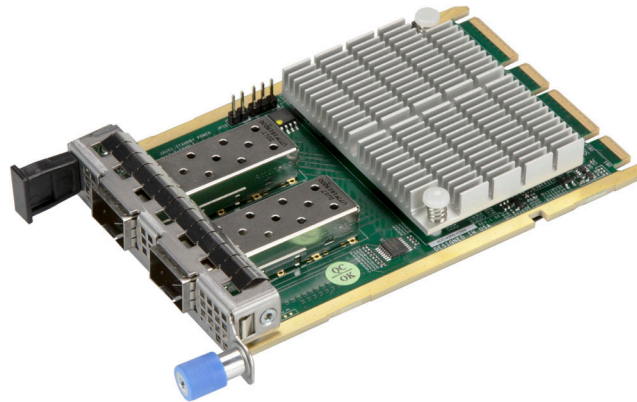




AOC-A25G-m2SM



AOC-A25G-m2SG



USER'S MANUAL

Revision 1.0a

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Preface

About This Manual

This user's guide is written for system integrators, PC technicians, and knowledgeable PC users. It provides information for the installation and use of the AOC-A25G-m2SM/AOC-A25G-m2SG add-on card.

About This Add-On Card

Supermicro® Advanced I/O Modules (AIOM) are the latest form factor designed to provide a wide range of networking options as well as other I/O technologies. The AOC-A25G-m2SM/AOC-A25G-m2SG is one of the most feature-rich and low-power consumption 25 GbE controllers in the market. Based on the Mellanox® ConnectX-6 Lx controller with the most advanced technological features (including LXAN, NVGRE, and RDMA), it offers the market a product that is unparalleled in density, functionality, and performance. The Supermicro AOC-A25G-m2SM/AOC-A25G-m2SG is the most versatile 25 GbE controller in the market with the best total cost of ownership for 25 GbE deployments in cloud, telecommunication, and enterprise data centers.

An Important Note to the User

All graphic images and layout drawings shown in this user's guide are based upon the latest PCB revision available at the time of publishing this user's guide. The add-on card you have received may or may not look exactly the same as the graphics shown in this user's guide.

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 to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton and mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete. For faster service, RMA authorizations may be requested online (<http://www.supermicro.com/support/rma/>).

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.

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.



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



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



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



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

Important Links

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

- Supermicro product manuals: <http://www.supermicro.com/support/manuals/>
- Product drivers and utilities: <https://www.supermicro.com/wdl/driver>
- Product safety info: http://www.supermicro.com/about/policies/safety_information.cfm
- A secure data deletion tool designed to fully erase all data from storage devices can be found at our website: https://www.supermicro.com/about/policies/disclaimer.cfm?url=/wdl/utility/Lot9_Secure_Data_Deletion_Utility/
- If you have any questions, contact our support team at: support@supermicro.com
- Frequently Asked Questions: <https://www.supermicro.com/FAQ/index.php>
- 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.

Naming Convention

AOC-ATG-i2T2SM



Character	Representation	Options
1st	Product Family	AOC: Add On Card
2nd	Form Factor	S: Standard, P: Proprietary, C: MicroLP, M: Super IO Module (SIOM), MH: SIOM Hybrid A: Advanced IO Module (AIOM), AH: AIOM Hybrid
3rd	Product Type/Speed	G: GbE (1Gb/s), TG: 10GbE (10Gb/s), 25G: 25GbE (25Gb/s), 40G: 40GbE (40Gb/s), 50G: 50GbE (50Gb/s), 100G: 100GbE (100Gb/s), IBE: EDR IB (100Gb/s), HFI: Host Fabric Interface
4th	Chipset Model (Optional)	N: Niantec (82599), P: Powerville (i350), S: Sageville (X550), F: Fortville (XL710/X710), L: Lewisburg (PCH)
5th	Chipset Manufacturer	i: Intel, m: Mellanox, b: Broadcom
6th	Number of Ports	1: 1 port, 2: 2 ports, 4: 4 ports, 8: 8 ports
7th	Connector Type (Optional)	S: SFP/SFP+/SFP28, T: 10GBase-T, Q: QSFP+, C: QSFP28
8th	2 nd Controller/Connector Type (Optional)	G: 1x GbE RJ45, 2G: GbE 2x RJ45, S: 1x 10G SFP+, T: 10GBase-T, 2T: 2x 10GBase-T, 2S: 2x SFP+
9th	Bracket	For SIOM – Non-M: swappable bracket for Storage systems, M: Internal bracket for Twin systems. For AIOM – Non-M: 1U height bracket for Edge systems, M: 0.5U height bracket for all other systems.

