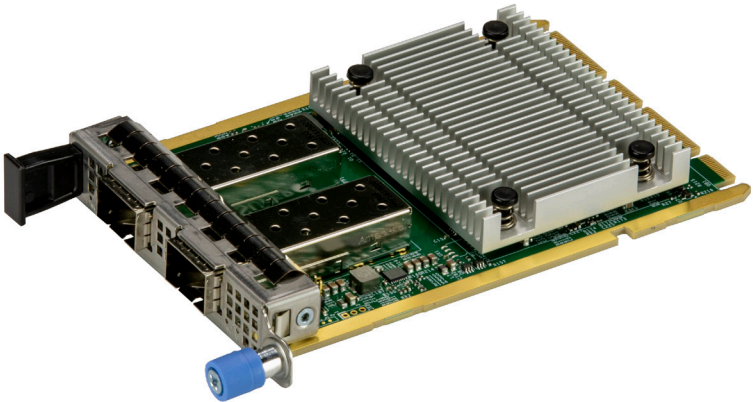




AOC-A25G-i2SM



User's Guide

Revision 1.0

The information in this user's guide 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 user's guide, or to notify any person or organization of the updates. **Please Note: For the most up-to-date version of this user's guide, please see our Website at www.supermicro.com.**

Super Micro Computer, Inc. ("Supermicro") reserves the right to make changes to the product described in this user's guide 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 the manufacturer and the 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 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 an industrial environment. 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 www.dtsc.ca.gov/hazardouswaste/perchlorate".

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.



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 www.P65Warnings.ca.gov.

User's Guide Revision 1.0

Release Date: March 10, 2022

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 © 2022 by Super Micro Computer, Inc.

All rights reserved.

Printed in the United States of America

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-i2SM 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-i2SM is one of the most feature-rich controllers in the market with a lower power consumption of 25GbE. Based on the Intel E810-XXVAM2 Ethernet controller with features such as VXLAN, NVGRE, RDMA, and others, it provides unparalleled density, performance, and functionality. The Supermicro® AOC-A25G-i2SM 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

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.

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)
support@supermicro.com (Technical Support)

Website: 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@supermicro.nl (General Information)
support@supermicro.nl (Technical Support)
rma@supermicro.nl (Customer Support)

Website: 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: support@supermicro.com.tw

Website: www.supermicro.com.tw

Table of Contents

Preface

Chapter 1 Overview

1-1	Overview	1-1
1-2	Key Features	1-1
1-3	Technical Specifications	1-2

Chapter 2 Hardware Components

2-1	Add-On Card Image and Layout	2-1
2-2	Major Components	2-3
2-3	SFP28 Ethernet Connections	2-4
2-4	Jumper Settings	2-6

Chapter 3 Installation

3-1	Static-Sensitive Devices	3-1
3-2	Before Installation	3-2
3-3	Uninstalling and Installing the AOC-A25G-i2SM	3-3
3-4	Installing Drivers (for Intel®E810-XXVAM2)	3-6

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/info/networking.cfm#adapter>.

1-2 Key Features

- Advanced I/O Module (AIOM) form factor
- Intel® E810-XXVAM2 25GbE controller
- Support for 25GbE and 10GbE speed
- Dual SFP28 connectors
- PCIe Gen 4.0 (backward compatible to PCI-E 3.0)
- Low Latency RDMA over Converged Ethernet (iWARP and RoCE v2)
- Intel® Ethernet Adaptive Virtual Function (Intel® Ethernet AVF)
- Intel® Ethernet Flow Director – Application Device Queues (ADQ)
- Dynamic Device Personalization (DDP)
- Hardware Root of Trust (RoT) with firmware recovery
- VXLAN, NVGRE, and Geneve
- Asset Management Features (AMF) with thermal sensor
- Network Controller Sideband Interface (NC-SI) for remote management

