

# HARSH ENVIRONMENT BATTERY BACKUP SYSTEM FOR INDOOR AND OUTDOOR APPLICATIONS

STADIUM, GYMNASIUM, AMPHITHEATER, CONVENTION CENTER, PARKING STRUCTURE, EMERGENCY AND SECURITY LIGHTS, TELECOMMUNICATION MILITARY, INLAND NON-CONTROL ENVIRONMENT, OCEAN FRONT BATTERY BACKUP SYSTEM, DUSTY AND UNCONTROLLED ENVIRONMENTS



## HE MODEL (2.1-17 kW)

### Emergency Lighting Approved

UL 924 with 90 minutes of VRLA batteries to power emergency lighting circuits.

### State of Art Technology

High Frequency PWM double conversion use Digital Signal Processing for control, measurement to protect the load. The Harsh Environment UPS is always on-line, eliminating noise, spikes, sags, and brownouts. Should utility power fail, the inverter provides uninterrupted output power to the critical load. This high frequency unit is listed to UL1778 and UL924 by CSA.

### Display (local and remote)

The Harsh Environment UPS provides one of the most comprehensive monitoring packages. Its 4 line X 20 character backlit LCD panel continuously display and monitor vital power line conditions and status of the unit.

### Global Monitoring System (GMS)

The Harsh Environment UPS can communicate with computers, and serial devices via its local RS232/RS485 ports standard on every model making HEUPS compatible with today's most popular devices. Optional dry contacts are also available for remote monitoring and annunciation. GMS options includes dial-up modem, fax, alpha pager, beeper, email, and internet web page for monitoring or retrieving event logs and system status information.

### Alarms

The Harsh Environment UPS offers local alarm and optional remote display with sound alert (including unit status). It also offers most extensive method of remote alarm notification via pager, email, fax, voice annunciation and website. The system can advise multiple recipients.

### Small Footprint Cabinet

The Harsh Environment UPS requires less floor-space than most other UPS systems and Stackable Cabinet Rack are available as an option for more space savings. Its compact, lightweight design saves overall space, facilitates handling, and keeps shipping costs to a minimum.

### Input Power Factor Correction

The Harsh Environment UPS pays for itself by correcting input current draw to reduce your utility bill without compromising power quality.

### Isolation, Including Output Neutral To Ground Bonding

The Harsh Environment UPS provides the galvanic electrical isolation required by FIPS PUB 94 (Federal Information Processing Standard) and it qualifies as a true, separately derived power source as defined by the National Electrical Code, Article 250-5d. This isolation allows the HEUPS to offer excellent RF noise filtering and single point grounding for sensitive electronic equipment (standard on all models with different input/output voltages).

### Distribution (optional)

Normally On and OFF Output breakers are available with optional trip alarm as well as customer selectable time delay.

### Safeguard™ Battery Management System

OnLine Power has designed (patent pending) a process for the real time ability to charge and monitor the battery system. This system utilizes a microprocessor technology to monitor the batteries critical levels and apply charging cycles in a method substantially increasing battery life.

3R Indoor and Outdoor Standard painted Steel cabinet, Stainless Steel and Zinc Anodized Aluminum cabinet option



Listed to  
UL1778 and UL924 by CSA

Built-in Input Power Factor Correction

Modular Assembly for Ease of Installation

LCD Panel for Monitoring

Global Monitoring System (GMS)

94% Efficiency (typ.)

Pulse Width Modulated (PWM)

Generator Compatible with Automatic Governor max 2Hz per second

Transformerless Technology (Same Input/Output voltage only)

