.

▶Add New Boot Option (Available when any storage device is detected by the BIOS)

This feature allows you to add a new boot option to the boot priority features for system boot.

Add boot option

This feature allows you to specify the name for the new boot option.

Path for boot option

Use this feature to enter the path for the new boot option in the format fsx:\path\filename.efi.

Boot option File Path

This feature allows you to specify the file path for the new boot option.

Create

After the name and the file path for the boot option are set, press <Enter> to create the new boot option in the boot priority list.

▶Delete Boot Option

This feature allows you to select a boot device to delete from the boot priority list.

Delete Boot Option

This feature allows you to remove an EFI boot option from the boot priority list.

▶UEFI NETWORK Drive BBS Priorities

This feature allows you to set the system boot order of detected devices.

▶UEFI Application Boot Priorities

This feature allows you to set the system boot order of detected devices.

▶UEFI USB Key Drive BBS Priorities
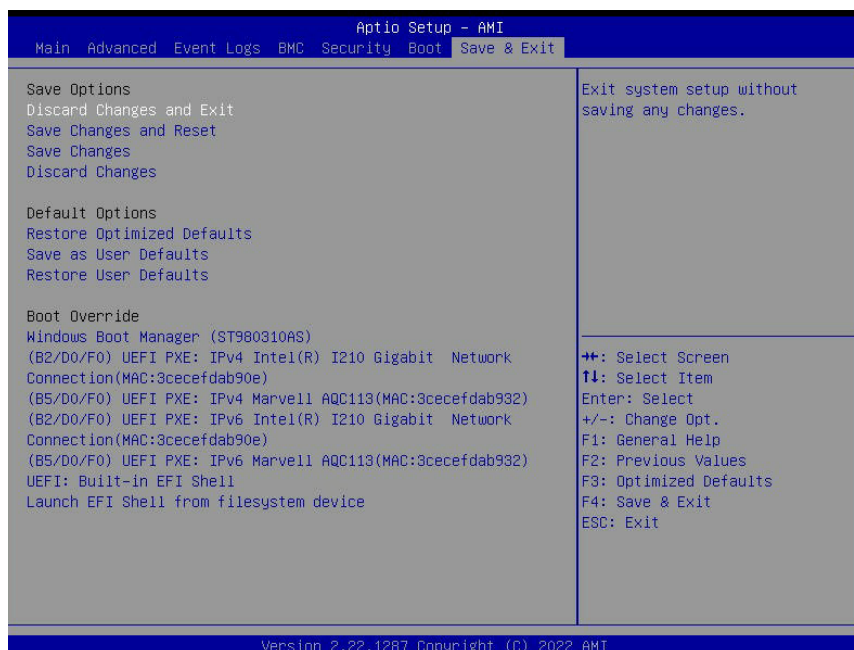
This feature allows you to set the system boot order of detected devices.

