

R4850G Rectifier - Official Technical Overview & Hardware Datasheet

EXECUTIVE SUMMARY

The Huawei R4850G series represents a state-of-the-art family of high-efficiency, high-power-density digital rectifier modules, purpose-built for carrier-grade telecommunications, data center, and industrial power infrastructures. Operating from a wide 85–300 V AC input range and delivering a default 53.5 V DC output with a rated power of 3000W, the R4850G series is engineered to meet the rigorous demands of modern network applications requiring compact, reliable, and energy-efficient power conversion .

Leveraging full digital control and advanced power monitoring technologies, these modules provide real-time supervision, comprehensive protection, and intelligent management, ensuring system stability and operational excellence in the most critical environments .



ARCHITECTURE & CHASSIS DESIGN

The R4850G series embodies a modular, hot-swappable design philosophy, optimizing both deployment flexibility and serviceability. The compact mechanical envelope, depending on the specific sub-model, features dimensions as small as 40.8 mm (H) x 105 mm (W) x 281 mm (D) and a weight of under 2 kg, enabling high-density installations within standard 19-inch racks. The front panel integrates a clear LED alarm display and a robust handle, facilitating straightforward module insertion and extraction. The chassis is engineered to accommodate forced-air cooling, with a built-in fan equipped with intelligent speed control to manage thermal performance efficiently across a wide range of operating conditions.

HARDWARE FEATURES

Designed for demanding environments, the R4850G series incorporates a host of advanced hardware features. The module boasts a peak efficiency exceeding 96%, minimizing energy loss and operational expenditure .

Key hardware attributes include:

- Wide Input Voltage Range: 85–300 V AC single-phase, allowing for global deployment without concern for grid variations. The module is also capable of disconnecting automatically at voltages above 320 V AC for enhanced safety .
- High Power Factor: ≥ 0.99 , which contributes to grid stability and efficient power utilization .
- Low Total Harmonic Distortion (THD): $\leq 5\%$, ensuring a clean power supply and reducing stress on upstream infrastructure .
- Comprehensive Protection: Integrated input under-voltage, output over-voltage, over-current, short-circuit, and over-temperature protection mechanisms ensure system resilience in fault conditions .

COMPLIANCE & STANDARDS

The R4850G series is fully certified to meet a comprehensive suite of international safety and electromagnetic compatibility (EMC) standards,

underscoring its reliability and suitability for global telecommunications networks. The module carries TUV, CE, and UL certifications and has been awarded CB certificates, confirming its compliance with IEC 60950-1, IEC 62368-1, CAN/CSA-C22.2 No. 60950-1, and EN 60950-1 standards .

The design adheres to RoHS directives for environmental compliance and meets stringent EMC requirements, including EN 55032 and EN 55024 .

TECHNICAL SPECIFICATIONS

Parameter	Specification
Model Variants	R4850G1, R4850G2, R4850G6
Form Factor (H x W x D)	40.8mm x 105mm x 281mm (R4850G1/G6) / 88.9mm x 103mm x 243mm (R4850G1)
Weight	≤ 2.0 kg (R4850G1/G6) / ≤ 2.83 kg (R4850G1)
Cooling Method	Forced Air Cooling with Intelligent Speed Control
Input Voltage Range	85–300 V AC
Input Frequency	45–66 Hz (Rated: 50/60 Hz)
Maximum Input Current	≤ 17 A

Power Factor	≥ 0.99 (50%–100% load)
Total Harmonic Distortion (THD)	$\leq 5\%$
Output Voltage	42–58 V DC (Default: 53.5 V DC)
Rated Output Power	3000 W
Output Derating	3000W (176 – 300 V AC), 3000W – 1200W (85–176 V AC)
Peak Efficiency	$\geq 96\%$
Voltage Regulation Accuracy	$\leq \pm 0.6\%$
Ripple & Noise	≤ 200 mVp-p (Bandwidth ≤ 20 MHz)
Operating Temperature	-40°C to +75°C
Storage Temperature	-40°C to +75°C
Relative Humidity	5%–95% RH (Non-condensing)
Altitude	≤ 4000 m
Communication Protocols	RS485, CAN (varies by model)
Hot-swappable	Yes
Safety Compliance	TUV, CE, UL, CB
MTBF	> 500,000 hours

ORDERING OPTIONS

The R4850G series is available in several distinct sub-models, each tailored to

specific application requirements and regional certifications. The primary orderable variants include:

- R4850G1: The foundational model offering broad compatibility and a comprehensive feature set for general telecom and industrial power applications. It includes RS485 communication and supports a robust set of protection features .
- R4850G2: An evolution featuring enhanced digital control with support for CAN bus communication in addition to RS485, providing improved interoperability and management capabilities for modern power systems. This model is also noted for its high-efficiency design .
- R4850G6: A later-generation variant with a rated efficiency of up to 96.5%, improved power density, and an extended operating temperature range of -25° C to +75°C. It also supports advanced CAN communication, making it ideal for next-generation network infrastructure .

Customers are advised to consult the relevant ordering SKU guide to select the correct module based on the required communication protocol (RS485 or CAN), specific environmental conditions, and target certifications. All modules are available in standard bulk packaging for integration into new systems or as direct replacements in existing installations .

