SUPERMICR○®

AOC-MH25G-m2S2T

User's Guide

Revision 1.0

The information in this User's Guide has been carefully reviewed and is believed to be accurate. The vendor 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 user's guide, or to notify any person or organization of the updates. **Please Note: For the most up-to-date version of this user's guide, please see our Website at www.supermicro.com.**

Super Micro Computer, Inc. ("Supermicro") reserves the right to make changes to the product described in this user's guide 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 the manufacturer and the 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 a commercial 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".

WARNING: Handling of lead solder materials used in this product may expose you to lead, a chemical known to the State of California to cause birth defects and other reproductive harm.

Preface

About this User's Guide

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-MH25G-m2S2T add-on card.

About this Add-on Card

The Supermicro AOC-MH25G-m2S2T is one of the most feature rich 25GbE controllers in the market. Based on the Mellanox® ConnectX-4 Lx EN with features such as VXLAN and NVGRE; it provides flexible connectivity for different networking requirements. It is compatible with 10GbE networks and offers the most cost effective upgrades from 10GbE to 25GbE in Data Center and Cloud deployments. The AOC-MH25G-m2S2T also supports an additional 2-ports of 10GbE RJ45 connectivity, based on the Intel® X550 controller, providing NC-SI for Remote Management. This versatile 25GbE controller is an excellent choice to enhance data center network connectivity when high speed throughput is required.

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. When returning the motherboard to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and the shipping package is 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).

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 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 to differentiate between various models or provides information for correct system setup.

Naming Convention

AOC-MHIBF-m2Q2G

1st   2nd   3rd   5th 6th 7th   8th

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)
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	2nd Controller/Connector Type (Optional)	G: 1x GbE RJ45, 2G: GbE 2x RJ45, S: 1x 10G SFP+, T: 10GBase-T, 2T: 2x 10GBase-T

SMC Networking Add-on Cards

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-i2T	10GbE	SIOM	Intel® X550-AT2	2 RJ45 (10GBase-T)	3.622" (92mm) x 3.428" (87.08mm)	13
AOC-MTG-i4T	10GbE	SIOM	2x Intel® X550-AT2	4 RJ45 (10GBase-T)	3.622" (92mm) x 3.428" (87.08mm)	26
AOC-MHIBF-m1Q2G	FRD 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	FRD 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-MH25G-b2S2G	25GbE GbE	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-AT2	2 SFP28 (25Gb/port) 2 RJ45 (10GBase-T)	3.622" (92mm) x 3.428" (87.08mm)	25
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-AT2	2 RJ45 (10GBase-T)	5.9" (150mm) x 2.73" (69mm)	13
AOC-STGS-i1T	10GbE	Standard LP	PCI-E x4	Intel® X550-AT	1 RJ45 (10GBase-T)	5.9" (150mm) x 2.73" (69mm)	9
AOC-STGS-i2T	10GbE	Standard LP	PCI-E x4	Intel® X550-AT2	2 RJ45 (10GBase-T)	5.9" (150mm) x 2.73" (69mm)	11
AOC-STG-i4T	10GbE	Standard LP	PCI-E x8	Intel® XL710-BM1	4 RJ45 (10GBase-T)	5.9" (14.99cm) x 2.73"(6.9cm)	15.5
AOC-STGN-i1S	10GbE	Standard LP	PCI-E x8	Intel® 82598EN	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)	TBD	TBD
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)	8
AOC-S40G-i4S	10GbE	Standard LP	PCI-E x8	Intel® XL710-BM1	1 QSFP+ w/ breakout cable to 4 x 10GbE	5.9" (150mm) x 2.73" (69mm)	TBD
AOC-S25G-b2S	25GbE	Standard LP	PCI-E x8	Broadcom® BCM57414	2 SFP28 (25Gb/port)	5.6" (142mm) x 2.713" (69mm)	7
AOC-S25G-m2S	25GbE	Standard LP	PCI-E x8	Mellanox® CX-4 LX	2 SFP28 (25Gb/port)	TBD	TBD
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 EN	2 QSFP28 (100Gb/port)	TBD	TBD
AOC-PTG-i1S	10GbE	Proprietary	PCI-E x8	Intel® 82599EN	1 SFP+ (10Gb/port)	10.04" (255mm) x .78" (20mm)	7.5
AOC-UG-i4	GbE	UIO FH	PCI-E x8	Intel® 82571EB	4 RJ45 (1Gb/port)	6.6" (167mm) x 3.9" (98mm)	10
AOC-CGP-i2	GbE	MicroLP	PCI-E x4	Intel® i350 AM2	2 RJ45 (1Gb/port)	4.45" (113mm) x 1.54" (39mm)	4
AOC-CG-i2	GbE	MicroLP	PCI-E x4	Intel® 82580	2 RJ45 (1Gb/port)	4.45" (113mm) x 1.3" (34mm)	4
AOC-CIBF-m1	FDR IB	MicroLP	PCI-E x8	Mellanox® ConnectX-3	1 QSFP (56Gb/port)	4.85" (123mm) x 1.54" (39mm)	7
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-AT2	2 RJ45 (10GBase-T)	4.8" (123mm) x 2.75" (77mm)	13
AOC-CTGS-i2T	10GbE	MicroLP	PCI-E x4	Intel® X550-AT2	2 RJ45 (10GBase-T)	4.45" (113mm) x 1.54" (39mm)	12
AOC-C25G-m2S	25GbE	MicroLP	PCI-E x8	Mellanox® CX-4 Lx EN	2 SFP28 (28Gb/port)	4.45" (113mm) x 1.54" (39mm)	9

