

# windynation



## BattaMax Lithium

Lithium Iron Phosphate (LiFePO<sub>4</sub>) – Deep Cycle SMART Battery

BAT-LFP12-100

User's Manual

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# 1 INTRODUCTION

Deep cycle batteries are a key component in various types of renewable energy systems and the primary method to store direct current (DC) power produced from sources like solar panels and wind generators. A battery bank can provide a relatively constant power source when the grid is down or during periods when your renewable energy system is not producing power and the BattaMax Lithium offers longer life cycles, lighter weight, higher power, and superior safety over traditional lead acid batteries.

This manual contains vital information regarding proper care and maintenance of your BattaMax Lithium battery. **Read through this User's Guide carefully and completely BEFORE using and installing your battery.**

The manual will provide safety guidelines and procedures for using your battery to ensure optimum performance and long life. The manual will not provide details about any of the connected equipment to the battery (e.g.: charge controllers, inverters, etc.). Information concerning any connected equipment should be available from the equipment manufacturer.

## 1.1 SAFETY

Windy Nation Inc. ("Windy Nation") is not assembling or installing the product and therefore Windy Nation, its directors, officers, and employees disclaim that by purchasing a Windy Nation product you accept all liability and responsibility for damage to property, injury, or death arising out of or related to the use or misuse of any product offered by Windy Nation.

- Installation and servicing should be referred to qualified service personnel.
- Remove all sources of power (photovoltaic, wind generator, battery chargers, etc.) before servicing or installing.

### Battery Safety

**Warning: Please observe safety precautions when installing or operating the battery**

- ◆ Do NOT disassemble, open, or modify the battery enclosure.
- ◆ NEVER smoke or allow a spark, flame, or heat sources within 25 feet of the battery.
- ◆ Do NOT touch or short circuit terminals or connectors
- ◆ Be extremely cautious of metal items such as jewelry and tools to reduce risk of short circuit. Remove all electrically conductive items from your body and clothing before working with or touching the battery.
- ◆ Handle batteries with extreme caution; especially when transporting.
- ◆ Use only insulated tools and wear protective clothing when working with batteries
- ◆ Do NOT dispose of waste batteries with household waste. Recycle in accordance with local, state, and federal regulations.

## 1.2 DEFINITIONS

- Ah Amp-Hours
- AWG American Wire Gauge
- BAT Battery
- BMS Battery Management System
- DOD Depth of Discharge
- LiFePO4 (Li-Ion) Lithium Iron Phosphate
- SOC State of Charge: Available Amp-hours relative to the battery's full capacity

# 2 PRODUCT OVERVIEW

The BattaMax Lithium is a smart lithium iron phosphate battery (LiFePO4 or LFP). The battery includes an integrated Battery Management System (BMS) that offers superior safety and protection during the charging and discharging stages as well as extensive monitoring and control over the battery.

The BattaMax Lithium is considered a drop-in replacement for lead acid batteries with a lighter weight of nearly 40% and up to 20x longer cycle life than traditional lead acid batteries. This drastically reduces the total cost of ownership and minimizes replacements.

## 2.1 FEATURES

- ✓ BMS Protection and Monitoring
- ✓ Automatic Battery Balancing
- ✓ Compact Design with embedded carry handles
- ✓ High Quality and High Reliability
- ✓ Long Cycle Life
- ✓ 6-month storage life
- ✓ Reliable threaded terminals
- ✓ ABS plastic container offering excellent impact resistance and strength

## 2.2 APPLICATIONS

- ✓ Renewable energy (Solar & Wind) power storage
- ✓ Telecommunication systems
- ✓ Alarm and security systems
- ✓ Backup - Emergency power
- ✓ Portable DC power
- ✓ UPS (Uninterrupted Power System)
- ✓ Marine & RV house power
- ✓ Electric Vehicles
- ✓ Medical Equipment

## 2.3 SPECIFICATIONS

### 2.3.1 Electrical Specifications

Parameter	BAT-LFP12-100
Nominal Voltage	12.8V (4x 3.2V cells)
Nominal Capacity (25°C)	100 Ah
Internal Resistance	<150mΩ
Cycle Life	>2000 @1C 100% DOD
Max Discharge Current	100A Continuous (300A <3s Pulse)
Discharge Cutoff	10 Volts
Discharge Efficiency	96-99% @1C
Charge Voltage	14.6 +/-0.2V
Max Charge Current	50 Amps
Charge Cutoff	14.8 +/-0.2V
Charge Efficiency	100% @0.2C

