extremeEDGE Server™ 2000 Series

Product Overview

The 2000 series brings powerful processing to the extreme edge, enabling remote system monitoring and management via the built-in NANO-BMC (Baseboard Management Controller).

The fanless enclosure offers scalability with memory and storage configurations.

These products can be powered using a standard DC Input or the optional PoE+ input.

Common IO features include USB-A 3.2 as well as Dual 2.5GbE, and Dedicated BMC GbE Ports.

Control at the extremeEDGE...

The first of its kind, offering NANO-BMC out-of-band management in a small form factor enables remote management of edge devices at the extremeEDGE.

Functionality Overview: Monitor, control, and manage hardware health and performance.

NANO-BMC Features:

Features	Function	Notes
Remote Console Access:	Accessing the system console for diagnostics and troubleshooting	Serial over IP
Remote Power Management:	Power-on/off control, power cycling reset	Hard & soft
Virtual Drive:	Make a local file or directory appear as a Drive on the Remote System	This allows updating the BIOS, installing an OS, or loading files remotely onto the system
Firmware Updates	Updating firmware remotely	n/a

BMC Benefits:

- **Remote access to hardware even when the main system is powered off (useful for troubleshooting).**
- **Increased system uptime and faster problem resolution.**
- **Improved power management and resource utilization.**
- **Remote Management reduces support cost.**

Remote Access Methods:

- **Dedicated BMC management interface.**
- **Integration with system management software.**
- **In-Band management through OS applications (SSH, Telnet, etc)**

Architecture

The 2000 series leverages a range of powerful AMD processors, including the V3C18I, 7840U, and the 8840U.

Features	EE-2000	EE-2100	EE-2200
Processor	AMD Ryzen V3C18I (Zen 3)	AMD Ryzen 7 7840U (Zen 4)	AMD Ryzen 7 8840U (Zen 4)
BMC	NANO-BMC	NANO-BMC	NANO-BMC
Console Port, Mini-USB	USB Chip (FTDI RS232 Controller)	USB Chip (FTDI RS232 Controller)	USB Chip (FTDI RS232 Controller)
TPM (Discrete)	TPM 2.0	TPM 2.0	TPM 2.0
Max Memory	96 GB	96 GB	96 GB
Max Storage	16 TB	16 TB	16 TB
Max Drives	2x 2280	2x 2280	2x 2280
USB	2x USB-A 3.2	2x USB-A 3.2	2x USB-A 3.2
Network	2x 2.5GbE 2x 10GbE SFP+ 1x 1GbE BMC	2x 2.5GbE 1x 1GbE BMC	2x 2.5GbE 1x 1GbE BMC
Wifi-AC + Bluetooth	N/A	N/A	N/A
4G / 5G Modem	N/A	N/A	N/A
PoE+ PD	Optional	Optional	Optional
Display Out	Headless	2x Mini-DP	2x Mini-DP
Video Chipset	N/A	Radeon 780M 12 Cores 2x 3840x2160@120Hz 1x 7680x4320@60Hz * Hardware Accelerators	Radeon 780M 12 Cores 2x 3840x2160@120Hz 1x 7680x4320@60Hz * Hardware Accelerators
AI Accelerator	Optional Module	32 TOPS + Optional Module	38 TOPS + Optional Module
Operating Temperature Range	Standard: 0°C to 40°C Optional: -50°C to 60°C		
Mounting Options	DIN-Rail, 1U Rack Mount		

* = Untested feature

Product Differentiating Features

Built for the Edge: Power and Efficiency in a Compact Design

The 2000 series thrives in edge computing applications where space is limited and on-site processing is crucial. Its compact size brings powerful computing to the edge of your network, while remote monitoring and management capabilities enhance security and simplify control.

Quiet Operation, Lower Costs

This fanless system operates silently and consumes minimal power – up to 28 watts under load, significantly less than a traditional server with a single CPU. This translates to lower energy costs and a reduced environmental footprint.

Flexible Mounting, Scalable Performance

The 2000 series adapts to diverse environments with its DIN rail compatibility, making installation a breeze. Additionally, it supports memory and storage configurations, allowing you to tailor the system to your specific data storage and management requirements.

