



Key Specifications

Efficiency	Peak point $\geq 96\%$. $\geq 95\%$ (230 V AC, 30%–90% load)
Dimensions (H x W x D)	40.8 mm x 95.5 mm x 208 mm
Weight	≤ 1.5 kg
Cooling mode	Built-in fan (fan speed adjustment)
IP rating	IP20

Overview

The R4830G1 is a digital rectifier with high efficiency and high power density. It converts 85–300 V AC or 85–420 V DC input voltage to 53.5 V DC output voltage by default. The rectifier provides comprehensive protection functions, supports soft start, and produces low noise. Multiple rectifiers can be connected in parallel. With the latest power monitoring technology, states of the rectifier and load are monitored in real time, and the output voltage can be adjusted by the host.

Key Features

- Grid voltage range: 85–300 V AC or 85–420 V DC
- Operating temperature range -40°C to $+80^{\circ}\text{C}$
- Power density: 40.4 W/inch³
- Total harmonic distortion (THD): $\leq 3\%$
- Full digital control
- Hot swappable
- Supports a smart electricity meter
- Fan speed adjustment for temperature control
- Supports CAN bus communication
- Supports LED alarm display
- Supports voltage adjustment, current limiting, and current equalization
- RoHS compliance
- TUV, CE and UL certifications, CB certificate
- Disconnects above 320 V AC

Environment Specifications

Item	Specifications
Operating temperature range	-40°C to $+80^{\circ}\text{C}$ (see Figure 3)
Storage temperature range	-40°C to $+80^{\circ}\text{C}$
Relative humidity	5% RH–95% RH (non-condensing)
Altitude	≤ 5000 m (Note: When the altitude ranges from 2000 m to 5000 m, the operating temperature decreases by 1°C for each additional 200 m.
Environmental requirements	• There should be no conductive dust, corrosive gas, or explosion hazard. • Dust, corrosive substances, pests, molds, and other indicators should be controlled in accordance with Class 3.1 requirements in ETSI EN 300 019-1-3 (V2.3.2 or a later version). • If the module is configured in a direct ventilation cabinet or an outdoor cabinet, the IP rating of the cabinet must be greater than or equal to IP55.

Electrical Specifications

Item	Specifications
Input	
Input voltage range	85–300 V AC or 85–420 V DC
AC input frequency	45–66 Hz Rated frequency: 50/60 Hz
Max. input current	≤ 13 A
Power factor	≥ 0.99 (load $\geq 50\%$)
THD	$\leq 3\%$ (230 V AC, load $\geq 50\%$)
Output	
Output voltage	42–58V DC Rated voltage: 53.5 V DC
Output power	2000 W (176–300 V AC/ 200–420 V DC) 900 W (90–176 V AC/90–200 V DC linear derating)
Regulated voltage precision	$\leq \pm 0.5\%V_o$
Ripple and noise	≤ 200 mVp-p (bandwidth 20 MHz)
Dynamic response	• 25%–50%, 50%–75% load: –Overshoot: $\pm 5\%$ –Recover time: $< 200\mu\text{s} (\pm 0.5\%)$ • 10%–90% load: –Overshoot: $\pm 5\%$ –Recover time: < 1 ms ($\pm 1\%$)
Standby power consumption	≤ 5 W
Startup time	3s–8s

Item	Specifications
Output	
Output hold time	>10 ms
Psophometrically weighted noise	≤ 2 mV
Wide-band noise voltage	≤ 50 mV (3.4–150 kHz) ≤ 20 mV (0.15–30 MHz)

Other Features

Item	Specifications
Protection	
Input overvoltage protection	AC protection threshold: > 300 V AC DC protection threshold: > 420 V DC
	AC recovery range: 290–300 V AC DC recovery range: 410–420 V DC
Input undervoltage protection	AC protection threshold: < 80 V AC DC protection threshold: < 80 V DC
	AC recovery range: 70–85 V AC DC recovery range: 70–85 V DC
Output overvoltage protection	Protection range: 56–60 V DC (can be set on the monitoring module) 1. If overvoltage occurs inside a rectifier, the rectifier will latch off 2. If the external voltage is greater than 63 V for more than 500 ms, the rectifier will latch off.
Output current limiting protection	See Figure 1.
Output short-circuit protection	A long term short circuit is allowed. After the fault is rectified, the rectifier is restored to a healthy state automatically.
Overtemperature protection	The rectifier protects against overtemperature.
Safety/EMC/Lightning protection	
Safety certification	TUV, CE and UL certifications, CB certificate; Complies with UL60950-1; IEC60950-1; CAN/CSA C22.2 No. 60950-1; EN60950-1;
EMC	EN55022 Class B; EN55024; EN61000-3-2; EN61000-3-3; ETSI EN300 386; ETSI EN301489; ITU-T K.20;
Surge protection	≥ 5 kA (8/20 μs) - Ensure that the upstream surge protection design complies with the local regulation requirements and surge protection requirements when using the module
Reliability	
MTBF	> 500,000 hours (40°C)

