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# BATTERY INVERTER KIT

# OPERATOR'S MANUAL


## DESCRIPTION

The Bee Access Battery Inverter Kit is a fully portable power solution designed to deliver reliable single phase 210-220V 20A power when jobsite supply power is limited or unavailable. Engineered for maximum versatility, it works with all single phase 208-220V hoists up to 1.5 kW including the ALBA MC 250 material hoist. With a continuous runtime of up to 3 hours on a single battery and double that with an additional parallel connected battery, the need for power cables or noisy generators is eliminated.

The inverter features built-in indicator lights for normal operation, low battery, and system faults, along with a protective fuse to safeguard the system. The on-panel display provides live updates on charge level, voltage, and amperage. The batteries are easily charged through the built-in 220V fast charger in the inverter or with the 110V charger.

## SPECIFICATIONS

**Part No.:**
936150: Inverter Control Box, 210V 20A 1ph
936154: Battery Charger, 110V LFP
936155: Battery, LFP 51V IP65, 50Ah
936156: Battery, LFP 51V IP65, 70Ah

**Individual Product Weights:**
Inverter: 75 lb
Battery: 50 lb/50Ah, 65 lb/70Ah

**Total Kit Weights (for platforms & material hoists):**
1 Battery Kit: 125 lb (140 lb 70Ah) (Work Cage)
2 Battery Kit: 175 lb (205 lb 70Ah) (Dual Hoist / MC 250)

**Battery Charge Time (from empty):**
220V Inverter Fast Charger: 2.5 hr (average)
110V Stand Charger: 3 hr (average)

**Continuous Run Time:** 2.5hr/50Ah & 3hr/70Ah (average)

# BATTERY INVERTER KIT

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# ⚠ GENERAL WARNING - READ FIRST ⚠

## Safety is a matter of life or death for riggers, operators and by-standers. This warning is your share of duties for achieving safety.

**Your duty to understand and comply:**

1. It is imperative for safety and efficiency of operations that this manual be read and fully understood by the rigger and the operator before rigging and using this equipment. All instructions contained herein must be carefully and strictly followed, including applicable Bee Access guidelines.
2. Should you hand over this equipment under any conditions, to any party operating out of your control, you must attach a clean copy of this manual and draw to other party's attention that strictly following all the instructions therein is a matter of life or death.
3. Before using this equipment, the rigger and the operator must become aware of all requirements of federal, state, provincial and local safety regulations, applicable to the entire suspended scaffold system and any component of it.
4. Never load this equipment above its rated load capacity.
5. Bee Access declines any responsibility for any special layouts, rigging or structural combinations beyond the descriptions of this manual.
6. Bee Access declines any responsibility for any other use of this equipment, than described in this manual.

**Your duty to inspect and maintain:**

7. Keep this manual available at all times for easy reference whenever required. Extra copies are available from Bee Access and/or your equipment supplier.
8. Carefully take notice of all labels affixed to the equipment. Never rig or operate this equipment if any label, normally fixed on it is obscured or missing. Replacement labels are available from Bee Access and/or your equipment supplier.
9. Every time the suspended scaffold is to be rigged or used, check that the Tieback Anchor, rigging, hoists, platform and other components are complete and in good working condition, prior to proceeding. All wire ropes and safety lines and their protective sleeves should be inspected at the beginning of every shift. Check for wear and abrasion due to contact with rigging equipment and/or the building structure.
10. **Daily inspection before use is to be carried out by a competent person.** Thoroughly check overall condition for bent, damaged or worn parts and broken welds. A signed and dated inspection record should be maintained for these purposes.
11. Make sure to comply with inspection and maintenance guidelines of all other components used in the suspended scaffold system.
12. Bee Access declines any responsibility for consequences of repairs or modifications brought out of its control to the product, specifically by replacement of original parts or repairs by another manufacturer.

**Your duty to train and control people:**

Compliance with safety rules extends to rigging operations which must be carried out only after securing safe conditions of operation as per safety regulations and requirements.

13. An operator must not be assigned to rigging, de-rigging, moving or operating a suspended scaffold if that person is not:
    a. Mentally and physically fit for the purpose, especially at heights
    b. Competent for the job to be performed
    c. Familiar with the scaffold equipment as rigged
    d. Professionally trained for working under the above requirements
14. Never let the equipment be moved or operated by unauthorized personnel. Keep the equipment, either rigged or unrigged, out of reach of unauthorized persons, while out of operation.
15. Every suspended job must be placed under the control of a person having the required competence and authority for checking that all the instructions prescribed by this manual be regularly and efficiently carried out.

**Your duty to safety of the entire scaffold system:**

A suspended scaffold system is made up of numerous pieces of equipment; all of these components can contribute to the required safety only if:

16. Other components meet the requirements of the applicable safety regulations and requirements, are of the proper quality, assembled to form a safe and efficient suspended system and compatibility is approved by Bee Access.
17. The supporting structure and tie-backs can withstand every load to be applied, either static or dynamic, during rigging or operating of the suspended scaffold equipment.
18. All the requirements in strength and resistance are obtained with the necessary safety coefficients (call your supplier for regulations and professional standards).
19. All the calculations, design and subsequent work necessary to meet the above requirements have been made by a competent person on the basis of proper technical information regarding the site.

**NOTE:** This manual is neither a regulations compliance manual nor a general training guide on suspended scaffold operations. You must refer to proper instructions delivered by your supplier of the other pieces of equipment included in your suspended scaffold installation. Whenever calculations and specific rigging and handling are involved, the operator should be professionally trained to that end and secure relevant information prior to commencing such work.

