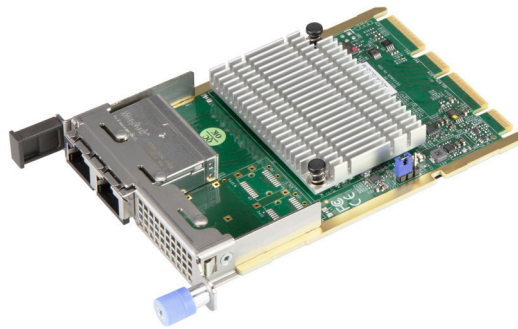
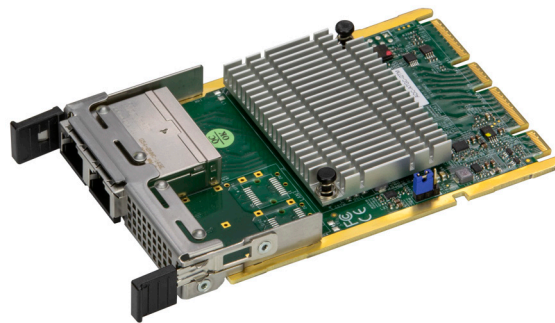




AOC-ATGC-i2TM



AOC-ATGC-i2TG



USER'S MANUAL

Revision 1.0c

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Manual Revision 1.0c

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Preface

About This Manual

This user's guide is written for system integrators, IT technicians, and knowledgeable end users. It provides information for the installation and use of the AOC-ATGC-i2TM and AOC-ATGC-i2TG 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 and other I/O technologies. The AOC-ATGC-i2TM/-i2TG is one of the most flexible and scalable 2-port 10 GB network solutions in the market. Based on the Intel® X710-AT2 network controller with performance-enhancing features and power management technologies, the AOC-ATGC-i2TM/-i2TG provides a quality networking choice for data centers while reducing CPU utilization and power consumption. With the added NC-SI feature, this adapter can also function as a secure networking port for remote server management.

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 (<https://www.supermicro.com/en/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 below 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: <https://www.supermicro.com/en/about/policies/safety-information>
- 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-	A	TG	C	-	i	2	T	M
Prefix	2 nd	3 rd	4th		5th	6th	7th	9th

Character	Representation	Options
Prefix	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 (1 Gb/s), TG: 10 GbE (10 Gb/s), 25 G: 25 GbE (25 Gb/s), 40 G: 40 GbE (40 Gb/s), 50 G: 50 GbE (50 Gb/s), 100 G: 100 GbE (100 Gb/s), IBE: EDR IB (100 Gb/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), C: Carlsville (X710-AT2/ TM4)
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 AIOM – Non-M: 1U height bracket for Edge systems only, B: 0.5U height bracket (internal lock) for Blade systems only, G: 0.5U height narrow bracket for Grand Twin Front IO systems, M: 0.5U height bracket (Pull Tab) 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)
Sales-USA@supermicro.com (Sales Inquiries)
Government_Sales-USA@supermicro.com (Gov. Sales Inquiries)
support@supermicro.com (Technical Support)
RMA@supermicro.com (RMA Support)
Webmaster@supermicro.com (Webmaster)

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_Europe@supermicro.com (Sales Inquiries)
Support_Europe@supermicro.com (Technical Support)
RMA_Europe@supermicro.com (RMA 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: Sales-Asia@supermicro.com.tw (Sales Inquiries)
Support@supermicro.com.tw (Technical Support)
RMA@supermicro.com.tw (RMA Support)

Website: www.supermicro.com.tw

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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
- Intel X710-AT2 Ethernet controller
- Dual 10GBase-T ports with RJ45 connectors
- Network Virtualization: VXLAN and NVGRE
- Energy Efficient Ethernet (EEE)
- Intel Ethernet Flow Director
- Data Plane Developer Kit for efficient packet processing (DPDK)
- Asset Management Features
- NC-SI for Remote Management
- Supports RJ-45 Category 6 and 6A cables
- RoHS compliant 6/6 

