High efficiency and reliable rectifiers

The most efficient power conversion module in the industry! Since the launch the Flatpack2 family has expanded into a wide selection of power ratings and voltages.

Power systems up to the MW-range can be realized using the 10A model addressing small and larger modular data centers' power needs. 220VDC power systems provide an excellent alternative to traditional AC UPS providing significant efficiency and reliability improvements.

With 220VDC, standard components, cables and distribution can be used and most IT equipment designed for 208/230VAC can be connected directly to the 220VDC bus.

Flatpack2 220V Rectifiers

220/2000 HE & 220/10A HE

Doc PEDM0000873089 v00

APPLICATIONS

POWER UTILITIES

- Switch tripping
- Control and protection systems
- Emergency lighting

RAILWAY INFRASTRUCTURE

- Converter stations
- Power stations

MARINE AND OFF-SHORE

- Central power system

DATA CENTER

- Central power system
- DC/DC – isolate branches

8kW / 40A 1U 19" rack with brackets

Smartpack2 Touch and Basic Industrial controller

KEY FEATURES

- PROVEN RELIABILITY
- HIGH POWER DENSITY
- HIGH EFFICIENCY
- APPLICATION FLEXIBILITY 2KW TO MULTI CABINET INSTALLATIONS
- ACCEPTS DC INPUT (DC/DC CONVERTER)
- GLOBAL COMPLIANCE (CE, UL)
- MARINE & OFFSHORE CERTIFICATIONS
- DIGITAL CONTROLLERS
- HOT PLUGGABLE RECTIFIERS

Flatpack2 220V Rectifiers

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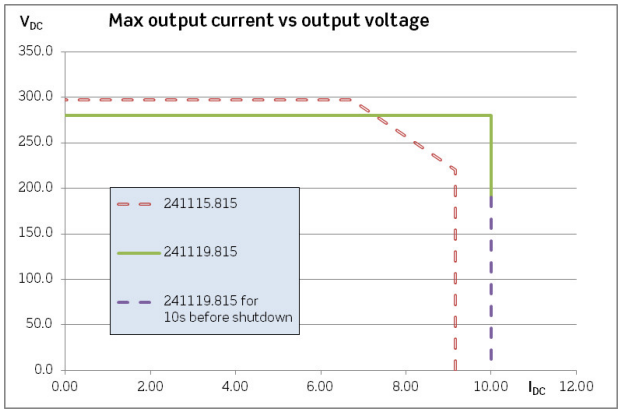
Applicable systems

2u Flatpack2 bulk output rack with earth fault detection

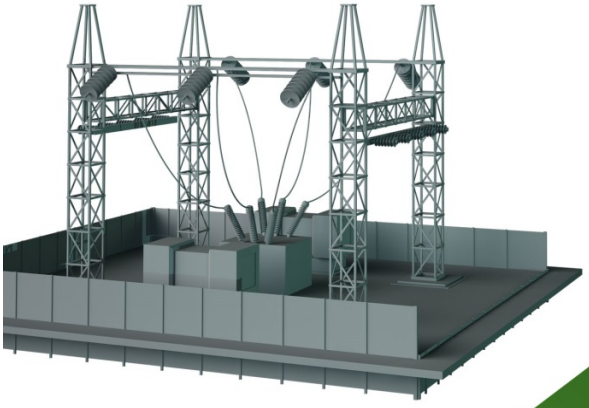
IBB system in FPC cabinet

Available current at nominal input & temperature



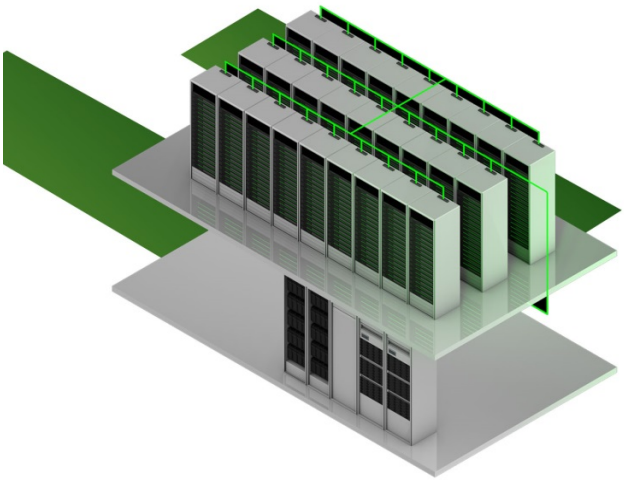
Application examples

HV AND MV SWITCHGEAR



Modular and redundant solutions for safe and energy efficient powering of HV and MV switchgear

RELIABLE POWER FOR DATA CENTERS



Uninterruptable power solutions based on 220VDC have many advantages and provide an extreme power reliability and power availability while opening new possibilities to further improve PUE.