**Read and comply with the "Code of Safe Practices for Suspended Powered Scaffolds" issued by the Scaffold Industry Association (also available from Bee Access or your supplier).**

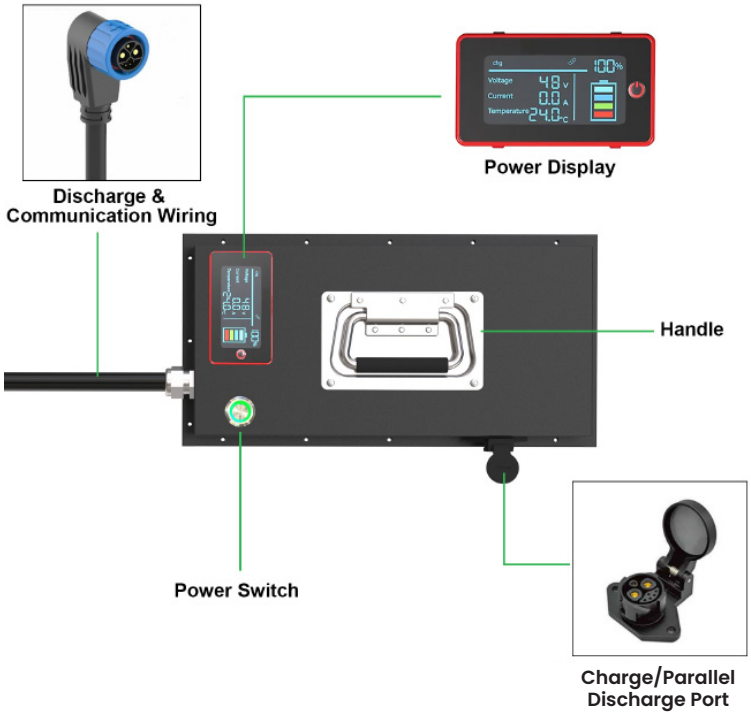
# BATTERY INVERTER KIT

## COMPONENTS & DIMENSIONS

**936150 - Inverter Control Box, 210V 20A 1ph**


**936155 - Battery, LFP 51V IP65, 50Ah**
**936156 - Battery, LFP 51V IP65, 70Ah**


**936154 - Battery Charger, 110V LFP**




### DIMENSIONS (LxWxH)

**Inverter & Bracket**
21.5" x 9" x 29.5"

**Charger**
8.5" x 4.75" x 2.75" w/ 58" cords

**Battery**
50Ah - 13.75" x 7" x 10.5" w/ 33" cord
70Ah - 13.75" x 7" x 13.75" w/ 33" cord

**NOTE:** Spare parts used for all equipment must be in accordance with the product, no substitutions are allowed.

# BATTERY INVERTER KIT

## INSTALLATION INSTRUCTIONS

**STEP 1**

**STEP 2**

**STEP 3**

**STEP 4**

**NOTE:**

Assembly and operation must be performed or supervised by a trained and competent person. Read and fully understand these instructions before proceeding with assembly/installation. Make sure warning/rating labels are in place, legible and have been read.

**Installation Instructions:**

1. When using the system on a suspended platform, place the Inverter Control Box (ICB) on the top guardrail and install the hitch pins to secure the support brackets. Make sure that it is positioned as close to a Guardrail Post as possible to better support the weight of the ICB.
2. When using the system on a fixed scaffold to power an MC 200/250 Material Hoist, place the ICB on a horizontal ledger next to the hoist ensuring it does not obstruct the travel of the carrier.
3. Install one battery if using one scaffold hoist or two batteries if using two scaffold hoists or one MC 200/250 Material Hoist. When using two batteries, connect them parallel by attaching the Discharge & Communication Cable from the second battery directly to the Charge/ Parallel Discharge port of the first battery (see diagram on page 4).
4. When using the Battery Inverter Kit on a Suspended Platform, make sure to attach the batteries to one of the diagonal braces via an aluminum mounting bracket or chain and carabiners.

## ⚠ WARNING

- Any installation/use of this equipment other than in strict accordance with these instructions shall be at the operator's risk and may result in death or serious injury.
- Make sure the warning labels are present and legible.
- Do not alter the product and never use it for purposes in which it was not intended.
- Use only Bee Access provided hardware and connectors. Do not substitute.
- Inspect all equipment before use.
- Never use damaged equipment.

# BATTERY INVERTER KIT

## INSTALLATION INSTRUCTIONS
*(Continued)*

**STEP 5**


**STEP 6**


**STEP 7**


**STEP 8**


**Installation Instructions (continued):**

5. Connect the Elbow Plug of the battery Discharge & Communication Cable to the BATTERY POWER Receptacle Plug on the side of ICB.
6. Connect a 10/3 Power Cord or Electrical Yoke with 250V 20A 1 phase plug to the POWER OUT Receptacle on the bottom of the ICB and connect the other end(s) to the hoist(s).

   NOTE: Do NOT exceed 20A total current draw. The Voltage Output can be read through the window of the ICB and is set at 210V from the factory for optimal performance of 208V BISOMAC scaffold hoists. The supplier can switch it to 220V for best performance with the MC 200/250 scaffold material hoist.
7. When the system is ready for use, turn the batteries on by pressing the Power Switch ON/OFF button on top of each battery. A green LED will light up and the Power Meter LCD screen will come on showing battery voltage, current draw and temperature. The display will automatically shut down after 1 minute and can be re-activated by pushing the Power Meter LCD ON/OFF button. Confirm that each battery has a charge of at least 90%, a minimum voltage of 50V, and that the operating temperature is within the allowable range of -15°C to 55°C (-15°F to 130°F).
8. Push the ICB "INVERTER POWER" button to turn the inverter on. Once the "INVERTER STATUS" light turns green verify that the input and output voltages are correct after which the system is ready to be used. If the "INVERTER STATUS" light turns red, there is a fault in the system. Refer to Appendix 5 for a list of Fault Codes and a troubleshooting guide.

