S3NV

Three Phase Inverter

Big, Powerful Inverter System.

Centralized emergency lighting inverters featuring one of the smallest pure sine wave three phase cabinet footprints in the industry!
Meets NFPA 101, 111, NEC, IBC and local codes.

Applications

Industrial Manufacturing
Warehouses
Theaters/Concert Halls
Auditoriums
Conference/Banquet Centers
Shopping Malls
Casinos
Sports Facilities
University Buildings
Healthcare Facilities
Subway/Train Stations
Correctional Facilities
Worship Facilities

UL 924 Listed
C-UL Listed to CSA C22.2 No. 141-10
CCMC on selected models

Emergency Lighting Requirements

Stanpro meets stringent requirements in construction, performance, self-diagnostic and self-testing of S3NV centralized emergency lighting inverter. S3NV is UL 924 listed as “Emergency Lighting Equipment” and “Auxiliary Lighting and Power Equipment”, as well as NFPA compliant as “Life Safety Equipment”.

The S3NV offers more security and versatility to meet illumination requirements, being the perfect complement for all life safety and lighting applications.

Our inverter technology effectively maintains critical equipment with extended brownout protection, tight voltage regulation, and power conditioning. Tight voltage regulation assures that facility egress lumens are maintained 100% at emergency lighting fixtures, in all modes of operation, and also extends ballast, LED driver, and lamp life.

Advantages

Design Flexibility

Using existing fixtures for emergency lighting and egress assures compliance with minimum illumination code requirements. Extensive combinations of input and output voltages, timed off bus with remote “Command ON” control, automatic battery testing, and control device override options make the S3NV one of the most versatile and dependable lighting inverter systems in the market.

Single Point Operation / Maintenance

One central inverter controls many smaller circuits. Cost-effective, single-point operation, provides a common battery pack, and enables all maintenance to be performed and records to be logged from a single location. Additional benefits include:

- Egress lighting integrity test.
- Hot-swappable battery replacement.
- Standard internal bypass.
- Standard 15-year pro-rated battery life.

Premium Power And Voltage Regulation

Maintains proper operating voltage for HID and high-pressure sodium lighting, as well as electronic ballasts and LED lighting, resulting in:

- Voltage sag and surge protection.
- Longer wire runs without upsizing the wire. Regulated voltage source minimizes voltage drop.
- Less-frequent replacement of ballasts, LED drivers, and lamps.
- Facility egress lumens are maintained 100% (will not diminish) over the full 90 minute of emergency power.

Generator Compatible

The S3NV is listed “UL 924 Auxiliary Lighting and Power Equipment”, and is suitable to provide uninterrupted back-up power until a generator starts. Even with an extremely distorted input waveform, the output of the S3NV delivers a clean sine wave, with no more than 3% THD, without switching to batteries. This feature also extends ballast, LED driver, and lamp life.

Benefits

Reliability & Compatibility

Reliability is the most important feature of any emergency power source! Without it, all the other features and benefits are meaningless. This is why state-of-the-art, DSP-controlled, IGBT circuitry is used for the S3NV's rectifier and inverter power sections. Also essential to the design, are the fiber optic cables for control and communications. Fiber optics allow for better isolation and faster, more accurate, noise-free signals between processors. The S3NV provides reliable, regulated voltage during normal and emergency power modes.

The S3NV is designed to be compatible with all lighting fixture types, including LED. The S3NV also allows for full design flexibility, used to power both normally ON and normally OFF emergency lighting loads, in any combination. The S3NV's off bus option includes user-programmable transfer on delay, transfer off delay, and a proprietary soft start feature.

Compact Footprint

The S3NV is thoughtfully designed to be physically smaller than comparable emergency lighting inverter products, without compromising performance or serviceability. In fact, competing products don't even come close! The S3NV's "front access" cabinet design does not require any side or rear access for system installation, operation, or service.

	Output Rating	Width (in.)	Depth (in.)	Height (in.)
S3NV	33 kW	70	33	77
Competitor A	32 kW	130	32.5	71
Competitor B	33 kW	140	31	72

Note: Dimensions include 90 minutes of battery at full load.

Advanced digital monitoring

Advanced Digital Monitoring — The Intellistat TS™

The S3NV includes a user-friendly Intellistat TS™ monitor which provides quick, full-access to all of the inverter's features. This allows all programming to be done directly from the touchscreen display, and provides complete system diagnostics and testing. A colour, TFT, high resolution touchscreen display indicates all the electrical parameters, as well as the functional status of the inverter. The touchscreen display allows the entry of the date/time values, system setpoints, and password information into the monitor, without the need of an external computer and cable.

