Test report no.: *Prüfbericht-Nr.:*	**CN2358VW 001**	**Order No.:** *Auftragsnr.:*	244544101	**Page 1 of 13** *Seite 1 von 13*
Client reference no.: *Kunden-Referenz-Nr.:*	/	**Order date:** *Auftragsdatum:*	2023-09-12	
Client: *Auftraggeber:*	Shanghai PYTES Energy Co.,Ltd No. 3492 Jinqian Road, Fengxian District, Shanghai, P.R.China			
Test item: *Prüfgegenstand:*	Rechargeable Li-ion Battery			
Identification / Type no.: *Bezeichnung / Typ-Nr.:*	E-BOX 12100			
Order content: *Auftrags-Inhalt*:	IP65 TEST REPORT			
Test specification *Prüfgrundlage:*	IEC 60529:2013			

Date of sample receipt: *Wareneingangsdatum:*	2023-09-28
Test sample no: *Prüfmuster-Nr.:*	244544101 001 to 002
Testing period: *Prüfzeitraum:*	2023-09-29 - 2023-10-10
Place of testing: *Ort der Prüfung:*	See page 6
Testing laboratory: *Prüflaboratorium:*	TÜV Rheinland (Shanghai) Co., Ltd.
Test result*: *Prüfergebnis*:*	Pass

tested by: *geprüft von:*	X	**authorized by:** *genehmigt von:*	X
Date: 2023-10-23 *Datum:*		**Issue date:** 2023-10-23 *Ausstellungsdatum:*	
Position / *Stellung*:	PE/ Haifeng Liu	**Position** / *Stellung*:	Reviewer/ Yuzhang Chen

Other: This test report is created for battery package IP57 tested under IEC 60529:2013.
Sonstiges: No modifications deem necessary.
Attachment 1: Photograph (total 5 pages)

Condition of the test item at delivery: Test item complete and undamaged
Zustand des Prüfgegenstandes bei Anlieferung: Prüfmuster vollständig und unbeschädigt

* Legend:	P(ass) = passed a.m. test specification(s)	F(ail) = failed a.m. test specification(s)	N/A = not applicable	N/T = not tested
* Legende:	P(ass) = entspricht o.g. Prüfgrundlage(n)	F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet

V05

Remarks

Anmerkungen

1	The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request. *Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben.* *Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden.*
2	Wie vertraglich vereinbart, wurde dieses Dokument nur digital unterzeichnet. Der TÜV Rheinland hat nicht überprüft, welche rechtlichen oder sonstigen diesbezüglichen Anforderungen für dieses Dokument gelten. Diese Überprüfung liegt in der Verantwortung des Benutzers dieses Dokuments. Auf Verlangen des Kunden kann der TÜV Rheinland die Gültigkeit der digitalen Signatur durch ein gesondertes Dokument bestätigen. Diese Anfrage ist an unseren Vertrieb zu richten. Eine Umweltgebühr für einen solchen zusätzlichen Service wird erhoben. Informationen zur Verifizierung der Authentizität unserer Dokumente erhalten Sie über folgenden Link: Einführung in digitale Signaturen *As contractually agreed, this document has been signed digitally only. TUV Rheinland has not verified and unable to verify which legal or other pertaining requirements are applicable for this document. Such verification is within the responsibility of the user of this document. Upon request by its client, TUV Rheinland can confirm the validity of the digital signature by a separate document. Such request shall be addressed to our Sales department. An environmental fee for such additional service will be charged. For information on verifying the authenticity of our documents, please visit the following link: Introduction to Digital Signature*
3	Test clauses with remark of * are subcontracted to qualified subcontractors and descripted under the respective test clause in the report. Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report. *Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben. Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt.*
4	The decision rule for statements of conformity, based on numerical measurement results, in this test report is based on the “Zero Guard Band Rule” and “Simple Acceptance” in accordance with ILAC G8:2019 and IEC Guide 115:2021, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also

Anmerkungen
Remarks

not declared in the test report. For additional information to the resulting risk based of this decision rule please refer to ILAC G8:2019.

Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnisen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2021, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. Zu weiteren Informationen bezueglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019.

Test Report issued under the responsibility of:

TÜVRheinland®

TEST REPORT
IEC 62133-2
Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications – Part 2: Lithium systems

Report Number. ..... :	**CN2358VW 001**
Date of issue ..... :	See cover page
Total number of pages ..... :	See cover page
Name of Testing Laboratory preparing the Report ..... :	TÜV Rheinland (Shanghai) Co., Ltd.
Applicant's name ..... :	**Shanghai PYTES Energy Co.,Ltd**
Address ..... :	No. 3492 Jinqian Road, Fengxian District, Shanghai, P.R.China
Test specification:	
Standard ..... :	IEC 60529:2013
Test procedure ..... :	~~CB Scheme~~ Test Report
Non-standard test method ..... :	N/A
TRF template used ..... :	N/A
Test Report Form No. ..... :	N/A
Test Report Form(s) Originator .... :	N/A
Master TRF ..... :	N/A

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

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

General disclaimer:

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

Test item description ..... :	Rechargeable Li-ion Battery		
Trade Mark(s) ..... :	N/A		
Manufacturer ..... :	Same as applicant		
Model/Type reference ..... :	E-BOX 12100		
Ratings ..... :	12.8V,100Ah/ 1.28kWh		
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):			
☒	**Testing Laboratory:**	See cover page	
Testing location/ address.....:		See cover page	
Tested by (name, function, signature).....:		See cover page	
Approved by (name, function, signature)...:		See cover page	
☐	**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 (5 pages).

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
Cl.13.6 Special conditions for first characteristic numeral 6 Cl.14.2.5 Test for second characteristic numeral 5 with the 6.3mm nozzle	TÜV Rheinland (Shanghai) Co., Ltd. No.177, 178, Lane 777 West Guangzhong Road, Jing'an District, Shanghai, China

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

☐ ~~**The product fulfils the requirements of _____ (insert standard number and Year of publication and delete the text in parenthesis, leave it blank or delete the whole sentence, if not applicable)**~~

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.

Pytes

Battery Model	E-BOX 12100
Batteries Type	LFP Battery
Operating Voltage Range	10.8V~14.4V
Nominal Voltage	12.8V
Nominal Capacity	100Ah
Rated Energy	1.28kWh
Continuous Discharge Current	100A
Continuous Charge Current	50A
Discharging Temperture	-20°C~55°C
Charging Temperture	-10°C~55°C
Ingress Protection	IP65

CAUTION! IFpP54/150/120/[4S]E/-30+60/95

- Rechargeable Li-ion Battery.
- Do not dispose of batteries in afire. The batteries may explode.
- Do not open or mutilate batteries. Released electrolyte is harmful to the skin and eyes.It may be toxic.
- A battery can present a risk of electric shock and burns by high short-circuit current.
- Failed batteries can reach temperatures that exceed the burn thresholds for touchable surface.

