



C9Z890-MW
C9B860-MW
C9Q870-M

USER'S MANUAL

Revision 1.0c (MNL-2707)

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Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the C9Z890- MW/C9B860- MW/C9Q870- M motherboard. Installation and maintenance should be performed by certified service technicians only.

Notes

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

- Supermicro product manuals: <https://www.supermicro.com/support/manuals>
- Product drivers and utilities: <https://www.supermicro.com/wdl>
- Product safety info: https://www.supermicro.com/about/policies/safety_information.cfm
- A secure data deletion tool designed to fully erase all data from storage devices can be found on our website:
[https://www.supermicro.com/about/policies/disclaimer.cfm?url=/wdl/utility/Lot9_Secure Data Deletion Utility](https://www.supermicro.com/about/policies/disclaimer.cfm?url=/wdl/utility/Lot9_Secure_Data_Deletion_Utility)
- Frequently Asked Questions: <https://www.supermicro.com/FAQ/index.php>
- If you still have questions after referring to our FAQs, contact our support team. Region-specific Technical Support email addresses can be found at: "[Contacting Supermicro](#)" on page 11
- If you have any feedback on Supermicro product manuals, contact our writing team at: Techwriterteam@supermicro.com

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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.



Warning! Indicates hazardous moving parts may be encountered while handling a fan or components near a fan.

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

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

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Contacting Supermicro

Headquarters

Address: Super Micro Computer, Inc.
980 Rock Ave.
San Jose, CA 95131 U.S.A.

Tel: +1 (408) 503-8000

Fax: +1 (408) 503-8008

Email: Marketing@supermicro.com (General Information)
Sales-USA@supermicro.com (Sales Inquiries)
[Government Sales-USA@supermicro.com](mailto:Government_Sales-USA@supermicro.com) (Gov. Sales Inquiries)
Support@supermicro.com (Technical Support)
RMA@Supermicro.com (RMA Support)
Webmaster@supermicro.com (Webmaster)

Website: <https://www.supermicro.com>

Europe

Address: Super Micro Computer B.V.
Het Sterrenbeeld 28, 5215 ML
's-Hertogenbosch, The Netherlands

Tel: +31 (0) 73-6400390

Fax: +31 (0) 73-6416525

Email: Sales_Europe@supermicro.com (Sales Inquiries)
Support_Europe@supermicro.com (Technical Support)
RMA_Europe@supermicro.com (RMA Support)

Website: <https://www.supermicro.nl>

Asia-Pacific

Address: Super Micro Computer, Inc.
3F, No. 150, Jian 1st Rd.
Zhonghe Dist., New Taipei City 235 Taiwan (R.O.C)

Tel: +886 (2) 8226-3990

Fax: +886 (2) 8226-3992

Email: Sales-Asia@supermicro.com.tw (Sales Inquiries)
Support@supermicro.com.tw (Technical Support)
RMA@supermicro.com.tw (RMA Support)

Website: <https://www.supermicro.com.tw>

Chapter 1:

Introduction

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

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1.1 Quick Reference

For details on the C9Z890-MW/C9B860-MW/C9Q870-M motherboard layout, features, and other quick reference information, refer to the content below.

Checklist

In addition to the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, several important parts that are included in your shipment are listed below. If anything listed is damaged or missing, contact your retailer.

Main Parts List		
Description	Part Number	Quantity
Supermicro Motherboard	C9Z890-MW/C9B860-MW/C9Q870-M	1
I/O Shield	MCP-260-00193-0B	1
SATA Cables	CBL-0044L	4
Quick Reference Guide	MNL-2707-QRG	1
Antennas	CBL-ANTD-0115SMA (C9Z890-MW and C9B860-MW only)	2
S-Connector*	JMP-0010L-0000-PRX	1

Note: The S-Connector is a plug designed to connect the front control panel header on the motherboard and front control panel cables of the chassis.

Motherboard Layout

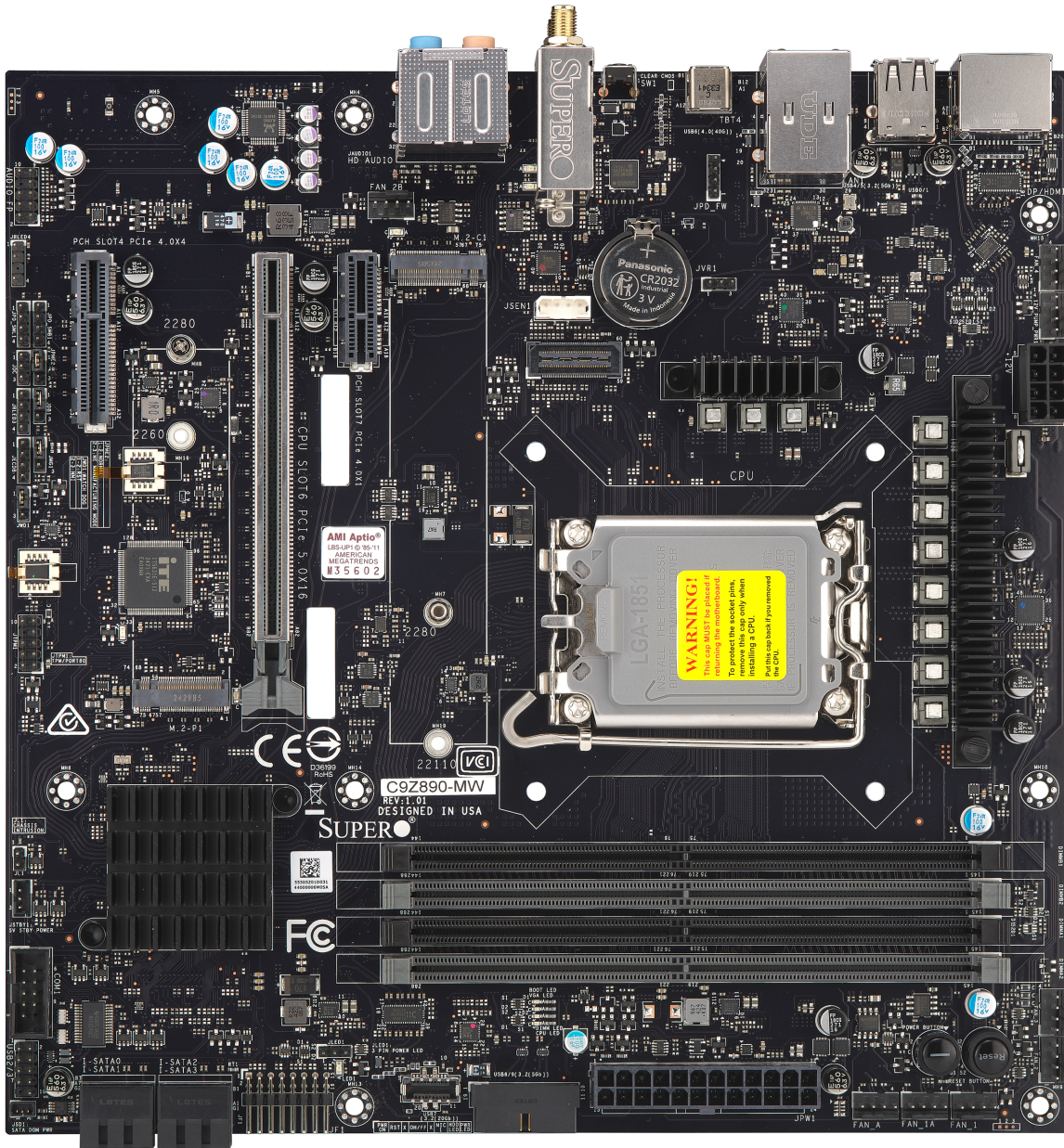


Figure 1-1. C9Z890-MW Motherboard Image

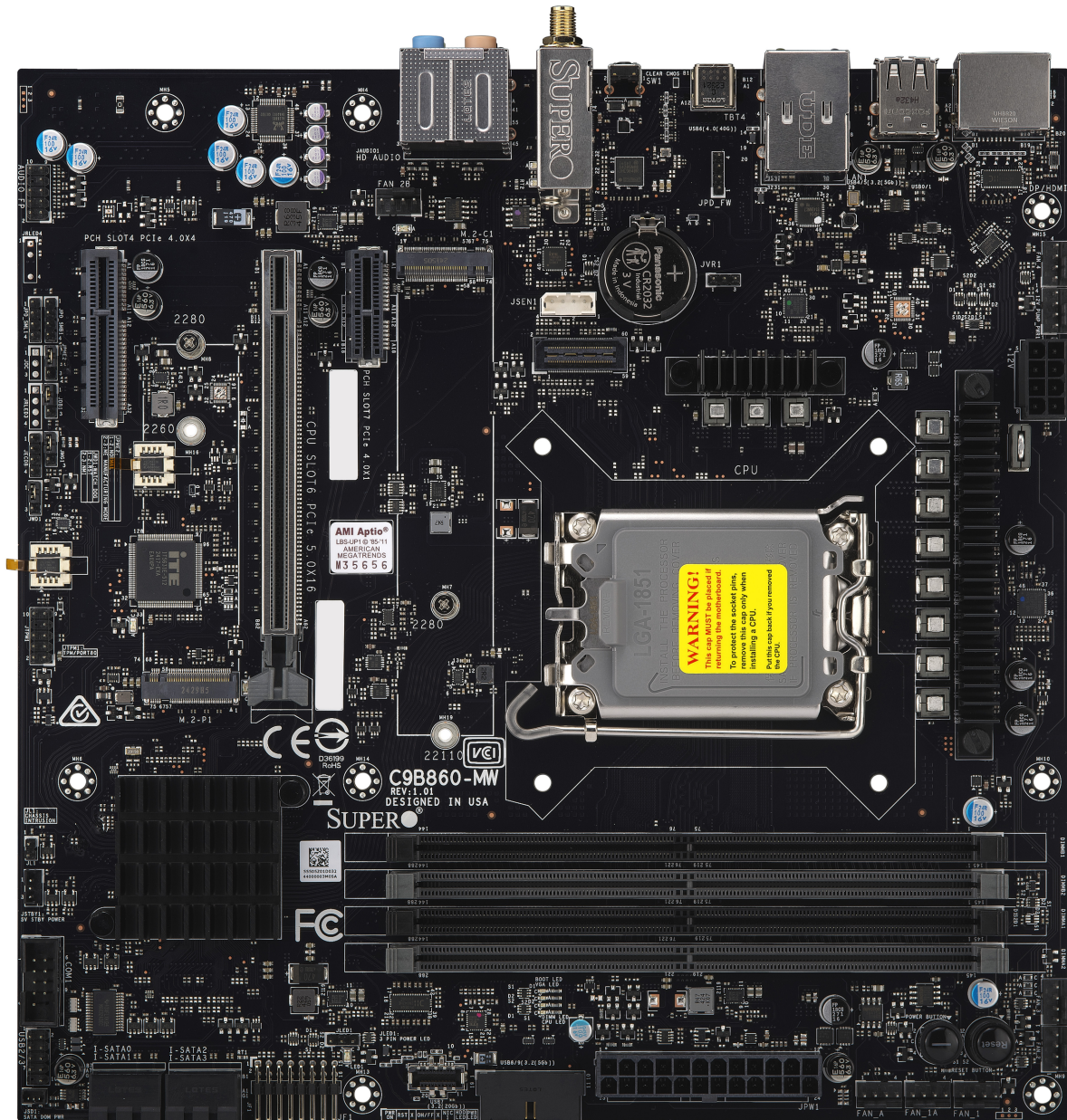


Figure 1-2. C9B860-MW Motherboard Image

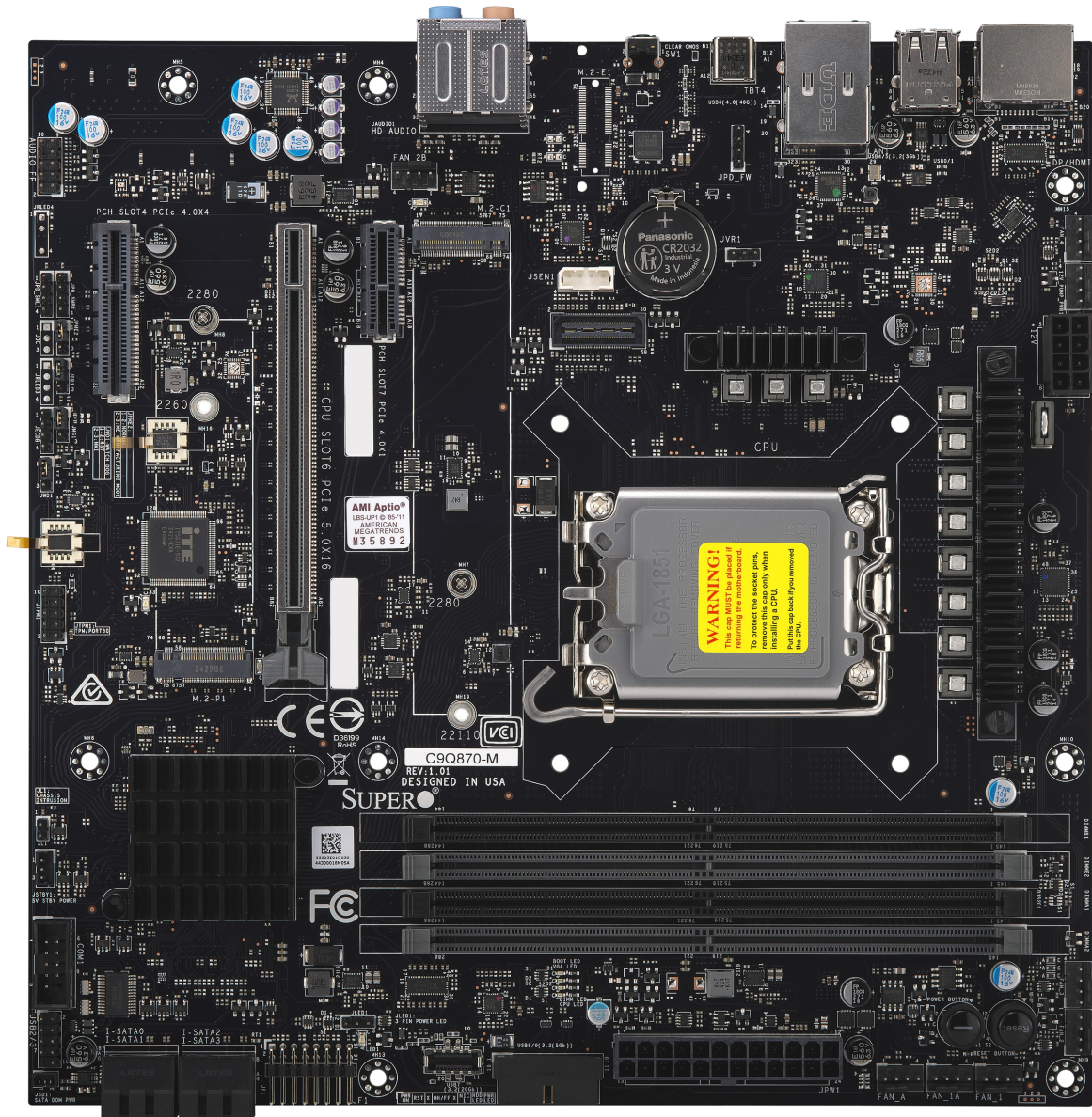


Figure 1-3. C9Q870-M Motherboard Image

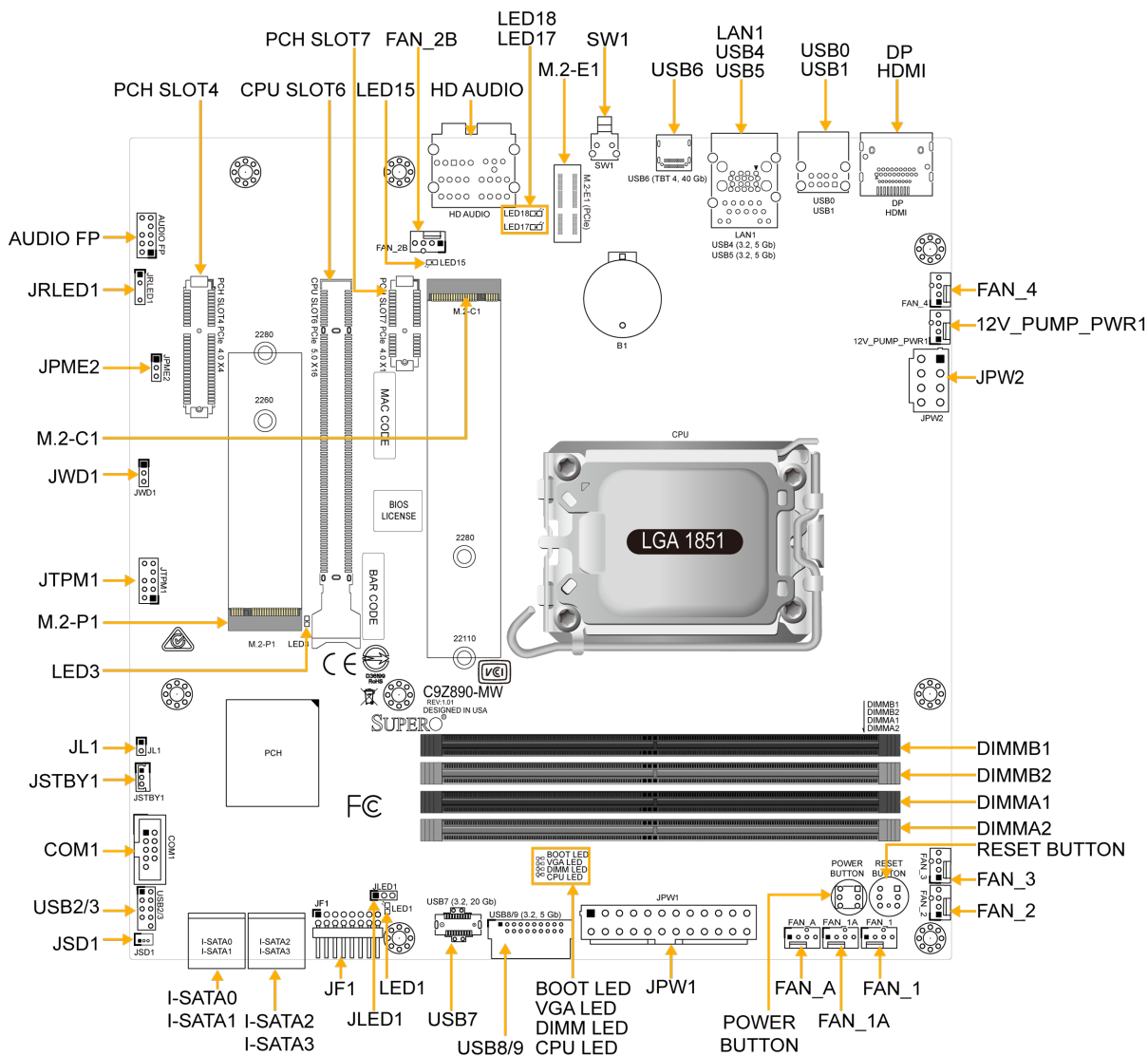


Figure 1-4. C9Z890-MW/C9B860-MW/C9Q870-M Motherboard Layout

Differences between C9Z890-MW/C9B860-MW/C9Q870-M			
	C9Z890-MW	C9B860-MW	C9Q870-M
WiFi 7 + Bluetooth 5.4 module	Yes	Yes	N/A
PCH Chipset	Intel® Z890	Intel B860	Intel Q870
LAN Controller	Intel Ethernet i219-V	Intel Ethernet i219-V	Intel Ethernet i219-LM
Overclocking Support	Yes (CPU and Memory)	Yes (Memory)	N/A

Notes:

- For detailed information on jumpers, connectors, and LED indicators, see "[Component Installation](#)" on page 31.
- "■" indicates the location of pin 1.
- "MH" indicates the location of a mounting hole.
- Components not documented are for internal testing purposes only.
- Use only the correct type of onboard CMOS battery as specified by the manufacturer. To avoid possible explosion, do not install the onboard battery upside down.

Quick Reference Table

Jumper	Description	Default
JPME2	Intel Manufacturing Mode	Pins 1–2: Normal
JWD1	Watchdog Function Enable	Pins 1–2: Reset
POWER BUTTON	Internal Power Button	Push Button Switch
RESET BUTTON	Onboard System Reset Button	Push Button Switch
SW1	Rear Clear CMOS Button	Push Button Switch

LED	Description	Status
BOOT LED	Bootable Device Power-On Self-Test (POST) Status	Orange ON : Bootable Device POST OFF: Bootable Device POST Completion
CPU LED	CPU Power-On Self-Test (POST) Status	Yellow ON : CPU POST OFF: CPU POST Completion
DIMM LED	DIMM Power-On Self-Test (POST) Status	Blue ON: DIMM POST OFF: DIMM POST Completion
LED1	Onboard Power LED S3 (Suspend to RAM) LED	Green On: Power On Green Blinking: S3
LED17	WLAN Power-On Self-Test (POST) Status (C9Z890-MW and C9B860-MW only)	Green ON: WLAN POST OFF: WLAN POST Completion

LED	Description	Status
LED18	Bluetooth Device Power-On Self-Test (POST) Status (C9Z890-MW and C9B860-MW only)	Green ON: Bluetooth Device POST OFF: Bluetooth Device POST Completion
LED3, LED15	M.2 LEDs for M.2-P1 / M.2-C1	Green ON: PCIe Device Detected Green Blinking: Activity
VGA LED	Onboard VGA Power-On Self-Test (POST) Status	Green ON : Onboard VGA POST OFF: Onboard VGA POST Completion

Connector	Description
12V_PUMP_ PWR1	12 V 4-pin Power Connector (for CPU liquid cooling pump)
AUDIO FP	Front Audio Header * This header is designed for a headphone/microphone combo jack. If using a standalone microphone, use the MIC jack on the rear panel. * Standalone headphone and microphone jacks are provided on the rear panel.
B1	Onboard Battery
COM1	COM Header
DP	Rear DisplayPort 2.1 (supports data rates of up to 10 Gbps)
FAN_1, FAN_A, FAN_1A, FAN_2B	System Fan Headers
FAN_2–FAN_4	CPU Fan Headers
HD AUDIO	High Definition Audio Ports
HDMI	High Definition Multimedia Interface 2.1 (supports data rates of up to 8 Gbps)
I-SATA0–I-SATA3	Intel SATA 3.0 Ports (from PCH, 6 Gbps, with support of RAID 0/1/5/10)
JF1	Front Control Panel Header * Align the printed indications on the S-Connector with the corresponding pins on JF1 when plugging in.
JL1	Chassis Intrusion Header

Connector	Description
JLED1	3-pin Power LED Indicator Header
JPW1	24-pin ATX Main Power Connector (Required)
JPW2	+12 V 8-pin CPU Power Connector (Required)
JRLED1	5 V 3-pin Addressable RGB (ARGB) LED Connection Header * For the 5 V 3-pin ARGB LED connections only.
JSD1	SATA Disk-On-Module (DOM) Power Connector
JSTBY1	5 V Standby Power Header
JTPM1	Trusted Platform Module (TPM)/Port 80 Header (TPM 2.0 only)
LAN1	RJ45 1 GbE LAN Port
M.2-C1	PCIe 5.0 x4 M.2 M-Key Slot (from CPU, with support of 2280 and 22110 form factors and RAID 0/1)
M.2-E1 (PCIe)	WiFi 7 and Bluetooth 5.4 (pre-installed, C9Z890-MW and C9B860-MW only)
M.2-P1	PCIe 4.0 x4 M.2 M-Key Slot (from PCH, with support of 2260 and 2280 form factors and RAID 0/1)
SLOT4	PCIe 4.0 x4 Slot (from PCH)
SLOT6	PCIe 5.0 x16 Slot (from CPU)
SLOT7	PCIe 4.0 x1 Slot (from PCH)
USB0, USB1	Rear USB 2.0 Ports (Type-A)
USB2/3	Front Accessible USB 2.0 Header
USB4, USB5	Rear USB 3.2 Gen 1x1 Ports (5 Gb, Type-A)
USB6	Rear Thunderbolt™ 4 (TBT 4) Port (40 Gb, Type-C)
USB7	Front Accessible USB 3.2 Gen 2x2 Header (20 Gb, Type-C)
USB8/9	Front Accessible USB 3.2 Gen 1x1 Header (5 Gb, Type-A)

Note: Jumpers, connectors, switches, and LED indicators that are not described in these tables are for manufacturing testing purposes only, and are not covered in this manual.

Motherboard Features

Motherboard Features
Processor
<ul style="list-style-type: none"> Supports a single Intel Core™ Ultra 200S (Ultra 9/7/5) or Core Ultra 200S Plus (Ultra 7/5) processor (in LGA 1851, Socket V1), and a thermal design power (TDP) of up to 125 W
Memory
<ul style="list-style-type: none"> Supports up to DDR5 256 GB of Unbuffered (UDIMM) and Clocked Unbuffered (CUDIMM) ECC/non-ECC DDR5 memory with speeds of up to 5600 MT/s (1DPC), 4800 MT/s (2DPC, 1R DIMM), and 4400 MT/s (2DPC, 2R DIMM) in four 288-pin memory slots
DIMM Size
<ul style="list-style-type: none"> 8 GB, 16 GB, 24 GB, 32 GB, 48 GB, and 64 GB
Chipset
<ul style="list-style-type: none"> Intel PCH Z890 (C9Z890-MW) Intel PCH B860 (C9B860-MW) Intel PCH Q870 (C9Q870-M)
Expansion Slots
<ul style="list-style-type: none"> One PCIe 5.0 x16 Slot (SLOT6, from CPU) One PCIe 4.0 x4 Slot (SLOT4, from PCH) One PCIe 4.0 x1 Slot (SLOT7, from PCH) One PCIe 5.0 x4 M.2 M-Key Slot (from CPU, with support of 2280 and 22110 form factors and RAID 0/1) One PCIe 4.0 x4 M.2 M-Key Slot (from PCH, with support of 2260 and 2280 form factors and RAID 0/1)
Network Controller
<ul style="list-style-type: none"> One 1 GbE LAN port supported by Intel Ethernet i219-V (C9Z890-MW and C9B860-MW) One 1 GbE LAN port supported by Intel Ethernet i219-LM (C9Q870-M)
I/O Devices
<ul style="list-style-type: none"> One front accessible COM port header (COM1) Four SATA 3.0 ports at 6 Gbps (I-SATA0–I-SATA3 with support of RAID 0/1/5/10) One DisplayPort 2.1 connection on the rear I/O (supports data rates of up to 10 Gbps) One HDMI 2.1 connection on the rear I/O (supports data rates of up to 8 Gbps)

Motherboard Features
Peripheral Devices
<ul style="list-style-type: none"> • Two USB 2.0 ports on the rear I/O (Type-A, USB0 and USB1) • One front accessible USB 2.0 header with two USB connections (USB2/3) • Two USB 3.2 Gen 1x1 ports on the rear I/O (5 Gb, Type-A, USB4 and USB5) • One Thunderbolt 4 port on the rear I/O (40 Gb, Type-C, USB6) • One front accessible USB 3.2 Gen 2x2 header (20 Gb, USB7) • One front accessible USB 3.2 Gen 1x1 header (5 Gb, USB8/9)
BIOS
<ul style="list-style-type: none"> • 256 Mb AMI BIOS® SPI Flash BIOS • ACPI 6.5 or later, Plug and Play (PnP) SPI dual/quad speed support, riser card auto detection support, SMBIOS 3.7 or later
Power Management
<ul style="list-style-type: none"> • ACPI power management • Power button override mechanism • Power-on mode for AC power recovery • Wake-on-LAN • Power supply monitoring
System Health Monitoring
<ul style="list-style-type: none"> • Onboard voltage monitoring for +12 V, +5 V, +3.3 V, CPU, Memory, VBAT, +5 V stdby, +3.3 V stdby, +1.8 V PCH, +1.05 V PCH, +1.0 V PCH, CPU temperature, VRM temperature, LAN temperature, PCH temperature, system temperature, and memory temperature • Five CPU switch phase voltage regulators • CPU thermal trip support • Platform Environment Control Interface (PECI)/TSI
Fan Control
<ul style="list-style-type: none"> • Triple cooling zones • Multi-speed fan control via Embedded Controller (EC) • Seven 4-pin fan headers

Motherboard Features
System Management
<ul style="list-style-type: none">• Trusted Platform Module (TPM) support• SuperServer Automation Assistant (SAA)• SuperDoctor® 5• Super Diagnostics Offline (SDO)• Intel vPro (C9Q870-M only)• ACPI power management• Chassis intrusion header and detection <p>Note: Connect a cable from the Chassis Intrusion header at JL1 to the chassis to receive an alert.</p>
LED Indicators
<ul style="list-style-type: none">• Power, HDD, NIC, CPU/system overheat, and fan failure LEDs (via JF1)• Onboard power/suspend-state LED (LED1)• LAN status LEDs (on LAN1 port)• M.2 LEDs (LED3 and LED15)• Onboard Boot, CPU, DIMM, and VGA POST LEDs• Onboard WLAN and Bluetooth POST LEDs (LED17 and LED18, C9Z890-MW and C9B860-MW only)
Dimensions
micro-ATX, 9.6" x 9.6" (244 mm x 244 mm) (L x W)

Motherboard Block Diagram

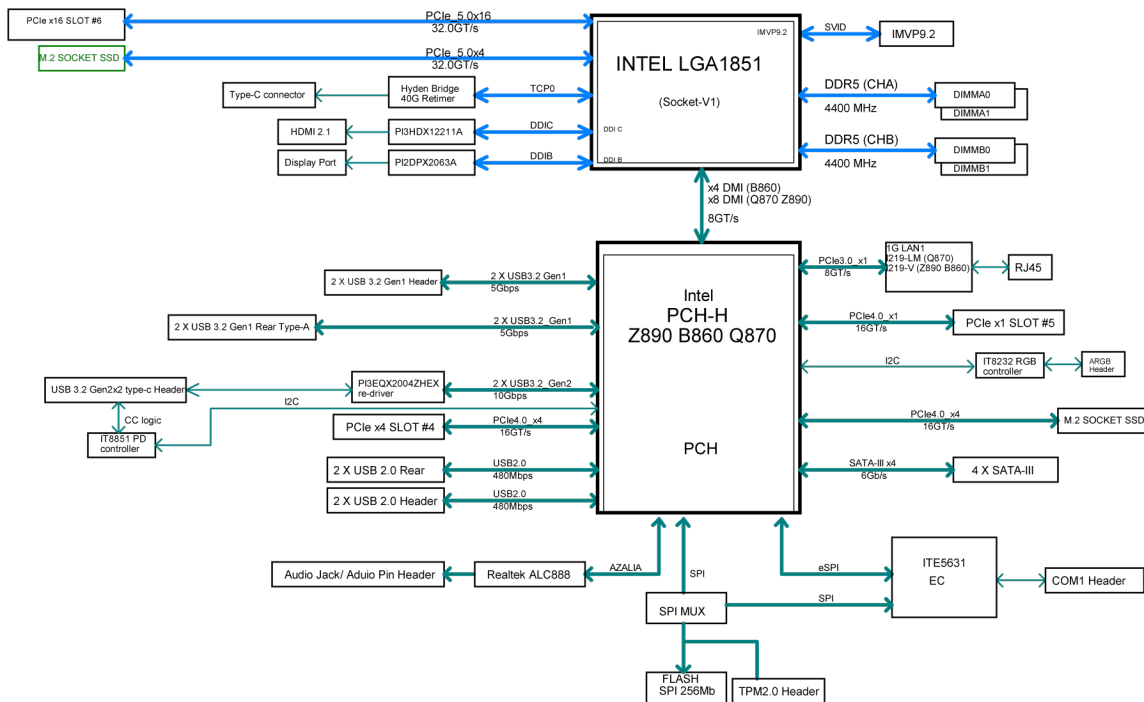


Figure 1-5. Motherboard Block Diagram

1.2 Platform Overview

Built upon the functionality and capability of the Intel Core Ultra 200S (Ultra 9/7/5) or Core Ultra 200S Plus (Ultra 7/5) processor (in LGA 1851, Socket V1), and the Intel 800 Series chipset, the C9Z890-MW/C9B860-MW/C9Q870-M motherboard provides system performance, power efficiency, and feature sets to address the needs of next-generation computer users.

