



# CloudEnergy

After sales service email: [info@cloudnewenergy.com](mailto:info@cloudnewenergy.com)



Please Read The Manual Carefully Before Using The Equipment.

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# Appearance



# 01 / PRODUCT INTRODUCTION

<b>LiFePo4 Battery</b>	12.8V 300Ah
<b>Nominal Voltage</b>	12.8V
<b>Charge Voltage</b>	14.2V-14.6V
<b>Weight</b>	25.8KG/56.89LB
<b>Energy</b>	3840Wh
<b>Max Continuous Charging Current</b>	200A
<b>Max Continuous Discharging Current</b>	200A
<b>Recommend Charge Current</b>	20A(0.2C)
<b>Max Load / Inverter Power</b>	2560W
<b>Operating Temperature Range</b>	Charge 0°C~50°C(32°F~122°F) Discharge -20°C~60°C(-4°F~140°F) Storage -10°C~50°C(-14°F~122°F)
<b>Waterproof Class</b>	IP67
<b>Terminal Type</b>	M8
<b>Demension</b>	385*190*250 mm 15.15*7.48*9.84 inch

# 02 / ADVANTAGE

- Mobile with carry handles makes it easy to lift and move around.

- With battery management system enclosed, need no extra wiring.
- Built with LiFePO4 battery cells that are engineered to deliver superior performance & longevity.
- Battery voltage stays above 12.5V at 90% discharged.
- Maintenance Free; Non spill.
- Perfect replacement or upgrade for a traditional lead-acid battery.

## 03 / WARRANTY POLICY

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We provide a five-year warranty for all batteries. Our five-year battery warranty includes the following privileges, if used correctly according to the manual :

- We will assist in analyzing the customer' s problem within 24 hours, help solve the problem, restore battery usage, and introduce the best use method.
- If the problem cannot be resolved, we will send a new battery to replace the defective battery. And the defective battery needs to be returned to our US warehouse, and inspected and tested by our technical team.



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## 04 / CHARGING TIPS

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### ► About Charging Voltage

Based on the characteristics of Lithium Iron Phosphate (LiFePO4) batteries, the voltage measured by all LiFePO4 batteries during is

not the real voltage of the battery.

Therefore, after charging and disconnecting the battery from the power source, the voltage of the battery will gradually drop to its real voltage.

If you need to test the real voltage of the battery, please charge and disconnect the power supply and test its voltage after putting it aside for over 15 mins.

## ► **Charging Methods**

Scheme 1: You can use a lithium iron phosphate 4-string (14.6V) charger to charge the battery pack.

Scheme 2: You can use photovoltaic solar panels to charge the battery through MPPT.

Scheme 3: You can use the inverter to charge the battery pack (note: the inverter needs a built-in AC to DC charging function)

## **Battery Charger**

Use 14.6V lithium battery charger to maximize the capacity.

Recommend Charging Voltage: Between 14.2V to 14.6V.

### **12V 300Ah Recommend Charging Current :**

60A (0.2C) The battery will be fully charged in around 5hrs to 100% capacity.

90A (0.3C) The battery will be fully charged in around 3hrs to 90% capacity.

## **If you use an inverter (MPPT) to connect our battery pack, please refer to the following data:**

The MPPT settings of the 12.8V lithium iron phosphate battery are as follows:

## Charge

Charging limit voltage:14.6V

Overvoltage disconnection voltage: 15V

Overvoltage reconnection voltage: 14.2V

## Discharge

Low voltage disconnection voltage: 10.8V

Low voltage reconnection voltage: 11.6V

Undervoltage warning voltage: 12.4V

## ► STATE OF CHARGE(SOC)

The battery capacity could be roughly estimated by its voltage. As there are subtle differences in the voltage of each battery, below parameters are for reference only. The voltage needs to be tested at rest (with zero current) after 15mins of disconnecting from charger& loads.

Capacity	Voltage
100%	13.6V
90%	13.5V
80%	13.4V
70%	13.3V
40%	13V
30%	12.8V
20%	12.5V
10%	12V
1%	10.8V (recommended low-voltage disconnect voltage)
0%	10.4V

## 05 / LONG-TERM STORAGE

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- The battery can be operated in temperature of  $-20^{\circ}\text{C}$  to  $60^{\circ}\text{C}$ , and a temperature between  $10^{\circ}\text{C}$  to  $35^{\circ}\text{C}$  is ideal for long-term storage.
- Store in a fireproof container and away from children.
- For a longer-lasting product, it is best to store your battery at 50% charge level and recharge every three months if it is not going to be used for a long period of time.

