Prüfbericht - Produkte

Test Report - Products



Prüfbericht-Nr.: Test Report No.:	CN225JLJ 002	Auftrags-Nr.: Order No.:	244443347 P00778272	Seite 1 von 16 Page 1 of 16	
Kunden-Referenz-Nr.: Client Reference No.:	2277059	Auftragsdatum: Order date:	2022-08-15	5	
Auftraggeber: Client:	Renac Power Technology Co., Block C-12, No. 20 Datong Ro District, Suzhou, China	, Ltd. ad, Comprehensive	Bonded Zone, Su	ızhou Hi-Tech	
Prüfgegenstand: Test item:	Rechargeable Li-ion Battery S	ystem			
Bezeichnung / Typ-Nr.: Identification / Type No.:	TB-H1-3.74, TB-H1-7.48, TB-H	H1-11.23, TB-H1-14	l.97, TB-H1-18.7		
Auftrags-Inhalt: Order content:	AK Certificate				
Prüfgrundlage: Test specification:	IEC 62040-1: 2017				
Wareneingangsdatum: Date of receipt:	2022-08-11		RERAC		
Prüfmuster-Nr.: Test sample No.:	Engineering sample				
Prüfzeitraum: Testing period:	2022-08-11				
Ort der Prüfung: Place of testing.	See page 3				
Prüflaboratorium: Testing laboratory:	Renac Power Technology Co.	., Ltd			
Prüfergebnis*: Test result*:	Pass				
geprüft von: tested by: Datum: Date: 2022-12-03 Stellung / Position	StoneWang&MikeYu PE&Trainee	genehmigt von authorized by: Datum: Date: 2022-1 Stellung / Positi	: 2-03 Bow on Re	ven Dong eviewer	
 Sonstiges / Other. Part of enclosures of the products has been changed in this edition This report is based on the report of CN225JLJ 001 This report includes the following documents: - Attachment 1: Photo documentation (17 pages); - Attachment 2: Critical components information (6 pages) 					
Zustand des Prüfgegen Condition of the test iter	nstandes bei Anlieferung: n at delivery:	Prüfmuster vollstä Test item comple	andig und unbesch ete and undamage	nädigt d	
* Legende P(ass) = entspricht o * Legend: P(ass) = passed a.n	.g. Prüfgrundlage(n) F(ail) = entspricht nic n test specification(s) F(ail) = failed a.m tes	cht o.g. Prüfgrundlage(n) N st specification(s) N	A = nicht anwendbar N A = not applicable N	I/T = nicht getestet I/T = not tested	
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.					

TUV Rheinland (Shanghai) Co., Ltd. No. 177, Lane 777, West Guangzhong Road, Jingan District, Shanghai 200072, P.R. China Mail: info@bi.chn.tuv.com Web: http://www.chn.tuv.com

Test Report issued under the responsibility of:



TEST REPORT IEC 62040-1

Uninterruptible power systems (UPS) -

Part 1: General and safety requirements for UPS

Report Number:	CN225JLJ 002			
Date of issue:	See cover page			
Total number of pages:	See cover page			
Name of Testing Laboratory preparing the Report	See cover page			
Applicant's name:	See cover page			
Address:	See cover page			
Test specification:				
Standard:	IEC 62040-1:2017			
Test procedure:	AK Certificate			
Non-standard test method:	N/A			
Test Report Form No:	IEC 62040_1E			
Test Report Form(s) Originator:	TÜV Rheinland Japan Ltd.			
Master TRF:	Dated 2017-11-10			
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This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.				
General disclaimer:				

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	A	TÜV Rheinland [®]
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Test item description:	Rechargeable Li-ion Battery System	
Trade Mark:	RENAC	
Manufacturer:	Same as applicant	
Model/Type reference:	See cover page	
Ratings	See copy of marking label and model li	ist.

List of Attachments (including a total number of pages in each attachment): - Attachment 1: Photo documentation (17 pages) - Attachment 2: Critical components information (6 pages) Summary of testing: Tests performed (name of test and test clause): N/A (Only enclosure change, there is no need to conduct the tests after evaluation) Block C-12, No. 20 Datong Road, Comprehensive Bonded Zone, Suzhou Hi-Tech District, Suzhou, China Note: The products were evaluated in above address Summary of compliance with National Differences (List of countries addressed): N/A

 \Box The product fulfils the requirements of <u>IEC 62040-1:2017</u> (insert standard number and edition and delete the text in parenthesis, leave it blank or delete the whole sentence, if not applicable)



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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.