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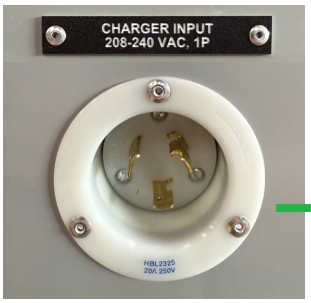
# BATTERY INVERTER KIT

## OPERATING INSTRUCTIONS


**Option A**

**Option B**




**Operation Instructions:**

1. After the final inspection is completed, commence using the platform or MC 200/250 Material Hoist.
2. When operating the hoist(s), monitor the charge and voltage levels of the batteries. Once they reach a charge level of 5% or less and a voltage level of 45V or less, replace or recharge the battery.
3. The ICB has an automatic internal cooling fan that comes on at approximately 104°F. There is also a temperature protection circuit that shuts off the inverter when the operating temperature exceeds its range of -10°C to 55°C (-15°F to 130°F).
4. When finishing a shift, turn off the ICB and Battery power.
5. To charge a battery, there are 2 options:
   A) Using the dedicated 110V Charger will recharge a fully depleted battery in about 3 hrs.
   B) Using the built-in 220V Charger, reducing the charging time to 2.5 hrs.
6. It is recommended to downoad the "Smart BMS" App on your smart phone from the Apple App or Google Play store to connect to a battery via BlueTooth and monitor in depth information of the battery. It allows an analysis of each of the cells in the battery.

BMS

Download on the App Store

GET IT ON Google Play

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# BATTERY INVERTER KIT

## LABELS


Label-51.2V 50Ah

# BATTERY INVERTER KIT

## PRE-OPERATION CHECKLIST

**This checklist provides general inspection guidelines concerning this Battery Inverter Kit. Be aware that this checklist is not all inclusive and report any unusual findings beyond this check list.**

External conditions such as misuse, abuse and long term factors such as weather, wear and fatigue, can severely damage components to the point where they can become unsafe for use. The purpose of this checklist is to spot any defects before they become a hazard. In addition, check the instruction manuals and warning labels of all other components of the suspended scaffold system for additional information on its use and inspection procedures. Perform a thorough component check prior to each use of this equipment.

***WARNING: Failure to check the equipment prior to each use can result in death or serious injury.***

If you check off any boxes under "YES" or you are in doubt about any item, immediately contact your supervisor or supplier and **DO NOT** use this equipment until the problem is corrected.

| YES | NO | |
|---|---|---|
| ☐ | ☐ | Cracked, dented, broken or missing parts that do not allow proper installation or operation. |
| ☐ | ☐ | Missing or illegible labels. |
| ☐ | ☐ | Missing Quick Pins or Lynch Pins where applicable. |
| ☐ | ☐ | Missing Battery mounting bracket or chain. |
| ☐ | ☐ | Signs of water penetration. When in doubt, consult a competent person. |
| ☐ | ☐ | Excessive dirt and debris that interferes with installation or operation. |
| ☐ | ☐ | Damaged cables and/or exposed wires. |
| ☐ | ☐ | Battery on/off green light does not come on. |
| ☐ | ☐ | Battery Power Meter does not function. |
| ☐ | ☐ | Battery charge level is below 50%. (Charge battery before use) |
| ☐ | ☐ | Battery voltage is below 46V. (Charge battery before use) |
| ☐ | ☐ | Inverter light is Red. |

**Inspected by:** _____

**Signature:** _____

**Date:** _____

# BATTERY INVERTER KIT

## OPTIONAL ACCESSORIES

### PROTECTIVE CANVAS BATTERY COVER

**Part #:** 936157 (fits both 50Ah & 70Ah batteries)

**Dimensions:** 13.75" x 7.25" x 10" (L x W x D)

**Weight:** 0.5 lb

**Construction:** Light Gray Fire Retardant Canvas w/ Velcro Closures and Clear Vinyl Windows

**Description:** Keep your battery protected with this durable canvas cover. Built for tough worksites, it shields against rain, snow and debris, adding an extra layer of defense when conditions get messy. The light gray color reflects heat to help keep the battery a few degrees cooler in hot environments—supporting consistent performance throughout the day. It has a fire retardant rating for Lithium Ion Batteries in case of emergency.

### Battery Extension Cable, 7ft

**Part #:** 936158

**Dimensions:** 7ft long

**Description:** Allows for longer separation between parallel connected batteries of up to 10 ft for better weight distribution on a suspended platform.

# BATTERY INVERTER KIT

## APPENDIX

| | Supplements |
|---|---|
| 1 | Battery User Manual 50Ah & 70Ah |
| 2 | Daly BMS Phone App |
| 3 | Power Meter User Manual |
| 4 | Battery Charger User Manual |
| 5 | Inverter Fault Codes and Troubleshooting |


# LiFePO4 Battery Pack

## 51.2V 50 or 70 Ah

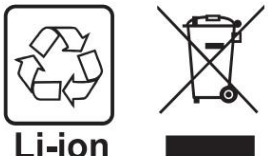
Disclaimer: When using and installing the battery pack, please read and abide by the operating instructions carefully. If improper operation causes man-made damage,the warranty claim will be invalid

This manual introduces the 51.2V 50Ah LiFePO4 battery, please read this manual before installing the battery, and follow the instructions carefully during the installation process. If you have any questions, please contact manufacturer for assistance immediately.

## 1.Safety Instructions

### Reminding

1) Before installing or using the battery, it is important and necessary to read the user manual (in the attachment) carefully. Failure to do so or to follow any instructions or warnings in this document may result in electric shock, serious injury or death, or may damage the battery, potentially rendering it inoperable.
2) If the batteries have been stored for long time, it is required to charge them every six months, and the SOC should be no less than 90%.
3) The battery needs to be recharged within 12 hours after fully discharged.
4) Do not install the product in an environment beyond the operating temperature or humidity range listed in the manual.
5) Do not expose the cable to the outside.
6) Do not connect power terminal reversely.
7) All battery terminals must be disconnected for maintenance.
8) Please contact the supplier within 24 hours if there is something abnormal.
9) Do not use detergent to clean the battery.
10) Do not expose batteries to flammable or harsh chemicals or vapors.
11) Do not paint any part of the battery, including any internal or external components.
12) Do not connect battery with PV solar wiring directly.
13) The warranty claims are excluded for direct or indirect damage due to items above.
14) Any foreign object is prohibited to insert into any part of battery.



