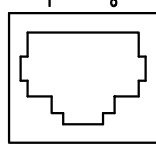
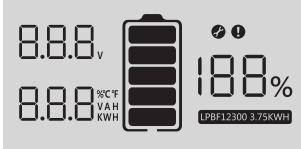


#### 4.1 Switch On / Off

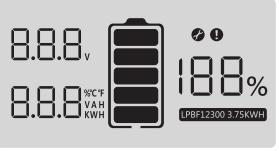
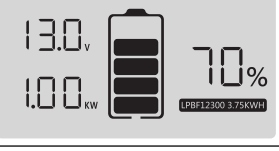
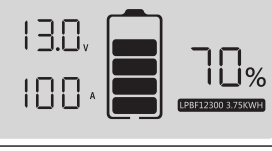
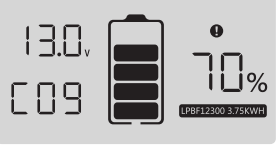
- 1.Switch on: press On/Off button to switch on the battery, then the battery will do self-inspection before enable output. The LCD will show the SOC.
- 2.Switch off: press and hold On/Off button for 1to3 seconds, the battery will shut down directly.Description for Communication port

| Picture                                                                           | PIN | Description |
|-----------------------------------------------------------------------------------|-----|-------------|
|  | 1   | Trigger-GND |
|                                                                                   | 2   | Trigger-VCC |
|                                                                                   | 3   | CANL-PCS    |
|                                                                                   | 4   | CANH-PCS    |
|                                                                                   | 5   | RS485-B     |
|                                                                                   | 6   | RS485-A     |
|                                                                                   | 7   | CANL        |
|                                                                                   | 8   | CANH        |

#### 4.2 LCD Display Icons

|  |                                                                                                                                                                      |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Icon                                                                              | Function description                                                                                                                                                 |
| Display Information                                                               |                                                                                                                                                                      |
|                                                                                   | Indicates battery voltage.                                                                                                                                           |
|                                                                                   | Indicates battery current or watt Short press the switch button to switch watt and current                                                                           |
|                                                                                   | Indicate SOC.                                                                                                                                                        |
| Battery Information                                                               |                                                                                                                                                                      |
|                                                                                   | Indicates battery level by 0-20%, 21-40%, 41-60%61-80%, 81-100%. (Whencharging,this icon is displayed for horserunning;When discharging,the icon displays constant). |
| Fault information                                                                 |                                                                                                                                                                      |
|                                                                                   | Indicates a fault.                                                                                                                                                   |
| set information                                                                   |                                                                                                                                                                      |
|                                                                                   | Indicates settings.                                                                                                                                                  |

#### 4.3 BMS Information Page

|                                                                                                                                    |                                                                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| <b>BMS power on information</b><br>BMS information is all on.                                                                      | <b>BMS Version</b><br>Eg:"100" is the software version ;"0" is the IAP version and temporary version;"01" is the countdown. |
|                                                   |                                           |
| <b>BMS data</b><br>Eg:"13.0V" / "1.00KW" / "70%" refers to battery voltage, power and SOC.                                         | <b>BMS Data</b><br>Eg:"13.0V" / "100A" / "70%" refers to battery voltage, current and SOC.                                  |
|                                                   |                                           |
| <b>BMS Fault code</b><br>Eg:"13.0V" / "C09" / "70%" are battery voltage, fault code and SOC respectively, and Fault icon constant. |                                                                                                                             |
|                                                   |                                                                                                                             |

#### 4.4 Fault Code Table

| Fault Code | Fault Information     | Trouble Shooting                                                              |
|------------|-----------------------|-------------------------------------------------------------------------------|
| C01        | Battery overvoltage   | Restart the unit, If the error happens again, please return to repair center. |
| C02        | Battery undervoltage  | Restart the unit, If the error happens again, please return to repair center. |
| C03        | Cell overvoltage      | Restart the unit, If the error happens again, please return to repair center. |
| C04        | Cell undervoltage     | Restart the unit, If the error happens again, please return to repair center. |
| C05        | Charge overcurrent    | Restart the unit, If the error happens again, please return to repair center. |
| C06        | Discharge overcurrent | Restart the unit, If the error happens again, please return to repair center. |

