



CARAM5-M

USER'S MANUAL

Revision 1.0a (MNL-2819)

The information in this User's Manual has been carefully reviewed and is believed to be accurate. The vendor assumes no responsibility for any inaccuracies that may be contained in this document, and makes no commitment to update or to keep current the information in this manual, or to notify any person or organization of the updates. Note: For the most up-to-date version of this manual, see our website at <https://www.supermicro.com>.

Super Micro Computer, Inc. ("Supermicro") reserves the right to make changes to the product described in this manual at any time and without notice. This product, including software and documentation, is the property of Supermicro and/or its licensors, and is supplied only under a license. Any use or reproduction of this product is not allowed, except as expressly permitted by the terms of said license.

IN NO EVENT WILL Super Micro Computer, Inc. BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, SPECULATIVE OR CONSEQUENTIAL DAMAGES ARISING FROM THE USE OR INABILITY TO USE THIS PRODUCT OR DOCUMENTATION, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN PARTICULAR, SUPER MICRO COMPUTER, INC. SHALL NOT HAVE LIABILITY FOR ANY HARDWARE, SOFTWARE, OR DATA STORED OR USED WITH THE PRODUCT, INCLUDING THE COSTS OF REPAIRING, REPLACING, INTEGRATING, INSTALLING OR RECOVERING SUCH HARDWARE, SOFTWARE, OR DATA.

Any disputes arising between manufacturer and customer shall be governed by the laws of Santa Clara County in the State of California, USA. The State of California, County of Santa Clara shall be the exclusive venue for the resolution of any such disputes. Supermicro's total liability for all claims will not exceed the price paid for the hardware product.

FCC Statement: This equipment has been tested and found to comply with the limits for a Class A or Class B digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in industrial environment for Class A device or in residential environment for Class B device. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's instruction manual, may cause harmful interference with radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case you will be required to correct the interference at your own expense.

California Best Management Practices Regulations for Perchlorate Materials: This Perchlorate warning applies only to products containing CR (Manganese Dioxide) Lithium coin cells. "Perchlorate Material-special handling may apply. See <https://www.dtsc.ca.gov/hazardouswaste/perchlorate>".



WARNING: This product can expose you to chemicals including lead, known to the State of California to cause cancer and birth defects or other reproductive harm. For more information, go to <https://www.P65Warnings.ca.gov>.



AVERTISSEMENT : Ce produit peut vous exposer à des agents chimiques, y compris le plomb, identifié par l'État de Californie comme pouvant causer le cancer, des malformations congénitales ou d'autres troubles de la reproduction. Pour de plus amples informations, prière de consulter <https://www.P65Warnings.ca.gov>.

The products sold by Supermicro are not intended for and will not be used in life support systems, medical equipment, nuclear facilities or systems, aircraft, aircraft devices, aircraft/emergency communication devices or other critical systems whose failure to perform be reasonably expected to result in significant injury or loss of life or catastrophic property damage. Accordingly, Supermicro disclaims any and all liability, and should buyer use or sell such products for use in such ultra-hazardous applications, it does so entirely at its own risk. Furthermore, buyer agrees to fully indemnify, defend and hold Supermicro harmless for and against any and all claims, demands, actions, litigation, and proceedings of any kind arising out of or related to such ultra-hazardous use or sale.

Manual Revision 1.0a

Release Date: May 11, 2026

Unless you request and receive written permission from Super Micro Computer, Inc., you may not copy any part of this document. Information in this document is subject to change without notice. Other products and companies referred to herein are trademarks or registered trademarks of their respective companies or mark holders.

Copyright © 2026 by Super Micro Computer, Inc.
All rights reserved.

Published in the United States of America

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 CARAM5-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
- 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 9
- If you have any feedback on Supermicro product manuals, contact our writing team at: Techwriterteam@supermicro.com

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

Conventions Used in the Manual

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



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



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



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.

Contents

Contacting Supermicro	9
Chapter 1: Introduction	10
1.1 Quick Reference	11
Motherboard Layout	11
Quick Reference Table	13
Motherboard Block Diagram	15
1.2 Motherboard Features	16
1.3 Platform Overview	18
1.4 Special Features	19
Recovery from AC Power Loss	19
1.5 System Health Monitoring	20
Onboard Voltage Monitors	20
Fan Status Monitor with Firmware Control	20
Environmental Temperature Control	20
1.6 ACPI Features	21
Chapter 2: Component Installation	22
2.1 Static-Sensitive Devices	24
Precautions	24
Unpacking	24
2.2 Motherboard Installation	25
Tools Needed	25
Location of Mounting Holes	25
Installing the Motherboard	25
2.3 Processor and Heatsink Installation	27
Preparing the Processor Socket	27
The AMD EPYC 4004 / 4005 or Ryzen 7000 / 9000 Series Processor	27
Overview of the Processor Socket	28
Overview of the Heatsink	29
Installing the Processor	29
Installing the Heatsink	32
2.4 Memory Support and Installation	35

Memory Support	35
General Guidelines for Optimizing Memory Performance	35
DIMM Population	36
DIMM Installation	37
DIMM Removal	40
2.5 Battery Removal and Installation	41
Battery Removal	41
Proper Battery Disposal	41
Battery Installation	41
2.6 Connections, Jumpers, and LEDs	42
Power Supply and Power Connections	42
Power Supply	42
Power Connectors	42
Headers and Connections	43
Audio Front Panel Header	43
COM Header	44
Fan Headers	44
Onboard Battery (BT1)	45
PCIe M.2 Connectors (M.2-C1, M.2-P1)	45
Standby Power Header	45
TPM/Port 80 Header	45
USB Ports (USB0~3, USB4~5, USB6~7, USB8~9, USB10~11)	46
I/O Ports	48
Jumper Settings	48
CMOS Clear	49
Watchdog Timer	50
LED Indicators	50
Power Fail/Fan Fail LED	50
Onboard Power LED	50
Chapter 3: Troubleshooting	52
3.1 Troubleshooting Procedures	53
Before Power On	53
No Power	53
No Video	53

System Boot Failure	53
Memory Errors	54
Losing the System's Setup Configuration	54
If the System Becomes Unstable	54
3.2 Technical Support Procedures	56
3.3 Motherboard Battery	57
3.4 Where to Get Replacement Components	58
3.5 Returning Merchandise for Service	59
3.6 Feedback	60
Chapter 4: UEFI BIOS	61
4.1 Introduction	62
Starting the Setup Utility	62
4.2 Main Setup	63
4.3 Advanced Setup Configurations	65
Boot Feature	65
CPU Configuration	67
North Bridge	68
Trusted Computing	69
AMD fTPM Configuration	70
IT5631 Super IO Configuration	70
Serial Port Console Redirection	71
SATA Configuration	71
PCIe/PCI/PnP Configuration	71
USB Configuration	73
Network Configuration	73
HTTP Boot Configuration	75
Supermicro KMS Server Configuration Menu	76
Super-Guardians Configuration Menu	78
Realtek PCIe 5 GBE Family Controller	79
TLS Authenticate Configuration	80
Driver Health	80
4.4 Thermal & Fan	80
Fan Control	82
4.5 Security	83

4.6 Boot	85
4.7 Save & Exit	87
Appendix A: Software	89
Microsoft Windows OS Installation	89
Installing the OS	89
Driver Installation	91
Appendix B: Standardized Warning Statements	92
Battery Handling	92
Product Disposal	94

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.

1.1 Quick Reference	11
Motherboard Layout	11
Quick Reference Table	13
Motherboard Block Diagram	15
1.2 Motherboard Features	16
1.3 Platform Overview	18
1.4 Special Features	19
Recovery from AC Power Loss	19
1.5 System Health Monitoring	20
Onboard Voltage Monitors	20
Fan Status Monitor with Firmware Control	20
Environmental Temperature Control	20
1.6 ACPI Features	21

1.1 Quick Reference

For details on the CARAM5-M motherboard layout, features, and other quick reference information, refer to the content below.

Motherboard Layout

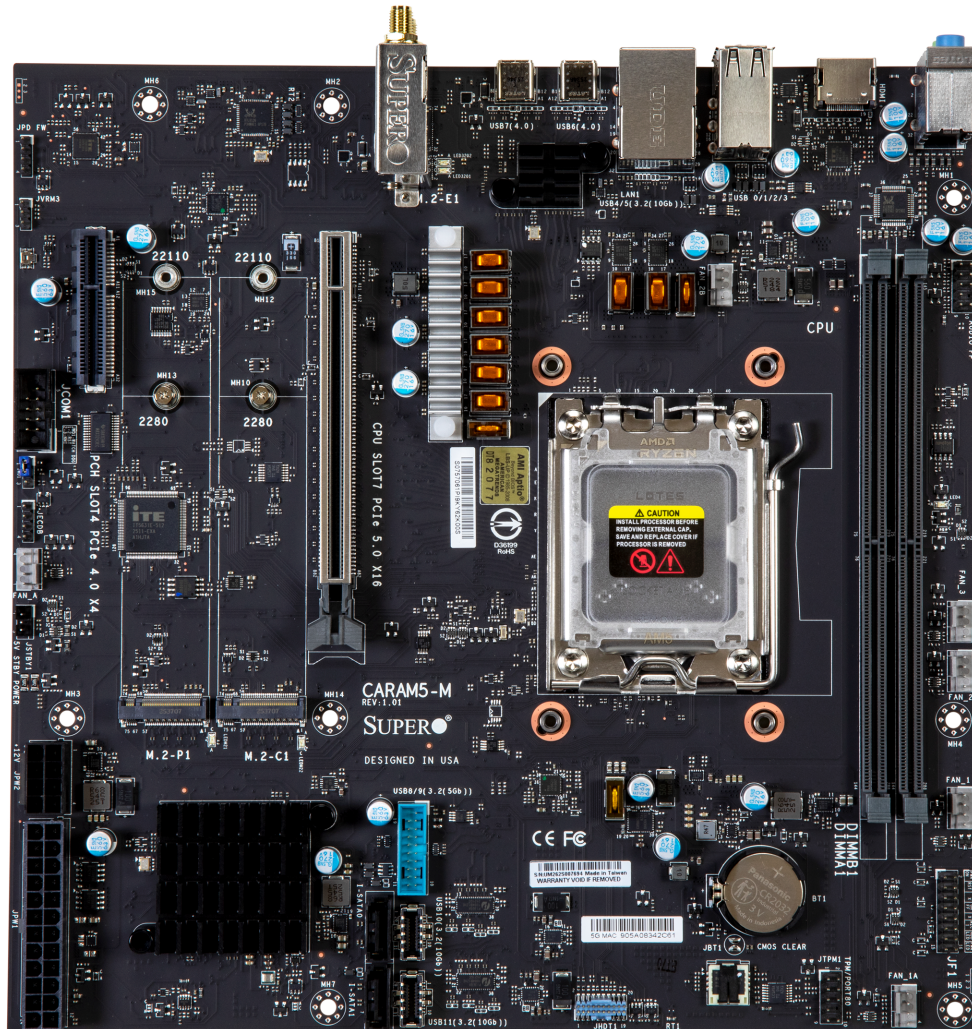


Figure 1-1. Motherboard Image

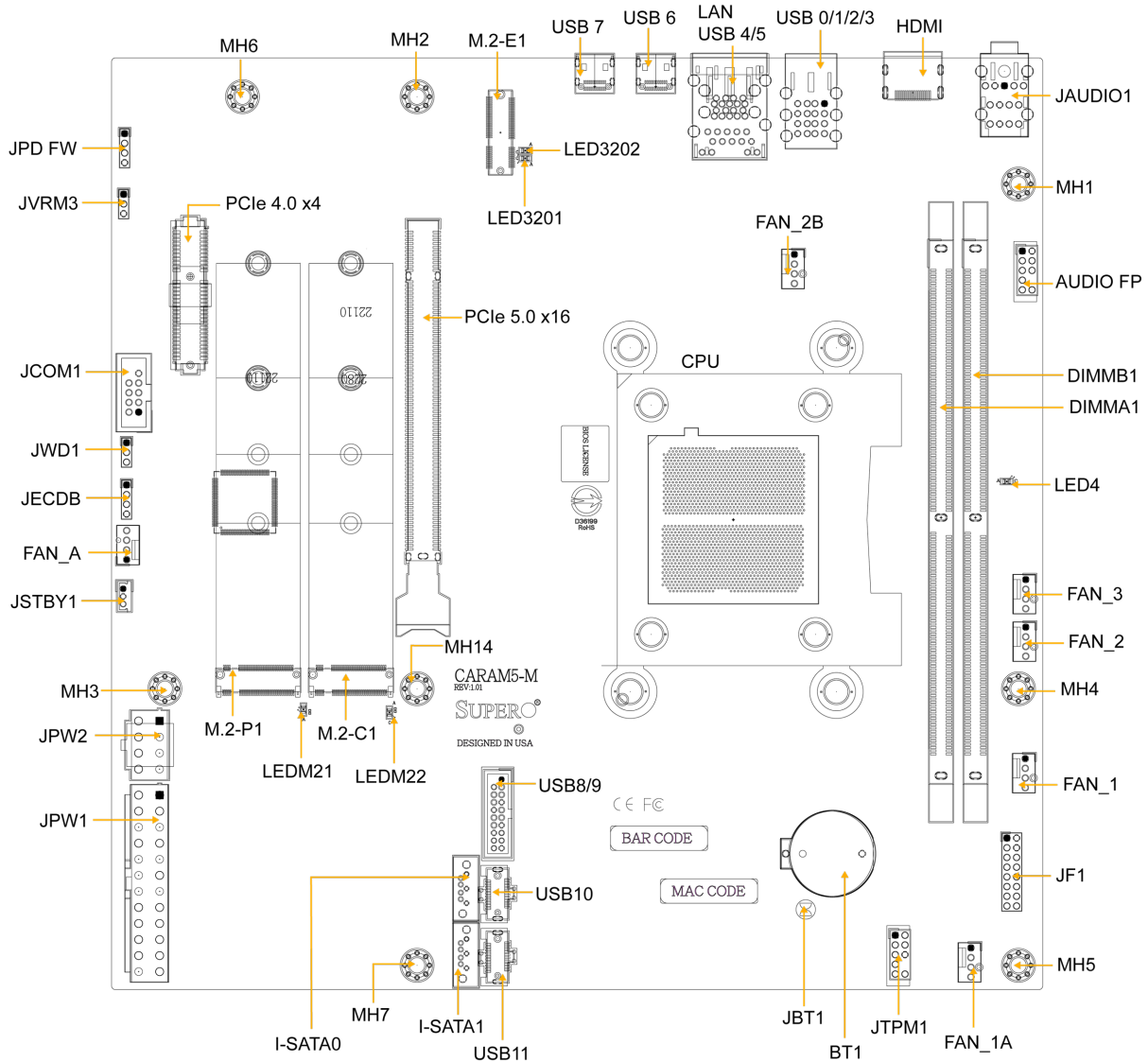


Figure 1-2. Motherboard Layout

Notes:

