KISAE

# Abso Sinewave Inverter-Charger 1000W (IC121040) 2000W (IC122055)

## Owner's Manual

# 1. INTRODUCTION

Thank you for purchasing the KISAE Abso Sinewave Inverter-Charger. With our state of the art, easy to use design, this product will offer you reliable service by providing AC power and 5V USB power for your home, cabin, boat, RV or Trailer and recharge your battery automatically when utility AC is available. The KISAE Abso Sinewave Inverter-Charger can run many AC-powered appliances when you need AC power anywhere. The 5V USB power can charge many USB-powered devices. The multi-stage battery charger will charge different type of batteries.
This manual will explain how to use this unit safely and effectively. Please read and follow these instructions and precautions carefully.

## IMPORTANT SAFETY INFORMATION

This section contains important safety information for the KISAE Abso Sinewave Inverter-Charger. Each time, before using the unit, READ ALL instructions and cautionary markings on or provided with the unit, and all appropriate sections of this guide.
The KISAE Abso Sinewave Inverter-Charger contains no user-serviceable parts. See Warranty section for how to handle product issues.

### WARNING: FIRE AND/OR CHEMICAL BURN HAZARD

- Do not cover or obstruct any air vent openings and/or install in a zero-clearance compartment.

### WARNING: FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN DEATH OR SERIOUS INJURY

- When working with electrical equipment or lead acid batteries, have someone nearby in case of an emergency.
- Study and follow all the battery manufacturer's specific precautions when installing, using and servicing the battery connected to the inverter.
- Wear eye protection and gloves.
- Avoid touching your eyes while using this unit.
- Keep fresh water and soap on hand in the event battery acid comes in contact with eyes. If this occurs, cleanse right away with soap and water for a minimum of 15 minutes and seek medical attention.
- Batteries produce explosive gases. **DO NOT** smoke or have an open spark or fire near the system.
- Keep unit away from moist or damp areas.
- Avoid dropping any metal tool or object on the battery. Doing so could create a spark or short circuit which goes through the battery or another electrical tool that may create an explosion.

### WARNING: Shock Hazard. Keep away from children!

- Avoid moisture. Never expose unit to snow, water etc.
- Unit provides 120 Vac, treat the GFCI output socket the same as regular wall AC sockets at home.

### WARNING: Explosion hazard!

- DO NOT use the unit in the vicinity of flammable fumes or gases (such as propane tanks or large engines).
- AVOID covering the ventilation openings. Always operate unit in an open area.
- Prolonged contact to high heat or freezing temperatures will decrease the working life of the unit.

## FCC INFORMATION

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generate, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is

connected.

- Consult the dealer or an experienced radio/TV technician for help.

**LIMITATIONS ON USE**

Do not use in connection with life support systems or other medical equipment or devices.

## 2. PRODUCT DESCRIPTION

The KISAE Sinewave Inverter-Charger includes the items list below.

- Inverter-Charger base unit (one of the following models)
  IC121040: Abso Inverter-Charger 1000 (Sinewave Inverter 1000W with 40A charger)
  IC122055: Abso Inverter-Charger 2000 (Sinewave Inverter 2000W with 55A charger)
- Owner's manual (P/N: MU IC1210)

## 3. INSTALLATION

**WARNING: KISAE Technology recommends that all wiring be done by a certified technician or electrician to ensure adherence to the applicable electrical safety wiring regulations and installation codes. Failure to follow these instructions can damage the unit and could also result in personal injury or loss of life.**

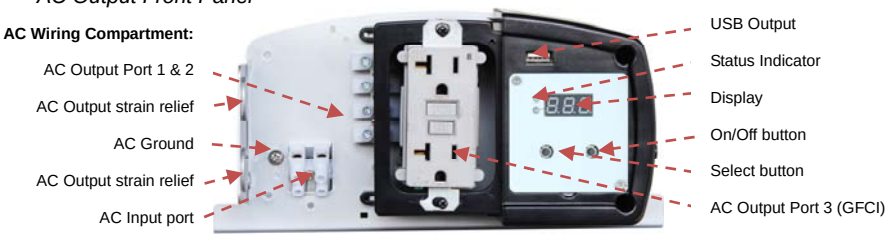
**CAUTION:**

Before beginning unit installation, please consider the following:

- The unit should be used or stored in an indoor area away from direct sunlight, heat, moisture or conductive contaminants.
- When placing the unit, allow a minimum of three inches of space around the unit for optimal ventilation.