Double Conversion Technology

Battery Exerciser

Small Foot Print Cabinet and Certified Zone 4 Seismic Bracket

1 Year Warranty

# HARSH ENVIRONMENT UPS

## SPECIFICATIONS

<b>Power Rating:</b>	2.1, 3, 3.5, 5, 5.25, 6, 7, 7.5, 8.75, 10, 10.5, 12.5, 14, 15, 17 KW
<b>Input Voltage:</b>	2.1 - 5, 6, 8 KW: 120, 208, 240, 277, or 480 VAC (-20% to +15%) 5.25, 7, 7.5, 8.75 - 17 KW: 208, 240, 277, or 480 VAC (-15% to +15%)
<b>Input Frequency:</b>	Slew rate of 2Hz/sec
<b>Output Voltages:</b>	120, 208, 240, or 277VAC
<b>Output Freq. (Inverter Operation):</b>	60 Hz $\pm$ 0.5 Hz
<b>Voltage Regulation:</b>	$\pm$ 3%
<b>Output Wave Form:</b>	Sine-Wave
<b>Optional Input Protection:</b>	Input circuit breaker provided protection to the unit, load and personnel. Input Circuit Breaker will be higher interruption rated (10, 42, and 65 KAIC)
<b>Optional Output Protection:</b>	Internal Electronic overload protection. Circuit breaker provides inherent over-load protection. Factory selectable voltage 120, 208, 240, or 277 for input or output voltages.
<b>Output Power Factor:</b>	1.0 unity
<b>Efficiency:</b>	94% typical
<b>Isolation:</b>	Complete from line. Output neutral bonded to ground
<b>Noise Isolation:</b>	-120 dB Common-Mode; -60 dB Transverse-Mode
<b>Battery:</b>	Sealed maintenance-free (AGM) battery (optional Long Life Battery)
<b>Recharge Time:</b>	Conforms to UL Standard
<b>External Battery:</b>	Provisions for hardwire connection of optional external battery cabinets or DC source.
<b>Environmental:</b>	
	<b>Humidity:</b> 0 - 95% RH w/ no condensation
	<b>Operating Temperature:</b> UPS: -40° to 58°C. (-40° to 136°F) Battery: 20° to 25°C. (68° to 77°F)
	<b>Storage Temperature:</b> -40° to 60°C. (-40° to 140°F) electronics only.
	<b>Altitude:</b> -1000 to +13,000 ft
<b>Safety Agencies:</b>	Listed to ULI778, and UL924 by CSA
<b>Cabinet Size:</b>	Standard: 39"W x 74.5"H x 20"D Optional: 51"W x 77.5"H x 33.5"D

KW	Model Numbers	Input	Output	BTUs/HR	WEIGHT (lbs)	Cabinet Size W x H x D standard battery
2.1	HE3.0A0100N1-VA	120, 208, 240, 277	120, 208, 240, 277	1137	967	39" x 73.5" x 20"
3	HE3.0A0100N1			2047	1433	
3.5	HE5.0A0100N1-VA			2047	1314	
5	HE5.0R2500N1			3033	2047	
6	HE6.0R2500N1			2630	2150	
8	HE8.0R2500N1			3278	2150	
5.25	HE7.5R2500N1-VA	120, 208, 240, 277, 480	120, 208, 240, 277, 480	3033	2150	51" x 77.5" x 33.5"
7	HE010R2500N1-VA			3594	2866	
7.5	HE7.5R2500N1			3594	3070	
8.75	HE012R2500N1-VA			3594	3070	
10	HE010R2500N1			3594	4094	
10.5	HE015R2500N1-VA			4194	4299	
12.5	HE012R2500N1			4194	5118	
14	HE020R2500N1-VA			7188	5732	
15	HE015R2500N1			4194	6141	
17	HE017R2500N1			4194	6141	

Normally On and Normally Off Circuits are available at an additional cost. Please consult factory.

Specifications are subject to change without prior notification.

## STANDARD FEATURES

- Back-lit LCD Display for monitoring
- RS 232 & RS 485 ports for metering, measuring, and diagnostic.
- System pre-wired for optional Global Monitoring System (GMS)
- Battery Breaker
- Inverter Test Switch
- Generator Compatible with Automatic Governor (Slew Rate 2Hz/sec.)
- High Frequency PWM with Digital Signal Processing Technology
- Built-in Input Power Factor Correction