- For detailed information on jumpers, connectors, and LED indicators, see "[Component Installation](#)" on page 22.
- "■" 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 Setting
JBT1	CMOS Clear	Open (Normal)
JWD1	Watch Dog Timer	Pins 1-2: Reset

LED	Description	Status
LED3201	WLAN Power-On Self-Test (POST) Status	Green ON: WLAN POST OFF: WLAN POST Completion
LED3202	Bluetooth Device Power-On Self-TEST (POST) Status	Green ON: Bluetooth Device POST OFF: Bluetooth Device POST Completion
LEDM21- LEDM22	M.2 SSD LED	Blinking: Device Working
LED4	Onboard Power LED	Solid Green: Power On

Connector	Description
AUDIO FP	Front Audio Header * This header is designed for a headphone/microphone combo jack. If you are using a standalone microphone, use the MIC jack on the rear panel. * Standalone headphone and microphone jacks are provided on the rear panel.
BT1	Onboard Battery
FAN_A/FAN_1A/FAN_2B	4-pin Fan Headers
FAN_1-3	4-pin Fan Headers
I-SATA0/I-SATA1	Dual SATA Port Connectors Supporting up to Two Devices
JAUDIO1	High Definition Audio Ports
JCOM1	Serial Port/Header
JF1	Front Control Panel Header
JPW1	24-pin ATX Main Power Connector (Required)
JPW2	12V 8-pin CPU Core Power Supply Connector

Connector	Description
JSTBY1	Inject External P5V_STBY Power
JTPM1	Trusted Platform Module (TPM)/Port 80 Connector
M.2-C1/P1	M.2 M-Key (2280/22110) PCIe Interfaces
M.2-E1 (PCIe)	WiFi 7 and Bluetooth 5.4
PCIe 4.0 x4	PCIe 4.0 x4 Slot
PCIe 5.0 x16	PCIe 5.0 x16 Slot
USB0/1/2/3	USB 2.0 Ports
USB4/5	USB 3.2 10 Gb Ports
USB6/7	USB 4.0 Port
USB8/9	USB 3.2 5 Gb Port
USB10/11	USB 3.2 10 Gb Port

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

Motherboard Block Diagram

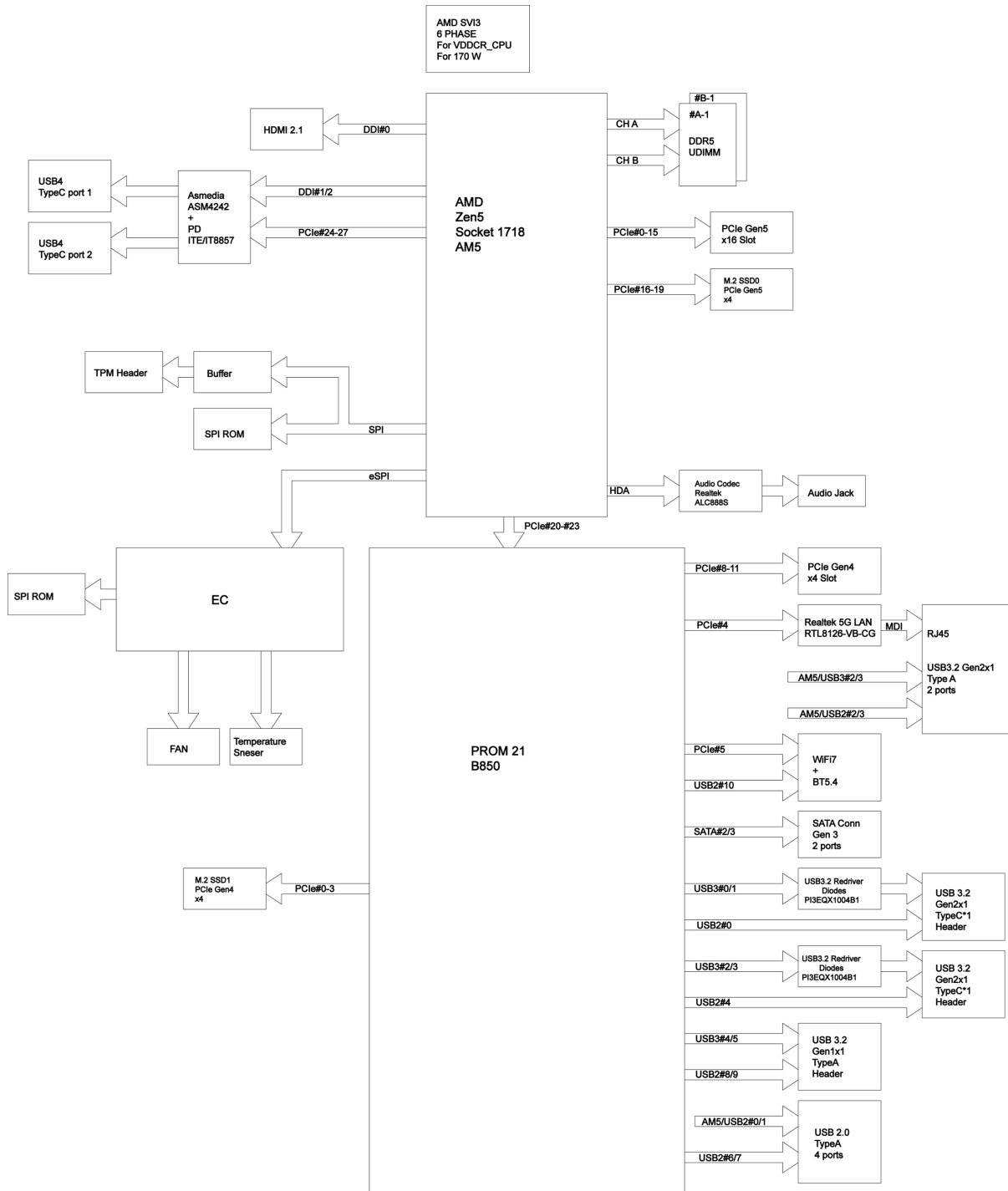


Figure 1-3. Motherboard Block Diagram

1.2 Motherboard Features

Motherboard Features
CPU
<ul style="list-style-type: none"> • AMD EPYC™ 4004 / 4005 or AMD Ryzen™ 7000 / 9000 Series Processor in Socket AM5
Memory
<ul style="list-style-type: none"> • Up to 96 GB of Non-ECC UDIMM DDR5 5600 MT/s speed in two DIMM slots. Please refer to Memory Support and Installation for more details on memory speed.
DIMM Size
<ul style="list-style-type: none"> • 8 GB, 16 GB, 24 GB, 32 GB, and 48 GB at 1.1 V
Chipset
<ul style="list-style-type: none"> • AMD B850 chipset
Expansion Slots
<ul style="list-style-type: none"> • One PCIe 5.0 x16 slot (CPU) • One PCIe 4.0 x4 slot (Chipset)
Network
<ul style="list-style-type: none"> • One 5 Gb LAN port (RTL8126)
Graphics
<ul style="list-style-type: none"> • AMD Radeon™ Graphics
I/O Devices
<ul style="list-style-type: none"> • Three Audio jacks • One HDMI2.1 • One TPM header • Four USB2.0 ports • Two USB3.2 Gen2 (Type A 10 G) ports • Two USB4.0 (Type C, support DP Alt mode) • One RJ45 Ethernet LAN (5 GbE) port • One Combo Audio header • Two WiFi/BT 5.4 antennas • Two USB3.2 Gen2 (Type C 10 G via header) ports • Two USB3.2 Gen1 (Type A 5 G via header) ports

Motherboard Features
BIOS
<ul style="list-style-type: none"> • 256 Mb AMI BIOS® SPI Flash BIOS • ACPI 6.5, SMBIOS 3.7 or later, Plug-and-Play (PnP), RTC (Real Time Clock) wakeup, Riser Card Auto-Detection support
Power Management
<ul style="list-style-type: none"> • ACPI power management (S3/S4/S5) • Wake-On-LAN • Power-on mode for AC power recovery
System Health Monitoring
<ul style="list-style-type: none"> • Onboard voltage monitoring for 3.3 V, +5 V, +12 V, +3.3 VStby, +5 VStby, Vcore, CPU temperature, system temperature, peripheral temperature, GPU temperature, and M.2 SSD temperature • CPU thermal trip support
Fan Control
<ul style="list-style-type: none"> • Six 4-pin fan headers • Fan speed control
System Management
<ul style="list-style-type: none"> • SAA/SDO/InBand
LED Indicators
<ul style="list-style-type: none"> • M.2 SSD Read / Write LED Indicators • Power LED
Dimensions
<ul style="list-style-type: none"> • 9.6" (W) x 9.6" (L) (243.84 mm x 243.84 mm)

1.3 Platform Overview

Built upon the functionality and capability of the AMD EPYC™ 4004 / 4005 or AMD Ryzen™ 7000 / 9000 in Socket AM5, the CARAM5-M motherboard offers maximum I/O expandability, energy efficiency, and data reliability in a 3 nm process architecture, and is optimized for embedded storage solutions, networking applications, or cloud-computing platforms.

With the support of new micro-architecture 3 nm process technology, it increases system performance for a multitude of server applications.

The following features are supported by the AMD EPYC™ 4004 / 4005 or AMD Ryzen™ 7000 / 9000:

- ACPI Power Management Logic Support Rev. 6.5
- Adaptive Thermal Management/Monitoring
- PCIe 5.0 with a transfer rate up to 32 GT/s and SATA 3.0 with a transfer rate of up to 6.0 Gb/s
- System Management Bus (SMBus) Specification Version 3.1.1

1.4 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 61](#) for this setting. The default setting is **Last State**.

1.5 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 increases the thermal control fan speed whenever the CPU temperature exceeds a user-defined threshold. The overheat circuitry runs independently from the CPU. When the thermal sensor detects that the CPU temperature is too high, it will automatically increase the thermal control fan speed to prevent the CPU from overheating. Conversely, when the temperature decreases, the fan speed will be reduced. 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.

1.6 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 operating systems such as Microsoft Windows, Red Hat Linux, and Ubuntu Linux. For detailed information about our certified operating systems, refer to [OS Compatibility](#).

Chapter 2:

Component Installation

This chapter provides instructions on installing and replacing main system components for the CARAM5-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.

2.1 Static-Sensitive Devices	24
Precautions	24
Unpacking	24
2.2 Motherboard Installation	25
Tools Needed	25
Location of Mounting Holes	25
Installing the Motherboard	25
2.3 Processor and Heatsink Installation	27
Preparing the Processor Socket	27
Installing the Processor	29
Installing the Heatsink	32
2.4 Memory Support and Installation	35
Memory Support	35
General Guidelines for Optimizing Memory Performance	35
DIMM Population	36
DIMM Installation	37
DIMM Removal	40
2.5 Battery Removal and Installation	41
Battery Removal	41
Proper Battery Disposal	41
Battery Installation	41
2.6 Connections, Jumpers, and LEDs	42
Power Supply and Power Connections	42
Headers and Connections	43

I/O Ports	48
Jumper Settings	48
LED Indicators	50

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

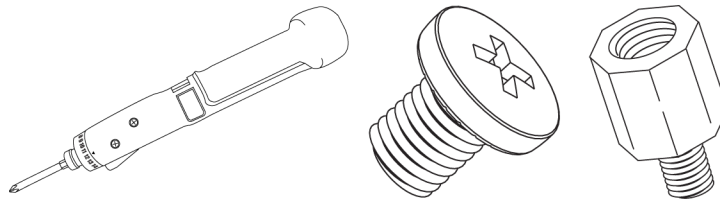


Figure 2-1. Torque Driver (1), Philips Screws (8), Standoffs (8)

Location of Mounting Holes

1. 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.
2. 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.

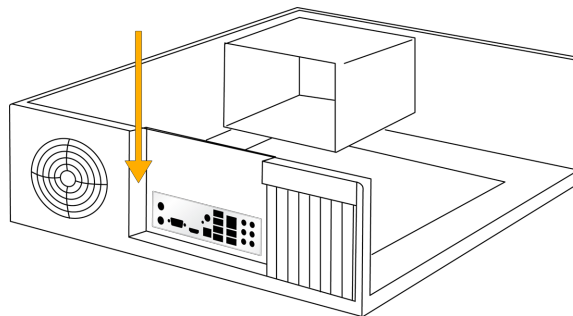


Figure 2-2. Installing the I/O Shield

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.

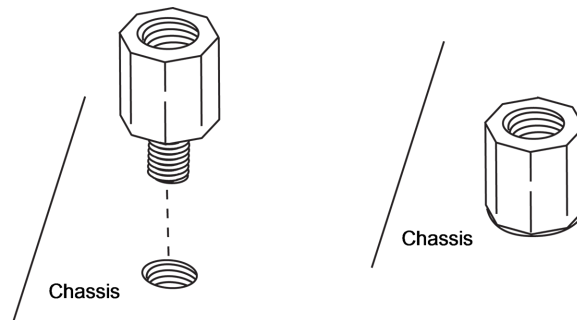


Figure 2-3. Locating the Mounting Holes

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

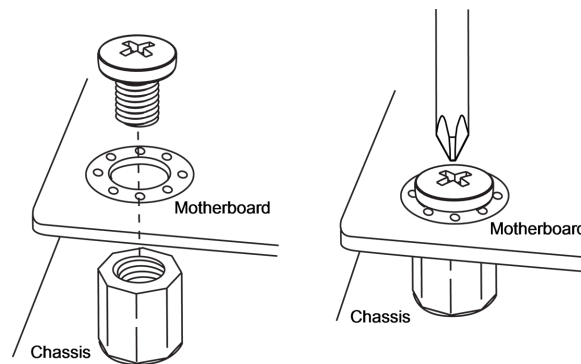


Figure 2-4. Aligning the Mounting Holes

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 24.
- 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.

