Note: This Approval Sheet (Version Number: SP08(A.1)120-0.2LE) prepared by Union Suppo Battery (Liaoning)Co., Ltd., is subject to be modified without prior notice.

1. MODEL: HX-(9V)0.2L

2.Product Description

HX-9V200L is a new generation of Nickel Metal Hydride rechargeable battery which combines the advantage of both dry cells and rechargeable batteries,which has higher outpower, higher capacity retention and good discharge performance at low temperature compared with dry battery. It can be used right now after purchasing.

3. SPECIFICATION

·Chemistry:	Nickel Metal Hydride	
·Nominal voltage:	8.4	V
·Nominal capacity:	200	mAh
·Standard charge:	20	mA×16 hrs
·Rapid charge:	200	mA (controlled by at least 3 of following methods simultaneously);
	-Delta V = 0-35mV (controlling voltage-decreasing while charging);	
	DT/ dt = 0.8-1 Celsius/min (controlling surface temperature increment);	
	TCO = 45-50 Celsius (controlling battery surface temperature);	
	63 mins (controlling charging time at constant current).	
·Discharge end-voltage:	7.0	V
·Max constant current of discharge:	300	mA (at 20 Celsius)

·Ambient temperature range (humidity: 65±10%)

Standard charge:	0 -- 40 Celsius
Rapid charge:	10 -- 35 Celsius
Discharge:	-10 -- 55 Celsius

·Storage temperature range(humidity:65±10%)*

Within 12 months:	-20 -- 25 Celsius
Within 6 months:	-20 -- 35 Celsius
Within 1 month:	-20 -- 45 Celsius

*We recommend the best storage temperature is below 20 Celsius if the storage temperature is above 20 Celsius the capacity retention rate can be decreased compared with what we claimed. The battery should keep open. Any conductive connection no matter dircet or indirect will cause a bad effect. When the battery is not in use please put it in the holder, which appends with the battery.

4. Appearance & Dimension/Weight

As per attached drawing

5. Performance Testing

5.1 Test Requirement

Unless otherwise stipulated, all tests are carried out in ambient temperature 20±5 Celsius,humidity 65±10%;Tests should be made within one month after receipt of the battery.

Important: New batteries are delivered in a 100% charged state, discharge at 40 mA to 7.0V before any test!

5.2 Testing Procedure and Standard

Item	Measuring Procedure	Standard
1. Appearance	Visual check	Refusal of dust and oil contamination, ovbious scratch
2. Dimension	Measured by calipers	As per attached drawing
3. Weight	Weighed by balance with precision of 0.1g	Appr. 45.0 g
4. Open-circuit voltage	Measure open-circuit voltage within 1 hour after standard charge	Min 8.75 V
5. Capacity	Calculate capacity when discharge at 40 mA to 7.0V within one hour after standard charging	Typical 200 mAh Min 180 mAh
6. High-rate discharge	Calculate times when discharge at 200 mA to 7.0V within one hour after standard charging	Min 160 mAh
6. Impedance	Measure the impedance of battery by applying AC with frequency of 1000Hz within one hour after standard charging (by milliohm meter)	Max 1000.0 mΩ
7.1.Capacity retention (180d)	Lay standard charged battery for 180 days below 20 Celsius, then discharge at 40 mA to 7.0V , measure capacity	Typ.retention rate 85%*
7.2.Capacity retention (360d)	Lay standard charged battery for 360 days below 20 Celsius, then discharge at 40 mA to 7.0V , measure capacity	Typ.retention rate 80%*
8. Over-charge	Charge at 20 mA for 28 days	ND,NL,NE
11. Over-discharge	(1) Standard charge and discharge for 3cycles ,(2) Conducted with constant load resistor 210 Ωfor 3days (3) Then standard charge and discharge(Up to three cycles are allowed)	ND,NL,NF,NE
12. Cycle life	As per IEC Standard, inspect the capacity at 400th cycle	Min 120 mAh
13. Humidity test	Put standard charged battery in ambient temperature: 33±3 Celsius humidity: 80±5% for 14 days	ND,NL
14. Vibration-proof	Lay the standard charged battery for 1 hour with open-circuit, vibrate the battery at Amplitude: 1.5mm Frequence: 1000Hz Direction: Any Time: 30min	Open circuit voltage variation below 0.03V/cell ND,NL
15. Impact-proof	Lay the standard charged battery for 1 hour with open-circuit,drop with the follow conditions: Height: 45cm Target: Hard wood plate Direction: Any direction Times: 3	Open circuit voltage variation below 0.03V/cell ND,NL
16. Safety	Short-circuit the positive and negative polarity for 1 hour using a leading wire of 0.75mm^2(max 0.1ohm)	NE but leakage or deformation allowed