Item	Specifications
Audible Noise	
Specifications	≤ 45 dB (25°C)

Output Feature Curves

Figure 1 Output feature curve

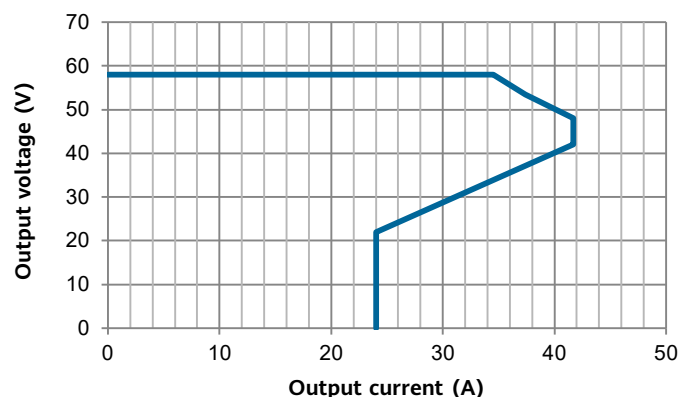


Figure 2 Output efficiency curve
($V_{out} = 53.5$ V; $T_a = 25^\circ\text{C}$)

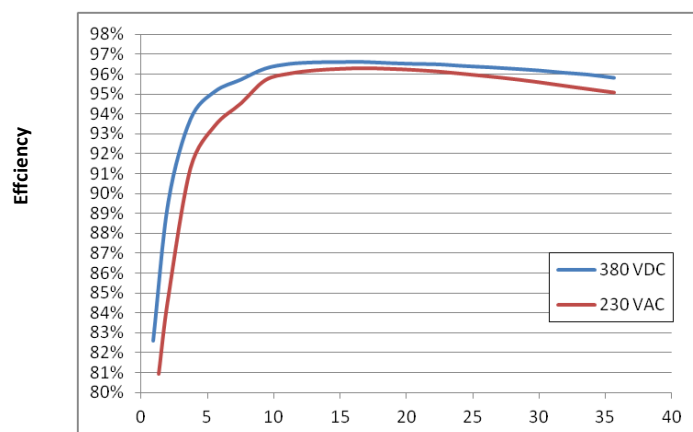
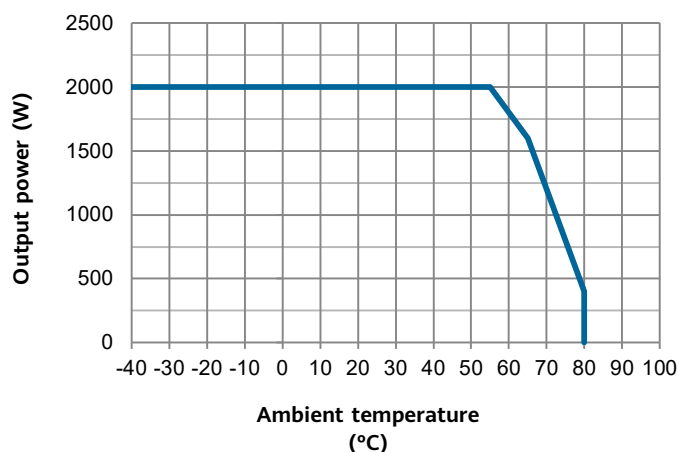


Figure 3 Power derating curve



Port Description

For the pin locations on the rectifier edge connector, see Figure 4. For the pin definitions, see Table 1.

Figure 4 Edge connector pins

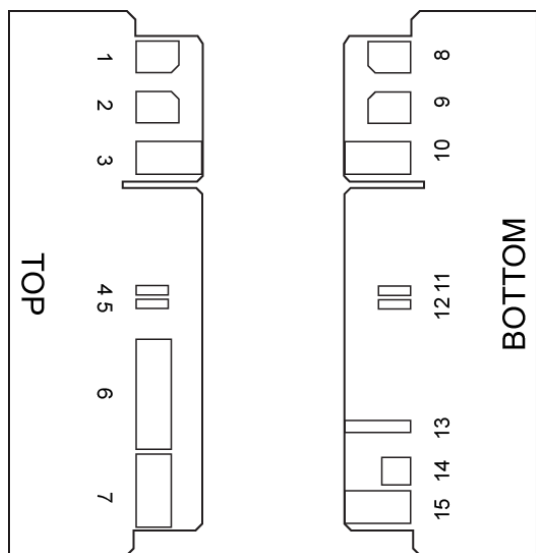


Table 1 Pin definitions for the edge connector

Pin	Definition	Function
1, 8	L	AC input phase wire/ DC input positive
2, 9	N	AC input neutral wire/ DC input negative
3, 10	PE	Protective earth
4	CANL	CAN low level
5	AC_D2	Slot detection signal 2
6	OUTPUT+	Output 48 V+
7, 15	OUTPUT-	Output 48 V-
14	PRESENT	Rectifier in-position detection
11	CANH	CAN high level
12	AC_D1	Slot detection signal 1
13	PRE-CHARGE	Pre-charge

