



中国认可
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检测
TESTING
CNAS L2885



TEST REPORT

Report No.:	HST201908-15632-2-WT
Sample Description.....:	Deep Cycle Series Valve Regulated Sealed lead-acid Battery
Model.....:	See the Table 1
Assessment Category.:	Entrusted
Applicant.....:	RITAR POWER (VIETNAM) COMPANY LIMITED

Guangdong Huesent Testing & Inspection Technology Co., Ltd.



TEST REPORT

Sample Description	Deep Cycle Series Valve Regulated Sealed lead-acid Battery	Trademark	RITAR
Model	See the Table 1	Specification	See the Table 1
Assessment Category	Entrusted	Sample Quantity	2 Pieces
Applicant	RITAR POWER (VIETNAM) COMPANY LIMITED	Sample Status	The samples are sound, intact and fit for test.
Sample Received Date	2019.08.03	Test Date	2019.08.03~2019.09.17
Manufacturer	Hengyang Ritar Power Co.,Ltd.		
Address	No.1 Huagong Road, Songmu Industrial Park, Hengyang, Hunan,China		
Factory	RITAR POWER (VIETNAM) COMPANY LIMITED		
Address	LOT A21,C4 ROAD, THANH THANH CONG INDUSTRIAL PARK, AN HOA VILLAGE, TRANG BANG DISTRICT, TAY NINH PROVINCE, VIETNAM		
Test address	Unit 102, 4th Building, HongJi e Valley International Enterprises Port, Tongji West Road, NantouTown, Zhongshan City, Guangdong.		
Test Items	See the Table 2		
Test standard	IEC 60896-21:2004 Stationary lead-acid batteries –Part 21: Valve regulated types – Methods of test IEC 60896-22:2004 Stationary lead-acid batteries –Part 22: Valve regulated types – Requirements		
Test Conclusion	The results conform to the requirements of standards and customer with respect to the test items.		
Remarks	There are forty-eight models (See the Table 1) for application, shown in this report, with the difference being the outer sizes and capacity. All of the tests were performed on DC12-260(RA12-260). Replace the original report HST201908-15632-1-WT.		
Tested by : Ben	Sign: <i>Ben</i>		
Reviewed by: John	Sign: <i>John</i>		
Approved by: Louis	Sign: <i>Louis</i>		



Table 1:Models for application			
No.	Models	No.	Models
1	DC12-260(RA12-260)	25	DC12-33(RA12-33)
2	DC12-230(RA12-230)	26	DC12-38(RA12-38)
3	DC12-225(RA12-225)	27	DC12-75C
4	DC12-200(RA12-200)	28	DC12-100C
5	DC12-180(RA12-180)	29	DC12-150C
6	DC12-160(RA12-160)	30	DC12-175C
7	DC12-150(RA12-150)	31	DC12-200C
8	DC12-145(RA12-145)	32	DC12-225C
9	DC12-134(RA12-134)	33	DC12-26S
10	DC12-120(RA12-120)	34	DC12-28S
11	DC12-100(RA12-100)	35	DC12-100S
12	DC12-90(RA12-90)	36	DC12-120S
13	DC12-80(RA12-80)	37	DC6-180
14	DC12-75(RA12-75)	38	DC6-200/RA6-200
15	DC12-65(RA12-65)	39	DC6-225
16	DC12-55(RA12-55)	40	DC6-225S
17	DC12-40(RA12-40)	41	DC12-200A(RA12-200A)
18	DC12-100S(RA12-100S)	42	DC12-240(RA12-240)
19	DC12-120S(RA12-120S)	43	DC12-36(RA12-36)
20	DC12-33A(RA12-33A)	44	DC12-120A(RA12-120A)
21	DC12-40A(RA12-40A)	45	DC12-150A(RA12-150A)
22	DC12-55A(RA12-55A)	46	DC12-160A(RA12-160A)
23	DC12-65A(RA12-65A)	47	DC12-180A(RA12-180A)
24	DC12-100A(RA12-100A)	48	DC12-36A(RA12-36A)



