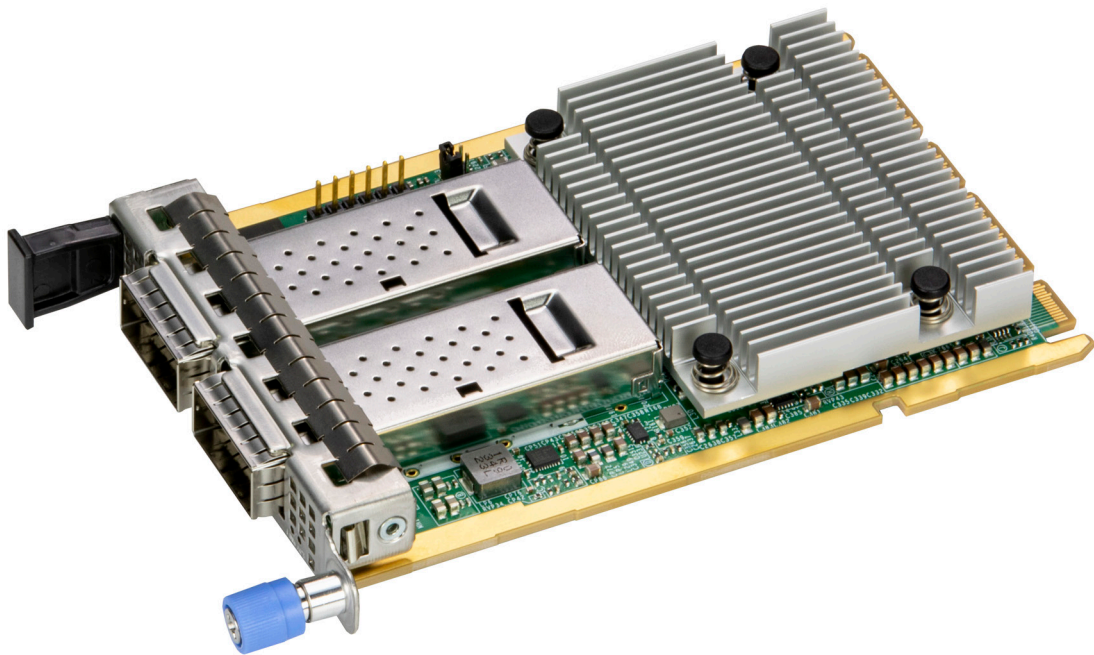




AOC-A100GT2-B2CM



USER'S MANUAL

Revision 1.0

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Manual Revision 1.0

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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-A100GT2-B2CM add-on card.

About This Add-On Card

The Supermicro® Advanced I/O Module (AIOM) is the latest form factor designed to provide a wide range of networking options as well as other I/O technologies. The AOC-A100GT2-B2CM is based on the Broadcom BCM57608 series Ethernet Controllers and is designed to lower data center total cost of ownership (TCO) by providing the industry's lowest power consumption for 100G NICs. The AOC-A100GT2-B2CM offers a 2x 100G-capable network interface that delivers high-performance networking while maintaining low power consumption and thermal efficiency.

The BCM57608 series supports the fourth generation of RDMA over Converged Ethernet (RoCE) with hardware-based congestion control. This technology ensures low latency and simplifies RoCE deployment at scale. Furthermore, the BCM57608 features the TruFlow engine, a hardware acceleration engine with enhanced programmability. This engine allows for rapid implementation of new flow types, increasing virtual machine density, and improving application performance.

The BCM57608 supports industry-leading security features, including Broadcom's HW Secure Boot (RoT) and Attestation support. These security measures enable the creation of secure server platforms.

In summary, the BCM57608 series Ethernet Controllers are versatile and can be used in a wide range of hardware designs, including cloud and enterprise data center servers, AI and ML clusters, NVMe storage disaggregation, 5G Wireless RAN, Network Function Virtualization (NFV), mobile edge computing, and HPC environments.

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.

