

High-voltage Stacked Energy Storage Battery



- 1 Homely style, elegant and beautiful
- 2 With high voltage stack-based design, the backup energy can be expanded flexibly
- 3 Multiple electrical protections, safe and reliable
- 4 Adopting LFP cells, safe and stable
- 5 Single battery 5.12kWh, it can be expanded to 30.72kWh

Parameters/ Model		CE-10-S	CE-15-S	CE-20-S	CE-25-S	CE-30-S
Electrical Parameters	System Architecture					
	Stack Capacity	10.24kWh	15.36kWh	20.48kWh	25.6kWh	30.72kWh
	Number of Cells in Series	2 pcs	3 pcs	4 pcs	5 pcs	6 pcs
	Rated Voltage	204.8V	307.2V	409.6V	512V	614.4V
Operating Conditions	Voltage Range	179.2~227.2V	268.8~340.8V	358.4~454.4V	448~568V	537.6~681.6V
	Rated Capacity	50Ah				
	Continuous Charging Current	12.5A (Recommended) / 25A (Maximum)				
	Continuous Discharging Current	25A (Recommended) / 50A (Maximum)				
	Communication Interface	RS485/CAN				
	Protection Functions	Over-voltage, Under-voltage, Over-temperature, Low-temperature, Over-current, Short-circuit				
	Dimensions (W*D*H)	550*370*740mm	550*370*973mm	550*370*1209mm	550*370*1445mm	550*370*1681mm
	Weight	126Kg	180Kg	233Kg	287Kg	340Kg
	IP Rating	IP20/IP54				
	Installation Requirements	Indoor installation / Outdoor installation				
	Operating Temperature Range	-10°C to 55°C (Optimal: 20°C to 30°C)				
	Storage Temperature	-30~60°C				
	Operating Humidity	5~95%				
	Altitude Requirement	≤2000m				
	Cooling Method	Natural Cooling				
Other Parameters	Compatible Inverter	Pylontech, Growatt, Goodwe, Megarevo, Victron, Sunways, SunWize, ATESS, Ginlong				
	Certifications	UL1973, UL9540A, IEC62619, FCC, CE-EMC				



Shenzhen Coslight Power Technology Co., Ltd.

W: WWW.COSPOWERS.COM

A: No.2, Guangtian Road, No.3 Industrial Zone, Luotian Community, Yanluo Street, Baoan District, Shenzhen, Guangdong Province, P.R.C

T: +86-755-33185898

Copyright and final interpretation rights belong to Shenzhen Coslight Power Technology Co., Ltd.



此文件针对我司高压堆叠锂电池 CE-X-S 系列产品与市场主流品牌的逆变器匹配情况进行说明：

This document explains the matching situation between our high-voltage stacked lithium battery CE-X-S series products and mainstream brands' inverters in the market:

以下是我司电池可匹配的逆变器品牌：

但需要注意，在电池安装前需要将具体的逆变器品牌及型号提供给我司确认，以免出现型号或软件版本不一致导致匹配失败的情况。

The following are the inverter brands that our company's batteries can match:

However, it should be noted that the specific model and brand of inverter needs to be provided to our company for confirmation before battery installation, in order to avoid matching failures caused by inconsistent models or software versions.

序号 NO.	逆变器品牌 Inverter brand	备注 model
1	NingBo Deye Inverter Technology Co., Ltd. (Deye)	SUN-30K-SG01HP3; - Exp: 16/08/2026 - Cert: AZ 69026887 SUN-40K-SG01HP3; - Exp: 16/08/2026 - Cert: AZ 69026887
2	Afore New Energy Technology (Shanghai) Co., Ltd.	AF5K-SL; - Exp: 13/06/2026 - Cert: EESS-221130-0 AF6K-SL; - Exp: 13/06/2026 - Cert: EESS-221130-0
3	GoodWe Technologies Co., Ltd. (GOODWE)	GW6000-ET-20; - Exp: 29/10/2027 - Cert: AZ 69027616 GW8000-ET-20; - Exp: 29/10/2027 - Cert: AZ 69027616 GW15K-ET-20

		- Exp: 29/10/2027 - Cert: AZ 69027616
4	Shenzhen Sinexcel Isuna Energy Technology Co., Ltd.	Isuna 5000T; - Exp: 22/08/2028 - Cert: CS11257N Isuna 8000T; - Exp: 22/08/2028 - Cert: CS11257N Isuna 10000T; - Exp: 22/08/2028 - Cert: CS11257N Isuna 12000T; - Exp: 22/08/2028 - Cert: CS11257N Isuna 15000T - Exp: 22/08/2028 - Cert: CS11257N Isuna 20000T - Exp: 22/08/2028 - Cert: CS11257N
5	SolaX Power Network Technology Co., Ltd.	X1-VAST-5K; - Exp: 16/05/2028 - Cert: AZ 69028235 X1-VAST-8K; - Exp: 16/05/2028 - Cert: AZ 69028235 X1-VAST-10K; - Exp: 16/05/2028 - Cert: AZ 69028235 X1-HYBRID-5.0-D; - Exp: 24/05/2027 - Cert: AZ 69025698 X1-HYBRID-7.5-D; - Exp: 24/05/2027 - Cert: AZ 69025698





		X3-ULT-15K; • Exp: 25/06/2027 • Cert: AZ 69027828 X3-ULT-20K; • Exp: 25/06/2027 • Cert: AZ 69027828 X3-ULT-25K; • Exp: 25/06/2027 • Cert: AZ 69027828 X3-ULT-30K • Exp: 25/06/2027 • Cert: AZ 69027828
6	Wuxi Solinteg Power Co., Ltd.	MHS-3K-30; • Exp: 11/12/2026 • Cert: AZ 69027187 MHS-5K-30; • Exp: 11/12/2026 • Cert: AZ 69027187 MHS-8K-30; • Exp: 11/12/2026 • Cert: AZ 69027187 MHT-10K-40; • Exp: 10/02/2028 • Cert: AZ 69027984 MHT-15K-40; • Exp: 10/02/2028 • Cert: AZ 69027984 MHT-20K-40 • Exp: 10/02/2028 • Cert: AZ 69027984

签字盖章 sign /seal: _____



材料安全数据表

Material Safety Data Sheet

Sample name : Rechargeable Lithium-ion Battery

样 品 名 称 : 可充电锂离子电池

Consignor : Foton Pty Ltd

委 托 单 位 : /

东莞市全测电子科技有限公司
ATS Electronic Technology Co., Ltd.

东莞市全测电子科技有限公司
ATS Electronic Technology Co., Ltd.
广东省东莞市长安镇锦厦社区河东三路一号A栋三楼、B栋
一楼、C栋一楼, 523852
3/F. of Building A, 1/F. of Building B & 1/F. of
Building C, No.1, Hedong 3rd Road, Jinxia Community,
Chang'an, Dongguan, Guangdong, China

Tel: +86-769-38975958
Fax: +86-769-38975968
Web: www.dgats.com

材料安全数据表
Material Safety Data Sheet

1. Identification of the product and supplier (产品和厂商信息)		
Name of goods 样品名称	Rechargeable Lithium-ion Battery 可充电锂离子电池	
Type/Mode 样品型号	CE-5-S, 102.4V, 50Ah, 5120Wh	
Commissioned by 委托单位	Foton Pty Ltd	
Commissioner address 委托单位地址	205 McKinnon Rd, McKinnon, 3204 VIC, Australia	
Manufacturer 制造商	SHENZHEN COSLIGHT POWER TECHNOLOGY CO., LTD. 深圳昆宇电源科技有限公司	
Manufacturer Address 制造商地址	Building#101, No. 2 Guangtian Road, Luotian Community, Yanluo Street, Baoan District, Shenzhen, China 深圳市宝安区燕罗街道罗田社区广田路2 号厂房101	
Factory 生产单位	SHENZHEN COSLIGHT POWER TECHNOLOGY CO., LTD. 深圳昆宇电源科技有限公司	
Factory's address 生产单位地址	Building#101, No. 2 Guangtian Road, Luotian Community, Yanluo Street, Baoan District, Shenzhen, China 深圳市宝安区燕罗街道罗田社区广田路2 号厂房101	
Inspection according to 鉴定依据	GLOBALLY HARMONIZED SYSTEM OF CLASSIFICATION AND LABELLING OF CHEMICALS (GHS, Rev.11) 全球化学品统一分类和标签制度（GHS, Rev.11）	
Emergency telephone call 紧急联系电话	+86-13796636106	
接样日期: Receiving date: 2026-08-11	签发日期: Issue date: 2026-08-14	生效日期: Effective Date: 2026-08-14

Tested by:
主检: 赵振

Reviewed by:
审核: 潘世军



Approved by:
批准: 张振杰

2. Hazards Identification (主要危险性鉴定)

Explosive risk 爆炸危险性	This article does not belong to the explosion dangerous goods 该物品不属于爆炸危险品
Flammable risk 易燃危险性	This article does not belong to the flammable material 该物品不属于易燃危险品
Oxidation risk 氧化危险性	This article does not belong to the oxidation of dangerous goods 该物品不属于氧化危险品
Toxic risk 毒害危险性	This article does not belong to the toxic dangerous goods 该物品不属于毒害危险品
Radioactive risk 放射危险性	This article does not belong to the radiation of dangerous goods 该物品不属于放射危险品
Mordant risk 腐蚀危险性	This article does not belong to the corrosion of dangerous goods 该物品不属于腐蚀危险品
Other risk 其他危险性	This article is Rechargeable Lithium-ion Battery, Watt hour rate 5120Wh, which belong to the Class 9 - Lithium Battery hazard goods. 该物品为可充电锂离子电池, 瓦时率为5120Wh, 属于第九类危险品。

3. Composition/Information on Ingredient (成分/组成信息)

Hazardous Ingredients (Chemical Name) 危险成分(化学名称)	Concentration or concentration ranges (%) 含量或含量范围(%)	CAS Number CAS号
Stainless steel, powder, -150 mesh 不锈钢	13.00%	12597-68-1
Aluminum 铝	17.35%	7429-90-5
Copper 铜	9.00%	7440-50-8
Iron lithium phosphate 磷酸锂铁	26.00%	15365-14-7
Graphite 石墨	13.10%	7782-42-5
Polypropylene 聚丙烯	2.50%	9003-07-0
Lithium Hexafluorophosphate 六氟磷酸锂	2.00%	21324-40-3
Acetylene Black 炭黑	1.00%	1333-86-4
Polyvinylidene Fluoride 聚偏氟乙烯树脂	0.80%	24937-79-9
Styrene Butadiene Rubber 丁苯橡胶	0.30%	9003-55-8
Diethyl carbonate 碳酸二乙酯	4.10%	105-58-8
Ethylene Carbonate 碳酸乙烯酯	5.50%	96-49-1
Ethyl Methyl Carbonate 碳酸甲乙酯	4.20%	623-53-0
Carboxymethylcellulose Sodium 羧甲基纤维素	0.25%	9004-32-4
Polyvinyl chloride 聚氯乙烯	0.30%	9002-86-2
Continuous Filament Fiber Glass 玻璃纤维	0.30%	65997-17-3
Acrylonitrile Butadiene Styrene ABS树脂	0.30%	9003-56-9

4. First aid measures (急救措施)

Eye 眼睛

Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

万一接触，立即用大量的清水冲洗至少15分钟，翻起上下眼睑，直到化学的残留物消失为止，迅速就医。

Skin 皮肤

Remove contaminated clothes and rinse skin with plenty of water or shower for 15 minutes. Get medical aid.

