

#### PRODUCT DESCRIPTION

Red Box and its partners have been developing and manufacturing Frequency Converters for more than a decade now.

Our policy, has always been to offer the best designed products that are environmentally friendly, simple to use, easy to maintain and exceptionally well manufactured thus meeting our clients requirements as well as complying with all standards and legislation.

Our RBC8000 Fixed and Semi-Mobile Ground Power Units deliver an output of 200V 3 phase 400Hz to the aircraft through a SINGLE or DUAL OUTPUT contactor and can be connected to a standard 380V to 415V 3 phase 50Hz mains or other.

These units use high frequency IGBT Technology (rectifier and inverter) to guarantee a sinewave input with low THDi (1.5%) and unit power factor (PF=1), perfect for civil airports and military applications as we guarantee a minimum impact on the mains or other power sources upstream. The RBC8000's highly reliable, very efficient and easy to operate and maintain. Our GPU use double conversion technology with an integrated inverter output transformer to ensure galvanic isolation of the load.



### Highly Efficient and Fully Compliant GPU

CE Mark Certified (IEC 61000-6-4:2006+AMD2010 - Electromagnetic compatibility (EMC). Part 6-2: Generic standards - immunity for industrial environments; Low Voltage Directive (LVD) 2014/35/EU  
State of the art semiconductor technology (IGBT) guarantee Unity Power Factor and Low Input Harmonics (THDi <1.5%)  
High efficiency (up to 95% efficiency)  
Voltage compensation (Load Dependent or via Remote Feedback)  
No break power transfer compatibility (NBPT)  
User friendly control panel  
Data logging

### Power Quality

#### Input

- Power Factor Correction (PF=1)
- State of the art semiconductor technology (IGBT) Rectifier
- 95% efficiency
- 4 quadrant operation (better response of the system and safer operation for NBPT)
- Low input harmonics (<1.5% THDi), to comply with the strictest regulations at any load.

#### Output

- Voltage compensation (Load Dependent or via Remote Feedback - Real plug and play connect GPU to aircraft and voltage compensation is done automatically, no user adjustment required or additional accessories)
- 4 Quadrant Operation (better response of the system and safer operation for NBPT)
- Vector control inverter for better response and higher efficiency.

### Efficiency

- Up to 94% -30KVA to 90KVA at load PF= 0.8 to 1.0
- 90% < 30kVA at load PF= 0.8 to 1.0
- Green standby function - losses: 20W
- No load losses <1.5 kW

## Models

- RBC8030- 30kVA 400HZ
- RBC8045- 45kVA 400HZ
- RBC8060- 60kVA 400HZ
- RBC8090- 90kVA 400HZ

### Protection and Safety

- Enclosure Protection class up to Ip55
- No break power transfer compatibility (NBPT)
- Over/under voltage at output
- Overload designed for:
  - Power stage 150% - Continuous
  - Magnetics 120% - Continuous
  - Regulator overload protections set at:
    - 120% for 600 seconds
    - 150% for 60 seconds
    - 200% for 2 seconds
- Variable fan speed for internal temperature control
- Over temperature protection
- Short circuit proof by electric current limiting and shutdown
- 90% switch interlock
- Neutral voltage supervision
- Broken neutral supervision
- Leakage current supervision

### Norms and Standards

- DFS400- Specification for 400Hz aircraft power.
- ISO 6858-1982 - Aircraft - Ground Support electrical supplies -General requirements
- MIL-STD-704F:2004

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- BS 2G 219:1983 - Specification for general requirements for ground support electrical supplies for aircraft
- SAE ARP 5015A:2003 - Ground Equipment - 400 Hertz ground power performance requirements
- IEC 62040-1:2008 - uninterruptible power systems (UPS). Part 1: General and safety equipment for UPS
- IEC 61558-26:2009 - Safety of transformers, reactors, power supply voltages up to 1100V. Part 2-6 - Particular requirements and tests for safety isolating transformers and power supply units incorporating safety isolating transformers
  - IEC61000-6-4:2006 + AMD1:2010 - Electromagnetic compatibility (EMC). Part 6-4. Generic standards. Emission standard for industrial environments.
- IEC 61000-6-2:2016 - Electromagnetic compatibility (EMC). Part 6-2. Generic standards - immunity for industrial environments.