1-3 Technical Specifications

General

- Advanced I/O Module (AIOM) form factor
- Intel® E810-XXVAM2 25GbE controller
- Dual SFP28 ports
- Advance Device Queues (ADQ)
- Dynamic Device Personalization (DDP)

Converged Storage Network

- iSCSI
- SMB Direct
- iSER
- NVMe over RDMA (iWARP and RoCEv2)
- Storage Performance Development Kit (SPDK)
- NVMe over TCP

RDMA

- iWARP
- RoCEv2
- Data Center Bridging

Management and Control

- Network Controller Sideband Interface (NC-SI)
- BMC
- PLDM and PLDM based firmware update

Remote Boot

- Signed UEFI option ROM compatible with HTTPS boot
- Remote boot over iSCSI
- PXE Boot/UEFI PXE Boot

Precision Clocks Synchronization IEEE 802.3ae 10 Gigabit Ethernet

- IEEE 1588 (also known as the Precision Time Protocol (PTP))

Power Consumption

- ACPI-compliant power management
- Pass through Energy Efficient Ethernet (IEEE802.3az-2010)
- Maximum: 12.5W

Operating Conditions

- Operating temperature: 0 °C to 105 °C
- Storage temperature: -40 °C to 115 °C

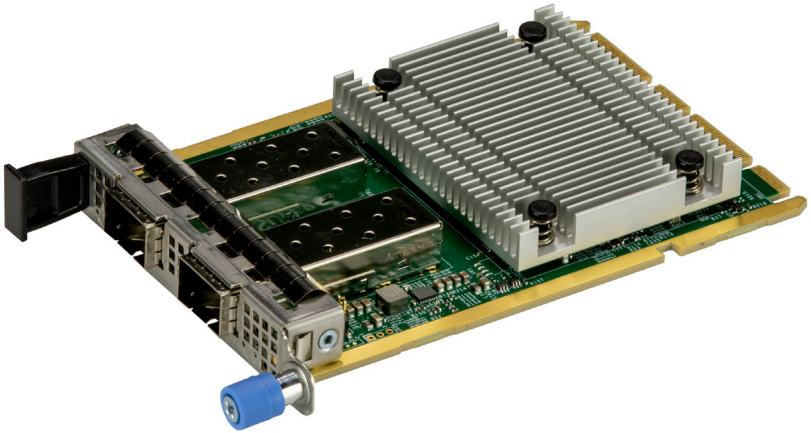
Physical Dimensions

- 76mm x 115mm (W x D)

