Test Report issued under the responsibility of:

TÜVRheinland®

TEST REPORT
IEC 63056
Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for secondary lithium cells and batteries, for use in electrical energy storage systems

Report Number. .....:	**CN2643YQ 001**
Date of issue .....:	2026-05-29
Total number of pages.....:	32
Name of Testing Laboratory preparing the Report.....:	TÜV Rheinland (Shanghai) Co., Ltd. Kunshan Branch
Applicant's name.....:	Dunext Technology Xiamen Co., Ltd.
Address .....:	Building 7, No. 1001 Haiming Road, Xiamen Torch High-tech Industrial Development Zone (Xiang'an), Xiamen 361115 Fujian P.R. China
Test specification:	
Standard.....:	IEC 63056:2020
Test procedure .....:	CB Scheme
Non-standard test method.....:	N/A
TRF template used.....:	IECEE OD-2020-F1:2020, Ed.1.4
Test Report Form No.....:	IEC63056A
Test Report Form(s) Originator.....:	UL(Demko)
Master TRF .....:	Dated 2020-10-15

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Test item description ..... :	Integrated energy storage system
Trade Mark(s) ..... :	DUNEXT
Manufacturer ..... :	Dunext Technology Xiamen Co., Ltd. Building 7, No. 1001 Haiming Road, Xiamen Torch High-tech Industrial Development Zone (Xiang'an), Xiamen 361115 Fujian P.R. China
Model/Type reference ..... :	PowerHill-P125-261kWh, PowerHill-P125-261kWh-S2, PowerHill-P125-261kWh-S3, PowerHill-P125-261kWh-S4
Ratings ..... :	See copy of marking label and model list

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):			
☒	**CB Testing Laboratory:**	TÜV Rheinland (Shanghai) Co., Ltd Kunshan Branch	
Testing location/ address.....:		No. 38 Jingfan Road, Bacheng, Kunshan, Jiangsu, China	
Tested by (name, function, signature).....:		Kevin Peng /Project Engineer	Kevin Peng
Approved by (name, function, signature)...:		Roger Fang /Authorizer	Roger Fang
☐	**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):

Attachment 1: Photo documentation (13 pages).

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
cl. 7.2 Resistance of abnormal heat (component, 2026-05-08) cl. 7.4 Electric insulation check during transport and installation (battery system, 2026-04-14) cl. 7.5 Charging procedures for test purposes (battery system, 2026-04-08) cl. 7.6 Protection against short circuit during transport and installation (battery system, 2026-04-24) cl. 7.8 Overdischarge control of voltage (battery system, 2026-04-08) cl. 7.9 Drop test (battery system, 2026-04-27) The samples comply with the requirement of IEC 63056: 2020.	TÜV Rheinland (Shanghai) Co., Ltd Kunshan Branch No. 38 Jingfan Road, Bacheng, Kunshan, Jiangsu, China

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

N/A

☐ **The product fulfils the requirements of _____**

Statement concerning the uncertainty of the measurement systems used for the tests

(may be required by the product standard or client)

☐ **Internal procedure used for type testing through which traceability of the measuring uncertainty has been established:**

Procedure number, issue date and title:

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

☒ **Statement not required by the standard used for type testing**

(Note: When IEC or ISO standard requires a statement concerning the uncertainty of the measurement systems used for tests, this should be reported above. The informative text in parenthesis should be delete in both cases after selecting the applicable option)

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.

For example:

DUNEXT

Integrated energy storage system

Model	PowerHill-P125-261kWh-S2
Serial Number	11010056××××××××
Battery Type	$LiFePO_4$
Battery Designation	IFpP73/176/208[(1P52S)5S]M/-20+50/85
Battery Rated Energy	261kWh
Battery Operating Voltage	715~936Vdc
Battery Nominal Voltage	832Vdc
Rated/Max AC Power	125kW
Rated AC Voltage	400Vac（3L/N/PE）
Rated/Max AC Current	181A
Nominal AC Frequency	50Hz
Power Factor Range	1 Lagging - 1 Leading
Auxiliary AC Voltage	230Vac
Auxiliary AC Current	＜18A
Nominal Auxiliary AC Frequency	50Hz
Auxiliary AC Power Supply	＜4kW
Protective Class	CLASS I
Pollution Degree	3
Ambient Temperature	-25℃~55℃（>45℃ derating）
Altitude	2000m
Humidity	0%-100% RH
IP Rating	IP55
Maximum Weight	＜2800kg
Maximum External Dimension	1026mm*1350mm*2366mm（W*D*H）

Dunext Technology Xiamen Co., Ltd.

Building 7, No. 1001 Haiming Road, Xiamen Torch High-tech Industrial Development Zone (Xiang'an), Xiamen, Fujian, China

Note:

1. The manufacturing date is reflected in the serial number.
2. The parameters on the label of the four models (PowerHill-P125-261kWh, PowerHill-P125-261kWh-S2, PowerHill-P125-261kWh-S3, PowerHill-P125-261kWh-S4) are the same except for the model names.

Test item particulars.....:	
Classification of installation and use.....:	Class I
Supply Connection.....:	Directly connected to mains
.....:	
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 .....:	2026-03-03
Date (s) of performance of tests.....:	2026-04-08 to 2026-05-15

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) .....:	Factory 1: Dunext Technology Xiamen Co., Ltd. Building 7, No. 1001 Haiming Road, Xiamen Torch High-tech Industrial Development Zone (Xiang'an), Xiamen 361115 Fujian P.R. China Factory 2: Wuxi Unite Energy Technology Co., LTD No.24 Yu'an Road, Shuofang Industrial Park, Xinwu District, Wuxi, JiangSu P.R. China

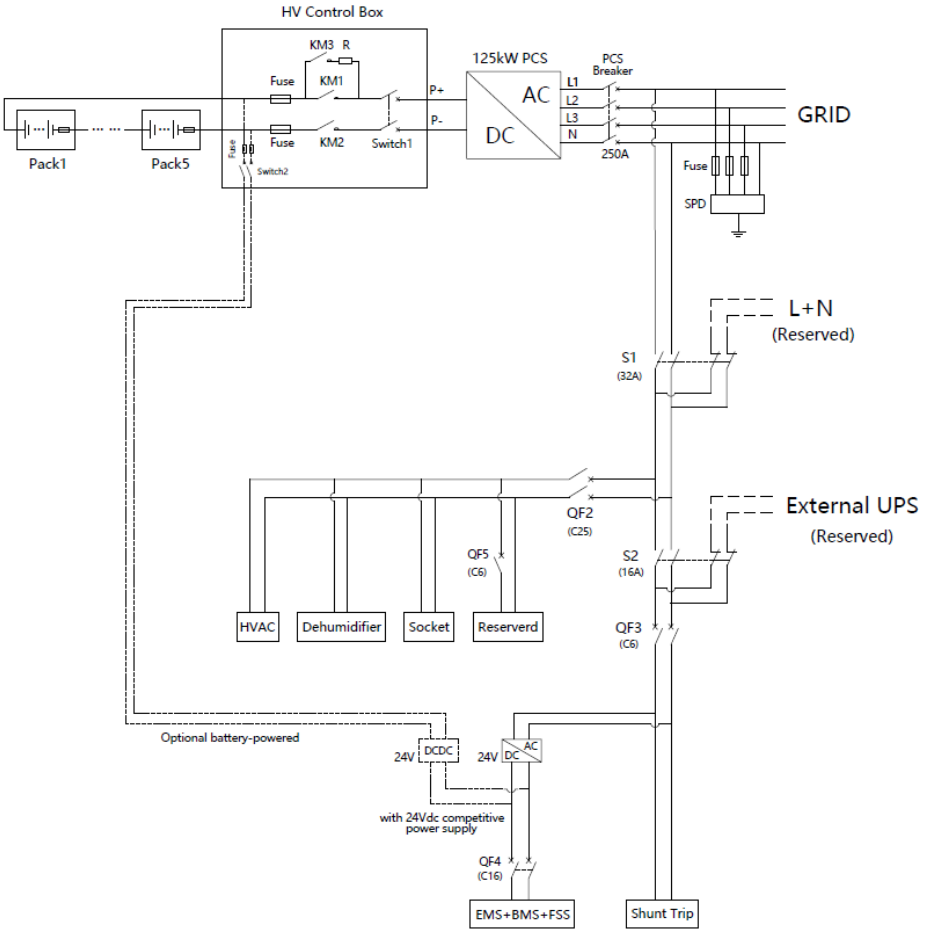
General product information and other remarks:

Product Description:

The products PowerHill-P125-261kWh, PowerHill-P125-261kWh-S2, PowerHill-P125-261kWh-S3, PowerHill-P125-261kWh-S4 are Battery Energy Storage System (BESS). The BESS contains one LFP battery rack, one PCS module, one liquid cooling system and one fire protection system.

The LFP battery rack contains one high voltage box and 5 battery packs in series connection. The BCU board is placed in the high voltage box. The battery pack contains 52 cells in structure 1P52S. Each battery pack contains one BMU board for measuring and collecting the cell parameters and uploading the information of cell voltage and temperature to the BCU board.
The battery rack connects to the PCS. The PCS is a converter which can deliver DC energy to AC energy or draw energy from AC grid. The battery rack can store energy from AC grid and deliver energy to AC grid through the PCS.
The grid port reduced the overvoltage category through the SPDs with status monitoring.

