



B3SD1-20C-25G

USER'S MANUAL

Revision 1.0

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Manual Revision 1.0

Release Date: November 14, 2023

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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 B3SD1-20C-25G motherboard.

About This Motherboard

The Supermicro B3SD1-20C-25G motherboard supports an Intel® Xeon® D-2796NT processor in a FCBGA 2579 socket with a thermal design power (TDP) of up to 120 W. This motherboard features up to 256 GB of DDR4 ECC LRDIMM memory with speeds of up to 2933 MHz in two DIMM slots, one M.2 M-Key PCIe 4.0 or SATA 3.0 connector (2280), two PCIe 4.0 x8 MCIO connectors, one SATA-DOM, and an onboard Trusted Platform Module (TPM) header. The B3SD1-20C-25G is optimized for data centers and cloud computing. Note that this motherboard is intended to be installed and serviced by professional technicians only. For processor and memory updates, refer to our website at <http://www.supermicro.com/products/>.

Conventions Used in the Manual

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



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



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



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



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

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Chapter 1

Introduction

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

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, contact your retailer.

1.1 Checklist

Main Parts List		
Description	Part Number	Quantity
Supermicro Motherboard	B3SD1-20C-25G	1
Quick Reference Guide	MNL-2656-QRG	1

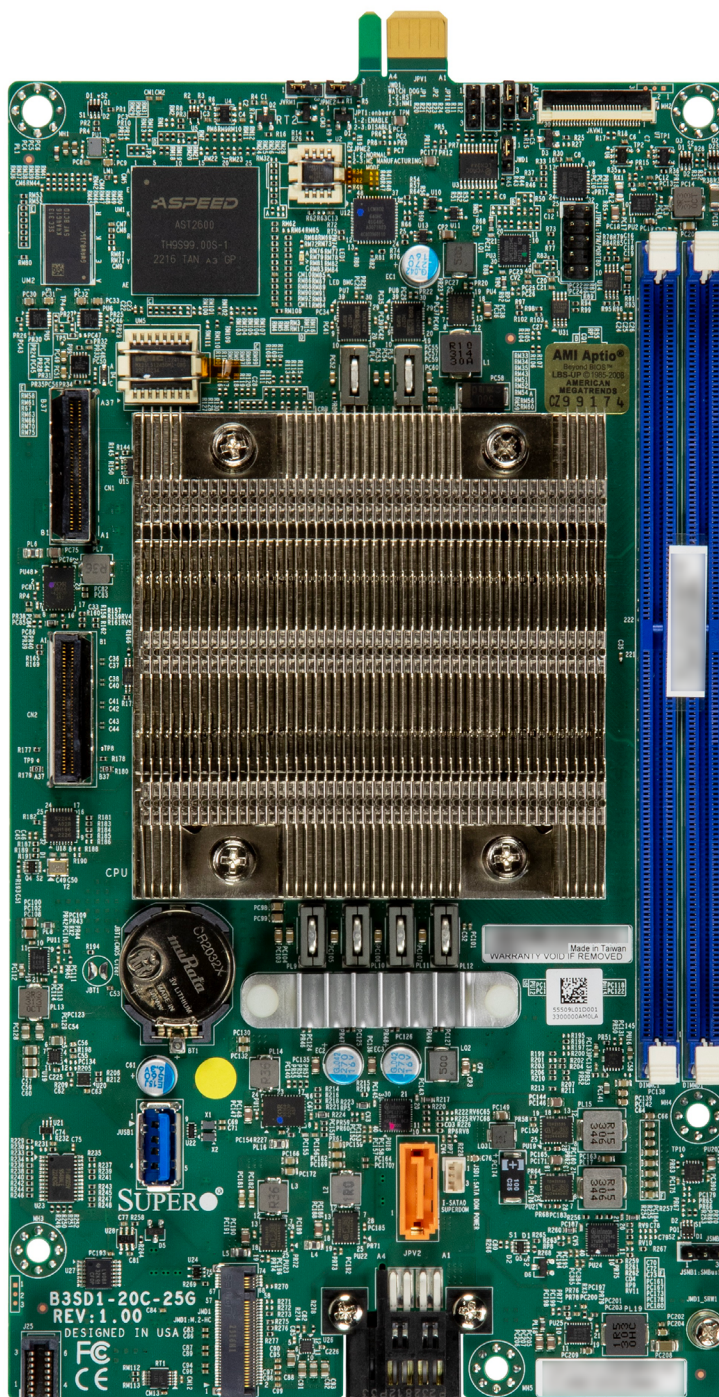
Important Links

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

- Frequently Asked Questions: <https://www.supermicro.com/FAQ/index.php>
- Supermicro product manuals: <http://www.supermicro.com/support/manuals/>
- Product drivers and utilities: <https://www.supermicro.com/wdl/driver/>
- Product safety info: http://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=/wftp/utility/Lot9_Secure_Data_Deletion_Utility/
- If you have any questions, contact our support team at: support@supermicro.com

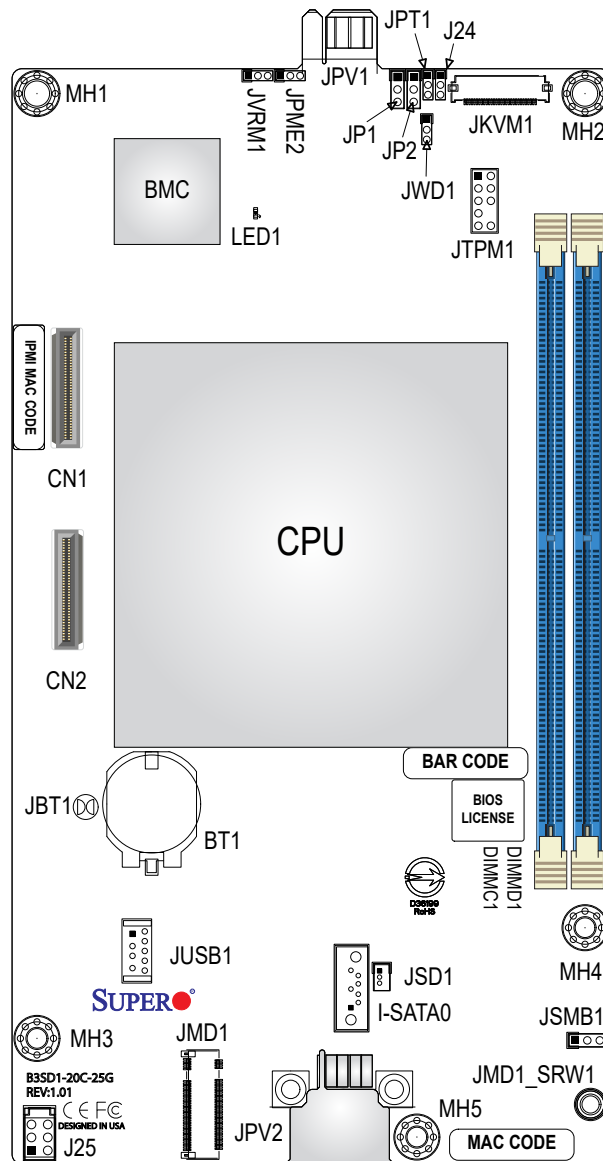
This manual may be periodically updated without notice. Check the Supermicro website for possible updates to the manual revision level.

Figure 1-1. B3SD1-20C-25G Motherboard Image



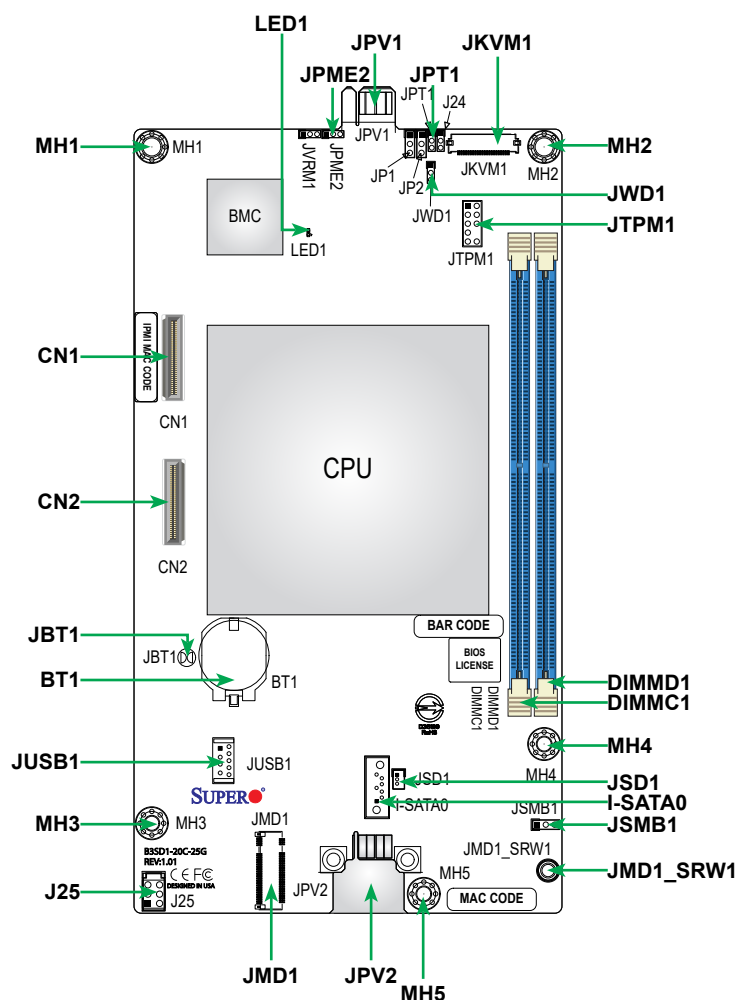
Note: All graphics shown in this manual were based upon the latest PCB revision available at the time of publication of the manual. The motherboard you received may or may not look exactly the same as the graphics shown in this manual.

Figure 1-2. Motherboard Layout
(not drawn to scale)



Note: Components not documented are for internal testing only.

Quick Reference



Notes:

- See [Chapter 2](#) for detailed information on jumpers and I/O ports.
- "■" 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	Onboard CMOS Clear	Open (Normal)
JPME2	Manufacturing Mode	Pins 1-2 (Normal)
JPT1	Onboard TPM 2.0 Enable/Disable	Pins 1-2 (Enable)
JWD1	Watchdog Timer	Pins 1-2 (Reset)
Connector	Description	
BT1	Onboard CMOS Battery	
CN1	MCIO Connector	
CN2	MCIO Connector	
I-SATA1	SATA DOM Port	
JKVM1	VGA/USB Module Connector	
JMD1_SRW1	M.2 Mounting Hole for M.2 2280	
JPV1	Gold Finger to JPV2 of Node 1 or Backplane through AOM-BPNIO-GFR for Power Delivery	
JPV2	12 V Power Straddle Connector to Node 2	
JSD1	SATA DOM Power Connector	
JSMB1	System Management Bus Header	
JTPM1	Trusted Platform Module (TPM)/Port 80 Connector	
JUSB1	Internal USB 3.0 Type-A Port for Debugging	
J25	Power Connector for HDD Backplane	
M.2-HC	M.2 M-Key PCIe 4.0 or SATA 3.0 Connector (2280)	
MH1 – MH5	Motherboard Mounting Holes	
LED	Description	Status
LED1	BMC Heartbeat LED	Blinking Green: BMC Normal

Motherboard Features

Motherboard Features
CPU
Supports an Intel® Xeon® D-2796NT processor in a FCBGA 2579 socket with up to 20 cores and a TDP of up to 120 W
Memory
Supports up to 256 GB of DDR4 ECC LRDIMM memory with speeds of up to 2933 MHz in two DIMM slots
DIMM Size
Up to 256 GB
Chipset
SoC
Expansion Slots
- One PCIe 4.0 x4 M.2 M-Key or SATA 3.0 slot in the 2280 form factors - Two MCIO PCIe 4.0 x8 connectors - One U.2 PCIe 4.0 x4 by HDD Backplane
Baseboard Management Controller (BMC)
Aspeed AST2600
Network
Dual 25G Ethernet ports to Backplane
Super I/O
Aspeed AST2600
Graphics
Aspeed AST2600
I/O Devices
- One SATA 3.0 SATA DOM port - One VGA/USB KVM connector
Peripheral Devices
One internal USB 3.0 Type-A port for Debugging
BIOS
- AMI 32 MB SPI Flash EEPROM - ACPI 6.3, UEFI 2.7, Plug and Play (PnP), SMBIOS 3.3, PCI FW 3.0, Real Time Clock (RTC) Wakeup



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

Motherboard Features	
Power Management	
• ACPI power management (supports S5) • Power button override mechanism • Power-on mode for AC power recovery	
System Health Monitoring	
• Onboard voltage monitoring for +3.3 V, +5 V, +12 V, +3.3 VStb, +5 VStb, Vcore, and Vmem • Temperature of CPU, PCH, System, DIMM, and peripheral • CPU thermal trip support • Platform Environment Control Interface (PECI)/TSI	
System Management	
• Trusted Platform Module (TPM) 2.0 header onboard • Trusted Platform Module 2.0 chip onboard • SuperDoctor® 5 • IPMIView, SMCIPMITOOL, IPMICFG, SPM, SSM, SUM (Supermicro Update Manager) InBand, SUM-OOB • Redundant power supply unit detection sensor	
LED Indicators	
• CPU/System Overheat LED • Power/Suspend State Indicator LED • Fan Failed LED • UID LED • LAN Activity LED	
Optimized Chassis	
• MBE-620E	
Dimensions	
• 8.8" (L) x 4.8" (W) (223.5 mm x 121.9 mm)	