## 06 / CONNECTION TIPS

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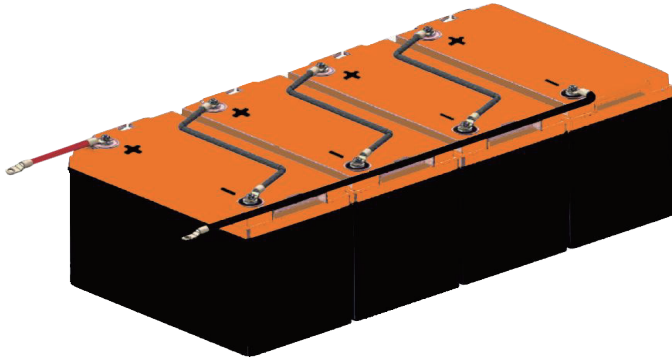
**Premise of Connection: To connect in series or/ and in parallel, batteries should meet below conditions:**

- 1、 The same battery capacity (Ah);
- 2、 From same brand (as lithium battery from different brands has their special BMS);
- 3、 Purchased in near time (within one month).

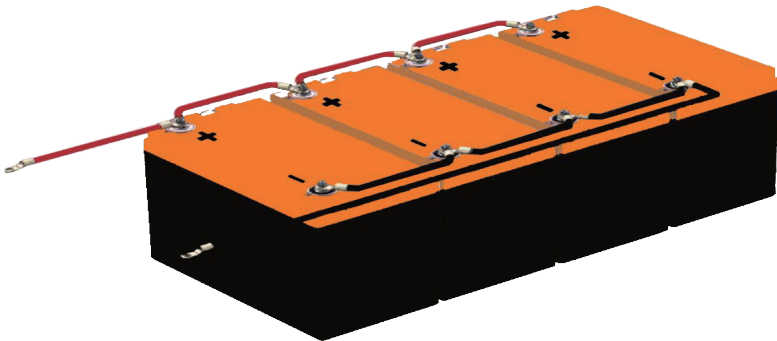
### ► **About connected in parallels and in series**

Our  $\text{LiFePO}_4$  batteries can be connected in parallels and in series for larger capacity and higher voltage. We suggest that the Max connection in series is: 4 pcs batteries to 48V, the Max connection in parallels is: it can connect multiple batteries, and no more than 10 pcs in parallel. Products of different manufacturers cannot be connected in series or in parallel. When the batteries are used in parallel or series, the voltage must be the same.

**Please refer to the following picture for series connection**



**Please refer to the following picture for parallel connection**



## ► Two Necessary Steps Before Connecting:

These two steps are necessary in order to reduce the voltage difference between batteries, and through these, the battery system can perform the best of it in series or/ and in parallel.

### **Step1.**

Fully charge your batteries separately.

### **Step2.**

Connect your batteries one by one in parallel, and leave them together for 12~24hrs.

And then, you can connect your batteries in series or/ and in parallel.

## **07 / About Our Battery's BMS**

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The unique built-in battery management system (BMS) of our product's lithium battery can protect it from overcharge, deep discharge, overload, overheating and short circuit, and low self-discharge rate. Our BMS has a high temperature disconnect function. When the internal temperature of the battery reaches 75 °C (167 ° F), It will automatically disconnect to protect the battery. With overcharge and overdischarge protection functions, when the overcharge voltage exceeds 15V or the overdischarge voltage is lower than 8.8V, the battery will automatically disconnect. Our recommended charging voltage and discharging voltage are  $14.4 \pm 0.2V$  and  $10V \pm 0.2V$ , respectively. If the charging voltage is lower than 13.8V, the battery power (with a deviation of 1-2%) cannot be fully charged.

# HOW TO ACTIVATE THE BATTERY WHEN BMS CUT IT OFF FOR PROTECTION?

If the BMS has cut-off the battery for protection, you need to cut off the load of the battery and put the battery aside for 30mins. Then the battery will automatically recover itself to normal voltage and can be used after fully charged.