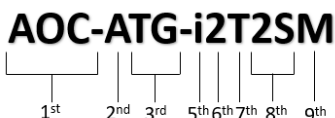
Important Links

For your system to work properly, follow the links 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 for Networking Adapters



Character	Representation	Options
1 st	Product Family	AOC: Add On Card
2 nd	Form Factor	S: Standard, P: Proprietary, C: MicroLP, M: Super IO Module (SIOM), MH: SIOM Hybrid, A: Advanced IO Module (AIOM), AH: AIOM Hybrid
3 rd	Product Type/Speed	G: GbE (1Gb/s), TG: 10GbE (10Gb/s), 25G: 25GbE (25Gb/s), 40G: 40GbE (40Gb/s), 100G: 100GbE (100Gb/s), 200G: 200GbE (200Gb/s), 400G: 400GbE (400Gb/s)
4 th	Chipset Model (Optional)	N: Niantic (82599), P: Powerville (i350), S: Sageville (X550), F: Fortville (XL710/X710), C: Columbiaville (E810) or Carlsville (X710-AT2/TM4), L: Linkville (E610), CN: Connersville (E830), 6: ConnectX-6, 7: ConnectX-7
5 th	Chipset Manufacturer	i or I: Intel, b or B: Broadcom, m or M: Mellanox, N: NVIDIA
6 th	Number of Ports	1: 1 port, 2: 2 ports, 4: 4 ports, 8: 8 ports
7 th	Connector Type (Optional)	S: SFP/SFP+/SFP28, T: 10GBase-T, Q: QSFP+, C: QSFP28/QSFP56/QSFP112/QSFP-DD
8 th	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+
9 th	Bracket	For AIOM – None: 1U height bracket for Edge systems only, B: 0.5U height bracket (internal lock) for Blade systems only, G: 0.5U height (Narrow) for Grand Twin Front IO systems only, M: 0.5U height bracket (Pull-Tab) for all other systems.

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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, please 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:

- Broadcom® BCM57608 2x 100 GbE controller
- PCIe Gen 5.0 x16
- Support for 100/50/25 GbE operation
- Backward compatible with QSFP28 and QSFP56 optical modules and DAC/AOC cables
- RDMA over Converged Ethernet (RoCEv2)
- VXLAN, NVGRE, and Geneve
- NIC Partitioning (NPAR)
- Broadcom® TruFlow™ flow processing engine
- Asset Management Features with thermal sensor
- NC-SI for Remote Management (Not supported in Standby by default)
- RoHS compliant 6/6 

1.3 Specifications

Networking Features

- Eight SerDes capable of 100/50G PAM4 and 25G NRZ
- QSFP112 physical interface
- 2x 100 GbE (supports 100/50/25 GbE)
- Auto-negotiation with auto-detect
- IEEE-1588v2
- IEEE 802.3x flow control
- IEEE 802.3ad Link Aggregation
- Virtual LANs 802.1q VLAN tagging
- Configurable Flow Acceleration
- UEFI and iSCSI boot

Platform Security Features

- HW Secure Boot (RoT)
- Attestation (SPDM)

Manageability Features

- Network Controller Sideband Interface/NC-SI (Not supported in Standby by default)
- Platform Level Data Model (PLDM) for Monitoring and FW Update

Stateless Offload Features

- TCP, UDP, and IP checksum offloads
- IPv4 and IPv6 offloads
- Receive Segment Coalescing (RSC)
- TCP Segmentation Offload (TSO)
- Large Receive Offload (LRO)
- Large Send Offload (LSO)
- Receive Side Scaling (RSS)
- Transmit Side Scaling (TSS)

NIC Partitioning (NPAR)

- 16 Physical Functions (PF)
- QoS per partition
- Partitioning control through sideband communication
- Up to 64 MAC/VLAN filters per partition
- Per partition statistics support
- Stateless offloads configuration per partition
- VEB/VEPA support

Virtualization Features

- NetQueue, VMQueue, and Multi-queue
- SR-IOV with up to 128 Virtual Functions (VFs)
- VXLAN, NVGRE, GRE, Geneve, and IP-in-IP
- Edge Virtual Bridging (EVB)

RDMA over Converged Ethernet (RoCE)

- RoCEv1 and RoCEv2
- Data Center Bridging (DCB) with RoCE

TruFlow Flow Processing

- Exact/Wildcard Match Flow Lookup
- VLAN insertion/deletion
- NAT/NAPT/Mirroring

Data Center Bridging

- Priority-Based Flow Control (PFC; IEEE 802.1Qbb)
- Enhanced Transmission Selection (ETS; IEEE 802.1Qau)
- Quantized Congestion Notification (QCN; IEEE 802.1Qau)
- Data Center Bridging Capability eXchange (DCBX; IEEE 802.1Qaz)
- Eight traffic classes per port; fully DCB compliant per 802.1Qbb

Power Savings

- ACPI-compliant power management
- Pass-through Energy Efficient Ethernet (IEEE 802.3az-2010)

Power Consumption

- Typical power consumption: 19 W
- Maximum power consumption: 25.4 W (at 100°C/212°F)

Environmental 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: 2.99" (76 mm) x 4.52" (115 mm) (W x L)

1.4 Available SKU



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

Product Part Number	Bracket Included	Description
AOC-A100GT2-B2CM	BKT-0170L	2-port 100 Gigabit Ethernet Adapter with a 0.5U height bracket.

