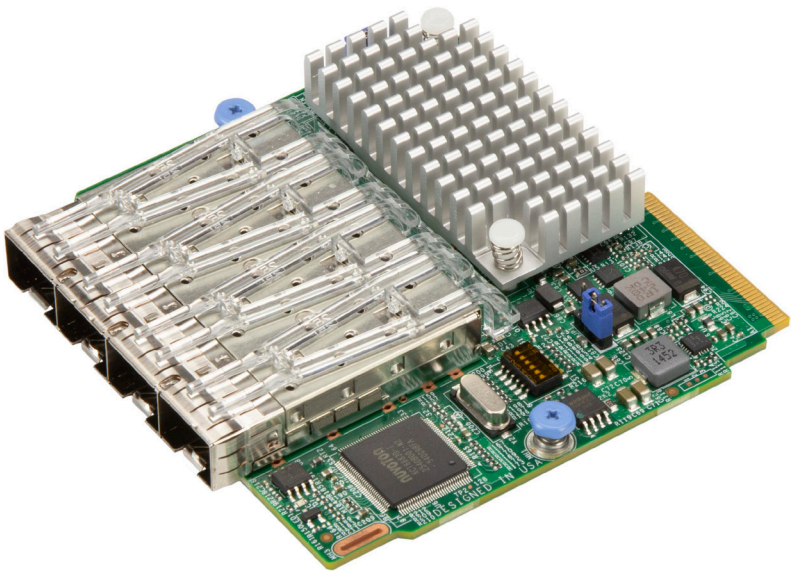




# AOC-MTG-i4S



## User's Guide

Revision 2.0a

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User's Guide Revision 2.0a

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## Preface

### About this User's Guide

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-MTG-i4S add-on card.

### About this Add-on Card

The AOC-MTG-i4S is the most advanced, market-leading SIOM add-on card that provides flexible I/O networking options with support of up to 10GbE LAN connections in the SFP+form-factor. This card expands virtualization beyond the server level to the network level and combines with hardware optimizations and offloads. It provides unmatched features for virtualization, flexibility for LAN and SAN networks, and reliable performance.

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

### 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. This number should be prominently displayed on the outside of the shipping carton when returning the motherboard to the manufacturer, while the shipping package will be 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 a 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

**AOC-MHIBF-m2Q2G**

1<sup>st</sup>
2<sup>nd</sup>
3<sup>rd</sup>
5<sup>th</sup>
6<sup>th</sup>
7<sup>th</sup>
8<sup>th</sup>

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
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), IBF: FDR IB (56Gb/s), IBQ: QDR IB (40Gb/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
7th	Connector Type (Optional)	S: 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, ZT: 2x 10GBase-T

