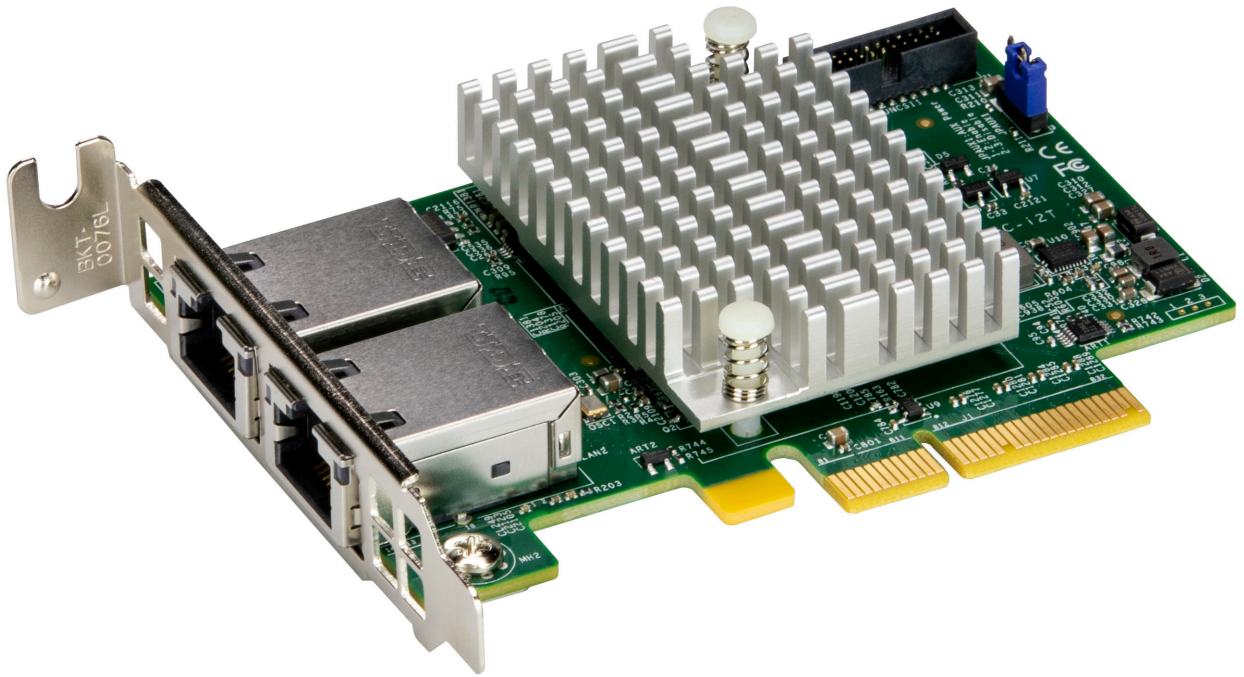




# AOC-STGC-i2T



## USER'S MANUAL

Revision 1.0

The information in this user's manual has been carefully reviewed and is believed to be accurate. The manufacturer 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 manual, or to notify any person or organization of the updates. **Please Note: For the most up-to-date version of this manual, please see our website at [www.supermicro.com](http://www.supermicro.com).**

Super Micro Computer, Inc. ("Supermicro") reserves the right to make changes to the product described in this manual 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 manufacturer and 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 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](http://www.dtsc.ca.gov/hazardouswaste/perchlorate)".



**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](http://www.P65Warnings.ca.gov).

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.

Manual Revision 1.0

Release Date: April 10, 2023

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 © 2023 by Super Micro Computer, Inc.  
All rights reserved.

**Printed in the United States of America**

## Preface

### About This Manual

This user's guide is written for system integrators, IT professionals, and knowledgeable end users. It provides information for the installation and use of the AOC-STGC-i2T add-on card.

### About This Add-On Card

The Supermicro® AOC-STGC-i2T features Intel's state-of-the-art Intel® X710-AT2 Ethernet solution that delivers a 10Gb per second transfer rate in PCIe Gen 3 architecture. Intel X710-AT2 has performance-enhancing and power management technologies that reduce CPU utilization. AOC-STGC-i2T also comes with NC-SI features that enable remote server management at an ease.

