Always On™
UPS Systems Inc.

Aurora
Single Phase Emergency Lighting Inverters

Version 1.1

True Sine Wave On-Line Single Phase Emergency Lighting Inverters

AURORA Series Emergency Lighting AC Inverters are among the most reliable systems available for emergency lighting and other demanding critical applications.
The AURORA Series Emergency Lighting AC Inverters are Dual Conversion, On-line, single-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 3kW to15kW.
The AURORA 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 and PFC technology, the AURORA Series Emergency Lighting AC Inverters provide high efficiency.
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 AURORA Series Emergency Lighting AC Inverters offers tailor-made power protection to comply with your individual installation requirements. Options include additional runtime, remote monitoring panel, and distribution panels. In addition, a comprehensive software suite can be added for mission control and data protection-covers all your application needs.
Features: The system incorporates an automatic testing feature performed monthly. The front panel display provides user notification of current system operation as well as operating parameters and battery charge level.

Internal Maintenance bypass switch: An internal maintenance bypass switch is standard with all AURORA single 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. Input surge protection: Input surge protection is added at the input to provide enhanced protection to both the Inverter 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.
b. 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.

c. 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.
d. 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 AURORA system providing isolation under every mode of operation.
e. Cold start function: The AURORA 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 AURORA on battery DC power.
f. CPU design: A CPU is designed into the control circuit. The critical functions are designed with multi-level redundancy increasing reliability and up-times by eliminating field problems.
g. Wide input range: The components are overrated by design to handle high input voltages and currents without harm to the system, ensuring that the AURORA will remain one of the most reliable Inverter Systems available in today's market.
h. Harsh environment: Each component of the AURORA is chosen with the highest degree of safety margins allowing for wider environmental parameters and specifications related to temperature, humidity, altitude, surge or noise.
i. Intelligent charger: The AURORA will automatically recharge (boost charge) the batteries when the battery voltage level decreases to approximately 2V/Cell. To prevent the over-charging of the battery, the boost charge will stop when batteries achieve a 90% charged level or the ambient temperature reaches 35°C (95°F) at which point the float charging begins.
j. Intelligent battery test: The batteries are tested monthly automatically. When an abnormal condition (low charge rating, or bad battery) is found the user will be informed immediately through alarms on the AURORA system.
k. MTBF of cooling fans: Long cycling fans will operate at variable speeds necessary which is dependent on the load of the AURORA system increasing the life expectancy of the fan motors.
l. Intelligent interface: One PC can monitor and control up to ninety-nine AURORA's. This communication will warn the user immediately if a condition occurs. The AURORA status, data or commands can be transmitted to external modules through an RS-232 port or an optional web based SNMP networking module.
m. Data log capability: All normal and abnormal conditions can be stored on a PC for further reference by the user. Each abnormal condition 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 AURORA is turned off for servicing.
n. Convenient front panel design: The LCD display and status lights are viewable through the front panel window. All the viewable parameters can be read by opening the front door. The inverter on/off switch is protected from accidental operation by being located behind the locked front door.

Options

Output Circuit Breakers: Supports normally on or normally off circuit breakers.

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.

Communication Options:

RTS: Remote terminal strip

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

SNMP: SNMP adapter

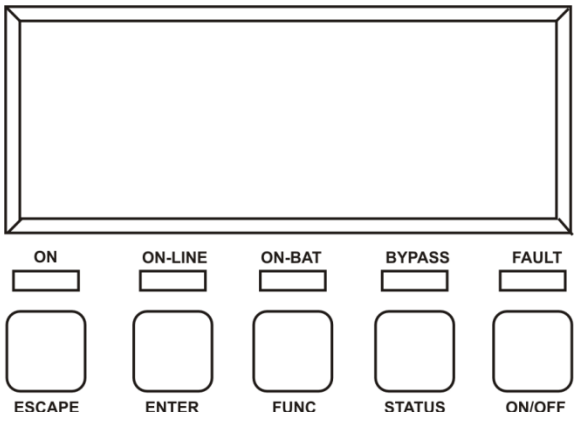
Other Options:

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 Control Panel



LCD Display

Normal Display

The AURORA status is shown in normal display mode. From here you have a choice to go to AURORA meters display and the Settings display by pushing the “STATUS” or “FUNC” button.

