

User Manual



TOPBAND Energy

Lithium Iron Phosphate Battery with Smart Phone Monitoring

48V30AH

深圳市拓邦锂电池有限公司 / SHENZHEN TOPBAND BATTERY CO.,LTD

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1. Safety /安全

1.1 Instruction /说明




Please read the user manual carefully before installation, operation and maintenance, and pay attention to various warning boards and warning statements on the equipment. Please keep it for future reference after reading the user manual,

请在安装、操作和维护前仔细阅读本手册，并注意设备上的各种警示牌及警示语句。本手册阅读后请妥善保存，以便日后查阅。

1.2 Standard /规范

The following marks are used in the user manual to indicate where the special attention should be paid during operation.

本手册采用以下标志来表示在操作过程中应该特别注意的地方。

Marked Symbol /标记符号	Expound /阐述
	CAUTION, WARNING: Call attention to something 注意、小心、警告：提醒操作中应注意的事项
	DANGER: Warning of electric shock risk 危险：提醒在操作过程中有触电风险，需做好防护措施
	INSTRUCTION, HINT: It's need to be special instructions or hints 说明、提示：需要特别说明或提示的事项

1.3 Important safety information /重要安全信息

The following operating and maintenance instructions must be read before installing, operating or maintaining the battery.

在安装、操作或维护电池之前，必须阅读以下操作和维护说明。

Before installation /安装之前:

- It is very important and necessary to read the user manual carefully before installing or using the battery. Failure to follow any of the instructions or warnings in this document can result in electrical shock, serious injury, or may damage the battery and the whole system.

在安装或使用电池之前，仔细阅读使用手册是非常重要的和有必要的。不遵守本文件中的任何指示或警告都可能导致触电、严重伤害或损坏电池和整个系统。

- Before connecting the battery packs to your equipment, check the voltages and ensure that they are within the limits of your equipment specifications. Failure to observe these specifications could void your

warranty.

在将电池组连接到您的设备之前，检查电压，并确保他们在您的设备规格的限制之内。不遵守这些规格会使你的保修无效。

Installation / 安装过程中:

- Personnel familiar with the electrical specifications of the country or region are required to install the battery pack. For best safety, follow the steps described in this manual
需要熟悉所在国家或地区电气规范的人员才能进行电池组的安装。为了最佳的安全，请遵循本手册中描述的步骤
- The ambient conditions given in the product documentation must be observed.
必须遵守产品规格书中规定的环境条件。

Operating the battery / 操作电池:

- ①It is prohibited to connect the battery with different type of battery;
禁止将电池与不同类型的电池连接;
- ②It is prohibited to charge the battery with faulty or unmatched charger;
禁止使用有故障或不匹配的充电器给蓄电池充电;
- ③Long term floating charge is prohibited for lithium ion batteries
锂离子电池禁止长期浮充
- ④The ambient conditions given in the product documentation must be observed.
必须遵守产品文档中给出的环境条件
- ⑤Do not use the battery for cranking/starting applications
•禁止将电池应用于启动电源
- ⑥Keep the battery away from fire or water.
- 如果发现电池变形，异常发热或者散发出气味，请立即切断电源，停止使用

1.4 Battery Maintenance / 电池维护

- ① During the charging operation, professional personnel shall take care of it. During the charging process, ensure that the plug and socket are in good contact, ensure that the charging equipment works normally, and ensure that the connection points of the battery pack are in good contact. In case of abnormality, it needs to be repaired before charging;
充电操作时要有专业人员进行看护，充电过程中确保插头与插座接触良好，确保充电设备工作正常，确保电池组各连接点接触良好。如果出现异常，需要修复后才能充电;
- ② If there is a large amount of dust, metal chips or other sundries on the upper cover and pole of the battery pack, clean it with compressed air in time to avoid cleaning with water or water soaked objects;
若电池组上盖与极柱上存在大量灰尘、金属屑或其他杂物，及时使用压缩空气进行清理，避免使用水或水浸湿的物体进行清洁;
- ③When charging and discharging, try to avoid splashing water or other conductive objects on the upper cover and pole of the battery, such as being exposed to heavy rain.
充电和放电时尽量避免有水或其他导电物体溅到电池上盖与极柱处，例如暴露在大雨中使用;
- ④ Estimate the charging time and discharging time of the battery according to the actual use state of the battery or battery pack. At the end of charging and discharging, pay attention to observe whether there are abnormalities in the battery or battery pack, such as the voltage difference of the battery
根据电池或电池组实际使用状态估计电池的充电时间和放电时间，在充电末期和放电末期注意观察电池或电池组是否存在异常，如电池的电压差问题。
- ⑤ check whether the conductive belt, voltage acquisition terminal and other nodes are loose, falling off, rusted or deformed, so as to ensure the series and parallel connection of the battery pack Reliable binding (once

