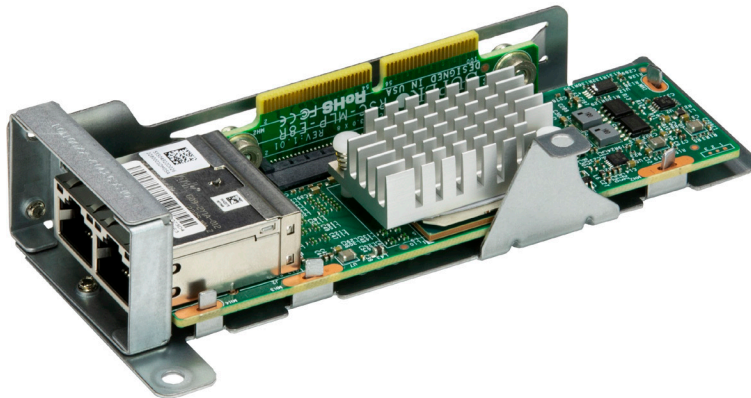




AOC-CTG-b2T



AOM-CTG-b2TM



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-CTG-b2T and AOM-CTG-b2TM add-on cards.

About This Add-On Card

The AOC-CTG-b2T and AOM-CTG-b2TM 10 Gigabit Ethernet Adapters are the most compact and scalable 10GBase-T adapters for today's demanding data center environments. Based on the Broadcom® network controller BCM57416, they address the demanding needs of the next-generation data center. Both AOC-CTG-b2T and AOM-CTG-b2TM are designed in a proprietary and small MicroLP form factor to fit Supermicro's MicroCloud 8-node and 12-node systems.

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

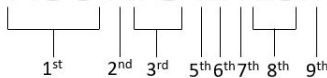
For your system to work properly, please follow the links below to download all necessary drivers/utilities and the user's manual for your server.

- Supermicro product manuals: <http://www.supermicro.com/support/manuals/>
- Product drivers and utilities: <ftp://ftp.supermicro.com>
- Product safety info: http://www.supermicro.com/about/policies/safety_information.cfm
- If you have any questions, please contact our support team at: support@supermicro.com

This manual may be periodically updated without notice. Please 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, please refer to our website at <http://www.supermicro.com/products/nfo/networking.cfm#adapter>.

1.2 Key Features

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

- Dual 10GbE RJ45 Connectors
- MicroLP Form Factor
- Broadcom® BCM57416 Ethernet Controller
- PCI-E 3.0 x4 interface
- Asset Management feature with thermal sensor
- NC-SI for remote management

1.3 Specifications

General

- MicroLP Form Factor for Supermicro Micro Cloud systems
- Broadcom® BCM57416 dual-port 10Gbps controller
- PCI-E 3.0 x4 (8 GT/s) interface

Networking Features

- Jumbo Frames (up to 9600-byte)
- 802.3x flow control
- Link aggregation (802.3ad)
- Virtual LANs 802.1q VLAN tagging
- Configurable Flow Acceleration
- IEEE 1588 and Time Sync
- vSAN/RDMA
- TruFlow Technology

Stateless Offload Features

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

NIC Partitioning (NPAR)

- 16 physical functions
- QoS per partition
- Partitioning control via sideband communication
- Up to 64MAC/VLAN filter per partition
- Stateless offload configuration per partition
- VEB/VEPA support

Flow Processing

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

Virtualization Features

- NetQueue, VMQueue, and Multiqueue
- Support for 128 Virtual Functions
- VXLAN
- NVGRE
- Geneve
- Edge Virtual Bridging (EVB)

Data Center Bridging

- Priority-based Flow Control (PFC; IEEE 802.1Qbb)
- Enhanced Transmission Selection (ETS; IEEE802.1Qau)
- Quantized Congestion Notification (QCN; IEEE802.1Qau)

- Data Center Bridging Capability eXchange (DCBX; IEEE802.1Qaz)
- 8 traffic classes per port; fully DCB compliant per 802.1Qbb

Manageability

- Network Controller Sideband Interface (NC-SI)
- PXE boot
- Asset Management with thermal sensors

Power Savings

- ACPI compliant power management
- Ultra low-power mode
- Pass-through Energy Efficient Ethernet (IEEE802.3az-2010)