### Understanding the unit features

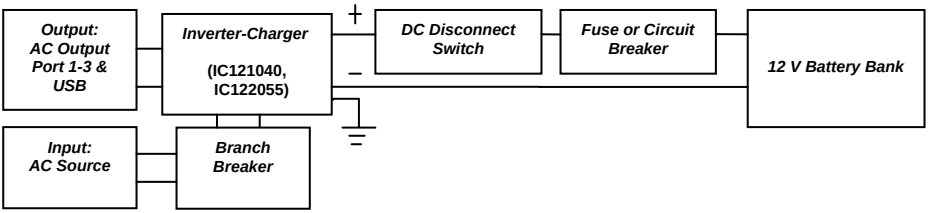
*AC Output Front Panel*




*DC Input Rear Panel*

## Preparing for Installation

Typical Wiring block diagram of the Power Inverter:




***12V Battery Bank:***

- The use of deep cycle battery is highly recommended for power inverter application
- For battery size, you need to identify what you wish to operate, and for how long. KISAE recommends that you purchase as much battery capacity as possible. See more on Battery Run time and Load in Section 4.

***Fuse or Circuit Breaker:***

- DC-rated fuse or DC-rated circuit breaker connected along the DC positive line is required.
- For IC121040 select a fuse or circuit breaker with a minimum of 150 Adc
- For IC122055, select a fuse or circuit breaker with a minimum of 300 Adc
- Based on the size of your 12V Battery Bank, determine the overall short circuit current rating of the battery bank from the battery manufacturer. The fuse or circuit breaker chosen has to be able to withstand the short circuit current that may be generated by the battery bank

***Disconnect Switch:***

- Select a DC Disconnect Switch with the same or higher rating of the selected fuse or circuit breaker.
- The DC Disconnect Switch is used to disconnect the DC power between the unit and the battery bank during service, maintenance or trouble shooting.

***DC Input and Grounding Cable:***

- Use of low resistance wire is required for all the DC connections between the unit and the battery bank.
- For IC121040, use minimum #2 AWG wire with maximum cable length of 5 feet.
- For IC122055, use minimum #2/0 AWG wire with maximum cable length of 5 feet.

**Important:** The unit is grounded through the ground stud of the unit located near the DC Input terminal.

- For the grounding cable connected between the unit's chassis and the earth ground, use a matching cable size as used on the DC Input Cable section.

***AC Input Source and Branch Breaker:***

- Standard AC Input wire is required for all the AC connections between the AC source & the AC Input port, and the AC Output ports to load.
- A 30A branch circuit breaker is required to connect between AC Input source and unit's AC Input port.

**Important:** Follow the electrical and or building code when you connect the unit to any AC source.

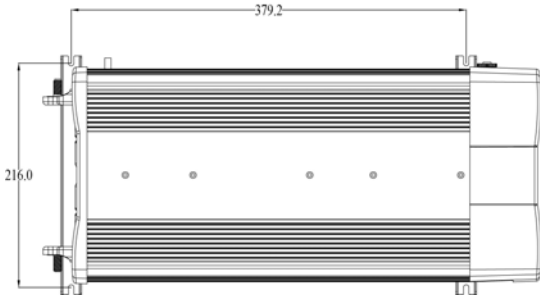
## Installing the Inverter-Charger System

### WARNING: Electrical Shock Hazard

**The unit 'On/Off' switch does not disconnect the DC power from the battery. Use the DC Disconnect Switch or disconnect the DC input cables connection to disconnect the DC power from the battery before working on any circuits connected to the unit. Failure to follow these instructions can result in death or serious injury.**

***Installation:***

- Choose an appropriate mounting location.
- For indoor use, the unit can be mounted in any direction except with the DC Input panel facing downwards.
- Use the mounting template below to mark the positions of the mounting screws.
- Drill the 4 mounting holes and place the Inverter-Charger in position and fasten the unit to the mounting surface.




