

YESA TECHNOLOGY CO., LTD.

SPECIFICATION FOR PRODUCTION

Name	Lithium Iron Starting Battery
Part No.	PS1220R160B
Model	12V 20Ah Battery
Specification	13.2V/20.0Ah
Drawn	Hand.W
Check	Sam.L
Approval	Lily Lau

ADD: NO. 1504 LAUNCH INDUSTRIAL ZONE , NORTH OF WUHE RD,

BANTIAN, LONGGANG, SHENZHEN, CHINA 518129

Tel.: 86-755-88855368 Fax: 86-755-82379471 www.yesabattery.com

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1 Application

This SPECIFICATION is used for the lithium iron starting battery that from YESA TECHNOLOGY CO., LTD., and the parts according with: This standard on the basis of priming battery standard formulation of QC/T 743-2006 《lithium iron battery for EV》, GB/T5008.1-2013, GB/T5008.2-2013.

2 Description

2.1 Name: Lithium Iron Starting Battery

2.2 Model: PS1220R160B

3 Parameter

Item	Project	Unit	Parameter	Note
1	Rated Capacity	Ah	20.0	According to the standard charged the battery full, then discharge capacity of 0.2 C ,
2	Rated Voltage	V	13.2	Average voltage in the process of standard discharge after charged the battery according to the standard
3	Charge Method	/	CC/CV	/
4	Limited Charge Voltage	V	14.6	/
5	Final Discharging Voltage	V	10.0	/
6	Max Charging Current	A	100	CC
7	Max Discharging Current	A	200	CC
8	Maximum Peak Discharge Current	A	300	<5S
9	Weight	g	3700±50	/
10	Internal Resistance	mΩ	≤4	/
11	Dimension (LxWxH)	mm	206×128×182	/

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Item	Project		Unit	Parameter	Note
	Work temp.		°C	-20~75	/
13	storage temperature	1 month	°C	-20~60	/
		3 months	°C	-20~45	/
		6 months	°C	-20~25	/
	atmospheric pressure		KPa	86~106	/
	relative humidity		RH	25%~85%	/

4 Technical specifications

4.1 test condition:

(1) Standard Charging: charge the battery with $1I_3$ Constant Current to limit the voltage (14.6V) under the temperature of $(20\pm 5)^\circ\text{C}$, then charge with the Constant Voltage, Until the charging current is less than 0.02 A.

(2) Standard Discharging: discharge the battery with $1I_3$ constant current to the final voltage (10V) under the temperature of $(20\pm 5)^\circ\text{C}$, Obtain $I_3=C_3/3(A)$, C_3 —3h rated capacity from the covered area of voltage -capacity curve

(3) standard test condition:

Temperature: 15-35°C

Relative Humidity: 25%~85%RH

Atmospheric Pressure: 86kPa~106kPa。

4.2 Electrical Performance:

Item	Article	Test Method	Technology Requirement
1	Rated Capacity	Place 1h after the standard charging. 1C discharge to the limited voltage 10V in the temp of $20\pm 5^\circ\text{C}$ environment.	$\geq 60\text{min}$
2	Rated Reserve Capacity	Place 1h after the standard charging. calculate the duration time of 20A constant current discharge to 10v protecting voltage under the temp of $20\pm 5^\circ\text{C}$	$\geq 60\text{min}$

