

**Technical Specifications**  
**for New Energy Vehicle Charging and**  
**Electrical Safety Inspection Equipment**

**Model: EVTS-120F2S1**

Version:  
V1.0-202503

Party A: \_\_\_\_\_

Representative (seal):

Party B: \_\_\_\_\_

Representative (seal):

Contract Number: \_\_\_\_\_

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# I、Introduction

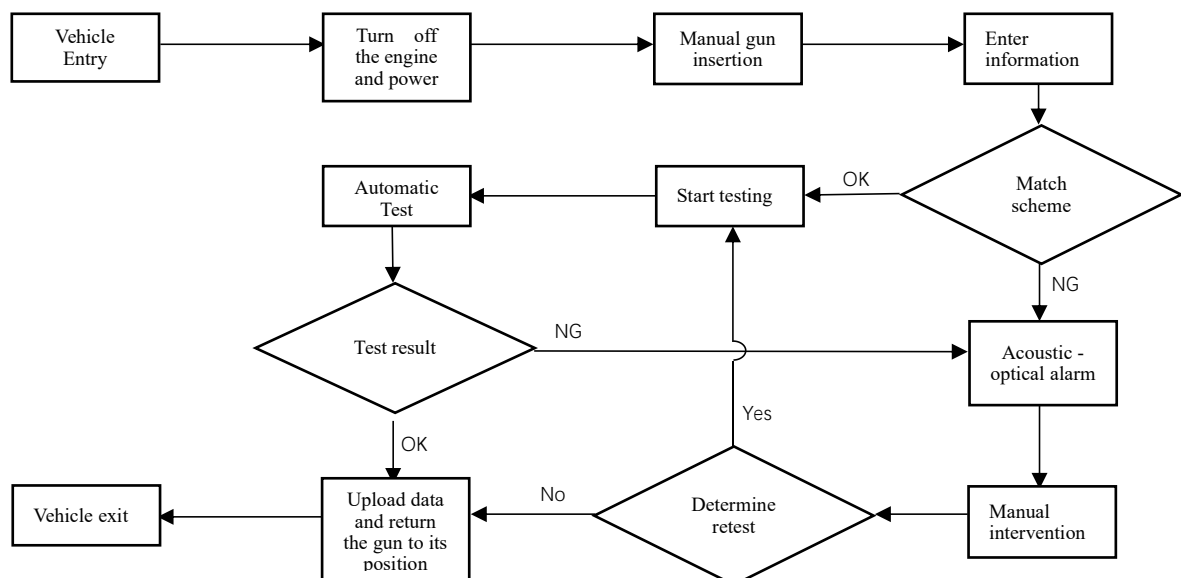
## 1.1 System Overview

With the rapid development of the new energy vehicle industry, China ranks first globally in the production and sales of new energy vehicles. As the stock of new energy vehicles continues to grow, accidents such as fires and out-of-control caused by their power batteries, electronic control systems, etc., show an increasing trend, attracting high attention from society and the public.

The charging and electrical safety inspection equipment for new energy vehicles meets the requirements of *Inspection Procedures for Operational Safety Performance of New Energy Vehicles GB/T 44500 - 2024*, achieving the functions of safety (charging) inspection for power batteries of new energy vehicles and electrical safety inspection. The detection system integrates a charging module, insulation and potential equalization test module, auxiliary power supply, as well as high-voltage and potential equalization switching modules into one. Through unified control by the system software, it realizes the automation of the test process, featuring simple operation.

The equipment can be applied to vehicle inspection and maintenance stations for new energy electric vehicles in various places, providing equipment tools for vehicle inspection in links such as management, maintenance, appraisal, and used-car transactions of in-use new energy vehicles. It is an essential standard-type equipment in the new energy vehicle detection industry.