## Networking Add-on Cards List

Model	Type	Form Factor	Controller	Connection	Dimension (w/o Brackets) (L x H)	Power (W)
AOC-MGP-i2	GbE	SIOM	Intel® i350 AM2	2 RJ45 (1Gb/port)	3.622" (92mm) x 3.428" (87.08mm)	3.7
AOC-MGP-i4	GbE	SIOM	Intel® i350 AM4	4 RJ45 (1Gb/port)	3.622" (92mm) x 3.428" (87.08mm)	4.4
AOC-MTGN-i2S	10GbE	SIOM	Intel® 82599ES	2 SFP+ (10Gb/port)	3.622" (92mm) x 3.428" (87.08mm)	7.2
AOC-MTG-i4S	10GbE	SIOM	Intel® XL710-BM1	4 SFP+ (10Gb/port)	3.622" (92mm) x 3.428" (87.08mm)	7
AOC-MTG-b2T	10GbE	SIOM	Broadcom® BCM57416	2 RJ45 (10GBase-T)	3.622" (92mm) x 3.428" (87.08mm)	11
AOC-MTG-i2T	10GbE	SIOM	Intel® X550-A72	2 RJ45 (10GBase-T)	3.622" (92mm) x 3.428" (87.08mm)	13
AOC-MTG-i4T	10GbE	SIOM	2x Intel® X550-A72	4 RJ45 (10GBase-T)	3.622" (92mm) x 3.428" (87.08mm)	26
AOC-MHIBF-m1Q2G	FDR IB GbE	SIOM	Mellanox® ConnectX-3 Pro Intel® i350	1 QSFP (56Gb/port) 2 RJ45 (1Gb/port)	3.622" (92mm) x 3.428" (87.08mm)	9
AOC-MHIBF-m2Q2G	FDR IB GbE	SIOM	Mellanox® ConnectX-3 Pro Intel® i350	2 QSFP (56Gb/port) 2 RJ45 (1Gb/port)	3.622" (92mm) x 3.428" (87.08mm)	11
AOC-MHIBE-m1CG	EDR IB GbE	SIOM	Mellanox® ConnectX-4 VPI Intel® i210	1 QSFP28 (100Gb/port) 1 RJ45 (1Gb/port)	3.622" (92mm) x 3.428" (87.08mm)	19
AOC-MH25G-b2S2G	25GbE	SIOM	Broadcom® BCM57414 Intel® i350	2 SFP28 (25Gb/port) 2 RJ45 (1Gb/port)	3.622" (92mm) x 3.428" (87.08mm)	9
AOC-MH25G-m2S2T	25GbE	SIOM	Mellanox® ConnectX-4 Lx EN Intel® X550-A72	2 SFP28 (25Gb/port) 2 RJ45 (10GBase-T)	3.622" (92mm) x 3.428" (87.08mm)	25
AOC-M25G-m4S	25GbE	SIOM	Mellanox® ConnectX-4 Lx EN	4 SFP28 (25Gb/port)	3.622" (92mm) x 3.428" (87.08mm)	20
AOC-M25G-i2S	25GbE	SIOM	Intel® XXV710	2 SFP28 (25Gb/port)	3.622" (92mm) x 3.428" (87.08mm)	11.8
AOC-MHFI-i1C	Omni-Path	SIOM	Intel® OP HFI ASIC (Wolf River WFR-B)	1 QSFP28 (100Gb/port)	3.622" (92mm) x 3.428" (87.08mm)	15