**If the battery is unable to recover itself and its voltage is too low to hold a charge, you can activate it in below two ways:**

- ① Use the charger with 0V charging function (it can charge the battery starting from 0V) to charge the battery. After fully charged, the battery can be used normally.
- ② Use another 12V lithium battery to connect in parallel with the battery for a minute to activate the battery (lead-acid battery with voltage more than/equal to 12V and less than/equal to 14.6V will also work). After that, fully charge the battery and it can be used normally.

## 08 / PRECAUTIONS

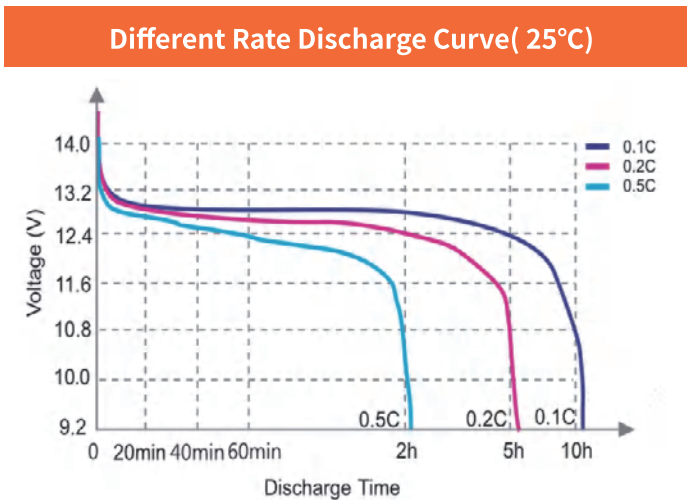
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- When recharging, use the LiFeP04 battery charger specifically for that purpose.
- Do not strike battery with any sharp edge parts, such as Ni-tabs, pins and needles.
- Do not immerse the battery in water and seawater.

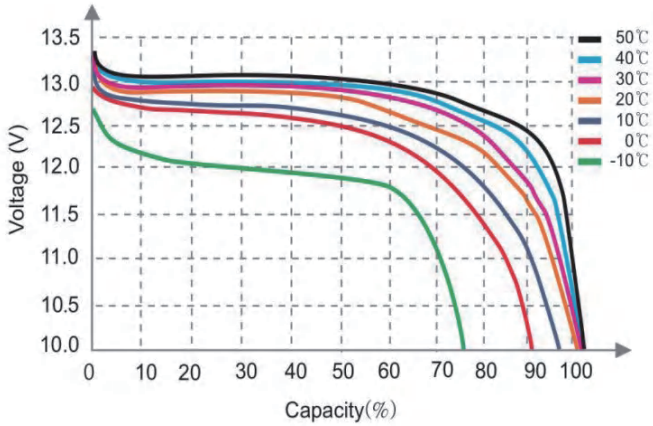
- Do not use and leave the battery near a heat source as fire or heater.
- Do not reverse the position and negative terminals.
- Do not connect the battery to an electrical outlet.
- Do not discard the battery in fire or heat it, Do not bend tab.
- The battery tabs are not so stubborn especially for aluminum tab.
- Do not short-circuit the battery by directly connecting the positive and negative terminal with metal object.
- Do not transport and store the battery together with metal objects such as necklaces, hairpins etc.
- Do not directly solder the battery and pierce the battery with a nail or other sharp object.