Chapter 2

Hardware Components

2.1 Add-On Card Image and Layout

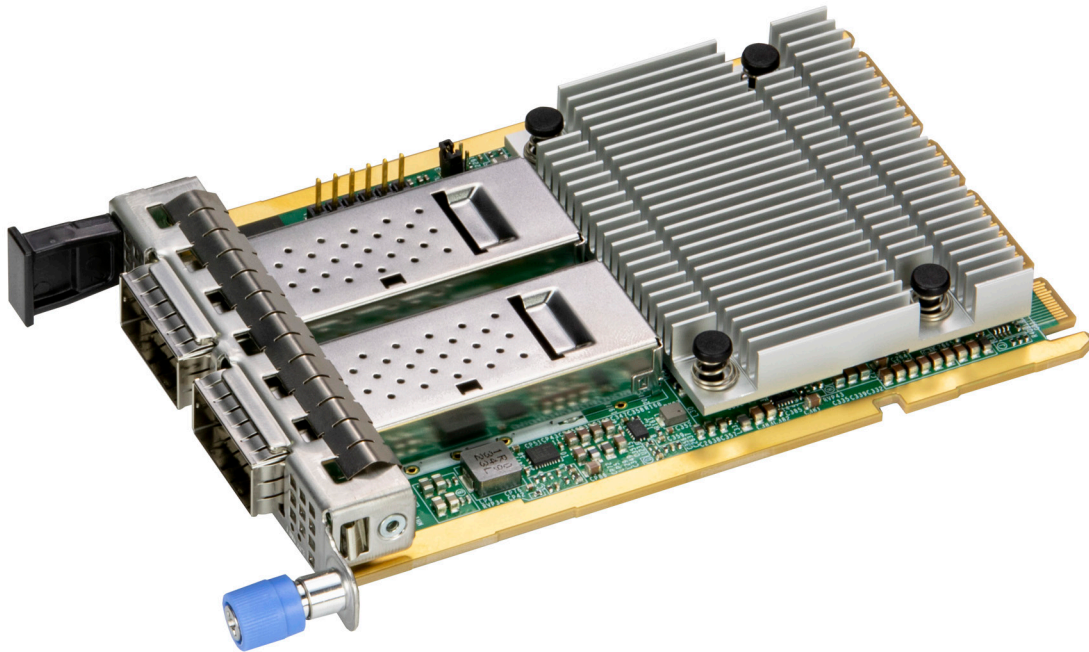


Figure 2-1: AOC-A100GT2-B2CM Image

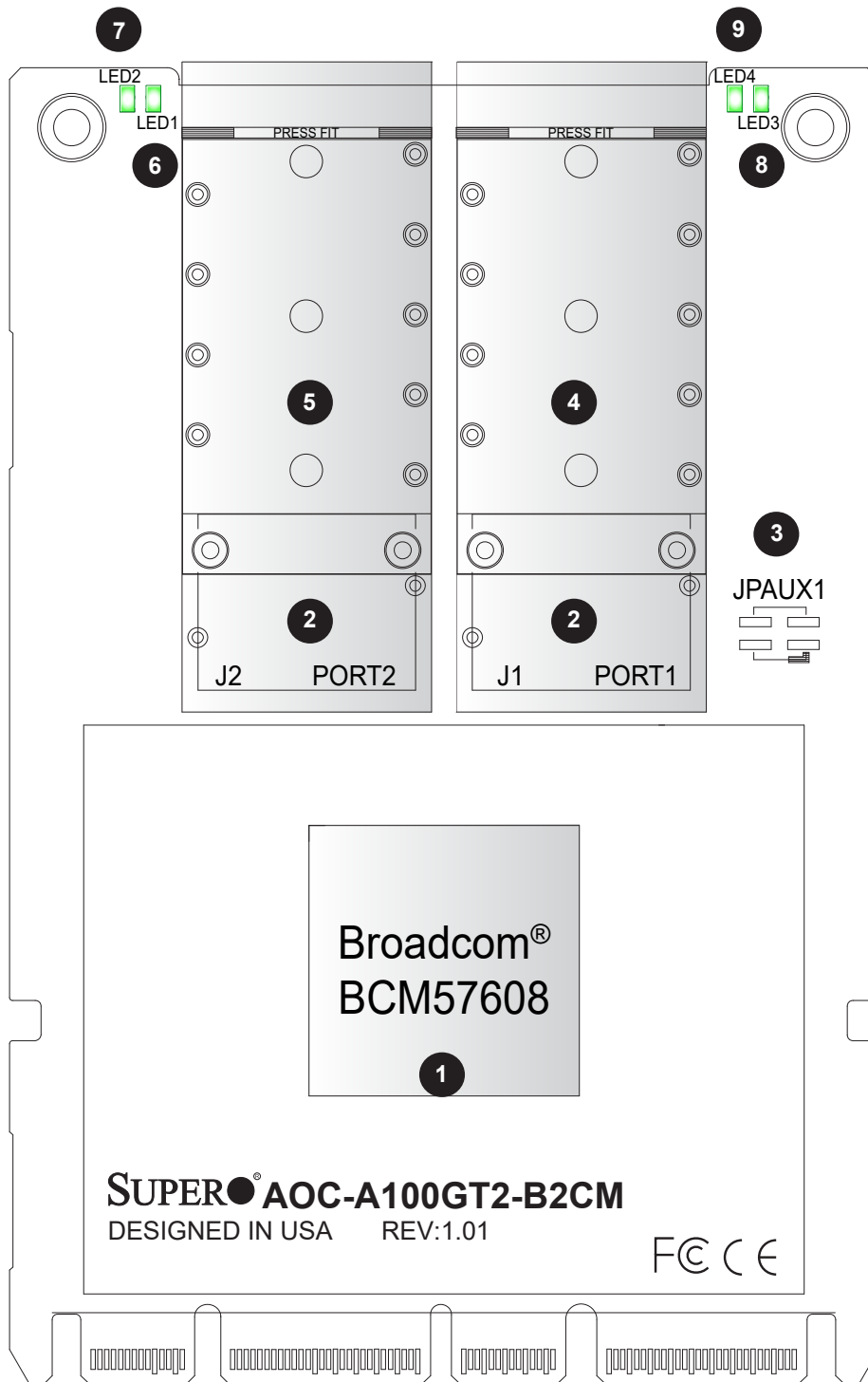


Figure 2-2: AOC-A100GT2-B2CM Layout

2.2 Major Components


The following major components are installed on the AOC-A100GT2-B2CM:

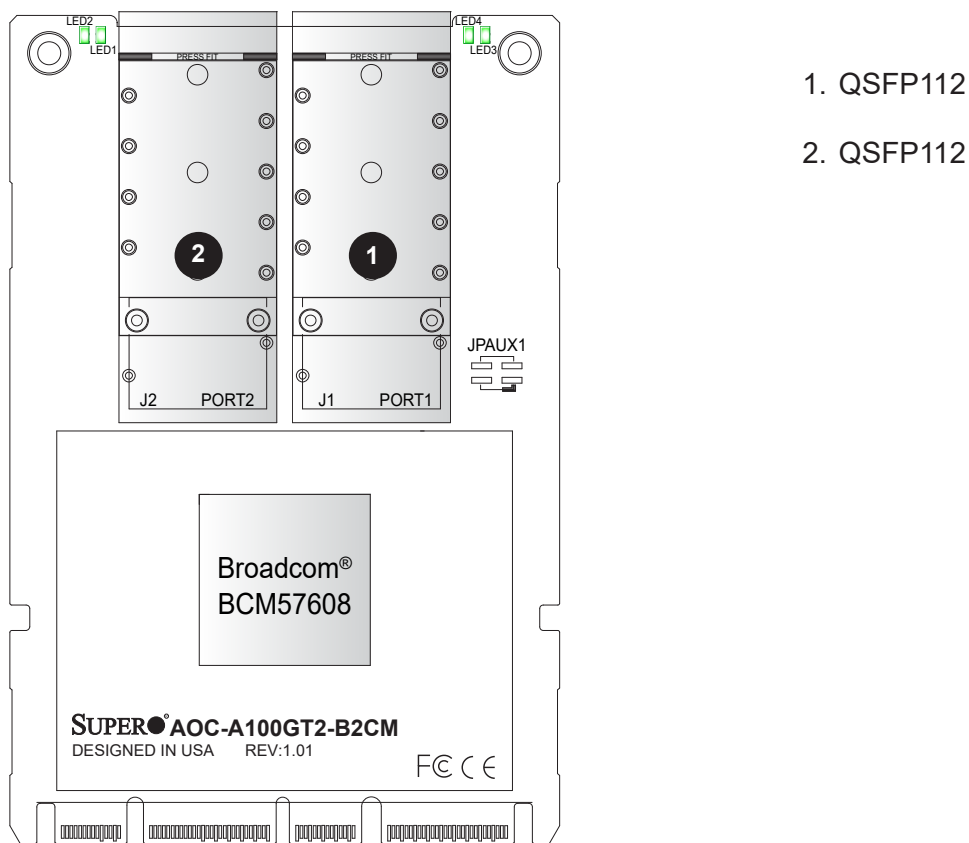
AOC-A100GT2-B2CM Major Components		
No	Component Name	Definition
1	Broadcom® BCM57608	200 GbE Ethernet LAN Controller
2	J1/J2	Connector Cages
3	JPAUX1	1–2: Enable AUX Power
		3–4: Disable AUX Power
4	Port 1	Quad Small Form-Factor Pluggable 112
5	Port 2	Quad Small Form-Factor Pluggable 112
6	LED1	QSFP112 Port 2 Link LED
7	LED2	QSFP112 Port 2 Activity LED
8	LED3	QSFP112 Port 1 Link LED
9	LED4	QSFP112 Port 1 Activity LED

