Solar charger controller
User manual

Revision: Rev 01
Date: 10-23-2023

Product features

(1) Bluetooth series solar controller, support for mobile app wireless Bluetooth connection, support battery type and load mode parameter configuration and real-time monitoring of device status.
(2) Protection function: charging over voltage, over current protection;
load short circuit, over current protection;
battery low voltage, over voltage protection;
equipment internal overheating protection and lightning protection.
(3) The battery supports 12/24V self applicability and supports USB phone charging.

Installation instructions

1. The installation holes and dimensions of the controller are shown in Figure 1.
2. Connecting System Components: as shown in Figure 2, first connect the battery, and the controller will automatically recognize the type of 12V/24V battery. During the power on period, the red, yellow, and green LED indicator lights on the panel will flash for 3 seconds at the same time. Then, if the battery is 12V, the yellow light will remain on for a long time. If the battery is 24V, the yellow indicator light will continue to flash for 3 seconds. Then, connect the solar photovoltaic panel, and finally connect the load to complete the entire system connection.

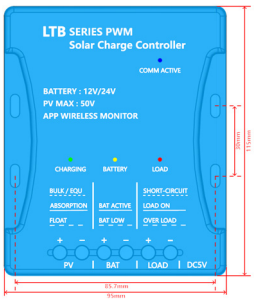

Figure 1

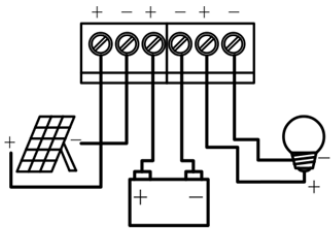

Figure 2

Status indicator

Blue LED (BLE)	Slow flashing	Disconnect	**Yello LED (Battery)**	ON	Battery normal
	ON	connected		flashing	Battery low
	Fast flashing	Activity status			
Red LED (Load)	OFF	Load off	**Green LED (Charge)**	OFF	No sunlight or not enough sunlight
	ON	Load on		Fast flashing	Bulk charge
	Slow flashing	Overload		ON	Absorption charge
	Fast flashing	Short circuit		Slow flashing	Float charge

Load Mode

Keep On	Load output controlled by battery voltage only	**Manual**	Manual load control
Light	Dusk to dawn mode	**Light+Timer**	Load output turned on during 1-23 hour after sunset
Light+Repeat	Light-controlled cycle interval timing	**Repeat**	24 hour cycle interval timing
Segmaints	Segmented real-time timing (up to 5 groups)		

Battery Type

Battery type	Sealed	Gel	Flooded	LiFePO4	Lithium	Custom
Battery voltage	12/24V	12/24V	12/24V	12V/24V	12V/24V	12V/24V
Equalization charge duration	0 Min	0 Min	120 Min	0 Min	0 Min	120 Min
Equalization charge interval	0 H	0 H	720 H	0 H	0 H	720 H
Absorption charge	0.0V	0.0V	14.8V/29.6V	0.0V	0.0V	14.6V
Bulk duration	120 Min	120 Min	120 Min	120 Min	120 Min	120 Min
Bulk voltage	14.4V/28.8V	14.2V/28.4V	14.6V/29.2V	14.2V/28.4V	12.6V/25.2V	14.4V/28.8V
Bulk recovery voltage	13.0V/26.0V	13.0V/26.0V	13.0V/26.0V	13.0V/26.0V	12.0V/24.0V	13.0V/26.0V
Float voltage	13.7V/27.4V	13.7V/27.4V	13.7V/27.4V	13.35V/26.7V	11.4V/22.8V	13.7/27.4V
Low voltage disconnect	11.2V/22.4V	11.2V/22.4V	11.2V/22.4V	11.2V/22.4V	8.7V/17.4V	11.2V/22.4V
Low voltage reconnect	12.6V/25.2V	12.6V/25.2V	12.6V/25.2V	12.6V/25.2V	9.9V/19.8V	12.6V/25.2V

Technical specifications

Product model	LTB2410	LTB2420	**Self-consumption**	<10mA
Rated change current	10A	20A	**Charge mode**	PWM
Rated load current	10A		**Wireless connections**	BLE 4.0
Battery voltage	12V/24V Auto Select		**Weight**	150g
Maximum solar voltage	50V		**Dimension (h x w x d)**	115x95x30mm
USB outputs	5V/2A			
Protections	1、Reverse polarity connection of the solar panels. 2、Reverse polarity connection of the battery. 3、Low voltage disconnect. 4、>110% and <160% load: Shuts down after 60sec. 5、>160% load: Shuts down after 5sec. 6、Short circuit: immediate shut down. 7、Over-temperature protection.			

Operation

1. APP Download and Installation

Scan the QR code below, download and install the LiMu Solar mobile app. As shown in Figure 3-4 below.