### 2.3.2 Physical Specifications

Parameter	BAT-LFP12-100
Dimension (L x W x H)	13.0" x 6.8" x 8.7" (330mm x 173mm x 220mm)
Unit Weight	22.7 lb. (10.3Kg)
Terminal	T11 (M8 thread)
Container Material	ABS Plastic
Nominal Operating Temperature	25°C +/-3°C (77°F +/-5°F)
Discharge Temperature Range	-20°C to 60°C (-4°F to 140°F)
Charge Temperature Range	0°C to 45°C (32°F to 113°F)
Storage Temperature Range	0°C to 40°C (32°F to 104°F)

## 3 INSTALLATION

The BattaMax can be used in any orientation as long as the terminals are accessible and are completely clear of all objects that could cause short circuiting of the battery terminals.

**Important:** Batteries deliver large amounts of power that can cause injury and even death. Please observe the rules set forth in Section 1.1 when working on or around batteries.

**Caution:** Risk of fire, explosion, or burns. Do not disassemble, heat above 70°C (160°F) or incinerate.

### 3.1 ENVIRONMENT

Batteries should be installed in a clean, dry area, keeping water, oil, and dirt away from the batteries. The accumulation of these materials on the batteries can result in self-discharge and possible short-circuits.

If the battery will be used in an enclosure with no air circulation, it is recommended to ventilate the enclosure to prevent heat buildup.

#### 3.1.1 Temperature

Temperature is a major factor in battery performance and battery life expectancy. The recommended operating temperature range is between 0°C to 45°C (32°F to 113°F) with a humidity of less than 90%. A minimum clearance of 0.50" (12.7 mm) between the battery and any other object is recommended to minimize heat accumulation and avoid heat transfer between batteries.

It is important to note that the temperature of the battery and the ambient temperature can differ significantly. As an ambient temperature can be changed rapidly, the battery temperature is slower to change due to the thermal mass of the battery. Batteries that are exposed to colder climates should be kept at a higher State of Charge (SOC) to prevent freezing. A frozen battery must be completely thawed prior to any use.

### 3.2 CONNECTIONS

**WARNING:** Faulty connections can lead to poor performance, terminal damage, and possible fire.

**Important:** Do NOT connect batteries together of different types or vintages.

Battery cables provide the link between the batteries, equipment, and charging system. The battery cable should be sized for the maximum load of the system where the voltage drop on the cable will not exceed 0.2 volts. To ensure proper connections, please use the wire gauge reference in Sec 3.2.1. Please note: UL and NEC electrical cable amperage ratings are lower than the chart below.

#### 3.2.1 Wire Gauge Reference

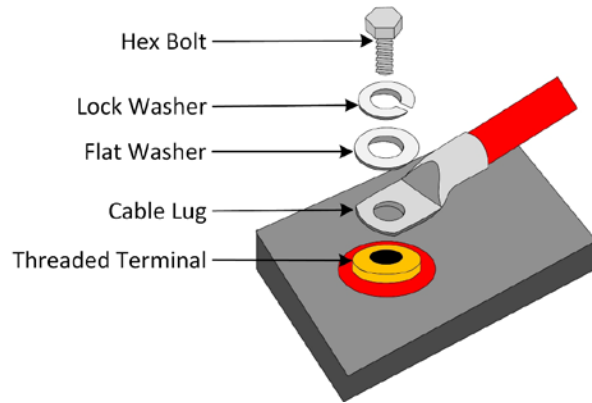
AWG	Diameter inches (mm)	Ohms per 1000ft	Maximum Current (A)
16	0.051 (1.29)	4.016	22
14	0.064 (1.63)	2.525	32
12	0.081 (2.05)	1.588	41
10	0.102 (2.59)	0.999	55
8	0.129 (3.26)	0.628	73
6	0.162 (4.11)	0.395	101
4	0.204 (5.19)	0.249	135
2	0.258 (6.54)	0.156	181
0 (1/0)	0.325 (8.25)	0.098	245
00 (2/0)	0.365 (9.27)	0.078	283
000 (3/0)	0.410 (10.4)	0.062	328
0000 (4/0)	0.460 (11.68)	0.049	380

#### 3.2.2 Threaded Terminals

The BattaMax has two threaded terminals and comes with the necessary bolts and washers to secure a cable connection.

Place battery connection cable lug (not included) over the threaded insert of the battery terminal ensuring that the cable lug connection is contacting the metal surface of the terminal. Place the flat washer on top of the cable lug, followed by the lock washer. Do not place washer between the terminal lead and the battery wire, which creates high resistance and can cause terminal meltdown.

