



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.....	A2-4791781118-001
Date of issue	2025-06-17
Total number of pages	24
Name of Testing Laboratory preparing the Report	Shanghai Truron Testing Technology Co., Ltd
Applicant's name	Huizhou Fuji Energy Technology Co., Ltd.
Address	No.11-12 Factory, Huizhou Zhongkai Zhongji Zhigu Industrial Park, Shanbei Village, Lilin Town, HZZK Hi-tech Industrial Development Zone, Huizhou City, Guangdong Province, P.R.China
Test specification: Standard IEC 62619:2022 Test procedure..... CB Scheme Non-standard test method..... N/A	
TRF template used IECEE OD-2020-F1:2022, Ed.1.5 Test Report Form No..... IEC62619B Test Report Form(s) Originator.... UL Solutions (Demko) Master TRF Dated 2023-02-24	
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Test item description..... :	Rechargeable Lithium ion Battery	
Trademark(s) :		
Manufacturer :	Huizhou Fuji Energy Technology Co., Ltd. No.11-12 Factory, Huizhou Zhongkai Zhongji Zhigu Industrial Park, Shanbei Village, Lilin Town, HZZK Hi-tech Industrial Development Zone, Huizhou City, Guangdong Province, P.R.China.	
Model/Type reference :	HV-40, HV-50, HV-60, HV-70, HV-80, HV-90, HV-100, HV-110, HV-120, HV-130, HV-140	
Ratings :	HV-40, 204.8V, 200Ah, 40960Wh HV-50, 256V, 200Ah, 51200Wh HV-60, 307.2V, 200Ah, 61440Wh HV-70, 358.4V, 200Ah, 71680Wh HV-80, 409.6V, 200Ah, 81920Wh HV-90, 460.8V, 200Ah, 92160Wh HV-100, 512V, 200Ah, 102400Wh HV-110, 563.2V, 200Ah, 112640Wh HV-120, 614.4V, 200Ah, 122880Wh HV-130, 665.6V, 200Ah, 133120Wh HV-140, 716.8V, 200Ah, 143360Wh	
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
☒	CB Testing Laboratory:	Shanghai Truron Testing Technology Co., Ltd.
Testing location/ address..... :		Workshop No.5, 4450, Shuangzhu Road, Shanghai China
Tested by (name, function, signature)..... :		Scott Wu, Project Handler 
Approved by (name, function, signature).... :		Garin Chen Reviewer 
☐	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) Attachments (17 pages)	
Summary of testing:	
Tests performed (name of test, test clause and date test performed): Cl. 7.2.3, was carried out on battery module model HBM-1024. Cl.8.2.2, Cl. 8.2.3 and Cl. 8.2.4 were carried out on battery system model HV-40. It is more rigorous to use the battery module for drop test. 7.2.3 Drop test (cell or cell block, and battery system) 2025-06-11 8.2.2 Overcharge control of voltage (battery system) 2025-06-10 8.2.3 Overcharge control of current (battery system) 2025-06-09 8.2.4 Overheating control (battery system) 2025-06-11	Testing location: (CBTL, SPTL, CTF, Subcontractor) Shanghai Truron Testing Technology Co., Ltd. Workshop No.5, 4450, Shuangzhu Road, Shanghai China
Summary of compliance with National Differences (List of countries addressed): EU group* *= No National or Group Differences declared ☒ The product fulfils the requirements of <u>EN IEC 62619:2022</u>	

Use of uncertainty of measurement for decisions on conformity (decision rule) :

☒ No decision rule is specified by the IEC standard, when comparing the measurement result with the applicable limit according to the specification in that standard. The decisions on conformity are made without applying the measurement uncertainty ("simple acceptance" decision rule, previously known as "accuracy method").

☐ Other: ... (to be specified, for example when required by the standard or client, or if national accreditation requirements apply)

Information on uncertainty of measurement:

The uncertainties of measurement are calculated by the laboratory based on application of criteria given by OD-5014 for test equipment and application of test methods, decision sheets and operational procedures of IECEE.

IEC Guide 115 provides guidance on the application of measurement uncertainty principles and applying the decision rule when reporting test results within IECEE scheme, noting that the reporting of the measurement uncertainty for measurements is not necessary unless required by the test standard or customer.

Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.

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.



名称/Name: Rechargeable Lithium ion Battery
 型号/Model: HV-40
 容量/电压/Capacity/Voltage: 200Ah/204.8V
 总能量/Total energy: 40960Wh
 IFpP56/175/206/[(16S1P) 4S]M/-20+60/95
 原产地/Origin: 中国制造/Made in China
 生产日期/Date: 2025/05/20
 请勿拆卸/Do not disassemble
 请勿短路/Do not short-circuit
 请勿置于火中/Do not dispose in fire
 请仔细阅读用户手册/Please read user manual carefully

惠州富基能源科技有限公司
 Huizhou Fuji Energy Technology Co., Ltd



名称/Name: Rechargeable Lithium ion Battery
 型号/Model: HV-50
 容量/电压/Capacity/Voltage: 200Ah/256V
 总能量/Total energy: 51200Wh
 IFpP56/175/206/[(16S1P) 5S]M/-20+60/95
 原产地/Origin: 中国制造/Made in China
 生产日期/Date: 2025/05/20
 请勿拆卸/Do not disassemble
 请勿短路/Do not short-circuit
 请勿置于火中/Do not dispose in fire
 请仔细阅读用户手册/Please read user manual carefully

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 Huizhou Fuji Energy Technology Co., Ltd



名称/Name: Rechargeable Lithium ion Battery
 型号/Model: HV-60
 容量/电压/Capacity/Voltage: 200Ah/307.2V
 总能量/Total energy: 61440Wh
 IFpP56/175/206/[(16S1P) 6S]M/-20+60/95
 原产地/Origin: 中国制造/Made in China
 生产日期/Date: 2025/05/20
 请勿拆卸/Do not disassemble
 请勿短路/Do not short-circuit
 请勿置于火中/Do not dispose in fire
 请仔细阅读用户手册/Please read user manual carefully

惠州富基能源科技有限公司
 Huizhou Fuji Energy Technology Co., Ltd



名称/Name: Rechargeable Lithium ion Battery
 型号/Model: HV-70
 容量/电压/Capacity/Voltage: 200Ah/358.4V
 总能量/Total energy: 71680Wh
 IFpP56/175/206/[(16S1P) 7S]M/-20+60/95
 原产地/Origin: 中国制造/Made in China
 生产日期/Date: 2025/05/20
 请勿拆卸/Do not disassemble
 请勿短路/Do not short-circuit
 请勿置于火中/Do not dispose in fire
 请仔细阅读用户手册/Please read user manual carefully

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 Huizhou Fuji Energy Technology Co., Ltd



名称/Name: Rechargeable Lithium ion Battery
 型号/Model: HV-80
 容量/电压/Capacity/Voltage: 200Ah/409.6V
 总能量/Total energy: 81920Wh
 IFpP56/175/206/[(16S1P) 8S]M/-20+60/95
 原产地/Origin: 中国制造/Made in China
 生产日期/Date: 2025/05/20
 请勿拆卸/Do not disassemble
 请勿短路/Do not short-circuit
 请勿置于火中/Do not dispose in fire
 请仔细阅读用户手册/Please read user manual carefully

