

IPX1 to IPX8 Waterproof Test Chamber

Professional Technical Datasheet (Enhanced Version)

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Standards: IEC 60529 (IPX1 – IPX8 Full Range)

Manufacturer: KingPo Test Equipment Co., Ltd. | www.dgkingpo.com

Product Overview

The KingPo IPX1 to IPX8 Waterproof Test Chamber is a fully integrated multi-function ingress protection testing system designed to perform the complete range of waterproof tests from IPX1 to IPX8 in strict accordance with IEC 60529. It consolidates drip, oscillating tube, water jet, and immersion testing capabilities into a single, efficient unit.

Featuring a modular quick-switch design, advanced PLC control, a large 500 L SUS304 stainless steel water tank with recirculation and filtration, and a heavy-duty motorized turntable, this system delivers exceptional testing efficiency, repeatability, and significant savings in capital expenditure, laboratory space, and operational costs. It is the ideal solution for manufacturers and accredited laboratories requiring comprehensive, standards-compliant waterproof validation across diverse product categories.

Key Advantages

- **Comprehensive IPX1–IPX8 Coverage in One System**

Engineering: Fully integrated modular design with quick-switch modules for drip box (IPX1/IPX2), servo-driven oscillating tube (IPX3/IPX4), precision jet nozzles (IPX5/IPX6), and pressure-rated immersion tank (IPX7/IPX8).

Benefit: Eliminates the need for multiple separate machines, dramatically reducing equipment investment, floor space, and changeover time while accelerating product development and compliance workflows.

- **Precision Control & Standards Compliance**

Engineering: Advanced PLC with high-resolution touchscreen enables precise, automatic regulation of flow rate, pressure, spray angle, oscillation parameters, and immersion depth/pressure according to exact IEC 60529 clauses.

Benefit: Guarantees highly repeatable, auditable, and internationally accepted test results, minimizing operator variability and supporting rigorous certification and OEM requirements.

- **Efficient Water Management System**

Engineering: Large 500 L SUS304 stainless steel tank with closed-loop recirculation and multi-stage filtration for stable flow and reduced water consumption.

Benefit: Lowers operating costs, minimizes environmental impact, and supports continuous high-volume testing with consistent water quality and pressure stability.

- **Heavy-Duty Motorized Turntable**

Engineering: Robust motorized turntable (1–5 rpm) with optional 15° tilt capability for uniform specimen exposure across all test modes.

Benefit: Ensures even and realistic water exposure on products of varying sizes, improving test accuracy and reproducibility for large or complex specimens.


- **Robust SUS304 Stainless Steel Construction**

Engineering: Full SUS304 stainless steel chamber and water-contact components with excellent corrosion resistance, engineered for long-term laboratory use.



Benefit: Delivers outstanding durability, minimal maintenance, and reliable performance under continuous exposure to water across all IPX test conditions

Technical Specifications

3.1 Performance Parameters (IPX1–IPX8 per IEC 60529)

IPX	Test Means	Flow / Condition	Duration	Standard Clause
IPX1	Drip box + turntable	1.0 +0.5/0 mm/min	10 min	Clause 14.2.1 

IPX2	Drip box, 15° tilt	3.0 +0.5/0 mm/min	2.5 min × 4 pos.	Clause 14.2.2 
IPX3	Oscillating tube / nozzle	0.07 L/min ±5% per hole	10 min	Clause 14.2.3 
IPX4	Oscillating tube ±180°	0.07 L/min ±5% per hole	10 min	Clause 14.2.4 
IPX5	Jet nozzle 6.3 mm	12.5 L/min ±5%	1 min/m ² (min 3 min)	Clause 14.2.5 
IPX6	Jet nozzle 12.5 mm	100 L/min ±5%	1 min/m ² (min 3 min)	Clause 14.2.6 
IPX7	Immersion tank	Depth by agreement	30 min	Clause 14.2.7

				
IPX8	Pressure immersion tank	Pressure by agreement	By agreement	Clause 14.2.8 

3.2 Mechanical Structure

Parameter	Specification	Notes
Chamber Material	SUS304 Stainless Steel	Full corrosion resistance
Water Tank Capacity	500 L SUS304	Closed-loop recirculation + multi-stage filtration
Turntable	Motorized, 1–5 rpm	Optional 15° tilt for enhanced exposure
Modules	Quick-switch modular system	Drip, oscillating tube, jet nozzles, immersion tank

3.3 Electrical & Control System

Parameter	Specification	Notes
Control System	Advanced PLC + touchscreen HMI	Centralized parameter control & mode switching
Oscillating Tube	Servo-driven, precise angles	IPX3: ±60°; IPX4: ±180° from vertical
Water Management	Automatic pressure stabilization	Multi-stage filtration for consistent flow
Power Supply	AC 380V / 220V, 50/60 Hz	Configured per site requirements

Test Procedure (IEC 60529 IPX1–IPX8)

The system executes the full range of IEC 60529 ingress protection tests through a unified control platform and interchangeable modules. Operators simply select the desired IPX level via the touchscreen; the system automatically configures the corresponding module and parameters.

- Module & Mode Selection:** Choose IPX1–IPX8 on the HMI. The system activates the correct module (drip box, oscillating tube, jet nozzle, or immersion tank) and loads the corresponding test parameters.
- Specimen Preparation:** Secure the specimen on the motorized turntable (use 15° tilt if required for IPX2). Verify positioning and connections.
- Parameter Verification:** Confirm flow rate, pressure, angle, duration, and immersion depth/pressure match the selected IEC clause. System performs automatic checks where applicable.
- Test Execution:** Start the automated cycle. The turntable rotates for uniform exposure while the selected water delivery method operates according to standard requirements.
- Monitoring & Data Logging:** Real-time monitoring of all critical parameters with automatic logging. Alerts trigger on any deviation.
- Post-Test Inspection:** Inspect the specimen for water ingress per the applicable acceptance criteria. Generate traceable test reports from logged data.

Fully compliant with IEC 60529 IPX1 through IPX8 ingress protection test requirements.

Typical Applications

- **Household Appliances:** Washing machines, dishwashers, refrigerators, outdoor appliances, and small domestic equipment.
- **Lighting & Luminaires:** Outdoor, architectural, industrial, and decorative lighting fixtures requiring comprehensive waterproof validation.
- **Electrical & Electronic Equipment:** Control cabinets, distribution boards, power supplies, sensors, and sensitive electronic enclosures.
- **Automotive & New Energy:** Connectors, sensors, battery enclosures, charging interfaces, and electronic modules for EVs and autonomous systems.
- **Third-Party Laboratories:** Multi-standard compliance testing, type approval, and accredited IPX1–IPX8 certification services.
- **Quality Control & R&D:** New product validation, design iteration testing, and routine batch inspection across multiple waterproof levels.

Optional Modules & Models

Optional Upgrades

- Larger or customized turntables for bigger specimens
- Additional modules for extended specimen sizes or special configurations
- Integration with IPX9K high-pressure hot water spray testing capability
- Specialized modules or full custom configurations upon request

Standard configuration includes the complete modular IPX1–IPX8 system, PLC/HMI, 500 L water management system, motorized turntable, and factory calibration certificate.

Compliance & Manufacturer

This equipment is designed and manufactured in strict accordance with IEC 60529 for the full range of IPX1 to IPX8 ingress protection testing. It also supports related standards including GB/T 4208, IEC 60598-1, and IEC 60034-5.

Manufactured under an ISO 9001 certified quality management system. Factory calibration certificate with traceability is included as standard. Optional ISO/IEC 17025 accredited third-party calibration is available upon request.

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