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Chapter 1

Introduction

1.1 Overview

Congratulations on purchasing your add-on card from an acknowledged leader in the industry. Supermicro products are designed with the utmost attention to detail to provide you with the highest standards of quality and performance. For product support and updates, refer to our website at <https://www.supermicro.com/en/products/networking/adapters>.

1.2 Key Features

The key features of this add-on card include the following:

- Advanced I/O Module (AIOM) form factor
- Mellanox ConnectX-6 Lx 25 GbE controller
- Support for 25 GbE and 10 GbE speeds
- Dual SFP28 connectors
- RDMA over Converged Ethernet
- VXLAN, NVGRE, and Geneve
- Asset management features with a thermal sensor
- Network Controller Sideband Interface (NC-SI) for remote management

1.3 Specifications

General

- Advanced I/O Module (AIOM) form factor
- Mellanox ConnectX-6 Lx 25 GbE controller
- Dual SFP28 port

Storage Accelerations

- NVMe over Fabric offloads for target
- Storage protocols: iSER, NFSoRDMA
- SMB Direct, NVMe-oF, and more

RDMA over Converged Ethernet (RoCE)

- RoCE v1/v2
- Zero-Touch RoCE: no ECN, no PFC
- RoCE over overlay networks
- IPsec over RoCE
- Selective repeat
- GPUDirect®
- Dynamically Connected Transport (DCT)
- Burst buffer offload

Management Features

- SMBus 2.0
- Network Controller Sideband Interface (NC-SI)
- NC-SI, MCTP over SMBus, and MCTP over PCIe — Baseboard Management

- Controller interface
- PLDM for Monitor and Control DSP0248
- PLDM for Firmware Update DSP026

Remote Boot

- Remote boot over Ethernet
- Remote boot over iSCSI
- UEFI support for x86 and ARM servers
- PXE boot

Standards

- IEEE 802.3ae 10 Gigabit Ethernet
- IEEE 802.3by 25 G supporting all FEC modes
- IEEE 802.3ad, 802.1AX Link Aggregation
- IEEE 802.3az Energy Efficient Ethernet (supports only “Fast-Wake” mode)
- IEEE 802.3ap based auto-negotiation and KR startup
- IEEE 802.1Q, 802.1P VLAN tags and priority
- IEEE 802.1Qaz (ETS)
- IEEE 802.1Qbb (PFC)
- IEEE 802.1Qbg
- IEEE 1588v2
- IEEE 1149.1 and IEEE 1149.6 JTAG
- PCIe 3.0 and 4.0

Power Consumption

- Typical 15 W

Environmental Conditions

- Storage temperature: -40°C to 70°C (-40°F to 158°F)
- Storage humidity: 90% non-condensing relative humidity at 35°C (95°F)

Physical Dimensions

- Card PCB dimensions: 2.99" x 4.528" (76 mm x 115 mm) (W x D)

1.4 Available SKUs



Note: This product is sold only as part of an integrated solution with Supermicro server systems.

SKUs	Bracket Included	Description
AOC-A25G-m2SM	BKT-0166L	2-port 25 Gigabit Ethernet Adapter with a 0.5U height bracket
AOC-A25G-m2SG	BKT-0209L	2-port 25 Gigabit Ethernet Adapter with a 0.5U height narrow bracket for Grand Twin Front IO systems