Preparing the Processor Socket

The AMD EPYC 4004 / 4005 or Ryzen 7000 / 9000 Series Processor

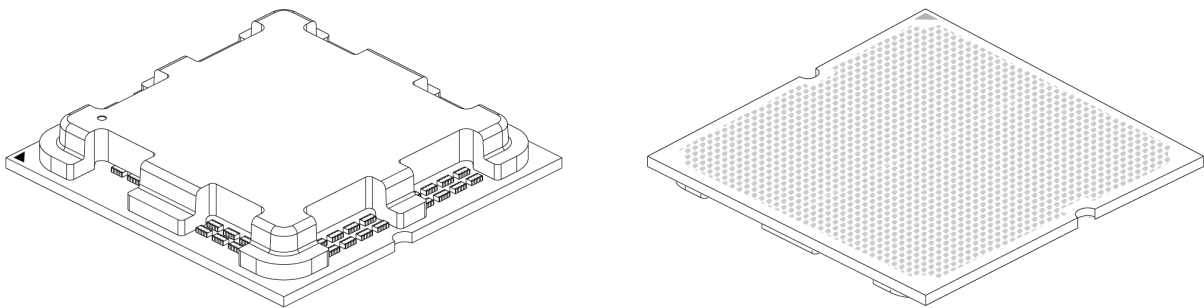


Figure 2-5. AMD EPYC 4004 / 4005 or Ryzen 7000 / 9000 Series Processor

Overview of the Processor Socket

The processor socket is protected by an outer plastic protective cover.

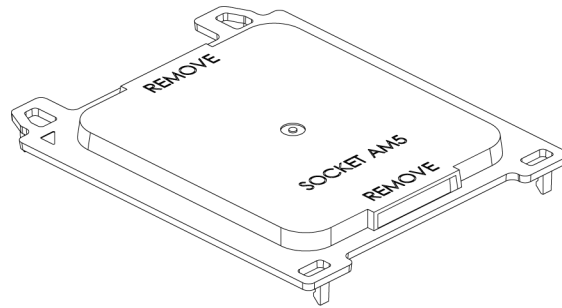


Figure 2-6. Outer Plastic Cover

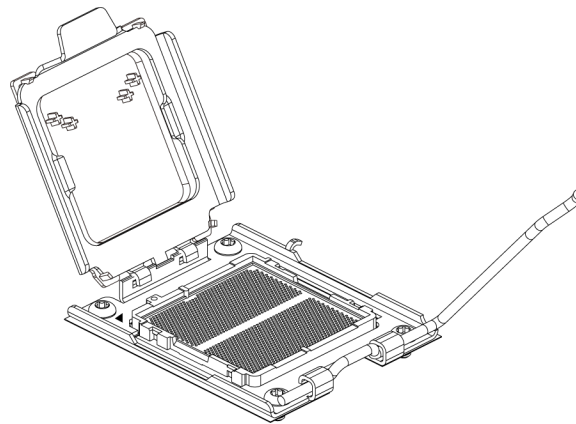


Figure 2-7. Socket AM5

Overview of the Heatsink

The heatsink is attached to the socket with Phillips #1 screws after the processor is secured. If this is a new heatsink, thermal grease is pre-applied.

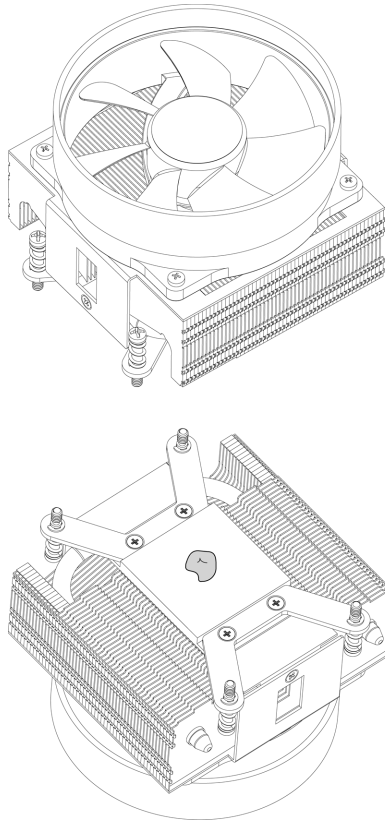


Figure 2-8. Installing the Heatsink

Installing the Processor

Note: Do not remove the plastic cover covering the outside of the socket. This cover will pop out during installation of the processor.

1. Use a finger to push down the lever, then move the lever rightward. Pull the lever until it passes over the processor socket.

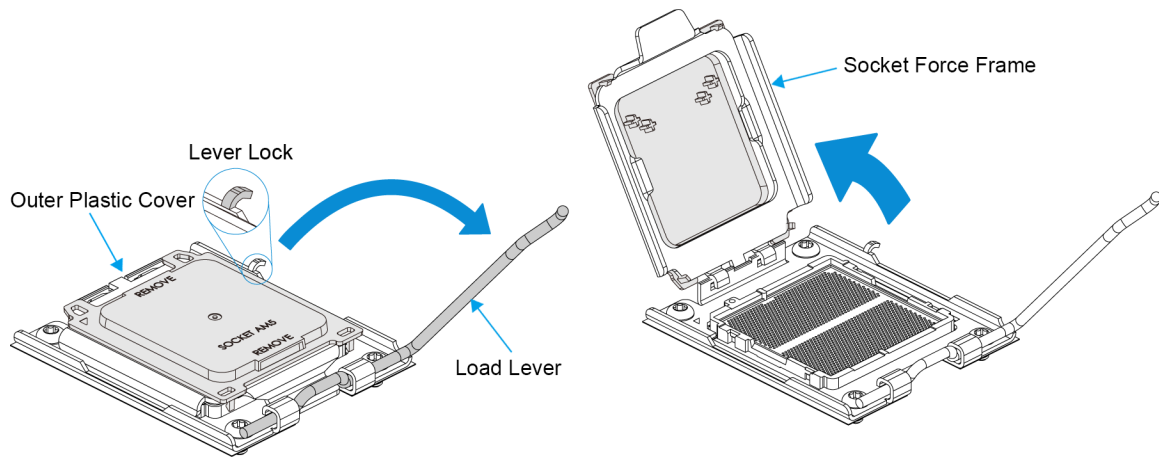


Figure 2-9. Releasing the Processor Socket Lever

2. Pick up the processor on its left and right edges. Hold the processor over the socket and align the arrow on the top-left corner of the processor with the arrow on the top-left corner of the socket. Gently lower it onto the AM5 socket pins.

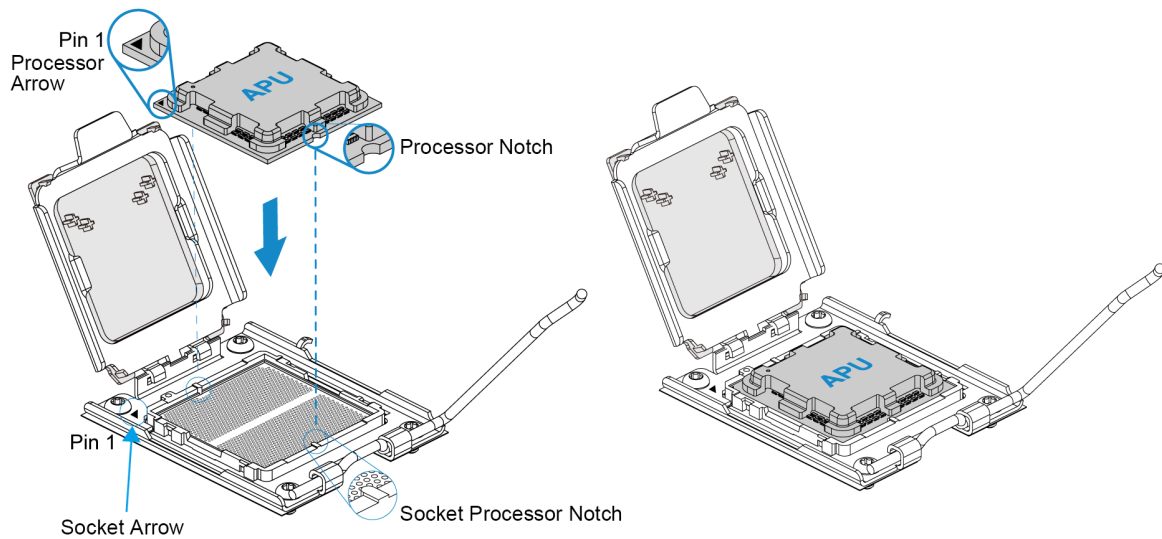


Figure 2-10. Installing the Processor onto the AM5 Socket

3. With the processor in the socket, lower the socket force frame.

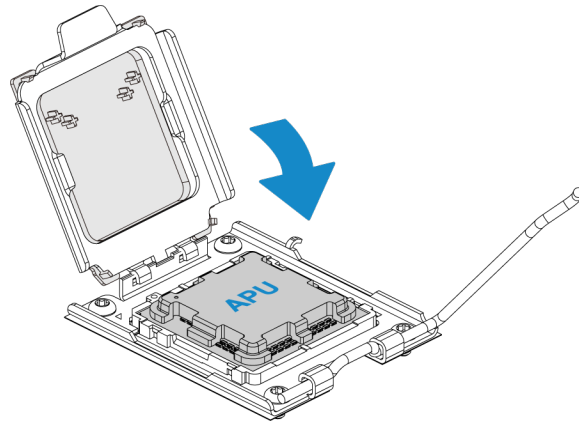


Figure 2-11. Lowering the Socket Force Frame

4. Reattach the lever arm onto the right side of the socket. The outer plastic cover will pop out when the lever arm is reattached.

Note: Store the outer plastic cover. Attach the outer plastic cover to the socket force frame when storing or transporting the motherboard without a processor.

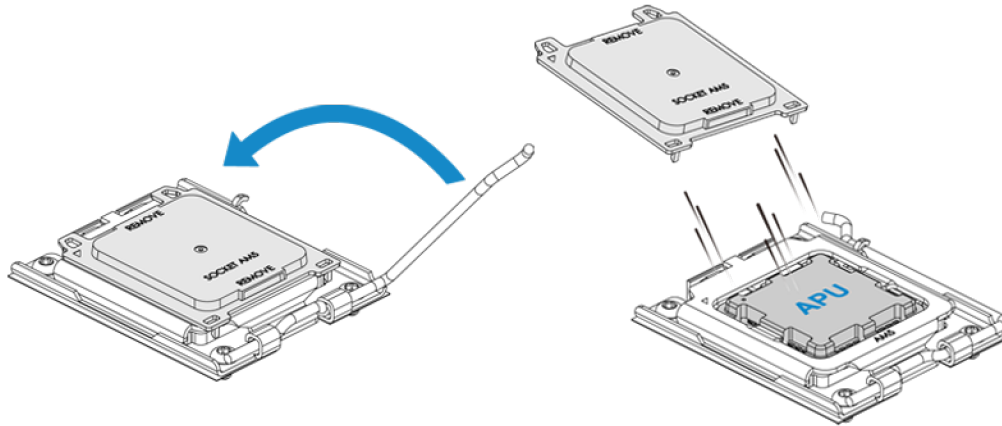


Figure 2-12. Reattaching the Socket Lever Arm

5. When finished, the socket force frame will secure the processor.

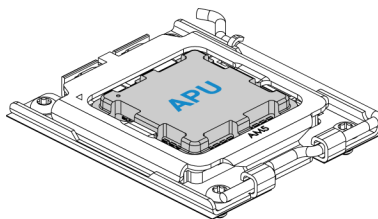
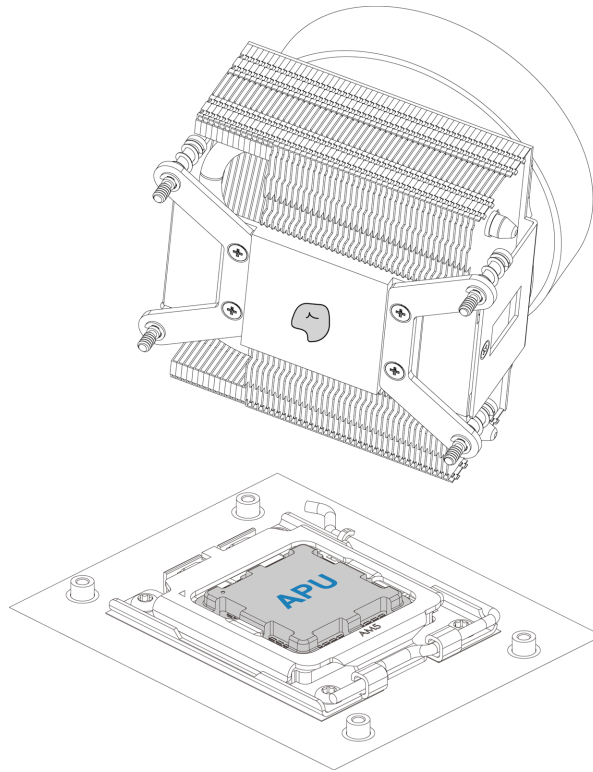


Figure 2-13. Completing the Socket Installation

Installing the Heatsink

1. After the processor is secure, you must install the heatsink to the socket frame. Ensure a proper amount of thermal grease is applied to the heatsink. Lower the heatsink down until the four screws on the heatsink align with the four screw holes on the socket frame.