The difference between four product models is that the models PowerHill-P125-261kWh-S3, PowerHill-P125-261kWh-S4 are equipped with a DC/DC module in high voltage box whereas models PowerHill-P125-261kWh, PowerHill-P125-261kWh-S2 are not equipped. The DC/DC module accepts high-voltage DC input and provides regulated 24 VDC output. Two types of EMS(Energy Management System) are adopted across the four product models. Product models PowerHill-P125-261kWh and PowerHill-P125-261kWh-S3 adopt EMS model DN-EMS-300-EU. Product models PowerHill-P125-261kWh-S2 and PowerHill-P125-261kWh-S4 adopt EMS model WL-EMS-1000. Except for the above two differences, the product structure is identical. See Model difference table below for details.
All the tests performed on the full-featured models of PowerHill-P125-261kWh-S3 and PowerHill-P125-261kWh-S4 to represent the others.
Block diagram as below:



(PowerHill-P125-261kWh-S3, PowerHill-P125-261kWh-S4)

The insulation between the DC circuit and the metal enclosure is basic insulation. And the insulation between the DC circuit and communication ports is reinforced insulation or double insulation.

The insulation between the AC circuit and the metal enclosure is basic insulation. And the insulation between the AC circuit and communication ports is reinforced insulation or double insulation.

OVC II considered for the battery rack, it shall be isolated from an OVC III supply source (such as from an OVC III PCS) through an isolated transformer or protected in a manner that prevents transient overvoltage conditions in end use.

The EUT(equipment under test) is outdoor type. The Ingress Protection (IP) rating of the EUT is IP55, and the Pollution Degree (PD) of the product is PD3 (PD2 inside) which specified by the manufacturer.

The PCS is certified individually.

The BMS functional safety was evaluated according to IEC 60730-1 Annex H by TÜV Rheinland.
Note: All tests in this report apply only to the DC part of the product.

Model difference:

Product model	DC/DC module in high voltage box	EMS model
PowerHill-P125-261kWh	Excluded	DN-EMS-300-EU
PowerHill-P125-261kWh-S2	Excluded	WL-EMS-1000
PowerHill-P125-261kWh-S3	Included	DN-EMS-300-EU
PowerHill-P125-261kWh-S4	Included	WL-EMS-1000

1. The main features of battery system are shown as below:

	Cell	Module
Product name	Lithium-ion Cell	Rechargeable Li-ion Battery Pack
Type/model	LFP71173207/314Ah	PowerPack-52.2HV-EU
Rated Capacity[Ah]	314	314
Cell Quantity	1	52
Battery structure	-	1P52S
Nominal voltage[Vd.c.]	3.2	166.4
Nominal energy[Wh]	1004.8	52249.6
Upper limited charging voltage [Vd.c.]	3.85	187.2
Recommend charging voltage [Vd.c.]	3.65	187.2
Recommend charging current[A]	157A	157
Maximum continuous charging current[A]	314A	185
Recommend discharging current [A]	157A	157
Maximum continuous discharge current[A]	314A	185
End of discharge voltage[Vd.c.]	2.5	143
Lower limit discharging voltage	1.8	137.8

[Vd.c.]		
Temperature range for charging [°C]	0 to 60	0 to 55
Temperature range for discharging[°C]	-30 to 60	-25 to 55
Temperature threshold for protection(cell surface)[°C]	-	56
Overcharge protected voltage supply by battery system[Vd.c.]	-	3.7V/cell
Recommend charging method declared by the manufacturer	At constant current 157A till cell voltage reaches 3.65V, then switch to constant voltage 3.65V till charge current drops to 15.7A	Charging at constant power 26.1248kW until the voltage reaches 187.2V or any one cell reaches 3.6V
Recommend discharging method declared by the manufacturer	Discharging the cell with 157A constant current to discharge cut-off voltage 2.5V	Discharging at constant power 26.1248kW until the voltage reaches 143V or any one cell reaches 2.75V
Dimension[mm]	Thickness: 71.70±0.50 mm Width: 174.70±0.50 mm Height: 207.11±0.50 mm	W790×D1145×H246.3mm
Weight[kg]	5.6±0.2	347±5kg
Ingress Protection (IP)	-	IP67
Protective Class	-	I
Pollution degree	-	2 (Indoor)
Cooling type	-	Liquid cooling
Altitude[m]	-	2000

	Battery system	
Product name	DC Side of Integrated Energy Storage System	
Type/model	PowerHill-P125-261kWh, PowerHill-P125-261kWh-S2	PowerHill-P125-261kWh-S3, PowerHill-P125-261kWh-S4
DC/DC module in high voltage box	-	Input: 300-400VDC, 2A(max) Output: 24V, 11700mA Input: 400-1500VDC, 2A(max) Output: 24V, 14600mA
Designation	IFpP73/176/208[(1P52S)5S]M/-20+50/85	
Rated Capacity[Ah]	314	
Cell Quantity	260	
Battery structure	(1P52S)5S	
Nominal voltage[Vd.c.]	832	
Nominal energy[Wh]	261248	

Upper limited charging voltage [Vd.c.]	936
Recommend charging voltage [Vd.c.]	936
Recommend charging current[A]	157
Maximum continuous charging current[A]	185
Recommend discharging current [A]	157
Maximum continuous discharge current[A]	185
End of discharge voltage[Vd.c.]	715
Lower limit discharging voltage [Vd.c.]	689
Temperature range for charging [°C]	0 to 55
Temperature range for discharging[°C]	-25 to 55
Temperature threshold for protection(cell surface)[°C]	56
Overcharge protected voltage supply by battery system[Vd.c.]	3.7V/cell
Recommend charging method declared by the manufacturer	At constant Power 125kW till any one cell voltage reaches 3.6 V
Recommend discharging method declared by the manufacturer	At constant Power 125kW till any one cell voltage reaches 2.75 V
Dimension[mm]	1026±2(W)*1350±2(D)*2366±3(H)
Weight[kg]	<2800
Ingress Protection (IP)	IP67(battery pack)
Protective Class	I
Pollution degree	2 (Indoor)
Cooling type	Liquid cooling
Altitude[m]	2000

2. PCS Cabinet:

MODELS LIST		EPCS125-AM-F
Battery Input	Battery Type	lithium-ion battery Lead-acid battery Lithium titanate battery
	Voltage range [V]	615-950(3W+PE)/650-950(3W+N+PE)

	Full load voltage range [V]	615-950(3W+PE)/680-950(3W+N+PE)
	Max continuous charging current [A]	203
	Max continuous discharging current [A]	203
	Overvoltage Category (OVC)	II
AC Side (On Grid)	Rated Input/Output Voltage [Vac]	230/400, 3W+N+PE/3W+PE
	Rated Input/Output Frequency [Hz]	50/60
	Rated Input/Output Power [kW]	125
	Max. Input/Output Apparent power [kVA]	138.0
	Rated Input/Output Current [A]	181.2
	Max. Input/Output Current [A]	200
	Power Factor cosφ [λ]	1 Leading - 1 Lagging
	Overvoltage Category (OVC)	III
CONSTRUCTION	Firmware version	V100B000D000
	Hardware version	A00
	Type of inverter	Non-isolated
	Type of NS Protection	Integrated
	Protective Class	I
	Enclosure Protection (IP)	IP20
	Acoustic Noise	<70dB
	Operating Temperature Range [ºC]	-30°C ~ 55°C (Derating above 45°C)
	Pollution degree (PD)	2
	Altitude [m]	4000m
	Size W*H*D [mm]	520*232*785
	Weight [kg]	74.5

3. Energy Storage System

MODELS LIST		PowerHill-P125-261kWh, PowerHill-P125-261kWh-S2, PowerHill-P125-261kWh-S3, PowerHill-P125-261kWh-S4
DC side	Cell Type	LiFePO4
	Battery Nominal Voltage [Vd.c.]	832
	Voltage Range [Vd.c.]	715~936
	Rated Energy[Wh]	261248
	Recommend charging / discharging power(kW)	125

	Maximum continuous charging current[A]	185
	Maximum continuous discharge current[A]	185
	Overvoltage Category(OVC)	II
AC side	PCS Cabinet Model	EPCS125-AM-F
	Rated Output Voltage Un [Vac]	230/400, 3L/N/PE
	Rated Output Frequency fn [Hz]	50
	Rated AC Power Pn [kW]	125
	Max AC Power Pn [kW]	125
	Rated AC Current [A]	181
	Max AC Current [A]	181
	Power Factor Range cosφ	1 Lagging - 1 Leading
	Overvoltage Category (OVC)	III
Auxiliary power	Rated Output Voltage Un [Vac]	230, L/N
	Rated Output Frequency fn [Hz]	50
	Max Power Pn [kW]	<4
	Max Current Imax [A]	<18
Battery Energy Storage System	Type of inverter	Non-isolated
	Enclosure Protection (IP)	IP55
	Protective Class	I
	Operating Temperature Range [ºC]	-25 to 55 (>45 derating)
	Humidity Range[%RH]	0-100
	Pollution degree (PD)	External PD3/Internal PD 2
	Cooling method	Liquid cooling
	Acoustic Noise [dB]	<70
	Altitude [m]	2000
	Weight [kg]	<2800
	Size (W x D x H) [mm]	(1026±2)*(1350±2)*(2366±3)