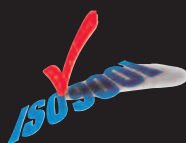
## OPTIONS

- Extended Warranty and Service Plans
- Lifting Ear NEMA 3R and NEMA 4
- Monitoring via RS232 and RS485
- Duplex 120V Receptacle for Service
- Make before break Maintenance Bypass Switch and Electronic Maintenance Bypass Switch
- External Maintenance Bypass Switch (wrap around type)
- Main Input and/or Output Circuit Breaker (with custom KAIC)
- TVSS
- Secondary Auxiliary Output Circuit Breakers (Main or max. 24 total)
- Spare Part Kits Available
- Runtime Up to 13 Hours
- High Isolation Transformer with Harmonic Reduction (up to K-50)
- Heater Strip with Thermostat Control
- Heating Pad Assy for Battery System
- Seismic Mounting Brackets
- (5) Form "C" Contacts Alarms
- Output Distribution Limit
- Long Life Battery
- Stainless Steel, Zinc Anodized Aluminum Cabinets
- **Global Monitoring System LOCAL**
  - Local PC via RS232 and RS485
  - Event logging up to 500

## REMOTE

- **Dial-up**
  - Voice (10 event logging), numeric pager
  - Voice, data, fax, pager, PC, e-mail, event logging up to 500
  - Voice, data, fax, pager, PC, e-mail, and measurement (500 event logging plus graphic)
- **Web/SNMP:**
  - System status, measurement, alarm notification, event logging and password protected configuration.

Consult Factory for more features and options



# MINI HARSH ENVIRONMENT SYSTEM FOR INDOOR AND OUTDOOR APPLICATIONS

STADIUM, GYMNASIUM, AMPHITHEATER, CONVENTION CENTER, PARKING STRUCTURE, EMERGENCY AND SECURITY LIGHTS, TELECOMMUNICATION, MILITARY, INLAND NON-CONTROL ENVIRONMENT, OCEAN FRONT BATTERY BACKUP SYSTEM, DUSTY AND UNCONTROLLED ENVIRONMENTS



## MINI HE MODELS (100-1600 W)

- **UL1778 and CAN/CSA C22.2 No107.1-95**
- **Tested and Certified to Bellcore**
- **Operation Temp. (-40 to 58°C.)**
- **Provide power conditioning and transient filtering**
- **Uninterrupted,  $\pm 0.5\%$  voltage regulated, continuous sinewave out for use with “normally on” lighting fixtures and exit lamps**
- **Shock and Vibration:** GR-63-CORE ISSUE 1 section 4.3
- **Vibration and Earthquake:** GR-63-CORE ISSUE 1 section 4.4
- **Salt and Fog:** Per GR-487-core R3-165
- **TVSS (Transient Voltage Surge Suppression)**
  - AC power connections to the battery backup systems are protected from lightning and electrical surges in accordance with ANSI C62.41-1991 category C3 and UL1449 second edition.
  - Grounding is in accordance with Article 250 of the National Electrical Code (ANSI/ NFPA70), and Section 10 of the Canadian Electrical Code Part I (CSA C22.1-94).
- **Electromagnetic Compatibility (EMC):** FCC Part 15 Subpart J-Class B, Bellcore TA 1089, EN 55022 (1991)/CISPR 22 Class A
- **Reliability**
  - The predicted Mean Time Between Failures (MTBF) of unit is exceeding 86,000 hours at full power output.
  - The products all comply with the requirements of Bellcore document TY-TSY-000357, Issue 1, December 1987, “Component Reliability Assurance Requirements for Telecommunications Equipment”.
- **ESD:** Meets all ESD requirements specified in Bellcore GR-1089-CORE, Issue 1A, July 1996.
- **Cabinet:** The Unit is designed and tested to the NEMA 12 environmental standard. The enclosures are designed for indoor unconditioned or outdoor unprotected use compliant with applicable sections of Bellcore GR-487-CORE, Issue 1, October, 1995.
  - Bellcore Rain intrusion test performed in addition to UL 50 tests.