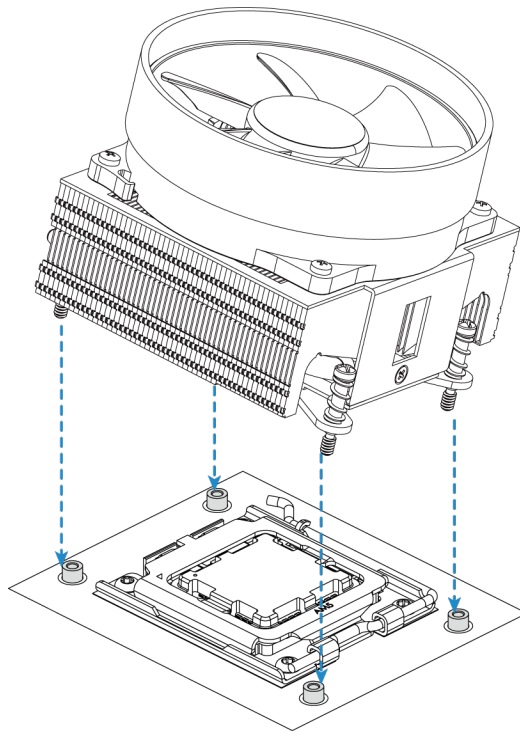


Figure 2-14. Mounting the Heatsink onto the Socket Frame

2. Align the heatsink to the socket. With a Phillips #1 bit torque driver set to a force of 8.3-9.1 lbf-in (9.5-10.5 kgf-cm), gradually secure the heatsink by starting with two screws on opposite corners. When finished, the heatsink will be secured over the socket and processor.

Important: Do not use a force greater than 9.1 lbf-in (10.5 kgf-cm). Exceeding this force may over-torque the screw, causing damage to the processor, heatsink, and screw.

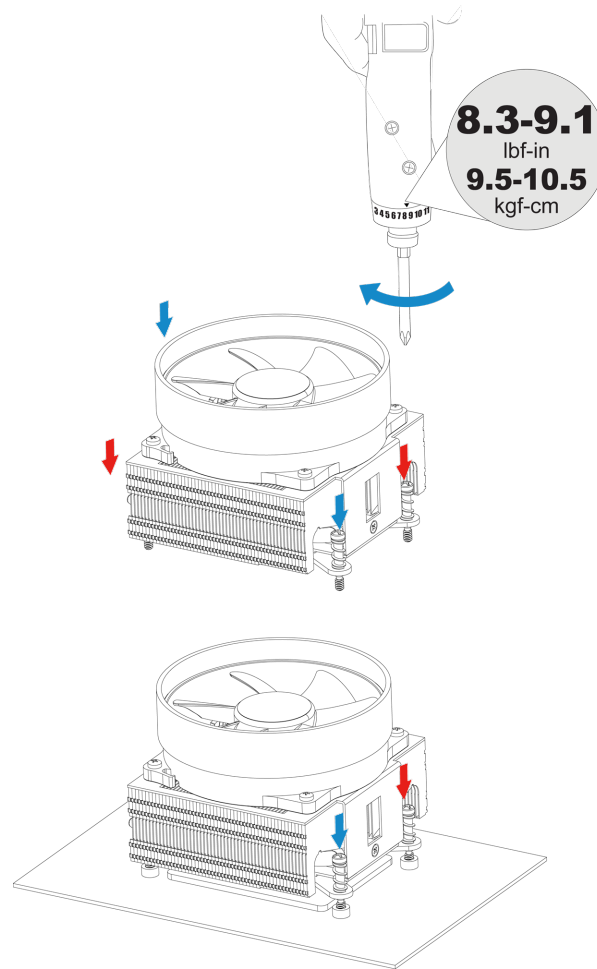


Figure 2-15. Securing the Heatsink with Proper Torque

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 motherboard supports up to 96 GB of Non ECC UDIMM DDR5 memory across two DIMM slots. When populating DDR5 memory modules with AMD EPYC™ 4004 / 4005 or Ryzen™ 7000 / 9000 series processors, memory speeds are supported as follows: 5200 MT/s for 4004 / 7000 series, and 5600 MT/s for 4005 / 9000 series. Refer to the table below for additional memory information.

DIMM Population Guide		
Type	Channel	
	A1	B1
1 DIMM		V
1 DIMM	V	
2 DIMMs	V	V

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 will support an odd number amount of memory modules. However, to achieve the best memory performance, a balanced memory population is recommended.
- Please use Supermicro validated memory. Contact Supermicro representative for more details.

DIMM Population

This table shows the recommended slots to populate.

Populating DDR5 Memory Modules with AMD EPYC™ 4004 or Ryzen™ 7000 Series (Up to 5200 MT/s)			
Type	Number of DIMMs Populated	DIMMA1	DIMMB1
UDIMM	1	SR: 5200 MT/s DR: 5200 MT/s	N/A
	1	N/A	SR: 5200 MT/s DR: 5200 MT/s
	2	SR: 5200 MT/s DR: 5200 MT/s	SR: 5200 MT/s DR: 5200 MT/s

Populating DDR5 Memory Modules with AMD EPYC™ 4005 or Ryzen™ 9000 Series (Up to 5600 MT/s)			
Type	Number of DIMMs Populated	DIMMA1	DIMMB1
UDIMM	1	SR: 5600 MT/s DR: 5600 MT/s	N/A
	1	N/A	SR: 5600 MT/s DR: 5600 MT/s
	2	SR: 5600 MT/s DR: 5600 MT/s	SR: 5600 MT/s DR: 5600 MT/s

Note: Fully populate the motherboard with validated memory modules to achieve the best memory performance. The NPS setting should be based on the applications. Selecting "Auto" in the BIOS will default to NPS1.

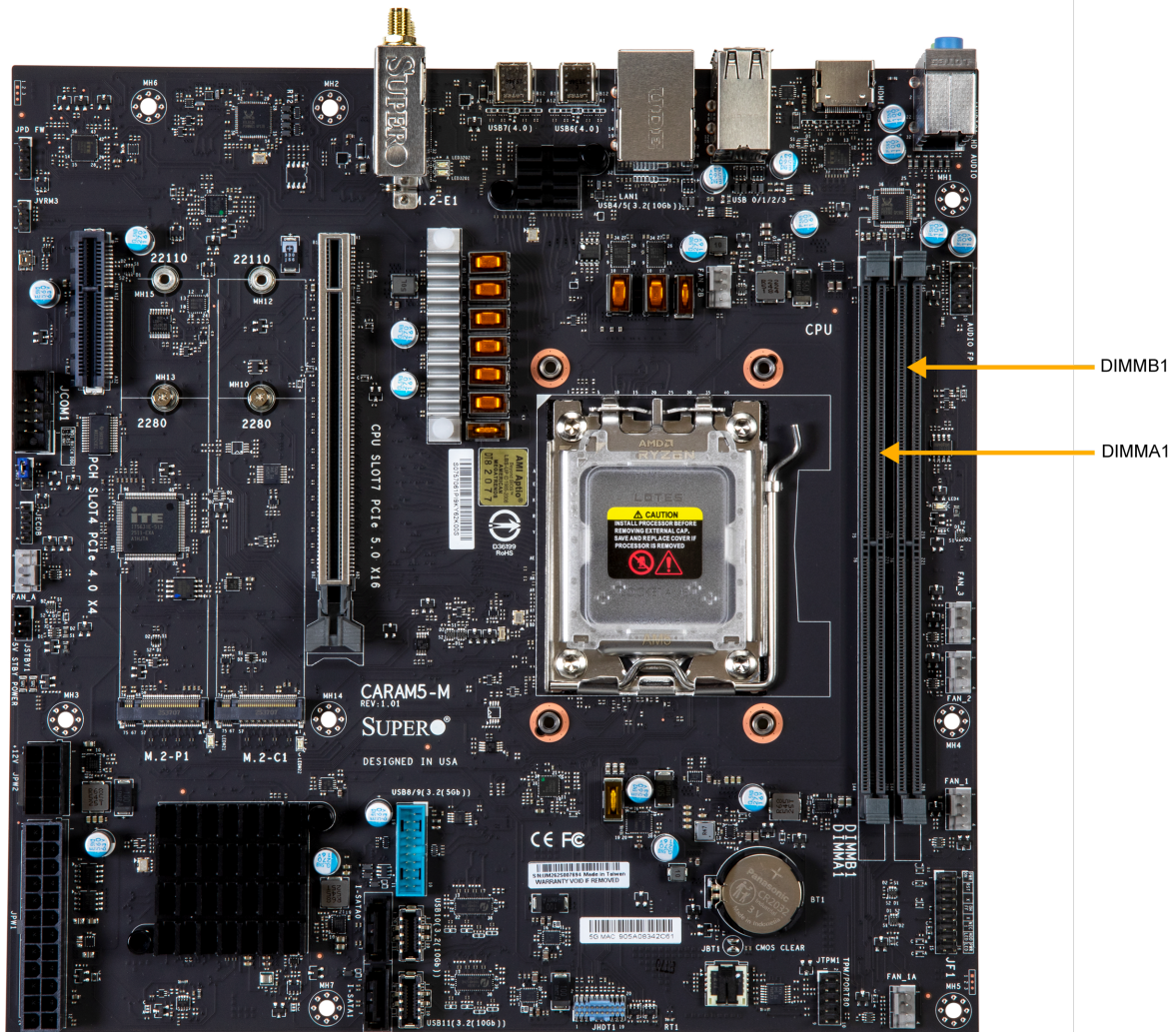


Figure 2-16. DIMM Labels

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 24](#).

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.

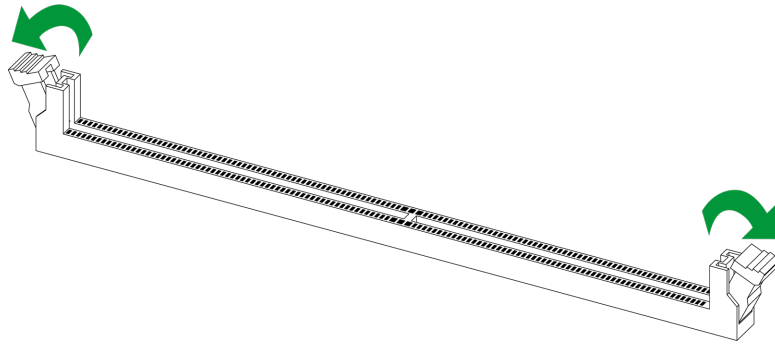


Figure 2-17. Unlocking the DIMM Slot

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

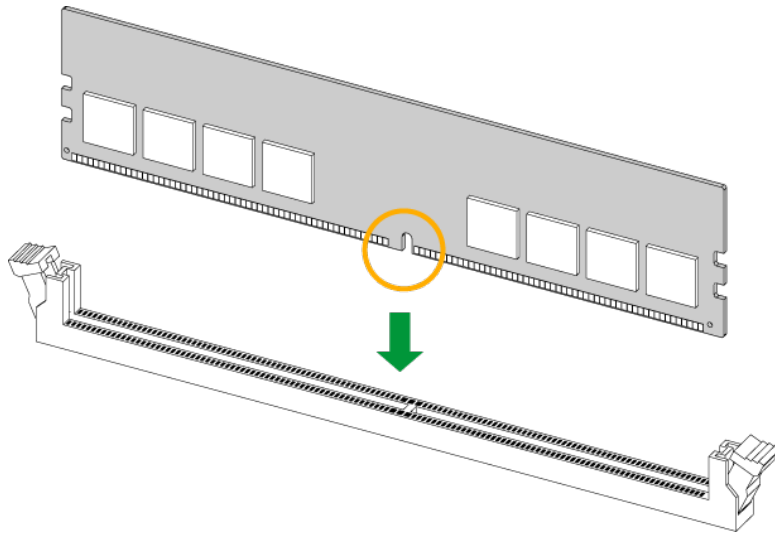


Figure 2-18. Aligning the DIMM Slot with the Receptive Point

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

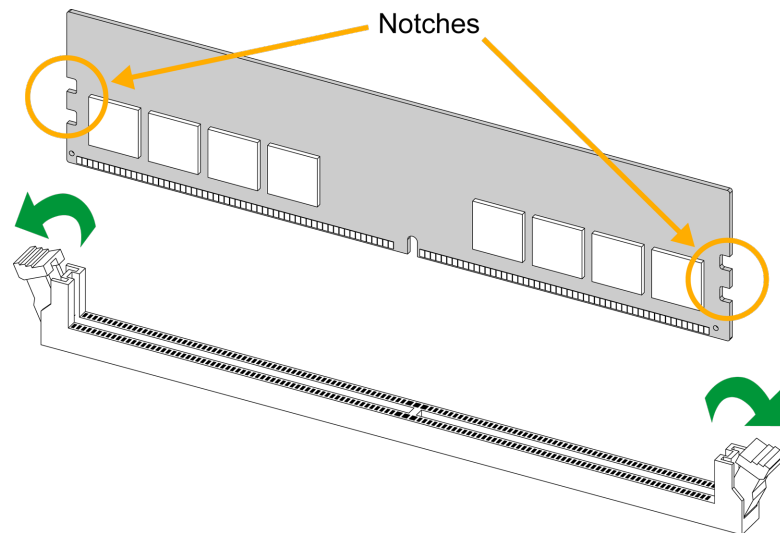


Figure 2-19. Aligning the Notches

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

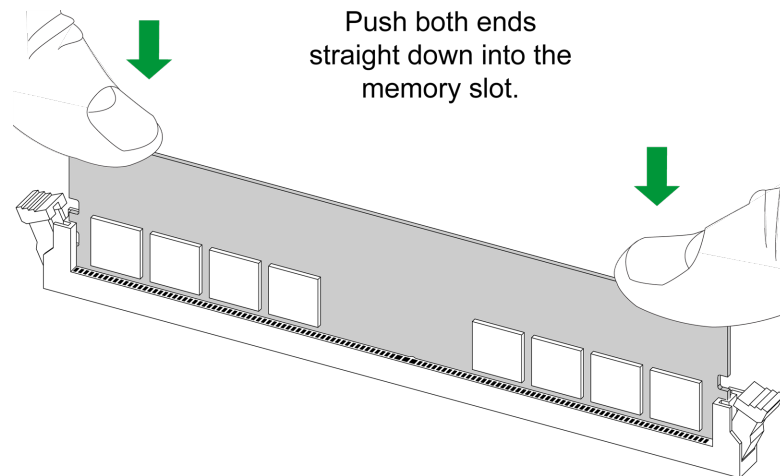


Figure 2-20. Securing the DIMM

For a detailed diagram of the CARAM5-M motherboard, see the layout under ["Quick Reference"](#) on page 11.

