



STL SERIES 3 PHASE

PURE SINE WAVE EMERGENCY LIGHTING INVERTER

Installation Instructions and User Manual
***SAVE THESE INSTRUCTIONS**



IMPORTANT!!

READ AND FOLLOW ALL SAFETY INSTRUCTIONS

IMPORTANT SAFEGUARDS

WHEN USING ELECTRICAL EQUIPMENT, YOU SHOULD ALWAYS FOLLOW BASIC SAFETY PRECAUTIONS, INCLUDING THE FOLLOWING:

1. **Read and follow all safety instructions.**
2. **Do not install this lighting inverter outdoors.**
3. **Do not install near heaters or in any other high-temperature environment.**
4. **Exercise extreme caution when servicing batteries. Battery acid can cause burns to skin and eyes. If acid comes in contact with skin or eyes, flush with fresh water and contact a physician immediately.**
5. **Inverter should be installed in locations where it will not be readily subjected to tampering by unauthorized personnel.**
6. **The use of any accessory equipment not recommended by the manufacturer may cause an unsafe condition and will void the warranty.**
7. **Prior to installation, read through the instructions thoroughly and follow all steps outlined in the instructions during the installation. Failure to do so may cause premature failure of the equipment and may cause an unsafe condition.**
8. **If this lighting inverter needs servicing, all work must be performed by a qualified personnel.**

SAVE THESE INSTRUCTIONS

The installation and use of this equipment must comply with all federal, state, municipal, and local codes that apply.



STL Inverters require on-site factory start-up. Do not start on your own!

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1. INVERTER SPECIFICATIONS

1.01 Inverter Specification - STL 3 Phase

Inverter:

Input voltage:	208Y or 480Y VAC, 60Hz, Three Phase, Four Wire
Input power factor:	≥95%
Output voltage:	208Y or 480Y VAC, 60Hz, Three Phase, Four Wire
Overall inverter efficiency:	≥95%
Minimum loading:	none required
Noise:	45-60dB (4ft from inverter)
Harmonic distortion:	< 3% Linear load, non-linear load <5%
Overload capacity:	125% for 5 minutes, 150% for 10 seconds
Time to transfer to inverter after utility power failure:	0 ms

Battery:

Battery charger: Fully automatic and temperature compensated
Recharge time: Meets UL924
Battery protection: Automatic low-battery voltage disconnect
automatic restart upon utility return
Standard battery: Sealed VRLA, 10 year design life.
Runtime: 90 minutes standard
Operating Temperature: 20° C - 30° C (68° F - 86° F)

Battery performance and life are rated at 25°C (77°F)

Relative humidity: 95% non-condensing.

2. INSTALLATION INSTRUCTIONS

2.01 Shipment Inspection

Upon delivery of the lighting inverter, inspect the outer cartons for any sign of damage or mishandling and verify the total carton count received against the total carton count indicated on the shipping documents. Do not attempt to install the system if damage is apparent. If any damage is noted or any item is missing, file a damage claim or material loss claim with the carrier within 24 hours and inform the factory of the claim and the condition of the equipment. The manufacturer's contact information is in section 5.01.

Remove the system from its outer packaging materials and recycle the materials if possible, then visually examine the inverter system and all of its components for any transit damage. Report any damage to the carrier and the factory immediately.

Check the system rating of the inverter to verify the model number and rating of the inverter shipped is as specified. This is located on the inner dead front of the inverter. Record all relevant information in the back of this manual under section 5.02. This information is necessary in the event service is required, and fill out the registration page on our IEP Systems website.

2.02 Temporary Storage of Inverter and Batteries

If the inverter will not be installed immediately, the inverter must be stored indoors where the humidity is no higher than 90%, the temperature is no higher than 30°C (86°F) and the location should be clean with normal ventilation for human habitation.

Batteries for this inverter system should be stored at 25°C (77°F). If the batteries are to be stored for more than three (3) months, the batteries must be charged at least once every three (3) month period.



Lengthy storage of batteries will cause irreversible damage to the cells. Batteries should not be stored for more than 6 months from when they are shipped.



Do not allow smoking, sparks, or flames in battery storage vicinity due to explosion hazard from concentrated hydrogen. Batteries will self discharge quicker at higher average ambient temperature.

2.03 Installation Room Selection

Choose a location that offers:

- Enough space to service the inverter
- Air circulation to expel any heat generated by the inverter, preferably air conditioned
- Protection against moisture and excessive humidity
- Protection against dust and other particulate matter

INSTALLATION INSTRUCTIONS



The system is very heavy. Proper equipment and practice must be taken to ensure safety. Verify that the floor is capable of safely bearing the overall weight of the system.

This inverter system is designed to operate from 0°C to 40°C (32°F to 104°F) at up to 95% relative humidity. For optimal performance, avoid installing the inverter in an environment at the temperature extremes of the designated operating range.

Batteries will be less efficient at temperatures below 18°C (65°F). High temperatures will reduce the useful service life of the batteries. The battery life will typically be reduced to half (½) at 35°C (95°F) and reduced to one-fourth (¼) at 45°C (113°F).

Battery performance and service life is maximized if the operating temperature is maintained at 25°C (77°F)

The system must be installed in an area in which the air is free of dust, corrosive chemicals, and other contaminants. Do not place this inverter system or batteries in a sealed room or container.



Never install batteries in a sealed room or enclosure.

The maximum operating temperature drops 1°C per 300 meters (2°F per 1000 feet) above sea level. Maximum elevation is 3000 meters (10,000 feet)

The inverter must be installed on a surface that is capable of supporting the overall weight of the system.

2.04 Installation Requirement

Tools:

- Socket Set (metric)
- Electrical Tape
- Slotted Screwdriver
- Phillips Screwdriver
- Digital Multimeter
- Torque Wrench
- Personal Safety Equipment
- Other Safety Equipment Required by Code
- Digital Clamp on Ammeter



Always use insulated tools for battery and AC connections. Always torque to the manufacturer's recommendations.

Follow all federal, state and local codes as it pertains to emergency circuit raceways

2.05 Inverter Placement

There must be a minimum of 36 inches of clearance space in front of the inverter for service, and a minimum of 12 inches of clearance on each side of the inverter for ventilation.

The unit must be secured from the back to the wall, or secured to the floor via means of floor-mounting brackets.

Necessary hardware to fasten the unit to the mounting surface is to be supplied by the installing contractor.



Follow all federal, state and local codes as it pertains to emergency circuit raceways. Exercise and observe all safety practices.

Note: All conduit openings are located bottom front, Do not punch any additional openings in cabinet.

2.06 Inverter Battery (DC) Placement Connection

Prior to installing batteries, the installer must read and observe the following precautions and any other safety measures dealing with DC and battery wiring.

1. Wear protective clothing, eye-wear, rubber gloves and boots. Batteries contain corrosive acids or caustic alkalis and toxic materials and can rupture or leak if mistreated. Remove rings and metal wristwatches or other metal objects and jewelry. Don't carry metal object in pockets where the objects can fall onto the batteries or into the inverter system.
2. Tools must have insulated handles so that they will not short battery terminals. Do not allow a tool to short a battery terminal to another battery terminal or to the cabinet at any time. Do not lay tools or metal parts on top of the batteries, and do not lay any objects where they can fall onto the batteries or into the cabinet.
3. Install the batteries as shown on the battery wiring diagram provided in this manual or with the battery cable kit. Important: When connecting cables, never allow a cable to short across a battery's terminals, the string of batteries, or to the cabinet.
4. Align the cables on the battery terminals so that the cable lug will not contact any part of the cabinet even if the battery is moved. Keep the cable away from any sharp metal edges.
5. Install the battery cables so that they cannot be pinched by the inverter system cover.
6. Where conductors may be exposed to physical damage, protect conductors in accordance with NEC requirements.
7. Full voltage and current are always present at the battery terminals. The batteries used in this system can produce dangerous voltages, extremely high currents, and risk of electric shock. Batteries may cause severe injury if the terminals are shorted together or to ground (earth). Be extremely careful to avoid electric shock and burns caused by contacting battery terminals or shorting terminals during battery installation. Do not touch battery terminals.
8. A qualified electrician who is familiar with battery systems and required precautions must install and service the batteries. Any battery used with this inverter must comply with the applicable requirements for batteries in the standard for emergency lighting and power equipment, UL924. Replacement batteries must be approved by the factory for use with this inverter system. If using substitute batteries not supplied by the factory, the inverter may fail to perform properly and will void the warranty. The installation must conform to national and local codes as well. Keep unauthorized personnel away from batteries.



