

# 户用储能电池系统规格书

## Product Specification

Battery System for Household ESS

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### EVE-HVI-40.0

版本 Version 1.0



惠州亿纬锂能股份有限公司

EVE Energy Co., Ltd.

地址：广东省惠州市仲恺高新区惠风七路 38 号

Address: NO.38, Hui Feng 7th Road, Zhongkai Hi-Tech Zone, Huizhou, Guangdong

Website: [www.evebattery.com](http://www.evebattery.com)



# 惠州亿纬锂能股份有限公司

**EVE Energy Co., Ltd.**

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## 1. 概述 Product Overview

产品型号定义规则参考以下说明。The definition of product model is shown as follows. EVE - HV I - 40.0



该规格书描述了电池系统(409.6V 100Ah)设计结构、基本特性、测试方法和磷酸铁锂电池注意事项等，主要应用于户用储能应用场景。针对客户需求亿纬储能可以提供不同的产品解决方案。本产品的标准供货内容为**电池包及相关安装配件**，不包含电池包的连接线束。详细供货清单参考下表。

The purpose of this document is to specify the structure design, basic performance and product precautions of battery system: 409.6V 100Ah, which is mainly applied in household ESS. EVE can provide diverse product solutions according to customers' demands. The supply scope of this product is: **battery pack and related installation accessories**; customers' accessories: battery pack wiring harness. The details are as follows.

表 1 供货清单

Table 1 Components of battery pack

序号 No.	设备名称 Items	技术说明 Specification	数量 Quantity
1	储能电池包 Battery pack	EVE-HVI-5.0	8*15

2	高压箱 PDU	/	15
4	产品出厂检验报告 Test report	/	/
5	产品合格证 Product certificate	/	/
6	线束清单 List of harnesses		
6.1	串联功率线 series power wires	快插端子*2, EV 线, 橙色, 长 180mm plug-in terminal *2, EV wire, orange, 180mm	8*15
6.2	电池串联通讯线 Battery communication wires	双头插接端子, 长 130mm plug-in terminal at both ends, 130mm	8*15
6.3	电池-高压箱正极输出线 Positive output wires from Pack to PDU	快插端子*2, EV 线, 橙色, 长 2250mm plug-in terminal *2, EV wire, orange, 2250mm	15
6.4	电池-高压箱负极输出线 Negative output wires from Pack to PDU	快插端子*2, EV 线, 橙色, 长 160mm plug-in terminal *2, EV wire, orange, 160mm	15
6.5	高压箱-逆变器正极输出线 Positive output wires from Pack to PDU	OT8 端子+快插端子, EV 线, 橙色, 长 1000mm OT8 terminal+ plug-in terminal, EV wire, orange, 1000mm	15
6.6	高压箱-逆变器负极输出线 Negative output wires from Pack to PDU	OT8 端子+快插端子, EV 线, 橙色, 长 1000mm OT8 terminal+ plug-in terminal, EV wire, orange, 1000mm	15
6.7	高压箱-逆变器通讯线 communication wires from PDU to inverter	双头 RJ45 端子, 超五类屏蔽双绞线, 长 1000mm Double-ended R J45 terminal, Cat.5e Shielded Twisted Pair, 1000mm	15

注：具体型号规格和数量以供货前确认为准。

Note: The specific model, specification and quantity are subject to confirmation before delivery.

## 2. 产品特点 Product Features

### ◆ 小型化和易于安装

Compact size and easy installation

- ◆ 通过并联方案实现产品多样化，最大支持 12 个电池串联

Product diversification through parallel solutions , support max 12 pack in series.

