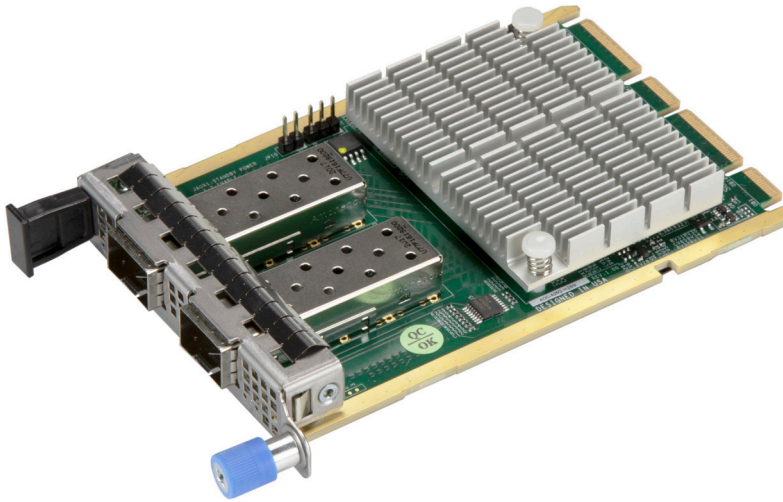
AOC-A25G-m2SM



User's Guide

Revision 1.0

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User's Guide Revision 1.0

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Preface

About this User's Guide

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 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 is one of the most feature rich and low power consumption 25GbE 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 is the most versatile 25GbE controller in the market with the best total cost of ownership for 25GbE deployments in cloud, telco, and enterprise data centers.

An Important Note to the User

All images and layouts shown in this user's guide are based upon the latest PCB revision available at the time of publishing. The 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 the add-on card to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and the shipping package is mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete. For faster service, you can also request an RMA authorization online http://www.supermicro.com/RmaForm/.

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

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

Conventions Used in the User's Guide

Pay special attention to the following symbols for proper system installation and for safety instructions to prevent damage to the system or injury to yourself:

Warning: Important information given to ensure proper system installation or to prevent damage to the components or injury to yourself.

Note: Additional information given for proper system setup.

Naming Convention for Standard Network Adapters



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	2nd 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

Overview

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 in quality and performance. For product support and updates, please refer to our website at http://www.supermicro.com/products/nfo/networking.cfm#adapter.

1-2 Key Features

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

1-3 Technical Specifications

General

- Advanced I/O Module (AIOM) Form Factor
- Mellanox® ConnectX-6 Lx 25GbE 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 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 25G 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
- PCI-E 3.0 and 4.0

Power Consumption

- Maximum 15W

Operating Conditions

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

Physical Dimensions

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

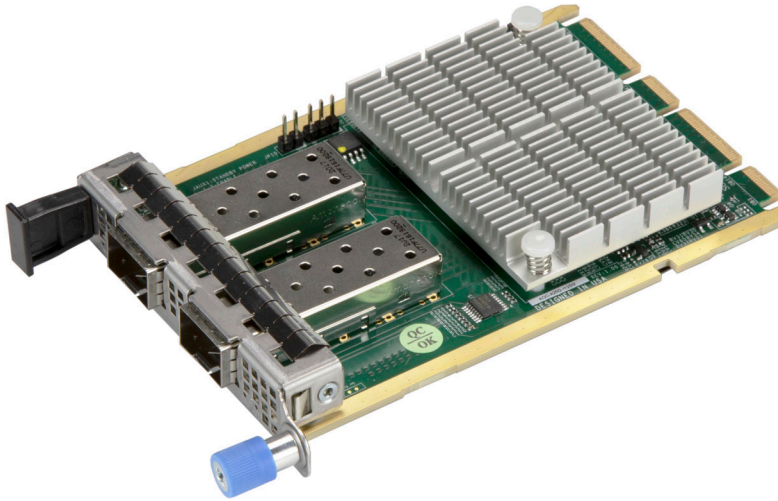
1-4 Available SKUs

SKUs	Bracket Included	Description
AOC-A25G-m2SM	BKT-0166L	2-port 25 Gigabit Ethernet Adapter with a 0.5U height bracket