Warning: Lethal DC voltage is always present. PPE is required.

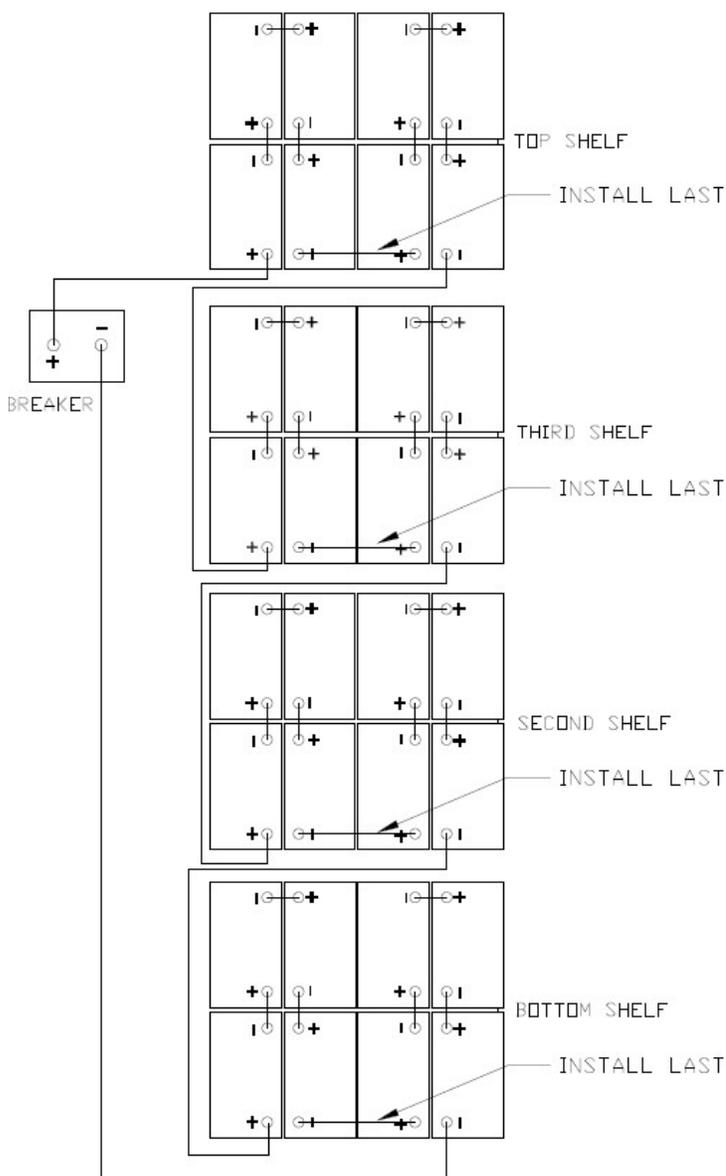
The installers will encounter dc voltage of between from 384 to 540 Volts depending on system size.



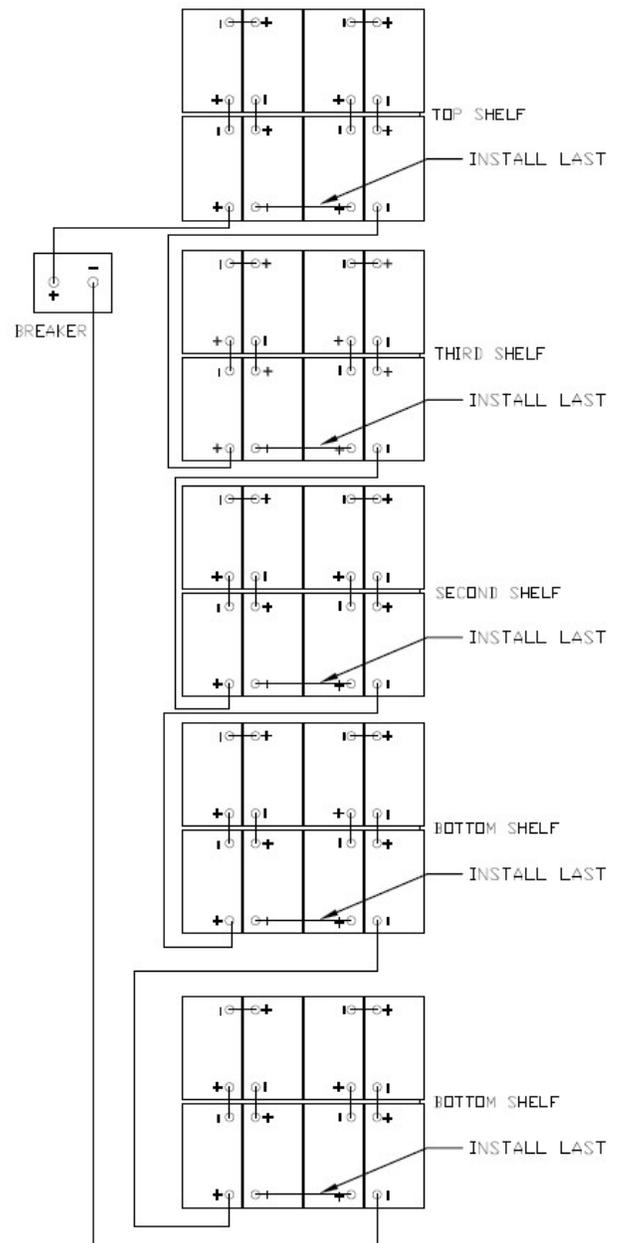
A qualified electrician who is familiar with battery installation and applicable building and electrical codes should install the batteries.

The nominal battery voltage for this lighting inverter is indicated on the system. Batteries must be installed at the correct DC voltage. Failure to do so will damage the inverter!

384VDC



480VDC





Be careful! Observe the correct polarity on the battery terminals. Any illustration provided below is given as a guide only. Polarity markings may vary from battery to battery. There may be a small arc and pop when the last battery is connected.

Read the equipment labels as to what DC Voltage the system is and use the appropriate diagram.



The DC feed to the inverter must be in a separate cabinet. Connection is in the bottom front of the cabinet

Always follow the system label for proper DC voltage applicable to the system on which you are working. Ensure that the DC voltage reading is within 10% of the nominal DC rating on the system label. Contact the factory for any questions.



DO NOT TURN ON THE BREAKER OR FUSE HOLDER TO CHECK DC VOLTAGE.

Make sure the DC connection is made before energizing the inverter. Applying AC voltage to the inverter without installing the battery will damage the inverter and void the warranty.

Install batteries bottom shelf back first and work forward. Torque battery connection as you install each battery. Connect the next shelf of battery when the bottom shelf batteries are connected. Voltage should be within 10% of nominal.

2.07 AC Connection

Prior to making the AC connections, the installer must read and observe the following precautions and any other safety measures dealing with AC wiring.

- 1. This equipment contains hazardous AC and DC voltage. Because of these voltages, only a qualified electrician can install this system. The electrician must install the AC line service according to local, state, NEC and other applicable safety practices, and must be familiar with batteries and battery installation. Always wear protective clothing and eye protection and use insulated tools when working near batteries.**
- 2. Before installing, maintaining or servicing this unit, always de-energize all sources of AC power first, then disconnect the DC power, and shut off this inverter according to the section on Safe Shutdown Procedures (4.01). Disconnect the AC line input at the service panel and make sure the inverter will not supply output voltage.**
- 3. Observe proper phase rotation. The system will not operate if phase rotation is incorrect.**
- 4. Whenever AC and/or DC voltage is applied, there will be AC voltage inside this inverter system. The unit is designed to supply power from AC line or from the DC power from the batteries. To avoid equipment damage or personal injury, always assume that there may be voltage inside the equipment.**

INSTALLATION INSTRUCTIONS

5. Remove rings, watches and other jewelry before installing the AC wiring. Whenever servicing an energized system with the cover open, electric shock is possible; follow all applicable safety codes.
CONFIRM THE UNIT IS SAFE TO TOUCH BEFORE TOUCHING!
6. To reduce the risk of fire or electric shock, install this inverter and the batteries in a temperature controlled and humidity-controlled indoor area free of contaminants.