- ◆ 长循环和高安全性

Long cycle life and high safety

- ◆ 认证：设计满足 UN38.3、IEC62619、CE

Certification: The design meets UN38.3, IEC62619, CE



图 1 系统示意图 (图片仅供参考，实际 8 个 pack 串联)

Figure 1 Product diagram (Picture for reference, actual 8 packs in series)

### 3. 技术规格和性能描述 Product Specification

#### 3.1 电芯技术参数 Technical Parameters (Cell)

亿纬储能采用自主研发和生产的磷酸铁锂电池 LF100LA(3.2V 100Ah)方形电芯，具有高安全性、长循环、高一一致性、优越的充放电性能和绿色无污染，主要技术参数如下：

The prismatic LFP battery cell LF100LA(3.2V 100Ah) which is independently developed and produced by EVE, has the characteristics of high safety, longer cycle life, high consistency, excellent charge/discharge performance and green pollution-free. The main technical parameters are as below:

表 3 电芯技术参数表

Table 3 Technical parameters (cell)

序号 No.	项目 Item	规格 Specification	备注 Remark
1	额定容量 Rated capacity	100Ah	0.5C, 25°C±2°C, 2.5-3.65V
2	额定电压 Rated voltage	3.2V	
3	工作电压 Operating voltage	2.5V~3.65V	
4	尺寸 Dimension	T×W×H= (50.1±0.5) mm* (160±0.8) mm* (118.5±0.5) mm	
5	重量 Weight	1.985±0.1kg	



图 2 电芯示意图

Figure 2 Battery cell: LF100LA

### 3.2 电池包技术参数 Technical Parameters (Battery Pack)

表 4 电池包技术参数表

Table 4 Parameters of EVE-HVI-5.0

序号 No.	项目 Item	规格 Specification	备注 Remark
1	成组方式 Configuration	1P16S	

序号 No.	项目 Item		规格 Specification	备注 Remark
2	额定容量 Rated capacity		100Ah	充放电电流: 0.5C 25±2°C Charge/discharge current: 0.5C 25±2°C
3	标称电压 Rated voltage		51.2V	
4	标称电量 Rated energy		5.12kWh	
5	电压范围 Voltage range		43.2 V-58.4V	单体电压 2.7V~3.65V Cell voltage 2.7V~3.65V
6	标准充电电流 Standard charge current		50A(0.5C)	25±2°C
7	最大充电电流 Maximum charge current		90A(0.9C)	
8	标准放电电流 Standard discharge current		50A(0.5C)	25±2°C
9	最大放电电流 Maximum discharge current		100A(1C)	
10	电池内阻 Internal resistance		≤30mΩ	30%SOC, AC 1kHz
11	工作温度 Operating temperature	充电 Charge	3°C~60°C	
12		放电 Discharge	-20°C~60°C	
13	出货状态 Delivery state		45%~55%SOC	
14	尺寸 Dimension		L×W×H= (420±2.0) mm* (442±2.0) mm* (131±2.0) mm	
15	重量 Weight		41±2kg	以实际为准 Subject to actual conditions
16	IP 等级 IP rating		IP20	
17	存储温度 Storage temperature	1 个月内 Within 1 month	-20°C~45°C	
18		1 年内 Within 1 year	0°C~35°C	
19	储存湿度		< 70% RH, 无冷	

序号 No.	项目 Item	规格 Specification	备注 Remark
	Storage humidity	凝水 <70% RH, no condensation	
20	充放电容量效率 Charge/discharge capacity efficiency	≥97%	
21	海拔高度 Application altitude	≤3000m	

### 3.3 电池系统技术参数 Technical Parameters (Battery System)

表 5 电池系统技术参数表

Table 5 Parameters of EVE-HVI-40.0

序号 No.	项目 Item	规格 Specification	备注 Remark
1	额定电压 Rated voltage	409.6V	1P16S*8
2	额定容量 Rated capacity	100Ah	充放电电流: 0.5C 25±2°C Charge/discharge current: 0.5C 25±2°C
3	额定能量 Rated energy	40.9kWh	
4	电压范围 Voltage range	345.6 V-467.2V	单体电压 2.7V~3.65V Cell voltage 2.7V~3.65V
5	标准充电电流 Standard charge current	50A(0.5C)	25±2°C
6	最大充电电流 Maximum charge current	90A(0.9C)	
7	标准放电电流 Standard discharge current	50A(0.5C)	25±2°C
8	最大放电电流 Maximum discharge current	100A(1C)	建议不多于 1 天 1 次循环 Recommended: no more than 1 cycle per day
9	工作温度 Operating temperature	充电 Charge	3°C~60°C
10		放电 Discharge	-20°C~60°C
11	存储温度 Storage temperature	1 个月内 Within 1 month	-20°C~45°C

