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Product Specification

产品技术规格书

AENERGY L1™

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1. 概要 General

1.1 文档目的 Purpose of this document

本产品规范文件描述了 AENERGY L1 的接口规范以及操作、性能和环境特性。本文档不包括 AENERGY L1 的所有特征和参数。本文件可能会定期更新；因此，利益相关方有责任确保使用最新版本。A123 系统保留随时更新或修改本文档的权利，恕不另行通知。

This Product Specification document describes the interface specifications as well as operational, performance, and environmental characteristics for Low Voltage Home Energy Storage System. This document does not include all features and characteristics of Low Voltage Home Energy Storage System. This document may be updated regularly; therefore, it is the responsibility of the interested party to make sure the latest revision is being used. A123 Systems reserves the rights to update or modify this document at any time without prior notification.

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1.2 变更历史 Change history

表 1: 版本历史 Table 1: Revision History

Revision	Date	Description	Author (dept., name)
V01	2024-12-25	First version	Shengda Jiao (Product Engineer)
V02	2025-05-30	For SGS test	

1.3 术语 Abbreviations

表 2: 术语表 Table 2: Abbreviations List

术语 Abbreviation	定义 Definition
PV Inverter	光伏逆变器 Photovoltaic inverter
Ah	安培小时, 电池容量 Amp hour, battery capacity
BMS	电池管理系统 Battery Management System
OCV	开路电压 Open Circuit Voltage
CAN	控制器区域网络 Controller Area Network
MPPT	最大功率点跟踪 Maximum Power Point Tracking
ACR	电池交流内阻 Battery AC internal Resistance
DCR	电池直流内阻 Battery DC internal Resistance
SOC	充电状态 State of Charge
SOH	健康度状态 State of Health
Tmax	最高温度 Maximum Temperature
Tmin	最低温度 Minimum Temperature

2. 产品规格 Product Specification

2.1 产品信息 Product Information

产品名称: AENERGY L1

Product Name: AENERGY L1

产品规格型号: WXL18S00510314A

Product specifications and models: WXL18S00510314A

2.2 通用信息 General Information

2.2.1 系统概述 System Overview

随着低碳理念和能源危机的深化,以及零碳家居和储能经济效益的提高,欧美发达地区逐步实现了光伏+云平台的商业应用。A123 的低压家用储能解决方案可以快速响应云平台调度指令,与屋顶光伏形成智能友好的供电系统,使电力更加高效稳定。

A123 的低压家用储能系统主要由光伏逆变器 (PV inverter) 和低压储能电池 (AENERGY L1) 组成。光伏逆变器可根据用户要求分为单相和离网光伏逆变器和三相光伏逆变器。低压储能电池采用通用 3.2V/314Ah 磷酸铁锂电池。每个电池单元包含两个 1P8S 标准模块,总容量为 16KWh。

光伏逆变器可用于优化自身消耗,将能量存储在电池中以备将来使用或输送到公共电网。工作模式取决于光伏能量和用户的偏好。它可以通过使用电池和逆变器 (由光伏发电) 的能量,在电网断电期间提供紧急电力。

AENERGY L1 是一种用于储能的低压电池系列。在光照充足的情况下进行储能,在光照不足或没有光照的情况下,将能量输送给电网或用户负载,以实现能量的最佳分配。

With the deepening of low-carbon concept and energy crisis, as well as the improvement of zero-carbon homes and energy storage economic benefits, developed areas in Europe and the United States have gradually realized the commercial application of PV+ Cloud Platform. A123's Low Voltage Home Energy Storage solution can quickly respond to Cloud Platform dispatch instructions, and form an intelligent and friendly power supply system with roof photovoltaic, making electricity more efficient and stable.

A123's low voltage home energy storage system is mainly composed of photovoltaic inverter (PV Inverter) and low voltage energy storage battery (AENERGY L1). The PV Inverter can be divided into single-phase and off-grid photovoltaic inverters and three-phase photovoltaic inverters according to user requirements. The low voltage energy storage battery uses a universal 3.2V/314Ah lithium iron phosphate cell. Each battery unit contains two 1P8S standard modules with a capacity of 16KWh.

The PV Inverter can be used to optimize self-consumption, storing energy in the battery for future use or feeding to public grid. Work mode depends on PV energy and user's preference. It can provide power for emergency use during the grid lost by using the energy from battery and inverter (generated from PV).

The AENERGY L1 is a low voltage battery family for energy storage. Energy storage in the case of sufficient light, In the case of insufficient or no light, the energy is fed back to the grid or the user load to achieve the optimal allocation of energy.

逆变器特点

PV Inverter Features

- 最大效率 98.0%， 电池效率 94.5%

Maximum efficiency 98.0%, battery efficiency 94.5%

- 三路 MPPT 设计， 适配大功率光伏组件

Three way MPPT design, suitable for high-power photovoltaic modules

- IP65 级的防护， 噪音 <35dB

IP65 protection grade, noise <35dB

- 电池反向连接保护， 兼容抗逆流

With battery reverse connection protection, compatible anti-counter current

- 支持全功率放电， 电池自动充放电管理

Support full power discharge, automatic battery charge and discharge management

AENERGY L1 特点

AENERGY L1 Features

- 电池模块的 16KWh 系统

16KWh system with battery modules

- 无钴磷酸铁锂电池的卓越安全性

Excellent safety of cobalt free LiFePO4 battery

- 基于云的智能系统监控

Cloud based intelligent system monitoring accessible via web and app

- 易于安装和维护

Easy to install and maintain

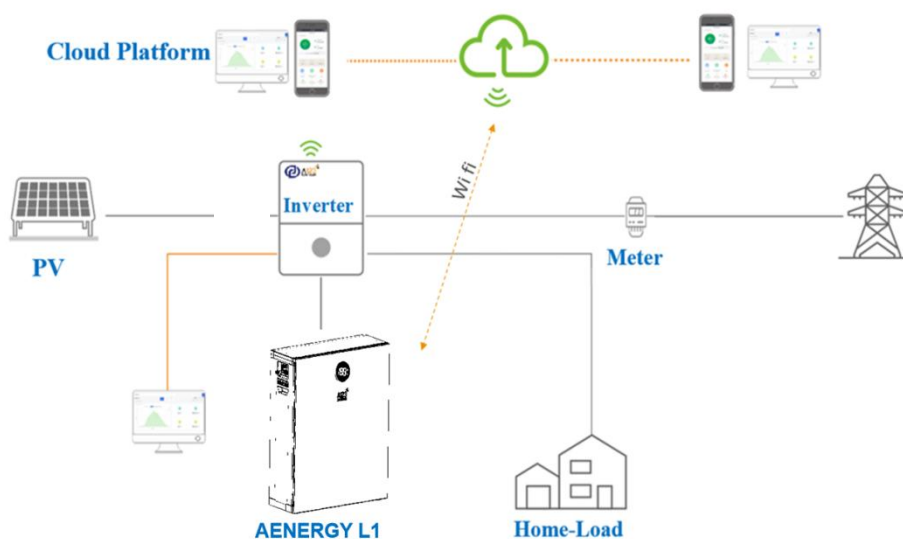


图.1 系统拓扑视图 **System Topology View**

2.2.2 系统参数 **System Parameter**

A123 的家用储能系统由光伏逆变器、电池模组、电池管理系统和 Energon Desk 云平台组成。

A123's Home Energy Storage is composed of PV Inverter, Modules, Battery Management System and Energon Desk Cloud platform.