IEC 63056			
Clause	Requirement + Test	Result - Remark	Verdict
4	**PARAMETER MEASUREMENT TOLERANCES**		
	Parameter measurement tolerances		P
5	**GENERAL SAFETY CONSIDERATIONS**		**P**
5.1	**General**		**P**
	Battery systems and the cells comply with the applicable general safety considerations of IEC 62619.	Complied with IEC 62619 Approval battery systems and cells used.	P
	Within the standard temperature range, secondary cells are charged at the maximum charge current		P
	Lithium-ion cells are operated within the operating region and the storage conditions		P
	Cells and battery systems are safe under conditions of both intended use and reasonably foreseeable misuse..... :	Considered	P
	Moving parts apply appropriate design to reduce the risk of injuries		P
5.2	**Insulation and wiring**		**P**
	Sufficient for maximum voltage, current, temperature, altitude, and humidity requirements.. :	See also Table 5.1 for Critical Components information.	P
	Adequate clearances and creepage distances between connectors according to IEC 60950-1:2005, 3.1 and 3.2		P
	Hazardous live parts are protected to avoid the risk of electric shock		P
	The mechanical integrity of whole battery system and internal connections follow end use equipment manufacturer's requirements or Annex A ..... :	See also Table 5.1 for Critical Components information.	P
	Maximum allowed number of series connections of a module or a battery system is provided in the specifications or instruction manual		P
5.3	**The peak voltage of charging**		**P**
	Battery system manufacturer ensures the peak voltage of charging current is under the upper limit charging voltage by monitoring the voltage of every single cell or cell block.		P
6	**TYPE TEST CONDITIONS**		**P**
6.1	**General**		**P**
6.2	**Test items**		**P**

IEC 63056			
Clause	Requirement + Test	Result - Remark	Verdict
	DUT (device under test) is stored under conditions specified by cell manufacturer and is not more than six months old		P
	Capacity confirmation of the DUT		P
	Default ambient temperature of test, 25 °C ± 5 °C	Tests were carried out in an ambient temperature of 25 ± 5°C.	P
	See Table 1 of IEC 63056 for the type tests and the sample quantity for each tests		P
7	**SPECIFIC REQUIREMENTS AND TESTS**		**P**
7.1	**Basic requirement**		**P**
	Cells and batteries used in battery systems evaluated to this standard comply with the test requirements of IEC62619 and this standard		P
7.2	**Resistance of abnormal heat**		**P**
	Non-metallic materials, on which parts at hazardous voltage are directly mounted, are resistant to abnormal heat and comply with ball pressure test in IEC 60695-10-2 ..... :	See Table 7.2.	P
	Results: The dimension *d* of indentation does not exceed 2 mm		P
	Dimension *d* is the largest distance that can be measured across the indentation from one clearly defined edge of the indentation to another		—
7.3	**Casing material of a battery system which can be transported for installation or maintenance**		**N/A**
	The class of thermoplastic casing (V-2 or higher) .....……..:	Metal enclosure	—
	Where components cannot be protected against overheating under fault conditions, the following additional requirements are met:		—
	(1) Mounted on V-1 or higher class material, and ……..…:		—
	(2) Separated from the V-2 class case material by min. 13 mm of air, or by a solid barrier of V-1 or higher class material……:		—
	Materials are tested at a thickness equal to the smallest thickness used in the application and classified according to IEC 60695-11-10 (mm) .... :		N/A
7.4	**Electric insulation check during transport and installation**		**P**
	The hazardous live parts of battery or cell are covered or insulated from personnel	Considered	P

IEC 63056			
Clause	Requirement + Test	Result - Remark	Verdict
	Unless the end use equipment has specific requirements, the test method is in accordance with the insulation resistance test of IEC 62133:2017, Clause 5.2		P
	The insulation resistance between the positive terminal and externally exposed metal surfaces of the battery is not less than 5 MΩ at 500 Vdc when measured 60 s after applying the voltage		P
	Results: The insulation resistance is equal to or higher than 5 MΩ..... :	See Table 7.4.	P
7.5	**Charging procedures for test purposes**		**P**
	The battery is discharged at a constant current of 0,2 *I*t A to a specified final voltage prior to charging		P
	Discharge current, 0,2 *I*t A……..…:	62.8	—
	The cells or batteries are charged using the method specified by the manufacturer..... :	See model list on General product information and other remarks for details.	—
7.6	**Protection for short circuit during transport and installation**		**P**
	A safeguard is provided to prevent the risk of short circuit for personnel during transport and installation		P
	Safeguards are provided for battery system and for each part when the battery system is divided into parts for transportation		P
	Fully charged DUT is discharged to SOC (state of charge) for installation or maintenance, which is specified by the manufacturer		P
	Unless otherwise specified by the manufacturer, tests are carried out without discharging after charging in accordance with 7.2.		P
	DUT is stored in an ambient temperature until its temperature is stabilized at 25 °C ± 5 °C. Then, DUT is short-circuited by connecting the positive and negative terminals.		P
	The external resistance to short circuits is (30 mΩ ± 10 mΩ) × module configuration (= number of series connections / number of parallel connections) or less than 5 mΩ, whichever is higher; total external resistance less than 100 mΩ.		P
	Test is continued for 6 hours or the case temperature declined by 80 % of maximum temperature rise, whichever is sooner		P
	Results: No rupture, no fire, no explosion ..... :	See Table 7.6	P
7.7	**Protection for reverse connection**		**N/A**

IEC 63056			
Clause	Requirement + Test	Result - Remark	Verdict
	Battery systems consisting of multiple battery packs or modules - that are not designed to prevent a reverse polarity connection or - that are not connected into the battery system with the BMS at the factory	The battery system designed to prevent a reverse polarity connection.	N/A
	Fully charged DUT is discharged to SOC (state of charge) for installation or maintenance, which is specified by the manufacturer		N/A
	One of the DUTs of battery system is connected with opposite polarity		N/A
	The battery system is fully charged or stopped by a safety protection, and then rested for one hour		N/A
	If the battery system can be discharged, - with the maximum discharge current until it stops discharging, and it's rested for one hour.		N/A
	If the battery system cannot be discharged, it is rested for one hour.		N/A
	Results: No rupture, no fire, no explosion ..... :	N/A	N/A
7.8	**Overdischarge control of voltage test (battery system)**		**P**
	The BMS controls the cell voltage during discharging above the lower limit discharging voltage of the cells	The smallest system form of a BMS box and a module was tested as representative of the battery system.	P
	The cooling system remains functional during the test and the main contactors are closed with the battery system controlled by the BMS		P
	The battery system is discharged at a constant current of 0,2 *I*t A to 30 % of the rated capacity, and then is discharged at the specified maximum discharging current		P
	The discharge is continued until the BMS terminates the discharging before exceeding the lower limit discharging voltage of the cells		P
	If difficult to overdischarge the whole system, the exceeded voltage applied to the cell(s) in the battery system		P
	Data acquisition/monitoring was continued for 1 h after discharging is stopped		P
	Results: No fire, no explosion ..... :	See Table 7.8	P
	The BMS interrupts the discharging before exceeding the lower limit discharging voltage of the cells		P

IEC 63056			
Clause	Requirement + Test	Result - Remark	Verdict
	All functions of the battery system are fully operational as designed during the test		P
7.9	**Drop test**		**P**
7.9.1	General		P
	For the simulation of a drop during installation and maintenance		P
	The DUT is (Cell, Module or Battery System).…….:	Battery System	—
7.9.2	Whole drop test		P
	For DUT's mass less than 50 kg	35kg	P
	Fully charged DUT is discharged to SOC (state of charge) for installation or maintenance, which is specified by the manufacturer.		N/A
	Where SOC for installation or maintenance is not specified by the manufacturer, tests carried out without discharging after charging per clause 7.2.		N/A
	Description of the DUT ..... :	one high voltage box	—
	The DUT is dropped one time from a height shown in Table 2 of IEC63056		P
	For DUT's mass less than 7 kg, it drops so as to obtain impact in random orientation		N/A
	For DUT's mass between 7 kg and 50 kg, it drops in the bottom down direction. The bottom surface of the DUT is specified by the manufacturer		P
	After the test, the DUT is put on rest for 1 h, and a visual inspection is performed		P
	Results: No fire, no explosion ..... :	See Table 7.9.2	P
7.9.3	Edge and corner drop test		P
	For DUT's mass equal to or more than 50 kg	342kg	P
	Fully charged DUT is discharged to SOC (state of charge) for installation or maintenance, which is specified by the manufacturer.		P
	Unless otherwise specified by the manufacturer, tests are carried out without discharging after charging in accordance with 7.2.		P
	Description of the DUT ..... :	Battery pack	—
	The DUT is dropped two times from a height shown in Table 2 of IEC63056		P
	Test is arranged for reproducible impact points for the shortest edge drop impact and the corner impacted		P