惠州富基能源科技有限公司
 Huizhou Fuji Energy Technology Co., Ltd



名称/Name: Rechargeable Lithium ion Battery
 型号/Model: HV-90
 容量/电压/Capacity/Voltage: 200Ah/460.8V
 总能量/Total energy: 92160Wh
 IFpP56/175/206/[(16S1P) 9S]M/-20+60/95
 原产地/Origin: 中国制造/Made in China
 生产日期/Date: 2025/05/20
 请勿拆卸/Do not disassemble
 请勿短路/Do not short-circuit
 请勿置于火中/Do not dispose in fire
 请仔细阅读用户手册/Please read user manual carefully

惠州富基能源科技有限公司
 Huizhou Fuji Energy Technology Co., Ltd



 名称/Name: Rechargeable Lithium ion Battery 型号/Model: HV-100 容量/电压/Capacity/Voltage: 200Ah/512V 总能量/Total energy: 102400Wh IFpP56/175/206/[(16S1P)10S]M/-20+60/95 原产地/Origin: 中国制造/Made in China 生产日期/Date: 2025/05/20 请勿拆卸/Do not disassemble 请勿短路/Do not short-circuit 请勿置于火中/Do not dispose in fire 请仔细阅读用户手册/Please read user manual carefully 惠州富基能源科技有限公司 Huizhou Fuji Energy Technology Co., Ltd  	 名称/Name: Rechargeable Lithium ion Battery 型号/Model: HV-110 容量/电压/Capacity/Voltage: 200Ah/563.2V 总能量/Total energy: 112640Wh IFpP56/175/206/[(16S1P)11S]M/-20+60/95 原产地/Origin: 中国制造/Made in China 生产日期/Date: 2025/05/20 请勿拆卸/Do not disassemble 请勿短路/Do not short-circuit 请勿置于火中/Do not dispose in fire 请仔细阅读用户手册/Please read user manual carefully 惠州富基能源科技有限公司 Huizhou Fuji Energy Technology Co., Ltd  
 名称/Name: Rechargeable Lithium ion Battery 型号/Model: HV-120 容量/电压/Capacity/Voltage: 200Ah/614.4V 总能量/Total energy: 122880Wh IFpP56/175/206/[(16S1P)12S]M/-20+60/95 原产地/Origin: 中国制造/Made in China 生产日期/Date: 2025/05/20 请勿拆卸/Do not disassemble 请勿短路/Do not short-circuit 请勿置于火中/Do not dispose in fire 请仔细阅读用户手册/Please read user manual carefully 惠州富基能源科技有限公司 Huizhou Fuji Energy Technology Co., Ltd  	 名称/Name: Rechargeable Lithium ion Battery 型号/Model: HV-130 容量/电压/Capacity/Voltage: 200Ah/665.6V 总能量/Total energy: 133120Wh IFpP56/175/206/[(16S1P)13S]M/-20+60/95 原产地/Origin: 中国制造/Made in China 生产日期/Date: 2025/05/20 请勿拆卸/Do not disassemble 请勿短路/Do not short-circuit 请勿置于火中/Do not dispose in fire 请仔细阅读用户手册/Please read user manual carefully 惠州富基能源科技有限公司 Huizhou Fuji Energy Technology Co., Ltd  
 名称/Name: Rechargeable Lithium ion Battery 型号/Model: HV-140 容量/电压/Capacity/Voltage: 200Ah/716.8V 总能量/Total energy: 143360Wh IFpP56/175/206/[(16S1P)14S]M/-20+60/95 原产地/Origin: 中国制造/Made in China 生产日期/Date: 2025/05/20 请勿拆卸/Do not disassemble 请勿短路/Do not short-circuit 请勿置于火中/Do not dispose in fire 请仔细阅读用户手册/Please read user manual carefully 惠州富基能源科技有限公司 Huizhou Fuji Energy Technology Co., Ltd  	

Remark:

1. “+” “-” are marked near the terminals of the battery.
2. The code “2025/05/20” represent the manufacture date. “2025” presents year. “05” presents month. “20” presents day. It is not the manufacture date of the actual battery and only for example.

Test item particulars.....:	
Classification of installation and use.....: Use in residential energy storage system	
Supply Connection Supply by connectors	
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 2025-05-14	
Date (s) of performance of tests 2025-06-09 to 2025-06-11	
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. ☐ This Test Report Form contains requirements according to IEC/ISO Standard dated and includes Corrigendum dated (Note: The above text maybe removed if not applicable)	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC62619B:	
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) Huizhou Fuji Energy Technology Co., Ltd. No.11-12 Factory, Huizhou Zhongkai Zhongji Zhigu Industrial Park, Shanbei Village, Lilin Town, HZZK Hi-tech Industrial Development Zone, Huizhou City, Guangdong Province, P.R.China.	
General product information and other remarks: - The Lithium-ion Battery system with models HV-40, HV-50, HV-60, HV-70, HV-80, HV-90, HV-100, HV-110, HV-120, HV-130, HV-140 respectively consist of 4pcs ~ 14pcs of battery modules with model HBM-1024 connected in series, 1pcs PDU with model HVP-140. -The Trolley Base with model HBM-1024-TR is used to load battery system. Models HV-40, HV-50, HV-60 are equipped with one trolley base, Models HV-70, HV-80, HV-90, HV-100 are equipped with two trolley bases, Models HV-110, HV-120, HV-130, HV-140 are equipped with three trolley bases. See below for details:	

Model Number Module	HV-40	HV-50	HV-60	HV-70	HV-80	HV-90	HV-100	HV-110	HV-120	HV-130	HV-140
PDU (HVP-140)	1	1	1	1	1	1	1	1	1	1	1
Battery Module (HBM-1024)	4	5	6	7	8	9	10	11	12	13	14
Trolley Base (HBM-1024-TR)	1	1	1	2	2	2	2	3	3	3	3

- The battery module with model HBM-1024 consists of 16S1Pcells, model CBA54173200-206Ah.
- The cell with model CBA54173200-206Ah is approved by IEC 62619:2022 (CB test report No. CN23CQX5 001 issued on 2023-07-20; CB Test Certificate No. JPTUV-250125 issued on 2023-07-20 by TÜV Rheinland Japan Ltd. Global Technology Assessment Center 4-25-2 Kita-Yamata, Tsuzuki-ku Yokohama 224-0021, Japan).
- Functional Safety: There is only a single independent protection of the BMS, additional independent protection shall be provided in end product associated with the battery system through the communication port. Further evaluation should be done with the associated end product in battery system level.
- The final color of the sample may not be consistent with the color in the photos of Attachment ID 01, and the color of the product will be changed by spray paint.