Chapter 2

Hardware Components

2.1 Add-On Card Image and Layout

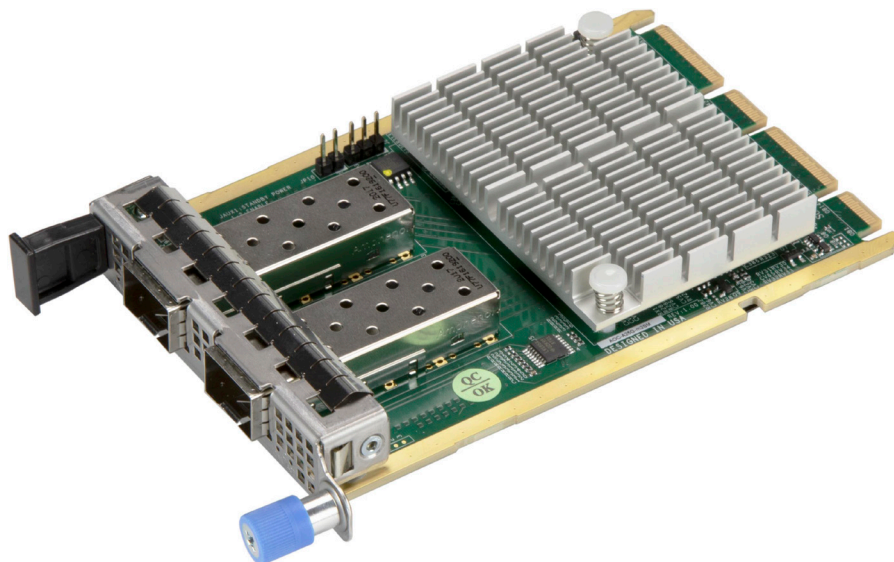


Figure 2-1: AOC-A25G-m2SM View



Figure 2-3: AOC-A25G-m2SG View

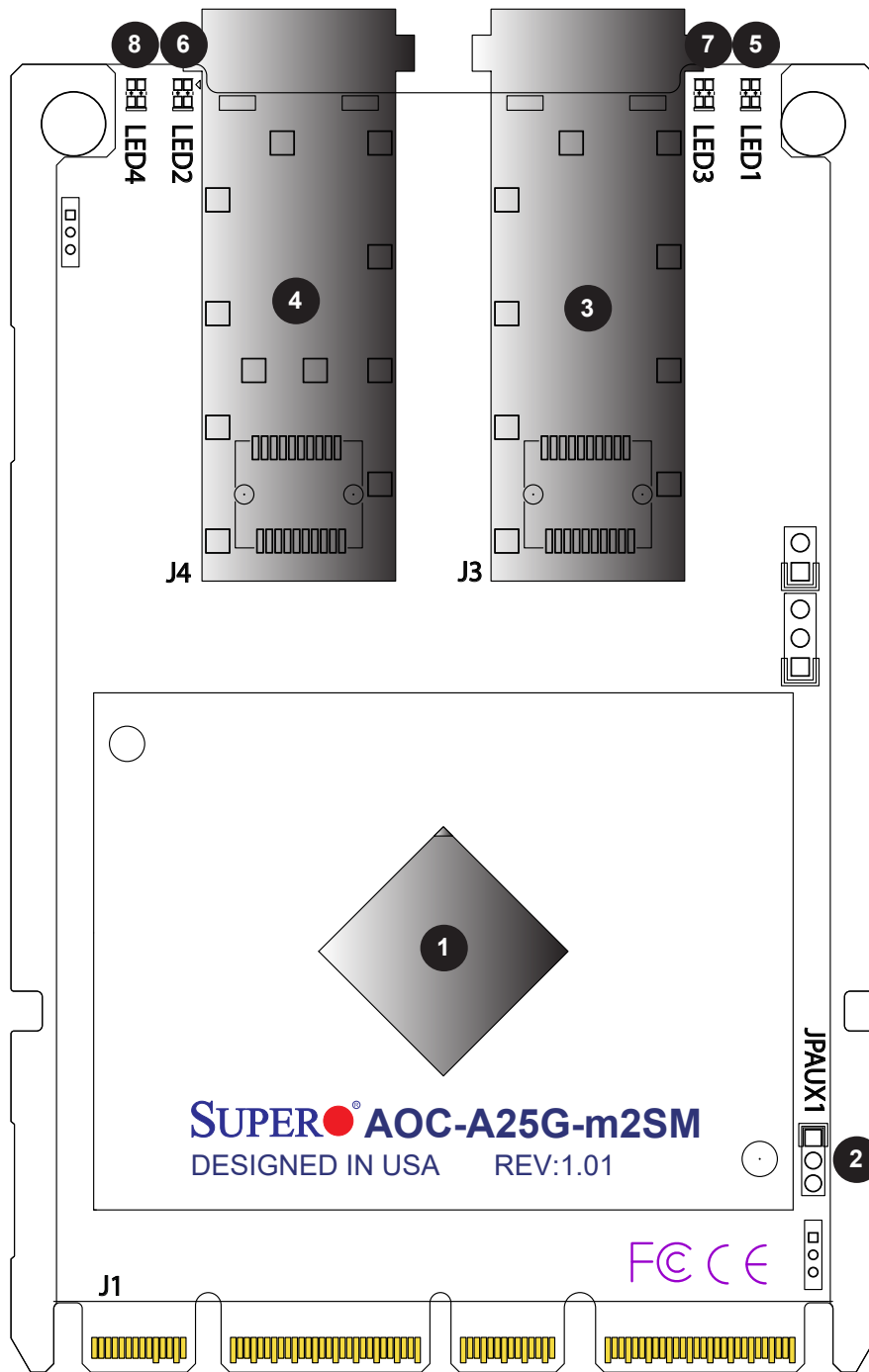


Figure 2-2: AOC-A25G-m2SM/m2SG Layout

2.2 Major Components

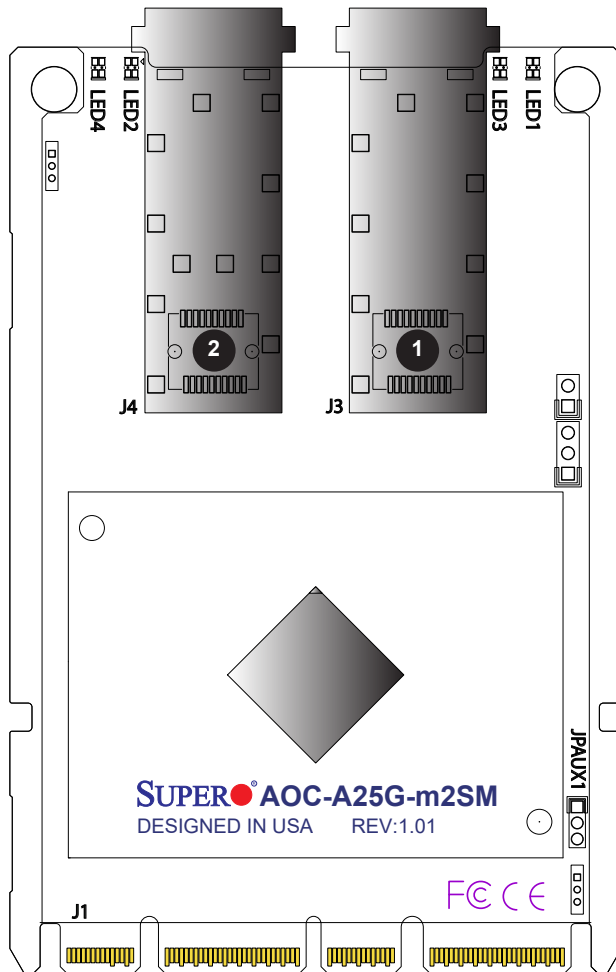
The following major components are installed on AOC-A25G-m2SM/-m2SG:

AOC-A25G-m2SM-/m2SG Major Components		
No	Component Name	Definition
1	Mellanox ConnectX-6	Ethernet 25 GbE controller
2	JPAUX1	1–2: Enable AUX Power in S5
		2–3: Disable AUX Power in S5
3	LAN1	SFP28 Port 1
4	LAN2	SFP28 Port 2
5	LED1	Port 1 Link LED
6	LED2	Port 2 Link LED
7	LED3	Port 1 Activity LED
8	LED4	Port 2 Activity LED

2.3 SFP28 Ethernet Connections

SFP28 Ports

There are a total of two SFP28 LAN ports (SFP28 LAN1/SFP28 LAN2) on the AOC-A25G-m2SM/-m2SG. These two LAN ports support network speeds of up to 25 GbE.

