

SHENZHEN HRCPOWER TECHNOLOGY CO., LTD

SPECIFICATION

Product Name: Battery Charger

Product Spec: 14.0V10A, Lithium Battery

Product Model: HRC-H240CH14-10

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1. General



The battery charger has single chip microcomputer (MCU) controlled 3 stages intelligent charging technology, which can accurately track the battery charging process, and make the battery always in the best electrochemical reaction condition, in order to prolong its service life.

Charger input voltage range is wide, with multiple protection features, and high reliability. Control circuit adopts advanced high frequency transformer LLC half-bridge resonant soft-switching power supply control technology, the reasonable structure and thermal design make the charger with high efficiency, small dimension, light weight and greatly improve the portability.

2. Main Product Specification

Max. Output Power	Rated Input Voltage	Max. Output Voltage	Output Current
140W	100~240Vac	14.0Vdc	10.0A

3. Environmental Condition

No.	Item	Technical Specification	Unit	Remark
3.1	Operating Temperature	-10~+45	℃	
3.2	Storage Temperature	-40~+75	℃	
3.3	Humidity	5%~95%	/	No Condensation
3.4	Atmospheric Pressure	70~106	Pa	
3.5	Altitude	≤2000	m	
3.6	Cooling	Ventilation with fan cooling	/	

4. Electrical Characteristics

Input Characteristics				
No.	Item	Technical Specification	Unit	Remark
4.1	Rated Input Voltage	100~240	Vac	
4.2	Input Voltage Range	90~264	Vac	
4.3	AC Input Voltage Frequency	47~63	Hz	
4.4	Inrush Current	≤100	A	Vin=132Vac/start-up in cold condition /environmental temperature is 25℃

4.5	Max Input Current	≤3.0	A	Vin=90Vac, rated load
4.6	PF	≥0.95	/	Vin=110Vac, rated load

Output Characteristics

No.	Item	Technical Requirements	Unit	Remark
4.7	Deep Charge Voltage	10.0±5%	Vdc	
4.8	Fast Charge Voltage	14.0±1%	Vdc	
4.9	Constant Current	10.0±0.2	A	
4.10	Output Voltage Accuracy	±1%	/	
4.11	Power Efficiency	≥88%	/	Vin=220Vac, rated load

Protection Characteristics

No.	Item	Technical Requirements	Remark
4.12	Output over voltage protection	15.0V±3%	Lockout
4.13	Output current limiting protection	10.0±0.2A	@CC MODE
4.14	Output short circuit protection	Short circuit protection should be automatically recovery after remove the condition	
4.15	Thermal cutback	An internal temperature monitor reduce charger output power in extreme operational temperature to prevent damage	
4.16	Electronic reverse battery protection	The charger is electronically protected against permanent reverse battery connection	

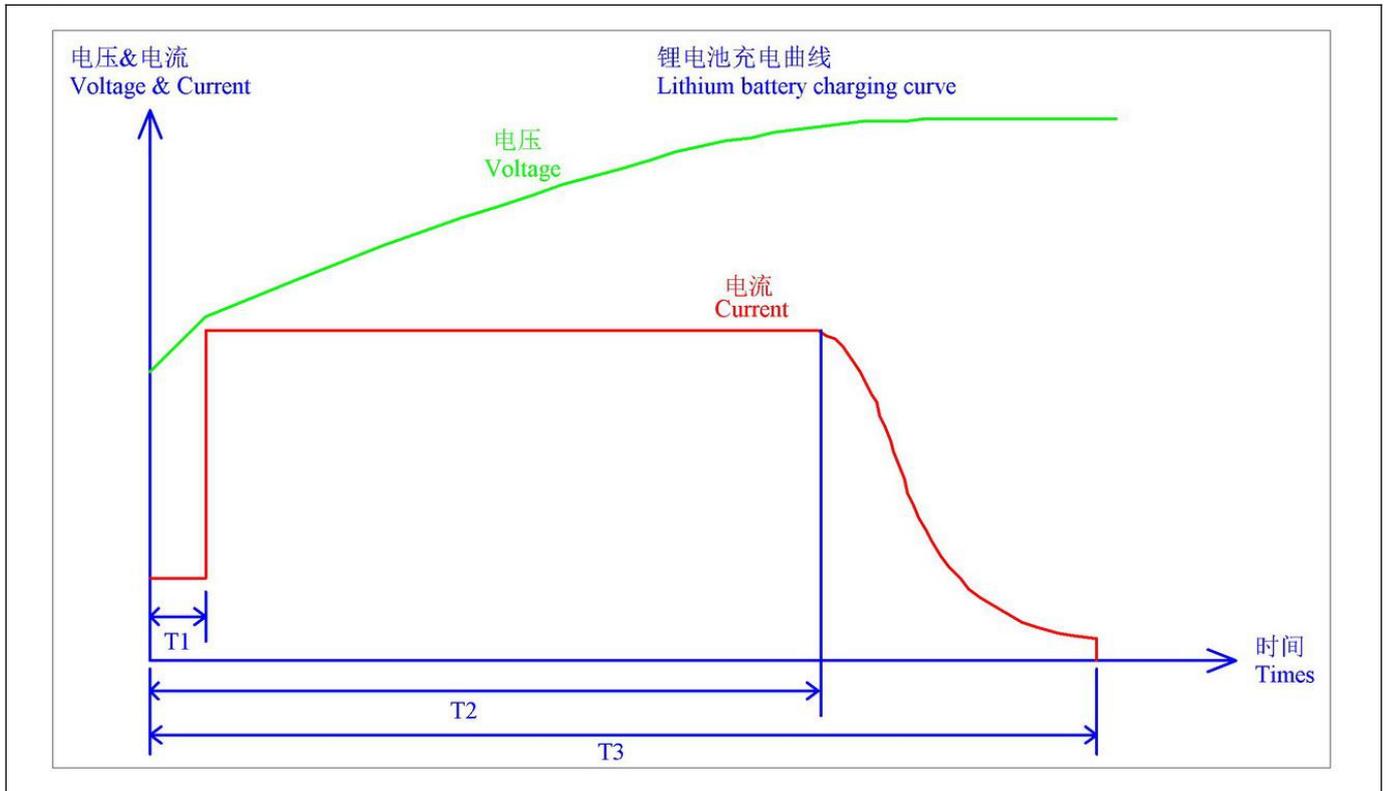
LED Status and Digital Tube Display State