万一接触，用大量水冲洗至少15分钟，同时除去污染的衣物和鞋子，迅速就医。

Inhalation 吸入

Remove from exposure and move to fresh air immediately. Use oxygen if available.

立即从暴露处移至空气清新处，如果呼吸困难给予输氧，立即就医。

Ingestion 食入

Give at least 2 glasses of milk or water. Induce vomiting unless patient is unconscious. Call a physician.

饮用两杯牛奶或水。如果当事人仍然清晰可以采取催吐的方法，并且立即就医。

5. Fire-fighting measures (消防措施)

Flash Point: N/A.

燃点: 不适用

Auto-Ignition Temperature: N/A.

自燃温度: 不适用

Extinguishing Media: Water, CO₂.

灭火介质: 大量水（降温），二氧化碳

Special Fire-Fighting Procedures: Self-contained breathing apparatus.

特殊灭火程序: 自给式呼吸器

Unusual Fire and Explosion Hazards: Cell may vent when subjected to excessive heat-exposing battery contents.

异常火灾或爆炸: 当电芯暴露于过热的环境中时，安全阀可能会打开。

Hazardous Combustion Products: Carbon monoxide, carbon dioxide, lithium oxide fumes.

燃烧产生的危险物品: 一氧化碳，二氧化碳，锂氧化物烟气

6. Accidental release measures (泄漏应急处理)

Steps to be Taken in case Material is Released or Spilled 为防止电池材料泄露或释放采取的措施

If the battery material is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. Wipe it up with a cloth, and dispose of it in a plastic bag and put into a steel can. The preferred response is to leave the area and allow the battery to cool and vapors to dissipate. Provide maximum ventilation. Avoid skin and eye contact or inhalation of vapors. Remove spilled liquid with absorbent and incinerate.

如果电池内部材料泄露，操作人员应立刻撤离事故区直到烟气消散。将通风设备打开吹散危险性气体。用抹布擦净试验区，清除溢出的液体，将泄露电池放进塑料袋中，然后放进钢制容器。避免皮肤和眼睛接触或吸入有害气体。

Waste Disposal Method 废弃物处置方法

东莞市全测电子科技有限公司

It is recommended to discharge the battery to the end, to use up the metal lithium inside the battery, and to bury the discharged battery in soil.

建议将电池完全放电，电池消耗内部的锂金属，并且深埋于土壤中。

7. Handling and storage (操作处置和储存)

The battery should not be opened, destroyed or incinerate, since they may leak or rupture and release to the environment the ingredients that they contain in the hermetically sealed container.

Do not short circuit terminals, or over charge the battery, forced over-discharge, throw to fire.

Do not crush or puncture the battery, or immerse in liquids.

禁止打开、毁坏或焚烧电池，因为电池有可能在这些处理过程中发生爆炸、破裂或泄露等事故。

禁止将电池短路、过充、强制放电或扔入火中。禁止挤压刺穿电池或将电池浸入溶液中。

Precautions to be taken in handling and storing 操作处置和储存中的防范措施

Avoid mechanical or electrical abuse. Storage preferably in cool, dry and ventilated area, which is subject to little temperature change. Storage at high temperatures should be avoided. Do not place the battery near heating equipment, nor expose to direct sunlight for long periods.

禁止物理或电滥用，禁止高温储存，最好将电池储存在阴凉、干燥、通风及温度变化较小的环境中。禁止将电池接触加热设备或将电池直接暴露于阳光中。

Other Precautions 其他要注意的防范措施

The battery may explode or cause burns, if disassembled, crushed or exposed to fire or high temperatures. Do not short or install with incorrect polarity.

拆解、挤压、直接放入火中或高温条件下，电池可能发生爆炸和燃烧。禁止短接或将电池正负极错误的安装在设备中

8. Exposure controls/personal protection (接触控制/个人防护)

Respiratory Protection 呼吸防护

In case of battery venting, provide as much ventilation as possible. Avoid confined areas with venting cell cores.

Respiratory Protection is not necessary under conditions of normal use.

当电池排气阀打开时，应尽量使通风设备开至最大，避免将打开排气阀的电芯局限在某一狭窄空间内。正常操作条件下，呼吸保护是不必要的。

Ventilation 通风条件

Not necessary under conditions of normal use.

正常使用条件下不必考虑。

Other Protective Clothing or Equipment 其他防护服装或设备

Not necessary under conditions of normal use.

正常使用条件下不必考虑。

Personal Protection is recommended for venting battery 电池开阀试验时应做好个人防护

Respiratory Protection, Protective Gloves, Protective Clothing and safety glass with side shields.

呼吸防护，防护手套，防护服装和有护边的安全玻璃罩都是要准备的。

9. Physical and chemical properties (物理和化学特性)

Appearance: Cuboid shape

外形：长方体形状

Ref. No.: ATSU260804811

认证编号：ATSU260804811

Odour: If leaking, smells of medical ether.

气味: 泄漏时, 有醚的气味。

pH: Not applicable as supplied.

酸碱度: 不适用

Flash Point: Not applicable unless individual components exposed.

闪点: 针对单个组分暴露情况, 其他不适用。

Flammability: Not applicable unless individual components exposed.

易燃度: 针对单个组分暴露情况, 其他不适用

Relative density: Not applicable unless individual components exposed.

相对密度: 针对单个组分暴露情况, 其他不适用。

Solubility (water): Not applicable unless individual components exposed.

溶解性 (水溶性): 针对单个组分暴露情况, 其他不适用。

Solubility (other): Not applicable unless individual components exposed.

溶解性 (其他): 针对单个组分暴露情况, 其他不适用。

10. Stability and reactivity (稳定性和反应活性)

Stability: Product is stable under conditions described in Section 7.

稳定性: 产品在第7节所述的条件下稳定。

Conditions to avoid: Heat above 70°C or incinerate. Deform. Mutilate. Crush. Disassemble. Overcharge.

Short circuit. Expose over a long period to humid conditions.

应避免的条件: 加热70°C 以上或焚烧、变形、毁坏、粉碎、拆卸、过充电、短路, 长时间暴露在潮湿的条件下。

Materials to avoid: Oxidising agents, alkalis, water.

应避免的材料: 氧化剂, 碱, 水。

Hazardous Decomposition Products: Toxic Fumes, and may form peroxides.

危险分解物: 有毒烟雾, 并可能形成过氧化物。

Hazardous Polymerization: N/A.

聚合危害: 不适用

If leaked, forbidden to contact with strong oxidizers, mineral acids, strong alkalies, halogenated hydrocarbons.

如果发生泄露, 避免与强氧化剂, 无机酸, 强碱, 卤代烃接触。

11. Toxicological information (毒理性资料)

Signs & symptoms: None, unless battery ruptures.

标志及症状: 无, 除非电池破裂。

In the event of exposure to internal contents, vapour fumes may be very irritating to the eyes and skin.

内部物质暴露的情况下, 蒸汽烟雾可能对眼睛和皮肤的刺激性。

Inhalation: Lung irritant.

吸入: 对肺有刺激性。

Skin contact: Skin irritant

皮肤接触: 对皮肤刺激性。

Eye contact: Eye irritant

眼睛接触: 对眼睛有刺激性。

Ingestion: Poisoning if swallowed

食入: 吞下中毒。

Medical conditions generally aggravated by exposure: In the event of exposure to internal contents, moderate to severe irritation, burning and dryness of the skin may occur, Target organs nerves, liver and kidneys.

下列情况下会危险人员身体健康: 如果与电池内部材料直接接触, 皮肤可能会出现干燥、灼烧等轻微或严重的刺激, 并且损坏靶器官的神经, 肝脏和肾脏。

12. Ecological information (生态学资料)

Mammalian effects: None known at present.

对哺乳动物的影响: 目前未知。

Eco-toxicity: None known at present.

生态毒性: 目前未知。

Bioaccumulation potential: Slowly Bio-degradable.

生物体内积累: 慢慢地生物降解。

Environmental fate: None known environmental hazards at present.

环境危害: 目前没有已知的环境危害。

13. Disposal consideration (废弃处置)

Waste Treatment 废弃处置方法

Recycle or dispose of in accordance with regulations. government, state & local

建议遵照国家和地方法规处置或再利用。

Attention for Waste Treatment 废弃注意事项

Deserted batteries couldn't be treated as ordinary trash. Couldn't be thrown into fire or placed in high temperature. Couldn't be dissected, pierced, crushed or treated similarly. Best way is recycling.

废电池不能被当作普通垃圾。不能扔进火中或置于高温下。不能解体, 刺穿, 破碎或类似的处理。最好的处理办法是回收利用。

14. Transport information (运输信息)

Label for conveyance: Class 9 battery hazard label, Cargo Aircraft Only Label

运输标签: 九类电池危险标签, 仅限货机标签

UN Number: UN3480 or UN3481

UN 编号: UN3480 or UN3481

EmS No: F-A, S-I

EmS 编号: F-A, S-I

Marine pollutant: No

海洋污染物: 无

Packing Group: II

包装类别: II

Class NO : Class 9

危险品级别: 9类

Proper Shipping name: 1) Lithium ion batteries; 2) Lithium ion batteries packed with equipment; 3) Lithium ion batteries contained in equipment. (including Lithium ion polymer batteries)

正确的装运名称: 1) 锂离子电池; 2) 与设备包装在一起的锂离子电池; 3) 安装在设备中的锂离子电池 (包括锂离子聚合物电池)

东莞市全测电子科技有限公司

Hazard Classification: The goods shall be complied with the requirements of Section IA of Packing Instruction 965 and Section I of Packing Instruction 966~967 of 67th DGR Manual of IATA (2026 edition), including the passing of the UN38.3 test. And also complies with the P903 of IMDG CODE (Amdt 42-24) Edition.

危害分类: 货物应符合IATA(2026年版)第67版DGR手册包装说明965第IA节,966和967第I节的要求, 包括通过UN38.3测试。并符合《国际危规》(Amdt 42-24)版P903。

15. Regulation information (法规信息)

Law information 法律信息:

《Dangerous Goods Regulations》

《危险品规则》

The UN Model Regulations: United Nations ST/SG/AC.10/1/Rev.23. Recommendations on the Safe Transport of Dangerous Goods

联合国《关于危险货物运输的建议书规章范本》ST/SG/AC.10/1/Rev23.