1.3 Specifications

General

- Advanced I/O Module (AIOM) form factor
- Intel X710-AT2 controller
- Dual RJ45 connectors with speeds of up to 10 Gbps per port
- PCIe Gen 3.0 x8

Networking Features

- IEEE 802.3ad, 802.1AX Link Aggregation
- IEEE 802.1Q VLAN
- MSI and MSI-X support
- Intel Flow Director
- Jumbo Frames (up to 9.5 KB)
- IEEE 802.3x Flow Control
- Teaming support
- Checksum Offload (IPv4/IPv6, SCTP, TCP, UDP, Tx/Rx)

Virtualization Features

- Virtual Machine Devices queues (VMDq)
- Single-Root I/O Virtualization (SR-IOV)
- VLAN
- VXLAN and NVGRE
- GENEVE

Management Features

- Asset Management support with thermal sensor
- NC-SI for remote management
- Preboot eXecution Environment (PXE)
- iSCSI remote boot
- PLDM

Power Savings

- ACPI compliant power management
- Energy Efficient Ethernet (IEEE 802.3az)

OS Support

- Windows
- Linux RHEL
- Linux SLES
- Linux Ubuntu
- Linux CentOS
- FreeBSD
- VMware

Power Consumption

- Maximum power consumption: 9.5 W

Operating 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 4.53" (76 mm x 115 mm) (W x L)

1.4 Available SKUs

SKUs	Bracket Included	Description
AOC-ATGC-i2TM	BKT-0185L	2-port 10 Gigabit Ethernet Adapter with a 0.5U height bracket.
AOC-ATGC-i2TG	BKT-0208L	2-port 10 Gigabit Ethernet Adapter with a 0.5U height narrow bracket for Grand Twin Front IO systems.



