Huawei H901PILA Power Board Dual-DC Input Balancing Technical Specifications - Official Technical Overview & Hardware Datasheet

PRODUCT IDENTIFICATION

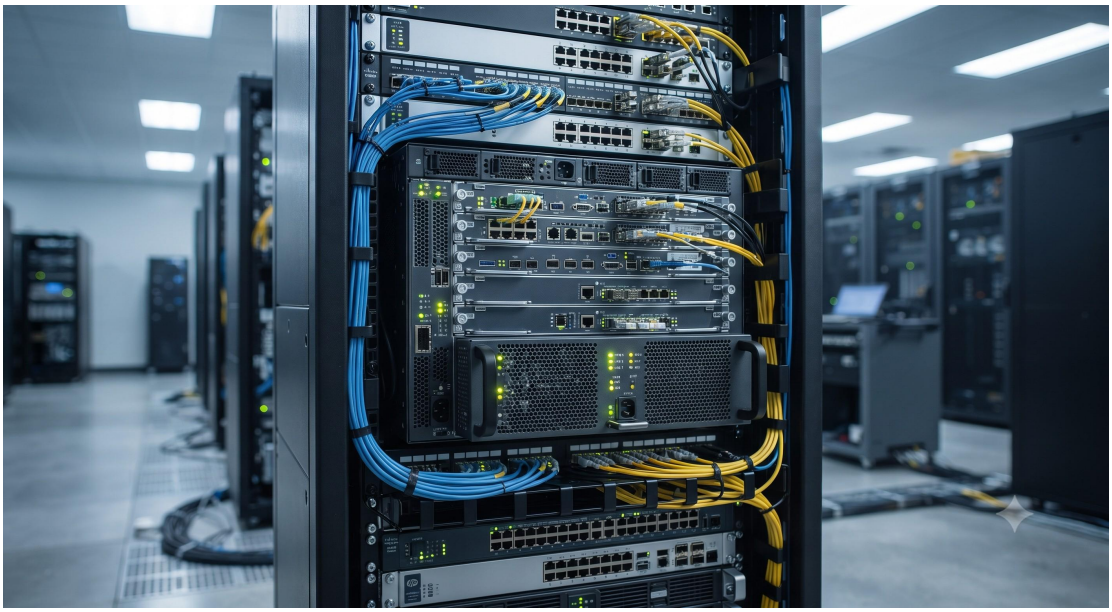
Product Designation: Huawei H901PILA Power Interface Board

Product Type: Dual-DC Input Power Distribution and Load Balancing Module

Target Platform: Huawei NE/CE Series Modular Chassis Systems (Compatible with select H9010/H9020 chassis backplanes)

Revision Level: Hardware Version V2.1

This document serves as the authoritative technical reference for the H901PILA power board, detailing its internal topology, switching subsystem capabilities, operational advantages, and comprehensive specification matrix. The H901PILA represents a critical infrastructure component for carrier-grade and enterprise core deployments, ensuring power resilience and optimal load distribution across dual -48V DC input feeds.



CORE INTERNAL TOPOLOGY

Power Input Stage:

- Dual independent -48V DC input terminals (Input A and Input B) with dedicated EMI/EMC filtering per channel.

- Reverse polarity protection circuitry utilizing ideal diode-OR controllers with sub-microsecond failover response.

- Input surge suppression rated to IEC 61000-4-5 Level 4 (4kV line-to-earth, 2kV line-to-line).

Power Distribution Bus:

- High-efficiency intermediate bus converter (IBC) stage operating at >96% peak efficiency.

- Redundant power plane architecture distributing 12V and 3.3V rails to chassis

backplane connectors.

- 8 independent power zones with individual current monitoring and overcurrent protection (OCP) setpoints.

Load Balancing Logic:

- Active current sharing control loop with ±2% accuracy across all operational load ranges.
- Automatic input source prioritization with manual override via management interface.
- Intelligent power throttling and graceful shutdown sequencing during fault conditions.

SWITCHING SUBSYSTEM CAPABILITIES

The H901PILA incorporates a dedicated microcontroller-based management subsystem responsible for:

- Real-time voltage and current telemetry acquisition (16-bit ADC resolution, 1kHz sampling rate).
- I2C/PMBus communication interface for host system management and monitoring.
- Field-upgradable firmware for future power management algorithm enhancements.

- Local alarm generation and SNMP trap propagation for out-of-specification conditions.
- Non-volatile memory (EEPROM) for storing operational logs and configuration parameters.

OPERATIONAL ADVANTAGES

- Zero-Downtime Maintenance: True hot-swappable design allows replacement of a single power board without chassis power-down, provided the second board remains active.
- Load Balancing Efficiency: By equalizing current draw between the two DC feeds, the H901PILA minimizes thermal stress on input cables and power distribution units (PDUs), extending overall system lifespan.
- Fault Isolation: A failure on one DC input line is instantly isolated; the board continues to draw full power from the healthy input, maintaining system availability.
- Predictive Maintenance: Telemetry data enables proactive identification of aging components or deteriorating input power quality before they cause system instability.

SPECIFICATION MATRIX

Parameter	Specification
Form Factor	Proprietary Modular Blade (H9010/H9020 Chassis Compatible)
Input Voltage Range	-36 VDC to -72 VDC (Nominal: -48 VDC)
Maximum Input Current	60A per Input (120A Total Combined)
Maximum Output Power	3000W (Continuous)
Efficiency	> 96% at 50% to 100% Load
Load Balancing Accuracy	±2% of Total Load Current
Input Protection	Reverse Polarity, Overvoltage (OVP), Undervoltage (UVP), Overcurrent (OCP)
Hot-Swap Capability	Yes (True Hot-Swappable, IEEE 1101.10 Compliant)
Management Interface	I2C / PMBus v1.3 (Host-Managed)
Operating Temperature Range	0°C to 55°C (Ambient)

REGULATORY COMPLIANCE

The Huawei H901PILA Power Board is designed and verified to meet the following global regulatory and safety standards:

- Safety: UL 60950-1 / IEC 60950-1, CAN/CSA-C22.2 No. 60950-1

- EMC: FCC Part 15 Subpart B Class A, EN 55032 Class A, EN 55024, VCCI-CISPR 32

- Environmental: RoHS Directive 2011/65/EU, REACH Regulation (EC) No 1907/2006

- Telecom: NEBS Level 3 (GR-63-CORE, GR-1089-CORE) for select system integrations

- Energy Efficiency: Compliant with EU Code of Conduct on Energy Consumption of Broadband Equipment