The International Civil Aviation Organization (ICAO) Technical Instructions for the Safe Transport of Dangerous Goods by Air Transport

国际民用航空组织(民航组织)危险货物安全航空运输技术规程

The International Air Transport Association (IATA) Dangerous Goods Regulations (67th Edition 2026)

国际航空运输协会(IATA)危险货物条例(第67版2026)

International Maritime Dangerous Goods Code. (IMDG CODE (Amdt 42-24) Edition)

《国际海上危险货物规则》。(IMDG CODE (Amdt 42-24)版)

Agreement concerning the International Carriage of Dangerous Goods by Road (ADR 2025)

《危险品公路运输欧洲协议》(2025版)

Regulations concerning the International Carriage of Dangerous Goods by Rail (RID 2025)

《国际危险货物铁路运输欧洲协定》(RID 2025版)

JT/T 617-2018 Regulations concerning road transportation of dangerous goods

JT/T617-2018《危险货物道路运输规则》

OSHA Hazard communication standard (29 CFR 1910)

OSHA危险通信标准(29 CFR 1910)

16. Other information (其他信息)

This file is only effective to the batteries provided by client. The client provides the composition information of batteries, and promises its integrity and accuracy. Users should read this file carefully, and use the batteries in correct method. ATS Electronic Technology Co., Ltd. doesn't assume responsibility for any damage or loss cause of misuse of batteries.

本文件仅对由委托单位提供的电池有效。该电池的成分信息由委托方提供并承诺其完整性和准确性。用户应仔细阅读此文件,并按照正确的方法使用电池,如因电池使用不当造成的损害或损失,东莞市全测电子科技有限公司不承担任何责任。

Cospowers Lithium Battery Limited Warranty Terms and Conditions

Version 2.0
Effective From: 23rd December, 2025



Cospowers Co., Ltd. (referred to as Cospowers) gives the following limited Standard Warranty against defects set out in these Terms and Conditions. This Warranty is applicable only in Australia for Cospowers Lithium-ion batteries (CE-10-S / CE-15-S / CE-20-S / CE-25-S / CE-30-S) (Battery).

Cospowers' Warranties are only provided to the original purchaser of the Battery (Purchaser), where the purchaser is Foton Pty Ltd (ABN 39 685 635 830), Address: 205 McKinnon Road, McKinnon, VIC 3204, Australia appointed as the sole and exclusive distributor, who on-supplies the Battery to accredited reseller or Installer, who on-supplies the Battery to another party, to that other-party (End-User). Cospowers' Standard Warranties are not otherwise transferable.

1. Warranty

1.1 Warranty Start Date

Generally, the Warranty Start Date is the day when the Product is delivered to the installation site where the Product is installed and operated for the first time (the 'Delivery Date'). The original purchaser may choose the first day after thirty (30) days from the Delivery Date as the Warranty Start Date, provided written documentation proving the delivery date is provided to Cospowers.

1.2 Product Warranty

Cospowers warrants that the Product will be free from defects in materials or workmanship for 10 years or 3,600 cycles (whichever comes first), from the Warranty Start Date, provided the usage complies with the operating conditions specified in the Cospowers specification and installation manual. One cycle is defined as one complete charge and one complete discharge.

1.3 Performance Warranty

Cospowers warrants that the Product will retain 60% of its Usable Energy for the periods shown in the table below, based on the ambient operating temperature of the Product. This warranty applies when the Product is operated correctly according to Cospowers operating guidelines. The ambient temperature refers to the temperature recorded by the Product's control module.

Ambient Temperature	Warranty Period	Guaranteed Remaining Energy
0–20°C	10 years	60%
20–30°C	7 years	60%
30–45°C	5 years	60%

1.4 Performance Warranty for Additional Battery Modules

Only new battery modules added to existing battery stacks are covered. All additions must follow the Cospowers battery extension guide (refer to the User Manual or contact Cospowers Service for details). The performance warranty runs from either the initial battery system installation date or the manufacturing date of the oldest battery in the stack, whichever applies. New battery stacks added on site are considered separate systems and require separate warranty registration.



2. Warranty Limitations and Exclusions

This Limited Warranty will not cover any defect caused by the following circumstances:

1. The Battery or packaging is damaged due to improper storage before installation;
2. Damage during the transportation of the Battery;
3. Use of an incompatible PCS (inverters, DC/DC converters, etc.);
4. Failure to comply with Cospowers' operating instructions, the installation guide and the maintenance instructions for the Battery;
5. Failure to comply with Cospowers' normal operational ambient temperature range of -10°C to 50°C for the Battery;
6. Failure to comply with safety regulations in respect of the Battery;
7. Faulty installation or commissioning of the Battery (e.g. the Battery being knocked over or falling);
8. Improper use or misuse of the Battery, including accidents and external influences beyond the control of Cospowers (e.g. lightning, fire);
9. Unauthorized repairs or alteration to the Battery;
10. Third-party products or parts are assembled or used in combination with Products of Cospowers;
11. Removal and reinstallation of the Product at a location other than the original installation location, without the express written consent of Cospowers;
12. A force majeure event (e.g. war, crime, natural disasters, etc.);
13. Flaws that do not adversely affect the proper functioning of the Battery (e.g. cosmetic defects and wear and tear);
14. Battery system left in a non-operational state for extended periods, which may cause over-discharge damage. Examples include: Battery switch off – 20% SOC in 8 months, 5% SOC in 2 months, 0% SOC in 1 month. Battery switch on – 20% SOC in 9 days, 5% SOC in 3 days, 0% SOC in 1 day.

3. Liability Limitations

Cospowers shall not be liable for indirect, incidental, consequential or special damages, howsoever caused, including but not limited to loss of use, loss of profits, loss of production, or loss of revenues. Travel and subsistence expenses as well as on-site installation, modification and maintenance costs will not be covered by the Standard Warranty. Cospowers will not accept any claims for compensation for power that the Battery does not charge or discharge.

4. Product Repair Service and Remedies

If the Battery is defective due to material and workmanship defects within the period specified in the Product Warranty section, or if the Battery can operate but fails to comply with its Performance Warranty as per the standard capacity test conditions (see Appendix), Cospowers will, at its sole discretion, provide one of the following remedies:

- Repair the defective Product at no cost to the Purchaser;
- Replace the Product with a new or equivalent refurbished Product at no cost to the Purchaser; or
- Provide a partial refund calculated based on the remaining warranty period or energy degradation as per the Performance Warranty section.

Cospowers guarantees to provide a replacement Product which performance is equal to or higher than the defective Product. For any Battery repaired or replaced under this Warranty, the remaining warranty period of the original Battery will be transferred to the replacement Battery. The original warranty period is not extended.

If the Battery is defective but is not covered under warranty, Cospowers may offer a paid repair service. The Purchaser may contact Cospowers to organise this paid repair service. Cospowers will offer a quotation that covers inspection, labour, freight, material, waste disposal and management costs. Cospowers warrants the workmanship of any paid repair for 6 months from completion.



5. Warranty Claim Process

5.1 Warranty Registration

Cospowers encourages the installer/end-user to register the warranty on the Cospowers portal at <https://www.foton.net.au/warranty/warranty-registration> within 30 days of installation. Registration helps expedite warranty claims and ensures proper warranty coverage.

5.2 Claim Initiation Process

In the event of a fault, an End-User should contact the Installer from whom the Battery system was purchased to arrange preliminary troubleshooting. If the product is suspected to be faulty, Cospowers will require a warranty claim submission with detailed reasons. The End-User or the Installer should lodge a warranty claim (Claimant) with Cospowers using one of the following contact methods:

- Email: support@foton.net.au
- Phone: +61 428 931 714
- Online Portal: <https://www.foton.net.au/warranty/warranty-registration>

The Claimant must notify Cospowers of any suspected defect within 30 days of discovery. Failure to notify within this timeframe may result in claim denial.

6. Transportation and Return

Cospowers will cover the outbound and inbound transportation costs to the Claimant by standard ground transportation up to a total of AUD \$200. Excess costs or costs in respect of any other mode of transportation (such as express delivery) requested by the Claimant will be borne by the Claimant.

It is the responsibility of the Claimant to contact Cospowers to organise the return of the allegedly defective Battery to Cospowers in the same packaging material and in reasonable condition as provided by the replacement. A Battery not returned within 4 weeks after delivery of the replacement will be billed to the Claimant for the replacement unit in addition to the delivery and service charges incurred by Cospowers.

7. Statutory Rights and Australian Consumer Law

In addition to the warranty given by Cospowers, consumers have statutory warranty rights that will not be limited or replaced by this warranty. For customers in Australia, our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.



8. Contact Details

1. Sole Australian Authorized Importer & Distributor:

Foton Pty Ltd
Address: 205 McKinnon Road, McKinnon, VIC 3204, Australia
Phone: +61 428 931 714
Email: support@foton.net.au
Website: <https://www.foton.net.au/>

2. Manufacturer (China):

Cospowers Co., Ltd.
Address: No. 28, Dongqi Road, Dongying City, Shandong Province, China
Phone: +86-546-7768891
Email: dysales@cospowers.com
Website: <http://en.cospowers.com/>

Appendix A: Standard Capacity Test Condition

For this Limited Warranty, the remaining Usable Energy is measured and calculated using the following testing method and values:

Test Procedure:

- Ambient temperature is maintained between 25–28°C;
- Discharge the battery with constant current until the battery reaches End of Discharge Voltage (EODV) or its self-protective voltage;
- Wait 10 minutes;
- Charge the battery with constant current and constant charge voltage to its full capacity;
- Wait 10 minutes;
- Discharge the battery with constant current until it reaches EODV or its self-protective voltage. Record the current, voltage and time;
- The remaining Usable Energy is calculated as the integral of discharge time, current and voltage.



Test Value List:

Product Model	End of Discharge Voltage (V)	End of Charge Voltage (V)	Constant Current (A)
CE-10-S	179.2	227.2	50
CE-15-S	268.8	340.8	50
CE-20-S	358.4	454.4	50
CE-25-S	448.0	568.0	50
CE-30-S	537.6	681.6	50

Note: End of Discharge Voltage (EODV), End of Charge Voltage, and Constant Current values must be verified against current product datasheets.

CE-X-S Series High Voltage Stacked Energy Storage Battery

User Manual



Document Version: A11

Archiving Date: 2026 - 08 - 04

Shenzhen Cospowers Technology Co., Ltd.