▶UEFI Hard Disk Drive BBS Priorities

This feature allows you 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.

```
                              Aptio Setup - AMI
     Main  Advanced  Event Logs  BMC  Security  Boot  Save & Exit

   Save Options                                     Exit system setup without
   Discard Changes and Exit                         saving any changes.
   Save Changes and Reset
   Save Changes
   Discard Changes

   Default Options
   Restore Optimized Defaults
   Save as User Defaults
   Restore User Defaults

   Boot Override
   Windows Boot Manager (ST980310AS)
   (B2/D0/F0) UEFI PXE: IPv4 Intel(R) I210 Gigabit  Network
   Connection(MAC:3cecefdab90e)                     →←: Select Screen
   (B5/D0/F0) UEFI PXE: IPv4 Marvell AQC113(MAC:3cecefdab932)  ↑↓: Select Item
   (B2/D0/F0) UEFI PXE: IPv6 Intel(R) I210 Gigabit  Network    Enter: Select
   Connection(MAC:3cecefdab90e)                     +/-: Change Opt.
   (B5/D0/F0) UEFI PXE: IPv6 Marvell AQC113(MAC:3cecefdab932)  F1: General Help
   UEFI: Built-in EFI Shell                         F2: Previous Values
   Launch EFI Shell from filesystem device          F3: Optimized Defaults
                                                    F4: Save & Exit
                                                    ESC: Exit



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```

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

When you have completed the system configuration changes, use this feature to exit the BIOS Setup utility and reboot the computer for the new system configuration parameters to become effective.

Save Changes

When you have completed the system configuration changes, use this feature to save all changes you've made. This will not reset (reboot) the system.

Discard Changes

Select this feature and press <Enter> to discard all the changes you've 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 to ensure that your system has the optimized default settings.

Save as User Defaults

Select this feature and press <Enter> to save all changes on 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

This feature allows you to override the Boot priorities sequence in the Boot menu, and immediately boot the system with a device specified instead of the one specified in the boot list. This is a one-time override.

Appendix A

BIOS POST Codes

A.1 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, please refer to https://www.ami.com/products/.

Appendix B

Software

After the hardware has been installed, you can install the Operating System (OS), configure RAID settings, and install the drivers.

## B.1 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 www.supermicro.com/support/manuals.

Installing the OS