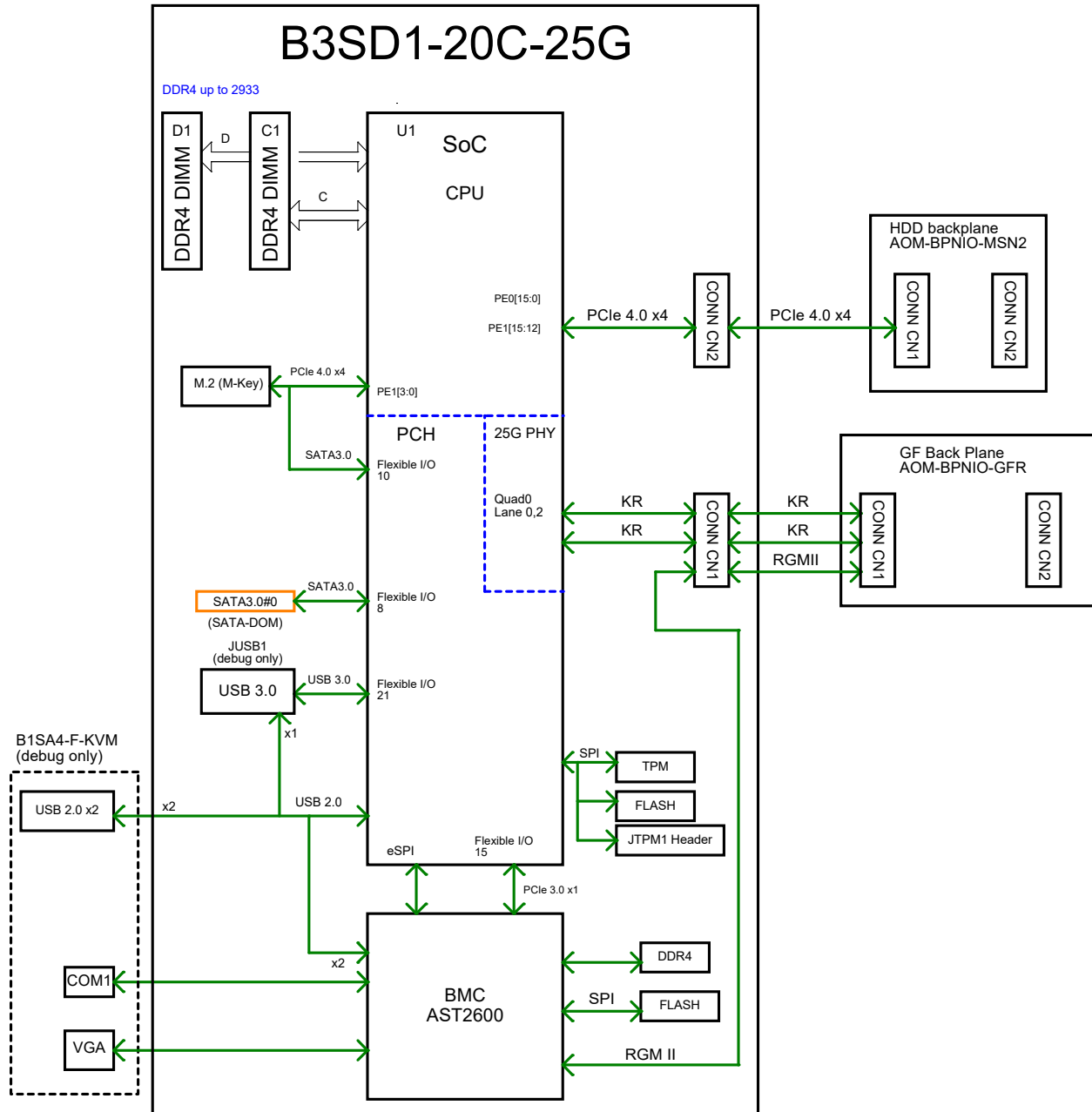
 **Note 1:** The CPU maximum thermal design power (TDP) is subject to chassis and heatsink cooling restrictions. For proper thermal management, check the chassis and heatsink specifications for proper CPU TDP sizing.

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

 **Note 3:** If you purchase a Supermicro Out of Band (OOB) software license key (Supermicro P/N: SFT-OOB-LIC), DO NOT change the IPMI MAC address. Once the Mac address has been changed, the OOB license key will be invalid.

 **Note 4:** Supermicro ships standard products with a unique password for the BMC ADMIN user. This password can be found on a label on the motherboard.

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 Overview

Built upon the functionality and capability of the Xeon D-2796NT processor, the B3SD1-20C-25G motherboard provides optimized system performance, efficient power management, and features based on cutting edge technology to address today's needs in advanced computing, engineering simulations, and automation.

The Intel Xeon D-2796NT processor supports the following features:

- Intel Volume Management device (VMD) 2.0
- Intel Deep Learning Boost (Intel DL Boost) with AVX-512, VNNI
- PCIe 4.0
- 25G Ethernet LAN through Backplane
- Intel Hyper-Threading, Intel VT-D, VT-x
- TSX-NI, AES, SGX
- Intel Turbo Boost Technology
- Up to 256 GB ECC LRDIMM memory with speeds of up to 2933 MHz in two DIMM slots

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 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 **Stay Off**.

1.4 System Health Monitoring

Onboard Voltage Monitors

An onboard voltage monitor will scan the voltages of the memory, CPU, and battery continuously. Once a voltage becomes unstable, a warning is given, or an error message is sent to the screen. You can adjust the voltage thresholds to define the sensitivity of the voltage monitor.

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/CPU cooling fans will be turned on to prevent the CPU or the system from overheating.



Note: To avoid possible system overheating, 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 is used to notify you of certain system events. For example, you can configure SuperDoctor 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) specification defines a flexible and abstract hardware interface that provides a standard way to integrate power management features throughout a computer system, including its hardware, operating system and application software. This enables the system to automatically turn on and off peripherals such as CD-ROMs, network cards, solid state 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, refer to the Supermicro website.

1.6 Power Supply

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

Chapter 2

Installation

2.1 Static-Sensitive Devices

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

Precautions

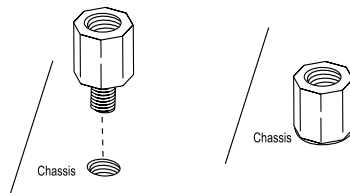
- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Handle the motherboard by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules,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

Unpacking

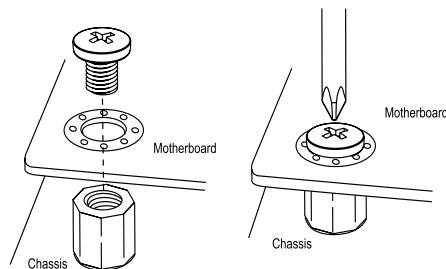
The motherboard is shipped in antistatic packaging to avoid static damage. When unpacking the motherboard, make sure that the person handling it is static protected.

Installing the Motherboard

1. Locate the mounting holes on the motherboard and the mounting tray. See the previous page for the location.
2. Install the standoffs on the mounting tray. Align the mounting holes on the motherboard against the mounting holes on the tray.



3. Using the Phillips screwdriver, insert a Phillips head #6 screw into the mounting hole on the motherboard and its matching hole on the tray.



4. Repeat step 3 to insert #6 screws to all mounting holes located on the motherboard and the tray and securely install the motherboard onto the tray.

Assembling a Dual Node MicroBlade

Two MicroBlade nodes can be assembled to create a dual node configuration in one MicroBlade sled.

1. Install a MicroBlade in the center of the MicroBlade sled and fasten all screws of this motherboard.

 **Note:** This MicroBlade is Node 2.

2. Connect JPV2 of another MicroBlade to JPV1 of Node 2 by sliding the MicroBlade into the sled. Fasten the mounting screws closest to JPV2. Do not fasten the mounting screws near the end of the MicroBlade sled.

 **Note:** This MicroBlade is Node 1.

3. Connect JPV2 of AOM-BPNIO-GFR to JPV1 of Node 1 by slightly angling Node 1 upwards and sliding JPV2 of AOM-BPNIO-GFR onto JPV1 of Node 1.

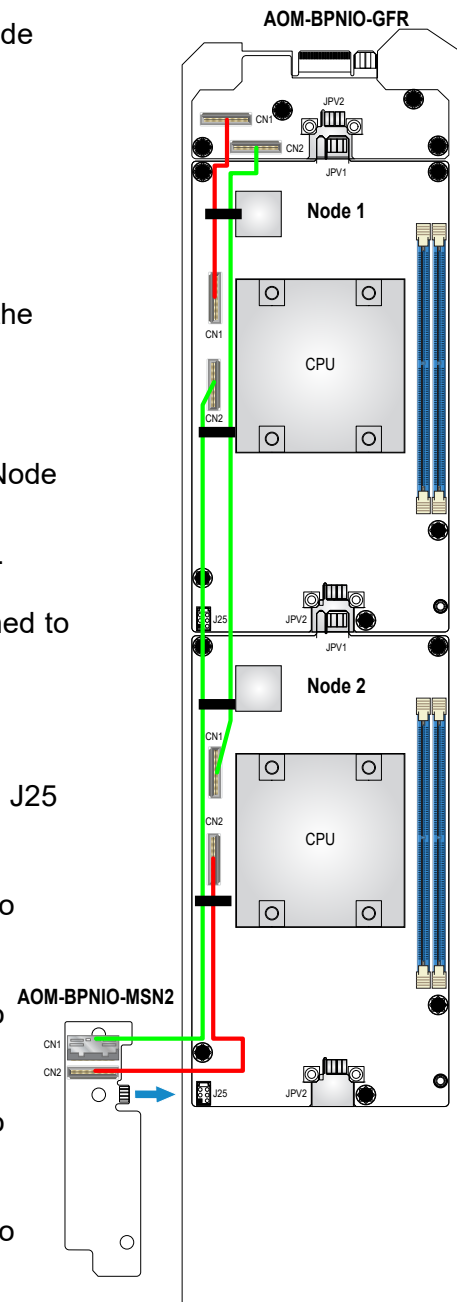
 **Note:** Ensure AOM-BPNIO-GFR is not attached to JPV1 of Node 1 at a large tilting angle.

4. Fasten all remaining mounting screws.
5. Connect the goldfinger on AOM-BPNIO-MSN2 to J25 of Node 2 and fasten the mounting screws.
6. Route a short MCIO cable from CN1 of Node 1 to CN1 of AOM-BPNIO-GFR.
7. Route a long MCIO cable from CN1 of Node 2 to CN2 of AOM-BPNIO-GFR.
8. Route a long MCIO cable from CN2 of Node 1 to CN1 of AOM-BPNIO-MSN2.
9. Route a short MCIO cable from CN2 of Node 2 to CN2 of AOM-BPNIO-MSN2.

10. Use cable ties to secure the MCIO cables.

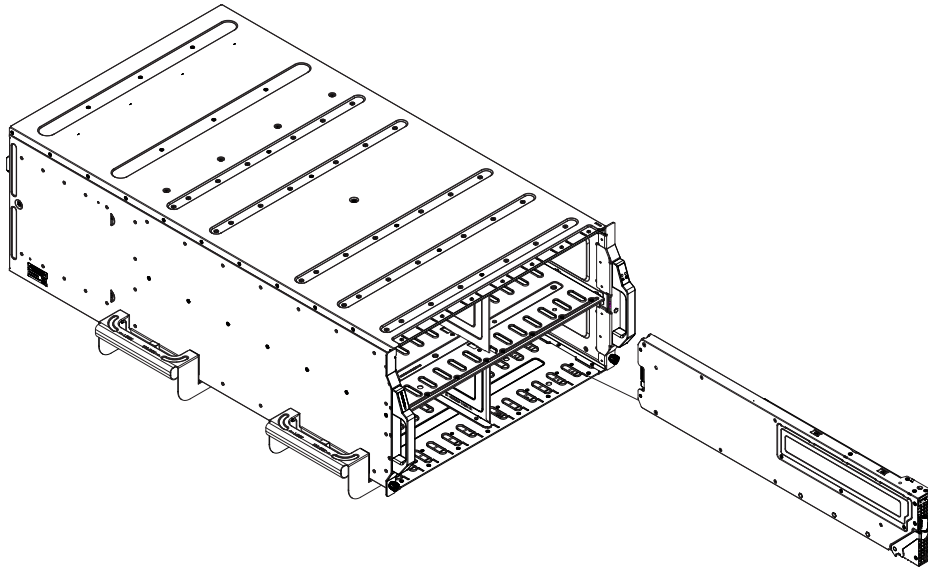
 **Note 1:** Short MCIO cables are illustrated in red. Long MCIO cables are illustrated in green. Cable ties are illustrated with wide black bars. Ensure cables are inside the chassis side wall to avoid interference with the enclosure guiding slots.

 **Note 2:** Images displayed are for illustrative purposes only. Your chassis or components may look different from those shown in this manual.



Installing the Motherboard into the Superblade Chassis

1. When the motherboard is securely installed on the mounting tray, push the tray into the Superblade chassis shown below.



2. Once the mounting tray is pushed into the chassis, the connectors on the motherboard's edge will make contact with the chassis' backplane, which provides the connections to the chassis power, network, and other I/O devices.

 **Note:** Images displayed are for illustrative purposes only. Your chassis or components may look different from those shown in this manual.

2.3 Memory Support and Installation



Note: Check the Supermicro website for recommended memory modules.



Important: Exercise extreme care when installing or removing DIMM modules to prevent any possible damage.

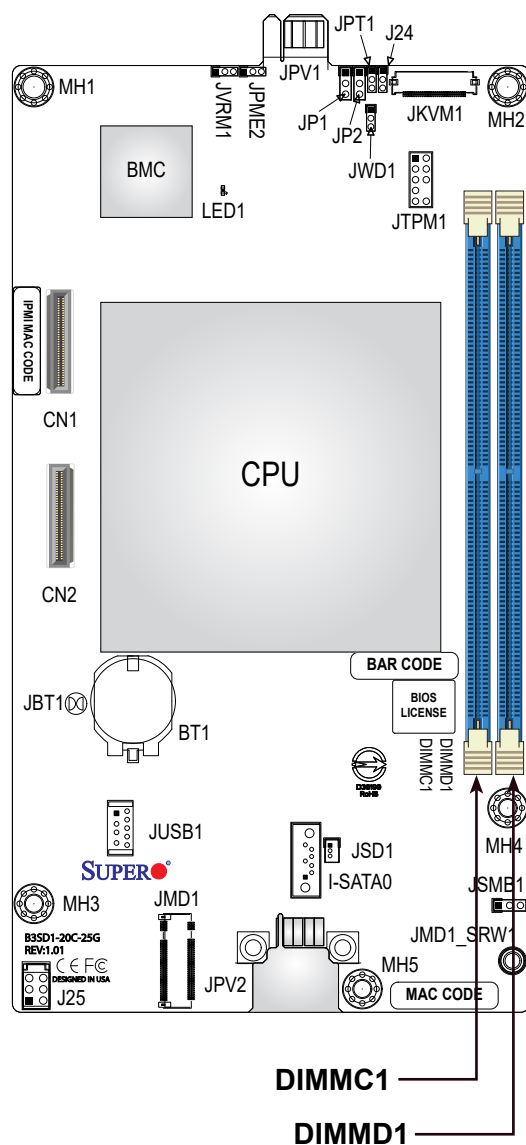
Memory Support

The B3SD1-20C-25G motherboard supports up to 256 GB of DDR4 ECC LRDIMM memory with speeds of up to 2933 MHz in two DIMM slots.