Add the hexagonal bolt and tighten to a torque of 98-107 (in-lbs), 11-12 (Nm)



### 3.2.2.1 Terminal Protection

Corrosion can build up on terminals if they are not kept clean and dry. To prevent corrosion, apply a thin coat of terminal protector spray that can be purchased through your local automotive parts dealer. The battery terminals must be inspected prior to each use for corrosion and loose connections.

## 3.3 CONFIGURATION

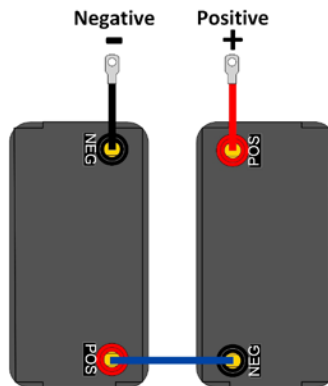
Batteries can be connected in series (increases voltage, maintains ah capacity), in parallel (increases ah capacity, maintains voltage), or in a combination of series and parallel.

The modular design enables deployment of up to a maximum of four (4) batteries in series and up to a maximum of ten (10) batteries in parallel.

### 3.3.1 Series Connection

A series connection will increase the system voltage and the system capacity (Ah) will remain unchanged.

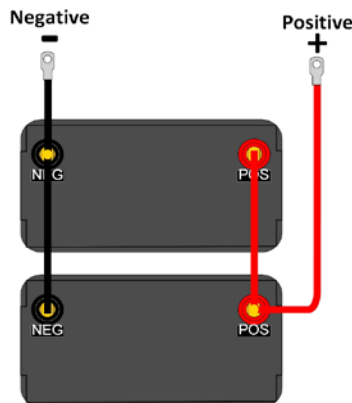
For example, if two 12V batteries with 100Ah of capacity are wired in series, the resulting battery bank will be 24V ( $12V + 12V = 24V$ ) of 100Ah.



### 3.3.2 Parallel Connection

A parallel connection will increase the system capacity (Ah) and the system voltage will remain unchanged.

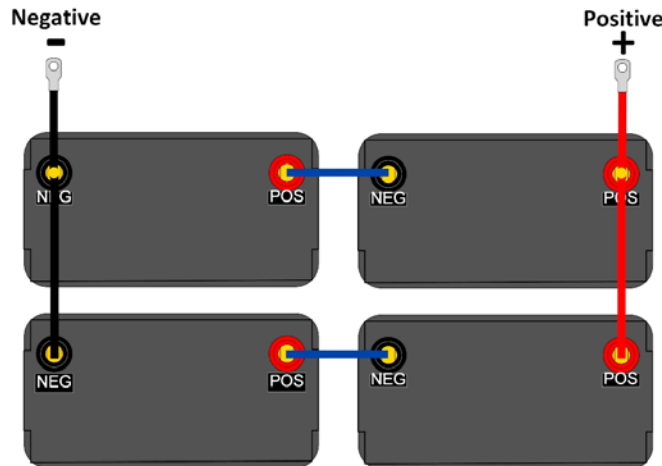
For example, if two 12V batteries with 100Ah of capacity are wired in parallel, the resulting battery bank will be 12V of 200Ah ( $100Ah + 100Ah = 200Ah$ ).



### 3.3.3 Series-Parallel Connection

A Series-Parallel connection will increase the system capacity (Ah) as well as increase the system voltage.

For example, if four 12V batteries with 100Ah of capacity are wired in series-parallel, the resulting battery bank will be 24V of 200Ah.



## 4 SERVICE AND MAINTENANCE

### 4.1 CHARGING

BattaMax batteries are charged at the factory and under most cases, are ready for installation when they are received. Proper charging will maximize battery performance and lifecycle. Undercharging as well as overcharging batteries will significantly reduce the life of the battery.

It is recommended to fully charge the battery to between 14.4 and 14.6 Volts using a charge controller that is compatible with lithium iron phosphate batteries. The maximum charge current for the 100Ah BattaMax lithium battery is 0.5C, which is 50 amps. At this rate, if the battery is completely empty, it will take 2 hours to completely charge the battery. A charge rate of 0.5C for a 100Ah battery is 50A charge current. Keep in mind, that the higher the charge current, the more heat will be produced and, as such, proper ventilation space is needed around the batteries. Depending on the installation, hot air extraction or forced air cooling might be needed in high current charge applications.

**Important:** LifePO4 Batteries do not have “memory”, so they can be fully charged after each discharge of at least 30 minutes.