S/N: ES1000371P005751

Date: 2023-Jul-13

CE

MADE IN CHINA

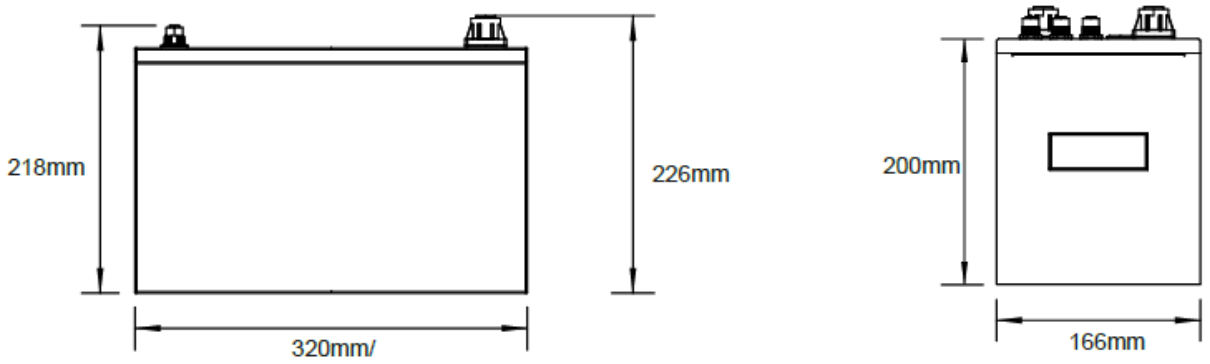
Shanghai PYTES Energy Co., Ltd.

Test item particulars.....:	
Classification of installation and use.....:	N/A
Supply Connection.....:	DC connector
Recommend charging method declared by the manufacturer.....:	Charging the battery with 50A constant current and 14.4V constant voltage (CC/CV) at ambient 20°C±5°C
Discharge current.....:	100A
Specified final voltage.....:	10.8V
Upper limit charging voltage per cell.....:	N/A
Maximum charging current.....:	50A
Charging temperature upper limit.....:	55°C
Charging temperature lower limit.....:	-10°C
Polymer cell electrolyte type.....:	☐ gel polymer ☐ solid polymer ☒ N/A
Possible test case verdicts:	
- test case does not apply to the test object.....:	N/A
- test object does meet the requirement.....:	P (Pass)
- test object does not meet the requirement.....:	F (Fail)
Testing.....:	
Date of receipt of test item .....:	2023-09-28
Date (s) of performance of tests.....:	2023-09-28 to 2023-10-10
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) ..... :	Same as applicant

General product information and other remarks:

This battery is constructed with 4 lithium-ion cells series and 1 parallels connected (4S1P), and has overcharge, over-discharge, over current and short-circuits proof circuit.

Construction:



Battery (Unit: mm)

IEC 60529:2013			
Clause	Requirement + Test	Result - Remark	Verdict
11	**General requirements for tests**		P
11.1	**Atmospheric conditions for water or dust tests**		P
	Unless otherwise specified in the relevant product Standard, the tests should be carried out under the Standard atmospheric conditions described in IEC 60068-1.		
	The recommended atmospheric conditions during the tests are as follows:		P
	Temperature range:15°C to 35°C	25°C	P
	Relative humidity: 25% to 75%	65%	P
	Air pressure: 86 kPa to 106 kPa (860 mbar to 1060 mbar).	95kPa	P
13	**Tests for protection against solid foreign objects indicated by the first characteristic numeral**		P
13.1	**Test means**		P
	Test means and the main test conditions are given in table 7.		P
	Table 7 - Test means for the tests for protection against solid foreign objects		P
13.4	**Dust test for first characteristic numerals 5 and 6**		P
	The test is made using a dust chamber incorporating the basic principles shown in figure 2 whereby the powder circulation pump may be replaced by other means suitable to maintain the talcum powder in suspension in a closed test chamber. The talcum powder used shall be able to pass through a square-meshed sieve the nominal wire diameter of which is 50 (Am and the nominal width of a gap between wires 75 (Am. The amount of talcum powder to be used is 2 kg per cubic metre of the test chamber volume. It shall not have been used for more than 20 tests.	IP65 considered.	P
	NOTE: Health and safety regulations should be observed in selecting the type of talcum powder and its use.		P
	Enclosures are of necessity in one of two categories:		P
	Category 1: Enclosures where the normal working cycle of the equipment causes reductions in air pressure within the enclosure below that of the surrounding air, for example, due to thermal cycling effects.		P
	Category 2: Enclosures where no pressure difference relative to the surrounding air is present.		N/A

