HUAXING NEW ENERGY

Intelligent Home Energy Storage System

Lithium iron phosphate | Wall-mounted

5KWh / 10KWh

High performance battery cell

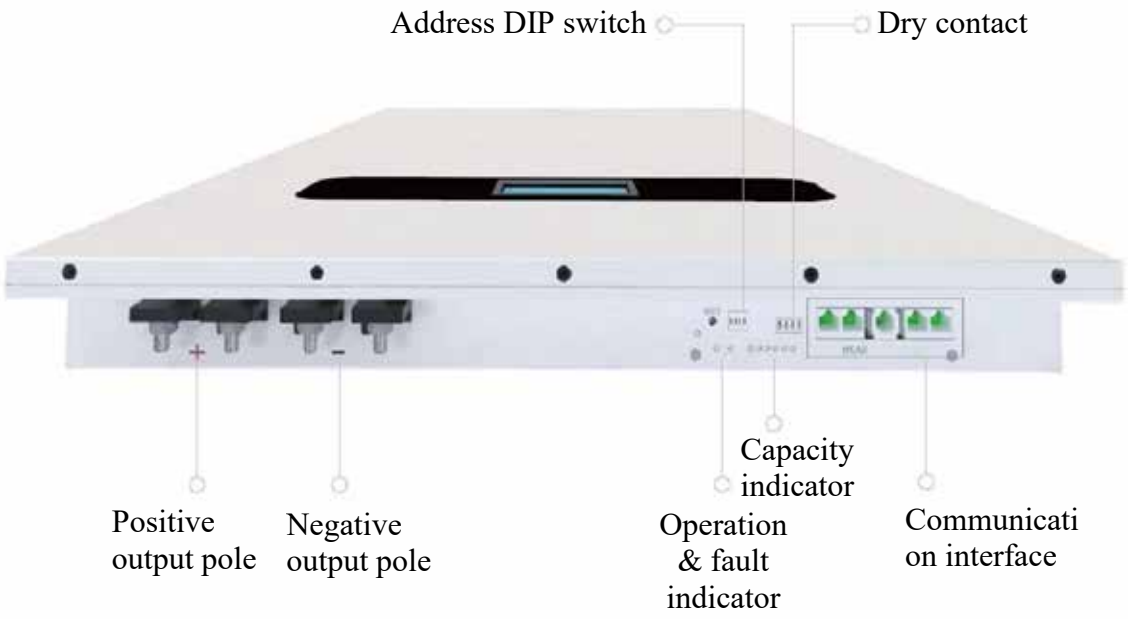
Perfect size

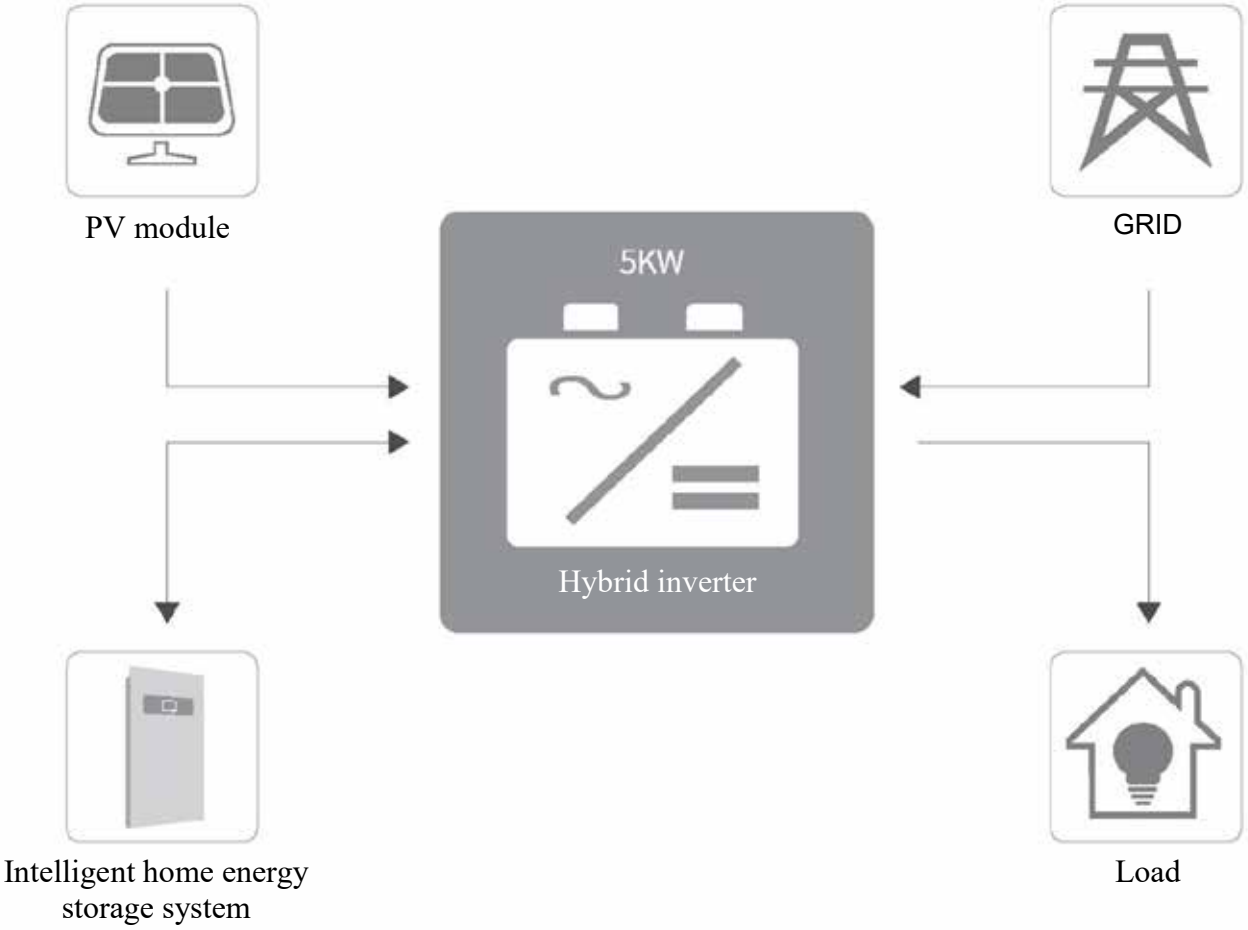
Touch screen

Multiple protection

info@huaxingenergy.com
www.huaxingenergy.com
huaxingenergy

	CSF-C-5KWh	CSF-C-10KWh
Rated capacity	5.12KWh	10.24KWh
Type of battery cell	Li-ion (LiFeP04)	
Cycle life	>6000 times	
Rated voltage	51.2V	
Range of voltage	44.0 V ∽58.4 V	
Maximum charge/discharge current	100A	
Maximum discharge power	5.5KW	
Cooling mode	Natural cooling	
Parallel operation	Available, up to 15 units	
Water resistance class	IP55	
Range of temperature	Charge: 0°C - 55°C, SOC: -10°C - 55°C	
Communication interface	RS 485, CAN 2.0B	
HMI	4.3-inch touch screen	
Authentication information	TUV(IEC62619) / UL1642(Cell) / CE / UN38.3 / ROHS	
Storage requirements	Temperature: -20°C to 50 °C/SOC: 30% - 60%	
List of compatible inverters	SMA/ Solar/ EAST/ MEGEREVO/GROWATT/ Sinexcel/ ATESS, etc.	
Size (L*W*H)	590*91*1009 mm	570*183*1020 mm
Weight	65 kg	110 kg


Address DIP switch
Dry contact
Positive output pole
Negative output pole
Capacity indicator
Operation & fault indicator
Communicati on interface


PV module
GRID
5KW
Hybrid inverter
Intelligent home energy storage system
Load

Ref. Certif. No.

DK-117975-UL

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

CB TEST CERTIFICATE

Product	Rechargeable Li-ion Cell
Name and address of the applicant	ShenZhen Coslight Power Technology Co.,Ltd NO.37,Xiangshan Avenue, Luotian Third Industrial Zone, Yanluo Street, Baoan District, Shenzhen City,Guangdong Province, China
Name and address of the manufacturer	ShenZhen Coslight Power Technology Co.,Ltd NO.37,Xiangshan Avenue, Luotian Third Industrial Zone, Yanluo Street, Baoan District, Shenzhen City,Guangdong Province, China
Name and address of the factory Note: *When more than one factory, please report on page 2*	Harbin Coslight New Energy CO.,Ltd Room 202,Building 1 Nanhu Street, Jizhong Area Yingbin Road,Development Zone Harbin, China ☒ Additional Information on page 2
Ratings and principal characteristics	3.2V,100Ah
Trademark (if any)	COSLIGHT
Customer's Testing Facility (CTF) Stage used	
Model / Type Ref.	FP26122320A
Additional information (if necessary may also be reported on page 2)	☒ Additional Information on page 2
A sample of the product was tested and found to be in conformity with	IEC 62619:2017
As shown in the Test Report Ref. No. which forms part of this Certificate	RESS- 4790073720-001 issued on 2021-08-30

This CB Test Certificate is issued by the National Certification Body

☐ UL (US), 333 Pfingsten Rd IL 60062, Northbrook, USA
☒ UL (Demko), Borupvang 5A DK-2750 Ballerup, DENMARK
☐ UL (JP), Marunouchi Trust Tower Main Building 6F, 1-8-3 Marunouchi, Chiyoda-ku, Tokyo 100-0005, JAPAN
☐ UL (CA), 7 Underwriters Road, Toronto, M1R 3B4 Ontario, CANADA

For full legal entity names see www.ul.com/ncbnames

Date: 2021-09-07

Signature:
Jan-Erik Storgaard

Ref. Certif. No.

DK-117975-UL

Factories:
ShenZhen Coslight Power Technology Co.,Ltd
NO.37,Xiangshan Avenue, Luotian Third Industrial Zone, Yanluo Street, Baoan District, Shenzhen City,Guangdong Province, China

Additionally evaluated to:
EN 62619:2017

Additional information (if necessary)

☐ UL (US), 333 Pfingsten Rd IL 60062, Northbrook, USA
☒ UL (Demko), Borupvang 5A DK-2750 Ballerup, DENMARK
☐ UL (JP), Marunouchi Trust Tower Main Building 6F, 1-8-3 Marunouchi, Chiyoda-ku, Tokyo 100-0005, JAPAN
☐ UL (CA), 7 Underwriters Road, Toronto, M1R 3B4 Ontario, CANADA

For full legal entity names see www.ul.com/ncbnames

Date: 2021-09-07

Signature:
Jan-Erik Storgaard

Test Report issued under the responsibility of:

TEST REPORT
IEC 62619
Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for secondary lithium cells and batteries, for use in industrial applications

Report Number. ..... :	RESS- 4790073720-001
Date of issue ..... :	2021-08-30
Total number of pages ..... :	18
Name of Testing Laboratory preparing the Report ..... :	Shanghai Truron Testing Technology Co., Ltd
Applicant's name ..... :	ShenZhen Coslight Power Technology Co.,Ltd
Address ..... :	NO.37,Xiangshan Avenue, Luotian Third Industrial Zone, Yanluo Street, Baoan District, Shenzhen City,Guangdong Province, China
Test specification:	
Standard ..... :	IEC 62619: 2017
Test procedure ..... :	CB Scheme
Non-standard test method ..... :	N/A
Test Report Form No. ..... :	IEC62619A
Test Report Form(s) Originator .... :	UL(Demko)
Master TRF ..... :	Dated 2018-06-07

If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.