**Caution:** Never charge a frozen battery and never charge a battery at temperatures above 45°C (113°F)

#### 4.1.1 State of Charge (SOC)

Charge Percentage (%)	Cell (Open Circuit Voltage)	Battery (Open Circuit Voltage)
100 (Charging)	3.65	14.6
100 (Rest)	3.40	13.6
80	3.33	13.3
60	3.28	13.1
40	3.25	13.0
20	3.20	12.8
0	2.50	10.0

#### 4.1.2 Cell Balancing

The battery contains four lithium cells connected in series. Over the lifecycle of the battery, the cells will become charged or discharged at different proportions. Unbalanced cells do not necessarily cause damage, but it can cause a reduction in capacity. The BattaMax Lithium battery has a built-in cell balancing feature that monitors the voltage of each cell and transfers energy between them until all cell voltages are within 0.01 volts of each other. This transfer happens when the cell reaches full charge.

### 4.1.3 Temperature Compensation

The BattaMax has internal temperature sensors that can be monitored and configured to prevent charging and/or discharging at extremely low or high temperatures.

Many charge controllers offer a Battery Temperature Sensor (BTS) that automatically adjusts the charging parameters based on the measured battery temperature. External temperature compensation is not needed with the BattaMax Lithium battery, so any external BTS may be left disconnected from the charge controller or set the compensation to "0".

## 4.2 DISCHARGING

A major advantage of lithium batteries over lead acid, is that nearly the entire capacity of the battery can be utilized. Although they can be discharged to nearly 3% of their capacity, it is still important to not allow them to discharge too deeply.

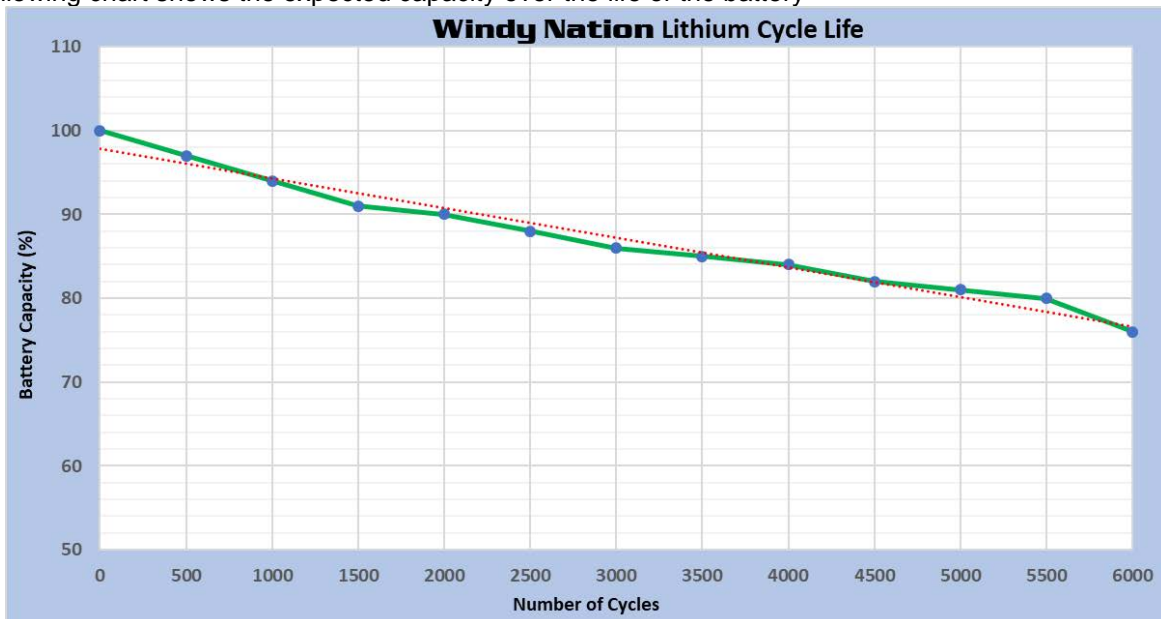
The BattaMax can be discharged at a continuous rate of 1C or 100 Amps. For short discharge pulses of less than 3 seconds, the battery can be discharged at a rate of 3C or 300 Amps. Keep in mind that higher discharge rates will produce more heat and may require additional ventilation.

The BMS will turn off the output of the battery as soon as a battery voltage drops below the low voltage threshold; default =10V. If the battery shuts off due to low state of charge (SOC), disconnect any loads connected to the battery to eliminate potential parasitic loads and charge the battery as soon as possible. Parasitic loads are usually small loads that draw an idle current such as alarm systems, relays, back current drain of battery chargers or charge regulators. In addition, the battery itself also has a small amount of self-discharge.