AURORA Meters Display

Various measurements are available through the AURORA meters display; pressing the “STATUS” button will scroll through the following meters:

LCD Message	Description
O/P VOLT=***.*V	Shows Output AC voltage
O/P FREQ=**.*Hz	Shows Output Frequency
I/P VOLT=***.*V	Shows Input AC Voltage
I/P FREQ=**.*Hz	Shows Input Frequency
BAT VOLT=**.*V	Shows Battery Voltage
O/P Load%=**%	Shows % of Maximum Rated Load
O/P W=*W	Shows Output Watts
O/P VA=*VA	Shows Output VA
O/P Curr=*A	Shows Output Current
BACKUP TIME=**min	Shows Estimated Backup time in minutes
BAT CHARG=**%	Shows approximate % of battery capacity
TEMPERATURE=**C	Shows approximate ambient temperature
BAT PACK NUM=*	Shows External Battery Packs Number
RATING=****VA	Shows UPS Rating
CPU VERSION **.*	Shows CPU Version

Table: AURORA metered display

Specifications

3KW to 7.5KW ELI 1Ø Input - 1Ø Output

	Model	3 kW	5 kW	7.5 kW
Input	Capacity	4.3kVA / 3.0kW	7kVA / 5kW	10kVA / 7.5kW
	Phase / Frequency	1 - Ø (2 Wire + GND)		50 / 60 Hz
	Rated Voltage	120 / 208 / 240 / 277 / 347 VAC		
	Voltage Range	- 25% to + 15%		
	Input Current	120 / 50 A 208 / 30 A 240 / 30 A 277 / 30 A 347 / 20 A	120 / 80 A 208 / 50 A 240 / 40 A 277 / 40 A 347 / 30 A	208 / 70 A 240 / 60 A 277 / 60 A 347 / 50 A
Output	Voltage / Phase	120 / 240 / 277 / 347 VAC (2 Wire + G)		
	Voltage Regulation	± 2%		
	Total Current	120 / 25 A 208 / 14.4 A 240 / 12.5 A 277 / 10.8 A 347 / 8.6 A	120 / 41.6 A 208 / 24 A 240 / 20.8 A 277 / 18 A 347 / 14.4 A	120 / 62.5 A 208 / 36 A 240 / 31.2 A 277 / 27 A 347 / 21.6 A
	Frequency	50 Hz / 60 Hz ± 0.5%		
	THD	< 3% Linear Load; < 5% Rectified Load		
	Load Power Factor	0.7		
	Slew Rate	1 Hz / Second		
	Transient Response	± 4% (100% Load Change)		
	Overload Capacity	110% - 125% for 1 min then switch to bypass 125% - 150% for 10 sec then switch to bypass		
	Crest Factor	3:1		
	Efficiency (AC - AC)	> 85%		
	Transfer Time	0ms		
	Outlets	Hard-Wired		
DC System	DC System Voltage	240 VDC		
Protection	Output Short	Yes		
	Abnormal Voltage	Yes		
	I / O Noise Protection	Common & Normal Mode Noise Suppression		
	I / O Spike & Transient Protection	Yes		
Interface	Communication	RS 232 / Dry Contact / Optional SNMP or AS400		
	Display	LCD Indicator Status Panel		
	Audible Alarms	On Battery, Low Battery, Overload, Fault		
Environment	Operating Temp.	0 - 40°C		
	Humidity	0% - 95% (Non-Condensing)		
	Audible Noise	55 dBA At 1 Meter from Unit		
Safety Approval	Safety	UL1778, UL924, CSA, C22.2, CSA107.3, NFPA111		
	EMI / RFI	FCC Part 15 Class A		
	Surge / Transient	IEEE C62.41 Cat.A		
Physical Data	W x D x H in mm.	450 x 700 x 1050	450 x 700 x 1050	450 x 700 x 1050
	Weight in kg.	208	255	300

