



## Uninterruptible Power Supplies

## 3RPQ Range



The 3RPQ Range of Uninterruptible Power Supplies (UPS) supply 60Hz three phase output to ships loads. The UPS consists of a transformer isolated rectifier, battery, an inverter and static switch. The batteries can be supplied either combined with the UPS or as stand alone cabinets

The rectifier in the UPS is supplied by the ship's 440V 3phase 60Hz supply and provides power to supply the inverter and recharge the battery.

In normal operation, the rectifier float charges the battery and supplies the DC input to the inverter. The inverter supplies the output. When the input supply fails the battery supplies the DC input to the inverter that continues to supply the output. When the mains returns the rectifier recharges the battery.

As required for naval applications the UPS is designed to meet the necessary ruggedness in terms of shock, vibration and EMC requirements.

Gresham Power Electronics  
Gresham House, Telford Road  
Salisbury, SP2 7PH, UK  
+44 (0)1722 413060  
[www.greshampower.com](http://www.greshampower.com)  
e-mail: [sales@greshampower.com](mailto:sales@greshampower.com)



## ELECTRICAL CHARACTERISTICS

### Input

440 volts 3 phase 3 wire 60Hz in accordance with STANAG 1008 Edition 8

Input Rated Voltage 440V  
Input Current THD <4%  
Power Factor 0.99  
Inrush Current <Inom

Option: Normal/Emergency input supply with automatic changeover  
Option: Anti condensation heater, 115V or 230V

### Battery

Valve Regulated Sealed Lead Acid type,  
Capacity to suit application  
Typical autonomy: 10min, 30min or 1hr

### Output

440V 3 phase, 60Hz

Waveform	Sinusoidal
THD	<2%
Static voltage regulation	± 1%
Dynamic voltage regulation	± 5%
Frequency stability	± 0.1%.

Option: 415/230/115V 3ph output  
Option: Single phase output

### Load

10, 15, 20, 30, 40, 60kVA

### Options

Input/output isolation transformers  
Earth isolation monitor  
Output distribution  
Auxiliary 24V DC Output  
Individual Battery monitoring  
Alternative output voltages 415V, 230V or 115V

**Efficiency** >90 %

### Protection

Input fused. Output short circuit and over current protection. Over voltage and over temperature trips are also provided to afford general protection to the unit. Battery cut off at the end of discharge, battery overvoltage protection.

### Local Controls and Indications

Supply ON/OFF selector switch, Supply available LED, Rectifier LED  
Battery LED, Inverter LED, Liquid Crystal Display with scroll  
pushbuttons to view the parameters.

Option: Full monitoring of individual batteries

### Remote Indications

RS232 interface gives status/fault information plus the parameter  
values of supply voltage, supply current, Output Voltage, Output  
Current, Battery Voltage, Battery charge/discharge current,  
Temperature, Battery Capacity

## MECHANICAL FEATURES

### Enclosure

Fabricated mild steel folded and welded for strength. Deck mounted  
with top steadies. Lifting eyes are provided.

### Cable Entry

Top/bottom via gland plate.  
User connections are made to internal rail mounted and stud  
terminals. Access for the cables is by a gland plate that can be drilled  
or punched as required for glands.

### Ingress Protection Rating

IP23 suitable for electrical equipment compartment  
IP44 suitable for machinery spaces

### Cooling

The UPS is designed for natural cooling by convection and louvres of  
sufficient size are provided for this purpose. Individual cooling fans for  
power assemblies are provided. Unrestricted airflow should be  
allowed around the unit.

### Maintenance

Front maintenance – Lift off hinged doors for access.

### Internal wiring

Low fire hazard cross linked polyolefin RADOX 125.

### Earth

For safety the chassis of the UPS must be earthed. An external M10  
earth stud is situated adjacent to the gland plate.

## ENVIRONMENTAL CHARACTERISTICS

### Shock

The equipment is designed to meet a shock requirement of a  
maximum vertical acceleration (half sine-wave pulse) of amplitude  
117.7m/s<sup>2</sup> (12g) and of duration 9ms (rise time to peak velocity) and  
24ms (fall time to zero velocity). For installed shock levels in excess  
of this shock mounts should be fitted.

### Vibration

The unit, when 'hard' mounted, is designed to meet shipboard  
vibration. Typically: 5 to 33Hz +/- 0.125mm

### Noise

< 65dbA. @ 1m

### Electromagnetic Compatibility.

The equipment is designed to comply with the requirements of Def  
Stan 59-41. Emissions and susceptibility (Below deck limits)

### Ambient Temperature.

0°C to + 45°C.

### Relative Humidity

10% to 95% non-condensing.

### Ships Motion

The equipment is designed to withstand, without damage or  
degradation of performance or spillage of fluids, ship motion due to  
the action of the sea and weather as well as accelerations and  
velocities deriving from deliberate ship manoeuvres. Typically:

Roll angles	± 30°
Pitch angles	± 10°
Steady list angles	± 15°
Steady trim angles	± 5°



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