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)
	support@supermicro.com (Technical Support)
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@supermicro.nl (General Information)
	support@supermicro.nl (Technical Support)
	rma@supermicro.nl (Customer Support)

Asia-Pacific

Address:	Super Micro Computer, Inc.
	4F, No. 232-1, Liancheng Rd.
	Chung-Ho Dist., New Taipei City 235
	Taiwan, R.O.C.
Tel:	+886-(2) 8226-3990
Fax:	+886-(2) 8226-3991
Website:	www.supermicro.com.tw
Email:	support@supermicro.com.tw (Technical Support)
Tel:	+886-(2) 8226-5990 (Technical Support)

Table of Contents

Notes

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/nfo/networking.cfm#adapter.

1-2 Key Features

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

- Super I/O Module (SIOM) Form Factor

- Mellanox® ConnectX-4 Lx EN 25GbE controller – Dual SFP28 (Small Form Factor Pluggable) connectors

- Intel® X550-AT2 10GbE controller – Dual RJ45 connectors

- Hardware offloads for NVGRE, VXLAN and GENEVE encapsulated traffic

- SR-IOV for virtualization

- Low latency RDMA over Converged Ethernet (RoCE) (25GbE controller only)

- Jumbo Frames support

- NC-SI for Remote Management (10GbE controller only)

- Asset Management Features with thermal sensor

- RoHS compliant 6/6

1-3 Specifications

General

- Super I/O Module (SIOM) Form Factor

- Mellanox® ConnectX-4 Lx EN 25GbE controller – Dual SFP28 connectors with speed up to 25Gb/s per port

- Intel® X550-AT2 10GbE 10GBase-T controller – Dual RJ45 connectors with speed up to 10Gb/s per port

Cables Support

- 25GbE SFP28: Direct attach copper cables and Fiber-optic cables (with required optional transceivers)

- 10GbE RJ45: RJ45 Category-6 up to 55m; Category-6A up to 100m

Power Consumption

- Maximum power consumption: 25W

Operating Condition

- 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) (WxD)

Supported Platforms

- Supermicro® motherboards with Super I/O Module slot

- Supermicro® server systems with Super I/O Module slot (see SIOM Compatibility Matrix online at *http://www.supermicro.com/support/resources/AOC/ AOC_Compatibility_SIOM.cfm*))

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

Compliance/Environmental

- RoHS Compliant 6/6, Pb Free

25GbE SFP28 Specifications

Ethernet

- 25GbE/10GbE/1GbE

- IEEE 802.3ad, 802.1AX Link Aggregation

- IEEE 802.1Q, 802.1P VLAN tags and priority

- IEEE 1588v2

- Jumbo frame support (9.6KB)

Enhanced Features

- Hardware-based reliable transport

- Collective operations offloads

- Vector collective operations offloads

- 64/66 encoding

- Dynamically Connected Transport (DCT)

- Enhanced Atomic operations

- Support for MSI/MSI-X mechanisms

Storage Offloads

- RAID offload – erasure coding (Reed-Solomon) offload

Overlay Networks

- Stateless offloads for overlay networks and tunneling protocols

- Hardware offload of encapsulation of NVGRE and VXLAN overlay networks

Hardware-based I/O Virtualization

- Single Root IOV

- Multi-function per port

- Multiple queues per virtual machine

- VMware NetQueue support

Virtualization

- SR-IOV: Up to 256 Virtual Functions

- SR-IOV: Up to 16 Physical Functions per port

CPU Offloads

- RDMA over Converged Ethernet (RoCE)