光伏逆变器 **PV Inverter**



图.2 光伏逆变器示意图 **PV Inverter View**

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光伏逆变器内置的双向 AC/DC 模块在充足的照明下将光伏太阳能电池板产生的可变直流电压转换为交流电，可以连接到电网并反馈给输电系统或供用户使用。同时，多余的能量被储存到电池系统中。在低光或无光条件下将电池容量转换为交流电。

The built-in bidirectional AC/DC module of PV Inverter converts the variable DC voltage generated by the photovoltaic solar panel into AC power under sufficient illumination, which can be connected to the grid and fed back to the power transmission system or used by users. Meanwhile, the excess energy is stored to the battery system. Convert battery capacity to alternating current under low or no light conditions.

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表 3: 光伏逆变器参数概述 Table 3: PV Inverter Parameter Overview

参数 Parameter	值 Value
效率 Efficiency	
最大效率（光伏到电网）Max. Efficiency (PV to AC)	98.0%
最大效率（电池到电网）Max. Efficiency (BAT to AC)	94.5%
输入（光伏）Input (PV)	
最大输入功率 Max. PV Input Power	15kW
最大光伏电压 Max. PV Voltage	600V DC
启动工作电压 Start-up Voltage	90V
MPPT 电压范围 MPPT Operating Voltage Range	70V - 540V DC
最大输入电流 Max. Input Current per MPPT	30A / 22A / 22A
最大故障电流 Max short current per MPPT	40A / 30A / 30A
MPPT 串数 Nos. of MPPT	3
输入/输出（电池）Input/Output (BAT)	
电池电压范围 Battery Voltage Range	40V - 64V DC
最大充/放电电流 Max. Charge/Discharge Current	210A / 210A
最大充/放电功率 Max. Charge/Discharge Power	10kW / 10kW
输出（电网）Output (Grid)	
额定交流输出功率 Nominal AC Output Power	10kW
最大输出功率（PF=1）Max. AC Output Power	11400W
额定输出电流 Nominal AC Output Current	41.7A
最大输出电流 Max. AC Output Current	47.5A
额定交流电压 Nominal Grid Voltage	120V / 240V(Split phase) / 208V(2/3 phase)
额定电网频率 Nominal Grid Frequency	50Hz / 60Hz
谐波（额定功率）THDI	<3%
常规 General	
最大海拔 Max. Operation Altitude	2000m
防护等级 Ingress Protection Degree	NEMA 3R
工作温度范围 Operating Temperature Range	-25°C~60°C(>45°C derating)
冷却方式 Cooling Method	Fan Cooling
安装方式 Mounting	Wall Bracket
尺寸(W*H*D) Dimensions (W*H*D)	16.5*31.5*9.4 inch 420*800*240 mm
重量 Weight	40Kg/88lb
通讯接口 Communication Interface	RS485/CAN(for BMS),DRM/RS485(for meter),RS485, optional: WiFi / LAN
安全认证 Safety Certification	UL 1741/CSA C22.2/UL 1699B
并网认证 Grid Certification	UL1741SB,IEEE1547:2018,HECO SRD 2.0
电磁兼容 EMC	FCC Part 15 Class B
保修 Warranty	5 Years

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AENERGY L1 System



图.3 AENERGY L1 示意图 AENERGY L1 View

AENERGY L1 系统是基于磷酸锂离子电池的低压电池储能系统，是 A123 公司研发生产的新型储能产品之一。它可用于为各种类型的设备和系统提供可靠的电源。AENERGY L1 特别适用于低功耗、安装空间有限、承重受限、循环寿命长的应用场景。

AENERGY L1 System is a low voltage battery storage system based on lithium ion phosphate battery, and it's one of the new energy storage products developed and produced by A123. It can be used to support reliable power for various types of equipment and systems. AENERGY L1 is especially suitable for application scene of low power, limited installation space, restricted load-bearing and long cycle life.

表 4: 产品参数概述 Table 4: Product Parameter Overview

产品参数 Product parameter	值 Value
额定容量 Nominal Capacity	314Ah
额定电池能量 Nominal Battery Energy	16KWh
额定电压 Nominal Voltage	51.2V DC
指示名称 Designation	IFpP/72/174/208[(8S)2S]M/-20+60/95
电芯类别 Cell Type	LFP
工作电压范围 Operation Voltage Range	42.4V~57.6V DC
尺寸 Dimension (W*D*H)	750mm*230mm*1040mm
重量 Weight	140kg
充电功率 Charge Power	8038.4W (0.5P)
放电功率 Discharge Power	8038.4W (0.5P)
充电电流 Charge Current	157A
放电电流 Discharge Current	157A
最大可持续充电电流 Max. Continuous Charging Current	157A
最大可持续放电电流 Max. Continuous Discharging Current	157A
制造商推荐充电方式 Recommend Charging Method by Manufacturer	Charge with 157A(0.5C) constant current until to 58.4V, then constant voltage 58.4V until charging current reduces to 15.7A(0.05C) Or charge with a constant power of 8038.4W(0.5P)
短路电流 Short Circuit Current	50000A(2.5ms)
模组数量 Module Number	2
储存温度范围 Storage Temp. Range	-30~60°C (-10°C~35°C is recommended for storage)
充电温度范围 Charging Temp Range	0~45°C
放电温度范围 Discharging Temp Range	-20~45°C
工作海拔 Operating Altitude	<2000m
防护等级 IP Level	IP54
寿命 Life	Calendar life: 10 years Cycle life: 6600 Cycles @ 25°C 0.5P 70%SOH
连接方式 Connection Method	CAN / RS485
冷却方式 Thermal management	Natural
认证 Certification	UL 1973 / UL 9540A / UL 9540 UN38.3
制造商 Manufacturer	Wanxiang A123 Systems Corp.