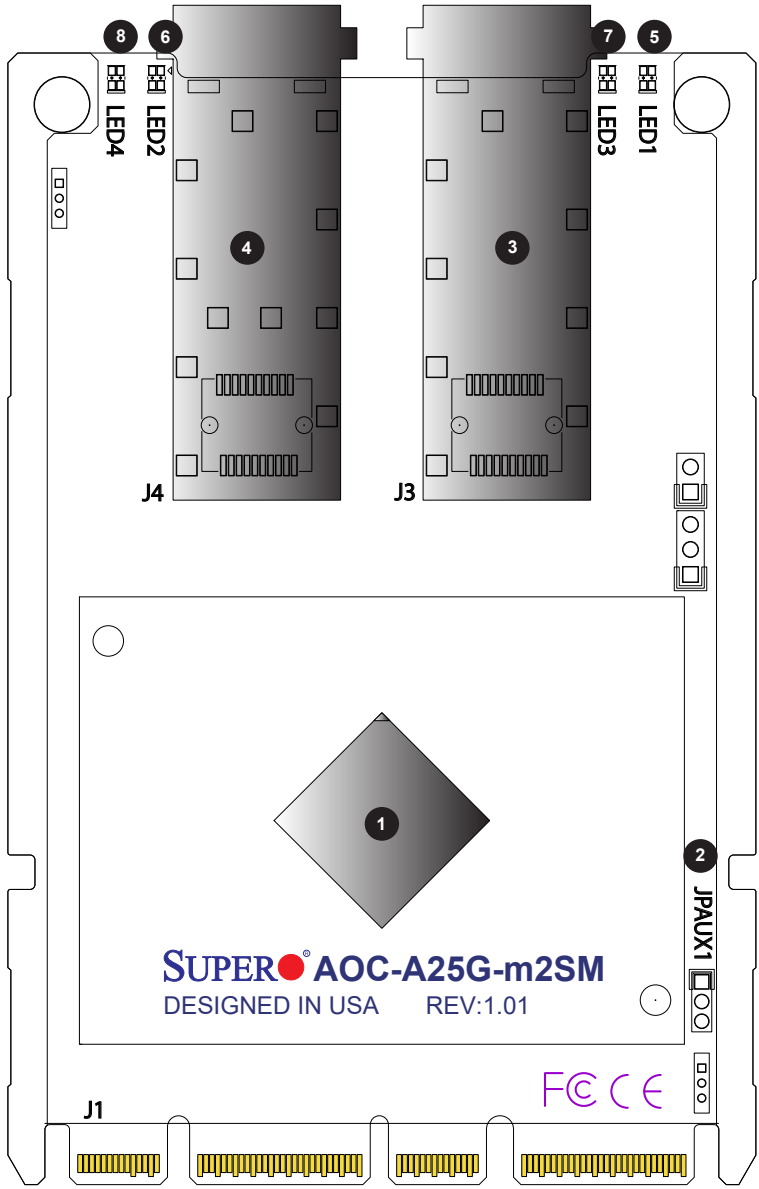
Chapter 2

Hardware Components

2-1 Add-On Card Image and Layout



AOC-A25G-m2SM View



AOC-A25G-m2SM Layout

2-2 Major Components

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

AOC-A25G-m2SM Major Components		
No	**Component Name**	**Definition**
1	Mellanox® ConnectX-6	Ethernet 25GbE 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 Active LED
8	LED4	Port 2 Active LED

2-3 SFP28 Ethernet Connections

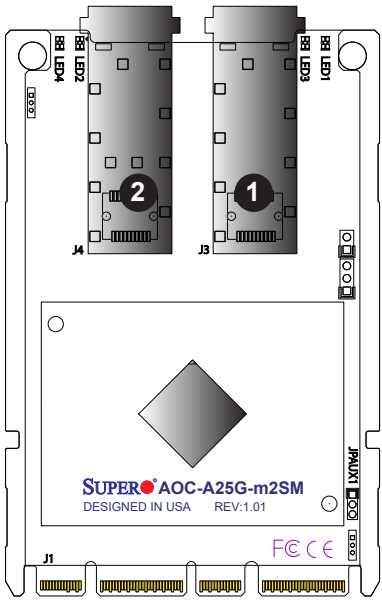
SFP28 Ethernet Connectors

There are a total of two SFP28 LAN ports (SFP28 LAN1/SFP28LAN2) on the AOC-A25G-m2SM. These two LAN ports support network speeds of up to 25GbE.

Link/Activity LED Indicators

This card's 25G LAN has two bi-colored LED indicators per port (SFP28 – Link and Activity) at the bottom of PCB. Please refer to the table below for LED color definition.

SFP28 Ports	Color	Link (L)	Activity (A)
LAN1 LAN2	25Gbps	Green	Blink
	10Gbps	Amber	Blink



1. SFP28 Port 1
2. SFP28 Port 2

LAN LED

Each SFP28 connector has two LEDs. The LED on the left indicates link speeds, and the LED on the right indicates the status of the activity of the connector. See the table on the previous page for more information.

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.