## 1.2 Basic Test Process



**Note: The action process is for reference only and does not represent the scope of supply.**

**1.3 Main Configuration**

| No. | Unit Name                          | Brand              | Specification/Model   | Number | Unit |
|-----|------------------------------------|--------------------|---|--------|------|
| 1   | Test System                        | RePower            | main module of detection system with cabinet  | 1      | Pcs  |
| 2   | Charging Module                    | RePower            | 1000V30A 30kW   | 4      | Set  |
| 3   | Embedded all-in-one machine        | RePower Customized | i7/16G/1TB  | 1      | Pcs  |
| 4   | DC Charging Gun                    | RePower            | Current 250A,5m wire with electronic lock   | 2      | Set  |
| 5   | AC Charging Gun                    | RePower            | Current 32A,7m wire   | 1      | Set  |
| 6   | Potential equalization test pliers | RePower            | Length 5m   | 1      | Set  |
| 7   | Temp. & Humidity Meter             | RePower Customized | RJ45 network port temperature and humidity recorder   | 1      | Pcs  |
| 8   | Test Software                      | RePower            | RP-EOL-S/W  | 1      | Set  |
| 9   | Input Harness                      | RePower            | 35mm <sup>2</sup> +10mm <sup>2</sup> , three-phase five-wire, standard configuration, 10 meters in length | 1      | Set  |

## II、 Technical Parameters

### 2.1 Main Functions

- 1、 Supports national standard DC fast - charging mode. The charging interface complies with the relevant requirements of GB/T 18487.1, and the communication transmission protocol complies with the relevant regulations of GB/T 27930. It has the function of automatically recording and transmitting data during the detection process.
- 2、 Insulation resistance detection ,range $\geq 100\text{M}\Omega$ ,accuracy error  $\pm 3\%$ ,resolution $\leq 0.1\text{M}\Omega$ .
- 3、 Potential equalization detection, adjustable measurement current, current range $\geq 0.2\text{A}$ , accuracy error $\pm 3\%$ , resolution $\leq 0.01\Omega$ .
- 4、 With median computer control and data collection and processing functions.
- 5、 The system test items and results can generate report documents and be uploaded to the upper - level system for storage.
- 6、 It has the function of monitoring environmental temperature and humidity.
- 7、 Supports local TCP/IP communication.
- 8、 Inspection of power battery safety (Charging):
  - a) Connect the vehicle to the DC Charging plug of the equipment, charge the vehicle, and the continuous charging duration shall be no less than 180s.
  - b) During the charging stage, collect the maximum temperature of the power battery and the maximum voltage of a single battery. The time interval between collection points shall be no more than 250ms. Record the maximum temperature and maximum voltage that occur during the charging process.
  - c) At the end of the charging stage, collect the maximum voltage and minimum voltage of a single battery. The time interval between collection points shall be no more than 250ms. Calculate the voltage range of a single battery (the difference between the maximum voltage and minimum voltage of a single battery).
  - d) Charging socket insulation resistance detection:
  - e) Cut off the power of the vehicle to make all electrical and electronic switches in a non - activated state.

f) For the DC Charging socket, connect the positive and negative test leads of the insulation resistance tester to the positive terminal (DC+) and PE terminal, and negative terminal (DC-) and PE terminal of the DC Charging socket respectively in sequence. The test voltage of the insulation resistance tester shall be greater than the maximum charging voltage of the battery until the reading is stable (3s-5s). Calculate the insulation resistance of the DC Charging socket according to the following formula:

$$R_i = \frac{R_1 \cdot R_2}{(R_1 + R_2)U_i}$$

$R_i$ ——DC Charging socket insulation resistance,unit:  $\Omega/V$ ;

$R_1$ ——Insulation resistance between DC+ and PE,unit:  $\Omega$ ;

$R_2$ ——Insulation resistance between DC- and PE, unit:  $\Omega$ ;

$U_i$ ——Maximum work voltage,unit: V.

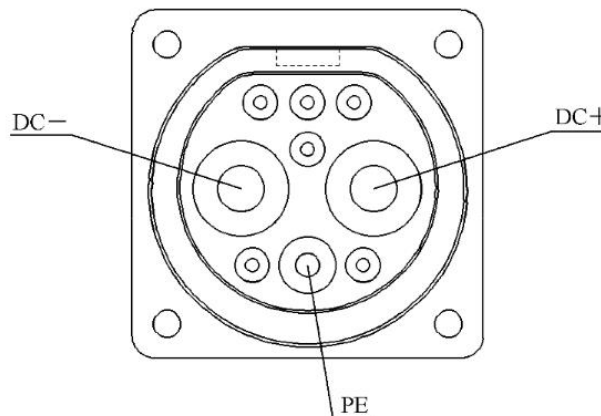


Fig 1

Labeling index description:

DC+——Positive DC power supply terminal, Connects the DC power supply positive to the battery positive terminal;

DC——Negative DC power supply terminal,Connects the DC power supply negative to the battery negative terminal;

PE ——Protective Earth,Connects the power supply equipment ground line to the vehicle electrical platform.