## Specifications

- DFS400 - Specification for 400 Hz aircraft power.
- ISO 6858-1982 - Aircraft - Ground support electrical supplies - General requirements.
- BS 2 G 219:1983 - Specification for general requirements for ground support electrical supplies for aircraft.
- MIL-STD-704F:2004 - Aircraft electric power characteristic.
- SAE ARP 5015A:2003 - Ground Equipment - 400 Hertz ground power performance requirements.
- IEC 62040-1:2008 - Uninterruptible power systems (UPS). Part 1: General safety requirements for UPS.
- IEC 61558-2-6:2009 - Safety of transformers, reactors, power supply units and similar products for supply voltages up to 1100V. Part

2-6: Particular requirements and tests for safety isolating transformers and power supply units incorporating safety isolating transformers.

- IEC 6100-6-4:2006+AMD1:2010 - Electromagnetic compatibility (EMC). Part 6-4: Generic standards - Emission standard for industrial environments.
- IEC 6100-6-2:2016 - Electromagnetic compatibility (EMC) Part 6-2: Generic standards - Immunity for industrial environments.

## Interface and Communications

- Rs232

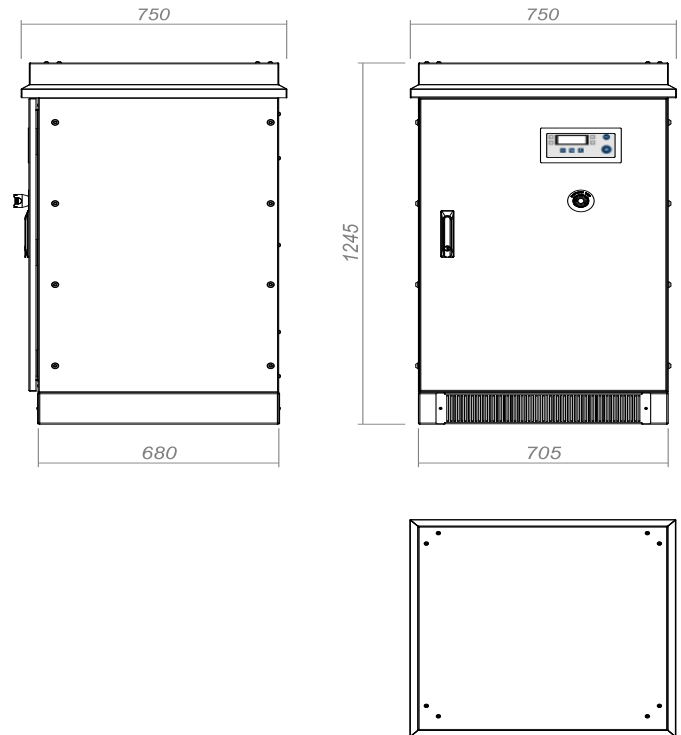
## Miscellaneous

- MTTR: 20 minutes

## Optional Features

### Output

- 28VDC, 600 A output - 2000 A Crank (DC and AC simultaneous output)
- Dual output
- Communications
  - Monitoring by web and SNMP
  - MODBUS Rs485
  - MODBUS TC/IP
  - Remote control box
  - Billing System
- Military Interlock



## Specifications

### Input

3 phase 400V/415V AC.....+15%  
45Hz up to 65 Hz  
Input current harmonics.... <1.5% @ 100%  
load)

### Output

3 phase 200V AC-400Hz.....+1%  
Overall Efficiency.....87%-94%  
Max. Crest Factor.....1.4:1

### Rectifier

4 quadrant operation  
AC Voltage Range.....-25%+10%  
Efficiency.....93%-95%  
Overload Capacity.....150% Continuous  
Inrush Current.....None  
Overall current limit.....120% Continuous

### Inverter

Static Regulation 0-100% load.....+1%  
Dynamic regulation 100%..... 5% recovering to 1%  
within 20ms  
Total harmonic distortion.... <2% (linear load)  
Electronic Limit Overload....120% @ 60s, 150% @ 60s,  
200% @ 2s  
Overload Capacity (IGBTs)....150% Continuous  
Frequency stability.... +0.01% Crystal Controlled  
Load Power Factor....0-1  
Efficiency..... 93-98%  
Short circuit proof by electric current limiting and  
shutdown

### Environmental Conditions

Temperature range  
Sea level.... -40°C to + 55°C (@100% load)  
Above 2000m.....35°C (@100% load)  
Relative Humidity.... 0%-90% without  
condensation  
Noise level.... <65 dBA @ 1 meter  
Altitude..... up to 2500m without de-rating