CAUTION

- If the red indicator is on or the green indicator is off, check the PSU first and then power it on. (Shake the PSU to check whether there is abnormal sound, check whether the PSU has an odor, whether the edge connector is clean and intact, and whether the L/N and PE pins of the edge connector are short-circuited.) Do not directly power on the PSU. Otherwise, it may arc or become faulty.
- Only trained and qualified personnel are allowed to install or service the rectifier.
- A fuse is equipped for both the input terminals L and N of the rectifier.
- This product should be used in the environment that meets specifications described in the user manual.
- If the product is used with abnormal grid input or exposed to salt mist, dust, or water mist, the product may become faulty, and the resulting product exceptions or component damage are beyond the warranty scope.
- To prevent burns, wear protective gloves and exercise caution when removing a rectifier because it is hot during operation.

Installing a Rectifier

Figure 5 Removing the old rectifier



Step 1: Push the locking latch left.

Step 2: Pull out the handle to remove the rectifier from the subrack.

Figure 6 Installing the new rectifier



Step 1: Place a new rectifier in the correct slot, push the locking latch left, and pull out the handle.

Step 2: Gently push the rectifier along the guide rails into the subrack and flip the locking latch right to secure the handle.

Transportation

During transportation, the product must be securely placed in a packing case. The packing case must comply with related international standards and be printed with marks such as anti-collision and moisture prevention. The packing case containing the product can be transported by any means. Protect the packing case with the product from being dampened and knocked.

Storage

Unused products must be stored in packing cases and placed in a dry, well-ventilated warehouse where the temperature ranges from -40°C to $+75^{\circ}\text{C}$, the relative humidity is not greater than 80%, and no corrosive gas exists. It is recommended that the storage period be no more than one year.

CAUTION

- In an indoor scenario, you are advised to power on the rectifier within seven days after unpacking. If the rectifier cannot be powered on in time, place it in an indoor environment that is dry and without corrosive gas.
- In an outdoor scenario, you are advised to power on the rectifier within 24 hours after unpacking. If the rectifier cannot be powered on in time, place it in an indoor environment that is dry and without corrosive gas.

Maintenance

DANGER

- The high voltage power supply provides power for the device operation. Direct or indirect contact (especially with a damp object) with the high voltage power supply may result in fatal injury.
- Non-standard and improper high voltage operations may result in fire and electric shock.

To rectify simple faults, refer to Table 2.

Table 2 Indicator status and troubleshooting

Indicator	Color	Status	Description	Suggestion
Power indicator 	Green	Steady on	The rectifier has input.	The status is normal, and no action is required.
		Off	The rectifier has no input.	Check whether the input voltage is normal. If the input is normal, replace the rectifier.
			The rectifier is faulty.	Replace the rectifier.
		Blinking at 0.5 Hz	The rectifier is being queried.	The status is normal, and no action is required.
		Blinking at 4 Hz	The rectifier is loading an application program.	The rectifier automatically recovers after the loading is finished, and no action is required.
Alarm indicator 	Yellow	Off	The rectifier is not protected, and there is no alarm.	The status is normal, and no action is required.
		Steady on	The rectifier has generated a power limiting alarm due to ambient overtemperature. The rectifier has generated a shutdown alarm for protection due to ambient overtemperature or undertemperature.	Check that the air vent is not blocked and the ambient temperature is within the normal range.
			The rectifier is protected against input over/undervoltage.	Check the power grid voltage.
			The rectifier is hibernating.	The status is normal, and no action is required.
		Blinking at 0.5 Hz	The communication between the rectifier and the monitoring module is interrupted.	Replace the rectifier or monitoring module.
Fault indicator 	Red	Off	The rectifier is running properly.	The status is normal, and no action is required.
		Steady on	The rectifier latches off due to overvoltage or is not properly inserted.	Remove the rectifier and then insert it after 1 minute.
			The rectifier has no output due to an internal fault.	Replace the rectifier.

Suggestions

1. Rectify the faults by referring to Table 2.
2. If you cannot rectify the fault according to Table 2, replace the rectifier.
3. Return the faulty rectifier to Huawei for repairing.

Huawei Technologies Co., Ltd.

Huawei Industrial Base

Bantian, Longgang, Shenzhen

518129

<https://support.huawei.com/enterprise>