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.

### 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 ± 10%;
- Voltage distortion: ≤ 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

#### Output 450VDC (maximum)

**Current control:**
- Range: 0A, and 1 - 63A;
- Precision: <±1.5A 6 – 63A;
  - <±0.15A 1 – 5A;

**Voltage limit:**
- Range: 200 – 450V;
- Precision: <±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:**
- ±1A under current control over voltage range;
- ±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;
RT15 450V 25kW
HRE Rectifier Specification

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.


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.