1 CPU, 4 DIMM Slots	
Number of DIMMs	Memory Population Sequence
1	DIMMC1 DIMMD1
2	DIMMC1 / DIMMD1

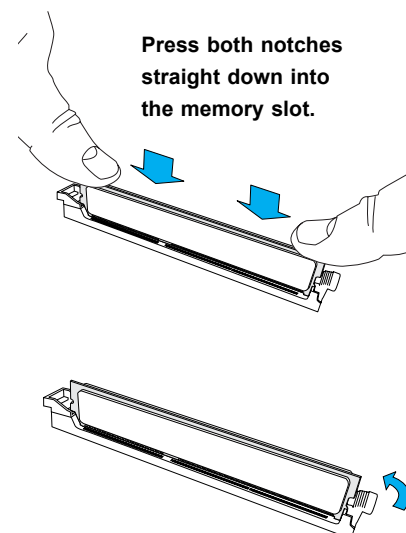
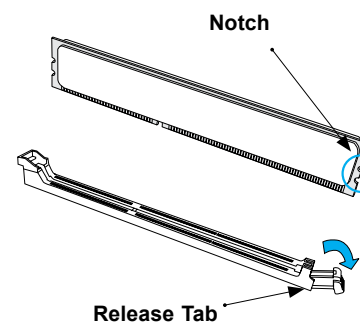
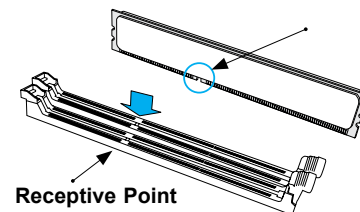
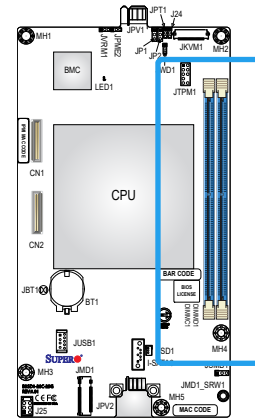
General Guidelines for Optimizing Memory Performance

- It is recommended to use DDR4 ECC LRDIMM memory of the same type, size and speed.
- Mixed DIMM speeds can be installed. However, all DIMMs will run at the speed of the slowest DIMM.
- The motherboard will not support an odd-numbered amount of DIMM modules except for a single DIMM module necessary for board operation.



DIMM Installation

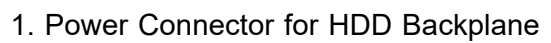
1. For the system to work properly, use memory modules of the same type and speed. Refer to the table in [Chapter 2.3](#) for the memory population sequence.
2. Align the DIMM module key with the receptive point on the single-latch DIMM slot.
3. Push the release tab outwards to unlock the slot.
4. Align 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.



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.

Located at J25 is a power connector for the HDD backplane. When the system has only one motherboard, connect J25 of Node 1 to the HDD backplane. When the system has two motherboards, connect J25 of Node 2 to the HDD backplane.



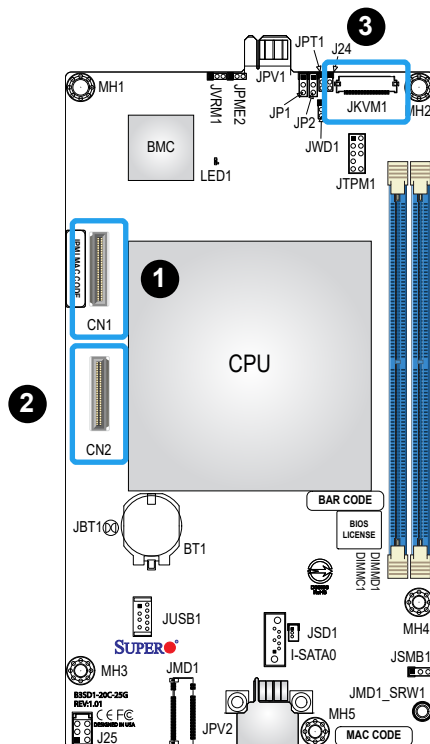
Headers

MCIO Connectors

CN1 and CN2 are MCIO connectors. Use CN1 to provide Ethernet and CMM management to the system. Use CN2 to connect to the HDD backplane.

VGA/USB Module Connector

Use JKVM1 to connect to a VGA/USB module.



1. MCIO Connector (CN1)
2. MCIO Connector (CN2)
3. VGA/USB Module Connector

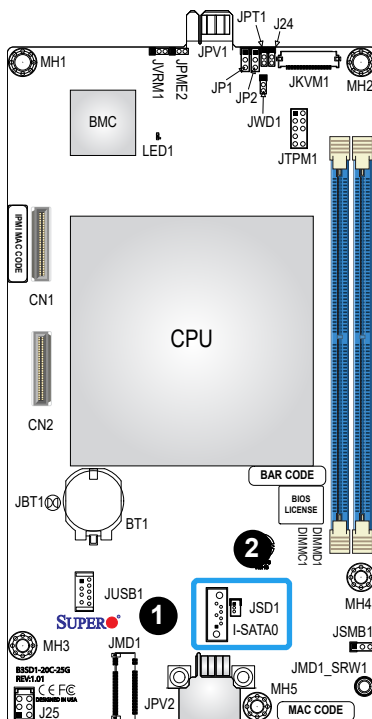
SATA DOM Port

This motherboard has one SATA DOM port at I-SATA1. I-SATA1 can be used with Supermicro SuperDOMs that are yellow SATA DOM connectors with power pins built in, and do not require external power cables. Supermicro SuperDOMs are backwards compatible with regular SATA HDDs or SATA DOMs that need external power cables.

SATA DOM Power Connector

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

DOM Power Pin Definitions	
Pin#	Definition
1	5 V
2	Ground
3	Ground



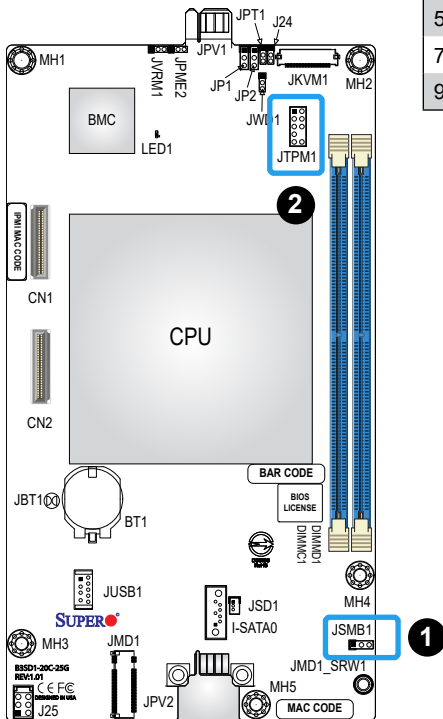
1. SATA DOM Port
2. SATA DOM Power Connector

A System Management Bus (SMBus) header for additional slave devices is located at JSMB1. Refer to the table below for pin definitions.

SMBus Header Pin Definitions	
Pin#	Definition
1	Data
2	Ground
3	Clock

A Trusted Platform Module (TPM)/Port 80 header is located at JTPM1 to provide TPM support and Port 80 connection. Use this header to enhance system performance and data security. Refer to the table below for pin definitions. Go to the following link for more information on the TPM: <http://www.supermicro.com/manuals/other/TPM.pdf>.

Trusted Platform Module Header			
Pin Definitions			
Pin#	Definition	Pin#	Definition
1	+3.3 V	2	SPI_CS#
3	RESET#	4	SPI_MISO
5	SPI_CLK	6	GND
7	SPI_MOSI	8	
9	+3.3 V Stby	10	SPI_IRQ#



1. System Management Bus Header
2. Trusted Platform Module (TPM) Header

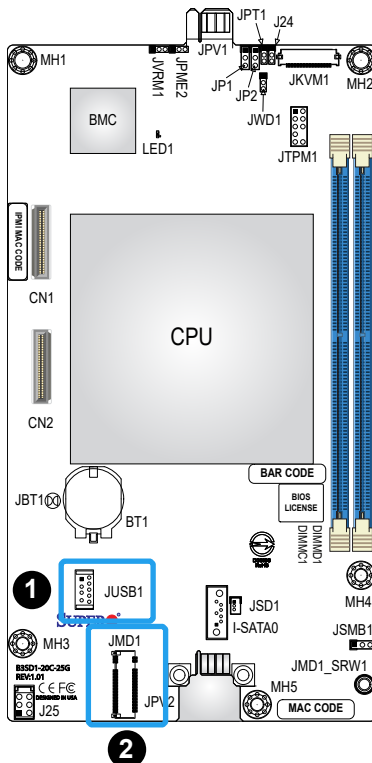
Internal USB 3.0 Type-A Connector for Debugging

There is one internal USB 3.0 port (JUSB1) on the motherboard. Use this port for USB debug access to the motherboard.

Internal USB 3.0 Pin Definitions			
Pin#	Definition	Pin#	Definition
A1	VBUS	B1	VBUS
A2	D-	B2	D-
A3	D+	B3	D+
A4	GND	B4	GND
A5	Stda_SSRX-	B5	Stda_SSRX-
A6	Stda_SSRX+	B6	Stda_SSRX+
A7	GND	B7	GND
A8	Stda_SSTX-	B8	Stda_SSTX-
A9	Stda_SSTX+	B9	Stda_SSTX+

M.2 M-Key PCIe 4.0 or SATA 3.0 Connector (2280)

This motherboard has one hybrid M.2 slot at M.2-H. M.2 was formerly known as Next Generation Form Factor (NGFF) and serves to replace mini PCIe. M.2 allows for a variety of card sizes, increased functionality, and spatial efficiency. M.2-H supports an M-Key PCIe 4.0 x4 or SATA 3.0 device in the 2280 form factor.



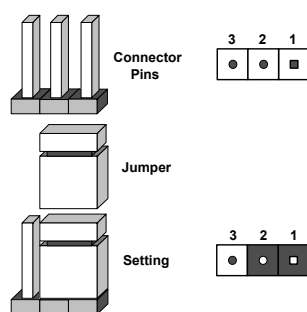
1. Internal USB 3.0 Type-A Connector
2. M.2 M-Key PCIe 4.0 or SATA 3.0 Connector (2280)

2.5 Jumper Settings

How Jumpers Work

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

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



CMOS Clear

JBT1 is used to clear CMOS, which will also clear any passwords. Instead of pins, this 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.
3. Remove the onboard battery from the motherboard.
4. Short the CMOS pads with a metal object such as a small screwdriver for at least four seconds.
5. Remove the screwdriver or shorting device.
6. Replace the cover, reconnect the power cord(s), and power on the system.

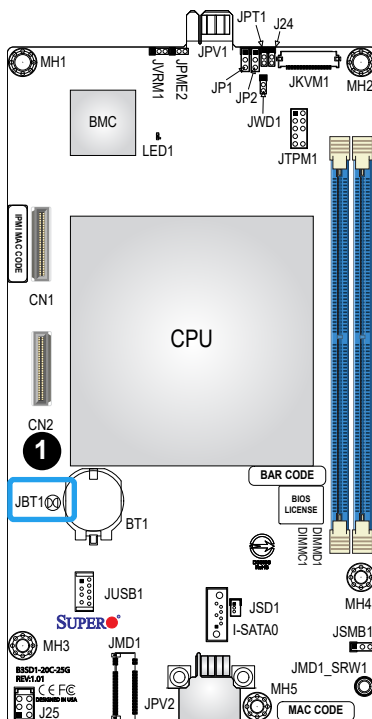


Note: Clearing CMOS will also clear all passwords.

Do not use the PW_ON connector to clear CMOS.



JBT1 contact pads



1. Clear CMOS

Manufacturing Mode

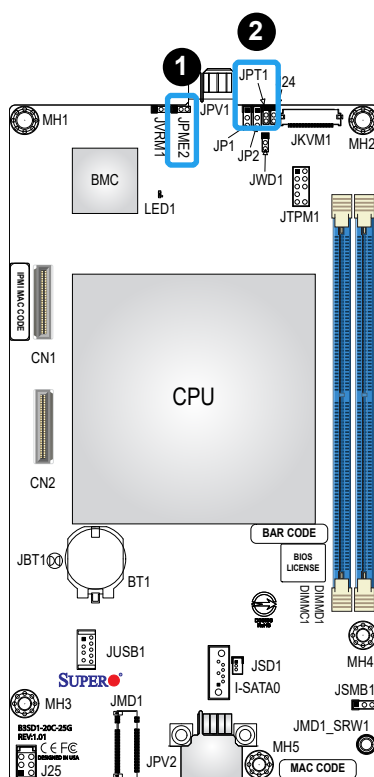
Close pins 2-3 of JPME2 to bypass SPI flash security and force the system to operate in manufacturing mode, which will allow you to flash the system firmware from a host server for system setting modifications. Refer to the table below for jumper setting.

Manufacturing Mode Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Normal (Default)
Pins 2-3	Manufacturing Mode

Onboard TPM 2.0 Enable/Disable

Use jumper JPT1 to enable or disable support for the onboard TPM 2.0 module. The default setting is enabled.

TPM 2.0 Enable/Disable Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Enabled (Default)
Pins 2-3	Disabled

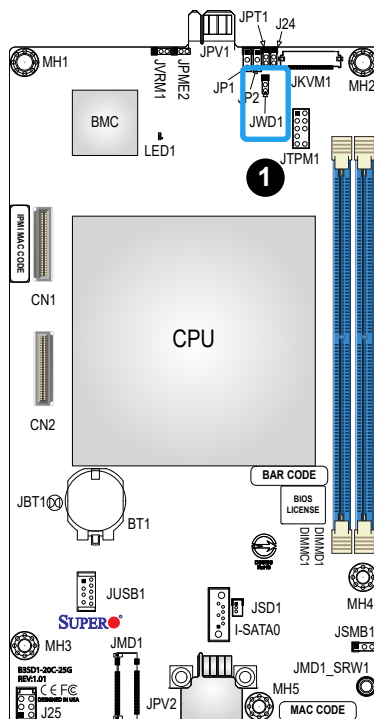


1. Manufacturing Mode
2. Onboard TPM 2.0 Enable/Disable

JWD1 controls the Watchdog function. Watchdog is a monitor that can reboot the system when a software application hangs. Jumping pins 1-2 will cause Watchdog to reset the system if an application hangs. Jumping pins 2-3 will generate a non-maskable interrupt signal for the application that hangs. Watchdog must also be enabled in BIOS.



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



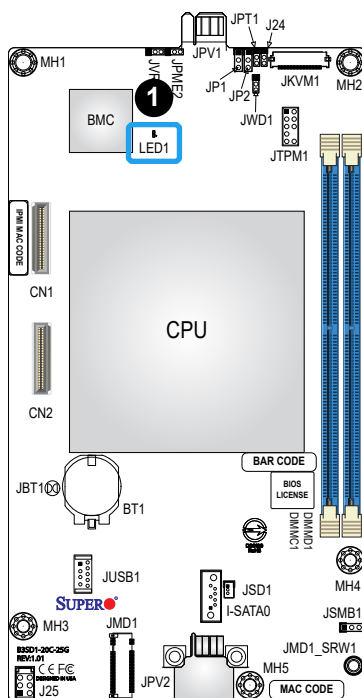
1. Watchdog

2.6 LED Indicators

BMC Heartbeat LED

LED1 is the BMC Heartbeat LED. When the LED is blinking green, the BMC is working. Refer to the table below for the LED status.