JPAUX1 for Standby Power	IPMI Support	FailOver Support	WoL Support
Disable = No standby power to AOC NIC	Yes	Yes	No
Enable = Standby power to AOC NIC	Yes	Yes	Yes

JPAUX1 for Standby Power	Function	Notes
Disable = No standby power to AOC NIC	Disable jumper to disconnect the standby power	Default
Enable = Standby power to AOC NIC	Enable jumper to connect standby power to AOC NIC	WoL is supported on port 1 ONLY but limited to platforms with sufficient airflow when it is in standby mode (S5 state). Please consult Supermicro before enabling it.

Chapter 3

Installation

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.
- 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 that 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

Before you install the add-on card, follow the instructions below.

1. Power down the system.
2. Unplug the power cord.
3. Use industry-standard anti-static equipment such as gloves or a wrist strap and follow the precautions on page 3-1 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 hotfixes.

3-3 Uninstalling and Installing the AOC-A25G-m2SM (with 0.5U bracket)

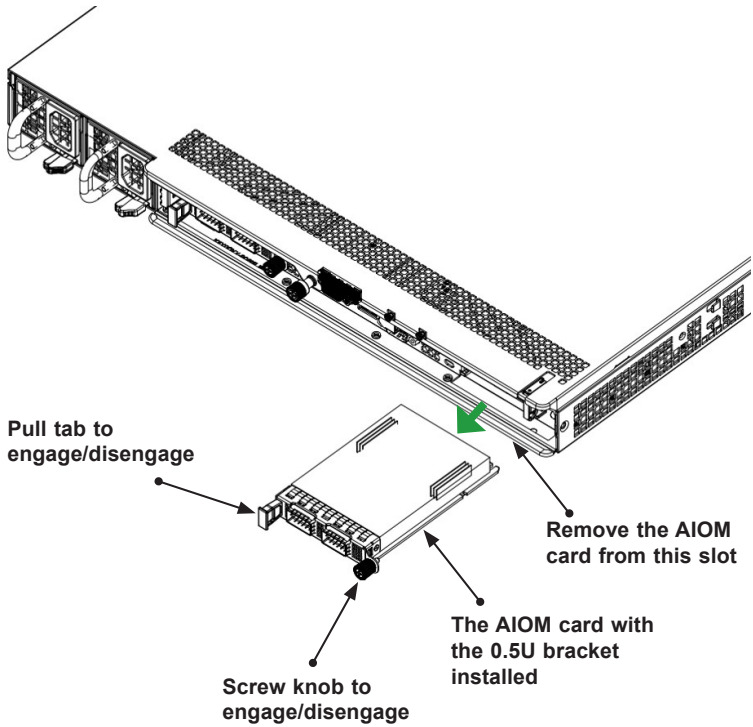
Follow the steps below to install an add-on card into your system. (If the system is fixed onto a rack, the removal of server top cover is not required. If the system is not anchored to a fixed structure, it is recommended to remove the system top cover for ease of installation.)

A. Uninstalling an AIOM Module

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 module from the motherboard connector.

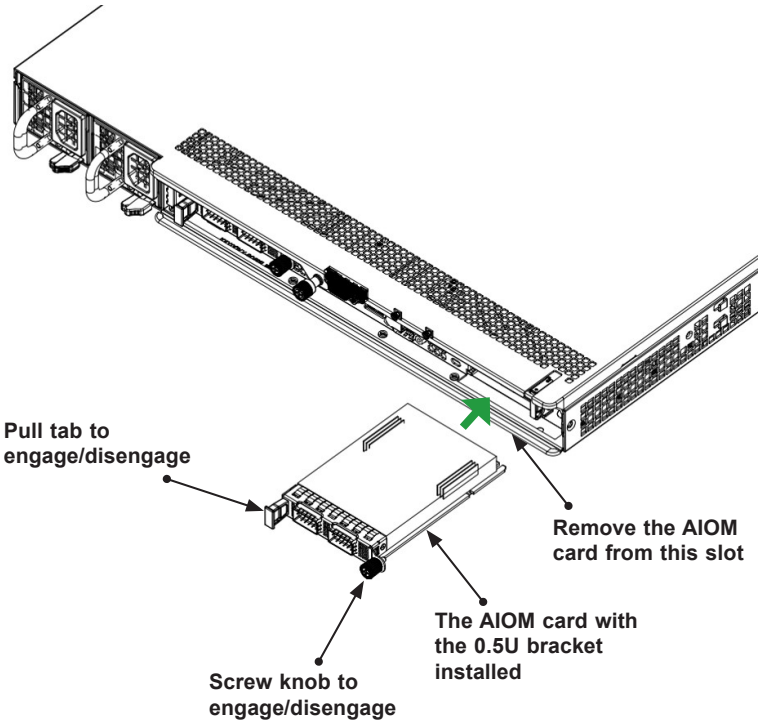
3. Gently slide the AIOM module out.



B. Installing an AIOM Module

1. Position the AIOM module in front of the empty slot and gently push it onto the metal bracket. The AIOM module should slide into the chassis until the card is securely seated in the connector.

