

## **Borealis** **Three Phase Emergency Lighting Inverters**



## True Sine Wave On-Line 3 Phase Emergency Lighting Inverters

BOREALIS Series Emergency Lighting AC Inverters are among the most reliable systems available for emergency lighting and other demanding critical applications.

The BOREALIS Series Emergency Lighting AC Inverters are Dual Conversion, On-line, three-phase, intelligent systems for centralized power protection. The Dual Conversion means it converts the incoming AC power to DC, charges the batteries, then inverts the DC back into highly regulated isolated AC power. These continuous on-line Emergency Lighting AC Inverters are available in models from 8kW up to 48kW.

For redundant applications, the BOREALIS Series Emergency Lighting AC Inverters can be installed in parallel, achieving isolated and redundant power protection. Isolated Parallel Redundant Operation (IPRO) is a feature of Always On BOREALIS Series Emergency Lighting AC Inverters, whereby the systems are controlled in a true peer-to-peer configuration with redundancy in all critical elements and functions. This advanced technology provides greater system reliability and expandability for mission critical applications.

The BOREALIS Series Emergency Lighting AC Inverters provide reliable and constant protection for mission critical emergency lighting, and infrastructure applications such as airports, hospitals, and financial companies.

### Features and Benefits

**Full Galvanic Isolation:** Provides a completely isolated and re-reference output. This isolation protection provides a proven solution to problems created by induced voltages affecting the critical loads. Since the output circuit to the load is completely isolated and no noise induced on the neutral can permeate to the loads, systems operate in a more reliable fashion.

**High efficiency:** Thanks to IGBT technology, the BOREALIS Series Emergency Lighting AC Inverters provide high efficiency (up to 94.5%). This combined with optional IPRO, results in the most cost-efficient and reliable Emergency Lighting AC Inverter solution in the industry.

**Fully digital:** DSP (Digital Signal Processor), flash memory, and multi-contact strategy are the technology corner stones of the new age of power quality and reliability.

**Extremely flexible:** The BOREALIS Series Emergency Lighting AC Inverters offers tailor-made power protection to comply with your individual installation requirements. Options include passive filter, 12-pulse rectifier, and distribution panels.

**Features:** The system incorporates an automatic testing feature performed monthly. An event log will record, and store, up to 77 of the most recent events allowing the user to observe the condition of the system. The front panel display provides user notification of current system operation as well as provides the interface to view the event log and operating parameters.

**Internal Maintenance bypass switch:** An internal maintenance bypass switch is standard with all BOREALIS 3 phase inverter units

**Diagnostics:** A diagnostic feature can be preformed according to the National Fire Code of Canada.

A) At intervals not greater than one month to ensure that the emergency lights will function upon failure of the primary power supply.

(B) At intervals not greater than 12 months to ensure that the unit will provide emergency lighting for a duration equal to the design criterion under simulated power failure conditions.

## Additional Features

- a. Reliable input protection:** Circuit breakers are in each input loop to ensure power can continue through the other loops in the event of a breaker trip caused by abnormal conditions in either the rectifier or the load.
- b. Input surge protection:** Input surge protection is added at the input to provide enhanced protection to both the BOREALIS and the load and also protects against lightning effects and/or surges caused by large cycling loads or those that are being turned on and/or off.
- c. EMI suppression:** An EMI filter is added to meet the international EMC limits to ensure that No noise will effect or interfere with other equipment connected to the same AC source.
- d. Ruggedness:** The rectifier employs phase control technology to regulate the DC bus voltage allowing the batteries to be charged while supplying DC power to the inverter. This has been proven to be the most efficient method to control and regulate the charge on the batteries. The SCR technology and PFC circuit also assist in maintaining the input waveform.
- e. High frequency design:** The inverter design incorporates high frequency, high efficiency Insulated Gate Bi-polar Transistors (IGBT). A PWM wave, synchronized to the bypass input, triggers the IGBT's, which invert the DC into AC power required by the loads. This design decreases the number of required components, increases reliability and performance while decreasing acoustic noise, size and weight.
- f. True galvanic isolation:** The isolation transformer addresses ground differentials between the input and output, and prevents ground leakage current problems, common mode and normal mode noise. This transformer is located on the output side of the BOREALIS system providing isolation under every mode of operation.
- g. PNP modular design:** The circuit boards are designed into several modules, which are plugged into slots in the BOREALIS. These plug-able modules allow for easy replacement in the field when necessary and eliminate field diagnostics.
- h. Cold start function:** The BOREALIS can be started without the utility AC supply being activated, or present at the input terminal strip because our system is designed with current limiting circuitry, which allows Startup of the BOREALIS on battery DC power.
- i. Multi-CPU design:** Several CPU's are designed into the control circuit. These critical functions are designed with multi-level redundancy increasing reliability and up-times by eliminating field problems.
- j. Wide input range:** The components are overrated by design to handle high input voltages and currents without harm to the system, ensuring that the BOREALIS is one of the most reliable Inverter Systems available in today's market.
- k. Harsh environment:** Each component of the BOREALIS is chosen with the highest degree of safety margins allowing for wider environmental parameters and specifications related to temperature, humidity, altitude, surge or noise.
- l. Intelligent charger:** The BOREALIS will perform an automatic monthly recharge (boost charge) of the batteries as well as automatically recharge (boost charge) the batteries when the battery voltage level decreases to approximately 2V/Cell or to a user specified level. To prevent the over-charging of the battery, the boost charge will stop when batteries achieve a 90% charged level at which point the float charging begins.
- m. Intelligent battery test:** The batteries are automatically tested after every boost charge. When an abnormal condition (low charge rating, or bad battery) is found the user will be informed immediately through alarms on the BOREALIS system.
- n. Charging rate :** The charging rate is selectable (L/M/H) according to Ah ratings of the batteries. The charger is designed to charge the larger battery banks without adding an additional charger (up to 8hr. back-up).
- o. MTBF of cooling fans:** Long cycling fans will operate at variable speeds necessary which is dependent on the load of the BOREALIS system increasing the life expectancy of the fan motors.
- p. Redundant power supply:** Redundant power supplies have been installed to allow for worry free operation of the system.