a month);

- 检查导电带、电压采集端子等节点是否存在松动、脱落、生锈或者变形等情况，确保电池组使用的串并联束固可靠（1次/月）；

1.5 Waste Treatment / 废旧处理



Please dispose the package and replaced parts according to the rules applicable in the country where the device is installed.

请按照电池组所在国家或地区的法律法规处理包装和更换部件。

Do not dispose the battery with normal domestic waste.

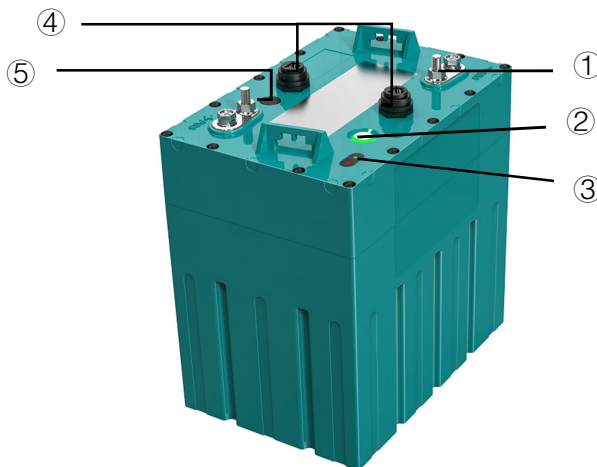
不要将电池与日常生活垃圾一起丢弃。

2. Introduction to the TOPBAND series battery/TOPBAND 系列电池简介

2.1.Key Features/主要特点

- a、LiFePO₄ composition – provides exceptional safety and longevity
LiFePO₄ 成分—提供卓越的安全性和寿命
- b、High safety and reliability
高可靠性
- c、Consistent performance over wide temperature range
在较宽的温度范围内保持一致的性能
- e. With higher heat dissipation effect, it can maintain the high current charge and discharge of the battery for a longer time
e.具有更高的散热效果，可以更长时间维持电池大电流充放电
- f. With the communication function, the battery can communicate with external devices through can to better manage the battery.
f.通讯功能，可以实现电池与外部设备通过 CAN 通讯，更好管理电池。

2.2.Product Appearance/产品外观



①	Positive and negative terminals
②	Switch
③	LED
④	Communication port
⑤	Explosion proof valve

Fig1 Outline drawing

2.3 Functional characteristics/功能特性

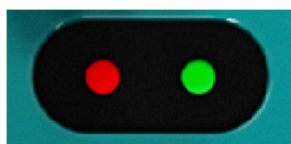
Item	Specification	Item	Specification
Rated voltage	51.2V	Size	260*180*283mm
Rated capacity	30AH	Communication	CAN
Standard Charging voltage	58.2V~58.6V	Weight	12.5KG
Max continuous charging current	30A	Working temperature	charge: 0°C-50°C
Standard charging current	10A		dsicharge: -20°C-65°C
Maximum continuous discharge current	60A	Short circuit protection	500A/500ms
Peak discharge current / time1	65A/30S	Self discharge rate	<3%/month 待机模式
Peak discharge current / time2	150A/10S	Cycle life	4000 次@80%DOD 25°C
Discharge cut-off voltage	44.8V	Shell material	ABS+PC /UL94-V0
IP	IP67	Authentication	UL2271 /UN3840 /UL1642 cell

2.3.1 First use/首次使用

- ① When the battery leaves the factory, the button switch will be turned off and in the off state,
- ② Before the battery is used, the switch needs to be closed to the on state, and the LED indicator lights up.
- ③ Before multiple batteries are connected in parallel, a multimeter shall be used to test the voltage at both ends of the positive and negative poles of the battery to ensure that the voltage between the batteries does not exceed 2V.
- ④ If the voltage between batteries exceeds 2V, each battery shall be fully charged separately and then used in parallel.