Label for Module and Battery System:

Rechargeable Li-ion
Model:B9639-S
Battery type: Nominal Voltage/Range: Capacity/Energy: Enclosure: Max charge/discharge curre Operating Temperature: Protection Class:
Serial No:



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REENACE Battery master control Model:BMC600 DC Voltage range: Max charge/discharge current Operating Temperature: Protection Class: Enclosure: Serial No: Serial No: Image: Serial No: Im	oller :: 30A -10°C~50°C ⁰ I IP65	Rechargeable Li Battery System Model:Turbo H1 □ 1)TB-H1-3.74 IFpR34/141/[((3P15S)2S)15] □ 2)TB-H1-7.48 IFpR34/141/[((3P15S)2S)25] □ 3)TB-H1-11.23 IFpR34/141/[((3P15S)2S)35] □ 4)TB-H1-14.97 IFpR34/141/[((3P15S)2S)45] □ 5)TB-H1-18.7 IFpR34/141/[((3P15S)2S)55] Nominal Voltage/Range 1)96V(81~108V) 2)192V(162~216V) 3)288V(243~324V) 4)384V(324~432V) 5)480V(405~540V)	5]E/0+40/90 5]E/0+40/90 5]E/0+40/90 5]E/0+40/90 5]E/0+40/90 6]E/0+40/90 Capacity/Energy 1)39Ah/3.74kWh 2)39Ah/11.23kWh 4)39Ah/11.23kWh 5)39Ah/18.7kWh

Module and Battery System Warning Label:



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Test item particulars.....: □ Instructed Person Skilled Person Supply Connection...... type A type B ☑ permanent connection detachable power supply cord non-detachable power supply cord Environmental category.....: indoor unconditional conditional 🛛 outdoor Equipment mobility for building-in ⊠ fixed Access location Solution accessible restricted access location Over voltage category: OVCI OVCII OVCIII OVCIV Mains supply tolerance (%).....: N/A Tested for power systems N/A IT testing, phase-phase voltage (V) N/A Class of equipment Considered current rating of protective device as N/A part of the building installation (A)..... Pollution degree (PD)..... DPD1 DPD2 PD3 IP protection class..... IP65 Mass of equipment (kg) See model list 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: See cover page Date (s) of performance of tests: : See cover page General remarks:

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"(See Enclosure #)" refer "(See appended table)" re	s to additional information appended to the effect to the report.	e report.				
Throughout this report a \Box comma / \boxtimes point is used as the decimal separator.						
Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:						
The application for obtain includes more than one fa declaration from the Man sample(s) submitted for e representative of the proo been provided	ing a CB Test Certificate actory location and a ufacturer stating that the evaluation is (are) ducts from each factory has	icable				
When differences exist;	; they shall be identified in the General p	roduct information section.				
Name and address of fa	i ctory (ies) : Renac Powe Block C-12, I Bonded Zone China	er Technology Co., Ltd. No. 20 Datong Road, Comprehensive e, Suzhou Hi-Tech District, Suzhou,				
The battery system cons battery system can be ex The battery module whic module contains 45 batter collecting the cell parame master controller. The battery system has of The electronic circuits an battery management sys The EUTs are outdoor ty insulation. And the insula	ists of one master controller (BMC600) and (panded up to maximum 5 stacks depend of h named B9639-S is constructed with two ery cells in 3P15S. The battery module con- eters and uploading the information of cell overcharge, over-discharge, over current a nd software controls for the battery system stem which have been evaluated in accorda pe. The insulation between the DC circuit ation between the DC circuit	d several battery stacks (B9639-S). Tr on the end-user request. small modules in series. Each small ntain one CMU board for measuring an voltage and temperature to BMU in and short-circuits proof circuit. replied upon protective functions of th ance with IEC 60730-1 Annex H. and the metal enclosure is basic cation ports is reinforced insulation or				
double insulation.		cation ports is remorced insulation of				
Block diagram as below.						