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
	Reduce the risk of injuries from moving parts		N/A
5.2	Insulation and wiring		P
	Voltage, current, altitude, and humidity requirements		P
	Adequate clearances and creepage distances between connectors and live parts at different voltages or between live parts and non-current-carrying accessible parts		P
	Protect from hazardous live parts, including during installation		P
	The mechanical integrity of internal connections		P
5.3	Venting		P
	Pressure relief function		P
	Encapsulation used to support cells within an outer casing		P
5.4	Temperature/voltage/current management		P
	The design prevents abnormal temperature-rise	Overcharge, over discharge, over current, over-temperature and short-circuit protection proof circuit used in this battery. See tests of clause 8	P
	Voltage, current, and temperature limits of the cells		P
	Specifications and charging instructions for equipment manufacturers		P
5.5	Terminal contacts of the battery pack and/or battery system		P
	Polarity marking(s)	Indicated polarity by colour of terminals	P
	Polarity marking not provided for keyed external connector	"+" "-" are marked near the terminals of the battery.	N/A
	Capability to carry the maximum anticipated current		P
	External terminal contact surfaces		P
	Terminal contacts are arranged to minimize the risk of short circuits		P

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
5.6	Assembly of cells, modules, or battery packs into battery systems		P
5.6.1	General		P
	Independent control and protection method(s)		P
	Recommendations of cell operating limits, mounting advice, storage conditions and other design recommendations by the cell manufacturer		P
	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		P
5.6.2	Battery system design		P
	The voltage control function		P
	Maximum charging/discharging current of the cell are not exceeded		P
5.7	Operating region of lithium cells and battery systems for safe use		P
	The cell operating region..... :	See attachment ID 02 for detail.	P
	Designation of battery system to comply with the cell operating region	See attachment ID 02 for detail.	P
5.8	System lock (or system lock function)		P
	Non-resettable function to stop battery operation		P
	Manual with procedure for resetting of battery operation		P
	Emergency battery final discharge		P
5.9	Quality plan		P
	Manufacturing quality plan (for example: ISO9001, etc.) prepared and implemented :	Reference: ISO9001 Certificate provided See Attachment ID 05	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 IEC 62619)		P
	Capacity confirmation of the cells or batteries		P
	Default ambient temperature of test, 25 °C ± 5 °C		P

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
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		P
	The cells or batteries charged using the method specified by the manufacturer	See attachment ID 02 for detail	P
7.2	Reasonably foreseeable misuse		P
7.2.1	External short-circuit test (cell or cell block)	Certificated Cell	N/A
	Short circuit with total resistance of 30 mΩ ± 10 mΩ at 25 °C ± 5 °C		N/A
	Results: no fire, no explosion		N/A
7.2.2	Impact test (cell or cell block)	Certificated Cell	N/A
	Cylindrical cell, longitudinal axis impact		N/A
	Prismatic cell, longitudinal axis and lateral axis impact		N/A
	Results: no fire, no explosion.		N/A
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.....	HV box: HVP-140	—
	Mass of the test unit (kg).....	18.2	—
	Height of drop (m).....	0.1	—
	Results: no fire, no explosion		P
7.2.3.3	Edge and corner drop test (cell or cell block, and battery system)		P
	Description of the Test Unit.....	Batter module: HBM-1024	—
	Mass of the test unit (kg).....	83.4	—
	Height of drop (m).....	0.05	—
	Results: no fire, no explosion		P
7.2.4	Thermal abuse test (cell or cell block)	Certificated Cell	N/A
	Results: no fire, no explosion		N/A
7.2.5	Overcharge test (cell or cell block)	Certificated Cell	N/A
	For those battery systems that are provided with only a single protection for the charging voltage control		—
	Results: no fire, no explosion		N/A

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
7.2.6	Forced discharge test (cell or cell block)	Certificated Cell	N/A
	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 :		N/A
	Maximum discharge current of the cell, I_m :		N/A
	Discharge current for forced discharge, $1.0 I_t$:		N/A
	Discharging time, $t = (1 I_t / I_m) \times 90$ (min.) :		N/A
	Results: no fire, no explosion :		N/A
7.3	Considerations for internal short-circuit – Design evaluation		N/A
7.3.1	General		N/A
7.3.2	Internal short-circuit test (cell)	Certificated Cell	N/A
	Samples preparation procedure: In accordance with Clause A.5 and A.6 of IEC 62133-2:2017		N/A
	Tested per 7.3.2 b) in an ambient temperature of $25\text{ °C} \pm 5\text{ °C}$.		N/A
	The appearance of the short-circuit location recorded by photograph or other means :		—
	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		N/A
	Results: no fire :		N/A
7.3.3	Propagation test (battery system)	Internal short-circuit test (cell) was selected.	N/A
	Method to create a thermal runaway in one cell ... :		N/A
	Results: No external fire from the battery system, no battery case rupture :		N/A

8	BATTERY SYSTEM SAFETY (CONSIDERING FUNCTIONAL SAFETY)		P
8.1	General requirements		P
	Functional safety analysis for critical controls	Functional safety analysis considered	P
	Conduct of a process hazard analysis for both the cell manufacturing process and the battery system manufacturing process	This part had been done by the battery system manufacturer, and FMEA provided.	P

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
	Conduct of risk assessment and mitigation of the battery system		P
8.2	Battery management system (or battery management unit)		P
8.2.1	Requirements for the BMS		P
	The safety integrity level (SIL) target of the BMS		P
	The charge control evaluated by tests in clauses 8.2.2 to 8.2.4		P
8.2.2	Overcharge control of voltage (battery system)		P
	The exceeded charging voltage applied to the whole battery system		P
	The exceeded charging voltage applied to only a part of the battery system, such as the cell(s)..... :	The exceeded charging voltage was applied to the whole battery system	N/A
	Results: no fire, no explosion..... :	See Table 8.2.2.	P
	The BMS terminated the charging before exceeding the upper limit charging voltage		P
8.2.3	Overcharge control of current (battery system)		P
	Results: no fire, no explosion..... :	See Table 8.2.3	P
	The BMS detected the overcharging current and controlled the charging to a level below the maximum charging current		P
8.2.4	Overheating control (battery system)		P
	The cooling system, if provided, was disconnected		P
	Elevated temperature for charging, 5 °C above maximum operating temperature..... :	60°C	P
	Results: no fire, no explosion..... :	See Table 8.2.4	P
	The BMS detected the overheat temperature and terminated charging		P
	The battery system operated as designed during test		P

9	EMC		N/A
	Battery system fulfil EMC requirements of the end-device application..... :	Considered in end use application.	N/A

10	INFORMATION FOR SAFETY		P
	The cell manufacturer provides information about current, voltage and temperature limits of their products		P

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
	The battery system manufacturer provides information regarding how to mitigate hazards to equipment manufacturers or end-users.		P

11	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		N/A
	Battery designation	See labels for detail	P
	Battery structure formulation		P

12	PACKAGING AND TRANSPORT		P
	Refer to Annex D		P

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

ANNEX B	PROCEDURE OF 7.3.3 PROPAGATION TEST BY LASER IRRADIATION		N/A
B.1	General		N/A
B.2	Test conditions		N/A
B.2.1	Cell test (preliminary test)		N/A
	The cell fully charged according to the manufacturer recommended conditions		—
	Laser irradiation point on the cell		—
	Output power of laser irradiation.....		—

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict
	Tested in an ambient temperature of 25 °C ± 5 °C		N/A
	Repeat of cell test for 3 times		N/A
B.2.2	Battery system test (main test)		N/A
	The battery system fully charged according to the manufacturer recommended conditions		—
	Target cell to be laser irradiated		—
	The irradiation point on the target cell same or similar as that on the cell test		
	Output power of laser irradiation.....		—
	Tested in an ambient temperature of 25 °C ± 5 °C		N/A

