IEC 62368-1 Annex Y.5.5 Dust Test Apparatus

IP5X / IP6X Dust Protection Test Chamber for Audio, Video and IT Equipment

Standards: IEC 62368-1 Annex Y.5.5 (IP5X / IP6X Dust Protection)
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1. Product Overview

The KingPo IEC 62368 Annex Y.5.5 Dust Test Apparatus is designed to evaluate the dust protection performance of enclosures for audio, video, and information technology equipment. It performs IP5X and IP6X dust ingress tests as required by IEC 62368-1 Annex Y.5.5.

This equipment is suitable for AV/IT equipment manufacturers, testing laboratories, certification bodies, and research institutions to verify that dust does not compromise the safety or functionality of internal electrical components in products intended for dusty environments.

2. Key Advantages

- **Designed for IEC 62368-1 Annex Y.5.5 IP5X/IP6X Dust Protection Testing**
  Engineering: 1 m³ test chamber with precise talcum powder circulation system maintaining 2 kg/m³ concentration and controlled air velocity ≤ 2 m/s, fully compliant with IEC 62368-1 Annex Y.5.5 requirements.
  Benefit: Enables accurate and repeatable evaluation of enclosure dust protection performance for AV/IT equipment, supporting product development and regulatory compliance.
- **Large Test Volume for Full-Size Enclosures and Multiple Samples**
  Engineering: Internal chamber dimensions of 1000 × 1000 × 1000 mm (1 m³) with SUS304 stainless steel construction and large tempered glass observation door.
  Benefit: Accommodates full-size equipment enclosures, large assemblies, and multiple test specimens simultaneously, improving testing efficiency.
- **Precise Dust Concentration and Airflow Control**
  Engineering: Maintains uniform talcum powder concentration of 2 kg/m³ with adjustable air velocity ≤ 2 m/s and 50 µm nominal particle size for consistent test conditions.
  Benefit: Delivers highly repeatable and standardized dust ingress testing results in accordance with IEC 62368-1 Annex Y.5.5.
- **User-Friendly Touchscreen Control with Programmable Cycles**
  Engineering: Touchscreen HMI interface with programmable test cycles for precise setting of test duration and parameters.
  Benefit: Simplifies operation, reduces human error, and ensures consistent test execution across different operators and test runs.

3. Technical Specifications

3.1 Performance Parameters

Parameter	Specification	Remark / Notes
Applicable Standard	IEC 62368-1 Annex Y.5.5	IP5X (dust-protected) and IP6X (dust-tight) testing
Internal Chamber Volume	1000 × 1000 × 1000 mm (1 m³)	Suitable for full-size enclosures and multiple samples
Test Dust	Talcum powder, 50 µm nominal diameter	Standard test dust per IEC 60529 / IEC 62368-1
Dust Concentration	2 kg/m³	Uniform dispersion maintained throughout test
Air Velocity	≤ 2 m/s (adjustable)	Controlled airflow to simulate real conditions
Internal Material	SUS304 stainless steel	High corrosion resistance for long-term use
Observation Door	Large tempered glass door	Safe real-time monitoring of test process
Control System	Touchscreen HMI with programmable cycles	Precise setting of test duration and parameters
Power Supply	AC 220V, 50/60 Hz, 3.0 kW	Standard laboratory power requirement

Test Modes	IP5X and IP6X	Supports both dust-protected and dust-tight verification

4. Testing Principle

The test exposes the equipment under test to a circulating talcum powder environment at a controlled concentration (2 kg/m³) and air velocity (≤ 2 m/s). According to IEC 62368-1 Annex Y.5.5, the enclosure is evaluated to determine whether dust enters the device and affects its safety or performance.

IP5X allows limited dust ingress that does not interfere with operation or safety, while IP6X requires complete dust tightness with no visible ingress permitted. This standardized method helps manufacturers verify that sensitive internal components in AV/IT equipment are adequately protected from excessive dust in real-world operating conditions.

5. Best Practices

1. Use dry talcum powder and verify concentration before each test.
2. Maintain stable air velocity and uniform dust distribution during testing.
3. Properly position and seal the test specimen according to the standard.
4. Clean the chamber and filters regularly to prevent powder buildup.
5. Record all test parameters including duration, concentration, and velocity.

6. Typical Applications

- AV/IT equipment manufacturers — Dust protection testing of enclosures and housings
- Testing laboratories — IEC 62368-1 Annex Y.5.5 compliance testing
- Certification bodies — Safety assessment of equipment for dusty environments
- Electronic component suppliers — IP5X/IP6X verification of critical parts
- Research institutions — Studies on enclosure sealing effectiveness

7. Supply Options & Support

Technical support is available for equipment operation, test setup, and proper application of the IEC 62368-1 Annex Y.5.5 test method.

8. Compliance & Manufacturer

This dust test apparatus is engineered to perform tests according to IEC 62368-1 Annex Y.5.5 for protection from excessive dust in audio, video, information and communication technology equipment.

Manufactured under ISO 9001, ISO 14001, and ISO 45001 certified management systems. CE, RoHS, PSE, and SGS documentation can be provided upon request according to the applicable equipment configuration.

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