- ①.电池在出厂时，是会将按钮开关关闭，处于 OFF 状态，
- ②电池在使用前，需要将开关闭合到 ON 状态，此时 LED 显示灯亮起。
- ③多台电池并联之前，需用万用表测试电池正负极两端电压，确保电池之间电压不超过 2V，即可并联。
- ④如果电池之间电压超过 2V，则需要单独给每台电池充满电，再并联使用。

2.3.2 LED description/LED 灯说明



``LED indicator, one red and one green

The red light indicates that the fault is displayed. Under normal conditions, the indicator is not on. When a fault occurs, the indicator is on.

Green light represents: it represents different SOC according to different lighting modes.

LED 指示灯，一个红灯、一个绿灯

红灯代表：故障显示，正常情况下该指示灯不亮，当发生故障时，该指示灯亮起。

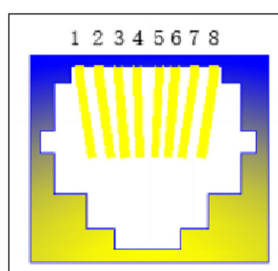
绿灯代表：根据不同的亮灯方式，代表不同 SOC。

SOC	Lighting mode/亮灯方式
≤20%	On "0.3s" / off "0.7s"
20%-90%	On "1s" / off "1s"
≥90%	Green light constant

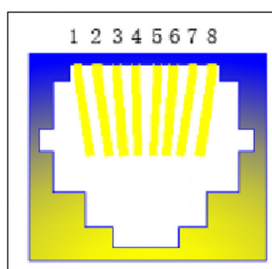
2.3.3 Communication port/通讯口

- ① 2*RJ45 communication port, with can communication;
- ② The battery can be upgraded through the communication port
- ③ It can communicate with other devices through the communication port, and the communication protocol needs to be deployed before communication
- ④ The communication port is defined as follows (this is not a certainty, and each subsequent communication port will have can+rs485 communication)

- ①2*RJ45 通讯口，带有 CAN 通讯；
- ②可以通过通讯口给电池升级程序
- ③可以通过通讯口与其他设备通讯，通讯前需要调配通讯协议。
- ④通讯口定义如下（这不是确定性，后续每个通讯口都会有 CAN+RS485 通讯）



COM 1:
 1 RS485A
 2 SPARE
 3 RS485B
 4 SPARE
 5 SPARE
 6 SPARE
 7 SPARE
 8 SPARE



COM 2:
 1 CAN H
 2 SPARE
 3 CAN L
 4 SPARE
 5 SPARE
 6 SPARE
 7 SPARE
 8 SPARE

3. Installation/安装

3.1 Tool And Equipment/工具和设备



Insulating Gloves



Safety Shoes



Spanner

3.2. Battery placement/电池的放置

Gently place the battery pack on the support surface with the front side up, do not place it on the side or upside down, and do not place any covering above the pack. The schematic diagram of battery pack placement is shown in Figure 3