Model list:

No.	Model	Battery System	Nominal Energy (kWh)	Voltage (V)
1	TB-H1-3.74	BMC600 + B9639-S	3.74	81-108
2	TB-H1-7.48	BMC600 + 2*B9639-S	7.48	162-216
3	TB-H1-11.23	BMC600 + 3*B9639-S	11.23	243-324
4	TB-H1-14.97	BMC600 + 4*B9639-S	14.97	324-432
5	TB-H1-18.7	BMC600 + 5*B9639-S	18.7	405-540

The main features of one battery system are shown as below:

Battery System designation:

Rechargeable Li-ion Battery System					
Type/model	TB-H1-3.74	TB-H1-7.48	TB-H1-11.23	TB-H1-14.97	TB-H1-18.7
Cell Type			LiFePO4		
Component	BMC600 + B9639-S	BMC600 + 2*B9639-S	BMC600 + 3*B9639-S	BMC600 + 4*B9639-S	BMC600 + 5*B9639-S
Nominal voltage [V]	96	192	288	384	480
Operating voltage range [V]	81-108	162-216	243-324	324-432	405-540
Battery Module	1 Module	2 Module	3 Module	4 Module	5 Module
Structure	(3P15S)2S	((3P15S)2S) 2S	((3P15S)2S)2 S	((3P15S)2S)2 S	((3P15S)2S)2 S
Rated capacity [Ah]	ty 39				

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Nominal Energy [kWh] Usable Energy [kWh] Nominal Current [A] Recommend	3.74 3.36	7.48	11.23	14.97	18.7
Usable Energy [kWh] Nominal Current [A] Recommend	3.36				
Nominal Current [A] Recommend		6.73	10.1	13.47	16.83
Recommend			20		
Current [A]			20		
Maximum charging current [A]			30		
Maximum discharging current [A]			30		
Over voltage category			OVC II		
Available charge/discharge temperature range	Charge: 0°C~40°C				
[°C]	Discharge: -10°C~50°C				
Storage temperature [°C]	0°C to 35°C (6 months)			nths)	
Dimension (H*W*D) [mm]		Cont Mod	trol box BMC: 280 lule B9639-S: 326	*651*217 *651*217	
Weight [kg]	49.5	86.8	124.1	161.4	198.7
Overcharge protected voltage supply by battery system			≥ 3.60 V/Cell		
Temperature threshold for charge protection [°C]			43		
Protective Class			I		
Installation Type		· · · · · · · · · · · · · · · · · · ·	Grounding moun	ting	
Enclosure Protection (IP)			IP65		
Pollution degree			3		
Cooling type			Natural		
Altitude [m]			≤ 2000		



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This report is modified base on CN225JLJ 001, and this report is not valid without the original test Report.

History of amendments and modifications:

CN225JLJ 001	Original report
CN225JLJ 002	Enclosure change

Note: Battery system has the follow changes: decorative covers have been removed, screws are fixed inside of front cover, added nuts to lock the screws on the front cover. The details of changes shall refer to photo documentation.



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		IEC 62040-1		
Clause	Requirement + Test		Result - Remark	Verdict

4	Protection against hazards		Р
4.1/RD	General		Р
4.2 4.2/RD	Fault and abnormal conditions	Only enclosure change, there is no effect for this section	Р
5.2.4.6/RD	Breakdown of components test (type test)		Р
5.2.4.6.1 /RD	Load conditions		Р
5.2.4.6.2 /RD	Application of short circuit or open-circuit		Р
5.2.4.6.3 /RD	Test sequence		Р
4.3	Short-circuit and overload protection	Only enclosure change, there is no effect for this section	Р
4.4	Protection against electric shock	Only enclosure change, there is no effect for electric shock	Р
4.5	Protection against electrical energy hazards		Р
4.5.1/RD	Operator access areas	Considered	Р
4.5.1.1/RD	General		Р
	Equipment shall be so designed that there is no risk of electrical energy hazard in operator access areas from accessible circuits by fulfilling requirement of 4.2/RD.		Ρ
	A risk of injury due to an electrical energy hazard exists if it is likely that two or more bare parts (one of which may be earthed) between which a hazardous energy level exists, will be bridged by a metallic object.		
	The likelihood of bridging the parts under consideration is determined by means of the test finger of Figure 1 of IEC 60529:1989, in a straight position. If it is possible to bridge the parts with this test finger, a hazardous energy level shall not exist.		
	Barriers, guards, and similar means preventing unintentional contact may be provided as an alternative to limiting the energy.		
	Compliance is checked by inspection or test of 5.2.2.2/RD.		Р
4.5.1.2/RD	Determination of hazardous electrical energy level		Р