|     |                           |                                                                                                                                                                                                                                                                                                                              |
|-----|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| C07 | MOS overtemperature       | 1. The inner temperature is over the limitation.<br>2. Check whether the ambient temperature is too high.                                                                                                                                                                                                                    |
| C08 | MOS undertemperature      | 1. The internal temperature is lower than the limit range<br>2. Check whether the ambient temperature is too low.                                                                                                                                                                                                            |
| C09 | Cell ovetemperature       | Restart the unit, If the error happens again, please return to repair center.                                                                                                                                                                                                                                                |
| C10 | Cell undertemperature     | Restart the unit, If the error happens again, please return to repair center.                                                                                                                                                                                                                                                |
| C11 | Abnormal current sampling | Restart the unit, If the error happens again, please return to repair center.                                                                                                                                                                                                                                                |
| C12 | Abnormal output impedance | Restart the unit, If the error happens again, please return to repair center.                                                                                                                                                                                                                                                |
| C13 | Parallel failed           | 1. Please check if single unit is installed to parallel system.<br>2. If this error happens during parallel installation, please check wires connection. If they are connected correctly, please finish parallel installation first, and then restart the unit.<br>3. If the problem remains, please contact your installer. |
| C14 | Output loss               | 1. Please check whether the circuit breaker is closed;<br>2. Please check whether the fuse is normal;<br>3. Restart the unit, If the error happens again, please return to repair center.                                                                                                                                    |

#### 5. EMERGENCY SITUATIONS

Felicity cannot guarantee battery absolute safety.

##### 5.1 Fire

In case of fires, make sure that the following equipment is available near the system.

- SCBA (self-contained breathing apparatus) and protective gear in compliance with the Directive on Personal Protective Equipment 89/686/EEC.
  - NOVEC 1230, FM-200, or dioxide extinguisher
- Batteries may explode when heated above 150°C. KEEP FAR AWAY from the battery if it catches fire.

##### 5.2 Leaking Batteries

If the battery pack leaks electrolyte, avoid contact with the leaking liquid or gas. If one is exposed the leaked substance, immediately perform the cations described below.

- Inhalation: Evacuate the contaminated area, and seek medical attention.
- Contact with eyes: Rinse eyes with running water for 5 minutes, and seek medical attention.
- Contact with skin: Wash the affected area thoroughly with soap and water, and seek medical attention.
- Ingestion: Induce vomiting, and seek medical attention.

##### 5.3 Wet Batteries

If the battery pack is wet or submerged in water, do not let people access it, and contact your supplier for help.

##### 5.4 Damaged Batteries

Damaged batteries are not fit for use and are dangerous and must be handled with the utmost care. It may leak electrolyte or produce flammable gas. If the battery pack seems to be damaged, pack it in its original container, and then return it to your supplier.

##### 5.5 Warranty

Products that are operated strictly in accordance with the user manual are covered by the warranty. Any violation of this manual may void the warranty.

Limitation of Liability

Any product damage or property loss caused by the following conditions, Felicity does not assume any direct or indirect liability.

- Product modified, design changed or parts replaced.
- Changed, or attempted repairs and erasing of series number or seals;
- System design and installation are not in compliance with standards and regulations;
- The product has been improperly stored in end user's premises;
- Transport damage (including painting scratch caused by movement inside packaging during shipping). A claim should be made directly to shipping or insurance company.



## USER MANUAL

LiFePO4 Battery System for Households



In order to prevent improper operation before use, please carefully read thismanual.

358-010412-00

#### 1.ABOUT THIS MANUAL

##### 1.1 Purpose

This manual describes the introduction, installation, operation and emergency situations of the battery bank. Please read this manual carefully before installations and operations. Keep this manual for future reference.

##### 1.2 Scope

This manual provides safety and installation guidelines as well as information on tools and wiring.

##### 1.3 Safety Instructions

**WARNING:** This chapter contains important safety and operating instructions. Read and keep this manual for future reference.