### 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 of 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.

### An Important Note to the User

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

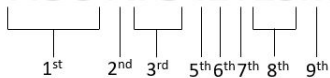
For your system to work properly, please follow the links below to download all necessary drivers/utilities and the user's manual for your server.

- 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](http://www.supermicro.com/about/policies/safety_information.cfm)
- If you have any questions, please contact our support team at: [support@supermicro.com](mailto: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 <sup>nd</sup> 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)  
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)a

Website: [www.supermicro.com](http://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 (Technical Support)  
RMA\_Europe@supermicro (RMA Support)

Website: [www.supermicro.nl](http://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

**Asia-Pacific**

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](http://www.supermicro.com.tw)

# Table of Contents

## ***Chapter 1 Introduction***

1.1 Overview.....	9
1.2 Key Features.....	9
1.3 Specifications.....	10

## ***Chapter 2 Hardware Components***

2.1 Add-On Card Image and Layout.....	13
2.2 Major Components.....	17
2.3 LAN Ports and LAN LED Indicators.....	18
2.4 NC-SI Header.....	20
2.5 Jumpers.....	21

## ***Chapter 3 Installation***

3.1 Major Components.....	22
3.2 Before Installation.....	23
3.3 Installing the Add-on Card.....	23
3.4 Installing Drivers for Windows.....	24
3.5 Installing Drivers on Linux.....	25
3.6 Installing Drivers on FreeBSD.....	26

# 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 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

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

- Dual Port RJ45 connector
- Low-profile, short length standard form factor
- Intel® X710-AT2 Ethernet controller
- Asset Management Feature with thermal sensor
- Data Plan Development Kit (DPDK)
- VxLAN, NVGRE, and Geneve
- Jumbo Packet (9K Max)
- NC-SI for IPMI support
- RoHS compliant 6/6 

## 1.3 Specifications

### General

- Intel® X710-AT2 Ethernet Controller
- Compact size low-profile standard form factor
- PCIe 3.0
- Dual RJ45 connectors
- Message Signal Interrupt (MSI-X)

### Networking Features

- Jumbo Packet (9K Max)
- Teaming
- IEEE 8023x Flow Control
- IEEE 802.1Q VLAN
- IEEE 802.3ad, 802.1AX Link Aggregation

### Stateless Offload Features

- TCP, UDP, IPv4, IPv6 checksum offload
- Large Send Offload/Large Segment Offload (LSO)
- Receive Segment Coalescing (RSC)
- TCP segmentation Offload (TSO)
- UDP Segment Offload (USO)
- Receive Side Scaling (RSS)

## **Virtualization Features**

- VXLAN
- NVGRE
- Geneve
- SR-IOV
- DPDK Support

## **Manageability**

- Network Controller Sideband Interface (NC-SI)\*
- Asset Management with Thermal Sensors

## **Remote Boot**

- iSCSI Boot
- Legacy PXE Boot
- UEFI PXE Boot

## **Data Center Bridging**

- Enhanced transmission – IEEE 802.1Qaz
- Edge Virtual Bridging – IEEE 802.Qbg

## **Power Saving**

- ACPI-compliant power management
- 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