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IEC 62040-1			
Clause	Requirement + Test	Result - Remark	Verdict
	A hazardous electrical energy level is considered to exist if		Р
	the voltage is 2 V or more;		
	and		
	• power available exceeds 240 VA after 60 s; or		
	• the energy exceeds 20 J.		
	Compliance shall be checked with the test in 5.2.3.9/RD or by calculation.		
4.5.2 4.5.2/RD	Service access areas	The change has no effect for this section	Р
4.6	Protection against fire and thermal hazards		Р
4.6.1/RD	Circuits representing a fire hazard	The change has no effect for this section	Р
4.6.2/RD	Components representing a fire hazard	The change has no effect for this section	Р
4.6.3/RD	Fire enclosure	Metal enclosure provided	Р
4.6.3.1 4.6.3.1/RD	General		Р
	Fire enclosures are used to reduce the risk of fire to the environment, independent of the location where they are installed.	Metal enclosure	Р
	A fire enclosure shall be provided for all UPS unless:		
	• circuits inside of an enclosure are within the limits of limited power sources in 4.6.5 of this document; or		
	 there is an agreement between the user and the manufacturer; or 		
	• the UPS is intended to be used only in areas without combustible materials and is marked according to 6.3.5/RD.		
4.6.3.2/RD	Flammability of enclosure materials	The change has no effect for this section	N/A
4.6.3.3/RD	Openings in fire enclosure	The change has no effect for this section	Р
4.6.4/RD	Temperature	The change has no effect for this section	Р
4.6.5 4.6.5/RD	Limited power sources	The change has no effect for this section	N/A
4.7	Protection against mechanical hazards		Р
4.7.1/RD	General		Р



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IEC 62040-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Failure of any component within the PECS shall not release sufficient energy to lead to a hazard, for example, expulsion of material into an area occupied by personnel.		Ρ
4.7.2/RD	Specific requirements for liquid cooled PECS	No such parts	N/A
4.7.101	Protection in service access area		Р
4.8	Equipment with multiple sources of supply		N/A
4.8.101	General		N/A
4.8.102	Backfeed protection		N/A
4.9 4.9/RD	Protection against environmental stresses	The change has no effect for this section	Р
4.10	Protection against sonic pressure hazards		Р
4.11	Wiring and connections	Wiring and connections has no change this time	Р
4.12/RD	Enclosures		Р
4.12.1/RD	General	Considered	Р
4.12.2/RD	Handle and manual controls	The change has no effect for this section	Ρ
4.12.3/RD	Cast metal	Sheet metal	N/A
4.12.4/RD	Sheet metal		Р
4.12.5/RD	Stability test for enclosure	The change has no effect for stability	Ρ
4.101	UPS isolation and disconnect device	The change has no effect for this section	Р
4.102	Stored energy source	The change has no effect for this section	Р
4.103	UPS connection to telecommunication lines		N/A

5	Test requirements		N/A
		Only minor change for enclosure, there is no test after evaluation	N/A

6	Information and marking requirements	N/A
	The change has no effect for information and marking requirements	N/A

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IEC 62040-1	

	IEC 62040-1		
Clause	Requirement + Test F	Result - Remark	Verdict
Annex A Addition information for protection against electric shock		N/A	
	T ti	The change has no effect for his section	N/A

Annex D Evaluation of clearance and creepage distances		Р	
D.1/RD	Measurement		Р
D.2/RD	Relationship of measurement to pollution degree		Р
D.3/RD	Examples		Р

Annex F	Clearance and creepage distance determination for frequencies greater than 30kHz		N/A
F.1/RD	General influence of the frequency on the withstand characteristics		N/A
F.2/RD	Clearance		N/A
F.2.1/RD	General		N/A
F.2.2/RD	Clearance for inhomogeneous fields		N/A
F.2.3/RD	Clearance for approximately homogenous fields		N/A
F.3/RD	Creepage distance		N/A
F.4/RD	Solid insulation		N/A
F4.1/RD	General		N/A
F4.2/RD	Approximately uniform field distribution without air gaps or voids		N/A
F4.3/RD	Other cases		N/A

Annex BB	Reference loads	N/A
BB.1	General	N/A
BB.2	Reference resistive load	N/A
BB.3	Reference inductive-resistive loads	N/A
BB.4	Reference capacitive-resistive loads	N/A
BB.5	Reference non-linear load	N/A
BB.5.1	General	N/A
BB.5.2	Test method	N/A

Annex CC Ventilation of lead-acid battery compartments	N/A
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		IEC 62040-1		
Clause	Requirement + Test		Result - Remark	Verdict
CC.1	General			N/A
CC.2	Normal conditions			N/A
CC.3	Blocked conditions			N/A
CC.4	Overcharge conditions			N/A

Annex GG	Requirements for the mounting means of rack-mounted equipment		N/A
GG.1	General		N/A
GG.2	Mechanical strength test, variable force		N/A
GG.3	Mechanical strength test, 250N force, including end stops		N/A
GG.4	Compliance		N/A

---End of report---

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