2.3 QSFP112 Ethernet Connections

QSFP112 Connectors

AOC-A100GT2-B2CM has two Quad Small Form-Factor Pluggable 112 (QSFP112) connectors located on the add-on card. The QSFP112 connectors operate at up to 100 GbE. Plug the Direct Attached Copper (DAC) cable into the QSFP112 ports for network connections.

 **Note:** QSFP112 connector supports backward compatibility with QSFP28 and QSFP56 modules operating at 100 GbE and below.



2.4 Port and Port LED

QSFP112 Ports

The QSFP112 adapter ports are located on the AIOM form factor card. Connect a Direct Attach Copper cable or an LC Fiber Optic cable to the port to provide 100 Gigabit Ethernet communication.

QSFP112 Port LED

There are two LEDs located below each of the QSFP112 ports to indicate the link speed and activity status of the port.

QSFP112 Port LEDs		
LED	Color	Definition
Activity	Blinking Green	Activity
Link	Amber	< 100G Link Speed
	Green	100G Link Speed



Note: QSFP112 connector supports backward compatibility with QSFP28 and QSFP56 modules operating at 100 G and below.

2.5 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.

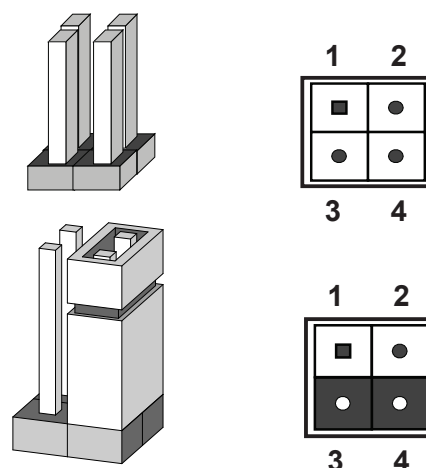


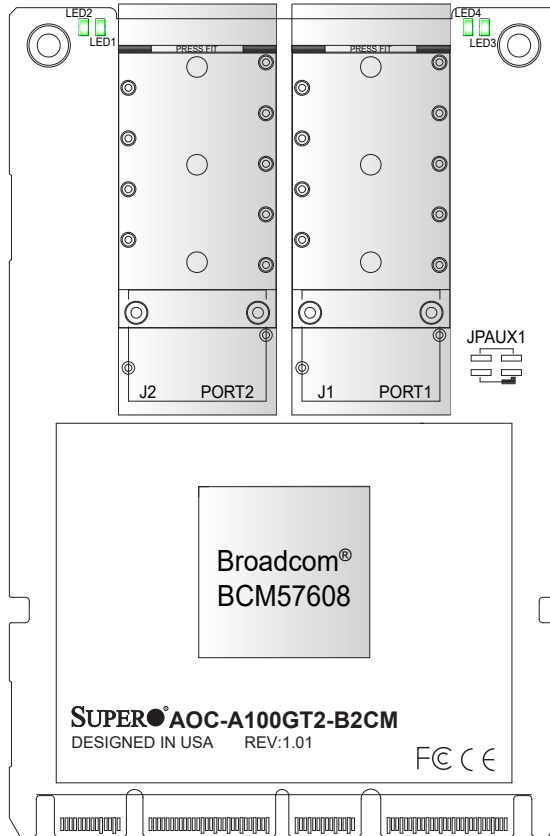
Figure 2-3: Four-Pin Jumper

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.

2.6 PCIe 5.0 x16 AIOM Form Factor Connector

Insert the PCIe 5.0 x16 AIOM form factor connector into a PCIe 5.0 x16 AIOM form factor slot on a motherboard to use this AIOM form factor card.