## Warning

### 1.1 Before connecting

1) After unpacking, please check the product and packing list first, if the product is damaged or missing parts, please contact us immediately.

2) Before installation, be sure to cut off the grid power and make sure the battery is in the turned-off mode.

3) Wiring must be correct, do not mistake the positive and negative cables, and ensure no short circuit with the external device.

4) It is forbidden to directly connect the battery with AC power.

5) The battery embedded BMS is designed for 48VDC, please do not connect the battery in series.

6) The battery must be grounded and the resistance must be less than 0.12Ω.

7) Please ensure that the electrical parameters of the battery system are compatible with related equipment.

8) Keep the battery away from water and fire.

### 1.2 In using

1) If you need to move or repair the battery system, you must cut off the power supply and turn off the battery completely.

2) It is forbidden to connect the battery with different types of batteries.

3) It is forbidden to connect the battery with a faulty or incompatible inverter.

4) It is forbidden to disassemble the battery (the QC sheet falls off or is damaged);

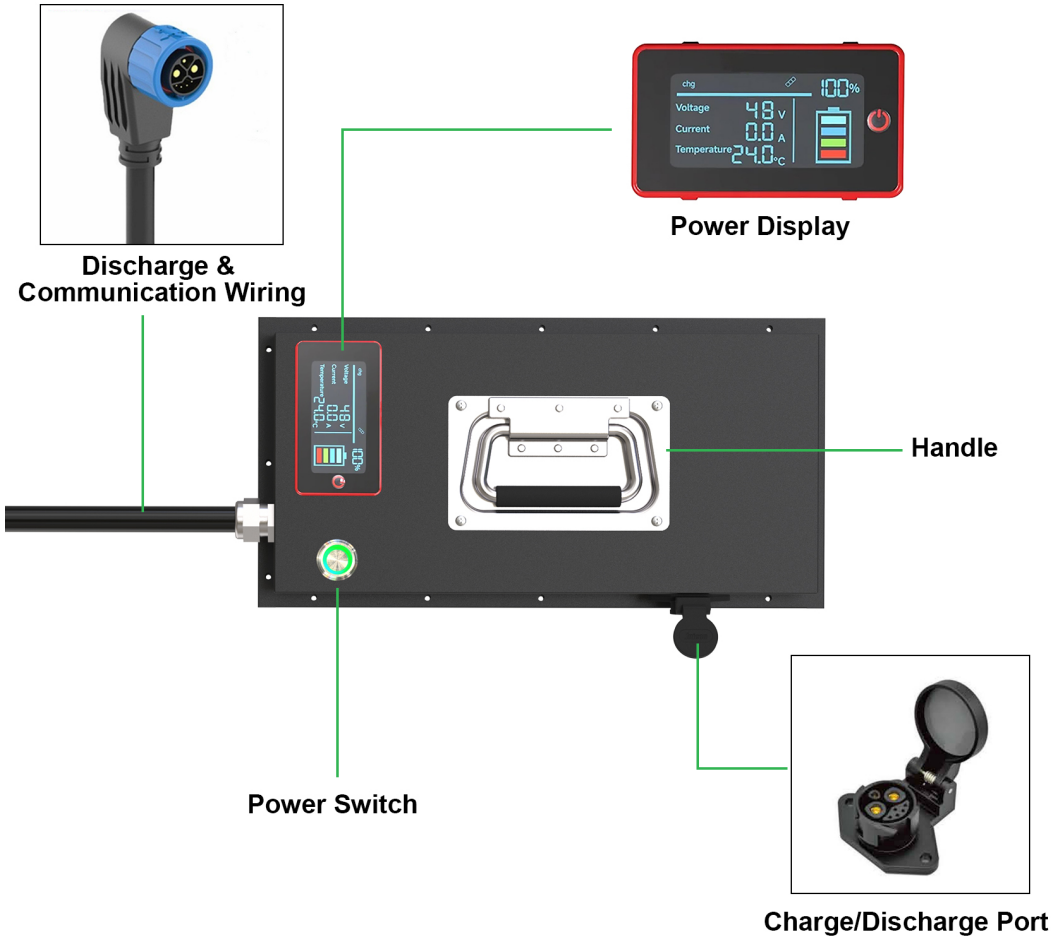
5) In the event of a fire, only dry powder fire extinguishers can be used, and liquid fire extinguishers are prohibited.

6) Please do not open, repair or disassemble the battery except staffs from manufacturer or authorized by manufacturer. We do not undertake any consequences or related responsibility which because of violation of safety operation or violating of design, production and equipment safety standards.

## 2. Battery Specification Sheet

| | | |
|---|---|---|
| **Model** | | SPB4850 |
| **Technical Parameter** | Nominal voltage | 51.2V |
| | Nominal capacity | 50Ah |
| | Stored energy | 2.56kWh |
| | Life cycles | >3000 times |
| | Self discharge | Max 3% per month |
| **Charging** | Charge Voltage | Maximum 58.4V,Minimum 57.6V |
| | Standard/Maximum current | 10A/25A |
| | Standard charge time | About 5 hours with 10A charger |
| **Discharge** | End of discharge voltage | 40V |
| | Continuous Discharge current | 50A |
| | Maximum discharge current | 150A(30s) |
| **Operation Temperature** | Charge temperature range | 0°C ~ 55°C |
| | Discharge temperature range | -20°C ~55°C |
| | Storage temperature range | -20°C~45°C ( 1 month )<br>0°C~35°C ( 1 year ) |
| **General** | Cell combination | 1P 16S |
| | Cell model | 3.2V 50Ah |
| | Casing material | Steel |
| | Weight | ≈21.5kg |
| | Dimension (L*W*H) | L348*W178*H260mm |
| | IP rate | IP65 |

## 3. Battery interface instruction




## 4. Operation Guide

### 4.1. Recharge the battery

Before charging, please make sure the charger output power is DC58.4V and matching connector type.