2. Press the blue knob and secure it onto the chassis by turning the knob clockwise.

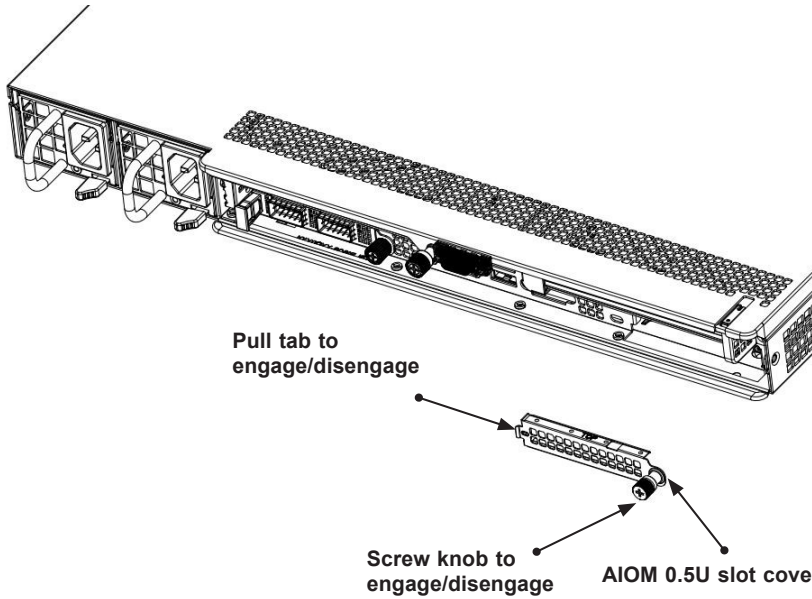


C. Installing an AIOM Module (with an AIOM Slot Cover)

1. Remove the AIOM slot cover by removing the knob and screw that is attached to the bracket of the chassis. Pull the bracket away and set it aside.

2. Position the AIOM module in front of the empty slot and gently push it onto the metal bracket. The AIOM module should slide into the chassis until the card is securely seated in the connector.

3. Press the blue knob and secure it onto the chassis by turning the knob clockwise.



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

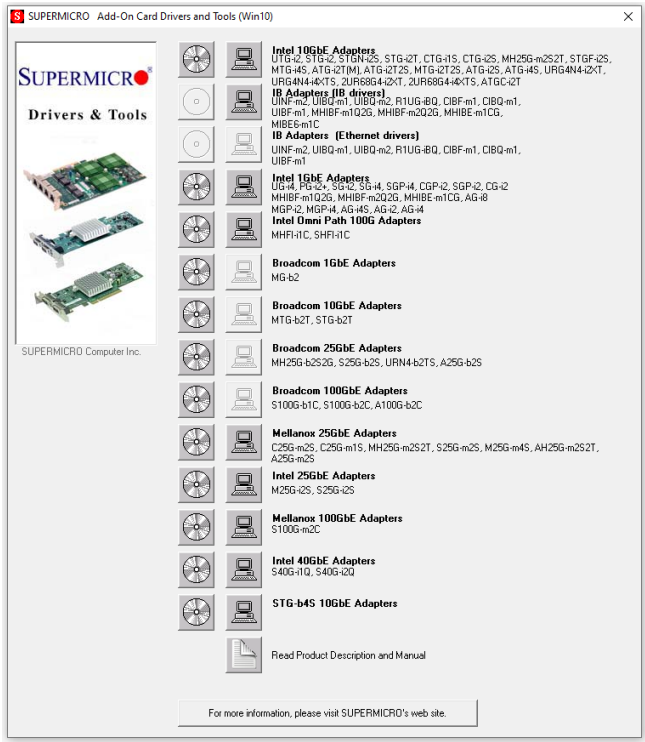
Note 2: Pictures shown above are for illustration purposes only. Actual products may vary due to product enhancement.

3-4 Installing Drivers on Windows

Follow the steps below 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.



Note: If the *FOUND NEW HARDWARE WIZARD* screen displays on your system, click CANCEL.

3. Click on INSTALL DRIVERS AND SOFTWARE.

4. Follow the prompts to complete the installation.

3-5 Installing Drivers (for Mellanox® ConnectX-6)

Use the procedures below to install the driver for the AOC-A25G-m2SM add-on card on both Linux and Windows.

Linux Drivers

Use the following procedures to install the 25GbE 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

```
./mlnxofedinstall
```

This installs the Linux drivers to 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 25GbE driver on the Windows operating system..

1. We recommend downloading the latest Mellanox Driver directly from the Mellanox website: https://mellanox.com/products/adapter-software/ethernet/windows/winof-2.

2. Once the driver is downloaded, run the .exe file to install the driver

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