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 24](#).

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.

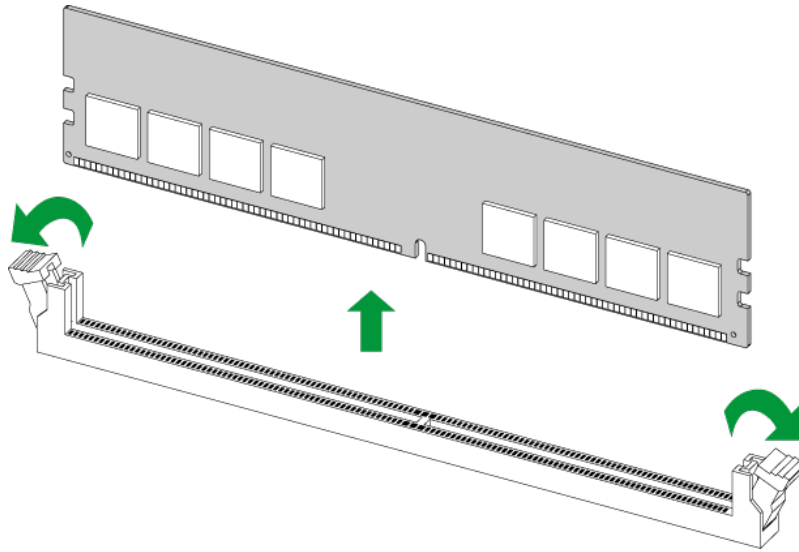


Figure 2-21. Unlocking the DIMM Slot

For a detailed diagram of the CARAM5-M motherboard, see the layout under "[Quick Reference](#)" on [page 11](#).

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.

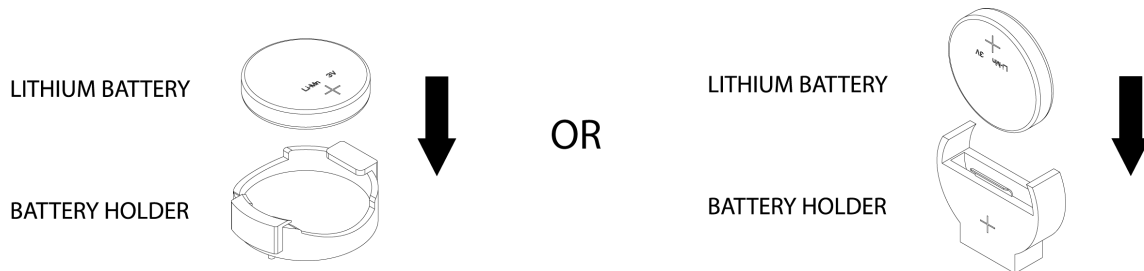


Figure 2-22. Installing a Battery

2.6 Connections, Jumpers, and LEDs

Refer to the following sections for information about connections, jumpers, and LEDs for the CARAM5-M motherboard.

Power Supply and Power Connections

For information about the power supply and power connections of the CARAM5-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.

There are two 12 V power connectors (JPW1 and JPW2) on the CARAM5-M motherboard.

Power Connectors

12V 8-pin Auxiliary Power Connector (JPW2)

JPW2 is an 8-pin ATX power input to provide auxiliary power to the processor. Refer to the table below for pin definitions.

12 V 8-pin Power Connector			
Pin Definitions: Eight Total			
Pin#	Definition	Pin#	Definition
1	Ground	5	+12 V
2	Ground	6	+12 V
3	Ground	7	+12 V
4	Ground	8	+12 V

Main Power Supply Connector (JPW1)

The primary power supply connector (JPW1) is an ATX power connector that the power supply plugs directly into.

ATX Power 24-pin Connector			
Pin Definitions: 24 Total			
Pin#	Definition	Pin#	Definition
1	+3.3 V	13	+3.3 V

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

Headers and Connections

For information about the headers on the CARAM5-M motherboard, refer to the following content.

Audio Front Panel Header

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

For a detailed diagram of the CARAM5-M motherboard, see the layout under "[Quick Reference](#)" on page 11.

Audio Header			
Pin Definitions: 10 Total			
Pin#	Definition	Pin#	Definition
1	Microphone_Left	2	Audio_Ground
3	Microphone_Right	4	Audio_Detect
5	Line_2_Right	6	Ground

Audio Header			
Pin Definitions: 10 Total			
Pin#	Definition	Pin#	Definition
7	Jack_Detect	8	Key
9	Line_2_Left	10	Ground

COM Header

There is one COM header at JCOM1 on the CARAM5-M motherboard. Use a cable with the COM header to access the COM port. COM ports provide serial communication support.

For a detailed diagram of the CARAM5-M motherboard, see the layout under "[Quick Reference](#)" on page 11.

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		

Fan Headers

There are six 4-pin fan headers (FAN_A/1A/2B, FAN_1/2/3) on the CARAM5-M motherboard.

4-pin Fan Headers	
Pin Definitions: Four Total	
Pin#	Definition
1	Ground
2	+12 V Standby
3	Tachometer
4	PWM Control

Onboard Battery (BT1)

The onboard backup battery is located at BT1. The onboard battery provides backup power to the on-chip CMOS, which stores the BIOS' setup information. It also provides power to the Real Time Clock (RTC) to keep it running.

PCIe M.2 Connectors (M.2-C1, M.2-P1)

The PCIe M.2 connectors are for devices such as memory cards, wireless adapters, etc. These devices must conform to the PCIe M.2 specifications (formerly known as NGFF). These particular PCIe M.2 connectors support M-Key (PCIe x4) storage cards. M.2-C1 supports a speed of PCIe 5.0, while M.2 -P1 supports a speed of PCIe 4.0 only.

For a detailed diagram of the CARAM5-M motherboard, see the layout under "[Quick Reference](#)" on page 11.

Standby Power Header

A Standby Power header is located at JSTBY1 on the CARAM5-M motherboard.

Standby Power	
Pin Definitions	
Pin#	Definition
1	+5 V Standby
2	Ground
3	Wake-up

TPM/Port 80 Header

The JTPM1 header on the CARAM5-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 storage drives. It allows the motherboard to deny access if the TPM associated with the storage drive is not installed in the system. Information on the TPM is available at the following page:

https://www.supermicro.com/manuals/other/AOM-TPM-9670V_9670H_X12_H12.pdf

For a detailed diagram of the CARAM5-M motherboard, see the layout under "[Quick Reference](#)" on page 11.

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	+1.8 V Standby	10	SPI_IRQ#

USB Ports (USB0~3, USB4~5, USB6~7, USB8~9, USB10~11)

There are a total of 12 USB ports supported on the CARAM5-M motherboard. Eight are located on the rear panel, and four are located on the front panel. Note that USB devices are not able to wake up from an S3/S4 state.

Rear Panel USB8~9 (3.2)			
Pin Definitions			
Pin#	Definition	Pin#	Definition
1	+5 V		
2	USB32_RN	19	+5 V
3	USB32_RP	18	USB32_RN
4	GND	17	USB32_RP
5	USB32_TN	16	GND
6	USB32_TP	15	USB32_TN
7	GND	14	USB32_TP
8	USB_N	13	GND
9	USB_P	12	USB_N
10	GND	11	USB_P

Rear Panel USB10 (3.2)			
Pin Definitions			
Pin#	Definition	Pin#	Definition
1	+5 V	20	CC2
2	USB32_TP0	19	USB_P

Rear Panel USB10 (3.2)			
Pin Definitions			
Pin#	Definition	Pin#	Definition
3	USB32_TN0	18	USB_N
4	GND	17	GND
5	USB32_RP0	16	USB32_RN1
6	USB32_RN0	15	USB32_RP1
7	+5 V	14	GND
8	CC1	13	USB32_TN1
9	X	12	USB32_TP1
10	X	11	+5 V

Rear Panel USB11 (3.2)			
Pin Definitions			
Pin#	Definition	Pin#	Definition
1	+5 V	20	CC2
2	USB32_TP0	19	USB_P
3	USB32_TN0	18	USB_N
4	GND	17	GND
5	USB32_RP0	16	USB32_RN1
6	USB32_RN0	15	USB32_RP1
7	+5 V	14	GND
8	CC1	13	USB32_TN1
9	X	12	USB32_TP1
10	X	11	+5 V

I/O Ports

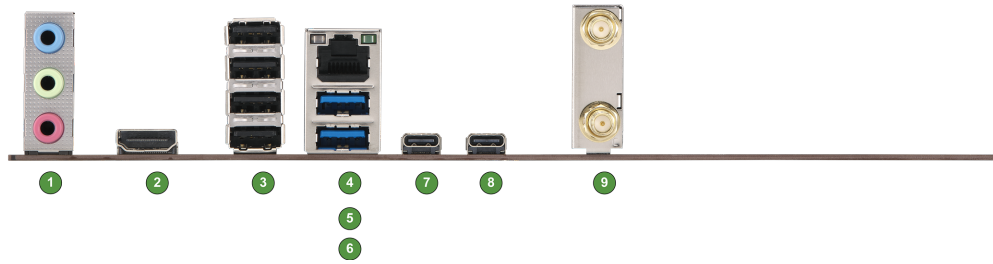


Figure 2-23. CARAM5-M Ports

I/O Ports			
#	Description	#	Description
1	Audio Jacks	6	USB 3.2 Gen2 (10 G)
2	HDMI	7	USB 4.0
3	USB 2.0	8	USB 4.0
4	LAN	9	WiFi 7 + Bluetooth 5.4
5	USB 3.2 Gen2 (10 G)		

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.

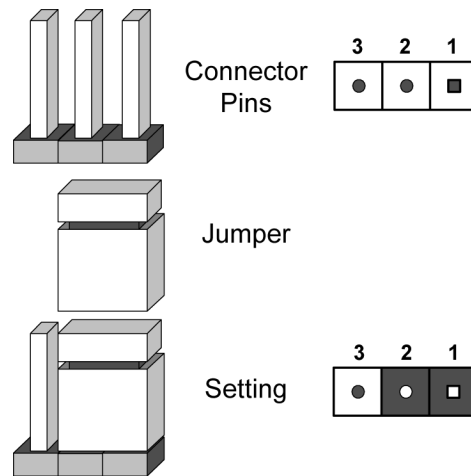


Figure 2-24. Jumping Connector Pins

CMOS Clear

JBT1 on the CARAM5-M motherboard is used to clear CMOS, which will also clear any passwords. Instead of pins, this jumper consists of contact pads to prevent accidentally clearing the contents of CMOS.

For a detailed diagram of the CARAM5-M motherboard, see the layout under "[Quick Reference](#)" on page 11.



1. Power down the system.
 2. Unplug the power cord(s).
 3. Remove the cover of the chassis to access the motherboard.
 4. Remove the onboard battery from the motherboard.
 5. Short the CMOS pads, JBT1, with a metal object such as a small screwdriver for at least four seconds.
- Note:** Clearing CMOS will also clear all passwords.
6. Remove the screwdriver or shorting device.
 7. Reinsert the battery.
 8. Replace the cover.
 9. Reconnect the power cord(s).
 10. Power on the system.

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 CARAM5-M motherboard, see the layout under ["Quick Reference"](#) on page 11.

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 CARAM5-M motherboard, refer to the following content.

Power Fail/Fan Fail LED

LED6 is the power and fan fail LED. Refer to the table below for the LED status.

For a detailed diagram of the CARAM5-M motherboard, see the layout under ["Quick Reference"](#) on page 11.

Power Fail/Fan Fail LED LED Indicator	
Pin#	Definition
Blinking Red	Power Fail or Fan Fail
Solid Red	Overheat

Onboard Power LED

An Onboard Power LED is located on the CARAM5-M motherboard. When this LED is on, the system is on. Be sure to turn off the system and unplug the power cord before removing or installing components.

For a detailed diagram of the CARAM5-M motherboard, see the layout under ["Quick Reference"](#) on page 11.

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

Chapter 3:

Troubleshooting

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

3.1 Troubleshooting Procedures	53
Before Power On	53
No Power	53
No Video	53
System Boot Failure	53
Memory Errors	54
Losing the System's Setup Configuration	54
If the System Becomes Unstable	54
3.2 Technical Support Procedures	56
3.3 Motherboard Battery	57
3.4 Where to Get Replacement Components	58
3.5 Returning Merchandise for Service	59
3.6 Feedback	60

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 56](#) or ["Returning Merchandise for Service" on page 59](#) section(s) in this chapter. Always disconnect the AC power cord before adding, changing or installing any non hot-swappable 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" on page 49](#).
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 22](#) 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 10](#) for details on recommended power supplies.
2. The battery on your motherboard may be old. Check to verify that it still supplies approximately 3 VDC. If it does not, replace it with a new one.

If the System Becomes Unstable

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. 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.

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

1. Source of installation: Make sure that the devices used for installation are working properly, including boot devices such as a USB flash or media device.
2. Cable connection: Check to make sure that all cables are connected and working properly.
3. Use the minimum configuration for troubleshooting: Remove all unnecessary components (starting with add-on cards first), and use the minimum configuration (but with the processor and a memory module installed) to identify the trouble areas. Refer to the steps listed above in this section for proper troubleshooting procedures.
4. Identify bad components by isolating them: If necessary, remove a component in question from the chassis, and test it in isolation to make sure that it works properly. Replace a bad component with a good one.
5. Check and change one component at a time instead of changing several items at the same time. This will help isolate and identify the problem.
6. To find out if a component is good, swap this component with a new one to see if the system will work properly. If so, then the old component is bad. You can also install the component in question in another system. If the new system works, the component is good and the old system has problems.

3.2 Technical Support Procedures

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

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

3.3 Motherboard Battery

For information on removing, disposing of, and replacing the motherboard battery of your system, refer to ["Battery Removal and Installation"](#) on page 41.

3.4 Where to Get Replacement Components

If you need replacement parts for your CARAM5-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 CARAM5-M motherboard.

4.1 Introduction	62
4.2 Main Setup	63
4.3 Advanced Setup Configurations	65
4.4 Thermal & Fan	80
4.5 Security	83
4.6 Boot	85
4.7 Save & Exit	87

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, press 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 hot keys are used, such as <F1>, <F2>, etc. Each main BIOS menu option is described in this manual.