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Clause	Requirement + Test	Result - Remark	Verdict
	The two impacts, per impact type, are on the same corner and on the same shortest edge		P
	After the test, the DUT is put on rest for 1 h, and a visual inspection is performed		P
	Results: No fire, no explosion ..... :	See Table 7.9.3	P
8	**INFORMATION FOR SAFETY**		P
	Information for safety in accordance with IEC 62619 was provided		P
	The cell manufacturer provides information about current, voltage and temperature limits of their products	See the manual and model list	P
	The battery system manufacturer provides information regarding how to mitigate hazards to equipment manufacturers or end-users	See the manual	P
9	**MARKING AND DESIGNATION**		P
	The marking items shown in Table 1 of IEC 62620 indicated on the cell, battery system or instruction manual	See label above	P
	Cell or battery system has clear and durable markings		P
	Cell designation		N/A
	Battery designation	See label above	P
	Battery structure formulation	See model list	P
ANNEX A	**WIRING, CONNETIONS AND SUPPLY**		N/A
Table A.1	Wiring, connections and supply requirement, as addressed in IEC 60950-1:2005		N/A
Table A.2	Wiring, connections and supply requirement, as addressed in IEC 62368-1		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

7.2	TABLE: Resistance of abnormal heat			P
Allowed impression diameter (mm) :		2		—
Object/ Part No./ Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)	
Plastic part of battery connector	General Connectivity System Co., Ltd	125	0.5	
Busbar post insulator	Chengdu Jieyang Electric Components Co., Ltd	125	0.55	
Connector of BCU	Shenzhen Changjiang Connectors Co., Ltd	125	1.5	

Supplementary information:
The test is made in a heating cabinet at a temperature of (ΔT + Tmax + 15 °C) ± 2 °C.

- ΔT means the maximum temperature rise of thermoplastic parts during the most adverse operation specified by the battery system manufacturer at 25 °C ± 5 °C.
- Tmax means upper limit ambient temperature specified by the battery system manufacturer.

7.4	TABLE: Electric insulation check during transport and installation	P

Sample No.	Insulation resistance (MΩ)(1)	Results
A004216626-001	> 20	A

Supplementary information:

1. The insulation resistance is measured between the positive terminal and externally exposed metal surfaces of the battery at 500 Vdc when measured 60 s after applying the voltage
2. Tested on A004216626-001 (model PowerHill-P125-261kWh-S4).

Results:
A – The insulation resistance is equal to or higher than 5 MΩ
B – The insulation resistance is less than 5 MΩ
C – Other (Please explain): ___

7.6	TABLE: Protection for short circuit during transport and installation	P
Constant discharging current, 0,2 *I*t (A)……:	62.8	—
SOC for installation or maintenance (Ah or Wh)……..:	94.2Ah	—
Battery configuration (XS/YP)……..:	1P52S for battery pack (1P52S)5S for battery rack	—

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Clause	Requirement + Test	Result - Remark	Verdict

Sample No.	DUT's temperature at start of test (°C)(1)	External resistance (mΩ)(2)	Results
A004216626-001	21.5	30	A, F
Battery pack	21.6	30	A, F

Supplementary information:

1. Prior to test, the DUT is stored in an ambient temperature until its temperature is stabilized at 25 °C ± 5 °C.

2. The external resistance to short circuits is (30 mΩ ± 10 mΩ) × battery configuration (= number of series connections / number of parallel connections) or less than 5 mΩ, whichever is higher. Total external resistance is less than 100 mΩ.

3. The protective device was broken immediately after short circuit, and there is no obvious temperature rise during testing.

4. Tested on A004216626-001(model PowerHill-P125-261kWh-S4) and the protective device is breaker.

Results:
A – No rupture or fire or explosion
B – Rupture
C – Fire
D – Explosion
E – The test is completed after 6 h
F – The test is completed after the casing cooled to 20% of the maximum temperature rise
G – Other (Please explain): ___

7.7	TABLE: Protection for reverse connection				N/A
Constant discharging current, 0,2 *I*t (A) ..... :		--			—
SOC for installation or maintenance (Ah or Wh)..... :		--			—
Sample No.	**Charging voltage (Vdc)**	**Charging current (A)**	**Maximum discharging current (A)**	**Results**	
--	--	--	--	--	

Supplementary information:

Results:
A – No fire or explosion
B – Fire
C – Explosion
D – The DUT is fully charged and then is rested for one hour
E – The charging is stopped by a safety protection and then is rested for one hour
F – The DUT can be discharged with maximum discharge current until stopped by itself and then is rested for one hour
G – The DUT can't be discharged and then is rested for one hour
H – Other (Please explain): ___

IEC 63056			
Clause	Requirement + Test	Result - Remark	Verdict

7.8	TABLE: Overdischarge control of voltage test (battery system)						P
Constant discharging current, 0,2 *I*t (A)……:		62.8					—
30% of rated capacity (Ah)……:		94.2					—
Sample No.	**Maximum discharging current applying to battery (A)(1)**		**OCV at end of the test (Vdc)**		**Lower limit discharging voltage of the cell (Vdc)**	**Results**	
	Whole system	**Cell(s)**	**Whole system**	**Cell(s)**			
A004216626-001	185	-	134.7	2.373	1.8	A, D	

Supplementary information:

1. If it is difficult to overdischarge the whole system, the exceeded voltage can be applied to a part of the system such as the cell(s) in the battery system.
2. Tested on a part of the battery system which consisted of one battery pack and one high voltage box.

Results:
A – No fire or explosion
B – Fire
C – Explosion
D - The voltage of the measured cells or cell blocks did not exceed the lower limit discharging voltage
E - The voltage of the measured cells or cell blocks did exceed the lower limit discharging voltage
F – Other (Please explain): ___

7.9.2	TABLE: Whole drop test					P
Constant discharging current, 0,2 *I*t (A)……:		**-**				—
SOC for installation or maintenance (Ah or Wh)……..:		**-**				—
Sample No.	**Mass of DUT (kg)**	**Height of drop (m)(1)**	**OCV at start of the test (Vdc)**	**Impacted points (2)**	**Results**	
A004216626-001 (High voltage box)	35	0.5	**-**	Bottom down direction	A	

Supplementary information:

Mass of the DUT, *m*	Test method	Orientation	Height of drop
m < 7 kg	Whole	Random	100,0 cm
7 kg ≤ *m* < 20 kg	Whole	Bottom down direction (Note)	100,0 cm
20 kg ≤ *m* < 50 kg	Whole	Bottom down direction (Note)	50,0 cm
50 kg ≤ *m* < 100 kg	Edge and corner	--	5,0 cm
m ≥ 100 kg	Edge and corner	--	2,5 cm
Note – The bottom surface of the DUT is specified by the manufacturer			

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Clause	Requirement + Test	Result - Remark	Verdict

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

7.9.3	TABLE: Edge and corner drop test		P
Constant discharging current, 0,2 *I*t (A)..... :		62.8	—
SOC for installation or maintenance (Ah or Wh)..... :		94.2Ah	—

Sample No.	Mass of DUT (kg)	Height of drop (m)(1)	OCV at start of the test (Vdc)	Impacted points (2)	Results
A004216626-001 (Battery pack)	342	0.025	152.2	Edge and corner	A

Supplementary information:

Mass of the DUT, *m*	Test method	Orientation	Height of drop
m < 7 kg	Whole	Random	100,0 cm
7 kg ≤ *m* < 20 kg	Whole	Bottom down direction (Note)	100,0 cm
20 kg ≤ *m* < 50 kg	Whole	Bottom down direction (Note)	50,0 cm
50 kg ≤ *m* < 100 kg	Edge and corner	--	5,0 cm
m ≥ 100 kg	Edge and corner	--	2,5 cm
Note – The bottom surface of the DUT is specified by the manufacturer			

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

IEC 63056			
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)]**
Battery Pack					
Rechargeable Prismatic Lithium-ion Cell	Xiamen Hithium Energy Storage Technology Co., Ltd.	LFP71173207/314Ah	3.2V, 314Ah	IEC 62619: 2022	TUV RH JPTUV-152897
Fuse in Battery module	Xi'an Sinofuse Electric Co. Ltd.	RSZ307-1-TMZ-450A250V-N	DC250V/450A breaking capacity 50kA/-40°C~+85°C	EN 60269-1: 2007+A1+A2, EN 60269-4: 2009+A1+A2	TUV RH R 50448323
Positive connector (High voltage)	General Connectivity System Co., Ltd	PSR8CBM6L	Rated current:250 A Operating voltage: DC1500V Operating temperature: -40°C~+125°C IP67	EN 61984: 2009	TUV RH AN 50669162 0001
Negative connector (High voltage)	General Connectivity System Co., Ltd	PSR8ABM6L	Rated current:250 A Operating voltage: DC1500V Operating temperature: -40°C~+125°C IP67	EN 61984: 2009	TUV RH AN 50669162 0001
Connector (Low-Voltage)	Shanghai Futronics Electronic Technology Co Ltd	FLP25	Operating voltage: DC300V Operating temperature: -40°C~+125°C IP67	EN 61984: 2009	TUV SUD No. B 123935 0003 Rev. 01
Insulator (between cells and case)	Changzhou Hongjun Material Science & Technology Co Ltd	HJFRPC-770FB	V-0, Min. Thickness: 0,5 mm, 80°C	UL 94 UL 746B	UL E524866
NTC	THINKING ELECTRONIC INDUSTRIAL CO LTD	NTSA1103	Resistance at 25 °C: R25=10kΩ±1%	UL 1434 UL 60730	UL E138827