**Important:** Failure to do so may cause irreversible damage to the battery.

### 4.2.1 Cycle Life versus Capacity

The following chart shows the expected capacity over the life of the battery



## 4.3 MAINTENANCE

BattaMax batteries are maintenance free but as with any battery, require periodic inspections and parameter recording to ensure effective operation and identify issues before they become problematic.

1. Examine the outside appearance of the battery. The tops of the batteries and terminal connections should be clean and dry, as well as free of dirt and corrosion.
2. Check battery cables and connections. Replace any damaged cables and tighten any loose connections.
3. **The following will only be done when all electrical connections are completely disconnected from the battery.** Clean the top of the battery, terminals and connections with a damp cloth or brush, using a solution of baking soda and water (1 cup of baking soda to 1 gallon of water). Next, thoroughly wipe the battery with a damp cloth of pure water until the baking soda/water solution has been completely removed. Lastly, completely dry the battery with a clean cloth and re-apply a thin coat of terminal



protector spray to each battery terminal. Confirm the battery is completely dry before attaching electrical connections.

- Periodically check the battery's state of charge. Lithium batteries will slowly self-discharge when not in use or whilst in storage.

## 5 BATTERY MANAGEMENT SYSTEM (BMS)

BattaMax batteries contain a Battery Management System (BMS) that provides the ability to monitor your battery status via a Bluetooth Smartphone app and protect the battery cells from excessive high and low voltage, temperature, and current conditions.

### 5.1 BMS APPLICATION

Notes: If more than one version of the application is available install the latest version of the app. Bluetooth supports one-to-one mode, so only one device can connect to the BMS at a time. Capacity information requires two (2) full charge / discharge cycles to properly calibrate. Installation requires Android version 6.0 or later and IOS 12.0 or later to operate.

- Download the application Xiaoxiang BMS from the app store; links below:
  - iPhone: <https://apps.apple.com/us/app/xiaoxiang-bms/id1375405426>
  - Android: <https://www.pgyer.com/Bzt1> (Android\_app\_xiaoxiangBMS\_3.1.1026.apk)
 NOTE: Must allow 3rd party apps to install on Android
- Ensure the phone's Bluetooth is enabled (*Settings* → *Bluetooth* → *radio button selected*)
- Open the app from within 30 feet of the battery and the battery should be in the list of devices found.
- Click on the device to display the basic info for your BMS.



#### 5.1.1 iPhone

The Main screen has three radio buttons located at the bottom of the screen:

- batt off: Turns off the battery
- batt on: Turns on the battery
- config: Opens the configuration page and allows BMS settings to be edited; requires Pro Version of the app; see section 5.1.1.1

**5.1.1.1 Pro Version**

To access the configuration screens of the application, the purchase of the Pro version of the application is required. Once purchased the config button becomes active and can be clicked to open any of the five configuration pages located at the bottom of the config screen:

Page	Description
Settings	Allows Naming of BMS for each battery in your system, Temperature to be displayed as Celsius or Fahrenheit, and PIN Settings
BMS Settings	Allows read and write functions of the BMS settings. BMS read will display settings from the BMS. After adjusting any settings, click BMS write to update the BMS. See Section 5.2 for recommended settings. Configuration settings can be saved by selecting “save configuration” and loaded to the BMS by selecting “open configuration”.
Current Calibration	Charge and discharge current measurements can be calibrated; See Section 5.3
Voltage Calibration	Charge and discharge voltage measurements can be calibrated; See Section 5.3
Notifications	Allows for a preconfigured notification to be sent to your phone. Notifications only work if the app is running, and the phone is connected to the BMS

**5.1.2 Android**

Once connected, two pop-up screens will appear:

1. Capacity Setting: Set Nominal capacity to 100.0 Ah and Cycle capacity to 99.0 Ah
2. Use GPS to test speed: Select “NO”; this is for mobile battery applications; e.g. electric scooters.

To access the configuration screens of the application, select the menu icon (hamburger icon) in the top of the screen. This will open a menu for seven configuration pages:

Page	Description
DASHBOARD	Returns to the Main Menu
BATTERY STATE	View individual cell voltages
PARAMETER VIEW	View / read current BMS settings
PARAMS SETTING	Allows for customization of BMS settings; See Section 5.2 for recommended settings.
FUNCTION SETTING	General BMS settings: external switch on/off, load check on/off, balance enable on/off, charge balance on/off, and NTC temp sensors on/off; See Section 5.2
APP SETTING	Setting of password, naming of battery
ABOUT XIAOXIANG	Information about the creator of the app

