AECHELON
TECHNOLOGY

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Nucleus 10.0 G Datasheet

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Overview

Nucleus 10.0 Chassis

System Detail

The following table highlights the details of the Nucleus system hardware.

Component	Description
Dimensions	7" x 17.2" x 29" (H x W x D) *Rail Kit between 26.5" and 36.4" deep (square and round hole support)
Weight	88 lbs.
CPU	Xeon® Scalable Processor
System Memory	320 GB
Video Output	NVIDIA RTX Ampere®; primary system: 2 – 7 channels + 1 Front End; 8 channels for secondary systems DisplayPort (1.4) typical formats: 2560x1600@120Hz and 4K e-Shift 120Hz
Storage	87 TB (RAID 5 protected) + Hot Spare

Ports	2 x RJ45 1GBase-T 2 x RJ45 10GBase-T 2 x SFP 6 x USB 3.0 1 x RS-232
Max Power Consumption	3,494 Watts / 11,914 BTU/h (Config: 8 GPU @ 4k120, Fan 100%, 200V)
Operating System	SHB Windows 11 IoT Enterprise
Operating Environment	Operating Relative Humidity: 8% to 90% (non-condensing) Operating Temperature: 10°C to 35°C (50°F to 95°F)
Non-operating Environment	Non-operating Relative Humidity: 5% to 95% (non-condensing) Non-operating Temperature: -40°C to 60°C (-40°F to 140°F)
MTBF	

Power

Nucleus optimal voltage is 208/230V 50/60Hz (2+2) redundant power with IEC C14 receptacles.   The Nucleus can be run at 120V 50/60Hz on each if the four Titanium rated power supplies, but redundancy will be lost in this configuration. Up to 2 of the power supplies can be powered from a 20 AMP circuit.

Volatility Statement

Nucleus Nodes include non-volatile cache storage for the RAID controllers. Before returning any IG for repair from a classified environment, it is best practice to remove the cache vault first.

Storage Type	Volatility	Usage
Motherboard - DRAM[2]	Volatile	System Memory
Motherboard - Flash ROM[1]	Non-Volatile	BIOS/Firmware
Raid Controller - Flash ROM[1]	Non-Volatile	BIOS/Firmware
Raid Controller - Cache	Non-Volatile	Temporary Data Cache
SSD	Non-Volatile	User Data

Encryption

Nucleus is able to provide encryption of data at rest with self-encrypting drives (SEDs). The SEDs adhere to the TCG Enterprise and OPAL 2.0 Security Subsystem Class specification.

Accessories Included

- Four NEMA 5-15P to IEC C13 power cords per each IG
- Rail Kit
- External USB-DVD
- OS System Recovery Drive

Options

Aechelon Part No.	Description
004-0007-001	Rack, 24U, 600mm x 1070mm (APC AR3104)
002-0114-001	PDU, 2U 208V 3ph, NEMA L21-30, Metered (Server Technology, Inc. C2WG24SN-YCLN5D6) - Requires a rack.
006-0072-002	Cable, 16/3, IEC C13 to IEC C14, 6 ft (Stay Online 9768)

Rack Considerations

The NFPA (National Fire Protection Association) sets the rack clearance in front and behind to be a minimum of 36".

[1] Flash ROM is used for the Firmware and BIOS and contains no user data.

[2] DRAM volatility only occurs when power is completely removed from an IG for more than 60 seconds.