2.3 模式定义 Operation Definition

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LED 显示屏 LED Viewing Screen



NO.	功能 Function
1	状态：正常状态/错误状态 Status: Normal mode/Fault mode
2	电量（0-100%） SOC(0~100%)
3	Wifi 连接状态 Wifi connect note

2.4 使用场景定义 Usage Definition

2.4.1 光伏逆变器使用场景要求 Requirements for the use scenarios of PV inverters

环境要求 Environment Requirements

- a. 逆变器具有 NEMA 3R 防护等级，可安装在室内或室外
With an NEMA 3R protection rating, the inverter can be mounted indoors or outdoors.
- b. 逆变器适用于住宅非居住空间
The inverter is suitable for use in residential non-habitable spaces.
- c. 由于外壳和散热器在运行过程中非常热，因此无关人员必须无法接近安装位置
The mounting location must be inaccessible to unrelated personnel since the enclosure and heat sinks are extremely hot during operation.
- d. 请勿在含有高度易燃材料或气体的区域安装逆变器
Do not install the inverter in areas containing highly flammable materials or gases.
- e. 为确保最佳运行和长使用寿命，环境温度必须低于 50°C
To ensure optimum operation and long service life, the ambient temperature must be below 50°C.
- f. 逆变器必须安装在通风良好的环境中，以确保良好的散热
The inverter must be mounted in a well-ventilated environment to ensure good heat dissipation.
- g. 确定短框架、砖墙或混凝土墙上的逆变器位置。确保安装逆变器的载体能够支撑逆变器的重量
Identify the inverter location on a stub frame, a brick wall or a concrete wall. Ensure the carrier, where the inverter is mounted, can support the weight of the inverter.
- h. 不要将逆变器安装在休息区，因为它会在运行过程中产生噪音
Do not install the inverter in a rest area since it will cause noise during operation.
- i. 安装高度应合理，请确保易于操作和查看显示器

The installation height should be reasonable, and please make sure it is easy to operate and view the display.

- j. 安装后，产品标签和警告符号应清晰易读

Product label and warning symbols shall be clear to read after installation.

- k. 为确保使用寿命长，逆变器不得直接暴露在阳光照射、雨雪中。建议将逆变器安装在有遮蔽的地方

To ensure long service life, the inverter must not be exposed to direct solar irradiation, rain, or snow. It is recommended that the inverter be mounted in a sheltered place.

2.4.2 产品使用场景要求 Requirements for the use scenarios of product

环境要求 Environment Requirements

- l. 产品具有 IP54 防护等级，可安装在室内

With an IP54 protection rating, the product can be mounted indoors.

- m. 产品适用于住宅非居住空间

The product is suitable for use in residential non-habitable spaces.

- n. 由于产品在安装过程中仍有极低概率发生意外，因此无关人员必须无法接近安装位置

Due to the extremely low probability of accidents occurring during the installation process of the product, unrelated personnel must not be able to approach the installation location

- o. 请勿在含有高度易燃材料或气体的区域安装产品

Do not install the product in areas containing highly flammable materials or gases.

- p. 为确保最佳运行和长使用寿命，环境温度必须低于 40°C

To ensure optimum operation and long service life, the ambient temperature must be below 40°C.

- q. 确保产品安装地面坚固水平能够支撑产品的重量

Ensure that the product is installed on a sturdy and level ground that can support the weight of the product.

- r. 安装后，产品标签和警告符号应清晰易读

Product label and warning symbols shall be clear to read after installation.

2.5 设计寿命 Design Life

光伏逆变器五年保修（正常使用条件下）

电池(AENERGY L1)循环寿命 6600 次（标准充放电模式，25°C，70%电池健康度）

PV inverter: Five year warranty (under normal usage conditions)

AENERGY L1 battery: 6600 cycles (standard charge and discharge mode, 25 ° C, 70% battery health)

2.6 结构参数 Mechanical Specification

2.6.1 物理参数 Physical Specification

光伏逆变器外观 PV Inverter appearance

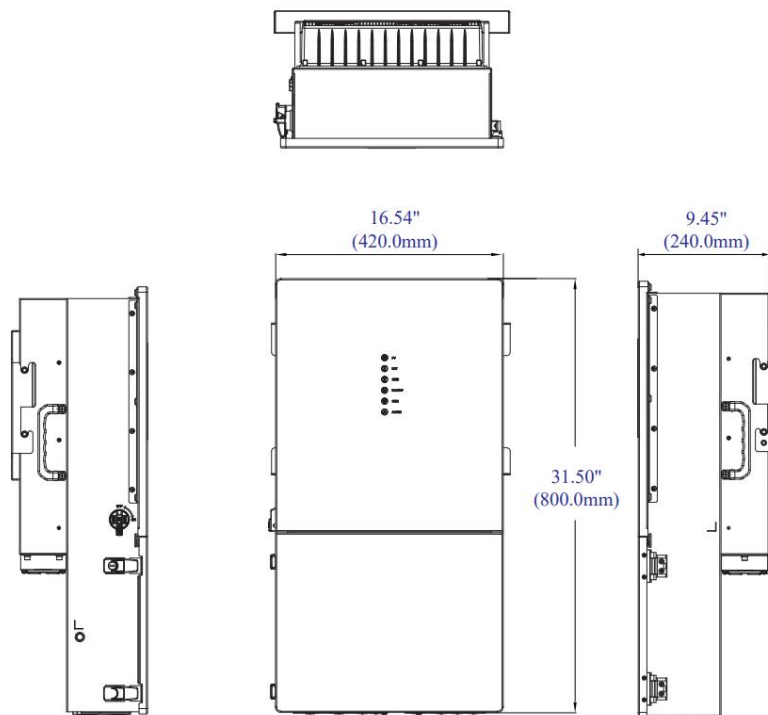


图.4 光伏逆变器尺寸示意图 **PV Inverter Dimensions View**

光伏逆变器尺寸 PV Inverter dimensions:

W:16.54 inch(420.00 mm) H: 31.50 inch(800.00 mm) D: 9.45 inch(240.00 mm)

产品外观 **AENERGY L1 appearance**



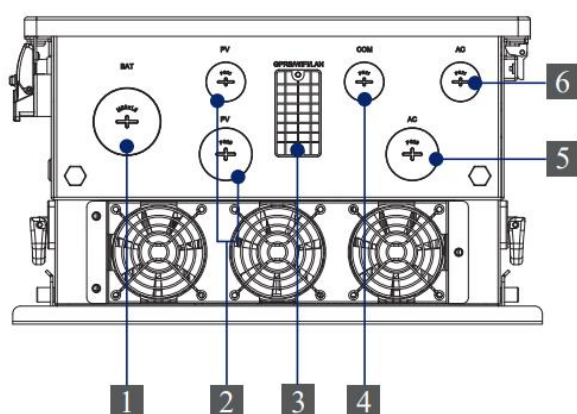
图.5 产品尺寸示意图 Product Dimensions View

产品尺寸（含脚垫）AENERGY L1 dimensions(Including foot pad):

W:29.5 inch(750 mm) H:40.9 inch(1040 mm) D:9.1 inch(230 mm)

2.6.2 接口规格 Interfaces Specification

2.6.2.1 光伏逆变器接口 PV Inverter Terminals



No.	Description
1	Battery connection port
2	PV connection ports
3	COM Port (GPRS/WIFI/LAN)
4	Communication connection ports (RS485, BMS, DRM, CT, DRY, RSD, PARA)
5	GRID/BACKUP/PE connection port
6	GEN connection port