This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

General disclaimer:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

Test item description ..... :	Rechargeable Li-ion Cell
Trade Mark ..... :	COSLIGHT
Manufacturer ..... :	ShenZhen Coslight Power Technology Co.,Ltd. NO.37,Xiangshan Avenue, Luotian Third Industrial Zone, Yanluo Street, Baoan District, Shenzhen City,Guangdong Province, China.
Model/Type reference ..... :	FP26122320A
Ratings ..... :	3.2V,100Ah

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):

☒	**CB Testing Laboratory:**	Shanghai Truron Testing Technology Co., Ltd.	
Testing location/ address.....:		Floor 1 and 2 Building 1, No. 685, Huishan Road, Shanghai, China.	
Tested by (name, function, signature).....:		(Project Handler) Velvet Cao	Velvet Cao
Approved by (name, function, signature)...:		(Reviewer) Sally Ren	Sally Ren
☐	**Testing procedure: CTF Stage 1:**		
Testing location/ address.....:			
Tested by (name, function, signature).....:			
Approved by (name, function, signature)...:			
☐	**Testing procedure: CTF Stage 2:**		
Testing location/ address.....:			
Tested by (name + signature).....:			
Witnessed by (name, function, signature) .:			
Approved by (name, function, signature)...:			
☐	**Testing procedure: CTF Stage 3:**		
☐	**Testing procedure: CTF Stage 4:**		
Testing location/ address.....:			
Tested by (name, function, signature).....:			
Witnessed by (name, function, signature) .:			
Approved by (name, function, signature)...:			
Supervised by (name, function, signature) :			

List of Attachments (including a total number of pages in each attachment):
National Differences (0 pages)
Enclosures (10 pages)

Summary of testing:

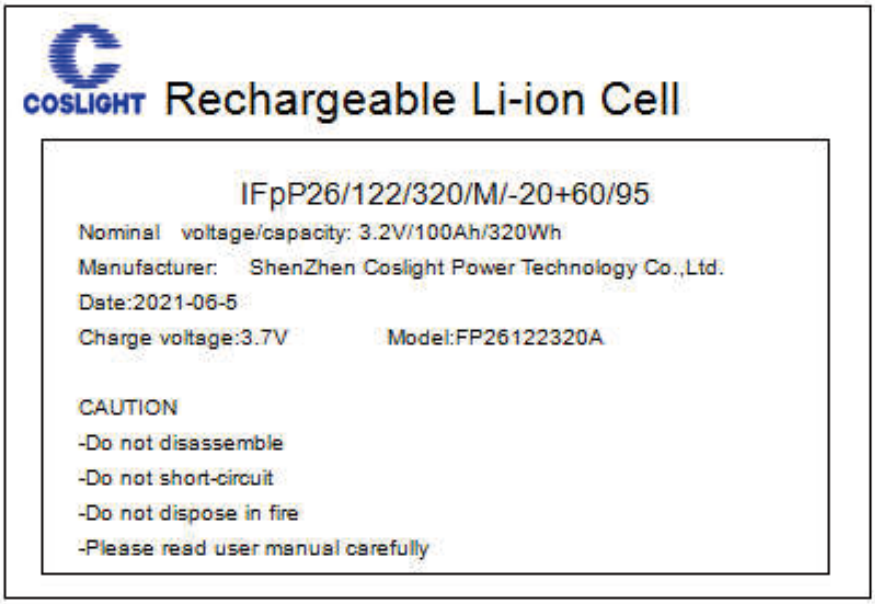
Tests performed (name of test and test clause):	**Testing location:**
Tests: 7.2.2 Impact test (cell) 7.2.3.2 Whole drop test (cell) 7.2.4 Thermal abuse test (cell) 7.3.2 Internal short-circuit test (cell) 7.2.1 External short-circuit test (cell) 7.2.5 Overcharge test (cell) 7.2.6 Forced discharge test (cell)	Shanghai Truron Testing Technology Co., Ltd. Floor 1 and 2 Building 1, No. 685, Huishan Road, Shanghai, China NO.5 Workshop 4450 Shuangzhu Road Jiading Shanghai 201807 China

Summary of compliance with National Differences (List of countries addressed):
N/A

☒ **The product fulfils the requirements of EN 62619:2017**

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.



Test item particulars.....:	
Classification of installation and use.....:	For built-in
Supply Connection.....:	N/A
.....:	
Possible test case verdicts:	
- test case does not apply to the test object.....:	N/A
- test object does meet the requirement.....:	P (Pass)
- test object does not meet the requirement.....:	F (Fail)
Testing.....:	
Date of receipt of test item .....:	2021-08-10
Date (s) of performance of tests.....:	2021-08-17 to 2021-08-25

General remarks:

"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.

Throughout this report a ☐ comma / ☒ point is used as the decimal separator.

Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided ..... :	☒ **Yes** ☐ **Not applicable**

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies) ..... :	Harbin Coslight New Energy CO.,Ltd Room 202,Building 1 Nanhu Street, Jizhong Area Yingbin Road,Development Zone Harbin,China ShenZhen Coslight Power Technology Co.,Ltd NO.37,Xiangshan Avenue, Luotian Third Industrial Zone, Yanluo Street, Baoan District, Shenzhen City,Guangdong Province, China

General product information and other remarks:

-- Rechargeable Lithium Ion Phosphate Prismatic cell, all positive electrode, negative electrode and separator are covered by Al case and insulation materials.

- Maximum charge current/ Standard charge voltage of 50A/3.7V, end of discharging voltage is 2.5V
- Upper limit charging voltage is 3.7V
- IFpP26/122/320/M/-20+60/95 is identical to model FP26122320A except for model designation.

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
4	**PARAMETER MEASUREMENT TOLERANCES**		**P**
	Parameter measurement tolerances		P
5	**GENERAL SAFETY CONSIDERATIONS**		**P**
5.1	**General**		**P**
	Cells and batteries are safe under conditions of both intended use and reasonably foreseeable misuse.. :	See also table 5.1 for Critical components information	P
5.2	**Insulation and wiring**		**N/A**
	Voltage, current, altitude, and humidity requirements		N/A
	Adequate clearances and creepage distances between connectors		N/A
	The mechanical integrity of internal connections		N/A
5.3	**Venting**		**P**
	Pressure relief function		P
	Encapsulation used to support cells within an outer casing		N/A
5.4	**Temperature/voltage/current management**		**N/A**
	The design prevents abnormal temperature-rise		N/A
	Voltage, current, and temperature limits of the cells		N/A
	Specifications and charging instructions for equipment manufacturers		N/A
5.5	**Terminal contacts of the battery pack and/or battery system**		**N/A**
	Polarity marking(s)		N/A
	Capability to carry the maximum anticipated current		N/A
	External terminal contact surfaces		N/A
	Terminal contacts are arranged to minimize the risk of short circuits		N/A
5.6	**Assembly of cells, modules, or battery packs into battery systems**		**N/A**
5.6.1	General		N/A
	Independent control and protection method(s)		N/A
	Recommendations of cell operating limits by the cell manufacturer		N/A
	Batteries designed for the selective discharge of a portion of their series connected cells		N/A
	Protective circuit component(s) and consideration to the end-device application		N/A

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
5.6.2	Battery system design		N/A
	The voltage control function		N/A
	The voltage control for series-connected batteries		N/A
5.7	**Operating region of lithium cells and battery systems for safe use**		**P**
	The cell operating region..... :	Upper charge limit: 3.7V; Charge Temperature: 5~45°C ; Discharge Temperature: -20~60°C; Maximum charge current: 100A; Maximum discharge current: 300A; Cut off discharge Voltage: 2.5V	P
	Designation of battery system to comply with the cell operating region		N/A
5.8	**Quality plan**		**P**
	Manufacturing quality plan (for example: ISO9001, etc.) prepared and implemented..... :	Reference: ISO9001 certificate in Enclosure ID 05-01, ID 05-02.	P
	The process capabilities and the process controls		P
6	**TYPE TEST CONDITIONS**		**P**
6.1	**General**		**P**
6.2	**Test items**		**P**
	Cells or batteries that are not more than six months old (See Table 1 of IEC62619)		P
	Capacity confirmation of the cells or batteries		P
	Default ambient temperature of test, 25 °C ± 5 °C		P
7	**SPECIFIC REQUIREMENTS AND TESTS**		**P**
7.1	**Charging procedure for test purposes**		**P**
	The battery discharged to a specified final voltage prior to charging		N/A
	The cells or batteries charged using the method specified by the manufacturer..... :	Cell: CC/CV 50A at 3.7V	P
7.2	**Reasonably foreseeable misuse**		**P**
7.2.1	External short-circuit test (cell or cell block)		P

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
	Short circuit with total resistance of 30 mΩ ± 10 mΩ at 25 °C ± 5 °C		P
	Results: no fire, no explosion		P
7.2.2	Impact test (cell or cell block)		P
	Cylindrical cell, longitudinal axis impact		N/A
	Prismatic cell, longitudinal axis and lateral axis impact		P
	Results: no fire, no explosion.		P
7.2.3	Drop test (cell or cell block, and battery system)		P
7.2.3.1	General		P
7.2.3.2	Whole drop test (cell or cell block, and battery system)		P
	Description of the Test Unit..... :	Cell	—
	Mass of the test unit (kg)..... :	2.24±0.04Kg	—
	Height of drop (m)..... :	1	—
	Results: no fire, no explosion		P
7.2.3.3	Edge and corner drop test (cell or cell block, and battery system)		N/A
	Description of the Test Unit..... :		—
	Mass of the test unit (kg)..... :		—
	Height of drop (m)..... :		—
	Results: no fire, no explosion		N/A
7.2.4	Thermal abuse test (cell or cell block)		P
	Results: no fire, no explosion		P
7.2.5	Overcharge test (cell or cell block)		P
	For those battery systems that are provided with only a single protection for the charging voltage control	Maximum voltage value that is possible under the condition where the original charging control does not work:4V	—
	Results: no fire, no explosion..... :	See Table 7.2.5.	P
7.2.6	Forced discharge test (cell or cell block)		P
	Upper limit charge voltage of the cell..... :	3.7V	P
	Cells connected in series in the battery system ..... :		N/A
	Redundant or single protection for discharge voltage control provided in battery system ..... :		N/A
	Target Voltage ..... :	-4V	P

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
	Maximum discharge current of the cell, I_m ..... :	300A	P
	Discharge current for forced discharge, 1.0 It ..... :	100A	P
	Discharging time, t = (1 It / I_m) x 90 (min.) ..... :	90min.	P
	Results: no fire, no explosion ..... :	See Table 7.2.6.	P
7.3	**Considerations for internal short-circuit – Design evaluation**		**P**
7.3.1	General		P
7.3.2	Internal short-circuit test (cell)		P
	Samples preparation procedure: a), in accordance with 8.3.9 of IEC62133:2012; or b), the nickel particle inserted before charging, or c), the nickel particle was inserted before electrolyte filling ..... :	a)	P
	Tested according to Cl. 8.3.9 of IEC 62133:2012 test method, except all tests were carried out in an ambient temperature of 25 °C ± 5 °C.		P
	The appearance of the short-circuit location recorded by photograph or other means ..... :	See Attachment ID 06	—
	The pressing was stopped - When a voltage drop of 50 mV was detected; or		N/A
	- The pressing force of 800 N (cylindrical cells) or 400 N (prismatic cells) was reached		P
	Results: no fire, no explosion ..... :	See Table 7.3.2.	P
7.3.3	**Propagation test (battery system)**		**N/A**
	Method to create a thermal runaway in one cell ... :		N/A
	Results: No external fire from the battery system or no battery case rupture ..... :		N/A
8	**BATTERY SYSTEM SAFETY (CONSIDERING FUNCTIONAL SAFETY)**		**N/A**
8.1	**General requirements**		**N/A**
	Functional safety analysis for critical controls		N/A
	Conduct of a process hazard, risk assessment and mitigation of the battery system		N/A
8.2	**Battery management system (or battery management unit)**		**N/A**
8.2.1	Requirements for the BMS		N/A
	The safety integrity level (SIL) target of the BMS		N/A
	The charge control evaluated by tests in clauses 8.2.2 to 8.2.4		N/A
8.2.2	Overcharge control of voltage (battery system)		N/A

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
	The exceeded charging voltage applied to the whole battery system		N/A
	The exceeded charging voltage applied to only a part of the battery system, such as the cell(s)..... :		N/A
	Results: no fire, no explosion..... :		N/A
	The BMS interrupted the overcharging before reaching 110% of the upper limit charging voltage		N/A
8.2.3	Overcharge control of current (battery system)		N/A
	Results: no fire, no explosion..... :		N/A
	The BMS detected the overcharging current and controlled the charging to a level below the maximum charging current		N/A
8.2.4	Overheating control (battery system)		N/A
	The cooling system, if provided, was disconnected		N/A
	Elevated temperature for charging, 5 °C above maximum operating temperature..... :		N/A
	Results: no fire, no explosion..... :		N/A
	The BMS detected the overheat temperature and terminated charging		N/A
	The battery system operated as designed during test		N/A
9	**INFORMATION FOR SAFETY**		**P**
	The cell manufacturer provides information about current, voltage and temperature limits of their products		P
	The battery system manufacturer provides information regarding how to mitigate hazards to equipment manufacturers or end-users.		N/A
10	**MARKING AND DESIGNATION (REFER TO CLAUSE 5 OF IEC 62620)**		**P**
	The marking items shown in Table 1 in IEC 62620 indicated on the cell, battery system or instruction manual.		P
	Cell or battery system has clear and durable markings		P
	Cell designation		P
	Battery designation		N/A
	Battery structure formulation		N/A

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

ANNEX A	**OPERATING REGION OF CELLS FOR SAFE USE**		**P**
A.1	General		P
A.2	Charging conditions for safe use		P
A.3	Consideration on charging voltage		P
A.4	Consideration on temperature		P
A.5	High temperature range		P
A.6	Low temperature range		P
A.7	Discharging conditions for safe use		P
A.8	Example of operating region		P