Flatpack2 220V Rectifiers

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ELTEK
A brand of Delta

Model	220 / 2000 HE WOR	220 / 10A HE
Part number	241115.815	241119.815
INPUT DATA		
Voltage range	85 - 300 $V_{AC/DC}$	85 - 305 V_{AC}
Voltage range (nominal)	185 - 275 $V_{AC/DC}$	176 - 305 V_{AC}
Frequency	0 - 66 Hz	45 - 66 Hz
Maximum current	11.9 A_{RMS}	17 A_{RMS}
Power Factor	0.99 (@ 50-100% load)	0.99 (@ 50-100% load)
THD (@ 230 V_{AC})	< 5 % (@ full load)	< 4% (@ full load)
Protection	Varistor for transient protection, fuse in both lines, shutdown above 300/305 V	
OUTPUT DATA		
Default voltage	245.3 V_{DC}	
Voltage range	178.5[1] - 297 V_{DC}	198[1] - 280 V_{DC}
# Pb cell supported (1.8 - 2.4 V_{DC}/cell)	108 - 122	108-110 (120[2])
# NiCad cell supported (1.05 - 1.65 V_{DC}/cell)	170 - 180	-
Max power, nominal input	2000 W	2800 W
Max power, 85V input	850 W	1304 W
Max current, @220V_{DC}	9.16 A	10 A[3]
Hold-up time, default voltage and 1500 W load	20 ms, V_{OUT} > 178 V_{DC}	20 ms, V_{OUT} > 210 V_{DC}
Ripple and noise, 30 MHz bandwidth	< 1000 mV_{PP}	
Current sharing	±5% of maximum current from 10 to 100% load	
Static voltage regulation	±0.5% from 10% to 100% load and nominal input	
Dynamic voltage regulation	±5.0% for 10-90% or 90-10% load variation, regulation time < 50ms	
Protection	Overvoltage shutdown, short circuit proof, high temperature, hot plug-in inrush current limiting, ORing diode	
OTHER SPECIFICATIONS		
Efficiency	> 95%	> 95.5%
Isolation test voltage	4.2 kVDC – input to output & CAN, output to CAN 2.5 kVDC – input to chassis 2.5 kVDC – output to chassis	5.0 kVDC – input to output & CAN, output to CAN 2.5 kVDC – input to chassis 2.5 kVDC – output to chassis
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	
MTBF (Telcordia SR-332 Issue I method III (a))	>391 000h (@$T_{AMBIENT}$= 25°C)	>400 000h (@$T_{AMBIENT}$= 25°C)
Operating temperature (5 - 95% RH non-cond.) Output power de-rates above temp / to	-40 to +75°C [-40 to +167°F] +55°C / 1350W @ +75°C	-40 to +75°C [-40 to +167°F] +50°C / 1750 W @ +75°C
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 (WxHxD) [4.25 x 1.69 x 13"] / 1.950 kg [4.3lbs]	
DESIGN STANDARDS		
Electrical safety	EN IEC 62368-1:2020/A11:2020, IEC 62368-1:2018, UL 62368-1:2021 C22.2 No. 62368-1:2021, IEC 60950-1:2013	
EMC	EN IEC 61000-6-1:2019, -6-2:2019, -6-3:2021, -6-4:2019, IEC 61000-6-5:2015/AC:2018, ETSI EN 300 386 V.2.2.1, EN 60945:2002 + Cor.1 : 2008	
Mains Harmonics	EN 61000-3-2	
Environment	ETSI EN 300 019: 2-1 (Class 1.2) & 2-2 (Class 2.3), EN IEC 62474:2019 2011/65/EU incl. 2015/863/EU (RoHS), 2012/19/EU (WEEE), IEC 63000:2018 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	
Marine	DNVGL-CG-0339	-

1) V_{OUT} may increase at no and very light load (< 1 A) for V_{OUT_SET} < 245 V_{DC} set and V_{IN} > 250 $V_{AC/DC}$
2) VRLA batteries boost 2.33V/cell
3) 8A when V_{IN} > 290V_{AC} and $T_{ambient}$ > 45°C and V_{OUT} < 220V_{DC}

Specifications are subject to change without notice