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

Chapter 2

Hardware Components

2.1 Add-On Card Image and Layout

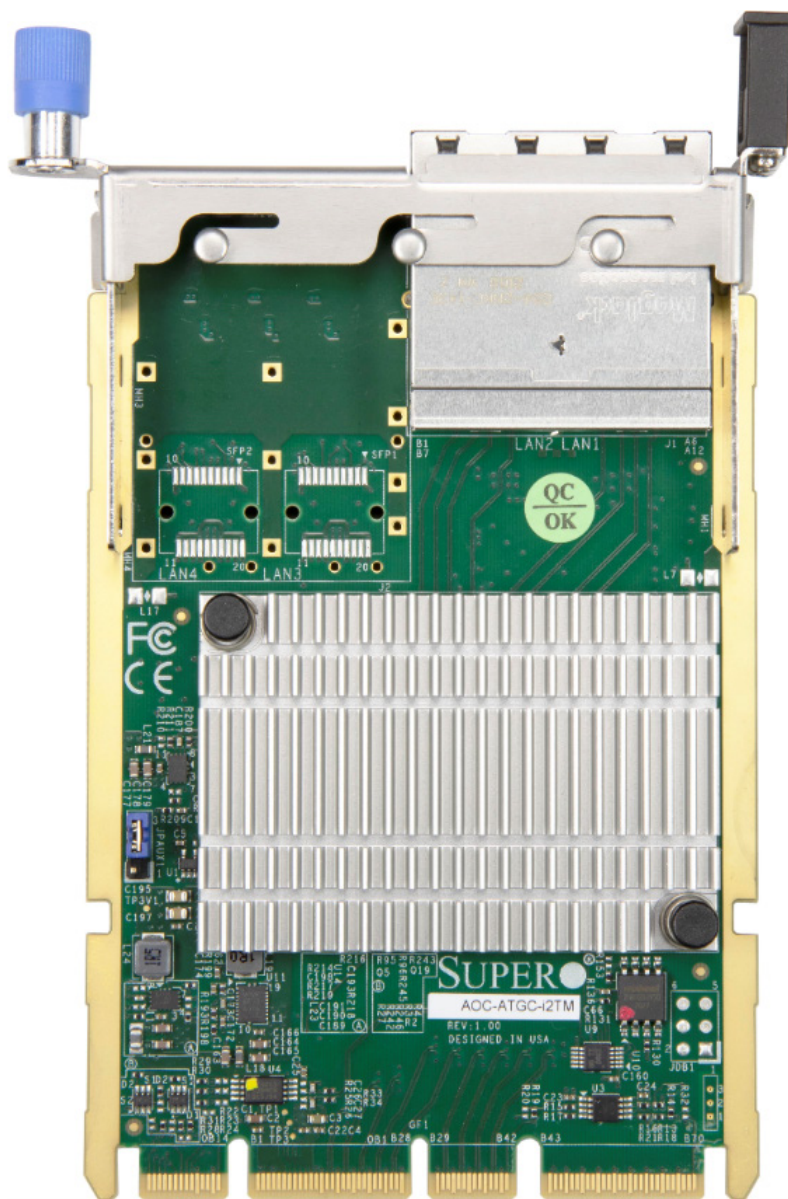


Figure 2-1: AOC-ATGC-i2TM Top View

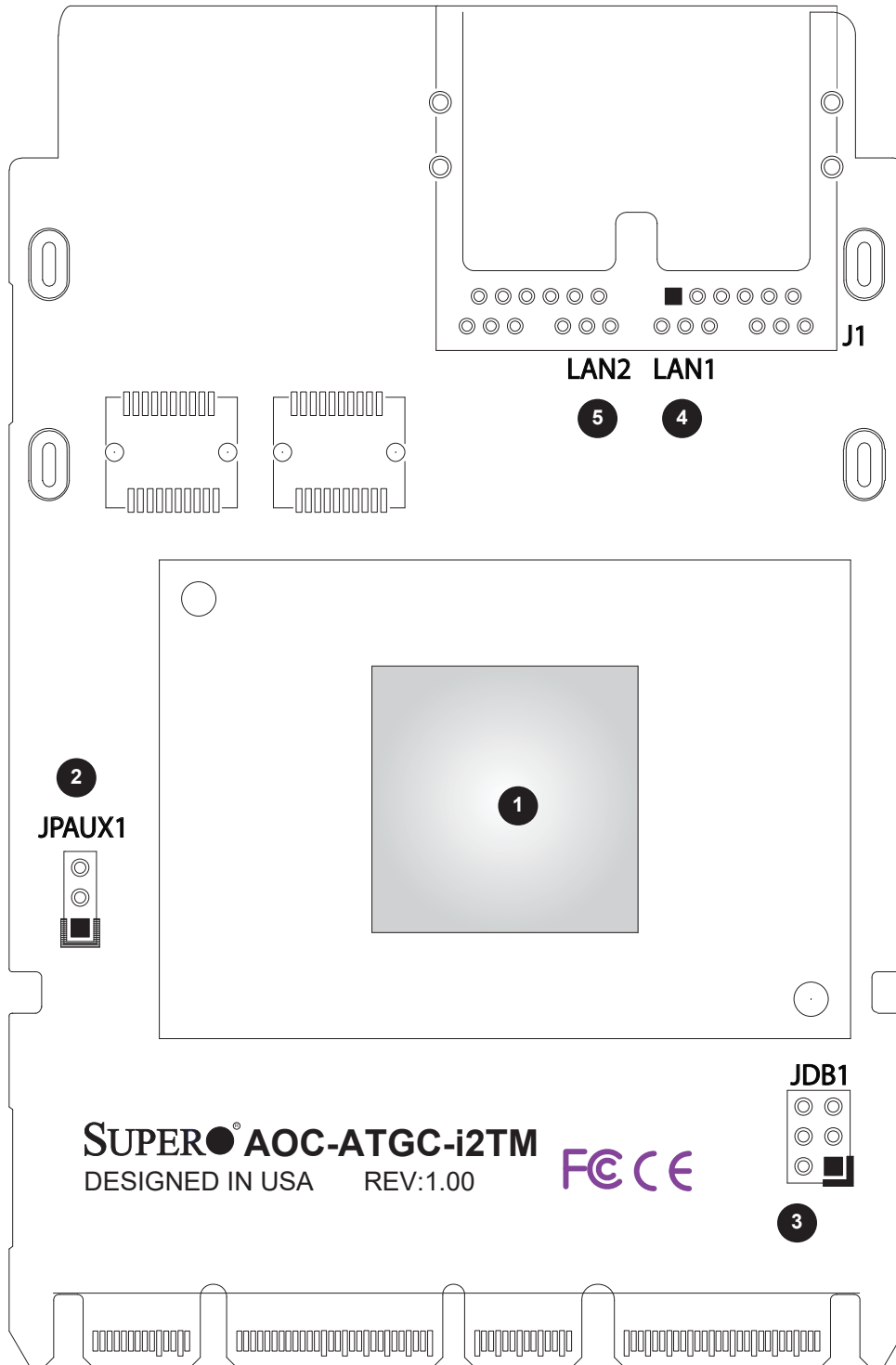


Figure 2-2: AOC-ATGC-i2TM Layout

2.2 Major Components

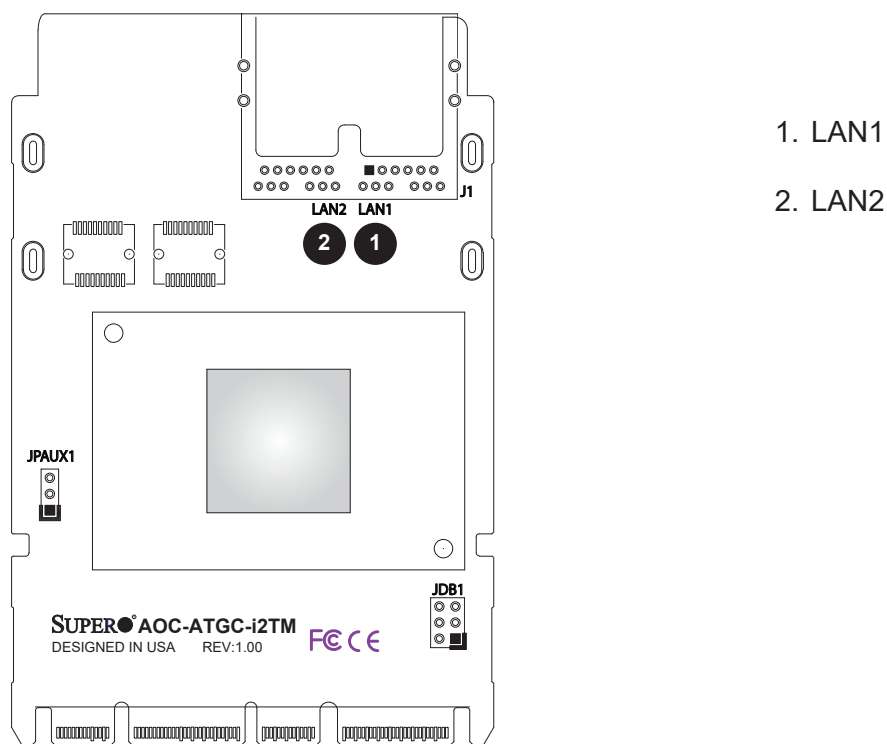
The following major components are installed on the AOC-ATGC-i2TM/-i2TG:

AOC-ATGC-i2TM/-i2TG Major Components		
No	Component Name	Definition
1	Intel X710-AT2	Ethernet LAN Controller
2	JPAUX1	1-2: Enable AUX Power in S5
		2-3: Disable AUX Power in S5
3	JDB1	Debug Header
4	LAN1	RJ45 Port 1
5	LAN2	RJ45 Port 2

2.3 LAN Ports and LAN LED Indicators

LAN Ports

There are two RJ45 LAN ports located at LAN1 and LAN2 on the AOC-ATGC-i2TM/-i2TG. These LAN ports support connection speeds of 10 Gbps. Use a direct-attach RJ45-type LAN cable.



Each LAN has one bi-colored LED per port (RJ45) at the bottom of the PCB.

Port Link LED State	
LED Color	Definition
Green	10 Gbps
Amber	<10 Gbps

2.4 Jumpers

Explanation of Jumpers

To modify the operation of the add-on card, a jumper can be used to choose between optional settings. A jumper creates 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 add-on card layout on [page 14](#) for the jumper locations.