Model Size	3 kW	5 kW	7.5 kW
Output Power Factor	0.7		
Input // Output Voltage Combinations Available[1] single phase	120 // 120 120 // 120 / 240 120 // 277 120 // 347 208 // 120 208 // 120 / 240 208 // 277 208 // 347 240 // 120 240 // 120 / 240 240 // 277 240 // 347 277 // 120 277 // 120 / 240 277 // 277 277 // 347 347 // 120 347 // 120 / 240 347 // 277 347 // 347		208 // 120 208 // 120 / 240 208 // 277 208 // 347 240 // 120 240 // 120 / 240 240 // 277 240 // 347 277 // 120 277 // 120 / 240 277 // 277 277 // 347 347 // 120 347 // 120 / 240 347 // 277 347 // 347
AC Input Voltage / Input Service Amps	120 / 50 A 208 / 30 A 240 / 30 A 277 / 30 A 347 / 20 A	120 / 80 A 208 / 50 A 240 / 40 A 277 / 40 A 347 / 30 A	208 / 70 A 240 / 60 A 277 / 60 A 347 / 50 A
Output Voltage and Maximum Output Current in Amperes at 100% load	120 / 25 A 208 / 14.4 A 240 / 12.5 A 277 / 10.8 A 347 / 8.6 A	120 / 41.6 A 208 / 24 A 240 / 20.8 A 277 / 18 A 347 / 14.4 A	120 / 62.5 A 208 / 36 A 240 / 31.2 A 277 / 27 A 347 / 21.6 A
Standard Charger Size (amps)	5		
DC System Voltage	240 VDC		

[1] Consult factory for other voltage ratings.

Circuit Breakers, cabling and other electrical components should be sized according to your national and local electrical codes.

SINGLE PHASE 30 MINUTES BACKUP CONFIGURATIONS

Standard Battery Systems for 30 Minute Runtime			
System Capacity Rating	3kW	5kW	7.5kW
ELI Dimensions WxDxH (in)	18" x 28" x 42"	18" x 28" x 42"	18" x 28" x 42"
ELI Dimensions WxDxH (mm)	450 x 700 x 1,050	450 x 700 x 1,050	450 x 700 x 1,050
BBU Dimensions WxDxH (in)	32" x 34" x 76"	32" x 34" x 76"	32" x 34" x 76"
BBU Dimensions WxDxH (mm)	815 x 865 x 1,930	815 x 865 x 1,930	815 x 865 x 1,930
Configuration	A	A	A
Maximum System Weight - lb/kg	1,600/728	1,600/728	1,800/819

SINGLE PHASE 60 MINUTES BACKUP CONFIGURATIONS

Standard Battery Systems for 60 Minute Runtime			
System Capacity Rating	3kW	5kW	7.5kW
ELI Dimensions WxDxH (in)	18" x 28" x 42"	18" x 28" x 42"	18" x 28" x 42"
ELI Dimensions WxDxH (mm)	450 x 700 x 1,050	450 x 700 x 1,050	450 x 700 x 1,050
BBU Dimensions WxDxH (in)	32" x 34" x 76"	32" x 34" x 76"	32" x 34" x 76"
BBU Dimensions WxDxH (mm)	815 x 865 x 1,930	815 x 865 x 1,930	815 x 865 x 1,930
Configuration	A	A	A
Maximum System Weight - lb/kg	1,600/728	1,950/887	1,950/887

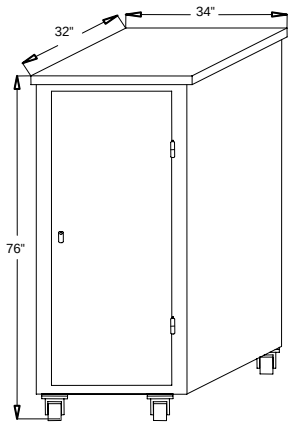
SINGLE PHASE 90 MINUTES BACKUP CONFIGURATIONS