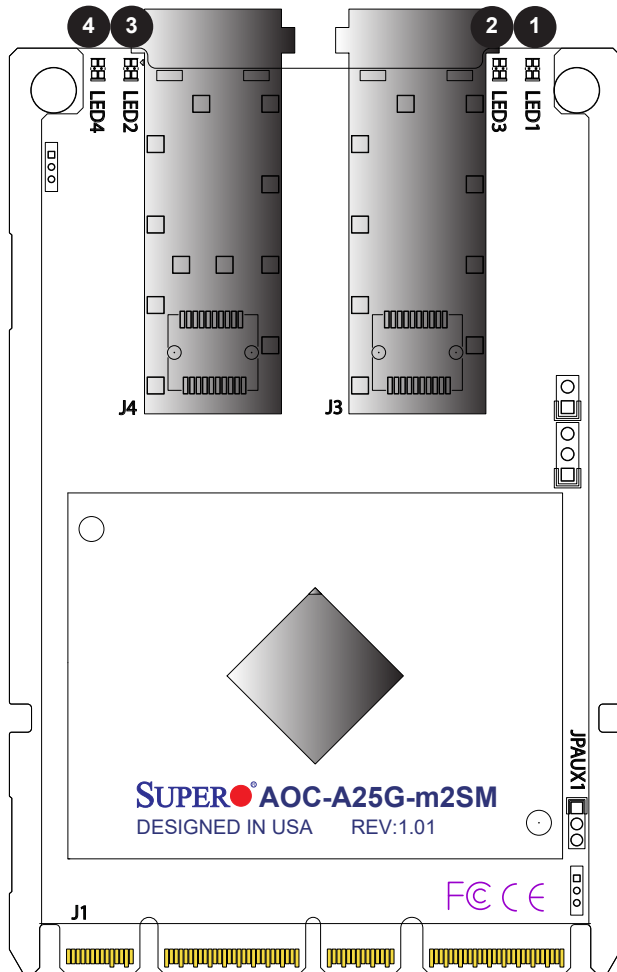


1. LAN Port 1
2. LAN Port 2

SFP28 LEDs

On this card, each SFP28 25 GbE LAN connector has two LEDs. This card's 25 GbE LAN has two bi-colored LED indicators per port (Link and Activity) at the bottom of the PCB. The LED on the left indicates link speeds, and the LED on the right indicates the status of the connector activity. Refer to the table for LED color definitions.

SFP28 Port LEDs		
LED	Color	Definition
Activity	Blink	Activity
Link	Green	25 Gbps
	Amber	10 Gbps



1. Port 1 Link LED
2. Port 1 Activity LED
3. Port 2 Link LED
4. Port 2 Activity LED

2.4 Jumper Settings

Explanation of Jumpers

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.

AOC JPAUX1 set to Disabled	When system/motherboard goes into standby mode		
	IPMI Support	FailOver Support	WoL Support
	No	No	No
	When system/motherboard is NOT in standby mode		
	IPMI Support	FailOver Support	WoL Support
	Yes	Yes	N/A
AOC JPAUX1 set to Enabled	When system/motherboard goes into standby mode		
	IPMI Support	FailOver Support	WoL Support
	Yes	Yes	No
	When system/motherboard is NOT in standby mode		
	IPMI Support	FailOver Support	WoL Support
	Yes	Yes	N/A

JPAUX1 for Standby Power	Function	Notes
Disable <i>No standby power to AOC NIC</i>	Disable jumper to disconnect the standby power.	Default
Enable <i>Standby power to AOC NIC</i>	Enable jumper to connect standby power to AOC NIC.	Standby Power can be enabled to provide support for NC-SI (IPMI/Failover Support). Consult Supermicro before enabling it.

Chapter 3

Installation

Your system came with the AOC-A25G-m2SM/-m2SG add-on card, which is designed as a part of an integrated solution. We do not recommend that any part of your system components be removed and reinstalled. However, if you do need to remove or reinstall a system component, including this add-on card, follow the instructions to ensure proper system setup. Also, be sure to remove the power cord first before adding, removing, or changing any hardware components to avoid damaging the system or components.

3.1 Static-Sensitive Devices

Electrostatic Discharge (ESD) can damage electronic components. To avoid damaging your add-on card, 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 add-on card from the antistatic bag.
- Handle the add-on card by its edges only; do not touch its components or peripheral chips.
- Put the add-on card back into the antistatic bags when not in use.
- For grounding purposes, make sure that your system chassis provides excellent conductivity between the power supply, the case, the mounting fasteners, and the add-on card.

Unpacking

The add-on card is shipped in antistatic packaging to avoid static damage. When unpacking your component or system, make sure you are static protected.



Note: To avoid damaging your components and to ensure proper installation, always connect the power cord last, and always unplug it before adding, removing, or changing any hardware components.

3.2 Before Installation

To install the add-on card properly, be sure to follow the instructions:

1. Power down the system.
2. Remove the power cord from the wall socket.
3. Use industry-standard antistatic equipment (such as gloves or a wrist strap) and follow the instructions listed on [page 18](#) to avoid damage caused by ESD.
4. Familiarize yourself with the server, motherboard, and/or chassis documentation.
5. Confirm that your operating system includes the latest updates and hot fixes.

3.3 Uninstalling and Installing the Add-on Card (With 0.5U Brackets)

Follow the steps to install an add-on card into your system. If the system is fixed onto a rack, the removal of the server top cover is not required. If the system is not anchored to a fixed structure, it is recommended to remove the system's top cover for ease of installation.

A. Uninstalling an AIOM

To uninstall an AIOM card, take the following steps:

1. Unscrew the blue knob from the system.
2. Pull on the tab and knob evenly on both sides of the card to disengage the AIOM from the motherboard connector.
3. Gently slide the AIOM out.

