

The Phoenix Plus is a single phase, on-line, double conversion, solid state inverter system utilizing the 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 Phoenix Plus is designed to 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.

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

- Standard Power Level:** 4.7, 5.25, 7.0, 8.0, 10.0, 12.0, 14.0, 18.0 and 21.0 KW
- 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/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
- Operating Temperature:** 0° to 40°C (32° to 104°F)
- Storage Temperature:** -20° to 60°C (-4° to 140°F)
- Humidity:** 5 - 95%, Non-condensing



**ORDERING INFORMATION** Example: PHXPLUS-4.7-120-480-EPO-90

Series	Power Rating	Input Voltage <sup>1</sup>	Output Voltage <sup>1</sup>	Options	Run Time <sup>3</sup>
PHXPLUS	4.7 = 4.7KW	120 = 120VAC	120 = 120VAC	ECM120/# <sup>2</sup> = 120V Environmental Control Module / Qty	5 = 5 Min
	5.25 = 5.25KW	208 = 208VAC	208 = 208VAC	ECM277/# <sup>2</sup> = 277V Environmental Control Module / Qty	10 = 10 Min
	7.0 = 7.0KW	240 = 240VAC	240 = 240VAC	NOF/V/# = Normally OFF Output Circuit / Voltage / Qty	15 = 15 Min
	8.0 = 8.0KW	277 = 277VAC	277 = 277VAC	NOH/V/# = Normally OFF "Hold ON"/ Voltage / Qty	20 = 20 Min
	10.0 = 10.0KW	480 = 480VAC	480 = 480VAC	OCB/V/#A = Output Circuit Breakers / Voltage / Qty / Amps	25 = 25 Min
	12.0 = 12.0KW		120/240 = 120/240VAC	EPO = Emergency Power Off	30 = 30 Min
	14.0 = 14.0KW		120/277 = 120/277VAC	RP = Remote Indicator Panel	45 = 45 Min
	18.0 = 18.0KW			SNMP = SNMP Card	60 = 60 Min
	21.0 = 21.0KW			FCON = Form C Contacts	90 = 90 Min (Std)
				SRB = Seismic Rated Bracket	120 = 120 Min
<b>Notes</b>				OST = Onsite Start-Up	180 = 180 Min
<sup>1</sup> Consult factory for other voltages, may effect weight, size and number of cabinets				IDB = Internal Dimmer Bypass	240 = 240 Min
<sup>2</sup> One ECM is used per switching device or circuit				EMB = External Maintenance Bypass Switch	
<sup>3</sup> Consult factory for other run times				EW = Extended Warranty	

Series	Select Power Rating (KW)	Voltage (VAC)		UPS Cabinet Dimensions			Battery Cabinet Dimensions			Combined Weight (LBS)	BTUs	Battery Type	Output Protection	Safety Approvals		
		Select Input	Select Output	W	H	D	W	H	D							
Phoenix Plus Single Phase Online Inverter	4.7KW	120, 208, 240, 277 or 480	120, 208, 277, 480, 120/240 or 120/277	42"	71"	22.5"	Not Required			1200	1278.4	Sealed, Maintenance Free (AGM) Lead Calcium	Input and Output Circuit Breakers Standard	UL924 UL1778 NFPA101 NFPA70 NEC		
	5.25KW									1200	1428					
	7.0KW									1450	1904					
	8.0KW									1450	2176					
	10.0KW									1820	2720					
	12.0KW									2210	3264					
	14.0KW						2550	3808	42"	71"	22.5"				3750	4896
	18.0KW						42"	71"	22.5"	4375	5712					
	21.0KW															

#### POWER RATING

2400 - 4200 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 input.

#### 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 Phoenix Plus is equipped with a standard input filter assembly that will withstand surges per IEEE 587-1980/ANSI C62.41

#### OUTPUT

120, 208, 277, 480, 120/240 or 120/277 VAC output.

#### AC Output Characteristics:

- 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 is 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 Phoenix Plus module employs a valve regulated, sealed, lead calcium, heavy-duty, industrial battery. This battery system is designed for auxiliary power service. The primary battery is furnished with an impact resistant plastic case and housed in matching battery cabinet (units 14KW or under are self contained).

- Protection against deep discharge and self-discharge: The Phoenix Plus is equipped 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 will adjust the battery shutdown voltage as a function of a discharge coefficient in order to avoid excessive discharge.
- Battery self-test: The battery monitoring system is to perform the following automatic functions:
  - 1. Battery circuit check
- 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

- Pure sine wave output for all types of lamps
- 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

#### CODES

- City of Chicago and New York approved
- Complies with the Buy American Act – (Level 3)
- The Phoenix Plus will 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)

#### 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

#### DIAGNOSTICS, MAINTENANCE AND ACCESSIBILITY

All Phoenix Plus sub-assemblies, as well as the battery, are accessible from the front only. The Phoenix Plus design will provide maximum reliability and minimum MTTR (mean time to repair). The electronic Phoenix Plus 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 the 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 enabling flexible installation
- Enclosure: The Phoenix Plus is housed in a freestanding enclosure. The mechanical structure of the unit is sufficiently strong and rigid to withstand handling and installation operations without risk. Access to Phoenix Plus subassemblies is 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.
- Cable Access: The Phoenix Plus allows for side, top and bottom entry cables.
- Ventilation and Heat Rejection: The Phoenix Plus designed specifically for forced air cooling. Air inlets are provided in the front, bottom of the Phoenix Plus enclosure. Air exhaust is achieved from the top or side portions of the unit.
- Units up to 14KW are self contained, larger units require an 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 Phoenix Plus will operate under the following environmental conditions:
  - Temperature:
    - Phoenix Plus Module
      - Operating: 0° to 40°C (32°F to 104°F)
      - Non-Operating: -20°C to +60°C (-4°F to 140°F)
    - Batteries: 25°C (77°F)
  - Relative humidity (operating and storage): 5 to 95% 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
- 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 are 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 are inspected at the factory for damage.
- Equipment is protected against extreme temperature and humidity and is stored in a conditioned or protected environment.
- Equipment containing batteries will 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