The Main BIOS screen has two main frames. The left frame displays all the options that can be configured. “Grayed-out” options cannot be configured. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When 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>, <F6>, <Enter>, <ESC>, the arrow keys, etc.) can be used at any time during the setup navigation process.

4.2 Main Setup

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

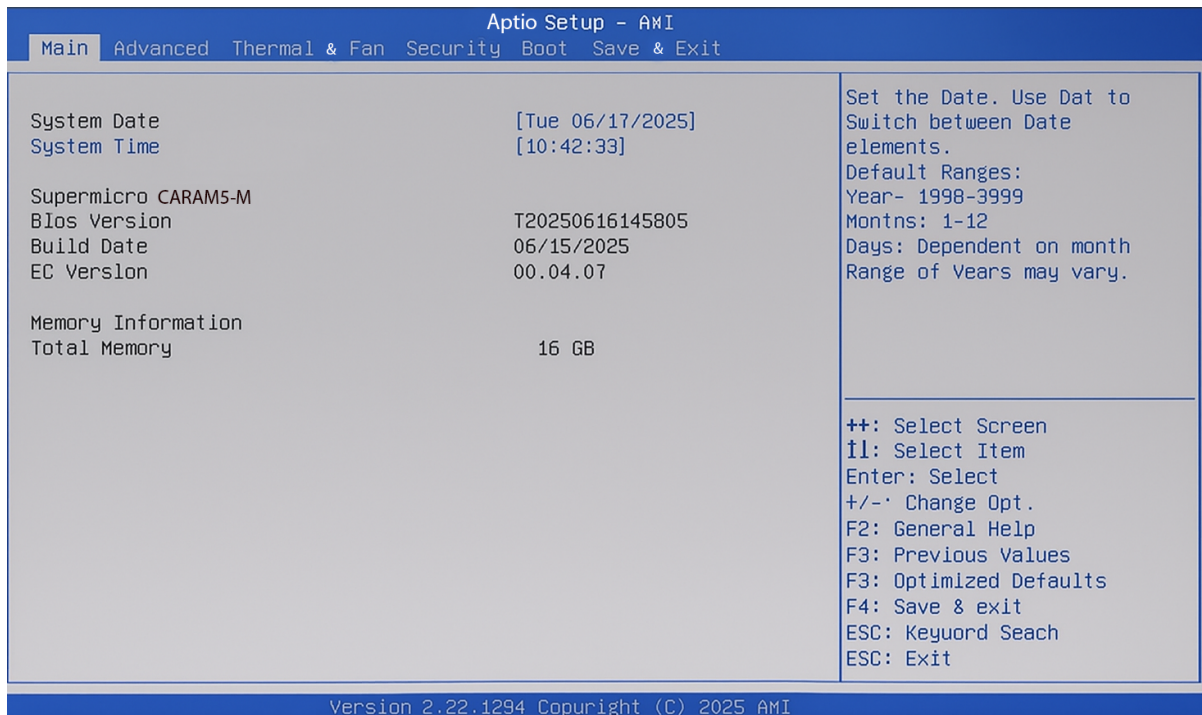


Figure 4-1. UEFI BIOS Main Tab Screen

System Date/System Time

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

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

Supermicro CARAM5-M

BIOS Version

This 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 version of the Embedded Controller (EC) firmware used in the system.

Memory Information**Total Memory**

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

4.3 Advanced Setup Configurations

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

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.

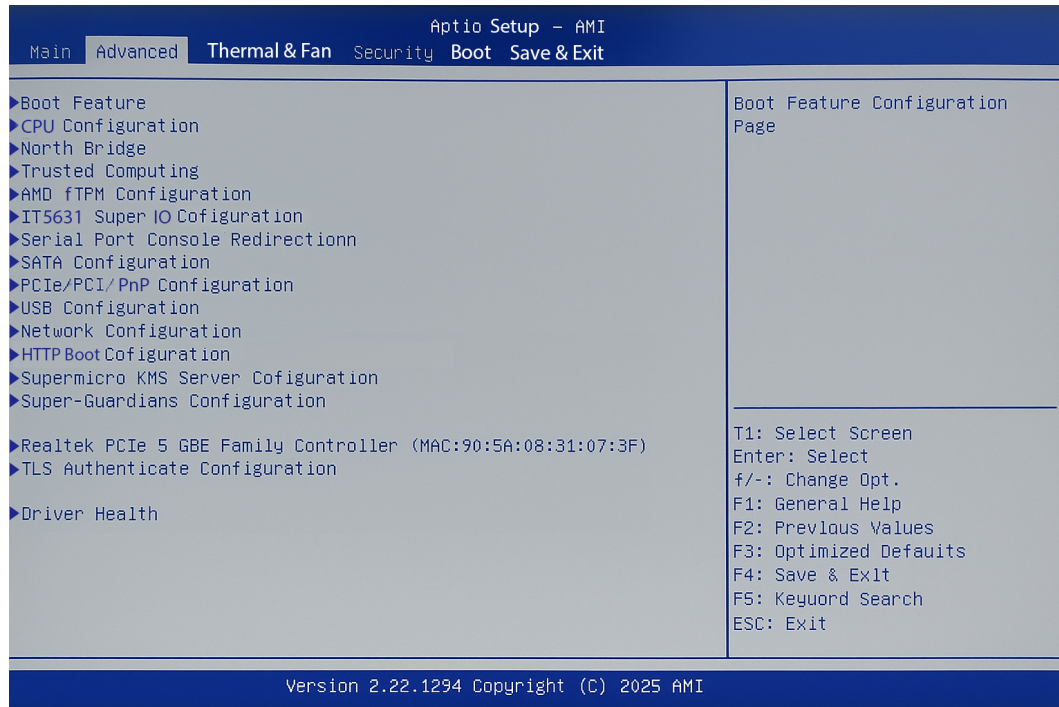


Figure 4-2. Advanced BIOS Screen

Boot Feature

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.

Option ROM Messages

Use this feature to set the display mode for the Option ROM. Select Keep Current to display the current AddOn ROM display settings. Select Force BIOS to use the Option ROM display mode set by the system BIOS. The options are **Force BIOS** and Keep Current.

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**.

INT19 Trap Response

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

Re-try Boot

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 EFI Boot.

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.

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.

DeepS5 Power Policy

Use this setting to enable or disable S5 Deep Sleep Mode. The options are **Disabled** and **Enabled**.

ACPI Sleep State

Selects the highest ACPI sleep state that the system will enter when the SUSPEND button is pressed. The options are Suspend Disabled and **S3 (Suspend to RAM)**.

Enable Hibernation

Use this setting to enable or disable the system's ability to Hibernate (OS/S4 Sleep State). This option may not be effective with some operating systems. The options are **Disabled** and **Enabled**.

CPU Configuration

Module Version

Global C-state Control

Controls I/O-based C-state generation and DF C-states. The options are **Disabled**, **Enabled**, and **Auto**.

PSS Support

Use this setting to enable or disable the generation of ACPI_PPC, _PSS, and PCT objects. The options include **Disabled** and **Enabled**.

PPC Adjustment

Use this setting to adjust PPC objects. The options include **PState 0** and **PState 1**.

NX Mode

Use this setting to enable or disable no-execute page protection function. The options include **Disabled** and **Enabled**.

SVM Mode

This setting enables or disables CPU Virtualization. The options are **Disabled** and **Enabled**.

SMT Control

This setting is used to disable symmetric multithreading. To re-enable SMT, a power cycle is needed after selecting the **Enable** option. Select **Auto** based on BIOS PCD default setting. The options are **Disabled** and **Auto**.

Core Performance Boost

Use this setting to configure Core Performance Boost. The options are **Disabled** and **Auto**.

► CPU Information

These sections are for informational purposes. They will display some details about the detected CPUs on the motherboard, such as:

- CPU Version
- Number of Cores Running
- Processor Family
- Processor Model
- CPUID
- Max Speed
- Min Speed
- Microcode Patch Level
- L1 Instruction Cache (Size/Method)
- L1 Data Cache (Size/Method)
- L2 Cache (Size/Method)
- Total L3 Cache per Socket (Size/Method)

North Bridge

North Bridge Configuration

Above 4GB MMIO Limit

Use this setting to set Above 4GB MMIO Limit to 38 to 43 bits limit. This option only works when "Above 4G decoding" is enabled. Options include **40bit (1TB)**, 41bit (2TB), 42bit (4TB), 43bit (8TB), 44bit (16TB), 45bit (32TB), 46bit (64TB), 47bit (128TB), and 48bit (256TB).

IOMMU

Use this setting to enable or disable IOMMU. The options are Disabled, Enabled, and **Auto**.

PPT Control

The options are Manual and **Auto**.

NB Azalia

This setting enables the Integrate HD Audio Controller. The options are Disabled, Enabled, and **Auto**.

HD Audio

This setting enables the HD Audio Controller. The options are Disabled and **Enabled**.

► Memory Information

Memory Information

DIMMA1

DIMMB1: Size/Current speed/Max speed

Trusted Computing

Configuration

Security Device Support

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

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

- Active PCR banks
- Available PCR banks

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

SHA256 PCR Bank

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

SHA384 PCR Bank

Use this feature to disable or enable the SHA384 Platform Configuration Register (PCR) bank for the installed TPM device. The options are **Disabled** and Enabled.

Pending Operation

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

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

Platform Hierarchy

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

Storage Hierarchy

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

Endorsement Hierarchy

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

PH Randomization

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

AMD fTPM Configuration

AMD fTPM Switch

The options are Route to SPI TPM and **AMD CPU fTPM**.

Erase fTPM NV For Factory Reset

When a new CPU is installed, select Enabled to reset fTPM. If you have a BitLocker or encryption enabled system, the system will not boot without a recovery key. Select Disabled to keep the previous fTPM record and continue with system boot. Note that fTPM will not be active with the new CPU unless it is reset (reinitialized). If necessary, you can swap back to the old CPU to recover TPM-related keys and data. The options are Disabled and **Enabled**.

IT5631 Super IO Configuration

Super IO Chip: IT5631

► Serial Port 1 Configuration

Serial Port 1

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

Change Settings

Use this feature to select an optimal setting for Super IO Device. The options are **Auto**, (IO=3F8h; IRQ=4;), (IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12;), (IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12;), (IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12;), and (IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;).

Serial Port Console Redirection

COM1

Console Redirection

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

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

► Legacy Console Redirection Settings

Legacy Serial Redirection Port

Select a COM port to display redirection of legacy OS and legacy OPROM messages. The options are **COM1** and SOL/COM2 (Disabled).

Resolution

On legacy OS, the number of rows and columns supported redirection. The options are 80x24 and **80x25**.

Redirection After BIOS Post

When bootloader is selected, then legacy console redirection is disabled before booting to legacy OS. When always is select, then legacy console redirection is enabled for legacy OS. The options are **Always Enable** and BootLoader.

Console Redirection EMS

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

SATA Configuration

SATA Configuration

SATA Mode

The options are **AHCI Mode** and RAID Mode.

PCIe/PCI/PnP Configuration

Above 4G Decoding

This setting enables 64-bit PCI device access to memory beyond 4 GB for improved memory utilization and performance. The options are Disabled and **Enabled**.

Re-Size BAR Support

This setting enables or disables the Re-Size Base Address Register feature for compatible PCIe devices, which allows the system to allocate more memory to the device. The options are Disabled and **Enabled**.

SR-IOV Support

This setting enables or disables Single Root I/O Virtualization support for the system's PCIe devices. The options are **Disabled** and Enabled.

BME DMA Mitigation

This setting enables or disables Bus Mastering Error (BME) Direct Memory Access (DMA) mitigation for protection during the pre-boot process. The options are **Disabled** and Enabled.

ASPM Support

Configure the Active State Power Management (ASPM) level for PCIe links to optimize power consumption and performance. The options are **Disabled**, Auto, and Force L1.

Relaxed Ordering

This setting determines whether PCI Express devices are permitted to bypass strict transaction ordering, which can lead to potential performance improvements. The options are Disabled and **Enabled**.

No Snoop

This setting configures the No Snoop option for PCI Express devices, determining whether memory accesses bypass the cache. The options are Disabled and **Enabled**.

DATA Link Feature Exchange

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

NVMe Firmware Source

This setting determines the source of firmware for NVMe devices, allowing you to select between native support or vendor-specific firmware. The options are Vendor Defined Firmware and **AMI Native Support**.

NVMe RAID Mode

This setting enables or disables NVMe RAID Mode. The options are **Disabled** and Enabled.

CPU SLOT7 PCIe 5.0 x16 OPROM

This setting enables or disables PCH SLOT7 PCIe 5.0 x16 OPROM option. The options are Disabled and **EFI**.

PCH SLOT4 PCIe 4.0 x4 OPROM

This setting enables or disables PCH SLOT4 PCIe 4.0 x4 OPROM option. The options are Disabled and **EFI**.

M.2-E1 OPROM

This setting enables or disables the OPROM for the M.2-E1 slot. The options are Disabled and **EFI**.

Onboard LAN1 Option ROM

Select which firmware function to be loaded for onboard LAN1. The options are Disabled and **EFI**.

Onboard LAN1 Support

Select which firmware function to be loaded for onboard LAN1 support. The options are **Enabled** and Disabled.

M.2-C1 OPROM

This setting enables or disables the OPROM for the M.2-C1 slot. The options are Disabled and **EFI**.

M.2-P1 OPROM

This setting enables or disables the OPROM for the M.2-P1 slot. The options are Disabled and **EFI**.

USB Configuration

USB Devices: 1 Keyboard

XHCI Hand-off

This setting provides a workaround for operating systems that do not support XHCI hand-off. The XHCI ownership change must be claimed by the XHCI driver. The options are **Enabled** and Disabled.

Port 60/64 Emulation

This setting enables or disables I/O port 60h/64h emulation support. The options are Disabled and **Enabled**.

Network Configuration

Network Stack

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

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

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

IPv4 HTTP Support

This setting enables IPv4 HTTP boot support. The options are **Disabled** and Enabled.

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

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

IPv6 HTTP Support

This setting enables IPv6 HTTP boot support. The options are **Disabled** and Enabled.