序号 No.	项目 Item	规格 Specification	备注 Remark
12		1 年内 Within 1 year	0°C~35°C

## 4. 技术规格和外观及结构 Product Appearance and Structure

### 4.1 外形尺寸 Dimension

电池包由 16 个 LF100LA 电芯通过 1P16S 成组而成，尺寸如下图所示。

The battery pack is consisted of 16pcs LF100LA cells configured in 1P16S, and its dimension is presented as follows.

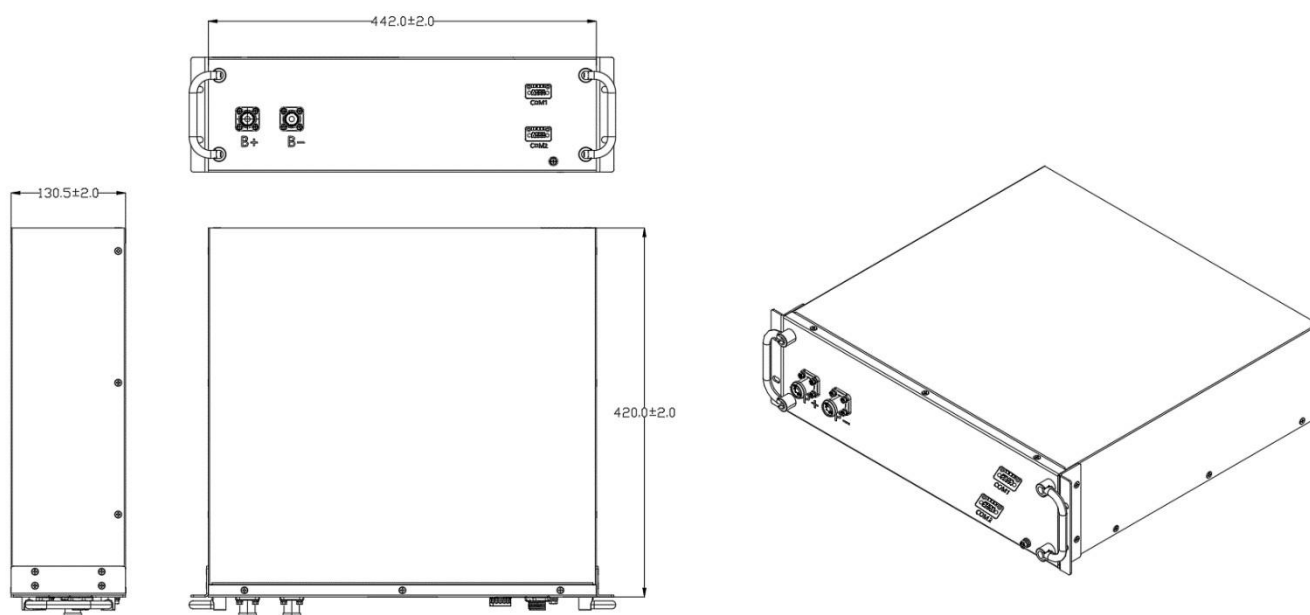


图 3 电池包尺寸图

Figure 3 The dimension of battery pack

## 4.2 接口 Connection interface

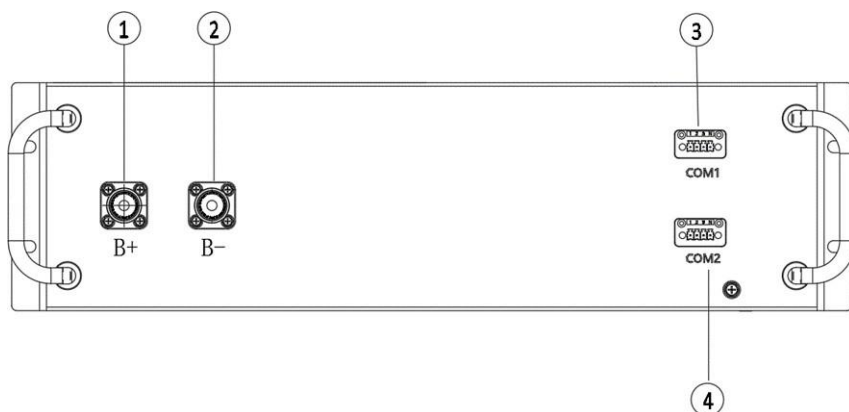


图 4 接口示意图

Figure 4 The diagram of connection terminals

表 6 电池接口定义表

Table 6 Definition of pack power interface

序号 No.	项目 Item	描述 Description
①	电池正极接口 B+	电池正极插座 (橙色) Pack Positive socket(orange)
②	电池负极接口 B-	电池负极插座 (黑色) Pack Negative socket(black)
③	通信口 1 COM1	电池通讯输入口 Communication input
