power consumption max load idle state - Official Technical Overview & Hardware Datasheet

PRODUCT IDENTIFICATION: power consumption max load idle state (PLATFORM SERIES NX-9000)

This document serves as the definitive technical datasheet for the power consumption max load idle state series of carrier-grade Ethernet switching platforms. Designed for energy-optimized datacenter and campus core deployments, this series introduces industry-leading granularity in power telemetry, enabling network architects to baseline, monitor, and dynamically scale operational expenditure (OPEX) against real-time traffic loads.



CORE INTERNAL TOPOLOGY & POWER RAIL ARCHITECTURE

The power consumption max load idle state platform integrates a dual-rail, 80 PLUS Titanium-rated power delivery network (PDN) with per-port power gating. Each forwarding ASIC (model Q-Silicon Gen5) is subdivided into 12 independent power domains. At idle state (zero traffic, link-up with LLDP), the device autonomously clocks down unused pipeline stages and places inactive SerDes lanes into a deep-sleep mode. At maximum load (line-rate non-blocking 100G traffic across all interfaces), the voltage-frequency scaling (AVFS) logic operates at peak efficiency, delivering deterministic performance with transparent thermal headroom reporting.

SWITCHING & POWER SUBSYSTEM CAPABILITIES

- IDLE STATE POWER DRAW: 78W (typical, 25 ° C ambient, dual PSU active/standby)
- MAXIMUM LOAD POWER DRAW: 445W (100% throughput, 64-byte frames, all ports active)
- HOT-SWAPPABLE POWER SUPPLIES: 2 x 550W AC/DC (1+1 redundancy, hot-swap)
- POWER EFFICIENCY RATIO (PER 10G): 0.18W per 10G at idle / 1.04W per 10G at max load
- TELEMETRY PROTOCOLS: In-band PMBus 1.3, SNMP Power-MIB, gRPC streaming

OPERATIONAL ADVANTAGES FOR ENERGY-AWARE NETWORKS

Compared to legacy fixed-configuration switches, the power consumption max load idle state series reduces average annual power consumption by up to 42% in typical mixed traffic patterns. The embedded intelligent power orchestration (IPO) engine automatically aligns PSU phase shedding with real-time load, eliminating redundant conversion losses. For greenfield deployments, this enables precise capacity planning without over-provisioning cooling or UPS infrastructure.

SPECIFICATION MATRIX

Parameter	**Specification**
Form Factor	1RU fixed, 19-inch rack mountable
Switching Capacity	1.44 Tbps non-blocking
Power Supply	Dual 550W hot-swappable 1+1 redundant AC/DC (100-240V, 50/60Hz)
Idle State Power (Typical)	78W (link-up, no traffic, 25°C)
Max Load Power (Typical)	445W (100% line-rate, 64B frames)
Operating Temperature Range	0°C to 50°C (derated above 2000m)
MTBF (Telcordia SR-332)	287,000 hours at 40°C

Port Configuration	48 x 10G SFP+ / 8 x 100G QSFP28 uplinks

REGULATORY COMPLIANCE & EFFICIENCY CERTIFICATIONS

- ENERGY STAR 3.0 Network Equipment (validated)
- ErP Lot 9 (idle state ≤ 85W at 48-port configuration)
- RoHS 2015/863/EU, REACH SVHC compliant
- CEC Title 20 (California Energy Commission)
- IEC 62368-1 safety and IEC 60950-1 (legacy)
- ETSI EN 303 470 (power measurement methodology v2.1.1)



Thermal design supports front-to-rear airflow with variable-speed N+1 fan

trays; acoustic noise at idle: 38 dBA; at max load: 62 dBA (measured at 1m). All specifications are validated per TIA-568-C.2 and GR-63-CORE NEBS Level 3 thermal requirements.