***Chassis Grounding Connection:***

**DANGER: The unit chassis has to be grounded properly. Never operate the Inverter-Charger without proper grounding. Failure to do so will result in death or serious injury.**

- Connect the grounding cable's ring terminal to the unit ground screw.
- Connect the other side of the cable to the common grounding point.

***DC Input Connection:***

**CAUTION: Reversing the DC Input terminal will damage the unit and it cannot be repaired. Damage caused by reverse polarity connection is not covered by the warranty.**

- Connect one end of the negative DC input cable to the Inverter-Charger DC negative terminal. Connect the other end of the negative DC input cable to the battery negative terminal.
- Make sure the Disconnect Switch is in the OFF position.
- Connect one end of the positive DC input cable to the Power Inverter DC positive terminal. Connect the other end of the positive DC input cable to one of the terminals of the Disconnect Switch.
- Connect a DC input cable between the other terminal of the Disconnect Switch and one side of the terminal of the fuse holder.
- Connect a DC input cable between the other terminal of the fuse holder and the battery positive terminal.
- Install the selected fuse to the fuse holder.
- Turn Disconnect Switch to ON position.

***AC Input Connections:***

**Warning: Please double check on the location of the AC input port located inside the wiring compartment. Misconnecting to the AC output port inside the same compartment will blow the unit and may catch fire. Before making any AC Input and output connection, please be sure the AC Input Source is not energized and the DC disconnect switch is OFF.**

**Important:** A 30A branch breaker (not provided) is required to connect between the AC source and the Inverter-Charger.

- Remove AC compartment cover by unscrewing the two screws located at the front of the AC compartment cover.
- Connect the AC Input 'L' wire between the unit's AC Input port and the branch breaker terminal.
- Connect the AC Input 'N' wire between the unit's AC Input port and the AC source 'N' terminal.

***AC Output Connections:***

**CAUTION:** Please be sure that the AC Input source is not energized before making any AC Input

and Output connection and that the DC disconnect switch is turned OFF.
The AC Output connection has three types of configurations:

1) Use of the provided GFCI AC socket for AC load:
   This configuration does not require AC Output installation. Plug in the AC load to the provided GFCI output socket. During the by-pass mode, the AC output is limited to 15A for 1000W model (IC121040) and 20A for 2000W model (IC122055).
2) Hardwire AC Output with GFCI protection:
   This configuration is for AC hardwire connection with a load that requires GFCI protection. During by-pass mode, the AC output is limited to 15A for 1000W model (IC121040) and 20A for 2000W model (IC122055).
   - Remove AC compartment cover located on the front panel of the unit.
   - Hardwire the AC load to the AC Output port 2. Please verify the 'L' and 'N' connection between the AC load and the AC Output port.
3) Hardwire AC Output without GFCI protection:
   This configuration is for AC hardwire connection with a load that does not require GFCI protection and maximizes the by-pass mode current to the rating of the branch breaker installed (maximum 30A).
   - Remove AC compartment cover located on the front panel of the unit.
   - Hardwire the AC load to the AC Output port 1. Please verify the 'L' and 'N' connection between the AC load and the AC Output port.

**Note:** During Battery Power Mode, all AC output is limited to 8.3A for 1000W model (IC121040) or 16.6A for 2000W model (IC122055).

***Remote Display Connection:***

- The Remote Display on the unit is detachable. To install the remote to different location, an optional 6 pin standard RJ12 cable (not provided) is required.
- Remove the 2 screws at the front of the Display Panel and remove the small RJ12 cable.
- Install the optional RJ12 standard cable to your desired location. Please note polarity.
- Connect one end of the RJ12 cable to the unit and the other end of the cable to the Display Panel. Please note polarity.

