

RT15 450V 25kW HRE

Rectifier Specification



The RT15 450V 25kW HRE Rectifier is a high reliability and high efficiency switched mode isolated AC-DC module that converts 3-phase 400VAC to 200VDC - 450VDC at up to 25kW output. It is suitable for battery charging applications such as electric vehicle (EV) chargers. The RT15 delivers a peak efficiency of > 96%. Its compact size allows high power density in 19-inch 600mm x 600mm footprint racks.

The addition of a charging controller and other peripherals allows sophisticated vehicle charging to CCS requirements.



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Detailed specifications at 400VAC in, 450VDC out, 25°C, unless otherwise stated:

Input

Voltage requirement	Three phase, 4 wire (no neutral) nominal range: 380 – 480VAC; Voltage tolerance: 285 – 530VAC; Full output power available above 323VAC; Frequency: 50/60Hz \pm 10%; Voltage distortion: \leq 5%; Phase imbalance: <10%
Current drawn at full load	38A RMS max at 400VAC; 48A RMS max below 323VAC;
Power factor	Greater than 0.99 at full load; 0.98 at half load; 0.95 at 30% load
Harmonic distortion of input current: Type 1	Less than 5% at full load; 10% at half load;
Voltage withstand test	2800VDC input to chassis for 1 minute;
Protection	Overvoltage: operates to 530VAC typically and will sustain 720VAC without damage; Undervoltage: operates at reduced power to 155VAC typically; Surge protection to 6kV/3kA;
Startup and hot plug	Inrush less than 100% input current; Soft start <10 seconds; Diesel generator compatible;

Output

Current control	Range: 0A, and 1 - 63A; Precision: \pm 1.5A 6 – 63A; \pm 0.15A 1 – 5A;
Voltage limit	Range: 200 – 450V; Precision: \pm 0.5%;
Power limit	Output power is internally limited to 25kW; Available current: <ul style="list-style-type: none">• 63A max at < 400V;• 56A at 450V;
Voltage withstand test	2800VDC output to chassis for 1 minute;
Static regulation	\pm 1A under current control over voltage range; \pm 0.5% of voltage in voltage limit condition;
Noise	< 0.5% peak to peak (0 - 20MHz);
Protection	Overcurrent: can sustain short circuit at output terminals indefinitely; Surge protection to 5kV/2.5kA; Overshoot voltage: less than 0.1% at start-up.

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General

Isolation	Input and output are isolated; all components that cross the isolation barrier are tested to 4000VAC or 5600VDC or higher;
Efficiency	>96% peak efficiency; >95% typical from 20 – 63A;

Standards

Features and Safety	Designed to be used as part of a vehicle charger to IEC 61851-23: 1 st edition 2014; IEC 61851-1: 3 rd edition 2018.
EMC Emissions and Immunity	Designed to IEC 61851-21-2: 1 st edition 2018.

Mechanical

Dimensions	Width: 482.6mm Height: 130mm (3U) Depth: 440mm
Weight	< 31kg
Acoustic Noise	≤ 55dB (A Weighted);
Magazine	Width: 19 inch standard; Height: 132mm (3U);

Environment

Operating range	-25°C to +40°C, ≤90% RH;
Storage and transport	-40°C to +70°C, ≤95% RH;
Vibration	10-55Hz, 0.35mm sine;
Altitude	1000m without de-rating;

Connections

Input, Output, and Communications:

A multifunction hot-plug connector is mounted on the back of the rectifier module that carries the AC, DC and communications lines. A matching connector is located at the back of the magazine. Reliable mating is ensured by a screw fastener to the magazine that mechanically secures the rectifier.