Model	Type	Form Factor	Interface	Controller	Connection	Dimension (w/o Brackets) (L x H)	Power (W)
AOC-SGP-I2	GbE	Standard LP	PCI-E x4	Intel® i350 AM2	2 RJ45 (1Gb/port)	3.9" (99mm) x 2.73" (69mm)	3.5
AOC-SGP-I4	GbE	Standard LP	PCI-E x4	Intel® i350 AM4	4 RJ45 (1Gb/port)	3.9" (99mm) x 2.73" (69mm)	5
AOC-STG-I2T	10GbE	Standard LP	PCI-E x8	Intel® X540-A72	2 RJ45 (10GBase-T)	5.9" (150mm) x 2.73" (69mm)	13
AOC-STGS-I1T	10GbE	Standard LP	PCI-E x4	Intel® X550-A7	1 RJ45 (10GBase-T)	5.9" (150mm) x 2.73" (69mm)	9
AOC-STGS-I2T	10GbE	Standard LP	PCI-E x4	Intel® X550-A72	2 RJ45 (10GBase-T)	5.9" (150mm) x 2.73" (69mm)	11
AOC-STG-b2T	10GbE	Standard LP	PCI-E x8	Broadcom® BCM57416	2 RJ45 (10GBase-T)	5.6" (142mm) x 2.73" (69mm)	13.1
AOC-STG-I4T	10GbE	Standard LP	PCI-E x8	Intel® XL710-BM1	4 RJ45 (10GBase-T)	5.9" (149mm) x 2.73" (69mm)	15.5
AOC-STGN-I1S	10GbE	Standard LP	PCI-E x8	Intel® 82599EN	1 SFP+ (10Gb/port)	4.0" (102mm) x 2.73" (69mm)	10
AOC-STGN-I2S	10GbE	Standard LP	PCI-E x8	Intel® 82599ES	2 SFP+ (10Gb/port)	4.0" (102mm) x 2.73" (69mm)	11.2
AOC-STGF-I2S	10GbE	Standard LP	PCI-E x8	Intel® X710-BM2	2 SFP+ (10Gb/port)	5.19" (132mm) x 2.73" (69mm)	5.6
AOC-STG-b4S	10GbE	Standard LP	PCI-E x8	Broadcom® BCM57840S	4 SFP+ (10Gb/port)	5.4" (137mm) x 2.73" (69mm)	14
AOC-STG-I4S	10GbE	Standard LP	PCI-E x8	Intel® XL710-BM1	4 SFP+ (10Gb/port)	5.9" (150mm) x 2.73" (69mm)	9
AOC-S25G-m2S	25GbE	Standard LP	PCI-E x8	Mellanox® CX-4 LX	2 SFP28 (25Gb/port)	5.6" (142mm) x 2.713" (69mm)	8.7
AOC-S25G-b2S	25GbE	Standard LP	PCI-E x8	Broadcom® BCM57414	2 SFP28 (25Gb/port)	5.6" (142mm) x 2.713" (69mm)	5.2
AOC-S25G-I2S	25GbE	Standard LP	PCI-E x8	Intel® XXV710	2 SFP28 (25Gb/port)	6.1" (155mm) x 2.713" (69mm)	7.2
AOC-S40G-I1Q	40GbE	Standard LP	PCI-E x8	Intel® XL710-BM1	1 QSFP+ (40Gb/port)	5.9" (150mm) x 2.73" (69mm)	6.5
AOC-S40G-I2Q	40GbE	Standard LP	PCI-E x8	Intel® XL710-BM2	2 QSFP+ (40Gb/port)	5.9" (150mm) x 2.73" (69mm)	7
AOC-S100G-m2C	100GbE	Standard LP	PCI-E x16	Mellanox® CX-4 EH	2 QSFP28 (100Gb/port)	6.8" (168mm) x 2.73" (69mm)	16.3
AOC-S100G-b1C	100GbE	Standard LP	PCI-E x16	Broadcom® BCM57454	2 QSFP28 (100Gb/port)	6.8" (168mm) x 2.73" (69mm)	17.8
AOC-CGP-I2	GbE	MicroLP	PCI-E x4	Intel® i350 AM2	2 RJ45 (1Gb/port)	4.45" (113mm) x 1.54" (39mm)	4
AOC-CTG-I1S	10GbE	MicroLP	PCI-E x8	Intel® 82599EN	1 SFP+ (10Gb/port)	4.85" (123mm) x 1.54" (39mm)	10
AOC-CTG-I2S	10GbE	MicroLP	PCI-E x8	Intel® 82599ES	2 SFP+ (10Gb/port)	4.85" (123mm) x 1.54" (39mm)	11
AOC-CTG-I2T	10GbE	MicroLP	PCI-E x8	Intel® X540-A72	2 RJ45 (10GBase-T)	4.8" (123mm) x 2.75" (77mm)	13
AOC-CTGS-I2T	10GbE	MicroLP	PCI-E x4	Intel® X550-A72	2 RJ45 (10GBase-T)	4.45" (113mm) x 1.54" (39mm)	12
AOC-C25G-m1S	25GbE	MicroLP	PCI-E x8	Mellanox® CX-4 Lx EN	1 SFP28 (25Gb/port)	4.45" (113mm) x 1.54" (39mm)	8.5

## 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](mailto:marketing@supermicro.com) (General Information)  
[support@supermicro.com](mailto:support@supermicro.com) (Technical Support)

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@supermicro.nl](mailto:sales@supermicro.nl) (General Information)  
[support@supermicro.nl](mailto:support@supermicro.nl) (Technical Support)  
[rma@supermicro.nl](mailto:rma@supermicro.nl) (Customer 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

Email: [support@supermicro.com.tw](mailto:support@supermicro.com.tw)

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

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# 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 Product Highlights