ANNEX B	**PROCEDURE OF 7.3.3 PROPAGATION TEST**		**N/A**
B.1	General		N/A
B.2	Test conditions:		N/A
	– The battery fully charged according to the manufacturer recommended conditions ..... :		—
	– Target cell forced into thermal runaway ..... :		—
	– A specially prepared sample (e.g. a heater or a hole for nail penetration provided) used for ease of testing..... :		—
B.3	Method used for initiating the thermal runaway. 1) Heater (Heater, Burner, Laser, Inductive heating 2) Overcharge 3) Nail penetration of the cell 4) Combination of above methods 5) Other methods..... :		—

ANNEX C	**PACKAGING**		**P**
	The materials and pack design chosen in such a way as to prevent the development of unintentional electrical conduction, corrosion of the terminals and ingress of environmental contaminants		P

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

5.1	**TABLE: Critical components information**				P
Object/part no.	**Manufacturer/ trademark**	**Type/model**	**Technical data**	**Standard**	**Mark(s) of conformity [1)]**
Cells	ShenZhen Coslight Power Technology Co.,Ltd	FP26122320A	3.20V 100Ah	--	--
- Case	--	--	aluminium	--	--
- Electrolyte	--	--	LiPF6 EC+EMC	--	--
- Separator	--	--	16μm	--	--
- Positive Electrode		--	LiFePO4	--	--
- Negative Electrode	--	--	C	--	--
- Vent or pressure release mechanism	--	--	0.75±0.15MPa	--	--
Supplementary information: N/A **[1)] Provided evidence ensures the agreed level of compliance. See OD-2039.**					

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

7.2.1	TABLE: External short-circuit test (cell or cell block)				P
Sample No.	**Ambient (at 25°C ± 5°C)**	**OCV at start of test (V dc)**	**Resistance of Circuit (mΩ)**	**Maximum Case Temperature Rise ΔT (°C)**	**Results**
M06291	25.3	3.41	38.2	11.2	A, E
M06292	25.3	3.40	38.1	12.3	A, E
M06293	25.3	3.40	38.0	14.0	A, E

Supplementary information:

A - No fire or Explosion
B - Fire
C - Explosion
D - The test was completed after 6 h
E - The test was completed after the cell casing cooled to 20% of the maximum temperature rise
F - Other (Please explain):___

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

7.2.5	TABLE: Overcharge test (cell or cell block)					P
Sample No.	**OCV at start of test (V dc)**	**OCV at end of test (V dc)**	**Measured Maximum Charging Current (A)**	**Measured Maximum Charging Voltage (V dc)**	**Max. Cell Case Temperature, (°C)**	**Results**
M06306	3.03	3.34	100	4	39.7	A,E
M06307	2.98	3.35	100	4	39.7	A,E
M06308	3.00	3.32	100	4	37.8	A,E

Supplementary information:

Results:
A - No fire or Explosion
B - Fire
C - Explosion
D - Test concluded when temperature reached a steady state condition
E - Test concluded when temperature returned to ambient
F - Other (Please explain): _____

7.2.6	TABLE: Forced discharge test (cell or cell block)				P
Sample No.	**OCV before applying reverse charge, (V dc)**	**Target Voltage (V dc)**	**Measured Reverse Charge Current It, (A)**	**Total Time for Reversed Charge Application (min)**	**Results**
M06309	2.98	-3.7	100	90	A
M06310	3.01	-3.7	100	90	A
M06311	3.00	-3.7	100	90	A

Supplementary information:

Results:
A - No fire or Explosion
B - Fire
C - Explosion
D - Other (Please explain): ___

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

7.3.2	TABLE: Internal short-circuit test (cell)			P
Sample No.	**OCV at start of test, (V dc)**	**Particle location [1)]**	**Maximum applied pressure, (N)**	**Results**
M06286	3.40	1	401	A,E
M06287	3.41	1	402	A,E
M06288	3.40	1	400	A,E
M06289	3.40	1	403	A,E
M06290	3.41	1	402	A,E

Supplementary information:

[1)] Identify one of the following**:**

1: Nickel particle inserted between positive and negative (active material) coated area.

2: Nickel particle inserted between positive aluminium foil and negative active material coated area.

Results:

A - No fire or explosion
B – Fire
C - Explosion
D – Test concluded when 50 mV voltage drop occurred prior to reaching force limit
E – Test concluded when 800/400 N pressure was reached and 50 mV voltage drop was not achieved
F – Test was concluded when fire or explosion occurred
G - Other (Please explain): __

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

7.3.3	TABLE: Propagation test (battery system)				N/A
Sample No.	**OCV of Battery System Before Test, (V dc)**	**OCV of Target Cell Before Test, (V dc)**	**Maximum Cell Case Temperature, (°C)**	**Maximum DUT Enclosure Temperature, (°C)**	**Results**

Method of cell failure [1)]	Location of target cell	Area for fire protection (m^2)

Supplementary information:

1) Cell can be failed through applied heat, overcharge, nail penetration or combinations of these failures or other acceptable methods. See supporting documentation for details on cell failure method

2) If the battery system has no outer covering, the manufacturer is required to specify the area for fire protection.

Results:
A – No fire external to DUT enclosure or area for fire protection or no battery case rupture
B – Fire external to DUT enclosure or area for fire protection
C – Explosion
D – Battery case rupture
E - Other (Please explain): __

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

8.2.2	TABLE: Overcharge control of voltage (battery system)				N/A
Sample No.	**OCV at start of test for Cell/Cell Blocks, (V dc)**	**Maximum Charging Current, (A)**	**Max. Charging Voltage, (V dc)**	**Max. Voltage of Cell/Cell Blocks, (V dc)**	**Results**

	Charge Voltage Applied Battery System: 1)	
	Whole	**Part**

Supplementary information:

1. The exceeded voltage can be applied to only a part of the system such as the cell(s) in the battery system per Figure 6 of IEC 62619, if it is difficult to do it in using the whole battery system.

Results:
A - No Fire or Explosion
B – Fire
C - Explosion
D - The voltage of the measured cells or cell blocks did not exceed the upper limit charging voltage
E - The voltage of the measured cells or cell blocks did exceed the upper limit charging voltage
F - All function of battery system did operate as intended during the test.
G - All function of battery system did not operate as intended during the test.
H - Other (Please explain): ___

8.2.3	TABLE: Overcharge control of current (battery system)				N/A
Sample No.	**OCV at start of test, (V dc)**	**Max. Charging Current, (A)**	**Max. Charging Voltage, (V dc)**	**Results**	

Supplementary information:

Results:
A – No fire or Explosion
B – Fire
C – Explosion
D - Overcurrent sensing function of BMU did operate and then charging stopped
E - Overcurrent sensing function of BMU did not operate and then charging stopped
F - All function of battery system did operate as intended during the test.
G - All function of battery system did not operate as intended during the test.
H - Other (Please explain): ____

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

8.2.4	TABLE: Overheating control (battery system)		N/A
Model No.	**OCV at start(SOC 50%) of test, V dc**	**Maximum Charging Current, A**	**Maximum Charging Voltage, V dc**
Maximum Specified Temperature of Battery System, °C		**Maximum Measured Cell Case Temperature, °C**	**Results**

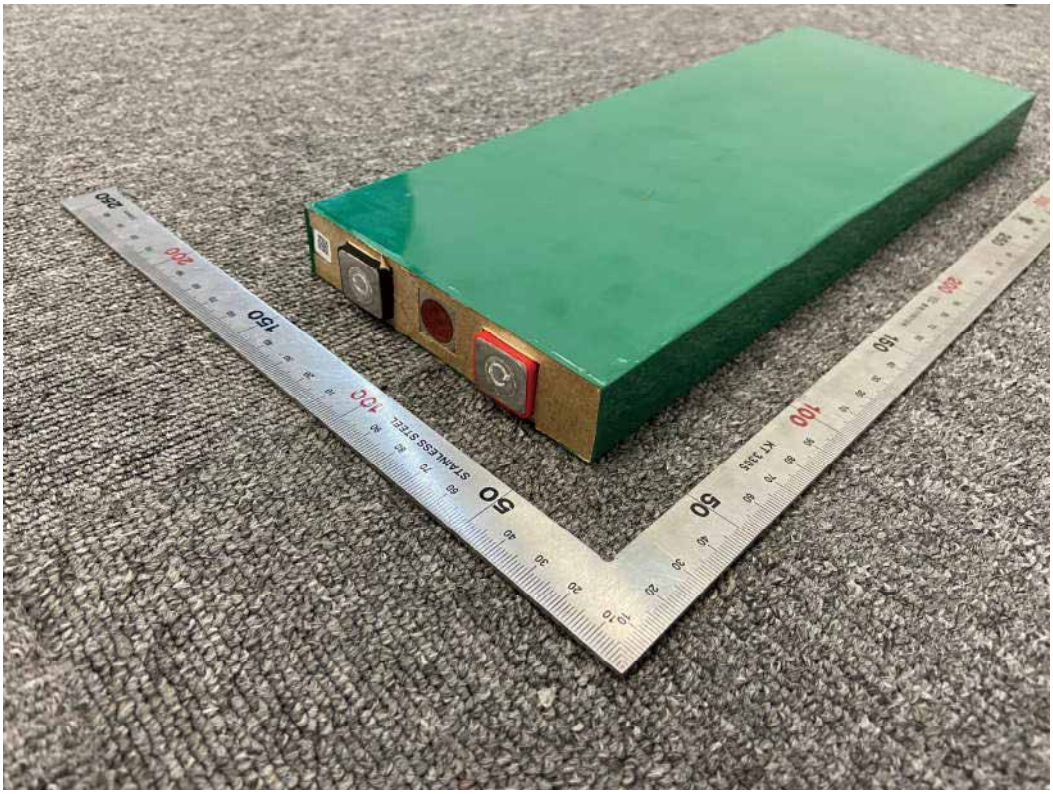
Supplementary information:

Results:
A – No fire or Explosion
B – Fire
C – Explosion
D - Temperature sensing function of BMU did operate and then charging stopped
E - Temperature sensing function of BMU did not operate and then charging stopped
F - All function of battery system did operate as intended during the test.
G - All function of battery system did not operate as intended during the test.
H - Other (Please explain): ____

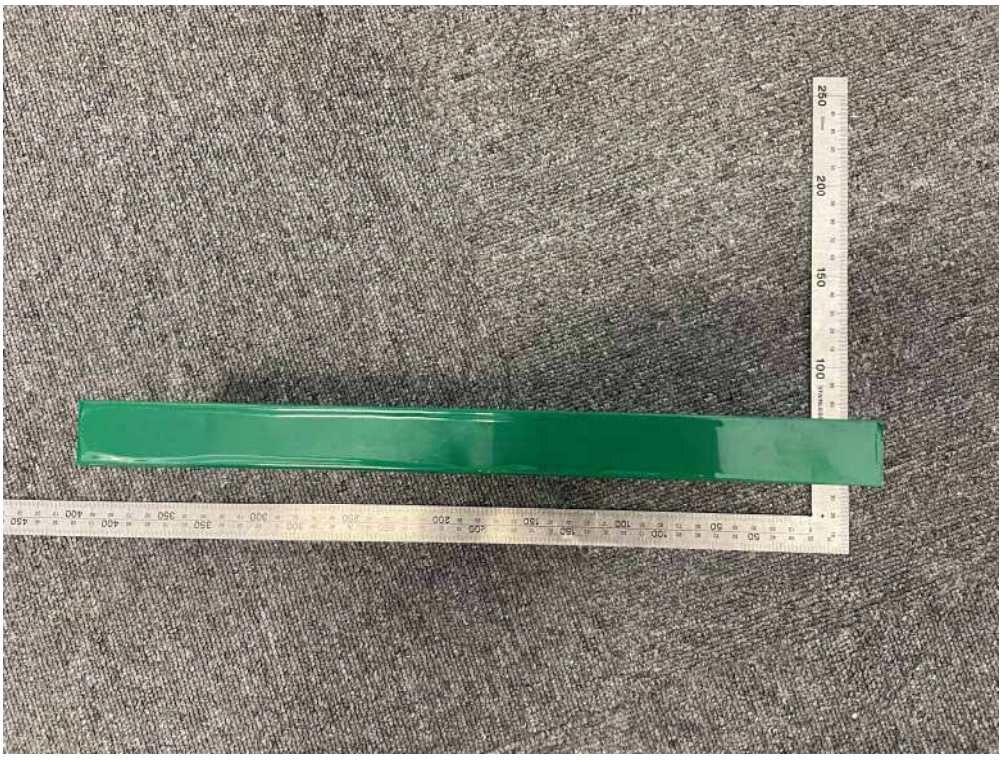
ENCLOSURE

Supplement ID	Description
01-01	Front view
01-02	Back view
01-03	Top view
02	Specification
03	Outline Dimension
04	Package requirement
05-01	ISO9001 Certification for factory (Harbin)
05-02	ISO9001 Certification for factory (ShenZhen)
06	The appearance of the internal short-circuit location

