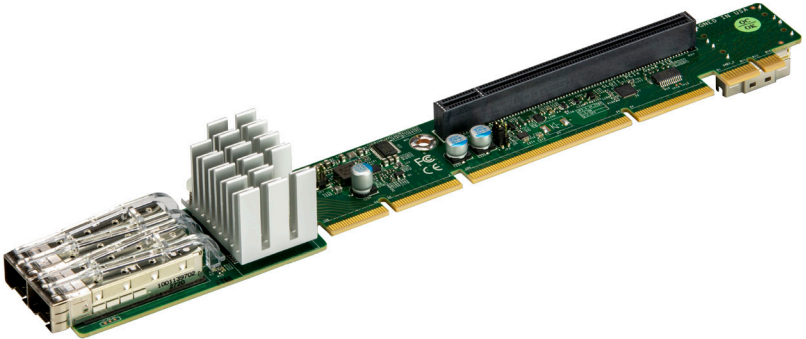




AOC-URG4N4-m2TS



User's Guide

Revision 1.0

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User's Guide Revision 1.0

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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-URG4N4-m2TS add-on card.

About this Add-on Card

The AOC-URG4N4-m2TS, an ultra riser card, offers the most advanced networking technology in the market. This add-on card provides the latest PCI-E Gen 4 support to accommodate various networking devices with various LAN controllers. With two 25GbE ports, which are based on Mellanox® ConnectX-6 LX, an internal PCIe 4.0 x16 slot, and four NVMe ports built-in, this add-on card provides exceptional flexibility for Supermicro Ultra system configuration.

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/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.

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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/nfo/networking.cfm#adapter>.

1-2 Key Features

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

- 1U Networking Ultra Riser cards for 1U Ultra systems
- Mellanox® ConnectX-6 LX 25GbE controller
- Dual SFP28 connectors
- One internal PCIe 4.0 x16 slot
- Four NVMe ports (two SlimSAS x8)
- RDMA over Converged Ethernet
- Network Virtualization: VXLAN and NVGRE
- Thermal sensor support
- NC-SI for remote management

1-3 Specifications

General

- 1U Networking Ultra Riser for 1U Ultra systems
- Mellanox® ConnectX-6 LX 25GbE controller
- Dual SFP28 connectors
- One internal PCIe 4.0 x16 slot
- Four NVMe ports (two SlimSAS x8)

Storage Accelerations

- NVMe over fabric offloads for target
- Storage protocols: iSER and NFSoRDMA
- SMB Direct, NVMe-oF, and more

RDMA over Converged Ethernet

- RoCE v1/v2
- Zero-Touch RoCE: no ECN, no PFC
- RoCE over overlay networks
- IPsec over RoCE
- Selective repeat
- GPUDirect®
- Dynamically Connected Transport (DCT)
- Burst buffer offload

Management and Control

- SMBus 2.0
- Network Controller Sideband Interface (NC-SI)
- NC-SI, MCTP over SMBus, and MCTP over PCIe – Baseboard Management Controller interface
- PLDM for Monitor and Control DSP0248
- PLDM for Firmware Update DSP026

Remote Boot

- Remote boot over Ethernet
- Remote boot over iSCSI
- UEFI support for x86 and Arm servers
- PXE boot

Standards

- IEEE 802.3ae 10 Gigabit Ethernet
- IEEE 802.3by 25G supporting all FEC modes
- IEEE 802.3ad, 802.1AX Link Aggregation
- IEEE 802.3az Energy Efficient Ethernet (supports only “Fast-Wake” mode)
- IEEE 802.3ap based auto-negotiation and KR startup
- IEEE 802.1Q, 802.1P VLAN tags and priority
- IEEE 802.1Qaz (ETS)
- IEEE 802.1Qbb (PFC)
- IEEE 802.1Qbg

- IEEE 1588v2
- IEEE 1149.1 and IEEE 1149.6 JTAG
- PCI Express Gen 3.0 and 4.0

Power Consumption

- Maximum power consumption: 15W (+75W for each PCIe slot if used)

Operating Conditions

- Storage temperature: -40°C to 70°C (-40°F to 158°F)
- Storage humidity: 90% non-condensing relative humidity at 35°C

