

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 400VAC

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 450VDC (maximum)

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: 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;

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Surge protection to 5kV/2.5kA;
Overshoot voltage: less than 0.1% at start-up.

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: 1st edition 2014; IEC 61851-1: 3rd edition 2018.

EMC Emissions and Immunity:

Designed to IEC 61851-21-2: 1st edition 2018.

Mechanical

Module:

Width: 482.6mm
Height: 130mm (3U)
Depth: 440mm
Mass: < 31kg

Acoustic Noise:

≤ 55dB (A Weighted);

Magazine:

Width 19 inch standard;
Height 132mm (3U);

Environment

Operating range:

-5°C to +50°C, ≤90% RH;

Storage and transport:

-40°C to +70°C, ≤95% RH;

Vibration:

10-55Hz, 0.35mm sine;

Altitude:

de-rating 5°C per 1000m, up to 2000m

Connections

Input, Output, and Communications:

Two hot-plug connectors are mounted on the back of the rectifier module that carry the AC, DC and communications lines. Matching connectors are located at the back of the magazine.