Standard Battery Systems for 90 Minute Runtime			
System Capacity Rating	3kW	5kW	7.5kW
ELI Dimensions WxDxH (in)	18" x 28" x 42"	18" x 28" x 42"	18" x 28" x 42"
ELI Dimensions WxDxH (mm)	450 x 700 x 1,050	450 x 700 x 1,050	450 x 700 x 1,050
BBU Dimensions WxDxH (in)	32" x 34" x 76"	32" x 34" x 76"	32" x 34" x 76"
BBU Dimensions WxDxH (mm)	815 x 865 x 1,930	815 x 865 x 1,930	815 x 865 x 1,930
Configuration	A	A	A
Maximum System Weight - lb/kg	1,950/887	2,310/1,050	2,700/1,228

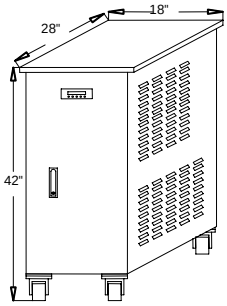
- Longer runtimes available. Consult factory.

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

Configuration A



BATTERY CABINET
32"X34"X76"
815 x 865 x 1930



ELI CABINET
18"x28"X42"
450 x 700 x 1050

10KW to 15KW ELI 1Ø Input - 1Ø Output

	Model	10 kW	15 kW
Input	Capacity	12.5 kVA / 10 kW	18.75 kVA / 15 kW
	Phase / Frequency	1 - Ø (2 Wire + GND)	50 / 60 Hz
	Rated Voltage	208 / 240 / 277 / 347 VAC	
	Voltage Range	- 25% to + 15%	
	Input Current	208 / 100 A 240 / 80 A 277 / 70 A 347 / 60 A	208 / 150 A 240 / 125 A 277 / 125 A 347 / 90 A
Output	Voltage / Phase	120 / 240 / 277 / 347 VAC (2 Wire + G)	
	Voltage Regulation	± 2%	
	Total Current	120 / 83.3 A 208 / 48 A 240 / 41.6 A 277 / 36.1 A 347 / 28.8 A	120 / 125 A 208 / 72.1 A 240 / 62.5 A 277 / 54.1 A 347 / 43.2 A
	Frequency	50 Hz / 60 Hz ± 0.5%	
	THD	< 3% Linear Load; < 5% Rectified Load	
	Load Power Factor	0.7	
	Slew Rate	1 Hz / Second	
	Transient Response	± 4% (100% Load Change)	
	Overload Capacity	110% - 125% for 1 min then switch to bypass 125% - 150% for 10 sec then switch to bypass	
	Crest Factor	3:1	
	Efficiency (AC - AC)	> 85%	
	Transfer Time	0ms	
	Outlets	Hard-Wired	
DC System	DC System Voltage	240 VDC	
Protection	Output Short	Yes	
	Abnormal Voltage	Yes	
	I / O Noise Protection	Common & Normal Mode Noise Suppression	
	I / O Spike & Transient Protection	Yes	
Interface	Communication	RS 232 / Dry Contact / Optional SNMP or AS400	
	Display	LCD Indicator Status Panel	
	Audible Alarms	On Battery, Low Battery, Overload, Fault	
Environment	Operating Temp.	0 - 40°C	
	Humidity	0% - 95% (Non-Condensing)	
	Audible Noise	55 dBA At 1 Meter from Unit	
Safety Approval	Safety	UL1778, UL924, CSA, CSA107.3, C22.2, NFPA111	
	EMI / RFI	FCC Part 15 Class A	
	Surge / Transient	IEEE C62.41 Cat.A	
Physical Data	W x D x H in mm.	1120 x 865 x 1880	
	Gross (Net) Weight in kg.	900 (825)	