## 09 / DISCHARGE CURVE

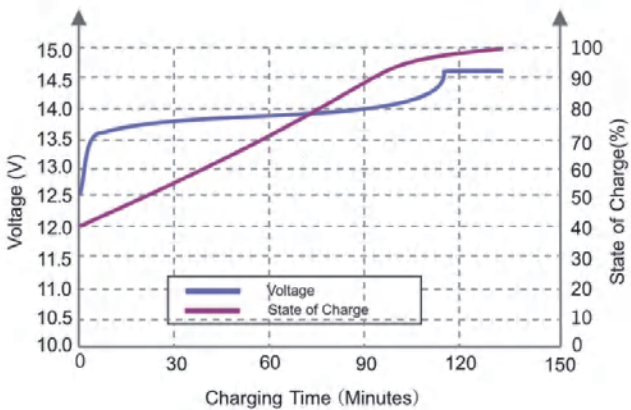
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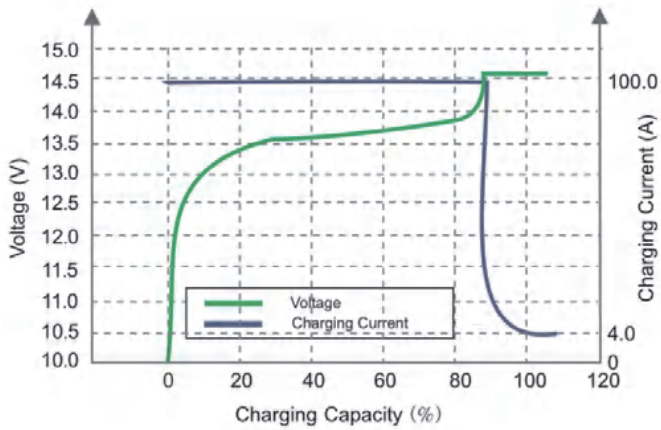
## Different Temperature Discharge Curve( 0.5°C)



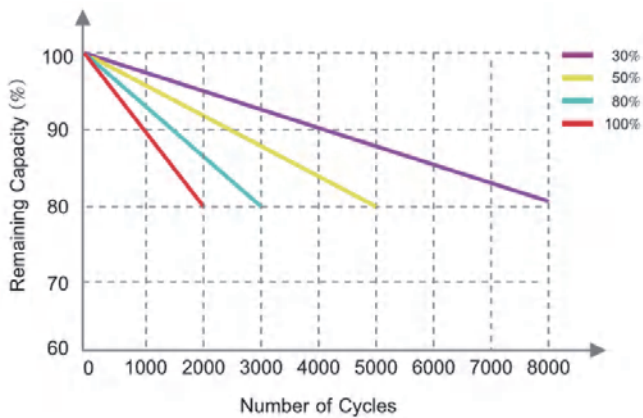
## State Of Charge Curve( 0.5C , 2.5°C)



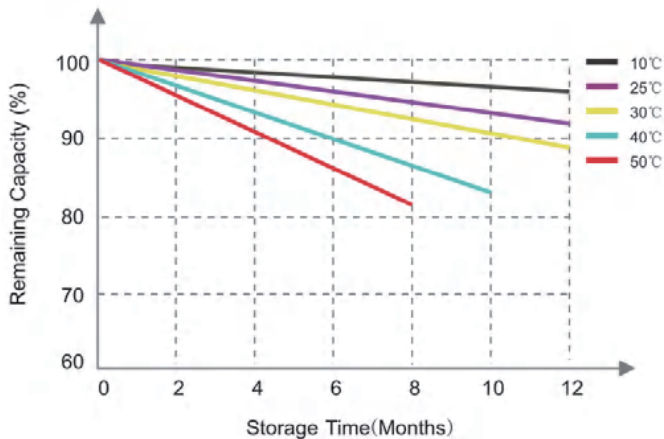
## Charging Characteristics( 0.5C , 2.5°C)