④	通信口 2 COM2	电池通讯输出口 Communication Output

## 4.3 高压箱接口定义 Interface definition of PDU

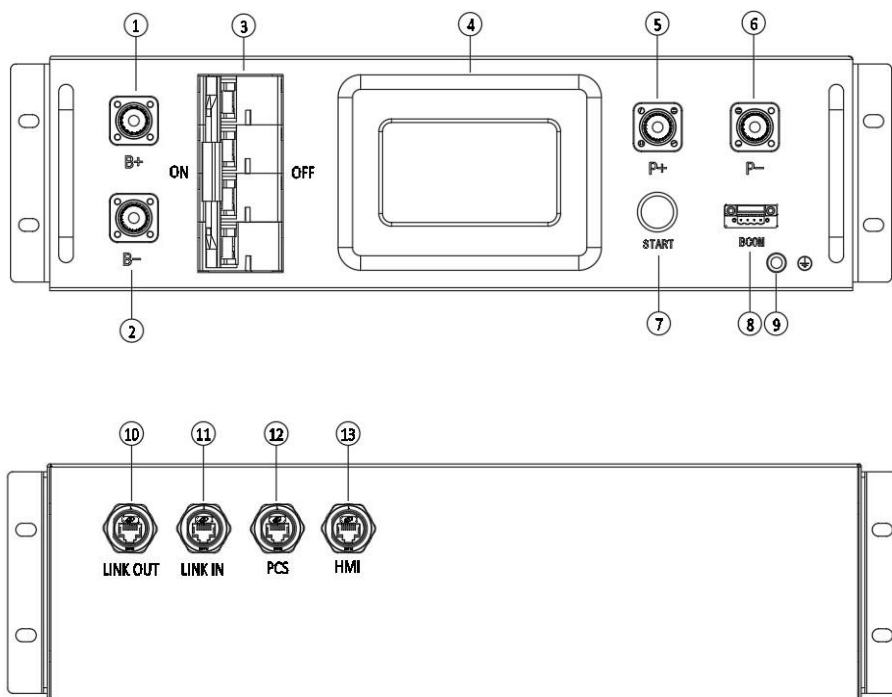


图 5 高压箱接口

Finger 5 interface of PDU

表 7 高压箱接口定义表


Table 7 Definition of PDU interface

序号 No.	项目 Item	描述 Description
①	电池总正接口 B+	电池正极插座 (橙色) Pack Positive socket(orange)
②	电池总负接口 B-	电池负极插座 (黑色) Pack Negative socket(black)
③	断路器 Breaker	用于控制电池与外部设备的电路连接 Used to manually control the connection between the battery rack and external devices.
④	显示屏 HMI	显示一些重要的电池信息 Display some important battery information.
⑤	逆变器正极接口 PCS+	连接逆变器的正极插座 (橙色) Connection position of PCS positive pole (orange)
⑥	逆变器负极接口 PCS-	连接逆变器的负极插座 (黑色) Connection position of PCS negative pole (black)
⑦	启动开关 START	DC24V 的启动开关, 控制高压箱的启动 (带运行和告警灯) A