Table 2:Test Items		
Test Clause	Measures	Purpose
6.2	High current tolerance	To verify the adequacy of current conduction cross-sections
6.3	Short circuit current and d.c. internal resistance	To provide data for the sizing of fuses in the exterior circuit
6.4	Protection against internal ignition from external spark sources	To evaluate the adequacy of protective features
6.6	Content and durability of required markings	To evaluate the quality of the markings and the content of the information
6.7	Material identification	To ensure the presence of material identification markings
6.8	Valve operation	To ensure the correct opening of safety valves
6.9	Flammability rating of materials	To verify the fire hazard class of battery materials
6.10	Intercell connector performance	To verify the maximum surface temperatures of the connectors during high rate discharges
6.11	Discharge capacity	To verify the available capacities at selected discharge rates or discharge durations.
6.14	Recharge behaviour	To determine the recovery of capacity or autonomy time after a power outage
6.17	Abusive over-discharge	To determine the expected behaviour when excessive capacity is discharged
6.18	Thermal runaway sensitivity	To determine the expected times to establish acondition of escalating current and temperature
6.19	Low temperature sensitivity	To determine the sensitivity toward damageinduced by electrolyte freezing
6.20	Dimensional stability at elevated internalpressure and temperature	To determine the propensity of the cell ormonobloc battery to be deformed by internalpressure and at elevated temperature
6.21	Stability against mechanical abuse of unitsduring installation	Determine the propensity of the cell ormonobloc battery to fracture or leak whendropped.

TEST RESULT

IEC60896-21:2004, IEC 60896-22:2004			
Items	Requirement – Test	Result - Remark	Verdict
6.2	High current tolerance:	It has no any damage after 30 s of high current flow. Voltage after open circuit for 5min: 1#: U=12.53V 2#: U=12.55V	P
	The test methods are according to clause 6.2.1 to 6.2.6 which are stated in the standard IEC 60896-21		
	Requirement and application: Measure unit voltage, inspect and document the status of the top-lead and terminals of each unit after 30 s current flow. Pass for all applications: Voltage of unit >2,0 Vpc; Show evidence of no incipient melting or of no loss of electrical continuity after 30 s of high current flow (value to be stated).		
6.3	Short circuit current and d.c. internal resistance:	1#: I _{sc} =4633.2A Ri =2.59mΩ 2#: I _{sc} =4615.4A Ri =2.60mΩ	State the value
	The test methods are according to clause 6.3.1 to 6.3.6 which are stated in the standard IEC 60896-21		
	Requirement and application: Define prospective short-circuit value I _{sc} and internal resistance Ri of all units of a type range. State data for all applications: Short-circuit current (I _{sc}) in A; Internal resistance (Ri) in ohms.		
6.4	Requirement for protection against internal ignition from external spark sources	Batteries 1#, 2# both no rapid combustion, no explosion Conformity	P
	The test methods are according to clause 6.4.1 to 6.4.6 which are stated in the standard IEC 60896-21		
	Requirement and application: see table 7 in the standard IEC 60896-22		

IEC60896-21:2004, IEC 60896-22:2004			
Items	Requirement – Test	Result - Remark	Verdict
6.6	Content and durability of required markings:	Information remain readable after test and content meet requirement	P
	The durability of the marking shall be tested according to clause 1.7.13 of IEC 60950-1 and the content of marking shall meet the requirement of IEC 60896-22		
	Requirement and application: Expose information to chemicals. Pass all substances for all applications: Information shall remain readable after exposure to chemicals and remain in place		
	Requested information to be present for all applications.	See the ANNEX A	
6.7	Material identification:	All the symbol remain readable; ABS plastic	P
	The test methods are according to clause 6.7.1 to 6.7.4 which are stated in the standard IEC 60896-21		
	Requirement and application: Inspect case and/or cover for ISO 1043-1 materials symbol. Expose to chemicals. Pass for all applications: ISO symbol present on the outside of the cover or/and case. Symbol shall remain readable after exposure to chemicals and remain in place. (NOTE If the material of the case differs from the material of the cover, then a material identification symbol should also be present on the case. Otherwise one symbol on the cover is sufficient.)		
6.8	Valve operation:	The valve adequate opening Gas release detected before and after stress temperature impact test Valve pressure: 20.2kpa~24.9kpa	P
	The test methods are according to clause 6.8.1 to 6.8.3 which are stated in the standard IEC 60896-21		
	Requirement and application: Overcharge units and detect gas flow from the valve. Pass for all applications: Gas release detected before and after stress temperature impact test		

