SONORAN 1 Series

Single Phase, Outdoor, Harsh Environment Online Emergency Inverter

The Sonoran 1 is a single phase, on-line, double conversion, solid state inverter system utilizing patented ECM technology. Each 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 1 functions 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 or 4X (outdoor) or NEMA 12 or 12X (indoor) rain/weatherproof enclosure designed for harsh environmental conditions. This Energy Star rated unit is is an economical and reliable solution for your emergency backup needs.

Standard Power Level:	0.35, 0.525, 0.7, 0.875, 1.05, 1.4, 2.0, 2.4, 2.6, 3.0, 3.4 3.8, 4.2, 4.7, 5.25, 7.0, 8.0, 10.0, 12.0, 14.0, 18.0 and 21.0KW
Input Voltage:	120, 208, 240, 277 or 480 VAC
Input Voltage Range:	+10% -15%
Output Voltage:	120, 208, 277, 480, 120/240 or 120/277 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/EEE 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 - 95%, Non-condensing
Cabinet:	NEMA 4 and NEMA 12, or NEMA 4X and NEMA 12X (stainless steel)
Compliance:	Assembled in the USA with global components. American Recovery and Reinvestment Act (ARRA) compliant.

Model: _____ Date: _____

Accessories: _____

Job Name: _____ Type: _____

ORDERING INFORMATION Example: SON1-7.0-120-277-RP-90

Series	Power Rating	Input Voltage[1]	Output Voltage[1]	Options	Run Time[3]
SON1	0.35 = 350W	120 = 120VAC	120 = 120VAC	ECM120/#[2] = 120V Environmental Control Module / Qty	5 = 5 Min
	0.525 = 525W	208 = 208VAC	208 = 208VAC	ECM277/#[2] = 277V Environmental Control Module / Qty	10 = 10 Min
	0.7 = 700W	240 = 240VAC	277 = 277VAC	NOF/V/# = Normally OFF Output Circuit / Voltage / Qty	15 = 15 Min
	0.875 = 875W	277 = 277VAC	480 = 480VAC	NOH/V/# = Normally OFF “Hold ON”/ Voltage / Qty	20 = 20 Min
	1.05 = 1.05KW	480 = 480VAC	120/240 = 120/240VAC	OCB/V/#/A = Output Circuit Breakers / Voltage / Qty / Amps	25 = 25 Min
	1.4 = 1.4KW		120/277 = 120/277VAC	EPO = Emergency Power Off	30 = 30 Min
	2.0 = 2.0KW			RP = Remote Indicator Panel	45 = 45 Min
	2.4 = 2.4KW			SNMP = SNMP Card	60 = 60 Min
	2.6 = 2.6KW			FCON = Form C Contacts	90 = 90 Min (Std)
	3.0 = 3.0KW			OST = Onsite Start-Up	120 = 120 Min
	3.4 = 3.4KW			IDB = Internal Dimmer Bypass	180 = 180 Min
	3.8 = 3.8KW			EMB = External Maintenance Bypass Switch	240 = 240 Min
	4.2 = 4.2KW			HTR = Heater	
	4.7 = 4.7KW			EW = Extended Warranty	
	5.25 = 5.25KW				
	7.0 = 7.0KW				
	8.0 = 8.0KW				
	10.0 = 10.0KW				
	12.0 = 12.0KW			**Notes**	
	14.0 = 14.0KW			[1] Consult factory for other voltages, may effect weight, size and number of cabinets	
	18.0 = 18.0KW			[2] One ECM is used per switching device or circuit	
	21.0 = 21.0KW			[3] 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 1 Single Phase On-line Inverter	0.075KW	120 208 240 277 480	120 208 277 480 120/240 120/277	20"	24"	8"	Not Required			100	20.4	Sealed, maintenance free (AGM) lead calcium	Input and ouput circuit breakers standard	UL924 UL1778 NFPA101 NFPA70 NEC
	0.1KW			20"	24"	8"	Not Required			110	27.2			
	0.125KW			20"	24"	8"	Not Required			120	34			
	0.2KW			20"	24"	8"	Not Required			130	54.4			
	0.3KW			20"	24"	8"	Not Required			140	81.6			
	0.35KW			20"	24"	8"	Not Required			150	95.2			
	0.525KW			41"	44"	32"	Not Required			630	142.8			
	0.7			41"	44"	32"	Not Required			640	190.4			
	0.875			41"	44"	32"	Not Required			670	238			
	1.05			41"	44"	32"	Not Required			710	285.6			
	1.4			41"	44"	32"	Not Required			790	380.8			
	2.0			41"	44"	32"	Not Required			870	544			
	2.4			41"	44"	32"	Not Required			920	652.8			
	2.6			41"	44"	32"	Not Required			930	707.2			
	3.0			41"	44"	32"	Not Required			980	816			
	3.4			41"	44"	32"	Not Required			1030	924.8			
	3.8			41"	44"	32"	Not Required			1090	1033.6			
	4.2			41"	44"	32"	Not Required			1150	1142.4			
	4.7KW			41"	72"	32"	Not Required			1630	1278.4			
	5.25KW			41"	72"	32"	Not Required			1630	1428			
	7.0KW			41"	72"	32"	Not Required			1880	1904			
	8.0KW			41"	72"	32"	Not Required			1880	2176			
	10.0KW			41"	72"	32"	Not Required			2250	2720			
	12.0KW			41"	72"	32"	Not Required			2640	3264			
	14.0KW			41"	72"	32"	41"	72"	32"	2945	3808			
	18.0KW			41"	72"	32"	41"	72"	32"	4145	4896			
	21.0KW			41"	72"	32"	41"	72"	32"	4555	5712			

