

## 60kVA Uninterruptible Power Supply 3RPQ60KA



The 3RPQ60KA Uninterruptible Power Supply (UPS) supplies battery supported, 230V, 60Hz three phase output to ships loads. The UPS consists of a transformer isolated rectifier, battery, inverter and static switch.

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.

The unit is designed for front operation and maintenance and has an ingress protection rating of IP23.

The main power electronic sub-assembly is built onto slides to enable easy withdrawal from the unit for maintenance.

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## ELECTRICAL CHARACTERISTICS

### Input

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

Input kVA	75kVA
Input Power	75kW (Full load/battery recharge)
Input Rated Voltage	440V
Input Rated Current	99A/phase
Power Factor	0.99
Inrush Current	<1500A
Input isolation transformer	

ACH input 230V

### Battery (separate cabinet)

Autonomy time: 60minutes,  
Nominal rated capacity 65Ah.  
Valve Regulated Sealed Lead Acid type,  
Single string of 64 blocks connected in series.  
Nominal voltage 768VDC  
Specified lifetime of 7 to 10yrs at 20degC  
Recommended normal operating temperature range is 20 to 25degC.  
Recharge to 80% from a fully discharged condition within 8 hours.  
Battery Float Voltage Temperature compensation.

### Output

230V, 3 phase, 60Hz, 60kVA, 60kW.

Waveform	Sinusoidal
THD	<3%
Static voltage regulation	± 2%
Dynamic voltage regulation	± 5%
Frequency stability	± 0.1%.

**Wild heat** 10.5kW (worst case)

**Efficiency** >85 %

### Protection

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 available LED, Battery Charge/discharge LEDs, Output On LED, Dual Liquid Crystal Displays with scroll pushbuttons to view the parameters.

### Remote Indications.

RS232/RS485 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.

### Dimensions

UPS Cabinet (O/A)(hxwx d) mm 1660 x 1415 x 935

Battery Cabinet (O/A)(hxwx d) mm

A clearance of at least 100 mm should be allowed around the unit (including base) to allow proper ventilation.

Fixings UPS (mm) 4 holes M16(x2.0). Centres (w) x (d) mm  
2 holes M16(2.0). Centres (w) x (h) mm

### Weight

975kg

### Cable Entry

Top 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

### 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 panels 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.

### Fire Extinguishing

CO<sub>2</sub> injection socket

## ENVIRONMENTAL CHARACTERISTICS

### Vibration

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

### Noise

< 70dbA. @ 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°

### Safety Approvals

Lloyds Register



Internal view (power assembly withdrawn)

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