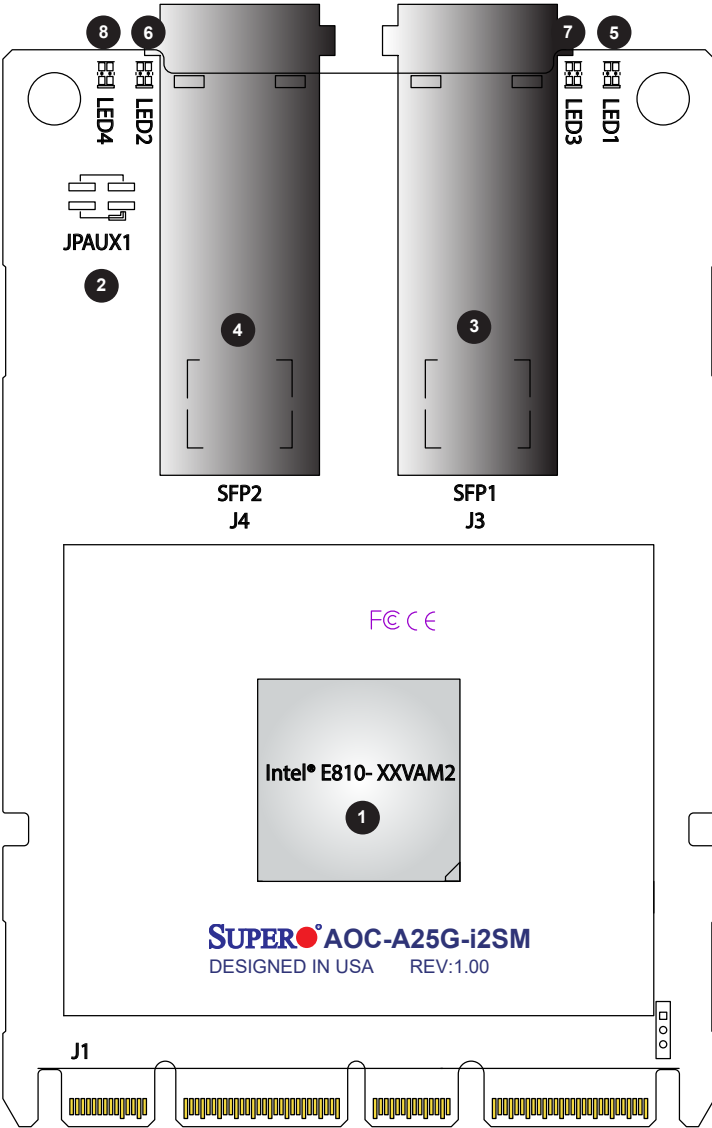
Chapter 2

Hardware Components

2-1 Add-On Card Image and Layout



AOC-A25G-i2SM View



AOC-A25G-i2SM Layout

2-2 Major Components

The following major components are installed on the AOC-A25G-i2SM:

AOC-A25G-i2SM Major Components		
No	Component Name	Definition
1	Intel® E810-XXVAM2	Ethernet 25GbE controller
2	JPAUX1	1-2: Enable AUX Power
		3-4: Disable AUX Power (default)
3	J3	SFP28 Port 1
4	J4	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

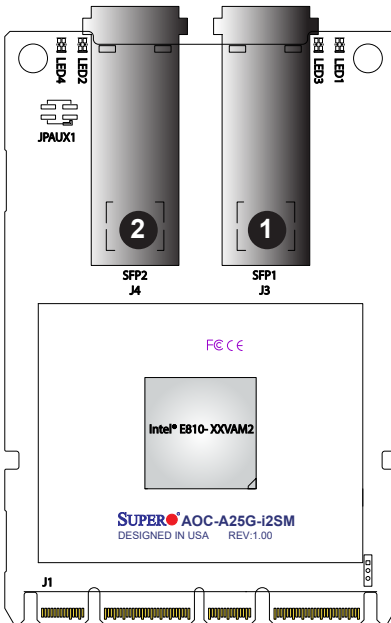
SFP28 Ethernet Connectors

There are a total of two SFP28 LAN ports (SFP28 LAN1/SFP28 LAN2) on the AOC-A25G-i2SM. These two LAN ports support network speeds of up to 25GbE.

Link/Activity LED Indicators

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

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



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.

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

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.

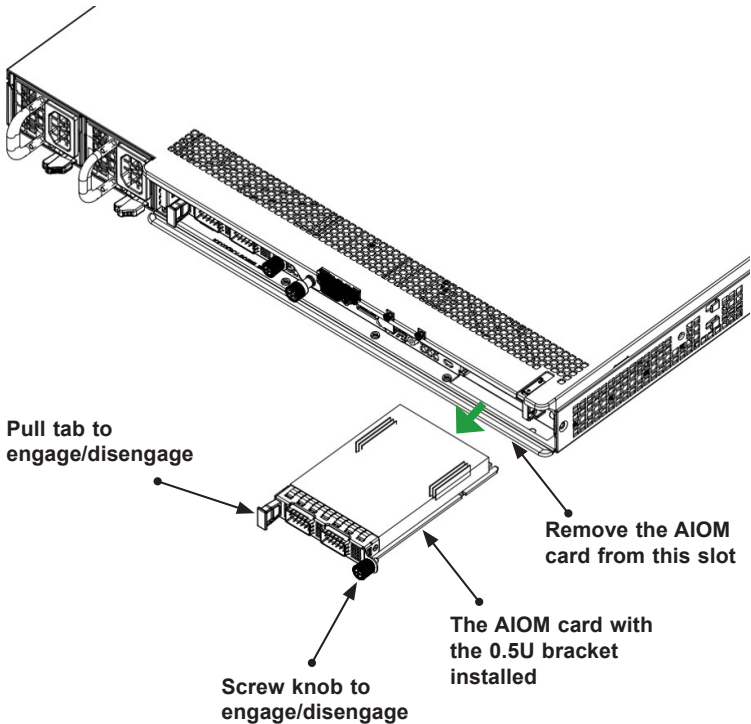
1. Power down the system.
2. Unplug the power cord.
3. Use industry-standard anti-static equipment such as gloves or a wrist strap and follow the precautions on page 3-1 to avoid damage caused by ESD.
4. Familiarize yourself with the server, motherboard, and/or chassis documentation.
5. Confirm that your operating system includes the latest updates and hotfixes.