- Quad SFP+ connectors
- Super I/O Module (SIOM) Form Factor
- Network Virtualization Offloads including VXLAN and NVGRE
- Small packet performance
- Data Plane Developer Kit for efficient packet processing
- Low power consumption
- Intel® Flow Director
- Intelligent Offloads
- Unified networking providing a single wire support for LAN and storage
- Asset Management features
- RoHS compliant 6/6
- Both-direct-attach copper and fiber cable supported



## 1-3 Technical Specifications

### General

- Intel® XL710-BM1 controller
- Super I/O Module (SIOM) Form Factor
- Quad SFP+ connectors with speed up to 10Gbps per port
- Load balancing on multiple CPUs
- Intel® PROSet Utility for Windows Device Manager
- Time Sync (IEEE 1588)
- Energy Efficient Ethernet (EEE)

### I/O Features

- Intel® Flow Director
- MSI-X support
- Multiple Queues: 1,536 TX and RX queues per port
- Tx/Rx IP, SCTP, TCP, and UDP checksum offloading (IPv4, IPv6) capabilities
- Jumbo Frame (9.5KB)

### Virtualization Features

- Next-Generation VMDq with up to 256 VMDq VMs supported
- PCI-SIG SR-IOV with up to 128 virtual ports
- Virtual Machine Load Balancing (VMLB)
- Advanced Packet Filtering
- VLAN support for up to 4096 VLAN tags
- VXLAN and NVGRE support

## Storage Interface Features

- Preboot eXecution Environment (PXE) support
- iSCSI remote boot
- Simple Network Management Protocol (SNMP) and Remote Network Monitoring (RMON) static counters

## Management Features

- Asset Management support on Supermicro platforms
- Controller asset tags such as part number, revision, serial number, and MAC addresses
- Controller thermal sensor
- NC-SI for remote management

## Advanced Software Features

- Teaming support
- IEEE 802.3ad (link aggregation control protocol)
- IEEE 802.1Q VLANs
- IEEE 802.3 2005 flow control support
- TCP segmentation/large send offload
- Interrupt moderation

## OS Support

The AOC-MTG-i4S add-on card supports the following operating systems:

- Windows® Server 2012 R2, 2012, 2008 R2 X86-64
- Linux RedHat EL 6.5 and 7.0 IA-32, X86-64, and IA-64
- Linux SuSE SLES 11 SP3 and 12 IA-32, X86-64, and IA-64

- FreeBSD 9 and 10 IA-32, X86-64, and IA-64
- UEFI 2.1 and 2.3 X86-64 and IA-64
- VMware ESXi 5.1, ESXi 5.5 and ESXi 6.0 X86-64

## **Cable Support**

- SFP+ direct-attach twinaxial copper cables up to 7m
- Fiber-optic cables (with required optional SFP+ transceivers)

## **Power Consumption**

- Typical power consumption: 4W
- Maximum power consumption: 7W

## **Operating Conditions**

- Operating temperature: 0°C to 55°C (32°F to 131°F)
- 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: 92mm (3.62in) x 87.1mm (3.43in) (W x D)

## **Optional Accessories**

- AOC-E10GSFPSR: SFP+ transceiver module for short range fiber cables (up to 300m), 10G/1G, 850nm, MMF, LC
- AOC-E10GSFPLR: SFP+ transceiver module for long range fiber cables (up to 10km), 10G/1G, 1310nm, MMF, LC
- AOC-TSR-FS: SFP+ transceiver module for short range fiber cables (up to 300m), 10G/1G, 850nm, MMF, LC

- AOM-TSFP-709DMZ-AVG: SFP+ transceiver module for short range fiber cables, 10G/1G, 850nm, MMF, LC
- CBL-0347L: 1m 10GbE SFP+ to SFP+ copper cable, Passive, 30AWG, Pull Type
- CBL-NTWK-0347: 1m 10GbE SFP+ to SFP+ copper cable, Passive, 30AWG, Push Type
- CBL-NTWK-0456: 2m 10GbE SFP+ to SFP+ copper cable, Passive, 30AWG, Push Type
- CBL-0348L: 3m 10GbE SFP+ to SFP+ copper cable, Passive, 24AWG, Pull release
- CBL-0349L: 5m 10GbE SFP+ to SFP+ copper cable, Passive, 24AWG, Pull release
- CBL-SFP+AOC-1M: 1m 10GbE SFP+ to SFP+ Fiber Active Optical Cable (AOC)
- CBL-SFP+AOC-3M: 3m 10GbE SFP+ to SFP+ Fiber Active Optical Cable (AOC)
- CBL-SFP+AOC-5M: 5m 10GbE SFP+ to SFP+ Fiber Active Optical Cable (AOC)