***Test the Inverter-Charger connection:***

- Switch DC disconnect switch to ON.
- Switch the Branch circuit breaker to ON.
- The LED on display will turn on. If AC input source is available, 'Status' LED turns green. This indicates the unit is running in by-pass mode meaning AC output is running from the AC input source.
- LED located at the GFCI will also turn ON
- Disconnecting the AC input source by turning OFF the 30A branch breaker will change the 'Status' LED on the Display to amber.
- Both AC output and 5V USB are now available.
- Plug in a small AC load like a 40W table lamp or small appliance to the AC socket to verify AC is available.
- The unit is successfully installed and functioning properly.

***Test the GFCI monthly:***

- Use the following instruction to perform a monthly test of the GFCI to ensure the GFCI is functioning properly.
- Turn unit on and plug a small AC load (e.g. 40W light bulb) to the GFCI.
- Check that the AC load is ON.
- Press 'Test' button and observe a clicking sound. Check that the AC load is turned off.
- Press 'RESET' button and check that the AC load is back ON again.

## 4. UNIT OPERATION

***Auto Backup Mode (Factory default setting):***

The unit is fully automatic. When utility power is available, the unit is running in AC bypass mode. AC output is supplied from the utility. The internal AC charger is ON and will automatically top up the battery bank that is connected to the unit. When there is a power failure from the utility or an AC source is not available, the unit will run on battery power and the unit will generate sinewave AC output to maintain and operate the load continuously.

***Non-Backup Mode***
Same as Auto Backup Mode but when there is a power failure of the utility or the AC input source is not available, the inverter will not turn ON automatically. You are required to manually turn ON the inverter.

***Understanding the Display Function:***


| Status LED | Display LED | Display | Function/Status |
|---|---|---|---|
| Green (solid) | Green | 'Ful' | By-Pass Mode. Battery is fully charged |
| Green (flashing) | OFF | 'bul' | By-Pass Mode. Battery charging in progress and is in 'BULK' mode |
| | OFF | 'abs' | By-Pass Mode. Battery charging in progress and is in 'ABSORPTION' mode |
| Amber (solid) | Green | '12.5' | Battery Mode, inverter is running, display shows battery voltage in DC volts |
| | Amber | '0.80' | Battery Mode, inverter is running, display shows output power in kW (800W as shown) |
| Amber (flashing) | Battery Mode and AC Input is detected and AC output will switch to By-Pass mode within 20 seconds | | |
| Red (solid) | OFF | E01-E12 | Unit has shutdown. Display shows error code (See error code reference chart below) |

***Understanding the Power and Select push button function***
A beep sound will occur every time when the 'Power' or 'Select' button is trigger.
'Power' button function:
- Turns unit On/Off. Press and hold for 1 second to turn unit ON or OFF

'Select' button function:
- Check unit setting: Press once to check or verify unit's present set functions

***Understanding the Error Code***

| Code | Condition | Corrective Action |
|---|---|---|
| E01 | Input battery voltage is too low and unit has shutdown | Recharge battery immediately and restart unit |

| | | |
|---|---|---|
| E02 | Input battery voltage is too high and unit has shutdown | Check battery voltage or determine if any external charger is connected to the battery bank |
| E03 | AC output is overloaded or short circuited and unit has shutdown | Check load connected to the output. Reduce load and restart the unit |
| E04 | Internal temperature is too high and unit has shutdown | Turn unit off and wait for 15 minutes before restarting. Check if any object has blocked the air flow of the unit |
| E05 | Input battery voltage is low and warning occurs | Recharge battery as unit will shutdown shortly |
| E06 | AC output has sensed high and is close to shutdown limit | Reduce load |
| E07 | Internal temperature is high and is close to shutdown limit | Reduce load and check if any ventilation of the unit is blocked |
| E08 | Not used | |
| E09 | Not used | |
| E10 | Battery Charging voltage too high | Check battery setting |
| E11 | Battery bad | Battery did not accept charge |
| E12 | Internal transfer switch temperature is high and shutdown occurs | Reduce load and check if any ventilation of the unit is blocked |

***AC Load on Inverter***

Although the Power Inverter can provide high surge power up to two times the rated output power, some high surge loads like sump-pumps, heavy duty motors etc. may still trigger the inverter protection system even though the load falls within the power rating of the inverter. A higher power Inverter-Charger is required for these appliances.