**5.2 BMS SETTINGS**

**5.2.1 General**

Parameter	Description	Value
Number of Cells	Total number of cells in battery	4

**5.2.2 Capacity Configuration**

Parameters used to display battery capacity and calculate the battery state of charge (SOC)

Parameter	Description	Units	Value
Total battery Capacity	Advertised battery capacity	mAh	100000 (100Ah)
Total Cycle Capacity	Usable battery capacity	mAh	99000
Cell full Voltage	Battery cell voltage at full charge	mV	3650
Cell minimal Voltage	Battery cell voltage at end of discharge	mV	2600
Cell Self-Discharge Rate	Discharge rate when battery is idle with no load(s)	%	0.2
Cell 100% Cap. Voltage	Battery cell voltage at each indicated percentage charge level	mV	3400
Cell 80% Cap. Voltage		mV	3300
Cell 60% Cap. Voltage		mV	3280
Cell 40% Cap. Voltage		mV	3250

Cell 20% Cap. Voltage		mV	3200
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### 5.2.3 Balancer Configuration

Parameter	Description	Units	Value
Start Voltage	Cell Voltage when balancing begins	mV	3500
Delta to Balance	Balance does not occur until delta level is reached	mV	15
Balancer Enabled	Turns Balancer on or off	On/Off	Enabled
Balance only when charging	Balance process only occurs during charging	On/Off	Enabled

### 5.2.4 Function Configuration

Parameter	Description	Units	Value
Switch	Optional External switch; Not applicable for BattaMax	On/Off	Disabled
Load Detect	Requires load to be disconnected after short circuit	On/Off	Enabled
LED Enabled	Not applicable for BattaMax		
LED Capacity			

### 5.2.5 PIN / BMS Name

Leave at Default

### 5.2.6 Protections

Parameters used to protect the battery from various conditions. For each condition, battery current will be disconnected at the Trigger Value and reconnect at the Release Value specified.

Parameter	Description	Trigger	Release	Delay (s)
Cell over voltage	Disconnects charge current for any cell value	3650 mV	3500 mV	2
Cell under voltage	Cuts off discharging current for any cell value	2500 mV	3000 mV	2
Battery over voltage	Disconnects charging current for battery level	14600 mV	14000 mV	2
Battery under voltage	Cuts off discharging current for battery level	10000 mV	12000 mV	2
Charge over Current	Disconnects charging current for "Delay" and reconnects after "Release Value" seconds.	130000 mA	32s	10
Discharge over current		130000 mA	32s	10
Charge over temp	Disconnects charging current when internal temperature crosses trigger	45°C	40°C	2
Charge under temp		0°C	5°C	2
Discharge over temp	Cuts off discharging current when internal temperature crosses trigger	60°C	55°C	2
Discharge under temp		-20°C	-10°C	2

### 5.2.7 NTC Settings

Leave at Default or select "NTC1" and "NTC2"

## 5.3 CALIBRATION

The BMS was calibrated at the factory and does not need to be calibrated.

**NOTE: Damage to your BMS can occur if the values are altered. Do not alter the battery's BMS settings.**

## 6 STORAGE, TRANSPORTATION, AND DISPOSAL

Batteries may be stored prior to installation for up to 2 years at 25°C (77°F).

**NOTE: Store in a cool, dry location, protected from the elements.**

Disconnect all connections to the battery and charge the battery to 100% SOC. Cover the battery terminals with non-conductive covers or electrical tape to avoid shorting and turn the battery off using the BMS application; see Section 5.

When batteries are taken out of storage, they should be recharged before use.

Batteries in storage should be boost charged to at least 80% every 3 months.

## **6.1 TEMPERATURE EFFECTS ON STORAGE**

### **6.1.1 Hot Environments (greater than 90°F or 32°C)**

Avoid direct exposure to heat sources, if possible, during storage as batteries self-discharge faster in high temperatures. If batteries are stored during hot summer months, monitor the voltage every month as opposed to every 3 months.

### **6.1.2 Cold Environments (less than 32°F or 0°C)**

Avoid locations where freezing temperatures are expected during storage. Batteries can freeze in cold temperatures if they are not fully charged. If batteries are stored during cold winter months, it is critical that they are always kept at least 80% charged.

## **6.2 TRANSPORTATION**

**Note: Check all applicable local, national, and international regulations before transporting a Lithium Iron Phosphate battery.**

Lithium Iron Phosphate batteries are classified under hazard class UN3480, class 9 and the packaging of the BattaMax is properly labeled to identify the Class 9 and UN identification for transportation. If the original packaging is not available, this identification must be properly labeled on any packaging used to transport the battery.