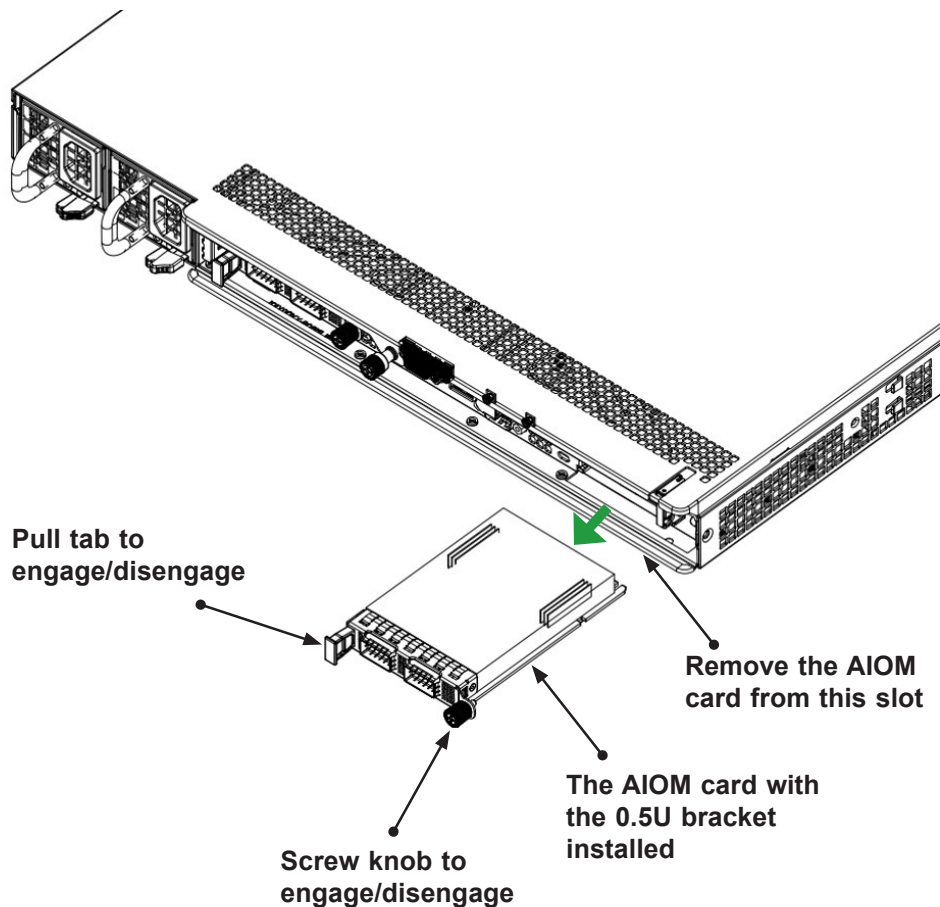


Figure 3-1: Uninstalling an AIOM

B. Installing an AIOM

To install an AIOM card, take the following steps:

1. Position the AIOM in front of the empty slot.
2. Gently push it onto the metal bracket. The AIOM should slide into the chassis until the card is securely seated in the connector.
3. Press the blue knob.
4. Secure it onto the chassis by turning the knob clockwise.