ANNEX C	PROCEDURE OF 7.3.3 PROPAGATION TEST BY METHODS OTHER THAN LASER		N/A
C.1	General		N/A
C.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.....		—
C.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 D	PACKAGING AND TRANSPORT		P
	The materials and pack design chosen in a way as to prevent the development of unintentional electrical conduction, corrosion of the terminals and ingress of environmental contaminants		P
	Regulations concerning international transport of secondary lithium batteries		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⁾	
1.Cells	Shandong Dejin Enw Energy Science and Technology Co., Ltd	CBA54173200 -206Ah	3.2V, 206Ah	IEC 62619:2022	Intertek SE-110826	
2. Trolley base	Huizhou Fuji Energy Technology Co., Ltd.	HBM-1024-TR	SPCC, Min. thickness 1.5mm	--	--	
3. External Power Wiring	JIANGYIN DENG FENG SPECIAL WIRE & CABLE CO LTD	3343	4AWG; 125°C	UL 758 Ed.3	UL E212429	
3.1 External Power Wiring	Interchangeable	Interchangeable	Min 4AWG; 125°C	UL 758 Ed.3	UL	
4. Battery Module	Huizhou Fuji Energy Technology Co., Ltd.	HBM-1024	51.2V, 200Ah	IEC 62619:2022	Test in appliance	
4.1 Battery Module Enclosure	--	--	SPCC, Min. thickness 1.5mm	--	--	
4.2 Positive external Terminal	Guangdong FineLink Electronic Technology Co., Ltd	FS08M50K00 02	1000V ;200A	EN 61984: 2009	TÜV SÜD M.2024.206.C 95176	
4.3 Negative external Terminal	Guangdong FineLink Electronic Technology Co., Ltd	FP08R25K0B0 1	1000V; 120A	EN 61984: 2009	TÜV SÜD M.2024.206.C 95176	
4.5 Internal wiring of power	DONGGUAN BOLI ELECTRONIC CO LTD	1332	22AWG; 200°C; 300V; VW-1	UL758 Ed.3	UL E305164	
4.5.1 Internal wiring of power	Interchangeable	Interchangeable	Min 22AWG; 200°C; 300V	UL 758 Ed.3	UL	
4.6 BMU board	JIABAIDA	JBD-BMU03- 16S6T	--	IEC 62619:2022	Test in appliance	

IEC 62619					
Clause	Requirement + Test		Result - Remark		Verdict
4.6.1 Printed Wiring Board	HANGZHOU YINGPAI TECHNOLOGY CO LTD	YP-04	V-0, 130°C	UL 746 Ed.12	UL E492700
4.6.1.1 Printed Wiring Board	Interchangeable	Interchangeable	Min.V-0,130°C	UL 746 Ed.12	UL
4.6.2 IC for AFE (U1)	BYD	BF8915A	Voltage measurement range of 16~85 V	--	--
5. PDU (HV box)	Huizhou Fuji Energy Technology Co., Ltd.	HVP-140	--	IEC 62619:2022	Test in appliance
5.1 Enclosure of HV Box	--	--	SPCC, Min. thickness 1.5mm	--	--
5.2 Relay (RL1, RL2)	Shenzhen Unitone New Energy Technology Co., LTD	UT200-P	200A	EN IEC 60947-1:2021	TÜV SÜD N8A 107422 0003 Rev.01
5.3 Pre-charge resistance	--	RX24-100W-50Ω	50Ω, 100W	--	--
5.4 Shunt (RS1)	--	FL-2	200A, 0.375mΩ	--	--
5.5 BCMU board	JIABAIDA	JBD-HVBCUM01	--	IEC 62619:2022	Test in appliance
5.5.1 Printed Wiring Board	HANGZHOU YINGPAI TECHNOLOGY CO LTD	YP-04	V-0, 130°C	UL 746 Ed.12	UL E492700
5.5.1.1 Printed Wiring Board	Interchangeable	Interchangeable	V-0, 130°C	UL 746 Ed.12	UL
5.5.2 IC (U46)	NUVOTON	M483KGCAE	Single Power supply: 1.8V~3.6V	--	--
Supplementary information: N/A					
1) Provided evidence ensures the agreed level of compliance. See OD-CB2039.					

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

7.2.1	TABLE: External short-circuit test (cell or cell block)					N/A
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	
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): ____						

7.2.5	TABLE: Overcharge test (cell or cell block)					N/A
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
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): ____						

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

7.2.6	TABLE: Forced discharge test (cell or cell block)				N/A
Sample No.	OCV before applying reverse charge, (V dc)	Target Voltage (V dc)	Measured Reverse Charge Current I_t , (A)	Total Time for Reversed Charge Application (min)	Results
Supplementary information: Results: A – No fire or Explosion B – Fire C – Explosion D – Other (Please explain): ____					

7.3.2	TABLE: Internal short-circuit test (cell)				N/A
Sample No.	OCV at start of test, (V dc)	Particle location ¹⁾	Maximum applied pressure, (N)	Results	
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 laser exposure, 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)					P
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	
Y-2510DB	Max: 3.05 Min: 2.98	100	224	3.62	A, D, F	
			Charge Voltage Applied Battery System: 1)			
			Whole		Part	
			246.4		--	
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)				P
Sample No.	OCV at start of test, (V dc)	Max. Charging Current, (A)	Max. Charging Voltage, (V dc)	Results	
Y-2510DB	196.5	120	224	A, D, F	
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)			P
Model No.	OCV at start(SOC 50%) of test, V dc	Maximum Charging Current, A	Measured Maximum Charging Voltage, V dc	
Y-2510DB	211.2	100	211.2	
Maximum Specified Temperature of Battery System, °C		Maximum Measured Cell Case Temperature, °C	Results	
55		60	A, D, F	
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): _____				

IEC 62619			
Clause	Requirement + Test	Result - Remark	Verdict

9	TABLE: EMC				N/A
Standard used for EMC test:					
Sample No.	EMC Test Item	Battery Condition	EMC Test Level/ Parameters	Compliance Criteria	Results
Supplementary information: Battery Condition During EMC test 1 – In Operation Mode, [] Supplied at ____, [] Load at ____ 2 – In non-operation Mode, Battery state of charge (SOC) before test at around ____ Compliance Criteria and Test Results: A – No fire or Explosion B – Fire C – Explosion D – Battery system did operate as intended during the test. E - All function of battery system did operate as intended after the test. F - All function of battery system did not operate as intended during the test, (Please explain): ____ G - Other (Please explain): ____					

ATTACHMENTS

Supplement ID	Description
01-A	Front view of Battery System HV-140
01-B	Back view of Battery System HV-140
01-C-1, 01-C-2	Overview of Battery Module HBM-1024
01-D	Internal overview of Battery Module HBM-1024
01-E-1, 01-E-2	Overview of BMU board
01-F-1, 01-F-2	Overview of PDU HVP-140
01-G	Internal view of PDU HVP-140
01-H-1, 01-H-2	Overview of BCMU board
02	Specification
03-A	Outline Dimension of Battery Module HBM-1024
03-B	Outline Dimension of PDU HVP-140
03-C	Outline Dimension of Trolley Base HBM-1024-TR
03-D	Outline Dimension of Battery Cell CBA54173200-206Ah
04	Package requirement
05	ISO 9001 Certification for manufacturer
06	Block of BMS board