The Intellistat TS's features include:

- LCD display of all electrical parameters.
- NFPA-compliant automatic battery testing / logging.
- User-programmable automatic system testing.
- System alarm annunciation.
- Audible alarm with alarm silence.
- Alarm status display.
- Programmable alarm set-points.
- Date and time display.
- Auto-logging of test results and abnormal events.
- Multi-layer password protection.
- Logs up to 75 events.
- Non-volatile clock and memory.
- Remote monitoring capabilities.
- Optional reporting of test results via e-mail/voice/webpage.
- Optional status notification via e-mail/ cell phone.

Monitored Parameters

The Intellistat TS monitors 3-phase input and output parameters, and inverter status indicators:

- Voltage
- kVA and kW totals
- Frequency
- Output percent load L-N (% kVA)
- Current
- Output percent load total (% kVA)
- VA
- Battery voltage
- Watts
- Battery charge/discharge current
- Power factor
- Battery time (minutes) remaining

Alarms & Status

The Intellistat TS announces multiple alarms, including:

- Input phase rotation error
- System on battery
- High/low input voltage
- Low battery warning
- High/low input frequency
- Low battery shutdown
- High/Low output voltage
- Battery test in progress
- High/Low output frequency/time remaining
- High output VA (overload)
- Auto battery test failed
- * Low output VA
- OFF bus status
- High/Low battery voltage
- DC charger fail/DC open
- High battery charger current
- Output circuit breaker open
- System normal
- REPO shutdown
- IGBT fault
- Manual restart required
- Overtemp shutdown
- Static bypass status/alarms
- System in manual bypass

**User-programmable limit referenced during automatic battery testing, to verify integrity of egress lighting.*

Egress Lighting Integrity Test

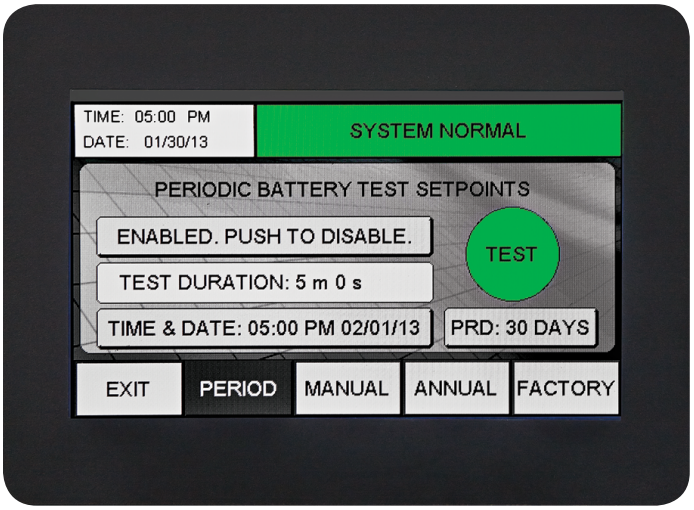
This feature provides the industry's most advanced life safety system test available. To satisfy NFPA-mandated periodic and annual requirements, the Intellistat TS automatically initiates the testing of all life safety circuits, regardless of egress lighting design ("always ON" or "normally OFF"). The Intellistat TS then compares power consumption during the test period with user-defined load capacity, analyzing the data, and advising if service is required.

Automatic System Tests

The Intellistat TS automatically performs a user-defined (date and time) 5-minute system test every 30 or 90 days. It also performs user-defined (date and time) 30-, 60-, or 90-minute, or 2- or 4-hour annual system tests. For all of these tests, the Intellistat TS logs the test results with date and time, as well as a "pass" or "fail" indication.

Manual System Tests

The Intellistat TS also allows the user to manually invoke a user-defined system test for 30-, 60-, or 90-minutes, as well as 2- or 4-hours. A 1-minute or 5-minute manual test is also available for "spot inspections".



The colour touchscreen display on the Intellistat TS provides all electrical parameters, inverter status, programmable inverter, battery testing, and data-logging. Optional NetMinder™ communications allow remote monitoring and reporting via BACnet/IP or BACnet MS/TP, Ethernet TCP/IP, MODBUS TCP, or MODBUS RS485.