- q. Intelligent interface:** One remote control panel (or one PC) can monitor and control up to ninety-nine BOREALIS's. The BOREALIS status, data or commands can be transmitted to external modules through four RS-485 ports or optional web based SNMP networking module.
- s. Data log capability:** All normal and abnormal events, via the front display panel, will be stored within the BOREALIS control interface board for further reference by the user. Each normal and abnormal event is time and date stamped (real-time clock) as the event occurs. This history is stored and cannot be removed even if or when the BOREALIS is turned off for servicing.
- t. Convenient front panel design:** The LCD display and control switches are accessible through the up, down, and enter switches below the front panel window. All the viewable parameters can be read without opening the front door. The inverter on/off switch is protected from accidental operation by being located behind the locked front door.

## Standard Features

### Communication Options:

**RTS:** Remote terminal strip

**SNMP:** SNMP adapter

**DS:** Drip Shield. This option provides protection against falling water produced by sprinkler systems or other sources.

**EWB10:** 10 year life type battery

## Additional Options

**Additional Run Times:** Additional run times may be selected at time of specification. These can be 30, 60, 90 or 120 minutes other configurations are available.

**Output Circuit Breakers:** Supports normally on and/or normally off breakers.

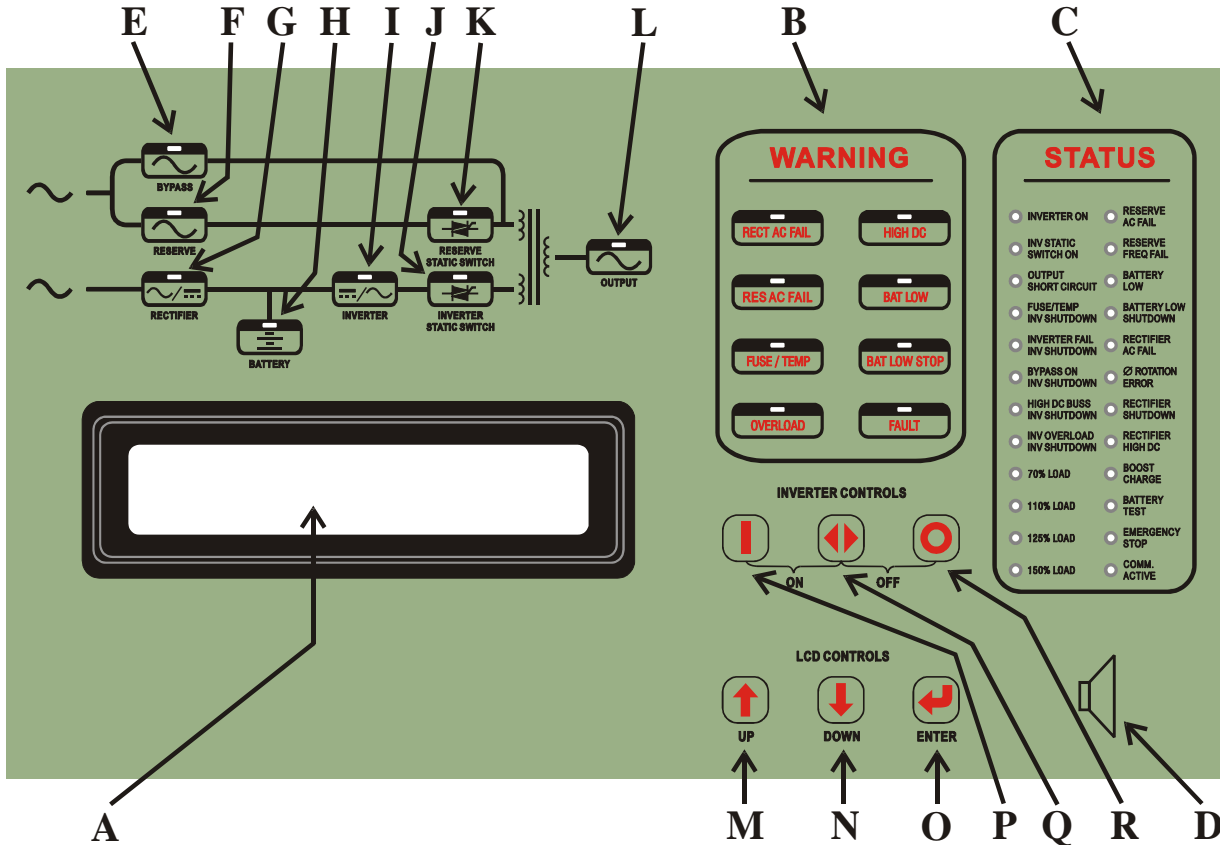
**RCMP:** Remote Control and Monitoring Panel. This option provides remote alarms to indicate the inverter status.