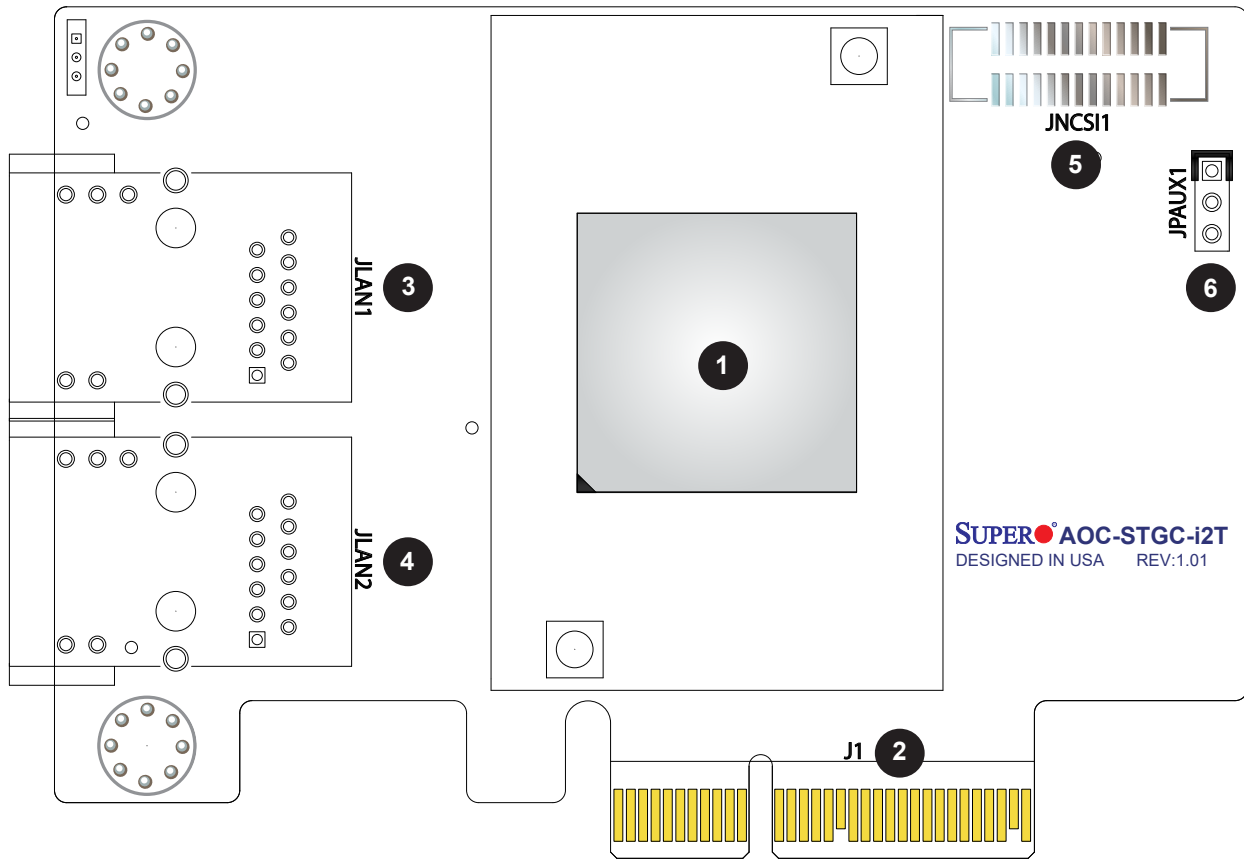
## Physical Dimensions

- PCB dimensions: 9.652 cm x 6.891 cm (3.8 in X2.713 in) (LxW)

