

RJ8000 Charging Pile Automatic Test System



System Introduction

RJ8000 Series charging pile automatic test system is developed for electric vehicle charging pile (off-board charger), and is an automatic test system in line with the AC and DC charging pile test standard.

The system adopts an open hardware and software architecture, and provides program-controlled AC and DC power supply, AC and DC load (box), power analyzer, BMS communication simulation unit, system control switching unit, safety comprehensive tester as well as digital oscilloscope, industrial computer and other measuring and testing equipments researched and developed by Ruijie, providing test solutions for the basic needs of R&D, high-speed production, quality sampling and other individual needs.

System Configuration

- **Programmable AC power supply:** Voltage, frequency, etc. can be edited, simulating the power supply of power grid output overvoltage, undervoltage and voltage stabilization test,
- **High voltage electronic load:** provide charging pile analog load with various modes such as constant voltage, current, power, resistance, etc., with fast dynamic response speed; meanwhile, measure each output parameter, including output voltage, current, power and other parameters;
- **Multi-Channel Power Analyzer:** Measure input and output electrical parameters, including voltage,

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current, power, power factor, frequency, harmonic content, etc;

- **Oscillograph:** Measurement of charging pile output ripple and noises;
- **Switch the control unit:** Provides an interface for communication with the charging pile under test, and provides control and
- **BMS communication simulation unit;**
- **Safety Comprehensive Tester:** Provide grounding, insulation, AC and DC Voltage withstand and other safety performance testing;
- **System software operating platform.**

Key Features

- **Compatibility Test:** Support AC charging pile, DC charging pile test, AC/DC integrated charging pile and various connection mode test;
- **Project Optimization:** According to the relevant inspection and test standards, design and optimize the standard test item library for special charging pile testing, and select according to the actual test needs for tests;
- **Simple operation:** the test system software is easy to learn and use, according to the need to select the test items; the test program is completed with a key to start the test; the special interface tooling customized for the charging pile test is designed to connect with the charging pile interface in a convenient and efficient way; the test data and judgment results can be stored locally and automatically;
- **Higher Functions:** It has the functions of writing charging pile address information, swiping card data entry, and comparing the pile metering instrument data with the test system measurement data through communication comparison judgment and other functions.

According to "Q/GDW 1591-2014 Electric vehicle off-board charger testing technical specification" the following test items can be completed, the test items include but are not but are not limited to, the tests of the following items:

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Test items		Type test	Factory inspection	Arrival test	Periodic inspection
2	Function test				
	Communication function test	√	√	√	√
	Measurement function test	√	√	√	√
3	Safety requirement test				
	Grounding continuity test	√	√	√	√
4	Insulation test				
	Insulation resistance test	√	√	√	√
	Power-Frequency Voltage Withstand Test	√	—	—	—
	Shock Voltage withstand test	√	—	—	—
5	Charge output test				
	Output voltage error test	√	√	√*	√*
	Output current error test	√	√	√*	√*
	Voltage stabilization accuracy test	√	√	√*	√*
	Current stabilization accuracy test	√	√	√*	√*
	Ripple coefficient test	√	√	√*	√*
	Voltage limiting characteristic test	√	√	√	√
	Current limiting characteristic test	√	√	√	√
	Efficiency and power factor test	√	—	—	—
	Equalizing current unbalance test	√	—	—	—
	Output current control time test	√	—	—	—
	Output current stopping rate test	√	—	—	—
6	Low-voltage auxiliary power supply test	√	√	√	√
7	Harmonic current test	√	√	√	√
8	Safety requirement test				
	Input overvoltage protection test	√	√	√	—
	Input undervoltage protection test	√	√	√	—
	Output overvoltage protection test	√	√	√	—
	Output overcurrent protection test	√	√	√	—
	Emergency stop function test	√	√	√	√*
	Inrush current test	√	√	√	—
	Soft start test	√	√	√	—
	Battery reverse connection test	√	√	√	√
Battery Voltage Inspection Test	√	√	√	√	
9	Compatibility test				
	Charge control compatibility test	√	√	√	√*
	Charging communication compatibility test	√	√	√	√*

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According to "NB/T 33008.1-2018 Electric Vehicle Charging Equipment Inspection and Test Specification Part 1 Off-board Chargers" the following test items can be completed, the test items include but are not limited to the following item tests:

	Test items	Type test	Factory inspection
2	Function test		
	Communication function test	√*	—
	Insulation detection function test	√	—
	DC output circuit short circuit detection function test	√	—
	Pre-charging function test	√	√
	Measurement function test	√*	—
	Emergency stop function test	√	√
3	Safety requirement test		
	Input overvoltage protection test	√	√
	Input undervoltage protection test	√	√
	Output overvoltage protection test	√	√
	Output short circuit protection test	√	—
	Start-stop device test	√	√
	Input current overshoot test	√	√
Battery reverse connection test	√	√	
9	Insulation test		
	Type of test	√	√
	Laboratory	√	√
	Stamping test	√	
10	Grounding test	√	
11	Charge output test		
	Low-voltage auxiliary power supply test	√*	√*
	General evidence of Junduo test	√	√*
	voltage stabilized fine F	√	√*
	voltage ripple factor test	√	√*
	Current ripple test	√	√*
	Output current error test	√	√
	Output voltage set error test	√	√
	voltage limiting characteristic test	√	√
	Current limiting characteristics test	√	√
	Output current response time test	√	—
	Output current stopping rate test	√	—
	output overshoot test	√	—
	Output current measurement error test	√	—
	Measurement error test	√	—
	Efficiency test	√	√*
Power factor test	√	√*	
12	Standby power consumption test	√	√
14	Control guidance test		
	Charge Commission 17	√	√
	Charge connection control timing test	√	√
	Control guidance voltage limit test	√	
	Communication interruption test	√	√
	Protective earthing continuity test	√	√
	Connection detection signal disconnection test	√	√