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: 11.3 cm (4.46") x 3.9 cm (1.54")

Supported Platforms

- AOC-CTG-b2T on MicroCloud 8-node systems
- AOM-CTG-b2TM on MicroCloud 12-node systems

1.4 Available SKUs



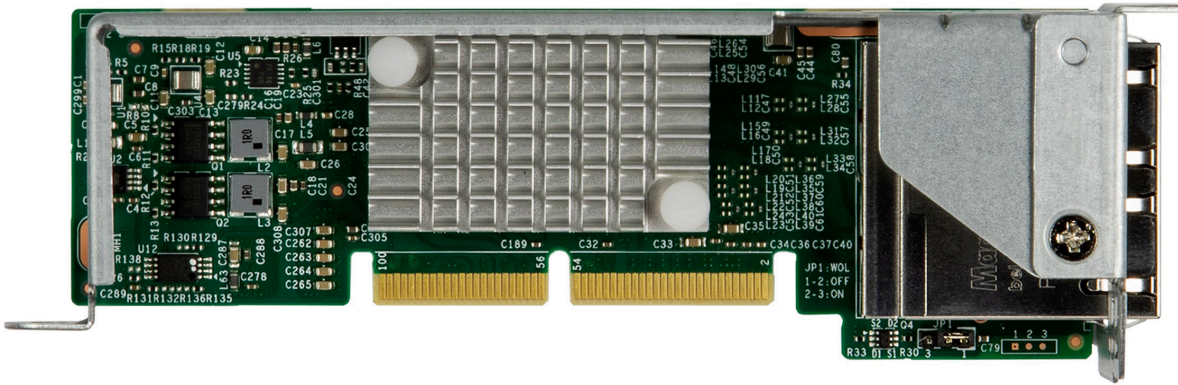
Note: Please note that this product is sold only as part of an integrated solution with Supermicro server systems.

SKUs	Bracket Included	Description
AOC-CTG-b2T	BKT-0051L and BKT-0054L	MicroLP 2-Port 10GbE RJ45 adapter for Micro-Cloud 8-node systems
AOM-CTG-b2TM	MCP-240-93907-0N and RSC-MLP-E8R	MicroLP 2-Port 10GbE RJ45 adapter for Micro-Cloud 12-node systems