## Different DOD Discharge Cycle Life Curve ( 0.5°C)



## Different Temperature Self Discharge Curve



## 10 / APPLICATION

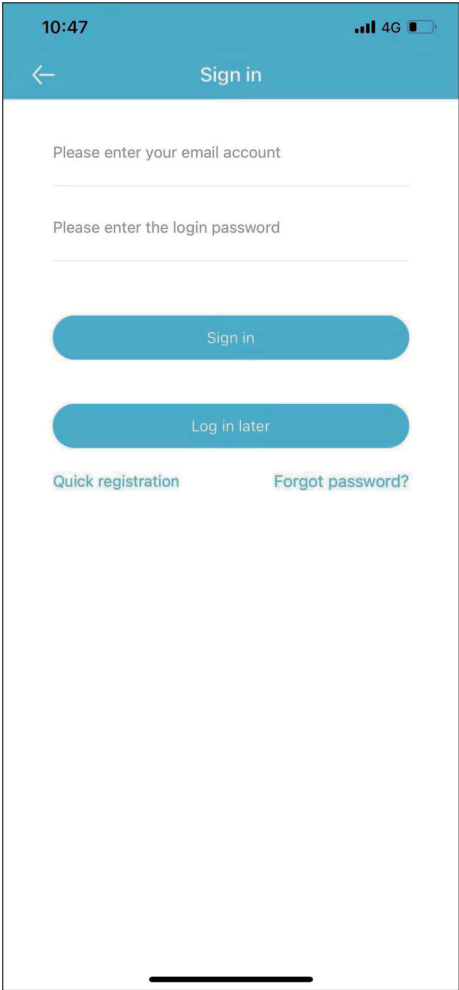
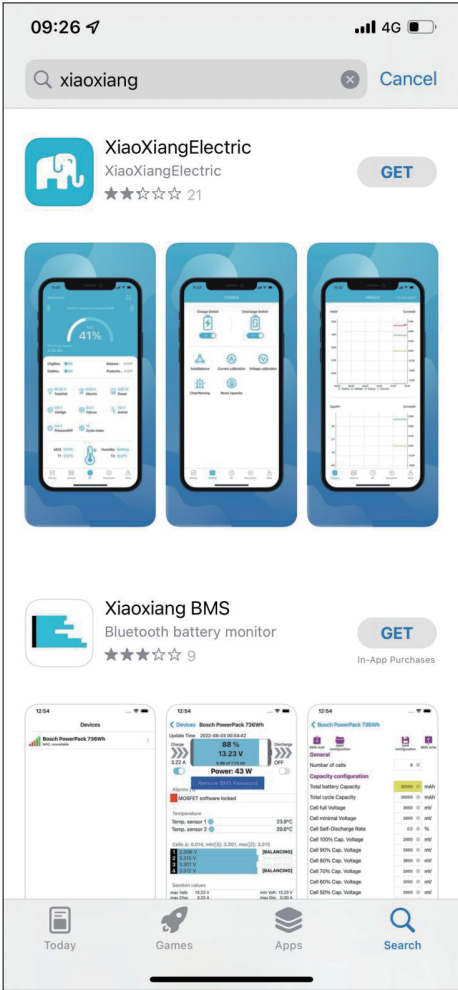
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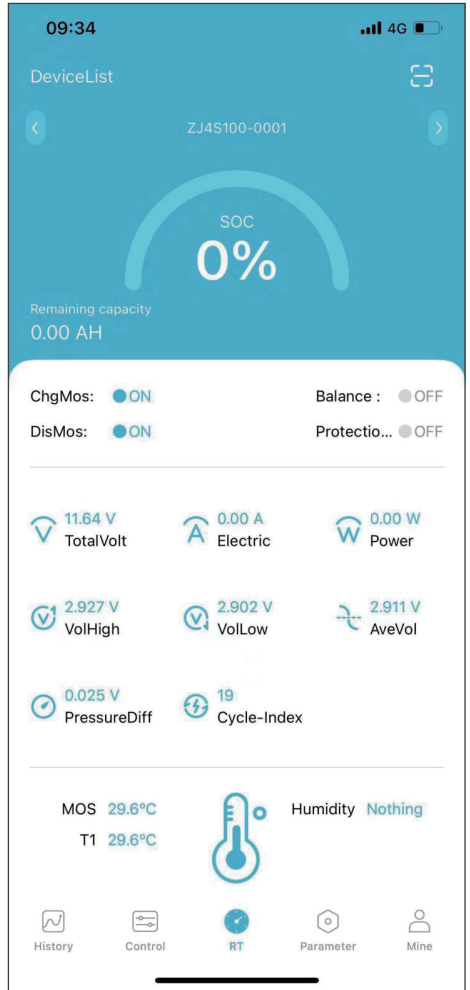
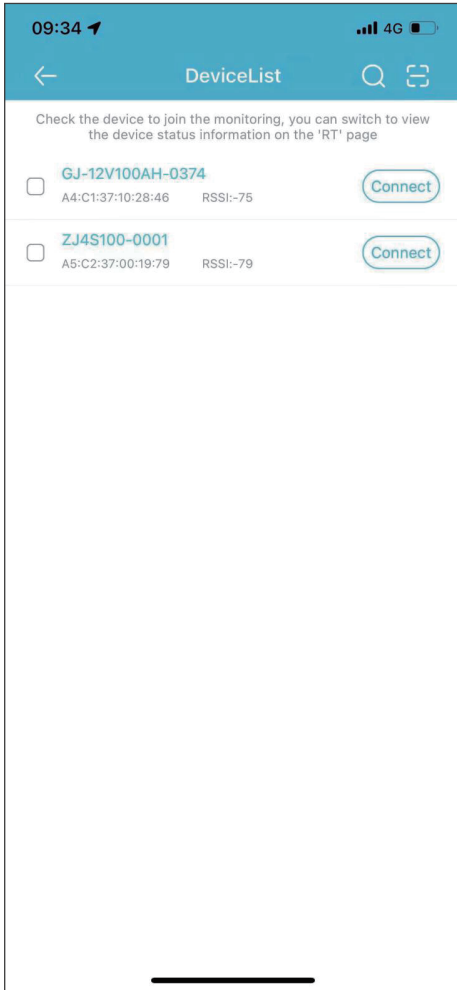
- RV, Camper, Trailer, Caravan, Camping Truck, Bus etc.
- Solar System+ Wind Power System
- Home Energy System
- Boat& Fishing
- Wireless Lawn Movers, Vacuum Cleaner& Washing Machine
- Portable Video Camera& Portable Personal Computer
- Car Audio System
- Light Equipment
- Emergency Lighting Equipment
- Fire Alarm& Security Systems
- Electric Equipment& Telemeter Equipment Portable
- Toys& Consumer Electronics

