

The Sonoran 3 is a three phase, on-line, double conversion, solid state inverter system utilizing patented ECM technology. The system consists of a solid-state inverter; a temperature compensated rectifier/battery charger, a continuous duty static switch, an internal maintenance bypass switch, battery plant, status/control panel, and synchronizing circuitry. The Sonoran 3 shall function in conjunction with the existing building electrical system to provide high quality power conditioning, back-up power protection and distribution for lighting loads and other critical loads. The enclosure is a Nema 4 (outdoor) or Nema 12 (indoor) rain/weatherproof enclosure designed for harsh environmental conditions. This unit is economical for the lowest overall cost for your light safety with Energy Star Rating.

Model: \_\_\_\_\_ Date: \_\_\_\_\_  
 Accessories: \_\_\_\_\_  
 Job Name: \_\_\_\_\_ Type: \_\_\_\_\_

- Standard Power Level:** 3.0, 4.5, 6.0, 8.0, 10.0, 12.0, 16.0, 20.0, 24.0, 30.0, 40.0, 60.0, 80.0, 100.0 and 125.0KW
- Input Voltage:** 208Y/120, 480Y/277, 208 or 480 VAC
- Input Voltage Range:** +10% -15%
- Output Voltage:** 208Y/120, or 480Y/277 VAC
- Output Voltage Regulation:** ±3% for all loads and battery discharge mode
- Output Frequency Range:** 60 Hz, ±1%
- Output Wave Form:** Sine-wave <5% @ 100% linear load
- Crest Factor:** 2.5:1 typical
- Input Protection:** Input Main Circuit Breaker
- Output Protection:** Output Main Circuit Breaker
- Surge Protection:** The unit will protect itself and the load against surges defined in ANSI/IEEE C62.45 category A/B
- Battery:** Sealed maintenance-free (AGM) lead calcium
- Recharge Current:** Conforms to UL924 standards
- External Battery:** Provision for hardware connection of external battery cabinets or DC source
- Efficiency:** ≥92% at 100% linear load
- Audible Noise:** <45dBA
- Listing:** ETL listed to UL 924 and 1778  
cETL listed to CSA-22.2 No. 107.3 and No. 141
- Operating Temperature:** -20°C to 50°C (-4°F to 122°F)
- Storage Temperature:** -30°C to 60°C (-22°F to 140°F)
- Humidity:** 5 - 100%, Non-condensing
- Cabinet:** NEMA 4X or 12
- Compliance:** Assembled in the USA with global components.  
American Recovery and Reinvestment Act (ARRA) compliant.



**ORDERING INFORMATION** Example: SON3-8-208-208Y/120-RP-90

Series	Power Rating	Input Voltage <sup>1</sup>	Output Voltage <sup>1</sup>	Options	Run Time <sup>4</sup>
SON3	3 = 3.0KW	208Y/120	208Y/120	ECM120/# <sup>2</sup> = 120V Environmental Control Module / Qty	5 = 5 Min
	4.5 = 4.5KW	480Y/120	480Y/277	ECM277/# <sup>2</sup> = 277V Environmental Control Module / Qty	10 = 10 Min
	6 = 6.0KW	208		NOF/V/# = Normally OFF Output Circuit / Voltage / Qty	15 = 15 Min
	8 = 8.0KW	480		NOH/V/# = Normally OFF "Hold ON" / Voltage / Qty	20 = 20 Min
	10 = 10.0KW			OCB/V/#/A = Output Circuit Breakers / Voltage / Qty / Amps	25 = 25 Min
	12 = 12.0KW			EPO = Emergency Power Off	30 = 30 Min
	16 = 16.0KW			RP = Remote Indicator Panel	45 = 45 Min
	20 = 20.0KW			SNMP = SNMP Card	60 = 60 Min
	24 = 24.0KW			FCON = Form C Contacts	90 = 90 Min (Std)
	30 = 30.0KW			SRB = Seismic Rated Bracket	120 = 120 Min
	40 = 40.0KW			OST <sup>3</sup> = Onsite Start-Up	180 = 180 Min
	60 = 60.0KW			IDB = Internal Dimmer Bypass	240 = 240 Min
	80 = 80.0KW			EMB = External Maintenance Bypass Switch	
	100 = 100.0KW			EW = Extended Warranty	
125 = 125.0KW					

**Notes**

<sup>1</sup> Consult factory for other voltages, may effect weight, size and number of cabinets