1. Open the system's front door/cover. Make sure the input AC is off.
2. Identify the input and output terminals.
3. Confirm the service input and output voltage matches with the inverter voltage and that the inverter voltage is correct for the application.



This inverter works and supplies three phase power only.

4. The input circuit breaker in the input service panel provides the means for disconnecting AC to the inverter. Only authorized persons shall be able to disconnect the AC to the unit.
5. If not done previously, select entrance into the cabinet for AC input and AC output in the system cabinet.



No drilling of the cabinet is permitted. Use conduct entries provided at the bottom front of cabinet.

6. Install the input and output conduits.
7. Run the AC input service conductors and AC output conductors through separate conduits. The inverter emergency output circuits shall be installed in dedicated conduit systems and not shared with other electrical circuits as described in NEC 700-9 (b)
8. Replace the terminal coverings.
9. Connect ground wire to the ground studs in the enclosure.



Any illustration provided below is given as a guide only. Wire color may vary. Observe the internal marking. When in doubt, contact the factory for assistance.

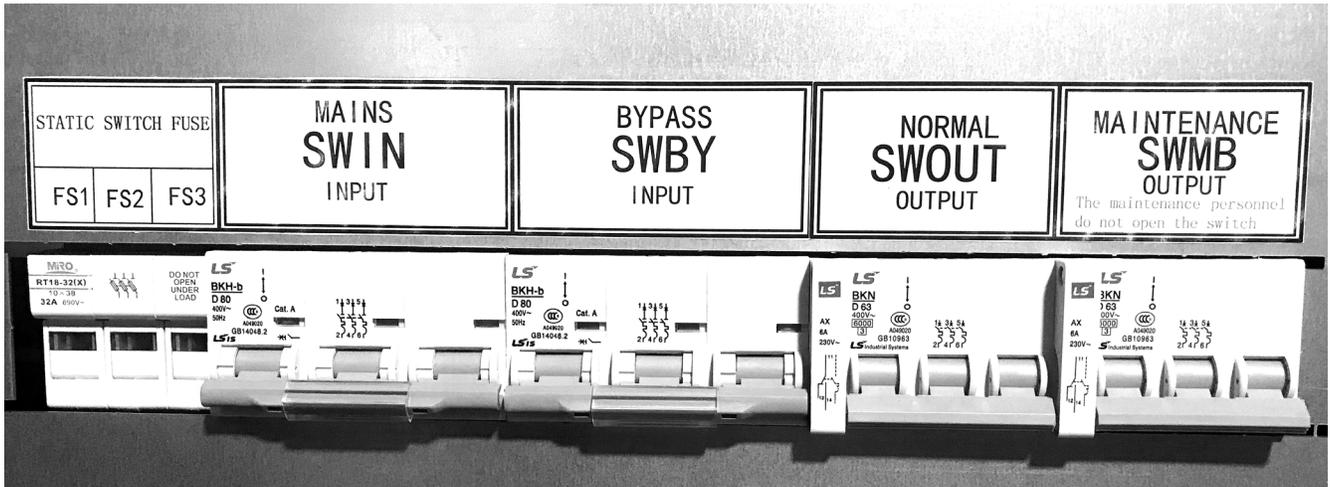
2.07A Breaker, Input/Output Battery

Always follow the labels on each of the terminals and breaker poles for proper identification

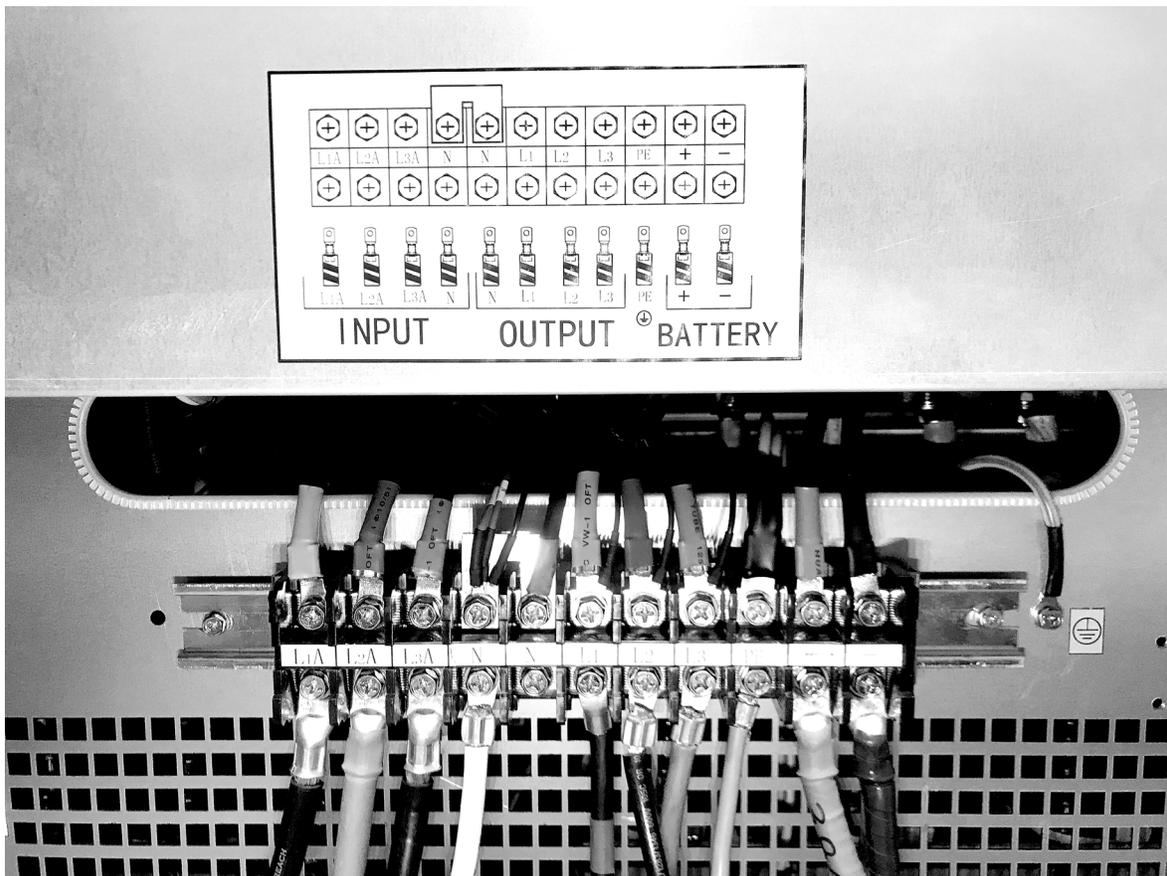


DO NOT TURN ON ANY BREAKER PRIOR TO STARTUP.