Notice

1. The products, services, etc. you purchase are subject to the commercial contracts and terms of Shenzhen Cospowers. Some products and services described in this document may not be within your purchase or usage scope. Unless otherwise agreed in the contract, Shenzhen Cospowers Company makes no express or implied statements or guarantees.
2. Due to product version upgrades or other reasons, the content of this document will be updated periodically. Unless otherwise specified, the content of the document does not replace the safety precautions in the product label or user manual. All descriptions in the document are for guidance only.
3. Changes to the content will not be notified separately.

To provide customers with comprehensive technical support, users can contact the nearest company office or customer service center,
or directly contact the company's headquarters.

Shenzhen Cospowers Technology Co., Ltd.

Address: No. 2, Guangtian Road, 3rd Industrial Zone, Yanluo Street, Bao'an District, Shenzhen

Postal Code: 518105

Customer Service Hotline: +86-0755-33185898

Preface

Instructions

This manual is applicable to the CE-X-S energy storage system (battery cluster + high voltage control box). This manual mainly introduces product information, installation wiring, system maintenance, and other content. Please read this manual carefully before installing and using this product to understand the product safety information and familiarize yourself with its functions and features. Please keep all accompanying materials properly for future reference.

Symbol Definitions

The safety symbols referenced in this manual are shown in the table below. These symbols are used to alert readers to the safety precautions that should be followed during equipment installation, operation, and maintenance.

	This symbol indicates that the interior of the device contains high voltage, and touching it may result in electric shock hazards.
	All external power connections must be disconnected before performing maintenance operations on the equipment.
	This symbol indicates that the temperature here is above the acceptable range for the human body. Please do not touch it arbitrarily to avoid personal injury.
	Maintenance, repair, and other operations can only be performed 10 minutes after the system is powered off.
	During the operation of the equipment, noise may be generated; it is recommended to wear noise-canceling earplugs.
	This symbol indicates that this is a protective grounding (PE) terminal, which needs to be securely grounded to ensure the safety of the operator.

Version History

The latest version in the modification record includes updates from all previous document versions.

Table of Contents

Notice	2
Shenzhen Cospowers Technology Co., Ltd.	2
Preface	3
Instructions	3
Symbol Definitions	3
Table of Contents	4
Chapter 1 Safety Instructions	6
1.4 Battery Safety Precautions	7
1.4.1 Explosion Risk	7
1.4.2 Fire Risk	7
1.4.3 Electric Shock Risk	7
1.5 Operational Safety	8
1.6 Electrical Safety	8
Chapter 2 Product Introduction	9
2.1 Product Overview	9
2.1.1 Function Overview	9
2.1.2 Product Features	9
2.1.3 System Topology Diagram	9
2.2 Technical Parameters	10
2.2.1 System Technical Parameters	10
Table 2-1 System Technical Parameters	11
2.3 Appearance Description	11
2.3.1 Product Appearance	11
2.4 Indicator Light Description	12
2.5 Unboxing and Storage	12
2.5.1 Unboxing Inspection	12
2.5.2 Delivery Scope	13
2.5.3 Storage	13
Chapter 3 Installation	14
3.3 Installation Requirements	14
3.3.2 Installation Carrier Requirements	15
3.3.3 Installation Angle Requirements	15
3.3.4 Installation Distance Requirements	15
3.4 Installation Tools	15
3.5 Installation Steps	17
Chapter 4 Electrical Connections	18
4.3 Electrical Connection Overview	21
4.3.1 Power line connection	21
4.3.2 Communication Line Connection	22
4.3.3 Ground Connection	23
Chapter 5 System Operation	25
5.1 Power-On Operation of the System	25
5.1.1 Safety Check Before Powering On	25
5.1.2 Power-On Steps	25

5.2 System Power Down Operation	26
6.1 Product Cleaning Instructions	27
6.2 Product Storage	27
6.3 Product Maintenance	27
6.3.1 Annual Inspection Items	28
7.1 Battery Cannot Be Charged	29
7.2 SOC Jump	29
7.4 Warranty	29
Conditions	30
Disclaimer	30
Appendix:	31

Chapter 1 Safety Instructions

This manual covers the introduction, installation, and use of the CE-X-P series products from Shenzhen Cospowers Power Technology Co., Ltd. All safety instructions in this manual must be strictly followed at all times. To avoid potential casualties and property damage during installation or operation, and to effectively extend the product's lifespan, please read all safety instructions carefully.



Danger

“Danger” means that there is highly potential danger. If it is not avoided, it will cause personnel injury or death and other critical accident.



Warning

“Warning” indicates a hazard with a medium level of potential. If not avoided, it will result in personnel injury or death and other serious accidents.



Caution

“Caution” indicates a hazard of light potential that, if not avoided, could result in minor or moderate injury.

Attention

‘Attention’ indicates a potential hazard that, if not avoided, may cause equipment failure or property damage.

“Instructions” are additional information in the manual that adds emphasis to the content. They may also provide tips or tricks for optimizing the use of the product that can help you solve a problem or save time.

1.1. Installation Environment Requirements:

◆ The installation environment must be friendly. It is strictly prohibited to perform any operations on the product (including but not limited to handling, installation, powering on, maintenance, connecting power, or working at heights) in adverse weather conditions (such as thunderstorms, rain and snow, strong winds above level 6, etc.).

◆ In the event of a fire on site, evacuate immediately and establish a safety perimeter; entry into the burning area is strictly prohibited.

Note: Shenzhen Cospowers is not responsible for any damage to the equipment caused by force majeure (such as earthquakes, floods, volcanic eruptions, mudslides, lightning strikes, fires, wars, armed conflicts, typhoons, hurricanes, tornadoes, and other extreme weather).

1.2. Installation Personnel Requirements:

◆ Only qualified electricians or personnel with professional qualifications who understand various safety precautions and master the correct operating methods are allowed to operate this product.

◆ Personnel operating the equipment, including operators, trained personnel, and

professionals, should possess the special operation qualifications required by the local country, such as high-voltage operation, working at heights, and special equipment operation qualifications.

- ◆ Operators should be fully familiar with the composition and working principles of the energy storage system.

- ◆ Operators should have training or operational experience with the equipment and be able to clearly identify various potential sources of danger and hazard levels during installation, operation, and maintenance.

- ◆ Operators should be fully familiar with the relevant standards and regulations of the country/region where the project is located.

- ◆ Operators should be fully familiar with the product manual for outdoor cabinets and internal electrical equipment.

Only personnel who meet the above requirements are allowed to perform installation, operation, maintenance, and repair on the battery system. Unauthorized personnel must not perform any operations on the energy storage integration system and should maintain a sufficient safety distance from the system to avoid accidents.

1.3 Installation Tool Requirements:

- ◆ When installing products or terminals, it is essential to use appropriate tools and tighten screws according to the specified torque; otherwise, it may lead to product damage.

- ◆ Before using tools, please learn the correct usage methods and understand the required installation torque to avoid injury and damage to the product.

1.4 Battery Safety Precautions

1.4.1 Explosion Risk

Do not subject the battery to any strong impacts.

- Do not cause mechanical damage to the battery (such as puncturing, deforming, or disassembling).

- Do not heat the battery or dispose of it in fire.
- Do not install the battery in an environment where explosions may occur.
- Do not place the battery in water or other liquids.

1.4.2 Fire Risk

- Do not disassemble the battery.
- Do not handle wet batteries or use wet tools.
- Do not immerse the battery in water or expose it to moisture and liquids.
- Keep the battery out of reach of children and animals.
- Wear appropriate clothing, protective gear, and gloves to prevent direct contact with DC voltage.
- Use insulated tools when handling the battery.
- Remove metal jewelry before working on DC circuits.

1.4.3 Electric Shock Risk

Do not disassemble the battery.

- Do not handle wet batteries or use wet tools.
- Do not immerse the battery in water or expose it to moisture and liquids.
- Keep the battery out of reach of children and animals.

- Wear appropriate clothing, protective gear, and gloves to prevent direct contact with DC voltage.
- Use insulated tools when handling the battery.
- Remove metal jewelry before working on DC circuits.

1.5 Operational Safety

1. Please do not open the machine's outer casing without authorization, as there is a risk of electric shock;
2. Only qualified electrical engineers who have read this user manual and possess relevant electrical and safety knowledge are allowed to operate and maintain this system;
3. Pay attention to and comply with the warning labels or safety instructions on the product during operation;
4. Follow the precautions listed in this manual and other related documents for this equipment;
5. Check whether the equipment or circuit connections are secure, and confirm that the device is in a safe state before operating;
6. There is a lethal high voltage inside the product; do not touch the metal parts of the cabinet, connection terminals, or conductors while it is in operation;
7. Damaged equipment or system failures may cause electric shock or fire; perform a preliminary visual inspection of the equipment for any damage or other hazards before operation, and conduct necessary insulation and live checks.

1.6 Electrical Safety

1. Before powering on, please ensure that the device's power cable is correctly connected and that the ground wire is properly attached.
2. When the device needs to be rewired, please turn off the device, disconnect the power supply and battery switch, and ensure the system is completely shut down; otherwise, the output terminal may still be live, posing a risk of electric shock.

Chapter 2 Product Introduction

2.1 Product Overview

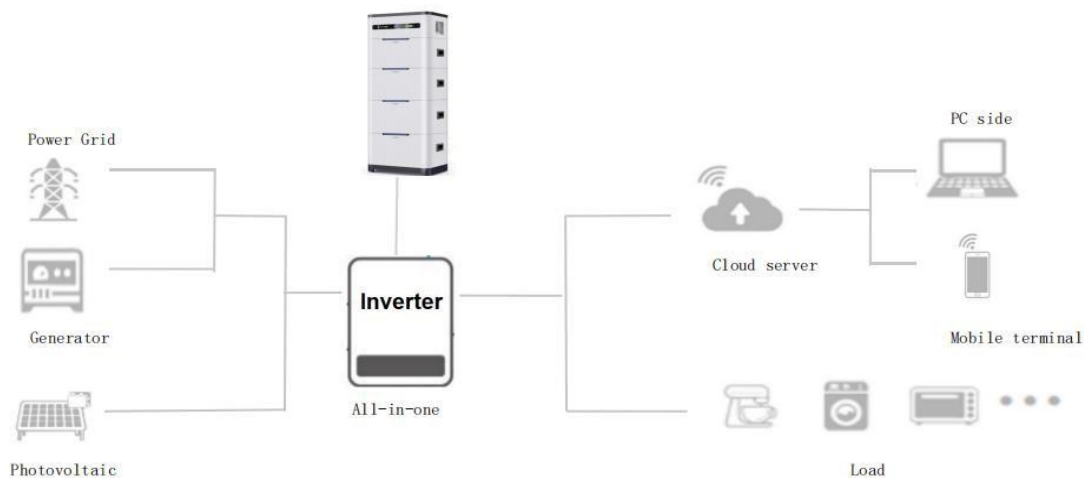
2.1.1 Function Overview

The CE-X-S series high-voltage stacked energy storage battery is a high-tech product developed by Shenzhen Cospowers, designed for multiple application scenarios. It integrates a lithium battery pack, a high-voltage control box, and a BMS (Battery Management System). The system features a four-level protection strategy and supports the series connection of 2 to 6 battery modules, with a stacked installation method that simplifies installation and maintenance. As part of a photovoltaic energy storage system, it can be paired with solar panels and inverters for applications such as emergency backup power for homes (in cases of power shortages, outages, and natural disasters like typhoons and earthquakes), peak and off-peak electricity price arbitrage, self-consumption, and grid dispatch subsidies.