***Estimate Run time on Load***

Following run times are estimates for reference, based on using different battery bank sizes. Actual run times may vary.

| | **Estimate run time on different 12V Battery Bank Size** | | | | |
|---|---|---|---|---|---|
| **AC Load** | **60AH** | **120AH** | **180AH** | **240AH** | **300AH** |
| **50 W** | 11 hrs. | 22 hrs. | 33 hrs. | 44 hrs. | 55 hrs. |
| **100 W** | 5 hrs. | 11.5 hrs. | 17 hrs. | 23 hrs. | 29 hrs. |
| **200 W** | 2.5 hrs. | 5 hrs. | 8 hrs. | 11 hrs. | 13.5 hrs. |
| **500 W** | 49 mins | 2 hrs. | 3 hrs. | 4 hrs. | 5 hrs. |
| **1000 W** | 15 mins | 49 mins | 1.5 hrs. | 2 hrs. | 2.5 hrs. |
| **1500 W** | 8 mins | 27 mins | 49 mins | 1 hr | 1.5 hrs |
| **2000 W** | N.R. | 15 mins | 34 mins | 49 mins | 1 hrs |
| **2500 W** | N.R. | 11 mins | 25 mins | 37 mins | 49 mins |
| **3000 W** | N.R. | N.R. | 17 mins | 27 mins | 37 mins |
| **Note: N.R. - Not Recommended** | | | | | |

## 5. FEATURE SETTING

To understand more about the unit features, read the following section and follow the instructions to make changes to the desired setting.

**Default Factory Setting:**

In (Inverter): In1- inverter enabled in standby mode with load sense off
Cu (Charger): 40A or 55A – charger enabled (40A for IC121040 and 55A for IC122055)
AL (Alarm): AL1 – alarm enabled
Sd (UV shutdown): SdL – Under voltage shutdown set to low setting
bAt (Battery type): FLo – Flooded typed
Cb (Maximum current): Cb3 – Maximum Shore Power Current draw is 30A

**Understanding the Unit Settings**

| | | | | |
|---|---|---|---|---|
| **Inverter Setting** | | | | |
| In0 | Inverter is disabled, unit will not provide backup function when utility power is not available | | | |
| In1 | Inverter is set to standby mode with power save mode OFF. Unit will provide backup function when utility power is not available | | | |
| In2 | Inverter is set to standby mode with power save mode ON. Unit will provide backup function only when utility power is not available AND the load connected to the output is >10W.<br>Note: Unit will turns ON every 10 s to check on the power consumption. | | | |
| **Charger Current Setting** | | | | |
| 5A – 40A<br>5A – 55A | Bulk/Float current setting:<br>IC121040: 5A/1.5A, 10A/2A, 20A/3A, 40A/4A<br>IC122055: 5A/1.5A, 15A/3A, 35A/4A, 55A/6A | | | |
| **Battery Type and Voltage Setting (Bulk/Absorption/Float)** | | | | |
| FLo | Flooded: 14.4V / 14.4V / 13.5V | | | |
| GEL | GEL: 14.2V / 14.2V / 13.8V | | | |
| AG | AGM: 14.3V / 14.3V / 13.4V | | | |
| Fi | Fixed: 13.5 Vdc fixed voltage | | | |
| **Battery Under Voltage Setting** | | | | |
| SdL | Battery under voltage setting is set to LOW (setting used for normal operation)<br>Under voltage alarm: 11.0 Vdc<br>Under voltage alarm recovery: 11.3 Vdc<br>Under voltage shutdown: 10.5 Vdc<br>Under voltage recovery: 12.0 Vdc | | | |
| SdH | Battery under voltage setting is set to HIGH (setting to avoid battery over discharge when connected to car start battery)<br>Under voltage alarm: 12.1 Vdc<br>Under voltage alarm recovery: 12.3 Vdc<br>Under voltage shutdown: 11.8 Vdc<br>Under voltage recovery: 12.6 Vdc | | | |
| **Alarm Setting** | | | | |
| AL0 | Fault and warning audible alarm is disabled. Display panel only shows error code and audible alarm will not sound. | | | |
| AL1 | Audible alarm will sound when fault or warning occurs. | | | |
| **Maximum Shore Power Current Draw Setting** | | | | |
| | ***IC121040*** | | ***IC122055*** | |
| | **AC Load current** | **Charger Current** | **AC Load Current** | **Charger Current** |
| Cb1 | Set the maximum current draw from shore power to 15A. The maximum current draw from unit is set to match with the shore power circuit breaker rating to avoid tripping of the shore power circuit breaker during the by-pass mode. Battery charging current will automatically reduce when there is a high demand on AC load during the by-pass mode. | | | |
| | >11Aac | 5 Adc | >11Aac | 5 Adc |
| | >10Aac and <12Aac | 10 Adc | >6Aac and <11Aac | 15 Adc |
| | >5Aac and <10Aac | 20 Adc | >1Aac and <6Aac | 35 Adc |
| | <5Aac | 40 Adc | <1Aac | 55 Adc |
| Cb2 | Same as above. Set the maximum current draw from shore power is 20A | | | |
| | >16Aac | 5 Adc | >16Aac | 5 Adc |
| | >15Aac and <17Aac | 10 Adc | >11Aac and <16Aac | 15 Adc |
| | >10Aac and <15Aac | 20 Adc | >6Aac and <11Aac | 35 Adc |
| | <10Aac | 40 Adc | <6Aac | 55 Adc |
| Cb3 | Same as above. Set the maximum current draw from shore power is 30A | | | |
| | >26Aac | 5 Adc | >26Aac | 5 Adc |