## Compliance Platforms

- RoHS Compliant 6/6, Pb Free



## Supported Platforms

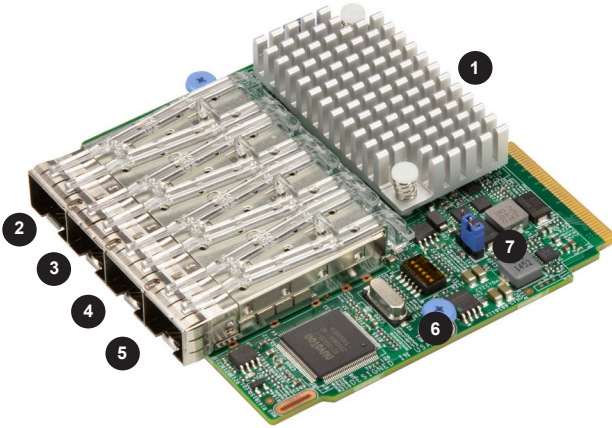
- Supermicro® motherboards with Super I/O Module slots
- Supermicro® server systems with Super I/O Module slots

## Notes

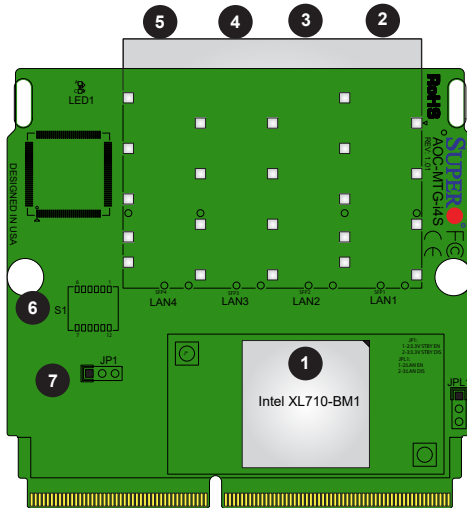
## Chapter 2

### Hardware Components

#### 2-1 Add-On Card Image and Layout



The AOC-MTG-i4S Image



The AOC-MTG-i4S Layout

## 2-2 Major Components

The following major components are on the AOC-MTG-i4S

1. Intel XL710-BM1	5. SFP+ Port 4
2. SFP+ Port 1	6. DIP Switch
3. SFP+ Port 2	7. 3.3V Standby
4. SFP+ Port 3	

## 2-3 LAN Ports and LAN LED Indicators

### LAN Ports

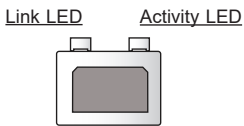
There are four SFP+ LAN ports on the add-on card. These LAN ports support connection speeds of 10Gbps and 1Gbps. Use a direct-attach twinaxial copper cable.



**Note:** Please refer to "Optional Accessories" on page 1-4 for recommended cables.

### LAN Port LED Indicators

Each LAN port has two LEDs to indicate speed and data activity. Refer to the table below for LED color and definition.



#### LAN Ports

1. SFP+ Port 0
2. SFP+ Port 1
3. SFP+ Port 2
4. SFP+ Port 3

LED	Color	Definition
LNK	Green	10 Gb Link Speed
	Yellow	1 Gb Link Speed
ACT	Blinking Green	Activity



## 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 2-1 for the jumper location.



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

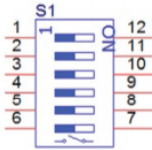
### Standby Power Header

The Standby Power header is located at JSTBY1 on the add-on card. See the table on the right for pin definitions.