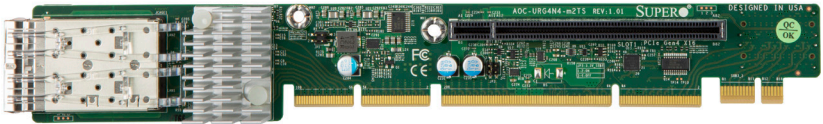
Supported Platforms

- Supermicro® Ultra systems

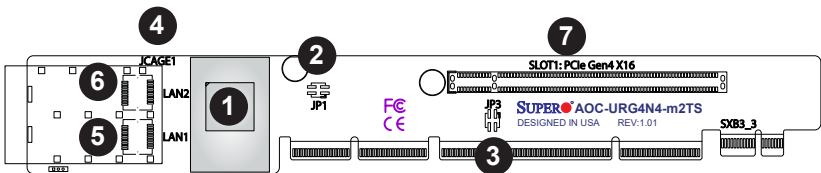
Chapter 2

Hardware Components

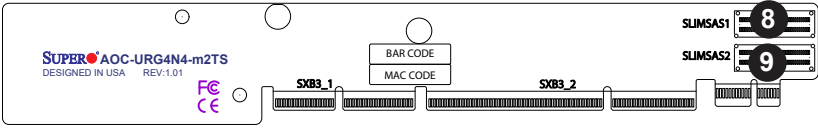
2-1 Add-On Card Image and Layout



AOC-URG4N4-m2TS Image



AOC-URG4N4-m2TS Front Layout



AOC-URG4N4-m2TS Back Layout

2-2 Major Components

The following major components are installed on the AOC-URG4N4-m2TS:

AOC-URG4N4-m2TS Major Components		
No	Component Name	Definition
1	Mellanox® ConnectX-6 LX	Ethernet 25GbE controller
2	JP1	No Jumper: Debug Disable (Default)
		1-3: Debug Enable
3	JP3	1-2: 3.3V Standby On
		3-4: 3.3V Standby Off (Default)
4	JCAGE1	Connector Cage
5	LAN1	LAN Port 1
6	LAN2	LAN Port 2
7	PCI-E Gen4 x 16	Slot 1
8	SLIMSAS1	SlimSAS x8 Port 1
9	SLIMSAS2	SlimSAS x8 Port 2

2-3 Ports

There are four ports (LAN1, LAN2, SlimSAS1, and SlimSAS2) located on the add-on card. Connect a Direct Attach Copper Twin Axial cable or an LC Fiber-Optic cable to the ports to provide Gigabit Ethernet communication. The SFP28 connectors is for JCAGE1 (LAN1 and LAN2). Refer to the add-on card layout on pages 2-1 and 2-2 for the locations of the ports.

2-4 Connectors

SFP28 Port LEDs

The triangular LEDs will be placed as arrows to indicate which LAN it corresponds to. An LED pointing upward indicates the status for the upper LAN port. A triangle LED pointing downwards is for the lower LAN port. For more information about the LED signals, see the table below.

SFP28 Port LEDs		
LED	Color	Definition
Link	Solid Green	25Gbps Link Speed
	Solid Amber	Less than 25Gbps Link Speed
Activity	Blinking Amber	Activity

2-5 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. See the add-on card layouts on pages 2-1 and 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.

3.3V Standby Power Enable

The 3.3V Standby Power Enable jumper is located at JP3 on the add-on card. Refer to the layouts on page 2-1 for the locations of the jumper. To turn 3.3V Standby on, connect pins 1-2 to enable the NC-SI/BMC management shared LAN1 and the WoL from LAN1 during standby. Switch to pins 3-4 to disable those functions when you want to turn 3.3V Standby off. The default setting is **3.3V Standby Off**.



Warning: Please check with your local Supermicro FAE or contact the Supermicro Technical Support team before you change the JP3 jumper to enable 3.3V Standby On. Staying in the standby state for a long period of time without the fan blowing air inside the chassis may cause the onboard Mellanox chipset to overheat.

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 your system, make sure that the person handling it is static protected.



Warning: To avoid damaging your components and to ensure proper installation, be sure to always connect the power cord last, and always remove 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 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 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 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 (for Mellanox® ConnectX-6)

Use the procedures below to install the driver for the AOC-URG4N4-m2TS add-on card on both Linux and Windows.

Linux Drivers

Use the following procedures to install the 25GbE driver on the Linux (RedHat/CentOS) operating system.

1. We recommend downloading the latest Mellanox Driver directly from the Mellanox website: https://mellanox.com/products/infiniband-drivers/linux/mlnx_ofed.
2. Download and extract /untar the MLNX_OFED***.tgz package.
3. Change to the appropriate directory where your newly extracted package is located.
4. Install the driver by entering the following commands: ./mlnxofedinstall

```
./mlnxofedinstall
```

This installs the Linux drivers to your system. You might be prompted to install kernel dependencies for Linux, in which case you would need to follow on-screen instructions.

Windows Drivers

Use the following procedures to install a 25GbE driver on the Windows operating system.

1. We recommend that you download the latest Mellanox Driver directly from the Mellanox website: <https://mellanox.com/products/adapter-software/ethernet/windows/winof-2>.
2. Once the driver is downloaded, run the .exe file to install the driver

(Disclaimer Continued)

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