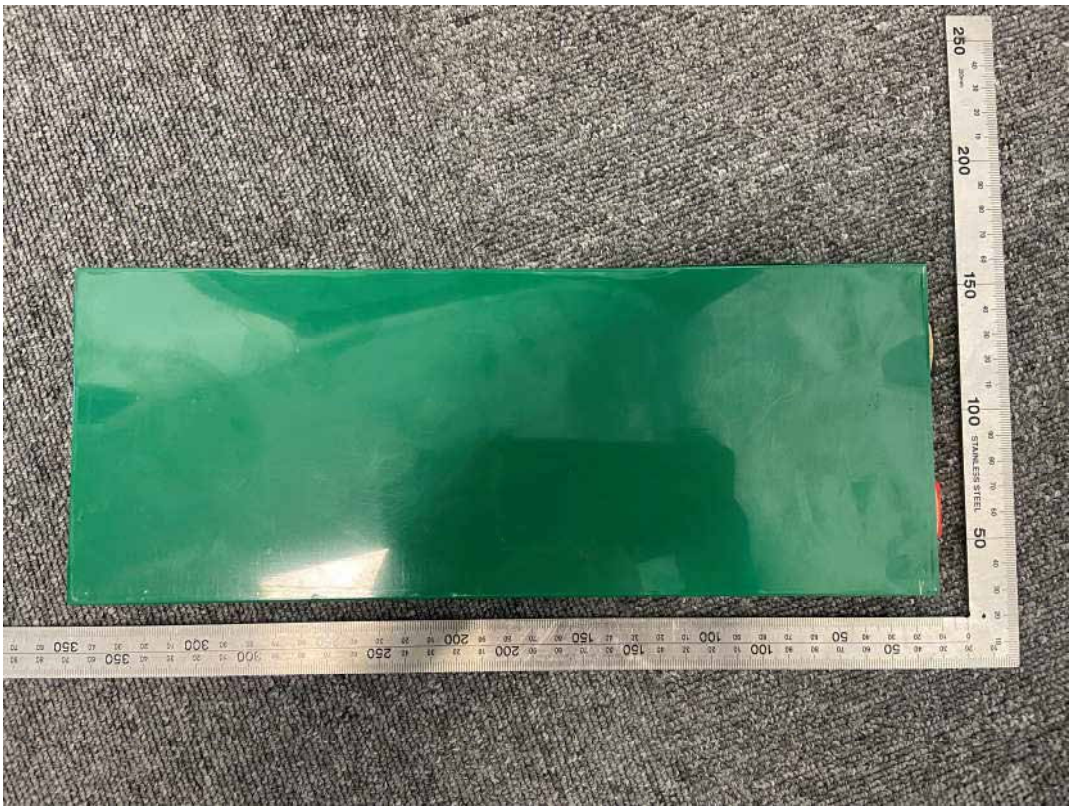
ID 01-01



ID 01-02



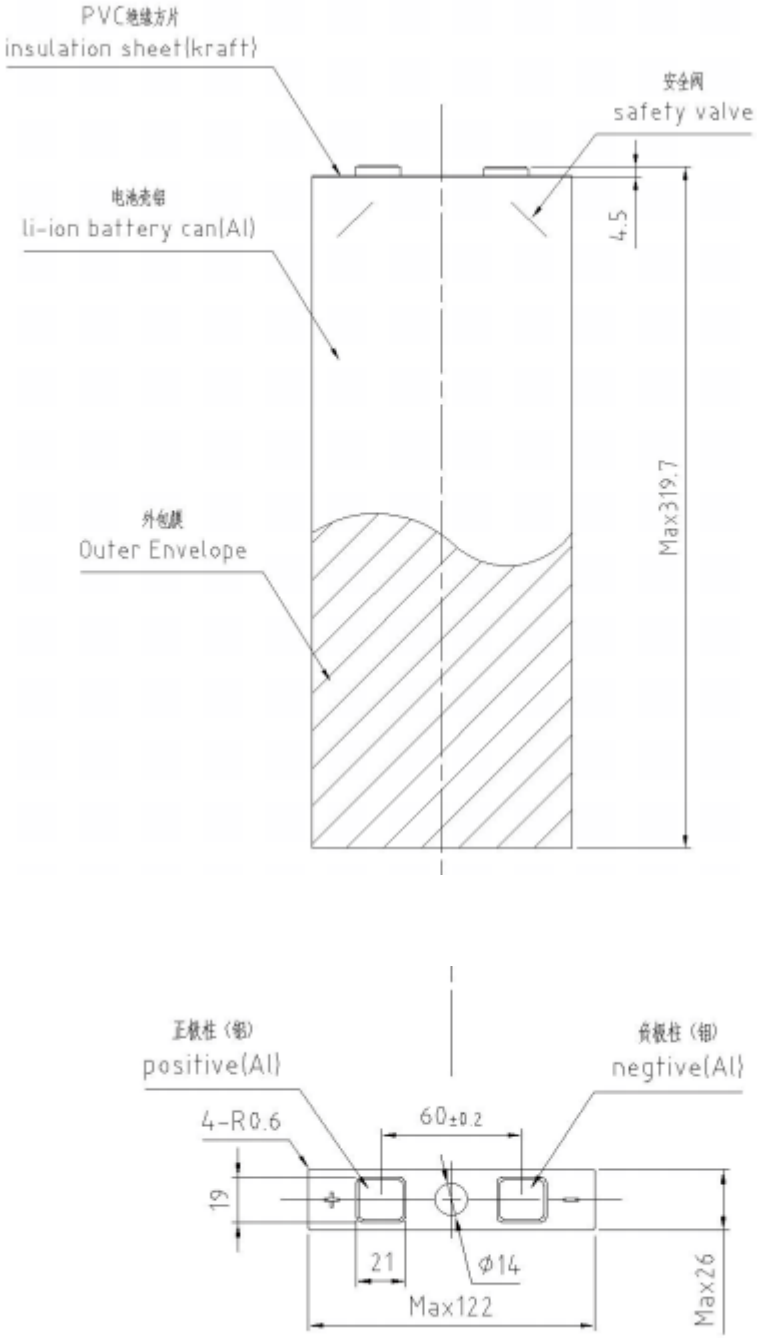
ID 01-03



ID 02

电芯参数表	
Manufacturer	ShenZhen Coslight Power Technology Co.,Ltd.
Model name	FP26122320A
Cell Type	LFP
PTC or other current/ thermal protection	no
Rated Capacity	100Ah
Standard Charging Current	0.5C
Standard Full Charging Voltage	3.7V
End of Charging Current	2A
Maximum Charging Current	1.0C
Standard Discharging Current	0.5C
Maximum Discharging Current	3.0C
End Point Voltage	2.5V
Discharge Temperature range	-20～60℃
Charge temperature range	5～45℃
Upper limit charging voltage	3.7V
Weight	2.24±0.04Kg
Dimensions	T26mm*W122mm*L320m

ID 03


PVC绝缘方片
insulation sheet(kraft)
安全阀
safety valve
电池壳铝
li-ion battery can(Al)
4.5
Max319.7
外包膜
Outer Envelope
正极柱（铝）
positive(Al)
负极柱（铝）
negtive(Al)
4-R0.6
60±0.2
19
21
Φ14
Max122
Max26

ID 04


三、设计方案 (Packaging Solution)
A 装配细节图
①木箱(Plywood Boxes)
①气泡袋 (Bubble Bag)
——表面及缓冲保护
②格挡—— (Paperboard Partition)
——电芯与电芯之间隔离，增加纸箱强度
③珍珠棉缓冲(EPE)
——缓冲防护
包装信息 (Packaging Information)
装载数量 (QT.) 180 PCS
净重(N.W.) 378 Kg
毛重(G.W.) 60 Kg
外尺寸(O.D.) 1050×780×620 mm

ID 05-01

Certificate CN20/10194

The management system of

HARBIN COSLIGHT NEW ENERGY CO., LTD.

Business Registration Address: ROOM 202, BUILDING 1 NANHU STREET, JIZHONG AREA YINGBIN ROAD, DEVELOPMENT ZONE HARBIN, HEILONGJIANG PROVINCE, P.R. CHINA

Business Operation Address: ROOM 202, BUILDING 1 NANHU STREET, JIZHONG AREA YINGBIN ROAD, DEVELOPMENT ZONE HARBIN, HEILONGJIANG PROVINCE, P.R. CHINA

Unified Social Credit Code 91230109MA1BN9HR8Q

has been assessed and certified as meeting the requirements of

ISO 9001:2015

For the following activities

Design and production of lithium-ion batteries and matching products

This certificate is valid from 28 April 2020 until 27 April 2023 and remains valid subject to satisfactory surveillance audits. Recertification audit due a minimum of 60 days before the expiration date. Issue 1. Certified since 28 April 2020

Authorised by

SGS United Kingdom Ltd
Rossmore Business Park Ellesmere Port Cheshire CH65 3EN UK
t +44 (0)151 350-6666 f +44 (0)151 350-6600 www.sgs.com
The certification information can be verified on the web site of Certification and Accreditation Administration of the People's Republic of China www.cnca.gov.cn

HC SGS 9001 2015 0118

Page 1 of 1

0005

ID 05-02

Certificate of Registration

The Governing Board of
Q.A. International Certification Limited
hereby grants to:

Shenzhen Coslight Power Technology Co., Ltd.

Unified Social Credit Code: 91440300067970415T
Registration No.: QAIC / CN / 180525

(hereinafter called the Registered Company) the right to be listed in the Directory of Registered Companies in respect of the services listed below. These services shall be offered by the Registered Company at or from only the active business address given below in accordance with the quality management system in compliance with ***ISO 9001:2015.***

Business License Address:

No.37, Xiangshan Avenue, Luotian Community, Yanluo Street, Bao'an District, Shenzhen City, Guangdong Province, P.R. China

Active Business Address to which this Certificate is registered:

No.37, Xiangshan Avenue, Luotian Community, Yanluo Street, Bao'an District, Shenzhen City, Guangdong Province, P.R. China

Approved Scope to which this Certificate refers:

The Manufacture of Lithium-ion Batteries.

(Please note that the above scope represents the certified activity of the named organization and as such, the organization may undertake additional activities that are not covered under this certification).

Signed for and on behalf of the Board

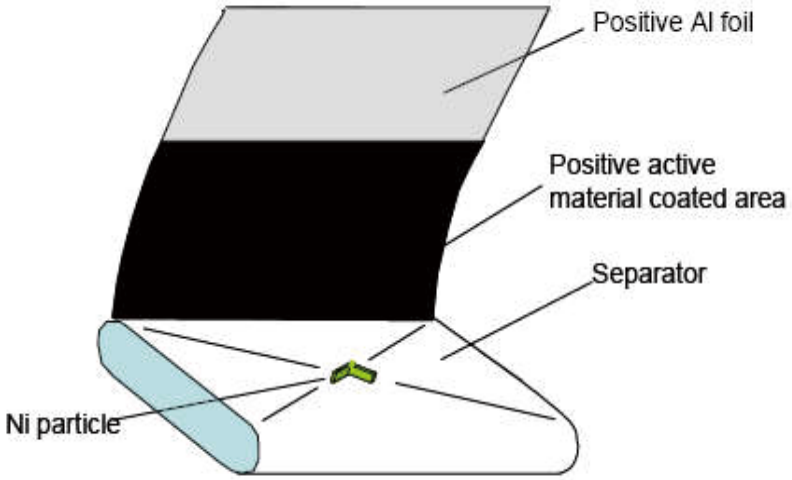
CHIEF EXECUTIVE SCHEME MANAGER

Certificate Issue Date : *29th August 2020* - **Certificate Renewal Before** : *28th August 2021*
Date of Initial Registration : *29th August 2018* - **Re-Certification Before** : *28th August 2021*

This Certificate of Registration is granted subject to the Regulations approved by the Board.
The information of this certificate can be searched on the website of CNCA (www.cnca.gov.cn).
The certified organization should apply for regular audit to maintain its qualification.