Standby Power Pin Definitions	
Pin#	Definition
1	+5V Standby
2	Ground
3	Wake-up

## DIP Switch

The DIP switch at S1 provides SMBUS address selection. You can configure the card with static SMBUS address. Please refer to the tables below for address sections and page 2-1 for the location of the switch.



S1:DIP switch for user selection

Switch Position	OFF (default)	ON
1	SMBUS ARP mode	Static SMBUS address mode
2~5	Static SMBUS address selection	
6	Thermal Reading Enable	Thermal Reading Disable

Static SMBUS address selection table by DIP switch S1

SMBUS Address	S1 position #5	S1 position #4	S1 position #3	S1 position #2
30/D0	OFF/ON	OFF	OFF	OFF
32/D2	OFF/ON	OFF	OFF	ON
34/D4	OFF/ON	OFF	ON	OFF
36/D6	OFF/ON	OFF	ON	ON
38/D8	OFF/ON	ON	OFF	OFF
3A/DA	OFF/ON	ON	OFF	ON
3C/DC	OFF/ON	ON	ON	OFF
3E/DE	OFF/ON	ON	ON	ON

## Notes

## 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 remove it before adding, removing or changing any hardware components.

## 3-2 Before Installation

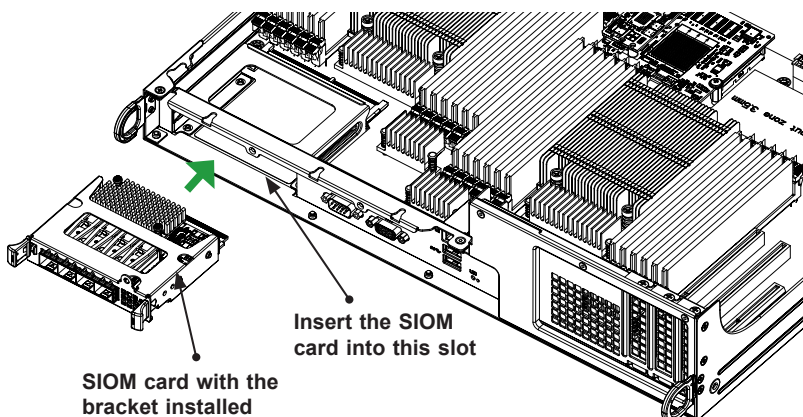
Before you install the add-on card, follow the instructions below.


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 Installing the Add-on Card

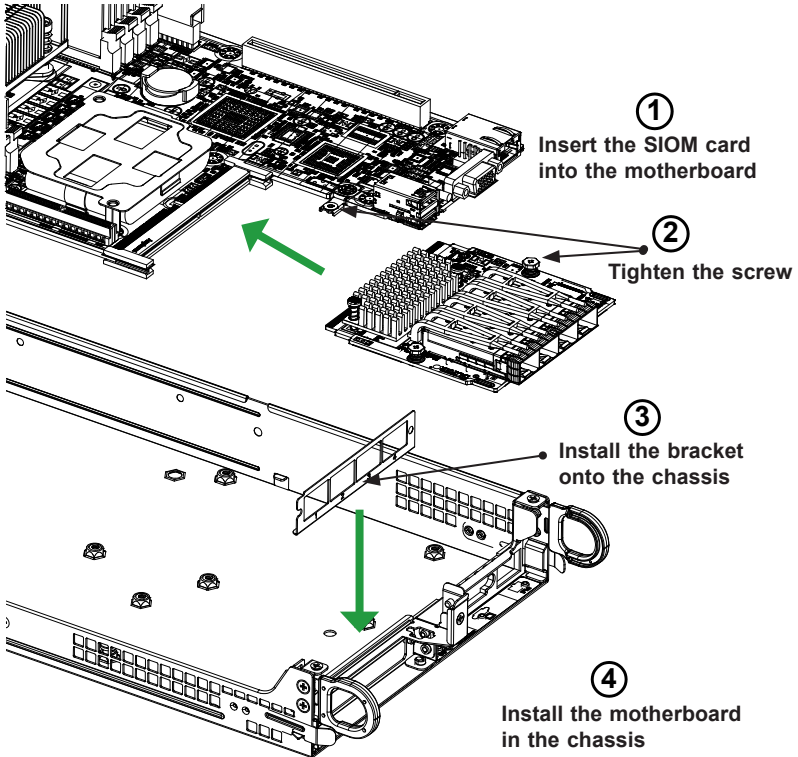
Follow the steps below to install the add-on card into your system.