①Connect the charger output end to the battery charging port;

②Connect the charger input end to the AC power source.

Warning: Don't discharge the battery when it is in charging.

### 4.2. Discharging connection

①Plugin the connection cable to the battery discharging port;

②Connect the connection cable other end to the loading device;

③Power ON the battery switch.

## Handling and Maintenance

## Storage：

- For storage over one month, place the battery in a dry and ventilated room that is 32°F~95°F.
- Do not store near corrosive material, fire, and heat sources.
- In order to avoid over discharge, for long-term storage, the power must be turned off and the SOC is kept above 60% to avoid over discharge. The battery must be fully charged and must be charged again every 8 months.

### Operation

- ATTENTION: Before installing, make sure that all appliances are turned off.
- Remaining battery capacity

Press the power switch of LCD display, it will display the real-time battery power level.

**• Shut down**

The battery may shut down immediately due to over-temperature, over-current, under-voltage, and external short-circuit. Once this happens, stop driving immediately and charge the battery as soon as possible.

Disclaimer: Once the battery shutting down, stop driving and charge the battery as soon as possible. Continue driving will cause the cart to suddenly stop. We are not responsible for any loss caused by the sudden stop of driving in this case.

**• Charging**

The LED light of the LCD keeps rolling while charging. This battery needs to be used with the designated charger we sell, otherwise it may cause insufficient charging or battery damage. We are not responsible for any problems caused by this.

## WARRANTY REPAIRS/REPLACEMENTS

Your Battery is warrantied for ONE year from date of purchase at retail against defective material or workmanship. We make no warranty other than this limited warranty and expressly exclude any implied warranty including any warranty for consequential damages. This limited warranty is not transferable.

Seller warranty this product, if used in accordance with all applicable instructions, to be free from original defects in material and workmanship within the warranty period.

If the product has any failure problem within the warranty period, Seller will repair or replace the product at its sole discretion according to the failure situation.

## LIMITED WARRANTY

Save the proof of purchase, such as a dated receipt. This warranty for the unit is extended to the original purchaser or user, and it may cover defects in materials and workmanship.

For malfunction due to defects in materials or workmanship six months from the purchase date, we will repair or replace the unit at our discretion after inspection.

This warranty is invalidated if any of the following occurs, but not limited to:

- Failure to follow instruction in the User's Manual.
- Accidental or unreasonable use, misuse or mishandling, over charging or loading, or normal wear.
- Extended storage without recharging or repairs done by an unauthorized person or modification.

This warranty is in lieu of all other express warranties. We will not be liable for consequential or incidental damages.

## 4.3. BlueTooth App

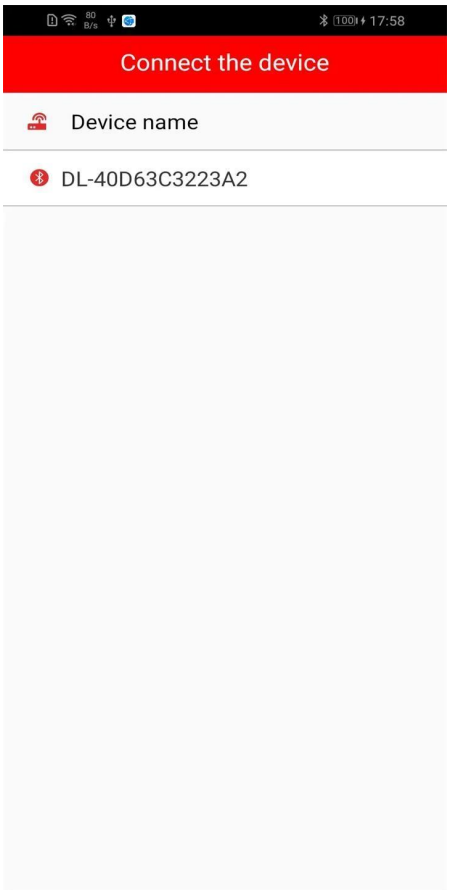
**Daly BMS APP**

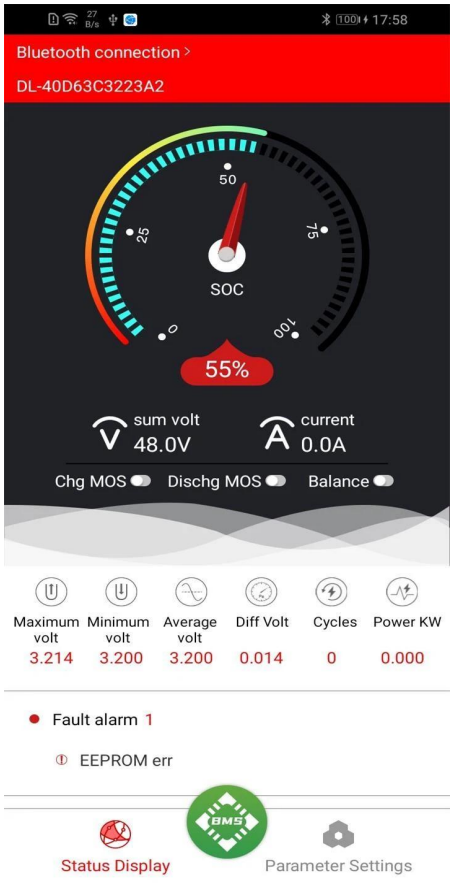
①Download and install the Daly BMS APP from Google Play Store / APP Store.