Model Size	**10kW**	**15kW**
Output Power Factor	0.8	
Input // Output Voltage Combinations Available (Single Phase)	208 // 120 208 // 120 / 240 208 // 277 208 // 347 240 // 120 240 // 120 / 240 240 // 277 240 // 347 277 // 120 277 // 120 / 240 277 // 277 277 // 347 347 // 120 347 // 120 / 240 347 // 277 347 // 347	
AC Input Voltage / Input Service Amps	208 / 100 A 240 / 80 A 277 / 70 A 347 / 60 A	208 / 150 A 240 / 125 A 277 / 125 A 347 / 90 A
Output Voltage and Maximum Output Current in Amperes at 100% load	120 / 83.3 A 208 / 48 A 240 / 41.6 A 277 / 36.1 A 347 / 28.8 A	120 / 125 A 208 / 72.1 A 240 / 62.5 A 277 / 54.1 A 347 / 43.2 A
Standard Charger Size (amps)	10	
DC System Voltage	240 VDC	240 VDC

Consult factory for other voltage ratings.

Circuit Breakers, cabling and other electrical components should be sized according to your national and local electrical codes.

SINGLE PHASE 30 MINUTES BACKUP CONFIGURATIONS

Standard Battery Systems for 30 Minute Runtime		
System Capacity Rating	10kW	15kW
ELI Dimensions W x D x H (in)	42” x 27” x 67”	42” x 27” x 67”
ELI Dimensions W x D x H (mm)	1,067 x 686 x 1,702	1,067 x 686 x 1,702
BBU Dimensions W x D x H (in)	32” x 34” x 76”	32” x 34” x 76”
BBU Dimensions W x D x H (mm)	815 x 865 x 1,930	815 x 865 x 1,930
Configuration	C	C
Maximum System Weight – lb / kg	2,700/1,228	3,100/1,410

SINGLE PHASE 60 MINUTES BACKUP CONFIGURATIONS

Standard Battery Systems for 60 Minute Runtime		
System Capacity Rating	10kW	15kW
ELI Dimensions W x D x H (in)	42” x 27” x 67”	42” x 27” x 67”
ELI Dimensions W x D x H (mm)	1,067 x 686 x 1,702	1,067 x 686 x 1,702
BBU Dimensions W x D x H (in)	32” x 34” x 76”	32” x 34” x 76”
BBU Dimensions W x D x H (mm)	815 x 865 x 1,930	815 x 865 x 1,930
Configuration	C	C
Maximum System Weight – lb / kg	3,250 / 1,478	3,800 / 1,728

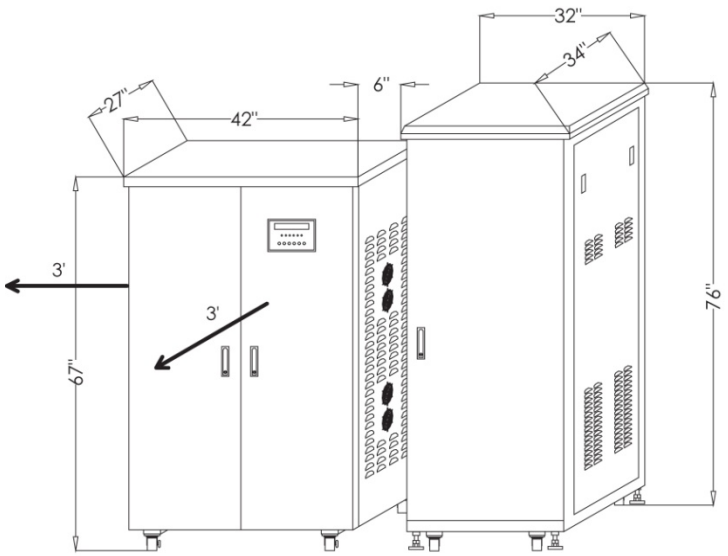
SINGLE PHASE 90 MINUTES BACKUP CONFIGURATIONS

Standard Battery Systems for 90 Minute Runtime		
System Capacity Rating	10kW	15kW
ELI Dimensions W x D x H (in)	42” x 27” x 67”	42” x 27” x 67”
ELI Dimensions W x D x H (mm)	1067 x 686 x 1702	1067 x 686 x 1702
BBU Dimensions W x D x H (in)	32” x 34” x 76”	2 * (32” x 34” x 76”)[1]
BBU Dimensions W x D x H (mm)	815 x 865 x 1,930	2 * (815 x 865 x 1,930)[1]
Configuration	C	D
Maximum System Weight – lb / kg	3,800 / 1,728	4,750 / 2,160

- Longer runtimes available. Consult factory.