**EMBP:** External Maintenance Bypass. This device allows the load power to be transferred from the inverter output to the AC supply. Thus the inverter can be completely removed or repaired without interruption of power to the load.

**12HR:** 12 Hour recharge time

**EWB20:** 20 year life type battery

## Front Panel



The front panel is located behind the glass window on the front of the BOREALIS system. It displays the real time information and status of the Inverter and battery system. It also provides for user interface for controlling and setting the BOREALIS operating status. This panel also allows the user to operate and monitor the system with ease. The panel is explained below:

**A: LCD display-** Real time status, data and historical events are displayed on the LCD. The Inverter parameters, real time clock, inverter, and buzzer can also be set through this LCD. The LCD is back lit by LED's for a sharper display, but in order to lengthen the LED's life time, the LED will automatically shut off 3 minutes after a key has been pressed, and will light up again when one of the up/down/enter keys are pushed.

**B: Warning LED's-** When an abnormal condition occurs, these LED's will illuminate allowing the user to identify the fault. This will also allow the service personnel the ability to troubleshoot the system. These LED's are described below:

**RECT AC FAIL** – when the supply to the rectifier is outside of the operating parameters. This not only applies to voltage range but also when phase rotation is incorrect or the rectifier has been shutdown (refer to **C: Status LED's**).

**RESERVE FAIL** – supply to the reserve is outside of the operating parameters. Supply voltage or frequency out of range (refer to **C: Status LED's**).

**FUSE/TEMP** – inverter has shutdown due to inverter fuse open or heat sink temperature above operating parameters.

**OVERLOAD** – an overload condition has occurred on the output.

**HIGH DC** – this LED will be lit as long as the DC voltage exceeds 430VDC.

**BAT LOW** – this LED will be lit as long as the DC voltage is lower than 320VDC.

**BAT LOW STOP** – the LED will be lit as long as the DC voltage is lower than 295VDC. The inverter will not activate until the DC voltage is above this level.

**FAULT** – the inverter has shutdown because an abnormal condition has occurred. Possible conditions include overload, short circuit, high DC shutdown, fuse/over temperature, bypass breaker on or emergency stop (refer to **C: Status LED's**).

**C: Status LED's**- 24 LED's represent the real-time information regarding the status of the BOREALIS system. These LED's will aid in diagnosing and trouble shooting abnormal conditions.

The 24 LED's represent the following:

**INVERTER ON** – inverter is running.

**INVERTER SS** – inverter static switch is active.

**SHORT CIRCUIT** – BOREALIS output is in a short circuit state.

**FUSE/OVER TEMP SD** – inverter has shutdown due to inverter fuse open or heat sink temperature above operating parameters.

**INVERTER FAIL SHUTDOWN** – inverter has shutdown due to inverter output voltage below tolerances.

**BYPASS ON SHUTDOWN** – inverter has shutdown because the bypass breaker has been activated while the inverter is supplying power to the load.

**HIGH DC SHUTDOWN** – inverter has shutdown because the DC Bus voltage is outside of operating parameters while the inverter is operating.

**OVERLOAD SHUTDOWN** – inverter has shutdown because an overload condition has been detected on the output. The inverter will automatically restart after the condition has been removed for a period of seven seconds.

**70% LOAD** – load connected to the output is over 70% of the BOREALIS rating.

**110% LOAD** - load connected to the output is over 110% of the BOREALIS rating.

**125% LOAD** - load connected to the output is over 125% of the BOREALIS rating.

**150% LOAD** - load connected to the output is over 150% of the BOREALIS rating.

**RESERVE AC FAIL** – supply voltage to the Reserve is outside of operating window.

**RESERVE FREQ FAIL** – supply frequency to the Reserve is outside of operating window.

**BATTERY LOW** – the DC bus (or battery) voltage is lower than 320VDC. Low battery shutdown is approaching.

**BATTERY LOW SHUTDOWN** – the inverter has shutdown because the DC bus (or battery) voltage is below operating level (lower than 295VDC).

