

HE rectifier for 380VDC in data centers

The Flatpack2 380/3000 HE UI rectifier has high efficiency, ORing protection on output and high output power.

Distribute pure battery backup DC voltage with a minimum of loss. Remove the low reliable DC-AC step in the central backup power system and maximize its reliability and efficiency.

Stack cabinets with up to 72 rectifiers to build large power systems monitored by the Smartpack2 controller.

The rectifiers Universal Input also allows it being powered from the 380Vdc bus. Static voltage outputs (300-400Vdc) can be realized for 400Vdc remote powering and other applications.



Flatpack2 380V Rectifier

380/3000 HE UI

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APPLICATIONS

DATA CENTER

- Centralized battery back-up systems

TELECOM

- Central office / large switch sites
- Remote feed

OTHER INDUSTRIES

- HVDC UPS



Smartpack2 system controller

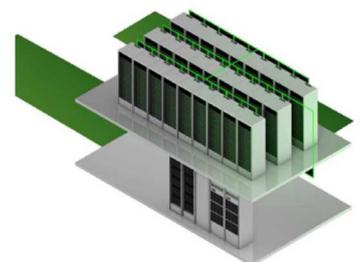


72 rectifiers power cabinet

KEY FEATURES

- POWER DENSITY - 33 W/INCH³
- HIGH EFFICIENCY – 96.2%
- OR-ING PROTECTION ON OUTPUT
- HOT PLUGGABLE – MTTR < 5 MIN
- UNIVERSAL INPUT – AC OR DC

RELIABLE POWER FOR DATA CENTERS



Uninterruptable power solutions based on 380VDC have many advantages and provide an extreme power reliability and power availability while opening new possibilities to further improve PUE.

Flatpack2 380V Rectifier



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Model	Flatpack2 380/3000 HE (UI)
Part number	241119.825
INPUT DATA	
Voltage (nominal)	176 - 277 V _{AC} / 260 - 400 V _{DC} ¹⁾
Voltage (range)	85 - 305 V _{AC} / 260 - 410 V _{DC} ¹⁾
Frequency	45 - 66 Hz / 15 - 18.5 Hz ²⁾ / DC ¹⁾
Current (maximum) @ nominal input, full load	18.2 A _{RMS}
Power Factor	> 0.99 at 50% load or more
Protection	Fuse in L & N Varistor Disconnect when V _{IN} is out of range
OUTPUT DATA	
Voltage (default)	381 V _{DC}
Voltage (adjustable range)	300 - 400 V _{DC}
# Pb cell supported	156 - 168 ³⁾
Power continuous (maximum)	3000 W
Power @ 85 V _{AC} / 85 V _{DC}	1200 W
Current continuous (maximum)	9 A (@V _{OUT} < 336 V _{DC}) / 7.9 A (@ V _{OUT} = 381 V _{DC})
Current sharing (10 - 100% load)	±5% of maximum current from 10 to 100% load
Static Voltage regulation (10 - 100% load)	±0.5%
Dynamic Voltage regulation	±2.0% for 10-90% or 90-10% load variation, regulation time < 10 ms ⁵⁾
Hold up time	> 20 ms; output voltage > 300 V _{DC} at 1500 W load
Ripple	< 1000 mV _{P-P} , 30 MHz bandwidth
Protection	Overvoltage shutdown, Hot plug-in - Inrush current limiting, ORing diode, Fuse ⁵⁾ , Short circuit proof, High temperature protection, Overload shutdown ⁴⁾
OTHER SPECIFICATIONS	
Efficiency @ 230 V _{AC} / 380V _{DC} input	96.2% / 96.6%
Isolation	3.0 kV _{AC} – input to output, 1.5 kV _{AC} – input to earth, 1.5 kV _{DC} – output to earth, 3.0 kV _{AC} – CAN to primary, 3.0 kV _{AC} – CAN to secondary
Alarms (Red LED)	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)	Rectifier in power derate mode, Remote battery current limit activated, Input voltage out of range, flashing at overvoltage
Normal (Green LED)	Input and output ok
Acoustic noise, at nominal input and full load	< 40dBA @T _{ambient} < 25°C / < 58dBA @ T _{ambient} > 40°C
MTBF (Telcordia SR-232 Iss.3 Meth. II Case L1)	2 291 210h (@ T _{ambient} = 25 °C)
Operating temperature	-40 to +75°C (-40 to +167°F), humidity 5 - 95% RH non-condensing Output power de-rates linear from 3000W @ 50°C (122°F) to 980W @ 75°C(167°F)
Storage temperature	-40 to +85°C (-40 to +185°F), humidity 0 - 99% RH non-condensing
Dimensions[WxHxD] / Weight	109 x 41.5 x 327 mm (4.25 x 1.69 x 13") / < 1.95 kg (4.3 lbs)
DESIGN STANDARDS	
Electrical safety	EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013, IEC 60950-1:2013, UL 60950-1:2014, CSA C22.2 No. 60950-1-07
EMC	EN 61000-6-1:2007, -6-2:2005, -6-3:2007 + A1:2010, -6-4:2007 + A1:2010, IEC61000-6-5: 2015, EN 300 386:v1.6.1, FCC CFR 47 Part 15:2013
Environment	Tested according to: ETSI EN 300 019: 2-1 (Class 1.2) & 2-2 (Class 2.3) 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 2011/65/EU (RoHS) & 2012/19/EU (WEEE)
<small> 1) DC input support from revision 7 phased in via pn 241119.825IA. Support for lower DC voltages on request 2) 16 2/3 Hz frequency range only supported for 230 V_{AC} +/-15%. Max available power de-rated to 1000 W 3) for 156 cells minimum test voltage is 1.923 V/cell. For 168 cell maximum boost voltage is 2.38 V/cell 4) if overloaded or load fault not cleared after 10s (defined as V_{out} < 200 V_{DC}) it will permanently shut down (power cycle to reset) 5) from revision 9, phased in via pn 241119.825IA </small>	

Specifications are subject to change without notice