A typical layout is pictured below:



Input Output Battery



INSTALLATION INSTRUCTIONS

INV P3 Chart

SYSTEM SIZE	INPUT VOLTAGE	MAXIMUM AMPS	RECOMMENDED BREAKER	Battery voltage	Strings
3000	208Y120	10.4	15	384	1
3000	480Y277	4.5	15	384	1
5000	208Y120	17.3	25	384	1
5000	480Y277	7.5	15	384	1
6000	208Y120	20.8	30	384	1
6000	480Y277	9.0	15	384	1
10000	208Y120	34.7	45	384	1
10000	480Y277	15.0	20	384	2
15000	480Y277	52.0	15	384	2
15000	208Y120	22.6	25	384	2
20000	208Y120	69.4	90	384	2
20000	480Y277	30.1	40	384	2
24000	208Y120	83.3	125	384	2
24000	480Y277	36.1	50	384	2
30000	208Y120	104.1	150	384	2
30000	480Y277	45.1	60	384	2
35000	208Y120	121.4	150	384	2
35000	480Y277	52.6	70	384	2
40000	208Y120	138.8	175	384	2

SYSTEM SIZE	INPUT VOLTAGE	MAXIMUM AMPS	RECOMMENDED BREAKER	Battery voltage	Strings
40000	480Y277	60.1	80	384	2
50000	208Y120	173.5	225	384	2
50000	480Y277	75.2	100	384	3

***Maximum amps calculated at high charge full load initially after power failure.
Recommended circuit breaker is rated at 1.25 times the maximum amps rounded up**

70000	208Y120	243	300	480	3
70000	480Y277	106	150	480	or 4
80000	208Y120	278	350	480	5
80000	480Y277	121	150	480	or 4
100000	208Y120	347	500	480	4
100000	480Y277	151	200	480	or 5
128000	208Y120	444	600	480	7
128000	480Y277	193	250	480	5
160000	208Y120	555	700	480	9
160000	480Y277	247	300	480	6

2.08 Startup Checklist



Before proceeding to the Inverter Start-up procedures (2.09), complete the Checklist below.

1. Ensure the inverter cabinet is securely fastened to a wall or other structure.
2. Ensure that the input circuit breaker in the building service panel serving as the AC disconnect to the inverter is in the OFF position.
3. Check for proper ground connections in the inverter cabinet, the building service panel, and the external load distribution panel if one is present.
4. Check for any loose wiring connection in the inverter cabinet, the building service panel, and the external load distribution panel.
5. Check that the correct nominal battery voltage is present in the inverter cabinet between the DC Input Positive and Negative wires. Refer to the section on Battery (DC) Connection (2.06) and system label for proper DC system voltage.

2.9 Inverter Start-up Procedures

1. Complete factory startup form.
DO NOT START THIS SYSTEM!
Factory start-up is required, and will not be scheduled until form is completed.
2. Measure the voltage on the input to the inverter. At this time, the reading should be at 0 volt.
3. Turn on the AC supply from the MDP to the unit - not the input breaker located within the unit! Measure the voltage and confirm that the input voltage matches the voltage indicated on the inverter.
4. Turn on the battery breaker fuse switch or circuit breaker in battery cabinet (s).
5. Measure the DC voltage and confirm that the DC voltage is as indicated on the inverter.
6. Turn on the AC input to the unit and verify correct voltage and phase rotation of the input.



Input and output hot connections are made at the terminals unless otherwise specified. Neutral and ground connections are either made at a neutral ground bar or neutral and ground modular terminal blocks. Your system may differ if custom configured.

7. Turn on the SWBY bypass switch
8. Turn on the SWOUT output switch
9. When the LCD panel doesn't display any alarms of the input phase fault you may turn on the SWIN switch.
10. After the panel indicates that the inverter is running measure the output voltage at the terminals.
11. Make sure all load connected to this inverter is on and confirm that the total load does not exceed the rated load of the inverter.
12. Check the load balance of the inverter more loads too different phases to properly balance the load.
13. Close the cover.
14. Allow at least a 48 hour charge period before conducting a full load test. After an outage that fully depletes the battery reserve of the inverter, the inverter may require up to 48 hours to fully recharge. The recharge time is dependent on the depth of discharge, age of the batteries and temperature.

2.10 System Verification

Conduct this test after the battery has been fully charged. To simulate a power failure, turn off the AC power to the inverter. At this time, the connected load will either come on for normally off loads or remain on for normally on loads. Record the information on Section 5.02 of this manual after start-up.

3. OPERATION INSTRUCTIONS

3.1 The touch display panel is equipped with an LCD display, 5 LED indicators.

Input (Green): LED indicator lit - Normal Power is on.

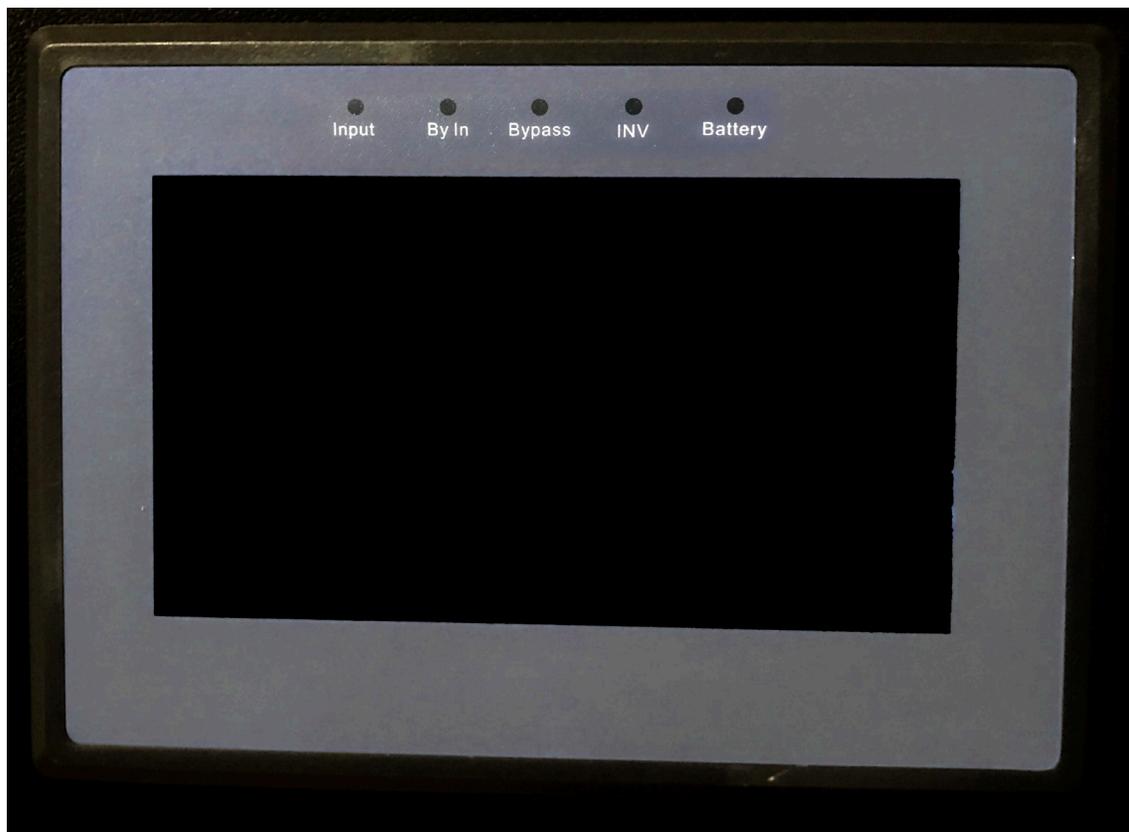
BY IN (Green): Power & bypass input lines.

BYPASS (Yellow): Bypass line output.

INV (Green): LED indicator lit

Battery (Yellow): Provides the reserve energy for powering the load when there is no power input to the inverter.

Sound Alarm Buzzer: Sound alarm will keep on every 2 secs, when lamp “BATT” flickers. Alarm Information which may display as the first line on the display panel, the number means priority.



USING THE BASIC SELECTION MENU

On the basic menu, the first line is current status, 2nd line is model #, output capacity, status of battery or power supply time. It only display one sentence at a time. If not pressed for 2 minutes it will return to basic menu.

NORMAL OPERATION:

--160:

Type mode

OUT = 100%VA

At the mode of inverter output load capacity is too small.

“OUT” changes to “BY” when load is powered through bypass BAT=100%AH:

It shows the status of battery capacity.

After battery discharge, the Inverter will recharge the battery automatically.

ATTENTION ! this value is the current and battery capacity.

.5=ON:It shows the current alarm statuses:when close the alarm function, it will display “5=OFF”

KEY MENU1, “ ?”, HELP

3.02 Routine Inverter Test

NFPA 101 requires that Emergency Lighting Equipment be tested on a monthly basis for a period of at least 30 seconds, and a minimum of 90 minutes once a year.

It is strongly recommended that these guidelines be followed to ensure system readiness and to prolong battery life. To perform tests, simply turn off the AC input breaker.