		start switch of 24VDC power inside the high-voltage control box(with RUN and ALRM light).
⑧	电池通讯接口 BCOM	与第一个电池模块进行通讯 Communicative connection with the first battery module.
⑨	接地点 Grounding	连接电池系统和接地点 Connection to the battery rack and the ground point.
⑩	通讯输出 OUT COM	并机通讯的输出口 communication output.
⑪	通讯输入 IN COM	并机通讯的输入口 communication input.
⑫	逆变器通讯 PCS COM	连接电池和逆变器的通讯口 Connection Battery with Inverter.
⑬	显示屏通讯 HMI COM	用来升级显示屏程序的通讯口 Used to upgrade the HMI.

查看电池信息可通过⑩OUT COM / ⑪IN COM 接口 (4H5L) 进行 CAN 通讯; 与 Inverter 通过 ⑫ PCS 接口 (4H5L) 进行通信, 引脚定义如下:

To view battery information, you can communicate with CAN through OUT COM/IN COM interface (4H5L). Communicate with Inverter through PCS COM (4H5L). The pins are defined as follows:

	PIN	名称 Name	备注 Note
	PIN-4	CANH	⑩ ⑪ ⑫
	PIN-5	CANL	⑩ ⑪ ⑫

注: 图示为高压箱通信接口定义, 面板设计以实际交货为准

Note: The figure shows the COM interface definition of PDU, and the panel design is subject to the actual delivery.

#### 4.4 系统接线图 system wiring diagram



图 6 系统接线图

Figure 6 System Wiring Diagram

注：图示为系统（12个PACK）示意图，接口位置，PACK数量，线束数量等以实际为准；

Note: The figure shows the schematic diagram of the system (12 PACK). The position of interface, number of packs, and number of wiring harnesses are subject to actual conditions.

## 4.5 包装方案

### (1) pack 包装方案 Pack packaging solutions

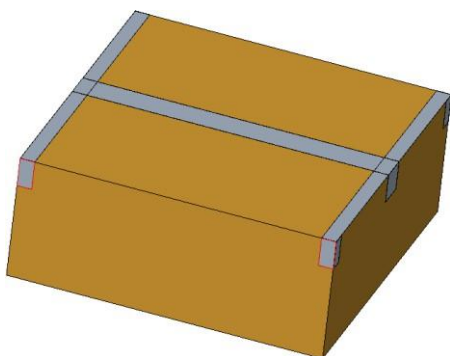


图 7 pack 包装图

Figure 7 Pack packaging diagram

表 8 pack 纸箱内清单

Table 8 List of contents in the cardboard box

序号 No.	项目 Item	用量 Number
1	HVI-5.0 电池包 HVI-5.0 Battery pack	1 EA
2	Pack 串联动力线 Pack series power cable	1 EA
3	Pack 串联通信线 Pack serial communication cable	1 EA
4	干燥剂 desiccant	1 EA
5	合格证 certificate of conformity	1 EA

(2) 高压箱包装方案 PDU packaging solutions

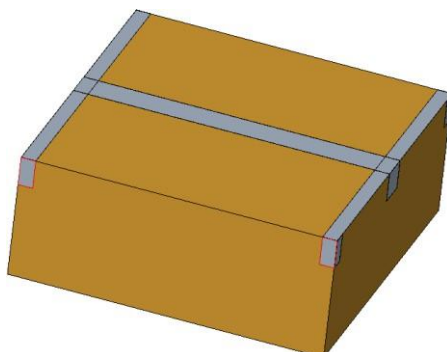


图 8 高压箱包装图

Figure 8 PDU packaging diagram

表 9 高压箱纸箱内清单

Table 9 List of contents in the cardboard box



序号 No.	项目 Item	用量 Number
1	高压箱 PDU	1 EA
2	电池-高压箱正极并联线 Battery -PDU positive parallel line	1 EA
3	电池-高压箱负极并联线 Battery - PDU negative parallel line	1 EA
4	高压箱-逆变器正极输出线 PDU -PCS positive output line	1 EA
5	高压箱-逆变器负极输出线 PDU - PCS negative output line	1 EA
6	高压箱-逆变器通信线 PDU - PCS communication line	1 EA

## 5. 产品使用说明 Product Instructions

1. 电池包可以单独使用，也可以多个串联使用，电池包不能并联使用，电池包的串联数量不能超过 12。

Battery packs can be used independently or in series. Battery packs cannot be used in parallel. The number of battery packs in series cannot exceed 12.