BMC Heartbeat LED	
LED Color	Definition
Green: Blinking	BMC Normal



1. BMC Heartbeat LED

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. Always disconnect the AC power cord before adding, changing or installing any non hot-swap hardware components.

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 115 V/230 V switch, if available, on the power supply is properly set.
4. Turn the power switch on and off to test the system, if applicable.
5. The battery on your motherboard may be old. Check to verify that it still supplies approximately 3 VDC. If it does not, replace it with a new one.

No Video

1. If the power is on, but you have no video, remove all add-on cards and cables.
2. Use the speaker to determine if any beep codes are present. Refer to Appendix A for details on beep codes.
3. 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 [Chapter 2.5](#) for instructions on how to clear CMOS.
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 RAM type and speed for all DIMMs in the system.
3. Make sure that you are using the correct type of DDR4 ECC LRDIMM 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 2 for details on recommended power supplies.
2. The battery on your motherboard may be old. Check to verify that it still supplies approximately 3 VDC. If it does not, replace it with a new one.
3. If the above steps do not fix the setup configuration problem, contact your vendor for repairs.

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. SSD support: Make sure that all solid state drives (SSDs) work properly. Replace the bad SSDs 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. Refer to our website for more information on the minimum power requirements.
6. Proper software support: Make sure that the correct drivers are used.

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

1. Source of installation: Make sure that the devices used for installation are working properly, including boot devices such as a USB flash or media drive.
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, take the following steps. Also, note that as a motherboard manufacturer, Supermicro also sells motherboards through its channels, so it is best to first check with your distributor or reseller for troubleshooting services. They should know of any possible problems with the specific system configuration that was sold to you.

1. Go through the Troubleshooting Procedures and Frequently Asked Questions (FAQ) sections in this chapter or see the FAQs on our website (<http://www.supermicro.com/FAQ/index.php>) before contacting Technical Support.
2. BIOS upgrades can be downloaded from our website (http://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. An example of a Technical Support form is on our website at <http://www.supermicro.com/RmaForm/>.
5. Distributors: For immediate assistance, have your account number ready when placing a call to our Technical Support department. We can be reached by email at support@supermicro.com.

3.3 Frequently Asked Questions

Question: What type of memory does my motherboard support?

Answer: The B3SD1-20C-25G supports up to 256 GB of DDR4 ECC LRDIMM memory with speeds of up to 2933 MHz in two DIMM slots.

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 http://www.supermicro.com/ResourceApps/BIOS_IPMI_Intel.html. Check our BIOS warning message and the information on how to update your BIOS on our website. Select your motherboard model and download the BIOS file to your computer. Also, check the current BIOS revision to make sure that it is newer than your BIOS before downloading. Unzip the BIOS file onto a bootable USB device. Run the batch file using the format FLASH.BAT filename.rom from your bootable USB device to flash the BIOS. Then, your system will automatically reboot.

Warning: Do not shut down or reset the system while updating the BIOS to prevent possible system boot failure!



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, refer to the AMI BIOS Recovery Instructions posted at <http://www.supermicro.com/support/manuals/>.

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. Using 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.

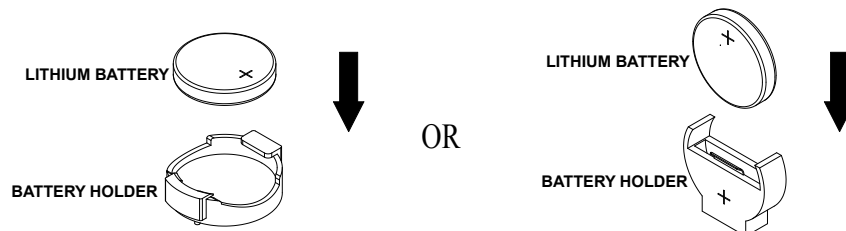
Proper Battery Disposal

Warning: Handle a used battery carefully. Do not discard it in the garbage or a public landfill. Comply with the regulations set up by your local hazardous waste management agency to dispose a used battery properly.

Battery Installation

1. To install an onboard battery, follow steps 1 and 2 above and continue below:
2. Identify the battery's polarity. The positive (+) side should be facing up.
3. 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, replace it with the same type.



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 (<http://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. Refer to the Manual Download area of our website for any changes to 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.

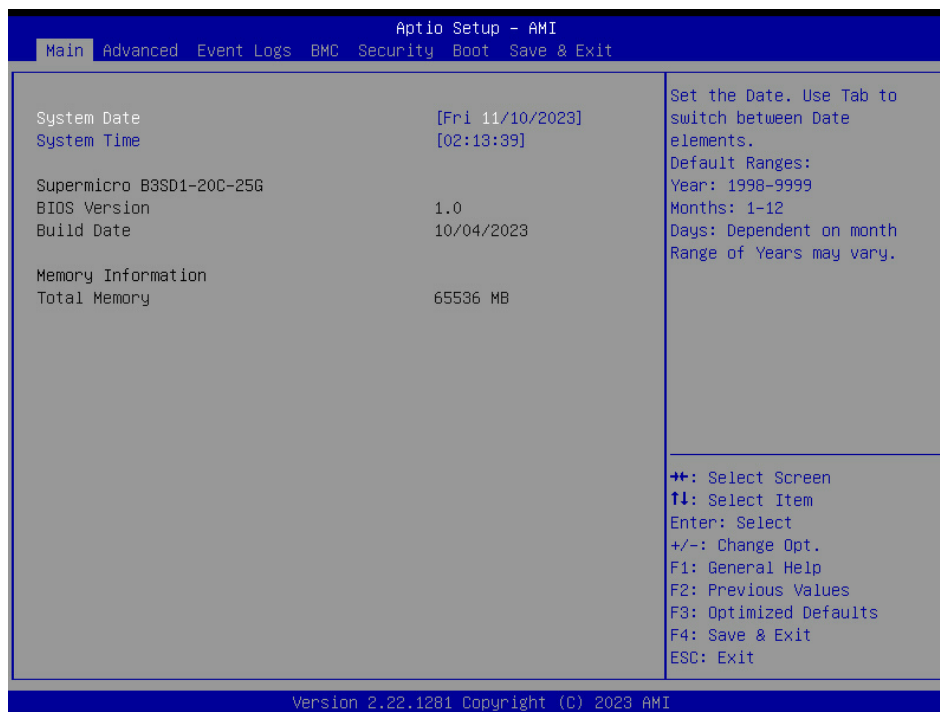
The Main BIOS screen has two main frames. The left frame displays all the options that can be configured. "Grayed-out" options cannot be configured. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message accompany it. (Note that BIOS has default text messages built in. We retain the option to include, omit, or change any of these text messages.) Settings printed in **Bold** are the default values.

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

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

4.2 Main Setup

When you first enter the AMI BIOS setup utility, you enter 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. The following Main menu items be displayed:



System Date/System Time

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



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

Supermicro B3SD1-20C-25G

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.

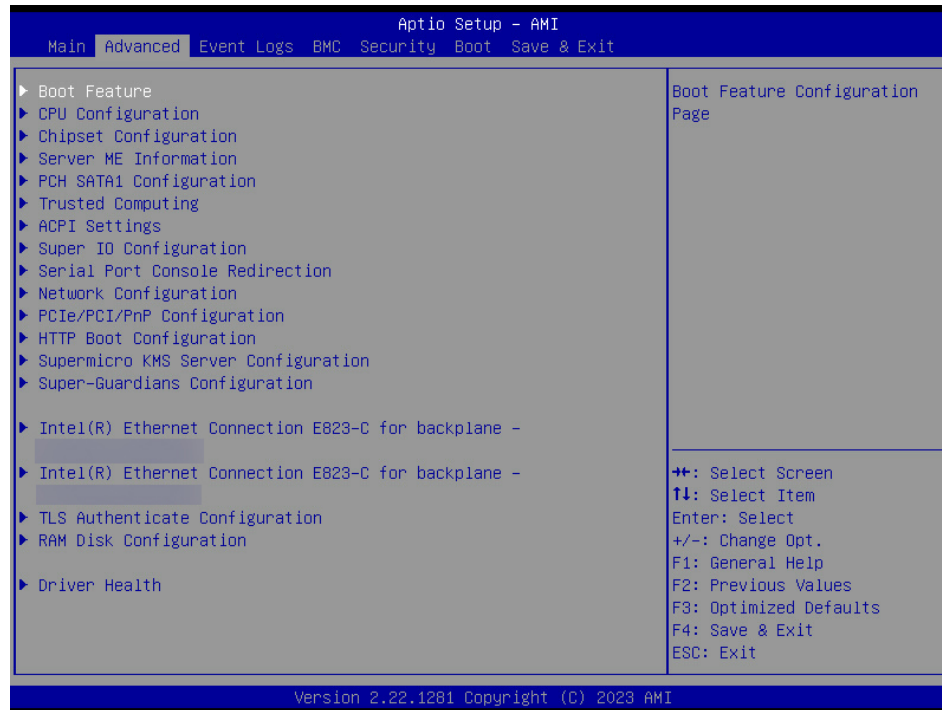
Memory Information

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.



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, revert the setting to the manufacture default settings.

► Boot Feature

Quiet Boot

Use this feature to select the screen display between the POST messages or the OEM logo upon bootup. Select Disabled to display the POST messages. Select Enabled to display the OEM logo instead of the normal POST messages. The options are Disabled and **Enabled**.



Note: BIOS Power-on Self Test (POST) messages are always displayed regardless of the setting of this feature.

Bootup NumLock State

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

Wait For "F1" If Error

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

Re-try Boot

If this feature is enabled, the BIOS automatically reboots the system from a specified boot device after its initial boot failure. The options are **Disabled** and EFI Boot.

Power Configuration**Watchdog Function**

If enabled, the Watchdog Timer allows the system to reset or generate NMI when it has expired for more than five minutes. The options are **Disabled** and Enabled.

Front USB Port(s) (Available when the DCMS key is activated)

Use this feature to enable or disable front USB ports. The options are **Enabled**, Disabled, and Enabled (Dynamic).

Rear USB Port(s) (Available when the DCMS key is activated)

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

Power Button Function

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

►CPU 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

► CPU1 Core Disable Bitmap

CPU1 Core Disable Bitmap

Available Bitmap

CPU Core Count

CPU1 Cores Enable

Use this feature to input how many CPU cores to enable. Input 0 to enable all cores. At least one core must be enabled.

Hyper-Threading (ALL)

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

Hardware Prefetcher

If set to Enable, the hardware prefetcher prefetches streams of data and instructions from the main memory to the L2 cache to improve CPU performance. The options are **Enable** and Disable.

Adjacent Cache Prefetch

The CPU prefetches the cache line for 64 bytes if this feature is set to Disabled. The CPU prefetches both cache lines for 128 bytes as comprised if this feature is set to Enable. The options are **Enable** and Disable.

DCU Streamer Prefetcher (Available when supported by the CPU)

Select Enable to enable the Data Cache Unit (DCU) Streamer Prefetcher, which streams and prefetches data and send it to the Level 1 data cache to improve data processing and system performance. The options are **Enable** and Disable.

DCU IP Prefetcher (Available when supported by the CPU)

Select Enable for Data Cache Unit (DCU) IP Prefetcher support, which prefetches IP addresses to improve network connectivity and system performance. The options are **Enable** and Disable.

LLC Prefetch

If set to Enable, the hardware prefetcher prefetches streams of data and instructions from the main memory to the L3 cache to improve CPU performance. The options are **Disable** and Enable.

Extended APIC

Select Enable to activate Advanced Programmable Interrupt Controller (APIC) support. The options are **Disable** and Enable.

Enable Intel(R) TXT

Use this feature to enable or disable Intel Trusted Execution Technology support. The options are **Disable** and Enable.

VMX

Use this feature to enable or disable Vanderpool Technology. The options are Disable and **Enable**.

Enable SMX

Use this feature to enable or disable Safer Mode Extensions. The options are **Disable** and Enable.

PPIN Control

Select Unlock/Enable to use the Protected Processor Inventory Number (PPIN) in the system. 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**.

TME, TME-MT, TDX**Total Memory Encryption (TME)**

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

Total Memory Encryption Multi-Tenant (TME-MT) (Available when "Total Memory Encryption" is set to "Enabled")

Use this feature to enable or disable Total Memory Encryption Multi-Tenant (TME-MT). The options are **Disabled** and Enabled. When "Limit CPU PA to 46 Bits" is set to Enable, this feature will be disabled.

Max TME-MT Keys

This feature displays the max TME-MT keys.

Software Guard Extension (SGX)**SGX Factory Reset**

Use this feature to enable or disable SGX factory reset on the next boot. When this feature is set to Enabled, all registration will be deleted. If "SW Guard Extensions (SGX)" is set to Enabled, Initial Platform Establishment flow will be forced. The options are **Disabled** and Enabled.

SW Guard Extensions (SGX)

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

SGX Package Into In-Band Access

Use this feature to enable or disable SGX package info in-band access. The options are **Disabled** and Enabled.

Limit CPU PA to 46 Bits

Use this feature to limit the CPU physical address to 46 bits to support older Hyper-V. The options are Disable and **Enable**. If this feature is set to Enabled, Total Memory Encryption Multi-Tenant will be disabled.

► Advanced Power Management Configuration

Power Performance Tuning

Use this feature to select whether the BIOS or the operating system chooses energy performance tuning. The options are **OS Controls EPB** and BIOS Controls EPB.

ENERGY_PERF_BIAS CFG Mode (Available when "Power Performance Tuning" is set to "BIOS Controls EPB")

Use this feature to set the energy performance bias. The options are Performance, **Balanced Performance**, Balanced Power, and Power.

► CPU P State Control

SpeedStep (Pstates)

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

AVX P1

Use this feature to select the AVX-P1 level. The options are **Nominal**, Level 1, and Level 2.

EIST PSD Function

This feature allows you to choose between Hardware and Software to control the processor's frequency and performance (P-state). In HW_ALL mode, the processor hardware is responsible for coordinating the P-state, and the OS is responsible for keeping the P-state request up to date on all Logical Processors. In SW_ALL mode, the OS Power Manager is responsible for coordinating the P-state, and must initiate the transition on all Logical Processors. The options are **HW_ALL** and **SW_ALL**.

Turbo Mode

This feature enables dynamic control of the processor, allowing it to run above stock frequency. The options are Disable and **Enable**.

► Hardware PM State Control

Hardware P-States

This setting allows you to select between OS and hardware-controlled P-states. Selecting Native Mode allows the OS to choose a P-state. Selecting Out of Band Mode allows the hardware to autonomously choose a P-state without OS guidance. Selecting Native Mode with No Legacy Support functions as Native Mode with no support for older hardware. The options are **Disable**, Native Mode, Out of Band Mode, and Native Mode with No Legacy Support.

