RT18 400V 20A 8kW HRE Rectifier Specification Preliminary

The RT18 400V 20A 8kW HRE Rectifier is a high reliability and high efficiency switched mode rectifier (SMR) module that converts 220VAC to as much as 400VDC at 20A output. It is suitable for high reliability applications such as Internet Data Centres (IDC) and DC UPS. The RT18 is designed to supply power to the requirements of EN 300 132-3-1 and to be used in conjunction with 168 cell, 336VDC nominal (or other) lead-acid batteries. It delivers a power saving peak efficiency of 96%.

The compact dimensions of the RT18 in its magazine (2.5U high, 3 units across) allow high power density in 800mm x 800mm footprint racks.

The addition of a MCSU-4 controller allows sophisticated power system management with network connectivity and advanced rectifier sleep mode functionality for additional power savings.

RT18 400V 20A 8kW HRE Rectifier

Detailed specifications at 230VAC, 50Hz in, 380VDC out, 25°C, unless otherwise stated

Input 208 - 240VAC

Voltage requirement:

Single phase, nominal range: 208 - 240VAC;
Voltage tolerance: 165 - 275VAC;
Full output power available above 187VAC;
Frequency: 45 - 66Hz;
Voltage distortion: ≤ 5%;

Current drawn at full load:

42A RMS max at 220 VAC;
50A RMS max below 187VAC;

Power factor:

Greater than 0.99 at full load; 0.98 at half load;

Harmonic distortion of input current:

Less than 5% at full load; 10% at half load;

Voltage withstand test:

2800VDC input to chassis for 1 minute;

Protection:

Overvoltage: operates to 300VAC typically and will sustain 420VAC without damage;
Undervoltage: operates at reduced power to 90VAC typically;
Surge protection to 6kV/3kA;

Startup and hot plug:

Inrush less than 100% input current;
Soft start approx 10 seconds to match diesel generator start-up characteristics;

Output up to 400VDC (380V typical float voltage)

Voltage:

Float adjustment range: 260 – 400V;
Equalise adjustment range: 260 – 405V;
Precision: <±0.5%;

Current limit:

Range 4 - 24A;
Precision: <±1%;

Power limit:

Current limit is automatically reduced to limit output power to 8000W;

Available current: 23.8A at 336V
21A at 380V
20A at 400V

Voltage withstand test:

2800VDC output to chassis for 1 minute;

Static regulation:

Load: terminal voltage drops by 3.3V ± 0.2V from zero to 20A load (for passive current sharing) for stand-alone units, or regulates to better than ±0.1% for MCSU-4 controlled units;

Dynamic regulation:

± 5% for 25/50/25% and 50/75/50% step load change;
± 0.5% of final value within 200us of step change;

Noise:

< 0.5% peak to peak (0 - 20MHz);

Load sharing:

Better than ± 5% of full scale with active current sharing from MCSU;

Protection:

Overcurrent: can sustain short circuit at output terminals indefinitely;

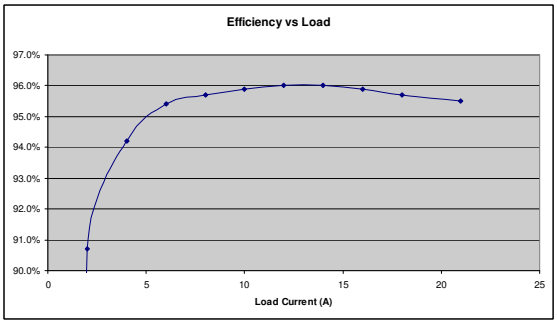
Inrush: no voltage dip on bus on hot plug;
Surge protection to 5kV/2.5kA;
Overshoot: 2% max at start-up;

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 6 – 22A;



Standards

Product: Designed to supply power per EN 300 132-3-1 (V2.1.1 2012);

Safety: Designed to IEC/EN 60950-1, Second Edition (2005);

EMC: Designed to IEC 61000-6-4:2006; IEC 61000-6-2:2005; EN 300 386 (V1.6.1 2012)

Mechanical

Module:

Width:	178mm
Height:	88mm (2U)
Depth:	640mm
Mass:	< 11kg

Acoustic Noise:

≤ 55dB (A Weighted);

Magazine to accept 3 modules:

Width	23 inch standard;
Height	110mm (2.5U);

Environment

Operating range:	-5℃ to +40℃, ≤90% RH;
Storage and transport:	-40℃ to +70℃, ≤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.