



**EV Charger Aging Tester | 20-Channel High-Efficiency Burn-in Reliability System**

## 1. Executive Summary

The **EV Charger Aging Tester** is an industrial-grade, 20-channel burn-in platform engineered by **KingPo** for high-volume parallel reliability validation of AC electric vehicle charging stations. Supporting both **Type 1 (SAE J1772)** and **Type 2 (IEC 62196)** interface standards, the system allows manufacturers to simulate rigorous real-world operating environments through controlled electrical loading and thermal stress. This system is critical for identifying early-life component failures, verifying long-term operational stability, and ensuring strict compliance with global standards such as **IEC 61851**, **IEC 62196**, and **GB/T 18487**.

## 2. Advanced Technical Specifications

### Aging Tester & Channel Architecture

Category	Parameter	Detailed Specification	Remark / Notes
Capacity	Number of Channels	<b>20 Channels (Expandable)</b>	Double-sided, 10 channels per side
Safety	Channel Isolation	Independent Electrical Isolation	Prevents cross-interference during testing

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Category	Parameter	Detailed Specification	Remark / Notes
<b>Input Power</b>	Operating Voltage	AC 220V 1-Phase / AC 380V 3-Phase	Customizable to global grid standards
<b>Compatibility</b>	Connector Types	1× Type 1 + 1× Type 2 per channel	Supports 1-Phase and 3-Phase chargers

### Load Simulation & Monitoring

Category	Parameter	Detailed Specification	Remark / Notes
<b>Load Power</b>	Rated Capacity	<b>Max 30 kW per unit</b>	High-power handling for rapid aging
<b>Current Control</b>	Max Current (L1)	60 A	Stepped adjustment for precise load ramping
<b>Precision</b>	Load Accuracy	±5%	Ensures repeatable and traceable results
<b>Supervision</b>	Real-time Data	Voltage & Current per channel	Digital display with charging status sync
<b>Control</b>	Circuit Protection	Main Contactor + Individual MCB	Independent on/off control for each unit

### 3. Professional Construction & Technical Precision

The EV Charger Aging Tester is designed to meet the rigorous demands of 24/7 industrial burn-in operations:

- **Structural Integrity:** Features a heavy-duty industrial-grade steel frame that ensures structural rigidity and long-term durability in high-turnover production environments.
- **Optimized Wiring Workflow:** Each channel is equipped with quick-connect terminals and dedicated junction boxes labeled for **L1, L2, L3, N, and PE**, facilitating fast, error-free setup.
- **Space-Efficient Design:** The double-sided, 2-layer rack configuration maximizes

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workshop throughput while maintaining ergonomic access for operators.

- **Dual-Load Compatibility:** The separated load architecture supports both cost-effective **resistive loads** and advanced **energy-feedback loads**, the latter of which can significantly reduce factory electricity consumption.
  - **Human-Machine Interface:** Incorporates clear channel status indicators and emergency stop functionality, making it intuitive for technical staff to manage large-scale batch testing.
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#### 4. Testing Principle & Risk Evaluation

The tester functions by connecting the AC EV charger under test (EUT) to the system via standard connectors and applying programmable electrical loads to simulate variable real-world charging cycles.

##### Key Validation Metrics:

1. **Thermal Stability:** Evaluates internal heat accumulation and dissipation efficiency under full-load conditions over extended periods.
  2. **Electrical Reliability:** Monitors voltage and current consistency to identify potential degradation in power electronics.
  3. **Protection Verification:** Confirms the responsiveness of the charger's internal safety mechanisms during prolonged operation.
  4. **Failure Analysis:** Provides traceable data for failure analysis (Root Cause Analysis) and subsequent design optimization.
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#### 5. Industrial Applications & Strategic Value

- **EV Charger Manufacturers:** Facilitates massive batch burn-in and final Quality Assurance (QA) before market distribution.
- **R&D Institutions:** Enables long-term reliability benchmarking and stress-testing of new prototypes.
- **Certification Laboratories:** Serves as a primary tool for compliance evaluation according to international safety standards.
- **Infrastructure Integrators:** Validates system-level stability for charging network deployments.

#### 6. Expert Operational Protocols

To maintain measurement integrity and personnel safety:

- **Pre-test Verification:** Ensure phase sequence correctness and tighten all terminal connections to prevent contact resistance heating.
  - **Load Matching:** Strictly match load steps to the charger's rated specifications to avoid over-stressing the EUT.
  - **Environmental Control:** Maintain adequate ventilation around the aging rack and load units to ensure accurate thermal data.
  - **Emergency Readiness:** Familiarize staff with the emergency stop locations for immediate activation upon detecting abnormal equipment behavior.
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#### 7. Global Support & Compliance

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## Kingpo Technology Development Limited

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- **Standard Alignment:** Fully compliant with IEC 61851, IEC 62196, and GB/T 18487.
- **Quality Management:** Manufactured under ISO 9001, ISO 14001, and ISO 45001 certified systems with CE marking.
- **Direct Technical Support:** Backed by a one-year comprehensive warranty and lifetime engineering assistance from the **Dongguan facility**.

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