

## Rectifier & Inverter in one box

Built on HE technology from the Flatpack2 HE rectifier family the Rectiverter 230/1500 220/1200 provides backed up power for 230 V<sub>AC</sub> loads with minimum losses and footprint.

It is a 3 port device capable of charging the 220V battery and simultaneously provides power for the AC and DC loads. During mains outage the Rectiverter feeds AC loads using energy stored in the battery.



# Rectiverter 220V

230/1500 220/1200 & 115/750 220/600

Doc 241123.140.DS3 – v2

### APPLICATIONS

#### POWER UTILITIES

- Switch tripping
- Control & protection systems
- Emergency lighting

#### RAIL & METRO

- Converter stations
- Power stations



Rectiverter 6kVA single phase power core



Rectiverter 54kVA A+B input system

### KEY FEATURES

- UNIQUE 3-IN-1 OPERATION....
  - INVERTER
  - RECTIFIER
  - POWER SOURCE TRANSFER
- ....IN ONE BOX
- MODULAR DESIGN
- HIGH EFFICIENCY
- GLOBAL COMPLIANCE
- PATENTED TECHNOLOGY
- HOT PLUG-ABLE
- VOLTAGE KEYING



3kVA 1U shelf

# Rectifier 220V

Doc 241123.140.DS3 – v2



| Models / ordering information   | 230/1500<br>220/1200  | 230/1500<br>220/150                | 230/1500<br>220/0                  | 115/750<br>220/600                              | 115/750<br>220/75                   | 115/750<br>220/0                   |
|---|---|------------------------------------|------------------------------------|---|-------------------------------------|------------------------------------|
| Part number   | 241123.140  | 241123.141                         | 241123.142                         | 241123.140L                                     | 241123.141L                         | 241123.142L                        |
| <b>AC OUTPUT DATA</b>   |   |                                    |                                    |   |                                     |                                    |
| Voltage (default) / (adjustable range)  | 230 V <sub>AC</sub> / 200 - 240 V <sub>AC</sub>   |                                    |                                    | 115 V <sub>AC</sub> / 100 - 127 V <sub>AC</sub> |                                     |                                    |
| Frequency (default inverter mode)   | 50 Hz (adaptive)  |                                    |                                    | 60 Hz (adaptive)                                |                                     |                                    |
| Frequency (set-able inverter mode)  | 50Hz, 60Hz or last synced 50/60Hz (adaptive), 94-106Hz <sup>6)</sup>  |                                    |                                    |   |                                     |                                    |
| Power maximum (continuous / overload (<15s) )   | 1200 W (1500 VA) / 2000 VA  |                                    |                                    | 600 W (750 VA) / 1000 VA                        |                                     |                                    |
| Load sharing  | ±5% of active power from 10 to 100% load  |                                    |                                    |   |                                     |                                    |
| Current maximum (continuous / overload (<15s) )   | 6.5 A <sub>RMS</sub> / 8.7 A <sub>RMS</sub>   |                                    |                                    |   |                                     |                                    |
| Current (maximum) Quick trip (20ms)   | 32 A (6 x nominal)  |                                    |                                    |   |                                     |                                    |
| THD   | < 1.5 % at resistive load   |                                    |                                    |   |                                     |                                    |
| Protection  | Fuse in L, Hot pluggable, Varistor  |                                    |                                    |   |                                     |                                    |
| <b>DC OUTPUT DATA</b>   |   |                                    |                                    |   |                                     |                                    |
| Voltage (default) / (adjustable range)  | 245 V <sub>DC</sub> / 194 - 290 V <sub>DC</sub>   |                                    |                                    |   |                                     |                                    |
| Power (maximum @nominal input)  | 1200 W <sup>1)</sup>  | 150 W                              | 0 W <sup>2)</sup>                  | 600 W <sup>1)</sup>                             | 75 W                                | 0 W <sup>2)</sup>                  |
| Current (maximum @V <sub>OUT</sub> ≤ 216 V <sub>DC</sub> )  | 5.56 A <sup>1)</sup>  | 0.69 A                             | -                                  | 2.78 A <sup>1)</sup>                            | 0.34 A                              | -                                  |
| Hold up time, maximum output power  | >10ms; V <sub>OUT</sub> > 190 V <sub>DC</sub> (only in rectifier mode)  |                                    |                                    |   |                                     |                                    |
| 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  | ±5.0% for 10-90% or 90-10% load variation, regulation time < 50ms   |                                    |                                    |   |                                     |                                    |
| Ripple  | < 1 V <sub>PP</sub> , 30 MHz bandwidth  |                                    |                                    |   |                                     |                                    |
| Protection  | Short circuit proof, Over voltage shutdown, Reversed polarity and Fuse  |                                    |                                    |   |                                     |                                    |
| <b>INPUT DATA</b>   |   |                                    |                                    |   |                                     |                                    |