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Clause	Requirement + Test	Result - Remark	Verdict

Voltage & Temperature Sensor Wiring Harness	Suzhou Xinchengda Wire & Cable Co Ltd	UL4413 24AWG UL10588 22AWG	Rating Temp:150°C Rating Voltage:300V 24AWG Rating Temp:200°C Rating Voltage:300V 22AWG	UL 758	UL E537778
Busbar insulation tube	CHANGYUAN ELECTRONICS GROUP CO LTD	cb-hft	Rating Voltage:300V Max. Operating Temp: 125°C	UL 1581	UL E494006
Power cable	JIANGSU ETERN CO LTD	3640	50mm² Rating voltage: AC1.1kV/DC1.5kV	UL 758	UL E470465-20220828
High-voltage box					
Switching Power Supply	PHOENIX CONTACT GmbH & Co.KG	PHO.1159038	240W Rated input voltage range:100 ~ 240Vac Rated output voltage:24Vdc	IEC 61010-1:2010/AMD1:2016, IEC 61010-2-201:2017	CB Test Certificate SIQ SI-12207
Female positive high voltage connector	General Connectivity System Co., Ltd	PSR8CBM6L	Rated current:250 A Operating voltage: DC1500V Operating temperature: -40°C~+125°C IP67	EN 61984:2009	TUV RH AN 50669162 0001
Female negative high voltage connector	General Connectivity System Co., Ltd	PSR8ABM6L	Rated current:250 A Operating voltage: DC1500V Operating temperature: -40°C~+125°C IP67	EN 61984:2009	TUV RH AN 50669162 0001
Main circuit fuse	Xi'an Sinofuse Electric Co., Ltd.	RS306-01-AT5Z-350A1250V	1000Vdc/350A Breaking capacity: 100kA (time constant: 10ms~15ms)	EN 60269-1: 2007+A1+A2, EN 60269-4: 2009+A1+A2,	TUV RH R 50405695 0001

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Hall current sensor	SINOMAGS TECHNOLOGY CO., LTD.	STB-CAB500M-52C	Rated Voltage : DC 12V or 24V Rated Current : 26-250mA Measurement category: CAT III, 300V for RI, 600V for BI Nominal Current: 500A Temperature: -40 to 85°C	EN 61010-1: 2010+A1, EN IEC 61010-2-030:2021+A11 EN IEC 62368-1:2020+A11, EN 62477-1: 2012+A11+A1+A12	TUV RH R 50621977 0001
High-voltage box relay	Xiamen Hongfa Electroacoustic Co., Ltd	HFE88P-400/1500-24-HA-C5-6	1500Vdc/400A Contact Arrangement:1 Form A Max Breaking Current:2000A(1 op)	EN IEC 60947-4-1:2019, EN 60947-1: 2007/A2:2014, EN IEC 60947-1:2021	TUV SUD N8A 053286 0060 Rev.00
Pre-charge contactor	Xiamen Hongfa Electroacoustic Co., Ltd	HFE82P-20/1500-24-H-Q2J-1	1500Vdc/20A Contact Arrangement: 1 Form A Max Breaking Current:200 A 1000 Vd.c. (1 op)	EN IEC 60947-4-1:2019	TUV RH AN 50599939 0001
Breaker	Xiamen Hongfa Electrical Safety & Controls Co., Ltd	UEM6H-400H/250-234011-Z3	1500Vdc/250A,2P Shell frame grade:400A Rated operating short-circuit breaking capacity Ics:15kA	IEC 60947-1: 2020, IEC 60947-2: 2016, IEC 60947-2: 2016/AMD1:2019	VDE DE1-65843
Power cable	JIANGSU ETERN CO LTD	3640	50mm² Rating voltage: AC1.1kV/DC1.5kV	UL 758	UL E470465-20220828
Red stand-off insulator	Chengdu Jieyang Electric Components Co., Ltd	JYZ-118AS, KLY30308G	D30*H60-M8, D30*H30-M8 V0	UL 94	UL E536124
Busbar insulation tube	Nanjing Sunyoung Insulation Material Co., Ltd	CZ1531-2N	>0.7mm V0	UL 94	UL E540086

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Pre-charging resistor	Shenzhen Zenithsun Electronics Tech. Co., Ltd.	ASZ6030 200W50R J	50Ω, 200W	IEC 63056:2020	Test with appliance
Switching power supply fuse	COOPER BUSSMANN LLC	PV-5A10F85L	1500Vdc, 5A	UL 248-19	UL E335324
DCDC power	Mornsun Guangzhou Science&Technology Co., Ltd.	PV350-29B24	Input: 300Vdc-1500Vdc Output: 24V/14.6A 350W	IEC 62109-1: 2010	Intertek SE-108481
DCDC power switch	Shanghai Liangxin Electrical Co., Ltd	NDG3V-50/2/1/01/M/1	1500Vdc, 63A	EN IEC 60947-1:2021, EN IEC 60947-3:2021	TUV SUD No. N8A 083574 0315 Rev. 07
Battery cabinet and Electrical cabinet					
Smoke fire detector	Gulf Security Technology co., Ltd	DC-9102E	Supply voltage: 16VDC~28VDC ≤55mA	EN 54-7:2018	LPCB 548d
Heat detector	Gulf Security Technology co., Ltd	DC-9103E	Supply voltage: 16VDC~28VDC ≤55mA	EN 54-5:2017/ A1:2018	LPCB 548c
Detector base	Gulf Security Technology co., Ltd	RB-01	9,5Vdc~28Vdc ≤15mA	EN 54-18: 2005, EN 54-18:2005/ AC:2007	APPLUS 0370-CPR-7231
Low-voltage connector	Shanghai Futronics Electronic Technology Co Ltd	FLP6008W-01W, FLP2508W-01W	DC300V,7A Max Operating temperature: -40°C~+125°C IP67	EN 61984:2009	TUV SUD B 123935 0003 Rev.01
AC back-up fuse	Xi'an Sinofuse Electric Co., Ltd.	SFD2-8EC-20	500Vac/40A Breaking capacity: 50kA	EN 60269-1: 2007+A1+A2, EN 60269-4: 2009+A1+A2	TUV RH R 50554874 0001 TUV RH AN 50557430 0001
Back-up fuse base(3P)	Xi'an Sinofuse Electric Co., Ltd.	TSA1451-K3/40	500Vac/40A, 3P	EN IEC 60947-1:2021, EN IEC 60947-3:2021	TUV RH R 50554873 0001 TUV RH AN 50559209 0001

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AC SPD	Sichuan Zhongguang Lightning Protection Technologies Co., Ltd.	ZGG40-385(3+1)e	Nominal discharge current 20kA; Maximum discharge current 40kA; Voltage protection level L-N: 1.8kV, N-PE: 1.5kV	IEC 61643-11: 2011, EN 61643-11: 2012	TUV RH AN 50611522 0001
PCS	Shenzhen Enjoy Technology Co., Ltd.	EPCS125-AM-(F)	125KW DC side operating voltage range:650~950Vdc AC side rated voltage:230/400Vac Power factor range: 1 (leading) ~ 1 (lagging)	EN 62477-1: 2012+A11+A1+A12	TUV RH AN 50663492 0001
HVAC (Liquid cooling unit)	Shenzhen Envicool Technology Co., Ltd.	EMW50HFNC1C	220~240VAC; Max operating current: 19.2A Cooling capacity: 5KW Heating capacity: 2KW	EN 60335-1:2012+A11+A13+A1+A14+A2+A15, EN 60335-2-40:2003+A11+A12+A1+A2+A13 EN 62233:2008	TUV RH AM 50703920 0001
Dehumidifier	Zhuzhou Gongchuang Technology Co., ltd.	CSH-8060TS	110-230VAC, 50/60Hz,60W	EN IEC 60335-2-40:2023/A11: 2023, EN 60335-1:2012/A16: 2023, EN 62233:2008	TUV SUD NO. N8A 126711 0001 Rev.00
AC main circuit breaker QF1	Xiamen Hongfa Electrical Safety & Controls Co., Ltd	UEM5-250L/250-434011B	400Vac/250A,4P Shell Frame Rating: 250A Rated operating short-circuit breaking capacity Ics: 25kA	EN 60947-2: 2017+A1	TUV RH AN 50672511 0001
Others					