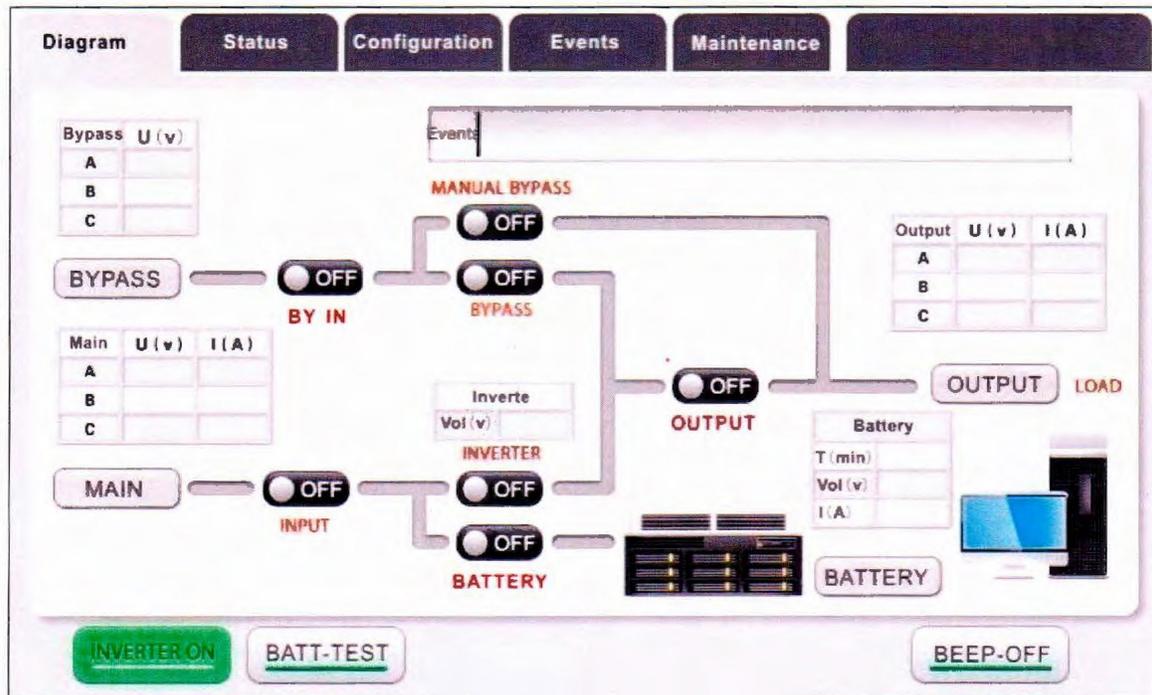
After a prolonged discharge, the inverter may require up to 48 hours to recharge the battery fully.

3.03 Alternate Panel

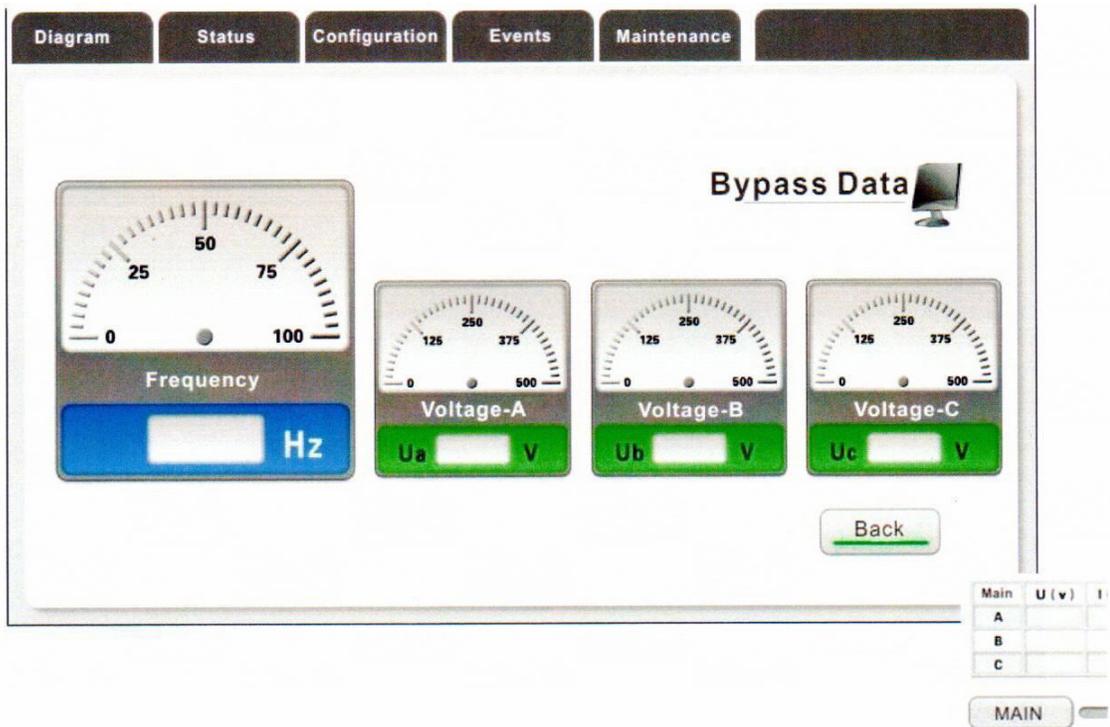
1. System startup interface



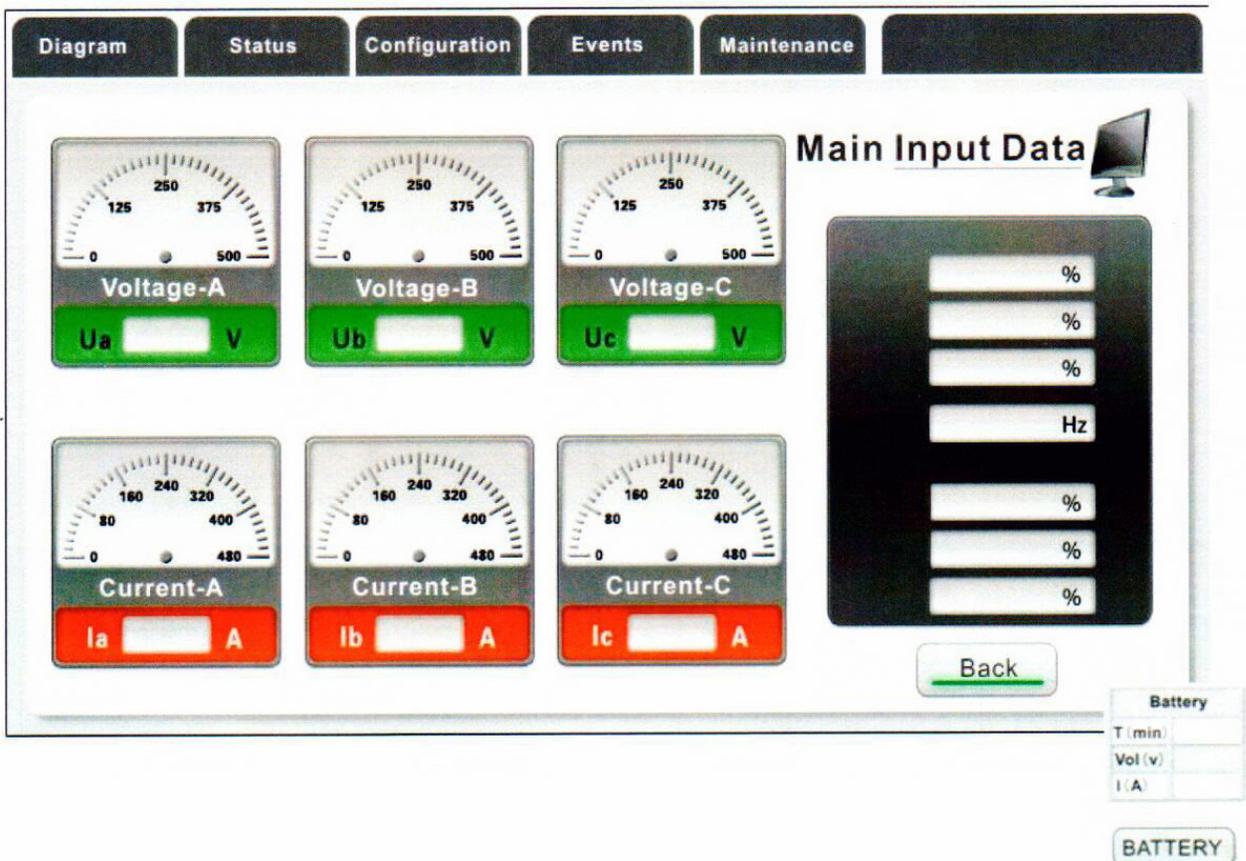
2. System Diagram (Turn on / off the inverter, battery test turn on / off the beep)