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

AOC JPAUX1 set to Disabled	When the System/Motherboard Goes Into Standby Mode		
	IPMI Support	FailOver Support	WoL Support
	No	No	No
	When the System/Motherboard Is NOT in Standby Mode		
	IPMI Support	FailOver Support	WoL Support
	Yes	Yes	No
AOC JPAUX1 set to Enabled	When the System/Motherboard Goes Into Standby Mode		
	IPMI Support	FailOver Support	WoL Support
	Yes	Yes	No
	When the System/Motherboard Is NOT in Standby Mode		
	IPMI Support	FailOver Support	WoL Support
	Yes	Yes	No

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	Consult Supermicro before enabling it

Chapter 3

Installation

3.1 Overview

As a part of an integrated solution, your system came with the adapter pre-installed. We do not recommend removing and reinstalling any part of your system components. If you need to remove or reinstall a system component, including this add-on card, follow the instructions in this chapter to ensure proper system setup.

3.2 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.
- Be sure to remove the power cord first before adding, removing, or changing any hardware components to avoid damaging the system or components.
- For grounding purposes, make sure that your system chassis provides excellent conductivity between the power supply, the cage, 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.

3.3 Before Installation

To install the add-on card properly, be sure to take the following steps:

1. Power down the system.
2. Remove the power cord from the wall socket.
3. Use industry-standard antistatic equipment (such as gloves or 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.

3.4 Installing the Add-on Card AOC-ATGC-i2™ (with 0.5U Bracket)

Take the following 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 top cover for ease of installation.)

Uninstalling an AIOM Module

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

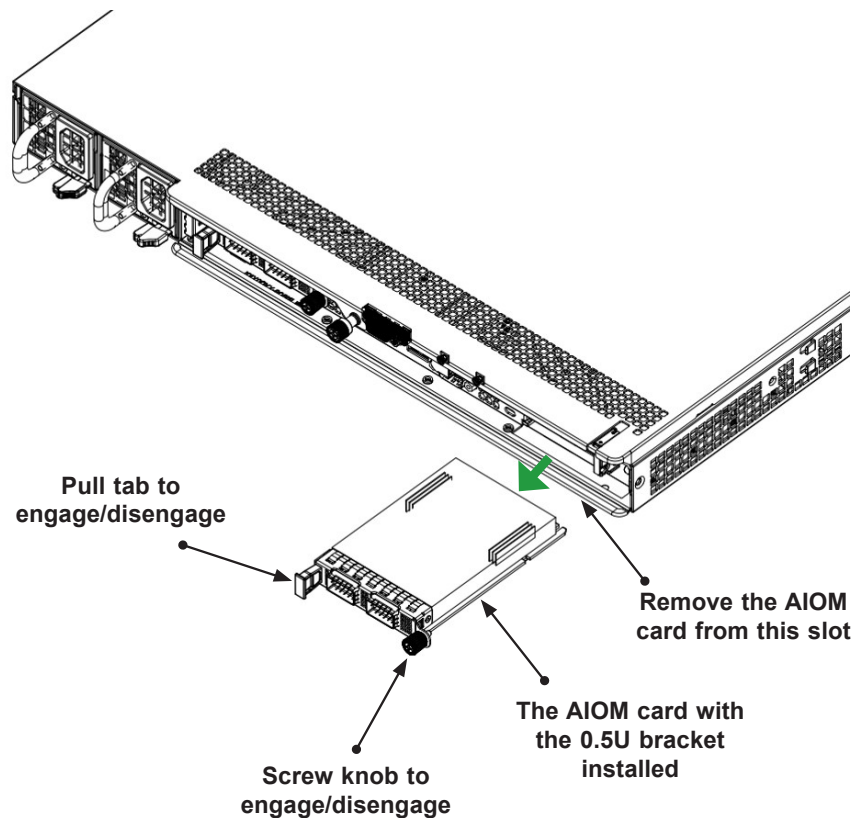


Figure 3-1: Removing the AIOM Card From the Slot

Installing an AIOM Module

1. Position the AIOM module in front of the empty slot and gently push 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.