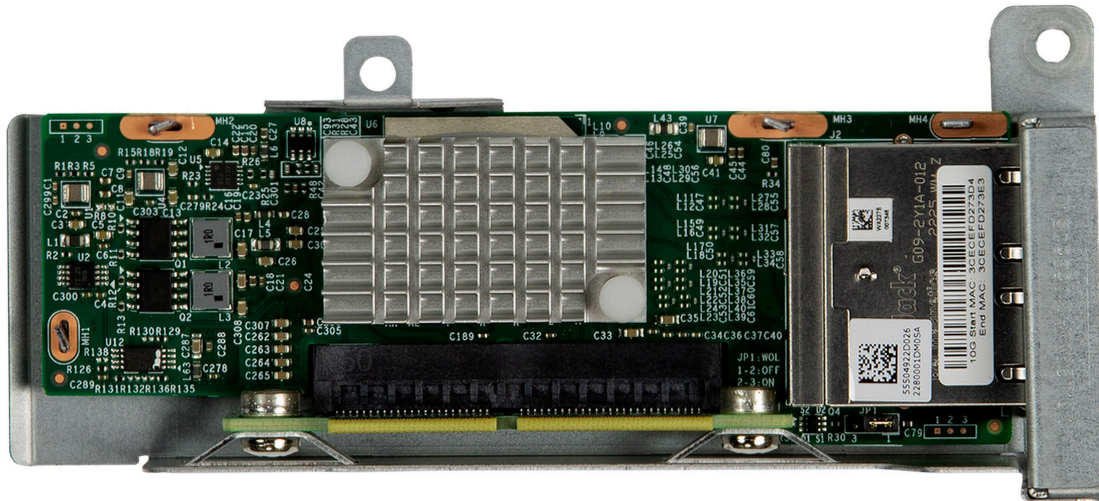
Chapter 2

Hardware Components

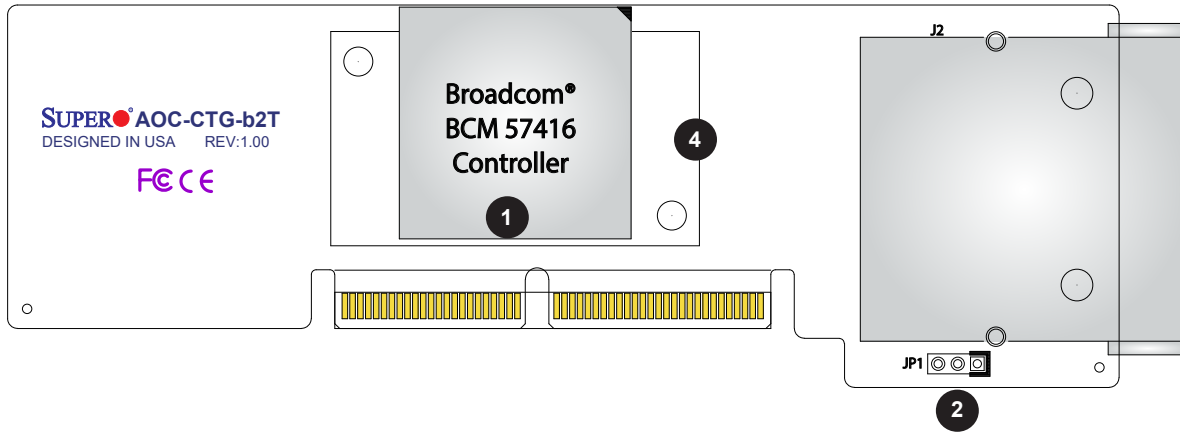
2.1 Add-On Card Image and Layout



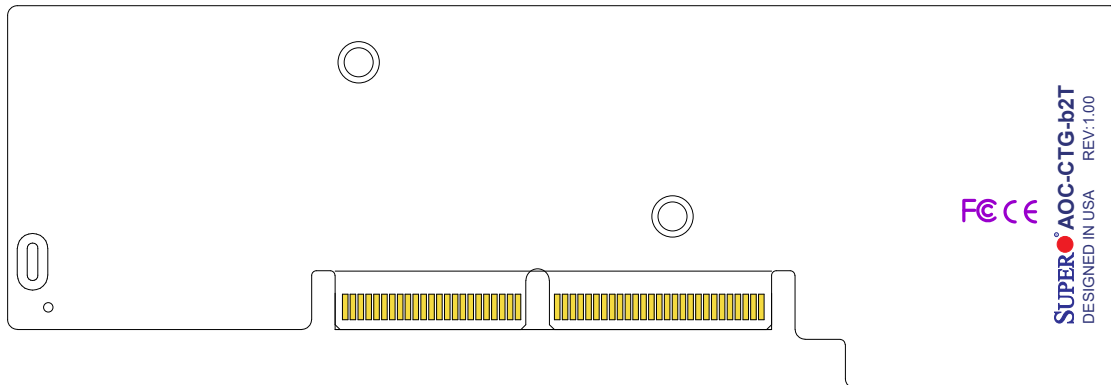
AOC-CTG-b2T Top View



AOM-CTG-b2TM Bottom View



AOC-CTG-b2T Top Layout



AOC-CTG-b2T Bottom Layout

2.2 Major Components

The following major components are installed on AOC-CTG-b2T and AOM-CTG-b2TM:

AOC-CTG-b2T and AOM-CTG-b2TM Major Components		
No	Component Name	Definition
1	Broadcom® BCM57416	Ethernet LAN controller
2	JP1	1-2: Wake on LAN Disable (default)
		2-3: Wake on LAN Enable
3	J2	10GbE RJ45 Ports

2.3 Ports

There are two RJ45 ports located on the add-on card. Connect a Category 6 or 6A RJ45 cable to provide 10 Gigabit Ethernet communication. Refer to the add-on card layout on page 2-1 for the locations of the ports.

2.4 Connectors

For more information about the RJ45 Port LED signals, see the table below.