图.6 光伏逆变器接口示意图 PV Inverter Terminals View

2.6.2.2 产品接口 Product Terminals

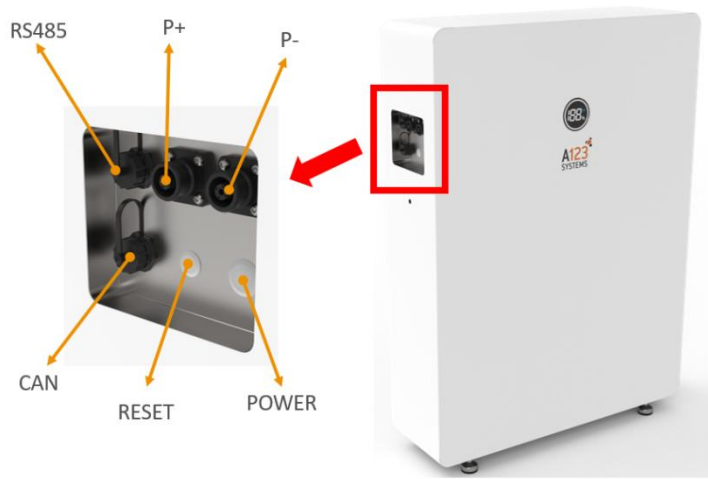


图.7 产品接口示意图 Product Terminals View

表 5：产品接口功能概述 Table 5: Product Overview

NO.	Name	Definition
1	RS485	通讯接口 Communication connection ports(RS485)
2	P+	电源接口 Positive
3	P-	电源接口 Negative
4	CAN	通讯接口 Communication connection ports(CAN)
5	RESET	天线复位按钮 WiFi reset switch
6	Power	电源按钮 Turn on the switch to power the BMS

电源接口参数 Power interface parameters

Product Series		PowerStorage Receptacle 10MM
Electrical Specification	Rated Voltage	1500V DC
	Rated Current	350A
Mechanical Capacity	Mating Cycles	100 Min.
Environmental Performance	Temperature Range	-40~125℃
	Altitude	5000m Max.
	Protection	IP67

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2.6.3 安装要求 Mounting Requirements

2.6.3.1 光伏逆变器安装 PV inverter mounting

垂直安装逆变器或最大后倾 15°。设备不能以错误的模式安装，连接区域必须指向下方。

Mount the inverter vertically or at a maximum back tilt of 15°. The device can not be installed in a wrong mode and the connection area must point downward.

安装注意事项详见光伏逆变器的说明书。

For installation precautions, please refer to the manual of the photovoltaic inverter.

2.6.3.2 产品安装 AENERGY L1 mounting

本产品 9540A 认证报告号为 CQES250600061801，测试机构为 SGS-CEC New Energy Technology (Chongqing) Co., Ltd，报告时间为 22025-07-25。报告中说明产品容量为 314AH，安装间隙保持 100mm 以上。

The certification report number for this product, 9540A, is CQES250600061801, issued by SGS-CEC New Energy Technology (Chongqing) Co., Ltd., with a report date of 2025-07-25. The report specifies the product capacity as 314AH and requires an installation clearance of more than 100mm.

垂直安装产品。产品距离墙面至少保持 10cm 以保证有足够的散热空间。建议产品前方无遮挡，保证显示屏信息容易看见。

Mount the product vertically. The product should be kept at least 10cm away from the wall to ensure sufficient heat dissipation space. It is recommended that there be no obstruction in front of the product to ensure that the information on the display screen is easily visible.

安装步骤 Installation Steps

步骤 1：设备检查

Step 1: Equipment Inspection

- 检查 60V PACK 外观是否完好，无破损、漏液。

Check the 60V battery PACK for any physical damage, leakage, or deformation.

- 检查 PCS 外壳是否完整，接线端子无松动。

Inspect the PCS enclosure for integrity and ensure all terminals are secure.

- 核对电缆规格是否符合要求，长度是否足够。

Verify that the cable specifications (gauge, voltage rating) meet requirements and are of sufficient length.

- 确认 PACK 的 BMS 已激活，且处于待机状态（可通过 BMS 显示屏或 APP 确认）。

Confirm that the BMS in the PACK is powered on and in standby mode (can be checked via BMS display or mobile app).

步骤 2：安装设备

Step 2: Equipment Mounting

- 将 60V PACK 和 PCS 固定在通风良好、远离水源和高温的墙面或支架上。

Mount the 60V PACK and PCS securely on a wall or rack in a well-ventilated, dry, and heat-resistant location.

- 保持设备间适当散热空间（建议 $\geq 10\text{cm}$ ）。

Maintain adequate clearance around the units for heat dissipation (recommended $\geq 10\text{cm}$).

步骤 3：连接高压电缆

Step 3: Connect High-Voltage Cables

1. 连接电池 PACK 至 PCS:

Connect Battery PACK to PCS:

- 使用正极电缆连接 PACK 的正极输出端子 (+) 至 PCS 的电池正极输入端子 (BAT+)。

Connect the positive cable from the PACK's positive terminal (+) to the PCS's battery positive input (BAT+).

- 使用负极电缆连接 PACK 的负极输出端子 (-) 至 PCS 的电池负极输入端子 (BAT-)。

Connect the negative cable from the PACK's negative terminal (-) to the PCS's battery negative input (BAT-).

- 确保所有接线端子紧固，无松动。

Ensure all terminal connections are tight and secure.

- 建议在接线完成后使用绝缘胶带或端子套管进行绝缘保护。

It is recommended to use insulating tape or terminal covers for added protection after wiring.

步骤 4：连接 RS485 通讯线

Step 4: Connect RS485 Communication Cable

1. 从 PACK 上的 RS485 通讯接口引出通讯线。

Run the communication cable from the RS485 port on the PACK.

2. 将通讯线连接至 PCS 上的 RS485 通讯接口。

Connect the cable to the RS485 port on the PCS.

步骤 5：连接电网与负载（由专业电工操作）

Step 5: Connect AC Grid and Load (To be performed by a qualified electrician)

- 将 PCS 的交流输入端连接至电网（市电）。

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Connect the PCS AC input terminals to the utility grid (mains power supply).

- 将 PCS 的交流输出端连接至家庭负载或备用电路。

Connect the PCS AC output terminals to the household load or backup circuits.

- 确保交流接线符合当地电气规范。

Ensure AC wiring complies with local electrical codes and safety standards.