- 1.Before using the unit, read all instructions and cautionary markings on the unit, the batteries and all appropriate sections of this manual.
2. CAUTION — To reduce risk of injury,damage,even burst, please use it following using manual. In case of causing personal
3. Do not disassemble the battery. Take it to a qualified service center when service or repair is required. Incorrect re-assembly may result in a risk of fire.
4. To reduce risk of electric shock, disconnect all wirings before attempting any maintenance or cleaning. Turning off the unit will not reduce this risk.
5. CAUTION – Only qualified personnel can install this device with inverter.
6. For optimum operation of this battery, please follow required spec to select appropriate cable size.
7. Be very cautious when working with metal tools on or around batteries. A potential risk exists to drop a tool to spark or short circuit batteries or other electrical parts and could cause an explosion or fire.
8. Please strictly follow installation procedure.
9. To support full output load, at least 2 sets of LPBF12V for inverter larger than 1.5KVA in parallel connection.
10. **GROUNDING INSTRUCTIONS** - This System should be connected to a permanent grounded wiring system. Be sure to comply with local requirements.
11. NEVER cause AC output and DC input short circuited. Do not connect to the mains when DC input short circuits.
12. Warning! Only qualified service persons are able to service this device.
13. Battery should be installed indoor and kept away from water, high temperature mechanical force and flames.
14. Do not install the battery in any environment of temperature below 0°C or over 55°C,and humidity over 80%.
15. Do not put any heavy objects on the battery.

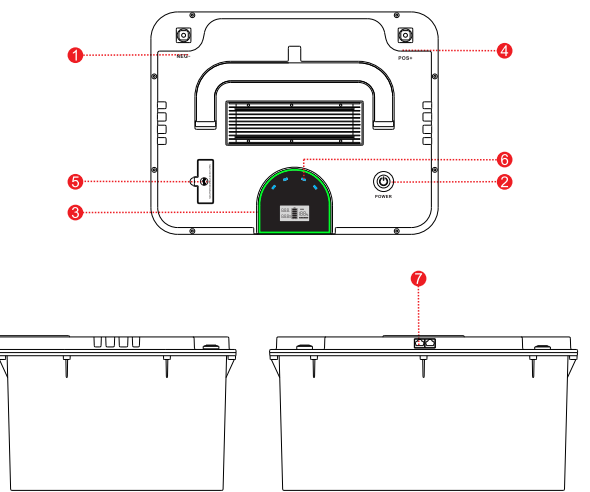
#### 2. INTRODUCTION

The battery system main using solar power system for family house. It also have a with to controller the battery easily and protect our Household application timely.

#### 2.1 Features

LiFePO4: Higher safe performance and longer cycle life.  
Multiple Protection: Built-in smart BMS and Fuse.  
Flexible Installation: Floor-Mounted.  
Wide Compatibility: Compatible with leading inverter brands.  
High Scalability: Capacity up to 60kWh.  
Long Warranty:5 Years.

#### 2.2 Product Overview



1. Battery Negative -
2. Power On/Charging indicator
- 3.LCD display
- 4.Battery Positive +
5. Fuse
6. LED display
- 7.Communication port

#### 2.3 Specifications

|                                                                                  |                                   |
|----------------------------------------------------------------------------------|-----------------------------------|
| Model                                                                            | LPBF12300                         |
| Energy                                                                           | 3.75kWh                           |
| Battery Type                                                                     | LiFePO4                           |
| Nominal Voltage                                                                  | 12.8V                             |
| Operating Voltage                                                                | 11.2-14.4V                        |
| Recommend Charge/Discharge Current[1]                                            | ≤150A                             |
| Recommend Charge/Discharge Power[1]                                              | ≤1,875W                           |
| Maximum Charge/Discharge Current(15s)                                            | 200A                              |
| Maximum Charge/Discharge Power(15s)                                              | 2,500W                            |
| Depth of Discharge(DOD)                                                          | ≥ 95%                             |
| Scalability                                                                      | Up to 16 units in parallel(60kWh) |
| Communication                                                                    | RS485 / CAN                       |
| Protection Level                                                                 | IP21                              |
| Cycle Life[2]                                                                    | ≥ 6,000 Cycles                    |
| Charging Temperature Range                                                       | 0-55 °C                           |
| Discharging Temperature Range                                                    | -20-55 °C                         |
| Display                                                                          | LCD+LED                           |
| Installation                                                                     | Floor-Mounted                     |
| Protection                                                                       | Built-in smart BMS, Fuse          |
| Warranty                                                                         | 5 Years                           |
| Net Weight                                                                       | 34kg                              |
| Gross Weight                                                                     | 38kg                              |
| Product Dimension                                                                | 492x381x245mm                     |
| Package Dimension                                                                | 560x450x303mm                     |
| [1] Recommend charge/discharge current/power is affected by temperature and SOC. |                                   |
| [2] Test conditions: 0.2C Charging/Discharging @25°C, 80% DOD.                   |                                   |