IEC 60529:2013			
Clause	Requirement + Test	Result - Remark	Verdict
	Category 1 enclosures: The enclosure under test is supported inside the test chamber and the pressure inside the enclosure is maintained below the surrounding atmospheric pressure by a vacuum pump. The suction connection shall be made to a hole specially provided for this test. If not otherwise specified in the relevant product standard, this hole shall be in the vicinity of the vulnerable parts.		P
	If it is impracticable to make a special hole, the suction connection shall be made to the cable inlet hole. If there are other holes (for example, more cable inlet holes or drain-holes) these shall be treated as intended for normal use on site.		N/A
	The object of the test is to draw into the enclosure, by means of depression, a volume of air 80 times the volume of the sample enclosure tested without exceeding the extraction rate of 60 volumes per hour. In no event shall the depression exceed 2 kPa (20 mbar) on the manometer shown in figure 2.		N/A
	If an extraction rate of 40 to 60 volumes per hour is obtained the duration of the test is 2 h.		N/A
	If, with a maximum depression of 2 kPa (20 mbar), the extraction rate is less than 40 volumes per hour, the test is continued until 80 volumes have been drawn through, or a period of 8 h has elapsed.		P
	Category 2 enclosures: The enclosure under test is supported in its normal operating position inside the test chamber, but is not connected to a vacuum pump. Any drain-hole normally open shall be left open for the duration of the test. The test shall be continued for a period of 8 h.		N/A
	Category 1 and category 2 enclosures: If it is impracticable to test the complete enclosure in the test chamber, one of the following procedures shall be applied:	Complete case in the chamber	N/A
	- testing of individually enclosed sections of the enclosure;		N/A
	- testing of representative parts of the enclosure, comprising components such as doors, ventilation openings, joints, shaft seals, etc., in position during test;		N/A
	- testing of a smaller enclosure having the same full-scale design details.		N/A
	In the last two cases, the volume of air to be drawn through the enclosure under test shall be the same as for the whole enclosure in full scale.		N/A

IEC 60529:2013			
Clause	Requirement + Test	Result - Remark	Verdict
13.6	**Special conditions for first characteristic numeral 6**	IP65	P
13.6.1	**Test conditions for first characteristic numeral 6**	Considered	P
	The enclosure shall be deemed category 1, whether reductions in pressure below the atmospheric pressure are present or not.		P
13.6.2	**Acceptance conditions for first characteristic numeral 6**		P
	The protection is satisfactory if no deposit of dust is observable inside the enclosure at the end of the test.	No interfere correct operation and impair safety. The function of the product is completely normal.	P
14	**Tests for protection against water indicated by the second characteristic numeral**		P
14.1	**Test means**		P
	The test means and the main test conditions are given in table 8.		P
	Table 8 - Test means and main test conditions for the tests for protection against water		P
14.1	**Test conditions**		P
	Test means and main test conditions are given in table 8. Details concerning compliance of degrees of protection – in particular for second characteristic numerals 5/6 (water jets) and numerals 7/8 (immersion) - are given in clause 6.		P
	The tests are conducted with fresh water.		P
	During the tests for IPXI to IPX6 the water temperature should not differ by more than 5 K from the temperature of the specimen under test. If the water temperature is more than 5 K below the temperature of the specimen a pressure balance shall be provided for the enclosure. For IPX7 details of the water temperature are given in 14.2.7.		P
	During the test, the moisture contained inside the enclosure may partly condense. The dew which may thus deposit shall not be mistaken for an ingress of water.		P
	For the purpose of the tests, the surface area of the enclosure is calculated with a tolerance of 10%.		P
	Adequate safety precautions should be taken when testing the equipment in the energized condition.		P
	The tests are conducted with fresh water.		P
14.2.5	**Test for second characteristic numeral 5 with the 6.3 mm nozzle**		P