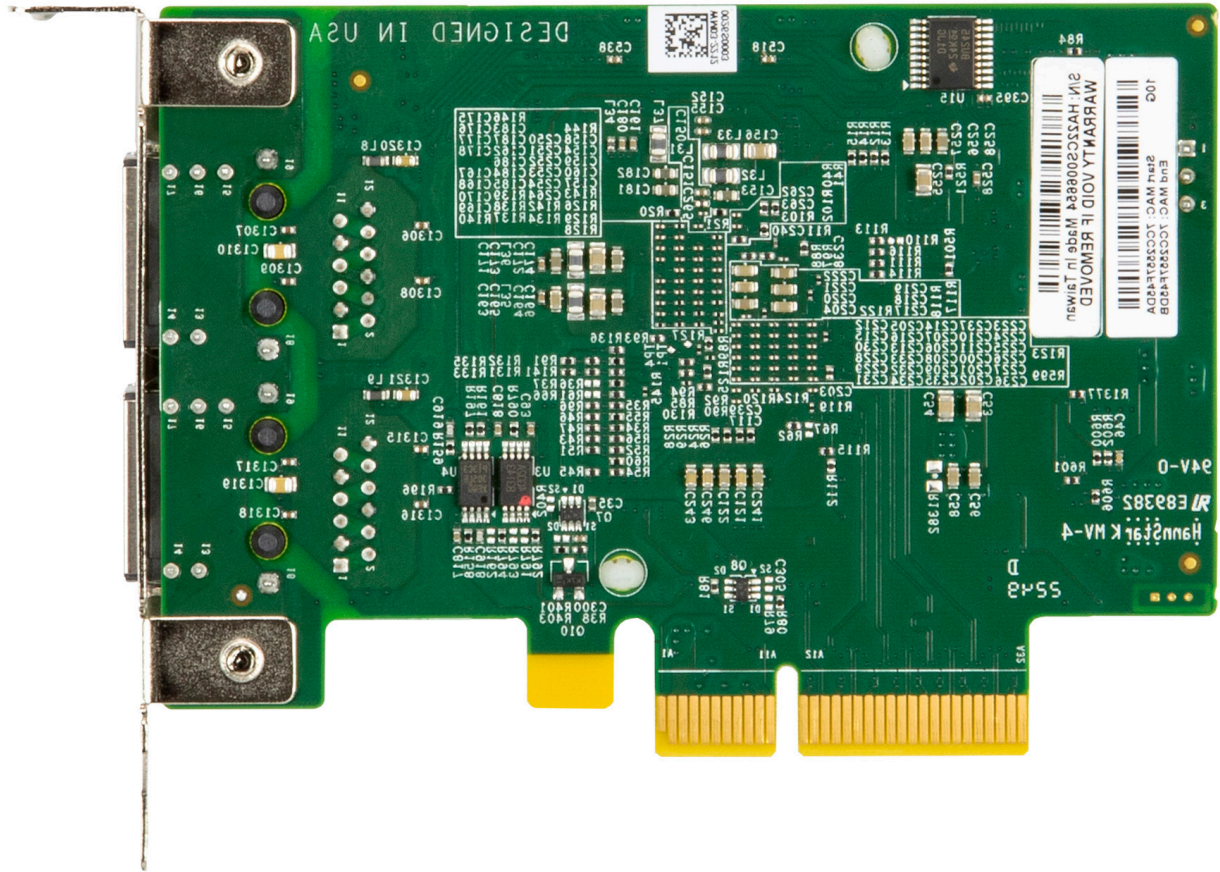


**Note:** This add-on card requires an NC-SI cable and motherboard support.

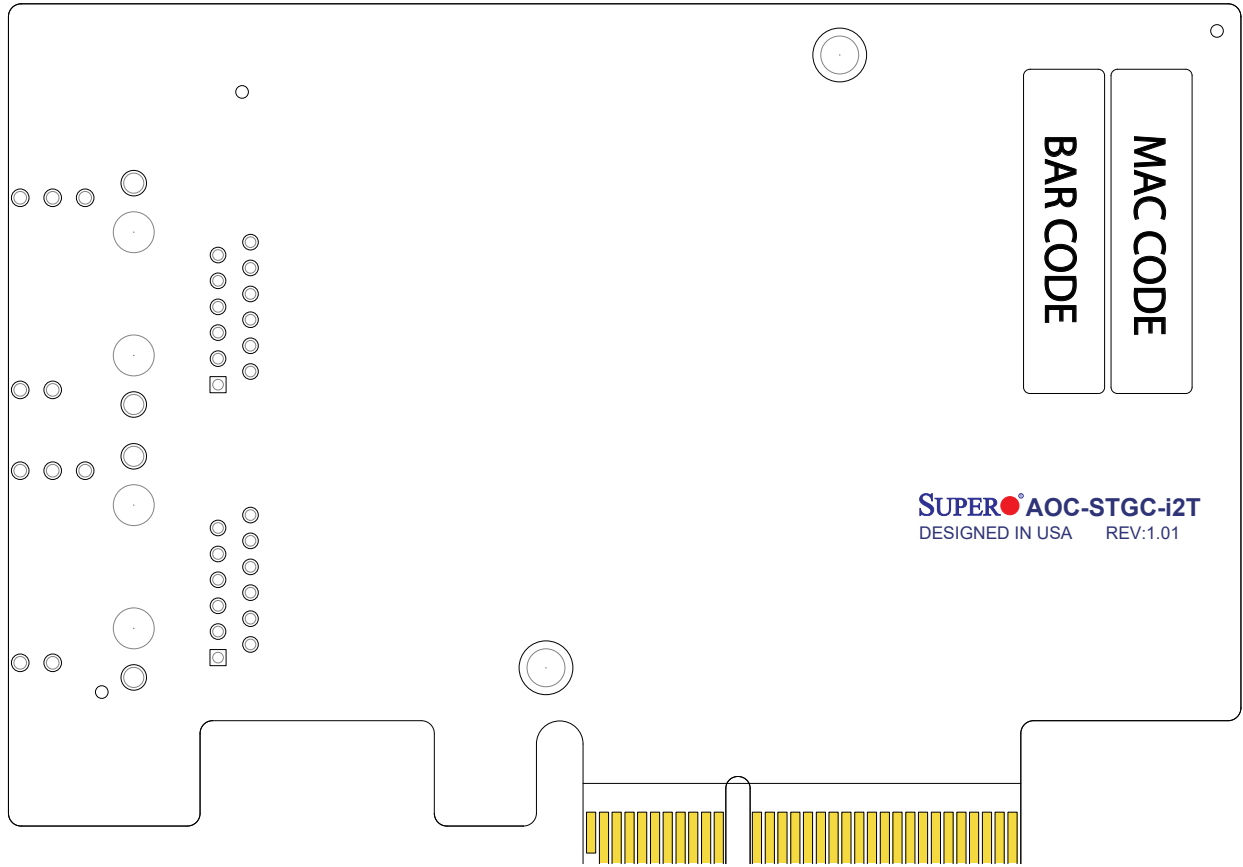




AOC-STGC-i2T Top Layout



AOC-STGC-i2T Bottom View



**AOC-STGC-i2T Bottom Layout**

## 2.2 Major Components

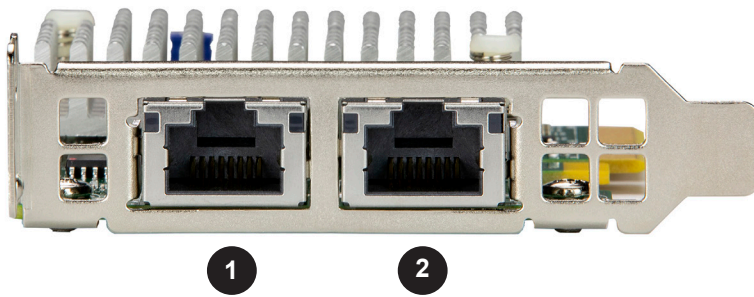
The following major components are installed on the AOC-STGC-i2T:

AOC-STGC-i2T Major Components		
No	Component Name	Definition
1	Intel® X710-AT2	Ethernet controller
2	J1	PCIe 3.0 slot
3	JLAN1	RJ45 Port 1
4	JLAN2	RJ45 Port 2
5	JNCSI1	NC-SI header
6	JPAUX1	1-2: Enable AUX Power
		2-3: Disable AUX Power