- TCP/UDP/IP stateless offload

- LSO, LRO, checksum offload

- RSS (can be done on encapsulated packet), TSS, HDS, VLAN insertion/stripping, Receive flow steering

- Intelligent interrupt coalescence

Management Features

- Remote boot over iSCSI

- PXE and UEFI

OS Support

- RHEL/CentOS

- Windows

- FreeBSD

- VMware

10GbE RJ45 Specifications

I/O Features

- MXI-X Support

- Intel® Flow Director

- Low Latency

- Multiple Queues – 64 Tx and Rx per port

- Tx/Rx IP, SCTP, TCP, and UDP Checksum Offloading (IPv4, IPv6) capabilities

- Tx TCP Segmentation Offload (IPv4, IPv6)

Network Features

- Jumbo frames up to 15.5KB

- IEEE 802.3az Energy Efficient Ethernet (EEE)

Virtualization Features

- Multi-mode I/O Virtualization Operations

- VXLAN Stateless Offloads

- NVGRE Stateless Offloads

- Virtual Machine Device Queues (VMDq)

- 64 Transmit (Tx) and Receive (Rx) Queue Pairs per port

- FPP – 64 VFs per port

- Support for PCI-SIG SR-IOV Specification

- IEEE 802.1Q VLAN Support

Management Features

- Preboot eXecution Environment (PXE) support

- iSCSI Remote Boot Support and FCoE

- NC-SI for remote management

OS Support

- Linux RHEL, Linux SLES

- Windows

- FreeBSD

- VMware

1-4   Available SKUs

SKUs	Part Number	Description
AOC-MH25G-m2S2T	AOC-MH25G-m2S2T	2-port 25 Gigabit & 2-port 10 Gigabit Ethernet Adapter
	BKT-0112L	Swappable bracket for 2U+ chassis
AOC-MH25G-m2S2TM	AOC-MH25G-m2S2TM	2-port 25 Gigabit & 2-port 10 Gigabit Ethernet Adapter
	BKT-0113L	Internal bracket

1-5   Similar Products

| Product Part Number	Form Factor	Protocols	Connector Type	Total Ports	Controller
AOC-MGP-i2	SIOM	1GbE	RJ45	2	Intel® i350
AOC-MGP-i4	SIOM	1GbE	RJ45	4	Intel® i350
AOC-MTGN-i2S	SIOM	10GbE	SFP+	2	Intel® 82599
AOC-MTG-i4S	SIOM	10GbE	SFP+	4	Intel® XL710
AOC-MTG-i2T	SIOM	10GbE	RJ45	2	Intel® X550
AOC-MTG-i4T	SIOM	10GbE	RJ45	4	Intel® X550
AOC-MH25G-b2S2G	SIOM	25GbE 1GbE	SFP28 RJ45	2 2	Broadcom® BCM57414 Intel® i350
AOC-MHIBF-m2Q2G	SIOM	InfiniBand FDR GBE	QSFP RJ45	2 2	Mellanox® ConnectX-3 Pro Intel® i350
AOC-MHIBF-m1Q2G	SIOM	InfiniBand FDR GBE	QSFP RJ45	1 2	Mellanox® ConnectX-3 Pro Intel® i350
AOC-MHFI-i1C	SIOM	Omni-Path	QSFP28	1	Intel® OP HFI ASIC