IEC60896-21:2004, IEC 60896-22:2004			
Items	Requirement – Test	Result - Remark	Verdict
6.9	Flammability rating of materials:	The flammability rating level for samples of thickness equivalent to that of case and cover: V-0	State the level
	The test methods are according to clause 6.9.1 to 6.9.4 which are stated in the standard IEC 60896-21 Requirement and application: Determine flammability rating of case and cover material. State data for all applications: State the flammability rating level for samples of thickness equivalent to that of case and cover		
6.10	Intercell connector performance:	This test item is not applicable for the samples.	N
	The test methods are according to clause 6.10.1 to 6.10.2 which are stated in the standard IEC 60896-21 Requirement and application: Measure and report maximum intercell connector temperature reached. State data for all applications: State maximum temperature reached.		
6.11	Discharge capacity:	See the ANNEX B	P
	The test methods are according to clause 6.11.1 to 6.11.12 which are stated in the standard IEC 60896-21 Requirement and application: Determine actual capacity C_a . C_a to be at least X % of C_r with all units at all rates shown below: 10 h 1,80 Vpc; 8 h 1,75 Vpc; 3 h 1,70 Vpc; 1 h 1,60 Vpc; 0.25 h 1,60 Vpc. Comply for all applications: $C_a \geq 95 \% C_r$ (NOTE The requirement of $C_a \geq 95 \% C_r$ applies not to the average but to each individual capacity of each of the 6 units tested with a particular discharge rate.)		
6.14	Recharge behavior:	1#: $Rbf_{24h} = 100.5\%$ $Rbf_{168h} = 101.4\%$ 2#: $Rbf_{24h} = 100.7\%$ $Rbf_{168h} = 101.7\%$	P
	The test methods are according to clause 6.14.1 to 6.14.12 which are stated in the standard IEC 60896-21 Requirement and application: Determine capacity after recharge; Rbf_{24h} (24 h Recharge behaviour factor), Rbf_{168h} (168 h Recharge behaviour factor). Comply for all applications: $\geq 90 \%$, $\geq 98 \%$ (NOTE The requirement applies not to the average but to each of the individual tested units.)		

IEC60896-21:2004, IEC 60896-22:2004			
Items	Requirement – Test	Result - Remark	Verdict
6.17	Abusive over-discharge:	Unbalanced string over-discharge capacity $C_{aod}: C_{aod} = 0.97 C_{rt(3h\ rate)}$	P
	The test methods are according to clause 6.17.1 to 6.17.15 which are stated in the standard IEC 60896-21		
	Requirement and application: see table 21 in the standard IEC 60896-22	Cyclic over-discharge capacity $C_{aoc}: C_{aoc} = 0.99 C_{rt(3h\ rate)}$	
6.18	information on thermal runaway sensitivity	Ultimate temperature after 168h at 2,45 Vpc: $T_a = 39.1\ ^\circ\text{C}$ Ultimate temperature after 24h at 2,60 Vpc: $T_b = 40.6\ ^\circ\text{C}$	P
	The test methods are according to clause 6.18.1 to 6.18.14 which are stated in the standard IEC 60896-21		
	Requirement and application: see table 22 in the standard IEC 60896-22		
6.19	impact of low temperature service on capacity	$C_{als} = 0.99 C_{rt(3h\ rate)}$ No mechanical damages	P
	The test methods are according to clause 6.19.1 to 6.19.13 which are stated in the standard IEC 60896-21		
	Requirement and application: see table 23 in the standard IEC 60896-22		
6.20	dimensional stability at elevated internal pressures and temperatures	Change in: Length: 0,19% +1.0mm Width: 0,37% +1.0mm	P
	The test methods are according to clause 6.20.1 to 6.20.6 which are stated in the standard IEC 60896-21		
	Requirement and application: see table 24 in the standard IEC 60896-22		
6.21	stability against mechanical abuse of units during installation	No leakage, No broken	P
	The test methods are according to clause 6.21.1 to 6.21.6 which are stated in the standard IEC 60896-21		
	Requirement and application: see table 25 in the standard IEC 60896-22		