# 11 / OPERATION INSTRUCTIONS OF APP

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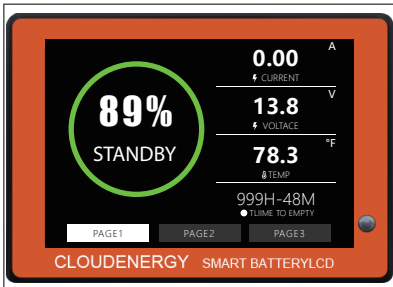
1. Search xiaoxiang in Android App Market or Apple App Store, then install xiaoxiang app on your smartphone.
2. Open the app, allow to open Bluetooth, get location information, the app will automatically pop up the registration account page, please enter the required email, set the password, complete the point to confirm. When the user is in an environment with poor cell phone signal or need to skip the account registration, you can choose to get in visitor mode.
3. The system automatically search the Bluetooth can be connected, find the battery Bluetooth number corresponding to the options in the list, click "connect".
4. After the connection is completed, the current information of the battery will be displayed.
5. The bottom of the interface from left to right display history, control, real-time, parameters, mine.



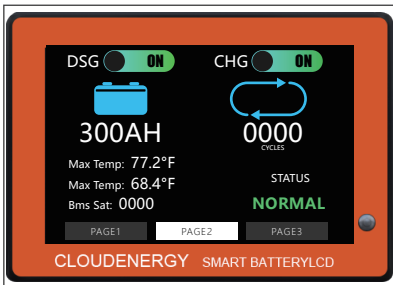


# 11 / DISPLAY SCREEN FUNCTION INTRODUCTION

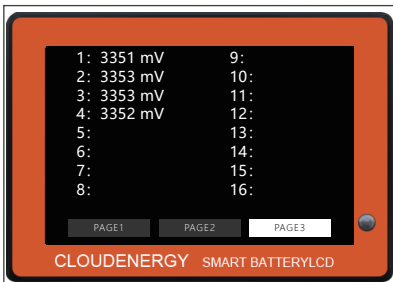
The battery comes with a 2.8-inch touch screen. You can view battery information in real time on the LCD.



<b>89%</b> Capacity/SOC	<b>0.00 A</b> Charge / Discharge Current
<b>13.8V</b> Total Voltage	<b>78.3 °F</b> Temperature
<b>999H-48M</b> Charging Full/Discharge Empty Time	



<b>DSG</b> Discharge State	<b>CHG</b> Charge State
<b>300AH</b> Surplus Capacity	<b>0000</b> Cycle Index Counter
<b>77.2 °F / 68.4 °F</b> Temperature	<b>NOMAL</b> Protection State



<b>1~4</b> Voltage of each cell
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# APPLICATION



 [www.cloudnewenergy.com](http://www.cloudnewenergy.com)

 [info@cloudnewenergy.com](mailto:info@cloudnewenergy.com)