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 close to 100 billion in-field operating hours and a proven cumulative field MTBF of more than 2,6 million hours, Flatpack2 HE is the HE (High Efficiency) rectifier with the longest 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 PEDM0000133197 – v02

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

108kW System

KEY FEATURES

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

Flatpack2 Hybrid Power core

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Flatpack2 48V HE Rectifiers

Doc PEDM0000133197 – v02

Model	48V / 2000W HE	48V / 3000W HE
Part number	241115.105	241119.105
INPUT DATA		
Voltage (nominal)	185 - 275 V_{AC} / 185 - 275 V_{DC}	176 - 277 V_{AC}
Voltage (range)	85 - 300 V_{AC} / 85 - 275 V_{DC}	85 - 305 V_{AC}
Frequency	45 - 66 Hz, 15-18.5 Hz[1] / 0 Hz	45 - 66 Hz
Current (maximum) @ nominal input, full load	11.6 A_{RMS}	19.2 A_{RMS}
Protection	Fuse in both lines Varistor for transient protection Disconnect above 300 $V_{AC/DC}$	Fuse in both lines Varistor for transient protection Disconnect above 305 V_{AC}
OUTPUT DATA		
Voltage (default)	53.5 V_{DC}	
Voltage (adjustable range)	43.5 - 57.6 V_{DC}	43.2 - 58[2] V_{DC}
Power (maximum)	2000 W	3000 W
Power @ 85 V_{AC}	850 W	1380 W
Current (maximum) @ nominal input, full load	41.7 A	62.5 A
Ripple, 30MHz bandwidth	< 100 mV_{pp}	< 150 mV_{pp}
Psophometric noise	< 2 mV_{RMS}	< 2 mV_{RMS}
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	
OTHER SPECIFICATIONS		
Efficiency @ nominal input	96 %	
Isolation	4.0 kV_{DC} - input to output, 2.5 kV_{DC} - input to earth, 710 V_{DC} - output to earth	5.0 kV_{DC} - input to output, 2.5 kV_{DC} - input to earth, 710 V_{DC} - 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 (@ $T_{ambient}$: 25 °C)	>300 000 (@ $T_{ambient}$: 25 °C)
Operating temperature	-40 to +75°C (-40 to +167°F)[4], humidity 5 - 95% RH non-condensing	
Temperature de-rating	>55°C (131°F), 1200W @ 75°C (167°F)	>55°C[3] (131°F), 2100W @ 75°C (167°F)[4]
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)	
DESIGN STANDARDS		
Electrical safety	EN 62368-1:2020+A11:2020, IEC 62368-1:2018, IEC 60950-1:2005+A2:2013 UL 62368-1:2019 , CSA C22.2 No.62368-1:2019	
EMC	EN 61000-6-1:2019, -6-2:2019, -6-3:2007+A1:2011+A2:2012+AC:2012, -6-4:2019, EN 61000-3-2:2019, ETSI EN 300 386 V.2.2.0:2020, Telcordia NEBS GR1089 CORE	
Marine	DNVGL-CG-0339	-
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) 57.6V for HW revision ≤ 5
3) 3kW: from HW revision 6: shutdown at 95°C with de-rating to ~1000W

Specifications are subject to change without notice.

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