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E-STOP button	PHOENIX CONTACT GmbH & Co.KG	PHO.1108295	Rated Insulation Voltage (Ui): 600V; Rated Impulse Voltage: 6kV; Ith: 10A; -25 °C to 70 °C	IEC 63056:2020	Test with appliance
EMS (LnXall)	Zhejiang LnXall IoT Technology Co., Ltd.	WL-EMS-1000	DC12V ~ 48V Methods of communication: RS485, Ethernet, CAN	IEC 63056:2020	Test with appliance
EMS (Dunext) -Alternative	UTEK TECHNOLOGY (SHENZHEN)CO., LTD	DN-EMS-300-EU	DC12V ~ 36V Methods of communication: RS485, Ethernet, CAN	IEC 63056:2020	Test with appliance
Positive high voltage connector plug	General Connectivity System Co., Ltd	PSRP8C50L	Rated current:250 A Operating voltage: DC1500V Operating temperature: -40°C~+125°C IP67	EN 61984:2009	TUV RH AN 50669162 0001
Negative high voltage connector plug	General Connectivity System Co., Ltd	PSRP8A50L	Rated current:250 A Operating voltage: DC1500V Operating temperature: -40°C~+125°C IP67	EN 61984:2009	TUV RH AN 50669162 0001
Breaker(25A, 2P)	Shanghai Liangxin Electrical Co., Ltd.	NDB2-63C25/2	400Vac/25A,2P Shell Frame Grade: 25A	IEC 60898-1 IEC 60898-2	TUV RH AN 50606700 0001
Breaker(6A, 2P)	Shanghai Liangxin Electrical Co., Ltd.	NDB2-63C6/2	400Vac/6A,2P Shell Frame Grade: 6A	IEC 60898-1 IEC 60898-2	TUV RH AN 50606700 0001
Breaker(16A, 2P)	Shanghai Liangxin Electrical Co., Ltd.	NDB2-63C16/2	400Vac/16A,2P Shell Frame Grade: 16A	IEC 60898-1 IEC 60898-2	TUV RH AN 50606700 0001

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Breaker(6A, 1P)	Shanghai Liangxin Electrical Co., Ltd.	NDB2-63C6/1	400Vac/6A,1P Shell Frame Grade: 6A	IEC 60898-1 IEC 60898-2	TUV RH AN 50606700 0001
European standard socket	ABB S.p.A. – ELSB	M1175	250 Vac/16 A Rated Frequency:50/60 Hz	IEC 60884-1: 2002, IEC 60884-1: 2002/AMD1:2006, IEC 60884-1: 2002/AMD2:2013	VDE 40022740
AC power cable	JIANGSU ETERN CO LTD	3512	70mm²	UL 758	UL E470465-20220828
DC power cable	JIANGSU ETERN CO LTD	3640	50mm² Rating voltage: AC1.1kV/DC1.5kV	UL 758	UL E470465-20220828
Gasket	AEROFLEX CO LTD	MSR20	EPDM.V-0	UL 94	UL E228536
Cabinet body	Wuxi Weijia Power Technology Co., Ltd.	UE399-0405-002-A0	Material: SGCC Galvanized Steel Sheet Cabinet Dimensions: Size1390*1350*2380 Coating: Zinc-rich primer + finish coat, RAL9003, fine orange peel texture Film Thickness: 120–280 μm	IEC 63056:2020	Test with appliance
Insulating Column	JIANGSU BI-GOLD TECHNOLOGY NEW MATERIALS CO., LTD.	YD0304E	3mm, V-0, 130°C	UL 94	UL E240680
White Epoxy Board	Anhui Yisuola Composite Materials Co., Ltd	UE312-05001-701-A0	FR4 Thickness: 2mm.V0	UL 94	UL E510612

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Clause	Requirement + Test	Result - Remark	Verdict

Copper busbar	Suzhou Yantai Copper Industry Technology Co., Ltd.	UE312-04003-406-A0	Grade T2 Copper Copper content: 99.988 Tensile strength: 258 Thickness: 3mm	IEC 63056:2020	Test with appliance
BCU board in high voltage box(model no. BCU-B30-201-003-001 V1.1)					
DC/DC power supply Chip (U9)	Joulwatt Electronic (Hangzhou)Co., Ltd.	JW5121	Working voltage: 4.5~ 60V Working temperature: -40~ 125°C	IEC 63056:2020	Test with appliance
Single chip microcomputer (U6)	STMicroelectronics	STM32F407ZGT6	Operating voltage: 1.8-3.6V, Operating temperature: -40 to 85°C, Flash memory : 192+4KB Memory :1MB	IEC 63056:2020	Test with appliance
Communication chip (UN3, UN5)	3PEAK INCORPORATED	TPT1051	Operating temperature: -40 to 125°C Communication rate: 5 Mbit/S	IEC 63056:2020	Test with appliance
-Alternative	Shanghai Chipanalog Microelectronics Co., Ltd.	CA-IF1051	Operating temperature: -55 to 125°C Communication rate: 5 Mbit/S	IEC 63056:2020	Test with appliance
Communication isolation chip (UN2, UN4, UN8, UN11, UN12)	Suzhou Novosense Microelectronics Co., Ltd.	NSi8221N1	Isolation voltage: 3.75kVrms Working voltage: 2.5-5.5V Operating temperature: -40 to 125°C	DIN EN IEC 60747-17 (VDE 0884-17):2021-10, EN IEC 60747-17:2020+AC:2021	VDE 40050121

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-Alternative	Shanghai Chipanalog Microelectronics Co., Ltd.	CA-IS3722HS	Isolation voltage: 3.75kVrms Working voltage: 2.5-5.5V Operating temperature: -40 to 125°C	DIN EN IEC 60747-17 (VDE 0884-17):2021-10, EN IEC 60747-17:2020+AC:2021	VDE 40052786
High-voltage connector (J3, J4, J5, J6)	ShenZhen ChangJiang Connectors Co., Ltd	C4201WR-2*1P C4201WR-2*2P	Flame rating: V-2 Operating temperature: -40 to 105°C Rated voltage :600V AC/DC Rated current :9A AC/DC	UL 1977	UL E326732
Transformer (TR5)	SHENZHEN SINODRIVE ELECTRIC TECHNOLOGIES CO., LTD.	N12103S	-40°C to 125°C Working Voltage Of 1500VDC Class A	IEC 63056:2020	Test with appliance
- Triple insulation wire	YOUNG CHANGSILICONE COLIMITED	STW-F-xx	155°C, Generic Type of Insulation: Reinforced Insulation, PFA 416HP(#), CTI 0	DIN EN IEC 62368-1 (VDE 0868-1):2025-01, EN IEC 62368-1:2024+A11:2024	VDE 40013359
- Case	WAH HONG INDUSTRIAL CORP	WH-9100(G1)(G2)	Diallyl Phthalate, V-0, 130°C, min. 0.8 mm thickness, CTI 0	UL 94 UL 746B	UL E150608
- Glue	Dow Silicones Corp	1-2577 #@, 12577 Low VOC#@	V-0, 130°C, Min. 1.4mm thickness, FR-4.0	UL 94 UL 746B	UL E81611
Optocoupler (UH1, UH2, UH3)	Xiamen Hualian Semiconductor Technology Co. LTD	HSSR-61A0 D-2	Isolation voltage: 5kVrms Working temperature: -40~ 85°C	UL 1577, DIN EN IEC 60747-5-5 (VDE 0884-5):2021-10, EN IEC 60747-5-5:2020	UL E178703, VDE 40004708

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Clause	Requirement + Test	Result - Remark	Verdict

AFE chip (U2)	NXP	MC33772	Working voltage:6-30V Operating temperature: -40 to 125°C	IEC 63056:2020	Test with appliance
PCB board	SHANGHAI GLOBAL ELECTRONIC MATERIAL LTD	GF11/T6	CTI: >600 FLAME CLASS: V-0 Min Thk (mm): 0.63-1.4mm R.T.I. (°C): 90	UL 94	UL E224772
BMU board in battery pack(model no. BMU-B30-64-504 V1.4)					
Connector (JV1, JV2, JV3, JV4, JV5)	JIANGSU YXT PRECISION ELECTRON ICS CO., LTD	WTB41-B116HW1-001, WTB41-B140HW1-001, WTB41-B136HW1-001, WTB41-DB140HZ1-001, WTB41-DB136HZ1-001	Flame rating: V-0, Operating temperature: -40 to 125°C, Rated voltage :50V AC/DC, Rated current :3A AC/DC	UL 1977	UL E532919
Transformer (TJ1 TJ2)	Huizhou U&T Electronics Inc	UTA06C02	Working voltage:1500V Operating temperature: -40 to 150°C	IEC 63056:2020	Test with appliance
- Triple insulation wire	E&B Technology Co., Ltd.	E&B-XXXH-3*	180°C, Generic Type of Insulation: Reinforced Insulation, PFA340(e) (#), CTI: 600V	IEC/EN 62368-1	VDE 40043492
- Magnet wire	GUANGDONG SUNTEK WIRE CO., LTD	FIWy F/R	Insulation Type: Reinforced; Temp Class °C: 155; Test Voltage V: 3000 39-26AWG	UL 1446	UL E469976

