

Static Frequency Converter

3CT40KB



The 3CT40kB Static Frequency Converter (SFC) is designed to supply 3 phase(4wire) 200V, 400Hz to the aircraft loads with low distortion and high stability when connected to the ships' main 440 volt 3 phase 60Hz supply.

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

The SFC consists of a rectifier and an inverter.

The rectifier converts the incoming ac supply to an internal DC voltage. It is a power factor corrected, high frequency PWM IGBT, three phase bridge converter that makes the input current in phase with the supply voltage.

The inverter converts the internal DC voltage to the 400Hz ac output. It is a three phase high frequency PWM IGBT inverter and has an isolation transformer to provide full galvanic isolation between input and output.

ELECTRICAL CHARACTERISTICS

Input

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

Input kVA	48kVA
Input Power	46kW
Input Rated Voltage	440V
Input Rated Current	65A/phase
Power Factor	>0.95
Input current harmonic distortion	7%(typical)
Inrush Current	<Inom

Option: Anti-condensation heater 115V or 230V

Output

200V line/115V/phase, 3 phase, 4wire, 400Hz, 40kVA,40kW
116A/phase continuous, 174A/phase for 5min, 232A/phase for 5s.

Output in accordance with MILSTD-704F

Waveform	Sinusoidal
THD(linear load)	<3%
Static voltage regulation	± 1%
Dynamic voltage regulation	± 6%
Load power factor	0.3lag to 0.3 lead
Crest factor	3:1
Frequency stability	± 0.1%.

Option: Earth isolation monitor

Load

40kVA Continuous, 60kVA for 5minutes, 80kVA for 5seconds

Wild heat 6kW

Efficiency >86%

Protection

Input circuit breaker. Output short circuit and over current protection. Over/under voltage, low DC and over temperature trips are also provided to afford general protection to the unit. Output phase failure protection.

Local Controls and Indications.

Supply ON/OFF selector switch
Output Voltmeter- with phase selector switch
Output Ammeter- with phase selector switch
Supply available LED
Output Available LED
Alarm LED
Fault LED
Mimic with diagnostic display

Remote Indications.

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

MECHANICAL FEATURES

Enclosure

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

Dimensions

(O/A)(h x w x d) 1753 x 800 x 845 mm

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

Fixings

4 holes M12 (x1.75) x 24deep. Centres 640(w) x 600(d) mm
2 holes M12 (x1.75) x 24deep. Centres 600(w) x 1628(h) mm

Weight 635kg

Finish Lt Adm Grey BS381c Shade697:semigloss

Cable Entry

Top via gland plate. Aperture 636mm x 86mm
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 Static Frequency Converter 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 - Hinged door for access.

Internal wiring

Low fire hazard cross linked polyolefin RADOX 125.

Earth

For safety the chassis of the Static Frequency Converters must be earthed. An external M10 (x1.5) 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/s² (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.

All PCBs are conformal coated to protect against 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°