With the support of the new Intel Microarchitecture 20A Enhanced SuperFin Process Technology, the C9Z890-MW/C9B860-MW/C9Q870-M motherboard dramatically increases system performance for a multitude of server applications and supports the following features:

- DDR5 288-pin memory support
- Direct Media Interface
- Intel Matrix Storage Technology and Intel Rapid Storage Technology
- Intel I/O Virtualization (VT-d) Support
- Intel Trusted Execution Technology Support
- PCIe 5.0 Interface (up to 32 GT/s)
- SATA Controller (up to 6 Gb/sec)
- Advanced Host Controller Interface (AHCI)

1.3 Special Features

Recovery from AC Power Loss

The Basic I/O System (BIOS) provides a setting that determines how the system will respond when AC power is lost and then restored to the system. You can choose for the system to remain powered off (in which case you must press the power switch to turn it back on), or for it to automatically return to the power-on state. See Advanced Setup Configurations under "[UEFI BIOS](#)" on [page 89](#) for this setting. The default setting is **Last State**.

1.4 System Health Monitoring

Onboard Voltage Monitors

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

Fan Status Monitor with Firmware Control

PC health monitoring in the BIOS can check the RPM status of the cooling fans. The onboard CPU and chassis fans are controlled by Thermal Management via Embedded Controller (EC).

Environmental Temperature Control

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

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

System Resource Alert

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

1.5 ACPI Features

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

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

Slow Blinking LED for Suspend-State Indicator

When the CPU goes into a suspend state, the chassis power LED will start to blink to indicate that the CPU is in suspend mode. When the user presses any key, the CPU will "wake up," and the LED will automatically stop blinking and remain on.

1.6 Serial Header

The C9Z890-MW/C9B860-MW/C9Q870-M motherboard supports one serial communication connection. The COM header can be used for input/output. The UART provides legacy speeds with a baud rate of up to 115.2 Kbps as well as an advanced speed with baud rates of 250 Kbps, 500 Kbps, or 1 Mbps, which support high-speed serial communication devices.

1.7 Embedded Controller

The Embedded Controller supports one high-speed, 16550 compatible serial communication port (UART). Each UART includes a 16-byte send/receive FIFO, a programmable baud rate generator, complete modem control capability and a processor interrupt system. The UART provides legacy speed with a baud rate of up to 115.2 Kbps as well as an advanced speed with baud rates of 250 Kbps, 500 Kbps, or 1 Mbps, which support higher speed modems.

The Embedded Controller provides functions that comply with Advanced Configuration and Power Interface (ACPI), which includes support of legacy and ACPI power management through an SMI or SCI function pin. It also features auto power management to reduce power consumption.

Chapter 2:

Component Installation

This chapter provides instructions on installing and replacing main system components for the C9Z890-MW/C9B860-MW/C9Q870-M motherboard. To prevent compatibility issues, only use components that match the specifications and/or part numbers given.

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

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2.1 Static-Sensitive Devices

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

Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Handle the motherboard only by its edges. 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. To avoid possible explosion, do not install the onboard battery upside down.

Unpacking

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

2.2 Motherboard Installation

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

Tools Needed

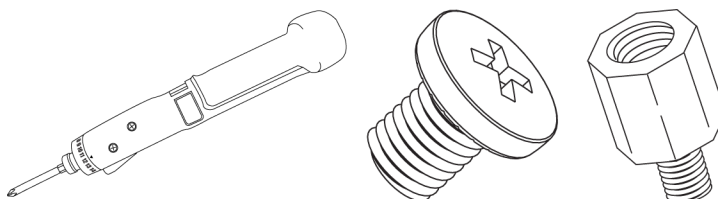


Figure 2-1. Torque Driver (1), Phillips Screws (9), Standoffs (9, only if needed)

Notes:

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

Installing the Motherboard

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

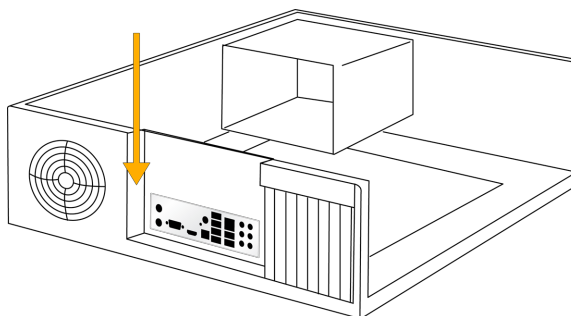


Figure 2-2. Installing the I/O Shield

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

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

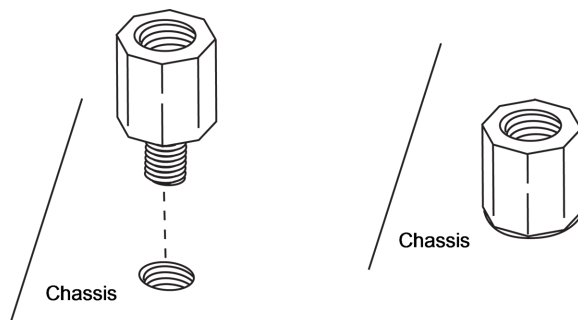


Figure 2-3. Locating the Mounting Holes

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

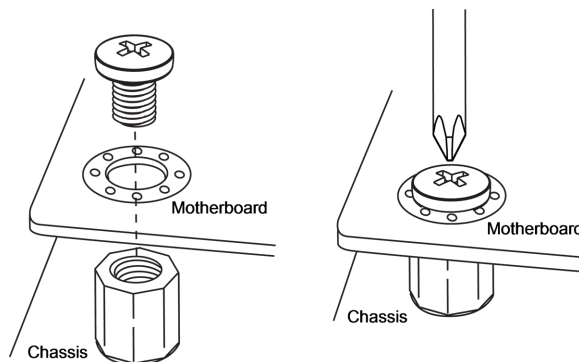


Figure 2-4. Aligning the Mounting Holes

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

2.3 Processor and Heatsink Installation

This section provides procedures to install the processor(s) and heatsink(s).

Notes:

- Take industry standard precautions to avoid ESD damage. For details, see "[Static-Sensitive Devices](#)" on page 33.
- Before starting, make sure that the plastic socket cap is in place and none of the socket pins are bent. If any damage is noted, contact your retailer.
- Do not connect the system power cord before the processor and heatsink installation is complete.
- When handling the processor, avoid touching or placing direct pressure on the LGA lands (gold contacts). Improper installation or socket misalignment can cause serious damage to the processor or processor socket.
- Install the processor in the socket and the motherboard into the chassis before installing the heatsink.
- When buying a processor separately, use only a Supermicro certified heatsink.
- Refer to the Supermicro website for the most recent processor support.
- When installing the heatsink, ensure a torque driver set to the correct force is used for each screw.
- Thermal grease is pre-applied on a new heatsink. No additional thermal grease is needed.

Installing an LGA 1851 Processor

Important: You can only install the processor in one direction. Make sure it is properly inserted into the socket before closing the load plate. If it doesn't close properly, do not force it as it may damage your processor. Instead, open the load plate again and double-check that the processor is properly aligned.

1. Remove the plastic protective cover from the load plate.

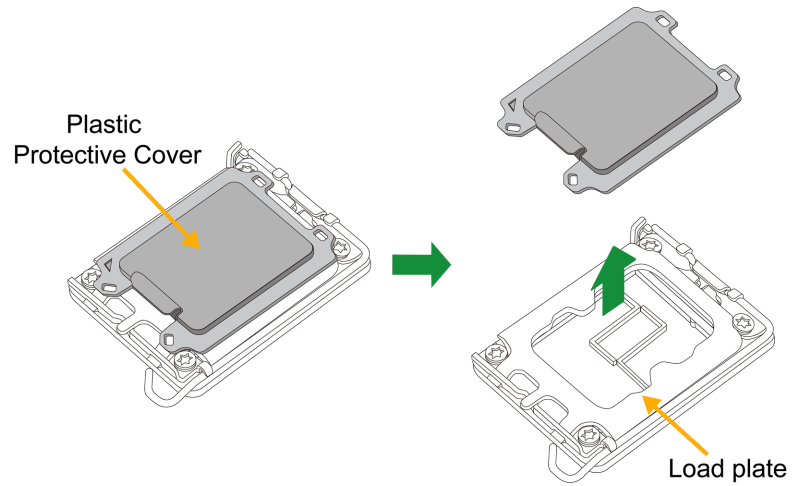


Figure 2-5. Removing the Protective Cover

2. Gently push the load lever down and away from the lever lock, then lift it up completely.

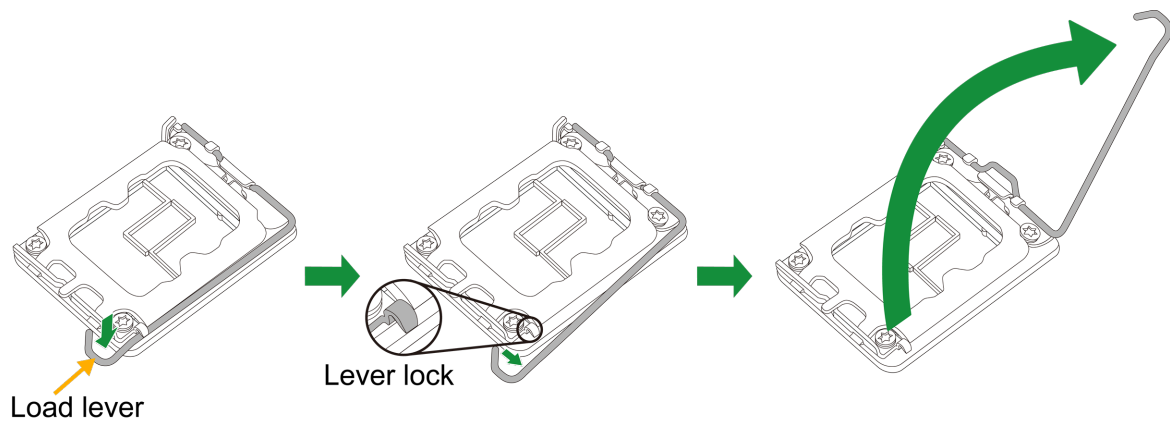


Figure 2-6. Releasing and Lifting the Lever

3. Lift the load plate to open it completely.

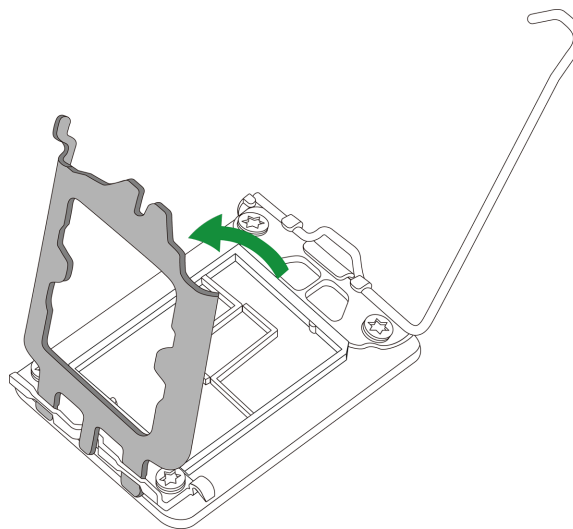


Figure 2-7. Opening the Load Plate

4. Carefully hold the processor by its edges. Align the small triangle marker and notches on the processor with the corresponding triangle marker and notches on the processor load bracket. Once aligned, carefully lower the processor straight down into the socket. (Do not drop the processor on the socket, or move it horizontally or vertically.)

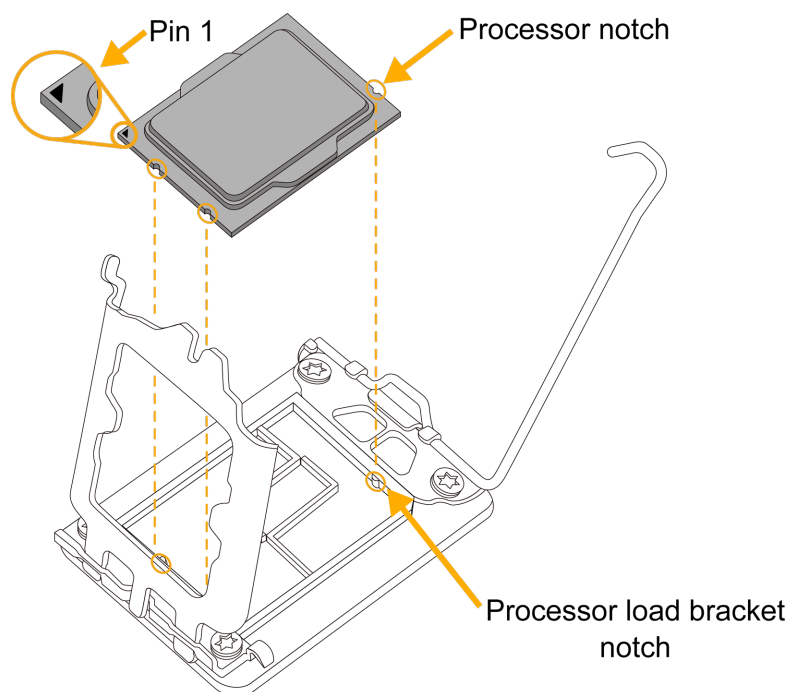


Figure 2-8. Aligning the Notches and Installing the Processor

5. Do not rub the processor against the surface or against any pins of the socket to avoid damaging the processor or the socket.

6. With the processor inside the socket, inspect all the corners to make sure it is properly installed.
7. Close the load plate with the processor inside the socket. Gently push the load lever down until it locks under the lever lock.

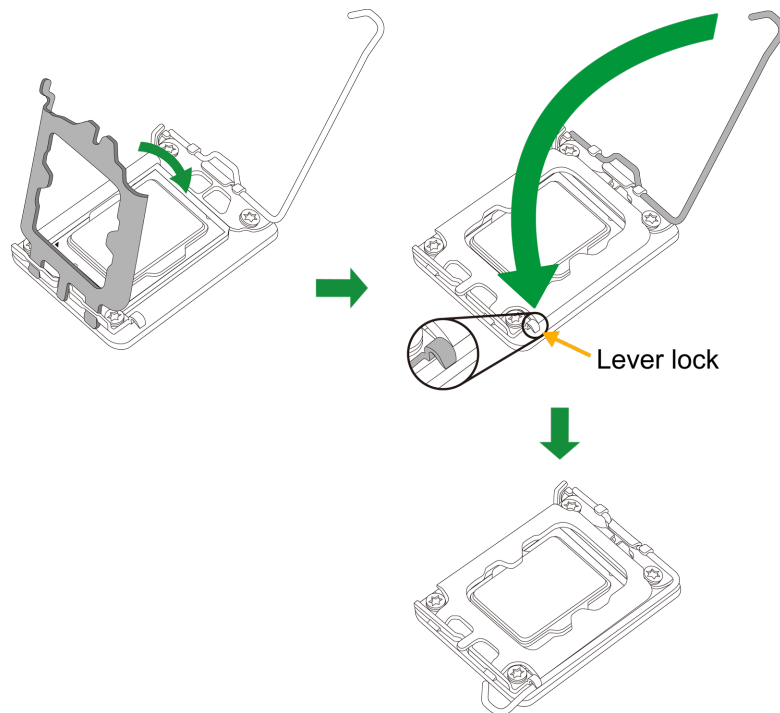


Figure 2-9. Closing the Load Plate and Pushing the Lever Down

Installing a Processor Heatsink

1. Loosen four screws to release the backplate. Note that one screw is not shown in the illustration below.

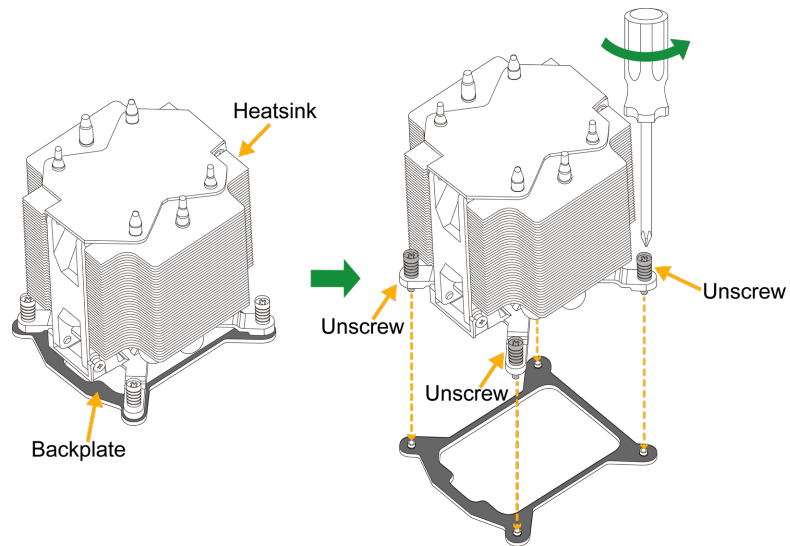


Figure 2-10. Releasing the Backplate from the Heatsink

2. If there is a thin layer of protective film on the backplate, remove it.

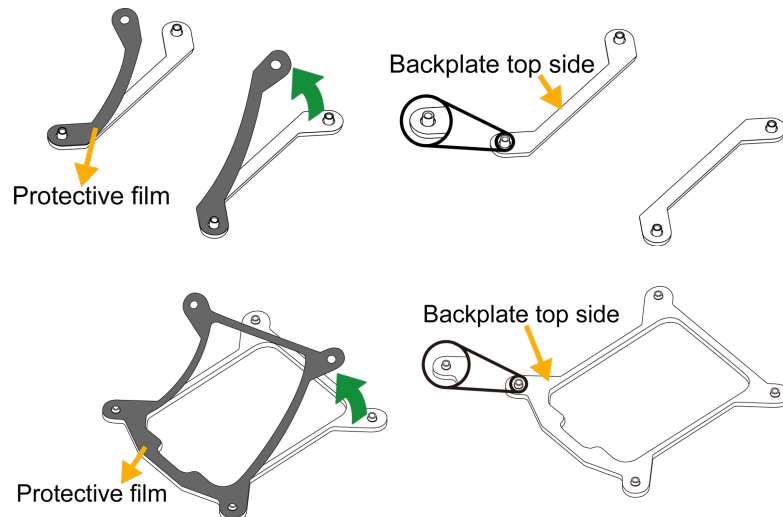
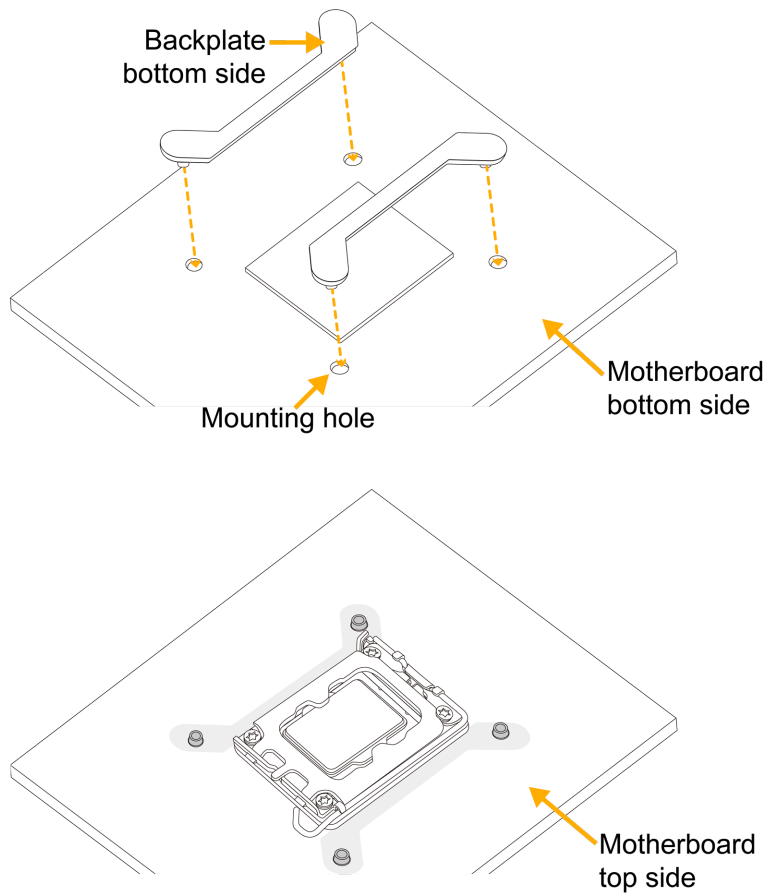


Figure 2-11. Removing the Protective Film

3. Attach the backplate into the mounting holes around the processor socket on the bottom side of the motherboard.



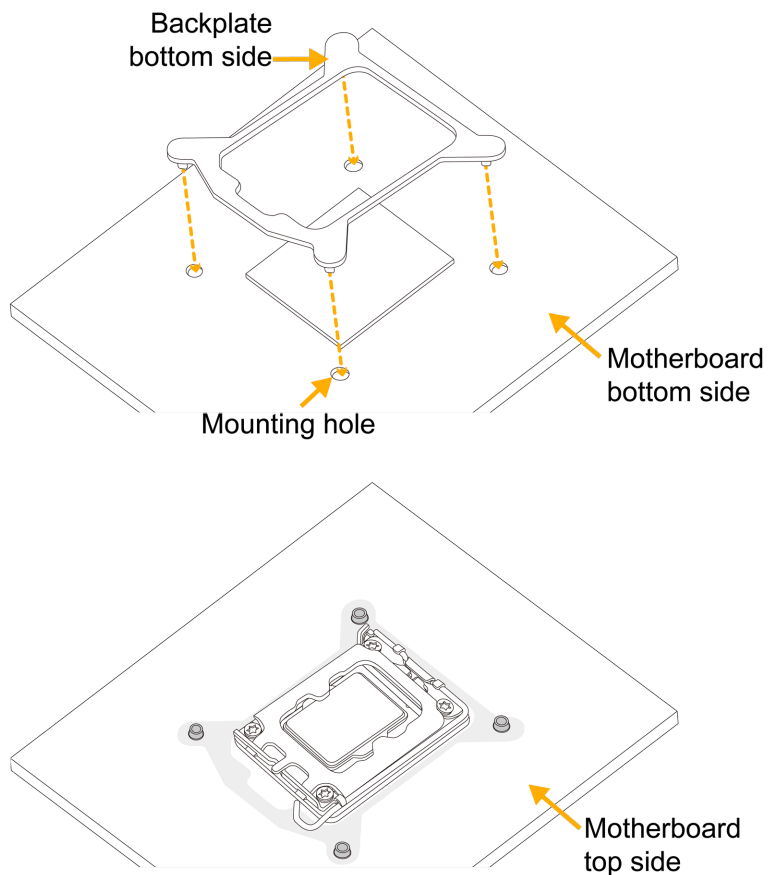


Figure 2-12. Attaching the Backplate to the Bottom Side of the Motherboard

4. Apply the proper amount of thermal grease on the processor.

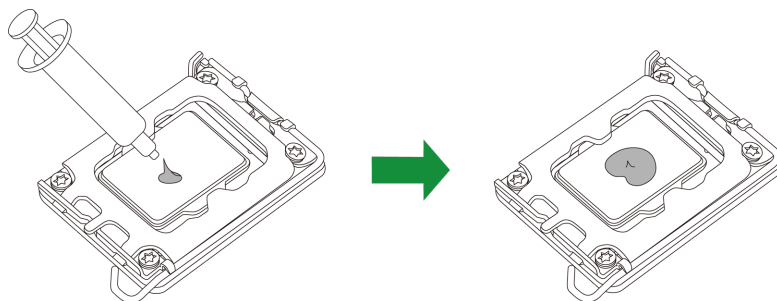


Figure 2-13. Applying Thermal Grease

5. Place the heatsink on top of the processor so that the four mounting holes on the heatsink are aligned with those on the retention mechanism.

6. Tighten the screws.

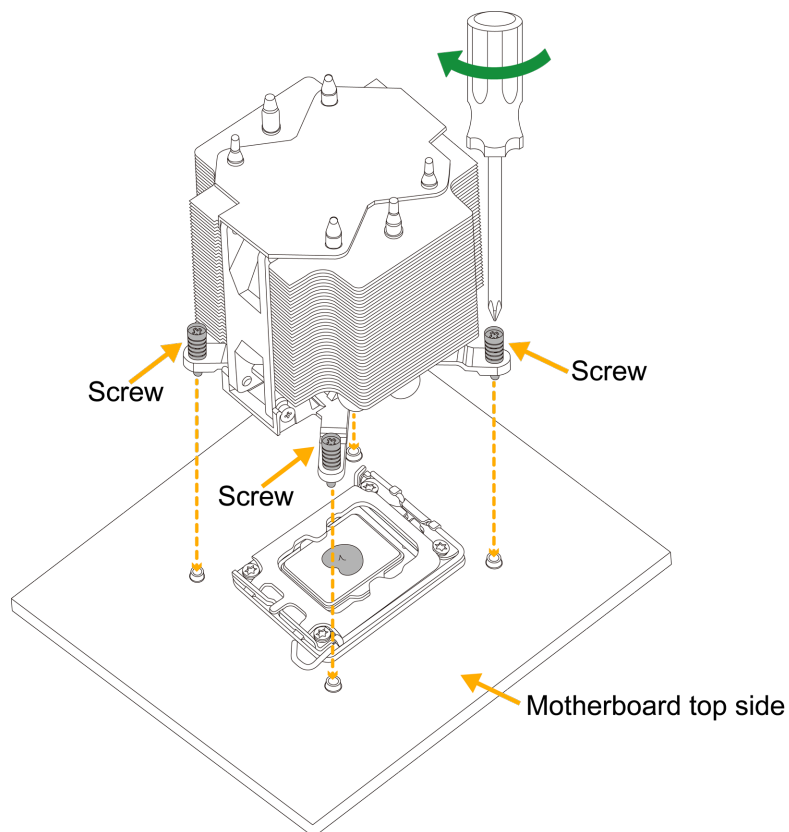


Figure 2-14. Tightening the Heatsink Screws

Notes:

- The installation described in this section is for reference only. The actual installation steps may vary depending on the CPU heatsink model. Refer to the heatsink instructions for more details.
- Images displayed are for illustration purposes only. Your components might look different from those shown in this manual.

Removing the Processor Heatsink

Important: We do not recommend that the processor or heatsink be removed. However, if you do need to remove the heatsink, follow the instructions below to remove the heatsink and prevent damage done to the processor or other components.

1. Unplug the power cord from the power supply and the power connector from the cooler and fan header.

2. Loosen the screws as shown in figure in the next step.
3. Gently wiggle the heatsink to loosen it. Do not use excessive force when wiggling the heatsink.

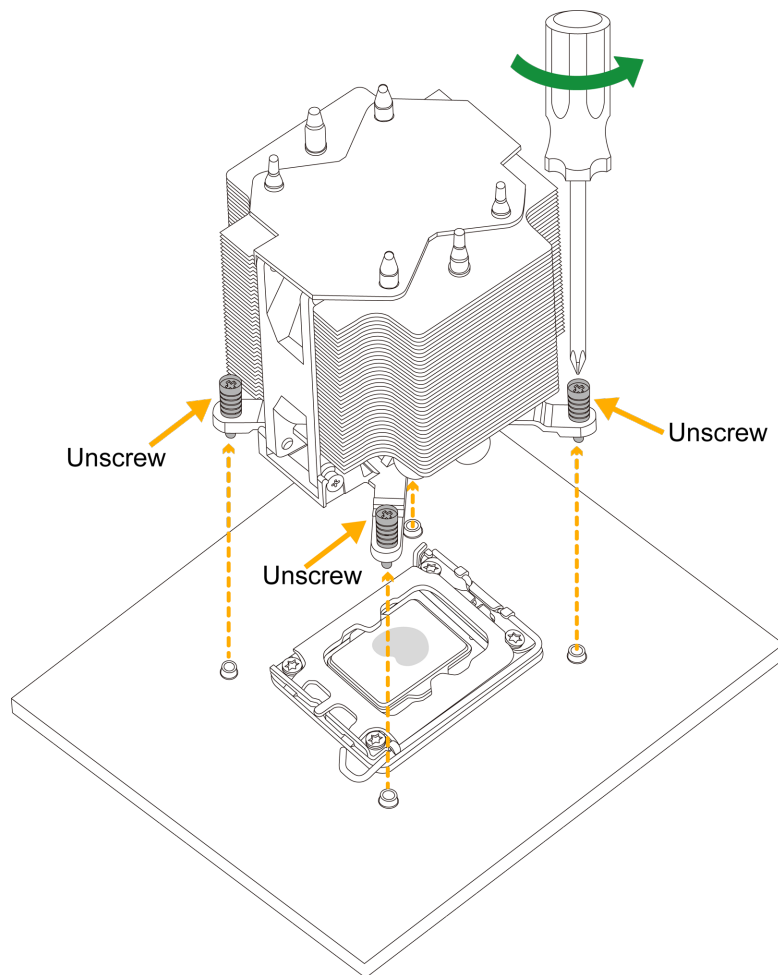


Figure 2-15. Loosening the Heatsink Screws

4. Once the heatsink is loosened, remove it from the motherboard.

2.4 Memory Support and Installation

Important: To prevent any damage, exercise extreme care when installing or removing memory modules.