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

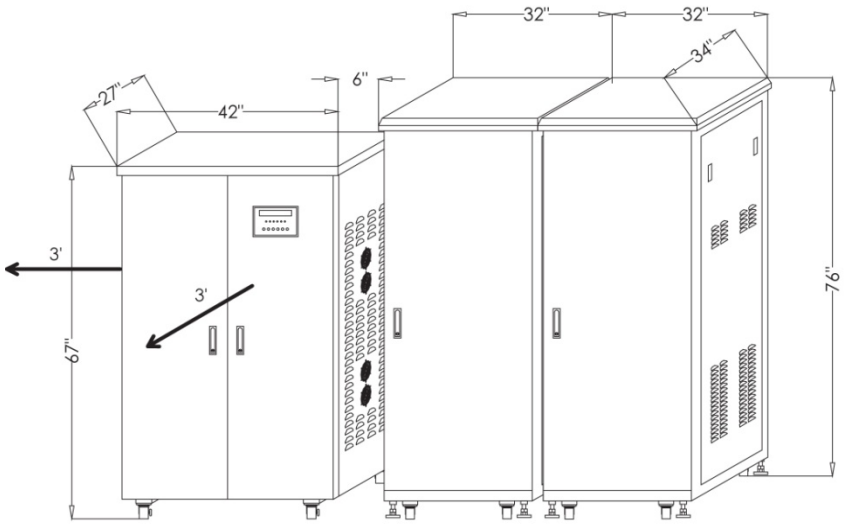
Configuration C



UPS CABINET
42"X27"X67"

BATTERY CABINET
32"X34"X76"

Configuration D



UPS CABINET
42"X27"X67"

BATTERY CABINET
32"X34"X76"

BATTERY CABINET
32"X34"X76"

AURORA Series

Developing an Always On Control Number

AUR _____ _____ _____ _____

Voltage[1] (In // Out)		Wattage (Select)		Runtime		Options
J	=120 // 120	J	=1.25kW	S	=Standard sealed battery	See Below
K	=120 // 120 / 240	K	=1.5kW			
L	=120 // 277	L	=2.2kW			
M	=120 // 347	M	=3.0kW			
N	=208 // 120	N	=5.0kW			
O	=208 // 120 / 240	O	=7.5kW			
P	=208 // 277	P	=10.0kW			
Q	=208 // 347	Q	=15.0kW			
R	=240 // 120					
S	=240 // 120 / 240					
T	=240 // 277					
U	=240 // 347					
V	=277 // 120					
W	=277 // 120 / 240					
X	=277 // 277					
Y	=277 // 347					
Z	=347 // 120					
A	=347 // 120 / 240					
B	=347 // 277					
C	=347 // 347					

[1] *Input, output voltages are single phase 2 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 up to 10 supervised or 15 unsupervised pole positions. Specify type, voltage, amp rating, and quantity of breakers from the selection below:

Type	**Voltage**	**Amp Rating**	**Qty**
ON = normally on OF = normally off	A = 120[2]	15[3]	1 – 15

2) R30 = 30 minutes R90 = 90 minutes
R60 = 60 minutes R120 = 120 minutes
Longer runtimes available. Consult factory.

3) Communication Options
RTS = Remote Terminal Strip
RCMP = Remote Control and Monitoring Panel
SNMP = SNMP adapter

4) Other Options
EMBP = External Maintenance Bypass
EWB20 = 20 year life type battery
12HR = 12HR recharge time

[2] 120 Volt input not available on 7.5kW and larger
Other voltage configurations available. Consult factory

[3] Other amp ratings available. Consult factory.

Contact Always ⏻n

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