ID 01-A



ID 01-B



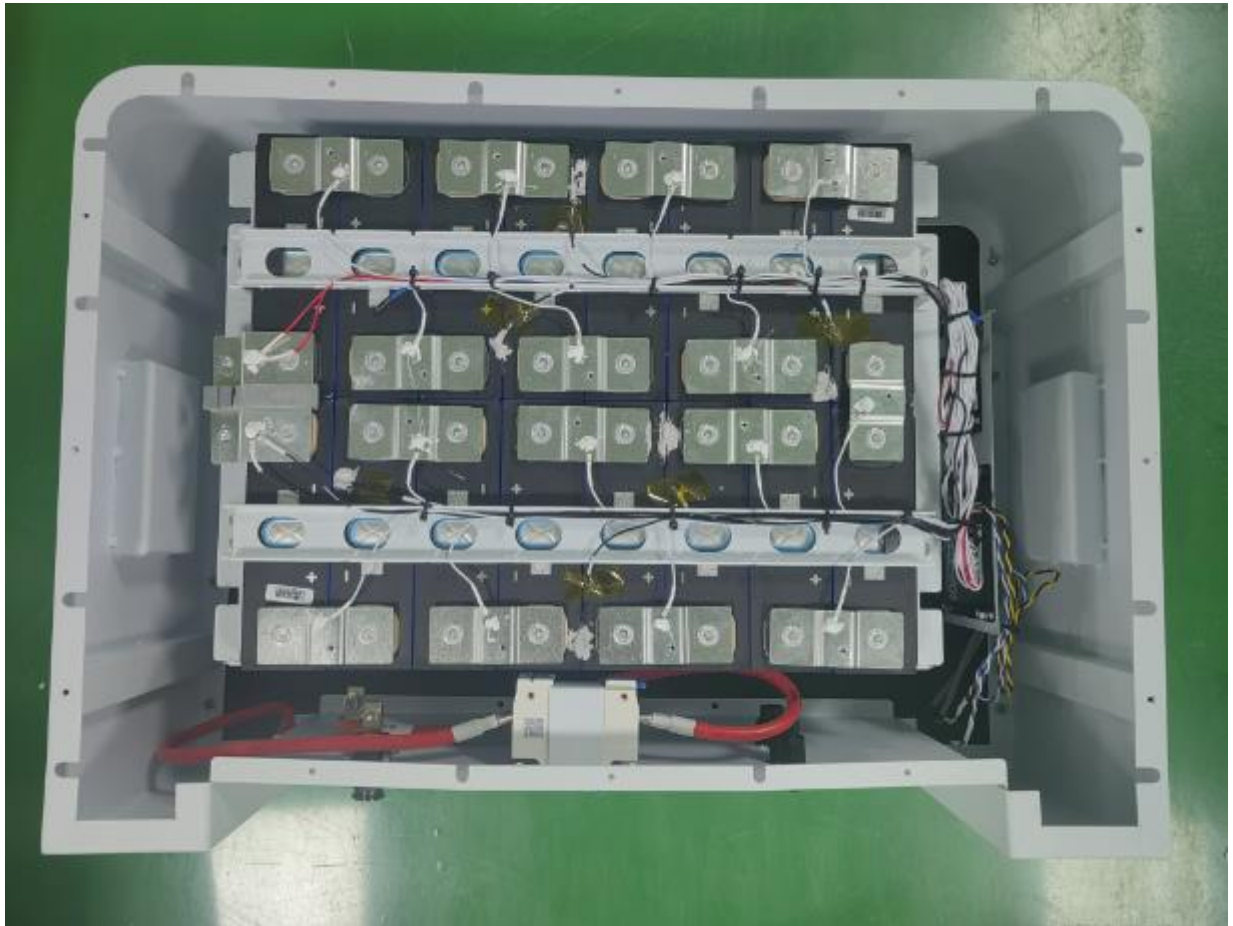
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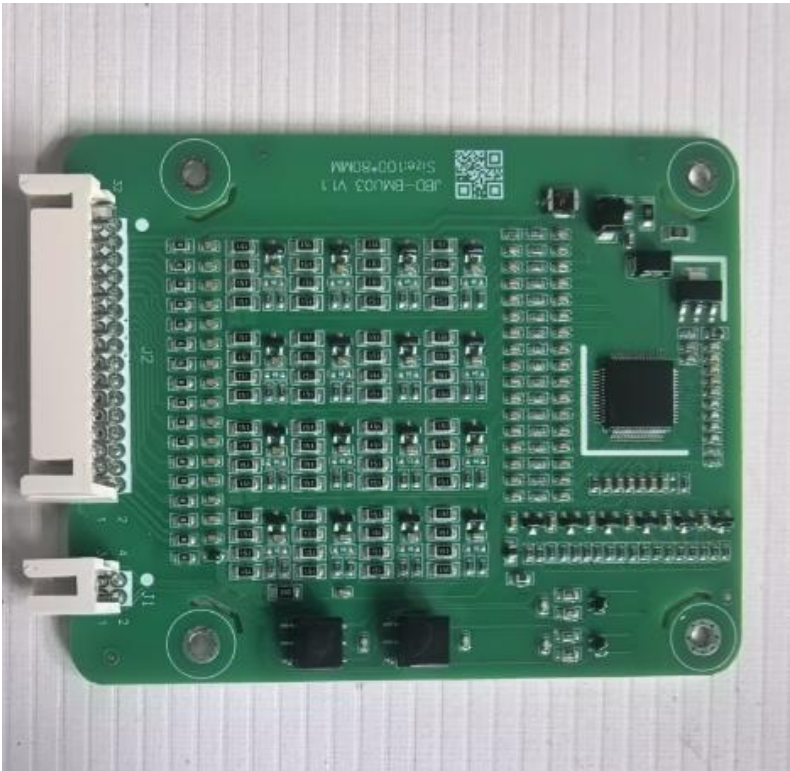
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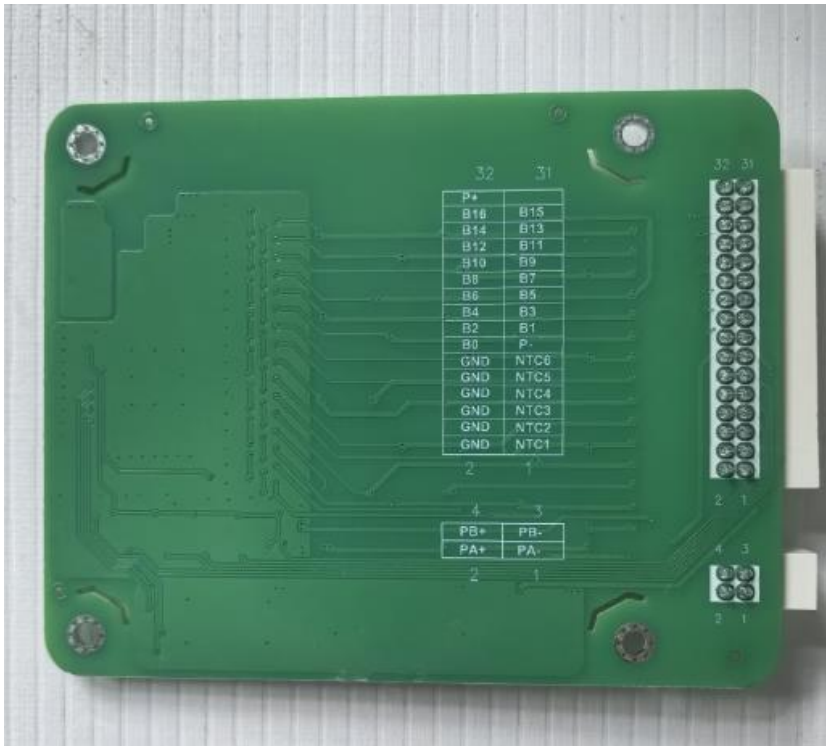
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ID 01-E-1