1. Create a method to access the Microsoft Windows installation ISO file. That can be a USB flash or media drive.

2. Retrieve the proper RST/RSTe driver. 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 startup.
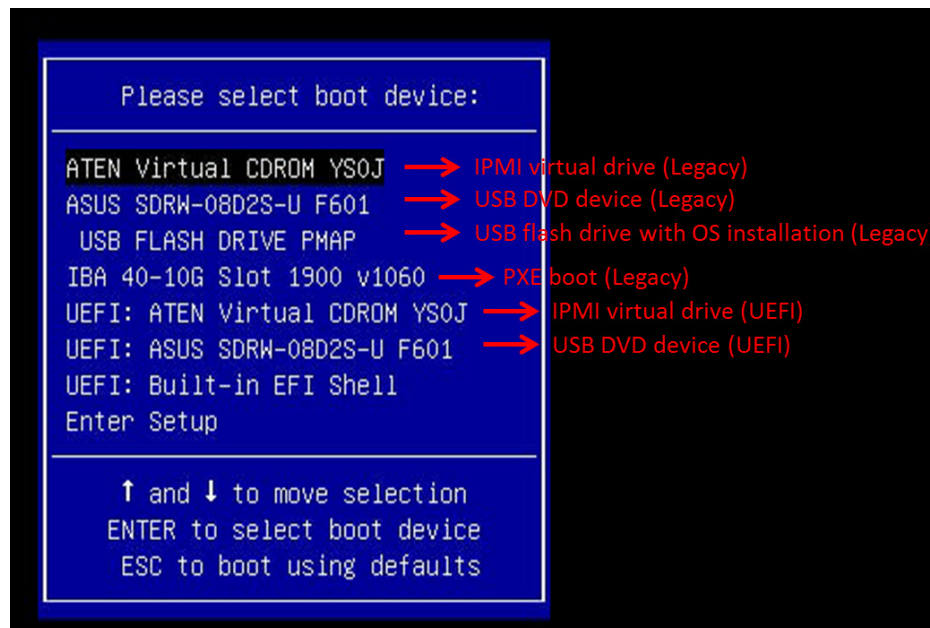
4. During Windows Setup, continue to the dialog where you select the drives on which to install Windows. If the disk you want to use is not listed, click on "Load driver" link at the bottom left corner.
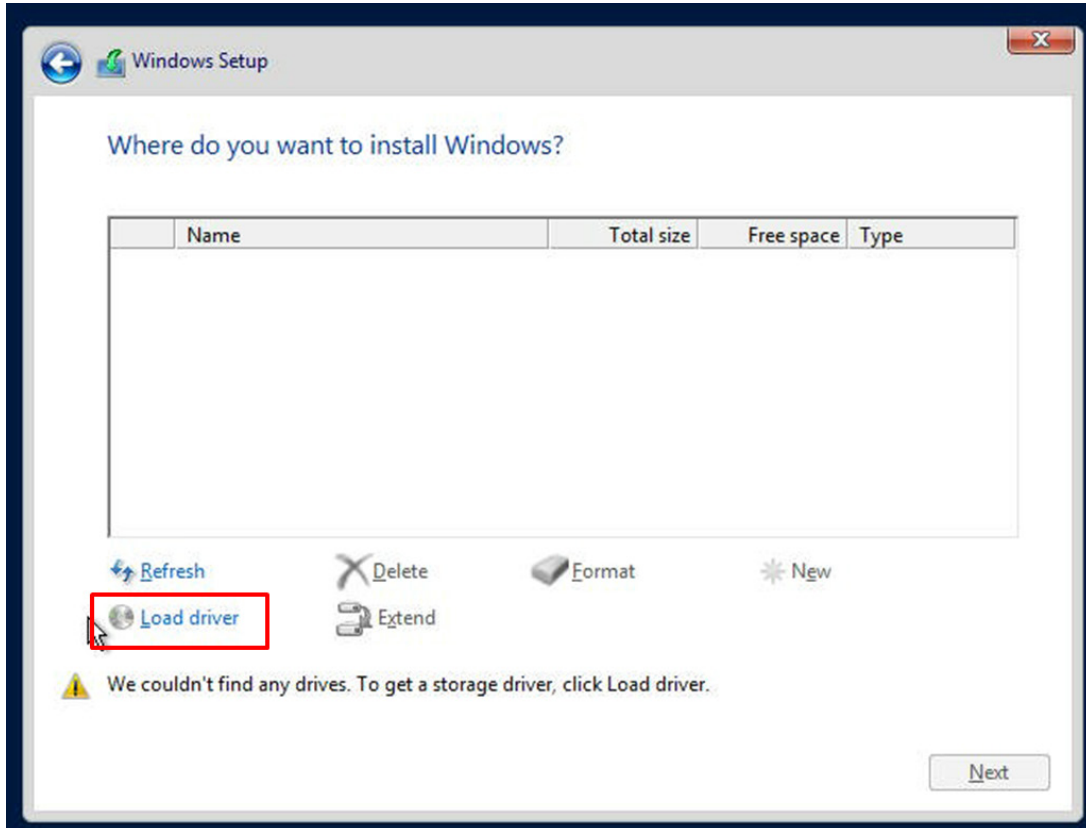
To load the driver, browse the USB flash drive for the proper driver files.

- For RAID, choose the SATA/sSATA RAID driver indicated then choose the storage drive on which you want to install it.

- For non-RAID, choose the SATA/sSATA AHCI driver indicated then choose the storage drive on which you want to install it.

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.

B.2 Driver Installation

The Supermicro website that contains drivers and utilities for your system is at https://www. supermicro.com/wdl/driver. 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/products/. 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.
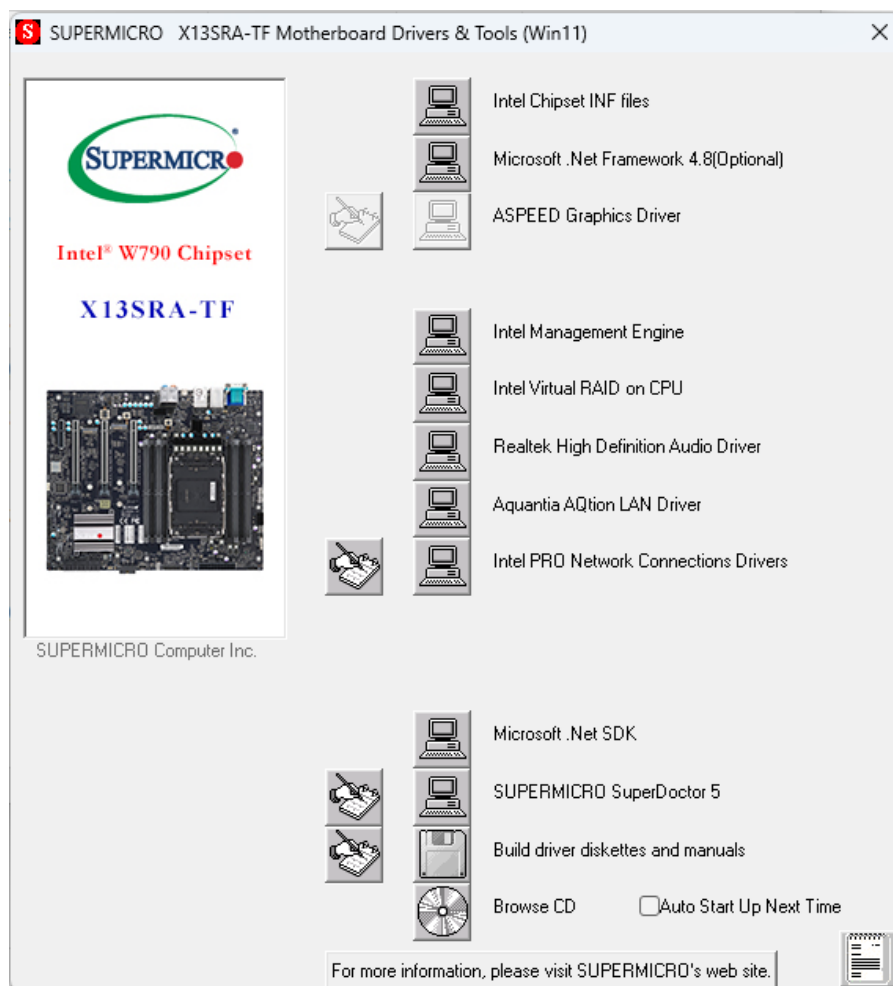
Note: Click the icons showing a hand writing on paper to view the readme files for each item. Click the computer icons to the right of these items to install each item (from top to bottom) one at a time. **After installing each item, you must reboot the system before moving on to the next item on the list.** The bottom icon with a CD on it allows you to view the entire contents.

B.3 SuperDoctor® 5

The Supermicro SuperDoctor 5 is a program that functions in a command-line or web-based interface for Windows and Linux operating systems. The program monitors such system health information as CPU temperature, system voltages, system power consumption, fan speed, and provides alerts via email or Simple Network Management Protocol (SNMP).

SuperDoctor 5 comes in local and remote management versions and can be used with Nagios to maximize your system monitoring needs. With SuperDoctor 5 Management Server (SSM Server), you can remotely control power on/off and reset chassis intrusion for multiple systems with SuperDoctor 5 or IPMI. SuperDoctor 5 Management Server monitors HTTP and SMTP services to optimize the efficiency of your operation.

B.4 IPMI

The X13SRA-TF supports the Intelligent Platform Management Interface (IPMI). IPMI is used to provide remote access, monitoring and management. There are several BIOS settings that are related to IPMI.

For general documentation and information on IPMI, please visit our website at: https://www.supermicro.com/products/nfo/IPMI.cfm.