Specifications

Power

Ratings (kVA/kW)	10, 13, 14, 15, 16, 17, 20, 22, 24, 26, 28, 30, 32, 33 at 1.0 (unity) power factor
Topology	True online double-conversion, uninterruptible power

Electrical input

Nominal Voltage	208/120V, 480/277V or 600/347V Wye, 60Hz. Consult factory for 50Hz models
Voltage Range	+10%, -15% at full load
Operating Frequency	+/-5% from nominal
Power Factor	> .98 typical
Current Distortion	< 10% THD

Electrical output

Nominal Voltage	208/120V, 480/277V or 600/347V Wye, 60Hz. Consult factory for 50Hz models
Voltage Regulation	+/-3% from nominal typical
Frequency	+/-0.5% while in battery operation mode
Overload	Up to: 110% for 2 minutes, 125% for 30 seconds, 150% for 10 seconds, 500% for ½ cycle (without use of static bypass)
Voltage Distortion	3% maximum THD with a linear load
Efficiency	90% typical

Battery

Type	Valve-regulated, sealed lead calcium, maintenance-free. Front access terminals
Testing	Manual: Password-protected Automatic: User-programmable
Standard Runtimes	UL 924 Emergency Lighting Equipment - 90 min. C-UL Emergency Lighting Equipment - 30 min.
Optional Runtimes	UL 924 Auxiliary Lighting and Power Equipment - 15, 30, 60, 120, and 240 minutes. Consult factory for other UL / C-UL listed runtimes.
Nominal Voltage	Factory-programmable from 216-384 VDC, or from 132-168 VDC, kW, model, and runtime dependent
Charger	3-stage, temperature compensated
Recharge Time	UL 924 and NFPA 101, 111 compliant
Battery Replacement	Hot-swappable batteries - replaced without interrupting power to the load

Certifications

Safety	UL 924 Listed - Emergency Lighting Equipment C-UL Listed to CSA C22.2 No. 141-10 - Emergency Lighting Equipment UL 924 Listed - Auxiliary Lighting and Power Equipment NFPA 101, 111, NEC, and local codes
EMI Compliance	FCC Class A limits, 47 C.F.R. Part 15, Subparts A, B
Quality	ISO 9001:2008

General

Diagnostics	Continuous system self-check, including battery health
Static Bypass	Automatic bypass on overload or system failure
Internal Bypass	Integral, make-before-break switch with a secure push-to-turn function that provides an uninterrupted bypass of the inverter system
Maintenance Bypass	Optional external, wall-mounted, wrap-around, 4 pole BBM or MBB switch with a secure push-to-turn function, available for models where input-output nominal voltages are the same
Remote Emergency Power Off (REPO)	Optional input relay interface allows external contact closure to shut off the inverter system
Normally Off Bus	Optional standby output for use with “normally off” emergency lighting fixtures
Output Distribution	Optional output circuit breakers

Communications

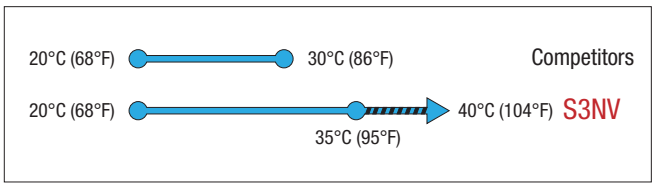
LCD Display	High resolution, colour touchscreen display for monitoring system status and parameters, and to access programmable inverter and battery testing
Communication Port	RS232 serial communications for factory setup and authorized field service access
Network / Web	Remote monitoring and reporting via optional BACnet/IP or BACnet MS/TP, Ethernet TCP/IP, MODBUS TCP, or MODBUS RS485. Includes notification of alarms via SNMP, e-mail, and network broadcast messaging, or user’s building management system
Relay Interface	Optional potential-free isolated status and alarm contacts via hardwired terminal strip. Contacts rated for 2A at 30 VDC, or 1A at 120 VAC