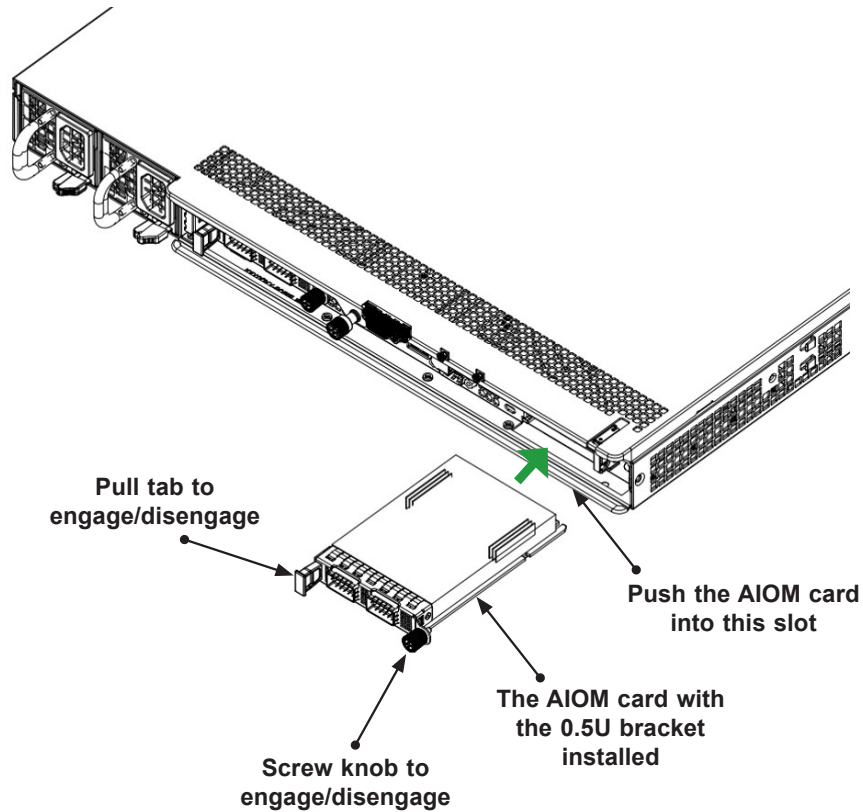


Figure 3-2: Push the AIOM Card Into the Slot

Installing an AIOM Module (with an AIOM Slot Cover)

1. Remove the AIOM slot cover by unscrewing the knob and screw that attaches the bracket to the chassis.
2. Pull the bracket away and set it aside.
3. 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.
4. Press the blue knob and secure it onto the chassis by turning the knob clockwise.