2.6.4 产品标签 Product Label Specification



图.8 标签位置示意图 Label Position View

2.6.4.1 System Label



Low Voltage AC Home Energy Storage System

AEnergy L1™

System Parameter

Inverter Model	SE 11K4HB-210-T2/UL
Battery model	LFP
Maximum energy	16KWh
PV Max. Input Power	15 kW
PV Input Voltage	70-540 V DC (600 V DC Max.)
PV Max. Input Current	30A/22A/22A
PV Max. Short Current	40A/30A/30A
AC Output Rated Voltage	120/240V (Split phase) / 208V (2/3 phase) AC
AC Output Rated Current	41.7 A
AC Output Max. Current	47.5 A
AC Output Rated Frequency	50/60 Hz
AC Output Rated Power	10 kW
AC Output Max. Power	11.4 kW
AC Input Rated Voltage	120/240V (Split phase) / 208V (2/3 phase) AC
AC Input Max. Current	62.5 A
AC Input Max. Power	15 kW
AC Input Rated Frequency	50/60 Hz
Off Grid Rated Output Voltage	120/240V (Split phase) / 208V (2/3 phase) AC
Off Grid Rated Output Frequency	50/60 Hz
Off Grid Rated Output Current	41.7 A
Off Grid Max. Output Current	47.5 A
Off Grid Rated Output Power	10 kW
Off Grid Max. Output Power	11.4 kW
Short Circuit Current Rating	50 kA (2.5ms)
Max. Overcurrent Protective Device Rating	180A
Output Available Fault Current	15 kA (15ms)
Weight	40kg (Inverter) 140kg (Pack)
Shape Size	16.5*31.5*9.4 inch (420*800*240mm) (Inverter) 29.5*9.1*40.9 inch (750*230*1040mm) (Pack)
Ingress Protection	NEMA 3R (Inverter) IP 54 (Pack)
Operation Temperature	-25~60°C (>45°C derating) (Inverter) 0~45°C (Charge) -20~45°C (Discharge)
Contact information	https://cn.a123systems.com/
Suitable for Use in Residential Non-Habitable Spaces Convient à une utilisation dans un espace résidentiel non habitable	

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2.6.4.2 产品标签 Product Label



Low voltage lithium battery home storage system

AEnergy L1™

Pack Parameter

Pack Model	WXL18S00510314A
Designation	IFpP/72/174/208[(8S)2S]M/-20+60/95
Cell Type	LFP
Nominal Capacity	314 Ah
Nominal Energy	16 KWh
Nominal Voltage	51.2 V DC
Operation Voltage	42.4-57.6 V DC (T>0°C) 32-58.4 V DC (T≤0°C)
Nominal Charge Power	8038.4W
Max. Continuous Charging Power	8038.4W
Nominal Discharge Power	8038.4W
Max. Continuous Discharging Power	8038.4W
Recommend Charge Current	157 A
Max. Continuous Charging Current	157 A
Recommend Discharge Current	157 A
Max. Continuous Discharging Current	157 A
Recommend Charging Method by Manufacturer	Charge with 157A constant current until to 58.4V, then constant voltage 58.4V until charging current reduces to 15.7A
Short Circuit Current	50 kA (32ms)
Manufacturer	Wanxiang A123 Systems Corp.
IP	IP54
FCC ID	2BRSI04XPB25XW1VON1
IC ID	34460-04XPB25XW1

For more, go to
<http://www.a123systems.com>



ios



android

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2.6.4.3 警告循环标签 Warning&Cycling Label



Avertissement

Utilisation selon le manuel d'utilisation spécifications
Risque d'incendie, d'explosion, de brûlure

- Les non-professionnels ne doivent pas débrancher ou démonter le matériel
- Ne pas jeter, déformer, frapper, couper ou piquer avec des objets tranchants
- Ne pas mettre en contact avec des enfants ou des animaux domestiques
- Ne soyez pas trop près d'une source d'incendie ou d'un métal à haute température
- Ne pas couvrir ou envelopper le boîtier du produit
- Ne pas s'asseoir ou placer des objets lourds sur le produit
- Ne touchez pas le liquide qui fuitÉvitez la lumière directe du soleil ou dans un environnement humide ou placez de l'eau
- Assurez-vous que le fil de terre est correctement connecté avant de commencer à travailler
- Suivez le manuel d'utilisation pour connecter le harnais
- En cas de fuite, d'incendie, de contact avec l'eau ou de dommages, éteignez l'alimentation et éloignez-vous de la batterie
- Contactez le fournisseur dans les 24 heures en cas d'accident
- Recharge tous les 6 mois sans utilisation prolongée





⚠WARNING

Consult user manual prior to operating.
Risk Of Fire, Explosion, or Burns

- Do not disconnect or disassemble by non-professional personnel.
- Do not drop, deform, impact, cut or spear with a sharp object.
- Do not place within the reach of children and pet.
- Do not place close to open flame or flammable material.
- Do not cover or wrap the product case.
- Do not sit or put heavy things on product.
- Do not touch the leaking liquid.
- Avoid of direct sunlight or moisture or liquid.
- Make sure the grounding wire connected correctly before operating.
- Follow the User Manual to make wiring connection.
- If leaked, fire, wet or damaged, switch off the breaker on DC side and stay away from battery.
- Contact your supplier within 24 hours if anything failure happens.
- Recharge the battery within every 6 months.



2.6.4.4 内部标签 Internal Label



Tracking code:WXLV2025010001A

Module traceability label

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2.7 电池性能参数 Battery Performance Specification

2.7.1 电芯参数 Cell Characteristics

采用 314Ah 磷酸铁锂电池，标称电压为 3.2V，温度高于 0 度时工作电压范围为 2.5-3.65V，电池的月自放电率首月小于 3.5%，首月后小于 3.0%。该电池已通过 IEC 62619，UL 1973，UL 9540A，UN 38.3 测试。在测项目 GBT 36276，计划获取项目 GB 44240。安全性能符合相关标准。

The 314Ah lithium iron phosphate cell is used, the nominal voltage is 3.2V, the working voltage range is 2.5-3.65V when temperature is above 0 degree, the monthly self-discharge rate of the cell is less than 3.5% in the first month and less than 3.0% after the first month. The cell has passed IEC 62619, UL 1973, UL 9540A, and UN 38.3 tests. It is testing project GBT 36276 and plan to obtain project GB 44240. The safety performance meets relevant standards.