2.1.2 Product Features

1. Home-style design, elegant and beautiful;
2. High-voltage stacked design, backup capacity can be flexibly expanded;
3. Multiple electrical protections, safe and reliable;
4. Uses lithium iron phosphate cells, safe and stable;
5. A single battery box has a capacity of 5.12 kWh, expandable up to 30.72 kWh.

2.1.3 System Topology Diagram



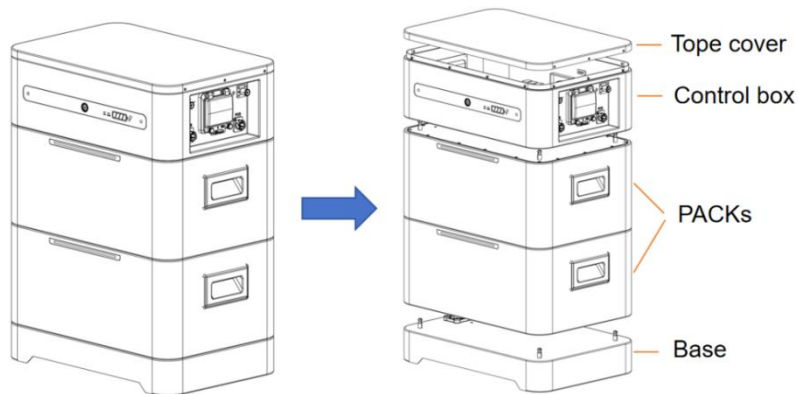
2.2 Technical Parameters

2.2.1 System Technical Parameters

Parameter/Specification Model		CE-10-S	CE-15-S	CE-20-S	CE-25-S	CE-30-S
Electrical Parameters	System Structure					
	Stacked Capacity (kWh)	10.24	15.36	20.48	25.6	30.72
	Number of Series Batteries	2pcs	3pcs	4pcs	5pcs	6pcs
	Rated Voltage (V)	204.8V	307.2V	409.6V	512V	614.4V
	Voltage Range (V)	179.2~227.2	268.8~340.8	358.4~454.4	448~568	537.6~681.6
	Rated capacity (Ah)	50				
	Standard charging and discharging current (A)	0.25C/0.5C				
	Maximum charging and discharging current (A)	0.5C/1C				
	Contact Methods	RS485/CAN				
	Protection Function	Over Voltage, Under Voltage, Over Temperature, Low Temperature, Over Current, Short Circuit				
	Dimensions (mm)	550*370*737	550*370*973	550*370*1209	550*370*1445	550*370*1681
	Weight (kg)	Approximately 119	Approximately 169	Approximately 220	Approximately 270	Approximately 321
	Protection Level	IP54				
Working Conditions	Installation Conditions	Indoor or Outdoor Installation				
	Operating temperature range	-10°C~55°C				
	Optimal operating temperature range	20°C~30°C				
	Storage temperature	-30°C~60°C				
	Operating humidity	5%~95%				
	Altitude requirement	≤2000m				
	Cooling method	Natural Cooling				
Others	Compatible Inverters	Power-N, GoodWe, Ginlong, Magenergy, Victron, New Ai, Shangweisi, Times Energy Innovation, Jinlang				

Table 2-1 System Technical Parameters

The battery system consists of a control box, battery packs (PACKs), and a base. This system can operate within a voltage range of 118.8V to 642.4V, allowing for 2-6 battery packs to be stacked and connected in series.



The images shown are for reference only; actual products may vary.

2.3 Appearance Description

2.3.1 Product Appearance

Table 2-2 Product Appearance

	①	LOGO
	②	POWER switch
	③	Operation Indicator Light
	④	Alarm Indicator Light
	⑤	Power Indicator Light
	⑥	Battery Negative
	⑦	Battery Positive
	⑧	Circuit Breaker Switch
	⑨	EMS Communication Port
	⑩	PCS communication port
	⑪	Handle
	⑫	Battery module (supports 2-6 units)
	⑬	Grounding hole
	⑭	Base
	⑬	Base
	⑭	Pulleys *4

2.4 Indicator Light Description

The battery system is equipped with two types of indicator lights: one is the SOC indicator light, and the other is the operating status indicator light.

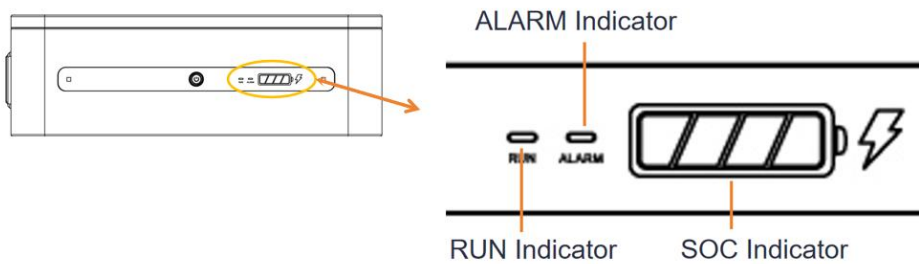


figure 2-2 LED Indicators

The SOC indicator displays the current SOC value of the battery. There are a total of 4 indicator lights, each representing 25% of the SOC.

SOC Indicator	SOC
	0
	$0 < \text{SOC} \leq 25\%$
	$25 < \text{SOC} \leq 50\%$
	$50 < \text{SOC} \leq 75\%$
	$75 < \text{SOC} \leq 100\%$

The status indicator shows the current state of the battery system, as shown in the table below.

Status indicator	Color	Status	Description
	Green	Solid	The battery system is operating normally
		Flashing	Battery system in power-on or standby state
	Red	Solid	Battery system failure
		Flashing	Battery system alarm

2.5 Unboxing and Storage

2.5.1 Unboxing Inspection

This product has undergone strict testing before delivery, but it may still be damaged during transportation. Therefore, please inspect it carefully before signing for receipt.

List of parts and components included in the delivery scope.

- Check if the packaging box is damaged.
- Verify the quantity of delivered items against the packing list to ensure the delivery matches the order.
- Open the package and check for any damage to the internal items.

If any damage or missing items are found, please contact the shipping company and provide relevant photos or the names and quantities of the missing items for better service.

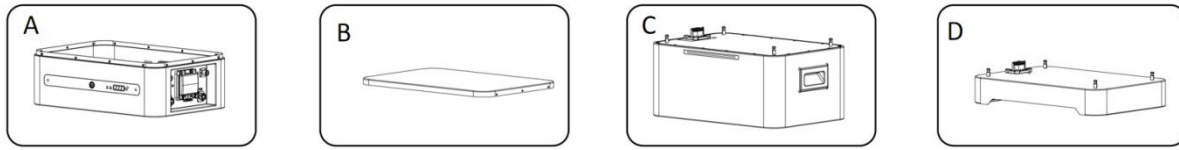
Please do not discard the original packaging box. It is recommended to store the equipment in its original packaging after disposal.

Note: Check the product for any external damage or structural component damage, and confirm that the packing list matches the order placed. If there are any issues with the above inspection items, do not install the equipment and contact Shenzhen Cospowers in a timely

manner. If using tools to unpack, be careful not to damage the product.

2.5.2 Delivery Scope

Main Components



Item	Name	Quantity
A	Control box	1
B	Top cover	1
C	PACK	2 -6
D	Base	1

2.5.3 Storage

If the battery is not installed immediately, it must be stored properly.

- Please store the battery in its original packaging and keep the internal desiccant.
- Store the battery in a clean, dry place, avoiding direct sunlight and rain.

- The storage location must be away from harmful gases, flammable and explosive materials, and corrosive chemicals. The battery should be protected from mechanical shocks, high pressure, strong magnetic fields, and direct sunlight.

- It is recommended to maintain the temperature between 15°C and 25°C and to install the battery as soon as possible. The storage temperature of the battery should be controlled between -10°C and 35°C, with a storage time not exceeding 6 months, and the total storage period should not exceed 12 months.

- Under ideal conditions, the maximum storage time for the battery is 12 months. However, due to uncertainties in warehouse conditions (such as temperature fluctuations beyond the normal storage range), the battery should be charged to 40% SOC every 6 months of storage.
- Handle the battery with care.
- The relative humidity of the storage environment must always be maintained between 0% and 95%, with no condensation.
- The number of stacked packaged battery modules must not exceed 6 layers. Direct stacking of unpackaged batteries is strictly prohibited.
- Packaging and batteries should be kept upright.
- Regularly check for damage or pest infestation in the packaging. If any damage is found, the product should be replaced immediately.
- Always prioritize using the batteries that have been stored the longest to ensure that no battery exceeds its recommended storage period.
- It is recommended to charge lithium-ion batteries once every 12 months at the recommended storage or transport temperature.

Chapter 3 Installation

3.1 Installation Safety Requirements



warning

This product or system must be operated by qualified personnel! Failure to follow the safety instructions in this manual or operation by unqualified personnel may result in serious personal injury or significant property damage.



warning

Strictly adhere to local relevant standards and requirements during the installation process.

3.2 Pre-installation Inspection

1. Check for any damage to the product upon receipt, such as deformation, holes, cracks, or other signs that may cause damage to the equipment inside the packaging. If there is any damage, do not open the package and contact your dealer.
2. Verify that the equipment model is correct. If there is a discrepancy, do not open the package and contact your dealer.
3. Check that the type and quantity of delivered items are correct and that there is no visible damage. If there is any damage, please contact your dealer.



attention

Material shortages or discrepancies may prevent the energy storage system from being installed completely.

3.3 Installation Requirements

3.3.1 Installation Environment Requirements

1. This energy storage system is designed for indoor or outdoor use, meeting the IP54 protection rating, and is suitable for installation in dry and low-dust environments.
2. The equipment must not be installed in flammable, explosive, or corrosive environments.
3. The installation location should be out of reach of children and should avoid easily accessible areas. The surface of the equipment may reach high temperatures during operation, so precautions should be taken to prevent burns.
4. The installation space must meet the equipment's ventilation and heat dissipation requirements as well as the operational space requirements.
5. The foundation must ensure the stability and safety of the energy storage system installation location.
6. Install the battery in a location that is convenient for electrical connections, operation, and maintenance.
7. Do not install the equipment within 500 meters of the coastline or in areas susceptible to sea breeze. Otherwise, the battery may corrode, leading to fire. The installation height of the equipment should facilitate operation and maintenance, ensuring that the device indicator lights and all labels are easily visible, and that the terminal blocks are easy to operate.
8. The installation altitude of the equipment must be below the maximum operating altitude of 2000m.
9. Stay away from strong magnetic field environments to avoid electromagnetic interference. If there are radio stations or wireless communication devices below 30MHz near the installation location, ensure that the distance between the battery and the electromagnetic interference devices is greater than 30m.