**RECT AC FAIL** – supply to rectifier is outside of operating window.

**ROTATION ERROR** – supply phase rotation is outside of operating window.

**RECTIFIER SHUTDOWN** – the rectifier has shutdown because the DC bus voltage has exceeded maximum operating level (over 445VDC). The rectifier will automatically restart 30 seconds after this abnormal condition has been cleared.

**HIGH DC** – the DC voltage has exceeded maximum operating level (over 430VDC). The bus voltage is limited to this voltage.

**BOOST CHARGE** – the batteries are being boost charged by the rectifier.

**BATTERY TEST** – batteries are being tested.

**EMERGENCY STOP** – the inverter has shutdown because the emergency stop switch has been activated.

**DATA LINE** – blinks when data is being transmitted or received via the communication port.

**D: Buzzer outlet:** There is a buzzer located behind the LCD Display. The buzzer will allow for audible notification during an abnormal condition. The buzzer will be activated under one of the following conditions: (The frequency of the buzzer is also described for your reference.)

**INVERTER IS OVERLOADED** >110%, beep once / 3 seconds

>125%, beep once / second

>150%, beep twice / second

**BACK-UP** >320VDC, beep once/ 3 seconds

<320VDC, beep twice / second

<295VDC, no beeping

**INVERTER IS SHORT CIRCUITED** beep continuously

**FUSE BROKEN** beep continuously

**HEAT SINK OVER TEMPERATURE** beep continuously

**HIGH DC SHUTDOWN** beep continuously

**BYPASS ON STOP** beep continuously

**EMERGENCY STOP** beep continuously

The buzzer will beep once every time the inverter is switched on or off. This will allow for the user to be sure the operation was performed correctly.

**E. Bypass LED:** This LED is lit when the maintenance bypass breaker is closed leaving the inverter in the off mode. If the inverter is active when the bypass breaker is closed the inverter will shutdown immediately.

**F. Reserve LED:** This LED is lit when the reserve breaker is closed, and the supply is within operating parameters.

**G. Rectifier LED:** This LED is lit when the rectifier is operating, the supply is within operating parameters, the rectifier breaker is closed and the DC bus voltage is within operating parameters.

**H. Battery LED:** This LED is lit while the BOREALIS is in back-up mode. This LED also indicates the results of battery test. If the battery pack does not pass the test, this LED will flash prompting the user to change the battery pack.

**I. Inverter LED:** This LED is lit when the inverter is supplying power to the load.

**J. Inverter Static Switch LED:** This LED is lit when the inverter static switch is operating and the reserve static switch is turned off. When this LED is on, the load is supplied from the inverter. Usually this LED will stay lit for 7sec. after the inverter is switched on.

**K. Reserve Static Switch LED:** This LED is lit when the reserve static switch is operating and the inverter static switch is turned off. When this LED is on, the load is being supplied by the reserve. Since the reserve static switch and inverter static switch will never operate simultaneously, the Inverter SS LED and the Reserve SS LED will never be lit at the same time.

**L. Output LED:** This LED is lit when there is AC power present at the output terminals.

**M. Up key:** This is an LCD control key. It moves the cursor one field upward when items are being selected or changes the number/character forward when data or parameters of the BOREALIS are being set.

**N. Down key:** This is an LCD control key. It moves the cursor one field downward when items are being selected or changes the number/character backward when data or parameters of the BOREALIS are being set.

**O. Enter key:** This is an LCD control key. It returns to the previous page, and also confirms the number/character/item selected.

**P. Inverter “On” switch:** This is an inverter control switch. When this switch is pushed simultaneously with the control key, the inverter will switch on.

**Q. Inverter “Control” switch:** This is an inverter control switch. When this switch is pushed in conjunction with the inverter “On” switch the inverter will activate. Similarly, when this switch is pushed with the inverter “Off” switch the inverter will shutdown. This switch acts as a safety switch to prevent accidental operation of the inverter.

**R. Inverter Off switch:** This is an inverter control switch. When this switch is pushed simultaneously with the control switch the inverter will be turned off.