## **6.3 DISPOSAL - RECYCLING**

Batteries that have reached the end of their service life must be completely discharged and returned to a local or regional collection center for recycling. Batteries must never be discarded in the trash or a landfill and all local regulations and ordinances must be followed.

For any concerns, please refer to the Rechargeable Battery Recycling Corporation ([www.rbrc.org](http://www.rbrc.org)).

Windy Nation supports a clean environment, and we hope that you will do the same.

# **7 TESTING AND SUPPORT**

These battery testing procedures are guidelines only for identifying a battery that may need to be replaced. Batteries configured in a battery bank must be the same type and the same vintage.

### **IMPORTANT: Shock Hazard**

**Clean the battery and check all terminals as stated in Section 4.3. Ensure the battery is fully charged prior to testing.**

## **7.1 TROUBLESHOOTING**

<b>Issue</b>	<b>Result</b>	<b>Solution</b>
Cell Imbalance	Battery off or disabled	<ul style="list-style-type: none"><li>• Charge battery to 100% SOC.</li><li>• Manually restart charger to rebalance for an additional 2 hours</li></ul>
Over / Under Temp	Protection Alarm triggered	<ul style="list-style-type: none"><li>• Disconnect battery connections and allow battery to self-recover at room temperature</li></ul>
Over Current	Protection Alarm triggered	<ul style="list-style-type: none"><li>• Disconnect battery connections and allow battery to self-recover at room temperature</li></ul>
Application Connection	Cannot connect to app	<ul style="list-style-type: none"><li>• Make sure battery is charged.</li><li>• Check to ensure Bluetooth is enabled on device</li><li>• Move closer to the battery</li><li>• Check to make sure another device is not already connected</li><li>• Reinstall app</li></ul>
Low Capacity	Battery does not charge as expected	<ul style="list-style-type: none"><li>• Make sure battery is charged and cells are balanced.</li><li>• Battery may be at end-of-life cycle; replace</li><li>• Battery has been discharged too deep; recovery required</li></ul>

## **7.2 TESTING: OPEN CIRCUIT VOLTAGE**

For accurate voltage readings, fully charge battery to 100% SOC and remove all connections. Allow the battery to remain idle for at least 6 hours, preferably up to 24 hours.

For battery banks, measure each battery voltage individually. Batteries with a voltage differential more than 0.3V compared to other batteries in set (e.g. battery bank) should be removed and further analyzed.

## **7.3 TESTING: DISCHARGE – CAPACITY**

1. Connect a load or discharger to battery and start the discharge process.
2. Record the runtime (minutes) until the discharge is complete.
3. Normalize the runtime minutes for temperature using the following formula:  $R_c = R_a [1 - 0.004 (B_t - 80)]$ 
  - i.  $R_c$  = Runtime Corrected
  - ii.  $R_a$  = Actual discharge time
  - iii.  $B_t$  = Battery temperature at end of discharge (°F)

If the discharge runtime is greater than 50% of the batteries' rated capacity at that discharge rate, then all the batteries are operational.

4. Restart the discharger to record the individual battery voltage while still under load (current drawn).

If the discharge runtime is less than 50% of the batteries' rated capacity, the battery with a voltage that is 0.5V lower than the highest voltage may be a failed battery.

## **7.4 SUPPORT**

If you are experiencing technical problems, and cannot find a solution in this manual, you can contact Windy Nation Inc. for further assistance.

- Call: (805) 323-6445
- Email: [support@windynation.com](mailto:support@windynation.com)
- Write: 1404 Fleet Ave, Ventura, CA 93003

For challenging issues or to just ask a question, consider using our FREE Community Forums! Consult our community of DIY'ers for fast answers to all your questions.

Post on our Forums: [Windy Nation Community Forum](#)

## **7.5 LIMITED WARRANTY**

Windy Nation warrants that the Battery (the "Product"), will be free from manufacturing defects in materials and workmanship under normal authorized use consistent with product instructions for a period of one (1) year from the date the original purchaser ("Customer") receives the Product (the "Warranty Period"). This warranty extends only to the original purchaser. The Customer's sole and exclusive remedy and the entire liability of Windy Nation, its suppliers and affiliates for breach of the warranty is, at Windy Nation's option, either (i) to replace the Product (or defective component part(s)) with a new or reconditioned Product (or component part(s)); (ii) to repair the reported problem; or (iii) to refund the purchase price of the Product. Repaired or replaced products are warranted for the remainder of the original warranty period only. No employee, agent, dealer or other person is authorized to give any warranties on behalf of Windy Nation not expressly set forth in this limited warranty.