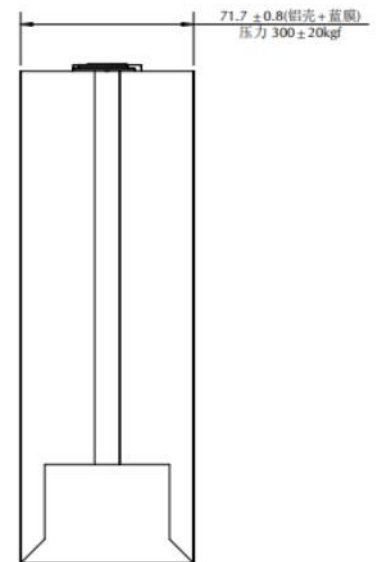
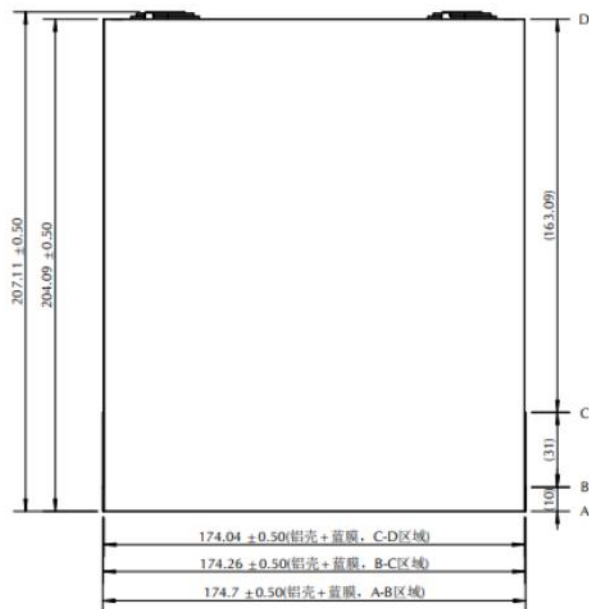
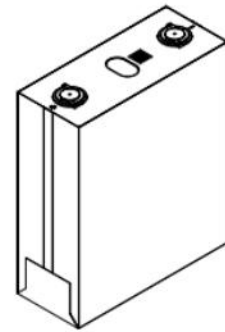
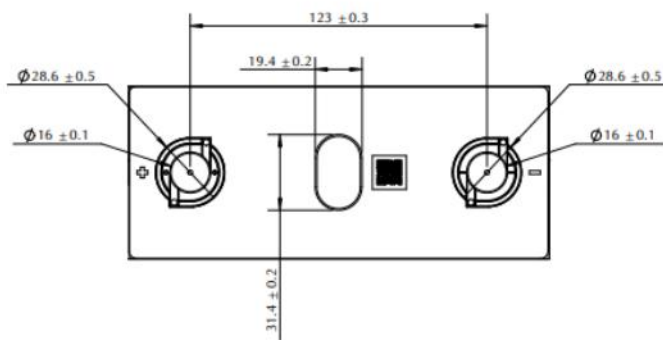


图.8 电芯尺寸示意图 Cells Dimensions View

表 6: 电芯参数概述 Table 6: Cell Parameter Overview

产品参数 Product parameter	值 Value
电芯型号 Cell Type	AEW10
标称容量 Nominal Capacity	314Ah
标称能量 Nominal Energy	1004.8Wh
标称电压 Nominal Voltage	3.2V
工作电压 Voltage Range	2.5V~3.65V, T>0°C 2.0V~3.65V, T≤0°C
初始内阻 Initial Internal Resistance	0.175±0.02mΩ
电池重量 Cell Weight	5.65 ± 0.08kg
工作温度 Operating Temperature	Charge: 0~60°C; Discharge: -20~60°C
存储温度 Storage Temperature	-30~60°C (recommend -10~35°C)
应用海拔 Altitude	<5000m
电池尺寸 Cell Dimension	Thickness: 71.7 ± 0.8mm Width: 173.9 ± 0.6mm Height: 207.6 ± 0.5mm
标准充放电功率 Standard Charge/Discharge Power	0.5P
标准充放电电流 Standard Charge/Discharge Current	157A
高低温容量 H&L temp capacity	55°C ≥314Ah -20°C ≥220Ah
45° C 存储(100%SOC, 30 days)	Energy retention≥95% Energy recovery≥97%
25° C 存储(100%SOC, 30 days)	Energy retention≥96% Energy recovery≥98%
效率 Efficiency	≥93.5% @0.5P ≥90% @1.0P

2.7.2 SOC/OCV 曲线 SOC-OCV Curve

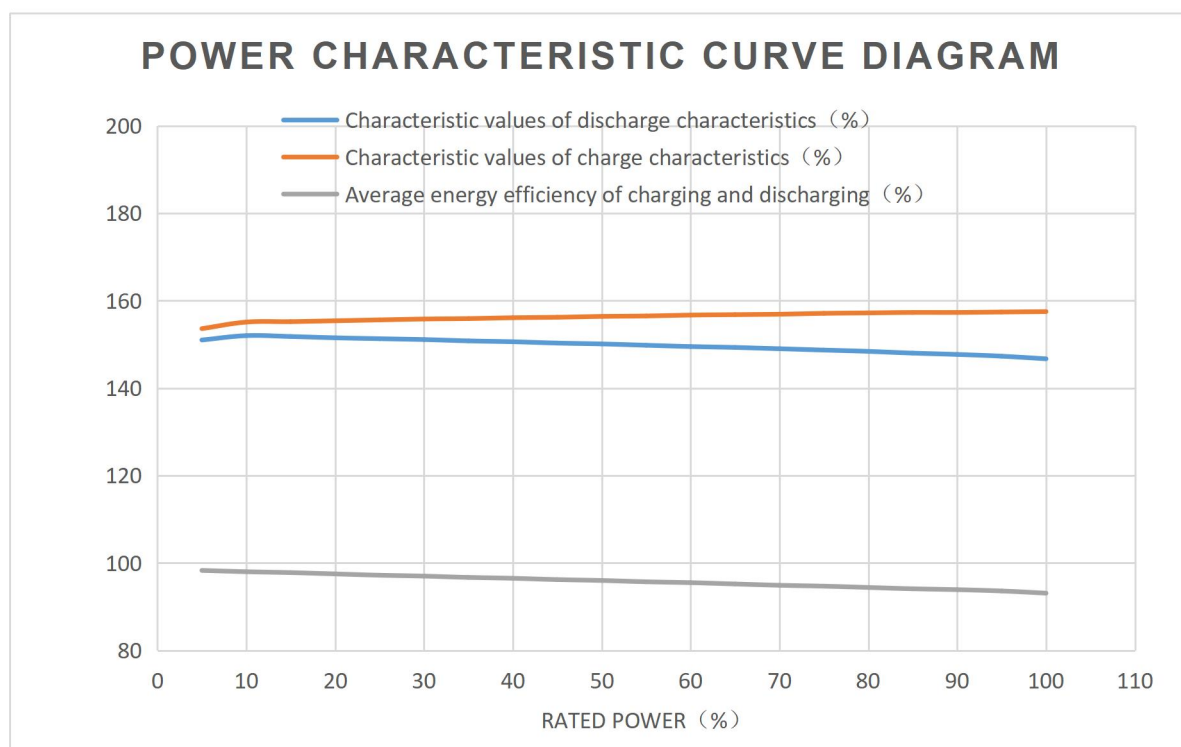
动态 OCV 指放电截止电压

dynamic OCV refers to the discharge cut-off voltage

静态 SOC 指静置 2h 后电压

static SOC refers to the voltage after being left to stand for 2 hours

[illegible]