| AC Mains Input Voltage (range / LV disconnect)  | 185 - 275 V <sub>AC</sub> / 170 V <sub>AC</sub>   |                                    |                                    | 95 - 140 V <sub>AC</sub> / 85 V <sub>AC</sub>   |                                     |                                    |
| AC Current (maximum)  | 11.5 A <sub>RMS</sub>   | 9.1 A <sub>RMS</sub> <sup>3)</sup> | 8.2 A <sub>RMS</sub> <sup>3)</sup> | 11.3 A <sub>RMS</sub>                           | 10.1 A <sub>RMS</sub> <sup>3)</sup> | 9.2 A <sub>RMS</sub> <sup>3)</sup> |
| Frequency (default: sync range)   | 47-53 & 57-63 Hz  |                                    |                                    | 47-53 & 57-63 Hz                                |                                     |                                    |
| Frequency (set-able: sync range)  | 47-53 Hz, 57-63 Hz or both (adaptive)   |                                    |                                    |   |                                     |                                    |
| Power Factor / THD  | > 0.99 at 50% load or more / < 3.5%   |                                    |                                    |   |                                     |                                    |
| AC Input Protection   | Fuse in L and N, Hot pluggable, Varistor  |                                    |                                    |   |                                     |                                    |
| DC Voltage nominal / extended range <sup>4)</sup>   | 204 - 290 V <sub>DC</sub> / 180 - 204 V <sub>DC</sub>   |                                    |                                    |   |                                     |                                    |
| DC Current (maximum)  | 6.67 A / 9 A during overload (15s)  |                                    |                                    | 3.2 A / 4.5 A during overload (15s)             |                                     |                                    |
| <b>OTHER SPECIFICATION</b>  |   |                                    |                                    |   |                                     |                                    |
| Efficiency  | >96% (mains mode (AC/AC and AC/DC)), >94% (inverter mode (DC/AC))   |                                    |                                    |   |                                     |                                    |
| Isolation   | 3.85 kV <sub>DC</sub> - AC <sub>IN/OUT</sub> to PE, 3.55 kV <sub>DC</sub> - AC <sub>IN/OUT</sub> to DC, 4.25 kV <sub>DC</sub> - AC <sub>IN/OUT</sub> to CAN/SYNC, 2.2 kV <sub>DC</sub> - DC to PE, 3.5 kV <sub>DC</sub> - DC to CAN/SYNC          |                                    |                                    |   |                                     |                                    |
| Alarms: Red LED<br>Alarm relay [NO max 75 V <sub>DC</sub> / 100 mA]<br>(AC output <b>OR</b> DC output alarms) | Low and high mains input voltage shutdown, High and low temperature shutdown, Rectifier Failure, Overvoltage shutdown on output, Fan failure, Low output voltage alarm, CAN bus failure, Sync bus lost and Sync fail                              |                                    |                                    |   |                                     |                                    |
| Warnings: Yellow LED  | Rectifier in power de-rate mode or in power or current limit mode on DC or AC port, Remote output current limit activated, Loss of CAN communication with controller  |                                    |                                    |   |                                     |                                    |
| Normal operation: Green LED   | AC output and/or DC output on and ok  |                                    |                                    |   |                                     |                                    |
| Operating temperature   | -40 to +75°C (-40 to +167°F), humidity 5 - 95% RH non-condensing  |                                    |                                    |   |                                     |                                    |
| Temperature de-rating above 55°C (131°F)  | 1200W to 480W @ 75°C (167°F) for each, AC and DC, outputs (total power 2000W to 800W)   |                                    |                                    |   |                                     |                                    |
| 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, IEC/EN 62040-1:2008+A1:2013<br>UL 60950-1:2014, UL1778:2014, CSA C22.2 No. 107.3-14  |                                    |                                    |   |                                     |                                    |
| EMC   | EN 61000-6-1:2019, -6-2:2019, -6-3:2007 + A1:2011, -6-4:2019, IEC 61000-6-5:2015<br>EN 62040-2:2006 (C1 emissions, C2/C3 immunity), FCC CFR 47 Part 15<br>EN50121 -2:2017+A1:2019, -4:2016+A1:2019, -5:2017+A1:2019 <sup>5)</sup>                 |                                    |                                    |   |                                     |                                    |
| Environment   | EU 2015/863 (RoHS) & 2012/19/EU (WEEE) / ETSI EN 300 019: 2-1 (Class 1.2) & 2-2 (Class 2.3)<br>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) AC load has priority. Maximum available DC output power and current is dependent on instant AC load and AC input voltage; i.e maximum 800W/7.4A at full AC power and nominal input for 230VAC.  
2) DC port must still be considered bi-directional port; voltage will present if mains powered

3) If DC port is overloaded pulling the voltage below 194V the input current may increase above this level.  
4) Reduced performance - no over load support, and for 200 - 240 VAC output THD will increase and maximum output power de-rates (to 970W for 230 VAC @ 180 VDC) 5) to meet surge requirement of 4kV external surge protection is needed on AC ports 6) required FW version ≥ 1.10/1.10

Specifications are subject to change without notice