3-3 Uninstalling and Installing the AOC-A25G-i2SM

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.)

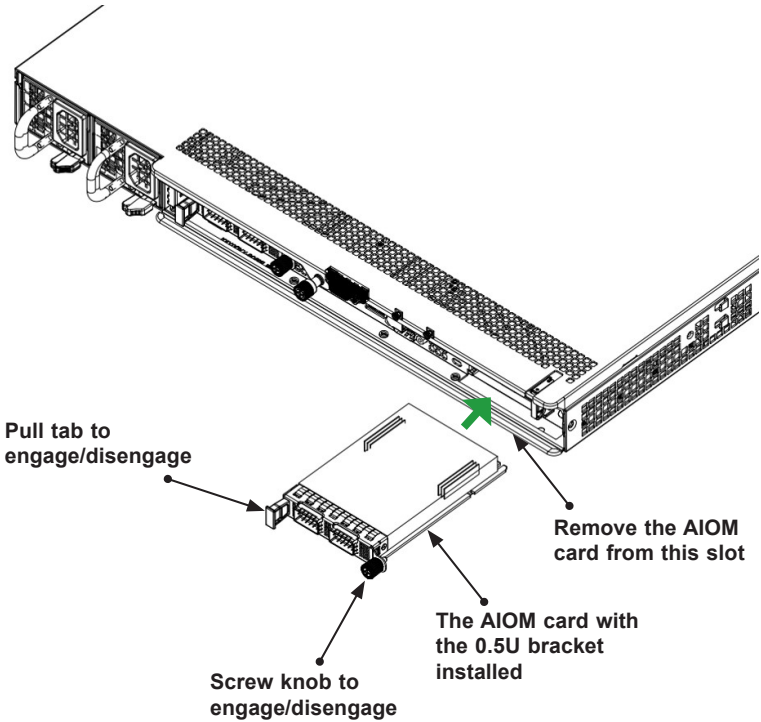
A. Uninstalling an AIOM Module

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.