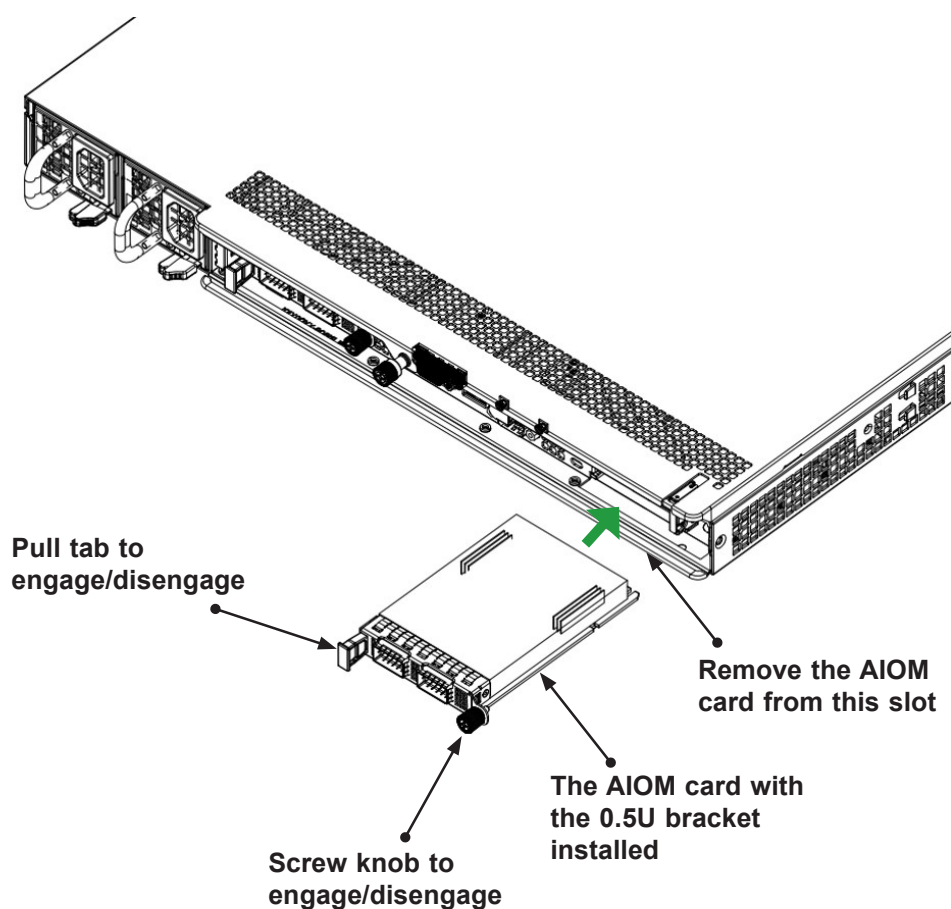


Figure 3-2: Installing an AIOM

C. Installing an AIOM (With an AIOM Slot Cover)

To install an AIOM card with an AIOM slot cover, take the following steps:

1. Remove the AIOM slot cover by removing the knob and screw that is attached to the bracket of the chassis.
2. Pull the bracket away and set it aside.
3. Position the AIOM in front of the empty slot and gently push it onto the metal bracket. The AIOM should slide into the chassis until the card is securely seated in the connector.
4. Secure it onto the chassis by pressing the blue knob and turning the knob clockwise.

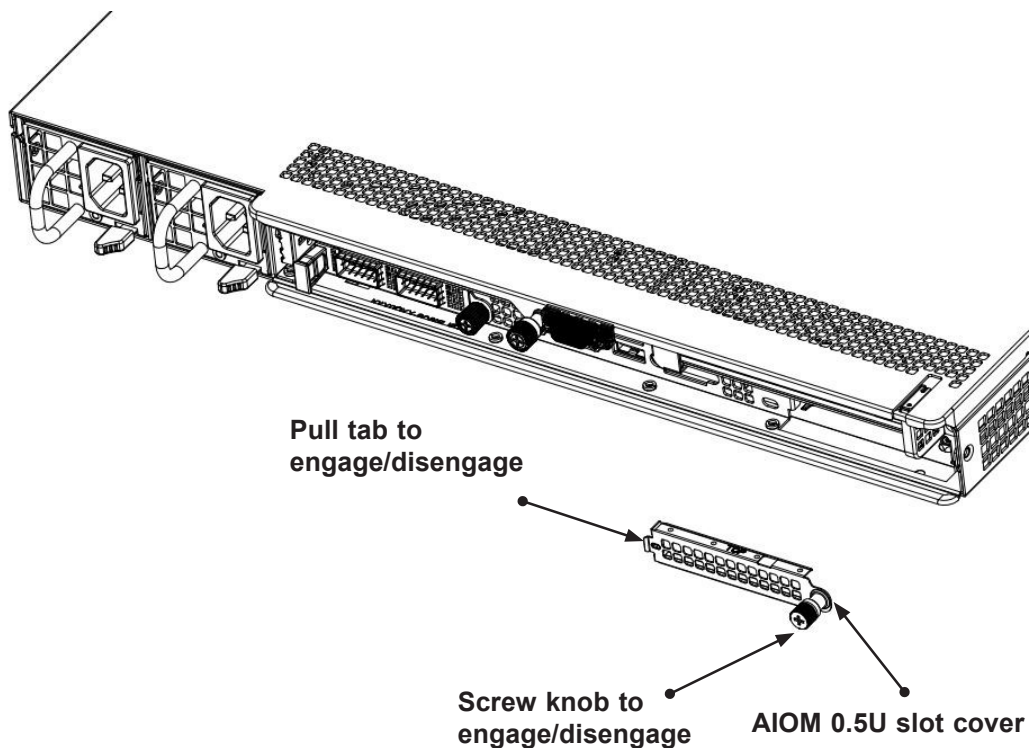


Figure 3-3: Installing an AIOM With an AIOM Slot Cover



Note 1: This AIOM does not support hot plug. Turn off the AC power and remove the power cord from the wall socket before installing or removing an AIOM.