No.	LED Status	Charger Status	Remark
4.17	LED always green	Fully charged or no connected.	
4.18	LED flashes blue	Battery is being charged.	
4.19	LED flashes red	Charger under protection	
4.20	LED does not light	NO AC input	
4.21	Flashes Blue => Green	Fully charged, 14.0V±2%, 1.0A±20%	
4.22	Green => Flashes Blue	Battery is being charged, 14.0V±3%, 1.0A±30%	

Charging Mode

- 1) Precharge stage (T1):** When the battery voltage is lower than normal standard, the charger can not withstand large current charging. The charger will supply small current for charging, which has the functions of activation, repair and battery life extension. When the output voltage reach normal value or at the T1 of the timing period, the charger will switch to fast charge stage automatically.
- 2) Fast charge stage (T2):** When battery is on the main period of charging, charger will quickly charge the batteries with a constant flow, at the maximum current which can be used to the battery. When the battery voltage raise up to the set value, the charger will switch to float charge stage automatically.
- 3) Float charge stage (T3):** The charger will switch to float charge stage, the charging current will fall off gradually, when the values drops to the set value or at the T3 of the timing period, Charger will turns off the output voltage automatically, battery charging is complete.

Charge curve as below:



5. Safety & EMC

No.	Item		Standard or Testing Condition	Remark
5.1	Electric Strength Test	Input—output	3000Vac/10mA/1min	No breakdown
		Input—ground	1500Vac/10mA/1min	
		Output—ground	500Vdc/10mA/1min	
5.2	Isolation Resistance	Input—output	≥10MΩ@500Vdc	
		Input—ground	≥10MΩ@500Vdc	
		Output—ground	≥10MΩ@500Vdc	
5.3	Leakage Current		<3.5mA	Vin=132Vac, 60Hz
5.4	Safety		Final products have the TUV and CE certification	IEC60335-1, EN60335-1, IEC60335-2-29, EN60335-2-29
5.5	EMC	RE	CLASS B	EN55014
		CE	CLASS B	EN55014
		Air discharge	LEVEL 3	EN61000-4-2(discrimination B)
		Contact discharge	LEVEL 3	EN61000-4-2(discrimination B)
		RS	LEVEL 3	EN61000-4-6(discrimination A)
		CS	LEVEL 3	EN61000-4-3(discrimination A)
		EFT	LEVEL 3	EN61000-4-4 (discrimination B)
		Surge	LEVEL 3	EN61000-4-5, differential module 1KV, common module 2KV(discrimination B)

Remark: discrimination A— function OK under technical requirement range; discrimination B— function temporarily debasement without reposition and halt is allowed; discrimination R— physical damage or failure of equipment are not allowed, but damage of protection device (fuse) caused by interference signal of outside is allowed, and the whole equipment can work normally after replacement of protection device and reset of running parameter.

6. Environmental Testing Requirements

No.	Item	Technical Specification	Remark
6.1	High temperature operating	+45°C	Features OK
6.2	Low temperature operating	-10°C	Features OK
6.3	High temperature storage	+75°C	Work normally after recovery under normal temperature for two hours
6.4	Low temperature storage	-40°C	Work normally after recovery under normal temperature for two hours
6.5	Vibration	5-9Hz, 3.5mm amplitude; 9-200Hz, acceleration is 10m/s ² ; 3 perpendicular direction, scan frequency vibration 5 times at each direction (about 3×50min)	1) component 2) appearance 3) each target
6.6	Shock	Pulse contacting time is 6mS; Acceleration is 250m/s ² ; 6 sides, and bump at each direction for 500 times	1) component 2) appearance 3) each target

7. Mechanical Characteristics

Shell Material: Aluminum

Outline Dimension: L × W × H=183×95×55 (mm)

AC Wire: 1.5m

DC Wire: 1.5m

Net Weight: 1.0Kg

8. Package, Transportation & Storage

8.1 Package

There are product name, model, making of manufacturer, safety approval, manufacturing date on the package box and manual of specifications and packing list in the package box.

8.2 Transportation

Suit for transportation by truck, ship, and plane. The products should be shielded by tent from sunshine, and loaded and unloaded carefully.

8.3 Storage

Products should be stored in package box when it is not used. And warehouse temperature should be -40°C~+70°C, and relative humidity is 5%~95%. In the warehouse, there should not be harmful gas, inflammable, explosive products, and corrosive chemical products, and strong mechanical vibration, shock and strong magnetic field affection. The package box should be over ground at least 20cm height, and 50cm away from wall, thermal source, and vent. Under this requirement, product has 1 years of storage period, and should be rechecked when over 1 years.

9. Reliability Requirements

MTBF(standard, environmental temperature, load requirement)≥30Khour; testing condition: 25°C, full load, testing proved value.