

AIR-COOLED FREQUENCY CONVERTER (ACFC)



Product Description

The ACFC-135/150kW is a family of Power Paragon's ruggedized frequency converters. Derived from the highly successful 288kW model, which is class standard equipment for the DDG-51 Aegis-equipped Destroyers, the robust 135/150kW units produce precise 400Hz power that exceed the most stringent system requirements of MIL-STD-1399 for Type III power.

Manufactured using the same highly-qualified manufacturing processes as its 288kW predecessor, the ACFC guarantees product commonality and supportability, enhanced reliability, and ease of maintenance. The ACFC is designed to survive the most adverse shipboard environments, and is fully qualified for shock, vibration, EMI/EMC, and airborne/structure-borne noise limitations.

- Modular construction design, incorporating state-of-the-art IGBT technology
- Sustained overload capability of 125% for 15 minutes, with a transient overload capability of 187% for two (2) seconds
- Multiple converters, from two (2) to six (6) units, may be operated in parallel for redundancy or increased power requirements
- 135 kW and 150 kW ACFCs are installed and operational on both U.S. and foreign naval platforms, including the USN's LPD-17 "San Antonio" Class, LHD-8 "Wasp" Class, and LHA-6 "America" Class amphibious transport and assault vessels, and are used extensively by the navies of Australia, Spain, and South Korea

FEATURES

- Air-cooled, self contained, self monitoring system
- Redundant cooling fans
- Modular construction
- Self-synchronization for parallel operation
- Built-in diagnostics and event history
- Easy access for test, troubleshooting, and maintenance
- Depot level support provided directly by the manufacturer
- Multiple data bus access protocols for remote monitoring and control
- Interactive touch screen provides the Human-Machine Interface (HMI)



With ratings from 135 to 150 kW, the ACFC is designed to provide power to the most demanding advanced shipboard systems

APPLICATIONS

Central and distributed 400 Hz systems, including:

- Weapons systems
- Fire control systems
- ECM systems
- Sonar systems
- Navigation Systems

OPTIONS

Interactive Touch Screen HMI readouts in customer's preferred language

Adaptable to customer's data bus protocol requirements

Horizontal and Vertical configurations available for flexible installation options

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INPUT POWER

- Voltage/Frequency: 440 VAC, 60 Hz, 3 ph, 3-wire ungrounded Type I (per MIL-STD-1399, Section 300)

ELECTRICAL CHARACTERISTICS

- Nominal output voltage 450 VAC rms, 3-wire, delta, ungrounded Type III (per MIL-STD-1399, Section 300)
- Output current (150 kW): 240A@0.8pf
- Frequency: 400 Hz, $\pm 0.1\%$
- Frequency modulation: $\pm 0.50\%$
- Steady state voltage: 428 VAC to 472 VAC, adjustable
- Voltage unbalance: 1% max
- Voltage modulation: 1% max
- Output voltage recovery with a 200A transient - voltage deviation < 1%
- Transient voltage recovery with 50% load step - < 2.5 ms
- Total Harmonic Distortion: 2%
- Voltage phase difference: 119 to 121 degrees maximum
- Current sharing in parallel operation with like unit - within 5%, both real and reactive
- Automatic self-synchronization for parallel operation (up to 6 like units)
- Efficiency 88% at 50% load, > 90% at 100% load

OUTPUT POWER

- Power rating continuous 150 kW/187 kVA
- Battle load: 187kW / 235kVa for 15 minutes
- Transient Load: 245kW / 350kVa for 2 seconds

ENVIRONMENTAL CHARACTERISTICS

- Ambient operating conditions -Temperature range: 0°C to 50°C, Humidity: 95% at 50 °C

QUALIFICATIONS

EMI	MIL-STD-461D
SHOCK	MIL-STD-901D, Grade A, Type A
VIBRATION	MIL-STD-167, Type I
NOISE	MIL-STD-740B

PHYSICALSICAL CHARACTERISTICS

VERTICAL CONFIGURATION

- Weight 4,500 lbs/2,045 kg
- Dimensions (without shock mounts) 70" (1778 mm) H X 40" (1016 mm) W X 40" (1016 mm) D
- Drip proof enclosure per MIL-STD-108

HORIZONTAL

- Weight 4,900 lbs/2,224 kg
- Dimensions (without shock mounts) 55" (1392 mm) H X 65.75" (1674 mm) W X 32" (812 mm) D
- Drip proof enclosure per MIL-STD-108



Partial interior view showing rectifier and inverter modules



Horizontal Configuration (LPD-17 Class)

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Power Paragon

Appropriate for public release as defined under ITAR 120.10(5). DFOISR 99-S-1293.