- f) For the AC Charging socket, connect the positive and negative test leads of the insulation resistance tester to the phase - line terminals L1, L2, L3, N and PE terminal of the AC Charging socket respectively in sequence. The test voltage of the insulation resistance tester shall be greater than the maximum charging voltage of the battery until the reading is stable (3s - 5s). Calculate the insulation resistance of the AC Charging socket according to the following formula

$$R_i = \frac{1}{1/R_3 + 1/R_4 + 1/R_5 + 1/R_6}$$

In the formula:

- R<sub>i</sub>——AC Charging socket insulation resistance,unit:M Ω ;
- R<sub>3</sub>——Insulation resistance between L1 and PE,unit:M Ω ;
- R<sub>4</sub>——Insulation resistance between L2 and PE,unit:M Ω ;
- R<sub>5</sub>——Insulation resistance between L3 and PE,unit:M Ω ;
- R<sub>6</sub>——Insulation resistance between N and PE,unit:M Ω .

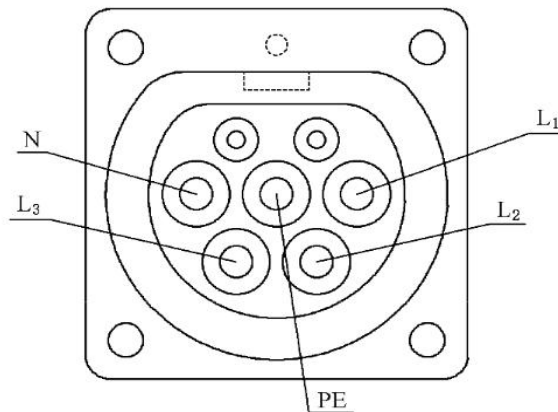


Fig2

Labeling Index Description:

- L<sub>1</sub> ——AC power supply (single-phase or three-phase);
- L<sub>2</sub> ——AC power supply (three-phase);
- L<sub>3</sub> ——AC power supply (three-phase);
- N ——Neutral conductor (single-phase or three-phase);

PE ——Protective Earth. Connects the power supply equipment ground line to the vehicle electrical platform.

9、 Potential Equalization Detection:

- a) Cut off the power of the vehicle to make all electrical and electronic switches in a non - activated state;
- b) When measuring potential equalization (between conductive components and the electrical platform), connect the two probes of the milliohmmeter to the PE terminal of the AC charging socket (or DC charging socket) and the conductive parts of the vehicle body frame or the connected conductive components (such as the door frame, door lock catch, etc.), increase the test current until it reaches at least 0.2A, and read the measurement result;
- c) When measuring potential equalization (between conductive components), connect the two probes of the milliohmmeter to the PE terminal of the DC charging socket and the PE terminal of the AC charging socket (for vehicles with only 2 DC charging sockets, it is the DC charging socket), increase the test current until it reaches at least 0.2A, and read the measurement result.

## 2.2 Equipment Features

### 1、Automated Detection Process

It can automatically complete various detection items for vehicles, and can quickly and accurately detect vehicles according to preset procedures and standards, greatly improving detection efficiency and reducing manual operation time and errors.

### 2、Rapid Data Processing

During the detection process, the equipment can quickly collect and process a large amount of detection data, and generate detection reports in real - time. Detection personnel can quickly view detection results and analysis data through the equipment's display screen, and make timely judgments and decisions.

### 3、Connection Status Detection

It can accurately determine the connection status between the detection equipment connector and the electric vehicle connector. Only when the detection equipment connector is correctly connected to the electric vehicle battery does the testing equipment allow the detection to start.

### 4、Wide Vehicle Model Compatibility

It can be compatible with a variety of vehicle models, with a wide range of applications.

### 5、High Functional Integration

It integrates power battery safety (charging) detection, charging socket Insulation resistance detection, and potential equalization detection, occupying a small area.

### 6、Simple Operation and Convenient Maintenance

It adopts simplified configuration steps, an intuitive and user - friendly host computer interface, and unique voice operation prompts, enabling easy completion of work tasks.