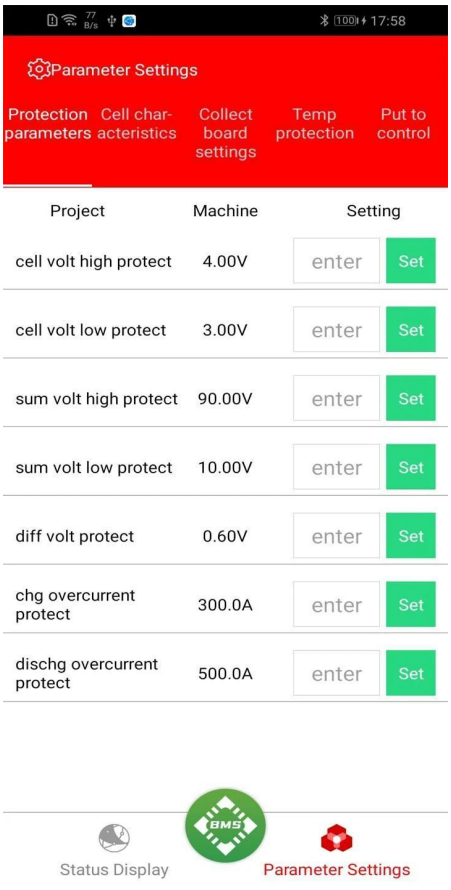
②Turn on your phone BlueTooth function, and enter the App, select the device name to monitor the battery real time status.

③You can find each battery BlueTooth device name from the sticker label on the battery.

## BlueTooth App Screenshots



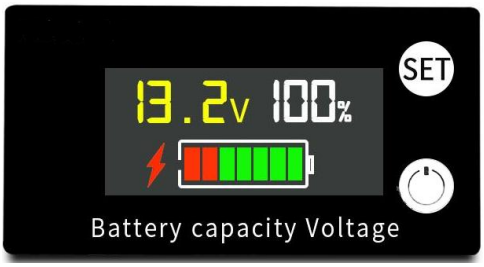



6133A Power Meter User Manual

## I. Product parameter

1. Voltage detection range :DC8-100V
2. Working current :<15mA
3. Display mode :LCD screen
4. Display color: blue/white/color (optional)




## II. Performance index

1. Detection accuracy :±1%;
2. Open installation hole size :58.5*28.5mm
3. Refresh speed: 500ms/ time;
4. Dimensions: 61.3 * 33.3 * 13.5mm

## III. Product description

1. Ternary lithium-ion battery **L** measurement from L03 series to L20 series (power off memory)
2. Lead-acid battery **P** measurement :DC12V, 36V, 48V, 60V, 72V, 84V (power off memory)
3. Lithium iron Phosphate battery **F** measurement from F03 series to F23 series (power off memory)
4. Custom set high and low voltage range :DC8-100V.

## IV. Mode declaration:

**Press and hold the button in the upper right corner of the main page for 2 seconds to enter the mode setting page. Press and hold the button in the upper right corner for another 2 seconds to exit the setting page and return to the main page.**

**Mode 1-P: Lead Acid battery setting;** 


**Mode 2-L: Lithium-ion battery setting;** 


**Mode 3-F: LiFePO4 battery setting;** 


**Mode 4: Custom high and low voltage Settings:**

Custom low voltage and saturation voltage, display 00.. 000, the left digit is the low voltage parameter, the right digit is the saturation voltage parameter;

**Mode 5: Backlight setting:**

Display 5-B, press the button in the lower right corner to switch ON/OFF,ON is to automatically turn

OFF the backlight after 10S delay,OFF is to keep the backlight on;

**Mode 6: Low voltage alarm setting:**

Display 00.0V Lo, the left is the alarm voltage parameter (alarm when the voltage is lower than this parameter);

**Mode 7: Alarm sound setting:**

Display 7-A, press the button in the lower right corner to switch ON/OFF,ON is to turn on the alarm sound function,OFF is to turn off the alarm sound function.

## Display Parameter Setting:

### Lead Acid battery setting


On the lead-acid battery setting page, the voltage value blinks. Press the key in the lower right corner to select the battery voltage you want to use
Press the button in the upper right corner to confirm and save the value (the voltage value is steady on), and hold the button in the upper right corner for 2 seconds to return to the main page, or you can press the button in the upper right corner
Key for other mode Settings.

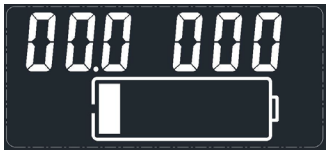
### Ternary Lithium-ion battery setting


On the ternary lithium battery setting page, the number of battery strings is blinking, press the button in the lower right corner to select the number of battery strings to be used, after selecting the number of battery strings, press the button in the upper right corner to confirm and save the value (the number of battery strings is steady on), and press the button in the upper right corner for 2 seconds to return to the main page, or press the button in the upper right corner to set other modes.

### LiFePO4 battery setting


On the lithium iron battery setting page, the number of battery strings is blinking, press the button in the lower right corner to select the number of battery strings to use, after selecting the number of battery strings, press the button in the upper right corner to confirm and save the value (the number of battery strings is steady on), and press the button in the upper right corner for 2 seconds to return to the main page, or press the button in the upper right corner to set other modes.

### Custom high and low voltage Settings:



On the custom high-low voltage setting page, the left side of 00.0 is the low voltage, the right side of 000 is the saturation voltage, short press the lower right button to set the number of digits
After setting the value, hold down the button in the lower right corner for 2 seconds to shift, after the low voltage and saturation voltage are set, press the button in the upper right corner to confirm and
Save the values (all values are steady on), and long press the upper right button for 2 seconds to return to the main page. You can also press the upper right button to set other modes.
Tip: The right 000 is actually 00.0, for example, 255 shows 25.5.

### Backlight setting


On the backlight setting page, ON/OFF flashes, press the button in the lower right corner to select ON or OFF, ON: the display automatically delays for 10 seconds to turn OFF, OFF: the display is steady on, press the button in the upper right corner to confirm and save the option, press and hold the button in the upper right corner for 2 seconds to return to the main page, or press the button in the upper right corner to set other modes.

### Low voltage alarm setting


On the low voltage alarm setting page, the left side of 00.0 is the setting value, short press the key in the lower right corner to set the bit value, after the bit value is set, long press the key in the lower right corner for 2 seconds to shift, after the alarm voltage is set, short press the key in the upper right corner to confirm and save the value (all values are steady on), long press the key in the upper right corner for 2 seconds to return to the main page. You can also press the button in the upper right corner to set other modes.