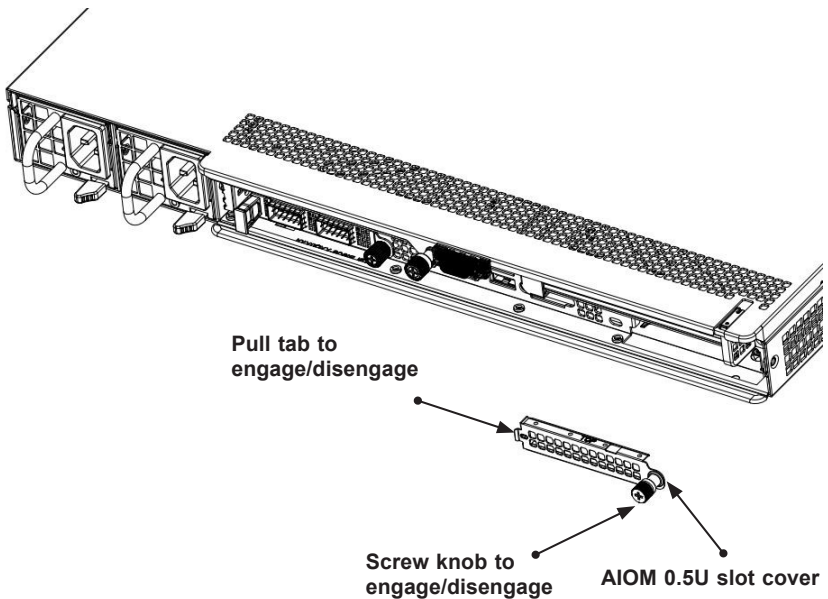
B. Installing an AIOM Module


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 (for Intel®E810-XXVAM2)

To install both drivers and firmware for the AOC-A25G-i2SM add-on card for either Linux or Windows, please follow the instructions below.




Building Driver RPM Package

Please follow the steps below to build a binary RPM package for this driver.

 **Note:** RPM functionality has only been tested in Red Hat distributions.

1. Run the following command, where <x.x.x> is the version number for the driver tar file.

```
# rpmbuild -tb ice-<x.x.x>.tar.gz
```

 **Note:** For the build to work properly, the kernel currently running MUST match the version and configuration of the installed kernel sources. If you have just recompiled the kernel, reboot the system before building.

2. After building the RPM, the last few lines of the tool output contain the location of the RPM file that was built. Install the RPM with one of the following commands where <RPM> is the location of the RPM file:

```
# rpm -Uvh <RPM>
```

or

```
# dnf/yum localinstall <RPM>
```



Note 1: To compile the driver on some kernel/arch combinations, you may need to install a package with the development version of libelf (e.g. libelf-dev, libelf-devel, elfutils-libelf-devel).

Note 2: When compiling an out-of-tree driver, users will find that details may vary by distribution. However, you will usually need a kernel-devel RPM or some RPM that provides the kernel headers at a minimum. The RPM kernel-devel will usually fill in the link at `/lib/modules/`uname -r`/build`.

Manually Building Driver

Please follow the steps below to manually build driver.

1. Move the base driver tar file to the directory of your choice. For example, use `'/home/username/ice'` or `'/usr/local/src/ice'`.
2. Untar/unzip the archive where `<x.x.x>` is the version number for the driver tar file:

```
# tar xzf ice-<x.x.x>.tar.gz
```

3. Change to the driver src directory where `<x.x.x>` is the version number for the driver tar:

```
# cd ice-<x.x.x>/src
```


4. Compile the driver module:

```
# make install
```

The binary will be installed as:

```
/lib/modules/<KERNEL_VER>/updates/drivers/net/ethernet/  
intelice/ice.ko
```

The installation location listed above is the default location. This may differ for various Linux distributions.

 **Note:** To compile the driver with ADQ (Application Device Queues) flags set, use the following command where <nproc> is the number of logical cores:

```
# make -j<nproc> CFLAGS_EXTRA='-DADQ_PERF -DADQ_PERF_COUN-  
TERS' install
```


This will also apply the above 'make install' command.

5. Load the module using the modprobe command. To check the version of the driver and then load it, enter the following commands:

```
# modinfo ice  
  
# modprobe ice
```

Alternately, make sure that any older ice drivers are removed from the kernel before loading the new module:

```
# rmmod ice; modprobe ice
```

 **Note:** To enable verbose debug messages in the kernel log, use the dynamic debug feature (dyndbg). See "Dynamic Debug" later in this README for more information.

6. Assign an IP address to the interface by entering the following where <ethX> is the interface name that was shown in dmesg after modprobe:

```
# ip address add <IP_address>/<netmask bits> dev <ethX>
```

7. After verifying that the interface works, enter the following commands where the IP_address is for another machine on the same subnet. Do so when the interface is being tested:

```
# ping <IP_address>
```

(Disclaimer Continued)

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.