Figure 3

Figure 4

2. APP connection.

Open the app and click on the Bluetooth logo in the upper right corner. After searching for the device, click on the device to connect; The initial password is "666666" As shown in Figure 3 and Figure 4, the device status after successful connection is shown in Figure 5.

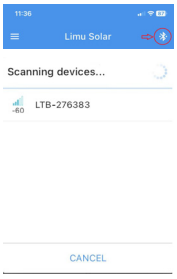

Figure 3

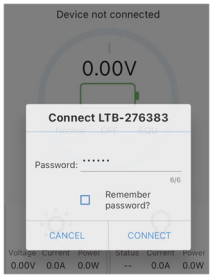

Figure 4

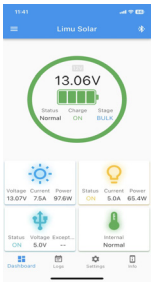

Figure 5

3. Device parameter setting function

Select the battery configuration on the settings page, select the corresponding battery type, and click the send button to complete the parameter configuration. As shown in Figures 6 and Figure 7.

NOTE *– When changing different battery types, if the battery voltage is recognized by AUTO, the system will automatically restart the device after successful setting. After restarting, the device needs to be reconnected.*

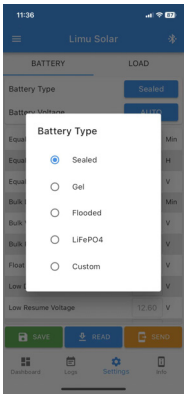

Figure 6

Figure 7

4. Device parameter setting function

Select the load configuration on the settings page, select the required load mode and parameters, and click the send button to complete the parameter configuration. As shown in Figure 8 and Figure 9.

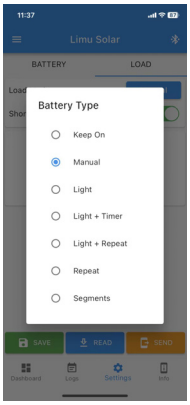

Figure 8

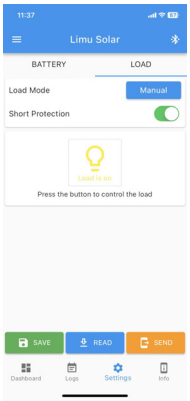

Figure 9

5. Device logs and information

Select Log to view the device operation log, as shown in Figure 10; Click on information to view device information, as shown in Figure 11 below.

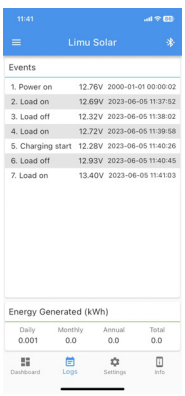

Figure 10

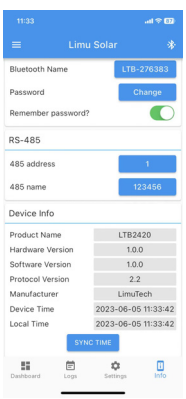

Figure 11

蓝牙系列太阳能充电控制器
使用手册

版本： Rev 01

日期：2023-10-23

一、产品主要特点

1. 蓝牙系列太阳能控制器，支持手机 APP 无线蓝牙连接，支持电池类型和负载模式参数配置及设备状态实时监测。
2. 保护功能：充电过压、过流保护；负载短路、过流保护；电池低压、过压保护；设备内部过热保护和防雷保护。
3. 电池支持 12/24V 自适用，支持 USB 手机充电。

二、安装和接线

1. 控制器安装孔位及尺寸如图 1:
2. 连接系统部件：如下图 2 先连接蓄电池，控制器会自动识别电池 12V/24V 电池类型，（上电期间面板上红、黄、绿三颗 LED 指示灯同时闪烁 3 秒，之后如果电池为 12V 系统即黄灯长亮，如果检测到电池为 24V 系统则电池黄色指示灯继续闪烁 3 秒。）再连接太阳能光伏板，最后连接负载，完成整个系统连接。

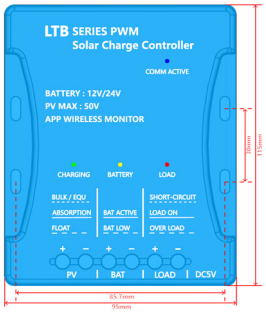

图 1

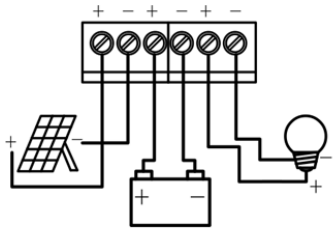

图 2

三、状态指示

蓝牙指示灯（蓝色）	慢闪	空闲状态	**电池电量指示灯（黄色）**	常亮	电池电量正常
	常亮	连接状态		闪烁	电池电量过低
	快闪	操作状态			
负载指示灯（红色）	熄灭	负载关闭	**光伏板指示灯（绿色）**	熄灭	断开连接或光线不足
	常亮	负载开启		快闪	快充状态
	慢闪	负载过流		常亮	均衡充、快充持续阶段
	快闪	负载短路		慢闪	浮充状态