IEC 63056			
Clause	Requirement + Test	Result - Remark	Verdict

- Case	WAH HONG INDUSTRIAL CORP	WH-9100(G1)(G2)	Diallyl Phthalate, V-0, 130°C, min. 0.8 mm thickness, CTI 0	UL 94 UL 746B	UL E150608
- Glue	MIANYANG WELLS ELECTRONIC MATERIALS CO LTD	WR7155	V-0, min.150ºC, min. 2.5 mm thickness, CTI 0	UL 94 UL 746B	UL E223455
Equalizing resistance (R9, R11, R12, R14, R15, R17, R18, R20, R21, R23, R24, R28, R29, R31, R32)	YAGEO CORPORATION	RC1206FR-0730RL, 1206W4F300JT5E	Operating temperature: -55 to 155°C	IEC 63056:2020	Test with appliance
AFE Chip (U4)	ADI	ADBMS6830MWCCSZRL	Working voltage: 11-80V Operating temperature: -40 to 125°C	IEC 63056:2020	Test with appliance
PCB board	SHANGHAI GLOBAL ELECTRONIC MATERIAL LTD	GF11/T6	CTI: >600, FLAME CLASS: V-0, Min Thk (mm): 0.63-1.4mm, R.T.I. Mech (°C): 90	UL 94 UL 746C	UL E224772
Enclosure	FORMOSA CHEMICALS & FIBER CORPORATION	PC/ABS AC310(+)	CTI:0 FLAME CLASS: V-0 Thickness :2.3mm	UL 94 UL 746C	UL E162823
Supplementary information: 1) Provided evidence ensures the agreed level of compliance. See OD-CB2039. 2) License available upon request.					

- End of test report -

Picture 1 Front view

Picture 2 Left view

Picture 3 Back view

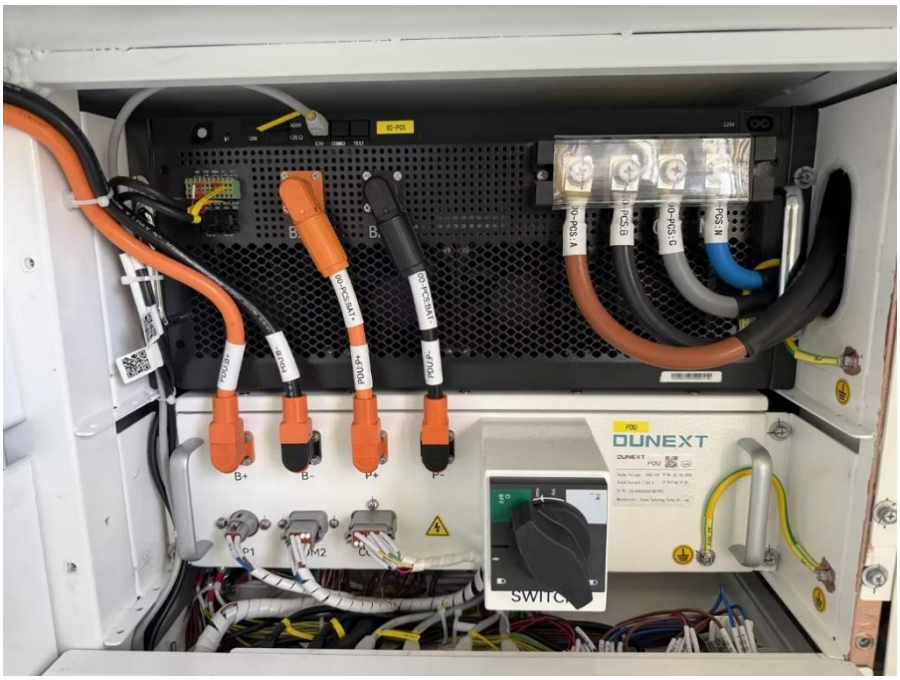
Picture 4 Right view

Picture 5 Open view 1

Picture 6 Open view 2

Picture 7 Battery cabinet

Picture 8 Electrical cabinet

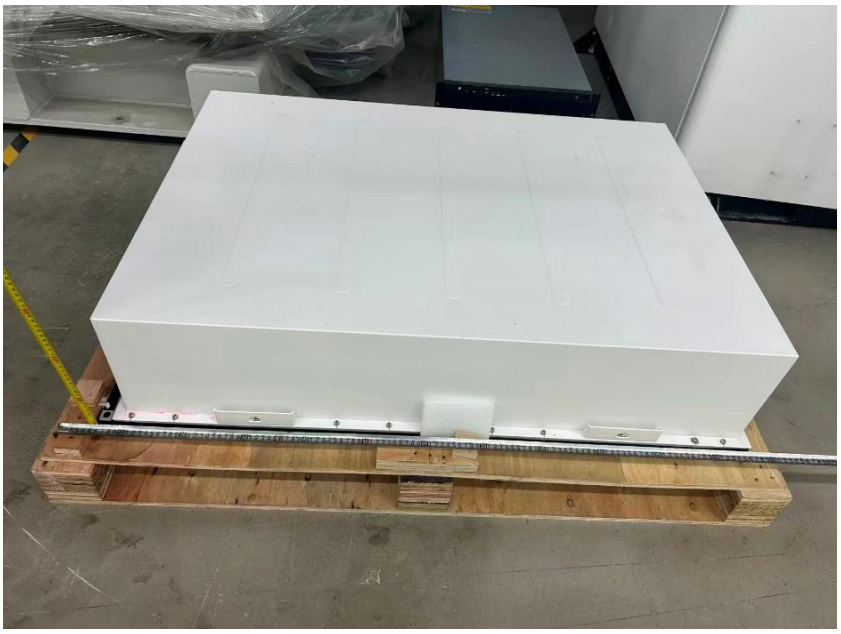


Picture 9 High voltage box/PDU + PCS box

Picture 10 AC main circuit breaker

Picture 11 Earth terminal

Picture 12 Battery pack (Top and front view)



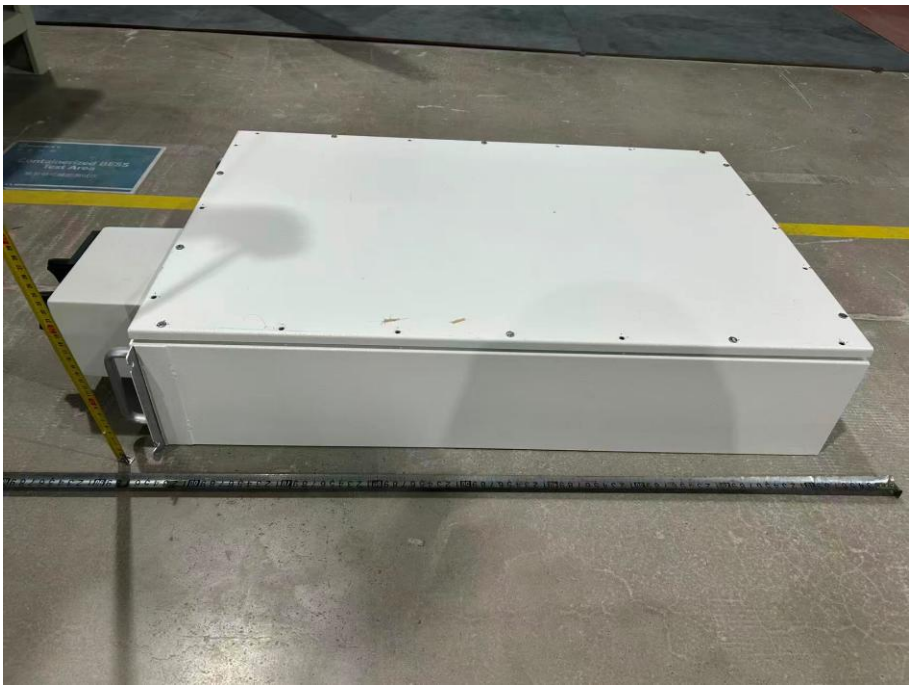
Picture 13 Battery pack (Top and right view)

Picture 14 Battery pack (Top and back view)

Picture 15 Battery pack (Inside view 1)

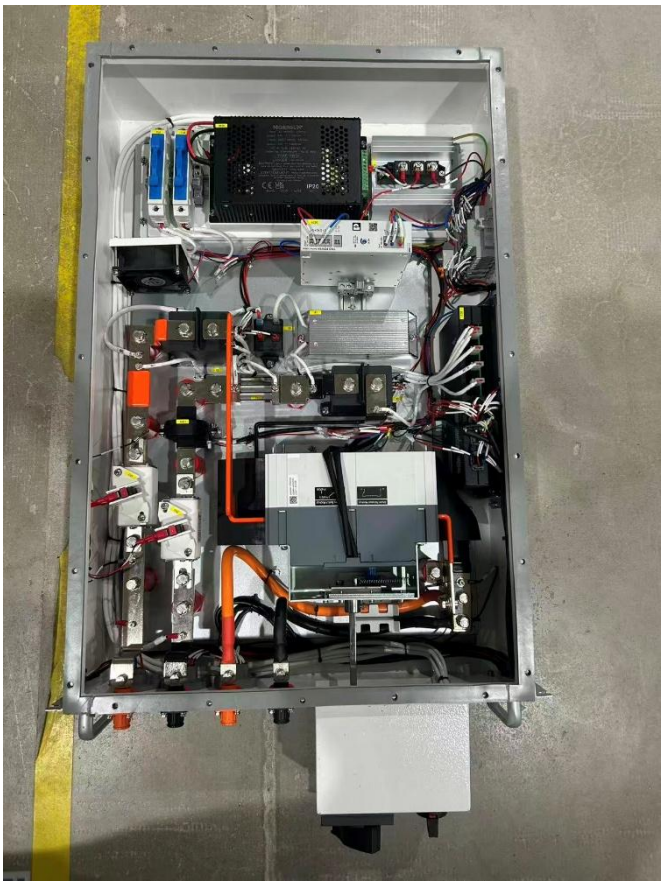
Picture 16 Battery pack (Inside view 2)