Note: If the user does not customize the low voltage alarm parameters, then the product default power is less than 10% automatic alarm prompt.

### Alarm sound setting


ON: turn ON the alarm sound, OFF: turn OFF the alarm sound, press the button in the upper right corner to confirm and save the option, press and hold the button in the upper right corner for 2 seconds to return to the main page, or press the button in the upper right corner to set other modes.

# USER MANUAL

# BATTERY CHARGER

**Please read this manual carefully before use!**

Subject to change without prior notice, please feel free to contact us for latest information

## A. Features:

1) Advanced high frequency switching mode power supply technology.
2) DC output isolated from AC input.
3) Charging parameters are insensitive to the AC input line voltage variations.
4) 2 LEDs: LED1 Red (power on), LED2 Red/green (charging/full).
5) Short circuit, over voltage, over-temperature, reverse polarity protections.
6) Efficiency≥85%.
7) Forced ventilation with fans.
8) 100% full loading aging test.

## B. Operations:

1) Check if your local mains supply conforms to charger's input voltage 110V or 230V.

   Then connect the charger system to a wall socket. If charger has switch with OFF position, it MUST be set to ON.

   LED1 RED confirms AC power on, and the LED2 GREEN confirms charger connects well.

2) Please attention to DC terminal:

   **Brown (Red)→Positive + terminal, Blue (Black)→Negative - terminal.**

   Then Connect the plug or the DC Output cord to battery terminals.

   LED2 RED confirms charger is charging, LED2 GREEN confirms battery fully charged.

## C. Attentions:

1) The phenomenon of Sparking is normal when it connects to battery because of high current.
2) Make sure that the charger type matches the battery type before charging. Avoid charging the wrong type of battery.
3) Always place the charger in well-ventilated and dry environments. Do not cover it to avoid the case from being over heated while charging.
4) Dust-proof should also be taken into consideration to avoid influencing heat dissipation effec because of surface dust accumulation.
5) In view of safety and electromagnetic compatibility, the charger equipped with grounding wire b default.

6) Do not attempt to repair or service the charger yourself. open the cover of charger casually may result in electric shock hazard or other damages. Take it to a qualified service person when service or repair is required.
7) Batteries produce hydrogen gas, which can explode if ignited, never smoke, use an open flame, or create sparks near the battery. Proper ventilation is required when charging.
8) Risk of electrical shock. DO NOT touch uninsulated portion of AC or DC connectors or the uninsulated battery terminal.
9) If the battery is found to be abnormal or damaged during working process, please drop the power adapter and connector immediately.
10) In order to avoid charger wiring harness damage, please do not put the matters onto charger wiring harness or the places easy to be stamped, if there is damage of wiring harness, please change immediately.

## D. Common Faults and Solutions:

1) **Error input voltage:** Check if the input voltage conformed to the requirement or not.
2) **Abnormal AC input:** Check whether there is AC voltage and whether the input plug is loose.
3) **Machine over heat:** Check that the fan is running. Also pay attention to ventilation at the working place of charger, covering anything on the charger is not allowed.
4) **Output short circuit:** Check the wire line of output terminal to exclude short-circuit.
5) **No battery or reverse connection:** Check the battery connection, connect the battery correctly.
6) **Battery voltage is too low:** Make battery voltage up to the starting voltage of charger.

## E. Storage:

Products should be stored in package box when it is not used. And warehouse temperature should be -40~70°C, and relative humidity is 5~95%. In the warehouse, there should not be harmful gas, inflammable, explosive products, and corrosive chemical products, and strong mechanical vibration, shock and strong magnetic field affection. The package box should be above ground at least 20 cm height, and 50 cm away from wall, thermal source, and vent. Under this requirement, product has 2 years of storage period, and should be rechecked when over 2 years. The charger must be energized every three months for not less than 0.5 hours.

# Inverter Maintenance & Troubleshooting

This troubleshooting guide contains information about how to troubleshoot possible error conditions while using the M3048BP and M5000H-48BP Solar Power Inverter/Chargers.
The following chart is designed to help you quickly pinpoint the most common inverter failures.

**Indicator and Buzzer**

| Fault Code | Fault Event | Icon on |
|---|---|---|
| 01 | Fan is locked |  |
| 02 | Over temperature |  |
| 03 | Battery voltage is too high |  |
| 04 | Battery voltage is too low |  |
| 05 | Output short circuited |  |
| 06 | Output voltage is too high. |  |
| 07 | Overload time out |  |
| 08 | Bus voltage is too high |  |
| 09 | Bus soft start failed |  |
| 51 | Over current or surge |  |
| 52 | Bus voltage is too low |  |
| 53 | Inverter soft start failed |  |
| 55 | Over DC voltage in AC output |  |
| 56 | Battery connection is open |  |
| 57 | Current sensor failed |  |
| 58 | Output voltage is too low |  |
| 60 | Negative power fault |  |
| 61 | PV voltage is too high |  |
| 62 | Internal communication error |  |

| | | |
|---|---|---|
| 80 | CAN fault |  |
| 81 | Host loss |  |

**Warning Indicator**

| Warning Code | Warning Event | Audible Alarm | Icon flashing |
|---|---|---|---|
| 01 | Fan is locked | Beep 3 times every second |  |
| 02 | Over temperature | Beep once every second |  |
| 03 | Battery is over-charged | Beep once every second |  |
| 04 | Low battery | Beep once every second |  |
| 07 | Overload | Beep once every 0.5 second |  |
| 10 | Output power derating | Beep twice every 3 seconds |  |
| 12 | Solar charger stops due to low battery | Beep once every second |  |
| 13 | Solar charger stops due to high PV voltage | Beep once every second |  |
| 14 | Solar charger stops due to overload | Beep once every second |  |
| 15 | Parallel input utility grid different | Beep once every second |  |
| 16 | Parallel input phase error | Beep once every second |  |
| 17 | Parallel output phase loss | Beep once every second |  |
| 18 | Buck over current | Beep once every second |  |
| 19 | Battery disconnect | No beep |  |
| 20 | BMS communication error | Beep once every second |  |
| 21 | PV power insufficient | Beep once every second |  |
| 22 | Parallel forbidden without battery | Beep once every second |  |
| 25 | Parallel inverters' capacity different | Beep once every second |  |
| 33 | BMS communication loss | Beep once every second |  |