### **7.5.1 Restrictions**

No warranty will apply if the Product (i) has been altered or modified except by Windy Nation; (ii) has not been installed, operated, repaired, or maintained in accordance with instructions supplied by Windy Nation; (iii) has been subjected to abnormal physical, thermal or electrical stress, misuse, negligence, or accident. If Windy Nation determines that the problem with the Product is not due to a manufacturing defect in Windy Nation's workmanship or materials, or otherwise does not qualify for warranty repair, then the Customer will be responsible for the costs of all necessary repairs and expenses incurred by Windy Nation.

### **7.5.2 Warranty Claims & Return Procedures**

To be eligible for service under this warranty, the Customer must submit a service request within the Warranty Period by contacting Windy Nation in writing or via telephone and obtaining a Returned Materials Authorization ("RMA") number. This RMA must be obtained before returning any product under this warranty. Notification

must include a description of the alleged defect, the way the Product was used, the serial number, and the original purchase date in addition to the name, address, and telephone number of the Customer. Within five (5) business days of the date of notification, Windy Nation will provide the Customer with an RMA number and the location to which the Customer must return the defective Product. Any Product returned for warranty service shall be shipped at the expense and risk of the Customer. The Customer must return the entire Product kit (or, if authorized by Windy Nation, the defective component parts), within fifteen (15) days after issuance of the RMA number. Windy Nation will be under no obligation to accept any returned Product that does not have a valid RMA number. Customer's failure to return the Product within fifteen (15) days of its receipt of an RMA number may result in cancellation of the RMA. All parts that Windy Nation replaces shall become Windy Nation's property on the date Windy Nation ships the repaired Product or part back to the Customer. Windy Nation will use all reasonable efforts within thirty (30) days of receipt of the defective Product to repair or replace such Product. If a warranty claim is invalid for any reason, the Customer will be charged at Windy Nation's then-current rates for services performed and will be charged for all necessary repairs and expense incurred by Windy Nation. If Windy Nation determines that a warranty claim is valid, it will ship the repaired or replaced Product to Customer at Windy Nation's cost.

### **7.5.3 Disclaimer**

EXCEPT FOR THE EXPRESS LIMITED WARRANTY SET FORTH IN THE PREVIOUS PARAGRAPH, WINDY NATION DISCLAIMS ALL WARRANTIES, EXPRESS, IMPLIED AND STATUTORY INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO ANY PRODUCTS PROVIDED BY WINDY NATION. NO ORAL OR WRITTEN INFORMATION OR ADVICE GIVEN BY WINDY NATION, ITS DEALERS, DISTRIBUTORS, AGENTS OR EMPLOYEES SHALL IN ANY WAY INCREASE THE SCOPE OF THIS WARRANTY. WINDY NATION DOES NOT WARRANT THAT THE QUALITY OR PERFORMANCE OF THE PRODUCTS WILL MEET YOUR REQUIREMENTS OR THAT YOU WILL BE ABLE TO ACHIEVE ANY PARTICULAR RESULTS FROM USE OR MODIFICATION OF THE PRODUCTS. Some jurisdictions do not allow the limitation or exclusion of implied warranties or how long an implied warranty may last, so the above limitations may not apply to you. In any such jurisdiction, the warranty shall be limited to the minimum warranty and period required by law.

WINDY NATION EXPRESSLY DISCLAIMS ALL LIABILITY FOR BODILY INJURIES OR DEATH THAT MAY OCCUR, DIRECTLY OR INDIRECTLY, BY USE OF THE PRODUCT BY ANY PERSON.

### **7.5.4 Limitation of Liability**

UNDER NO CIRCUMSTANCES WILL WINDY NATION OR ITS AFFILIATES OR SUPPLIERS BE LIABLE OR RESPONSIBLE FOR ANY LOSS OF USE, INTERRUPTION OF BUSINESS, LOST PROFITS, LOST DATA, OR INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES OF ANY KIND REGARDLESS OF THE FORM OF ACTION, WHETHER IN CONTRACT, TORT (INCLUDING NEGLIGENCE), STRICT LIABILITY OR OTHERWISE, EVEN IF WINDY NATION OR ITS AFFILIATE OR SUPPLIER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so these limitations may not apply to you. Neither Windy Nation nor its affiliates or suppliers will be held liable or responsible for any damage or loss to any items or products connected to, powered by or otherwise attached to the Product. The total cumulative liability to Customer, from all causes of action and all theories of liability, will be limited to and will not exceed the purchase price of the Product paid by Customer. This warranty gives the Customer specific legal rights and the Customer may also have other legal rights that vary from state to state.