Notes

Chapter 2

Hardware Components

2-1   Add-On Card Image and Layout
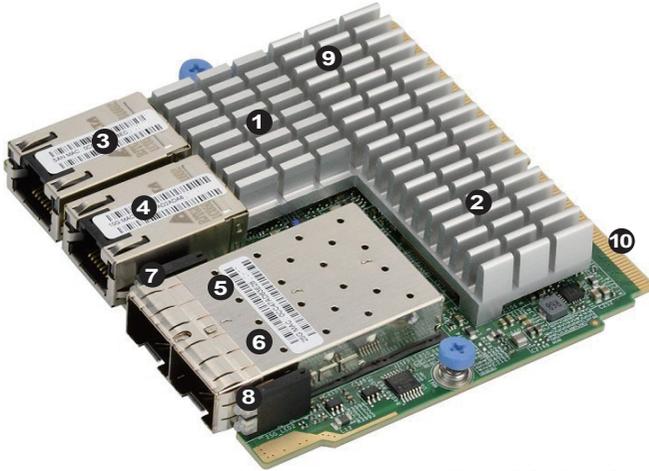
The AOC-MH25G-m2S2T Image
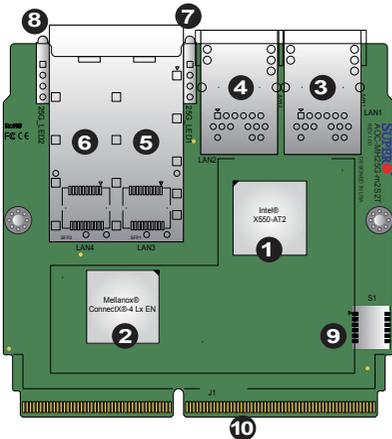
The AOC-MH25G-m2S2T Layout

1. Intel® X550-AT2	6. LAN4: SFP28 Port2
2. Mellanox® ConnectX®-4 Lx EN	7. 25G_LED1: LAN3 Link/Activity LED
3. LAN1: RJ45 Port1	8. 25G_LED2: LAN4 Link/Activity LED
4. LAN2: RJ45 Port2	9. S1: DIP Switch
5. LAN3: SFP28 Port1	10. J1: PCI-E 3.0 x8 and x4

2-2   Major Components

The following major components are installed on the AOC-MH25G-m2S2T:

1. Intel® X550-AT2 Controller

2. Mellanox® ConnectX®-4 Lx EN Controller

3. Dual RJ45 LAN Ports

4. Dual SFP28 (Small Form Factor Pluggable) Ports

5. Two (2) SFP28 Link/Activity LED Indicators

6. S1: DIP Switch

2-3   SFP28 Ethernet Connections

SFP28 (LAN3/LAN4) Connectors

Two small form-factor pluggable (SFP28) optical transceiver connectors (LAN3/LAN4) are located on the add-on card. These SFP28 ports provide Ethernet up to 25GbE network connections. See the layout below for the locations.

SFP28 (LAN3/LAN4) Link/Activity LED Indicators

Two LAN Link/Activity LED indicators are located at 25G_LED1 and 25G_LED2 on the add-on card. 25G_LED1 is used for the SFP28 LAN3 connector, and 25G_LED2, for SFP28 LAN4 connector. See the table below for the LED states.

LAN Port Activity LED Indicators Assignment/State	
LED	LAN Port Assigned
25G_LED1	LAN3 Active
25G_LED2	LAN4 Active
Green	SFP28 LAN Port Active

LAN Port Link LEDs LED State	
LED Color	Definition
Amber	10 Gbps
Green	25 Gbps
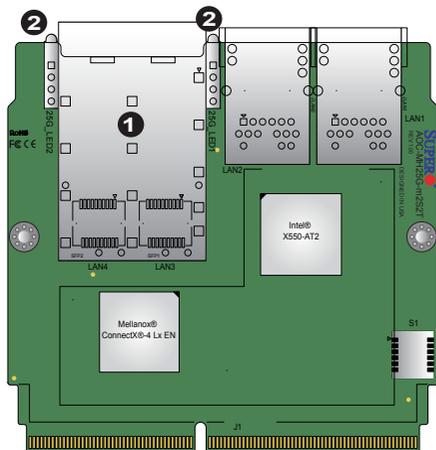
1. SFP28 Connectors
2. SFP28 Link/Activity LED Indicators

2-4   RJ45 LAN Ports and LAN LED indicators

RJ45 LAN Ports (LAN1/LAN2)

There are two RJ45 LAN ports (LAN1/LAN2) on the AOC-MH25G-m2S2T. These LAN ports support connection speeds of 10Gbps. Use a direct-attach RJ45 type LAN cable. See the layout below for the location.

🖉 **Note**: Please refer to page 1-5 for recommended cables.

RJ45 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.