1. PCIe 5.0 x16 AIOM form factor connector

1

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 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 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 20](#) 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 Installing the Add-on Card (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 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.

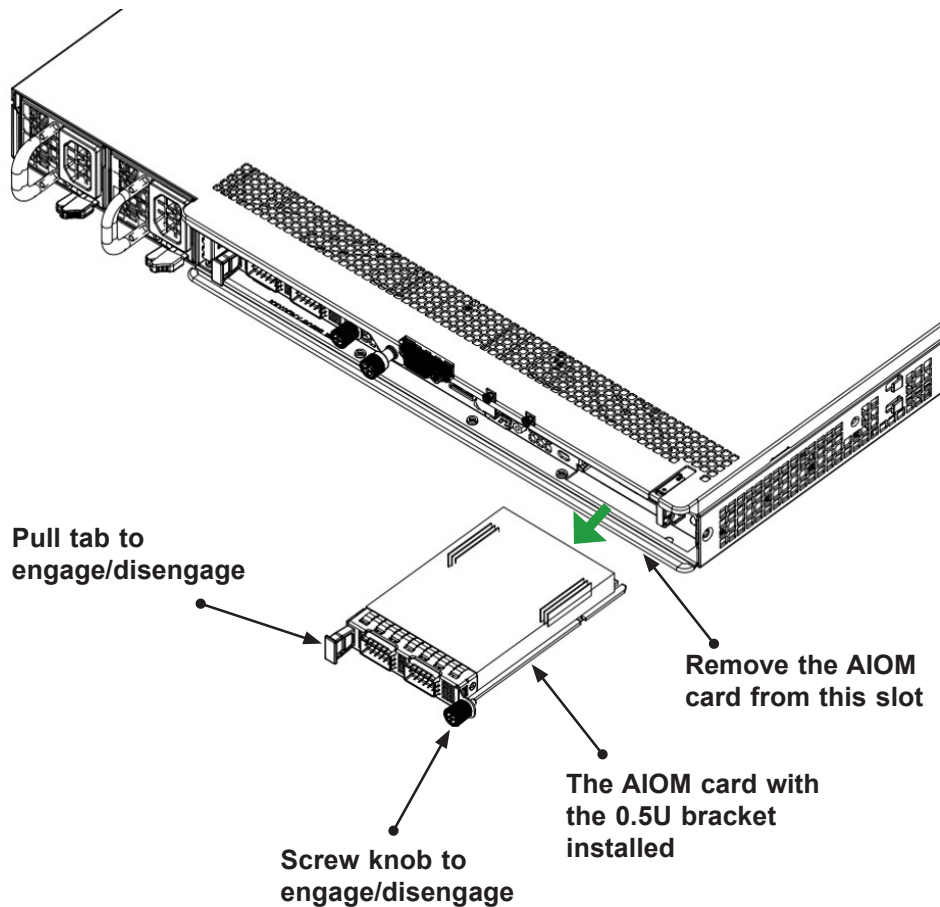


Figure 3-1: Uninstalling an AIOM Module

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.