IEC 60529:2013			
Clause	Requirement + Test	Result - Remark	Verdict
	The test is made by spraying the enclosure from all practicable directions with a stream of water from a standard test nozzle as shown in Fig.6.		P
	The conditions to be observed are as follows:		P
	internal diameter of the nozzle: 6.3 mm;		P
	delivery rate: 12,5 l/min ± 5%;		P
	water pressure: to be adjusted to achieve the specified delivery rate;		P
	core of the substantial stream: circle of approximately 40 mm diameter at 2,5 m distance from nozzle;		P
	test duration per square metre of enclosure surface area likely to be sprayed: 1 min; minimum test duration: 3 min; minimum test duration:3 min;	3 min	P
	minimum test duration: 3min	3 min	P
14.3	**Acceptance conditions**		P
	After testing in accordance with the appropriate requirements of 14.2.1 to 14.2.8 the enclosure shall be inspected for ingress of water.	No water drops were found inside.	P
	It is the responsibility of the relevant technical committee to specify the amount of water which may be allowed to enter the enclosure and the details of a dielectric strength test, if any.	No interfere correct operation and impair safety. The function of the product is completely normal	P
	In general, if any water has entered, it shall not:		N/A
	- be sufficient to interfere with the correct operation of the equipment or impair safety;		N/A
	- deposit on insulation parts where it could lead to tracking along the creepage distances;		N/A
	- reach live parts or windings not designed to operate when wet;		N/A
	- accumulate near the cable end or enter the cable if any.		N/A
	If the enclosure is provided with drain-holes, it should be proved by inspection that any water which enters does not accumulate and that it drains away without doing any harm to the equipment.		N/A
	For enclosures without drain-holes, the relevant product standard shall specify the acceptance conditions if water can accumulate to reach live parts.		N/A

--End of Test Report--

Product: Rechargeable Li-ion Battery

Type Designation: E-BOX 12100

Product: Rechargeable Li-ion Battery

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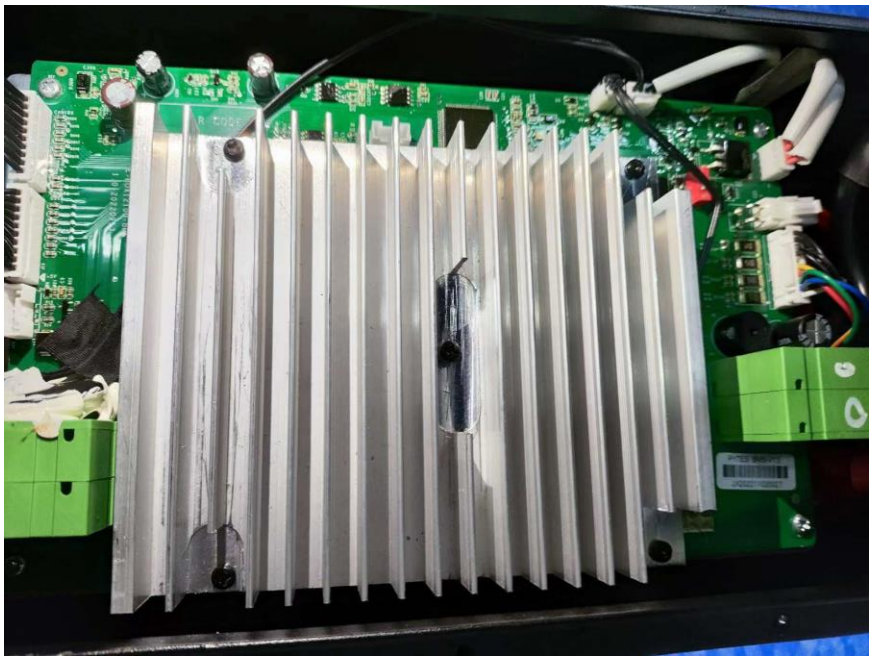
Type Designation: E-BOX 12100



Product: Rechargeable Li-ion Battery

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