Note: Check the Supermicro website for recommended memory modules.

Memory Support

The C9Z890-MW/C9B860-MW/C9Q870-M motherboard supports up to DDR5 256 GB of non-ECC UDIMM and CUDIMM with speeds of up to 5600 MT/s (1DPC), 4800 MT/s (2DPC, 1R DIMM), and 4400 MT/s (2DPC, 2R DIMM) in four 288-pin memory slots.

Memory Population Table

Recommended Population (Balanced)				
DIMMA1	DIMMB1	DIMMA2	DIMMB2	Total System Memory
		8 GB DIMM	8 GB DIMM	16 GB
8 GB DIMM	8 GB DIMM	8 GB DIMM	8 GB DIMM	32 GB
		16 GB DIMM	16 GB DIMM	32 GB
		24 GB DIMM	24 GB DIMM	48 GB
16 GB DIMM	16 GB DIMM	16 GB DIMM	16 GB DIMM	64 GB
		32 GB DIMM	32 GB DIMM	64 GB
24 GB DIMM	24 GB DIMM	24 GB DIMM	24 GB DIMM	96 GB
		48 GB DIMM	48 GB DIMM	96 GB
32 GB DIMM	32 GB DIMM	32 GB DIMM	32 GB DIMM	128 GB
		64 GB DIMM	64 GB DIMM	128 GB
48 GB DIMM	48 GB DIMM	48 GB DIMM	48 GB DIMM	192 GB
64 GB DIMM	64GB DIMM	64 GB DIMM	64 GB DIMM	256 GB

Memory Support Table

Memory Support			
Frequency	4400 MT/s (2DPC)	4800 MT/s (2DPC)	5600 MT/s (1DPC)
DIMMA1	2R DIMM	1R DIMM	N/A
DIMMA2	2R DIMM	1R DIMM	1R or 2R DIMM
DIMMB1	2R DIMM	1R DIMM	N/A
DIMMB2	2R DIMM	1R DIMM	1R or 2R DIMM

Note: Single UDIMM/CUDIMM populated in two slots per channel (2SPC) configuration frequency is 5600 MT/s.

General Guidelines for Optimizing Memory Performance

- It is recommended to use DDR5 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 supports installation of one DIMM. However, to achieve the best memory performance, a balanced memory population is recommended.
- When installing memory modules, the DIMM slots should be populated in the following order: DIMMB2, DIMMA2, then DIMMB1, DIMMA1.
- When installing only two memory modules, use DIMMB2 and DIMMA2.

Notes for DIMM Installation and Removal

Notes:

- The DDR5 DIMM module is NOT hot-swappable and be sure to disconnect power for a minimum of 20 seconds before inserting or removing it.
- Removing a DDR5 DIMM module at a slanted angle will cause damages. It is strongly recommended that you lift the module straight up out of the slot.

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under "[Quick Reference](#)" on page 13.

DIMM Installation

Important: To avoid causing any damage to the memory module or the DIMM socket, do not use excessive force when pressing the release tabs on the ends of the DIMM socket. Handle memory modules with care. To avoid ESD-related damage to your memory modules or components, carefully follow all the instructions given in ["Static-Sensitive Devices"](#) on page 33.

1. Insert the desired number of DIMMs into the memory slots based on the recommended DIMM population table earlier in this section.
2. Push the release tabs outwards on both ends of the DIMM slot to unlock it.

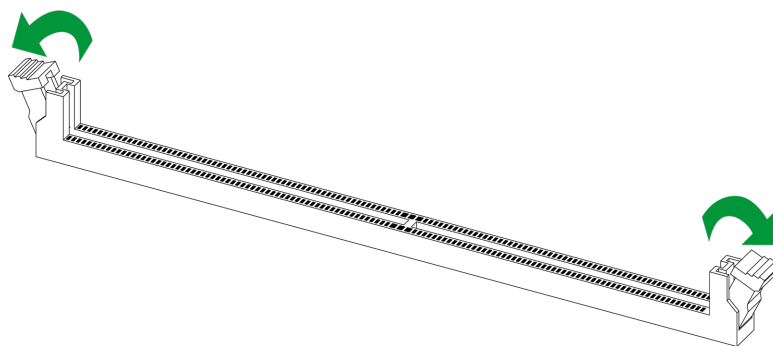


Figure 2-16. Unlocking the DIMM Slot

3. Align the key of the DIMM with the receptive point on the memory slot.

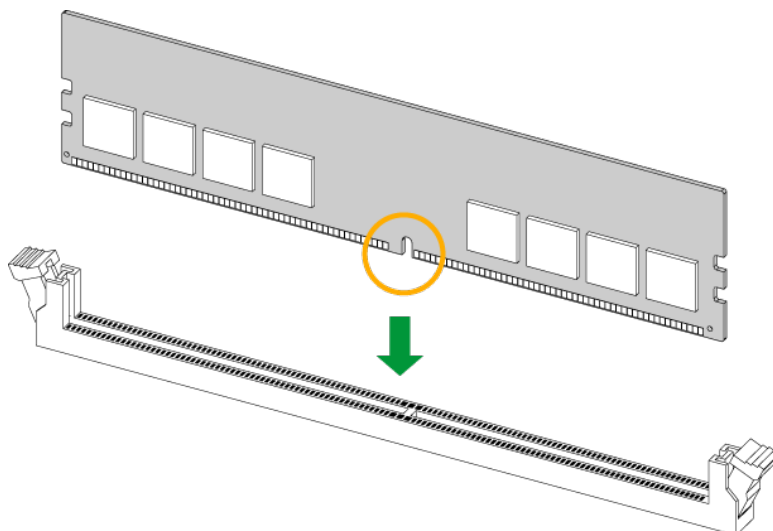


Figure 2-17. Aligning the DIMM Slot with the Receptive Point

- Align the notches on both ends of the module against the receptive points on the ends of the slot.

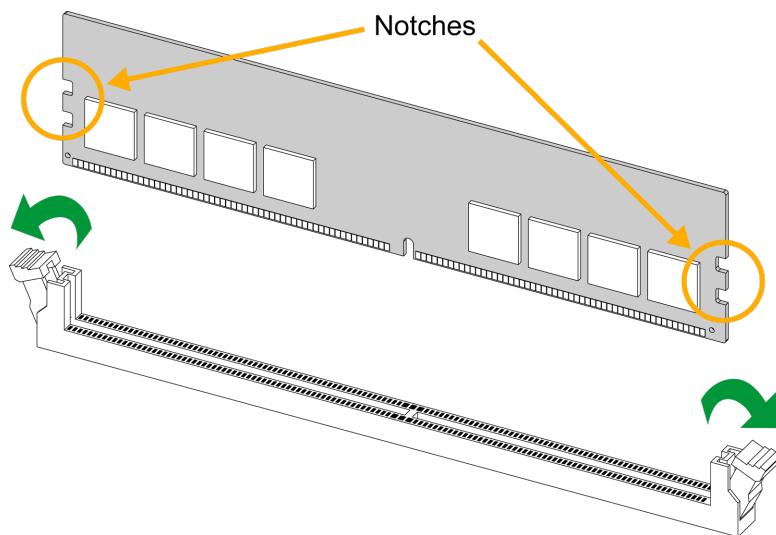


Figure 2-18. Aligning the Notches

- Press both ends of the module straight down into the slot until the module snaps into place.
- Press the release tabs to the lock positions to secure the DIMM into the slot.

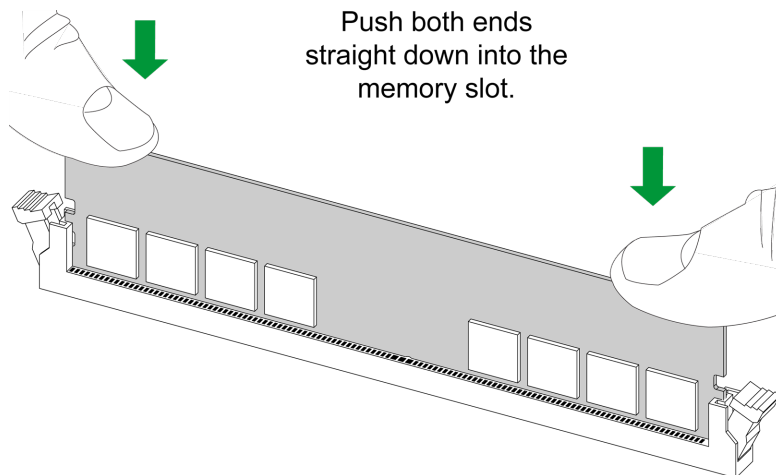


Figure 2-19. Securing the DIMM

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under ["Quick Reference"](#) on page 13.

DIMM Removal

Important: To avoid causing any damage to the memory module or the DIMM socket, do not use excessive force when pressing the release tabs on the ends of the DIMM socket. Handle memory modules with care. To avoid ESD-related damage to your memory modules or components, carefully follow all the instructions given in "[Static-Sensitive Devices](#)" on [page 33](#).

Press both release tabs on the ends of the DIMM socket to unlock it. Once the DIMM is loosened, remove it from the memory slot.

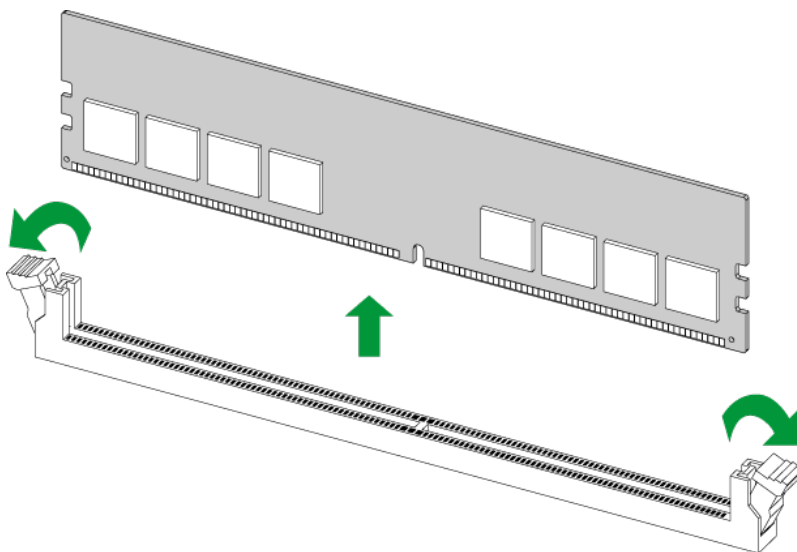


Figure 2-20. Unlocking the DIMM Slot

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under "[Quick Reference](#)" on [page 13](#).

2.5 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. Place the system on a workbench.
3. Remove the top cover from the system.
4. Locate the onboard battery as shown below.
5. 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.
6. Remove the battery.

Proper Battery Disposal

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

Battery Installation

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

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

1. Identify the battery's polarity. The positive (+) side should be facing up.
2. Insert the battery into the battery holder and push it down until you hear a click to ensure that the battery is securely locked.

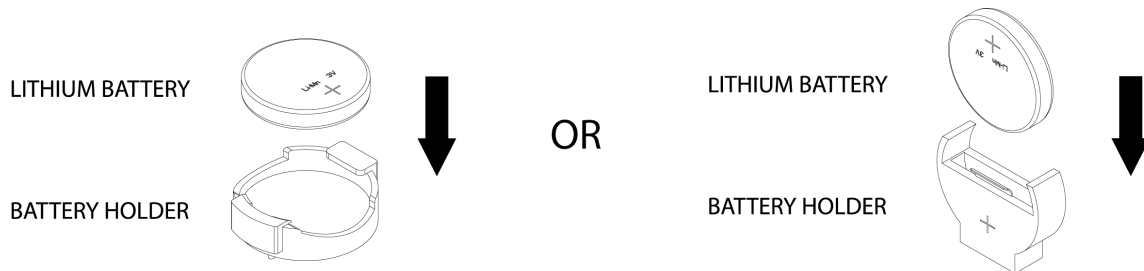


Figure 2-21. Installing a Battery

2.6 M.2 Device Installation

This motherboard has one PCIe 5.0 M.2 M-key slot (M.2-C1) that supports the M.2 2280/22110 modules and one PCIe 4.0 M.2 M-key slot (M.2-P1) that supports the 2260/2280 modules. Two standoffs are pre-installed in the positions of 2280 mounting holes. Follow the steps below to install the M.2 device.

Notes:

- The installation described in this section is for reference only. The actual installation steps may vary depending on the supported M.2 form factors and the standoff pre-installed location.
- Images displayed are for illustration purposes only. Your components might look different from those shown in this manual.

Installing a Standard M.2 Device

1. Locate the screw on the pre-installed standoff. Remove the screw and set it aside.

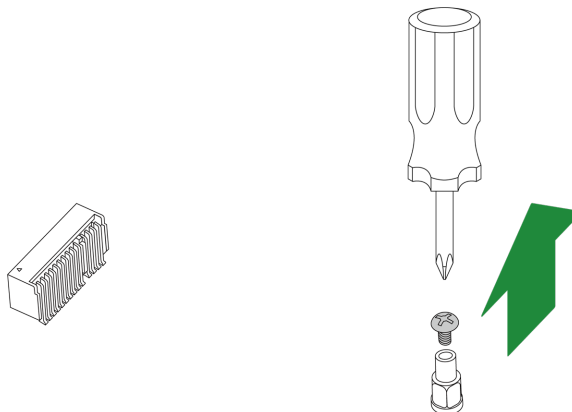


Figure 2-22. Removing the Screw on the Pre-Installed Standoff

2. If the soon-to-be used mounting hole doesn't have a standoff, move the pre-installed one to that mounting hole.

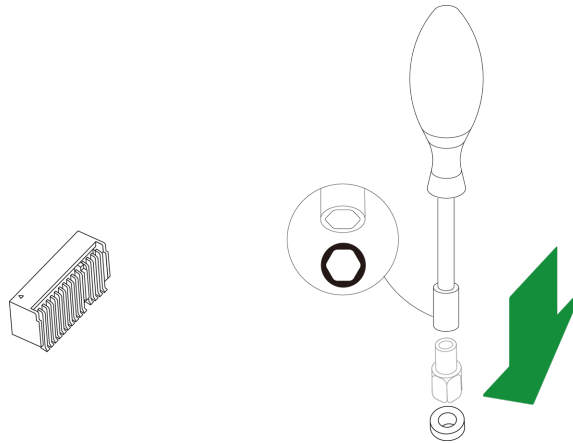


Figure 2-23. Changing the Standoff Position as Needed

3. Carefully insert the M.2 device into the M.2 slot at a 30-degree angle and lower the semi-circle notched end onto the standoff.

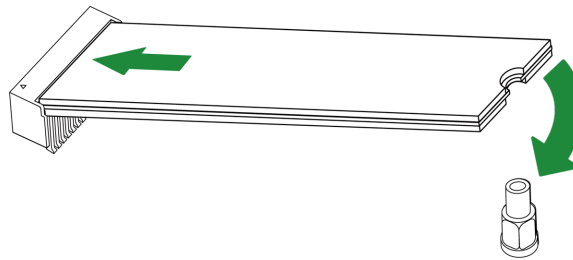


Figure 2-24. Inserting the M.2 Device and Pressing it Down

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

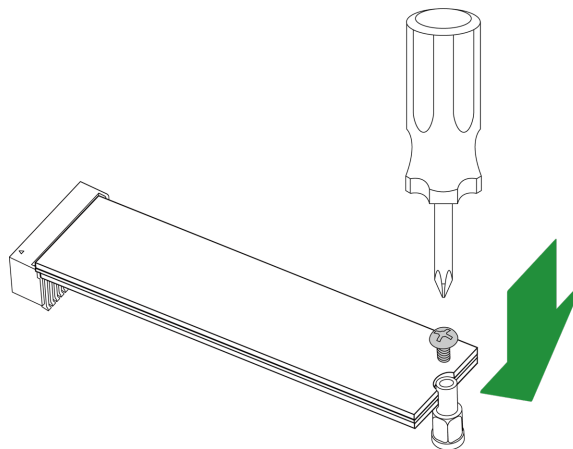


Figure 2-25. Securing the M.2 Device

Installing an M.2 Device with Heatsink (Optional)

It is strongly recommended that you install an M.2 heatsink provided by the M.2 device supplier. If you are using a Supermicro M.2 heatsink, follow the steps below:

1. Remove the thermal pad protective films from the cover and the tray of the M.2 heatsink.

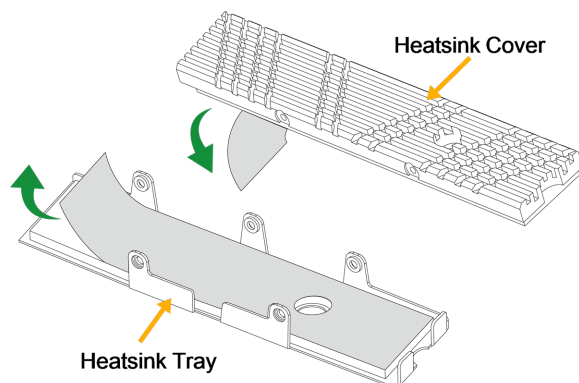


Figure 2-26. Removing the Protective Films from the Heatsink

Note: Images displayed are for illustration only. Your M.2 heatsink may not look exactly the same as the graphics shown in the manual.

2. Place the M.2 device into the tray, then put the heatsink cover in place. Be careful to align the tray holes with the cover holes.

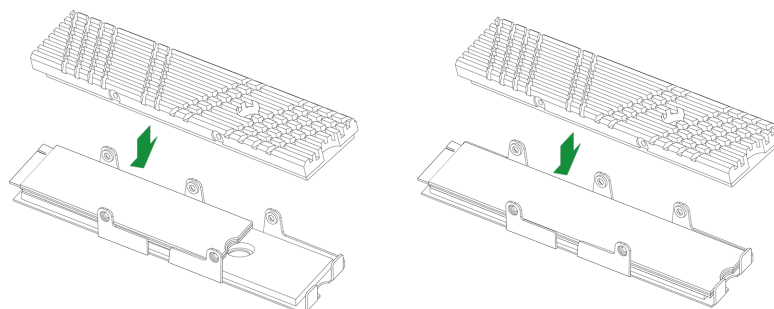


Figure 2-27. Creating the M.2 Heatsink Assembly

3. Tighten the screws to secure the M.2 heatsink assembly.

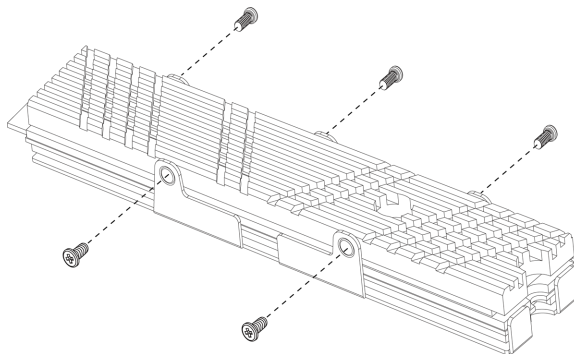


Figure 2-28. Securing the M.2 Heatsink Assembly

4. Locate the pre-installed standoff and screw . Remove the screw and set it aside.

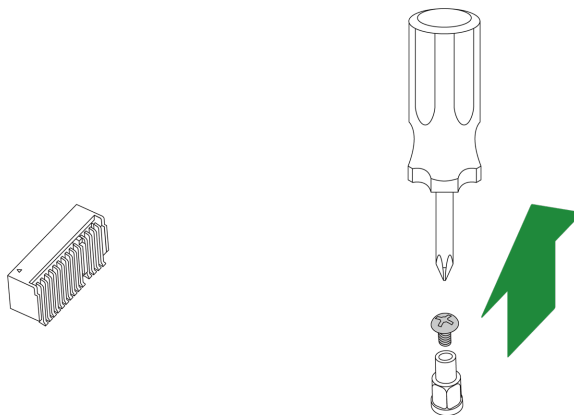


Figure 2-29. Removing the Screw on the Pre-Installed Standoff

5. If the soon-to-be used mounting hole doesn't have a standoff, move the pre-installed one to that mounting hole.

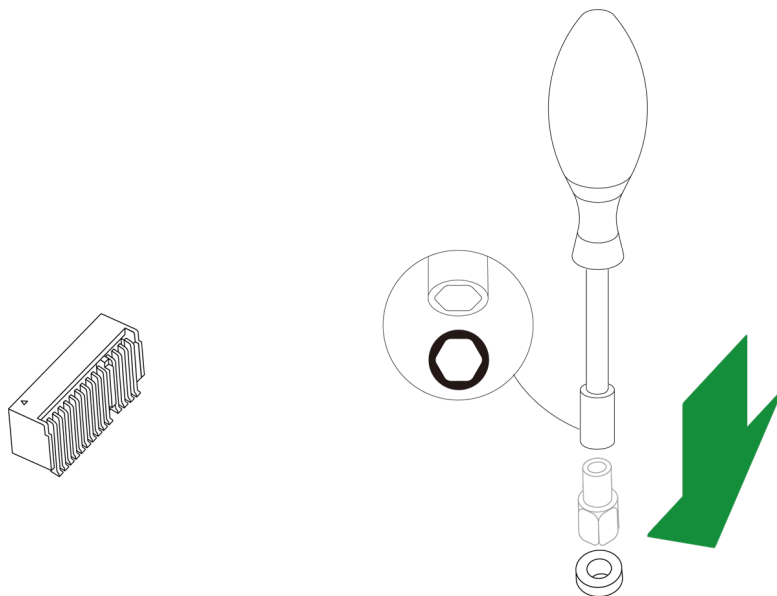


Figure 2-30. Changing the Standoff Position as Needed

6. Carefully insert the M.2 assembly into the M.2 slot at a 30-degree angle and lower the assembly onto the standoff.

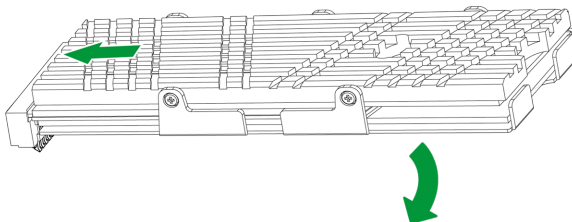


Figure 2-31. Inserting the M.2 Heatsink Assembly and Pressing it Down

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

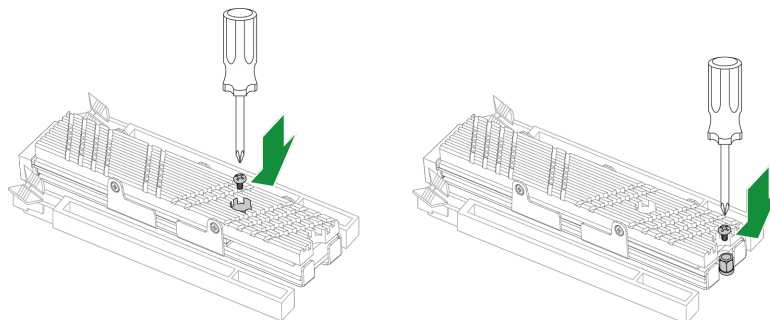


Figure 2-32. Securing the M.2 Heatsink Assembly

2.7 Rear I/O Ports

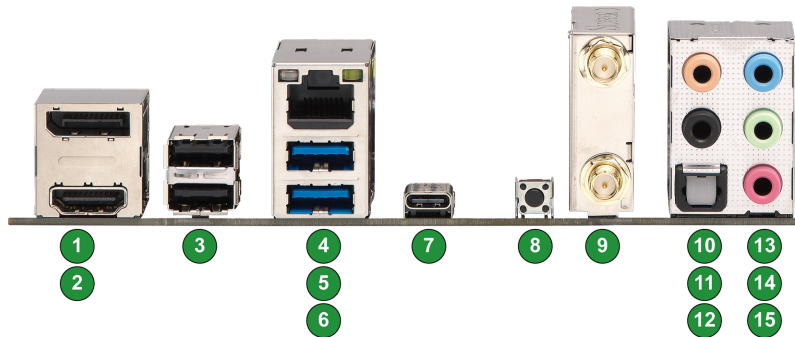


Figure 2-33. C9Z890-MW/C9B860-MW/C9Q870-M Rear I/O Ports

Rear I/O Ports					
No.	Descriptions	No.	Descriptions	No.	Descriptions
1	DisplayPort 2.1	7	USB6: TBT 4 (40 Gb, Type-C)	13	Line In
2	HDMI 2.1	8	Clear CMOS Button	14	Line Out (Note1)
3	USB0, USB1: USB 2.0 (Type-A)	9	WiFi 7 + Bluetooth 5.4 (C9Z890-MW and C9B860-MW only)	15	Mic In (Note 1, Note 2)
4	LAN1: RJ45 1 GbE LAN Port	10	Center / Low Frequency Effects (LFE) Out		
5	USB4: USB 3.2 Gen 1x1 (5 Gb, Type-A)	11	Surround Out		
6	USB5: USB 3.2 Gen 1x1 (5 Gb, Type-A)	12	S/PDIF Out		

Notes:

1. The combo jack connected to the front audio header (AUDIO FP) supports a standalone headphone and microphone.
2. Without the combo jack connected to the front audio header (AUDIO FP), use the MIC jack on the rear panel for a standalone microphone.

Clear CMOS Button

The Clear CMOS Button (SW1 located on the rear I/O) is used to clear the saved system setup configuration stored in the CMOS chip. All the settings will be erased and restored to the factory defaults after pressing this button.

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under ["Quick Reference" on page 13](#).

Note: Clearing CMOS will also clear all passwords.

DisplayPort

DisplayPort 2.1, developed by the VESA consortium, delivers digital display at a fast refresh rate. It can connect to virtually any display device using a DisplayPort adapter for devices, such as VGA, DVI, and HDMI.

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under ["Quick Reference" on page 13](#).

HDMI Port

One High-Definition Multimedia Interface (HDMI) 2.1 port is located on the rear I/O of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard. This port is used to display both high definition video and digital sound through an HDMI display, using a single HDMI cable (not included).

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under ["Quick Reference" on page 13](#).

High Definition Audio (HD Audio) Ports

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

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under ["Quick Reference" on page 13](#).

Audio Configuration					
		2 Channel	4.1 Channel	5.1 Channel	7.1 Channel
1	Orange (Center / LFE Out)			Center / Subwoofer	Center / Subwoofer
2	Black (Surround)		Rear Speaker Out	Rear Speaker Out	Rear Speaker Out
3	Light Blue (Line In / Side Speaker Out)	Line In	Line In	Line In	Side Speaker Out
4	Lime (Line Out / Front Speaker Out)	Line Out	Front Speaker Out	Front Speaker Out	Front Speaker Out
5	Pink (Mic In)	Mic In	Mic In	Mic In	Mic In



Figure 2-34. C9Z890-MW/C9B860-MW/C9Q870-M HD Audio Ports

LAN Port

One 1 GbE LAN port is located on the rear I/O of the C9Z890-MW/C9B860-MW/C9Q870-M to provide network connections. The LAN port accepts RJ45 type cables.

Note: Refer to the "LAN LEDs" on page 76 section for LAN LEDs information.

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under "Quick Reference" on page 13.

USB Ports

There are two USB 2.0 Type-A ports (USB0 and USB1), two USB 3.2 Gen. 1x1 Type-A ports (USB4 and USB5), and one Thunderbolt 4 (TBT 4) Type-C port (USB6) located on the rear I/O of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard. The Thunderbolt 4 port supports USB, DisplayPort, and PCI Express, enabling you to connect a variety of devices such as external monitors, storage drives, and docking stations.

There are also three front accessible USB headers on the C9Z890-MW/C9B860-MW/C9Q870-M motherboard. Refer to the ["USB Headers" on page 73](#) section for details.

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under ["Quick Reference" on page 13](#).

WiFi and Bluetooth Antenna Connectors (C9Z890-MW and C9B860-MW only)

Two WiFi and Bluetooth SMA antenna connectors are located on the rear I/O of the motherboard to enhance WiFi and Bluetooth connectivity. Attach the SMA antennas to ensure wireless connectivity.

For a detailed diagram of the C9Z890-MW/C9B860-MW motherboard, see the layout under ["Quick Reference" on page 13](#).

2.8 Front Control Panel

JF1 on the C9Z890-MW/C9B860-MW/C9Q870-M motherboard contains header pins for various buttons and indicators that are normally located on a control panel at the front of the chassis. These connectors are designed specifically for use with Supermicro chassis.

Note: You can connect the S-Connector that came with your motherboard to JF1. The S-Connector is a plug designed to connect the front control panel header on the motherboard and front control panel cables of the chassis. Align the printed indications on the S-Connector with the corresponding pins on JF1 when plugging in. Refer to the checklist table under "Checklist" on page 13 and contact Supermicro for more detailed connector information.

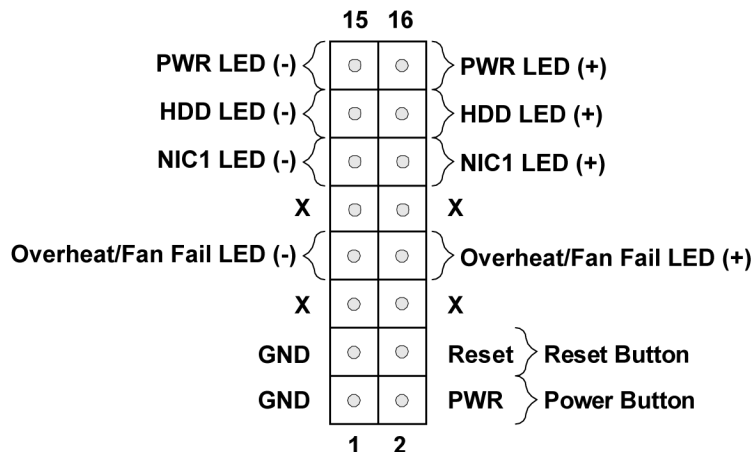


Figure 2-35. Front Control Panel Pin Definitions

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under "Quick Reference" on page 13.

Power LED

The Power LED connection is located on pins 15 and 16 of JF1 on the C9Z890-MW/C9B860-MW/C9Q870-M motherboard.

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under "Quick Reference" on page 13.

