



# ED-LIB Series™ COTS Military-Grade 3-5kVA UPS with Lithium-Polymer Battery System



## Unique UPS, Frequency/Phase Conversion and Power Conditioning Capabilities

Falcon® Electric's ED-LIB Series UPS, Frequency/ Phase Converter and Regenerative Power Source has been designed to tame harsh field power. It provides reliable computer-grade power suitable for power-sensitive equipment.

The ED converts incoming three-phase utility or generator power to DC which is regulated and fed into a robust PWM MOSFET inverter. The inverter stage then regenerates a new regulated, single-phase computer-grade power of the desired frequency.

This approach removes 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.

Additionally, the ED-LIB allows for the connection of single-phase equipment to a three-phase source while maintaining a balanced power draw from all three phases. This helps eliminate excessive harmonics and nuisance tripping of circuit breakers due to phase imbalances on the three-phase source.

Superior output power quality is assured with  $\pm 3\%$  voltage regulation and a 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, from no load to full load.

## Lithium-Polymer Battery Weighs Only 55 lbs. and Offers Optimal Backup Time

Falcon's ED-LIB Series features the lightest battery bank available and is ideal for a wide range of military applications. At only 55 lbs., the high-capacity lithium-polymer battery module offers 15 minutes of battery backup at 2800 watts! Plus, its compact 2U rackmount enclosure allows for easy system integration.

## Advanced Battery Management

The ED-LIB UPS has been specifically designed to operate with the Falcon high-capacity lithium-polymer battery module. The module incorporates the lithium-polymer batteries, Advanced Battery Management System (ABMS) and the charger into a 2U rackmount cabinet weighing only 55 pounds.

The ABMS monitors every individual cell continuously. It provides full cell equalization, cell and output level overload protection.

The internal EDBR5000-3/1/-LI-SEC battery charger is an advanced design with an input that accepts 115/200Vac, 47-450Hz three-phase or 115Vac, 120Vac, 47-450Hz single-phase power.

## DOT and UN Certifications

The ED-LIB Series has received both DOT Title 49 CFR and UN ST4/SG/AC.10/11 certifications to allow for safe ground transportation of lithium-polymer batteries. The ED-LIB is designed to meet the shock and vibration requirements of the Munson Road Test.

To discuss your specific application, please contact Falcon Military Sales.

## Advanced Features:

- \* True Double-Conversion On-line Sinewave Design
- \* UPS/Converter Weighs Only 74 Pounds in a 4U Rack
- \* Wide 115/200Vac, 47-450Hz Three-Phase Input Voltage Window
- \* Precision Single-Phase 120Vac, 50, 60 or 400Hz Output Voltage Regulation
- \* Superior Brownout, Surge & Transient Protection
- \* 2U Rackmount Lithium Battery Bank Weighs 55 Pounds!
- \* Lithium Battery Bank Incorporates Advanced Battery Management and Charger
- \* High-Capacity Lithium Battery System has DOT & UN Certifications
- \* Optional VRLA Battery Packs Available
- \* High Temperature  $+50^{\circ}\text{C}$  Operation for Harsh Environments
- \* Exceptionally Rugged Construction; Meets Munson Road Test Demands