Environmental

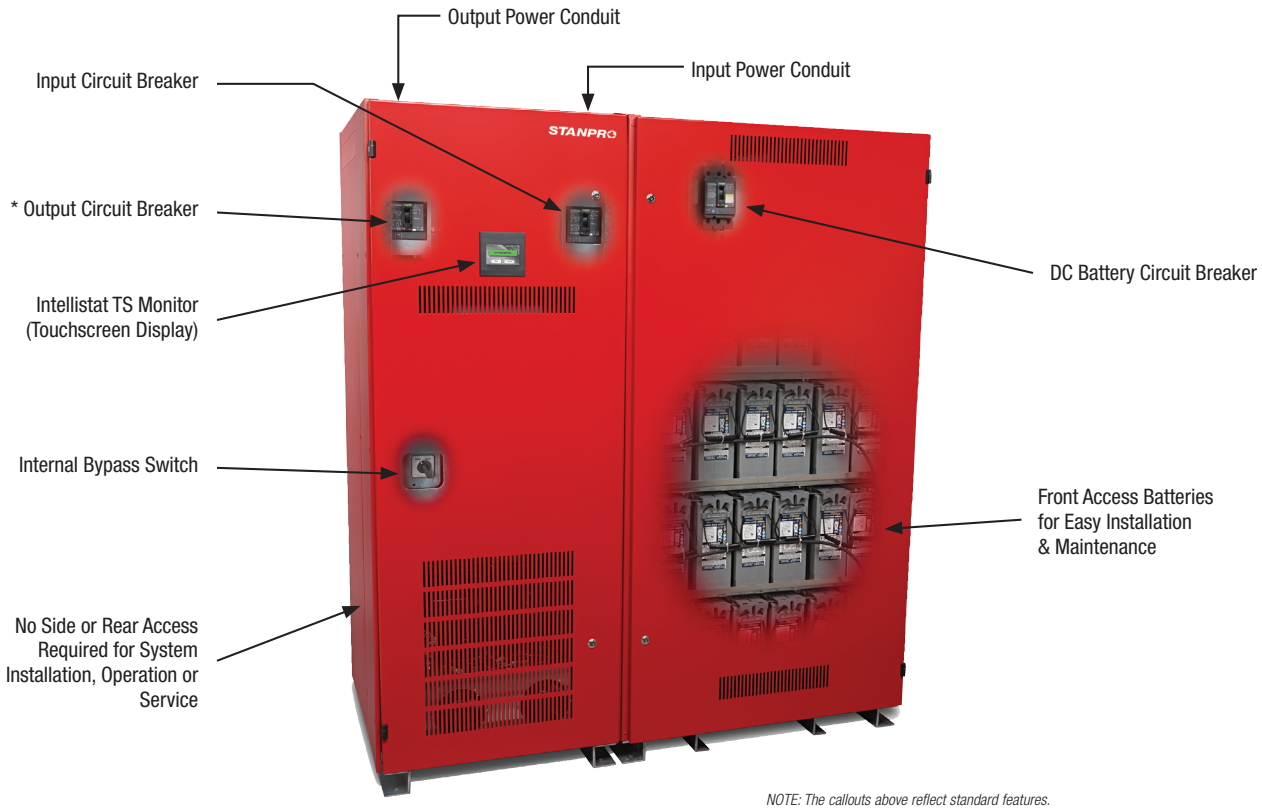
Operating Temperature	20°C to 35°C for UL 924 Listed models (See illustration and note below.) 20° C (10° C optional) to 40° C for C-UL Listed models Optimum battery performance and life at 25°C
Storage Temperature	Inverter at -20°C to 50°C Battery storage at 25°C for 6 months before charging is required. For each 9°C rise, reduce storage time by half
Relative Humidity	0 to 95% non-condensing
Audible Noise	< 60 dBA at 1 meter
Altitude	6600 feet (2000 meters) without derating

UL rating temperature test comparison

NOTE: To satisfy UL 924 requirements for a 35°C rating, UL testing was performed in a 40°C ambient environment, with units tested under full load and at low line input voltage.



Product Layout



NOTE: The callouts above reflect standard features. Protective Inner Panel in the Inverter Cabinet Allows Operation of Breakers & Bypass, But Prevents Physical Contact with Live Connections

** Monitored output circuit breaker standard on C-UL listed models, optional on UL 924 listed models.*

Inverter Options

Battery Run Times

All UL 924 models listed as Emergency Lighting Equipment are provided with a standard 90 minute of battery backup. C-UL models are provided with a standard 30 minutes backup. Please consult factory for other C-UL listed run times. Optional run times include 15, 30, 60, 120, and 240 minutes at full rated load. When optional run times are provided, the emergency lighting inverter is UL 924 listed as “Auxiliary Lighting and Power Equipment”. Please consult factory for battery option weights and cabinet configurations.

Maintenance Bypass

On systems in which the nominal input and output voltages are the same, an optional external, wall-mounted, push-to-turn, 4 pole Break-Before-Make (BBM) or Make-Before-Break (MBB) wrap around maintenance bypass switch is available. In bypass mode, the switch bypasses the system allowing isolation of the inverter’s input and output, and to enable the inverter to be fully serviced (including the complete maintenance and replacement of circuit cards or components). The bypass switch includes an auxiliary contact to indicate the position of the switch (normal or bypass) for remote monitoring purposes.