Port LED			
Port	LED	Color	Definition
RJ45	Link	Solid Green	10Gbps Link Speed
		Solid Amber	1Gbps Link Speed
	Activity	Blink Yellow	Activity

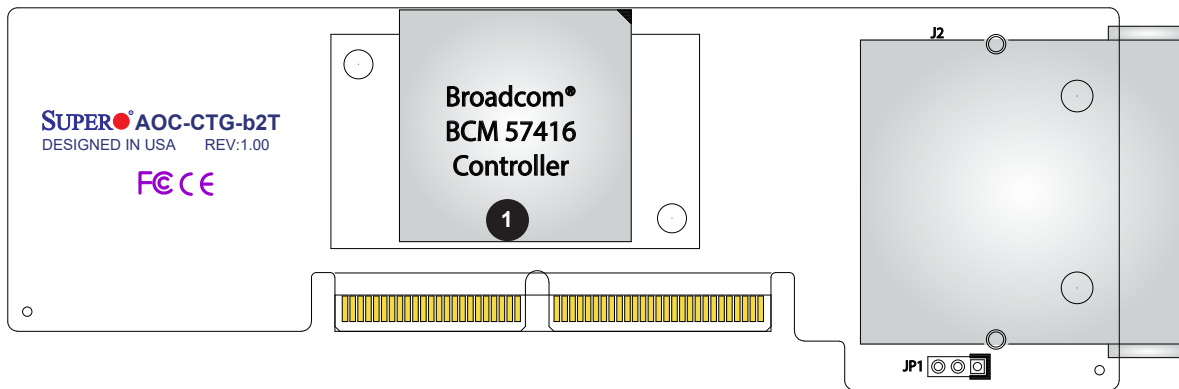
2.5 Major Components of AIOM Module

NC-SI

For remote management, Network-Controller Sideband Interface (NC-SI) will provide an out-of-band (sideband) connection between the onboard Broadcom® BCM57416 controller and the onboard BMC.

MicroLP Interface

Insert the MicroLP interface into a MicroLP slot on a motherboard to use this add-on card. See the layout below for the location.



1. MicroLP

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 follow the instructions below.

1. Power down the system.
2. Remove the power cord from the wall socket.
3. Use industry-standard anti-static equipment (such as gloves or wrist strap) and follow the instructions listed 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 hot fixes.

3.3 Installing the Add-on Card

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).

1. Remove the server cover and, if necessary, set aside any screws for later use.
2. Remove the add-on card slot cover. If the case requires a screw, place the screw aside for later use.
3. Position the add-on card in the slot directly over the connector, and gently push down on both sides of the card until it slides into the PCI connector.
4. Secure the add-on card to the chassis. If required, use the screw that you previously removed.
5. Attach any necessary external cables to the add-on card.
6. Replace the chassis cover.
7. Plug the power cord into the wall socket, and power up the system.

3.4 Installing Drivers on Windows

Follow the steps below to install the drivers needed for your Windows OS support. The controller comes with a driver on the CD-ROM CDR-NIC. Download the drivers from Intel Download Center or the Supermicro site at https://www.supermicro.com/wftp/Networking_Drivers.

1. Run CDR-NIC. (If you do not have a product CD-ROM, download drivers from the Supermicro Support Website and then transfer them to your system.)
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 Broadcom® BCM57416)

Use the procedures below to install both drivers and firmware for the AOC-CTG-b2T and AOM-CTG-b2TM add-on cards for both Linux and Windows.

Linux Drivers

Use the following procedures to install drivers on the Linux operating system. Download the drivers from ftp://ftp.supermicro/Networking_Drivers/.

Installing 10G Drivers for the Linux Operating System

1. Prerequisites: Install the following:

```
yum -y install libibverbs* infiniband-diags perftest qperf li-  
brdmacm-utils
```

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

2. From the CDR-NIC LAN driver CD or FTP site, go to the following directory: Broadcom > 10G > Linux_Driver.
3. Download the Linux driver package file netxtreme-bnxt_en-<ver>.tar.gz.
4. Install the driver by entering the following commands:

```
tar xzvf nextreme-bnxt_en-<ver>.tar.gz
```

```
cd nextreme-bnxt_en-<ver>
```

```
make build
```

```
make install
```

Windows Drivers

Use the following procedures to install drivers on the Windows operating system.

Installing 10G Drivers for the Windows Operating System

1. From the CDR-NIC LAN driver CD or FTP site, go to the following directory: Broadcom > 10G > Windows.
2. Choose the desired Windows driver package folder.
3. Drivers are in .inf format. You can install the driver from Device Manager.

(Disclaimer Continued)

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