POWER RATING
75 - 21,000 watt, single phase output unit uses the latest technology to provide the most advanced performance and reliability features

INPUT
120, 208, 240, 277 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 1 is equipped with standard input filter assembly will withstand surges per IEEE 587-1980/ANSI C62.41

OUTPUT
120, 208, 277, 480, 120/240 or 120/277 VAC
AC Output Characteristics
- True On-line design is ≥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:
  - +/- 5% for 50% step load change
  - +/- 8% for 100% step load change
  - +/- 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
- 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 1 module employs 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 matching battery cabinet. (Systems up to 12KW are self contained.)

- Protection against Deep Discharge and Self-Discharge: The Sonoran 1 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 shall adjust the battery shutdown voltage as a function of a discharge coefficient to avoid excessive discharge
- Battery Self-Test: The battery monitoring system shall be to perform the following automatic functions:
  - Battery circuit check
  - Partial discharge test customer selectable (12KW and above)
- 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
- Surer 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 1 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 1 sub-assemblies, as well as the battery, shall be accessible from the front only. The Sonoran 1design provides maximum reliability and minimum MTTR (mean time to repair). The electronic Sonoran 1 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 1 is housed in a NEMA 4, NEMA 12 or NEMA 4X, NEMA 12X (stainless steel) 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 1 subassemblies is through the front only. The sheet-metal elements in the structure shall be protected against corrosion by a suitable treatment, such as zinc electroplating, powder coating, epoxy paint or an equivalent
- Cable Access: The Sonoran 1 allows for side, top and bottom entry cables.
- Ventilation and Heat Rejection: The Sonoran 1 is designed specifically for forced air cooling. Air inlets are provided from the front, bottom of the Sonoran 1 enclosure. Air exhaust is achieved from the top or side portions of the unit
- Systems up to 12KW are self contained; larger systems require external battery cabinet(s)

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 1 shall operate under the following environmental conditions:
  - Temperature:
    - Sonoran 1 Module
      - Operating: -20°C to 50°C (-4°F to 122°F)
      - Non-Operating: -30°C to +60°C (-22°F to 140°F)
    - Batteries: 25°C (77°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 will 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 will 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

10800255 Rev 6 04/20

BARRON lighting group
7885 North Glen Harbor Blvd
Glendale, Arizona 85307
800.533.3948
barronltg.com