* if the ambient temprature is changed, the data may be different from the above value.

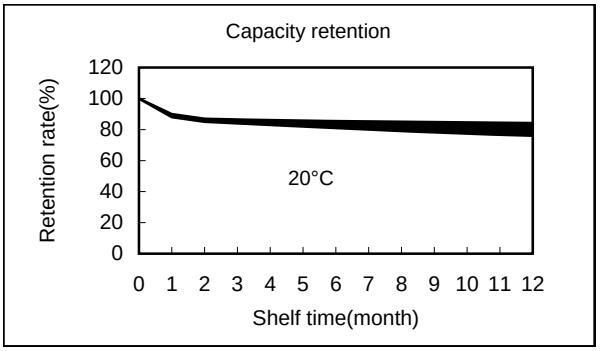
Note: If batteries are properly used, safety vent will remain in sealed status. But in case of abuse use such as long time over charge, short circuit, over-discharge etc., battery inner pressure will increase and lead to safety vent open. when the battery is not in use,turn off the equipment. Read instruction carefully before use.

Remark: ND = no deformation; NL = no leakage; NF = no fire; NE = no explosion

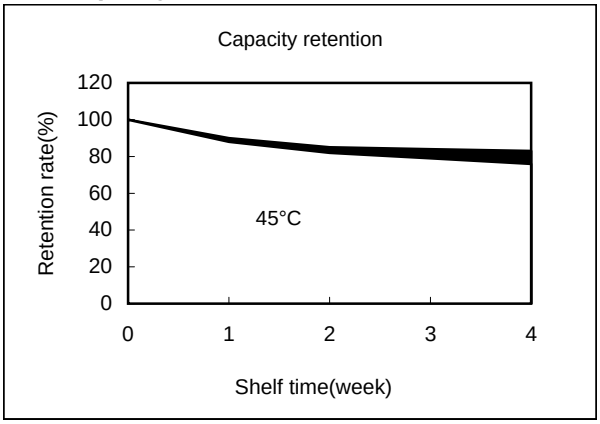
·Parameters

Nominal Voltage		8.4 V
Nominal capacity (0.2C)		200 mAh
Min. capacity		180 mAh
Dimension	Height(mm)	48.3±1mm
	Width(mm)	26±1mm
	Thickness(mm)	15.3±1mm
Weight (g)		45.0
Impedance(1000Hz)		Max 1000 mΩ
Charge	Standard Charge	20 mA×16hrs
	Rapid Charge (need control)	180 mA×63mins
Ambient Temperature	Charge	Standard charge: 0-40 Deg.
		Rapid Charge: 10-35 Deg.
	Discharge	-18-55 Deg.
	Storage	12 months: -20-25 Deg.
		6 months: -20-35 Deg.
		1 month: -20-45 Deg.