## 2.3 Production Parameters

|                   |   |                            |
|-------------------|---|----------------------------|
| Electrical Safety | Insulation Resistance Test Range          | DC 100V~1000V / 0.1MΩ~50GΩ |
|                   | Voltage Output Accuracy                   | ±1%±5V                     |
|                   | Voltage Measurement Accuracy              | DC 100 V~DC 499 V,±2%      |
|                   |   | DC 500 V~DC 1000 V,±1%     |
|                   | Potential equalization Test Current Range | DC 0.1A~2.0A               |
|                   | Resistance Test Range                     | 10mΩ~2000mΩ                |
|                   | Resistance Measurement Accuracy           | ±1% or ±0.01Ω              |
| DC Charging       | DC Charging Range                         | DC 150V~1000V/0A~250A      |
|                   | Rated Output Power                        | 120kW Max.                 |
|                   | DC Voltage Measurement Range              | DC 0V~1000V                |
|                   | DC Voltage Measurement Accuracy           | 0.02%                      |
|                   | DC Gun                                    | Double Gun                 |
| AC Charging       | Rated Input Voltage                       | AC 220V                    |
|                   | Rated Output Current                      | 32A Max.                   |
|                   | Rated Output Power                        | 7kW Max.                   |
|                   | AC Gun                                    | Single Gun                 |
| Charging Gun      | Line Length                               | DC Gun 5m & AC Gun 7m      |
|                   | Maximum Current                           | DC 250A & AC 32A           |
|                   | Temperature Test                          | Support                    |
|                   | CAN Communication                         | 3 Channel                  |

### III、System Diagram

#### 3.1 Equipment Appearance Rendering



(Note: subject to physical objects)

#### 3.2 Software Interface



## **IV、 Equipment Pre Acceptance and Final Acceptance Standards**

If Party B completes the debugging and trial operation for 30 days without any abnormal problems, it can enter the acceptance process and execute according to the relevant provisions of the technical agreement.

The acceptance shall be carried out by designated engineering and technical personnel from both parties, who shall jointly sign the acceptance report.

Acceptance mainly involves the acceptance of various functions, technical indicators, and appearance of the equipment.

If due to the reasons of Party A, if Party A does not have the production conditions, does not have corresponding products for Party B to debug, or is unable to provide installation and debugging conditions, Party A still does not notify installation within 30 days from the date of equipment delivery, or does not notify debugging within 30 days from the date of installation completion, it shall be deemed that the product acceptance is qualified.

## **V. Installation, Commissioning and Training**

Unless otherwise requested in writing, Party A shall be responsible for receiving; And prepare relevant electricity, gas, and other equipment input terminals.

The second party is responsible for delivering the goods to the location designated by the first party, the first party assists in transporting the machines to the installation site, and the second party carries out the installation and debugging of the equipment.

The second party shall provide free training to the relevant personnel of the first party, including the normal use, maintenance, fault analysis and troubleshooting, operation safety, and emergency handling procedures of the equipment. The first party must arrange for technical leaders, engineers, operators and other personnel who may use the equipment to be present and cooperate with the training, and sign and confirm on the "Equipment Training Attendance Form" provided by the second party.

## **VI、 Quality Assurance and After-Sales Service**

The warranty period for the equipment is one year, during which Party B is responsible for free maintenance and repair of the equipment (excluding vulnerable parts). The second party guarantees to respond by phone within 2 hours and submit a solution within 4 hours after receiving the equipment failure notice from the demand side; If necessary, rush to the buyer's site for maintenance within 48 hours.

After the warranty period expires, Party B shall still be responsible for repairing and maintaining the equipment, but shall only charge reasonable working hours and related travel expenses. For the replacement and purchase of equipment related accessories, Party B shall only charge the cost of accessories.

The second party will provide timely after-sales service by providing 24-hour technical support personnel on duty telephone.

## **VII、 Confidentiality Clause**

The first party shall strictly keep confidential any trade secrets of the seller that they become aware of as a result of the performance of this agreement, including but not limited to equipment technical parameters, configuration standards, equipment prices, product specifications, etc. Without the written consent of Party B, no information known during the cooperation shall be disclosed to any third party. If Party A violates the provisions of this agreement and leaks Party B's trade secrets, Party A shall compensate Party B for its direct losses. This clause shall remain valid for five years after the termination of this agreement.

## **VIII、 Other Matters and Agreements**

This agreement shall be authorized, signed and stamped by both Party A and Party B, and shall come into effect simultaneously with the signing of the business contract.

This agreement, as an appendix to the business contract, is made in duplicate, with Party A holding one copy and Party B holding one copy. Any matters not covered in this agreement shall be resolved through consultation between both parties.