Link LED   Activity LED
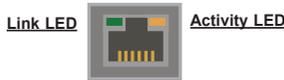
RJ45 LAN Port Link LED (Left) LED State	
LED Color	Definition
Green	10 Gbps
Amber	1 Gbps
Off	100 Mbps

RJ45 LAN Port Activity LED (Right) LED State		
LED Color	Status	Definition
Off	Off	No Connection
Green	Solid	Link
Green	Flashing	Active
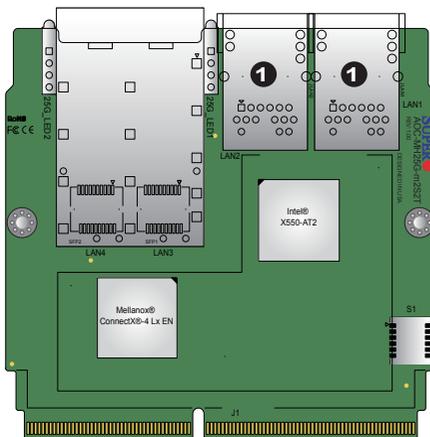
1. RJ45 LAN Ports

2-5   DIP Switch

DIP Switch

The DIP Switch at S1 provides SMBUS address selection. You can configure the card with static SMBUS address. Refer to the tables below for address selections. See the layout below for the location.
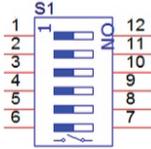

S1:DIP switch for user selection

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
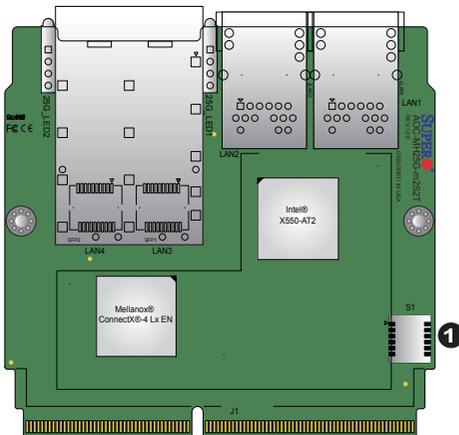
1. DIP Switch

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 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

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 push in both sides of the card until it slides into the slot.

Insert the SIOM card into this slot

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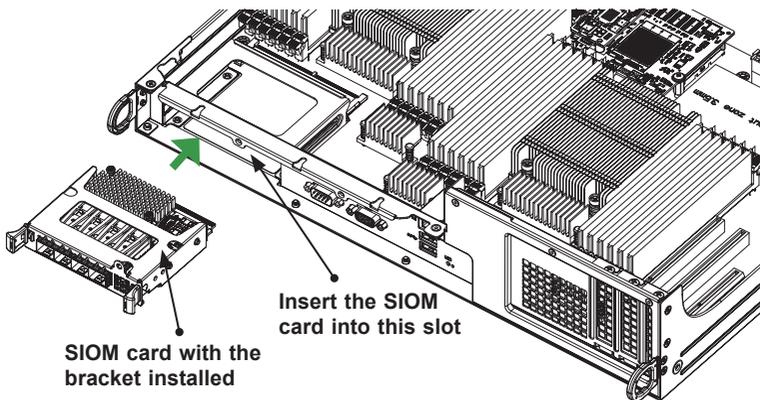
🖉 **Note**: This add-on card does not support hot plug. Please turn off the AC power and remove the power cord from the wall socket before you install or remove the add-on card.

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.

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.

① Insert the SIOM card into the motherboard

② Tighten the screw

③ Install the bracket onto the chassis

④ Install the motherboard in the chassis
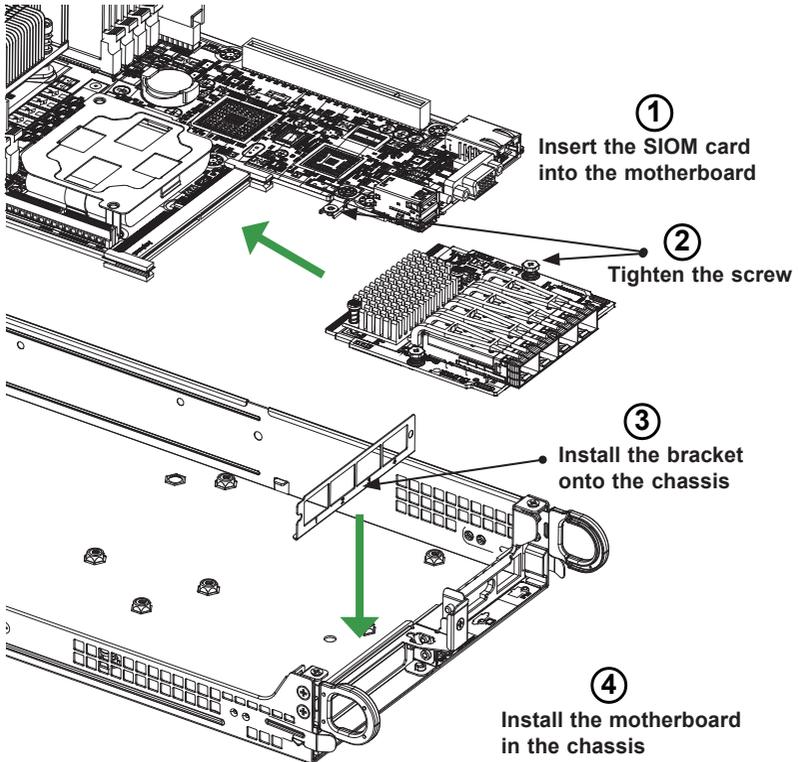
Note: It is recommended that the SIOM card installation above be completed by a system integrator or the manufacturer.