<sup>2</sup> One ECM is used per switching device or circuit

<sup>3</sup> Includes one additional year of warranty on unit

<sup>4</sup> Consult factory for other run times

Series	Power Rating (KVA/KW)	Voltage (VAC)		UPS Cabinet Dimensions			Battery Cabinet Dimensions			Combined Weight (LBS)	BTU	Battery Type	Output Protection	Safety Approval
		Select Input	Select Output	W	H	D	W	H	D					
Sonoran 3 Three Phase On-line Inverter	3	208Y/120 480Y/277 208 480	208Y/120 480Y/277	58"	72.8"	36"	Not Required			1730	816	Sealed, maintenance free (AGM) lead calcium	Input and output circuit breakers standard	UL924 UL1778 NFPA101 NFPA70 NEC
	4.5			58"	72.8"	36"	Not Required			1850	1225			
	6			58"	72.8"	36"	Not Required			2100	1632			
	8			58"	72.8"	36"	Not Required			2450	2176			
	10			58"	72.8"	36"	Not Required			3000	2720			
	12			58"	72.8"	36"	58"	72.8"	36"	3450	3264			
	16			58"	72.8"	36"	58"	72.8"	36"	3700	4352			
	20			58"	72.8"	36"	58"	72.8"	36"	4550	5440			
	24			Consult Factory						6528				
	30			Consult Factory						8160				
	40			Consult Factory						10880				
	60			Consult Factory						16320				
	80			Consult Factory						21760				
	100			Consult Factory						27200				
125	Consult Factory						34000							

## POWER RATING

3,000 - 125,000 watt, three phase output unit uses the latest technology to provide the most advanced performance and reliability features

## INPUT

208Y/120, 480Y/277, 208 or 480 VAC

### AC Input Characteristics

- Input Frequency: 60 Hz
- Power walk-in: 0 to 100% over a 10-second period.
- Magnetizing Inrush Current: Less than nominal input current for less than one cycle
- Input Surge Protection: The Sonoran 3 is equipped with standard input filter assembly will withstand surges per IEEE 587-1980/ANSI C62.41

## OUTPUT

208Y/120 or 480Y/277 VAC

### AC Output Characteristics

- True "on-line" design is  $\geq 92\%$  efficient at 100% linear load
- Voltage Regulation: + 3% for no-load to full load and full 90 minute battery discharge mode
- Frequency: 60 Hz (+ 0.1Hz when free running).
- Voltage Distortion: Maximum 5% total (THD) @ 100% linear loads
- Voltage Transient (Step Load) Response:
  - $\pm 5\%$  for 50% step load change
  - $\pm 8\%$  for 100% step load change
  - $\pm 3\%$  for loss or return of AC input power or manual transfer at full load
- Voltage Recovery Time: Return to within 3% of nominal value within 50 milliseconds
- Phase Angle Displacement:  $120^\circ \pm 1^\circ$  for balanced loads;  $120^\circ \pm 3^\circ$  for 50% unbalanced load
- Non-Linear Load Capability: Output voltage total harmonic distortion shall be less than 8% when connected to a 100% non-linear load with a crest factor not to exceed 2.5%
- Slew Rate: 1 Hz/second maximum
- Power Factor: Unity power factor
- Inverter Overload Capability:
  - 125% of rated load for 1 minute
  - 145% of rated load for 10 seconds
- Bypass Overload Capability: > 200% for one cycle; > 150% for 30 seconds

## BATTERIES

The Sonoran 3 unit uses a valve regulated sealed lead calcium heavy-duty industrial battery, designed for auxiliary power service. The primary battery is furnished with an impact resistant plastic case and housed in a matching battery cabinet(s). (Systems up to 10KW are self-contained).

- Protection against Deep Discharge and Self-Discharge: The Sonoran 3 is equipped with a device designed to protect the battery against deep discharge depending on discharge conditions, with isolation of the battery by a circuit breaker. In particular, a monitoring device to adjust the battery shutdown voltage as a function of a discharge coefficient to avoid excessive discharge.
- Battery Self-Test: The battery monitoring system performs the following automatic functions:
  - Battery circuit check
  - Partial discharge test customer selectable
- Sealed, maintenance-free, lead calcium (AGM) batteries
- 10 year prorated warranty
- Guardian Smart Battery Monitoring System is TEMPERATURE COMPENSATED maintaining maximum runtime and battery life
- Microprocessor controlled recharge and overcharge protection is standard

## LAMPS AND LOADS

- Emergency power provides FULL LIGHT OUTPUT from all lamps and fixtures for the entire runtime
- Standard or LED Exits and other safety equipment
- Standard or electronic ballasts, dimming devices or panels, sensors and most control equipment
- Operates fluorescent, compact fluorescent, incandescent, quartz, LED and other lamp types