# Specifications

## 8KW to 48KW ELI 3Ø Input - 3Ø Output

<b>KW Rating</b>	<b>8</b>	<b>12</b>	<b>16</b>	<b>24</b>	<b>32</b>	<b>40</b>	<b>48</b>
------------------	----------	-----------	-----------	-----------	-----------	-----------	-----------

### RECTIFIER

Input Voltage	120/208V 277/480V 347/600V 3 phase 4 wire + G						
Input Range	± 15% 180-750V						
Input Frequency	50 / 60 Hz +/- 7%						
Input Power Factor	< 1						
Normal Input Current(A) (Based on 208VAC)	33	49	66	99	132	165	198
Maximum Input Current(A) (Based on 208VAC)	45	63	83	125	160	200	250
Current THD	6 PULSE : 30% 12 PULSE WITH FILTER : 9%						
Power Walk In (adjustable)	0% - 100% : 20 sec						
Efficiency	99%						
Voltage Regulation	1%						
Ripple Voltage	0.5%						

### BATTERY

Battery Type	Maintenance free Sealed Lead Acid						
No. Of Cells	174						
Voltage Range	295 – 410VDC						
Maximum Charge Current (ADC)	10	15	20	25	30		
Battery Low Voltage	320VDC						
Battery Low Stop Voltage	295VDC						
Boost Charge	410VDC						
Float Charge	396VDC						

<b>KW Rating</b>	<b>8</b>	<b>12</b>	<b>16</b>	<b>24</b>	<b>32</b>	<b>40</b>	<b>48</b>
------------------	----------	-----------	-----------	-----------	-----------	-----------	-----------

**INVERTER**

DC Input Range		285 – 415VDC						
Wave Form		Sinusoidal						
Output Voltage (Adjustable)		120/208V 277/480V 347/600V 3 Phase 4 Wire + G						
Crest Factor		3 : 1						
Output Power Factor		0.8						
Voltage Regulation 100% Unbalance Load		+ / - 1 %						
Frequency Lock Range		45 – 55 Hz / 55 – 65 Hz						
Output Frequency (Free Running)		50 / 60 Hz + / - 0.1 Hz						
Output Voltage Tolerance	Static	+/- 1%						
	Load step 0% - 100% - 0%	+/- 3%, recovering to within +/- 1% in 1 cycle						
	Load step 0% - 50% - 0%	+/- 2%, recovering to within +/- 1% in 1 cycle						
	100% unbalanced load (Ph-N)	+/- 2.5%						
Phase Shift Under 100% Unbalance Load		120° + / - 0.5						
THD (Linear Load)		< 2 %						
Overload	- <110%	CONTINUOUS						
	- 110 – 125%	15 min						
	- 125 – 150%	10 min						
	- > 150%	60 sec						
Efficiency (100% Load)		93%	93%	93%	93%	93.5%	93.5%	94%
Maximum Output Wattage (kW)		8	12	16	24	32	40	48

**STATIC SWITCH**

Voltage Range		+- 20% of input voltage (Line to Neutral)					
Frequency Range		45 – 55 Hz / 55 – 65 Hz					
Efficiency		99.5%					
Transfer Time	- Mains -> Inverter	0 ms					
	- Inverter -> Mains	0 ms					
Overload	- 100%	30 sec					
	- 300%	1 sec					
Isolation With Output		YES					

<b>KW Rating</b>	<b>8</b>	<b>12</b>	<b>16</b>	<b>24</b>	<b>32</b>	<b>40</b>	<b>48</b>
------------------	----------	-----------	-----------	-----------	-----------	-----------	-----------

**OVERALL CHARACTERISTICS**

Overall Efficiency	91%	91%	91%	91%	91.5%	92%	92%
--------------------	-----	-----	-----	-----	-------	-----	-----

**Operating Environment:**

- Temperature	0 – 40°C (32 – 104°F)						
- Humidity	0% - 95% (non–condensing)						
- Altitude	<1500 m above sea level						
Maximum Heat Dissipation(kW)	0.79	1.18	1.58	2.37	2.93	3.47	4.17
Weight(kg)	380	415	450	580	650	710	850

**Dimension:**

- HEIGHT(mm)	1600						
- WIDTH(mm)	550						
- DEPTH(mm)	812						
- Audible Noise	< 65 dBA (AT 1 m)						

**Standards:**

- UL 924 and UL1778	Yes						
- NFPA111	Yes						
- CSA 107.1	Yes						
- CCMC and BMEC	Yes						
- EN50091-1,-2	Yes						
- FCC Part 15 Class A	Yes						

**Protections:**

- Short Circuit	Rectifier, Reserve, Bypass NFB						
- Lightning	MOV						
- EMC Filter	Input & Output						
- Galvanic Isolation	Between Input & Output						
Data Display By LCD	Yes						

**Indications & Alarms:**

- LED, LCD, Buzzer	Yes						
Dry Contact	Yes						
Battery Start	Yes						

All specifications mentioned above are subject to change without prior notice.

