产品规格书

Product specification

产品名称 Product name：48-88V 充电器

产品编号 Product number：SY-C1.6KW-25A

版　　本 Edition：V1.0

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Shenzhen San Yi Precision Technology Co., Ltd.				DESCRIPTION: (规格书) **SPECIFICATION**	
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1. 概述及适用范围 **Overview and scope of application**

1.1.性能介绍 **Performance introduction**

本产品是为铅酸和锂电池开发的智能型充电机，采用 LLC 架构高效率开关电源，内有温度补偿，锂电池不需要温度补偿，铅酸充电器根据开机时 NTC1/NTC2 的温度得出相应输出补偿电压值，补偿温度以 25℃为界，补偿温度范围：-10℃~45℃（补偿温度-10-45℃，补偿电压 0.108V 每℃）。This product is an intelligent charger developed for lead-acid and lithium batteries, using an LLC architecture high-efficiency switching power supply. It has temperature compensation built in. Lithium batteries do not require temperature compensation. The lead-acid charger determines the corresponding output compensation voltage based on the temperature of NTC1/NTC2 when powered on. The reference temperature for compensation is 25℃, and the compensation temperature range is -10℃ to 45℃ (for a compensation temperature of -10－45℃, the compensation voltage is 0.108V per ℃).

电压不上升定时：每半小时判断一次，判断六次，为三小时当电池电压在三个小时内上升的电压值小于所设定的电压阈值时条件生效,该设定用于铅酸模式。Voltage Rise Timeout: Check every half hour, six times in total, for a period of three hours. The condition is triggered if the voltage increase during these three hours is less than the set voltage threshold. This setting is used in lead-acid mode.

本机具有数字控制功能：采用串口通讯控制，使本机具有、充电曲线可编程、充电电压电流可编程、温度控制阈值可编程、充电效率高、充电电压控制精准等特点；

This machine has digital control functions: it uses serial communication control, allowing the machine to have programmable charging curves, programmable charging voltage and current, programmable temperature control thresholds, high charging efficiency, and precise charging voltage control.

指示灯类型支持两灯红绿或者四灯跑马，电量指示电压阈值：4 灯模式下，当电池电压达到 第一段设定充电电压，一盏指示灯常亮，其余三盏灯流水； 当电池电压达到第二段设定充电电压时，两盏指示灯常亮，其余两盏灯流水，以此类推

The indicator light types support either two lights (red and green) or four running lights. The power indicator voltage thresholds are as follows: In the 4-light mode, when the battery voltage reaches the first set charging voltage, one indicator light remains on while the other three lights run in sequence; when the battery voltage reaches the second set charging voltage, two indicator lights remain on while the other two lights run in sequence, and so on.

本充电机具有完善可靠的短路、过流、过温、过压、反接等 保护，使用更安全、更放心。

This charger is equipped with comprehensive and reliable protections against short circuits, overcurrent, overheating, overvoltage, and reverse connection, making it safer and more reassuring to use.

1.2.适用范围 **Scope of application**

本产品适用于新能源锂电池磷酸铁锂电池组和铅酸电池组的充电。

This product is suitable for charging lithium iron phosphate battery packs of new energy lithium batteries.

2. 执行标准 **Executive Standards**

GB 4706.1-2005 家用和类似用途电器的安全 第一部分：通用要求

GB 4706.18-2005 家用和类似用途电器的安全 电池充电器的特殊要求

QB/T2947.3-2008 电动自行车用蓄电池及充电器

GB 4706.1-2005 safety of household and similar electrical appliances Part 1: General requirements

GB 4706.18-2005 Safety of household and similar electrical appliances -- Particular requirements for battery chargers

QB / t2947.3-2008 battery and charger for electric bicycle

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1. 电气性能要求:Electrical performance requirements

1.1	输入特性：**Input characteristics**			
序 号 Serial number	项目 Items	技术要求 Specifications	单位	条件 Conditions
1.1.1	输入电压范围 Input voltage range	175～245	Vac	连续 Continuously
1.1.2	交流输入电压频率 Input frequency range	47～63	Hz	连续 Continuously
1.1.3	空载功率 No-loadpower	≤5	W	220Vac/OutOA
1.1.4	满载输入电流 Input current (full load)	≤15	A	Vin=220Vac
1.1.5	PFC 值 Power Factor	≥0.5		Vin=220Vac，额定负载 Rated load
1.1.6	效率 Efficiency	≥90%		Vin=220Vac，额定负载 Rated load