1. Remove the server cover and, if any, set aside any screws for later use.
2. Remove the add-on card slot cover. If the slot cover has a screw, place it aside for later use.
3. Position the add-on card in front of the SIOM slot and gently press both sides of the card until it slides into the slot.



 **Note:** This add-on card does not support hot plug. Please turn off the AC power and remove the power cord from the wall socket before you install or remove the add-on card.

Follow this step to install the add-on card if your system does not support a swappable bracket. Insert the SIOM card in the motherboard and then install the motherboard in the chassis. An internal bracket comes with the SIOM card 1U chassis SKU. It needs to be installed onto the chassis.



 **Note:** It is recommended that the SIOM card installation above be completed by a system integrator or the manufacturer.

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 system cover.
7. Plug in the power cord and power up the system.

### 3-4 Installing Drivers on Windows

Follow the steps below to install the drivers for Windows. Download the drivers from the Supermicro FTP site at [ftp://ftp.supermicro.com/Networking\\_Drivers/](ftp://ftp.supermicro.com/Networking_Drivers/).

1. Run CDR-NIC.
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.



**SUPERMICRO Add-On Card Drivers and Tools (Win8.1)**

**Intel 10GbE Adapters**  
 UTG-i2, STG-i2, STGN-i2S, STG-i2T, CTG-i1S, CTG-i2S, MH25G-m2S2T, STGF-i2S, MTG-i4S

**IB Adapters (IB drivers)**  
 UINF-m2, UIBQ-m1, UIBQ-m2, R1UG-iBQ, CIBF-m1, CIBQ-m1, UIBF-m1, MHIBF-m1Q2G, MHIBF-m2Q2G, MHIBE-m1CG

**IB Adapters (Ethernet drivers)**  
 UINF-m2, UIBQ-m1, UIBQ-m2, R1UG-iBQ, CIBF-m1, CIBQ-m1, UIBF-m1

**Intel 1GbE Adapters**  
 UG-i4, PG-i2S, SG-i2, SG-i4, SGP-i4, CGP-i2, SGP-i2, CG-i2, MHIBF-m1Q2G, MHIBF-m2Q2G, MHIBE-m1CG, AG-i8, MGP-i2, MGP-i4

**Intel Omni Path 100G Adapters**  
 MHFI-i1C, SHFI-i1C

**Broadcom 1GbE Adapters**  
 MG-b2

**Broadcom 10GbE Adapters**  
 MTG-b2T, STG-b2T

**Broadcom 25GbE Adapters**  
 MH25G-b2S2G, S25G-b2S

**Broadcom 100GbE Adapters**  
 S100G-b1C

**Mellanox 25GbE Adapters**  
 C25G-m2S, C25G-m1S, MH25G-m2S2T, S25G-m2S, M25G-m4S

**Intel 25GbE Adapters**  
 M25G-i2S, S25G-i2S

**Mellanox 100GbE Adapters**  
 S100G-m2C

**Intel 40GbE Adapters**  
 S40G-i1Q, S40G-i2Q

**STG-b4S 10GbE Adapters**

Read Product Description and Manual

For more information, please visit SUPERMICRO's web site.

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 in Linux.

### Build a Binary RPM Package

1. Run 'rpmbuild -tb <filename.tar.gz>'
2. Replace <filename.tar.gz> with the specific filename of the driver.



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

Follow the instructions below to build the driver manually.