将电池 PACK 正面朝上轻轻地放置于支撑面，切勿侧放或者倒立放置，PACK 上方不要放置任何的覆盖物。
 电池包放置示意图如图 3

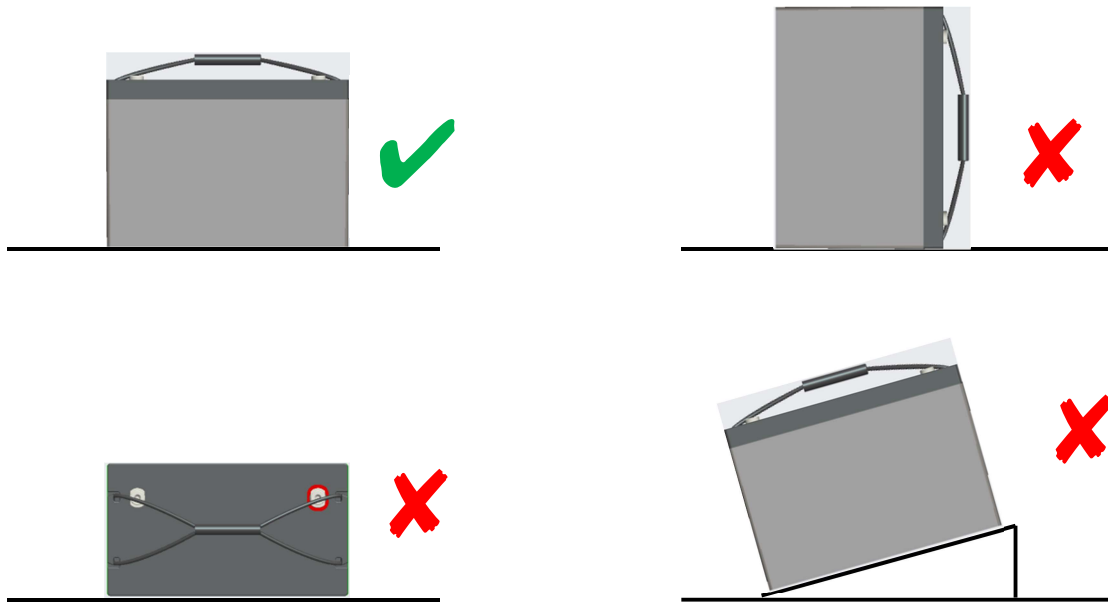


Fig 3 Battery placement

4. Charging requirements/ 充电要求

We recommend using charging sources with specific lithium charge settings that meet the charging requirements below for maximum performance and lifespan of the TOPBAND series battery

我们建议使用具有特定锂充电设置的充电源来满足以下充电要求，以达到 TOPBAND 系列电池的最优性能和寿命。

Model	Max Charge Voltage	Cut-off Voltage	Maximum Charge Current	Recommended Charge Current	Operation Temperature
48V	58.4V	40V	1C	0.3C	Charge: 0~45°C
					Discharge: -20~60°C

a. Charging with an AC-DC Battery Charger

Check the AC-DC battery charger you intend to use has a dedicated lithium charge setting that meets the above charging requirements. A lot of battery chargers are designed for charging lead-acid batteries only and may not have a suitable charge setting for lithium.

检查您打算使用的 AC-DC 电池充电器是否具有满足上述充电要求的专用锂充电设置。许多蓄电池充电器仅设计用于为铅酸蓄电池充电，可能没有合适的锂充电设置。

b. Charging with Solar/ 光伏充电

Check the solar regulator you intend to use has a dedicated lithium charge setting that meets the above charging requirements. A solar regulator without a lithium charge setting may be used to charge the TOPBAND series battery. However, it must be set to charge no higher than 58.4V and then MUST be switched off once the TOPBAND series battery is fully charged. DO NOT leave a solar regulator switched on without a suitable lithium charge setting once the battery is fully charged.

检查您打算使用的太阳能调节器是否具有满足上述充电要求的专用锂充电设置。可使用不带锂充电设置的太阳能调节器为 TOPBAND 系列电池充电。但是，必须将其设置为充电不高于 58.4V，然后必须在 TOPBAND 系列电池充满电后关闭。电池充满电后，如果没有合适的锂充电设置，请勿打开太阳能调节器。

c. Charging with an Alternator via a DC-DC Charger/ 用交流发电机通过 DC-DC 充电器充电

Check the DC-DC Charger you intend to use has a dedicated lithium charge setting that meets the above charging requirements. A DC-DC charger without a lithium charge setting may be used to charge the TOPBAND series battery. However, it must be set to charge no higher than 58.4V and then MUST be switched off once the TOPBAND series battery is fully charged. DO NOT leave a DC-DC charger switched on without a suitable lithium charge setting once the battery is fully charged.

检查您打算使用的 DC-DC 充电器是否具有满足上述充电要求的专用锂充电设置。可使用不带锂充电设置的 DC-DC 充电器为 TOPBAND 系列电池充电。但是，必须将其设置为充电不高于 58.4V，然后在 TOPBAND 系列电池充满电后必须关闭。电池充满电后，如果没有合适的锂充电设置，请勿打开 DC-DC 充电器。