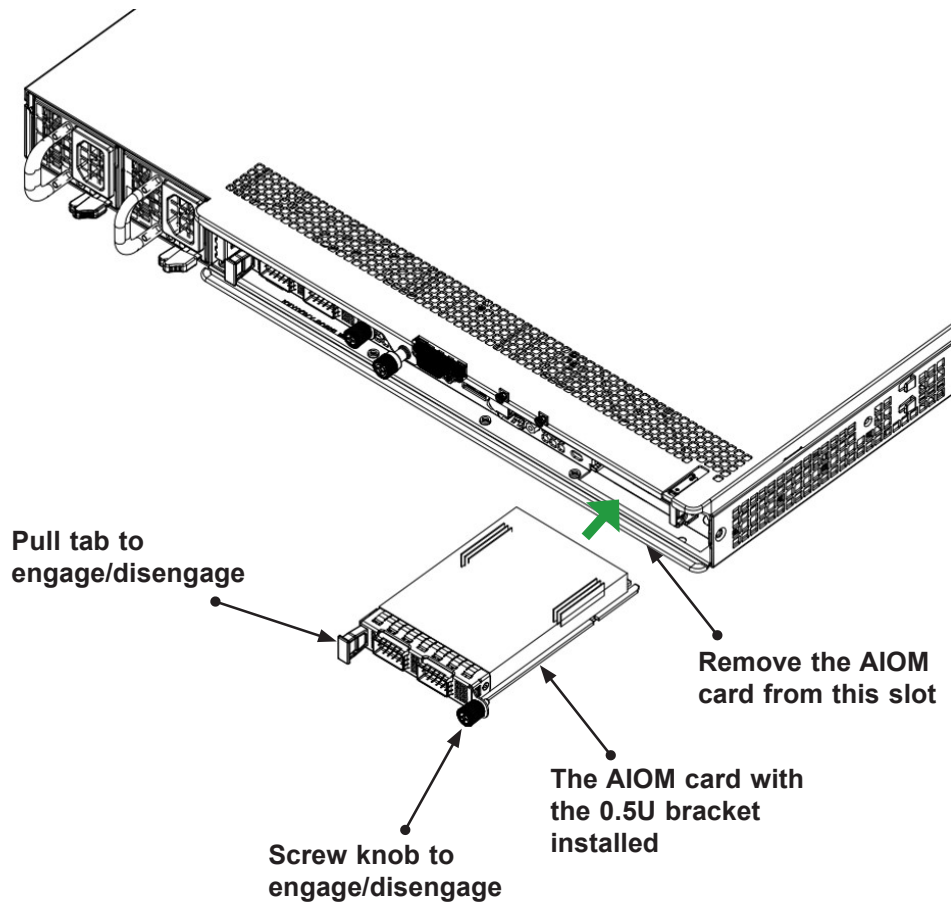


Figure 3-2: Installing an AIOM Module

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

1. Remove the AIOM slot cover by unscrewing the knob and screw that attaches the bracket to 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.

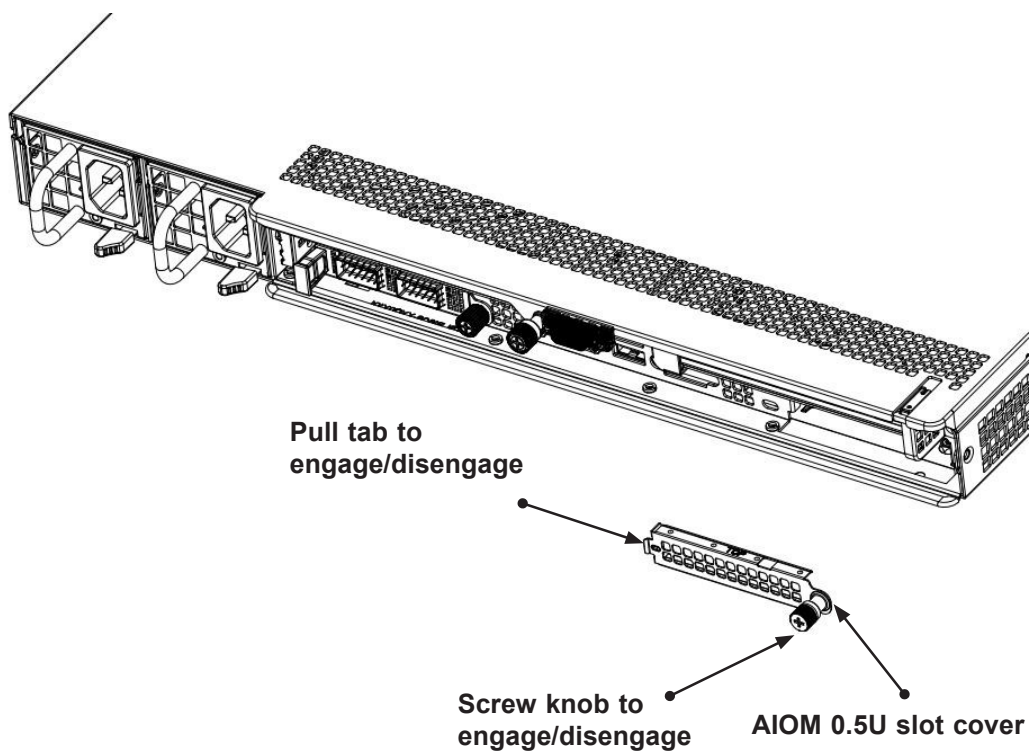


Figure 3-3: Installing an AIOM Module with an AIOM Slot Cover



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 illustrative purposes only. Actual products may vary due to product enhancement.

3.4 Installing Drivers (for Broadcom BCM57608)

To install drivers for the AOC-A100GT2-B2CM add-on card for either Linux or Windows, follow the provided instructions.