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

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

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

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

► IPv4 Network Configuration**Configured**

This setting enables or disables network address configuration. The options are **Disabled** and Enabled.

Save Changes and Exit

The options are **Yes** and no.

► IPv6 Network Configuration

Set IPv6 Network parameters.

► Enter Configuration Menu

Interface Name

Interface Type

MAC address

Host addresses

Route Table

Gateway addresses

DNS addresses

Interface ID

DAD Transmit Count

The number of consecutive Neighbor Solicitation messages sent while performing Duplicate Address Detection on a tentative address. A value of zero indicates that Duplicate Address Detection is not performed. The default value is **1**.

Policy

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

Save Changes and Exit

The options are **Yes** and **No**.

HTTP Boot Configuration

HTTP Boot Configuration

HTTP Boot Policy

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

HTTPS Boot Checks Hostname

Important: Disabling "HTTPS Boot Checks Hostname" is a violation of RFC 6125 and may expose you to Man-in-the-Middle Attacks. Supermicro is not responsible for any and all security risks incurred by you disabling this feature.

This setting determines whether HTTPS Boot verifies that the hostname in the server's TLS certificate matches the hostname of the remote server. The options are **Enabled** and **Disabled** (WARNING: Security Risk!!).

Priority of HTTP Boot

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

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

Select IPv4 or IPv6

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

Boot Description

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

Boot URI

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

Supermicro KMS Server Configuration Menu

Supermicro KMS Server IP address

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

Second Supermicro KMS Server IP address

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

Supermicro KMS TCP Port number

Use this feature to set the TCP port number used in Supermicro KMS Server. The valid range is 100–9999. The default setting is 5696. Do not change the default setting unless a different TCP port number has been specified and used in the Supermicro KMS Server.

KMS Time Out

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

TimeZone

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

Client UserName

Press <Enter> to set the client identity (UserName). The username can be between 0 and 63 characters in length.

Client Password

Press <Enter> to set the client identity (Password). The password can be between 0 and 31 characters in length.

► CA Certificate

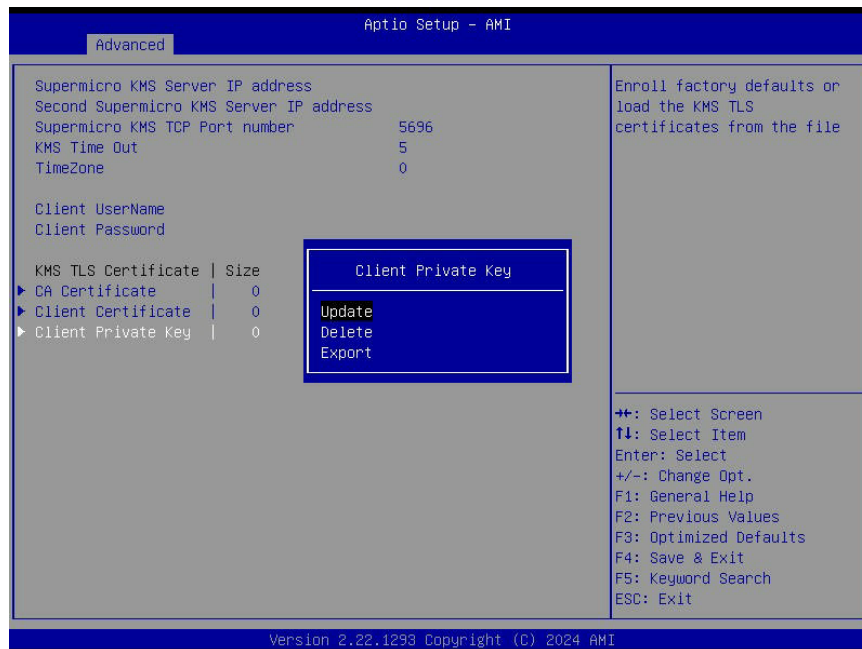
This setting provides options for managing the Certificate Authority (CA) certificate. The options are **Update**, Delete, and Export.

► Client Certificate

This setting provides options for managing the client certificate. The options are **Update**, Delete, and Export.

► Client Private Key

Use the three features to enroll factory defaults or load the KMS Transport Layer Security (TLS) certificates, which are generated by the KMS Server, from the file stored in the USB flash drive as shown below.



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

Use this feature to change the password for the client private key.

Super-Guardians Configuration Menu

► Super-Guardians Configuration

Super-Guardians Protection Policy

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

KMS Security Policy (Available when "TPM Security Policy" and "USB Security Policy" are set to Disabled)

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

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

Notes:

- Be sure that the KMS server is ready before configuring this feature.
- Use the professional KMS server solutions (e.g., Thales Server) or the Supermicro PyKMIP Software Package to establish the KMS server.

KMS Server Retry Count (Available when "TPM Security Policy" and "USB Security Policy" are set to Disabled)

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

TPM Security Policy (Available when "KMS Security Policy" and "USB Security Policy" are set to Disabled)

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

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

Note: Be sure to install a TPM 2.0 device to your system before configuring this feature.

Load Authentication-Key (Available when "KMS Security Policy," "TPM Security Policy," and "USB Security Policy" are set to Disabled)

Set this feature to Enabled. Changes take effect after you save settings and reboot the system. While booting, the BIOS will automatically load the Authentication-Key (filename: TPMAuth.bin) from the USB flash drive. Afterwards, the default setting will be set to Disabled by the BIOS. The options are **Disabled** and Enabled.

Notes:

- Be sure to connect a USB flash drive with the Authentication-Key (filename: TPMAuth.bin) to your system before the system reboots.
- Be sure to save the Authentication-Key (filename: TPMAuth.bin) to the USB flash drive and have a backup. Please load the Authentication-Key (filename: TPMAuth.bin) after installing a TPM device. Otherwise, the TPM function can not work properly.

USB Security Policy (Available when "KMS Security Policy" and "TPM Security Policy" are set to Disabled)

Use this feature to enable the USB Security Policy. The options are **Disabled** and Enabled. Set this feature to Enabled. Changes take effect after you save settings and reboot the system. Connect a USB flash drive to your system before the system reboot. While booting, the BIOS will automatically create the USB Authentication-Key (filename: USBAuth.bin) and save it to the USB flash drive.

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

Note: Be sure to connect a USB flash drive to your system before configuring this feature. Save the USB Authentication-Key (filename: USBAuth.bin) to the USB flash drive and keep a backup.

Realtek PCIe 5 GBE Family Controller

Driver Information

Driver Name

Driver Version

Driver Released Date

Device Information

Device Name

PCI Slot

MAC Address

Patent Information

TLS Authenticate Configuration

▶ Server CA Configuration

This feature allows you 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.

▶ Commit Changes and Exit

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

▶ Discard Changes and Exit

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

▶ Delete Certification

This feature is used to remove the selected TLS certificates that are no longer needed or valid.

▶ Client Certification Configuration

This feature is to manage the certificates used to authenticate remote clients connecting to your system. Add, view, or delete client certificates as needed.

Driver Health

This provides the health status of the drivers/controllers.

4.4 Thermal & Fan

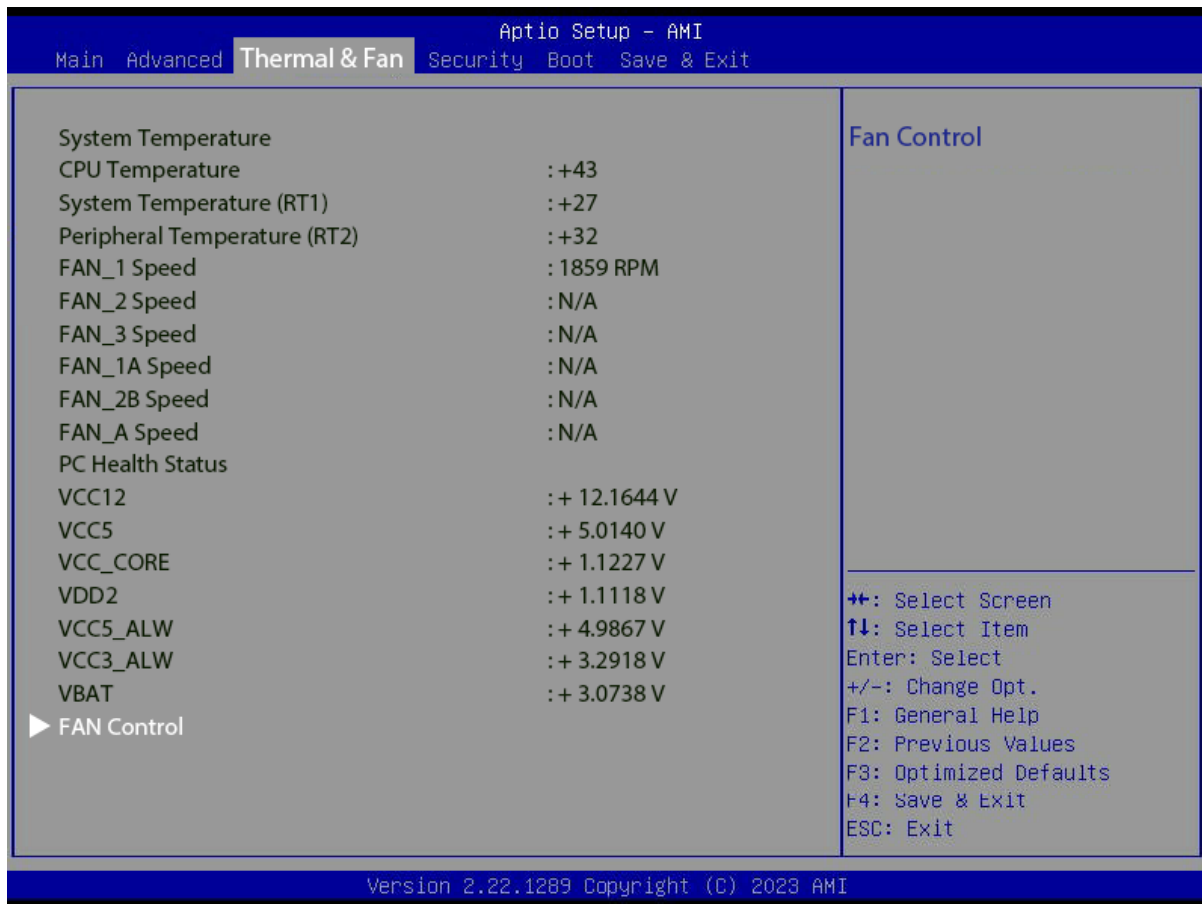


Figure 4-3. Thermal & Fan Tab Screen

System Temperature

CPU Temperature

System Temperature (RT1)

Peripheral Temperature (RT2)

FAN_1 Speed

FAN_2 Speed

FAN_3 Speed

FAN_1A Speed

FAN_2B Speed

FAN_A Speed

PC Health Status

VCC12

VCC5

VCC_CORE

VDD2

VCC5_ALW

VCC3_ALW

VBAT

Fan Control

Fan Control Setting

Fan Speed Control Mode

Use this setting to set the FAN Speed control mode. The options are **Silent**, Performance, and Full Speed.

4.5 Security

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

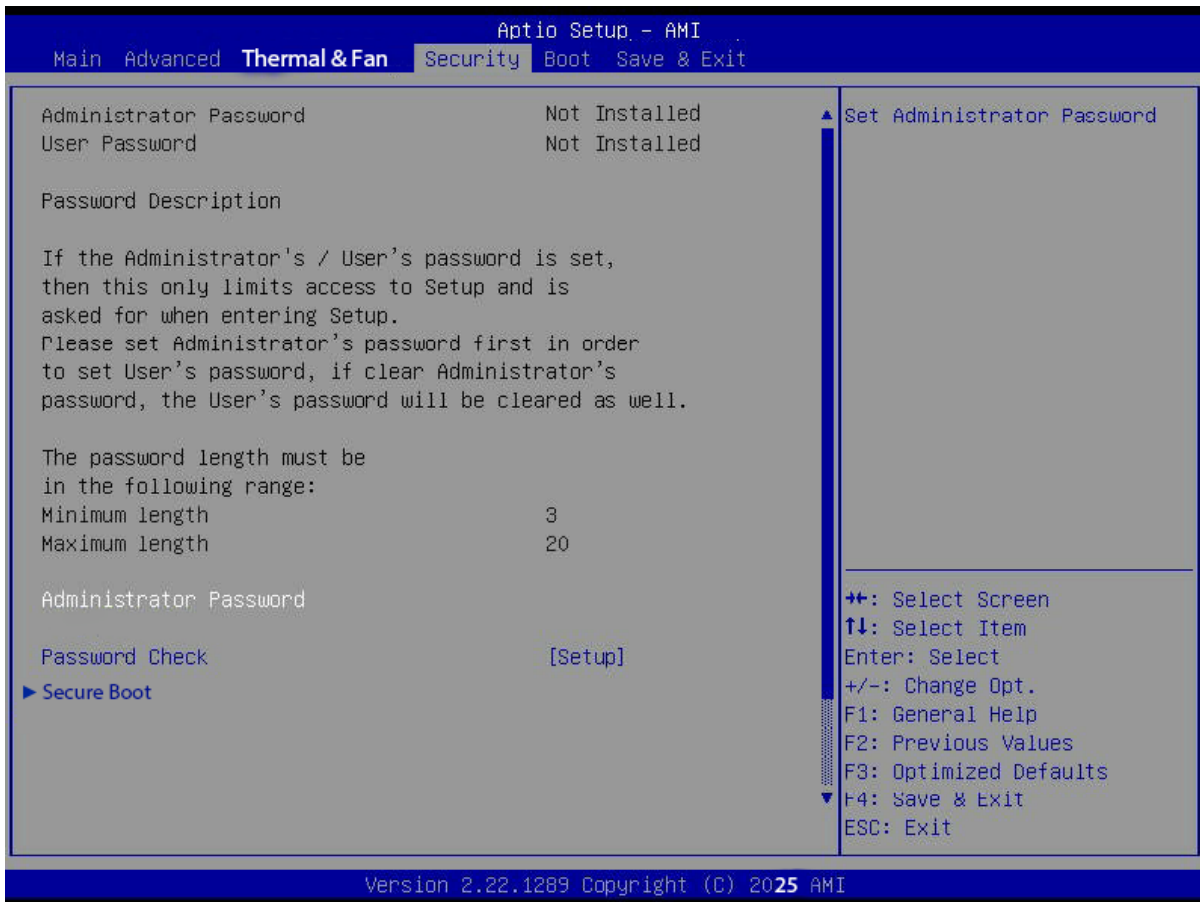


Figure 4-4. Security Tab Screen

The following information is displayed:

- Administrator Password
- User Password
- Password Description

Administrator Password

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

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.