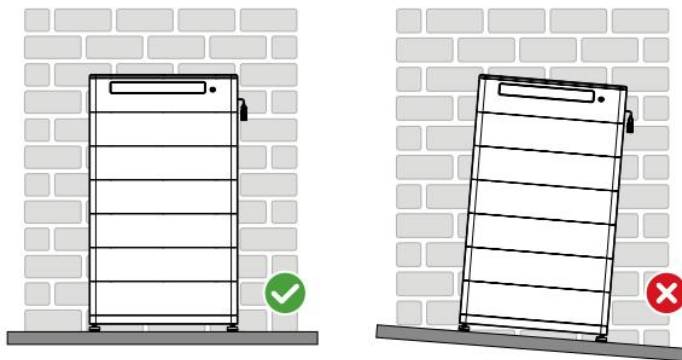
10. When installed outdoors, the battery system needs to have a rain cover on top to prevent direct sunlight and rain exposure.

3.3.2 Installation Carrier Requirements

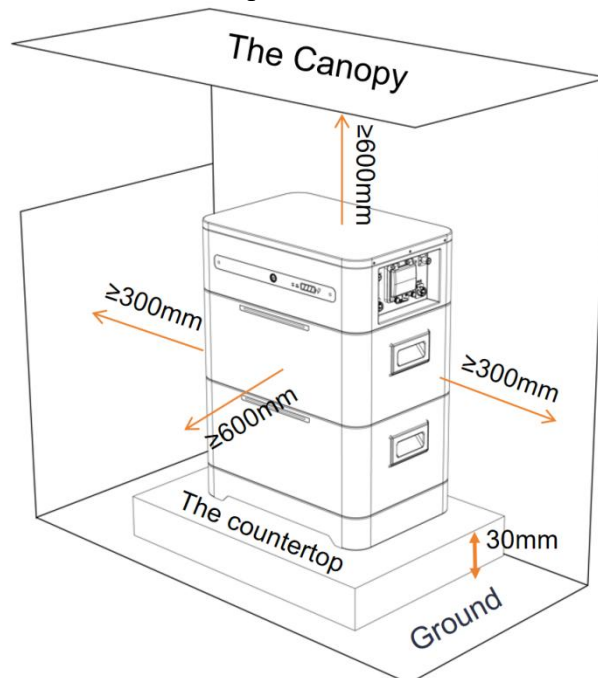
1. The installation carrier must not be made of flammable materials and must have fire resistance.
2. Please ensure that the installation carrier is sturdy and reliable, capable of bearing the weight of the equipment.
3. The battery system must be installed close to the wall to avoid tipping over.
4. The battery system needs to be installed on a fixed step, with the step at least 30mm above the ground to prevent water from flowing back into the battery system.

3.3.3 Installation Angle Requirements

Ensure the equipment is installed level, without tilting or inversion.



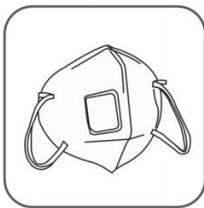
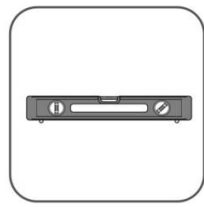
3.3.4 Installation Distance Requirements



3.4 Installation Tools

The installation tools include but are not limited to the following recommended tools; other auxiliary tools may be used if necessary.

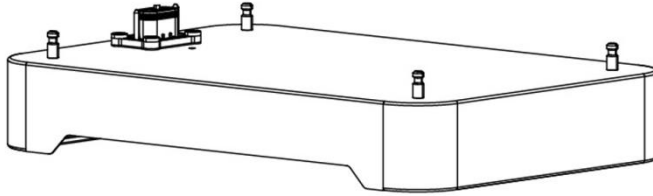
Table 4-1 Tool List

				
Goggles	Dust mask	Safety gloves	Safety shoes	Hydraulic pliers
				
Hammer drill (φ10)	Rubber mallet	Measuring tape	Utility knife	Wire stripper
				
Level	Torque wrench (16 mm, 17mm, 35mm)	Torque screwdriver (ST6.3, M4, M5, M6)	Electric drill (ST6.3, M4, M5, M6)	Marker

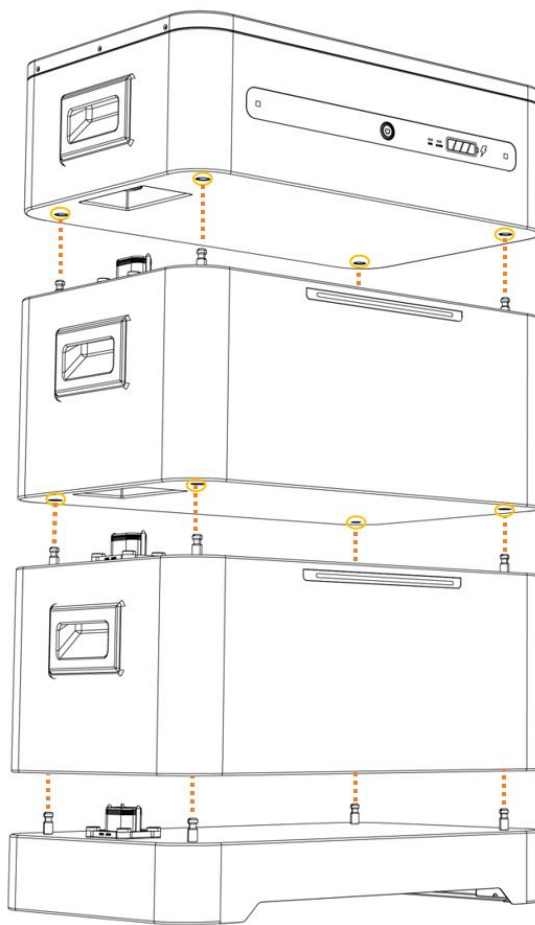
3.5 Installation Steps

At the installation location, create a work surface and a rain shelter. Remove the battery base from the packaging and place it in the intended position on the work surface. Install rubber pads or wheels to ensure the base is level and stable;

Step 1. Place the base on the intended work surface and ensure the base is level and stable;



Step 2. Place the battery box and control box on top of the base at once, aligning the upper positioning blind holes with the four positioning columns of the lower layer.



Warning

- Ensure that the control box is installed above the battery, and do not install the battery above the control box.
- When installing the battery system, ensure that it is level and secure. When placing the battery base, battery, or control box, confirm that the holes on the upper and lower layers are aligned.
- Before installing the battery system, the cover plate of the battery module's wiring port must be removed.

Chapter 4 Electrical Connections

4.1 Safety Instructions

Danger !

High voltage danger! Electric shock danger!

- Do not touch live parts
- Before installation, ensure that the AC and DC sides are not powered on
- Do not place the integrated energy storage system on combustible surfaces

Danger!

When a ground fault occurs in an integrated energy storage system, there may be a deadly high voltage in the part that was not originally charged. If accidentally touched, it is very dangerous. Before performing this operation, ensure that no grounding fault occurs in the system. At the same time, it is also necessary to take relevant protective measures.

Warning!

- All electrical connections must comply with the relevant standards and specifications of the country where the project is located
- The energy storage integrated system can be connected to the power grid only after it is licensed by the local power supply company and installed by professional technicians

Warning!

Warning!

Only professional electricians or personnel with professional qualifications can make electrical connections to this product

Strictly follow the cable connection labels inside the device to connect cables



Warning!

Before connecting cables, disconnect the AC/DC side of the energy storage integrated system



Warning!

The entry of wind sand and moisture may damage the electrical equipment in the energy storage integrated system, or affect the operation performance of the equipment

During the sandstorm season or when the relative humidity in the surrounding environment is greater than 95%, avoid electrical connection

When there is no wind and sand, and the weather is clear and dry, then start the connection work



Warning!

Failure to comply with torque requirements may result in a joint fire

During electrical connection, tighten bolts according to the torque described in this manual



Warning!

Only qualified electrical engineers can perform electrical connection work. Please comply with the safety requirements in this manual. KSTAR accepts no liability for any injury or loss of life or property resulting from the neglect of these safety instructions.



Warning!

When laying cables, ensure electrical insulation and comply with EMC specifications. Power cables and communication cables should be laid in layers, and when necessary, provide protection and support for the cables to reduce the stress on the cables.



Warning!

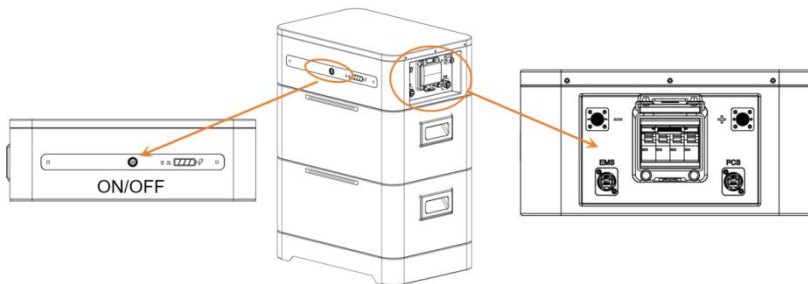
Strictly follow the cable connection labels inside the device to connect cables

Attention!

The installation design of the integrated energy storage system must comply with the relevant standards or specifications of the country or region where the project is located

4.2 Terminal Description

The electrical terminals are installed on the output side of the control box, as shown in the figure below.

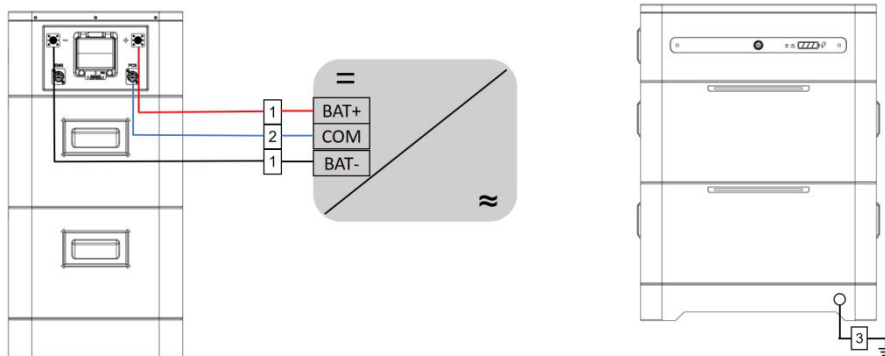


* For safety reasons, be sure to disconnect the circuit breaker on the high-voltage control box before connecting the AC input line, and ensure that the battery POWER switch is in the OFF position.