QA INTERNATIONAL
Q.A. International Certification Ltd.
Dudley Court
Dudley Road
Darlington
United Kingdom
DL1 4GG
Tel: +44 (0)1325 384272
Fax: +44 (0)1325 480980
www.qai.co.uk

ID 06


Positive Al foil
Positive active material coated area
Separator
Ni particle

HUAXING 华兴新能源

GENERAL OPERATION AND MAINTENANCE MANUAL FOR WALL-MOUNTED INTELLIGENT HOME ENERGY STORAGE SYSTEM

Shenzhen Huaxing New Energy Technology Co., Ltd.

Shenzhen Huaxing New Energy Technology Co., Ltd. provides its users with comprehensive technical support, and the users may contact a nearby authorized service center or contact the Headquarters directly.

Shenzhen Huaxing New Energy Technology Co., Ltd.

Address: No. 18, Mingcheng Road, Pingshan District, Shenzhen

Tel.: 4006010608

Website: http://www.huaxingenergy.com

Special Statement

Personal safety

1. High pressure in the product. It can only be opened by the Company's or its authorized technicians to prevent the danger of electric shock.
2. The product must be installed and commissioned by authorized technicians of the Company; otherwise it may cause product failure or endanger personal safety.
3. Before installation and use of the product, please read the manual and safety precautions carefully; otherwise it may cause product failure or endanger personal safety.
4. The product cannot be used as power supply for any life support equipment.
5. Never put the battery of the product into fire; otherwise it may cause explosion or endanger personal safety.

Battery safety

1. If the product is stored or not in use for a prolonged period of time, it must be placed in a dry, clean environment with specified ambient temperature. Power must be replenished if the battery is stored for over three months. The recommended storage voltage is 51.2V~54.4V.
2. If several groups of products are connected in parallel, measure the voltage of each group of battery with a multimeter and select those with voltage difference not larger than 2V for connection in parallel.
3. The product shall be used in an appropriate working environment. It is forbidden to use it in the following environment:

   Places with high temperature, low temperature or humidity that does not comply with the requirements of the technical indicators of the product;

   Places with conductive fine dust, corrosive gas. salt fog or flammable gas;

   Places with vibration and probable collision;

   Places close to heat sources or with strong electromagnetic interference.

Disclaimer

Huaxing New Energy is not responsible for defects or faults caused by the following reasons:

The product is used not in its specified scope of application and working environment;

Modification or repair without permission, improper installation and operation;

Force majeure;

Other situations in violation of the requirements of the manual of the product.

Safety precautions

The manual provides information on the installation and application of the wall-mounted intelligent home energy storage system of Shenzhen Huaxing New Energy Technology Co., Ltd. Please read the manual carefully before installation, use and maintenance of the system.

Please read the following safety precautions carefully before use to ensure proper installation, use and maintenance. The company is not responsible for any problems due to violation of the following requirements.

Danger

- Do not put the product into fire or heat it;
- Do not put the product in water or make it wet. Do not soak it in liquid such as sea water, beverage and beer.
- Do not use or store the product near heat sources (such as fire or heaters);
- Do not connect the product directly to wall socket or vehicle mounted cigarette lighter socket;
- Do not pierce through the product shell with nails or other sharp objects, nor hammer or tread on the product;
- Do not directly weld the product terminals;
- Do not decompose the product in any way;
- Do not charge the product under the condition of heat source or extreme heat;
- Do not hit, throw or mechanically impact the product;
- Do not connect the positive pole and negative pole of the product in a wrong manner;
- Do not short circuit the output positive pole and negative pole of the product. Do not transport or store the product together with necklaces, hair clips or other metal objects;
- The rated output voltage of the product is 51.2VDC which exceeds the safety voltage that can be borne by the human body. Electric shock may occur in case of contact;

Warning

- The discharge temperature range of the built-in battery of the product is -10℃~55℃ and the charge temperature range is 0℃~55℃. Do not exceed the battery temperature range during use of the product;
- Never charge the product in an environment below 0℃;
- Never use the product in an environment with temperature higher than 60℃;
- Do not use the product in an extremely hot environment such as direct sunlight or in a vehicle in a hot day. Otherwise, excessive heat can affect the battery performance and shorten its service life and, cause spontaneous combustion in serious cases;
- The product can only be used on designated equipment;
- The charger parameters shall meet technical requirements of the product;
- If the product output wire terminals become dirty, clean them with eraser or dry cloth. For electrical connection of the product and equipment, make sure the electrical connection points are in contact in a reliable and secure manner with the bolts properly tightened; otherwise, it may cause energy loss due to improper contact and may cause safety problems in serious cases.

Caution

- Do not use the product if it is damaged;
- The product may be damaged due to impact, etc. during transportation. Do not use the product in case of any abnormality of the built-in battery such as edge sealing damage, enclosure damage, electrolyte gas odor and electrolyte leakage;
- Do not use the product in case of objectionable odor or heat, deformation, color change or other abnormal phenomena of the built-in battery. If the product is being used or charged, turn off the power immediately and stop using it. In case of leakage or objectionable odor of the built-in battery, immediately take the product away from the fire source to prevent fire or explosion;
- If the built-in battery leaks and its electrolyte accidentally comes into contact with eyes, do not wipe; instead, rinse eyes with clean water or seek medical help immediately. The eyes may be injured if they are not treated timely;
- If the built-in battery leaks and its electrolyte comes into contact with skin or clothes, rinse affected areas with running water immediately; otherwise it may lead to inflamed skin.

This warning sign represents all personal safety instructions.

Thank you for buying the wall-mounted intelligent home energy storage system of the Company.
Before the use of the product, please carefully read relevant information and strictly observe all the instructions.

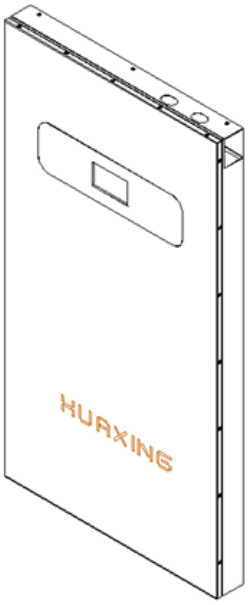
Contents

I. Overview

The wall-mounted intelligent home energy storage system (hereinafter referred to as the energy storage system) is characterized by small volume, light weight, long service life, flexible installation method, substantial environmental adaptation, maintenance-free, green and environmental protection, and low comprehensive cost. The users may select relevant product models according to their actual load size and quantity.

The energy storage system is designed with new high-performance cells and advanced BMS battery management systems. With the over-voltage, under-voltage, over-current, high temperature, low temperature and short circuit protection and restoration function, the safety of the system is guaranteed. In addition, the system is fitted with functions such as accurate measuring of SOC (state of charge), SOH assessment and passive balancing. The users can not only carry out man-machine interaction via the touch screen to check the battery working status and real-time data but they can also check history data via upper computer software and configure warning and protection parameters such as battery voltage, current and temperature.

II. Appearance

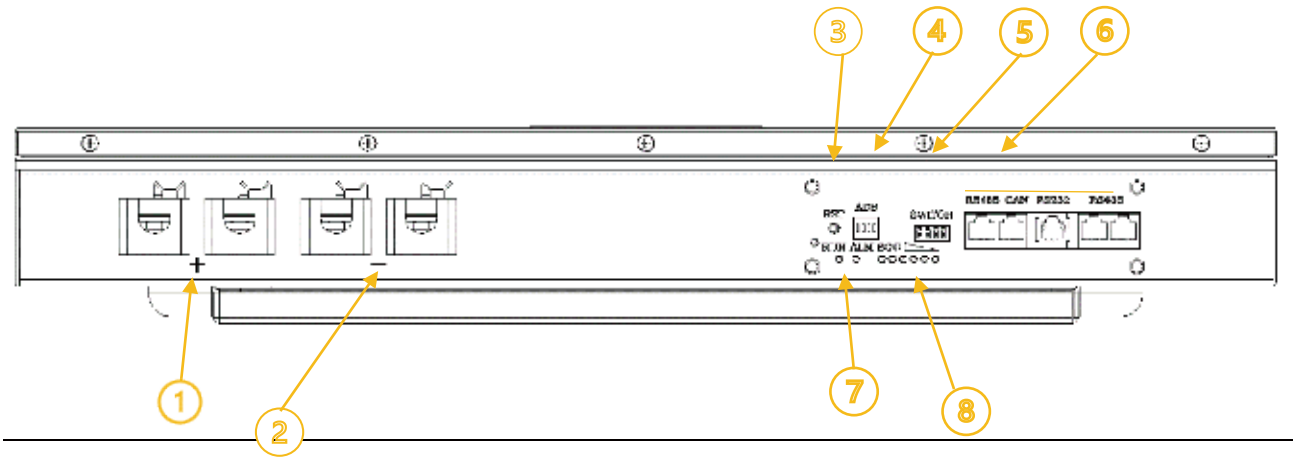


Appearance of the energy storage system

	Item	Specification and parameters
1	Battery model	51.2V100Ah
2	Enclosure material	Sheet metal
3	Enclosure color	White
4	L*W*H	590*91*1090 mm

Remarks: The diagram is for reference only.
See the physical object for actual effect.

III. Electrical Layout



Electrical layout (The diagram is for reference only. See the physical object for actual effect)

The above diagram is the electrical layout and the components are described below:

① Output positive pole+

The battery positive pole output connector. The two wiring terminals of the connector has completely the same purpose and performance.

② Output negative pole-

The battery negative pole output connector. The two wiring terminals of the connector has completely the same purpose and performance.

③ RST

Reset key for the battery on/off key. See 5.3/5.4 for specific operation.

④ ADS

ADS code switch is used to set ID address of the energy storage system in the parallel operation network. See 5.6 for the specific operation instructions.

⑤ Dry contact

Two groups of dry contacts in NO state. See 5.10 for the specific operation instructions.

⑥ Communication interface

The leftmost RS485/CAN communication interface can be connected with equipment (such as inverter) for transmission of battery information data.

RS232 interface in the middle can be connected with the upper computer for reading battery information.

The rightmost two RS485 communication interfaces have the same function and purpose and they are used for communication when the battery packs are connected in parallel.

⑦ RUN/ALM indicator light

RUN is the run indicator light. When it is on, it means the battery is in operation;

ALARM is the fault indicator light. When it is on, it means that there is battery warning or that the battery is in the protection state.

⑧ CAPACITY

Battery SOC indicator light. The LED lights from left to right represent high SOC to low SOC;

Remarks: The diagram is for reference only. See the physical object for actual effect.

IV. Technical Specification

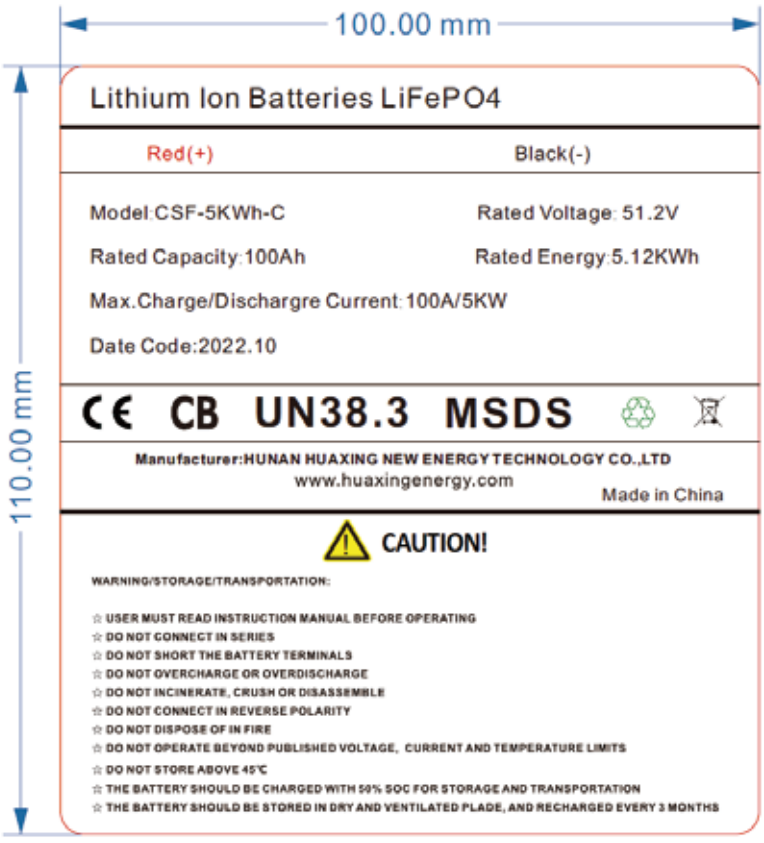
4.1. Specification and parameters

No.	Item	Specification and parameters
1	Battery model	51.2V/100Ah
2	Rated capacity	100Ah
3	Rated voltage	51.2V
4	Battery type	LiFeP04 (lithium iron phosphate)
5	Total capacity (Wh)	5120 Wh
6	Charging voltage (V)	58.4V
7	Maximum charging current (A)	100A
8	Maximum discharging current (A)	100A
9	End-of-discharge voltage (V)	44V (Min)
10	Operating temperature	Charge: 0℃ ~ 55℃
		Discharge: -10℃ ~ 55℃
11	Storage temperature	-20℃ ~ 50℃

12	**Size (L*W*H)**	**1090*590*91 mm**
13	Weight (kg)	65
14	Color	White
15	Communication interface	RS485/CAN2.0B/RS232

Remarks: The specification and parameters are for reference only. The battery specification shall prevail.