► Frequency Prioritization

RAPL Prioritization

Use this feature to enable the RAPL balancer. The options are Enable and **Disable**.

►CPU C State Control

Enable Monitor MWAIT

Select Enable to enable the Monitor/Mwait instructions. The Monitor instructions monitors a region of memory for writes, and MWait instructions instruct the CPU to stop until the monitored region begins to write. The options are Disable and **Enable**.

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**.

Enhanced Halt State (C1E)

Select Enable to use Enhanced Halt State technology, which significantly reduces the CPU's power consumption by reducing its clock cycle and voltage during a Halt-state. The options are Disable and **Enable**.

►Package C State Control

Package C State

This feature allows you to set the limit on the C State package register. The options are C0/C1 state, C2 state, C6(non Retention) state, and **Auto**.

►CPU T State Control

Software Controlled T-States

Use this feature to enable Software Controlled T-States. The options are **Disable** and Enable.

T-State Throttle Level (Available when "Software Controlled T-States" is set to "Enable")

Use this feature to enable or disable CPU throttling, which reduces power consumption. The options are **Disable**, 6.25%, 12.5%, 18.75%, 25.0%, 31.25%, 37.5%, 43.75%, 50.0%, 56.25%, 62.5%, 68.75%, 75.0%, 81.25%, 87.5%, and 93.75%.

► Chipset Configuration

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

► North Bridge

► Uncore Configuration

Uncore Configuration

- Number of CPU
- Number of IIO
- Current UPI Link Speed
- Current UPI Link Frequency
- Global MMIO Low Base / Limit
- Global MMIO High Base / Limit
- PCIe Configuration Base / Size

XPT Prefetch

Use this feature to enable or disable XPT Prefetch support, which allows an LLC request to be duplicated and sent to an appropriate memory controller based on the recent LLC history to reduce latency. The options are Disable, Enable, and **Auto**.

PCIe Remote P2P Relaxed Ordering

Enable peer-to-peer relaxed ordering to optimize system performance. The options are **Disable** and Enable.

Stale AtoS

Use this feature to enable or disable Stale A to S optimization. There are three states in the in-memory directory: invalid (I), snoopAll (A), and shared (S). Data in the I state is clean and does not exist in other sockets. Data in the A state may exist in another exclusive or modified socket. Data in the S state is clean and may be shared across one or more sockets. The options are Disable, Enable, and **Auto**.

LLC Dead Line Alloc

Select Enable to opportunistically fill dead lines in the LLC. Select Disable to never fill dead lines in LLC. The options are Disable, **Enable**, and Auto.

► Memory Configuration

Enforce POR

Select Plan of Record (POR) to enforce POR restrictions on DDR4 frequency and voltage programming. The options are **POR** and Disable.

PPR Type

Use this feature to select the Post Package Repair (PPR) type. The options are PPR Disabled, **Hard PPR**, and Soft PPR.

Memory Frequency

Use this feature to set the maximum memory frequency for onboard memory modules. The options are **Auto**, 2133, 2200, 2400, 2600, 2666, 2800, 2933, 3000, and 3200.

Data Scrambling for DDR4

Use this feature to enable or disable data scrambling for DDR4 memory. The options are Disable and **Enable**.

2x Refresh Enable

Use this feature to enable 2x memory refresh support to enhance memory performance. The options are **Auto**, Disable, and Enable.

► Memory Topology

This feature displays the information of memory modules detected by the BIOS.

► Memory RAS Configuration Setup

Enabled Pcode WA for SAI PG

Use this feature to enable Pcode Work Around for SAI Policy group for A Step. The options are **Disabled** and Enabled.

Mirror Mode

This feature allows memory to be mirrored between two channels, providing 100% redundancy. The options are **Disable**, Full Mirror Mode, and Partial 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**.

Leaky Bucket Low Bit

Use this feature to set the Low Bit value for the Leaky Bucket algorithm, which is used to check the data transmissions between the CPU socket and the memory controller. The default setting is **13**.

Leaky Bucket High Bit

Use this feature to set the High Bit value for the Leaky Bucket algorithm, which is used to check the data transmissions between the CPU socket and the memory controller. The default setting is **14**.

Partial Cache Line Sparing PCLS

Use this feature to enable or disable Partial Cache Line Sparing (PCLS). The options are Disabled and **Enabled**.

ADDDC Sparing

Adaptive Double Device Data Correction (ADDDC) Sparing detects when the predetermined threshold for correctable errors is reached, copying the contents of the failing DIMM to spare memory. The failing DIMM or memory rank will then be disabled. The options are Disabled and **Enabled**.

Patrol Scrub

Patrol Scrubbing is a process that allows the CPU to correct correctable memory errors detected on a memory module and send the correction to the requestor (the original source). When this item is set to Enable, the IO hub reads and writes 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 is scrubbed every day. The options are Disabled, Enabled, and **Enable at End of POST**.

► IIO Configuration**► CPU1 Configuration****CPU Slot6 PCIe 4.0 x16 Bifurcation**

Use this feature to set the PCIe bifurcation for this port. The options are **Auto**, x4x4x4x4, x4x4x8, x8x4x4, x8x8, and x16.

► CPU Slot6 PCIe 4.0 x16

Link Speed

Use this feature to override the link speed. The options are **Auto**, Gen 1 (2.5 GT/s), Gen 2 (5 GT/s), Gen 3 (8 GT/s), and Gen 4 (16 GT/s).

Override Max Link Width

Use this feature to override the max link width set by the PCIe bifurcation setting. The options are **Auto**, x1, x2, x4, x8, and x16.

PCIe Port Link Status

Use this feature to view the PCIe port link status.

PCIe Port Link Max

Use this feature to view the PCIe port link max width.

PCIe Port Link Speed

Use this feature to view the PCIe port link speed.

PCIe Port Max Payload Size

Use this feature to configure the max payload size supported in the PCIe device capabilities register. When this feature is set to "Auto", the hardware default will be kept. The options are 128B, 256B, 512B, and **Auto**.

Non-Transparent Bridge PCIe Port Definition

Use this feature to configure the PCIe port as transparent bridge, NTB-NTB, or NTB-RP. Ensure NTB-RP is not selected for legacy IIO on A0 Si. The options are **Transparent Bridge** and NTB to NTB.

Imbar2 Size

Use this feature to set a value for the prefetchable Imbar2 size on the primary side of NTB. The value can be a number in the range of 12 to 51 representing BAR sizes from 4 KB to 128 PB. The default setting is **22**.

Embar1 Size

Use this feature to set a value for the prefetchable Embar1 size on the secondary side of NTB. The value can be a number in the range of 12 to 51 representing BAR sizes from 4 KB to 128 PB. The default setting is **22**.

Embar2 Size

Use this feature to set a value for the prefetchable Embar2 size on the secondary side of NTB. The value can be a number in the range of 12 to 51 representing BAR sizes from 4 KB to 128 PB. The default setting is **22**.

►IOAT Configuration**Disable TPH**

Use this feature to enable or disable transparent layer packet processing hints (TPH). When this feature is set to "Yes", TPH will be disabled. The options are **No** and Yes.

Prioritize TPH (Available when "Disable TPH" is set to "No")

Use this feature to enable Prioritize TPH support. The options are Enable and **Disable**.

Relaxed Ordering

Select Yes to enable Relaxed Ordering support, which allows certain transactions to violate the strict-ordering rules of PCI bus for a transaction to be completed prior to other transactions that have already been enqueued. The options are **No** and Yes.

►Intel(R) 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.

ACS Control

Select Enable to program Access Control Services (ACS) to the chipset PCIe root port bridge. Select No to program ACS to all PCIe root port bridges. The options are **Enable** and Disable.

Interrupt Remapping

Use this feature to enable Interrupt Remapping support, which detects and controls external interrupt requests. The options are **Auto**, Enable, and Disable.

► Intel VMD Technology

► Intel VMD for Volume Management Device on CPU1

VMD Config for PCH ports

Enable/Disable VMD

Use this feature to enable or disable the volume management device for this stack. The options are **Disable** and **Enable**.

JMD1:M.2-H PCIe 3.0 x4/S-SATA 3.0 VMD (Available when "VMD Config for PCH ports" is set to "Enable")

Use this feature to enable or disable VMD technology for this port. The options are **Disable** and **Enable**.

VMD Config for IOU 0

Enable/Disable VMD

Use this feature to enable or disable the volume management device for this stack. The options are **Disable** and **Enable**.

CPU SLOT6 PCIe 4.0 x16 VMD Port 0 / CPU SLOT6 PCIe 4.0 x16 VMD Port 1 / CPU SLOT6 PCIe 4.0 x16 VMD Port 2 / CPU SLOT6 PCIe 4.0 x16 VMD Port 3 (Available when "VMD Config for PCH ports" is set to "Enable")

Use this feature to enable or disable VMD technology for this port. The options are **Disable** and **Enable**.

Hot Plug Capable

Use this feature to enable or disable hot plug for this port. The options are **Disable** and **Enable**.

VMD Config for IOU 4

Enable/Disable VMD

Use this feature to enable or disable the volume management device for this stack. The options are **Disable** and **Enable**.

JSLIM1 PCIe 4.0 x8 VMD Port 0 / JSLIM1 PCIe 4.0 x8 VMD Port 1 / JSLIM1 PCIe 4.0 x8 VMD Port 2 / JSLIM2 PCIe 4.0 x8 VMD Port 0 / JSLIM2 PCIe 4.0 x8 VMD Port 1 (Available when "VMD Config for PCH ports" is set to "Enable")

Use this feature to enable or disable VMD technology for this port. The options are **Disable** and **Enable**.

Hot Plug Capable

Use this feature to enable or disable hot plug for this port. The options are **Disable** and **Enable**.

IIO eDPC Support

Use this feature to enable or disable IIO enhanced DPC support. The options are **Disable**, **On Fatal Error**, and **On Fatal and Non-Fatal Errors**.

IIO eDPC Interrupt (Available when "IIO eDPC Support" is set to "On Fatal Error" or "On Fatal and Non-Fatal Errors")

Use this feature to enable or disable IIO enhanced DPC interrupt. The options are **Disable** and **Enable**.

IIO eDPC ERR_COR Message (Available when "IIO eDPC Support" is set to "On Fatal Error" or "On Fatal and Non-Fatal Errors")

Use this feature to enable or disable IIO enhanced DPC error correction message. The options are **Disable** and **Enable**.

PCIe ASPM Support (Global)

Use this feature to enable to disable ASPM support for all downstream devices. The options are **Disable** and **Auto**.

► South Bridge

The following USB information is displayed:

- USB Module Version
- USB Devices

XHCI Hand-off

When this feature is disabled, the motherboard will not support USB 3.0. The options are **Enabled** and **Disabled**.

PCIe PLL SSC

Use this feature to enable or disable PCIe PLL SSC. The options are Disabled and **Enabled**.

► Server ME Information

The following General ME Configuration is displayed:

- General ME Configuration
- Oper. Firmware Version
- Backup Firmware Version
- Recovery Firmware Version
- ME Firmware Status #1
- ME Firmware Status #2
- Current State
- Error Code

► PCH SATA1 Configuration

SATA Port 0 / JMD1:M.2-HC

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

SATA Port 0 / JMD1:M.2-HC Hot Plug

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

SATA Port 0 / JMD1:M.2-HC Spin Up Device

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

SATA Port 0 / JMD1:M.2-HC SATA Device Type

Use this feature to specify if the SATA port specified 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

The following Trusted Platform Module (TPM) information will display if a TPM 2.0 module is detected:

- Firmware Version
- Vendor Name

Security Device Support

If this feature and the TPM jumper on the motherboard are both set to Enabled, onboard security devices will be enabled for Trusted Platform Module (TPM) support to enhance data integrity and network security. Reboot the system for a change on this setting to take effect. The options are Disable and **Enable**.

- Active PCR Banks
- Available PCR banks

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

Use this feature to disable or enable the SHA-1 Platform Configuration Register (PCR) bank for the installed TPM device. The options are **Disabled** and Enabled.

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

Use this feature to disable or enable the SHA256 Platform Configuration Register (PCR) bank for the installed TPM device. The options are Disabled and **Enabled**.

Pending Operation

Use this feature to schedule a TPM-related operation to be performed by a security device for system data integrity. Your system will reboot to carry out a pending TPM operation. The options are **None** and TPM Clear.

Platform Hierarchy

Use this feature to disable or enable platform hierarchy for platform protection. The options are Disabled and **Enabled**.

Storage Hierarchy

Use this feature to disable or enable storage hierarchy for cryptographic protection. The options are Disabled and **Enabled**.

Endorsement Hierarchy

Use this feature to disable or enable endorsement hierarchy for privacy control. The options are Disabled and **Enabled**.

PH Randomization

Use this feature to disable or enable Platform Hierarchy (PH) Randomization. The options are **Disabled** and **Enabled**.

►ACPI Settings

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**.

Headless Support

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

High Precision Event Timer

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

RTC Wake System from S4/S5

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

►Super IO Configuration

The following Super IO information is displayed:

- Super IO Chip AST2600

►Serial Port 1 Configuration

Serial Port

Select Enabled to enable the selected onboard serial port. The options are Disabled and **Enabled**.

Device Settings

This feature displays the status of the specified serial port.

Change Settings

This feature specifies the base I/O port address and the Interrupt Request address of the specified serial port. Select Auto to allow the BIOS to automatically assign the base I/O and IRQ address. The options are **Auto**, (IO=3F8h; IRQ=4;), (IO=2F8h; IRQ=4;), (IO=3E8h; IRQ=4;), and (IO=2E8h; IRQ=4;).

► Serial Port 2 Configuration

Serial Port

Select Enabled to enable the selected onboard serial port. The options are Disabled and **Enabled**.

Device Settings

This feature displays the status of the specified serial port.

Change Settings

This feature specifies the base I/O port address and the Interrupt Request address of the specified serial port. Select Auto to allow the BIOS to automatically assign the base I/O and IRQ address. The options are **Auto**, (IO=3F8h; IRQ=3;), (IO=2F8h; IRQ=3;), (IO=3E8h; IRQ=3;), and (IO=2E8h; IRQ=3;).

► Network Configuration

Network Stack

Select Enabled to enable 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 Preboot Execution Environment (PXE) for boot support. If this feature is set to Disabled, IPv4 PXE boot option will not be supported. The options are Disabled and **Enabled**.

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

Use this feature to enable IPv4 HTTP boot support. The options are **Disabled** and Enabled.

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

Select Enabled to enable IPv6 Preboot Execution Environment (PXE) for boot support. If this feature is set to Disabled, IPv6 PXE boot option will not be supported. The options are Disabled and **Enabled**.