2. 电池包必须在规定的充电倍率或功率条件下使用，并且充电上限电压不得超过产品技术要求，防止电池过充电。以免影响电池的充放电性能、机械性能和安全性能。

The battery pack must be operated within the specified charge conditions. Overcharge will lead the electrical performance, mechanical performance and safety performance of the battery pack to be decreased.

3. 电池包必须在规定的放电倍率或功率条件下使用，并且放电下限电压不得超过产品技术要求，防止电池过放电。以免影响电池的充放电性能、机械性能和安全性能。

The battery pack must be operated within the specified discharge conditions. Over-discharge will lead the electrical performance, mechanical performance and safety performance of the battery pack to be decreased.

4. 电池包必须在规定的的环境条件下使用，过高或过低的温度环境都会影响电池的性能和安全。

The battery pack must be operated within the specified environment conditions, since too high or too low ambient temperature will affect the battery performance.

5. 电池包必须在清洁、通风的环境条件下使用或存储，避免与腐蚀性物质接触，并远离火源及热源。

The battery pack shall be used or stored in clean, dry and ventilated environmental conditions, and avoid contact with corrosive substances and keep away from fire and heat sources.

6. 电池系统禁止在强静电和强磁场的地方使用和存储，以免产生安全隐患。

The battery system shall not be used or stored in places with strong static electricity and strong magnetic fields to avoid potential safety hazards.

7. 电池系统安装或接线前，禁止拆下将正负极和通讯插座的防尘盖，避免造成接触短路和接口积灰。

Before the battery system is installed or wired, it is forbidden to remove the dust cover of positive and negative terminals, and the communication socket to avoid short circuit and interface dust.

8. 未经我司允许，不得私自拆卸或改装本产品，否则质保终止，若产生安全事故，我司概不负责。

The product shall not be disassembled or modified without the permission of EVE, otherwise the warranty will be terminated, and our company will not be responsible for any safety accidents.

9. 不得将电池系统与金属物体混放，避免造成短路，产生安全风险。

Do not mix the battery system with metal objects to avoid short circuits and safety risks.

10. 电池系统必须按照设计状态正立、平躺安装或存放，严禁侧放或倒置。

The battery system must be installed or stored standing or lying flat according to the design status. Do not place the battery pack on the side or upside down.

11. 电池系统第一次使用时，若有腐蚀，难闻气体或不正常现象，禁止使用。

Do not use the battery system if there is corrosion, unpleasant smell or any abnormality during the first usage.

12. 禁止将电池包投入水中。

Do not throw the battery into water.

13. 禁止反向充电或过放电。

Do not reversely charge or discharge the battery.

14. 电池系统的使用必须严格遵照以上要求，否则质保终止，造成产品的性能损坏以及安全事故，我司概不负责。

The usage of the battery system must strictly comply with the above requirements,

otherwise the warranty will be terminated, and EVE will not be responsible for any product performance damages or safety accidents.

## **6. 产品维护保养 Product Maintenance**

1. 电池系统长时间搁置或存放时，应保持在 30% ~ 50%SOC 的状态下。

When the battery system not in use for a long time, it is recommended to maintain the SOC at 30% ~ 50%.

2. 电池系统长时间搁置或存放时，建议每 3 个月进行一次补充电，防止电池过放亏电，每年应进行一次充放电循环。

When the battery system not in use for a long time, it shall be charged every 3 months regularly in case of the occurrence of over-discharge; And it is recommended to cyclically charge and discharge the battery module every 6 months.

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