

## The original HE rectifier

Since setting the new standard for rectifier efficiency, the Flatpack2 HE family is now available in a variety of voltages and power ratings, all with superior efficiency up to 96.5%.

With more than 4 billion in-field operating hours and a proven cumulative field MTBF of more than 1,9 million hours, Flatpack 2 HE is the only HE (High Efficiency) rectifier with a proven track record.

The line of systems available for Flatpack2 HE 48V rectifiers spans from 8kW 2U racks with complete distribution to multi-cabinet systems in multi MW installations.



# Flatpack2 48V HE Rectifiers

## 2000W & 3000W

Doc 24111x.105.DS3 – v7

### APPLICATIONS

#### TELECOM – MOBILE / WIRELESS

- RADIO BASE STATIONS/ CELL SITES
- LTE / 4G / WIMAX
- MOBILE SWITCHING CENTER (MSC)
- MICROWAVE
- BROADBAND

#### TELECOM – FIXED

- CENTRAL OFFICE
- TELEPHONY SERVERS / SWITCHES
- FIBER OPTICS
- MICROWAVE
- BROADBAND
- DATACENTERS

#### POWER UTILITIES

- SCADA

#### POWER UTILITIES

- CONTROL & PROTECTION



Flatpack2 Hybrid Power core



Flatpack2 Power core in T3 Outdoor cabinet



108kW System

### KEY FEATURES

- PROVEN RELIABILITY
- HIGH EFFICIENCY (HE)
- POWER DENSE, UP TO 33 W/INCH<sup>3</sup>
- WIDE TEMPERATURE RANGE
- APPLICATION FLEXIBILITY 2KW →
- GLOBAL COMPLIANCE (CE, UL)
- PATENTED HE TECHNOLOGY

# Flatpack2 48V HE Rectifiers



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Model	48V / 2000W HE	48V / 3000W HE
Part number	241115.105	241119.105
<b>INPUT DATA</b>		
Voltage (nominal)	185 - 275 V <sub>AC</sub> / 185 - 275 V <sub>DC</sub>	176 - 277 V <sub>AC</sub>
Voltage (range)	85 - 300 V <sub>AC</sub> / 85 - 275 V <sub>DC</sub>	85 - 305 V <sub>AC</sub>
Frequency	45 - 66 Hz, 15-18.5 Hz <sup>1)</sup> / 0 Hz	45 - 66 Hz
Current (maximum) @ nominal input, full load	11.6 A <sub>RMS</sub>	19.2 A <sub>RMS</sub>
Protection	Fuse in both lines Varistor for transient protection Disconnect above 300 V <sub>AC/DC</sub>	Fuse in both lines Varistor for transient protection Disconnect above 305 V <sub>AC</sub>
<b>OUTPUT DATA</b>		
Voltage (default)	53.5 V <sub>DC</sub>	
Voltage (adjustable range)	43.5 - 57.6 V <sub>DC</sub>	43.2 - 58 <sup>3)</sup> V <sub>DC</sub>
Power (maximum)	2000 W	3000 W
Power @ 85 V <sub>AC</sub>	850 W	1380 W
Current (maximum) @ nominal input, full load	41.7 A	62.5 A
Ripple, 30MHz bandwidth	< 100 mV <sub>pp</sub>	< 150 mV <sub>pp</sub>
Psophometric noise	< 2 mV <sub>RMS</sub>	< 2 mV <sub>RMS</sub>
Static Voltage regulation	±0.5% for 10 - 100% load	
Dynamic Voltage regulation	±5.0% for 10-90% or 90-10% load variation, regulation time < 50ms	
Protection	Fuse, Short circuit proof, High temperature protection, Hot plug-in inrush current limiting	
<b>OTHER SPECIFICATIONS</b>		
Efficiency @ nominal input	96 %	
Isolation	3.0 kV <sub>AC</sub> - input to output, 1.5 kV <sub>AC</sub> - input to earth, 500 V <sub>DC</sub> - output to earth	
Alarms: Red LED 'on'	Low mains shutdown, High and low temperature shutdown, Rectifier Failure, Overvoltage shutdown on output, Fan failure, Low voltage alarm, CAN bus failure	
Warnings: Yellow LED 'on'	Rectifier in power derate mode, Remote battery current limit activated, Input voltage out of range, flashing at overvoltage	
Normal (module running): Green LED 'on'		
MTBF (Telcordia SR-332 Issue I method III (a))	>350 000 (@ T <sub>ambient</sub> : 25 °C)	>300 000 (@ T <sub>ambient</sub> : 25 °C)
Operating temperature	-40 to +75°C (-40 to +167°F) <sup>4)</sup> , humidity 5 - 95% RH non-condensing	
Temperature de-rating	>55°C (131°F), 1200W @ 75°C (167°F)	>55°C <sup>4)</sup> (131°F), 2100W @ 75°C (167°F) <sup>4)</sup>
Storage temperature	-40 to +85°C (-40 to +185°F), humidity 0 - 99% RH non-condensing	
Dimensions[WxHxD] / Weight	109 x 41.5 x 327mm (4.25 x 1.69 x 13") / 1.95 kg (4.3 lbs)	
<b>DESIGN STANDARDS</b>		
Electrical safety	EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013, UL 60950-1:2014, CSA C22.2 No.60950-1-07:2014, IEC 60950-1:2013	
EMC	EN 61000-6-1:2019, -6-2:2019, -6-3:2007 + A1:2011, -6-4:2019, EN 61000-3-2:2019 ETSI EN 300 386 V.2.1.1, Telcordia NEBS GR1089 CORE	
Marine	DNVGL-CG-0339 <sup>2)</sup>	-
Environment	ETSI EN 300 019: 2-1 (Class 1.2) & 2-2 (Class 2.3) EU 2015/863 (RoHS) & 2012/19/EU (WEEE) Normal operating conditions as per IEC 62040-5-3:2016 clause 4.2. Other operating conditions as per IEC 62040-5-3:2016 clause 4.3, must be advised	

1) power derating, maximum 1000W @ 230Vac 16 2/3 Hz  
2) only valid for part number 241115.105M

3) 57.6V for HW revision ≤ 5  
4) from HW revision 6: shutdown at 95°C with de-rating to ~1000W

Specifications are subject to change without notice.,