**NEMA 4**  
for Outdoor  
Standard  
painted Steel  
cabinet,  
Stainless option

**NEMA 3R**  
for Indoor  
Standard painted  
Steel cabinet,  
Stainless option



**NEMA 4 totally enclosed**  
Standard painted  
Aluminum



# MINI HARSH ENVIRONMENT SPECIFICATIONS

## INPUT SPECIFICATIONS

**Nominal Input Voltage:** 120, 220, 240, or 277 VAC single phase  
**Input Voltage Range:** -20% to +15%  
**Input Frequency:** 60 or 50 Hz,  $\pm 5\%$   
**Overcurrent Protection:** Circuit breaker  
**Power Connection:** Hard wired (TB)  
**Input Configuration:** 2 wire plus ground

## ENVIRONMENT

**Operating Temperature:** -40°C to +58°C  
**Storage & Transport Temp.:** -40°C to +60°C  
**Operating Relative Humidity:** 0 to 100%  
**Solar Loading:**  $Q_s = 70 \text{ W/ft}^2$   
**Operating Altitude:** -1000 to +13,000 feet, referenced to sea level.  
 Temperature Compensated Battery Charger

## OUTPUT SPECIFICATIONS


**Output Voltage:** Same voltage as Input or Multiple Output 120/240, 120/208 or 120/277 VAC  
**Voltage Regulation:**  $\pm 3\%$  (HE),  $\pm 0.5\%$  (LU)  
**Frequency:** 60 Hz  $\pm 0.5$  Hz, or 50 Hz  $\pm 5\%$   
**Harmonic Distortion:**  $< 5\%$  THD;  $< 3\%$  Single Harmonic  
**Crest Factor:** 3 to 1  
**Power Factor:** 0.7 leading load to 1.0 P.F.  
**Noise Rejection:** -120 dB common mode; -60 dB normal mode  
**Battery Back-up Times:** Range from 2 min to 13 hrs. Consult Factory for longer backup time.



## PHYSICAL SPECIFICATIONS

**Mounting:** Pad Mount, Pole Mount Provision  
**Accessibility:** All servicing is through the front; no side or back required, and Cable Entry from Bottom or Side (Nema 3R or 4 Cabinets)

## OPTIONS

- Pole Mounting Provision
- Battery Heating Pad
- Extended Warranty and Service Plans
- Lifting Eyes NEMA 3R and 4
- Monitoring via RS232 and RS485
- Duplex 120V Receptacle for Service
- Make before break Maintenance Bypass Switch for HE & LU1.6, and Electronic Maintenance Bypass Switch for all others
- TVSS for 208/240 and 277V
- Secondary Auxiliary Output Circuit Breakers
  - LU0.4XXX, LU0.7XXX, LU1.5XXX models: Main or max. 4 total
  - LU1.6XXX model: Main or max. 9 total
- Spare Part Kits Available
- Door Intrusion Alarm Contacts
- Certified Zone 4 Seismic Bracket

NEMA 3R Cabinet	Model No	Max. Watts	**Backup time Range	**Qty. Battery	Cabinet Size
	LU0.4XXX	100	30min - 4hrs	(4) 12V 48 VDC	19.5" Wide 23" High 21" Deep
		200	30min - 2hrs		
		400	30min - 4hrs		
	LU1.5XXX	500	30min - 3hrs	(6) 12V 72 VDC	
		600	30min - 3hrs		
		700	30min - 2hrs		
		1000	15 - 60 min		
		1300	15 - 60 min		
		1400	15 - 30 min		

*NEMA 4 Cabinets	Model No	Max. Watts	**Backup time Range	**Qty. Battery	Cabinet Size
	LU0.7XXX	100	30min - 11hrs	(6) 12V 72 VDC	19.5" Wide 23" High 21" Deep
		200	30min - 9hrs		
		400	30min - 4hrs		
		500	30min - 3hrs		
		600	30min - 2hrs		
		700	30min - 2hrs		
	LU1.6XXX	500	30min - 10hrs	(8) 12V 96 VDC	33" Wide 42" High 17" Deep
		700	30min - 8hrs		
		800	30min - 7hrs		
		1000	30min - 6hrs		
		1300	30min - 4.5hrs		
		1400	30min - 4hrs		

\* 4 cabinet can be used for 3R cabinet.

\*\* Internal batteries. Longer backup times available with external battery cabinets.

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