► Secure Boot

Secure Mode: Setup

Secure Boot: Not Active

Secure Boot

The options are **Disabled** and Enabled.

Secure Boot Mode

The options are Standard and **Custom**.

► Key Management

Vendor Keys

Provision Factory Defaults

Install the factory default Secure Boot keys after a platform reset and while the system is in setup mode. The options are **Disabled** and Enabled.

Restore Factory Keys

This setting forces the system into user mode. Install the factory default Secure Boot key databases.

Enroll Efi Image

This setting allows Efi images to run in Secure Boot mode.

Secure Boot Variable

Platform Key (PK)

Key Exchange Keys (KEK)

Authorized Signatures (db)

Forbidden Signatures (dbx)

Authorized TimeStamps (dbt)

OsRecovery Signatures (dbr)

4.6 Boot

Use this menu to configure Boot settings.

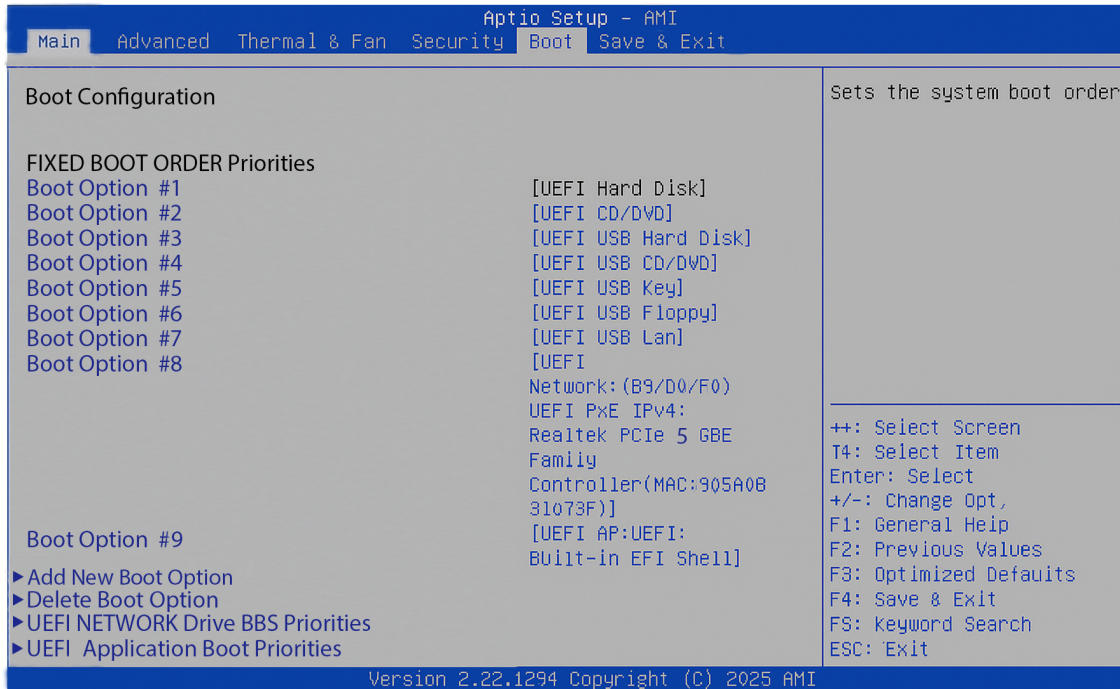


Figure 4-5. Boot Tab Screen

Boot Configuration

FIXED BOOT ORDER Priorities

Use this feature to prioritize the order of bootable devices 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

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`.

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.

4.7 Save & Exit

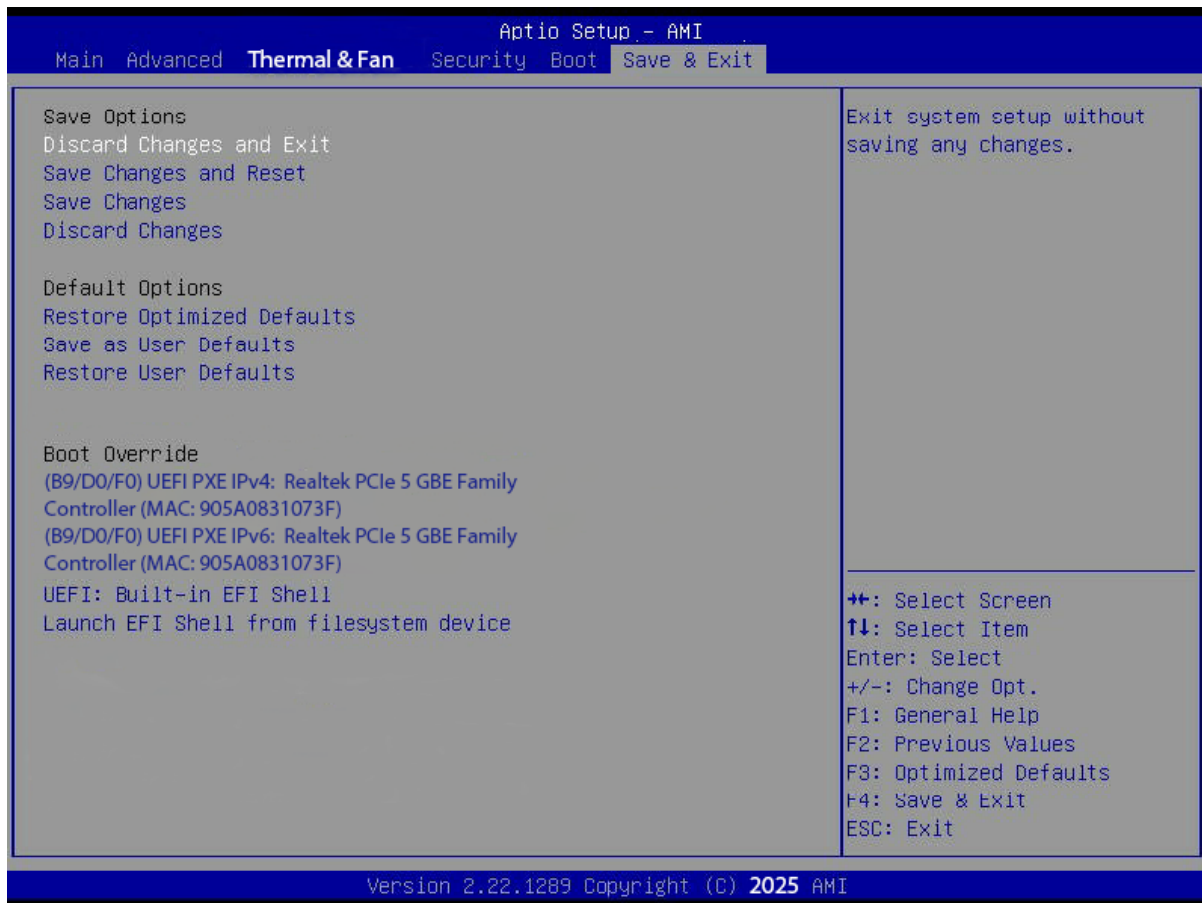


Figure 4-6. Save & Exit Tab

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 system.

Save Changes and Reset

On completing the system configuration changes, use this feature to exit the BIOS Setup utility and reboot the system 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 restore 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.

Appendix A:

Software

After the CARAM5-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.

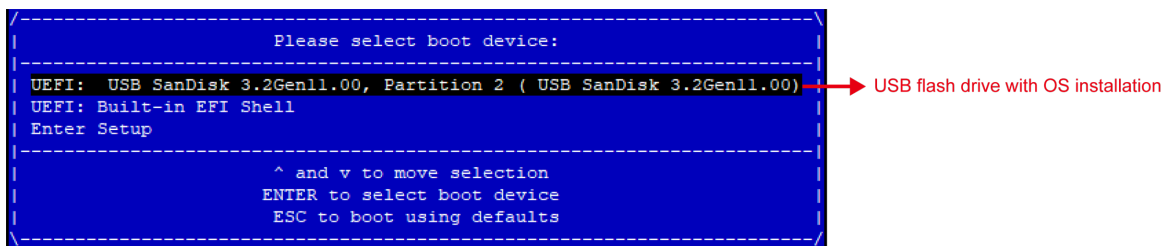


Figure A-1. Selecting the Boot Device

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.

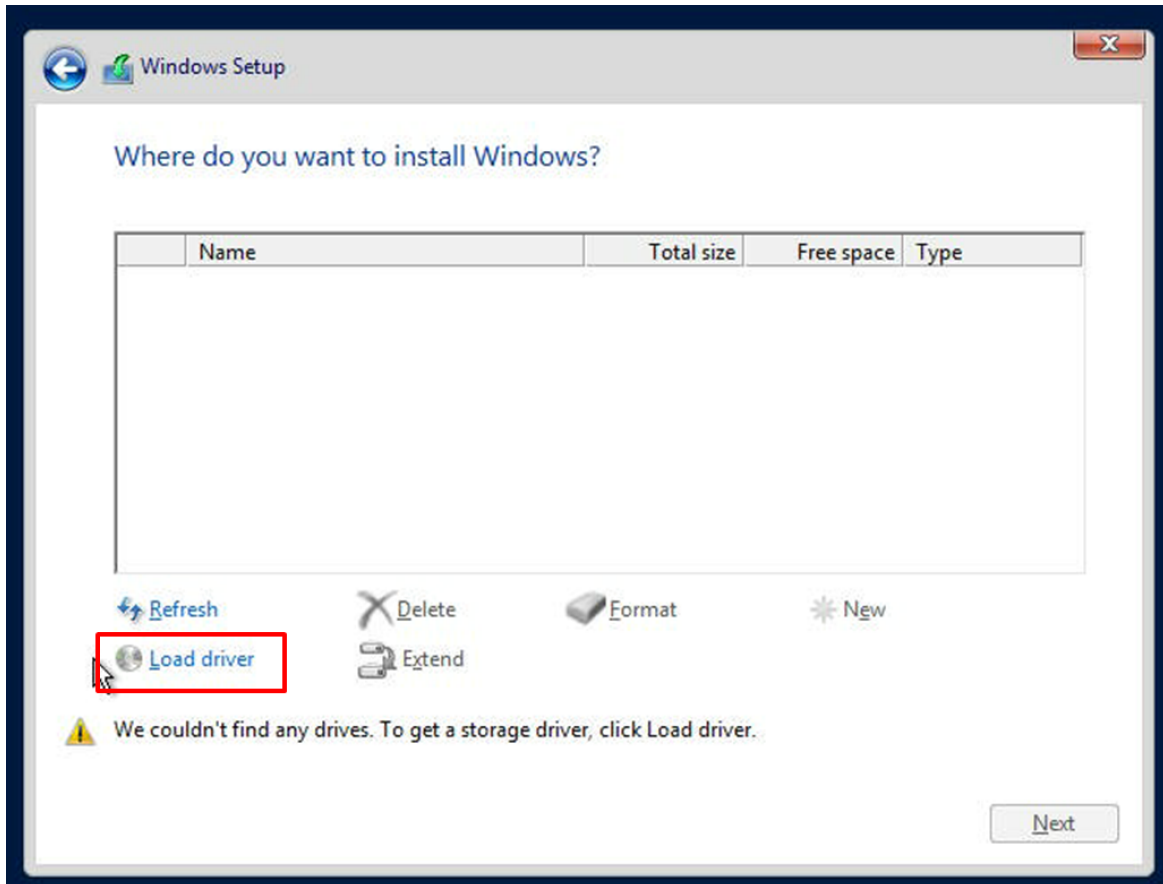


Figure A-2. Loading the Driver Link

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.

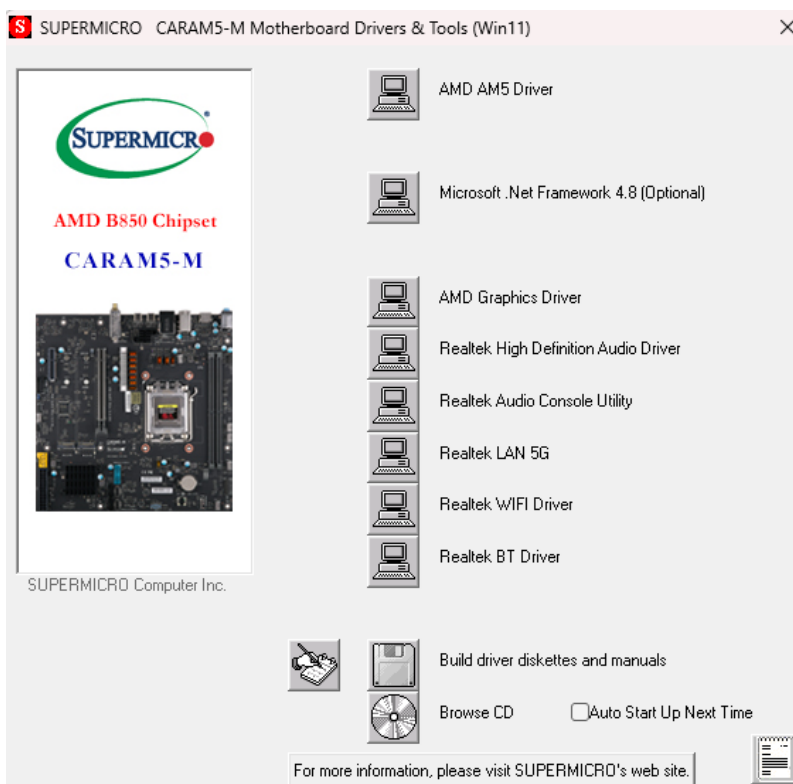


Figure A-3. Driver Download Screenshot

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

Appendix B:

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 CARAM5-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 suosittelemaan 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.

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.