The MBB bypass switch has a second auxiliary contact which is wired to the inverter system. This contact enables the switch’s push-to-turn function to invoke the static bypass before the switch is turned to the bypass position. With the static bypass engaged, no interruption of power to the load will occur during transfers and retransfers.

Output Distribution

Provided in a side-mounted, 14” wide, front access distribution cabinet, a total of 12 pole positions per phase (36 total) are available to accommodate 1, 2, and 3 pole circuit breakers fed from an inverter system output of 208/120 VAC or 480/277 VAC. These circuit breakers are located behind a secured, lockable, hinged door; and can be factory-wired to the “Normally ON” bus and/or “Normally OFF” bus in any combination specified.

Monitored output circuit breakers are available, reducing the number of pole positions to 8 per phase (24 total). If a circuit breaker is open, the Intellistat TS monitor sounds an alarm. Optional alarm relay contacts are also available.

Normally OFF Bus

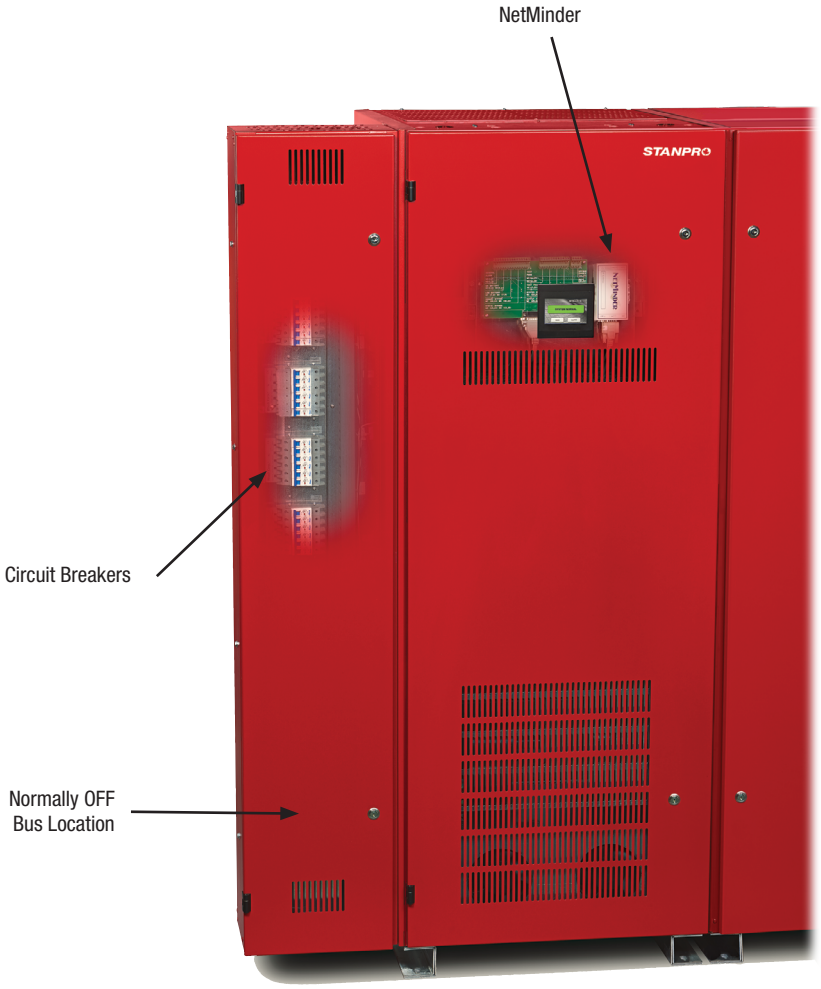
Provides standby power to “normally OFF” emergency lights when utility power is lost or inadequate, or if energized via a remote alarm contact. This option includes:

User-Programmable Settings

Transfer On Delay (0 – 8 seconds)
Transfer Off Delay (0 – 15 minutes)
Soft Start Control (0 – 172 cycles)

Remote Input “Command ON”

Allows a remote alarm contact signal to energize the “Normally OFF” bus, thus illuminating the “Normally OFF” emergency lights.



Status/Alarm Relay Contacts

Isolated, potential free (Form C) relay contacts, rated for 2A at 30 VDC or 1A 120 VAC, are available via a terminal strip for customers' hardwired connections to building monitoring and security systems. Status/alarm contacts include inverter ON, ON battery power, low battery, general alarm, in bypass, periodic or annual test activated, output circuit breaker open, battery test pass, and battery test fail.