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

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

PXE boot wait time (Available when Network Stack is set to "Enabled")

Enter a value for the wait time (in seconds) to press the <ESC> key to abort the PXE boot. The default is **0**.

Media detect count (Available when Network Stack is set to "Enabled")

Enter a value for the number of times the presence of media will be checked. The default is **1**.

▶ **MAC: XXXXXXXXXXXXX-IPv4 Network Configuration**
▶ **MAC: XXXXXXXXXXXXX-IPv4 Network Configuration**

Configured

This feature indicates whether a network address configured successfully or not. The options are **Disabled** and **Enabled**.

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

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

Local IP Address (Available when "Enable DHCP" is set to "Disabled")

Use this feature to enter an IP address in dotted-decimal notation.

Local NetMask (Available when "Enable DHCP" is set to "Disabled")

Use this feature to enter a NetMask in dotted-decimal notation.

Local Gateway (Available when "Enable DHCP" is set to "Disabled")

Use this feature to enter a Gateway in dotted-decimal notation.

Local DNS Servers (Available when "Enable DHCP" is set to "Disabled")

Use this feature to enter a DNS Servers in dotted-decimal notation.

Save Changes and Exit

Select this feature to save the changes you've made and return to the upper configuration page.

► **MAC: XXXXXXXXXXXXX-IPv6 Network Configuration**
► **MAC: XXXXXXXXXXXXX-IPv6 Network Configuration**

► **Enter Configuration Menu**

Information for the following is displayed:

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

Interface ID

Enter an ID for the device.

DAD Transmit Count

Enter a value for Duplicate Address Detection (DAD) Transmit Count. A value of zero indicates the DAD is not performed. The default is **1**.

Policy

Use this feature to set the Policy. The options are **automatic** and manual.

► **Advanced Configuration (Available when "Policy" is set to "manual")**

New IPv6 Address

Use this feature to enter a new IPv6 address.

New Gateway Addresses

Use this feature to enter a Gateway address.

New DNS Addresses

Use this feature to enter a new DNS address.

Commit Changes and Exit

Select this feature to save the changes you've made and return to the upper configuration page.

Discard Changes and Exit

Select this feature to discard all the changes and return to the upper configuration page.

Save Changes and Exit

Select this feature to save the changes you've made and return to the upper configuration page.

►PCIe/PCI/PnP Configuration**PCI Bus Driver Version****PCI Devices Common Settings****Above 4G Decoding (Available if the system supports 64-bit PCI decoding)**

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

SR-IOV Support

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

ARI Support

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

Bus Master Enable

Use this feature to enable the Bus Master, which enables the Bus Master Attribute for DMA transaction. The options are Disabled and **Enabled**.

Consistent Device Name Support

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

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, and 512 G.

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**.

Maximum Read Request

Use this item to select the Maximum Read Request size of the PCIe device, or select Auto to allow the System BIOS to determine the value. The options are **Auto**, 128 Bytes, 256 Bytes, 512 Bytes, 1024 Bytes, 2048 Bytes, and 4096 Bytes.

MMCFG Base

Use this feature to select the low base address for PCIe adapters to increase base memory. The options are 1G, 1.5G, 1.75G, 2G, 2.25G, 3G, and **Auto**.

NVMe Firmware Source

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

VGA Priority

Use this feature to select VGA priority when multiple VGA devices are detected. Select Onboard to give priority to your onboard video device. Select Offboard to give priority to your graphics card. The options are **Onboard** and Offboard.

CPU SLOT6 PCIe 4.0 x16 OPROM

Use this feature to select which firmware type to be loaded for the add-on card in this slot. The options are Disabled and **EFI**.

JMD1:M.2-H PCIe 3.0 x4/S-SATA 3.0 OPROM

Use this feature to select which firmware type to be loaded for the add-on card in this slot. The options are Disabled and **EFI**.

Onboard X550 LAN5/6 Option ROM

Use this feature to select which firmware function to be loaded for LAN Port5/6 used for system boot. The options are Disabled and **EFI**.

Onboard I350 LAN1/2/3/4 Option ROM

Use this feature to select which firmware function to be loaded for LAN Port1/2/3/4 used for system boot. The options are Disabled and **EFI**.

Onboard E823 LAN7/8 Option ROM

Use this feature to select which firmware function to be loaded for LAN Port7/8 used for system boot. The options are Disabled and **EFI**.

Onboard Video Option ROM

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

► HTTP Boot Configuration

HTTP Boot Configuration

HTTP Boot Policy

Use this feature to select the policy of HTTP Boot. The options are Apply to all LANs, **Apply to each LAN**, and Boot Priority #1 instantly.

 **Note:** To configure each LAN port, select Apply to each LAN or Boot Priority #1 instantly. Only "Instance of Priority 1" appears when selecting the option of Apply to all LANs.

HTTP Boot Checks Hostname

Selects whether HTTPS Boot Checks Hostname of TLS certificates matches the hostname provided by the remote server. The options are **Enabled** and Disabled (WARNING: Security Risk!!).

Warning: Disabling this option is a violation of RFC 6125 and may expose you to Man-in-the-Middle Attacks. Supermicro is not responsible for any and all security risks incurred by you disabling this option.

Priority of HTTP Boot

Instance of Priority 1

Use this feature to rank the targeted port.

 **Note:** "Instance of Priority 2" is available for configuring when "HTTP Boot Policy" is set to "Apply to each LAN" or "Boot Priority #1 instantly."

 **Note:** The features below will be hidden if the Instance of Priority 1 and Instance of Priority 2 are set to 0.

Select IPv4 or IPv6

Use this feature to select the Targeted LAN port that is boot from IPv4 or IPv6. The options are **IPv4** and IPv6.

Boot Description

Use this feature to input the HTTP boot option description, otherwise the boot option for the URI will not be created. The maximum length should not be more than 75 characters.

Boot URI

Use this feature to input the URI address for HTTP Boot feature. The maximum length should not be more than 128 characters.

Instance of Priority 2 / Instance of Priority 3 / Instance of Priority 4

Use this feature to set the rank of the targeted port.

► Supermicro KMS Server Configuration

Supermicro KMS Server IP address

Use this feature to enter the Supermicro Key Management Service (KMS) server IPv4 address in dotted-decimal notation.

Second Supermicro KMS Server IP address

Use this feature to enter the second Supermicro KMS server IPv4 address in dotted-decimal notation.

Supermicro KMS TCP Port number

Use this feature to enter the Supermicro KMS TCP port number. The valid range is 100 – 9999. The default setting is **5696**.

KMS Time Out

Use this feature to enter the KMS server connecting time-out (in seconds). The default setting is **5** (seconds).

TimeZone

Use this feature to enter the correct time zone. The default setting is **0** (not specified).

TCG Nvme KMS Policy

Use this feature to select the TCG NVMe KMS policy. The options are Normal Unlock, **Do Nothing**, Reset All Devices, and Delete Key Id List.

Client UserName

Press <Enter> to set the client identity (UserName). The length is 0 – 63 characters.

Client Password

Press <Enter> to set the client identity (Password). The length is 0 – 31 characters.

KMS TLS Certificate / Size

This feature displays the Transport Layer Security (TLS) certificate and its size for CA Certificate, Client Certificate, and Client Private Key.

► CA Certificate

For the CA certificate, use this feature to enroll factory defaults or load the KMS TLS certificates from the file. The options are **Update**, Delete, and Export.

► Client Certificate

For the client certificate, use this feature to enroll factory defaults or load the KMS TLS certificates from the file. The options are **Update**, Delete, and Export.

► Client Private Key

For the client private key, use this feature to enroll factory defaults or load the KMS TLS certificates from the file. The options are **Update**, Delete, and Export.

Private Key Password (Available when "Private Key Password" has been set)

Use this feature to change the private key password.

► Super-Guardians Configuration

Super Guardians is a unified security solution to facilitate KMS, TPM, or USB-based authentication controls for Supermicro X13 motherboards. Use this submenu to configure the authentication policy, method, and KMS server settings.

Super-Guardians Protection Policy

Use this feature to enable the Super-Guardians Protection Policy. The options are **Storage**, System, and "System and Storage." Set this feature to Storage to protect and have secure access to Trusted Computing Group (TCG) NVMe devices with the Authentication-Key (AK). Set this feature to System to protect and have secure access to your system/motherboard with the AK. Set this feature to "System and Storage" to protect and have secure access to your TCG NVMe devices/system/motherboard with the AK.

KMS Security Policy

Set this feature to Enabled to enable the Key Management Service (KMS) Security Policy. When this feature has not previously been set to Enabled, the options are **Disabled** and Enabled. Changes take effect after you save settings and reboot the system.



Note 1: Be sure that the KMS server is ready before configuring this feature.



Note 2: Use the professional KMS server solutions (e.g., Thales Server) or the Supermicro PyKMIP Software Package to establish the KMS server.

When this feature has previously been set to Enabled, the options are **Enabled**, Reset, and Key Rotation. Set this feature to Key Rotation to obtain an existing Authentication-Key from the KMS server and create a new Authentication-Key. To disable the KMS Security Policy, set this feature to Reset. When this feature is set to reset, the system and TCG NVMe devices chosen in "Super-Guardians Protection Policy" will be in the unprotected mode.

KMS Server Retry Count

Use this feature to specify how many times the system will attempt reconnecting to the KMS server. Press <+> or <-> on your keyboard to change the value. The default setting is **5**. If the value is 0, the system will retry infinitely. The valid range is 0 to 10.

TPM Security Policy

Use this feature to enable or disable the TPM Security Policy. When this feature has not previously been set to Enabled, the options are **Disabled** and Enabled. Changes take effect after you save settings and reboot the system.



Note: Install a Trusted Platform Module 2.0 device to your system before configuring this feature.

When this feature has previously been set to Enabled, the options are **Enabled** and Reset. To disable the TPM Security Policy, set this feature to Reset. When this feature is set to reset, the system and TCG NVMe devices chosen in "Super-Guardians Protection Policy" will be in the unprotected mode.

Load Authentication-Key

Use this feature to toggle whether the BIOS should automatically load an Authentication-Key named TPMAuth.bin from a USB flash drive. The options are **Disabled** and Enabled. Set this feature to Enabled to load the Authentication-Key. After an Authentication Key is loaded, this option will be reset to Disabled. Changes take effect after you save settings and reboot the system.



Note 1: Connect a USB flash drive with the Authentication-Key (TPMAuth.bin) to your system before configuring this feature.



Note 2: Load the Authentication-Key after installing a TPM device. The TPM function will not work properly without an Authentication-Key.

Save Authentication-Key

Use this feature to toggle whether the BIOS should automatically save an Authentication-Key with the name TPMAuth.bin to a USB flash drive. The options are **Disabled** and Enabled. After an Authentication Key is saved, this option will be reset to Disabled. Changes take effect after you save settings and reboot the system.

 **Note 1:** Connect a USB flash drive to your system before configuring this feature. Save the Authentication-Key and keep a backup.

 **Note 2:** Load the Authentication-Key after installing a TPM device. The TPM function will not work properly without an Authentication-Key.

USB Security Policy

Use this feature to configure USB Security Policy settings. When this feature has not previously been set to Enabled, this feature will toggle whether the BIOS should automatically save a USB Authentication-Key named "USBAuth.bin" to a USB flash drive and begin the USB Security Policy. The options are **Disabled** and Enabled. Changes take effect after you save settings and reboot the system.

 **Note:** Connect a USB flash drive to your system before configuring this feature. Save the USB Authentication-Key and keep a backup.

When this feature has been previously set to Enabled, the options are **Enabled** and Reset. To disable the USB Security Policy, set this feature to Reset. When this feature is set to reset, the system and TCG NVMe devices chosen in "Super-Guardians Protection Policy" will be in the unprotected mode.

► **Intel(R) Ethernet Connection E823-C for backplane -
XX:XX:XX:XX:XX:XX**

► **Intel(R) Ethernet Connection E823-C for backplane -
XX:XX:XX:XX:XX:XX**

► **Firmware Image Properties**

This feature displays information about the Ethernet controller. The following information is displayed:

- Option ROM version
- Unique NVM/EEPROM ID
- NVM Version

►NIC Configuration

Link Speed

Use this feature to specify the port speed for this port. The default setting is **Auto Negotiated**.

Wake On Lan

Use this feature to enable or disable Wake On Lan support. Wake On Lan allows the system to wake up when an onboard LAN device receives an incoming signal. The options are Disabled and **Enabled**.

LLDP Agent

Use this feature to enable or disable persistently enabling the Linked Layer Discovery Protocol Agent. The options are **Disabled** and Enabled.

►NIC Configuration

►NIC Configuration

Port Option

Use this feature to specify the port option of the device. The available option is **Option 0: 2x10G**.

Port option outlines

Use this option to select a port option outline for this port.

►Option 0: 2x10G

Blink LEDs (range 0-15 seconds)

Use this feature to identify the physical network port by blinking the associated LED. Highlight this feature and enter a number of seconds in the range of 0 to 15 to set the amount of seconds to blink the LED. The default setting is **0**.

The following information is displayed:

- UEFI Driver
- Adapter PBA

- Device Name
- Chip Type
- PCI Device Id
- PCI Address
- Link Status
- MAC Address
- Virtual MAC Address

► TLS Authenticate Configuration

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

► Server CA Configuration

► Enroll Cert

► Enroll Certification Using File

Use this feature to enroll certification from a file.

Certification GUID

Use this feature to 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

Use this feature to delete certification.

► Client Certification Configuration

► Enroll Certification

► Enroll Certification Using File

Use this feature to enroll certification from a file.

Certification GUID

Use this feature to 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

Use this feature to delete certification.

► RAM Disk Configuration

Use this feature to configure RAM disk settings.

Disk Memory Type

Use this feature to specify the type of memory to create a RAM disk. The options are **Boot Service Data** and Reserved.

► Create raw

Size (Hex):

Use this feature to set the size of the raw RAM disk. The default setting is **1**.

Create & Exit

Use this feature to save all changes and exit raw RAM disk settings.

Discard & Exit

Use this feature to save all changes and exit raw RAM disk settings.

► Create from file

Use this feature to create a RAM disk from a specified file.

Created RAM disk list:

Use this feature to select a RAM disk.

Remove selected RAM disks(s).