Power LED	
Pin Definitions (JF1)	
Pin#	Definition
15	Power LED (-)
16	Power LED (+)

HDD LED

The HDD LED connection is located on pins 13 and 14 of JF1 on the C9Z890-MW/C9B860-MW/C9Q870-M motherboard. Attach a cable here to indicate the status of storage drive-related activities, including SATA activities.

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under "[Quick Reference](#)" on page 13.

HDD LED	
Pin Definitions (JF1)	
Pin#	Definition
13	HDD LED (-)
14	HDD LED (+)

NIC1 (LAN1)

The Network Interface Controller (NIC) LED connection for LAN Port (LAN1) is located on pins 11 and 12 of JF1 on the C9Z890-MW/C9B860-MW/C9Q870-M motherboard. Attach the NIC LED cables here to display network activity.

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under "[Quick Reference](#)" on page 13.

LAN1 (NIC1) LED	
Pin Definitions (JF1)	
Pin#	Definition
11	NIC1 LED (-)
12	NIC1 LED (+)

Overheat (OH)/Fan Fail LED

Connect an LED cable to pins 7 and 8 of the Front Control Panel to use the Overheat/Fan Fail LED connections. The LED on pin 8 provides warnings of overheat or fan failure.

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under ["Quick Reference" on page 13](#).

OH/Fan Fail Indicator Status		OH/Fan Fail/UID LED Pin Definitions (JF1)	
Pin Definitions (JF1)		Pin#	Definition
State	Definition		
Off	Normal	7	OH/Fan Fail LED (-)
On	Overheat		
Flashing	Fan Fail	8	OH/Fan Fail LED (+)

Reset Button

The Reset Button connection is located on pins 3 and 4 of JF1 on the C9Z890-MW/C9B860-MW/C9Q870-M motherboard. Attach it to a hardware reset switch on the computer case to reset the system.

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under ["Quick Reference" on page 13](#).

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

Power Button

The Power Button connection is located on pins 1 and 2 of JF1 on the C9Z890-MW/C9B860-MW/C9Q870-M motherboard. To turn off the power when the system is in suspend mode, press the button for four seconds or longer.

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under ["Quick Reference" on page 13](#).

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

2.9 Connections, Jumpers, and LEDs

Refer to the following sections for information about connections, jumpers, and LEDs for the C9Z890-MW/C9B860-MW/C9Q870-M motherboard.

Power Supply and Power Connections

For information about the power supply and power connections of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, refer to the following content.

Power Supply

As with all computer products, a stable power source is necessary for proper and reliable operation. It is even more important for processors that have high CPU clock rates where noisy power transmission is present.

It is strongly recommended that you use a high quality power supply that meets ATX power supply Specification 2.02 or above.

ATX Power Supply Connection

The primary 24-pin power supply connection (JPW1 on the C9Z890-MW/C9B860-MW/C9Q870-M motherboard) meets the ATX SSI EPS 12 V specification. JPW2 is an 8-pin +12 V DC power input for the processor that must be connected to the power supply.

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

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under "[Quick Reference](#)" on page 13.

8-pin CPU Power Pin Definitions: Eight Total	
Pin#	Definition
1–4	GND
5–8	+12 V (12 V Power)

ATX Power 24-pin Connection Pin Definitions: 24 Total			
Pin#	Definition	Pin#	Definition
13	+3.3 V	1	+3.3 V
14	No Connection	2	+3.3 V
15	GND	3	GND
16	PS_ON	4	+5 V
17	GND	5	GND
18	GND	6	+5 V
19	GND	7	GND
20	Res (No Connection)	8	PWR_OK
21	+5 V	9	+5 VSB
22	+5 V	10	+12 V
23	+5 V	11	+12 V
24	GND	12	+3.3 V

Headers and Connections

For information about the headers on the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, refer to the following content.

Addressable RGB (ARGB) LED Header

The C9Z890-MW/C9B860-MW/C9Q870-M motherboard has one +5 V ARGB LED header (JRLED1) for connection to optional ARGB LED device such as an LED strip or LED fan. If connecting to an ARGB LED fan, also connect the fan's power connector to one of the motherboard's system fan headers (FAN_1, FAN_A, FAN_1A, and FAN_2B).

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under ["Quick Reference" on page 13](#).

ARGB LED Header	
Pin Definitions: Four Total	
Pin#	Definition
1	+5 V
2	DATA
3	No Connection
4	GND

Chassis Intrusion

A Chassis Intrusion header is located at JL1 on the C9Z890-MW/C9B860-MW/C9Q870-M motherboard. Attach the appropriate cable from the chassis to inform you when the chassis is opened.

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under ["Quick Reference" on page 13](#).

Chassis Intrusion	
Pin Definitions: Two Total	
Pin#	Definition
1	Intrusion Input
2	GND

COM Header

There is one COM header at COM1 on the C9Z890-MW/C9B860-MW/C9Q870-M motherboard. Use a cable with the COM header to provide serial communication support.

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under ["Quick Reference" on page 13](#).

COM Header			
Pin Definitions: Nine Total			
Pin#	Definition	Pin#	Definition
1	SP_DCD0	6	SP_DSR0
2	SP_RXD0	7	SP_RTS0
3	SP_TXD0	8	SP_CTS0
4	SP_DTR0	9	SP_RI0
5	GND		

DOM Power Connector

The Disk-On-Module (DOM) power connector, located at JSD1, provides 5 V power to a solid state DOM storage device connected to one of the SATA ports.

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under ["Quick Reference" on page 13](#).

DOM Power Connector	
Pin Definitions: Three Total	
Pin#	Definition
1	+5 V
2	GND
3	GND

Fan Headers

There are seven 4-pin fan headers (FAN_1, FAN_A, FAN_1A, FAN_2B, and FAN_2–FAN_4) on the C9Z890-MW/C9B860-MW/C9Q870-M motherboard. Although pins 1-3 of the fan headers are backwards compatible with the traditional 3-pin fans, the 4-pin fans are recommended to take advantage of the fan speed control. This allows fan speeds to be automatically adjusted based on the motherboard temperature.

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under "[Quick Reference](#)" on page 13.

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

Front Panel Audio Header

A 10-pin audio header located at AUDIO_FP/AUDIO FP is supported on the C9Z890-MW/C9B860-MW/C9Q870-M motherboard. This header allows you to connect the motherboard to the audio port on the front panel. If needed, connect an audio cable (not supplied) to the audio header to use this feature.

Notes:

- This header is designed for a headphone/microphone combo jack. If using a standalone microphone, use the MIC jack on the rear panel.
- Standalone headphone and microphone jacks are provided on the rear panel.

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under "[Quick Reference](#)" on page 13.

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

M.2 M-Key Slots

Two M.2 M-key slots are located at M.2-C1 and M.2-P1 on the C9Z890-MW/C9B860-MW/C9Q870-M motherboard. Refer to the table below for more information.

Slots	Signals	Bus Interface	Form Factors	RAID Support
M.2-C1	From CPU	PCIe 5.0 x4	2280 and 22110	RAID 0 and 1
M.2-P1	From PCH	PCIe 4.0 x4	2260 and 2280	RAID 0 and 1

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under ["Quick Reference" on page 13](#).

Power LED Header

An onboard Power LED header is located at JLED1. This Power LED header is used to indicate the status of system power.

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under ["Quick Reference" on page 13](#).

Power LED Header	
Pin Definitions: Three Total	
Pin#	Definition
1	POWER LED (+)
2	POWER LED (-)
3	POWER LED (-)

Pump Power Header

The C9Z890-MW/C9B860-MW/C9Q870-M motherboard has one +12 V header for optional CPU liquid cooling systems. When using a liquid cooling system, attach the pump power cable to the 12V_PUMP_PWR1 header.

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under ["Quick Reference" on page 13](#).

Pump Power Header	
Pin Definitions: Four Total	
Pin#	Definition
1	GND (Black)
2	2 A/+12 V (Red)
3	No Connection
4	No Connection

SATA 3.0 Ports

Four Serial ATA (SATA) 3.0 ports (I-SATA0–I-SATA3) are supported on the C9Z890-MW/C9B860-MW/C9Q870-M motherboard. These I-SATA 3.0 ports are supported by the Intel PCH chip (supporting RAID 0, 1, 5, and 10). SATA ports provide serial-link signal connections, which are faster than the connections of Parallel ATA.

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under ["Quick Reference" on page 13](#).

Standby Power Header

The Standby Power header is located at JSTBY1 on the motherboard.

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under ["Quick Reference" on page 13](#).

Standby Power Header	
Pin Definitions: Three Total	
Pin#	Definition
1	+5 V Standby
2	GND
3	Wake-up

TPM/Port 80 Header

The JTPM1 header on the C9Z890-MW/C9B860-MW/C9Q870-M motherboard is used to connect a Trusted Platform Module (TPM)/Port 80, which is available from Supermicro (optional). A TPM/Port 80 connector is a security device that supports encryption and authentication in hard drives. It allows the motherboard to deny access if the TPM associated with the hard drive is not installed in the system. Go to the following link for more information on the TPM: https://www.supermicro.com/manuals/other/AOM-TPM-9670V_9670H_X12_H12.pdf.

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under "Quick Reference" on page 13.

Trusted Platform Module Header			
Pin Definitions: 10 Total			
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	No Connection
9	+3.3 V Stdby	10	SPI_IRQ#

USB Headers

There is one USB 2.0 header (USB2/3) and one USB 3.2 Gen 1 x1 header (USB8/9) on the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, each supporting two USB connections. There is also one USB 3.2 Gen 2x2 header (USB7) located on the motherboard. These headers provide front access using USB cables (not included).

USB 2.0 Header			
Pin Definitions: 10 Total			
Pin#	Definition	Pin#	Definition
1	+5 V	2	+5 V
3	USB_N	4	USB_N
5	USB_P	6	USB_P
7	GND	8	GND
9	Key	10	GND

USB 3.2 Gen 2x2 Header			
Pin Definitions: 20 Total			
Pin#	Definitions	Pin#	Definitions
1	VBUS	11	VBUS
2	TX1+	12	TX2+
3	TX1-	13	TX2-
4	GND	14	GND
5	RX1+	15	RX2+
6	RX1-	16	RX2-
7	VBUS	17	GND
8	CC1	18	D-
9	No Connection	19	D+
10	No Connection	20	CC2

USB 3.2 Gen 1x1 Header			
Pin Definitions: 19 Total			
Pin#	Definitions	Pin#	Definitions
1	VBUS	11	IntA_P2_D+
2	IntA_P1_SSRX-	12	IntA_P2_D-
3	IntA_P1_SSRX+	13	GND
4	GND	14	IntA_P2_SSTX+
5	IntA_P1_SSTX-	15	IntA_P2_SSTX-
6	IntA_P1_SSTX+	16	GND
7	GND	17	IntA_P2_SSRX+
8	IntA_P1_D-	18	IntA_P2_SSRX-
9	IntA_P1_D+	19	VBUS
10	GND		

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under ["Quick Reference" on page 13](#).

Jumper Settings

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

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

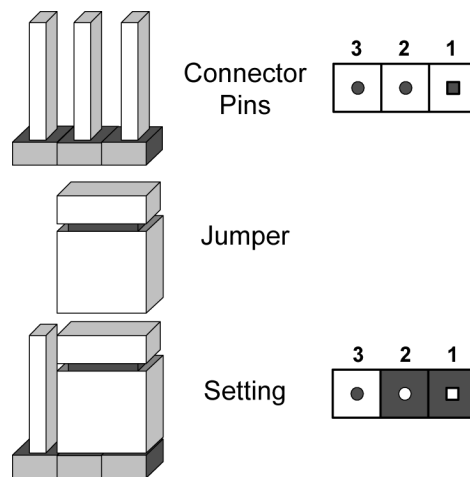


Figure 2-36. Jumping Connector Pins

Clear CMOS Button

The Clear CMOS Button (SW1 located on the rear I/O) is used to clear the saved system setup configuration stored in the CMOS chip. All the settings will be erased and restored to the factory defaults after pressing this button.

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under ["Quick Reference" on page 13](#).

Note: Clearing CMOS will also clear all passwords.

ME Manufacturing Mode

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

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under "[Quick Reference](#)" on page 13.

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

Power Button

In addition to the soft power button provided in JF1, the C9Z890-MW/C9B860-MW/C9Q870-M motherboard is equipped with a 'soft' power button on the motherboard. This button works the same way as the soft power button on JF1.

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under ["Quick Reference" on page 13](#).

Reset Button

When pressed, the Reset Button will reset the system and reboot. This action will erase everything in memory and restart the system.

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under ["Quick Reference" on page 13](#).

Watchdog Timer

Watchdog (JWD1) is a system monitor that can reboot the system when a software application hangs. Close pins 1–2 to reset the system if an application hangs. Close pins 2–3 to generate a non-maskable interrupt (NMI) signal for the application that hangs. The watchdog must also be enabled in the BIOS.

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under ["Quick Reference" on page 13](#).

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

LED Indicators

For information about the LED indicators on the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, refer to the following content.

LAN LEDs

The LAN port (LAN1) on the rear I/O of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard has two status LEDs that provide the link and activity information.

LAN LEDs		
	Color/State	Definition
Link (left)	Off	10 Mbps
	Green	100 Mbps
	Amber	1 Gbps
Activity (right)	Yellow: Blinking	Active

M.2 LEDs

M.2 LEDs are located at LED3 (for M.2-P1) and LED15 (for M.2-C1) on the C9Z890-MW/C9B860-MW/C9Q870-M motherboard. When an M.2 LED is blinking, the corresponding M.2 device is functioning normally.

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under ["Quick Reference" on page 13](#).

M.2 LED State	
LED Color	Definition
Green: On	Device Detected
Green: Blinking	Device Working

Onboard Power LED

An Onboard Power LED is located at LED1 on the C9Z890-MW/C9B860-MW/C9Q870-M motherboard. When LED1 is on, the AC power cable is connected and the system is on. When LED1 is blinking, it is in standby (S3, suspend to RAM) mode.

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under ["Quick Reference" on page 13](#).

Onboard Power LED Indicator	
LED Color	Definition
Off	System Power Off
On	System Power On
Blinking	S3, suspend to RAM

Power-On Self-Test (POST) LEDs

Multiple LEDs are built-in and used to display the status of system Power-On Self-Test (POST).

CPU LED Indicator		DIMM LED Indicator	
LED Color	Definition	LED Color	Definition
Yellow	CPU POST Working	Blue	DIMM POST Working
Off	CPU POST Completed	Off	DIMM POST Completed

VGA LED Indicator		BOOT LED Indicator	
LED Color	Definition	LED Color	Definition
Green	VGA POST Working	Orange	BOOT POST Working
Off	VGA POST Completed	Off	BOOT POST Completed

A WLAN POST LED (LED17) and a Bluetooth POST LED (LED18) are built-in to indicate the WLAN and Bluetooth devices POST status (C9Z890-MW and C9B860-MW only).

WLAN LED Indicator		Bluetooth LED Indicator	
LED Color	Definition	LED Color	Definition
Green	WLAN POST Working	Green	Bluetooth POST Working
Off	WLAN POST Completed	Off	Bluetooth POST Completed

For a detailed diagram of the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, see the layout under ["Quick Reference" on page 13](#).

Chapter 3:

Troubleshooting

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

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3.1 Troubleshooting Procedures

Use the following procedures to troubleshoot your system. If you have followed all of the procedures below and still need assistance, refer to the ["Technical Support Procedures" on page 84](#) or ["Returning Merchandise for Service" on page 87](#) section(s) in this chapter. Always disconnect the AC power cord before adding, changing or installing any non hot-swap hardware components. If the below steps do not fix the setup configuration problem, contact your vendor for repairs.

Before Power On

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

No Video

1. If the power is on, but you do not have video, remove all add-on cards and cables.
2. Remove all memory modules and turn on the system (if the alarm is on, check the specs of memory modules, reset the memory, or try a different one).

System Boot Failure

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

1. Check the screen for an error message.
2. Clear the CMOS settings by unplugging the power cord and contacting both pads on the CMOS clear jumper. Restart the system. Refer to [CMOS Clear](#).
3. Remove all components from the motherboard and turn on the system with only one DIMM installed. If the system boots, turn off the system and repopulate the components back into the system to retest. Add one component at a time to isolate which one may have caused the system boot issue.

Memory Errors

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

1. Make sure that the memory modules are compatible with the system and are properly installed. See "[Component Installation](#)" on [page 31](#) for installation instructions. (For memory compatibility, refer to the "Tested Memory List" link on the motherboard's product page to see a list of supported memory.)
2. Check if different speeds of DIMMs have been installed. It is strongly recommended that you use the same RAM type and speed for all DIMMs in the system.
3. Make sure that you are using the correct type of DIMMs recommended by the manufacturer.
4. Check for bad DIMMs or slots by swapping a single module among all memory slots and check the results.

Losing the System's Setup Configuration

1. Make sure that you are using a high-quality power supply. A poor-quality power supply may cause the system to lose the CMOS setup information. Refer to "[Introduction](#)" on [page 12](#) 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.

If the System Becomes Unstable

- A. If the system becomes unstable during or after OS installation, check the following:
 1. Processor/BIOS support: Make sure that your processor is supported and that you have the latest BIOS installed in your system.

2. Memory support: Make sure that the memory modules are supported. Refer to the product page on our website at <https://www.supermicro.com>. Test the modules using memtest86 or a similar utility.

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

3. Storage Drive support: Make sure that all storage drives work properly. Replace the failed storage drives with good ones.
 4. System cooling: Check the system cooling to make sure that all heatsink fans and processor/system fans, etc., work properly. Check the hardware monitoring settings in the IPMI to make sure that the processor and system temperatures are within the normal range. Also, check the front panel Overheat LED and make sure that it is not on.
 5. Adequate power supply: Make sure that the power supply provides adequate power to the system. Make sure that all power connectors are connected. Refer to our website for more information on the minimum power requirements.
 6. Proper software support: Make sure that the correct drivers are used.
- B. If the system becomes unstable before or during OS installation, check the following:
1. Source of installation: Make sure that the devices used for installation are working properly, including boot devices such as a USB flash or media device.
 2. Cable connection: Check to make sure that all cables are connected and working properly.
 3. Use the minimum configuration for troubleshooting: Remove all unnecessary components (starting with add-on cards first), and use the minimum configuration (but with the processor and a memory module installed) to identify the trouble areas. Refer to the steps listed above in this section for proper troubleshooting procedures.
 4. Identify bad components by isolating them: If necessary, remove a component in question from the chassis, and test it in isolation to make sure that it works properly. Replace a bad component with a good one.
 5. Check and change one component at a time instead of changing several items at the same time. This will help isolate and identify the problem.
 6. To find out if a component is good, swap this component with a new one to see if the system will work properly. If so, then the old component is bad. You can also install the component in question in another system. If the new system works, the component is good and the old system has problems.

If the Red Hat Enterprise Linux (RHEL) 9.4 Installation Stops

If the RHEL 9.4 installation process stops at "Started GNOME Display Manager," you can resolve this issue by following the workaround recommended by Red Hat:

1. Switch to text mode during the installation.
2. Edit the configuration file located at `/etc/gdm/custom.conf`, and remove the comment symbol (`#`) from the line `"WaylandEnable=false"`.
3. Restart the GNOME Display Manager (GDM) service using the following command:

```
# systemctl restart gdm
```

3.2 Technical Support Procedures

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

1. Refer to "Troubleshooting Procedures" on page 80 or see the FAQs on our website (<https://www.supermicro.com/FAQ/index.php>) before contacting Technical Support.
2. BIOS upgrades can be downloaded from our website (https://www.supermicro.com/support/resources/bios_ipmi.php).
3. If you still cannot resolve the problem, include the following information when contacting Supermicro for technical support:
 - Motherboard model and PCB revision number
 - BIOS release date/version (This can be seen on the initial display when your system first boots up.)
 - System configuration
4. An example of a Technical Support form is on our website at <https://webpr3.supermicro.com/SupportPortal>.
5. Distributors: For immediate assistance, have your account number ready when placing a call to our Technical Support department. For Supermicro contact information, refer to "Contacting Supermicro" on page 11.

3.3 Motherboard Battery

For information on removing, disposing of, and replacing the motherboard battery of your system, refer to ["Battery Removal and Installation"](#) on page 50.

3.4 Where to Get Replacement Components

If you need replacement parts for your C9Z890-MW/C9B860-MW/C9Q870-M motherboard, to ensure the highest level of professional service and technical support, purchase exclusively from our Supermicro Authorized Distributors/System Integrators/Resellers. A list can be found on the Supermicro website:

<https://www.supermicro.com>

Under the "Buy" menu, click the "Where to Buy" link.

3.5 Returning Merchandise for Service

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

For faster service, RMA authorizations can be requested online at the following page:

<https://www.supermicro.com/RmaForm>

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

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

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

3.6 Feedback

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

Chapter 4:

UEFI BIOS

The following content contains information on BIOS configuration with the C9Z890-MW/C9B860-MW/C9Q870-M motherboard.

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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 the UEFI script (flash.nsh) or the SuperServer Automation Assistant (SAA) utility.

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.

BIOS GUI Setup Utility (C9Z890-MW and C9B860-MW only)

For C9Z890-MW and C9B860-MW, the BIOS GUI Setup utility has two modes: EZ mode and Advanced mode.

Changing Between EZ Mode and Advanced Mode

When you first enter the BIOS GUI Setup utility, you will enter the Main setup screen of the EZ mode. To change between EZ Mode and Advanced Mode, hit F7 on the keyboard.

EZ Mode

When in EZ Mode, select feature options and an overview of hardware status are displayed.

Advanced Mode

The Advanced Mode screen has two main areas. The Navigation on the top area displays all the options that can be configured. “Grayed-out” options cannot be configured. The Information/Configuration area displays the information or the configuration options. (Icons that do not respond when the mouse pointer is hovering on top are not configurable.)

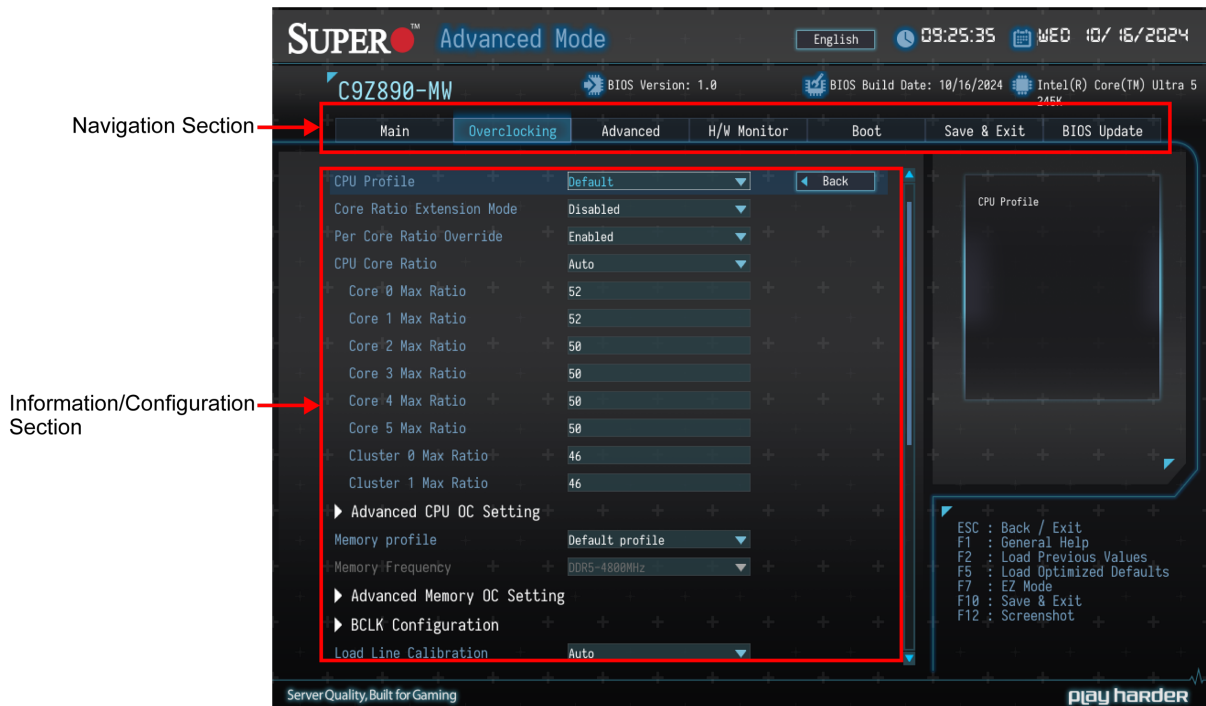


Figure 4-1. Advanced Mode Screen

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

The BIOS GUI Setup utility uses a mouse pointer navigation system similar to standard graphical user interfaces. Hover and click an icon to select a section, click a down arrow to select from an options list.

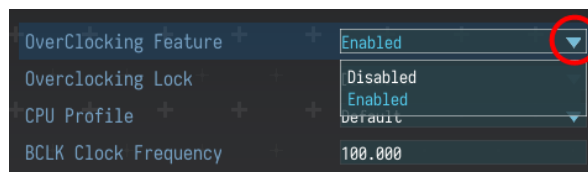


Figure 4-2. Hover and click to make selection

The BIOS setup utility uses a key-based navigation system called hot keys. Most of these hot keys (<F1>, <F2>, <F5>, <F7>, <F10>, <Enter>, <ESC>, the arrow keys, etc.) can be used at any time during the setup navigation process. You may press the <F1> on any screen under the Setup Section to see a list of Hot Keys that are available. Press <F12> to print the screen.

The keyboard's Escape key <ESC> cancels the current screen and will return you back to the previous screen

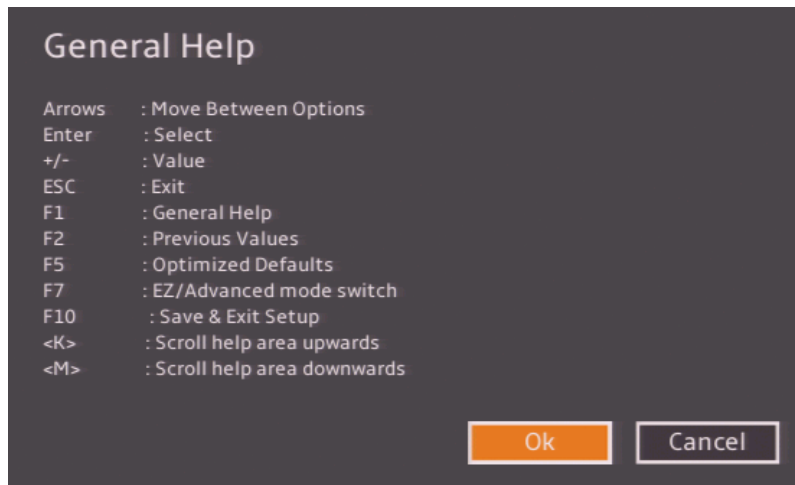


Figure 4-3. General Help Screen

BIOS Setup Utility (C9Q870-M)

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 a BIOS submenu or item is selected in the left frame, it is highlighted in white. Often a text message will 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>, <F2>, <F3>, <F4>, <F5>, <Enter>, <ESC>, the arrow keys, etc.) can be used at any time during the setup navigation process.

4.2 EZ Mode (C9Z890-MW and C9B860-MW only)



Figure 4-4. EZ Mode Screen

While in EZ Mode, the following information is displayed:

- BIOS Version: The current BIOS version.
- CPU Information: The model, speed, and voltage of installed CPU.
- Memory Frequency: The frequency of installed memory.
- System Temp: Displays CPU and PCH temperatures.
- CPU Profile: Allows changing of the CPU profile by clicking the left or right arrows.
- DRAM Status: Status of all DIMM slots.
- SATA Info: Displays the information about connected SATA storage devices.

Note: If the SATA controller has been mapped under VMD via the Advanced -> VMD setup menu feature, then SATA storage devices information will not be displayed.

- **Boot Priority:** Allows changing of the boot order.
- **X.M.P.:** Allows changing the X.M.P. profile.
- **Intel Rapid Storage Technology:** Allows for enabling Intel Rapid Storage Technology.
- **Fan Profile:** Displays current fan speeds, or click the SMC QFAN Setting icon using the mouse cursor for more advanced adjustments.

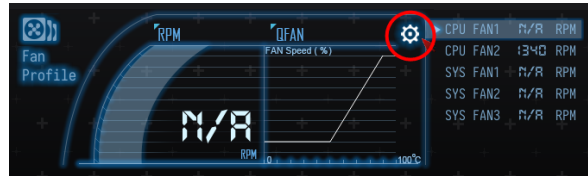


Figure 4-5. SMC QFAN Setting Icon

SMC QFan Setting

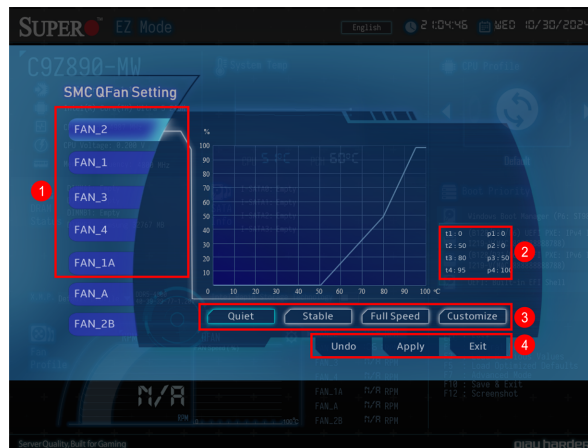


Figure 4-6. SMC QFan Setting Screen

Note: The SMC QFAN Setting page has a user friendly graphical interface. You can also configure these features via H/W Monitor -> Fan Control in the Advanced mode.

1. Select and click the fan connector that you want to adjust.
2. Use this feature to view the temperatures.
3. Use this feature to select Fan Speed Control Mode. The CPU temperature and the fan speed are correlative. When the CPU on-die temperature increases, the fan speed will also increase for effective system cooling. Select "Full Speed" to allow the onboard fans to run at full speed (of 100% Pulse Width Modulation Duty Cycle) for maximum cooling. This setting is recommended for special system configuration or debugging. Select "Stable" for the onboard fans to run at 50% of the Initial PWM Cycle in order to balance

the needs between system cooling and power saving. This setting is recommended for regular systems with normal hardware configurations. Select "Quiet" to optimize for minimal fan noise and Custom to enter user-specific settings. The options are **Quiet**, **Stable**, **Full Speed**, and **Customize**.