B.5 Logging into the Baseboard Management (BMC) Controller

Supermicro ships standard products with a unique password for the BMC ADMIN user. This password can be found on a label on the motherboard.

When logging in to the BMC for the first time, please use the unique password provided by Supermicro to log in as an administrator. After logging in, you can change the administrator password to protect your security. When logging in as an administrator, you can also create a user account and set the password of your choice for subsequent logins.

For more information regarding BMC passwords, please visit our website at https://www.supermicro.com/bmcpassword.

Appendix C

Standardized Warning Statements

The following statements are industry standard warnings, provided to warn the user of situations where a potential bodily injury may occur. 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.

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

電池交換が正しく行われなかった場合、破裂の危険性があります。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

电池更换不当会有爆炸危险。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

電池更換不當會有爆炸危險。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

Bei Einsetzen einer falschen Batterie besteht Explosionsgefahr. Ersetzen Sie die Batterie nur durch den gleichen oder vom Hersteller empfohlenen Batterietyp. Entsorgen Sie die benutzten Batterien nach den Anweisungen des Herstellers.

Attention

Danger d'explosion si la pile n'est pas remplacée correctement. 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.

¡Advertencia!

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

אזהרה!

קיימת סכנת פיצוץ של הסוללה במידה והוחלפה בדרך לא תקינה. יש להחליף

את הסוללה בסוג התואם מחברת יצרן מומלצת.

סילוק הסוללות המשומשות יש לבצע לפי הוראות היצרן.

هناك خطر من انفجار في حالة اسحبذال البطارية بطريقة غير صحيحة فعليل

اسحبذال البطارية

فقط بنفس النع أو ما يعادلها مما أوصث به الشرمة المصنعة

جخلص من البطاريات المسحعملة وفقا لحعليمات الشرمة الصانعة

경고!

배터리가 올바르게 교체되지 않으면 폭발의 위험이 있습니다. 기존 배터리와 동일하거나 제조사에서 권장하는 동등한 종류의 배터리로만 교체해야 합니다. 제조사의 안내에 따라 사용된 배터리를 처리하여 주십시오.

Waarschuwing

Er is ontploffingsgevaar indien de batterij verkeerd vervangen wordt. 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 الطنية

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.

Appendix D

UEFI BIOS Recovery

Warning: Do not upgrade the BIOS unless your system has a BIOS-related issue. Flashing the wrong BIOS can cause irreparable damage to the system. In no event shall Supermicro be liable for direct, indirect, special, incidental, or consequential damages arising from a BIOS update. If you need to update the BIOS, do not shut down or reset the system while the BIOS is updating to avoid possible boot failure.

D.1 Overview