Name	Mark	Note
Battery DC input terminal	P+	P+: Connected to the positive terminal of the inverter
	P-	P-: Connected to the negative terminal of the inverter
Communications terminal	COM	Connected to the communication port of the inverter
PE terminal		Used for product grounding
DC circuit breaker	/	Used to turn the battery system on/off by opening or closing the DC circuit, and to achieve short circuit protection.

4.3 Electrical Connection Overview

The electrical connection between the battery system and the inverter is shown in the figure.



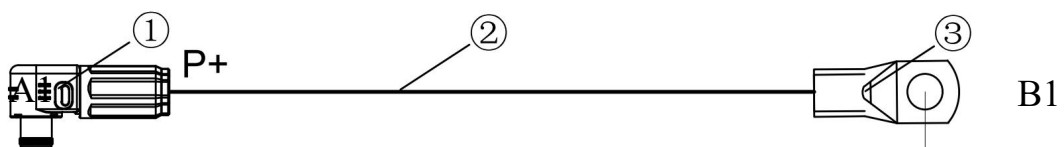
Schematic diagram of the electrical connection between the battery system and the inverter

table 4-1 Cable Requirements

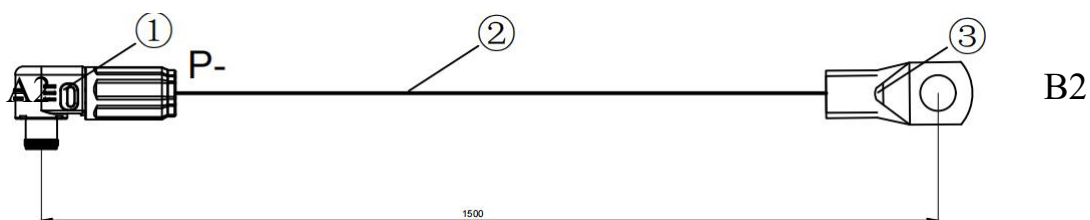
No.	Name	Type	Cross-sectional area of conductor (mm ²)
1	Positive and negative terminal harness	Multi-core photovoltaic cable, capable of withstanding voltages exceeding 1100V	16
2	Communication cable	Cat5e protective network cable (as one of the accessories)	/
3	Grounding wire harness	Outdoor multi-core copper conductor cable, capable of withstanding 1000 volts and operating normally at a temperature of 105°C.	12

4.3.1 Power line connection

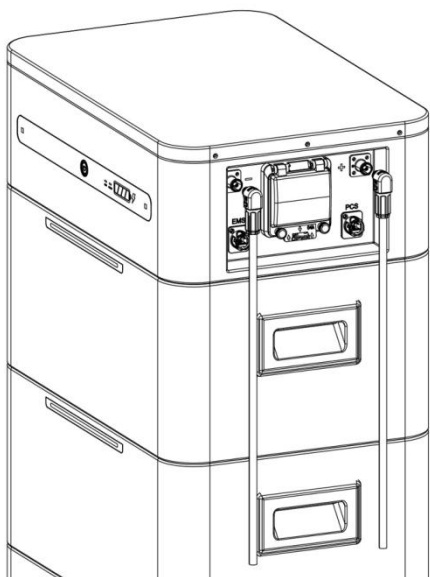
Power line connection: Connect the positive and negative connection wires correctly according to the cable sequence and terminal positions shown in the diagram below. Ensure that the cable used is sufficiently thick; the BAT wire needs to be connected to the product via a quick connector, and the other end should be connected to the DC bus of the inverter according to the customer's usage scenario. The BAT wire must be securely tightened to prevent excessive contact resistance that could cause overheating;



As shown, the A1 terminal connects to the positive terminal of the battery, and the B1 terminal connects to the positive terminal of the inverter.



As shown in the figure, terminal A2 is connected to the negative terminal of the battery, and terminal B2 is connected to the negative terminal of the inverter.



4.3.2 Communication Line Connection

This product uses CAN/RS485 communication to connect with the inverter, with one end of the communication line connected to the battery communication port and the other end connected to the inverter communication port.

The communication wiring harness is shown in the figure below:

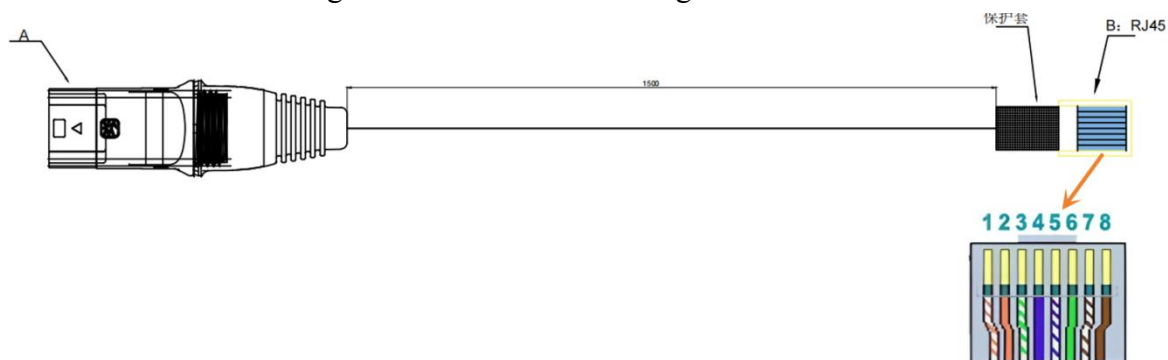
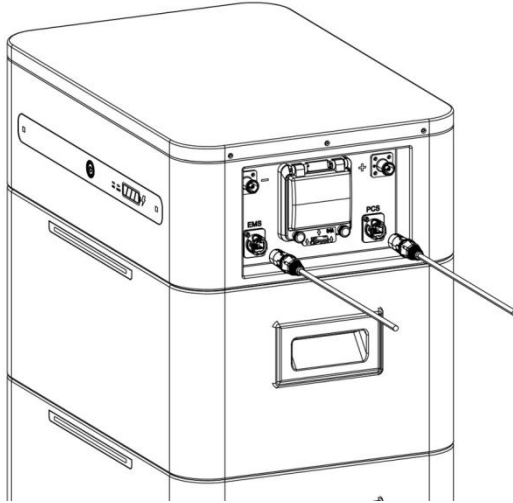


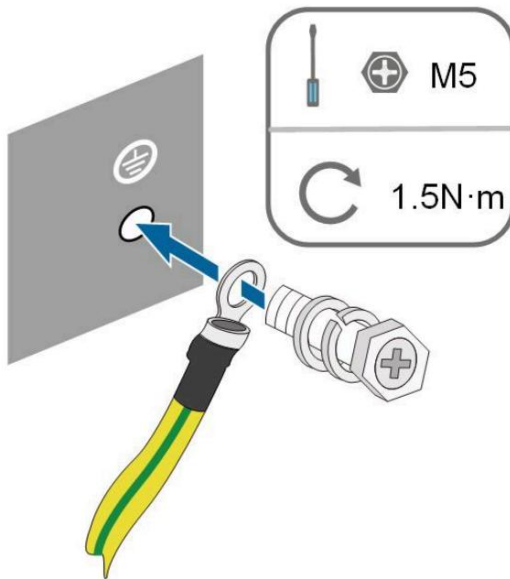
Table 4-2 Communication Interface Definition

Pin	Wire Color	Interface Definition	Instructions
1	Orange/White	A1	485 Communication
2	Orange	B1	
3	Green and White	/	/
4	Blue	CAN_H	CAN

5	Blue and White	CAN_L	Communication
6	Green	/	/
7	Brown and White		
8	Brown		



4.3.3 Ground Connection



Note: Connect the ground wire first, then connect the positive and negative power lines.

1. During the wiring process, be sure to pay attention to safety and ensure that the connections of the “+” and “-” terminals of each component are correct.
2. A circuit breaker must be installed between the battery and the inverter.
3. Check that the wiring is connected correctly and securely, especially to ensure that the battery input is not reversed.
4. After confirming that all wiring is correct, proceed according to the power-on sequence.



Warning

- This battery system is a high-voltage system, and there is high voltage present during operation. Before operating any equipment in the system, ensure that the equipment is powered off to avoid the risk of electric shock. During the operation of the equipment, strictly adhere to all safety precautions in this manual and the safety labels on the equipment.

- All operations during the electrical connection process, as well as the specifications of the cables and components used, must comply with local laws and regulations.

- Cables of the same type should be bundled together and arranged separately from cables of different types; intermingling or crossing is prohibited.

- When crimping the terminal connectors, ensure that the conductor part of the cable makes full contact with the terminal connector. Do not crimp the cable insulation together with the terminal connector, as this may cause the equipment to malfunction or lead to overheating due to unreliable connections, potentially damaging the inverter terminal block.



Attention

- When performing electrical connections, please wear personal protective equipment such as safety shoes, protective gloves, and insulated gloves as required.

- Only qualified personnel are allowed to perform electrical connection operations.

- The cable colors in the graphics of this document are for reference only; the specific cable specifications must comply with local regulatory requirements.

Chapter 5 System Operation

5.1 Power-On Operation of the System

5.1.1 Safety Check Before Powering On

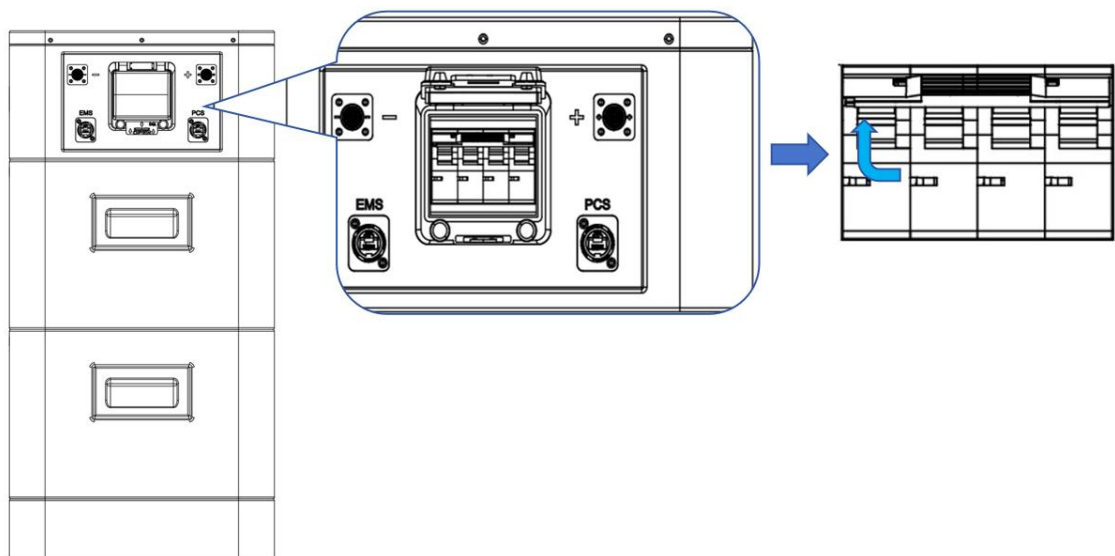
1. Check whether the wiring is connected correctly and securely, especially check if the positive and negative connections are reversed.
2. When powering on the battery system, please ensure the following items are checked to prevent system damage.