Customizing Fan Speed

When you set the Fan Speed Control Mode to Customize, adjust the control points by clicking and dragging the mouse. By default, there are two control points, and can be up to four control points. To add extra control points, drag the control point A to lower than temperature 100, then move the point A to release the point C and D by pressing and dragging the mouse left button. Adjust these control points to the locations you prefer, or you may click Undo button to return to the previous step. Once the configuration above has been completed, follow the step 4 to save and apply the settings

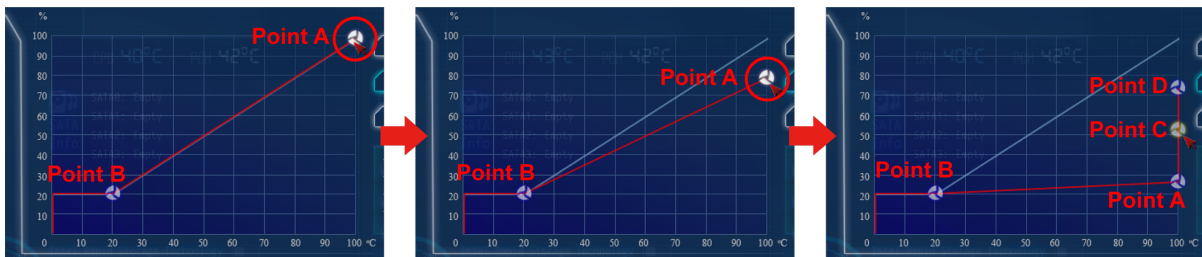


Figure 4-7. Customizing Fan Speed Screen

Note: You may refer to the temperatures in the bottom right corner of the setting page as references when adjusting the control points. T1 presents the temperature 1, and P1 is PWM1. These items are the same as the features in the section of Fan Control in the Advanced mode.

4. Click Apply for the changes to take effect or click Exit to return to the EZ Mode page.

4.3 Main Setup

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



Figure 4-8. Main Setup Screen for C9Z890-MW and C9B860-MW

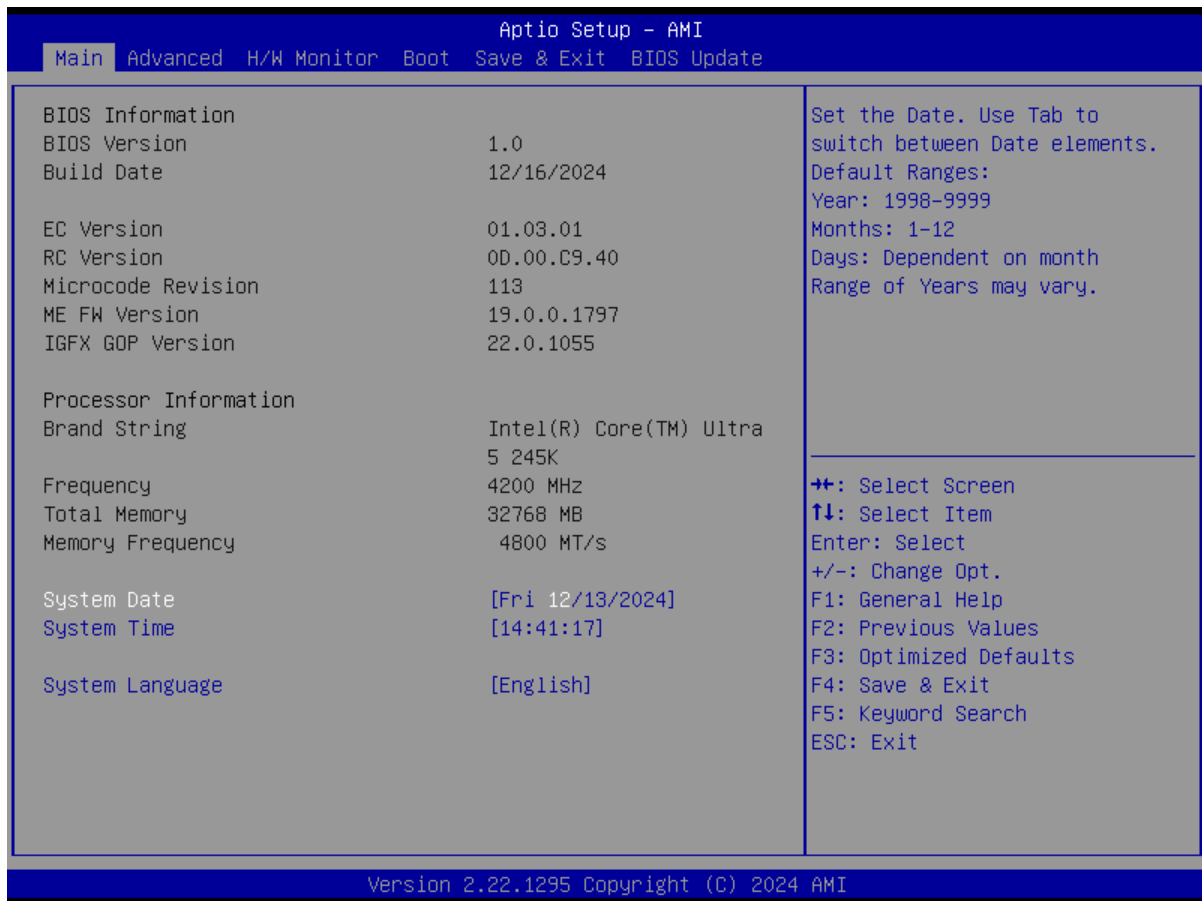


Figure 4-9. Main Setup Screen for C9Q870-M

► BIOS Information

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.

EC Version

This feature displays the memory EC version.

Microcode Revision

This feature displays the processor's microcode patch version.

ME FW Version

This feature displays the ME Firmware Version.

IGFX GOP Version

This feature displays the Integrated Graphics GOP version.

Note: Invisible if the installed processor doesn't support graphic function.

► Processor Information

Brand String

This feature displays the brand, model name, model number of the processor, and its rated clock speed.

Frequency

This feature displays the detected processor speed.

Total Memory

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

Memory Frequency

This feature displays the detected memory speed.

System Date/System Time

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

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

System Language

Use this feature to set the system language. The options are English, 中文(繁體), 中文(简体), 日本語, and 한국어.

4.4 Overclocking Menu (C9Z890-MW and C9B860-MW only)

Notes:

- This menu is available for C9Z890-MW and C9B860-MW only and for CPU/memory module that supports overclocking feature.
- For C9B860-MW, only memory overclocking features are available.



Figure 4-10. Overclocking Screen

CPU Profile (Available for C9Z890-MW only)

This feature allows for preset CPU overclocking profiles to be selected. The options are Stable, **Default**, and Performance.

Core Ratio Extension Mode (Available for C9Z890-MW only)

This feature enables core ratio above 85 extension mode. When enabled, the maximum overclocking ratio limit as specified by OCMB 0x1 command is 120. When disabled, the limit is 85. The options are **Disabled** and Enabled.

Per Core Ratio Override (Available for C9Z890-MW only)

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

CPU Core Ratio (Available for C9Z890-MW only)

This feature determines the core ratio control of CPU. The options are **Auto**, Sync All Cores, Per Core, and Active Core Usage. The Per Core option is available only when the Per Core Ratio Override feature is enabled.

Note: If "CPU Core Ratio" is set to Auto , Per Core, or Active Core Usage, the following features are available allowing you to configure the maximum overclocking ratio for each core and cluster.

Core 0–X Max Ratio

This feature allows to set the maximum overclocking ratio for each core individually.

Note: The number of X is depending on the CPU installed on the motherboard.

Cluster 0/1 Max Ratio

This feature allows to set the maximum overclocking ratio for each cluster individually. E-cores 0–3 in cluster 1 and E-cores 4-7 in cluster 2 will have their maximum core ratios aligned within their respective clusters.

Note: If "CPU Core Ratio" is set to "Sync All Cores", the following features are available to configure the maximum overclocking ratio to be synced.

Core 0 Max Ratio

This feature specifies the maximum OC ratio which will be synced across all the cores.

Cluster 0 Max Ratio

This feature specifies the maximum OC which will be synced across all the clusters.

Memory Profile (Available for C9Z890-MW and C9B860-MW only)

This feature controls the memory profile. The options are **Default profile** and Custom profile.

Memory Frequency (Available when "Memory Profile" is set to Custom profile)

Use this feature to set the frequency for the memory installed.

Memory Voltage VDD (Available when “Memory profile” is set to Custom profile)

Enter a value for the memory voltage override (Vdd) at DRAM side. 0 = no override. The default is **1100**.

Memory Voltage VDDQ (Available when “Memory profile” is set to Custom profile)

Enter a value for the memory voltage override (Vddq) at DRAM side. 0 = no override. The default is **1100**.

Memory Voltage VPP (Available when “Memory profile” is set to Custom profile)

Enter a value for the memory voltage override (Vpp) at DRAM side. 0 = no override. The default is **1800**.

Note: The following features are only available for C9Z890-MW.

Load line Calibration

This feature controls the load line calibration. The options are Disabled, Level 1, Level 2, Level 3, Level 4, and **Auto**.

External Vout Voltage override

This feature enables the external Vout voltage override. The options are **Disabled** and Enabled.

VF Configuration Scope

Use this feature to select whether to use All-core VF curve or per-core VF curve. The options are **All-core** and Per-core.

Core Voltage Mode (Available when “VF Configuration Scope” is set to All-core)

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

P-core Adaptive Voltage (Available when “Core Voltage Mode” is set to Adaptive)

Use this feature to specify the adaptive voltage (in mV) applied to the performance-core domain. The range is 0–2000 and the default is **0**.

Core Voltage Override (Available when “Core Voltage Mode” is set to Override)

Use this feature to specify the override voltage (in mV) applied to the performance-core domain. The range is 0–2000 and the default is **0**.

Core Voltage Offset (Available when “VF Configuration Scope” is set to All-core)

Enter a value for the offset voltage (in mV) that will be applied to global performance- core domain. The range is -500 to 500 and the default is **0**.

Offset Prefix (Available when “VF Configuration Scope” is set to All-core)

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

Advanced CPU OC Setting Menu

Note: This submenu is available for C9Z890-MW only.

► Advanced CPU OC Setting

Processor

Boot Max Frequency

This feature enables the boot maximum frequency in CPU strap. The options are Disabled and Enabled.

Boot Performance Mode

Note: This feature is available when “Boot Max Frequency” is set to Enabled.

This feature controls the performance state that the BIOS will set initially. The options are Max Battery, Max Non-Turbo Performance, and **Turbo Performance**.

Turbo Mode

This feature enables Turbo Mode if EMTTM is also enabled. The options are Disabled and Enabled.

Active Processor Cores

Note: This feature is available when "Per Core Disable Configuration" is set to Disabled.

Use this feature to select the number of active processor P-cores. The options are **All**, 5, 4, 3, 2, and 1. The available options depend on how many cores are supported by the CPU.

Active Efficient-cores

Note: This feature is available when "Per Core Disable Configuration" is set to Disabled.

This feature determines how many efficient cores will be activated for each processor package. When all is selected, all cores in the processor will be activated. The options are **All**, 7, 6, 5, 4, 3, 2, and 1. The available options depend on how many cores are supported by the processor.

Per Core Disable Configuration

Set this feature to Enable if you want to disable a core individually. Note that when this feature is enabled, features of Active Cores and Active Efficient-cores will be disabled. The options are **Disabled** and **Enabled**.

► Processor Disable

Note: This submenu is available when “Per Core Disable Configuration” is set to Enable.

Core 0–7 (E-core) / 8–13 (P-core)

Use this feature to enable or disable an individual core. The available options depend on how many cores are supported by the CPU. The default is **Enabled** (Checked).

Granular Ratio Units (Available when “Granular Ratio Override” is set to Enabled)

This feature shows the granular ratio units.

Core # Granular Ratio Bins (Available when “Granular Ratio Override” is set to Enabled)

Use this feature to configure the overriding granular ratio for CPU core #. It defines how many bins of “Granularity Units” will be subtracted from the otherwise-configured P0 frequency. The default is **0**.

AtomCluster 0/1 Granular Ratio Bins (Available when “Granular Ratio Override” is set to Enabled)

Use this feature to configure the overriding granular ratio for AtomCluster 0/1. It defines how many bins of “Granularity Units” will be subtracted from the otherwise-configured P0 frequency. The default is **0**.

Core Max OC Ratio

This feature controls the general maximum overclocking ratio for the CPU cores and Ring. The default is **0** (Auto).

AVX

This feature enables the AVX and AVX2 Instructions. This is applicable for big core only. The options are **Enabled** and **Disabled**.

AVX2 Ratio Offset

Note: This feature is available when AVX is set to Enabled.

Enter a value for AVX2 Ratio Offset. The default is **0** (no offset).

AVX2 Voltage Guardband Scale Factor

Note: This feature is available when AVX is set to Enabled.

This feature controls the voltage guardband applied to AVX2 workload. Enter a value ranging from 0 to 200 in 1/100 units. The default is **100**.

TjMax Offset

Enter a value to change the Tj-Max value. The default is **0** (no offset).

UnderVolt Protection

When this feature is enabled, you will not be able to program under voltage in OS runtime. It's recommended to keep it enabled by default. The options are **Enabled** and Disabled.

WDT Enable

Use this feature to enable WatchDog Timer. Note that this feature is ignored on debug BIOS. The options are **Enabled** and Disabled.

VCCIA Boot Voltage

When this feature is set to High Voltage, the BIOS can program VCCIA boot voltage higher than 1.65v (max 2.01v). The options are High Voltage and **Nominal**.

VCCSA Boot Voltage

When this feature is set to High Voltage, the BIOS can program the EPOC2 bits to bump up voltage to up to 1.2/1.3V. The options are High Voltage and **Nominal**.

CPU D2D Ratio

Enter a value to set the CPU D2D ratio. The range is 15–40 and the default is **0** (no setting).

Core Minimum Ratio

Enter a value to set the core minimum ratio in units of 100 Mhz for extreme overclocking. The request value will be updated to the minimum allowed one if it's too small, or to the maximum allowed one if it's too big. The default is **0** (no setting).

SA PLL Frequency Override

This feature configures the Sa PLL frequency. The options are **2400 MHz** and 1600 MHz.

C-States

Select Enabled to allow CPU to go to C states when it's not 100% utilized. The options are **Enabled** and Disabled.

CPU Flex Ratio Override

Select Enabled to activate CPU Flex Ratio programming. The flex ratio should be under the CPU's max ratio. The options are **Disabled** and Enabled.

CPU Flex Ratio Settings (Available when “CPU Flex Ratio Override” is set to Enabled)

The value must be between the maximum efficiency ratio and maximum non-turbo ratio. The default value is dependent on the CPU.

Power Limit 1 Override

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

Power Limit 1 (Available when “Power Limit 1 Override” is set to Enabled)

This feature configures the Power Limit 1 in milliwatts. The BIOS will round to the nearest 1/8W when programming. When the limit is exceeded, the CPU ratio is lowered after a period of time (see item below). A lower limit can save power and protect the CPU, while a higher limit improves performance. For overclocking SKUs, this value must be between Max and Min Power Limits. For other SKUs, this value must be between Min Power Limit and TDP limit. If this value is 0, the BIOS will program the TDP value. The default setting is **0**.

Power Limit 1 Time Window (Available when “Power Limit 1 Override” is set to Enabled)

This feature determines how long the time window over which the TDP value is maintained. The default setting is **0** (28 sec for mobile and 8 sec for desktop). This value may vary between 0–128.

Power Limit 2 Override

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

Power Limit 2 (Available when “Power Limit 2 Override” is set to Enabled)

This feature configures the Power Limit 2 in milliwatts. If this value is 0, the BIOS will set PL2 as 1.25* TDP. Processor applies control policies such that the package power does not exceed this limit. The default setting is **0**.

Thermal Velocity Boost (TVB)**TVB Voltage Optimizations**

This feature disables or enables the thermal base voltage optimizations for processor that implements the Intel TVB. The options are **Disabled** and **Enabled**.

TVB Ratio Clipping

This feature disables or enables the core frequency reduction caused by high package temperature for the processor that implements the Intel TVB. It is required to be disabled for supporting overclocking. The options are **Disabled** and **Enabled**.

OC TVB (Available when “TVB Ratio Clipping” is set to Enabled)

If this feature is enabled, you can modify and program new parameters for temperature thresholds T0, T1 and delta DownBins for temp thresholds T0 and T1. The options are **Disabled** and **Enabled**.

VR ICCMAX Current Override Menu**► VR ICCMAX Current Override****Current IA VR Current Limit**

This feature shows the current IA VR current limit.

Current GT VR Current Limit

This feature shows the current GT VR current limit.

Current SA VR Current Limit

This feature shows the current SA VR current limit.

IA ICC Max Current Limit Override (Available when “IA ICC Unlimited Mode” is set to Enabled)

This feature controls the IA voltage regular current limit (Icc Max). The value is in 1/4 A increments. The range is 4–2047 and the default is **0** (no overrides on ICCMAX).

IA ICC Unlimited Mode

This feature controls the IA unlimited ICCMAX. When enabled, the IA VR ICCMAX value is set to the maximum ICC current of 512A. The options are **Disabled** and **Enabled**.

GT ICC Max Current Limit Override

This feature controls the GT voltage regular current limit (Icc Max). The value is in 1/4 A increments. The range is 4-2047 and the default is **0** (no overrides on ICCMAX).

GT ICC Unlimited Mode

This feature This feature disables or enables the GT unlimited ICCMAX. When enabled, the IA VR ICCMAX value is set to the maximum ICC current of 512A. The options are **Disabled** and **Enabled**.

SA ICC Max Current Limit Override (Available when “SA ICC Unlimited Mode” is set to Enabled)

This feature controls the SA voltage regular current limit (Icc Max). The value is in 1/4 A increments. The range is 4-2047 and the default is **0** (no overrides on ICCMAX).

SA ICC Unlimited Mode

This feature disables or enables the SA unlimited ICCMAX. When enabled, the SA VR ICCMAX value is set to the maximum ICC current of 512A. The options are **Disabled** and **Enabled**.

OC TVB Parameters Menu

► OC TVB Parameters

Note: This submenu is available when "TVB Ratio Clipping" is set to Enabled and "OC TVB" is set to Enabled.

P-core TVB Temp ThP-core TVB Temp Threshold T0/T1 / E-core TVB Temp Threshold T0/T1

This feature configures the TVB temperature threshold in degree C. When P-cores/E-cores are running ABOVE this temperature threshold, it will clip delta Down Bins for Threshold 0/1 from the resolved OC ratio. The default is **70**for P-core and **100**for E-core.

OC TVB Configuration Limit

This feature control the method to configure the OC TVB configuration limits. The options are **Per CCP Module** and **Per P-core Group**.

P-core 0–5 DownBins for T0/T1 (Available when "OC TVB Configuration Limit" is set to Per CCP Module)

This feature configures the P-core # DownBins for TVB temperature threshold. When the P-core is running ABOVE this temperature threshold, the P-core # ratio will be clipped to (Max_Ratio - This Down Bins value). The default is **1** for T0 and **2** for T1.

E-core Cluster 0/1 DownBits for T0/T1 (Available when "OC TVB Configuration Limit" is set to Per CCP Module)

This feature configures the E-core cluster # DownBins for TVB temperature threshold. When the E-core cluster # is running ABOVE the temperature threshold, the E-core cluster # ratio will be clipped to (Max_Ratio - This Down Bins value). The default is **0**.

P-core Group 0–7 DownBins for T0/T1 (Available when "OC TVB Configuration Limit" is set to Per P-core Group)

This feature configures the P-core Group # DownBins for TVB temperature threshold. When the P-core group # is running ABOVE the temperature threshold, the P-core group # ratio will be clipped to (Max_Ratio - This Down Bins value). The default is **1** for T0 and **2** for T1.

CPU Feature Menu

► CPU Feature

Race To Halt (RTH)

This feature enables Race To Halt, which dynamically increases CPU frequency in order to enter package C-State faster. This will reduce overall power consumption. The options are Disabled and **Enabled**.

Intel® Speed Shift Technology

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

Thermal Monitor

This feature enables CPU thermal monitor. The options are Disabled and **Enabled**.

Energy Efficient Turbo

Select Enabled to activate Energy Efficient Turbo. This feature will opportunistically lower the turbo frequency to increase efficiency. We recommend to leave this enabled and disable only in overclocking situations where the turbo frequency must remain constant. The options are **Disabled** and Enabled, and Auto.

► CPU VR Settings

PSYS Slope

Enter a value for the PSYS Slope. The range is 0–200 in 1/100 increments and the default is **0** for Auto.

PSYS Offset

Enter a value for the PSYS Offset. The range is 0–128000 in 1/1000 increments and the default is **0**.

PSYS Prefix

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

PSYS PMax Power

Enter a value for the PSYS PMax Power. The range is 0–8191 in 1/8 Watt increments and the default is **0** for Auto.

Vsys/Psys Critical

This feature enables the Vsys/Psys Critical function. The options are **Disabled**, Psys Critical, and Vsys Critical.

Vsys/Psys Full Scale (Available when “Vsys/Psys Critical” is set to Vsys Critical or Psys Critical)

Enter a values for Vsys/Psys Full Scale. The Vsys/Psys Critical = Critical Threshold/Full Scale. Vsys inut is in mVolts and Psys input is in mW or in m% (for ATX12V0). The default is **200000** for Psys Critical and **24000** for Vsys Critical.

Vsys/Psys Critical Threshold (Available when “Vsys/Psys Critical” is set to Psys Critical)

Enter a values for Vsys/Psys Critical Threshold. The Vsys/Psys Critical = Critical Threshold/Full Scale. Vsys inut is in mVolts and Psys input is in mW or in m% (for ATX12V0). The default is **130000** for Psys Critical and **6000** for Vsys Critical.

Assertion Deglitch Mantissa

Enter a value for Assertion Deglitch Mantissa. The default is **1**.

Assertion Deglitch Exponent

Enter a value for Assertion Deglitch Exponent. The default is **0**.

De assertion Deglitch Mantissa

Enter a value for De Assertion Deglitch Mantissa. The default is **13**.

De assertion Deglitch Exponent

Enter a value for DE Assertion Deglitch Exponent. The default is **2**.

VR Power Delivery Design

This feature controls the ADL desktop board design used for the VR settings override values. The default is Auto which uses the board ID to determine the board design.

SVID Stabilization Delay

This feature configures the SVID Stabilization Delay (in us) being used for the FVM feature when it is enabled. Note that this delay applies to all SVID domains equally (no unique values possible for IA/GT/SA). The default is **3**.

► Acoustic Noise Settings

Acoustic Noise Mitigation

This feature enables Acoustic Noise Mitigation, which mitigates acoustic noise on certain CPUs when they are in deep C-states. The options are **Disabled** and Enabled.

Pre Wake Time / Ramp Up Time / Ramp Down Time (Available when “Acoustic Noise Mitigation” is set to Enabled)

Enter a value for the desired feature. The range is 0–255. The default is **0**.

IA VR Domain / GT VR Domain / SA VR Domain (Available when “Acoustic Noise Mitigation” is set to Enabled)**Disable Fast PKG C State Ramp for IA / GT / SA Domain**

This feature disables fast package C-state ramping in a specific domain. If set to FALSE, the selected domain will continue to fast ramp. If set to True, the selected domain will disable fast ramping. The options are **False** and True.

Slow Slew Rate for IA / GT Domain

This feature controls the slow slew rate for a specific domain. The options are **Fast/2**, Fast/4, Fast/8, and Fast/16.

► Core/IA VR Settings / GT VR Settings / SA VR Settings**VR Config Enable**

This feature enables VR Config. The options are Disabled and **Enabled**.

Note: If "VR Config Enable" is set to Enabled, the following information is displayed:

- Current AC/DC Loadline
- Current PSi1/2/3 Threshold
- Current Imon Slope/Offset
- Current VR ICC Max/Limit
- Current Tdc Current Limit
- Current Voltage Limit

Note: If "VR Config Enable" is set to Enabled, the following features will be available.

AC Loadline

Enter a value for AC Loadline. The range is 0–6249 in 1/100 mOhms and the default is **0** for Auto.

DC Loadline

Enter a value for DC Loadline. The range is 0–6249 in 1/100 mOhms and the default is **0** for Auto.

PS Current Threshold1/2/3

Enter a value for PS Current Threshold1/2/3. The range is 0–512 in 1/4 A increments. The default is **80/20/4** for PS Current Threshold1/2/3 respectively.

PS3 Enable

This feature enables PS3. The options are Disabled and **Enabled**.

PS4 Enable

This feature enables PS4. The options are Disabled and **Enabled**.

IMON Slope

Enter a value for IMON Slope. The range is 0–200 in 1/100 increments and the default is **0** for Auto.

IMON Offset

Enter a value for IMON Offset. The range is 0–63999 in 1/1000 increments and the default is **0**.

IMON Prefix

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

VR Current Limit

This feature is reserved and not configurable.

Core VR Fast Vmode

Use this feature to enable the Core VR Fast Vmode. The options are Disabled and **Enabled**.

VR Fast Vmode ICC Limit

Note: The following features are available when “Core/GT/SA VR Fast Vmode” is set to Enabled.

Enter a value in 1/4 A increments to set the VR Fast Vmode ICC Limit. A value of 400=100A. This value represents the current threshold where the VR would initiate reactive protection if Fast Vmode is enabled. The default is **0**.

VR Fast Vmode Offset

Note: This feature is available when “Core/GT/SA VR Fast Vmode” is set to Enabled.

Enter a value in 1 mV increments to set the VR Fast Vmode Offset. This value represents the ICC Max Offset (dV/dT) to be configured if Fast Vmode is enabled. If Fast Vmode ICC Limit is set to 0, the offset will be ignored. The default is **0** to use the processor default setting. It's highly recommended to keep the default.

VR Voltage Limit

Enter a value (in mV) for the voltage regulator voltage limit. The range is 0–7999 and the default is **0**.

TDC Enable

This feature disables or enables TDC. The options are Disabled and **Enabled**.

TDC Current Limit

Enter a value for the TDC Current Limit, with each whole number equating to 1/8A (i.e., 1000=125A). The range is 0–32767. The default is **0**.

TDC Time Windows

This feature controls the TDC Time Window. The range is 1s to 448s. The default is **Auto** (using processor default setting).

TDC Lock

This feature disables or enables TDC Lock. The options are **Disabled** and Enabled.

IRMS

This feature disables or enables IRMS. The options are **Disabled** and Enabled.

PS1 to PS0 / PS2 to PS1 Dynamic Cutoff Enable

This features enables PS1 to PS0 / PS2 to PS1 dynamic cutoff. The options are **Disabled** and Enabled.

PS1 to PS0 Dynamic Cutoff M Coef (Available when PS1 to PS0 Dynamic Cutoff Enable is set to Enable)

Enter a value to set the PS1 to PS0 Dynamic Cutoff M coefficient. This number is in Mx100 units. For 12.50, enter 1250. The range is 0–4096. The default is **100**.

PS1 to PS0 Dynamic Cutoff C Coef (Available when PS1 to PS0 Dynamic Cutoff Enable is set to Enable)

Enter a value to set the PS1 to PS0 Dynamic Cutoff C coefficient. This number is in Cx100 units. If the value is bigger than 2047, it will minus 4096. For -12.50, enter 2846. The range is 0–4096. The default is **2000**.

PS2 to PS1 Dynamic Cutoff M Coef (Available when PS2 to PS1 Dynamic Cutoff Enable is set to Enable)

Enter a value to set the PS2 to PS1 Dynamic Cutoff M coefficient. This number is in Mx100 units. For 12.50, enter 1250. The range is 0–4096. The default is **100**.

PS2 to PS1 Dynamic Cutoff C Coef (Available when PS2 to PS1 Dynamic Cutoff Enable is set to Enable)

Enter a value to set the PS2 to PS1 Dynamic Cutoff C coefficient. This number is in Cx100 units. If the value is bigger than 2047, it will minus 4096. For -12.50, enter 2846. The range is 0–4096. The default is **500**.

VCC Demotion Shutdown Threshold

Enter a value to set the VCC demotion shutdown threshold in msec. The range is 0–255 msec. The default is **0**.

VCC Demotion Shutdown Threshold (Available only for Core/IA VR Settings Menu)

Enter a value to set the VCC demotion shutdown threshold in msec. The range is 0–255 msec. The default is **0**.

CEP Enable (Available only for Core/IA VR Settings Menu)

This feature disables or enables CEP (Current Excursion Protection) support. The options are Disabled and **Enabled**.

SIRP Enable (Available only for Core/IA VR Settings Menu)

This feature disables or enables SIRP (Soc Iccmax Reactive Protection) support. The options are **Disabled** and Enabled.

► RFI Settings**RFI Domain****Global DLVR RFI Mitigation**

This feature enables Global Digital Linear Voltage Regulator(DLVR) RFI Mitigation Control. The options are Disabled and **Enabled**.

DLVR RFI Value

Enter a value to set the DLVR RFI value. DLVR SSC is in percentage with multiple of 0.25%. The default is **6**.

DLVR RFI Frequency

Use this feature to set a desired DLVR RFI frequency in Mhz. The default is **1370**.

Advanced Memory OC Setting Menu

Note: This menu is available for C9Z890-MW and C9B860-MW only.

► Advanced Memory OC Setting

SPD Write Disable

This feature controls if SPD write is disabled. The options are **True** and False. For security, it's recommended to set it to True to disable SPD write.

Force CKD Bypass

When enabled, the BIOS will force the Client Clock Driver (CKD) to run in Bypass Mode if CKD DIMM is detected. The options are **Disabled** and Enabled.

SAGV

This feature enables System Agent Geyserville. The options are **Disabled** and Enabled.

Gear Ratio (Available when SAGV is set to Disabled)

This feature determines the Gear ratio when SAGV is disabled. The options are **Auto**, Gear2 and Gear4.

Realtime Memory Timing

This feature enables Realtime Memory Timing changes to be made after MRC_DONE. The options are **Disabled** and Enabled.

Dynamic Memory Boost

This feature is set to **Disabled** and not configurable.

Realtime Memory Frequency

This feature is set to **Disabled** and not configurable.

RxVref Temperature Coefficient

Enter a value to set the RxVref temperature coefficient. The range is 0–255. The default is **6**.

Vddq Voltage Override

Enter a value to set the CPU FIVR TX Vddq. The value is multiple of 1mV. The default is **0** for Auto.

Vcclog Voltage Override

Enter a value to set the CPU FIVR TX Vcclog. The value is multiple of 1mV. The default is **0** for Auto.

VccClk Voltage Override

Enter a value to set the CPU FIVR TX VccClk. The value is multiple of 1mV. The default is **0** for Auto.