The Unified Extensible Firmware Interface (UEFI) provides a software-based interface between the operating system and the platform firmware in the pre-boot environment. The UEFI specification supports an architecture-independent mechanism that will allow the UEFI OS loader stored in an external storage device to boot the system. The UEFI offers clean, hands-off management to a computer during system boot.

D.2 Recovering the UEFI BIOS Image

A UEFI BIOS flash chip consists of a recovery BIOS block and a main BIOS block (a main BIOS image). The recovery block contains critical BIOS codes, including memory detection and recovery codes for the user to flash a healthy BIOS image if the original main BIOS image is corrupted. When the system power is turned on, the recovery block codes execute first. Once this process is complete, the main BIOS code will continue with system initialization and the remaining Power-On Self-Test (POST) routines.

Note 1: Follow the BIOS recovery instructions in Section D.3 for BIOS recovery when the main BIOS block crashes.

Note 2: If the recovery block processes stated in Section D.3 fail, you will need to follow the procedures to make a Returned Merchandise Authorization (RMA) request. Refer to Section 3.5 for more information about the RMA request.

D.3 Recovering the Main BIOS Block with a USB Device

This feature allows the user to recover the main BIOS image using a USB device without additional utilities used. A USB flash or media drive can be used for this purpose. However, a USB hard disk drive cannot be used for BIOS recovery at this time.

> **Note:** The USB flash drive doesn't have to be bootable; however, it has to be formatted to FAT16/FAT32 file system.

To perform UEFI BIOS recovery using a USB device, follow the instructions below.
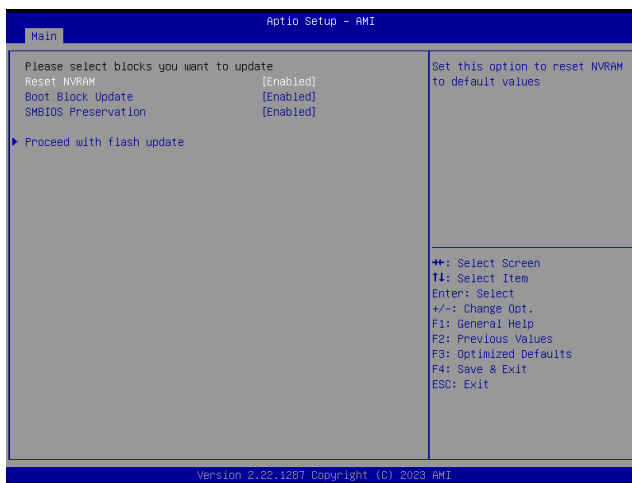
1. Please use a different machine to download the BIOS package for your motherboard or your system from the product page available on our website at www.supermicro.com.

2. Extract the BIOS package to a USB device. Copy the BIOS ROM file [BIOSname#.###] that is included in the BIOS package into the Root "\" directory of the USB device.

3. Rename the BIOS ROM file [BIOSname#.###] in the root directory to SUPER.ROM for BIOS recovery use.

> **Note:** Before recovering the main BIOS image, confirm that the SUPER.ROM file you have is the same version or a close version meant for your motherboard.

4. Insert the USB device that contains the SUPER.ROM file into the system before you power on the system or when the following screen appears.
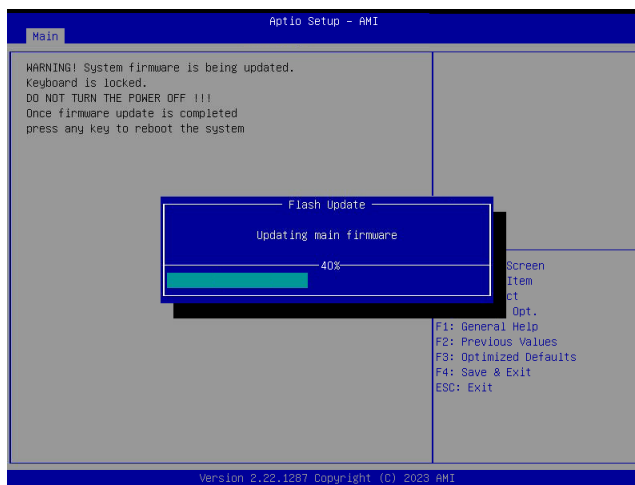
5. After locating the SUPER.ROM file, the system will enter the BIOS Recovery menu as shown below.