Remote Communications

The S3NV's Intellistat TS monitor is available with optional NetMinder communications. NetMinder integrates the S3NV into a BACnet/IP or BACnet MS/TP, Ethernet TCP/IP, MODBUS TCP, or MODBUS RS485 network with a specific IP address for Ethernet connected systems. NetMinder provides remote monitoring of the inverter status, battery test pass/fail results, alarm conditions, and electrical measurements via a web browser, without the need for any external software. Remote notification of alarms and status are available via SNMP, e-mail, and network broadcast messaging, or the user's building management system.

Ordering Guide

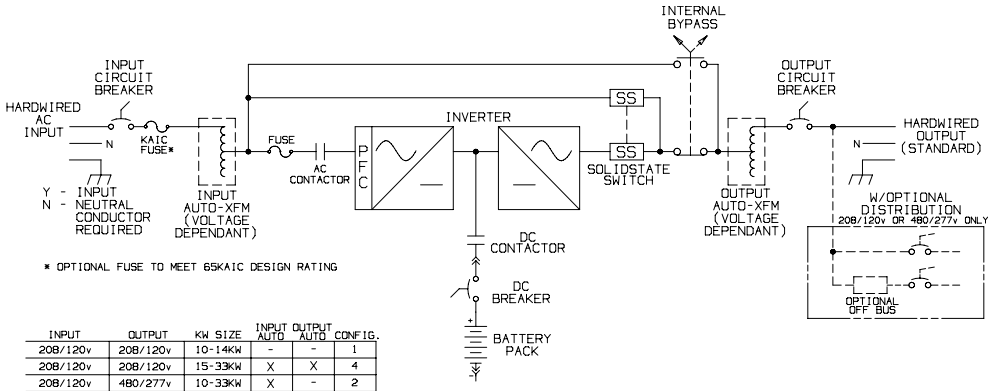
Series	Input Voltage (VAC)	Capacity Rating (KW)		Output Voltage (VAC)	Monitor	Output Distribution	Relay interface Options
S3NV30 **S3NV60** **S3NV90** **S3NV120**	**BA** - 208/120V **KE** - 480/277V **SH** - 600/347V	**10** **13** **14** **15** **16** **17** **20**	**22** **24** **26** **28** **30** **32** **33**	**BA** - 208/120V **KE** - 480/277V **SH** - 600/347V	**0** - Intellistat Intellistat with **1** - TCP/IP or Modbus TCP **2** - Modbus RS 485 **3** - BACnet/IP **4** - BACnet MD/TP	**0** - Intergral main CB Only **1** - Distribution Cabinet **2** - Distribution Cabinet w/ Normally OFF bus	**0** - None provided **1** - Output Alarm relay Contacts and Off bus “Command ON” and REPO Inputs **2** - Off bus “Command ON” and REPO Inputs

KVA/KW	“BTU/HOUR FULL LOAD”
10	3410
13	4433
14	4774
15	5115
16	5456
17	5797
20	6820
22	7502
24	8184
26	8866
28	9548
30	10230
32	10912
33	11253

Voltage configurations INPUT OUTPUT VAC 60HZ		
BABA - 208/120 - 208/120	BAKE - 208/120 - 480/277	BASH - 208/120 - 600/347
KEBA - 480/277 - 208/120	KEKE - 480/277 - 480/277	KESH - 480/277 - 600/347
SHBA - 600/347 - 208/120	SHKE - 600/347 - 480/277	SHSH - 600/347 - 600/347

1. Stated full load BTU’s for 480/277 VAC input – output models. Consult factory for BTU’s of other models.

TYPICAL INVERTER 3 PHASE SCHEMATIC



INPUT	OUTPUT	KW SIZE	INPUT AUTO	OUTPUT AUTO	CONFIG.
208/120v	208/120v	10-14KW	-	-	1
208/120v	208/120v	15-33KW	X	X	4
208/120v	480/277v	10-33KW	X	-	2
208/120v	600/347v	10-33KW	X	X	4
480/277v	208/120v	10-33KW	-	X	3
480/277v	480/277v	10-33KW	-	-	1
480/277v	600/347v	10-33KW	-	X	3
600/347v	208/120v	10-33KW	X	X	4
600/347v	480/277v	10-33KW	X	-	2
600/347v	600/347v	10-33KW	X	X	4