| | | | | |
|---|---|---|---|---|
| | >25Aac and <27Aac | 10 Adc | >21Aac and <26Aac | 15 Adc |
| | >20Aac and <25Aac | 20 Adc | >16Aac and <21Aac | 35 Adc |
| | <20Aac | 40 Adc | <16Aac | 55 Adc |
| **Manufacturing Default Setting** | | | | |
| Fd | Reset all settings to manufacturing default settings<br>(40A for IC121040 or 55A for IC122055, In1, AL1, SdL, Flo, Cb3) | | | |

**Understanding the Charger De-rating Current:**

The charger current will be de-rated when the environment temperature reaches 60 °C (140 °F) or the internal temperature reaches the pre-set values.

| Unit | De-rated Values | |
|---|---|---|
| Internal Temperature | >90°C (194°F) | Maximum charger will de-rated to half |
| | >95°C (203°F) | Charger current reduced to 5A |
| | <85°C (185°F) | Charger current recover back to set value |
| Environment Temperature | >60°C (140°F) | Charger current reduced to 5A |
| | >55°C (131°F) | Charger current recover back to set value |

**Enter Function Menu for unit setting:**

To enter unit Function Menu, press and hold “Power” and “Select” button together for about 5 seconds until a beep is sounded.

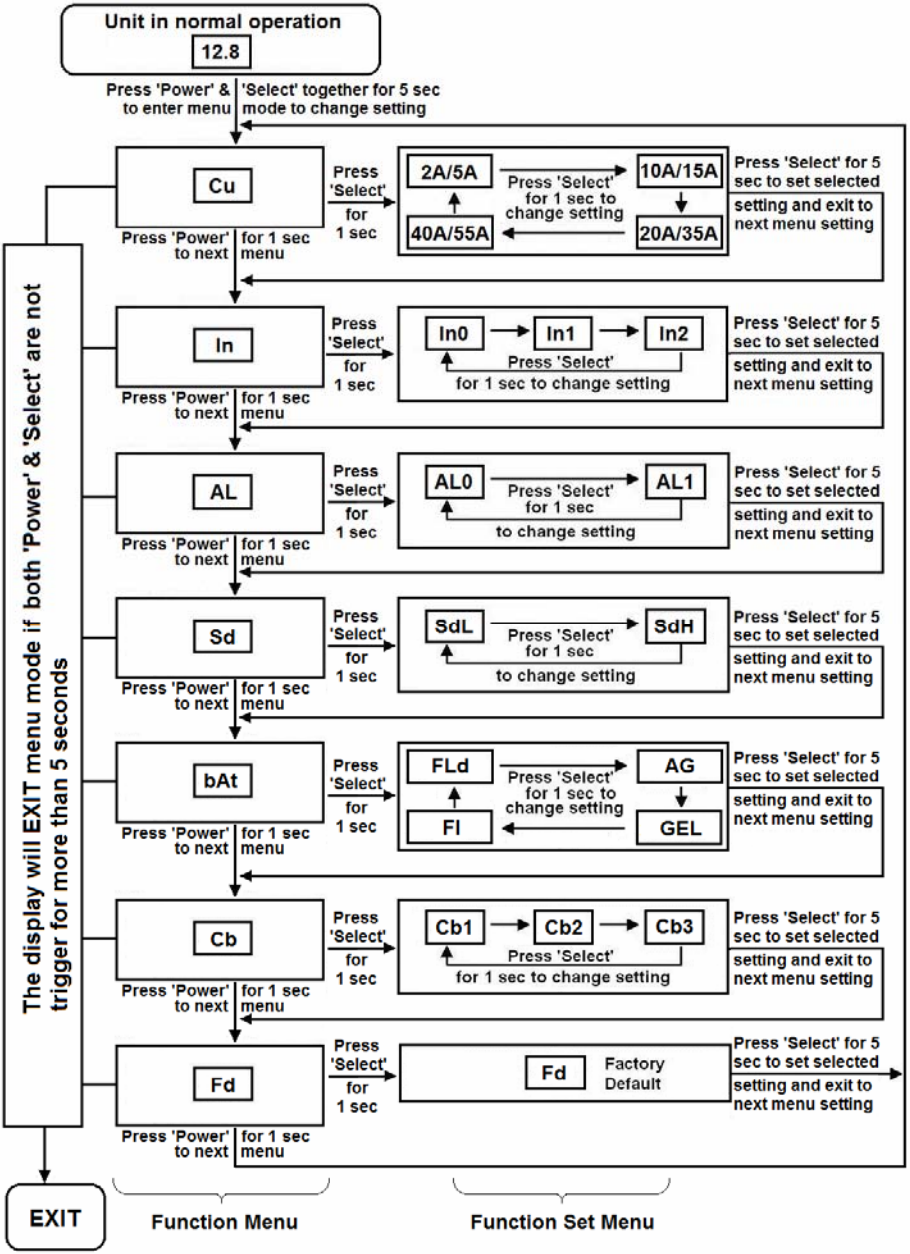
When you are in Function Menu:

- Press ‘Power’ button for 1 second to toggle between different Functions Menu like ‘Cu’, ‘In’, ‘AL’, ‘Sd’, ‘bAt’, ‘Cb’ and ‘Fd’ etc.