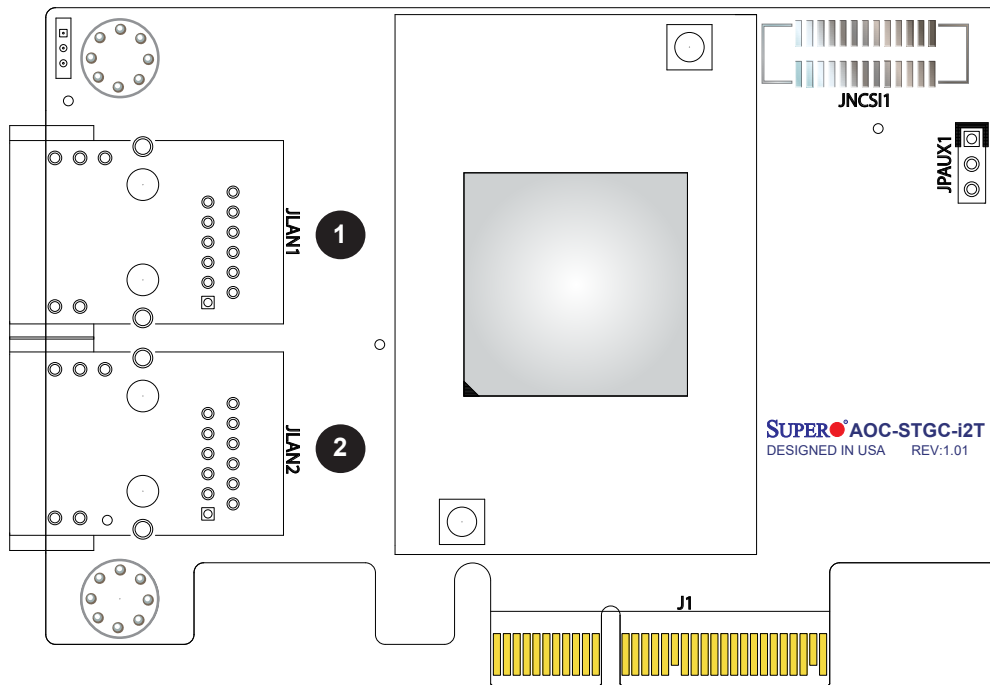
## 2.3 LAN Ports and LAN LED Indicators

### RJ45 Ports

There are two LAN ports (JLAN1 and JLAN2) on the AOC-STGC-i2T. These LAN ports support connection speeds of 10Gbps. Use a direct-attach RJ45 type LAN cable. See the layout below for the locations of the RJ45 ports.



- 1. JLAN1
- 2. JLAN2



## RJ45 LED Indicators

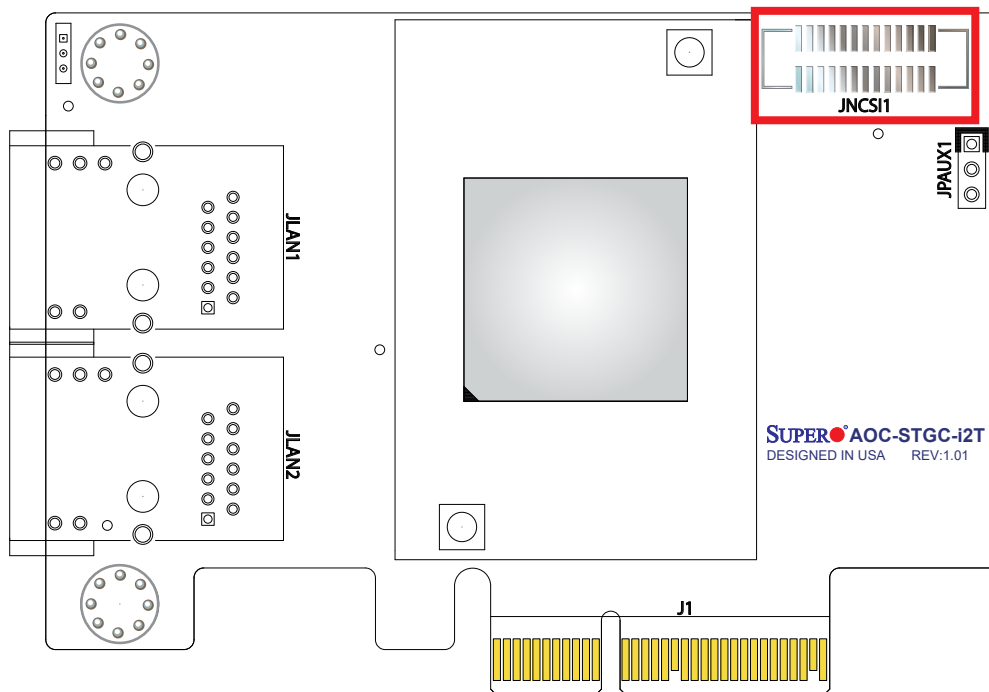
Each LAN has one bi-colored LED per port (RJ45) at the bottom of the PCB. Please refer to the tables below for LED color definition.