## Specification Table for Three Phase Inverters

Model Size	8kW	12kW	16kW	24kW	32kW	40kW	48kW
Output Power Factor	0.8						
Input // Output Voltage Combinations Available 3 phase	208/120 // 208/120 480/277 // 208/120 600/347 // 208/120 208/120 // 480/277 480/277 // 480/277 600/347 // 480/277 208/120 // 600/347 480/277 // 600/347 600/347 // 600/347						
AC Input Voltage- Input Service Amps	208/120V – 50A 480/277V – 20A 600/347V – 15A	208/120V – 70A 480/277V – 30A 600/347V – 30A	208/120V – 90A 480/277V – 40A 600/347V – 30A	208/120V – 125A 480/277V – 60A 600/347V – 50A	208/120V – 175A 480/277V – 80A 600/347V – 60A	208/120V – 225A 480/277V – 100A 600/347V – 80A	208/120V – 250A 480/277V – 125A 600/347V – 90A
Output Voltage and Maximum Output Current in Amperes at 100% Load	208/120V – 22.3A 480/277V – 9.7A 600/347V – 7.7A	208/120V – 33.4A 480/277V – 14.5A 600/347V – 11.6A	208/120V – 44.5A 480/277V – 19.3A 600/347V – 15.4A	208/120V – 66.7A 480/277V – 28.9A 600/347V – 23.1A	208/120V – 88.9A 480/277V – 38.5A 600/347V – 30.8A	208/120V – 111.1A 480/277V – 48.2A 600/347V – 38.5A	208/120V – 133.3A 480/277V – 57.8A 600/347V – 46.2A
Standard Charger Size (amps)	10	10	10	15	20	25	30
DC System Voltage	348VDC nominal						

### 30 MINUTES BACKUP CONFIGURATIONS

Standard Battery Systems for 30 minute runtime							
Type R Battery	Maintenance-Free Sealed Lead-Acid - 10 Year Design Life Expectancy						
System Capacity Rating	8kW	12kW	16kW	24kW	32kW	40kW	48kW
ELI Dimensions WxDxH (in)	22" x 32" x 63"	22" x 32" x 63"	22" x 32" x 63"	22" x 32" x 63"	22" x 32" x 63"	22" x 32" x 63"	22" x 32" x 63"
ELI Dimensions WxDxH (mm)	550 x 812 x 1,600	550 x 812 x 1,600	550 x 812 x 1,600	550 x 812 x 1,600	550 x 812 x 1,600	550 x 812 x 1,600	550 x 812 x 1,600
BBU Dimensions WxDxH (in)	52" x 34" x 76"	52" x 34" x 76"	52" x 34" x 76"	52" x 34" x 76"	52" x 34" x 76"	2 * (52" x 34" x 76")	2 * (52" x 34" x 76")
BBU Dimensions WxDxH (mm)	1,315 x 850 x 1,945	1,315 x 850 x 1,945	1,315 x 850 x 1,945	1,315 x 850 x 1,945	1,315 x 850 x 1,945	2 * (1,315 x 850 x 1,945)	2 * (1,315 x 850 x 1,945)
System Configuration	A	A	A	A	A	B	B
Estimated System Weight – lb/kg	2,627 / 1,194	3,113 / 1,415	3,639 / 1,654	4,352 / 1,978	5,311 / 2,414	7,713 / 3,506	8,021 / 3,646

### 60 MINUTES BACKUP CONFIGURATIONS

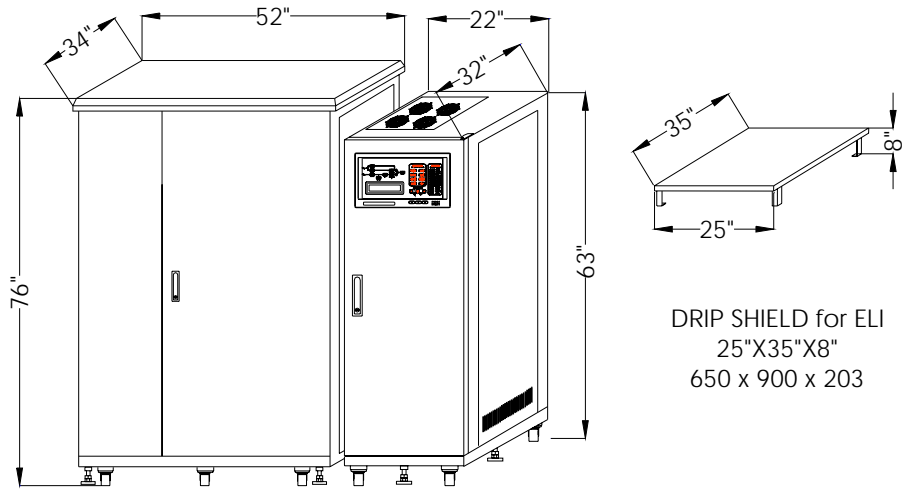
Standard Battery Systems for 60 minute runtime							
Type R Battery	Maintenance-Free Sealed Lead-Acid - 10 Year Design Life Expectancy						
System Capacity Rating	8kW	12kW	16kW	24kW	32kW	40kW	48kW
ELI Dimensions WxDxH (in)	22" x 32" x 63"	22" x 32" x 63"	22" x 32" x 63"	22" x 32" x 63"	22" x 32" x 63"	22" x 32" x 63"	22" x 32" x 63"
ELI Dimensions WxDxH (mm)	550 x 812 x 1,600	550 x 812 x 1,600	550 x 812 x 1,600	550 x 812 x 1,600	550 x 812 x 1,600	550 x 812 x 1,600	550 x 812 x 1,600
BBU Dimensions WxDxH (in)	52" x 34" x 76"	52" x 34" x 76"	52" x 34" x 76"	52" x 34" x 76"	2 * (52" x 34" x 76")	2 * (52" x 34" x 76")	2 * (52" x 34" x 76")
BBU Dimensions WxDxH (mm)	1,315 x 850 x 1,945	1,315 x 850 x 1,945	1,315 x 850 x 1,945	1,315 x 850 x 1,945	1,315 x 850 x 1,945	1,315 x 850 x 1,945	1,315 x 850 x 1,945
System Configuration	A	A	A	A	B	B	B
Estimated System Weight – lb/kg	3,036 / 1,380	3,562 / 1,619	4,066 / 1,848	5,157 / 2,344	7,581 / 3,446	9,324 / 4,238	9,632 / 4,378