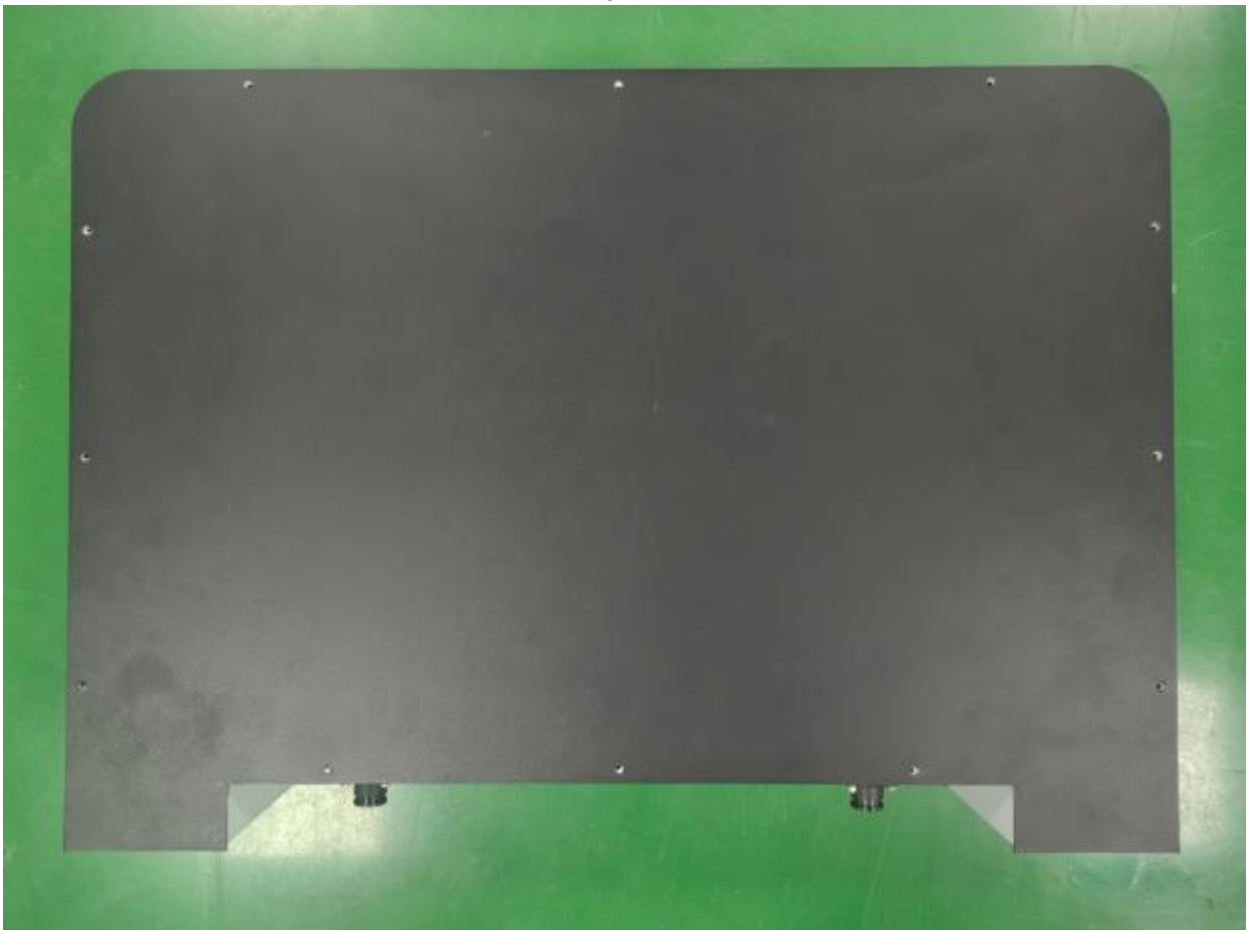
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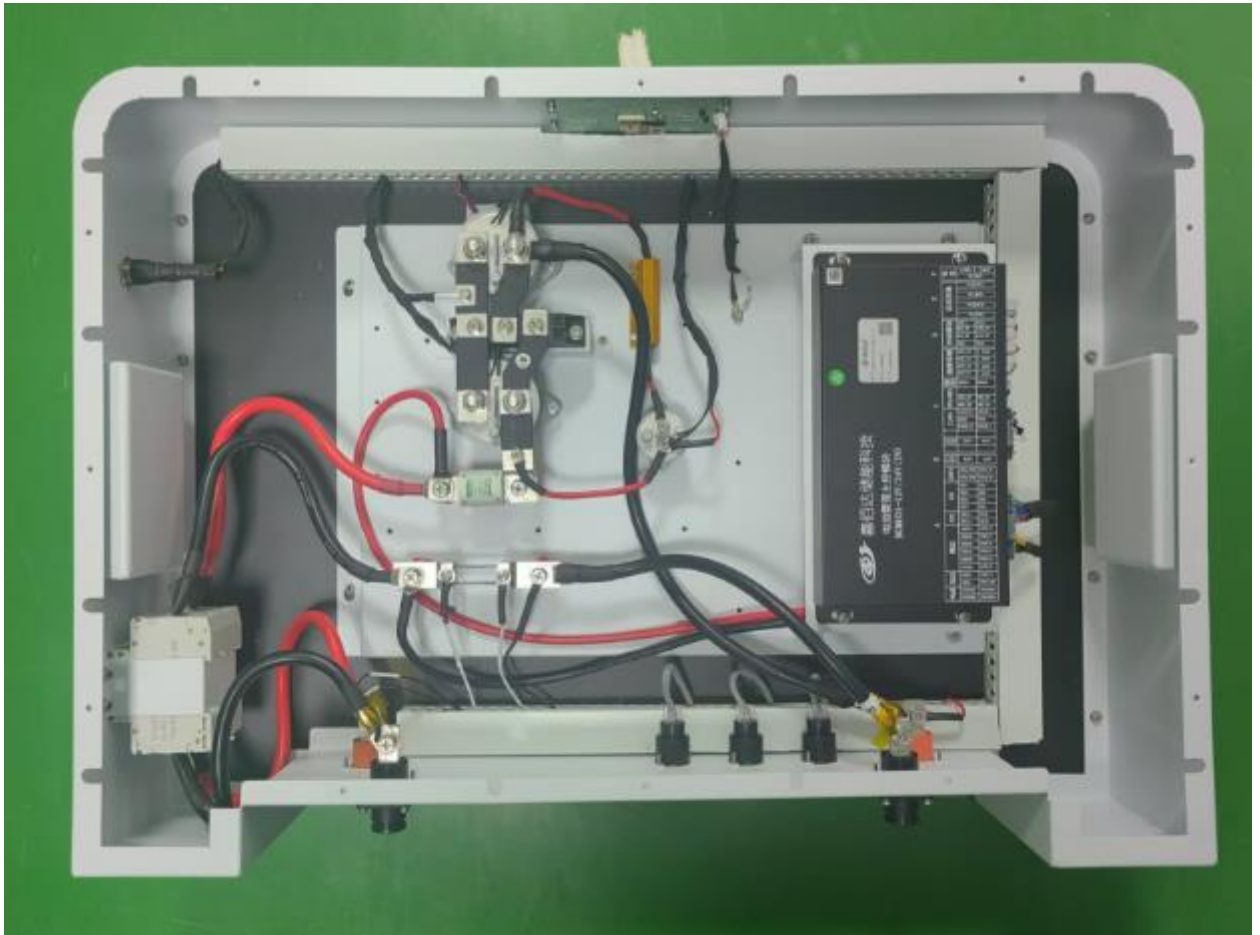
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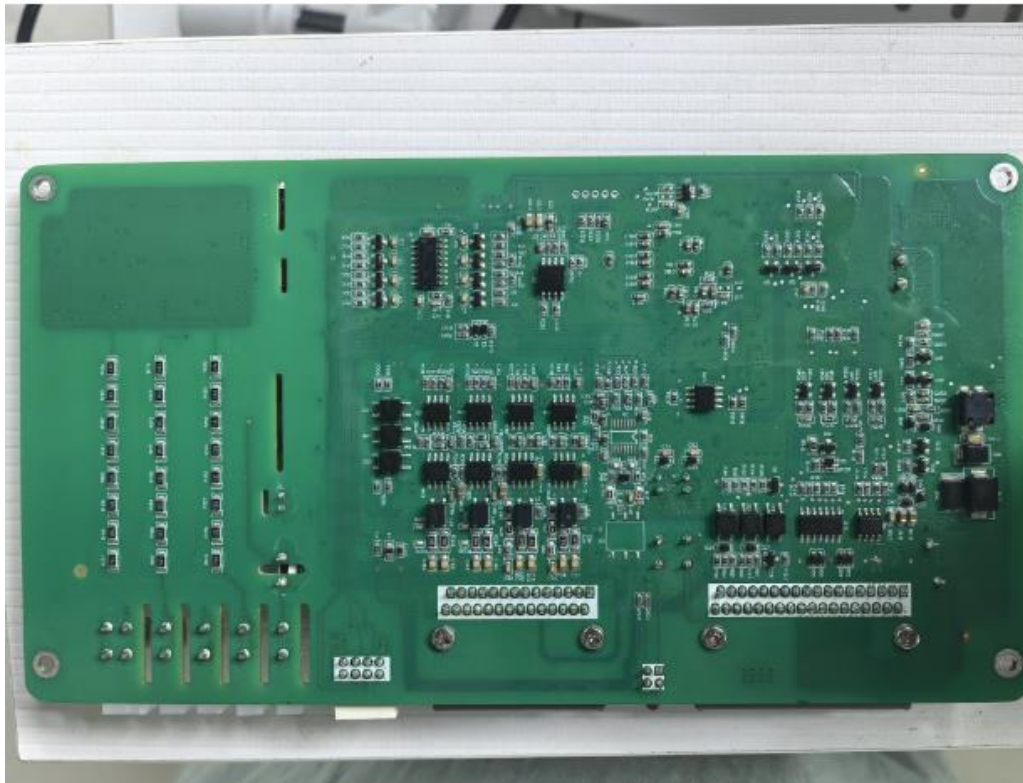
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ID 01-G