四、负载模式表

常开模式	负载 24 小时常开	**手动模式**	可通过 APP 软件开关
光控模式	如：光伏电压持续 <4V 电压 10 秒后开启； >4V 电压持续 60 秒后关闭	**光控定时模式**	光控+定时 1-23 小时
光控循环模式	光控循环间隔定时开关	**循环**	24 小时循环间隔定时开关
分段定时模式	分段实时定时（最多 5 组时段定时开启负载）		

五、电池类型表

电池类型	**密封铅酸**	**胶体铅酸**	**开口铅酸**	**磷酸铁锂**	**三元锂**	**自定义**
	Sealed	**Gel**	**Flooded**	**LiFePO4**	**Lithium**	**Custom**
电池电压	12/24V	12/24V	12/24V	12V/24V	12V/24V	12V/24V
均衡充持续时间	0 Min	0 Min	120 Min	0 Min	0 Min	120 Min
均衡充间隔	0 H	0 H	720 H	0 H	0 H	720 H
均衡充电压	0.0V	0.0V	14.8V/29.6V	0.0V	0.0V	14.6V
快充持续时间	120 Min	120 Min	120 Min	120 Min	120 Min	120 Min
快充电压	14.4V/28.8V	14.2V/28.4V	14.6V/29.2V	14.2V/28.4V	12.6V/25.2V	14.4V/28.8V
快充恢复电压	13.0V/26.0V	13.0V/26.0V	13.0V/26.0V	13.0V/26.0V	12.0V/24.0V	13.0V/26.0V
浮充电压	13.7V/27.4V	13.7V/27.4V	13.7V/27.4V	13.35V/26.7V	11.4V/22.8V	13.7/27.4V
低电保护电压	11.2V/22.4V	11.2V/22.4V	11.2V/22.4V	11.2V/22.4V	8.7V/17.4V	11.2V/22.4V
低电恢复电压	12.6V/25.2V	12.6V/25.2V	12.6V/25.2V	12.6V/25.2V	9.9V/19.8V	12.6V/25.2V

六、综合参数表

产品型号	LTB2410	LTB2420	**待机损耗**	<10mA
额定充电电流	10A	20A	**控制方式**	PWM 脉冲调制技术
额定放电电流	10A		**无线连接**	蓝牙 4.0
系统电压	12V/24V 自动适应		**重量**	150g
光伏最高电压	50V		**尺寸**	115x95x30(mm)
USB 放电电流	5V/2A			
保护功能	1、光伏板反接保护 2、电池端反接保护. 3、电池低电保护. 4、负载电流大于110%并小于160%最大额定电流, 负载60秒后关闭. 5、负载电流大于160%最大额定电流, 负载5秒后关闭 6、负载短路保护，立即关闭负载. 7、过热保护.			

七、 手机端 APP 软件

1. APP 下载与安装

扫描下方二维码，下载并安装 LiMu Solar 手机端 APP。如下图 3-4:

图 3

图 4

2. APP 连接

打开 APP 并点击右上角蓝牙标志，搜索到设备后点击设备进行连接；初始密码为“666666”。如下图 3、4，连接成功后设备状态如图 5:

图 3

图 4

图 5

3. 设备参数设置功能

选择设置页中**电池**配置，选择对应的电池类型，点击**发送**按钮完成参数配置。如下图 6、7:

注：改变不同电池类型时，如果电池电压为 AUTO 自动识别，系统会在设置成功后自动重启设备，重启后需要重新连接设备。

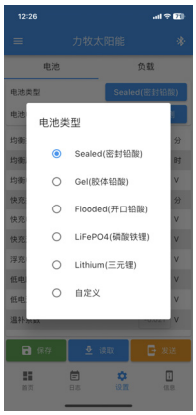

图 6

图 7

4. 设备参数设置功能

选择设置页中**负载**配置，选择需要的负载模式及参数，点击**发送**按钮完成参数配置。如下图 8、9:

图 8

图 9

5. 设备日志与信息

选择**日志**可查看设备运行日志，如下图 10；点击**信息**可查看设备信息，如下图 11:

图 10

图 11

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
-Reorient or relocate the receiving antenna.
-Increase the separation between the equipment and receiver.
-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-Consult the dealer or an experienced radio/TV technician for help.

RF warning for Portable device: The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.