## 90 MINUTES BACKUP CONFIGURATIONS

Standard Battery Systems for 90 minute runtime							
Type R Battery	Maintenance-Free Sealed Lead-Acid - 10 Year Design Life Expectancy						
System Capacity Rating	8kW	12kW	16kW	24kW	32kW	40kW	48kW
ELI Dimensions WxDxH (in)	22" x 32" x 63"	22" x 32" x 63"	22" x 32" x 63"	22" x 32" x 63"	22" x 32" x 63"	22" x 32" x 63"	22" x 32" x 63"
ELI Dimensions WxDxH (mm)	550 x 812 x 1,600	550 x 812 x 1,600	550 x 812 x 1,600	550 x 812 x 1,600	550 x 812 x 1,600	550 x 812 x 1,600	550 x 812 x 1,600
BBU Dimensions WxDxH (in)	52" x 34" x 76"	52" x 34" x 76"	52" x 34" x 76"	2 * (52" x 34" x 76")	2 * (52" x 34" x 76")	3 * (52" x 34" x 76")	3 * (52" x 34" x 76")
BBU Dimensions WxDxH (mm)	1,315 x 850 x 1,945	1,315 x 850 x 1,945	1,315 x 850 x 1,945	2 * (1,315 x 850 x 1,945)	2 * (1,315 x 850 x 1,945)	3 * (1,315 x 850 x 1,945)	3 * (1,315 x 850 x 1,945)
System Configuration	A	A	A	B	B	C	C
Estimated System Weight – lb/kg	3,485 / 1,584	4,794 / 2,179	4,871 / 2,214	9,038 / 4,108	9,192 / 4,178	13,204 / 6,002	13,512 / 6,142

- Input, output voltages are 3 phase 4 wire plus ground (wye) configuration.
- Consult factory for other voltage configurations.
- Longer runtimes available. Consult factory.
- Other voltage configurations available. Consult factory.
- Other amp ratings available. Consult factory.

Specifications are subject to change without prior notice to reflect upgrades and technology advances.