<b>LAN Port Link LED (Left) LED State</b>	
<b>LED Color</b>	<b>Definition</b>
Green	10 Gbps
Amber	1 Gbps
Off	100 Mbps

<b>LAN Port Link LED (Right) LED State</b>		
<b>LED Color</b>	<b>Status</b>	<b>Definition</b>
Off	Off	No Connection
Green	Solid	Link
Green	Flashing	Active

## 2.4 NC-SI Header

A Network-Controller Sideband Interface (NC-SI) header is located at JNCSI1 on the add-on card. Connect an appropriate cable from this header to a motherboard to provide the out-of-band (sideband) connection between the onboard Baseboard Management Controller (BMC) and a Network Interface Controller (NIC) for remote management. For the network sideband interface to work properly, you will need to use a motherboard that supports NCSI and also needs to have a special cable. Please contact Supermicro at [www.supermicro.com](http://www.supermicro.com) to purchase the cable for this header. See the layout below for the location of the JNCSI1 header.



## 2.5 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 2-2 for the jumper locations.



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

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	IPMI Shared LAN is supported but limited to platforms with sufficient airflow when it is in standby mode (S5 state). Please consult Supermicro before enabling it.

## Chapter 3

### Installation

Your system came with the AOC-STGC-i2T add-on card to be used as a part of an integrated solution. We do not recommend that any part of your system components be removed and reinstalled. However, if you do need to remove or reinstall a system component, including this add-on card, please follow the instructions below to ensure proper system setup. Also, be sure to remove the power cord first before adding, removing, or changing any hardware components to avoid damaging the system or components.

#### 3.1 Major Components

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 the add-on card into your system.

1. Remove the server cover and, if necessary, set aside any screws for later use.
2. Remove the add-on card slot cover and its screw.
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 server cover.
7. Plug in the power cord and power up the system.

## 3.4 Installing Drivers for 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.

1. Run the 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 on Linux

Follow the steps below to install the drivers for Linux.

1. Download the driver from the Supermicro CDR-NIC LAN driver CD or [https://www.supermicro.com/wdl/Networking\\_Drivers/CDR-NIC\\_1.70\\_for\\_Add-on\\_NIC\\_Cards/Intel/LAN/PRO40GB/LINUX/](https://www.supermicro.com/wdl/Networking_Drivers/CDR-NIC_1.70_for_Add-on_NIC_Cards/Intel/LAN/PRO40GB/LINUX/). Due to the continuous development of the Linux kernel, the drivers are updated more often than the bundled releases. The latest driver can be found by opening page <http://downloadcenter.intel.com> and then entering “i40e” in the search bar.”
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 the 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
```

```
make install
```

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

## 3.6 Installing Drivers on FreeBSD

Follow the instructions below to install the drivers to 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 kernel sources installed in order to compile the driver module.

1. Download the driver from the Supermicro CDR-NIC LAN driver CD or [ftp://ftp.supermicro.com/Networking\\_Drivers/CDR-NIC\\_1.62\\_for\\_Add-on\\_NIC\\_Cards/Intel/LAN/PRO40GB/FreeBSD](ftp://ftp.supermicro.com/Networking_Drivers/CDR-NIC_1.62_for_Add-on_NIC_Cards/Intel/LAN/PRO40GB/FreeBSD). Due to the continuous development of the Linux kernel, the drivers are updated more often than the bundled releases. The latest driver can be found at <http://downloadcenter.intel.com>.

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 xfz 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. Enter the following, 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, enter:

FreeBSD 7 or later:

```
cd ixl-x.x.x/src
cp *.ch /user/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)

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.