| | | | |
|---|---|---|---|
| 34 | Cell over voltage | Beep once every second |  |
| 35 | Cell under voltage | Beep once every second |  |
| 36 | Total over voltage | Beep once every second |  |
| 37 | Total under voltage | Beep once every second |  |
| 38 | Discharge over current | Beep once every second |  |
| 39 | Charge over current | Beep once every second |  |
| 40 | Discharge over temperature | Beep once every second |  |
| 41 | Charge over temperature | Beep once every second |  |
| 42 | Mosfet over temperature | Beep once every second |  |
| 43 | Battery over temperature | Beep once every second |  |
| 44 | Battery under temperature | Beep once every second |  |
| 45 | System shut down | Beep once every second |  |

## TroubleShooting

| **Problem** | **LCD/LED/Buzzer** | **Explanation** | **What to do** |
|---|---|---|---|
| Unit shuts down Automatically during startup process. | LCD/LEDs and buzzer will be active for 3 seconds and then complete off. | The battery voltage is too low . (<1.91V/Cell) | 1.Re-charge battery.<br>2.Replace battery. |
| No response after power on. | No indication. | 1.The battery voltage is far too low. (<1.4V/Cell)<br>2.Battery polarity is connected reversed. | 1. Check if batteries and the wiring are connected well.<br>2.Re-charge battery.<br>3.Replace battery. |
| Mains exist but the unit works in battery mode. | Input voltage is 0 on the LCD and green LED is flashing. | Input protector is tripped. | Check if AC breaker is tripped and AC wiring is connected well. |
| | Green LED is flashing. | Insufficient quality of AC power. (Shore or Generator) | 1. Check if AC wires are too thin and/or too long.<br>2. Check if generator (if applied) is working well or if input voltage range setting is correct. (UPS→Appliance) |
| | Green LED is flashing. | Set “Battery First” or “Solar First” as the priority of output source. | Change output source priority to Utility first. |
| When it’s turned on, internal relay is switching on and off repeatedly. | LCD display and LEDs are flashing | Battery is disconnected. | Check if battery wires are connected well. |
| Buzzer beeps | Fault code 01 | Fan fault. | 1.Check whether all fans are working properly. |

| | | | |
|---|---|---|---|
| continuously and red LED is on.(Fault code)<br><br>Buzzer beeps once every second, and red LED is flashing. (Warning code) | | | 2.Replace the fan. |
| | Fault code 02 | Internal temperature of component is over 100°C. | 1.Check whether the air flow of the unit is blocked or whether the ambient temperature is too high.<br>2.Check whether the thermistor plug is loose. |
| | Fault code 03 | Battery is over-charged. | Restart the unit, if the error happens again, please return to repair center. |
| | | The battery voltage is too high. | Check if spec and quantity of batteries are meet requirements. |
| | Warning code 04 | The battery voltage/SOC is too low. | 1.Measure battery voltage in DC input.<br>2.Check battery SOC in LCD when use Li battery.<br>3.Recharge the battery. |
| | Fault code 05 | Output short circuited. | Check if wiring is connected well and remove abnormal load. |
| | Fault code 06/58 | Output abnormal (Inverter voltage is over 150Vac or below 40Vac). | 1.Reduce the connected load.<br>2. Restart the unit, if the error happens again, please return to repair center. |
| | Fault code 07 | The inverter is overload 110% and time is up. | Reduce the connected load by switching off some equipment. |
| | Fault code 08 | Bus voltage is too high. | 1.If you connect to a lithum battery without communication, check whether the voltage points of the program 19 and 21 are too high for the lithum battery.<br>2. Restart the unit, if the error happens again, please return to repair center. |
| | Fault code 09/53/57 | Internal components failed. | Restart the unit, if the error happens again, please return to repair center. |
| | Warning code 15 | The input status is different in parallel system. | Check if AC input wires of all inverters are connected well. |
| | Warning code 16 | Input phase is not correct. | Change the input phase S and T wiring. |
| | Warning code 17 | The output phase not correct in parallel. | 1.Make sure the parallel setting are the same system(sigle or paralle; 3P1,3P2,3P3).<br>2.Make sure all phases inverters are power on. |
| | Warning code 20 | Li battery can't communicate to the inverter. | 1.Check whether communication line is correct connection between inverter and battery.<br>2.Check whether BMS protocol type is correct setting. |
| | Fault code 51 | Over current or surge. | Restart the unit, if the error happens again, please return to repair center. |
| | Fault code 52 | Bus voltage is too low. | |
| | Fault code 55 | Output voltage is unbalanced | |
| | Fault code 56 | Battery is not connected well or fuse is burnt. | If the battery is connected well, please return to repair center. |
| | Fault code 60 | Negative power fault | 1. Check whether the AC output connected to the grid input.<br>2. Check whether Program 8 settings are the same for all parallel inverters<br>3. Check whether the current sharing cables are connected well in the same parallel phases.<br>4. Check whether all neutral wires of all parallel units are connected together.<br>5. If problem still exists, contact repair center. |
| | Fault code 80 | CAN fault | 1. Check whether the parallel communication cables are connected well.<br>2. Check whether Program 23 settings are right for the parallel system.<br>3. If problem still exists, contact repair center |
| | Fault code 81 | Host loss | |

**Note:** To restart the inverter, all power sources need to be disconnected. After the LCD screen light is off, only use the battery to restart the inverter.