ID 01-H-1



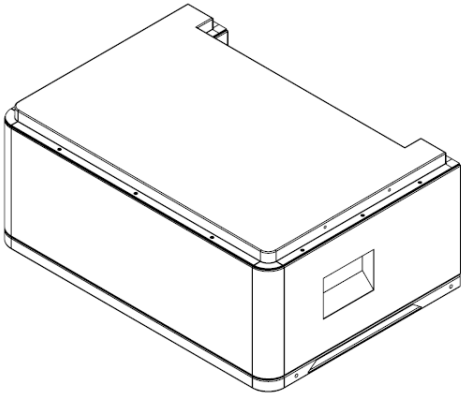
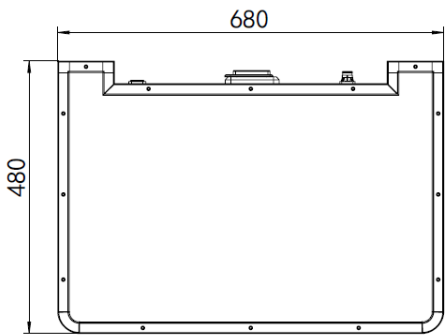
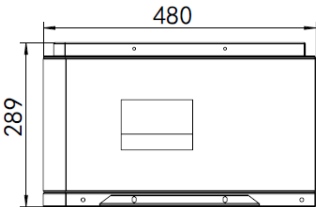
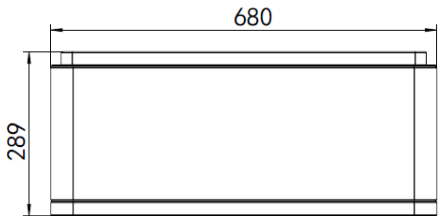
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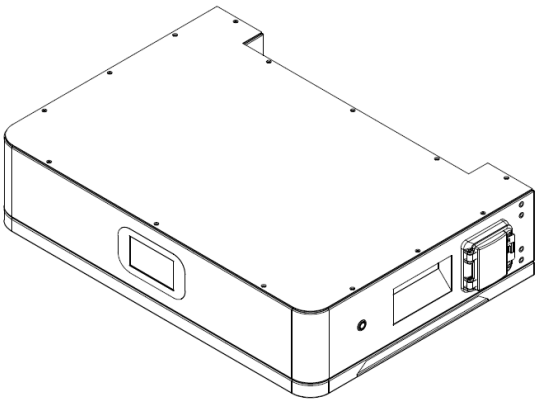
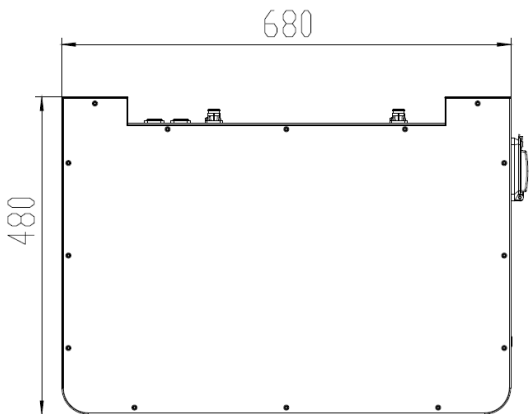
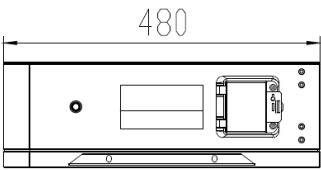
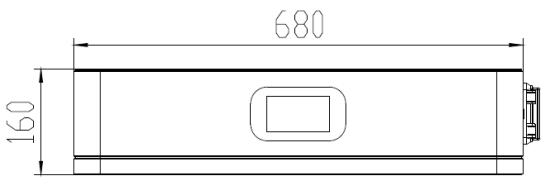
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Item	Specifications		
Product name	Rechargeable Li-ion Cell	Rechargeable Li-ion Battery Module	Rechargeable Li-ion Battery System
Type/model	CBA54173200-206Ah	HBM-1024	HV-40, HV-50, HV-60, HV-70, HV-80, HV-90, HV-100, HV-110, HV-120, HV-130, HV-140
Nominal voltage	3.2V	51.2V	51.2V*n (n=4~14)
Rated capacity	206Ah	200Ah	200Ah
Recommended charging voltage by manufacturer	3.65V	56V	56V*n (n=4~14)
Upper limit charging voltage	3.65V	56V	56V*n (n=4~14)
Recommended charging current by manufacturer	103A	50A	50A
Maximum continuous charging current	206A	100A	100A
Recommended discharging current by manufacturer	103A	100A	100A
Maximum continuous discharging current	206A	100A	100A
Final discharge voltage	2.5V	44.8V	44.8V*n (n=4~14)
Standard charging temperature range	0~60°C	0~50°C	0~50°C
Standard discharge temperature range	-20~60°C	-20~55°C	-20~55°C