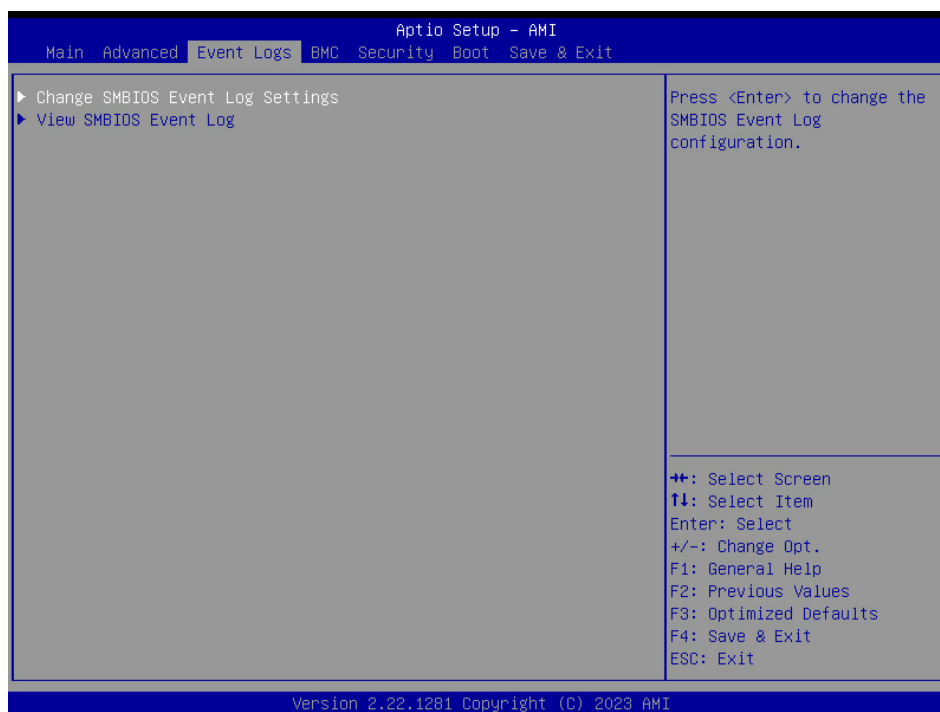
Use this feature to delete selected RAM disk(s).

► Driver Health

This submenu displays the health of the LAN and its related controller.

4.4 Event Logs

Use this feature to configure Event Log settings.



► Change SMBIOS Event Log Settings

Enabling/Disabling Options

SMBIOS Event Log

Change this feature to enable or disable all features of the SMBIOS Event Logging during system boot. The options are Disabled and **Enabled**.

Erasing Settings

Erase Event Log

If No is selected, data stored in the event log will not be erased. Select Yes, Next Reset, data in the event log will be erased upon next system reboot. Select Yes, Every Reset, data in the event log will be erased upon every system reboot. The options are **No**, Yes, Next reset, and Yes, Every reset.

When Log is Full

Select Erase Immediately for all messages to be automatically erased from the event log when the event log memory is full. The options are **Do Nothing** and Erase Immediately.

SMBIOS Event Log Standard Settings

Log System Boot Event

This option toggles the System Boot Event logging to enabled or disabled. The options are Enabled and **Disabled**.

MECI

The Multiple Event Count Increment (MECI) counter counts the number of occurrences that a duplicate event must happen before the MECI counter is incremented. This is a numeric value. The default value is **1**.

METW

The Multiple Event Time Window (METW) defines the number of minutes that must pass between duplicate log events before the MECI is incremented. Highlight this feature and enter a number between 0 to 99. The default value is **60**.



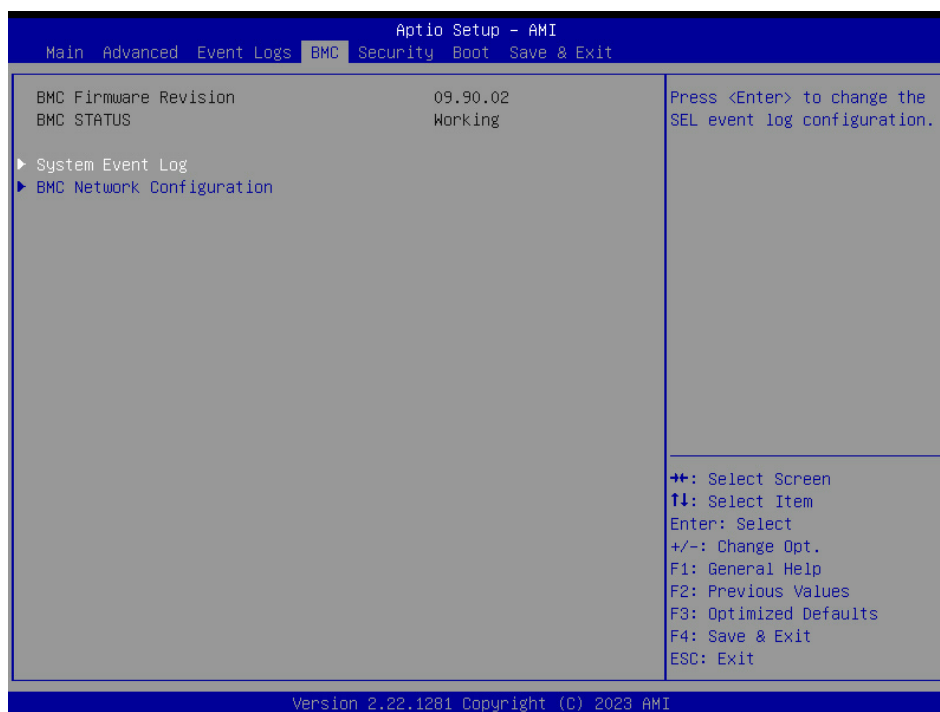
Note: Reboot the system after changing these settings for changes to take effect.

►View SMBIOS Event Log

Select this submenu and press <Enter> to see the contents of the SMBIOS event log. The following categories will be displayed: Date/Time/Error Codes/Severity.

4.5 BMC

Use this feature to configure Baseboard Management Console (BMC) settings.



BMC Firmware Revision

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

BMC STATUS

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

► System Event Log

Enabling/Disabling Options

SEL Components

Select Enabled for all system event logging at boot up. 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 reboot. 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 decide 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.

► BMC Network Configuration**--BMC Network Configuration--****Update BMC LAN Configuration**

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

****If this feature above is set to Yes, the following features will become available for configuration:***

Configure IPv4 Support

BMC LAN Selection

This feature displays the BMC LAN setting. The default setting is **Dedicated**.

BMC Network Link Status

This feature displays the BMC Network Link status. The default setting is **Dedicated LAN**.

Configuration Address Source

This feature allows you to select the source of the IP address for this computer. If Static is selected, you will need to know the IP address of this computer 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 **DHCP** and Static.

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

This feature displays the Station IP address for this computer. This should be in decimal and in dotted quad form (i.e., 192.168.10.253).

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.

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.

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., 172.31.0.1).

VLAN

This feature enables the BMC VLAN function. The options are **Disabled** and Enabled.

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

Use this feature to enter the VLAN ID. The default setting is 1.

Configure IPv6 Support

IPv6 Address Status

This section displays status of station IPv6 address to BMC.

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")

This feature allows you to select the source of the IP address for this computer. If Static is selected, you will need to know the IP address of this computer 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 Configuration, **DHCPv6 Stateless**, and DHCPv6 Stateful.

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

Use this feature to set the IPv6 Address in Static Configuration.

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

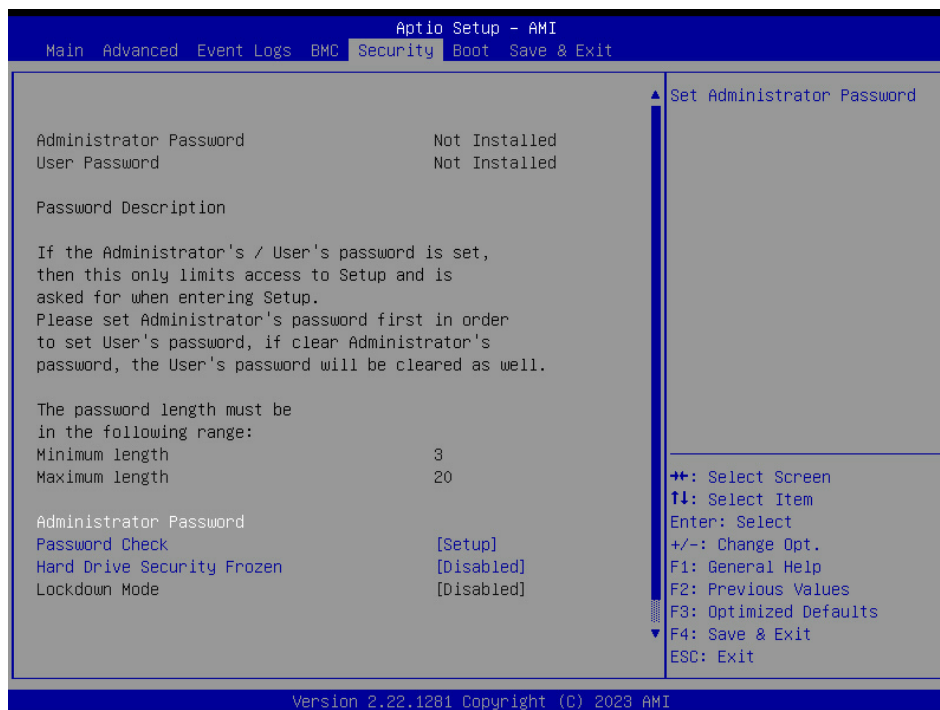
Use this feature to set the Prefix Length in Static Configuration.

IPv6 Router 1 IP Address (Available when "Configuration Address Source" is set to "Static Configuration")

Use this feature to set the IPv6 Router1 IP address from BMC in Static Configuration.

4.6 Security

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



Administrator Password

This feature indicates if an administrator password has been set. Press <Enter> to create a new or change an existing administrator password. The length of the password can be between three to 20 characters long.

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

This feature indicates if a user password has been set. Press <Enter> to create a new or change an existing user password. The length of the password can be between three to 20 characters long.

Password Check

Use this feature to have the system check for a password during BIOS 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

Use this feature to enable or disable freezing of the Lock Security feature for storage drives to protect key data in drives from being altered. The options are Enabled and **Disabled**.

Lockdown Mode

Use this feature to disable or enable Lockdown Mode. Lockdown Mode prevents existing data or keys stored in the system from being altered or changed to preserve system integrity and security. The options are **Disabled** and Enabled.

► Supermicro Security Erase Configuration



Note: This submenu becomes configurable when a storage device has been plugged into the motherboard. The features displayed in this section will change depending on what storage devices are detected.

The following information is displayed:

- HDD Name
- HDD Serial Number
- Security Mode
- Estimated Time
- HDD User Pwd Status
- **Security Function**



Note: Use this feature to secure erase the storage device or set a password for secure erasing this storage device. The options are **Disable**, Set Password, Security Erase – Password, and Security Erase – Without Password.

- **Password**



Note: Use this feature to set the user password.

HDD Security Configuration

Use this feature to set HDD security settings for supported drives.

► Secure Boot

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

This section displays the contents of the following secure boot features:

- System Mode
- Vendor Keys
- 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**.

CSM Support

If this feature is set to Enabled, legacy devices will be supported by the system. The options are **Disabled** and Enabled.

► Restore Factory Keys

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

► 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.

► 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.

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

The following information is displayed.

- Vendor Keys

Provision Factory Defaults

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

► Restore Factory Keys

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

► 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 image to run in the secure boot mode. Enroll 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 your "Platform Key." The default option is **Update**.

► Key Exchange Key (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." The options are **Update** and Append.

► 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 Delete to delete the authorized signatures. The options are **Update** and Append.

► 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." The options are **Update** and Append.

► Authorized TimeStamps (dbt)

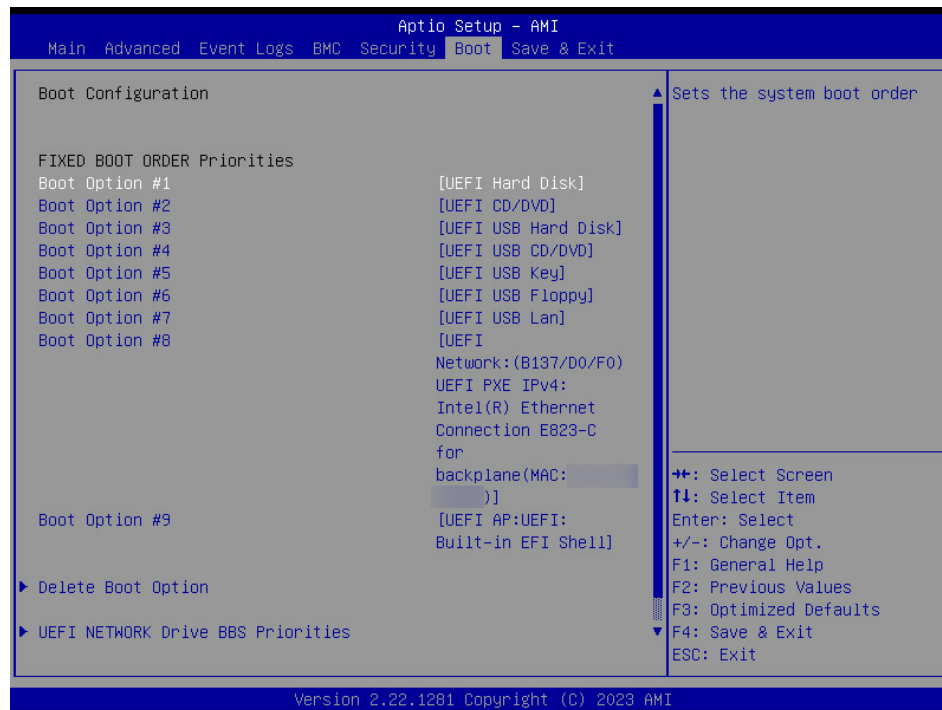
This feature allows you to set and save the timestamps for the authorized signatures which will indicate the time when these signatures are entered into the system. These values also indicate sizes, keys, and key sources of the authorized timestamps. Select Update to update your "Authorized TimeStamps." Select Append to append your "Authorized TimeStamps." The options are **Update** and Append.

► OsRecovery Signatures (dbr)

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." The options are **Update** and Append.

4.7 Boot

Use this feature to configure Boot Settings:



Fixed Boot Order 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. The displayed options change depending on the setting for "Boot Mode Select."

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

Use this feature to add a new boot option to the boot priority features for system boot.

Add boot option

Use this feature 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

Use this feature to specify the file path for the new boot option.

Create

Use this feature to create the new boot option in the boot priority list after the name and file path for the boot option are set.