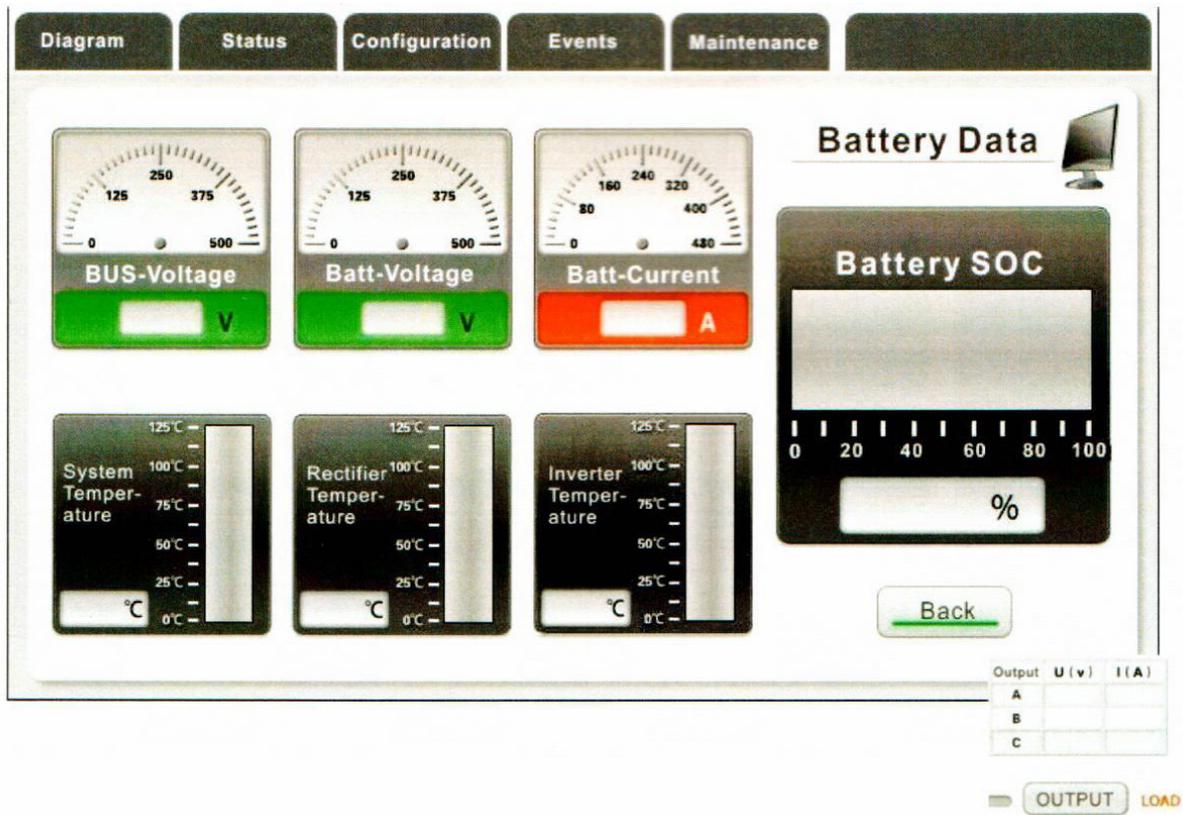
3. Inverter bypass data state diagram (“Click on the “bypass” or bypass input form into)



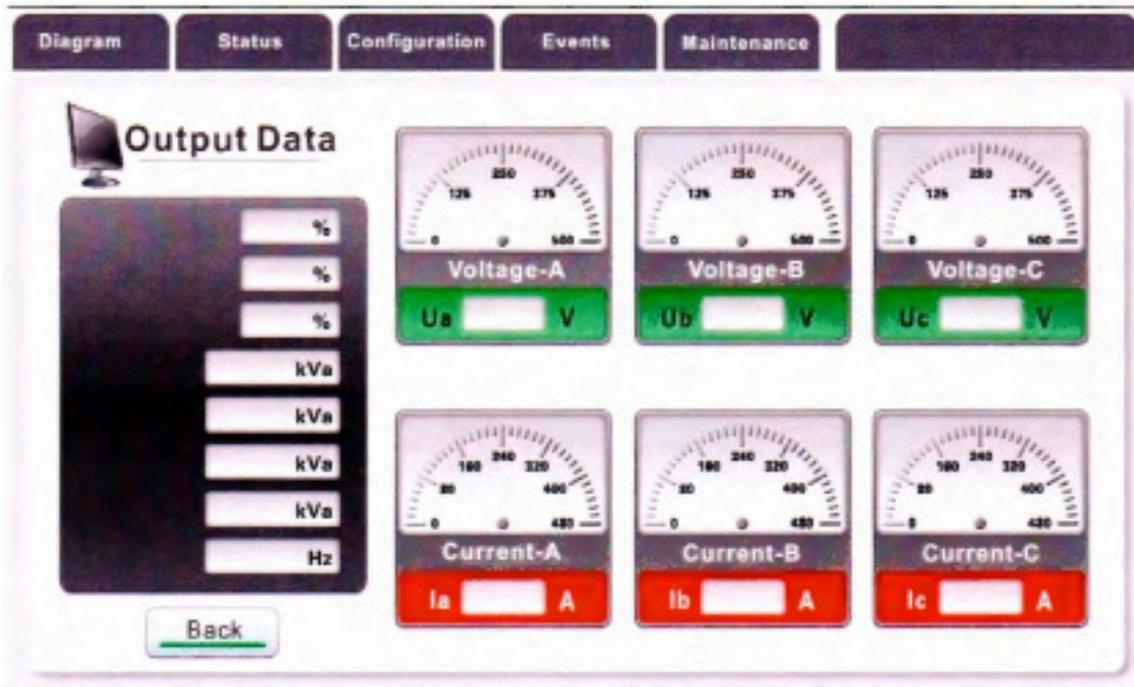
4. The Inverter input data view (“Click the mains input or mains input form to enter



5. Inverter battery and other data view (“Click on the battery or battery form into)



6. The Inverter output data view (“Click” output “ or output form to enter)



7. System status view

Stata	Connotation	Stata	Connotation
	Power supply error on system card		System power supply Permanent fault
	Temporary Error on system power card		Rs232 DSR signal present
	Synhro error on system card		Configuration card not present on system card
	Output frequency measure error on system card		Jumper 2 not present on system card
	system OVERTEMPRATURE		Low voltage from battery or ricifier
	Initialization error on system card		Prealarm Low voltage from battery or ricifier
	Remote system SHUT-OFF,active		Battery contactor opened
	Active aux.input on system card		Premanent fault on battery contactor

8. Output load status view

Stata	Connotation	Stata	Connotation
	High output peak current, line 1		
	High output peak current, line 2		SWOUT OFF, Output breaker OFF
	High output peak current, line 3		Output aver voltage fail, line 3
	Output OVERLOAD, line 1		Output instant voltage fail, line 1
	Output OVERLOAD, line 2		Output instant voltage fail, line 2
	Output OVERLOAD, line 3		Output instant voltage fail, line 3
	Permanent output OVERLOAD		Output aver voltage fail, line 1
	Internal of load insulation loss		Output aver voltage fail, line 2

