



ED-M Series™ Frequency / Phase Converter & UPS

Military 3kVA to 5kVA Three-Phase Input Models



ED-M Rackmount Series



Optional Battery Bank

Unique Frequency/Phase Conversion and Power Conditioning Capabilities

Falcon's ED-M Series™ Frequency/Phase Converter with optional UPS capability has been specifically designed for use in harsh mobile military applications. Yet it provides a reliable computer-grade output suitable for powering sensitive equipment.

The ED accepts 115/200Vac or 120/240Vac three-phase power from dirty utility, generator or aircraft sources and cleans it by converting the AC to a regulated DC. This is then fed into a robust PWM continuous-duty inverter. The inverter stage regenerates new, regulated, single-phase, computer-grade power of the desired frequency. Optional battery modules may be connected to supply on-line UPS and battery backup capability.

This double-conversion approach eliminates voltage transients, sags, surges and the frequency stability problems often encountered from ground-based and aircraft generator systems, as well as third-world utility sources.

The ED-M facilitates the connection of single-phase equipment to three-phase sources while maintaining a balanced power draw from the individual phases. This eliminates excessive harmonics, generator overheating and the nuisance tripping of circuit breakers.

Superior output power quality is assured with $\pm 3\%$ voltage regulation and a pure sinewave harmonic distortion of less than 3%. Frequency regulation is maintained at $\pm 1\%$. The output specifications are held over the entire input voltage and frequency range, no load to full load.

COTS Availability and a Rugged, Military Deployment-Ready Design

To accommodate field, mobile and aircraft installations, the ED-M Series has been designed to meet the shock and vibration requirements of RTCA/DO160, Zone A and the Munson Road Test.

Light Weight and Small Size is Ideal for Aircraft, Mobile and Shelter Usage

With a weight of 85 pounds, the ED-M is one-third the weight of other products. Its compact 4U rackmount form factor allows for easy integration into aircraft, ground-based mobile and shelter applications.

Aircraft - The ED-M converts 115/200 Vac, 400Hz three-phase aircraft "Wild Power" to computer-grade 120Vac, 60Hz, single-phase power. It provides an easy solution to powering land-based systems from fixed-wing and rotary aircraft 400Hz power.

Mobile - Originally designed for use with HMMWV three-phase and split-phase output generator systems, the ED-M is ideally suited for mobile implementation and survivability. It has been theater-proven powering communication systems on board the HMMWV. Models are also available for use with generators having a single-phase output.

Shelters - Due to its light weight and small size, the ED is the perfect solution for powering sensitive, computer-based equipment from the small generators typically incorporated into mobile and land-based shelters.

Optional On-line UPS Capability - With the addition of optional 2U height external battery modules, no-break battery backup capability can be added to the ED-M unit. This flexibility provides a reliable source of backup power when local utility or generator power is not available without the extra weight of an additional UPS. It assures that mission-critical equipment being powered by the ED will remain fully functional during mandatory generator down times.

Advanced Features:

- * Military grade design and construction
- * Double-conversion frequency and phase conversion having computer-grade output power
- * Three-phase input with a single-phase sinewave output solves phase balancing problems
- * Converts 45- 450Hz input power to fixed frequency 50, 60 or 400Hz output
- * Wide input voltage range with $\pm 3\%$ output voltage regulation
- * Basic rectifier input greatly increases reliability in harsh power environments
- * Optional battery banks are available to provide battery backup capability

Falcon Electric, Inc.
5116 Azusa Canyon Road
Irwindale, CA 91706
Toll-Free: 800.842.6940
Fax: 626.962.7720
Email: sales@falconups.com
www.falconups.com

ED Series Rackmount Frequency & Phase Converter, UPS

Model Numbers	ED4-3000RM-3/1-4-M ED4-3000RM-3/1-5-M ED4-3000RM-3/1-6-M	ED4-4000RM-3/1-4-M ED4-4000RM-3/1-5-M ED4-4000RM-3/1-6-M	ED4-5000RM-3/1-4-M ED4-5000RM-3/1-5-M ED4-5000RM-3/1-6-M
Nominal VA	3000	4000	5000
Electrical Input			
AC Voltage	115/200Vac or 120/208Vac 3Ø Wye, +/-10%, Four Wire Plus Ground		
Current-Amps (total)	9.6A per phase	12.8A per phase	16A per phase
Frequency Range	47Hz - 450Hz		
Power Factor	>0.9pf @ 2100W to full load		
Electrical Output			
AC Voltage	120 Vac 1Ø, ± 3% Single-Phase		
Frequency	-4 = 400Hz, -5 = 50Hz, -6 = 60Hz (±1Hz)		
Watts	2100	2800	3500
Current-Amps (0.7pf Load)	25	33	42
Non – Linear Repetitive Peak (Amps)	60	80	100
Total Harmonic Distortion	< 3% @ 100% Linear Load, < 5% @ 100% Non-Linear Load		
Overload	120% for 30 Seconds		
Dynamic Response	± 5% RMS for 100% Step Load Change, 1ms Recovery Time		
Output Protection	Short Circuit, Over-temperature and Overload		
Optional Battery			
Battery Type Supported	Valve Regulated Sealed Lead-Acid (VRLA)		
Bus Voltage	61Vdc to 81Vdc		
Battery Charger	4A Internal		
Electrical Connections			
Input	(1) MS3452W24-10P (Located on the front panel)		
Output	(1) MS3452W22-22S (Located on the front panel)		
Optional Battery	(1) MS3102A18-11P (Located on the front panel)		
Environmental			
Operating Temperature	-20°C to +50°C		
Storage Temperature	-20°C to +60°C		
Humidity	10% to 95% Non – Condensing		
Operating Altitude	10,000 Feet		
Cooling	200CFM Fan		
Air Flow	Front to Back		
Audible Noise	60dBA @ 1.5 Meters		
Controls and Indicators			
LEDs	Utility Present, Summary Alarm, Inverter On		
Audible Alarms	Utility Interrupt, Inverter Failure, Overload		
Communications	(2) RS-232 Ports (RX, TX & Gnd. Signal line only, Falcon Protocol) Supports connection of the Falcon external USHA SNMP/HTTP Agent		
Standards Compliance			
MIL-STD-810	F(3) DOD Test Method for Environmental Engineering Considerations and Lab Tests		
ANSI/ESD S20.20	2007, Protection of Electrical and Electronic Parts, Assemblies and Equipment		
IPC-A-610	Acceptability of Electronic Assemblies		
EIA/IPC J-STD-001	Requirements for Soldered Electrical and Electronic Assemblies		
Shock & Vibration	Munson Road Test		
Mechanical			
Converter Dimensions	H x W x D inches (mm)	6.97 x 16.87 x 21.19 (177.1 x 428.5 x 538.3) 4U Rackmount	
Converter Weight	lb. (kg)	85 (38.6)	
Mounting	Rackmount Front Panel & Slide Rail Mounting Holes		

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The information and specifications stated in this document are subject to change without notice. MD44053 Rev. NR 03-21-2012



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www.falconups.com - email: sales@falconups.com