- Press ‘Select’ button for 1 second to enter Individual Function Set Menu and you can make change to the settings.
- The unit will EXIT the Main Menu automatically if ‘Power’ and ‘Select’ buttons is not trigger for more than 5 seconds.

When you are in Individual Function Set Menu:

- Press ‘Select’ button for 1 second to toggle between different setting values.
- Press ‘Select’ button for 5 seconds to set selected setting and exit to next Main Menu

See more details on flow chart below.


Unit in normal operation
12.8
Press 'Power' & 'Select' together for 5 sec to enter menu mode to change setting
Cu
Press 'Power' to next
for 1 sec menu
Press 'Select' for 1 sec
2A/5A
10A/15A
20A/35A
40A/55A
Press 'Select' for 1 sec to change setting
Press 'Select' for 5 sec to set selected setting and exit to next menu setting
In
In0
In1
In2
Press 'Select' for 1 sec to change setting
AL
AL0
AL1
Press 'Select' for 1 sec to change setting
Sd
SdL
SdH
Press 'Select' for 1 sec to change setting
bAt
FLd
AG
Fl
GEL
Press 'Select' for 1 sec to change setting
Cb
Cb1
Cb2
Cb3
Press 'Select' for 1 sec to change setting
Fd
Fd
Factory Default
The display will EXIT menu mode if both 'Power' & 'Select' are not trigger for more than 5 seconds
EXIT
Function Menu
Function Set Menu