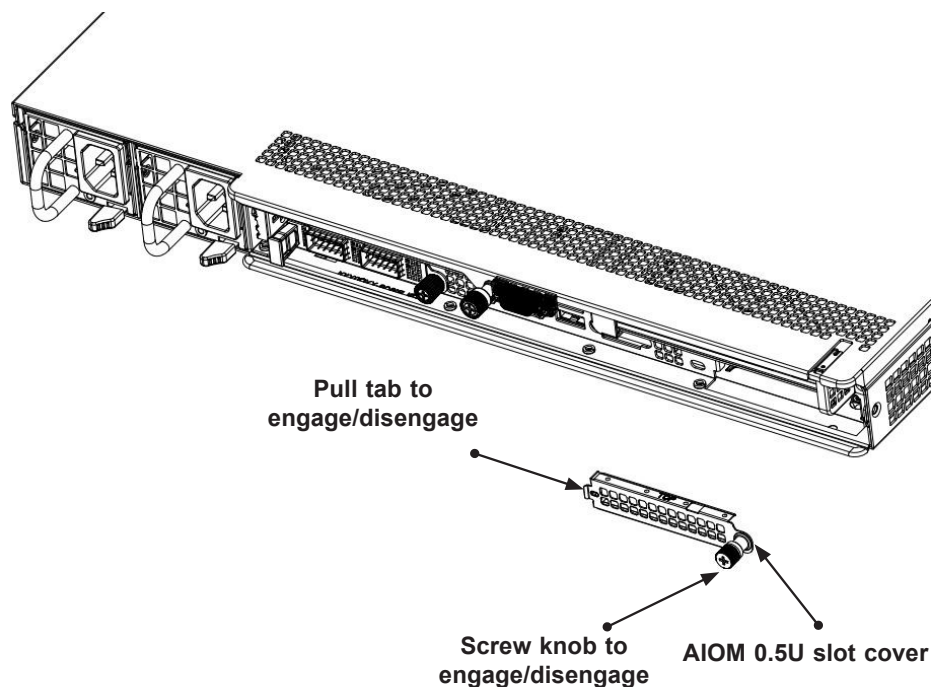



Figure 3-3: Removing Slot Cover

 **Note 1:** This AIOM module 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 module.

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

3.5 Installing the Drivers in Windows

Take the following steps to install the drivers on the Windows operating system:

1. Download the latest Driver directly from the Intel website at [Intel® Ethernet Adapter Complete Driver Pack](#).
2. Once the driver is downloaded, run the .exe file to install the driver.

3.6 Installing the Drivers in Windows

Take the following steps to install the drivers for Linux:

1. Download the latest Driver directly from the Intel website at [Intel® Ethernet Adapter Complete Driver Pack](#).
2. Choose the Intel driver package from LAN/PRO40GB/LINUX.
3. Copy the driver to the directory of your choice. For example:

```
/home/username/i40e
```

or

```
/usr/local/src/i40e
```

4. Untar/unzip archive, where <x.x.x> is the version number for the driver tar file:

```
tar zxf i40e-x.x.x.tar.gz
```

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

```
cd i40e-x.x.x/src/
```

```
make install
```

This will install the Linux driver onto your system. For more driver installation information, refer to the Intel Support Website.

3.7 Installing Drivers on FreeBSD

Take the following steps to install the drivers onto a FreeBSD system, where <x.x.x> is the driver version as indicated in the name of the driver tar file.



Note: You must have the kernel sources installed in order to compile the driver module.

1. Download the latest Driver directly from the Intel website at [Intel® Ethernet Adapter Complete Driver Pack](#).
2. Move the base driver tar file to the directory of your choice. For example, use `home/username/ixl` or `usr/local/src/ixl`.

3. Untar/unzip the archive:

```
tar xzf ixl-x.x.xtar.gz
```

4. To install the main page:

```
cd ixl-x.x.x
```

```
gzip -c ixl.4 /usr/share/man/man4/ixl.4.gz
```

5. To load the driver onto the running system:

```
cd ixl-x.x.x/src
```

```
make load
```

6. To assign an IP address to the interface, enter the following:

```
ifconfig ix<interface_num> <IP_address>
```

7. Verify that the interface works. To do so, enter the following line where <IP_address> is the IP address for another machine on the same subnet as the interface that is being tested:

```
ping <IP_address>
```

8. If you want the driver to load automatically when the system is booted:

```
cd ixl-x.x.x/src
```

```
make
```

```
make install
```

9. Edit `/boot/loader.conf`, and add the following line:

```
ixl_load="YES"
```

or

compile the driver into the kernel (see item 10)

Edit `/etc/rc.conf`, and create the appropriate `ifconfig_ixl<interface_num>` entry:

```
ifconfig_ix<interface_num>
```

Example usage:

```
ifconfig_ix0="inet 192.168.10.1 netmask 255.255.255.0"
```



Note: For assistance, see the `ifconfig` main page.

10. If you want to compile the driver into the kernel with FreeBSD 7 or later versions, enter:

```
cd ixl-x.x.x/src
```

```
cp *.ch /usr/src/sys/dev/ixl
```

```
cp Makefile.kernel /usr/src/sys/modules/ixl/Makefile
```

Edit the kernel configuration file (i.e., `GENERIC` or `MYKERNEL`) in `/usr/src/sys/i386/conf` (replace "i386" with the appropriate system architecture, if necessary), and ensure the following line is present:

```
device ixl
```

Compile and install the kernel. The system must be rebooted for the kernel updates to take effect. For additional information on compiling the kernel, consult the FreeBSD operating system documentation.

(Disclaimer Continued)

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