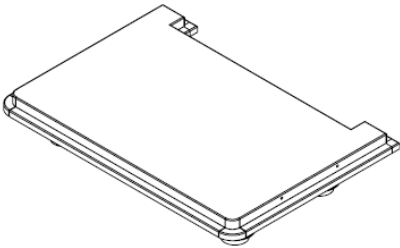
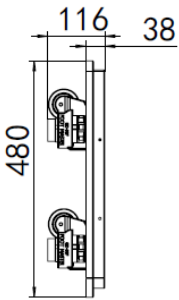
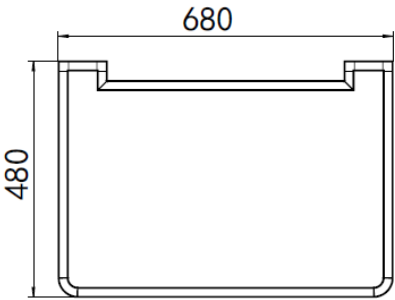
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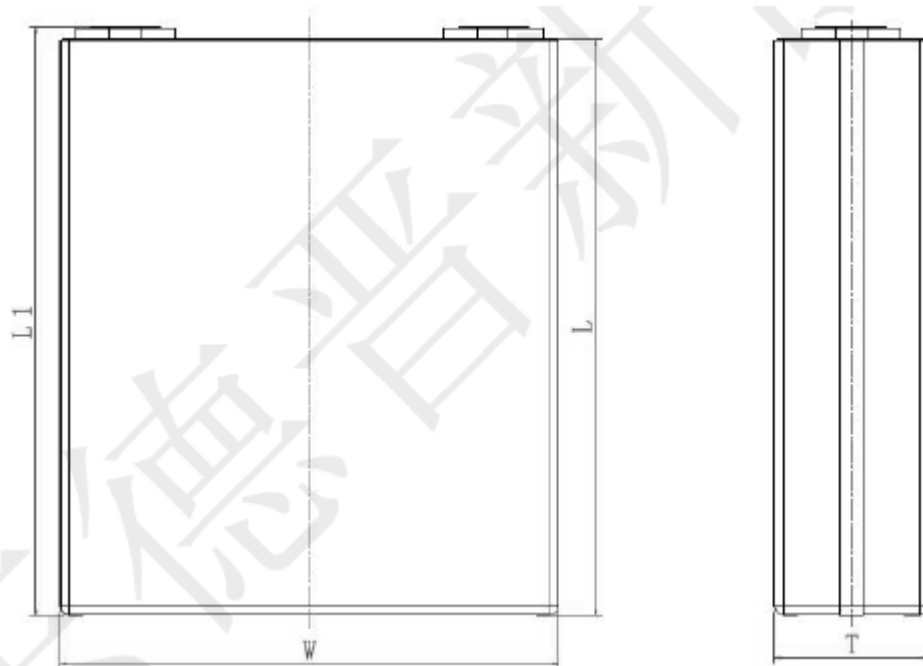
ID-03-B



ID-03-C



ID 03-D



T	$54.3 \pm 1.0\text{mm}$
W	$173.8 \pm 0.6\text{mm}$
L	$200.66 \pm 0.6\text{mm}$
L1	$204.83 \pm 0.6\text{mm}$

ID 04



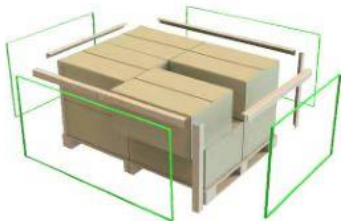
同纸箱采用五层瓦楞包装成品外尺寸：725*525*330MM.(长*宽*高)



采用2*4pcs经行布局成品卡板尺寸：1100*1520*825MM(长*宽*高)



纸箱四周采用出口材质(EPE)珍珠棉包裹加强整个产品的稳定性



纸箱四周采用出口材质(EPE)珍珠棉包裹加强整个产品的稳定性

ID 05



Certificate of Registration

This is to certify that the Management System of

Huizhou Fuji Energy Technology Co., Ltd.

Unified Social Credit Code: 91441303MA57C8BC8L

Registration Address: No.11-12 Factory, Huizhou Zhongkai Zhongji Zhigu Industrial Park,
Shanbei Village, Lilin Town, HZZK Hi-tech Industrial Development Zone, Huizhou City,
Guangdong Province, P.R.China

Assessment Address: No.11-12 Factory, Huizhou Zhongkai Zhongji Zhigu Industrial Park,
Shanbei Village, Lilin Town, HZZK Hi-tech Industrial Development Zone, Huizhou City,
Guangdong Province, P.R.China

**Has been independently assessed and is
compliant with the requirements of:
ISO 9001:2015**

For the following scope of activities:

The Package and Manufacture of Secondary Lithium Battery (Any Project that Must
be Approved in Accordance with Law Can Only be Carried Out after Getting Approval).

Certificate Number: AMTIVO/CN/230272

Initial certification:	25/10/2023
Latest issue:	27/09/2024
Re- certification before:	24/10/2026

Authorised by Mike Tims, Chief Executive Officer
Date of this certificate 27/09/2024, V1

The Validity and Status of this certificate can be verified by using
the UKAS CertCheck website at certcheck.ukas.com or the China CNCA website at cnca.gov.cn.
The certified organization must undergo annual audits to maintain its certification.



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ID 06

Functional Block Diagram