NANO-BMC (Baseboard Management Controller)

The 2000 series redefines remote management with its built-in NANO-BMC module. This module enables secure out-of-band access for monitoring, control, and power management, including remote power cycling, reboots, virtual drive and critical BIOS updates.

Display Support

The EE-2100 and EE-2200 systems are equipped with an integrated GPU, the AMD Radeon 780M supporting RDNA3, and provide the following display out connectors;

- **(2) Mini DisplayPort (mDP)**

Network Connectivity

All 2000 series systems support 2x RJ-45 2.5GbE for the Host and 1x RJ-45 GbE for the remote management and control through the BMC.

The EE-2000 enhances connectivity flexibility with SFP+ (Small Form-Factor Pluggable) module support. These modules come in RJ-45 (Copper) or Fiber Optic options, enabling high-speed data transfer up to 10Gbps. This versatility allows the system to adapt to diverse network configurations.

Model	Description	Details
All Models	2x RJ-45 Ports 2.5 Gb/s Intel i226	These Ethernet controllers support Base-T copper networking interface and provide standard IEEE 802.3 Ethernet interface for 2500BASE-T, 1000BASE-T, 100BASE-TX, and 10BASE-TE connections.
EE-2000	2x RJ-45 Ports 10 Gb/s SFP+ Modules (Copper or Fiber)	The 10GEMAC core is designed to the IEEE 802.3-2012 specification and supports the high-bandwidth demands of network Internet Protocol (IP) traffic on LAN, MAN, and WAN networks.
All Models	1x RJ-45 Port, 1 Gb/s (BMC)	The BMC feature offers a higher level of remote control and management. Allowing for, remote power on and off, system reset and the ability to push BIOS updates and images to the system.

SFP+ Description: (EE-2000 only)

Upgrade Your Network Connectivity with Blazing-Fast Speeds

This dual-port SFP+ module leverages AMD's 10 Gigabit Ethernet Controller (10GEMAC) technology to deliver exceptional performance and scalability for your network.

SFP+ Key Features: (EE-2000 only)

- **High-Speed Connectivity:** Supports data transfer rates up to 10 gigabits per second (Gbps) per port, enabling significant performance improvements over traditional Gigabit Ethernet connections.
- **SFP+ Interface:** Compatible with SFP+ transceivers (sold separately), providing flexibility for various network cable types (Fiber Optic or Copper) based on your specific needs.
- **Dual-Port Design:** This enables you to connect two separate 10 Gb/s devices, expanding your network bandwidth and facilitating communication between high-performance systems.
- **AMD 10GEMAC Technology:** Built with AMD's 10GE MAC controller, ensuring reliable and efficient data transfer.

SFP+ Benefits: (EE-2000 only)

- **Ideal for Demanding Applications:** Perfect for applications requiring high-bandwidth data transfer, such as data centers, cloud computing environments, video editing workstations, and more.
- **Future-Proofs Your Network:** Prepares your network for future data transfer needs and supports demanding workloads.
- **Increased Scalability:** Allows you to easily connect multiple high-performance devices to your network.

Note: SFP+ transceivers are required for operation (not included) and should be chosen based on your desired network cable type (fiber optic or copper) and transmission distance.

Expandable Memory & Storage

The 2000 Series allows for a wide range of memory configurations as noted below.

Memory

Feature	Maximum Configurations	Supported Types
Non-ECC	16 GB, 32 GB, 64 GB, or 96 GB	JEDEC Standard DDR5-5600 2x SODIMM / Dual Channel
ECC	32 GB, 64 GB, or 96 GB	JEDEC Standard DDR5-5600 2x ECC SODIMM / Dual Channel

Note: Only the processors for the EE-2000 and EE-2200 support ECC memory.

Storage

The 2000 Series allows for a wide range of storage configurations as noted below.

Interface	Capacity	Configuration
Primary 2280 M.2 M-Key	1 TB, 2 TB, 4 TB, 8 TB, or AI Accelerator	PCIe NVMe Gen 4
Secondary 2280 M.2 M-Key	1 TB, 2 TB, 4 TB, 8 TB, or AI Accelerator	PCIe NVMe Gen 4

Note: The Primary M.2 device must be pre-installed by Simply NUC. The Secondary M.2 device is User Accessible.
At least one of the two slots must have an SSD for the OS installation. Encrypted drive options are also available.