4.2. Product label



Product label

A product label is attached to
The product.

The label is at the lower right on
The front of the product. You will
Find the following information
On the label:

Product model;
Rated voltage;
Rated capacity;
Rated energy;

Maximum charging and
Discharging current/load power;
Date of production.

You will need the information on
The label for safe use of the product.
If you need user support of Huaxing
New Energy, inform the label information
And you can get solutions more quickly.

The product label must be permanently
Attached to the product.

V. Operation Instructions

Safety warning:

1. Make sure to shut down the product before wiring to prevent sparks.
2. After installation, check to ensure the wiring is correct before start-up.
3. If several groups of products are connected in parallel, measure the voltage of each group of battery with a multimeter and select those with voltage difference not larger than 2V for connection in parallel.
4. Power must be replenished if the product is stored for over three months and the recommended voltage for power replenishment is 51.2V~54.4V so as to prevent over discharge of the built-in battery.
5. The product contains high voltage battery and operation can only be conducted by professionals.
6. Please wear insulating gloves and the installation tools must be properly insulated for protection.

5.1. Preparation for installation

The following tools may be used for the installation:

 **Impact drill**	 Wire cutter	 Cable clamp
 **Multimeter**	 Socket tool kit	 Electric hand drill

5.2. Unpacking and inspection

Before installation, please check if the components in the package are complete. The package contains the following components:

S/N	Component name	Schematic diagram	Qty.
1.	Energy storage system		1 pcs
2.	Expansion screw (M8*60)		6 pcs
3.	Manual		1 pcs
4.	Certificate of Quality	 Conformed	1 pcs

5.3. Wall-mounted energy storage system

Before selection of the installation position, please consider the following points:

1. Do not install the product on inflammable building materials.
2. For installation of the product on solid wall, we strongly recommend that it should be installed on concrete wall. If it is to be installed on other types of walls, the bearing capacity of the walls should be fully considered.
3. It is suggested that the product should be installed vertically on wall on the visual horizon to facilitate reading and operating of the LCD touch screen.
4. In case of outdoor installation, measures should be taken to prevent direct sunlight and rainwater infiltration.
5. Do not install the product in a severe environment where it is wet, greasy, inflammable and explosive or where there is a large amount of fine dust.
6. The ambient temperature should be 0℃~55℃ to ensure optimal operation.
7. After installation of the product, an interval of at least 20cm should be kept at both sides of the product to ensure sufficient space for heat dissipation and for removal of electric wires.

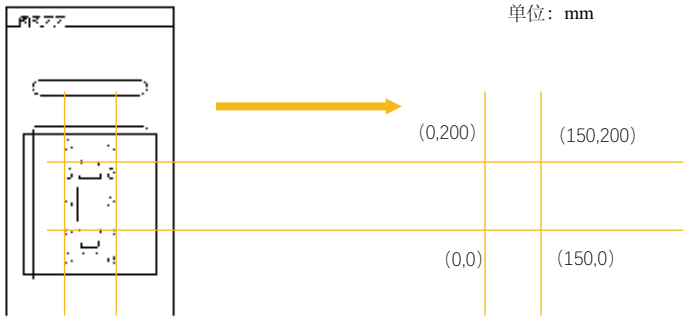
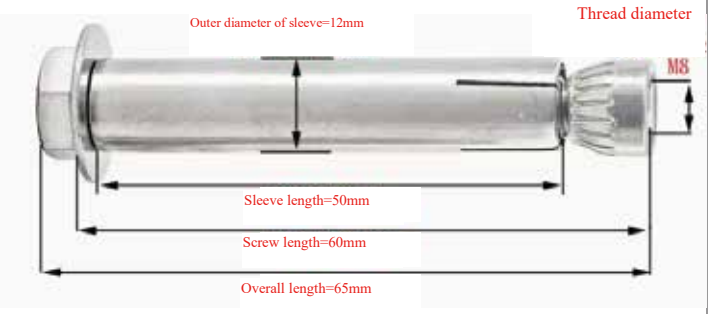


Fig. 5.3.1 Diagram of hole positions for wall mounting

	
Drill bit (12mm)	Expansion screw

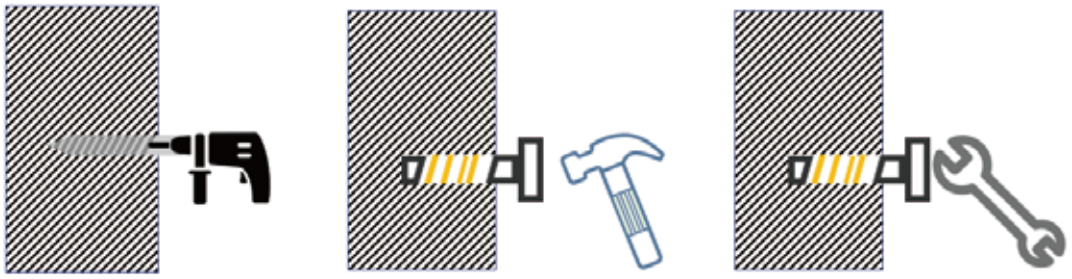


Fig. 5.3.2 Schematic diagram of installation

Use an impact drill and a 12mm drill bit to drill four holes in the wall according to Fig. 5.3.1 and then install expansion screws supplied along with the product. Refer to Fig. 5.3.2. The steps are as follows:

Step 1: Drilling depth 50mm;

Step 2: After drilling, hammer the screws and expansion tubes into the holes, with about 10mm reserved for the screw head;

Step 3: Tighten the nuts properly with a wrench to make the expansion tube expand.

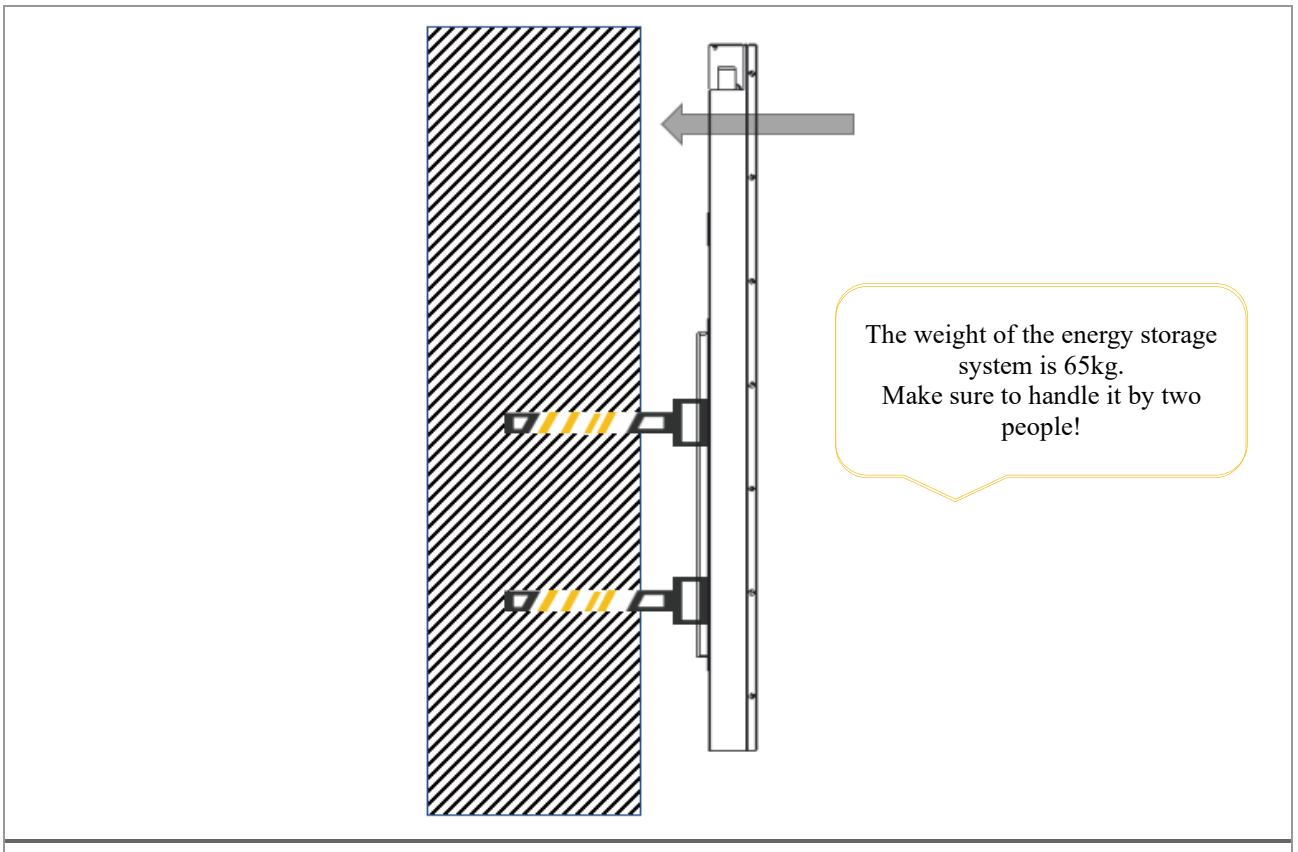


Fig. 5.3.3 Schematic diagram of wall mounting

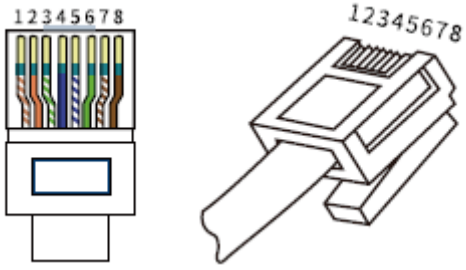
After four expansion screws are firmly fixed on the wall as shown in Fig. 5.3.3, align the product installation holes with the expansion screws and then push for locking.

5.4. Wiring

First shut down the product and then connect its output pole and RS485/CAN port to the electrical equipment (such as inverter).

For making of the positive and negative pole power cable, please make sure the cable cross-section area is S=25mm^2 and then crimp SC25-8 wiring terminal.

For making of the communication cable at the battery side, please refer to the following definition of communication interface:



RJ45 registered jack

PIN	Definition of RS485	Definition of CAN	Remarks
1.	RS485-B1	NC	
2.	RS485-A1	NC	
3.	GND	NC	
4.	NC	CANL	
5.	NC	CANH	
6.	GND	NC	
7.	RS485-A1	GND	
8.	RS485-B1	NC	

5.5. Battery ON

In the battery OFF state, press RST button for one second and then release it, the LED indicator lights are on successively for 0.5 second starting from "L6" and the energy storage system enters the ON status.

5.6. Battery OFF

In the battery ON state, press RST button for three seconds and then release it, the LED indicator lights are on successively for 0.5 second starting from "RUN" and then all of them are off, the energy storage system enters the OFF status.