►Delete Boot Option

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

Delete Boot Option

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

►UEFI NETWORK Drive BBS Priorities

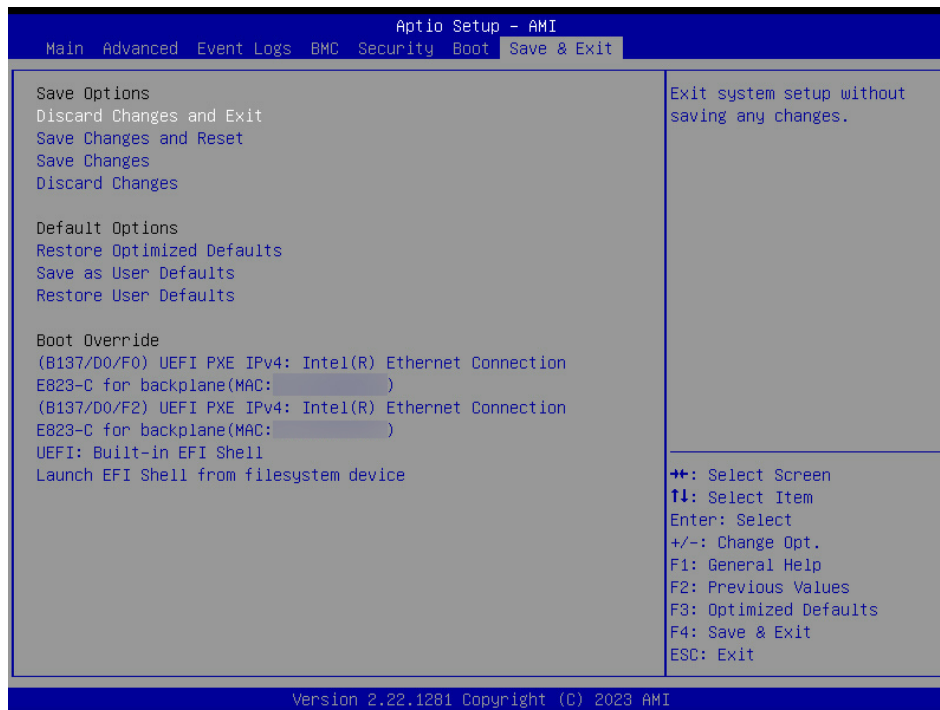
This feature allow you to set the system boot order of detected devices.

►UEFI Application Boot Priorities

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

4.8 Save & Exit

Use this feature to save the configurations or leave the BIOS Setup utility.



Save Options

Discard Changes and Exit

Select this feature to leave 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, select this feature to leave the BIOS Setup utility and reboot the computer, so the new system configuration parameters can take effect.

Save Changes

After completing the system configuration changes, select this feature to save the changes you have made. This will not reset (reboot) the system.

Discard Changes

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

Default Options

Load Optimized Defaults

Select this feature and press <Enter> to load the optimized defaults. These are factory settings designed for maximum system stability, but not for maximum performance.

Save As User Defaults

Select this feature and press <Enter> to save as the user defaults. This enables you to save any changes to the BIOS setup for future use.

Restore User Defaults

Select this feature and press <Enter> to restore the user defaults. Use this feature to retrieve user-defined settings that were saved previously.

Boot Override

Listed on this section are other boot options for the system (i.e., Built-in EFI shell). Select a desired feature and press <Enter>. Your system will boot to the selected boot option.

Appendix A

BIOS Codes

A.1 BIOS Error POST (Beep) Codes

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

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

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

These fatal errors are usually communicated through a series of audible beeps. The table shown below lists some common errors and their corresponding beep codes encountered by users.

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

A.2 Additional BIOS POST Codes

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

For information on AMI updates, refer to <http://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.

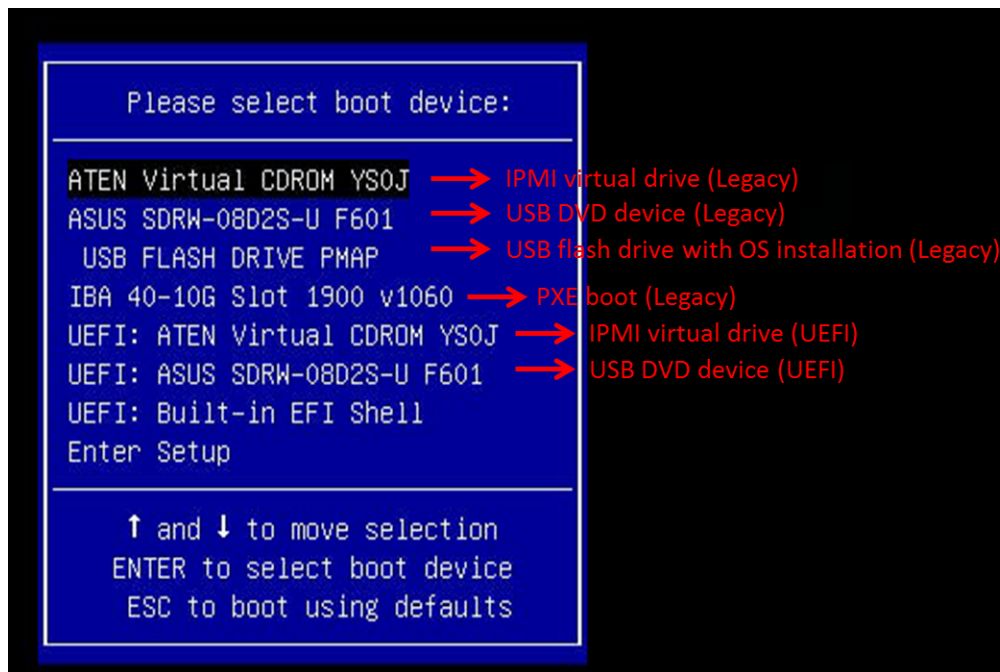


Figure B-1. Select Boot Device

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.

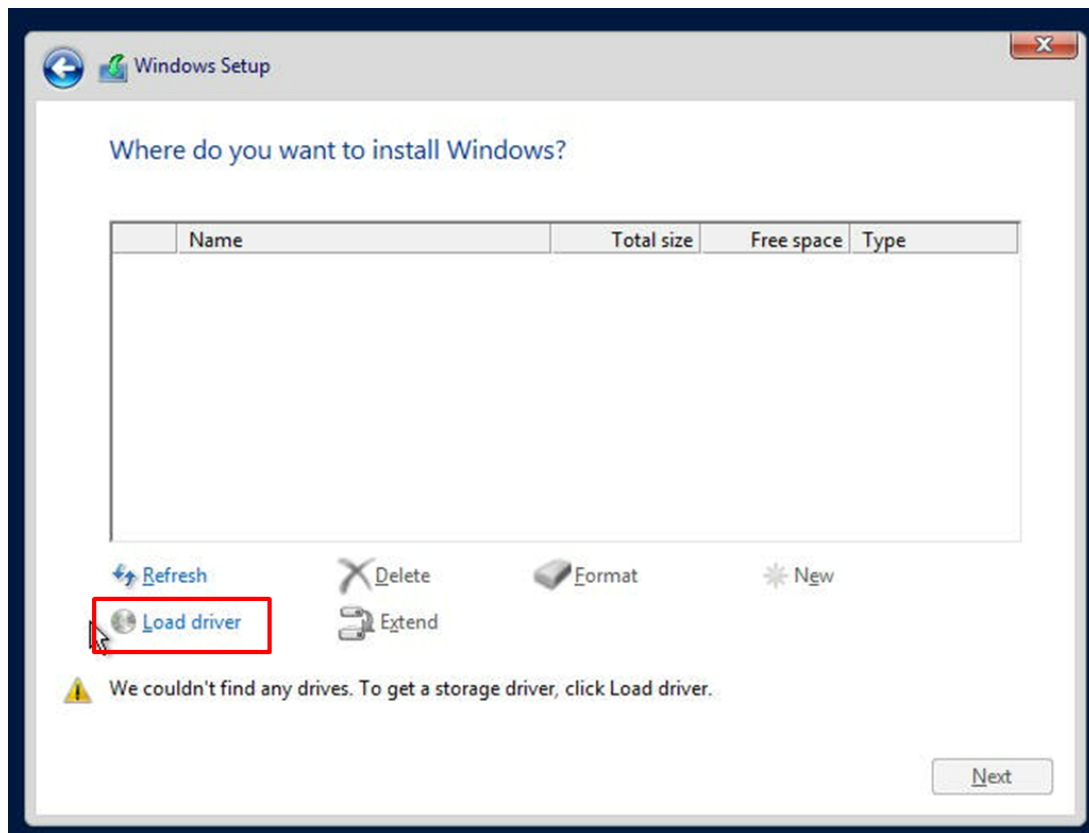


Figure B-2. Load Driver Link

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 <http://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.

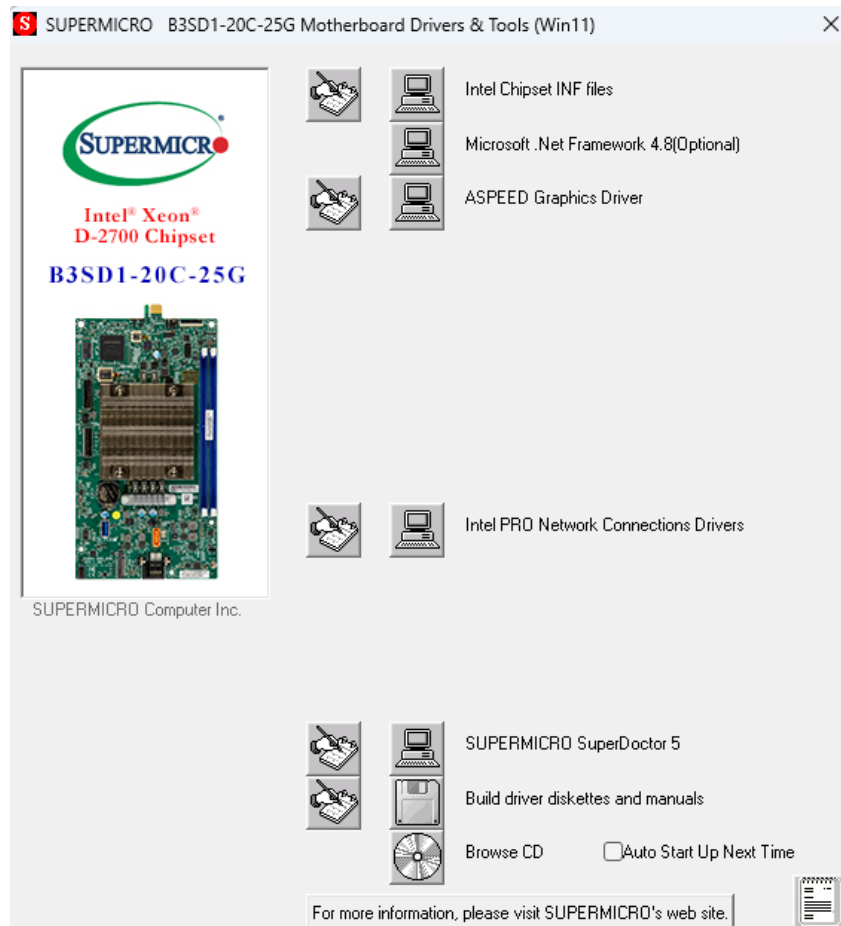


Figure B-3. Driver & Tool Installation Screen

 **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, FTP, and SMTP services to optimize the efficiency of your operation.



Note: The default User Name and Password for SuperDoctor 5 is ADMIN / ADMIN.

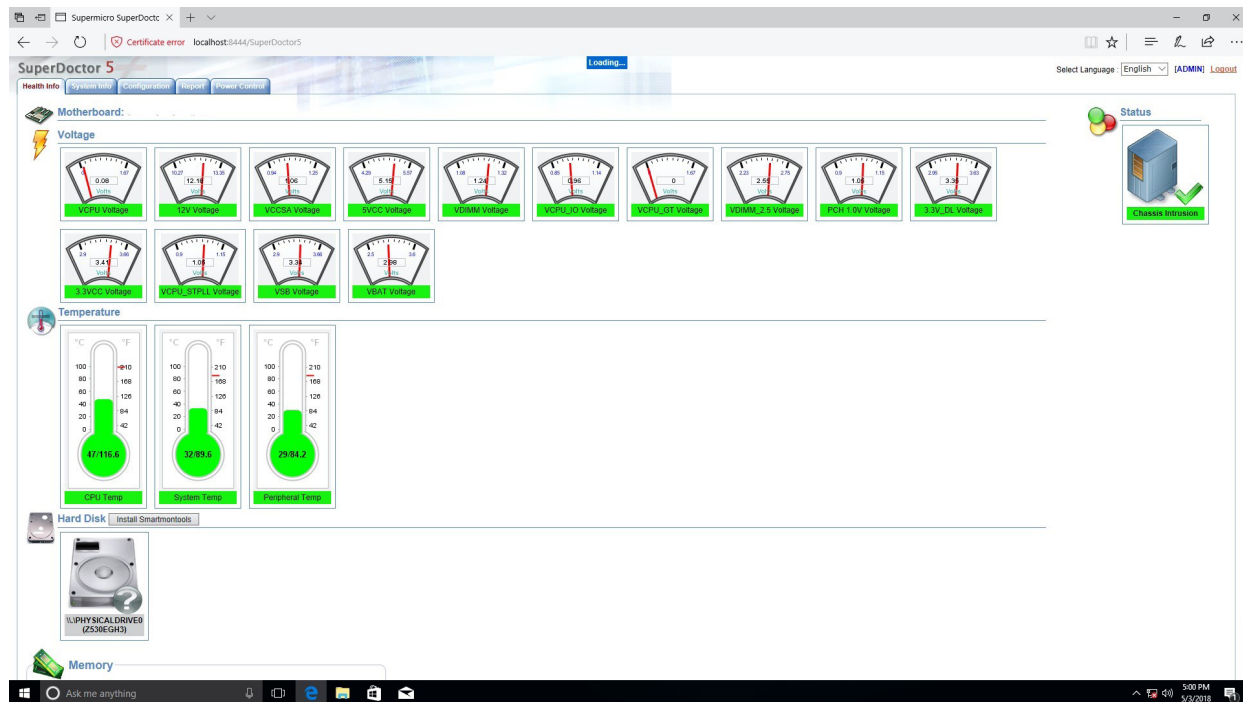


Figure B-4. SuperDoctor 5 Interface Display Screen (Health Information)

B.4 IPMI

The B3SD1-20C-25G 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.

Supermicro ships standard products with a unique password for the BMC ADMIN user. This password can be found on a label on the motherboard. For general documentation and information on IPMI, visit our website at <http://www.supermicro.com/products/nfo/IPMI.cfm>.

Appendix C

Standardized Warning Statements

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

Read this section in its entirety before installing or configuring components.

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

Battery Handling



Warning! There is the danger of explosion if the battery is replaced incorrectly. 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

電池更換不當會有爆炸危險。請只使用同類電池或制造商推薦的功能相當的電池更換原有電池。請按製造商的說明處理廢舊電池。

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 המושמשות יש לבצע לפי הוראות היצרן.

هناك خطر من انفجار في حالة اسبدال البطارية بطريقة غير صحيحة فاعلil

اسبدال البطارية

فقط بنفس النوع أو ما يعادلها مما أوصت به الشركة المصنعة

جخلص من البطاريات المسحمة وفقا لعليمات الشركة 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 القوانين واللوائح الوطنية

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.