Note: The following features are available when “Memory Profile” is set to Custom profile.

tCL / tRCD/tRP / tRAS / tCWL / tFAW / tREFI / tRFC / tRRD / tRTP / tWR / tWRT / tRFCpb / tRFC2 / tRFC4 / tRRD_L / tRRD_S / tWTR_L / tCCD_L / tCCD_L_WR / tWTR_S / NMode / tRRD_sg / tRRD_dg / tRDR_sg / tRDRD_dg / tRDRD_dr / tRDRD_dd / tRDWR_sg / tRDWR_dg / tRDWR_dr / tRDWR_dd / tWRRD_sg / tWRRD_dg / tWRRD_dr / tWRRD_dd / tWRWR_sg / tWRWR_dg / tWRWR_dr / tWRWR_dd / tCKE / tCSH / tCSL / tCAS2CA / tXSDLL / tMOD /

Enter a value for each of these features.

Dimm DFE Tap 1/2 Step Size

Enter a value to set the DIMM DFE Tap 1/2 Step Size. The default is **0**.

CsVrefLow/High

Use this feature to select the Cs Sweep Vref low/high value. The default is **Auto**.

CaVrefLow/High

Use this feature to select the Ca Sweep Vref low/high value. The default is **Auto**.

RxVref Offset

This feature configures the RxVref offset. Enter a value between 0–1600 where 0 is for Auto. The default is **0**.

Initial DDR5 TxVref Override

This feature configures the initial DDR5 TxVref Override. Enter a value between 350–975 in increments of 5. The default is **0** for Auto.

Vdd2Mv

This feature configures the VR Rail tied to the DRAM. Usually it equals to or lower than VDD2 voltage. The default is **1100**.

DIIBwEn[0] / [1] / [2] / [3]

Enter a value to set the DIIBwEn [0] / [1] / [2] / [3] for 1067, 1333, 1600, and 1867 respectively. The default for DIIBwEn [0] / [1] / [2] / [3] is **0 / 1 / 2 / 2** respectively.

► DIMM Odt

Dimm0 RttWr / Dimm0 RttNomRd / Dimm0 RttNomWr / Dimm0 RttPark / Dimm0 RttParkDqs / Dimm0 RttCa A / Dimm0 RttCs A / Dimm0 RttCk A / Dimm0 Rttca B / Dimm0 RttCk B

Enter a value for each of these features.

Dimm1 RttWr / Dimm1 RttNomRd / Dimm1 RttNomWr / Dimm1 RttPark / Dimm1 RttParkDqs / Dimm1 RttCa A / Dimm1 RttCs A / Dimm1 RttCk A / Dimm1 Rttca B / Dimm1 RttCk B

Enter a value for each of these features.

► RcomTarget

RcomResistor / RcomTarget [RdOdt] / RcomTarget [WrDS] / RcomTarget[WrDSCmd] / RcompTarget[WrDSCtl] / RcomTarget[WrDSClk]

Enter a value for each of these features.

BCLK Configuration Menu

Note: This menu is available for C9Z890-MW only.

► BCLK Configuration

External BCLK Only

Enter a value to set the CPU BCLK OC frequency. The default is **100000**.

BCLK Aware Adaptive Voltage

This feature enables BCLK Aware Adaptive Voltage. When enabled, pcode will be aware of the BCLK frequency when calculating the CPU V/F curves. This is ideal for BCLK OC to avoid high voltage overrides. The options are Disabled and **Enabled**.

CPU BCLK PLL configuration

This feature configures the CPU BCLK PLL state. If set to PLL On, BCLK source for CPU will be from the CPU PLL. The options are **PLL in HW default state**, PLL ON, and PLL OFF.

SoC BCLK PLL configuration

This feature configures the SoC BCLK PLL state. If set to PLL On, BCLK source for SoC-N and for CPU (unless PCU PLL is ON) will be from the CPU PLL. The options are **PLL in HW default state**, PLL ON, and PLL OFF.

Compute-Die SSC Configuration (Available when “CPU BCLK PLL configuration” or “SoC BCLK PLL configuration” is set to “PLL ON”)

This feature enables the Compute-Die SSC Configuration. The options are Disabled and Enabled.

Soc-Die SSC Configuration (Available when “CPU BCLK PLL configuration” is set to “PLL ON”)

This feature enables the SoC-Die SSC Configuration. The options are Disabled and **Enabled**.

SSC Enable (Not available when “CPU BCLK PLL configuration” or “SoC BCLK PLL configuration” is set to “PLL ON”)

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

SSC Mode (Not available when “CPU BCLK PLL configuration” or “SoC BCLK PLL configuration” is set to “PLL ON”)

This feature controls the SSC mode. The options are Down and **Center**.

Level (Not available when “CPU BCLK PLL configuration” or “SoC BCLK PLL configuration” is set to “PLL ON”)

Enter a value to set the level. The default is **5**.

Advanced Voltage OC Setting Menu

Note: This menu is available for C9Z890-MW only.

► Advanced Voltage OC Setting

Voltage Configuration

VCCIO

Enter a desired numeric value for VCCIO voltage. The default is **1270** mV.

Vcc1p8 QUIET

Enter a desired numeric value for VCCIO voltage. The default is **1810** mV.

VccDD2

Enter a desired numeric value for VccDD2 voltage. The default is **1100**mV.

DDR Vcc1p8

Enter a desired numeric value for DDR Vcc1p8 voltage. The default is **1810** mV.

CPU Vcc1p8

Enter a desired numeric value for CPU Vcc1p8 voltage. The default is **1810** mV.

VNNAON

Enter a desired numeric value for VNNAON voltage. The range is 500–1277 mV. The default is **770** mV.

Memory Menu

► Memory

MemSS Max OC Ratio Limit

This feature shows the maximum overclocking ratio limit for the memory subsystem.

MemSS Max OC Ratio

Enter a value to set the maximum overclocking ratio for the memory subsystem. The default is **0**.

VF Offset Mode

Use this feature to set VF Offset mode. In Legacy mode, it sets a global offset for the entire VF curve. In Selection mode, it sets a selected VF point. Reboot the system after enabling overclocking feature to initialize the default value. The options are **Legacy** and Selection.

Note: The following features are available when "VF Offset Mode" is set to Legacy.

MemSS Voltage Mode

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

MemSS Adaptive Voltage (Available when "MemSS Voltage Mode" is set to Adaptive)

Use this feature to specify the adaptive voltage (in mV) applied while memory subsystem is operating in adaptive mode. The range is 0–2000 and the default is **0**.

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

Use this feature to specify the override voltage (in mV) applied while memory subsystem is operating in override mode. The range is 0–2000 and the default is **0**.

MemSS Voltage Offset

Enter a value for the offset voltage (in mV) that will be applied to the memory subsystem domain. The range is - 500 to 500 and the default is **0**.

Offset Prefix

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

Note: The following VF Point features are only available when VF Offset Mode is set to Selection. The number of VF point depends on the CPU and the domain.

VF Point # Offset

Enter a value to specify the offset voltage (in mV) that will be applied to the VF point #. The range is -500 to 500. The default is **0**.

VF Point # Offset Prefix

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

VF Point # Ratio

This feature shows the VF point # ratio.

Ring Menu

▶ Ring

Ring Max OC Ratio Limit

This feature shows the maximum overclocking ratio limit for the CPU ring domain.

Ring Max OC Ratio

Enter a value to set the maximum overclocking ratio for the CPU Ring. The default is **0**.

VF Offset Mode

Use this feature to set VF Offset mode. In Legacy mode, it sets a global offset for the entire VF curve. In Selection mode, it sets a selected VF point. Reboot the system after enabling overclocking feature to initialize the default value. The options are **Legacy** and Selection.

Note: The following features are available when VF Offset Mode is set to Legacy.

Ring Voltage Mode

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

Ring Adaptive Voltage (Available when “Ring Voltage Mode” is set to Adaptive)

Use this feature to specify the adaptive voltage (in mV) applied while ring is operating in adaptive mode. The range is 0–2000 and the default is **0**.

Ring Voltage Override (Available when “Ring Voltage Mode” is set to Override)

Use this feature to specify the override voltage (in mV) applied while ring is operating in override mode. The range is 0–2000 and the default is **0**.

Ring Voltage Offset

Enter a value for the offset voltage (in mV) that will be applied to the ring domain. The range is -500 to 500 and the default is **0**.

Offset Prefix

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

Note: The following VF Point features are available when VF Offset Mode is set to Selection. The number of VF point depends on the CPU and the domain.

VF Point # Offset

Enter a value to specify the offset voltage (in mV) that will be applied to the VF point #. The range is -500 to 500. The default is **0**.

VF Point # Offset Prefix

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

VF Point # Ratio

This feature shows the VF point # ratio.

Ring Down Bin

This feature enables the Ring Down bin. When enabled, the CPU will down bin the ring ratio, meaning the requested maximum ring ratio will not be observed. When disabled, the CPU will not down bin the ring ration, and the requested ring ratio limit will be observed. The options are Disabled and **Enabled**.

Min Ring Ratio Limit

Enter a value for the minimum ring ratio limit. The default is **0** for Auto/HW default.

Max Ring Ratio Limit

Enter a value for the maximum ring ratio limit. The default is **0** for Auto/HW default.

GT Menu

▶ GT

GT Max OC Ratio Limit

This feature shows the maximum overclocking ratio limit for the GT domain.

GT Max OC Ratio

Enter a value to set the maximum overclocking ratio for the GT. The default is **0**.

VF Offset Mode

Use this feature to set VF Offset mode. In Legacy mode, it sets a global offset for the entire VF curve. In Selection mode, it sets a selected VF point. Reboot the system after enabling overclocking feature to initialize the default value. The options are **Legacy** and Selection.

Note: The following features are only available when VF Offset Mode is set to Legacy.

GT Voltage Mode

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

GT Adaptive Voltage (Available when “GT Voltage Mode” is set to Adaptive)

Use this feature to specify the adaptive voltage (in mV) applied while GT is operating in adaptive mode. The range is 0–2000 and the default is **0**.

GT Voltage Override (Available when “GT Voltage Mode” is set to Override)

Use this feature to specify the override voltage (in mV) applied while GT is operating in override mode. The range is 0–2000 and the default is **0**.

GT Voltage Offset

Enter a value for the offset voltage (in mV) that will be applied to the GT domain. The range is -500 to 500 and the default is **0**.

Offset Prefix

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

Note: The following VF Point features are only available when VF Offset Mode is set to Selection. The number of VF point depends on the CPU and the domain.

VF Point # Offset

Enter a value to specify the offset voltage (in mV) that will be applied to the VF point #. The range is -500 to 500. The default is **0**.

VF Point # Offset Prefix

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

VF Point # Ratio

This feature shows the VF point # ratio.

SA Menu

▶ SA

SA Voltage Mode

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

SA Adaptive Voltage (Available when “SA Voltage Mode” is set to Adaptive)

Use this feature to specify the adaptive voltage (in mV) applied while SA is operating in adaptive mode. The range is 0–2000 and the default is **0**.

SVID (Available when “SA Voltage Mode” is set to Override)

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

SA Voltage Override (Available when “SA Voltage Mode” is set to Override)

Use this feature to specify the override voltage (in mV) applied while SA is operating in override mode. The range is 0–2000 and the default is **0**.

SA Voltage Offset (Available when “SA Voltage Mode” is set to Override and SVID is Enabled)

Enter a value for the offset voltage (in mV) that will be applied to the ring domain. The range is -1000 to 1000 and the default is **0**.

Offset Prefix (Available when “SA Voltage Mode” is set to Override and SVID is Enabled)

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

NGU Menu**▶ NGU****NGU Max OC Ratio Limit**

This feature shows the maximum OC ratio limit for the NGU domain.

NGU Max OC Ratio

Enter a value to set the maximum overclocking ratio for the NGU. The default is **0**.

VF Offset Mode

Use this feature to set VF Offset mode. In Legacy mode, it sets a global offset for the entire VF curve. In Selection mode, it sets a selected VF point. Reboot the system after enabling overclocking feature to initialize the default value. The options are **Legacy** and Selection.

Note: The following features are only available when VF Offset Mode is set to Legacy.

NGU Voltage Mode

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

NGU Adaptive Voltage (Available when “NGU Voltage Mode” is set to Adaptive)

Use this feature to specify the adaptive voltage (in mV) applied while NGU is operating in adaptive mode. The range is 0–2000 and the default is **0**.

NGU Voltage Override (Available when “NGU Voltage Mode” is set to Override)

Use this feature to specify the override voltage (in mV) applied while NGU is operating in override mode. The range is 0–2000 and the default is **0**.

NGU Voltage Offset

Enter a value for the offset voltage (in mV) that will be applied to the NGU domain. The range is - 500 to 500 and the default is **0**.

Offset Prefix

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

Note: The following RF Point features are only available when VF Offset Mode is set to Selection. The number of VF point depends on the CPU and the domain.

VF Point # Offset

Enter a value to specify the offset voltage (in mV) that will be applied to the VF point #. The range is -500 to 500. The default is **0**.

VF Point # Offset Prefix

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

VF Point # Ratio

This feature shows the VF point # ratio.

Voltage PLL Trim Controls Menu**▶ Voltage PLL Trim Controls****PLL Voltage Trim Controls****Core / Ring / System Agent / IA Atom / Memory Controller / CPU System Agent PLL Voltage Offset**

Enter a value to set the Phase-locked Loop (PLL) voltage offset for each domain. The range is 0–15 and the units are in 17.5 mV. The default is **0**.

PLL Current Reference Tuning

Core PLL / IA Atom PLL IRefTune Offset

Enter a desired numeric value above for each feature. The value will be added to the PLL fuse. The range is 0–15 and the default is **0**.

Max Voltage PLL Limits Menu

▶ Max Voltage PLL Limits

P-Core / E-Core /GT / Ring / SA / MemSS / NGU Max voltage limits

Enter a value (in mV) to set the maximum voltage limits for each domain. The range is 0–2000 and the default is **0**.

4.5 Advanced Setup Configurations

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

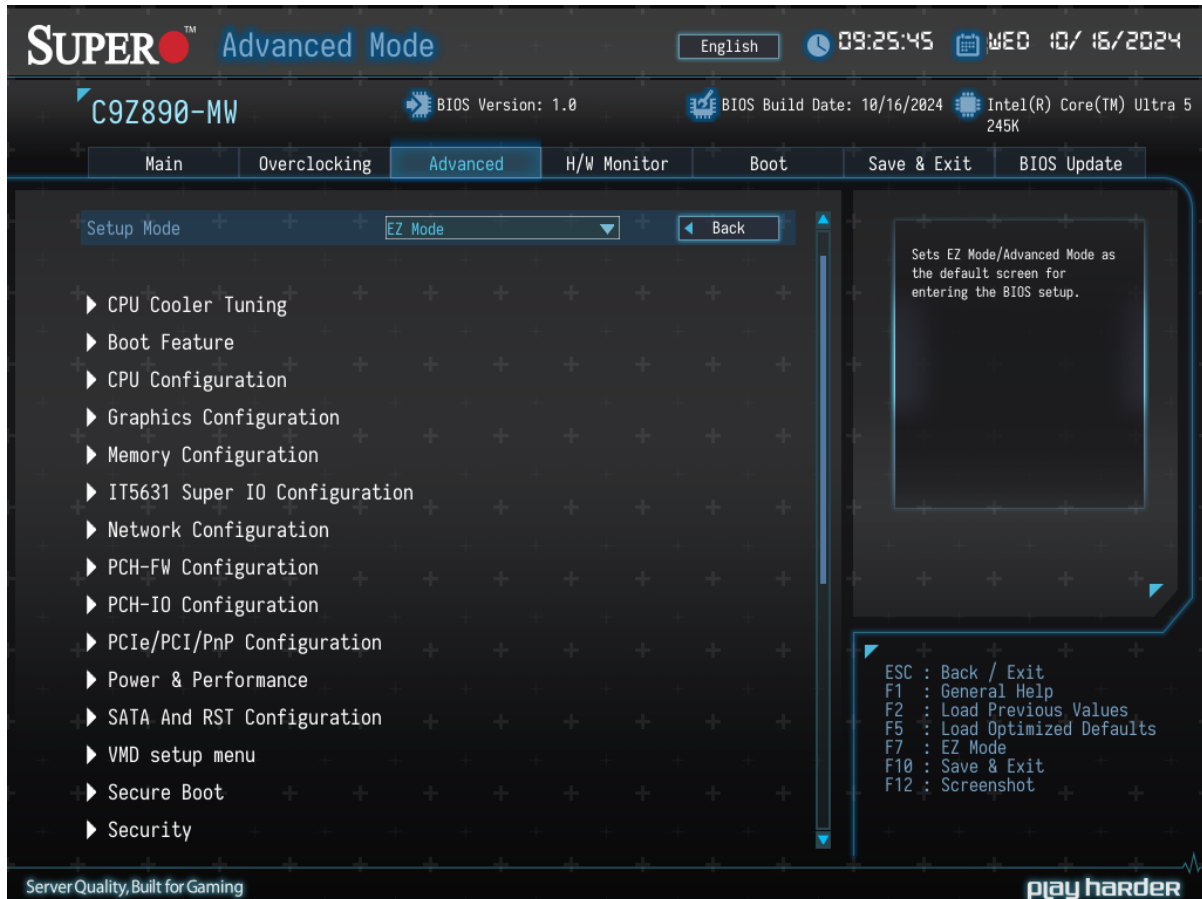


Figure 4-11. Advanced Setup Configuration Screen for C9Z890-MW and C9B860-MW

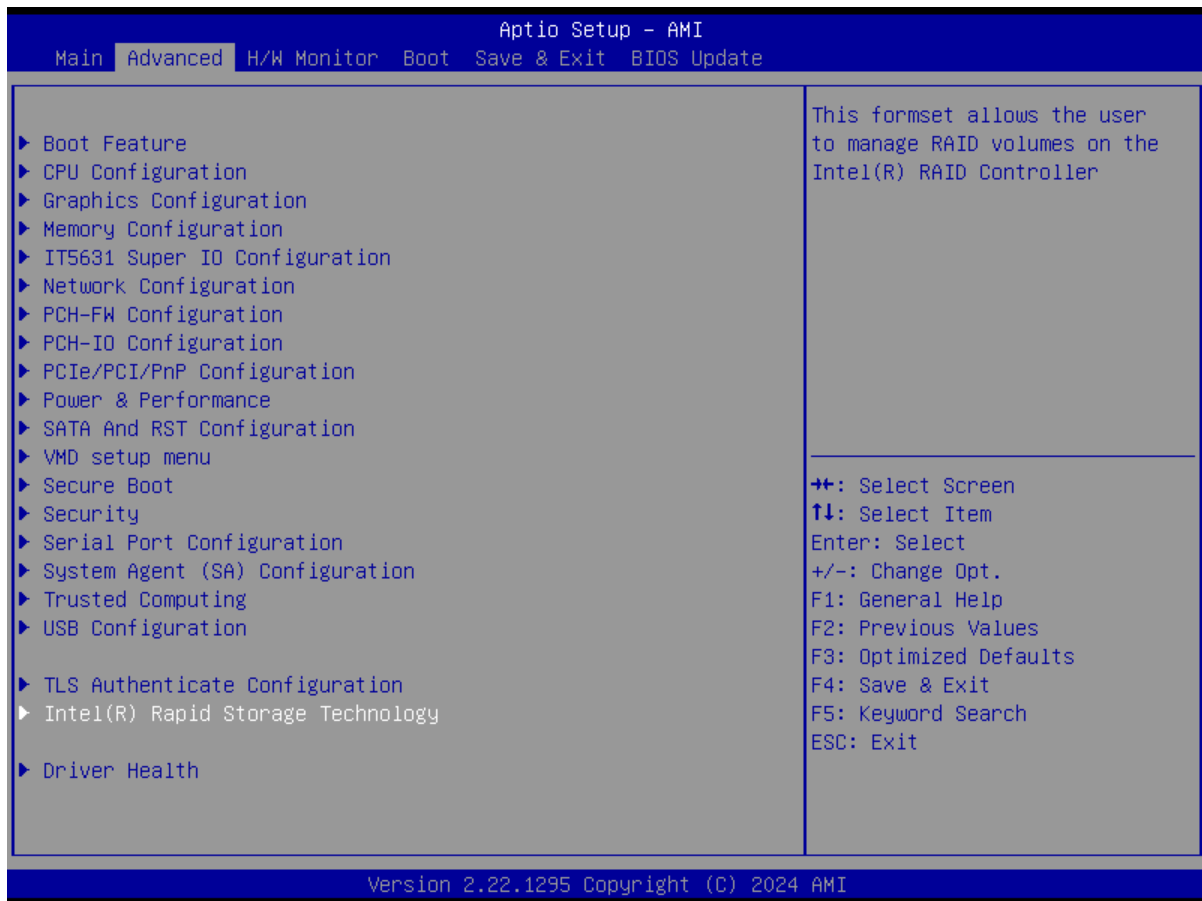


Figure 4-12. Advanced Setup Configuration Screen for C9Q870-M

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

Setup Mode Menu (C9Z890-MW and C9B860-MW only)

Setup Mode

This feature sets the default mode to start in after entering BIOS. The options are **EZ Mode** and **Advanced Mode**.

CPU Cooler Tuning (C9Z890-MW and C9B860-MW only)



Figure 4-13. CPU Cooler Tuning Screen

Use this feature to tune the coolers for the system. A pop-up window will appear when pressing <Enter> on this feature. Use the mouse cursor to select the desired cooler mode or enter a customized value on the feature of Manual using the number key on your keyboard. Once the setting has been completed, click Apply for the change to take effect.

Boot Feature Menu

► Boot Feature

Boot Configuration

Fast Boot

This feature enables the system to boot with a minimal set of required devices to launch. This has no effect on BBS boot options. The options are **Disabled** and Enabled.

Quiet Boot

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

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

Bootup NumLock State

Use this feature to set the power on state for the <Num Lock> key. The options are **On** and Off.

Wait For "F1" If Error

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

Re-try Boot

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

Quickly Boot Menu by F11 Support

Select Enabled to quickly invoke the boot menu by pressing the <F11> key at system bootup. The options are **Disabled** and Enabled.

Power Configuration

Watch Dog Function

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

Watch Dog Action (Available when "Watch Dog Function" is set to Enabled)

Use this feature to configure the Watchdog timeout setting. The options are **Reset** and NMI.

Restore on AC Power Loss

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

Power Button Function

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

Note: This feature is available only for non-ACPI OS and Pre-OS.

DeepSx Power Policies

Use this feature to configure the Advanced Configuration and Power Interface (ACPI) settings for the system. Enable S4 to use Hibernation mode (Suspend to Disk) so that all data stored in the main memory can be saved in a non-volatile memory area such as in a hard drive and then power down the system. Enable S5 to power off the whole system except the power supply unit (PSU) and keep the power button alive so that you can wake up the system by using a USB keyboard or mouse. The options are **Disabled**, Enabled In S4-S5, and Enabled in S5.

Delay Time Before PCI Enumeration

Use this feature to set the amount of time the system waits before enumerating PCI devices during the boot process. The valid range is 0–30 with a step of 1 second. The default setting is **0** for off, meaning the system will skip the delay time and immediately begin enumerating PCI devices.

Note: This feature is available for C9Q870-M only.

CPU Configuration Menu

► CPU Configuration

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

The following processor information is displayed.

- Brand String - the brand and speed of installed CPU
- Frequency - the frequency of installed CPU
- ID - the unique CPU ID
- Stepping - the processor stepping
- Number of Processors - the number of cores detected / the number of threads detected
- Number of Efficient-cores - the number of efficient cores detected / the number of threads detected

Advanced Option

Use this feature to enable the Advanced Option feature. The options are Enabled (Checked) or **Disabled** (Unchecked).

If the Advanced Option feature is enabled, the following information is displayed:

- Microcode Revision
- GT Info
- IGFX GOP Version (Available if the CPU installed supports IGFX GOP.)
- L1 Data Cache
- L1 Instruction Cache
- L2 Cache
- L3 Cache
- VMX
- SMX/TXT

Intel Virtualization Technology

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

Active Processor Cores

Use this feature to select the number of active processor P-cores. The default option is **All**, 5, 4, 3, 2, and 1. The available options depend on how many cores are supported by the CPU.

BIST

Select Enabled to activate the Built-In Self Test (BIST) on reset. The options are **Disabled** and Enabled.

MachineCheck

Select Enabled to activate Machine Check. The options are Disabled and **Enabled**.

Monitor MWAIT

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

Reset AUX Content

When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology. The feature is not configurable.

Graphics Configuration Menu

► Graphics Configuration

This submenu allows you to configure the graphics configuration settings.

Skip Scanning of External Gfx Card

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

Primary Display

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

Internal Graphics

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

DVMT Pre-Allocated

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

Configure GT for use

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

PAVP Enable

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

HDD Security Configuration Menu

Note: This menu appears when a hard drive is detected.

The following HDD security information is displayed:

- Security Supported
- Security Enabled
- Security Locked
- Security Frozen
- HDD User Pwd Status
- HDD Master Pwd Status

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

Press <Enter> to set the HDD user password.

Memory Configuration Menu

► Memory Configuration

This submenu is used to configure the Integrated Memory Controller (IMC) settings.

The following memory information is displayed:

- Memory RC Version
- Memory Frequency
- Memory Timings (tCL-tRCD-tRP-tRAS)
- DIMMA1
- DIMMA2
- DIMMB1
- DIMMB2

Maximum Memory Frequency

Use this feature to set the maximum memory frequency for the memory installed. The default is **Auto**. All values are in MHz.

Max TOLUD (Top of Low Usable DRAM)

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

Note: TSEG is a block of memory that is only accessible by the processor while operating in System Management Mode (SMM).

Memory Scrambler

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

Force ColdReset

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

Force Single Rank

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

Memory Remap

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

MRC Fast Boot

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

Total Memory Encryption

Use this feature to enable or disable Total Memory Encryption (TME). When enabled, Intel TME enhances memory data security. The options are **Disabled** and Enabled.

Super IO Configuration Menu

► Super IO Configuration

The following information is displayed.

- Super IO Chip

Note: This submenu is available when your system supports this feature.

Serial Port 1 Configuration Menu

► Serial Port 1 Configuration

Serial Port 1

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

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

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

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

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

Network Configuration Menu

Intel(R) Ethernet Connection (19) I219-V/-LM - (MAC address) Menu

► **Intel(R) Ethernet Connection (19) I219-V - (MAC address)(C9Z890-MW and C9B860-MW)**

► **Intel(R) Ethernet Connection (19) I219-LM - (MAC address)(C9Q870-M)**

Autonegotiation Timeout

This feature controls how long the UEFI PXE driver should wait for link. The default is **8**.

PORT CONFIGURATION INFORMATION

The following LAN port information will be displayed:

- UEFI Driver
- Adapter PBA
- PCI Device ID
- PCI Address
- MAC Address

MAC:(MAC address)-IPv4 Network Configuration Menu

► **MAC:(MAC address)-IPv4 Network Configuration**

Configured

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

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

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

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

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

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

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

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

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

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

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

Save Changes and Exit

Press <Enter> to save changes and exit.

MAC:(MAC address)-IPv6 Network Configuration Menu**▶ MAC:(MAC address)-IPv6 Network Configuration****▶ Enter Configuration Menu**

The following information is displayed.

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

Interface ID

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

DAD Transmit Count

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

Policy

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

▶ Advanced Configuration

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

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

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

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

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

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

Save Changes and Exit

Press <Enter> to save changes and exit.

PCH-FW Configuration Menu

PCH-FW Configuration

The following PCH-IO information is displayed:

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

ME FW Image Re-Flash

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

TPM Device Selection

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

AMT Configuration (C9Q870-M only)

USB Provisioning of AMT

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

MAC Pass Through

Use this feature to enable or disable the MAC Pass Through function. The options are **Disabled** and Enabled.

Activate Remote Assistance Process

Use this feature to activate Remote Assistance. Enabling this feature will also trigger the Client Initiated Remote Access (CIRA) boot. The options are **Disabled** and Enabled.

Unconfigure ME

Use this feature to unconfigure ME with resetting the MEBx password to default on next boot. The options are **Disabled** and Enabled.

ASF Configuration

PET Progress

Use this feature to enable or disable PET Events Progress to receive PET Events alerts. The options are Disabled and **Enabled**.

WatchDog

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

OS Timer / BIOS Timer

These options appear if WatchDog (above) is enabled. This is a timed delay in seconds, before a system power down or reset after a BIOS or operating system failure is detected. Enter the value in seconds. The default setting is **0**.

ASF Sensors Table

Enable this feature for the ASF Sensor Table to be added into the ASF ACPI table. The options are **Disabled** and Enabled.

Secure Erase Configuration

Secure Erase mode

Select Real to securely erase a solid state drive. The options are **Simulated** and Real.

Force Secure Erase

Select Enabled to force a secure erase of the solid state drive on the next boot. The options are **Disabled** and Enabled.

One Click Recovery (OCR) Configuration

OCR Https Boot

Use this feature to enable or disable One Click Recovery Https Boot. One Click Recovery is a recovery process that lets you restore your computer to its last known good state with a single command. The options are Disabled and **Enabled**.

OCR PBA Boot

Use this feature to enable or disable One Click Recovery PBA Boot. The options are Disabled and **Enabled**.

OCR Windows Recovery Boot

Use this feature to enable or disable One Click Recovery Windows Boot. The options are Disabled and **Enabled**.

OCR Disable Secure Boot

Use this feature to allow CSME to request Secure Boot to be disabled for One Click Recovery. The options are Disabled and **Enabled**.

PCH-IO Configuration Menu

HD Audio

This feature controls the detection of HD Audio devices. The options are Disabled and **Enabled**.

Wake on LAN Enable

This feature enables integrated LAN to wake the system. The options are Disabled and **Enabled**.

DMI Link ASPM Control

This feature configures Active State Power Management (ASPM) for DMI Link. The options are Disabled, L1, and **Auto**.

► **PCH M.2-P1 / PCH SLOT4 PCIe 4.0X4 / PCH LAN Controller / PCH SLOT7 PCIe 4.0X1**

► **PCH M.2-E1 WiFi 7 (C9Z890-MW and C9B860-MW only)**

ASPM

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

Note: The number of ASPM will differ depending on the PCH ports.

L1 Substates

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

PCIe Speed

Use this feature to set the PCI Express port speed. The options are **Auto**, Gen1, Gen2, Gen3, and Gen4.

P2P Support

This feature controls P2P support registers according to setup option. The options are **Disabled** and Enabled.