## PROTECTION

- Provides overload, surge and undercurrent protection using the latest technology and Guardian Diagnostics to protect system performance and reliability
- Surge protection against load surges as defined in ANSI/IEEE C62.45 category A and B

## CODES

- City of Chicago and New York approved
- Complies with the Buy American Act (Level 3)
- The Sonoran 3 shall meet the requirements of the following standards:
  - IEEE 587-1980/ANSI C62.41 1980 Standards for Surge Withstand Ability
  - FCC rules and regulations of Part 15, Subpart J, Class A
  - Meets UL 1778, UL 924, Standards for Lighting Inverter Equipment
  - NEMA PE 1 (National Electrical Manufacturers Association) - Lighting Inverter Systems
  - NEMA 250 (National Electrical Manufacturers Association) - Enclosures for Electrical Equipment (1000 Volts Maximum)
  - NFPA 70 - National Electrical Code
  - ISO 9001
  - Occupational Safety & Health Administration (OSHA)

## DIAGNOSTICS, MAINTENANCE AND ACCESSIBILITY

All Sonoran 3 sub-assemblies, as well as the battery, are accessible from the front only. The Sonoran 3 design provides maximum reliability and minimum MTTR (mean time to repair). The electronic Sonoran 3 control and monitoring assembly is fully microprocessor based. The unit is repairable by replacing standard subassemblies.

- Guardian Diagnostics provides complete self diagnostic capabilities and LED monitoring
  - Informative advanced display and alarms allow complete control of your emergency lighting environment
  - Automatically performs periodic self-tests ensuring a safely lighted environment prior to an emergency
  - Single point of testing instead of multiple testing points with battery packs

## CABINET

- Modular design that enables flexible installation
- Enclosure: The Sonoran 3 is housed in a NEMA 4X or NEMA 12 freestanding locking enclosure. The mechanical structure of the unit is sufficiently strong and rigid to withstand handling and installation operations without risk. Access to Sonoran 3 subassemblies are through the front only. The sheet-metal elements in the structure are protected against corrosion by a suitable treatment, such as zinc electroplating, powder coating, epoxy paint or an equivalent.
- Systems up to 10KW are self contained; larger systems require external battery cabinet(s).
- Cable Access: The Sonoran 3 allows for side, top and bottom entry cables.
- Ventilation and Heat Rejection: The Sonoran 3 is designed specifically for forced air cooling for maximum reliability. Air inlets are provided from the front, bottom of the Sonoran 3 enclosure. Air exhaust is achieved from the top or side portions of the unit.

## INSTALLATION

- Modular design allows easy installation in electrical closet or other convenient locations
- Phone assisted factory start-up standard for all systems
- Extended warranty available
- The Sonoran 3 shall operate under the following environmental conditions:
  - Temperature:
    - Operating: -20° to 50°C (4°F to 122°F)
    - Non-Operating: -30°C to +60°C (-22°F to 140°F)
  - Relative humidity (operating and storage): 5 to 100% non-condensing
  - Barometric Pressure:
    - Up to 1000 meters above sea level
    - Up to 2000 meters with ambient temperature less than 28°C
    - Up to 12,000 meters above sea level non operating
  - Audible Noise: 45dBA at 3 feet
  - Enclosure is NEMA 4X outdoor completely sealed or NEMA 12 indoor completely sealed. Either enclosure includes heat exchanger for complete environmental control of electronics and batteries.
- Site Testing and Start-Up: If selected, the inverter system will be checked, started and tested by a manufacturer's qualified field service engineer either by phone start-up (standard) or by optional onsite start up when performed by a factory technician.

## SPECIAL APPLICATIONS

- Barron offers numerous UL924 optional devices to meet unusual or difficult application parameters
- ECM – Eco-Control Module allows fixtures and lamps on the emergency circuit(s) to be operated by normal switching and/or dimming devices in NON-emergency conditions
- Dimming Panel Interface allows use with emergency lights controlled by common dimmer panel

## DELIVERY, STORAGE, AND HANDLING

- All products shall be packaged in a manner to prevent penetration by debris and to allow safe delivery by all modes of ground transportation and air transportation where specified
- Prior to shipping all products shall be inspected at the factory for damage
- Equipment shall be protected against extreme temperature and humidity and shall be stored in a conditioned or protected environment
- Equipment containing batteries shall not be stored for a period exceeding three months without powering up the equipment for a period of eight hours to recharge the batteries

## WARRANTY

- 1 year full warranty on system electronics
- Battery warranty 1 year with 9 years pro-rated
- System 1 year on-site warranty labor with phone assisted start-up
- 5 year power train warranty
- Maintenance contracts available