Power Characteristic Curve Diagram

2.8 电池电气系统 Battery Electrical System

2.8.1 系统框图 System Block Diagram

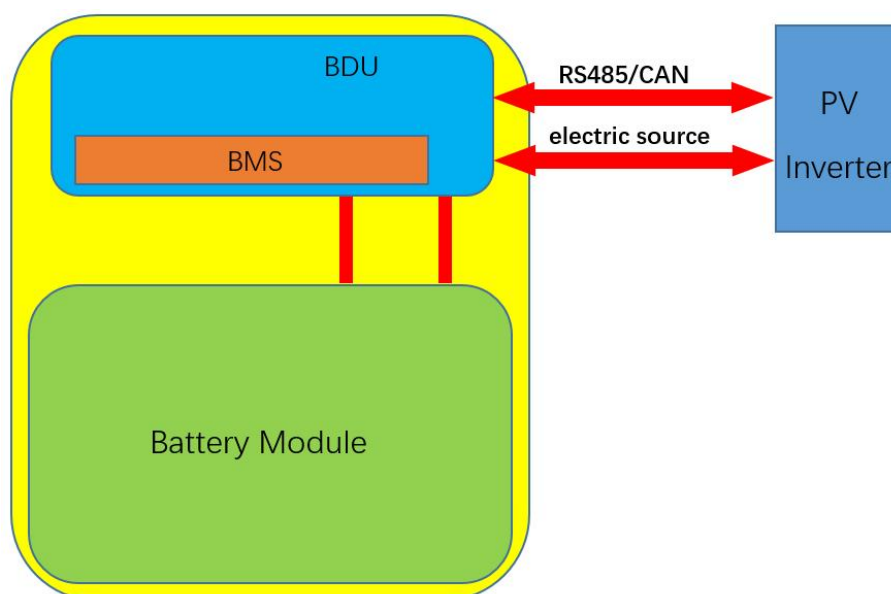


图.9 产品工作原理示意图 Product Operation Principle View

3. 使用边界 Usage Boundary

3.1 电压范围 Voltage Range

电芯电压使用范围:

2.5~3.65V, $T > 0^{\circ}\text{C}$

2.0~3.65V, $T \leq 0^{\circ}\text{C}$

产品电压使用范围:

42.4~57.6V

3.2 限制条件 Restrictive Conditions

表 8: 限制条件表 Table 8: Restriction conditions

First level overcharge protection 第一级过充电保护	Maximum cell voltage $\geq 3.6\text{V}$ 最高电芯电压 $\geq 3.6\text{V}$	When any of cell voltage is greater than or equal to threshold, for 5s, the BMS will stop charging after 5s 当任何电芯电压大于或等于阈值时, 持续 5s, BMS 将在 5s 后强制终止工作
Second level overcharge protection 第二级过充电保护	Maximum cell voltage $\geq 3.65\text{V}$ 最高电芯电压 $\geq 3.65\text{V}$	When any of cell voltage is greater than or equal to threshold, for 500ms, the BMS will stop charging after 500ms 当任何电芯电压大于或等于阈值时, 持续 500ms 内, BMS 将在 500ms 后强制终止工作
Third level overcharge protection 第三级过充电保护	Maximum cell voltage $\geq 3.75\text{V}$ 最高电芯电压 $\geq 3.75\text{V}$	When any of cell voltage is greater than or equal to threshold, for 50ms, the BMS will stop charging after 50ms 当任何电芯电压大于或等于阈值时, 持续 50ms 内, BMS 将在 50ms 后强制终止工作
First level over discharge protection 第一级过放电保护	Minimum cell voltage $\leq 2.65\text{V}$ 最低电芯电压 $\leq 2.65\text{V}$	When any of cell voltage is less than or equal to threshold, for 5 seconds, the BMS will stop discharging after 5 seconds 当任何电芯电压小于或等于阈值时, 持续 5s, BMS 将在 5S 后强制终止工作
Second level over discharge protection 第二级过放电保护	Minimum cell voltage $\leq 2.5\text{V}$ 最低电芯电压 $\leq 2.5\text{V}$	When any of cell voltage is less than or equal to threshold, for 100ms, the BMS will stop discharging after 100ms 当任何电芯电压小于或等于阈值时, 持续 100ms, BMS 将在 100ms 后强制终止工作

First level overheating protection 第一级过热保护	Maximum cell temperature $\geq 55^{\circ}\text{C}$ 最高电芯温度 $\geq 55^{\circ}\text{C}$	When battery temp is greater than or equal to threshold, for 5s, the BMS will stop charging and discharging after 5s 当电芯温度大于或等于阈值时，持续 5s，BMS 将在 5s 后强制终止工作
Second level overheating protection 第二级过热保护	Maximum cell temperature $\geq 58^{\circ}\text{C}$ 最高电芯温度 $\geq 58^{\circ}\text{C}$	When battery temp is greater than or equal to threshold, for 500ms, the BMS will stop charging and discharging after 500ms 当电芯温度大于或等于阈值时，持续 500ms 内，BMS 将在 500ms 后强制终止工作
Third level overheating protection 第三级过热保护	Maximum cell temperature $\geq 60^{\circ}\text{C}$ 最高电芯温度 $\geq 60^{\circ}\text{C}$	When battery temp is greater than or equal to threshold, for 50ms, the BMS will stop charging and discharging after 50ms 当电芯温度大于或等于阈值时，持续 50ms 内，BMS 将在 50ms 后强制终止工作
Absolute charging temperature (Cell Temperature) 绝对充电温度 (电芯温度)	0~60°C	No matter what charge mode the battery is in, stop charging once the cell temperature exceeds absolute charge temperature range 无论电芯处在何种充电模式，一旦发现电芯温度超过绝对充电温度范围即停止充电
Absolute charging voltage 绝对充电电压	Max 60V DC 最大 60V DC	No matter what charge mode the battery is in, stop charging once the cell voltage exceeds absolute charge voltage 无论电芯处在何种充电模式，一旦发现电芯电压超过绝对充电电压范围即停止充电

3.3 温度范围 Operational Temperature Range

对于 $>40^{\circ}\text{C}$ 的温度，LiFePO₄ 电池显示出老化加剧，这意味着容量损失和 DCR 升高。老化的程度是非线性的，然而更高的温度会导致更高的老化。

For temperatures $> 40^{\circ}\text{C}$, the LiFePO₄ cells show increased aging, which means loss of capacity and raise of DCR. The magnitude of aging is non-linear, nevertheless higher temperature leads to higher aging.

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表 9.工作温度规格 Table 9: Operational Temperature Specification

Parameter	Temperature Range
Desired Operating Temperature (DOT)	-20 °C to +40 °C
Extended Operating Temperature (EOT)	-20 °C to +60 °C

DOT 范围定义为在与电池指定使用寿命一致的一段时间内支持预期电池性能的工作温度范围

The DOT range is defined as the operating temperature range that supports expected battery performance for a period of time that is consistent with the specified service life of the cell.

EOT 范围是指预期电池使用寿命和电池系统性能会降低的工作温度范围

The EOT range is defined as the operating temperature range over which a reduction in cell service life and battery system performance is expected.

3.4 湿度范围 Humidity Range

产品存储环境湿度需<85%ROH，无凝露

The humidity of the product storage environment should be less than 85% ROH and there should be no condensation.