## 6. TROUBLESHOOTING

To troubleshoot the unit, please note the error code displayed on the main unit and review "Understanding the Error Codes" in section 4.

| Problem | Symptom | Solution |
|---|---|---|
| No output voltage. And Status LED is off. | The unit is off | Turn unit ON by following the instruction in Section 4 to turn unit ON |
| | No power to unit | Check DC fuse, Disconnect switch (if installed) and check if Branch breaker is either blown or turned OFF |
| No AC output. Status LED is Green | GFCI is tripped | Check load and reset the GFCI |
| No Output. Status LED is in Amber | GFCI is tripped<br>Check error code on display<br><br>Check AC Load Sense setting | Check load and reset the GFCI<br>Verify the error condition and make correction<br>AC Load connected must be below the AC Load sense setting |

## 7. SPECIFICATIONS

*Note: Specifications are subject to change without notices.*

| ***Specification*** | ***IC 121040*** | ***IC 122055*** |
|---|---|---|
| ***Inverter*** | | |
| AC Output Power | 1000W | 2000W |
| AC Output Current | 8.3A | 16.6A |
| AC Surge Power (Peak) | 2000W | 4000W |
| AC Output Voltage/Frequency | 120 VAC / 60 Hz | |
| AC Output Waveform | Sinewave (<3% THD) | |
| Nominal DC Input Voltage | 12.5 VDC | |
| No Load battery draw | < 1.5 ADC | |
| DC Input Voltage operating range | 10.5 – 15.5 VDC | |
| Under Voltage Alarm | 11.0/12.1 VDC | |
| Under Voltage Alarm Recovery | 11.3/12.3 VDC | |
| Under Voltage Shutdown | 10.5/11.8 VDC | |
| Under Voltage Recovery | 12.0/12.6 VDC | |
| Over Voltage Shutdown | 15.5 VDC | |
| ***USB*** | | |
| USB Port | 5V, 750 mA | |
| ***AC Transfer Switch*** | | |
| Transfer Time | < 30 ms | |
| Transfer Relay Rating | 30A | |
| AC Input Source Setting | 15, 20, 30A | |
| AC Output Port 1 (HW Connector) | 30A | 30A |
| AC Output Port 2 (HW Connector, GFCI, CB) | 15A | 20A |
| AC Output Port 3 (GFCI & CB) | 15A | 20A |
| ***Display*** | | |
| Display Panel Port | RJ12 | |
| Inverter Mode | Input Voltage, Output Power | |
| Charger Mode | Status & Battery voltage | |
| ***Charger*** | | |
| Charging Voltage Range | 13.5 -14.4 VDC | |
| Float Voltage Range | 13.4 – 13.8 VDC | |
| Charger Current (max) | 40 ADC | 55 ADC |
| Charger Current Setting | 5,10,20,40 | 5,15,35,55 |

| | |
|---|---|
| Battery Type | Gel, Flooded, AGM, Fixed |
| Charge Control | Bulk/Absorption/Float |
| Efficiency | >80% |
| ***Safety and Environmental*** | |
| Conformance | Conforms to UL 458<br>Certified to CSA C22.2 no. 107.1 |
| Agency Markings | cETLus |
| Operating Temperature | 0°C to 40°C (32°F to 104°F) |
| Storage Temperature | -20°C to 60°C (-4°F to 140°F) |
| Relative Humidity | 5-90% noncondensing |
| Operating Altitude | Up to 9,843ft (3000m) above sea level |
| ***Weights and Dimensions*** | |
| Weights | IC 121040: 12.5 lbs (5.7 kg)<br>IC 122055: 14.5 lbs (6.6 kg) |
| Dimensions | 9.0 x 18.8 x 4.5" ( 230 x 478 x 114 mm) |