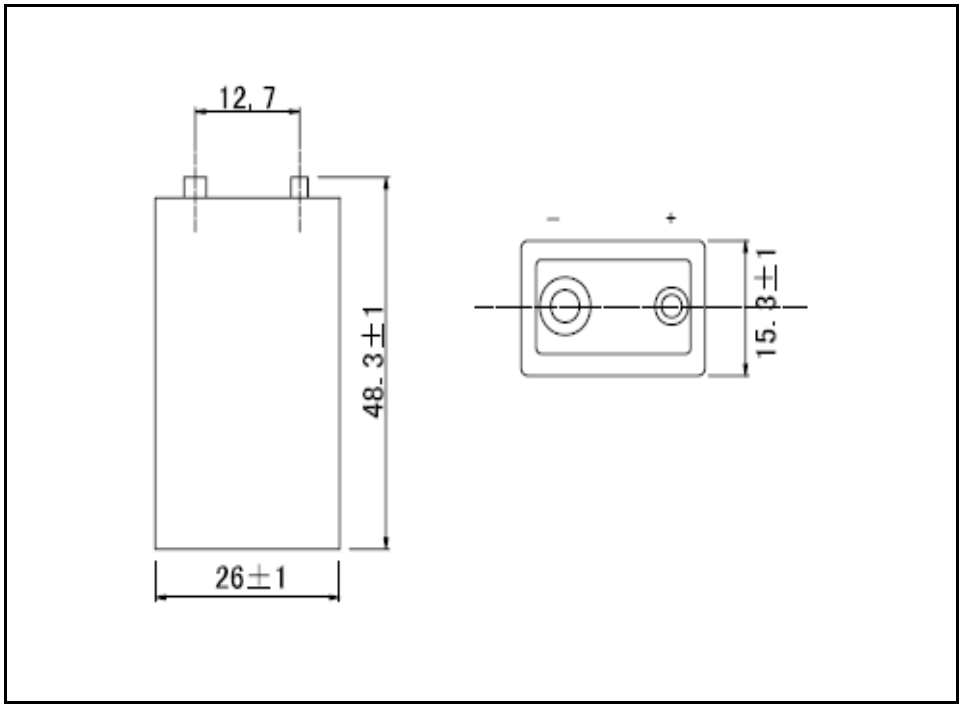
·Capacity retention characteristics



·Capacity retention characteristics



·Dimension(with tube)mm



•Cautions

1. We recommend to use SUPPO specified NI-MH battery charger equipped with rapid charge control. Do not overcharge batteries by exceeding the predetermined charging period specified. Prolonged charging may cause over heating and damage the battery.
2. Please recharge the battery before using.
3. Charge/discharge current should not exceed the current stipulated by SUPPO.
4. The end voltage of the battery pack is 7.0V,do not over-discharge the battery pack, or it will damage the performance of battery pack.
5. If battery will be stored for more than 3 months, we suggest charging the battery once every 3 months. The battery should charge 30-50% before storage.
6. Do not reverse-charge the battery pack.
7. Do not immerse the battery into water.
8. Do not disassemble batteries or throw the batteries into fire.
9. Do not solder any lead wires directly to the batteries.
10. Make sure terminals are correctly positioned when charging.
11. Trickle charge brand new batteries or batteries being stored for a long time before using.
12. Keep the batteries out of the reach of children, see a doctor when any accidents happen.
13. Do not touch overheated batteries,recharge the battery when temperature returns to normal.
14. Battery will heat after using, please put the battery on a ventilated place to make it cool before charge it again. Avoid direct sunshine.
15. Please press the connector directly when plug-in or plug-out battery to prevent damages to the welding between battery and leading wire.
16. Do not mix deferent size of batteries; do not mix SUPPO battery with other brand batteries.
17. When use the battery at too high or too low temperature, deeply charge/discharge, over-charge and over-discharge will decrease the cycle life of batteries.
18. It will cause internal air pressure increase when over-charge, short circuit or over-discharge, when such accidents happen, safety vent will action and release the air to ensure safety. Therefore, the battery pack should avoid airtight structure. The housing of battery pack should be ventilated, or other fire-source may ignite the Oxygen and Hydrogen released from the batteries.
19. The battery pack should have short-circuit protection device to prevent short-circuit. Do not short-circuit batteries, or it will cause permanent damage.
20. Store with load is forbidden, it will cause capacity of battery pack irreversible loose if store battery pack with loaded for a long time. Please cut-off the connection between battery pack and electronic bicycle when battery will not be used.
21. Low voltage protection is needed in the controller of electronic bicycle. It means, the battery pack will stop working when voltage drops to lower than end-of-voltage unless recharging job finished. Without such function, battery pack will be over-discharged continuously; this will affect the cycle life of battery pack.
22. Please stop using if abnormal phenomenon happens.
23. Please do not use the battery pack in other application. Or, it may damage the battery pack and the equipment.