

# Walk-In Dust Test Chamber

3×3×3 m Large-Scale IP5X/IP6X Dust Ingress Tester

*Professional Technical Datasheet (Enhanced Version)*



Standards: IEC 60529 IP5X/IP6X • ISO 20653 • MIL-STD-810G  
Manufacturer: KingPo Test Equipment Co., Ltd. | [www.dgkingpo.com](http://www.dgkingpo.com)

# Product Overview

The KingPo Ultimate 3×3×3 m Walk-In Dust Test Chamber is a large-scale environmental test system designed to evaluate dust resistance performance of full-size prototypes and multiple large components under both dust-protected (IP5X) and dust-tight (IP6X) conditions according to IEC 60529, ISO 20653, and MIL-STD-810G standards.

With a spacious internal test volume of 3 m × 3 m × 3 m, this chamber dramatically improves test throughput compared to smaller benchtop units. It simulates harsh dusty environments for automotive, electronics, aerospace, and industrial applications, helping manufacturers ensure product reliability, improve durability, and meet stringent certification requirements in real-world dusty conditions.

## Key Advantages

### • Large-Scale Walk-In Testing Volume

Engineering: Massive 3 m × 3 m × 3 m internal workspace (27 m³) capable of testing full-size vehicles, large prototypes, or multiple items simultaneously.

*Benefit: Dramatically increases test throughput and reduces per-unit testing cost for large or complex products.*

### • Precision Dust Distribution & Uniformity

Engineering: Controlled talcum powder dispersion at 2 kg/m³ with uniform airflow velocity below 2 m/s and precise wire mesh (50 µm wire, 75 µm gap).

*Benefit: Delivers highly consistent and repeatable dust exposure across the entire test volume for superior test accuracy.*

### • Full IP5X & IP6X Compliance Capability

Engineering: Supports both dust-protected (IP5X) and dust-tight (IP6X) testing per IEC 60529 clauses 13.4 & 13.5, ISO 20653, and MIL-STD-810G.

*Benefit: One chamber meets multiple international dust ingress standards for global market compliance.*

### • Robust Construction with Tempered Glass Door

Engineering: Sturdy steel frame, corrosion-resistant materials, and large tempered glass door for clear visibility during testing.

*Benefit: Built for long-term reliability in harsh test environments with safe, convenient real-time observation.*

### • Automated Programmable Operation

Engineering: Touchscreen HMI with programmable test cycles, one-touch start, automatic cycling, and real-time monitoring.

*Benefit: Reduces operator training time and ensures consistent, traceable test execution with minimal intervention.*

### • Comprehensive Safety & Support

Engineering: Overload protection, emergency stop, dust filtration system, plus 1-year warranty and lifetime technical support.

*Benefit: Ensures safe operation and long-term peace of mind with professional after-sales service from an ISO-certified manufacturer.*

## Technical Specifications

### 3.1 Performance Parameters

Parameter	Specification	Test Condition / Method
Dust Type & Concentration	Talcum powder at 2 kg/m³	Per IEC 60529 requirements
Wire Mesh Specifications	50 µm wire diameter, 75 µm gap	Standard IEC mesh
Airflow Velocity	< 2 m/s (adjustable)	Uniform distribution
Test Standards	IEC 60529 IP5X/IP6X, ISO 20653, MIL-STD-810G	Clauses 13.4 & 13.5 compliant
Test Duration	Programmable cycles	Automatic cycling available

### 3.2 Mechanical Structure

Parameter	Specification	Notes
Internal Dimensions (W×D×H)	3000 × 3000 × 3000 mm	27 m³ walk-in volume
External Dimensions (W×D×H)	3850 × 3280 × 4800 mm	Floor-standing design
Door Type	Tempered glass observation door	Clear visibility during testing
Construction	Sturdy steel frame + corrosion-resistant	Built for harsh environments

	materials	
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### 3.3 Electrical & Control System

Parameter	Specification	Notes
Control System	Touchscreen HMI with programmable cycles	One-touch start & real-time monitoring
Power Supply	Three-phase 380 V, 60 Hz, 6.0 kW	Stable industrial power
Safety Features	Overload protection, emergency stop, dust filtration	Comprehensive protection system

### Test Procedure (IEC 60529 IP5X/IP6X)

Load full-size prototypes or multiple large specimens into the 3×3×3 m walk-in chamber and secure as required. Introduce talcum powder to achieve a controlled concentration of 2 kg/m<sup>3</sup> with the specified wire mesh (50 µm / 75 µm). Activate the circulation system; maintain uniform airflow velocity below 2 m/s for consistent dust exposure across all zones. For IP6X testing, apply vacuum (if required by the test plan) to draw dust through any potential seal gaps. Run the programmable test cycle with automatic operation; monitor conditions in real time via the touchscreen HMI and tempered glass door. Upon completion, safely extract specimens and inspect for dust ingress according to IP5X (limited ingress) or IP6X (no ingress) acceptance criteria.

**Fully compliant with IEC 60529 IP5X/IP6X (clauses 13.4 & 13.5), ISO 20653, and MIL-STD-810G dust ingress protection testing requirements.**

### Typical Applications

- Automotive — Full vehicle components, ECUs, sensors, headlights, and large assemblies under dusty conditions.
- Electronics — Smartphones, wearables, industrial control systems, and large enclosures.
- Aerospace & Defense — Equipment validation under extreme dust and sand conditions.
- Industrial Machinery — Mining, agriculture, and construction equipment reliability testing.
- Certification Laboratories — Large-scale compliance testing per IEC 60529, ISO 20653, and MIL-STD-810G.

### Optional Modules & Models

#### Optional Upgrades

- Custom internal dimensions (width × depth × height) tailored to specific product sizes.
- Alternative dust types (Arizona sand, custom particle size distribution, etc.).
- Multi-language HMI (English + Chinese standard; additional languages available).
- Advanced data logging, remote monitoring, and automatic report generation.
- ISO/IEC 17025 accredited third-party calibration report.

#### Standard Model

Model Code	Description	Standard Configuration
KP-WD-3000	3×3×3 m Walk-In Dust Test Chamber	Full walk-in volume + touchscreen HMI + talcum powder system + tempered glass door + factory calibration

### Compliance & Manufacturer

This equipment is designed and manufactured in strict accordance with IEC 60529 (IP5X & IP6X, clauses 13.4 & 13.5), ISO 20653 (road vehicles), and MIL-STD-810G/H Method 510 (blowing dust & sand procedures).

KingPo is an ISO 9001, ISO 14001, ISO 45001, and CE certified manufacturer. Each unit is delivered with complete documentation, on-site installation guidance (recommended for large walk-in models), a full 1-year warranty, and lifetime technical support. Remote assistance is standard; on-site engineer service is available upon request.

**KingPo Test Equipment Co., Ltd.**

*Specialist in Precision Environmental, Ingress Protection & Reliability Test Systems*

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