

## AIR-COOLED FREQUENCY CONVERTER

The Air-Cooled Frequency Converter (ACFC) comes from a family of L3Harris' ruggedized frequency converters. Derived from the highly successful 288 kW model, which is class standard equipment for DDG-51 Aegis-equipped destroyers, these robust ACFC-110/135/150 kW units produce precise 400 Hz 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 insulated gate bipolar transistor (IGBT) technology
- > Sustained overload capability of 125% for 15 minutes, with a transient overload capability of 187% for two seconds
- > Multiple converters, from two-to-six units, may be operated in parallel for redundancy or increased power requirements
- > 110/135/150 kW ACFCs are installed and operational on both U.S. and international naval platforms, including the U.S. Navy'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)

### APPLICATIONS

Central and distributed 400 Hz systems, including:

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



With ratings from 110/135/150 kW, the ACFC is designed to provide power to the most demanding advanced shipboard 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

## INPUT POWER

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

## OUTPUT POWER

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

## PHYSICAL CHARACTERISTICS

### Vertical Configuration

- > Weight 4,500 lbs/2,045 kg
- > Dimensions (with shock mounts): 70" height x 40" width x 40" depth (1778 mm height x 1016 mm width x 1016 mm depth)
- > Drip-proof enclosure per MIL-STD-108

### Horizontal Configuration

- > Weight 4,900 lbs/2,224 kg
- > Dimensions (without shock mounts): 55" height X 65.75" width X 32" depth (1392 mm height x 1674 mm width x 812 mm depth)
- > Drip-proof enclosure per MIL-STD-108

## 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-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

## ENVIRONMENTAL CHARACTERISTICS

### Ambient Operating Conditions

- > Temperature range: 0°-to-50°C
- > Humidity: 95% at 50 °C



Partial interior view showing rectifier and inverter modules



Horizontal configuration (LPD-17-class)

## QUALIFICATIONS

- > EMI: MIL-STD-461D
- > Shock: MIL-STD-901D, Grade A, Type A
- > Vibration: MIL-STD-167, Type I
- > Noise: MIL-STD-740B