9. Bypass state view

Stata	Connotation	Stata	Connotation
	Remote bypass command (inverter-off), active		Failure on inverter output contactor
	Failure on SCR of bypass line		Inverter output contactor open
	Input bypass line 1 voltage error		Bypass line contactor closed
	Input bypass line 2 voltage error		Failure on bypass line contactor
	Input bypass line 3 voltage error		Permanent fault on bypass SCR
	Input bypass line frequency error		Bypass switching inhibited
	Input bypass line phases sequence		Failure on inverter output contactor
	SWMB on, manual bypass breaker closed		command to switch on bypass, active

10. Rectifier and battery status view

Stata	Connotation	Stata	Connotation	Stata	Connotation
	High voltage on input line 1		Input current not present on line 3		Rectifier Failure on one branch
	High voltage on input line 2		Output power limiting on rectifier		Control parallel card power failure
	High voltage on input line 3		Regulation error on rectifier		Parallel ups connection cable failure or SWMB
	Low voltage on input line 1		Input line frequency error		
	Low voltage on input line 2		Rectifier error on TEMPERATURE		Rectifier Permanent failure
	Low voltage on input line 3		Rectifier HIGHT output voltage		Rectifier-DRV1-signal
	Input current not present on line 1		Rectifier power supply error		Rectifier-DRV2-signal
	Input current not present on line 2		Rectifier inhibited		Rectifier-DRV3-signal

11. Inverter state view

Diagram **Status** Configuration Events Maintenance

System
Load
Bypass
Rectifier
Inverter
Alarm

Stata	Connotation	Stata	Connotation	Stata	Connotation
<input checked="" type="checkbox"/>	Cables error on inverter driver card	<input checked="" type="checkbox"/>	Inverter Failure	<input checked="" type="checkbox"/>	Inverter over temperature on module 3
<input checked="" type="checkbox"/>	Inverter STOP from driver card 3	<input checked="" type="checkbox"/>	Inverter synchro not present	<input checked="" type="checkbox"/>	Inverter STOP from driver card 1
<input checked="" type="checkbox"/>	Inverter STOP from driver card 2	<input checked="" type="checkbox"/>	Inverter Reset failure	<input checked="" type="checkbox"/>	inverter-HFDRV T-signal
<input checked="" type="checkbox"/>	Inverter over current	<input checked="" type="checkbox"/>	Inverter driver card power supply error	<input checked="" type="checkbox"/>	Inverter inhibited
<input checked="" type="checkbox"/>	Cables error into inverter	<input checked="" type="checkbox"/>	Inverter high output voltage	<input checked="" type="checkbox"/>	Inverter LOW output voltage
<input checked="" type="checkbox"/>	Inverter power supply error	<input checked="" type="checkbox"/>	Inverter high input dc voltage	<input checked="" type="checkbox"/>	Inverter LOW input dc voltage
<input checked="" type="checkbox"/>	inverter-HFDRV R-signal	<input checked="" type="checkbox"/>	inverter overtemperature on module 1	<input checked="" type="checkbox"/>	Inverter manual reset
<input checked="" type="checkbox"/>	inverter-HFDRV S-signal	<input checked="" type="checkbox"/>	Inverter over temperature on module 2	<input checked="" type="checkbox"/>	Inverter permanent failure

12. Alarm status view

Diagram **Status** Configuration Events Maintenance

System
Load
Bypass
Rectifier
Inverter
Alarm

Stata	Connotation	Stata	Connotation	Stata	Connotation	Stata	Connotation
<input checked="" type="checkbox"/>	Disrurbances on bypass line	<input checked="" type="checkbox"/>	TEMPORARY BYPASS. WAIT	<input checked="" type="checkbox"/>	FAULT 7: system power supply	<input checked="" type="checkbox"/>	Overtemperature or fan failure
<input checked="" type="checkbox"/>	MANUAL BYPASS ,SWMBON	<input checked="" type="checkbox"/>	Bypass for output VA < AUTO-OFF value	<input checked="" type="checkbox"/>	FAULT 8 : one section of rectifier	<input checked="" type="checkbox"/>	Input voltage sequence not ok
<input checked="" type="checkbox"/>	Bypass line volt fail or SWBY,FSCR off	<input checked="" type="checkbox"/>	FAULT 1: configuration card no present	<input checked="" type="checkbox"/>	FAULT 9: battery contactor	<input checked="" type="checkbox"/>	Output off,close SWOUT or SWMB
<input checked="" type="checkbox"/>	Main line voltage fail or SWIN off	<input checked="" type="checkbox"/>	FAULT 2: inverter lockup	<input checked="" type="checkbox"/>	FAULT 10: inverter communication	<input checked="" type="checkbox"/>	System off command active
<input checked="" type="checkbox"/>	Prealarmlow battery voltage	<input checked="" type="checkbox"/>	FAULT 3: output contactors	<input checked="" type="checkbox"/>	Bypass for output overload	<input checked="" type="checkbox"/>	Remote system off command active
<input checked="" type="checkbox"/>	Low input voltage or output overload	<input checked="" type="checkbox"/>	FAULT 4: rectifier lockup	<input checked="" type="checkbox"/>	Bypass command active	<input checked="" type="checkbox"/>	Memory changed
<input checked="" type="checkbox"/>	Low battery charge or close SWB	<input checked="" type="checkbox"/>	FAULT 5: SCR of bypass line	<input checked="" type="checkbox"/>	Remotebypass command active	<input checked="" type="checkbox"/>	FAULT 11: output voltage fail
<input checked="" type="checkbox"/>	Output overload	<input checked="" type="checkbox"/>	FAULT 6: power supply card	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	Auto-off timer active

13. System configuration interface (Click on the appropriate location to modify date time and device address)

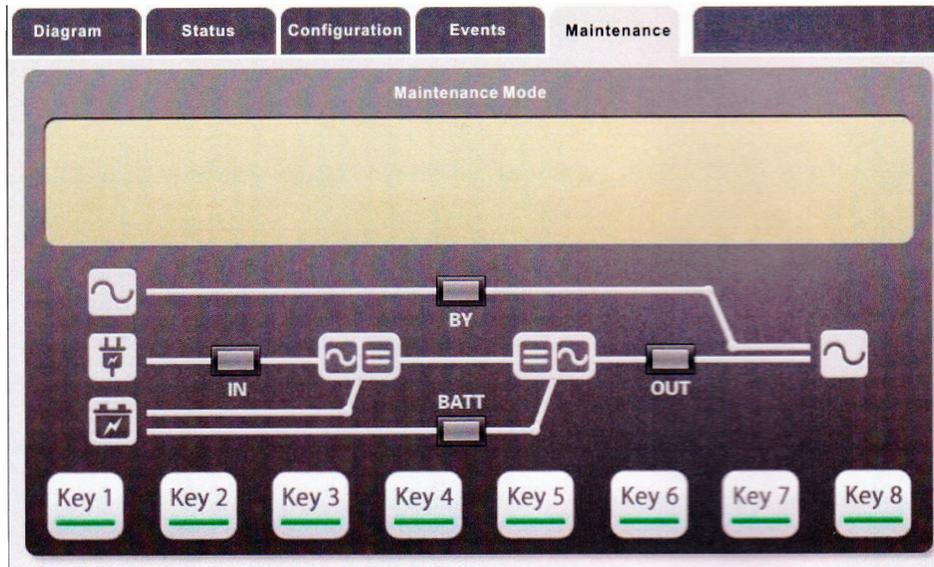
The screenshot shows a web-based configuration interface with a dark background. At the top, there are five tabs: "Diagram", "Status", "Configuration", "Events", and "Maintenance". The "Configuration" tab is selected. Below the tabs, there is a "Time setting" section with a clock icon. It contains six input fields for "Year", "Month", "Data", "Hour", "Minute", and "Second". Below this is a "Modbus Addr" section with a single long input field.

14. History View

The screenshot shows a web-based history view interface with a dark background. At the top, there are five tabs: "Diagram", "Status", "Configuration", "Events", and "Maintenance". The "Events" tab is selected. Below the tabs is a table with three columns: "DATA", "TIME", and "EVENTS". The table has 12 rows. At the bottom of the interface, there are four buttons: "Previous", "Next", "Page /All Pages", and "Clear records".