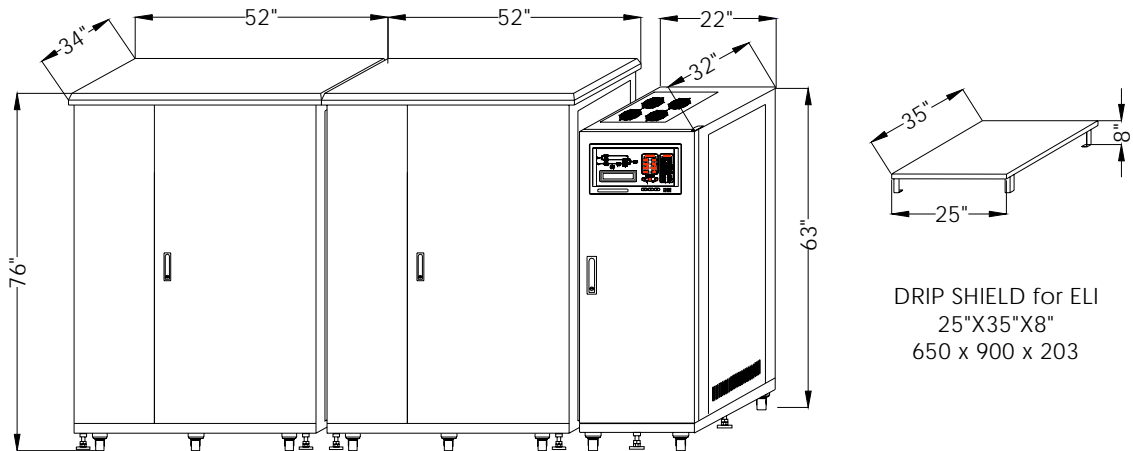


BATTERY CABINET  
52"X34"X76"  
1315 x 850 x 1945

ELI CABINET  
22"X32"X63"  
550 x 812 x 1600

DRIP SHIELD for ELI  
25"X35"X8"  
650 x 900 x 203

**Configuration A**



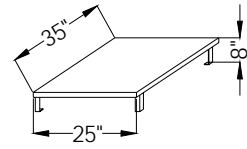
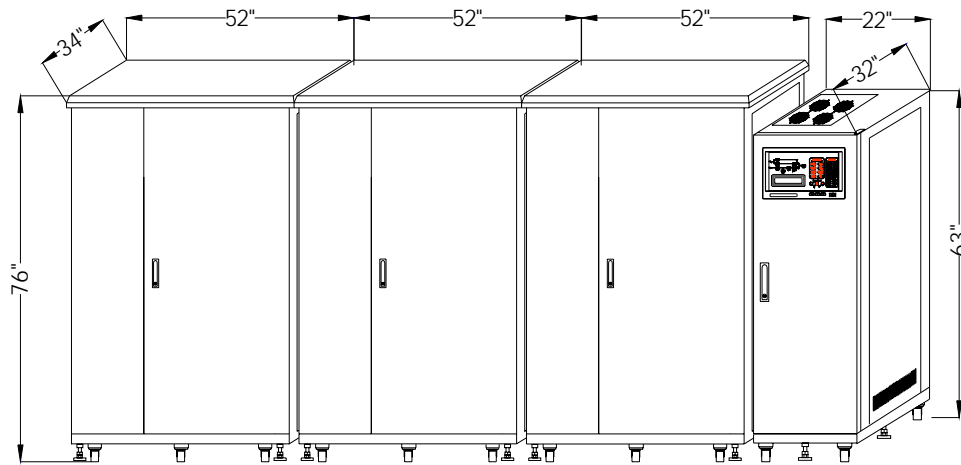
BATTERY CABINET  
52"X34"X76"  
1315 x 850 x 1945

BATTERY CABINET  
52"X34"X76"  
1315 x 850 x 1945

ELI CABINET  
22"X32"X63"  
550 x 812 x 1600

DRIP SHIELD for ELI  
25"X35"X8"  
650 x 900 x 203

**Configuration B**



DRIP SHIELD for ELI  
25"X35"X8"  
650 x 900 x 203

BATTERY CABINET  
52"X34"X76"  
1315 x 850 x 1945

BATTERY CABINET  
52"X34"X76"  
1315 x 850 x 1945

BATTERY CABINET  
52"X34"X76"  
1315 x 850 x 1945

ELI CABINET  
22"X32"X63"  
550 x 812 x 1600

**Configuration C**

## BOREALIS Series

### Developing an Always On Part Number

BOR	_____	_____	_____	_____
Input Voltage <sup>1</sup>	Output Voltage <sup>1</sup>	Wattage	Runtime	Options
J =208/120	208/120	I =8kW	S =Standard	See Below
K =480/277	208/120	J =12kW	sealed battery	
L =600/347	208/120	K =16kW		
M =208/120	480/277	L =24kW		
N =480/277	480/277	M =32kW		
O =600/347	480/277	N =40kW		
P =208/120	600/347	O =48kW		
Q =480/277	600/347			
R =600/347	600/347			

<sup>1</sup> Input, output voltages are 3 phase 4 wire plus ground (wye) configuration.  
Consult factory for other voltage configurations.

### Options

The options must be entered in the following order. If no option is desired, no entry is required.  
Move to the next step

- 1) Output Circuit Breakers  
Supports normally on or normally off breakers. Specify type, voltage, amp rating, and quantity of breakers from the selection below:

Type	Voltage	Amp Rating	Qty
ON = normally on	A = 120 <sup>2</sup>	15 <sup>3</sup>	1 – 15
OF = normally off			

<sup>2</sup> Other voltage configurations available. Consult factory

<sup>3</sup> Other amp ratings available. Consult factory.

- 2) R30 = 30 minutes      R90 = 90 minutes  
R60 = 60 minutes      R120 = 120 minutes  
Longer runtimes available. Consult factory.
- 3) Communication Options  
RCMP = Remote Control and Monitoring Panel
- 4) Other Options  
EMBP = External Maintenance Bypass  
EWB20 = 20 year life type battery  
12HR = 12Hr recharge time



## Contact Always On

### Always On UPS Systems Inc.

1 – 150 Campion Road,  
Kelowna, BC, Canada, V1X 7S8  
Phone: (250) 491-9777 Ext 451  
Fax: (250) 491-9775  
Email: [sales@alwayson.com](mailto:sales@alwayson.com)  
Website: [www.alwayson.com](http://www.alwayson.com)