AI Support

The 2000 Series supports an optional AI Acceleration module via one of the two available M.2 slots. This enables AI Compute Acceleration at a higher performance and lower power. Inferencing and Neural-Network processing can be performed using widely available AI Accelerators. User coding is required for your application.

The EE-2100 and 2200 have native AI acceleration within the processor as shown in the table below:

AI Engine Capabilities	AMD Ryzen 7 7840U (Zen 4)	AMD Ryzen 7 8840U (Zen 4)
AMD Ryzen™ AI (Brand Name)	Available	Available
Performance	Up to 10 TOPS	Up to 16 TOPS
Total Processor Performance	Up to 32 TOPS	Up to 38 TOPS
NPU Performance	Up to 10 TOPS	Up to 16 TOPS

Additional Product Protection

The 2000 series of products can be treated with a “Conformal Coating” at the PCBA level allowing for a higher level of protection against dust, moisture, and harsh chemical intrusion.

System Power Consumption (Runtime)

Model	Watts	Runtime Stimulus
EE-2000	Up to 25 Watts	Under System Stress Test
EE-2100	Up to 28 Watts	Under System Stress Test
EE-2200	Up to 28 Watts	Under System Stress Test

Power Supply

Specification	Specification Limits	Notes
AC Input Range	100 - 240 VAc	50 Hz to 60 Hz
DC Voltage Out	19 VDc	Regulated +/- 5%
Amperage	4.74 Amps	Maximum
Wattage Out	90 Watts	Maximum
System Connection	2 Pin Phoenix	Keyed Connector w/ Screw Down (Positive Retention)

System Dimensions & Weight

Dimensions	Weight
177.8 mm (W) x 88.9 mm (L) x 38.1 mm (H) 7” (W) x 3.5” (L) x 1.5” (H)	2.125 Lbs / 0.96Kg

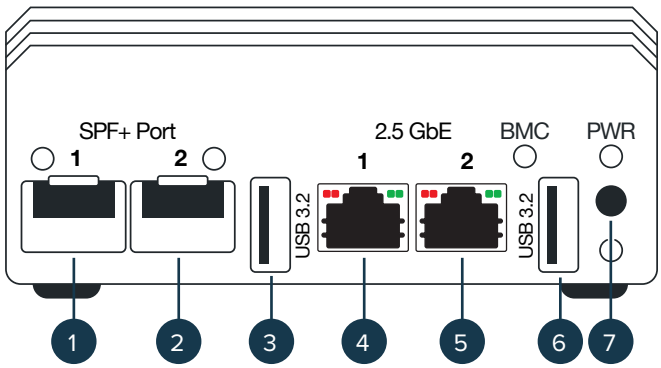
Certifications

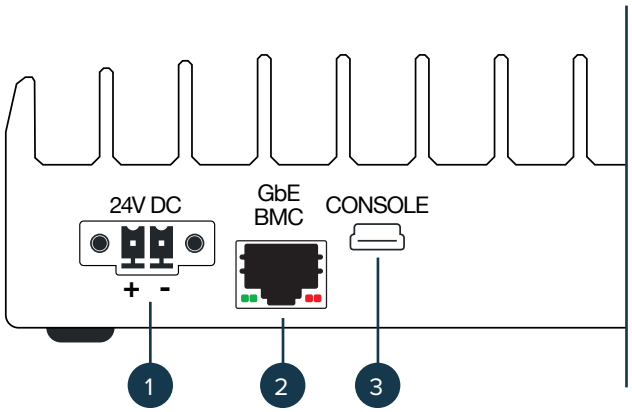
Certifications	Notes
FCC	Federal Communication Commission
CE	Consumer Electronics
ROHS	Restriction Of Hazardous Substances
REACH	Registration / Evaluation / Authorization / Restriction Of Chemicals

Service & Support

Global Support	
Integration Services	Custom Configuration Service - BIOS Settings, Imaging, System Configuration & Labeling
Deployment Services	Field Deployment Management
Support	In-region Technical Support