Picture 17 High voltage box/PDU with DC/DC module (Front view)



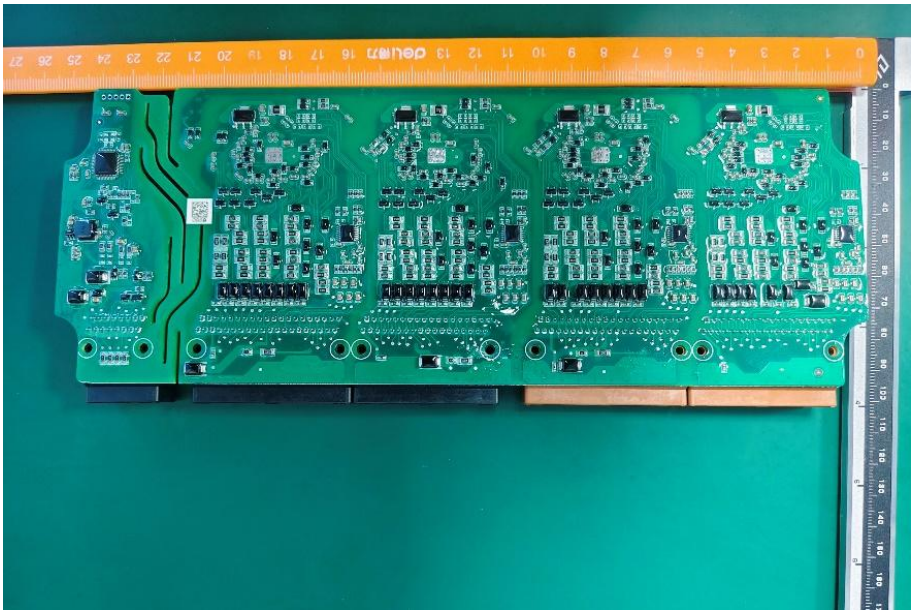
Picture 18 High voltage box/PDU (Top and side view)

Picture 19 High voltage box/PDU (Top and back view)

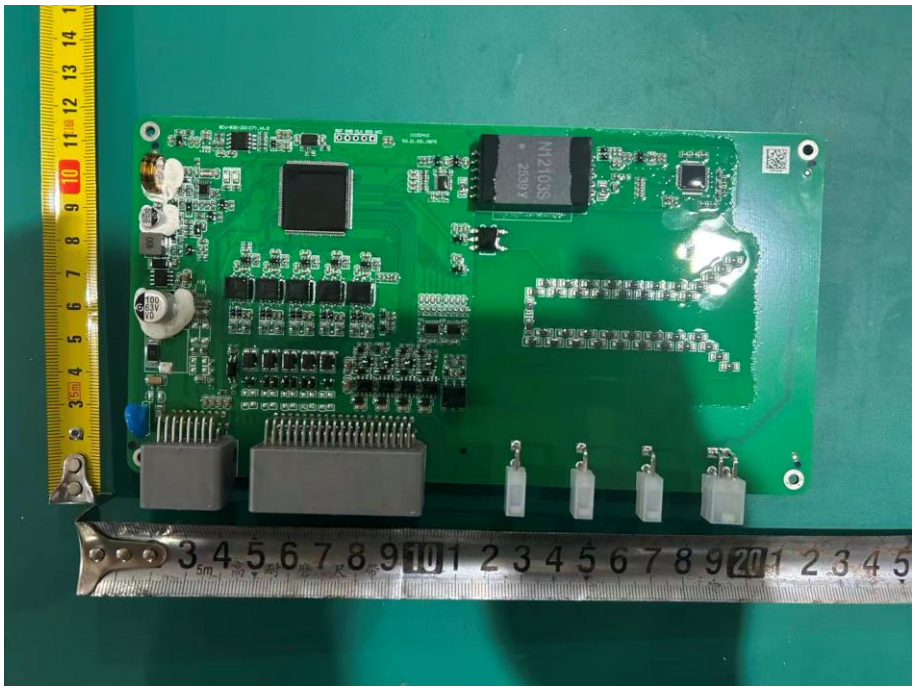


Picture 20 High voltage box/PDU with DC/DC module (Inside view)

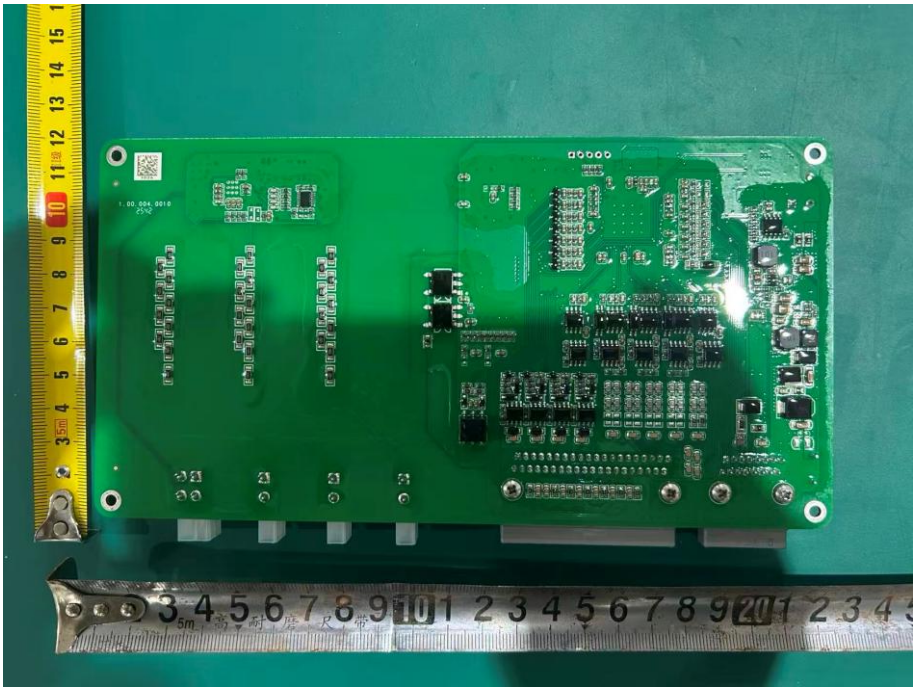
Picture 21 BMU view 1



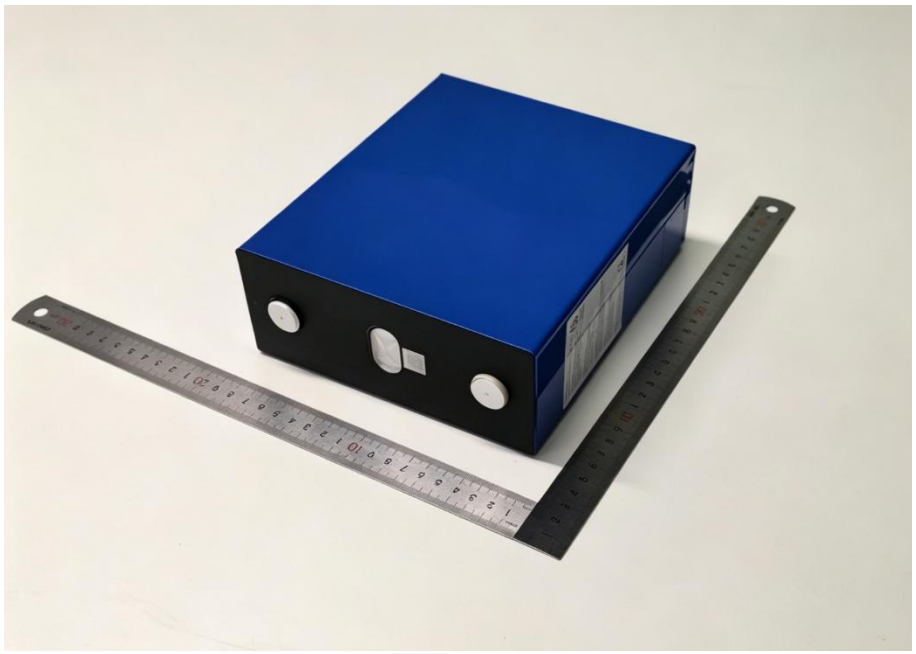
Picture 22 BMU view 2



Picture 23 BCU view 1



Picture 24 BCU view 2



Picture 25 Cell view