3.5 高海拔范围 High Altitude Range

光伏逆变器的应用海拔≤2000m

The application altitude of pv inverters is ≤ 2000m

产品的工作海拔<5000m

The working altitude of the product is < 5000m

因此建议整体的使用环境海拔≤2000m

Therefore, it is recommended that the overall usage environment has an altitude of ≤ 2000m

4. 运输和装卸要求 Transportation and Loading

运输要求 Transportation requirement

- 在运输过程中，产品不得被拆解，不得受挤压、外物撞击、曝晒及淋雨，距离热源（温度大于 65℃）不得小于 2m；
During transport process, production can't be disassembled, can't be crushed and crashed by foreign object, can't be exposed to the sunshine and the rain, should be 2 meters far away from heat source;
- 在运输过程中，应防止接插件及透气膜受到异物撞击；
During transport process, connector and vent cover of production can't be inserted and crashed;
- 在运输过程中，应防止标签（包括客户标签、厂家标签、警告标签、循环标签等）受到外物磨损或划伤；
During transport process, all of labels on production can't be scratched and damaged;
- 在运输过程中，外包装应能够起到保护产品作用；
During transport process, package should protect production;

4.1 装卸要求 Loading Requirement

- 在装卸过程中，产品应轻搬轻放，禁止将产品倒置搬运，严防摔掷、翻滚、重压、划伤；
During load and unload process, production should be taken care, avoid to throw/roll over/crush/scratch;
- 在装卸过程中，应防止接插件及透气膜受到异物撞击；
During load and unload process, connector and vent cover of production can't be inserted and crashed;
- 在装卸过程中，应防止标签（包括客户标签、厂家标签、警告标签、循环标签等）受到外物磨损或划伤；
During load and unload process, all of labels on production can't be scratched and damaged.

4.2 存储要求 Storage Requirement

- 产品生产下线时 SOC 范围为：30~40%；
production SOC range after end of line is 30~40%.
- 存储温度要求为-30℃~60℃；推荐在-10℃~35℃范围内存储；
Storage temperature range of production should be -30℃~60℃; It is recommended to store pack in the range of -10 °C~35 °C.
- 产品在未装车之前的，如果长时间存储，应至少每 90 天进行 1 次充电维护，并且注意 SOC 小于 8% 要及时补电，建议充电至 SOC 为 60%以上且最低电芯电压为 3.30V 以上，充电（电芯）温度为 25±2℃，推荐充电功率为 0.5P；
Before installed in vehicle, during long time storage at least charge production per 90 days and charge timely when SOC is smaller than 8%, charge production to more than 60% SOC and cell voltage higher than 3.30V, charge temperature (Cell Temperature) is 25±2℃, recommended charge rate is 0.5P;
- 产品应置于专用的包装箱内存储，储存环境应保持清洁、通风，不可有粉尘，尤其不可有金属屑等导电粉尘，并与其它易燃材料隔离，避免安全隐患；
Production should be kept in package and storage condition should be clean, especially metal dust should be avoided, and should be insulated from inflammable goods;
- 在存储过程中，产品不得被拆解，不得受挤压、外物撞击、曝晒及淋雨，距离热源（温度大于 50℃）不得小于 2m；

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During storage process, production can't be disassembled, can't be crushed and crashed by foreign object, can't be exposed to the sunshine and the rain, should be 2 meters far away from heat source;

➤ 在存储过程中，应防止接插件及透气膜受到异物撞击；

During storage process, connector and vent cover of production can't be inserted and crushed;

➤ 在存储过程中，应防止标签（包括客户标签、厂家标签、警告标签、循环标签等）受到外物磨损或划伤；

During storage process, all of label on production can't be scratched and damaged;

5. 安全须知 Safety instruction

产品应放置于阴凉干燥的环境中，避免在高温或过湿的环境内长期放置；

Production should place in shady and dry environment, avoid to place long time in high temperature or high humid environment;

La Production devrait placer dans un environnement ombragé et sec, éviter de placer le long temps dans un environnement à haute température ou fortement humide;

产品不得受挤压、外物撞击、爆晒、雨淋；

Production can't be crush and crash by foreign object, can't be exposed to the sunshine and the rain;

La Production ne peut pas être écrasée et écrasée par un objet étranger, ne peut pas être exposée au soleil et à la pluie;

禁止随意拆卸产品；

Prohibit to disassemble production;

Interdire le démontage de la production;

禁止将产品在热高温源旁（如火、加热器等）使用和留置；

Prohibit to place production close to heat source;

Interdire de placer la production près de la source de chaleur;

尽量避免在产品附近放置液体物品，尤其是带有腐蚀性液体；

Avoid to place fluid object close to production, especially corroded fluid;

Éviter de placer l'objet fluide près de la production, en particulier le fluide corrodé;

FCC:

Please take attention that changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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.

IC:

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

(1) This device may not cause interference.

(2) This device must accept any interference, including interference that may cause undesired operation of the device.

L'appareil contient des émetteurs/récepteurs exempts de licence qui sont conformes aux CNR exempts de licence d'Innovation, Sciences et Développement économique Canada. L'exploitation est soumise aux deux conditions suivantes :

(1) l'appareil ne doit pas produire de brouillage,

(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This equipment complies with FCC/IC RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

ce matériel est conforme aux limites de dose d'exposition aux rayonnements, FCC / CNR-102 énoncée dans un autre environnement.cette equipment devrait être installé et exploité avec distance minimale de 20 entre le radiateur et votre corps.

(i) the device for operation in the band 5150-5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;

(ii) the maximum antenna gain permitted for devices in the bands 5250-5350 MHz and 5470-5725 MHz shall comply with the e.i.r.p. limit; and



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(i) Les dispositifs fonctionnant dans la bande 5150-5250 MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux.

(ii) le gain d'antenne maximal autorisé pour les appareils dans les bandes 5250-5350 MHz et 5470-5725 MHz doivent respecter le pire limiter; et

6. 免责声明 Disclaimer

万向一二三股份公司对以下情况不提供质量保修服务：

未按本手册规定进行正确存储、使用、保养、检查产品而导致的损坏或损失。

Damage or loss caused by incorrect storage, usage, maintenance and inspection in accordance with this manual.

电池系统发生超过技术协议约定的密封等级标准的泡水、撞击等事件。

Water immersion, collision and other events occurred in the battery system that exceeded the sealing grade standard defined in the technical agreement.

未经万向一二三股份公司售后服务允许，用户私自或在非指定售后服务网点对电池系统进行改装、拆装和调整。

Without the permission of Wanxiang A123 Systems Corp. after-sales service, the user refits, disassembles and adjusts the battery system privately or at non-designated after-sales service outlets.

电池系统发生故障时，客户未经万向一二三股份公司售后服务允许私自对故障进行处理而导致的损坏。

When the battery system fails, the customer is not allowed to deal with the failure without the permission of Wanxiang A123 Systems Corp. after-sales service.

因不可抗力如地震、台风、洪水、化学污染、雷击、交通事故、冰雹、泥沙、飞石、火灾、政治灾难，以及基于这些损坏而引起的二次赔偿，双方均予以免责。

Both parties shall be exempted from liability for force majeure, such as earthquake, typhoon, flood, chemical pollution, lightning strike, traffic accident, hail, sediment, flying stone, fire, political disaster, as well as secondary compensation caused by these damages..

人为的故意损坏等因素导致的损坏。

The damage or loss caused by vandalism.

受相关法律法规保护的其他免责条件。

Other exemption conditions protected by relevant laws and regulations.

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