Illustrated I/O Port Overview EE-2000

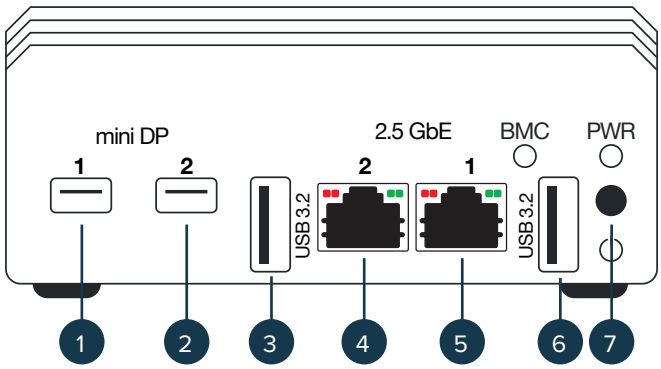


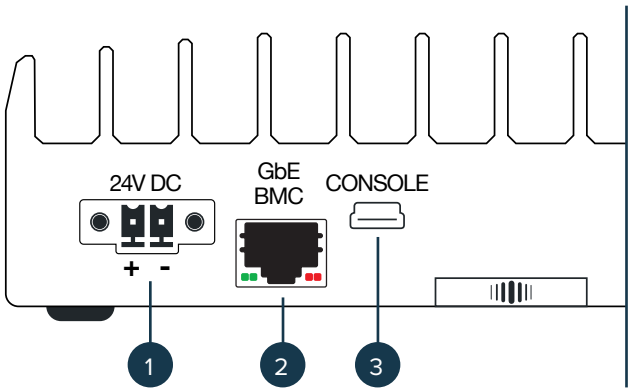


FRONT			
1	SFP+ Port	5	2.5 GbE
2	SFP+ Port	6	USB-A 3.2
3	USB-A 3.2	7	POWER BUTTON
4	2.5 GbE		

RIGHT			
1	24V DC	3	BMC CONSOLE
2	GbE BMC		

Illustrated I/O Port Overview EE-2100

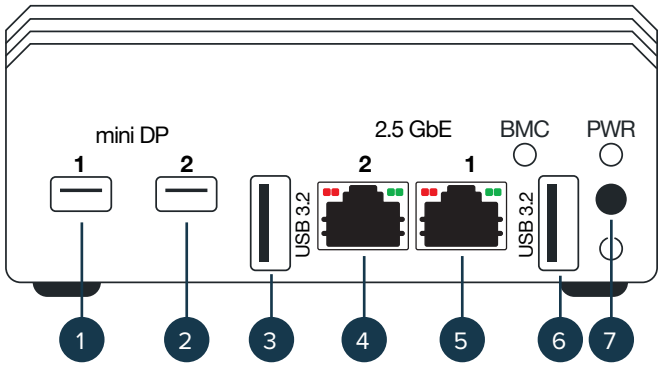


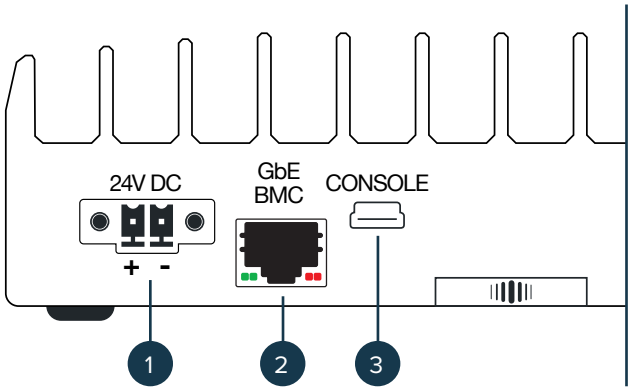


FRONT			
1	MINI-DP	5	2.5 GbE
2	MINI-DP	6	USB-A 3.2
3	USB-A 3.2	7	POWER BUTTON
4	2.5 GbE		

RIGHT			
1	24V DC	3	BMC CONSOLE
2	GbE BMC		

Illustrated I/O Port Overview EE-2200





FRONT			
1	MINI-DP	5	2.5 GbE
2	MINI-DP	6	USB-A 3.2
3	USB-A 3.2	7	POWER BUTTON
4	2.5 GbE		

RIGHT			
1	24V DC	3	BMC CONSOLE
2	GbE BMC		

Learn more about
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extremeEDGE Servers™

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