

NVIDIA
NVIDIA Spectrum-6
SN6810-LD
(920-9N64K-00LI-GC0)
Datasheet



Product Overview

- The NVIDIA Spectrum-6 SN6810-LD is a 2U liquid-cooled Ethernet switch designed for high-bandwidth data-center spine and AI factory networks.
- Its co-packaged optics architecture provides 128 MMC-16 interfaces and one QSFP112 interface for dense 800GbE connectivity.
- The Spectrum-6 ASIC delivers 102.4Tbps of switching throughput and supports 128 x 800GbE, 256 x 400GbE, and 512 x 200GbE configurations.
- The SN6810-LD also supports 512 plus 2 x 100GbE connections for deployments that require flexible breakout and lower-speed reach.
- A 48VDC busbar input, direct liquid cooling, and MGX v1.2 rack compatibility support dense deployments with controlled power and thermal infrastructure.
- With an 8-core AMD x86 management processor, DDR5 memory, NVMe storage, and out-of-band management, it supports practical operation at scale.

Product Highlights

- **128-Port 800GbE CPO Design:** 128 MMC-16 co-packaged optical interfaces provide high-density 800GbE connectivity in a compact 2U chassis.
- **Flexible Breakout Capacity:** Supports 128 x 800GbE, 256 x 400GbE, 512 x 200GbE, and 512 plus 2 x 100GbE configurations.
- **102.4Tbps Spectrum-6 Throughput:** The NVIDIA Spectrum-6 ASIC provides 102.4Tbps of switching throughput for AI and cloud Ethernet fabrics.
- **Liquid Cooling and 48VDC Power:** Direct liquid cooling and a 4060VDC busbar input support high-density MGX v1.2 deployments.

Detailed Features



NVIDIA Spectrum-6 SN6810-LD (920-9N64K-00LI-GC0)

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Component	Specification
System Model	NVIDIA Spectrum-6 SN6810-LD
Official NVIDIA SKU	920-9N64K-00LI-GC0
Port Configuration	128 x MMC-16 co-packaged optics, 1 x QSFP112
Switching Capacity	102.4 Tbps
Power and Cooling	48VDC busbar input, direct liquid cooling



High-Density CPO Switching

The SN6810-LD combines a Spectrum-6 ASIC with 128 MMC-16 co-packaged optical interfaces in a 2U platform. This design provides dense 800GbE connectivity while keeping the switch suitable for compact AI and data-center rack layouts.

800GbE to 100GbE Flexibility

The system supports 128 x 800GbE, 256 x 400GbE, 512 x 200GbE, and 512 plus 2 x 100GbE configurations. Network operators can match link speed and breakout mode to the topology without changing the switch platform.

102.4Tbps Switching Performance

The NVIDIA Spectrum-6 ASIC delivers 102.4Tbps of switching throughput. This capacity supports high-radix spine, leaf, and AI scale-out fabrics where predictable bandwidth is required across many high-speed links.

MMC-16 Optical Architecture

The MMC-16 form factor connects the co-packaged optical interface to the external fiber system. NVIDIA documents 4 x 200G PAM4 lanes per MMC-16 interface, supporting the switch's 800GbE operating mode.

Liquid-Cooled 2U Design

Direct liquid cooling removes heat from the high-speed switching and optical system within a compact 2U chassis. The design supports controlled thermal operation in high-density MGX v1.2 rack deployments.

48VDC Busbar Integration

The switch accepts a nominal 48VDC busbar input across a 4060VDC operating range. This enables connection to rack-scale DC power systems used in AI factories and other high-density data centers.

Operational Management Interfaces

Two RJ45 out-of-band management interfaces, one RJ45 BMC interface, one RJ45 RS232 console interface, and one USB Type-A port support bring-up, monitoring, and service access.

Compact Rack Deployment

The 87mm x 438mm x 900mm chassis fits a 19-inch MGX v1.2 rack and weighs approximately 32.5kg. The compact 2U form factor helps deploy high-bandwidth switching close to compute resources.