PCIe/PCI/PnP Configuration Menu

Re-Size BAR Support

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

SR-IOV Support (C9Q870-M only)

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

BME DMA Mitigation

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

NVMe Firmware Source

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

Consistent Device Name Support

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

PCIe/PCI/PnP Configuration

CPU SLOT6 PCI-E 5.0 X16 OPROM / CPU PCIE M.2-C1 OPROM / PCH SLOT7 PCI-E 4.0 X1 OPROM / PCH M.2-P1 OPROM / PCH SLOT4 PCIE-E 4.0 X4 OPROM

PCH M.2-E1 WiFi (C9Z890-MW and C9B860-MW only)

Select Disabled to deactivate the selected slot or EFI to activate the slot in UEFI mode. The options are Disabled and **EFI**.

PCH LAN Controller

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

Power and Performance Menu

CPU - Power Management Control Menu

▶ CPU - Power Management Control

Intel® SpeedStep™

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

C-States

C-States architecture, a processor power management platform developed by Intel, can further reduce power consumption from the basic C1 (Halt State) state that blocks clock cycles to the CPU. Select Enabled for CPU C-States support. The options are Disabled and **Enabled**.

If the C-States feature is set to enabled, the following features will become available for configuration:

Enhanced C-States

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

C-State Auto Demotion

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

C-State Un-Demotion

This feature allows you to enable or disable the un-demotion of C-State. The options are Disabled and **C1**.

Package C-State Demotion

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

Package C-State Un-Demotion

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

C-State Pre-Wake

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

IO MWAIT Redirection

When enabled, this feature will map and send the I/O read instructions to the I/O registers. The options are **Disabled** and Enabled.

Package C-State Limit

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

GT - Power Management Control Menu

▶ GT- Power Management Control

Note: This submenu becomes configurable when the installed CPU has built-in integrated graphics.

RC6 (Render Standby)

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

Maximum GT Frequency

This feature defines the Maximum GT Frequency. Choose between 100MHz (RPN) and 1200MHz (RP0). Any value beyond this range will be clipped to its min/max supported by the CPU. The options are **Default Max Frequency** and 100MHz–1200MHz (in increments of 50MHz).

Disable Turbo GT Frequency

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

Note: This feature is available when "Maximum GT Frequency" is set to Default Max Frequency.

SATA And RST Configuration Menu

► SATA And RST Configuration

SATA Controller(s)

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

Note: If this feature is set to Enabled, the following features will become available.

Support Aggressive Link Power Management

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

SATA Port#

This feature displays the SATA device detected by the BIOS.

Note: The quantity and numbering of SATA ports can differ depending on the motherboard.

Software Preserve

This feature displays the status of software preserve of a SATA port.

Hot Plug

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

Spin Up Device

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

SATA Device Type

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

VMD Setup Menu

► VMD Configuration

To create RAID volumes, you have to enable VMD controller and map the root port of the target storage device to VMD. You can map these ports to a VMD controller:

- PCH-attached M.2-P1
- CPU-attached M.2-C1
- SATA Controller

Notes:

- After you've enabled VMD in the BIOS on a PCIe slot, this PCIe slot will be dedicated for VMD use only, and it will no longer support any PCIe device. To re-activate this slot for PCIe use, disable VMD in the BIOS.
- After you've changed the VMD configurations, you must save the changes and reboot for the changes to take effect. After rebooting, the Intel Rapid Storage Technology will appear under the Advanced menu.

Enable VMD Controller

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

Enable VMD Global Mapping (Available when Enable VMD Controller is set to "Enabled")

Use this feature to enable or disable VMD global mapping. The options are **Disabled** and **Enabled**.

Map RP BDF 0/1/0 Under VMD / Map RP BDP 128/28/0 Under VMD / Map PCH SATA Controller Under VMD

Note: This feature for mapping individual Root Port is available when "Enable VMD Global Mapping" above is set to **Disabled**.

Use this feature to map or unmap this Root Port to VMD. The options are **Disabled** and **Enabled**.

Secure Boot Menu

► Secure Boot

The following information is displayed:

- System Mode
- Secure Boot

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

Secure Boot

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

Secure Boot Mode

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

► Enter Audit Mode

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

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

► Enter Deployed Mode / Exit Deployed Mode

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

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

► Key Management

The following information is displayed:

- Vendor Keys

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

Provision Factory Defaults

Select Enabled to install the default secure boot keys when the system is in the Setup Mode. Changes take effect after you save settings and reboot the system. The options are **Disabled** and Enabled.

► Restore Factory Keys

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

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

▶ Reset To Setup Mode

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

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

▶ Enroll Efi Image

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

▶ Export Secure Boot Variables

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

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

Secure Boot variable / Size / Keys / Key Source

▶ Platform Key (PK)

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

▶ Key Exchange Keys (KEK)

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

▶ Authorized Signatures (db)

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

► **Forbidden Signatures (dbx)**

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

► **Authorized TimeStamps (dbt)**

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

► **OsRecovery Signatures (dbr)**

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

Security

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

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

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

The following information is displayed:

- Administrator Password
- User Password
- Password Description

Hard Drive Security Frozen

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

Password Check

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

Administrator Password

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

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

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

Lockdown Mode (Available when the DCMS key is activated)

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

Supernano Security Erase Configuration Menu

► Supernano Security Erase Configuration

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

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

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

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

Security Function

Select **Set Password** to set a storage device user password to enable configuring the security settings on the storage device. Select **Security Erase - Password** to enter a storage device user password to enable erasing the password and the contents previously stored in the storage device. Select **Security Erase - Without Password** to use the manufacturer default password "1111111111" as the storage device user password and enable erasing the contents of the storage device by using this default password. The options are **Disabled**, **Set Password**, **Change Password**, **Clear Password**, **Security Erase - Password**, **Security Erase - PSID**, and **Security Erase - Without Password**.

Notes:

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

Password

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

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

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

System Agent (SA) Configuration Menu

► System Agent (SA) Configuration

Vt-d

This feature displays if Vt-d is enabled or disabled.

The following information is displayed.

► PEG Port Configuration

PEG 0:6:0

PEG 0:1:0

This feature displays the PCIe graphics card information installed on a PCIe slot and detected by the BIOS.

Enable Root Port

Use this feature to enable or disable the PCIe Graphics (PEG) device in the specified port . The options are Disabled and **Enabled**.

Max Link Speed

Use this feature to select PCIe support for the device installed the M.2 specified port. The options are **Auto**, Gen1, Gen2, Gen3, Gen4, and Gen5.

ASPM (Available for PEG 0:1:0 only)

This feature configures Active State Power Management (ASPM) for the PEG port . The options are Disabled, L0s, L1, L0sL1, and **Auto**.

L1 Substages L1.1 & L1.2 (Available for PEG 0:1:0 only)

This feature configures the L1 substate for the PEG port. The options are Disabled, L1.1, and **L1.1 & L1.2**.

DMA Control Guarantee

Use this feature to enable or disable DMA Control Guarantee bit. The options are **Enabled** and Disabled.

Trusted Computing Menu

► Trusted Computing

When the TPM 2.0 (either onboard or external) is detected by your system, the following information is displayed.

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

Note: This submenu is available when the TPM 2.0 (either onboard or external) is detected by the BIOS.

Security Device Support

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

When "Security Device Support" is set to Enabled and the TPM 2.0 (either onboard or external) is detected by the BIOS, the following information is displayed.

- Active PCR banks
- Available PCR banks

Note: The following features are available when the TPM 2.0 (either onboard or external) is detected by the BIOS.

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

This feature displays the SHA-1 PCR Bank information.

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

This feature displays the SHA256 PCR Bank information.

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

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

Note: If this feature is used, your system will reboot to carry out a pending TPM operation.

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

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

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

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

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

Select Enabled for Endorsement Hierarchy support, which contains separate controls to address the user's privacy concerns because the primary keys in the hierarchy are certified by the TPM key or by a manufacturer with restrictions on how an authentic TPM (either onboard or external) that is attached to an authentic platform can be accessed and used. A primary key can be encrypted and certified with a certificate created by using TPM2_ActivateCredential, which allows the user to independently enable "flag, policy, and authorization values" without involving other hierarchies. A user with privacy concerns can disable the endorsement hierarchy while still using the storage hierarchy for TPM applications, permitting the platform software to use the TPM. The options are Disabled and **Enabled**.

TPM 2.0 InterfaceType (Available when "Security Device Support" is set to Enabled)

This feature displays the interface type of the detected TPM 2.0 module.

USB Configuration Menu

► USB Configuration

USB Configuration

The following information is displayed:

- USB Module Version
- USB Controllers
- USB Devices

XHCI Hand-off

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

USB Mass Storage Driver Support

This feature enables USB mass storage driver support. The options are Disabled and **Enabled**.

TLS Authenticate Configuration Menu

► TLS Authenticate Configuration

Use this submenu to configure Transport Layer Security (TLS) settings.

► Server CA Configuration

Use this feature to configure the client certificate that is to be used by the server.

▶ Enroll Certification

Use this feature to enroll the certificate in the system.

▶ Enroll Certification Using File

Use this feature to enroll the security certificate in the system by using a file.

Certification GUID

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

▶ Commit Changes and Exit

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

▶ Discard Changes and Exit

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

▶ Delete Certification

Use this feature to delete the certificate if a certificate has been enrolled in the system.

▶ Client Certification Configuration

Intel(R) Rapid Storage Technology Menu

Note: This submenu is available only when Advanced -> VMD setup menu -> "Enabled VMD controller" feature is set to Enabled and the changes have taken effect after you save settings and reboot the system.

Intel(R) RST xx.xx.xxxx RST VMD Driver

▶ Create RAID Volume

This submenu will only appear when VMD controller is enabled and the root port of the storage device for RAID array has been mapped under VMD. The mapped storage devices will appear in the Non-RAID Physical Disks list. For information on VMD configurations, refer to the "VMD Setup menu" feature.

Name

Enter a unique name for the RAID volume. The name must not contain space at the beginning or backslash and must be under 16 characters. The default is Volume0.

RAID Level

Select the desired RAID level for the RAID volume. The options are RAID0 (Stripe), RAID1 (Mirror), RAID5 (Parity), and RAID10 (RAID0+1). The RAID level(s) displayed is (are) based on the number of disks connected to the system.

Select Disks

To select a desired RAID disk, select X from the drop-down list. Repeat this step to select all the desired disks for the RAID volume. For RAID0/RAID1/RAID5/RAID10, the minimum number of disks required is two/two/three/four respectively.

Strip Size (Available for RAID 0/RAID 5/RAID 10 Only)

Select the desired RAID strip size for your RAID volume. The options vary according the RAID level you select.

Capacity (GB)

Enter the capacity in gigabytes (GB) of the RAID volume to be created.

► Create Volume

After finishing the configuration of the Create RAID Volume feature, select Create Volume and you will return to the previous screen displaying the information about the created RAID volume. You can click the RAID volume to view more information.

RAID Volumes

This feature displays the RAID volumes you have created.

RAID VOLUME INFO

Volume Actions

Delete

This feature allows you to delete a RAID volume. When asked to confirm deletion of the RAID volume, select Yes to delete the RAID volume.

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

RAID Member Disks

This feature displays the RAID member disks.

Reset to non-RAID

This feature allows you to reset a RAID member disks to non-RAID disk. When asked to remove the RAID structure on the disk, select Yes to reset the disk.

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

Non-RAID Physical Disks

This feature lists the disks which have not been added to a RAID volume. Select a non-RAID physical disk and you can view the disk information.

Driver Health Menu

► Driver Health

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

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

4.6 H/W Monitor Menu



Figure 4-14. H/W Monitor Screen for for C9Z890-MW and C9B860-MW

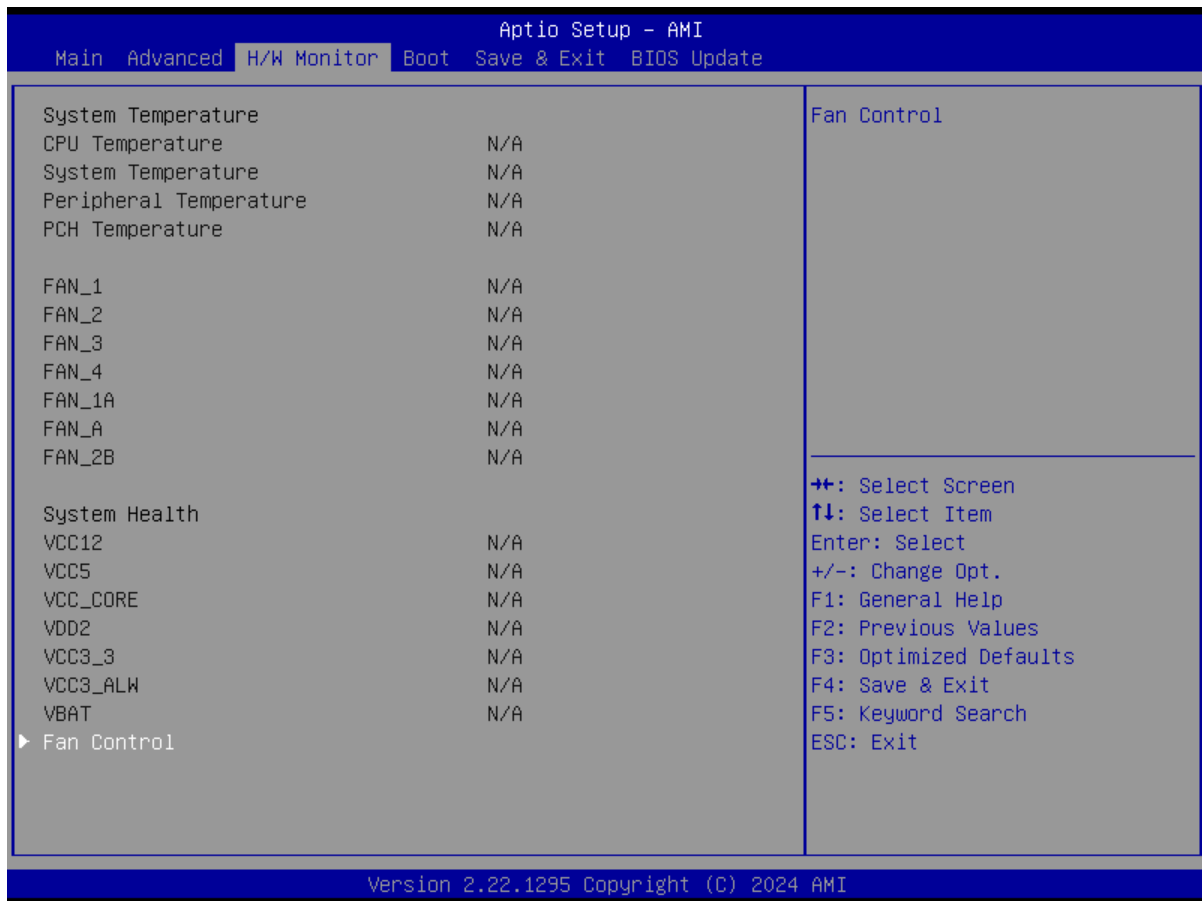


Figure 4-15. H/W Monitor Screen for C9Q870-M

System Temperature

The following information is displayed:

- CPU Temperature: The CPU temperature detected by PECI.
- System Temperature: The system internal temperature.
- Peripheral Temperature: The detected peripheral device temperature.
- PCH Temperature: the detected PCH chip temperature.
- FAN #: The detected RPM of the fan.

System Health

The voltages for the following items is displayed:

- VCC12
- VCC5
- VCC_CORE

- VDD2
- VCC3_3
- VCC3_ALW
- VBAT

► Fan Control

Fan Speed Control Mode

This feature allows you to decide how the system controls the speeds of the onboard fans. The CPU temperature and the fan speed are correlative. When the CPU on-die temperature increases, the fan speed will also increase for effective system cooling. Select "Full Speed" to allow the onboard fans to run at full speed (of 100% Pulse Width Modulation Duty Cycle) for maximum cooling. This setting is recommended for special system configuration or debugging. Select "Silent" to optimize for minimal fan noise and Customize to enter user-specific settings. The options are **Silent**, Performance, Full Speed, and Customize.

Thermal Zone 1/2/3 Control

Temperature 1/2 / PWM1/2 (Available when "Fan Speed Control Mode" is set to Customize)

Use this feature to set the temperature. The value should be set between 20–100.

4.7 Boot

Use this menu to configure Boot settings.

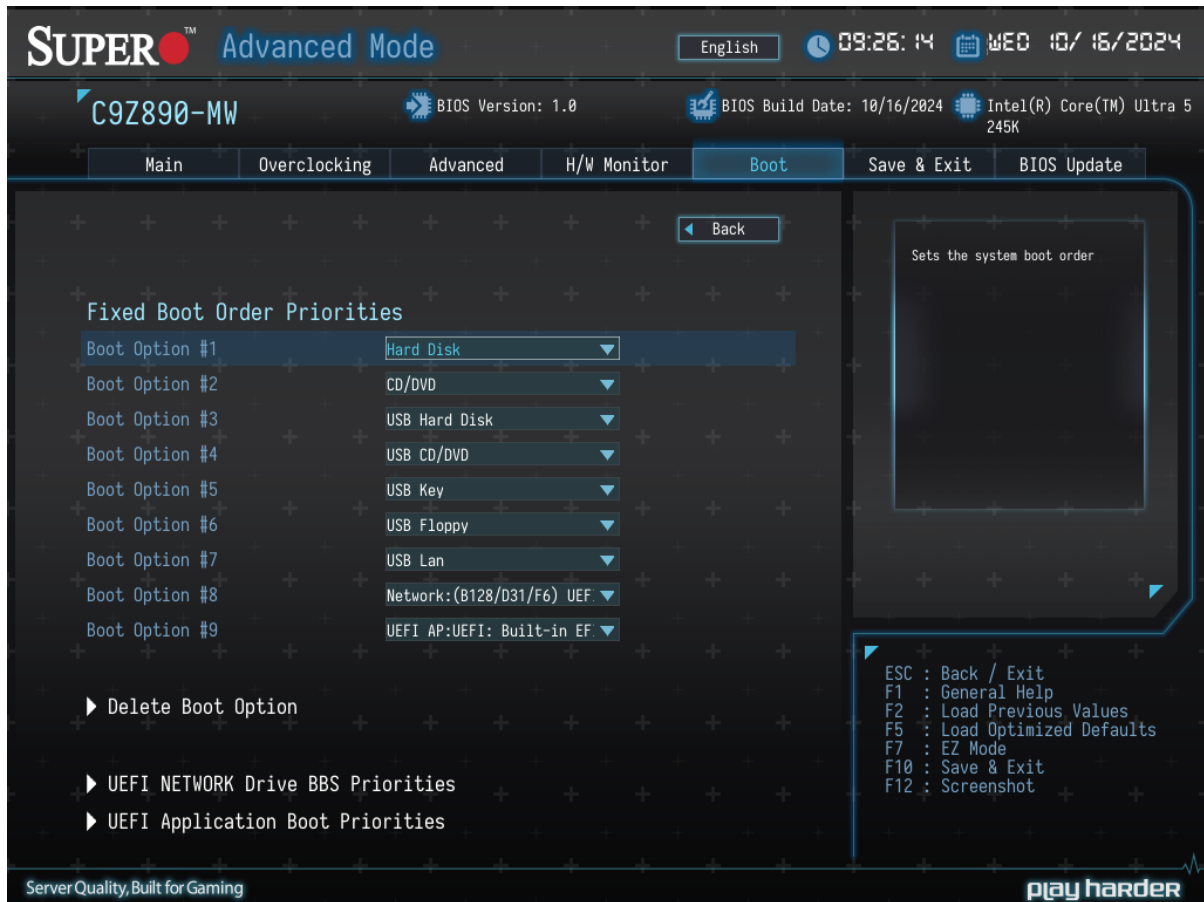


Figure 4-16. Boot Screen for C9Z890-MW and C9B860-MW

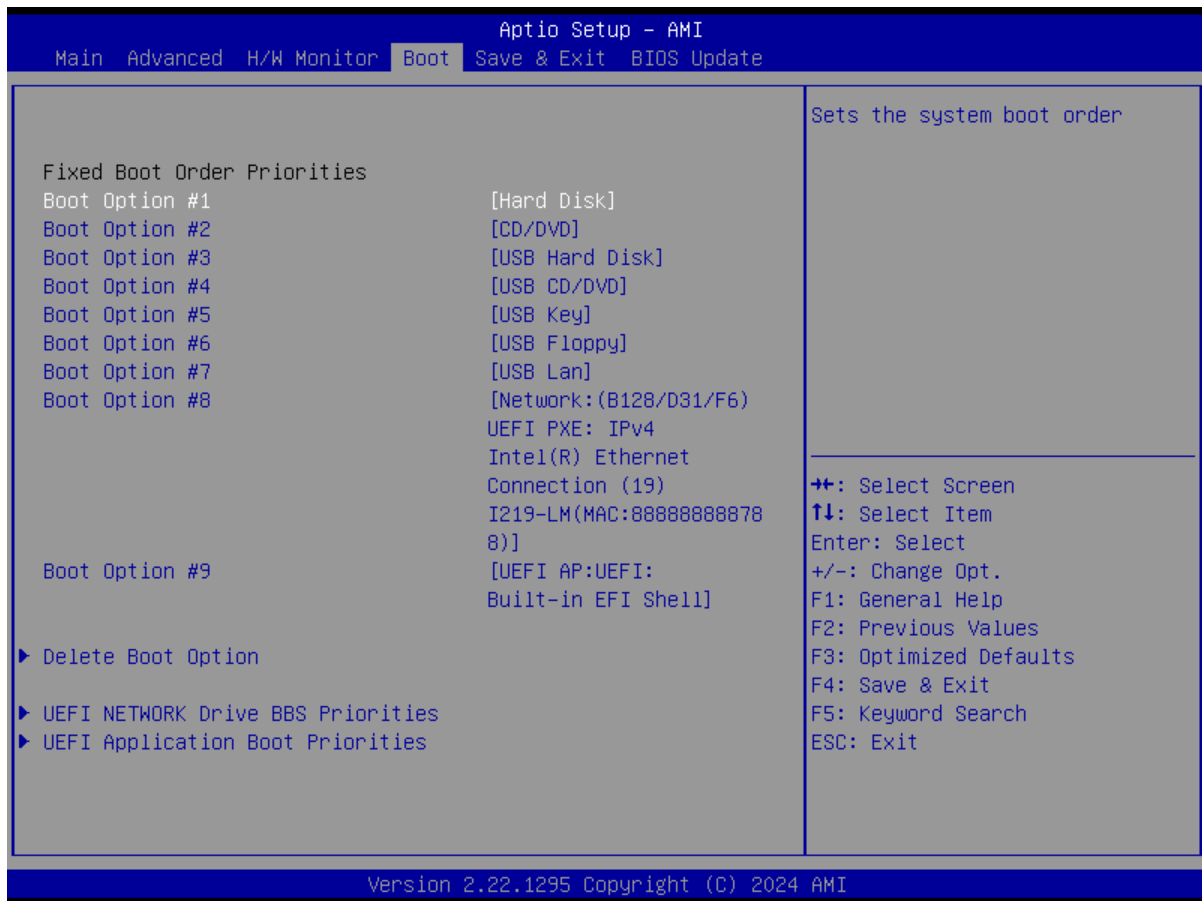


Figure 4-17. Boot Screen for C9Q870-M

FIXED BOOT ORDER Priorities

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

- Boot Option #1 – Boot Option #9

► Add New Boot Option

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

Note: This submenu is available when any storage device is detected by the BIOS.

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

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

▶ Delete Boot Option

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

Delete Boot Option

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

▶ UEFI NETWORK Drive BBS Priorities

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

▶ UEFI Application Boot Priorities

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

▶ UEFI USB Key Drive BBS Priorities

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

▶ UEFI Hard Disk Drive BBS Priorities

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

4.8 Save & Exit

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

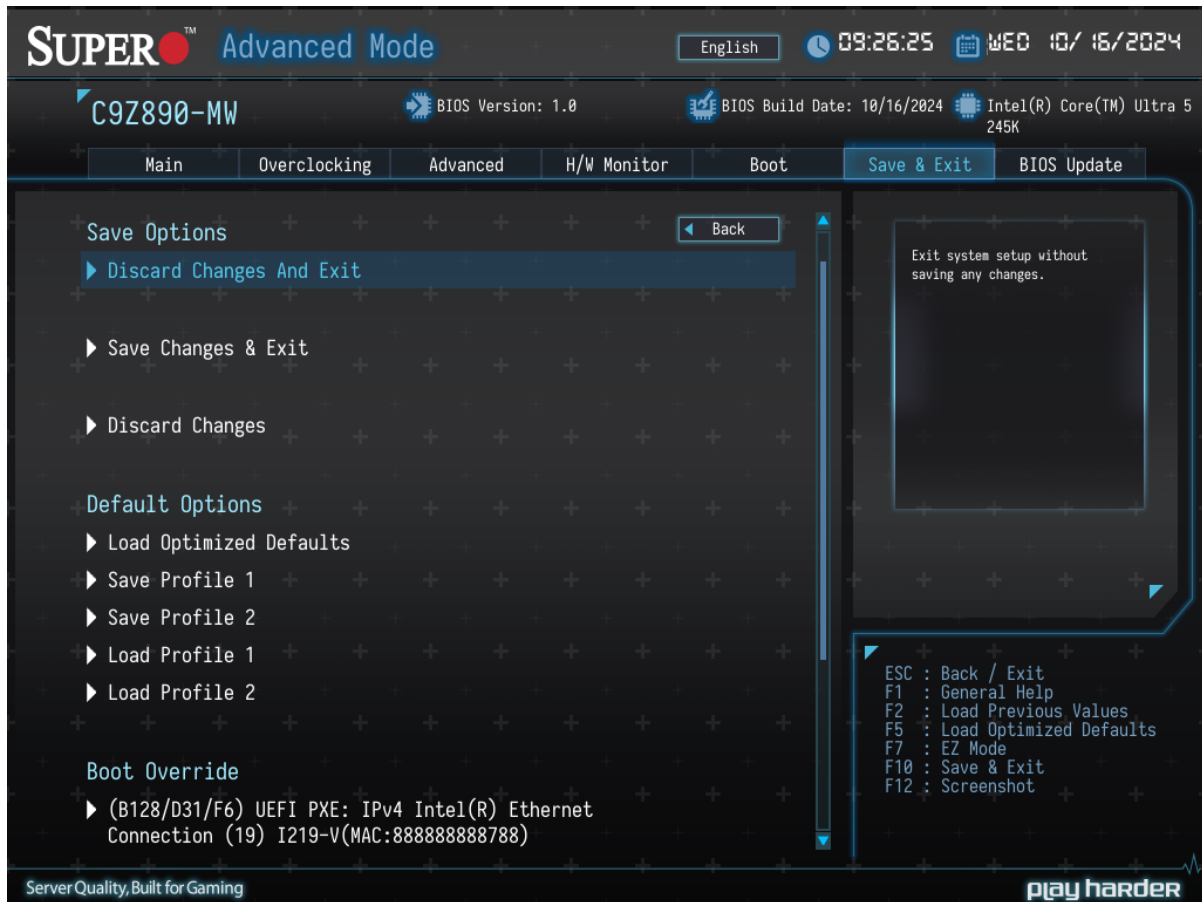


Figure 4-18. Save & Exit Screen for C9Z890-MW and C9B860-MW

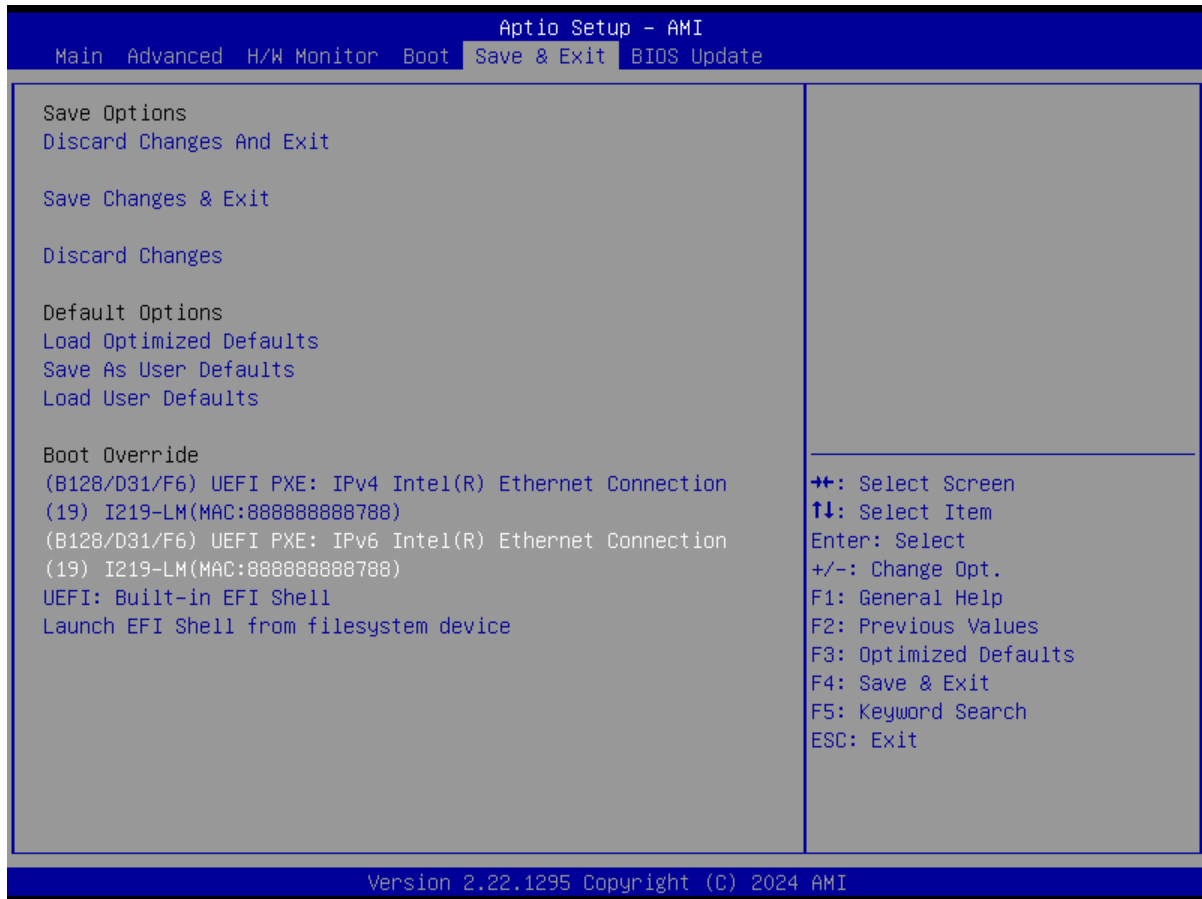


Figure 4-19. Save & Exit Screen for C9Q870-M

Save Options

Discard Changes and Exit

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

Save Changes and Reset

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

Save Changes

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

Discard Changes

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

Default Options

Restore Optimized Defaults

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

Note: Reboot the system for the changes to take effect to ensure that the system has the optimized default settings.