1.2	输出特性:**Output and charge characteristics**			
序 号 Serial number	项目 Items	技术要求 Specifications	单位	条件 Conditions
1.2.1	输出电压范围 Output Voltage Range	48～88±0.3	Vdc	输出空载以 DC 线末端为准 at the output end of DC cable
1.2.2	输出电流 Output current	Max25±0.3	A	最大功率 1600W Maximum power 1600W
1.2.3	输出纹波及噪声 Output voltage Ripple and Noise:	≤800	mVp-p	Vin=220Vac 限制带宽 20MHz,负载端并 0.1μF 和 10μF 电容 (0.1uF Ceramic Cap and 50V 10uF Aluminum Cap. Paralleled between the end of output cable, BW=20MHz)

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1.3	保护特性		
序 号 Serial number	项 目 Items	技术要求 Specifications	条件说明 Conditions
1.3.1	过 流 保 护 Over-current protection	保护，无损坏 Protectionwithoutdamage	当充电器发生内部或外部故障时，比如 短路或者过载，充电器进入保护状态。 故障排除后，充电器可恢复正常工作 When internal or external charger failure, such as short circuit or overload,charger will stop working until failures removed
1.3.2	短路保护 Short-circuit protection	保护，无损坏 Protectionwithoutdamage	当正负极短路，充电器进入保护状态： 充电器无输出； 故障排除后，充电器可恢复正常工作。 When the positive and negative short-circuit, charger will protect , Charger rework after failure removed
1.3.3	充满自停 Full of self-restraint	防止电池过充 Prevent battery overcharging	当电池电压到达充电器设定的最高电压时，继电器断开，电源停止输出 When the battery voltage reaches the maximum voltage set by the charger, the relay disconnects and the power supply stops outputting.
1.3.4	防倒灌 Anti-intrusion	无倒灌 No intrusion	当充电饱和,电源线拔掉充电器和电池依然连接时，电池里电能不会倒灌充电器 When charge saturation, unplug the power cord but battery charger is still connected,battery energy will not flow backward into charger.
1.3.4	防反接保护 Anti-reverse connection	保护，无损坏 Protectionwithoutdamage	当充电器输出和电池反向连接时，充电器会自动 关闭输出，充电器无损坏，故障解除后重启可恢复 When the charger output is connected in reverse to the battery, the charger will automatically shut off the output. The charger is not damaged, and it can resume normal operation after restarting once the issue is resolved.
1.3.5	过 压 保 护 Over-voltage protection	保护，无损坏 Protectionwithoutdamage	当充电器发生内部或外部故障时，比如 插错电池或者输出过压，充电器器进入保护 状态。故障排除后，充电器可恢复正常工作 When internal or external failure of the charger, such as wrong battery is inserted or the output voltage is over-voltage, the charger enters the protection status. After troubleshooting, the charger can resume normal operation.

1.3.6	输入过压保护 Input overvoltage protection	保护，无损坏 Protectionwithoutdamage，	当母线电压超过 350V 时，充电器进入保护状 态无输出。电压正常后充电器可恢复正常工作 When the bus voltage exceeds 350V, the charger enters a protection state and stops outputting. The charger can resume normal operation once the voltage returns to nor-mal.
1.3.7	输入欠压保护 Input undervoltage protection	保护，无损坏 Protectionwithoutdamage，	当母线电压低于 200V 时，充电器进入保护状 态无输出。电压正常后充电器可恢复正常工作 When the bus voltage is below 200V, the charger enters a protection state and outputs nothing. After the voltage returns to normal, the charger can resume normal operation.
1.3.8	过温保护 Over-temperatureprotection	保护，无损坏 Protectionwithoutdamage	NTC1 温度：当环境温度超过 55℃时，输出电流降半；超过 60℃时，充电器停机，只有当温度低于恢复阈值 50℃时才会恢复正常 NTC1 Temperature: When the ambient temperature exceeds 55° C, the output current is reduced by half; if it exceeds 60° C, the charger stops operating, and it will only return to normal when the temperature drops below the recovery threshold of 50° C. NTC2 温度：当功率器件温度超过 110℃时，输出电流降半；超过 120℃时，充电器停机，只有当温度低于恢复阈值 100℃时才会恢复正常 NTC2 Temperature: When the temperature of the power device exceeds 110℃, the output current drops by half; when it exceeds 120℃, the charger shuts down and will only resume normal operation when the temperature falls below the recovery threshold of 100℃.