Follow the steps below to install the add-on card into your system that supports a swappable bracket. The add-on card must be installed in the swappable bracket before it can be installed in the your system
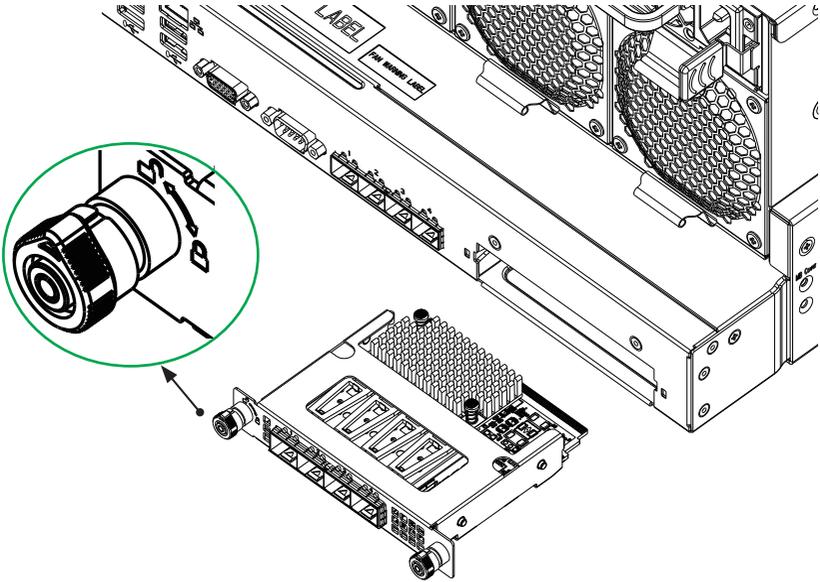
1. Install the add-on card into the swappable bracket.

2. Position the add-on card in front of the SIOM slot and gently push in both sides of the card until it slides into the slot.

3. Once the card is in the slot, push both knobs in and turn to the right to lock the card in the system. The left knob has the unlock/lock symbols next to it. To ensure that the add-on is locked, make sure that the knob position indicator is pointing to the lock symbol.

3-4   Installing Drivers on Windows (for Intel® X550)

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/.

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.

3. Click on INSTALL DRIVERS AND SOFTWARE.

4. Follow the prompts to complete the installation.

3-5   Installing Drivers on Linux (for Intel® X550)

Follow the steps below to install the drivers for 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 zxf 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 (for Intel® X550)

Follow the instructions below to install the drivers for 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 dirctory 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.

3-7 Installing Drivers (for Mellanox® ConnectX®-4 Lx EN)

Use the procedures below to install both drivers and firmware for the AOC-MH25G-m2S2T add-on card for both Linux and Windows.

Linux Drivers

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

Installing 25G Drivers for the Linux Operating System

1. From the CDR-NIC LAN driver CD or FTP site, go to the following directory: Mellanox > Linux.

2. Download the Linux driver package file.

3. Install the driver by entering the following commands:

```
tar xzvf mlnx-en-<ver>.tgz

cd mlnx-en-<ver>

./install.sh
```

This installs the Linux drivers to your system.

Windows Drivers

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

Installing 25G Drivers for the Windows Operating System

1. From the CDR-NIC LAN driver CD or FTP site, go to the following directory: Mellanox > Windows.

2. Choose the desired Windows driver package file.

3. Double-click to run and install the driver package file.

(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.