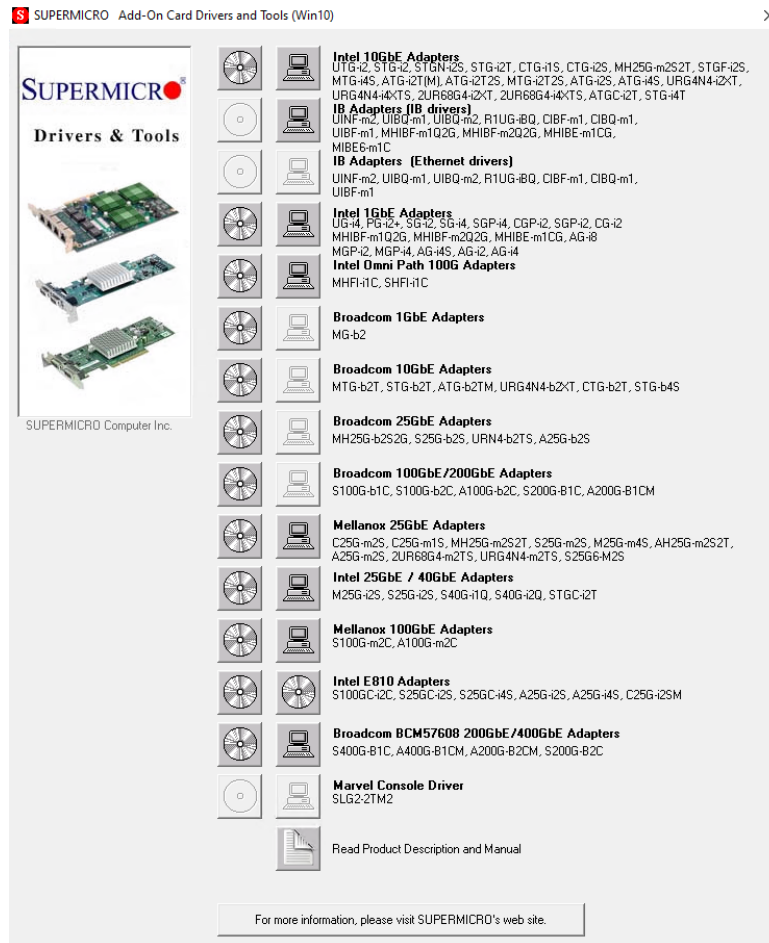


Figure 3-4: Add-On Card Drivers and Tools

Before Installing the Drivers for the Linux Operating System

Infiniband-diags is a set of utilities designed to help configure, debug, and maintain infiniband fabrics. Installing them from the Linux library is necessary prior to driver installation. To do so, first download the following libraries:

```
yum -y install libibverbs* infiniband-diags perftest qperf librd-
macm-utils
```

```
yum -y install groupinstall "InfiniBand Support"
```

Installing 100G Drivers for the Linux Operating System

Follow the steps below to install the drivers on the Linux operating system:

1. Download the Linux driver package file: netxtreme-bnxt_en-<ver>.tar.gz.



Note: This driver can be found on either the Supermicro website or by going to the Linux_Driver directory from the following site (https://www.supermicro.com/wdl/Networking_Drivers/CDR-NIC_1.70_for_Add-on_NIC_Cards/) or CDR-NIC LAN driver CD by going to the following directory: Broadcom > 100G > Linux > Linux_Driver.

2. Install the driver by entering the following commands:

```
tar xvzf netextreme-bnxt_en-<ver>.tar.gz
cd netextreme-bnxt_en-<ver>
make build
make install
```

RDMA over Converged Ethernet (RoCE) is a network protocol that allows remote direct memory access (RDMA) over an Ethernet network. This feature is optional, but if you would like to install it with RoCE, take the following additional steps:

1. Download the Linux driver package file: libbnxt_re-<ver>.tar.gz.



Note: This driver can be found on either the Supermicro website or by going to the RoCE_Lib directory from the following site (https://www.supermicro.com/wdl/Networking_Drivers/CDR-NIC_1.70_for_Add-on_NIC_Cards/) or CDR-NIC LAN driver CD by going to the following directory: Broadcom > 100G > Linux > RoCE_Lib.

2. Install the library by entering the following commands:

```
tar xvzf libbnxt_re-<ver>.tar.gz
cd libbnxt_re-<ver>
./configure
make
make install
cp bnxt_re.driver/etc/libibverbs.d
echo "/usr/local/lib">>/etc/ld.so.conf
ldconfig -v
```

Installing 100G Drivers for the Windows Operating System

Follow the steps below to install the drivers on the Windows operating system:

1. From the FTP site or CDR-NIC LAN driver CD, go to the following directory: Broadcom > 100G > Windows.
2. Choose the desired Windows driver package folder.
3. As the drivers are in .inf format, you can install the driver from the Device Manager.

(Disclaimer Continued)

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