#### 2.4 Recommended Settings

Lithium battery pack is not same as lead-acid battery, so for the devices which you connect with the battery pack for charging or discharging, such as inverters, MPPT charger controllers or UPS, please implement pre-settings as recommended settings as below before you launched them.

|                           |           |
|---------------------------|-----------|
| Setting                   | LPBF12300 |
| Max. Charging Voltage     | 14.4V     |
| Floating Charging Voltage | 14.4V     |
| Max. Charging Current     | 150A*N    |
| Cut-off Voltage           | 12V       |

Notes:

1. "N" means the number of battery packs connected in parallel.
- 2.If battery packs are used in series, the number of battery packs in series should not exceed 4.

#### 3. INSTALLATION

##### 3.1 Unpacking and Inspection

Before installation, please inspect the unit. Be sure that nothing inside the package is damaged. You should have received the following items inside of package.



| NO | NAME                | SPECIFICATION                                              |
|----|---------------------|------------------------------------------------------------|
| 1  | RS485 cable         | Battery terminal:5B6A<br>PCS terminal:5B6A                 |
| 2  | Communication cable | Used for Communication among batteries                     |
| 3  | Cables              | Usedfor battery parallel connection<br>Wire diameter 35mm² |
| 4  | User manual         | User manual                                                |
| 5  | Guarantee card      | Guarantee card                                             |

##### 3.2 Mounting the Unit

Consider the following points before selecting where to install:

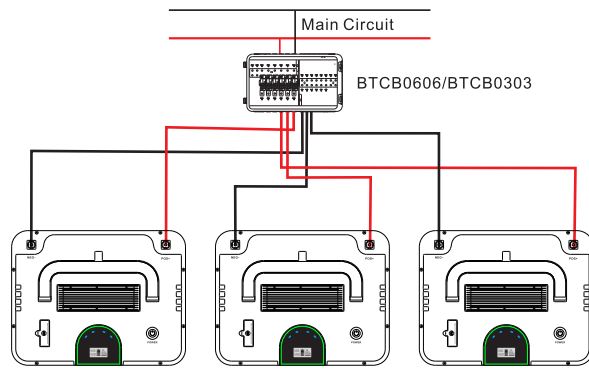
- Do not mount the battery on flammable construction materials.
- The ambient temperature should be between 0°C and 45°C to ensure optimal operation.
- The recommended installation position is to be adhered to the wall vertically.
- Be sure to keep other objects and surfaces as shown in the right diagram to guarantee sufficient heat dissipation and to have enough space for removing wires.

Please follow below steps to implement battery connection:

1. Assemble battery ring terminal based on recommended battery cable and terminal size.
2. Connect all battery packs as units requires. It's suggested to connect at least 2 sets for inverter larger than 2KVA in parallel connection.

##### 3.3 Connection for Parallel Mode

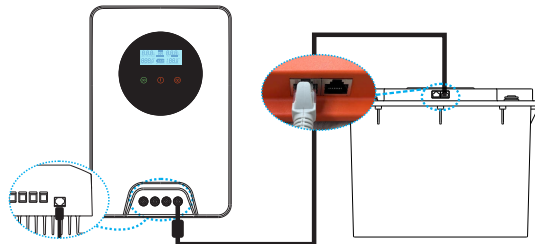
The PC series battery support to be connected in parallel for expansion. If you need one more battery bank to work in parallel mode, connect the battery as shown in Figure 1.



**Step :** The schematic diagram of the parallel connection of three battery packs is shown in Figure 1.

Note:After completing the above steps, arbitrarily select the positive and negative poles of one of the battery packs to output. After confirming the correct connection of the inverter, controller and battery, you can turn on any of the switches and use the battery group happily.

For pure off grid system ,the PV awake wire need to be connected with MPPT charge controller if the battery pack is charged by solar panels only . The connection diagram as below :



#### 4. OPERATION

Once the batteries are connected well, close the breaker to the ON block, press On/Off button to enable the output of the battery pack.

