Integrated Constant Temperature Test Chamber For Battery Research And Materials Testing

Item Number: DC15

Introduction

Integrated constant temperature test chamber for pouch polymer and coin cell batteries delivers stable 0 to 60°C testing, rapid thermal transitions, PID control, Ethernet connectivity, and four-level insulated sample storage for reliable laboratory and production quality evaluation workflows.

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Application	Description	Key Benefit
Pouch Polymer Battery Testing	Maintains controlled temperatures for constant-temperature testing of new-energy pouch polymer batteries during research, process development, and performance evaluation.	Provides repeatable thermal conditions for comparing battery behavior and test results.
Coin Cell Battery Testing	Supports four-level placement of coin cells, with each shelf accommodating up to 40 cells under the specified arrangement.	Increases sample capacity while keeping test organization structured and electrically insulated.
Electronics and Semiconductor Manufacturing	Tests non-flammable and non-explosive electronic, electrical, instrumentation, materials, and semiconductor products at controlled temperatures.	Helps production and quality teams evaluate product response under defined thermal conditions.
Materials Research	Provides a stable environment for material screening, process studies, and controlled-temperature experiments in laboratory and advanced materials settings.	Improves consistency when assessing temperature-dependent material behavior.
Water Analysis and Environmental Research	Supports constant-temperature work related to water analysis in environmental laboratories, research institutes, and production organizations.	Delivers controlled conditions for more consistent analytical workflows.
Microbiology and Biological Culture	Used for bacteria and mold culture, microorganism cultivation, and preservation where a stable temperature is required.	Supports controlled biological procedures across routine and research applications.
Plant Cultivation and Breeding	Provides constant-temperature conditions for plant cultivation and breeding trials in agricultural, academic, and research environments.	Helps researchers maintain repeatable thermal conditions across growth experiments.
Livestock and Aquatic Research	Supports controlled-temperature testing and research activities in livestock, aquatic, agricultural, and related institutions.	Provides a versatile thermal platform for varied biological and production studies.

Parameter	Specification
Model	DC15
Nominal interior volume	200 L
Interior dimensions	W500 mm × D500 mm × H800 mm
Overall dimensions	W700 mm × D1200 mm × H1500 mm
Net equipment weight	Approximately 220 kg
Transport configuration	Integrated whole-unit transportation
Maximum transport dimensions without packaging	Refer to overall dimensions

Parameter	Specification

Test environment conditions	Ambient temperature +25°C, relative humidity ≤85%, no specimen inside the chamber, unloaded condition
Temperature range	0 to 60°C
Temperature fluctuation	≤1°C, unloaded and temperature stabilized
Temperature deviation	±2.0°C, unloaded and temperature stabilized
Heating time	25°C to 60°C in ≤30 minutes
Cooling time	25°C to 0°C in ≤50 minutes

Component	Specification
Outer wall material	Quality cold-rolled steel plate with surface spray coating and baked-paint treatment
Inner wall material	SUS304 stainless steel plate
Insulation material	Polyurethane foam
Insulation thickness	50 mm
Air-conditioning passage	Axial-flow fan, heater, and evaporator
Cable access ports	Four φ50 mm ports with soft rubber plugs, located at the rear of the chamber
Casters	Four casters with brakes
Sample rack	Four-level electrically insulated sample rack
Sample rack load capacity	10 kg per level, evenly distributed
Lighting	LED lighting lamp
Control panel	Touch-control buttons
Heater	Stainless steel heating tube
Sample rack material	Electrically insulated Bakelite material
Battery types	Coin cells or pouch batteries
Battery placement	Four levels; each level can accommodate up to 40 coin cells
Sample rack customization	Available according to requirements
Battery fixing method	Sample rack configuration and fixation for coin cells and pouch batteries according to the required setup

Parameter	Specification
Heater control method	Contactless periodic pulse-width modulation using an SSR solid-state relay
Refrigeration compressor	Fully enclosed piston compressor
Cooling method	Air-cooled
Throttling device	Capillary tube
Refrigerant	R134a
Welding process	Nitrogen-protected welding
Controller	LED digital display with touch-key controller
Setting method	Touch keys
Temperature control method	Forced-circulation ventilation with balanced temperature regulation
Control logic	The control system automatically calculates PID output from the set temperature and adjusts heater output to achieve dynamic balance
Communication method	Standard Ethernet interface
Temperature control module	Independently developed module tested for high-low temperature impact, vibration, EMC, and related reliability performance

Connected System Component	Capacity or Configuration
Battery testing equipment	Up to 20 units with a total of 160 channels

Connected System Component	Capacity or Configuration
Host computer	Up to two units
Network switch	One unit

Parameter	Specification
Chamber safety protection	Leakage protection, short-circuit protection, and abnormal circulation-fan operation protection
Power cable	One single-phase plus protective-earth cable
Main power protection	Single-phase plus protective-earth leakage circuit breaker
Rated power supply	AC (220 ± 22)V, (50 ± 0.5)Hz, single-phase plus protective-earth line
Required protective-earth resistance	Less than 4Ω
Power capacity	6 kW
Maximum current	30 A
Site power arrangement	The user must provide an air or power switch of suitable capacity at the installation site; the switch must be dedicated exclusively to this equipment

Category	Requirement
Installation floor	Level floor with flatness ≤5 mm per 2 m
Ventilation	Good ventilation required
Vibration environment	No strong vibration around the equipment
Electromagnetic environment	No strong electromagnetic field affecting the equipment
Surrounding materials	No flammable, explosive, corrosive substances, or dust around the equipment
Maintenance clearance	Appropriate operating and maintenance space must be provided
Door clearance	Sufficient space must be available in front of the chamber for the door to open and close normally in any required position; no other object may be placed directly in front of the chamber door
Ambient temperature	5°C to 35°C
Ambient relative humidity	≤85%
Atmospheric pressure	86 kPa to 106 kPa
Door-opening effect	Opening the chamber door during a test will cause temperature fluctuation inside the chamber