

Transformer Rectifier Unit

3RC1KB



The Transformer Rectifier Unit type 3RC1KB provides a high quality output of 27.4 volts dc when used for float charging valve regulated lead acid batteries or can be set for 24V for ships 24V systems.

The TRU has an input isolation transformer and a 12 pulse thyristor rectifier configured as two fully controlled bridges combined in parallel by an interphase transformer. This produces a very smooth DC output and eliminates all harmonics below the 11th from the input current waveform. The input current to the equipment is close to sinusoidal with a "traditional" lagging power factor dependent on loading and mains voltage.

It is built into a custom built steel enclosure, 595mm x 497mm x 345mm overall dimensions, which is designed for bulkhead mounting. The enclosure is suitable for direct mounting for shock levels up to 30g, above this suitable shock mounts can be used.

Protection level is to IP23.

Access for maintenance and repair is from the front via a hinged door that opens to the left, it will open to 180° with a minimum maintenance opening requirement of 90°. The door contains panel meters, indicating lamps and the mains ON/OFF switch.

Louvres pressed outwards on the front and sides, with a grill on the bottom of the assembly provide for fan assisted cooling during normal operation, and natural convection when the Anti Condensation Heaters are operating.

ELECTRICAL CHARACTERISTICS

Input

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

Input kVA 1.38 kVA (@ 1kW o/p power)
Input Power 1.28 kW (@ 1kW o/p power)
Input Rated Voltage 440V
Input Rated Current 1.8A/phase (@ 1kW o/p power)
Internal fuses rated at 5A
Power Factor 0.85
Inrush Current <I_{nom}

ACH 115V 50/60Hz

Output

27.4V DC nominal 26-32V adjustment available (internal)
Max Output Current 40A

Voltage Regulation <2%
Voltage Ripple <200mV pk-pk
Voltage transients <10% (90% load step)
Voltage recovery time <100ms (90% load step)
Isolation > 10Mohm

Option: Earth isolation monitor

Load

Output Power: 1kW

Wild heat 175W (@ 1kW o/p power)

Efficiency 85%

Protection

Inputs fused, output current limited, over-voltage trip, over-temperature trip.

Local Controls and Indications.

Supply ON/OFF selector switch
Output Voltmeter
Output Ammeter
Supply available LED
ACH on LED
Output On LED
Fault LED

Remote Indications.

Fault, Output ON, and Alarm remote indication by means of volt free contacts.

Remote Sense

To compensate for output cable voltage drop,

MECHANICAL FEATURES

Enclosure

Fabricated mild steel folded and welded for strength. Bulkhead mounted. Lifting eyes.

Dimensions

570 x 442 x 325 (O/A)(hwxwd) mm

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

Fixings (mm) 4 holes 13.0mm dia. Centres 370(w) x 540(h) mm

Weight 40kg

Cable Entry

Bottom via gland plate. Aperture 70mm x170 mm

Ingress Protection Rating IP23

Cooling

Naturally cooled via louvers. Fan assisted by two speed fans.

Maintenance

Front maintenance - Hinged door for access.

Internal wiring

Low fire hazard cross linked polyolefin RADOX 125.

Earthing

M10 external earth stud.

ENVIRONMENTAL CHARACTERISTICS

Shock

Designed to meet the "minimum ruggedness" requirement of DGS 349, 30g in each of the three orthogonal directions when solidly mounted. For installed shock levels in excess of this shock mounts should be fitted.

Vibration.

Designed to meet the vibration requirements of DGS 350. (5 to 33Hz +/- 0.125mm)

Noise

< 60dbA @1m

Electromagnetic Compatibility.

Designed to meet the requirements of Def Stan 59-41

Ambient Temperature.

0°C to + 45°C.

Relative Humidity

10% to 95% non-condensing.

All PCBs have a conformal coat to protect against the effects of condensation.

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°