5.7. Description of indicator light

Power level indication

Status	Charge						Discharge					
Capacity indicator light	L6	L5	L4	L3	L2	L1	L6	L5	L4	L3	L2	L1
0-16.6%	Off	Off	Off	Off	Off	Flash 2	Off	Off	Off	Off	Off	Normally on
16.6-33.2%	Off	Off	Off	Off	Flash 2	Normally on	Off	Off	Off	Off	Normally on	Normally on
33.2-49.8%	Off	Off	Off	Flash 2	Normally on	Normally on	Off	Off	Off	Normally on	Normally on	Normally on
49.8-66.4%	Off	Off	Flash 2	Normally on	Normally on	Normally on	Off	Off	Normally on	Normally on	Normally on	Normally on

66.4-83%	Off	Flash 2	Normally on	Normally on	Normally on	Normally on	Off	Normally on	Normally on	Normally on	Normally on	Normally on
83-100%	Flash 2	Normally on	Normally on	Normally on	Normally on	Normally on	Normally on	Normally on	Normally on	Normally on	Normally on	Normally on
Operation indicator light	Normally on						Flash 3					

Indication of status

System Status	Abnormal event	RUN	ALM	Power level LED	Description
		●	●	● ● ● ● ● ●	
Off	Sleeping	Off	Off	All off	All off
Standby	Normal	Flash 1	Off	Based on power level displayed	Standby status
	Warning	Flash 1	Flash 3		
Charge	Normal	Normally on	Off	Based on power level displayed	
	Warning	Normally on	Flash 3	(Power level maximum indication LED flash 2)	Warning ALM other than overcharge warning flashes 3
	Overcurrent protection	Normally on	Flash 3	Off	Enter current limiting charge
Discharge	Normal	Flash 3	Off	Based on power level displayed	
	Warning	Flash 3	Flash 3		
	Under-voltage protection	Off	Flash 3	Off	Stop discharge
	Overcurrent protection	Off	Normally on		Stop discharge
Temperature	Protected	Off	Normally on	Off	Stop charge and discharge
Failure	Cell failure, NTC failure	Off	Normally on	Off	Stop charge and discharge
	Voltage sensor failure				
	Current sensor failure				
	Charge and discharge MOS failure				

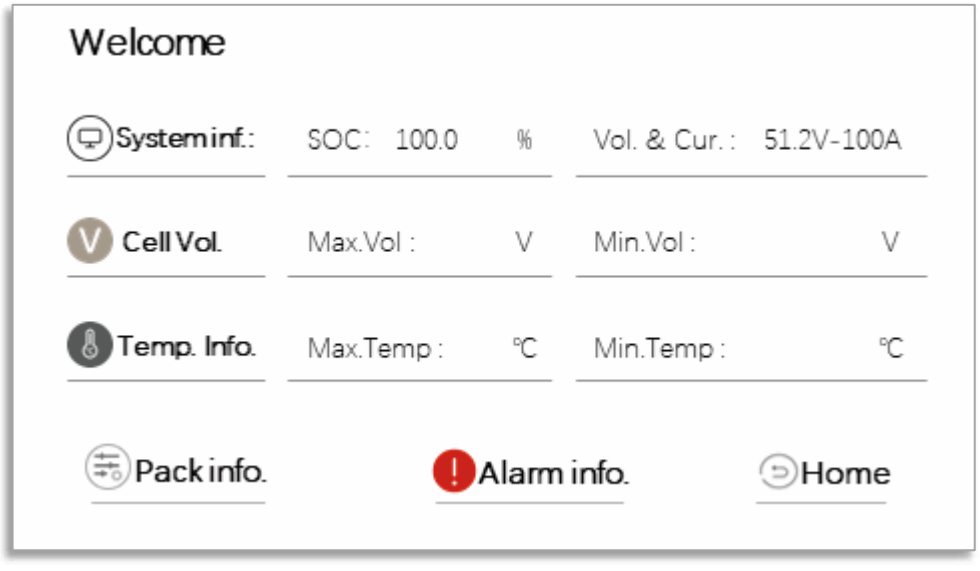
Description of flash

Flash mode	On	Off
Flash 1	0.25 S	3.75 S
Flash 2	0.5 S	0.5 S
Flash 3	0.5 S	1.5 S

5.8. Description of display screen

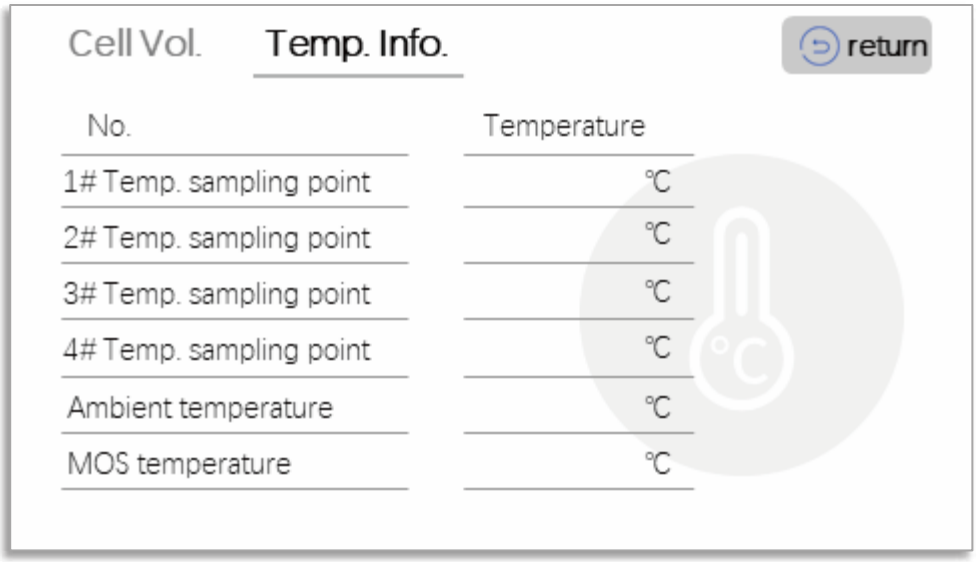
The product is equipped with a touch screen. The users may carry out man-machine interaction via the screen to check data such as battery working status, real-time total voltage, total current and units.

Boot page

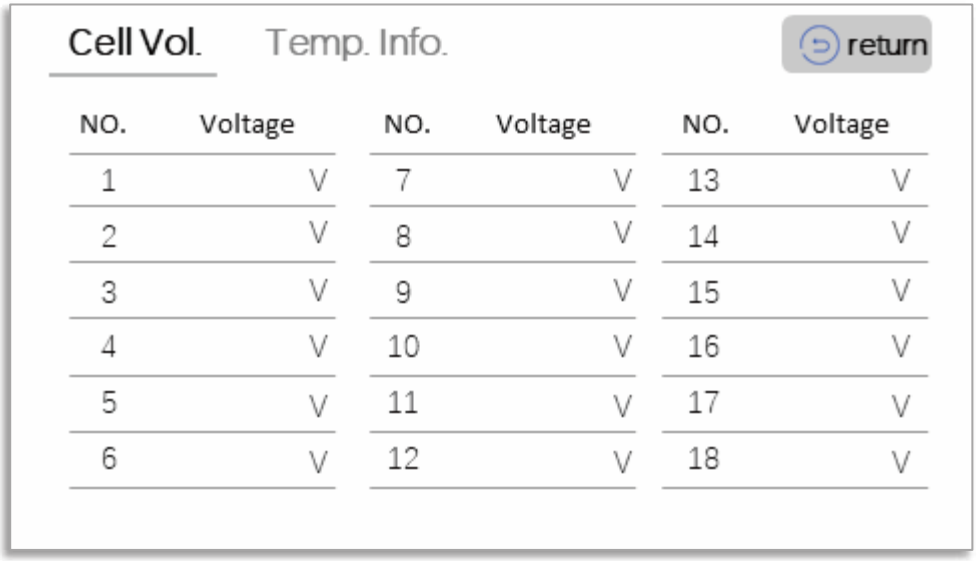


Home interface

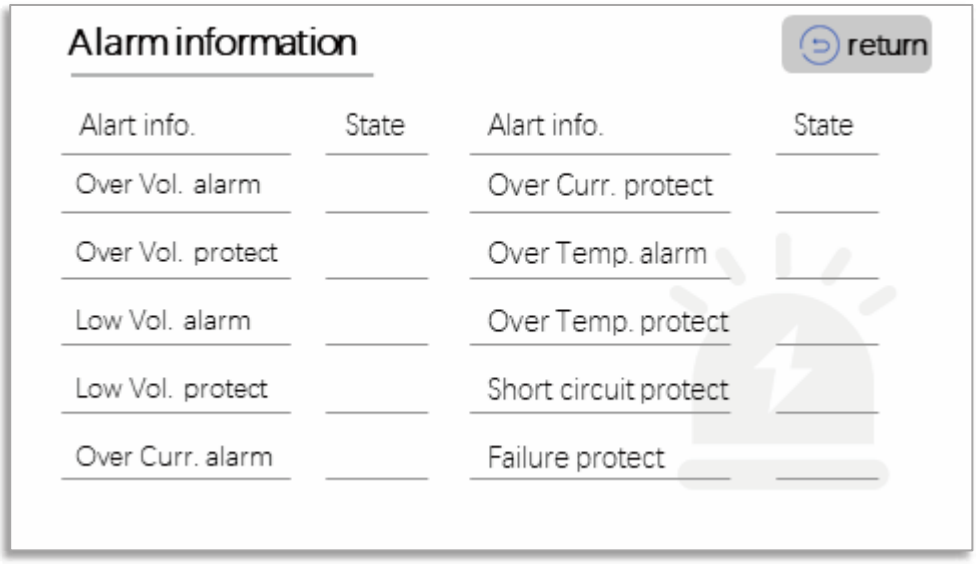
You can check SOC, total voltage, total current, maximum/minimum unit voltage, and maximum/ minimum unit temperature.



Temperature information interface
You can check real-time temperature information.



Unit voltage information interface
You can check real-time unit voltage information.



Warning message interface

Display of screen interface (subject to the actual object)

5.9. Description of dial

In the battery stand-alone working mode, the dial address should be set as 1 as shown in the diagram below.

Dial for a single pack of battery

In the multi-machine working mode of the battery, you need to configure the dial address for each energy storage system, starting from 1 and so on. BCD format is adopted for dial. As shown in the table below.

Position of ADS code switch				Dial address	Description
ADS1	ADS2	ADS3	ADS4		
OFF	OFF	OFF	OFF	0	Not used
ON	OFF	OFF	OFF	1	Slave 1 battery
OFF	ON	OFF	OFF	2	Slave 2 battery
ON	ON	OFF	OFF	3	Slave 3 battery
OFF	OFF	ON	OFF	4	Slave 4 battery
ON	OFF	ON	OFF	5	Slave 5 battery
OFF	ON	ON	OFF	6	Slave 6 battery
ON	ON	ON	OFF	7	Slave 7 battery
OFF	OFF	OFF	ON	8	Slave 8 battery
ON	OFF	OFF	ON	9	Slave 9 battery
OFF	ON	OFF	ON	10	Slave 10 battery
ON	ON	OFF	ON	11	Slave 11 battery
OFF	OFF	ON	ON	12	Slave 12 battery
ON	OFF	ON	ON	13	Slave 13 battery
OFF	ON	ON	ON	14	Slave 14 battery
ON	ON	ON	ON	15	Slave 15 battery

5.10. RS485 interface

RS485 interface of the battery can communicate with the upper computer or equipment and realize parallel communication between energy storage systems in case of parallel connection of multiple machines. For the communication specification, see the communication protocol manual. For the connecting method of single machine communication cable, see the diagram below.

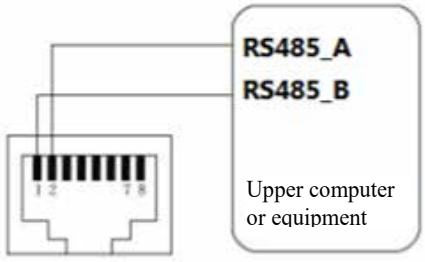
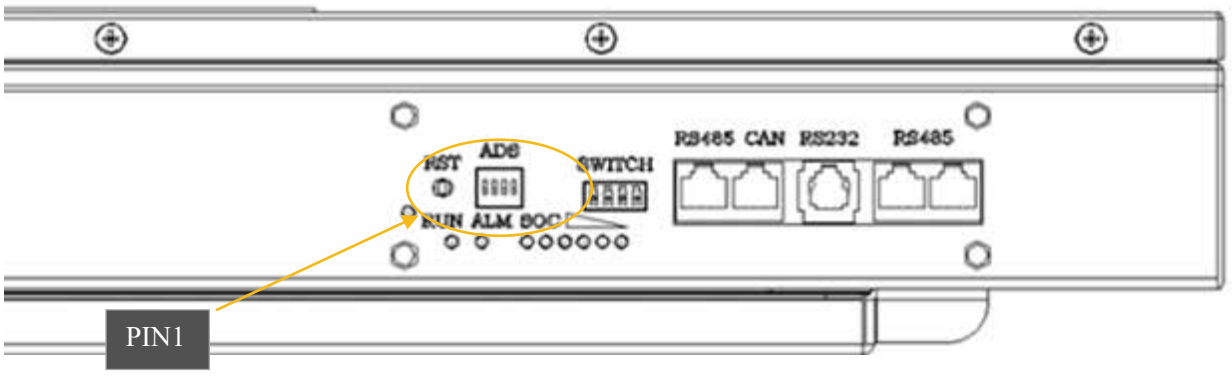


Diagram of connecting method for communication cable

5.11. Dry contact



Schematic diagram of dry contact position

Built-in BMS of the battery contains two groups of dry contacts:

Dry contact 1: PIN1 to PIN2, normally open, closed during fault protection.