1.4 充电灯指示 functional lights instructions:

项 目 Items	标 准（或测试条件） Conditions	备 注
四灯跑马 Four lights running in sequence	充电时按电池电量分档阈值跑马 Run a marquee according to the battery level threshold while charging	
绿色 LED 亮 GreenLEDon	电池充满或充电器待机 The battery is fully charged or the charger is on standby	

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2. 绝缘与安全规格:InsulationandSafety specifications

序号 Serial number	项 目 Items		标 准（或测试条件）Conditions	备 注
2.1	抗电强 度	输入与输出 Inputandoutput	1500Vac(3000Vdc)/10mA/1min（不带外壳）	无飞弧、无击穿 No flashover andbreakdown
	Electrical strength	输入与大地 Inputandearth	1500Vac(2120Vdc)/10mA/1min	
		输出与大地 Outputandearth	500Vac(700Vdc)/10mA/1min	
2.2	绝缘电 阻 Insulation resistance	输入与输出 Inputandoutput	≥50MΩ@500Vdc	在环境温度为 15—35℃，相对湿度为≤90% Whenthe ambient temperature is15-35 ℃, the relative humidity is ≤ 90%
		输入与大地 Inputandearth	≥50MΩ@500Vdc	
		输出与大地 Outputandearth	≥50MΩ@500Vdc	
2.3	安规认证 safety certific ation		设计符合 EN60950， 安规标准要求 Designed to comply with safety standards such as EN60950	

3. 电磁兼容性

序号 Serial number	项 目 Items		标 准（或测试条件）Conditions	备 注
3.1	EMS	静电放电抗扰性 Electrostatic Discharge Resistance	空气放电 8KV,接触放电 6KV,判据 B（系统） Air discharge 8KV, contact discharge 6KV, criterion B (system)	IEC61000-4-2
		电快速脉冲群抗扰性 Electric Fast Pulse Group Resistance	LEVEL3 判据：A（系统） LEVEL3 Criterion: A (System)	IEC61000-4-4
		浪涌抗扰性 Surge Resistance	LEVEL3 判据：A（系统） LEVEL3 Criterion: A (System)	IEC61000-4-5
		电压暂降、短时中断及缓变抗扰性 Voltage sag, short interrupt and slowly varying immunity	按标准选取 Select by criteria	IEC61000-4-11

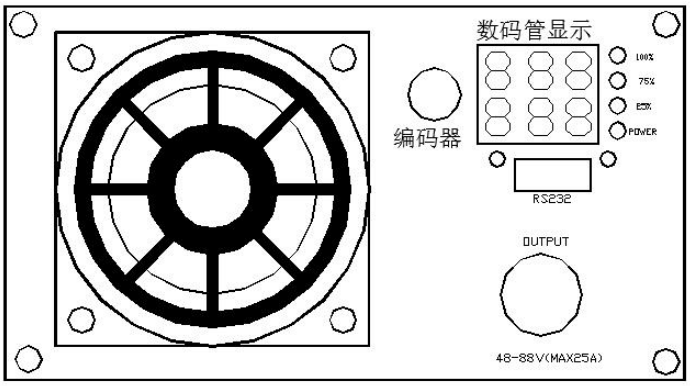
4. 使用环境 Environmental characteristics

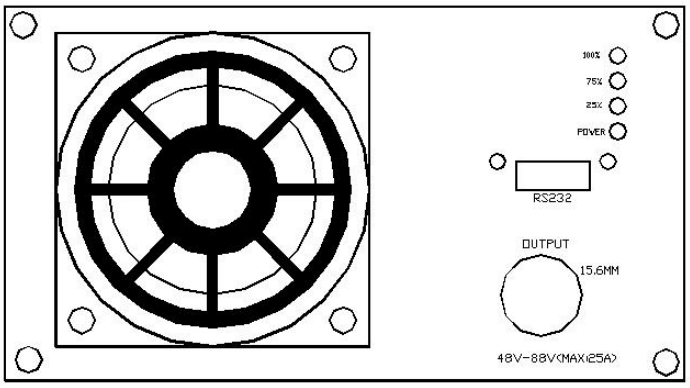
序 号 Serial numbe r	项 目 Items	技术指标 Specifications	单 位	备 注 Conditions
4.1	工作温度 Operation Temperature	-25～+60	℃	典型值 25℃
4.2	储 存 温 度 Storage Temperature	-40～+80	℃	典型值 25℃
4.3	工作湿度 Operation Humidity	10%～95%(无霜)		
4.4	存储湿度 Storage Humidity	5%～95%(无霜)		

5. 机械结构

序 号 Serial number	项 目 Items	技术要求 Specifications	单 位	备 注 Conditions
6.1	外 形 尺 寸 Shape size	见附图 Attacheddrawings		
6.2	外观图片 Appearance Picture	见附图 Attacheddrawings		
6.3	输出连接端子 OutputConnection Terminal	客户需求定制 Customizedcustomer needs		
6.4	包装 Packing	独立包装+泡棉 IndependentPacking andSoakCotton		

6附图













（输入输出插头可定制，高效率，灌胶防尘防水）

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