1. Move the base driver tar file to the directory of your choice. For example:

```
/home/username/ixgbe
```

or

```
/usr/local/src/ixgbe
```

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

```
tar xzf ixgbe-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 ixgbe-x.x.x/src/
```

4. Compile the driver module:


```
make install
```

The binary will be installed as:

```
/lib/modules/[KERNEL_VERSION]/kernel/drivers/net/ixgbe/ixgbe.[k]o
```



The install locations listed above are the default locations. They may not be correct for certain Linux distributions. For more information, see the `ldistrib.txt` file included in the driver tar.

 **Note:** `IXGBE_NO_LRO` is a compile time flag. The user can enable it at compile time to remove support for LRO from the driver. The flag is used by adding `CFLAGS_EXTRA="-DIXGBE_NO_LRO"` to the make file when it's being compiled.

```
make CFLAGS_EXTRA="-DIXGBE_NO_LRO" install
```

5. Load the module:

For kernel 2.6.x, use the `modprobe` command:

```
modprobe ixgbe <parameter>=<value>
```

For 2.6 kernels, the `insmod` command can be used if the full path to the driver module is specified. For example:

```
insmod /lib/modules/<KERNEL_VERSION>/kernel/drivers/net/  
ixgbe/ixgbe.ko
```

In addition, when using 2.6-based kernels, make sure that older `ixgbe` drivers are removed from the kernel before loading the new module. To do this, use:

```
rmmod ixgbe; modprobe ixgbe
```

6. Assign an IP address to the interface by entering the following, where `x` is the interface number:

```
ifconfig ethx <IP_address> netmask <netmask>
```

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>
```

## 3-6 Installing Drivers on FreeBSD

Follow the instructions below to install the drivers in FreeBSD kernel 4.8 or later. In the instructions below, `x.x.x` is the driver version as indicated in the name of the drive tar file.

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

1. Move the base driver tar file to the directory of your choice. For example, use `/home/username/ixgb` or `/usr/local/src/ixgb`.

2. Untar/unzip the archive:

```
tar xfz ixgb-x.x.x directory
```

3. To install man page:

```
cd ixgb-x.x.x
```

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

4. To load the driver onto a running system, perform the following steps:

```
cd ixgb-x.x.x
```

```
make
```

or

```
cd ixgb-x.x.x/src
```

```
make load
```

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

```
ifconfig ixgb<interface_num> <IP_address>
```

6. 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>
```

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

```
cd ixgb-x.x.x/src
```

```
make load
```

```
cp if_ixgb.ko /modules
```

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

```
if_ixgb_load="YES"
```

or

compile the driver into the kernel (see item 8). Edit `/etc/rc.conf`, and create the appropriate `ifconfig_ixgb<interface_num>` entry:

```
ifconfig_ixgb<interface_num>="<ifconfig_settings>"
```

Example usage:

```
ifconfig_ixgb0="inet 192.168.10.1 netmask 255.255.255.0"
```

8. If you want to compile the driver into the kernel, enter:

```
cd ixgb-x.x.x/src
mkdir /usr/src/sys/dev/ixgb
cp if_ixgb* /usr/src/sys/dev/ixgb
cp ixgb* /usr/src/sys/dev/ixgb
cp Makefile.kernel /usr/src/sys/modules/ixgb/Makefile
```

Edit the `/usr/src/sys/conf/files.i386` file, and add the following line:

```
dev/ixgb/ixgb_hw.c optional ixgb
dev/ixgb/ixgb_ee.c optional ixgb
dev/ixgb/if_ixgb.c optional ixgb
```

Remove the following lines from the `/usr/src/sys/conf/files.i386` file if they exist:

```
/dev/ixgb/if_ixgb_fx_hw.c optional ixgb
/dev/ixgb/if_ixgb_phy.c optional ixgb
```

Edit the kernel configuration file (i.e., `GENERIC` or `MYKERNEL`) in `/usr/src/sys/i386/conf`, and ensure the following line is present:

```
device ixgb
```

Compile and install the kernel. Reboot the system for the kernel updates to take affect.

(Disclaimer Continued)

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