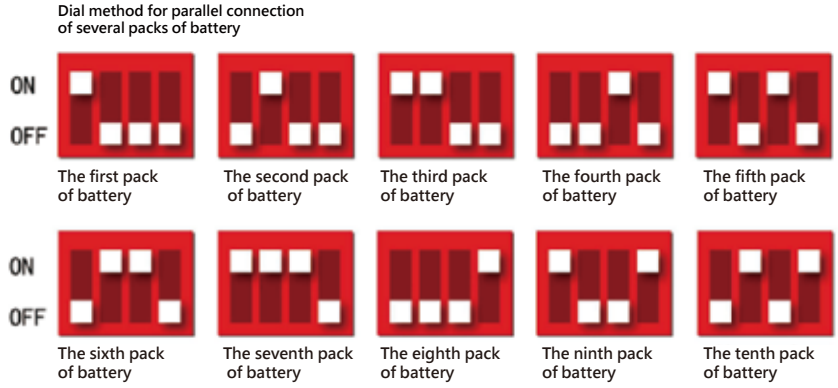
Dry contact 2: PIN3 to PIN4, normally open, closed in case of low power warning.

5.12. Operation of parallel connection of multiple machines

If several groups of products are connected in parallel, measure the voltage of each group of battery with a multimeter and select those with voltage difference not larger than 2V for connection in parallel.

Dial setting

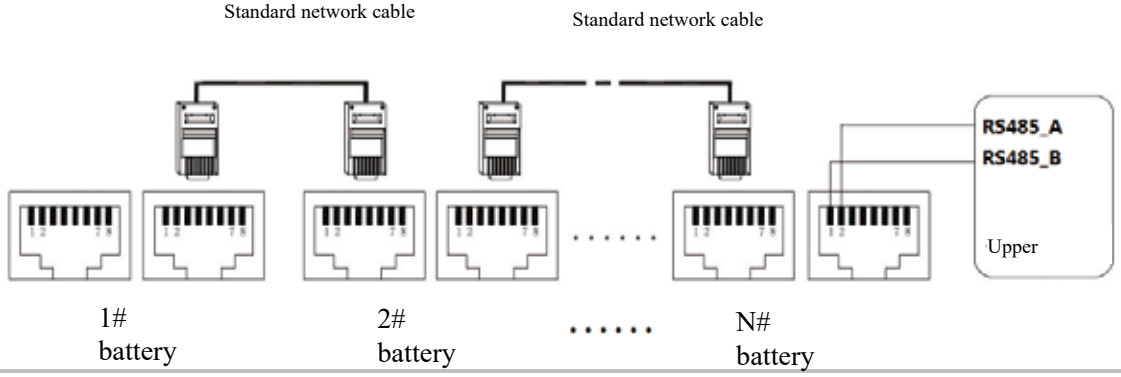
In case of need of parallel connection of several packs of battery, you need to configure the dial address for each product in the shutdown status of the product, starting from 1 and so on as shown in the diagram below. After dial setting, press the reset button for start-up, then hold down the reset button until the ticker is on; shut down and dial setting is completed.



Dial method for parallel connection of several packs of battery

Connection of communication cable

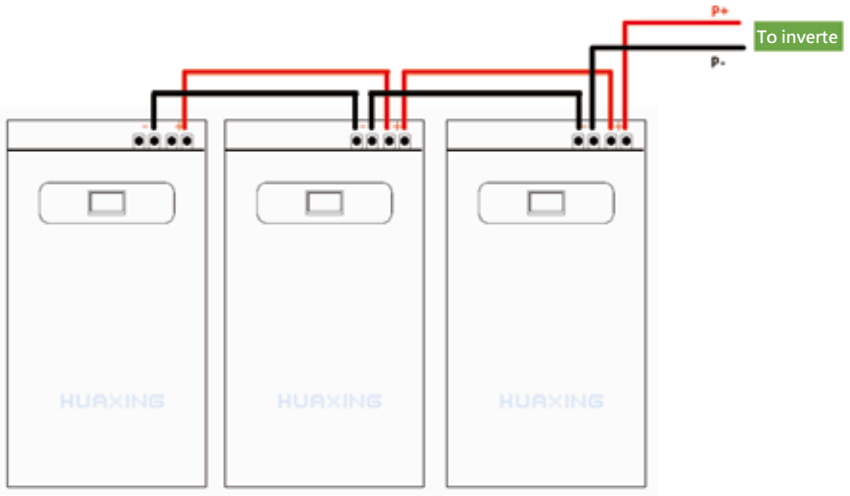
In the shutdown status, connect RS485 interfaces of each battery using standard network cable and connect any of the remaining RS485 interfaces to the equipment or upper computer for communication. For the connection method of communication cable of multiple machines in parallel, see the diagram below.



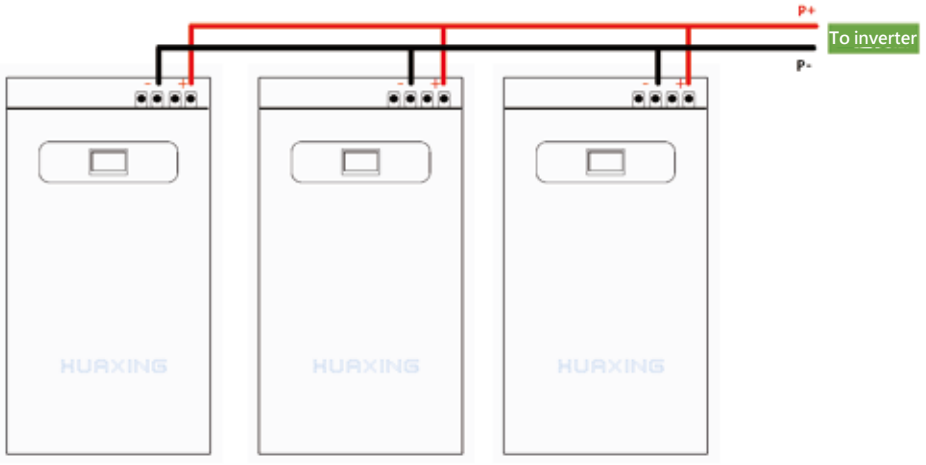
Connection method of communication cable of several groups of products in parallel

Connection of power cable

In the shutdown status, it is strongly suggested that the output of each pack of battery should be connected to the busbar or main cable for convergence. In case of convergence on the battery output terminal, make sure the control power is not larger than 5KW. Finally, connect the busbar to the equipment. Refer to the following wiring method for three packs of battery in parallel.



Suitable for inverter ≤5KW



Suitable for inverter ≤15KW

Schematic diagram of connection of power cable

5.13. Connection to electrical equipment

If the product is used for household energy storage, please make sure the power meets the following key points:

(1) Total capacity of a single product is 51.2V100Ah and the inverter power should be less than or equal to 5.5KW;

(2) Total capacity of two products in parallel is 51.2V200Ah and the inverter power should be less than or equal to 10KW;

(3) For electrical connection between the product and the inverter, please use DC circuit breaker for switch control. Type selection of DC circuit breakers should be in accordance with relevant local laws and regulations.

VI. Charging Instructions

The charge current and charge voltage of the product should not exceed the maximum value specified in the technical specification of the user manual.

The charge temperature should not exceed the charge temperature range specified in the technical specification of the user manual.

Do not charge the product for a long time. Do not carry out reverse charging of the product.

Charge parameter setting of the charger should comply with the requirements of the technical specification of the product.

Use of current, voltage and temperature range not specified in the technical specification of the product will affect the product service life or cause damage and cause safety performance problems in serious cases.

VII. Maintenance

The built-in battery is one of the core parts of the product and the application environment and method may affect the service life of the battery. Rational maintenance of the battery can effectively increase its service life.

1) If the product is stored or not in use for a prolonged period of time, it must be placed in a dry, clean environment with specified ambient temperature. Power must be replenished if the battery is stored for over three months. The recommended storage voltage is 51.2V~54.4V.

2) The product should not be used in an environment with excessively high or low temperature as far as possible. The ambient temperature should not exceed the working temperature range of the product (charge: 0℃~55℃, discharge: -10℃~55℃). The battery service life can be effectively increased when the product is used at the normal temperature of about 25℃.

3) During each patrol inspection, check the product appearance and measure the voltage. The battery voltage should be around 53-54V when the battery is fully charged.

4) If the product is not used, turn off the power or make the product enter the sleep state so as to prevent over discharge of the built-in battery.

5) To ensure the product service life, proper inspection and maintenance should be conducted. The recommended maintenance methods are as follows:

i. Seasonal maintenance

Carry out the following checks every month:

Check and record the temperature in the battery compartment;

Check the cleanliness, appearance and temperature of the cabinets one by one;

Measure and record the overall voltage of the battery system.

ii. Annual maintenance

Repeat all the seasonal maintenance and checks;

Check if any connecting part becomes loose every year;

Carry out discharge test for verification of the product based on the actual load. If the actual capacity of the product is lower than 80% of the rated capacity, it is deemed that the service life of the product ends.

iii. Precautions for use and maintenance

Insulated tools must be used for installation and maintenance;

Do not clean the modules with any organic solvent;

Do not smoke or use fire around the product;

After discharge of the product, the battery should be fully charged within 24 hours so as not to affect its electric capacity.

The battery performance will deteriorate during storage and therefore power should be replenished if the product has been stored for three months;

All maintenance must be conducted by professionals.

VIII. Handling of Abnormal Situation

In case of any abnormal situation of your product, please carry out checks based on the following table and then eliminate the fault. In case of any difficult problem, please contact our user service center.

Fault condition	Fault cause	Solution
ALM warning light ON	The battery is in the under-voltage, over-current and over temperature warning or protection state.	Check 5.7 status indication table to determine the reason for the warning and then solve it accordingly. For instance: Charge the battery in case of under-voltage warning. Check if the equipment status is normal in case of over-current warning. Check if the ambient temperature is too high in case of over-temperature warning.
Short battery discharge time	Insufficient charge of battery	Apply the mains supply for more than eight hours to re-charge the battery.
	Output overload	Check the application of load and remove non-critical equipment.
	Reduced capacity of battery due to aging	Replace battery

Handling of other special situations

☒ **Power cut**

AC power cut is the most common situation during system operation. In case of short period of power cut, the lithium iron energy storage system in the system will supply DC power. If the cause of the power cut is not clear or the power cut lasts for a prolonged period of time, attention should be paid to the matching of the load current magnitude and the backup energy storage system capacity.

☒ **Disastrous accidents**

Disastrous accidents include lightning stroke, water soaking, earthquake and fire etc. that cause communication equipment failure. Regarding disasters that may seriously affect the communication safety, prevention should be in the first place and, meantime, the communication bureau (station) should have emergency management regulations and major accident urgent repair procedures.

IX. Packing

The product adopts complete packaging to ensure it is free from damage due to hazardous gas, chemical pollution, static electricity and dampness and free from mechanical damage during handling, transportation and storage. The packing case bears the product name, model, quantity, gross weight, manufacturer, date of production and necessary signs such as "handle with care", "keep dry", "this side up".

X. Storage

The product should be stored in a dry warehouse. It should be in the half charging state of about 30% - 60%. It should be kept away from direct sunlight and rain. If the product has been stored for over six months, test should be conducted to verify its capacity. If its storage period exceeds one year, it should be inspected again to ensure it is acceptable before use.

To prevent over discharge of the battery, power should be replenished for the energy storage system every three months during storage so as to prevent the impact of self-discharge on the battery. Dedicated chargers should be used to replenish power for the energy storage system.

The built-in battery of the product is chemical product. If it is stored and not used for a prolonged period of time, the battery performance will deteriorate slowly. Therefore, the battery should be put into use as soon as possible after storage for some time; otherwise the battery should be charged and discharged again to activate it and restore its energy.

XI. Transportation

During handling of the product, it should be handled with care without violent impact. During transportation, the product should be placed in strict accordance with the direction marked on the packing case and efforts should be made to avoid violent vibration, impact, squeezing, exposure to sunlight and rain so as to prevent damage to the product. Measures should be taken to prevent impact or squeezing, exposure to the sun and rain so as to prevent damage to the product.

XII. After-sales Service

In case of need, Huaxing New Energy will provide the users with type selection service free of charge;

If the users have any objection regarding the quality of the product within three months after receiving it, please contact Huaxing New Energy for treatment;

Huaxing New Energy highly values the users' feedback regarding the product and continuously improves its products and service;

Huaxing New Energy constantly launches new products. To provide the users with satisfactory products and service continually.

Huaxing New Energy has perfect user files and quick, efficient service teams to timely solve various problems encountered by the users in the use of the product. After receiving service request from the users, it will give a clear reply at the earliest time possible and provide after-sales service in a timely manner. After-sales service should be provided timely.

The Company has established a perfect service network. Contact us if you have any questions and difficulties:

a) Service hotline: 4006010608

b) Website: http://www.huaxingenergy.com/