Table 5-1 Pre-Power-On Inspection Items

Number	Inspection Item
1	The inverter is installed securely, the installation location is convenient for operation and maintenance, the installation space allows for ventilation and heat dissipation, and the installation environment is clean and tidy.
2	The ground protection, power line, and communication line are connected correctly and securely.
3	The cable bundling meets the wiring requirements, is distributed reasonably, and is free from damage.
4	Unused ports have been sealed.
5	Measure the output voltage of the DC positive and negative terminals of the inverter charging this device; the value should meet the charging voltage requirements specified in the product specifications.

5.1.2 Power-On Steps

1. Close the circuit breaker between the inverter and the battery system;



2. After turning on the product "POWER" switch, check the status of the device's indicator lights according to the table below;

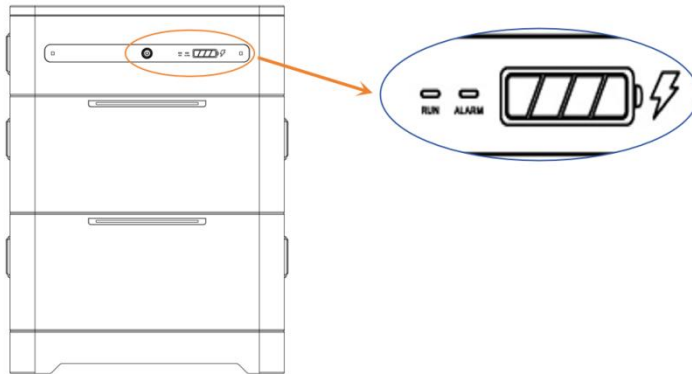


Table 5-2 LED Working Status Indicator Table
Running Indicator Light:

Normal/Alarm	RUN	ALM
	●	●
Normal	Bright	Off
Fault	Off	Bright

Power Indicator:

Power Display	Power Indicator LED			
	●	●	●	●
$SOC \leq 20$	Flashing	Off	Off	Off
$20 < SOC \leq 25$	Constant	Off	Off	Off
$25 < SOC \leq 50$	Constant	Constant	Off	Off
$50 < SOC \leq 75$	Constant	Constant	Constant	Off
$75 < SOC \leq 100$	Constant	Constant	Constant	Constant

3. When the battery is powered on, the running light (RUN) is on, the alarm light (ALM) is off, and the state of charge indicator (SOC) displays according to the battery level. At this time, the battery is functioning normally and can be used.

4. If the alarm light (ALM) is on after the battery is powered on, it indicates that the battery is in an alarm state. Refer to the fault diagnosis recommendations for handling. If the issue persists, please contact after-sales personnel.

5.2 System Power Down Operation

When shutting down the battery system, please follow the steps in order to prevent damage to the system.

1. Disconnect the circuit breaker between the battery and the inverter.
2. Press the POWER button to turn off the battery; it will shut down automatically.

Chapter 6 Product Cleaning, Storage, and Maintenance

6.1 Product Cleaning Instructions

- Ensure that the device is disconnected from all input power sources and output devices, and wipe it with a clean, dry, soft cotton cloth.

Do not use corrosive cleaners or solvents.



Note

To avoid the risk of electric shock, do not use metal objects to clean the ports.

6.2 Product Storage

- If stored for more than 1 month, please fully charge before storage.
- Charge once every 3 months to avoid over-discharging the battery, which may damage the equipment.
- Store indoors, away from direct sunlight.
- Excessive heat can shorten the lifespan and cause overheating of the power supply. If the temperature is too low, it will damage the performance and lifespan of the equipment.
- Keep away from corrosive chemicals and gases.
- After removing from the warehouse, a visual inspection should be conducted to ensure that the appearance of the equipment and all accessories is normal.

6.3 Product Maintenance

To maintain optimal long-term performance, it is recommended to check the following items every 6 months:

- Ensure that the airflow around the integrated machine is not obstructed.
- Check all exposed wires for insulation damage caused by sunlight, friction with other objects, dry rot, insects, or rodents. Repair or replace wires as necessary.
- Inspect all terminals for signs of corrosion, insulation damage, high temperature, or burning/discoloration, and tighten terminal screws.
- Check for dirt, nesting insects, and corrosion, and clean as required.
- If the external lightning arrester is faulty, replace the defective arrester to prevent lightning from damaging this product or other equipment of the user.



Warning

Before performing the above operations, ensure that all power to the integrated machine is disconnected and that all capacitors are discharged before proceeding with the corresponding checks or operations!

The company is not responsible for any damage caused by the following reasons:

- Damage caused by improper use or improper use in inappropriate locations.
- Damage caused by operating environment temperatures exceeding the limit operating temperature range.
- Unauthorized disassembly and repair of the equipment.
- Damage caused by force majeure: Damage occurring during transportation or handling by the user.



Warning

- This product contains lithium-ion cells. It is strictly prohibited to open the product casing without authorization to avoid potential damage to the cells or other hazards.
- It is strictly forbidden to disassemble, crush, puncture, short-circuit this product, or to throw it into water or fire, or expose it to high-temperature environments.
- If the product shows severe swelling, do not continue to use it.

6.3.1 Annual Inspection Items

Inspection item	Inspection method
Battery packaging and cleanliness	The following items should be checked. For any items that do not pass inspection, corrective measures should be taken immediately: • Check for any damage or deformation of the PACK and its internal components. • Check for any abnormal noise from internal components during operation. • Check if the internal temperature of the RACK is too high.
WarningLabels	Check if the warning labels and signs are clear, readable, and clean. Clean them if necessary.
Wiring Harness	Check if the switching equipment is correctly connected to the inverter.
Corrosion	Check for oxidation or rust inside the packaging bag.

6.3.2 Items to be checked every six months

Inspection Items	Inspection Method
Control box and battery box	The following items should be checked. For items that fail inspection, corrective actions should be taken immediately: • Check for flammable materials near the battery system. • Check if the battery system is securely mounted to the wall and if the mounting points are free from rust or corrosion. • Check for any damage, paint peeling, or oxidation on the switchgear and battery system.
Wiring and Cable Laying	No inspections should be conducted unless all components within the battery are powered off. During the inspection, corrective actions should be taken immediately for any items that fail inspection. • Check if the cables are laid according to relevant standards and are free from short circuit risks. If any abnormalities are found, corrective actions should be taken immediately. • Check for water ingress into the battery. • Check if the cable connections are loose. If loose, they should be tightened to the required torque.
Grounding	Check if the system grounding is correct.
Function	Check if the current, voltage, and temperature of the battery are within normal ranges.

Chapter 7 Frequently Asked Questions

7.1 Battery Cannot Be Charged

1. Please wait 5 to 10 minutes for the iSolarCloud application data to refresh.
 2. If the problem persists, try charging the battery by enabling forced mode. If it can charge now, please contact the installer or manufacturer of the hybrid inverter.
 3. Check if the current SOC (State of Charge) of the battery matches the SOC upper limit set on the hybrid inverter. Once the battery SOC reaches or exceeds the SOC upper limit, the battery will not be able to charge (set the value to 50 to 100 as needed).
 4. If the problem is still not resolved, check if there are any faults in the system and take appropriate actions based on the fault codes.
 5. If the problem is still not resolved, check if the ambient temperature is close to or below 0°C. If the temperature is below 0°C, please turn off the battery and restart and charge it when the temperature rises above 5°C.
 6. If the problem persists, check for any heat sources near the battery and whether the ambient temperature exceeds 55°C. If the temperature exceeds 55°C, please immediately turn off the battery and restart and charge it when the temperature drops below 40°C.
- If the problem still cannot be resolved, please contact the installer or manufacturer. Please turn off the battery immediately when the SOC drops below 3%.

7.2 SOC Jump

SOC jumps are occasional and are considered normal phenomena that do not affect the normal operation of the system.

If the SOC jump issue occurs frequently, please contact the installer or manufacturer.

7.3 Battery Upgrade

1. For upgrades, please contact the installer or manufacturer.
2. If updates have been made, please upgrade the inverter, communication module, and battery software simultaneously. Otherwise, issues may arise due to software version mismatches.
3. If any abnormalities occur during or after the upgrade, please contact the installer or manufacturer immediately.

7.4 Warranty

During the warranty period, if the product malfunctions, Shenzhen Cospowers will provide free service or replace it with a new product.

Evidence

During the warranty period, customers must provide the product purchase invoice and date. Additionally, the trademark on the product must remain intact and clearly identifiable. Otherwise, Shenzhen Cospowers reserves the right to refuse to fulfill the warranty.

Conditions

- After replacement, non-conforming products will be handled by Shenzhen Cospowers.
- Customers should allow Shenzhen Cospowers reasonable time to repair the faulty equipment.

Disclaimer

Shenzhen Cospowers reserves the right to refuse to fulfill the warranty under the following circumstances:

- The free warranty period for the entire machine/component has expired.
- The equipment is damaged during transportation.
- The equipment is improperly installed, reinstalled, or used.
- The equipment operates under conditions worse than those described in this manual.
- The failure or damage is caused by installation, maintenance, modification, or disassembly performed by service providers or personnel not affiliated with Shenzhen Cospowers.
- The failure or damage is caused by the use of non-standard components or software not provided by Shenzhen Cospowers.
- The installation and usage exceed the specifications of relevant international standards.
- Such damage is caused by unforeseen natural factors.

For faulty products under any of the above circumstances, if the customer requests repair, Shenzhen Cospowers will provide paid repair services at its discretion.

- The failure or damage is caused by the use of non-standard components, non-Shenzhen Cospowers software, or non-software related issues.
 - The installation and usage exceed the specifications of relevant international standards.
 - The damage is caused by unexpected natural factors.
- For faulty products under any of the above circumstances, if the customer requests repair, paid repair services may be provided at discretion.

Appendix:

Appendix 1: Accessory List

Serial Number	Name	Specification	Quantity
1	Positive Cable Harness	Positive Cable Harness 16mm ² /Red	1pcs
2	Negative Cable Harness	Negative Cable Harness 16mm ² /Black	1pcs
3	Communication Cable Harness	RJ45 Crystal Head Network Cable	1pcs
5	User Manual	/	1pcs
6	Certificate of Conformity	/	1pcs
7	Factory Report	/	1pcs