```
                              Aptio Setup - AMI
    Main

    Please select blocks you want to update                   Set this option to reset NVRAM
    Reset NVRAM                         [Enabled]              to default values
    Boot Block Update                   [Enabled]
    SMBIOS Preservation                 [Enabled]

  ▶ Proceed with flash update




                                                              →←: Select Screen
                                                              ↑↓: Select Item
                                                              Enter: Select
                                                              +/-: Change Opt.
                                                              F1: General Help
                                                              F2: Previous Values
                                                              F3: Optimized Defaults
                                                              F4: Save & Exit
                                                              ESC: Exit




                         Version 2.22.1287 Copyright (C) 2023 AMI
```

Note: At this point, you may decide if you want to start the BIOS recovery. If you decide to proceed with BIOS recovery, follow the procedures below.

6. When the screen as shown above displays, use the arrow keys to select the item "Proceed with flash update" and press the <Enter> key. You will see the BIOS recovery progress as shown in the screen below.

**Note:** *Do not interrupt the BIOS flashing process until it is complete*.

```
                              Aptio Setup - AMI
    Main

    WARNING! System firmware is being updated.
    Keyboard is locked.
    DO NOT TURN THE POWER OFF !!!
    Once firmware update is completed
    press any key to reboot the system



                     ┌──────────── Flash Update ────────────┐
                     │                                       │
                     │        Updating main firmware         │
                     │                                       │          Screen
                     │───────────── 40% ─────────────        │          Item
                     │                                       │          ct
                     │      ███████████                      │          Opt.
                     └───────────────────────────────────────┘   F1: General Help
                                                              F2: Previous Values
                                                              F3: Optimized Defaults
                                                              F4: Save & Exit
                                                              ESC: Exit




                         Version 2.22.1287 Copyright (C) 2023 AMI
```

Note: *Do not interrupt this process* until the BIOS flashing is complete.

7. After the BIOS recovery process is complete, press any key to reboot the system.
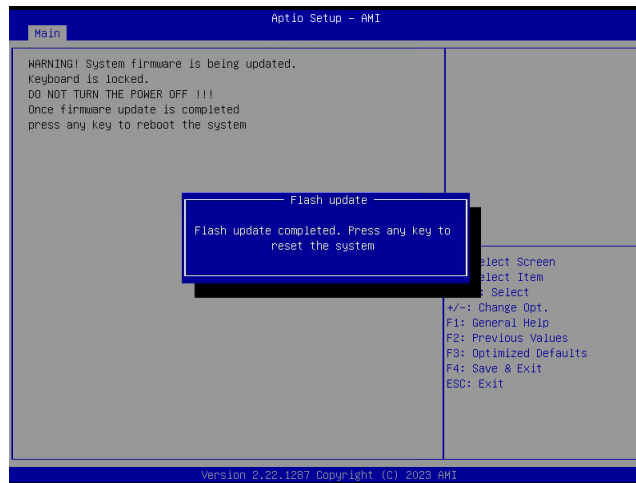
> ✎ **Note:** It is recommended that you update your BIOS after BIOS recovery. Please follow the update procedures below.

8. Press <Del> during system boot to enter the BIOS Setup utility. From the top of the tool bar, select Boot to enter the submenu. From the submenu list, select Boot Option #1 and set Boot Option #1 to [UEFI AP:UEFI: Built-in EFI Shell] as shown below. Press <F4> to save the settings and exit the BIOS Setup utility.
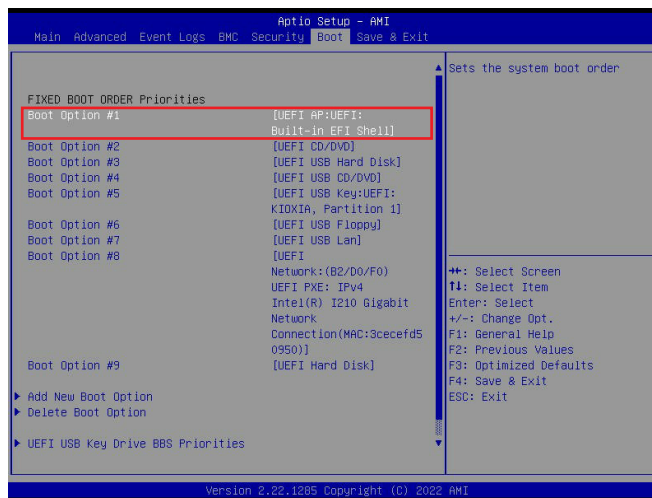
9. When the UEFI Shell prompt appears, type fs#: (where # is the drive number of the USB device) to change the device directory path. Use the "cd" command to go to the directory that contains the BIOS package you extracted earlier from Step 2. Enter flash. nsh BIOSname#.### at the prompt to start the BIOS update process.

Note: *Do not interrupt this process* until the BIOS flashing is complete.

10. The screen above indicates that the BIOS update process has completed. Perform an A/C power cycle when you see the screen below.