TEST RESULT

ANNEX A: 6.6-Requested markings information to be present	
Technical information to be present	
Polarity sign at the positive terminal(s) with a + symbol radius of at least 6 mm	Conformity
Manufacturer and/or vendor name	Hengyang Ritar Power Co.,Ltd.
Country of origin of unit	Made in Vietnam
Type designation of unit	DC12-260
At least one rated capacity and its final voltage in Vpc or V per unit at a rate listed in 6.11 of IEC 60896-2-1	260Ah(End voltage 1.8Vpc 25°C)
Rated temperature (20 °C or 25 °C) for the capacity value	25°C
Float voltage in Vpc or V per unit at a rated temperature of 20 °C and/or 25 °C	13.6V~13.8V of 25°C
Date of manufacture (see Note 1 below) in clear unequivocal mm.yyyy format	2019.07.29
ISO warning symbols to be present with 11 mm diameter minimum size and in two contrasting colours (See Note 2 and 3 below)	
Warning	P
Electrical danger	P
No open fires and sparks	P
Wear eye protection	P
Read instructions	P
Environmental protection and recycling symbols to be present	
Recycling symbol	P
Crossed out waste bin	P
NOTE 1 For the purpose of this standard the “date of manufacture” is defined as the date of final inspection of the units in the factory of origin.	
NOTE 2 When the physical dimensions of the units do not allow to apply the symbols on the unit itself then a separate label to be affixed near the battery or on the battery operating instructions is acceptable.	
NOTE 3 The background colour is considered to be one colour.	

TEST RESULT

ANNEX B: 6.11-Discharge capacity(DC12-260)											
Capacity Sample No.	C _{rt} =247.6Ah		C _{rt} =241Ah		C _{rt} =204Ah		C _{rt} =157.9Ah		C _{rt} =114Ah		Remark
	C ₁₀ (Ah)	%of C _{rt}	C ₈ (Ah)	%of C _{rt}	C ₃ (Ah)	%of C _{rt}	C ₁ (Ah)	%of C _{rt}	C _{0.25} (Ah)	%of C _{rt}	
1#	256.1	103.4	248.8	103.2	221.2	108.4	173.3	109.8	126.8	111.2	25°C
2#	256.4	103.6	249.5	103.5	222.3	109.0	174.5	110.5	127.1	111.5	C _a ≥95%C _{rt}

Photo(s) of the tested samples

DC12-260 (12V260Ah):



DC12-260 (12V260Ah):



--End of Report --

Report Statement

- 1.This test report is invalid if altered, additions and deletions.
- 2.This test report is responsible for tested samples only .
- 3.Objections to the test report must be submitted to Guangdong Huesent Testing & Inspection Technology Co., Ltd. within 15 days.
- 4.The test report is invalid without the signatures of tester, reviewer ,approver ,and official stamp of test unit.
- 5.Without permission of Guangdong Huesent Testing & Inspection Technology Co., Ltd., This report is not permitted to be duplicated in extracts.
- 6.“P”=Pass=Test item conform to the requirement
“F”= Fail=Test item not conform to the requirement
“N”= Not Applicable =Test item Not Applicable to the test object