Save as User Defaults

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

Restore User Defaults

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

Boot Override

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

Launch EFI Shell from filesystem device

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

4.9 BIOS Update

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

Use this menu to update the BIOS.

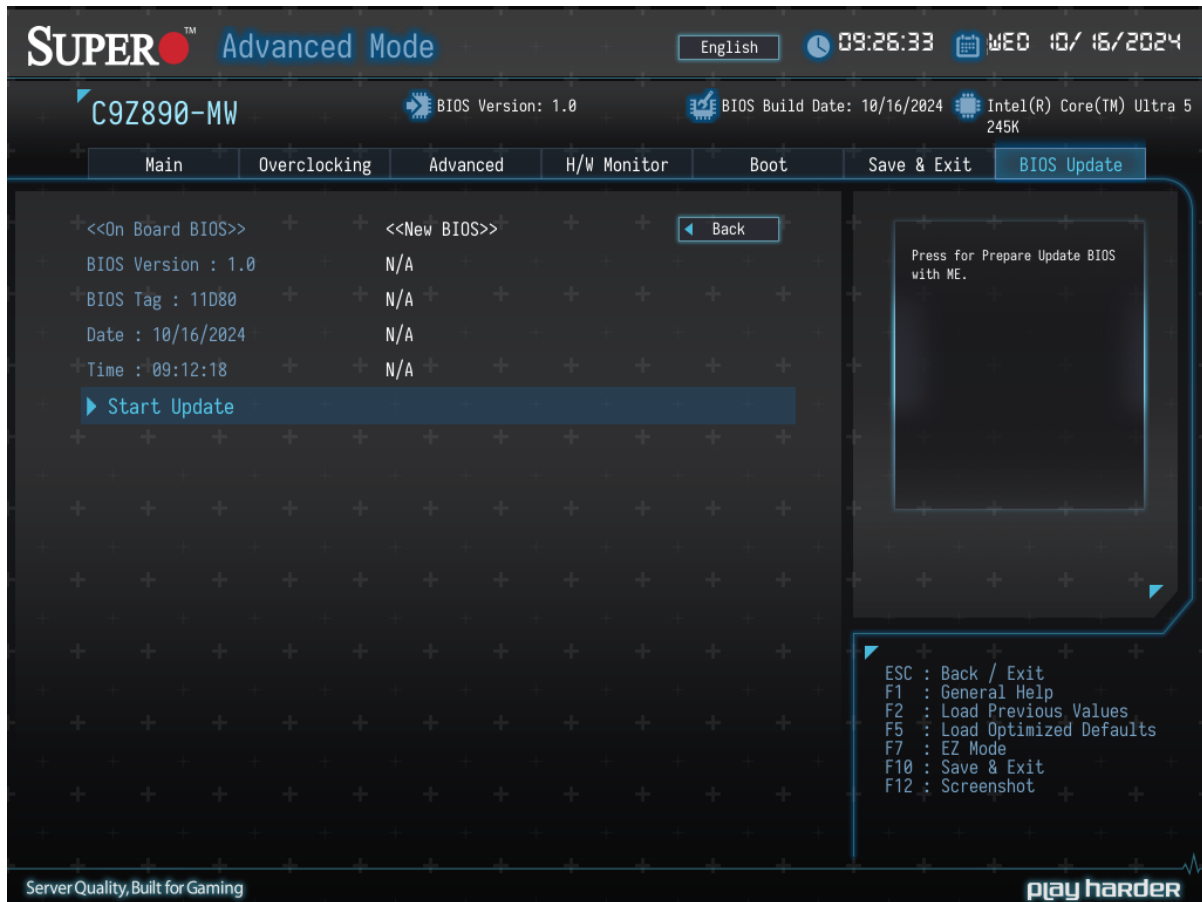


Figure 4-20. BIOS Update Screen for C9Z890-MW and C9B860-MW

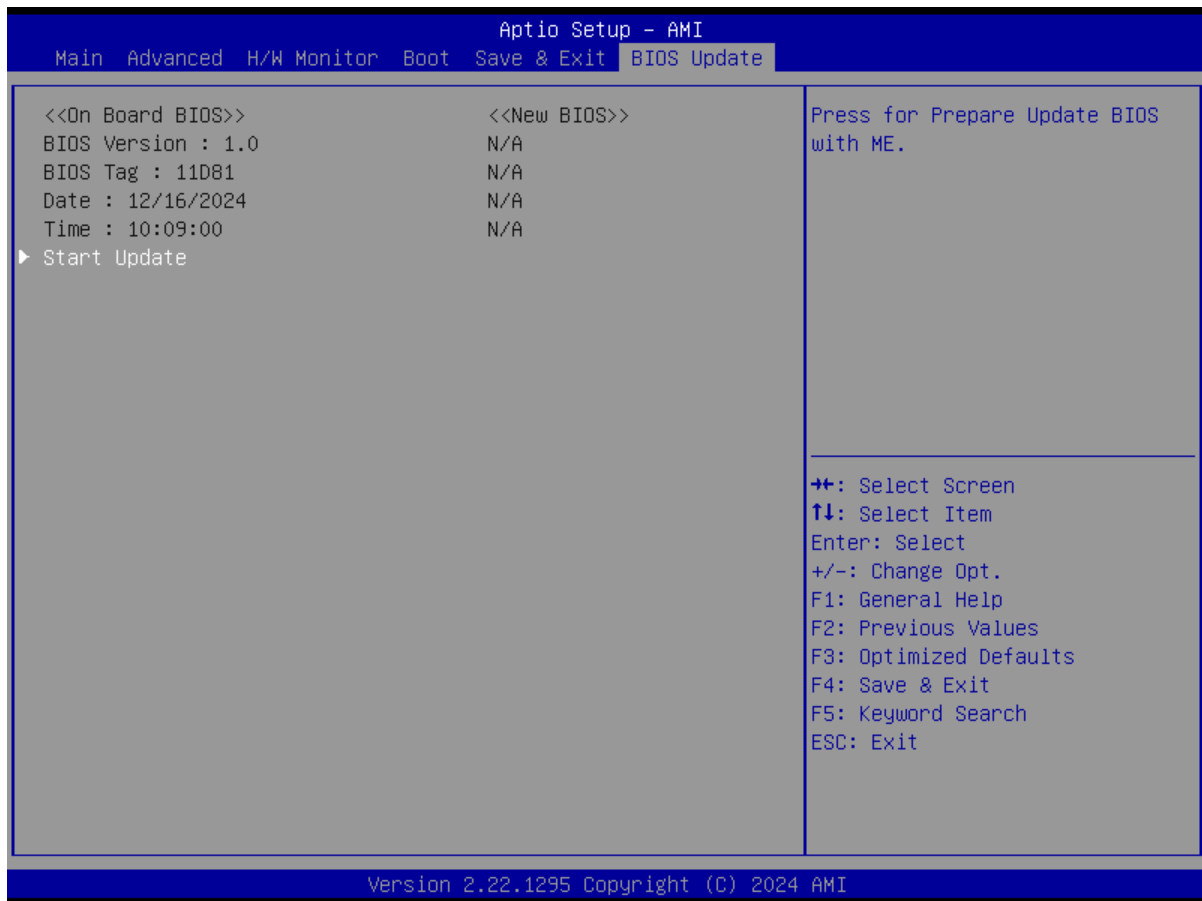


Figure 4-21. BIOS Update Screen for C9Q870-M

The following information is displayed:

- BIOS Version
- BIOS Tag
- Date
- Time

► Start Update

Before proceeding, download and unzip the BIOS file onto a USB flash drive formatted with the FAT/FAT32 file system. Then follow the steps below to update the BIOS.

1. Click "Start Update" to enter the SuperFlash utility.
2. At the prompt, select "Yes" to reboot and configure the system to Flash mode. Select "No" to cancel and view the BIOS information.

3. After the system reboots to the flash mode, the system is ready to flash the BIOS. At the prompt, select "OK" to continue.
4. Select "Select File" and then in the pop-up menu select the USB flash drive that contains the BIOS file (e.g., "General USB Flash Disk 1.00").
5. Select the filename of the BIOS file (e.g., "C9B860-MW") in the pop-up menu.
6. Select "Start Flash" to flash the BIOS. A pop-up message will appear to show the progress of the BIOS flash.
7. If the flash is successful, a pop-up message will indicate the result. Select "OK" to complete the BIOS flash and to reboot the system. Check the System Information section of the BIOS Setup to check for the correct BIOS version.

Appendix A:

BIOS Codes

For information about BIOS codes for the C9Z890-MW/C9B860-MW/C9Q870-M motherboard, refer to the following content.

Additional BIOS POST Codes

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

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

Appendix B:

Software

After the C9Z890-MW/C9B860-MW/C9Q870-M motherboard has been installed, you can install the Operating System (OS), configure RAID settings, and install the drivers.

Microsoft Windows OS Installation

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

Installing the OS

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

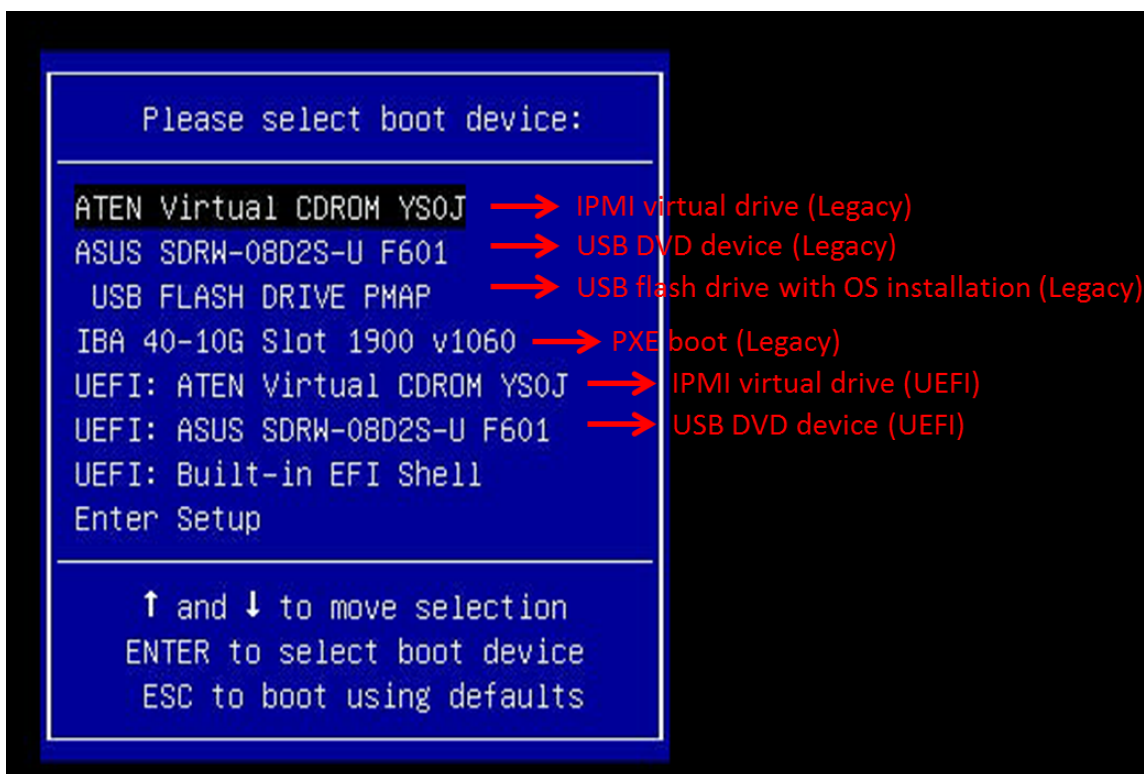


Figure B-1. Selecting the Boot Device

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

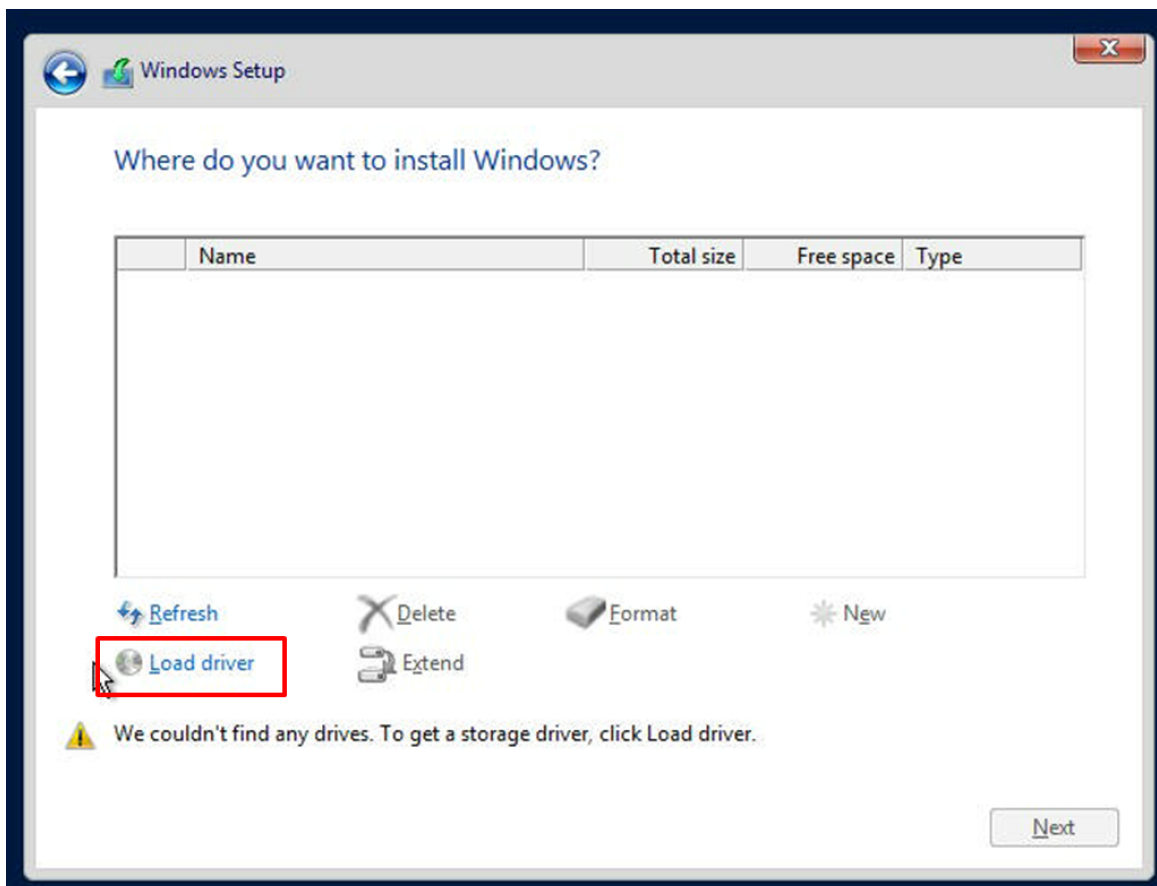


Figure B-2. Loading the Driver Link

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

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

Driver Installation

The Supermicro website contains drivers and utilities for your system at the following page:

<https://www.supermicro.com/wdl>.

Some of these drivers and utilities must be installed, such as the chipset driver. After accessing the website, go into the CDR_Images (in the parent directory of the above link) and locate the ISO file for your motherboard. Download this file to a USB flash or media drive. You may also use a utility to extract the ISO file if preferred.

Another option is to go to the Supermicro website at <https://www.supermicro.com>. Find the product page for your motherboard and download the latest drivers and utilities. Insert the flash drive or disk, and the screenshot shown below should appear.

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.

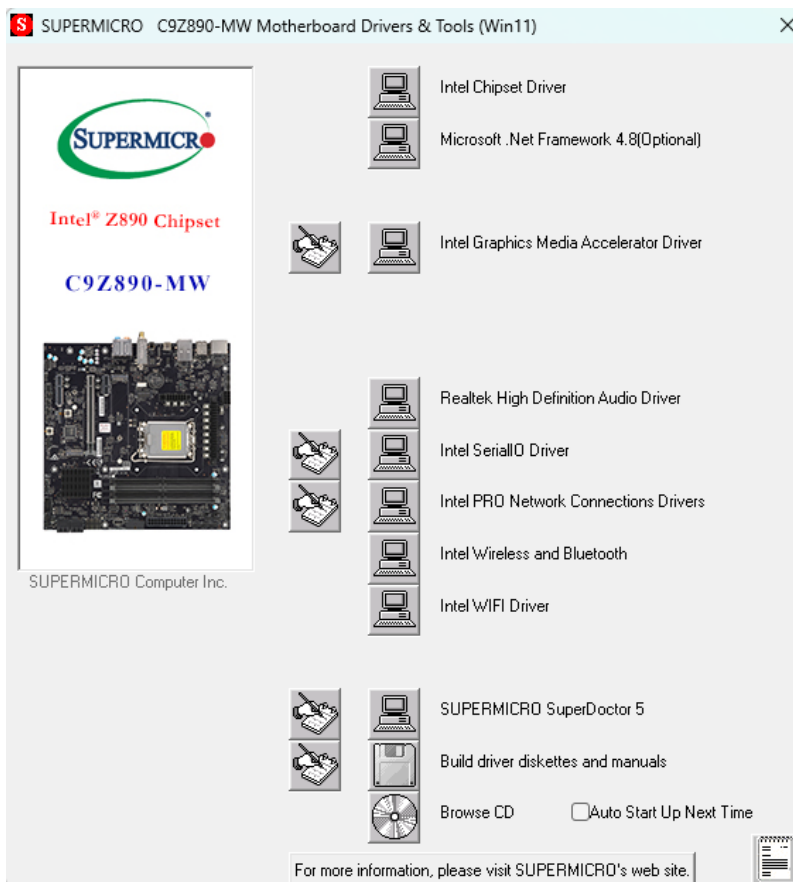


Figure B-3. Driver & Tools Installation Screen

After installing all the drivers showing on the Drivers & Tools screen, go to Windows Device Manager and manually install the drivers for the following devices:

- For "Base System Device" under "Other devices", right-click it and select Update Driver. Then navigate to the "gna..." folder to install the Intel GNA Scoring Accelerator driver.
- For "PCI Device" under "Other devices", right-click it and select Update Driver. Then navigate to the "npudriver..." folder to install the Intel NPU driver.

SuperDoctor 5

The Supermicro SuperDoctor 5 is a program that functions in a command-line or web-based interface for Windows and Linux operating systems. The program monitors such system health information as CPU temperature, system voltages, system power consumption, fan speed, and

provides alerts via email or Simple Network Management Protocol (SNMP).

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

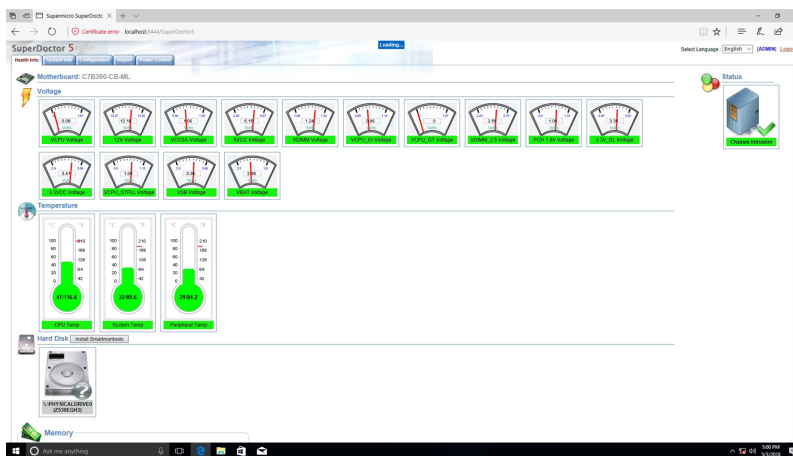


Figure B-4. SuperDoctor 5 Interface Display Screen (Health Information)

Appendix C:

Standardized Warning Statements

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

Read this section in its entirety before installing or configuring components in the Supermicro C9Z890-MW/C9B860-MW/C9Q870-M motherboard.

These warnings may also be found on our website at the following page:

https://www.supermicro.com/about/policies/safety_information.cfm

Battery Handling



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

تحذير! يوجد خطر حدوث انفجار إذا تم استبدال البطارية بنوع غير صحيح. استبدل البطارية بنفس النوع أو نوع مكافئ موصى به من قبل الشركة المصنعة فقط. يجب التخلص من البطاريات المستخدمة وفقاً لإرشادات الجهة المصنعة.

警告！如果更换的电池类型不正确，有爆炸危险。更换电池时，请使用制造商推荐的相同或同等型号的电池。请按制造商的说明处理废旧电池。

警告！如果更換的電池類型不正確，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。

Advarsel! Der er risiko for eksplosion, hvis batteriet skiftes med et batteri af den forkerte type. Batteriet må kun skiftes med et batteri af samme eller tilsvarende type, der anbefales af producenten. Opbrugte batterier skal bortskaffes i henhold til vejledningerne fra producenten.

Waarschuwing! Er bestaat een explosiegevaar als de batterij wordt vervangen door een onjuist type. Vervang de batterij alleen door hetzelfde type of een soortgelijk type aanbevolen door de fabrikant. Verwijder gebruikte batterijen overeenkomstig de instructies van de fabrikant.

Varoitus! Väärän tyyppisen akun käyttö voi aiheuttaa räjähdysvaaran. Vaihda akku vain valmistajan suositteluun samaan tai vastaavaan tyyppiseen akkuun. Hävitä käytetyt paristot valmistajan ohjeiden mukaisesti.

Attention! Il y a un risque d'explosion si la batterie est remplacée par une d'un type incorrect. Remplacez la batterie uniquement par une d'un type identique ou équivalent recommandé par le fabricant. Éliminez les batteries usagées conformément aux instructions du fabricant.

Warnung! Es besteht Explosionsgefahr, wenn die Batterie durch einen falschen Typ ersetzt wird. Ersetzen Sie die Batterie ausschließlich durch denselben oder einen vom Hersteller empfohlenen gleichwertigen Typ. Entsorgen Sie gebrauchte Batterien gemäß den Anweisungen des Herstellers.

אזהרה! קיימת סכנת פיצוץ אם הסוללה תוחלף בסוללה מסוג שגוי. החלף את הסוללה רק בסוללה מאותו סוג או בסוללה מקבילה המומלצת על ידי היצרן. השלך סוללות משומשות בהתאם להוראות היצרן.

चेतावनी! यदि बैटरी को गलत प्रकार से बदला जाता है तो विस्फोट का जोखिम है। बैटरी को केवल निर्माता द्वारा अनुशंसित समान या समकक्ष प्रकार से ही बदलें। इस्तेमाल की गई बैटरियों का निपटान निर्माता के निर्देशों के अनुसार करें।

警告！電池を間違ったタイプに交換すると爆発する危険があります。交換する電池はメーカーが推奨するタイプ、または同等のものを使用してください。使用済み電池は、メーカーの指示に従って廃棄してください。

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

Advarsel! Det er fare for eksplosjon hvis batteriet byttes ut med et av feil type. Batterier skal kun byttes ut med et av lik eller tilsvarende type, som anbefalt av produsenten. Kast brukte batterier i henhold til produsentens instruksjoner.

¡Advertencia! Existe riesgo de explosión si se sustituye la batería por una de tipo incorrecto. Reemplace la batería únicamente con el mismo tipo o uno equivalente recomendado por el fabricante. Deseche las baterías usadas de acuerdo con las instrucciones del fabricante.

Varning! Det finns risk för explosion om batteriet byts ut mot en felaktig typ. Byt endast ut batteriet mot ett batteri av samma eller likvärdig typ som rekommenderas av tillverkaren. Kassera förbrukade batterier i enlighet med tillverkarens anvisningar.

Connection to Earth



Warning! Equipment shall be connected to an Earth mains socket-outlet.

تحذير! يجب توصيل الأجهزة بمقبس كهربائي أرضي.

警告！设备应连接到接地电源插座。

警告！應將設備連接至接地電源插座。

Advarsel! Dette udstyr skal sluttes til en jordforbundet stikkontakt.

Waarschuwing! De apparatuur moet worden aangesloten op een geaard netstopcontact.

Varoitus! Laitteet on kytkettävä maadoitettuun pistorasiaan.

Attention! L'équipement doit être connecté à une prise de courant avec mise à la terre.

Warnung! Das Gerät muss an eine geerdete Netzsteckdose angeschlossen werden.

אזהרה! יש לחבר את הציוד לשקע חשמל עם הארקה.

चेतावनी! उपकरण को एक अर्थ में सॉकेट-आउटलेट से जोड़ा जाना चाहिए।

警告！機器は、接地主電源コンセントに接続するものとします。

경고! 장비는 접지된 전원 콘센트에 연결해야 합니다.

Advarsel! Utstyret skal kobles til en jordet stikkontakt.

¡Advertencia! El equipo deberá conectarse a una toma de corriente con conexión a tierra.

Varning! Utrustningen ska vara ansluten till ett jordat eluttag.

Product Disposal



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

تحذير! يجب التخلص النهائي من هذا المنتج وفقاً لجميع القوانين واللوائح الوطنية.

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。

Advarsel! Dette produkt skal bortskaffes i henhold til alle nationale love og regler.

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

Varoitus! Tämän tuotteen lopullinen hävittäminen on suoritettava kaikkien kansallisten lakien ja määräysten mukaisesti.

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.

Warnung! Die endgültige Entsorgung dieses Produkts muss gemäß allen nationalen Gesetzen und Vorschriften erfolgen.

אזהרה! סילוק סופי של מוצר זה חייב להתבצע בהתאם לכל החוקים והתקנות הלאומיים.

चेतावनी! इस उत्पाद का अंतिम निपटान सभी राष्ट्रीय कानूनों और नियमों के अनुसार किया जाना चाहिए।

警告！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。

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

Advarsel! Når produktet til slutt skal kasseres, må det håndteres i henhold til alle nasjonale lover og forskrifter.

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

Varning! Slutgiltigt bortskaffande av denna produkt ska ske i enlighet med alla nationella lagar och förordningar.

Appendix D:

UEFI BIOS Recovery

The following content contains information on BIOS configuration with the C9Z890-MW/C9B860-MW/C9Q870-M motherboard.

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

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Overview

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

Recovering the UEFI BIOS Image

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

Notes:

- Follow the BIOS recovery instructions for BIOS recovery when the main BIOS block crashes.
- If the recovery block processes fail, you will need to follow the procedures to make a Returned Merchandise Authorization (RMA) request. Refer to the instructions under ["Returning Merchandise for Service" on page 87](#).

Recovering the Main BIOS Block with a USB Device

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

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

To perform UEFI BIOS recovery using a USB device, follow the instructions below.

Use a different machine to download the BIOS package for your motherboard or your system from the product page available on our website at www.supermicro.com.

1. Extract the BIOS package to a USB device. Copy the BIOS ROM file [BIOSname#.###] that is included in the BIOS package into the Root "\" directory of the USB device.
2. Rename the BIOS ROM file [BIOSname#.###] in the root directory to SUPER.ROM for BIOS recovery use.

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

3. Insert the USB device that contains the SUPER.ROM file into the system before you power on the system or when the following screen appears.



Figure D-1. Startup Screen

4. After locating the SUPER.ROM file, the system will enter the BIOS Recovery menu. Select the item "Proceed with flash update" and press the <Enter> key.

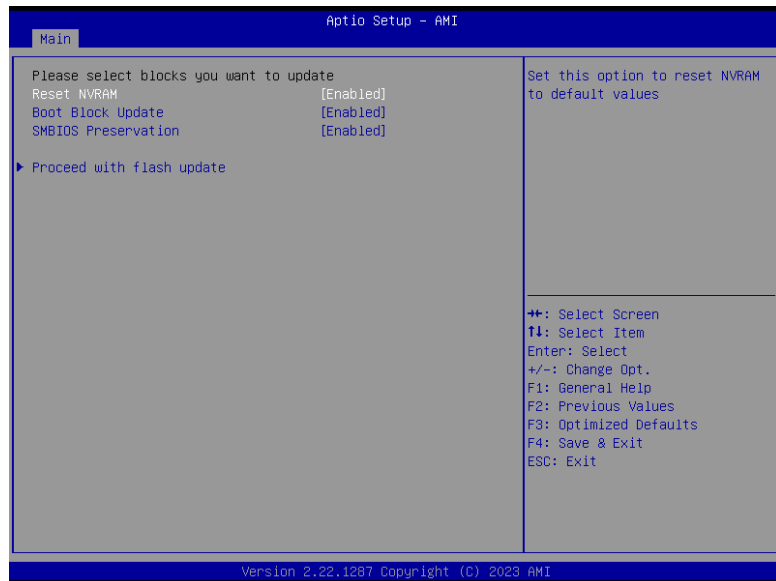


Figure D-2. BIOS Recovery Menu

5. You will see the BIOS recovery progress as shown in the screen below. Wait for the BIOS flashing process to complete.

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

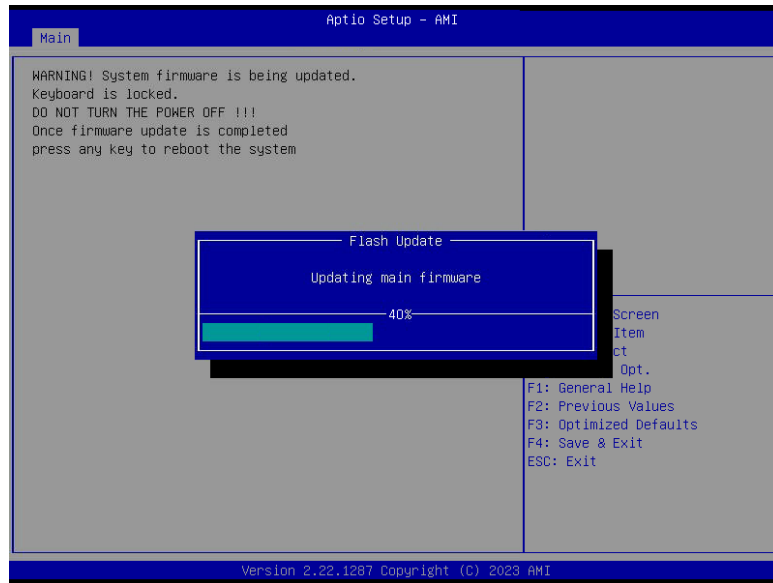


Figure D-3. BIOS Recovery In Progress Screen

6. After the BIOS recovery process is complete, press any key to reboot the system.

Note: After BIOS recovery, it is recommended that you update your BIOS.