Flatpack2 48V SHE Rectifiers

48V / 2000W SHE & 48V / 3000W SHE

Flatpack2 48V 3000W SHE

9U hybrid power core with Smartpack2 controller

Flatpack2 48V 2000W SHE

6U 300A power core with Smartpack S controller

Super High Efficiency (SHE) rectifiers for Telecom applications

The Flatpack2 48V Super HE rectifiers are contributing to setting the new industry standard for efficiency in the DC power market.

With an efficiency of 97.8% the Super HE is a premium rectifier particularly suitable for markets and applications where the energy is costly. In grid connected applications the payback time is down to 2 years compared to standard HE rectifiers, and in hybrid applications even faster.

The Flatpack2 Super HE is fully compatible with Flatpack2 and Flatpack2 HE systems and can replace any Flatpack2 48V rectifier module.

Key features

- Super high efficiency – 97.8%
- High power density – 33 W/in^3
- Compatible with existing systems
- Global compliance
- Patented technology
- Hot pluggable

Applications

- Telecom – Wireless
  - Radio base station / Cell sites
  - LTE / 5G / WiMAX
  - Mobile switching center (MCS)
  - Microwave
  - Broadband
- Telecom – Fixed
  - Central office
  - Telephony servers / switches
  - Fiber optics
  - Microwave
  - Broadband
  - Broadcast
  - Data center

Flatpack2 48V HE

48 / 2000 SHE & 48 / 3000 SHE

Model	48/2000 SHE	48/3000 SHE
Part number	241115.106	241119.106

Input data		
Voltage (nominal range)	185 - 264 V_{AC}	206 - 264 V_{AC}
Voltage (operating range)	85 - 264 V_{AC}	
Frequency	45 - 66 Hz	
Maximum current	11.6 A_{RMS}	16 A_{RMS}
Protection	Fuse in Live, varistor for transient protection, shutdown when V_{IN} is out of range	

Output data		
Voltage (default)	53.5 V_{DC}	
Voltage (adjustable range)	43.2[1)] - 57.6 V_{DC}	
Max power, nominal input	2000 W	3000 W
Max power, de-rated @V_{IN} = 85 V_{AC}	850 W	1000 W
Max current, @V_{OUT} = 48 V_{DC}	41.7 A	62.5 A
Current sharing	±5.0% of max current	
Static voltage regulation (10-100% load)	±0.5%	
Dynamic voltage regulation	±5.0% for 10-90% or 90-10% load variation, regulation time < 50ms	
Hold up time, @100% load	>10ms; output voltage > 42 V_{DC}	
Ripple	<150 mV_{PP} , 30 MHz bandwidth	
Protection	Overvoltage shutdown, short circuit proof, high temperature, hot plug-in inrush current limiting, fuse	

Specifications are subject to change without notice

1) Stand-by / test operation (V_{OUT} < 48V_{DC}) limited for V_{IN} > 230 V_{AC}
2) When input mains voltage is below 210 V_{RMS} temperature derating will start at 40 °C and 1500 W will be available at 75 °C
3) Tested according to Temperature, RH and Vibration

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DELTA ELTEK A brand of Delta

Flatpack2 48V HE

48 / 2000 SHE & 48 / 3000 SHE

Model	48/2000 SHE	48/3000 SHE
Part number	241115.106	241119.106

Other specifications		
Peak efficiency	97.8 %	
Isolation	3.0 kV_{AC} – input to output 1.5 kV_{AC} – input to protective earth 0.5 kV_{DC} – output to protective earth	
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 current limit activated, Input voltage out of range, flashing at overvoltage	
Normal (Green LED)	Input and output ok	
MTBF (Telcordia SR-332 Iss.3 method II Case L1)	1 900 000 hours	
Altitude	Up to 4000m	
Operating temperature (5 - 95% RH non-cond.)	-40 - 75°C [-40 - 167°F]	
Max output power de-rates above temp / to	45°C [+113°F] / 1350 W	45°C [+113°F] / 1800 W [2)]
Storage temperature	-40 to +85°C (-40 to +185°F), humidity 0 - 99% RH non-condensing	
Dimensions[WxHxD] / Weight	109 x 41.0 x 327mm [4.25 x 1.61 x 13"] / 2.05 kg [4.5lbs]	

Design standards	
Electrical safety	EN 62368-1:2020+A11:2020, IEC 62368-1:2018, UL 62368-1:2019
EMC	EN 61000-6-1:2019, -6-2:2019, -6-3:2007+A1:2011+A2:2012+AC:2012, -6-4:2019 ETSI EN 300 386 V.2.2.0:2020, FCC CFR 47 Part 15:2020
Environment	ETSI EN 300 019: 2-1 (Class 1.2), 2-2 (Class 2.3) & 2-3 (Parts of Class 3.2[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) Stand-by / test operation (V_{OUT} < 48V_{DC}) limited for V_{IN} > 230 V_{AC}
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