Technical Specifications

Product Specifications

Feature	Value
User SKU	MLNX-SN6810-LD
Official NVIDIA ordering SKU	920-9N64K-00LI-GC0
System model	SN6810-LD
Product family	NVIDIA Spectrum-6 SN6000 Ethernet switch systems
Product type	2U liquid-cooled co-packaged optics Ethernet switch
Switch ASIC	NVIDIA Spectrum-6
Optical architecture	Co-packaged optics
Optical interfaces	128 MMC-16 interfaces
Auxiliary interface	1 x QSFP112 interface
Ports form factor	MMC-16
Maximum 800GbE scale	128 ports of 800GbE
Maximum 400GbE scale	256 ports of 400GbE
Maximum 200GbE scale	512 ports of 200GbE
Maximum 100GbE scale	512 plus 2 ports of 100GbE



Feature	Value
Lanes per MMC-16	4 x 200G PAM4
Switching throughput	102.4 Tbps
Packet buffer	256 MB
CPU	8-core AMD x86 processor
System memory	32 GB DDR5
Storage	80 GB NVMe SSD
PCIe	Gen3 x4
Management interfaces	2 x RJ45 OOB management, 1 x RJ45 BMC, 1 x RJ45 RS232 serial console
USB interface	1 x USB Type-A
Power input	48VDC nominal busbar input; 40–60VDC operating range
Typical power consumption	1.96 kW
Maximum power consumption	2.2 kW
Cooling	Liquid cooling
Form factor	2U
Mounting	19-inch MGX v1.2 rack
Dimensions (H x W x D)	87 mm x 438 mm x 900 mm, including UQD and front levers
Dimensions, imperial	3.43 in x 17.2 in x 35.4 in, including UQD and front levers
Weight	32.5 kg
Operating temperature	5 to 40 °C ambient, ASHRAE A3
Non-operating temperature	-40 to 70 °C
Operating humidity	10% to 85%, non-condensing
Operating altitude	Up to 3050 m
Safety and EMC	CB, cTUVus, CE, CU, S_Mark, FCC, VCCI, ICES, RCM, BSMI, KCC, CQC
RoHS	RoHS compliant
Rail kit	930-9SKIT-00L0-00F installation kit for standard 2U switches in MGX v1.2 racks
Package contents	1 x system, 1 x rail kit, 1 x HAR000028 RS232 2 m DB9-to-RJ45 harness



Feature	Value
Ordering configuration	Cumulus Linux Authentication; 128 MMC-16; 1 QSFP112; 8-core AMD CPU; Secure Boot; 48VDC busbar; liquid cooling

Product Comparison

Feature	NVIDIA Spectrum-6 SN6810-LD / 920-9N64K-00LI-GC0	NVIDIA Spectrum-6 SN6600-LD / 920-9N62F-00LI-GC1	NVIDIA Spectrum-6 SN6800-LD / 920-9N67K-00LA-GC0
System model	SN6810-LD	SN6600-LD	SN6800-LD
Chassis	2U	2U	5U
ASIC architecture	1 x Spectrum-6	1 x Spectrum-6	4 x Spectrum-6
Optical architecture	128 MMC-16 co-packaged optics	64 OSFP pluggable optics	512 MMC-16 co-packaged optics
Auxiliary interfaces	1 x QSFP112	1 x QSFP112	4 x QSFP112 and 64 ELS
Maximum 800GbE scale	128	128	Not supported in documented configuration
Maximum 400GbE scale	256	256	Not supported in documented configuration
Maximum 200GbE scale	512	512	2,048
Maximum 100GbE scale	512 plus 2	512 plus 2	2,048 plus 8
Maximum throughput	102.4 Tbps	102.4 Tbps	409.6 Tbps
CPU	8-core AMD x86	8-core x86	16-core x86
System memory	32 GB DDR5	32 GB DDR5	96 GB DDR5
Storage	80 GB NVMe SSD	80 GB NVMe SSD	160 GB NVMe SSD
Typical / maximum power	1.96 / 2.2 kW	2.79 / 3.3 kW	8.3 / 10.5 kW
Cooling	Liquid cooling	Liquid cooling	Liquid cooling



Feature	NVIDIA Spectrum-6 SN6810-LD / 920-9N64K-00LI-GC0	NVIDIA Spectrum-6 SN6600-LD / 920-9N62F-00LI-GC1	NVIDIA Spectrum-6 SN6800-LD / 920-9N67K-00LA-GC0
Dimensions (H x W x D)	87 x 438 x 900 mm	88 x 438 x 900 mm	220 x 438 x 900 mm
Weight	32.5 kg	33 kg	95 kg
Best-fit role	CPO AI leaf or spine	Pluggable-optics AI leaf or spine	Extreme-scale CPO AI superspine

Accessories

Category	Accessories
Included Accessories	- SN6810-LD switch system - 1 x 930-9SKIT-00L0-00F rail kit - HAR000028 RS232 2 m DB9-to-RJ45 harness
Optional Accessories	- 930-9IAW0-00K00 External Laser Source - 930-9SECK-00NA-00A Silicone Photonics cleaning kit



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