DATA	TIME	EVENTS

15. Maintenance mode interface (Require authentication password)



16. Inverter expansion interface

Query:				
Address Field	Function code	Start Address	Number of Registers	Error Check
	Address: 01~FF(HEX) (1 Byte)			
	Function:04 (HEX) (1 Byte)			
	Start Address:The first register address (2Byte)			
	Number of Registers:To read how many Word data			
	Error Check : CRC (2 Byte)			
Response:				
Address Field	Function code	Number of Date Byte Count	D0,D1.....Dn	Error Check
	Address Field:01~FF(HEX) (1 Byte)			
	Function code:04 (HEX) (1 Byte)			
	Number of Date:00~??(HEX) (1 Byte),D0~Dn Byte			
	Byte Count			
	D0~Dn=Data			
	Error Check: CRC		*1Word=2Byte	
param				
Start Bit	Data Bit	Parity	Stop	Baudrate
1	8	No	1	9600

4. MAINTENANCE INSTRUCTIONS

4.01 Safe Shutdown Procedures



To avoid possible equipment damage or personal injury, always assume that there is AC voltage present inside the inverter. Never attempt to open the electronic module of the inverter in an attempt to service it. The inverter electronic module has no user-serviceable components.

1. Hold down the “Off” buttons until the system output shuts down.
2. Turn off the AC input
3. Open the front cover.
4. Turn off the output breaker.
5. Turn off the input breaker.
6. Turn off the battery breaker



If the unit will be shut off for an extended period of time, recharge the batteries at least once every 60 days. Prolonged period in a discharged state will damage the battery and void the warranty.

4.02 Routine Inverter Maintenance

This inverter is designed to be maintenance free and to provide years of trouble free operation. The internal diagnostic features and routine inverter test also help to ensure proper operation of this equipment. However, routine attention and basic maintenance outlined below will assure the peak performance of this inverter at all times. Due to the nature of this equipment, only qualified personnel should perform the following type of steps of system maintenance.

- Inspect and clean the unit. Be mindful that the unit is energized.
- Inspect all batteries for leaks, case swelling or terminal corrosion.
- Perform an operational test of this inverter to verify all critical connected loads are operational.

4.03 Battery Test

Key menu 3 “KEY” instruction

Key menu 3, 2:battery test

6 seconds of battery efficiency test. Press 8 will interrupt the test and return to basic menu.

BATT-500V + 10A battery voltage and current value

Vbc=490V battery voltage value

999min remaining power supply time

After test finished every time, compare the battery voltage and “Vbc” It will display “Battery Discharge” or “SB OPEN”

4.04 Battery Maintenance and Replacement

Prior to replacing the batteries, please read the section on Battery (DC) connection (section 2.06) of this manual.



ONLY QUALIFIED PERSONNEL SHOULD PERFORM THE PROCEDURES BELOW.

A battery can present a risk of electrical shock and high short circuit current. Battery replacement should only be performed by qualified service personnel familiar with battery systems. All safety precaution outlined previously in this manual (2.06) and other best safety practices must be observed when servicing, maintaining or replacing batteries.



This inverter utilizes VRLA maintenance-free batteries. By design, this type of battery is as maintenance free as a battery can be. However, a quarterly visual check on the physical state of the batteries, and an annual check on battery connection for tightness of the connections will help in ensuring the useful service life of these batteries and the reliability of the inverter.

If any battery is determined to be problematic, all batteries used in this inverter must be replaced.

To replace batteries for this inverter system, follow the Safe Shutdown Procedures outlined in section 4.01 and then proceed to disconnect the batteries following all applicable safety practices.

Do not dispose of these batteries in a fire, the batteries could explode.

Do not open or intentionally damage the battery casing.

The electrolytes within these batteries is harmful to the skin and eyes.

Batteries contain lead. Many state and local governments have regulations about used battery disposal. Please dispose of the batteries properly.

Contact the factory (5.01) for help if you are unsure how to dispose of the battery properly.

Only batteries recommended by the manufacturer can be used with this inverter system. Contact the factory (5.01) for information on how to obtain replacement batteries.

Follow the section on Battery (DC) connection (2.06) for proper steps in connecting new batteries.

5. Technical Support

5.01 Technical Support Information

During or after installation, IEP Technical Support team is available to provide assistance with any aspect of this inverter. Out service representatives are available during normal operating hours (Eastern Standard Time) in answering questions about these inverters.

IEP customer service number is: 1-610-351-1907

5.02 Troubleshooting Guide

- 1) System will not turn on - check that the battery breaker and the input breaker are on and not tripped or shut off.
- 2) System is operation (Green LED indicator on that the load but connected load is not on or is partially on - check that the load breaker (s) are turned on and are not tripped. If the load (all or part) is controlled by energy management panels or relays make sure they are in the proper mode so that the lights are on.
- 3) When transferring to emergency power, the system immediately sounds an overload alarm and shuts down. This may be caused bu either the inrush or peak currents of attached LED loads. Check the driver manufacturer's specifications as to inrush and peak currents when operating. This issue is not normally apparent on normal utility because utility is literally unlimited but the peaks and inrush issues may cause problems with inverters on emergency depending on the particular devices connected. In some cases we have seen inrush and peak currents that were more than 230 amps for a 50 watt device.

The following statement is quoted from one driver manufacturer's published data "When a large number of units are switched on simultaneously (particularly if they are switched on at peak of the AC input voltage) a large starting current will flow which may trigger a circuit breaker. To avoid false tripping of the circuit breakers, the number of devices connected may have to limited."

In the case of an inverter, even if there are several output circuit breakers, the unit is the ultimate circuit breaker and if the total inrush of the load is too great for the inverter, even though the load is smaller than the rating, the inverter may self-protect and shut down, In that case, it may be necessary to limit the number of fixtures connected to the unit. Universal voltage drivers operating at 277 volt are particularly prone to this problem. One manufacturer publishes the inrush current of 185 amps at 277 volts. That can get magnified upward depending upon where in the sine wave the peak occurs.

WARRANTY

5.03 Warranty

WARRANTY

This inverter is guaranteed, under normal and proper use, against defects in workmanship and materials for a period of twelve (12) months from the date of successful start-up, or eighteen (18) months from the date of shipment, whichever occurs first. Batteries supplied as part of this system are covered under a separate pro-rated warranty described below. One (1) year from the date of successful start-up and operating temperatures. Nine (9) years pro-rated. Failure in properly storing batteries will result in permanent damage to the batteries and will void the battery warranty.

5.04 Inverter Model and Serial Number

Inverter Information:

Model Number: _____

Serial Number: _____ Date Installed: _____

System Voltage: _____ VAC Load Current: _____ Amps

Battery P/N: _____ Number of Batteries: _____

Company Name: _____ Installer: _____

By registering this product with IEP, you can extend the warranty on this inverter system by three (3) months. Please register this system with IEP.

IEP SYSTEMS P.O. BOX 20302, LEHIGH VALLEY, PA 18002

IEP's customer service number is: 1-610-351-1907

WARRANTY

WARRANTY

This inverter is guaranteed, under normal and proper use, against defects in workmanship and materials for a period of twelve (12) months from the date of successful start-up, or eighteen (18) months from the date of shipment, whichever occurs first. Batteries supplied as part of this system are covered under a separate pro-rated warranty described below. One (1) year from the date of successful start-up and operating temperatures. Nine (9) years pro-rated. Failure in properly storing batteries will result in permanent damage to the batteries and will void the battery warranty.

5.05 Mail In Warranty Card

**IMPORTANT - RETURN THIS CARD COMPLETED AT ONCE TO:
IEP SYSTEMS P.O. BOX 20302, LEHIGH VALLEY, PA 18002**

Model Number: _____

Serial Number: _____ Date Installed: _____

System Voltage: _____ VAC Load Current: _____ Amps _____

Battery P/N: _____ Number of Batteries: _____

Installation Company: _____

Installer: _____ Contractor license number: _____

Company Name: _____

Address: _____

City: _____ State: _____ Zip: _____

E-Mail: _____ Telephone: _____

Web: _____

By registering this product with IEP, you can extend the warranty on this inverter system by three (3) months. Please register this system with IEP.