Note 2: Pictures shown above are for illustration purposes only. Actual products may vary due to product enhancement.

3.4 Installing the Drivers on Windows

Follow the steps to install the drivers for the Windows operating systems. Download the drivers from Intel Download Center or the Supermicro site at https://www.supermicro.com/wftp/Networking_Drivers.

1. Run CDR-NIC.
2. When the SUPERMICRO window appears, click on the computer icon next to the product model.

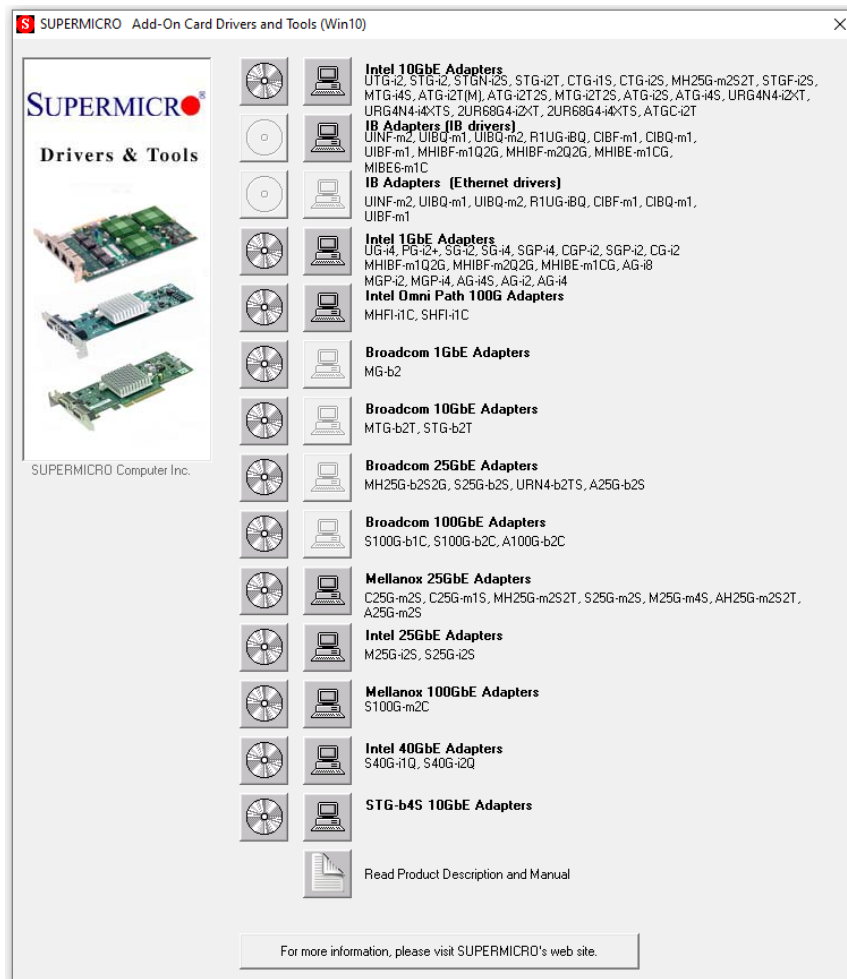


Figure 3-4: Add-On Card Drives and Tools

3. Click on INSTALL DRIVERS AND SOFTWARE.
4. Follow the prompts to complete the installation.

3.5 Installing the Drivers (for Mellanox ConnectX-6)

Use the appropriate following procedures to install the driver for the AOC-A25G-m2SM/-m2SG add-on card on both Linux and Windows.

Linux Drivers

Use the following procedures to install the 25 GbE driver on the Linux (RedHat/CentOS) operating system:

1. We recommend downloading the latest Mellanox Driver directly from the Mellanox website: https://mellanox.com/products/infiniband-drivers/linux/mlnx_ofed.
2. Download and extract /untar the MLNX_OFED***.tgz package.
3. Change to the appropriate directory where your newly extracted package is located.
4. Install the driver by entering the following commands:

```
./mlnxofedinstall
```

This installs the Linux drivers into your system. You might be prompted to install kernel dependencies for Linux, in which case you would need to follow on-screen instructions.

Windows Drivers

Use the following procedures to install a 25 GbE driver on the Windows operating system.

1. We recommend downloading the latest Mellanox Driver directly from the Mellanox website: <https://mellanox.com/products/adaptersoftware/ethernet/windows/winof-2>.
2. Once the driver is downloaded, run the .exe file to install the driver.

(Disclaimer Continued)

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