

**Quality inspection standards for chargers**

**The inspection standards for charging machines are divided into two parts: cabinet inspection and finished product inspection.**

I. Cabinet Inspection Section					
Content	Inspection item	Standard and Requirements		Test Results	Conclusion
Quality requirements for the whole machine and major components.	External dimensions of cabinet.	The Tolerance of External dimensions (Length x Width x Height)	±5mm		
	Coordinating capabilities of the cabinet	Clearance between inlaid door panels (front and back doors) and upper and lower frames	Horizontal clearance < 2mm Vertical clearance < 2mm		
		Clearance between lay-in door panels (front and back doors) and upper and lower frames	Horizontal clearance < 3mm Vertical clearance < 3mm		
		Cabinet top frame, stand column	Misalignment tolerance ±1mm		
		Flexible door opening	The opening range does not allow Friction, collision		
		Flexible door lock insertion and removal	The lock core rotates flexibly		
	Cabinet stability requirements	The cabinet must have reliable stability after assembly	Under the action of vibration and other external forces, there should be no loosening of parts and no abnormal sound.		
	Requirements for cabinet manufacturability and safety	Cabinet internal and external surfaces must be chamfered or deburred in the physically accessible parts of the edges and other parts.			
		Wire racks or trunking holes must be deburred.			
		Mechanical connections of all parts on the cabinet should be firm and reliable.			
		Cabinet grounding requirements: conductive parts without rust marks, good conductivity			
	Requirements of Spraying Quality	Cabinet exterior and interior colors need to be uniform	Compare with the color swatches, measure the color according to $\Delta E$ , the color difference $\leq 0.5$ .		
		Cabinet surface scratches	Length $\leq 15\text{mm}$ Area $\leq 9\text{mm}^2$		
		Cabinet Surface Bump	Area $\leq 9\text{mm}^2$		
		Rust on the surface of the cabinet	Area $\leq 15\text{mm}^2$		
	Requirements of Screen Printing Quality	No dust or foreign matter on the screen printing surface			
		No bottom color showing after screen printing			
		Clear silkscreen content without ghosting			
		No error in silkscreen content			

	Requirement of copper row	Overall dimension	(LxWxH) tolerance within 2mm		
		Hole Size	Tolerance of 1mm		
		Plating	No scratches or corrosion on the plating layer (visual inspection)		
	Requirements of Welding quality	Front and back doors	Welding surface is not allowed to have pores, cracks		
		Side door panels			
		Cabinet Architecture	Uniformity of spraying on welded surfaces		

II. Finished product inspection section				
Content	Inspection item	Standard and Requirements	Test Results	Conclusion
Finished product inspection requirements	Appearance and Structure	Cabinet plating is solid, well-proportioned paint, no flaking, rust and cracks and other phenomena		
		The surface of the cabinet is smooth, and all identification labels and texts should be clear, correct and neat.		
		All kinds of switches are easy to operate, flexible and reliable		
		All kinds of indicator lights are installed correctly and displayed without error		
		All kinds of meters display accurately, no damage and scratching		
	Fault test	Fault (over-voltage, over-current, over-temperature) protection: When the set over-voltage protection value $\cong$ actual value, the charger cuts off the output, there will be an alarm signal and light up the indicator light. When the set over-current protection value $\cong$ actual value, the charger cuts off the output, there will be an alarm signal and light up the indicator light The temperature sensor connects to the alarm contact wire, the charger stops output, there will be an alarm signal and light up the indicator light.		
		Over-voltage and low voltage alarm: When the set overpressure value $\cong$ actual value, there will be an alarm signal When the set low pressure value $\cong$ actual value, there will be an alarm signal		
		Ground fault alarm: When the grounding resistance is less than the set value, there is an alarm signal and light up the indicator light		
		Silicon chain fault alarm: Silicon chain through the alarm contacts in a set of normally open contacts, there will be an alarm signal and light indicator lamp		
		Utility fault or utility disconnect alarm: Try to disconnect the utility switch, there will be an alarm signal and light up the indicator lamp		
		Utility high voltage and low voltage alarm: Modulation voltage > high voltage alarm range value, there will be an alarm signal and light indicator lamps Modulating utility voltage > low voltage alarm range value, there will be an alarm signal and light indicators		
		Fuse failure alarm: Signal fuse normally open contacts change to normally closed contacts, there will		

		be an alarm signal and light indicators		
		DC current limit alarm: When the current limit value $\leq$ the actual value, there will be an alarm signal and light indicator		
		Fault alarm for mains, load and battery circuit breakers: Disconnect the mains, load and battery circuit breakers respectively, there will be an alarm signal and light up the indicator.		
	Insulation test	Insulation resistance: input and output terminals to the shell, apply 500V DC voltage, insulation resistance should be greater than 1M $\Omega$ .		
		Insulation strength: input and output terminals to ground 50Hz, 2000V AC voltage applied for 1min, there should be no breakdown, no flying arc, leakage current less than 10mA.		
	Light load and function tests	Light load test: When the current is $\leq 5A$ , test the maximum and minimum values of the input voltage, and verify that all parts of the electrical line and the cooling part can operate normally.		
		Charging with constant voltage: when the charger mode is set to constant voltage, the voltage should be stable and unchanged		
		Charging with constant current setting: when the charger mode is set to constant current, the current must be stable and constant.		
	Rated current test	In the input voltage range, when the output is rated voltage____, the charger can operate normally at rated current_____.		
	Ripple Voltage Measurement	Under the condition of output rated voltage_____, the superimposed AC ripple voltage measured on the DC side is not more than _____		
	Efficiency Testing	When the output voltage is rated, the system efficiency should be greater than 88% when the output is 100% of the rated load		
		When the output voltage is rated, the system efficiency should be greater than 85% when the output is 50% of the rated load		
	Temperature rise test	Measure the temperature rise of key components: transformer, reactor, thyristor module in 8 hours under rated load, as shown in the annex.		
	Auxiliary Device Inspection	Detecting the normal operation of auxiliary equipment such as contactors, fans, relays, etc.		
	Control equipment performance Inspection	Test whether the pulse control signal of the main control board is normal		
	Protection device Inspection	Check overcurrent protection device setting		
		Check for blown fast fuses and proper switching of fast switches.		
		Check the performance of overvoltage protection devices		
		Check whether it is securely grounded		
	Inspection	Charger should have RS485 or RS232, RS422, Ethernet, USB standard communication interface (at least one of them), and provide with the communication interface supporting the use of communication cables and a variety of alarm signal output terminals		
	Telemetry,	Charger telemetry content: charger output voltage, output current;		

	telecommunication function	The content of telecommunication is: charger alarm signal		
Note :				
Inspector:			inspection date:	