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Item	Article	Test Method	Technology Requirement
3	Low-Temperature Discharge Performances	Constant temperature 20 hours in the low temperature box of $-20\pm 2^{\circ}\text{C}$ after the standard charging, discharge with the current of 1C to 10V protecting voltage, test the discharging time	Discharge time no less than 56min
4	High-Temperature Discharge Performances	Constant temperature 5 hours in the low temperature box of $55\pm 2^{\circ}\text{C}$ after the standard charging, discharge with 1C constant current to 10V protecting voltage, test the discharging time	Discharge time no less than 65min
5	20°C 30C Discharge Performance	Discharge 10s with 30C(600A) after full charge under the temp of $20\pm 5^{\circ}\text{C}$	Surface temp. Of the Cell $\leq 65^{\circ}\text{C}$
6	20°C 8C Charge Performance	Discharge with $1I_3$ (A) current to 10V protecting voltage under the temp of $20\pm 5^{\circ}\text{C}$, Standing 10min, then charge 10S with 8C(160A)	surface temp. Of the Cell $\leq 50^{\circ}\text{C}$
7	Capacity Retention	open circuit on 28d under the temp of $20\pm 5^{\circ}\text{C}$ after standard charge, Discharge the battery with 1C constant current to 10V protecting voltage, test the discharging time.	Discharge time no less than 62min.
8	Recycling Time	Discharge the battery with $6I_3$ (A) current to the discharge capacity reached rated capacity of 100% under the temp of $20\pm 5^{\circ}\text{C}$ after standard discharge, then charge to 14.6V with the current of $3I_3$, then charge with the constant voltage of 14.6V until the current dropped to $0.1I_3$. Repeat 24 times as the steps of above, inspect the capacity, stop the test when the capacity of the battery less than the rated capacity of 80%. Recycling time no less than 2000	Recycling times no less than 2000

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5 Storage

Store the battery into the clean, dry, airy room under the temp of $-5^{\circ}\text{C} \sim 35^{\circ}\text{C}$, and the relative humidity no more than 75%.avoid contact with corrosive material, keep away from Fire and heat source .and keep the power under the charging state of 70%-80%, avoid the over discharge, charge the battery every 6 months during the storage.

6 Battery Maintenance

- (1) use under the airy, dry environment, avoid the fire source.
- (2) the better work environment temp of $-20^{\circ}\text{C} - 60^{\circ}\text{C}$, it will affect the work exceed this range.
- (3) Don't make battery positive and negative short circuit, In order to avoid risk
- (4) Don't clean the battery cover with organic solvent. Don't use carbon dioxide fire extinguishing when appear fire accident, can use of carbon tetrachloride, sand, fire extinguishing appliances.
- (5) In case of failure of battery, please send it to the manufacturer or the relevant authorities to properly handle the authorization. Please do not littering so as not to cause environmental pollution.

7 Notes during using:

In order to prevent battery leakage, fever, fire, performance degradation, explosion and other accidents, please use the battery as the following specification

- (1) Handle with care, avoid sharp pounding.
- (2) Do no put the battery into water or other liquid, Keep dry.
- (3) Avoid the battery positive and negative short circuit
- (4) Please use the special charger to charge the battery.
- (5) Do not teardown the battery, it may lead to internal short circuit, resulting in internal in fire, explosion, etc. otherwise, It may cause electrolyte leakage inside the battery, and battery electrolyte in harmful to human body; If electrolyte splash into the skin, eyes or other parts of the body, wash with water immediately, and go to see a doctor at once.
- (6) Do not process the waste battery with fire, it may cause blast and other dangerous accident.
- (7) Do not use the battery when it appears damage, out of shape, electrolyte leakage or smell the flavor of the electrolyte and other abnormal phenomenon, please send it

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to the manufacturer or the relevant authorities to properly handle the authorization. otherwise, leaked electrolyte battery should keep far away from fire, avoid to cause explosion

(8) Battery Replacement

should replace and install by the battery supplier, the user should not replace by himself

(9) teardown without permission

The user should not teardown the battery by himself without permission, or we will not be responsible if any accident happened.

8 Notes during transportation:

(1) Battery can be transport by cars, trains, air. but should be avoid the raining, solarization, and sharp pounding during transportation.

(2) Battery must be packed with insulation shockproof packaging, must stick with fragile landmarks, avoid the damage on the way.

(3) Keep batteries column up, stick the up label, do not upside down, do not placed battery randomly.

(4) Please handle with care during transportation loading and unloading , do not throwing, avoid crash.

(5) Do no put the heavy goods up the battery, avoid the damage by press

(6) Do not transport the battery together with inflammable, explosive, and sharp metal objects

(7) Should stick the label of moisture proof and waterproof, fire prevention labeling, avoid the danger during transportation.