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# ED-LIB Series™ UPS

# 3kVA - 5kVA

## ED Series Rackmount UPS, Frequency & Phase Converter 47Hz - 450Hz Three-Phase Input

Model Number	ED4-3000RM-3/1-60-LIB	ED4-4000RM-3/1-60-LIB	ED4-5000RM-3/1-60-LIB
Nominal VA	3000	4000	5000
<b>Electrical Input</b>			
Nominal AC Voltage , +10% -10%	115/200 Vac or 120/208 Vac 3Ø (without modification)		
Current Amps	9.6A per Phase	12.8A per Phase	16A per Phase
Frequency Range	47Hz - 450Hz		
Power Factor Correction	>0.90pf		
<b>Electrical Output</b>			
Watts	2100	2800	3500
AC Voltage	120Vac 1Ø, ± 3%		
Frequency (set at the factory)	50Hz or 60Hz ±1Hz, 400Hz ±4Hz		
Current Amps	25A with 0.7pf Load 17.5A with 1.0pf Load	33.4A with 0.7pf Load 23.4A with 1.0pf Load	41.7A with 0.7pf Load 29A with 1.0pf Load
Non – Linear Repetitive Peak (Amps)	60	80	100
Total Harmonic Distortion	< 3% @ 100% Linear Load, < 5% @ 100% Non-Linear Load		
Overload	110% for 100 Seconds		
Dynamic Response	± 5% RMS for 100% Step Load Change, 1ms Recovery Time		
Output Protection	Short Circuit and Overload		
<b>Battery</b>			
DC Bus Voltage	72Vdc		
Back Up Time @Full Load	28 minutes	15 minutes	5 minutes
Battery Charger	Located inside the EDBR5000-3/1-Li Battery Bank		
<b>Electrical Connections</b>			
Input	(1) MS3452W24-10P (Located on the front panel)		
Output	(1) MS3452W22-22S (Located on the front panel)		
External LI Battery System	(1) MS3102A18-11P (Located on the front panel)		
<b>Environmental</b>			
Temperature	Operational Storage	-10°C to +50°C -40°C to +60°C	
Humidity	10% to 95% Non – Condensing		
Altitude	10,000 Feet (3000 meters) without derating		
Cooling	200cfm Fan		
Air Flow	Front to Rear		
Audible Noise	60dBA @ 1.5 Meters		
<b>Controls &amp; Indicators</b>			
Sequenced LEDs	Load Level / Battery Level		
Single LEDs	Utility Present, Summary Alarm, Inverter On		
Audible Alarm	Utility Interrupt, Inverter Failure, Overload		
Communications	Dry Contact Closures on Utility Loss via 9 Pin "D" Connector		
<b>Mechanical</b>			
Dimensions	inches H x W x D (mm)	6.97 x 16.87 x 21.19 (177.1 x 428.5 x 538.3)	
Chassis	4U Rackmount		
Weight	lbs. (kg)	74 (33.6)	
Mounting	Rackmount Front Panel & Slide Rail Mounting Holes		

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# ED-LIB Series™ Lithium Battery System 3kVA - 5kVA

Model Number	EDBR5000-3/1-LI-SEC	
Description	Lithium-Polymer Battery System with Advanced Battery Management and Internal Charger	
<b>Charger Electrical</b>		
Nominal AC Voltage , +10% -10%	115/200 Vac or 120/208 Vac, Three-Phase Wye or 120Vac Single-Phase	
Current Amps	3A	
Frequency Range	47Hz - 450Hz	
Power Factor Correction	>0.95pf	
Output Voltage	72Vdc Nominal	
Battery Recharge Time	8 Hours or Less	
Output & Charge Controlled by	Microprocessor Based, Advanced Battery Management Board	
Missing or Improper Phase Indication	Red Indicator Light on Front Panel	
<b>Battery Information</b>		
Type	Lithium Polymer	
Cell Voltage	3.75Vdc	
Cell Rating	5AH	
Number of cells	80 Cells	
<b>Advanced Battery Management</b>		
Battery Charging	Charge Voltage Control, Cell Voltage Equalization	
Battery Output Protection	Over-current, Short Circuit, Over-Discharge, Over-Charge and Over-Temperature	
Battery Level Status	Four Segment LED Gas Gauge (green LEDs)	
Features	Cell Monitoring and Equalization, Two-Tier Over Current Protection, High Level of Programmability and Accurate Battery State of Charge	
Firmware Updates	Must be Performed by the Factory	
<b>Electrical Connections</b>		
Charger Input	MS3452W24-10PW	
UPS Output	MS3102A18-11S	
<b>Environmental</b>		
Temperature	Operational Storage	-10°C to +50° C -40°C to +60°C
Humidity	10% to 95% Non – Condensing	
Altitude	10,000 Feet (3000 meters) without derating	
Cooling	Two Low Velocity Cooling Fans	
Air Flow	Front to Rear	
Audible Noise	55dBA @ 1.5 Meters	
Vibration	Meets requirements of MIL-STD-810F, Method 514.5	
<b>Mechanical</b>		
Dimensions	inches H x W x D (mm)	3.47" x 22.19" x 16.87" (88 x 56.3 x 42.8)
Chassis	2U Rackmount	
Weight	lbs. (kg)	55 (25)
Mounting	Provisioned for the Installation of Rackmount Equipment Slides	
<b>Approvals</b>		
Transportation	DOT Title 49CFR & UN ST/SG/AC.10/11	
Air Shipments	Cargo Aircraft Only	
Shipping Instructions	Must contact Falcon Electric prior to shipment	

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