

Battery Constant Temperature Testing System

Item Number: DC14



Introduction

Battery constant temperature testing system for precise charge discharge evaluation of coin pouch prismatic and cylindrical cells with 0 to 60°C control stable uniform conditions and standards aligned testing for research manufacturing quality assurance and product validation applications

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Application	Description	Key Benefit
Battery Research and Development	Evaluate charge and discharge performance of coin, pouch, prismatic, and cylindrical cells under controlled temperatures during cell chemistry and design development.	Produces comparable environmental test data across development batches and cell formats.
Battery Manufacturing Inspection	Apply controlled-temperature screening to verify battery performance and identify process variation during production quality control.	Supports repeatable inspection workflows with defined temperature limits and stable chamber conditions.
Consumer Electronics and Electrical Products	Test batteries and related components used in electronics, electrical appliances, communications equipment, and instrumentation.	Helps assess performance consistency under representative operating temperatures.
Vehicle and Energy Technology Testing	Provide controlled thermal conditions for battery-related evaluation in vehicle, energy technology, and storage applications.	Supports structured performance comparison before system integration or product release.
Materials and Industrial Product Quality Testing	Test plastics, metals, chemicals, construction materials, food products, medical products, and other goods requiring controlled temperature exposure.	Extends the equipment beyond battery work for general product quality and environmental testing.
Aerospace and Defense Environmental Evaluation	Conduct temperature-related testing aligned with applicable environmental test methods for aerospace and defense-related products.	Provides a controlled chamber platform for standardized low- and high-temperature evaluation.

Parameter	Specification
Site-facing identifier	DC14
Nominal volume	162 L
Inner chamber dimensions W × D × H	460 mm × 400 mm × 880 mm
Overall dimensions W × D × H	570 mm × 570 mm × 1530 mm
Weight	90 kg
Power supply	220 V, 2 kW
Applicable test environment	Ambient temperature +5°C to +40°C; relative humidity ≤85%; chamber without specimens
Test method references	GB/T 5170.2-2008 temperature test equipment; GB/T 5170.5-2008 damp-heat test equipment
Temperature range	0°C to +60°C
Temperature fluctuation	≤0.5°C; when expressed according to GB/T5170.2-1996, fluctuation is ≤±0.25°C
Temperature deviation	±1°C
Temperature uniformity	≤±1°C
Average heating rate	3°C/min
Average cooling rate	0.5°C/min

Parameter	Specification
Load condition for stated test performance	Load not exceeding 35 kg/m ³ based on steel heat capacity; no active damp or heat load during damp-heat testing
Insulation exterior material	High-quality matte stainless steel plate
Insulation interior material	High-quality mirror stainless steel plate
Door-seal temperature range and service life	-100°C to +300°C; service life 10 years
Chamber insulation material	Glass fiber (as specified in the reference material)
Air circulation fan	Multi-wing centrifugal circulation fan with aluminum-alloy rotating blades for high- and low-temperature operation
Airflow method	FLOW THROW; horizontal diffusion and vertical heat-exchange arc circulation
Observation window	One transparent electrically heated hollow tempered-glass window located on the door
Cable ports	Five ports, $\phi 45$ mm, located on the left side of the chamber
Interior lighting	High-efficiency, long-life energy-saving lamp
Casters	Four mobile casters
Sample rack	Stainless steel sample-tray rack, five levels, five pairs of guide rails
Rack distributed load	10 kg per level
Maximum total sample load	80 kg maximum accumulated load inside the chamber
Door configuration	Single-opening hinged door; right-side hinge when facing the chamber; includes observation window and lighting
Control panel	Controller display, power switch, and status indicator lights
Mechanical compartment	Refrigeration unit and drain hole; condenser fan and condenser air inlet
Electrical control cabinet	Integrated circuit board, air circuit breaker, and push-button switch
Heater type	Nickel-chromium alloy resistance heating tube
Heater control	Non-contact periodic pulse-width modulation using SSR solid-state relay
Heater power	1.4 kW
Power cable and drain-hole location	Lower rear side of the chamber
Refrigeration operating mode	Single-stage compression
Refrigeration compressor	Fully enclosed, low-noise rotary compressor
Evaporator	Finned-tube heat exchanger, also used as dehumidifier
Condenser	Air-cooled finned-tube heat exchanger
Expansion device	Expansion valve plus capillary tube
Plate heat exchanger	Stainless steel brazed plate heat exchanger
Refrigeration control	The control system automatically adjusts compressor operation for an optimal energy-saving condition according to test conditions
Evaporator cooling control	Control system drives solenoid-valve switching
Compressor return-gas cooling	Return-gas cooling circuit provided
Refrigerant	R134a; ozone depletion potential is 0. R23 is used for cascade refrigeration systems as specified in the reference material
Controller manufacturer and type	Shanghai Jiutu controller
Display	JTSH200, 5-inch display
Operating modes	Program mode and constant-value mode
Setting interface	JTSH200 Chinese menu, freely selectable, with button-screen input
Program capacity	JTSH200; maximum 1 program, maximum 1 segment, unlimited cycles
Setting range	Temperature adjusted according to the equipment temperature operating range
Resolution	Temperature: 0.1°C; time: 1 min; humidity: 0.1% RH for temperature-and-humidity test equipment
Temperature input and measurement	PT100 platinum resistance thermometer

Parameter	Specification
Temperature control method	Anti-integral-saturation PID; BTC balanced temperature control + DCC intelligent cooling-capacity control + DEC intelligent electrical control for temperature test equipment
Additional control functions	Fault alarm with cause and handling prompts; power-failure protection; upper- and lower-limit temperature protection
Applicable low-temperature method	GB/T2423.1-2008, IEC60068-2-1:2007, low-temperature test method Ab
Applicable high-temperature method	GB/T2423.2-2008, IEC60068-2-2:2007, high-temperature test method Bb
Additional low-temperature method	GJB150.4-1986 low-temperature test
Additional high-temperature method	GJB150.3-1986 high-temperature test
Constant damp-heat method	GB/T2423.3-2006, IEC60068-2-78:2007, constant damp-heat test method Cab
Alternating damp-heat method	GB/T2423.4-2008, IEC60068-2-30:2005, alternating damp-heat test method Db
Additional damp-heat method	GJB150.9-1986 damp-heat test, Figure 1 and Figure 2
Listed temperature-change and environmental references	GB/T2423.1-2008 low-temperature chamber test method; GB/T2423.22-2002 temperature-change test method; GB/T2423.2-2008 high-temperature chamber test method; IEC60068-2-2.1974 high-temperature chamber test method; IEC60068-2-1.1990 low-temperature chamber test method
Refrigeration safety protection	Compressor overheat, compressor overcurrent, compressor overpressure, and condenser-fan overheat protection
Chamber safety protection	Adjustable overtemperature protection, air-circulation-channel limit overtemperature protection, and fan-motor overheat protection
Electrical safety protection	Total power phase-sequence and phase-loss protection for three-phase power; overload and short-circuit protection
Power cable configuration	220 V, 2 kW
Main power switch	CHINT residual-current protection
Transportation configuration	Integrated test chamber transported as a complete unit
Installation site requirements	Level floor, good ventilation, no strong vibration, no strong electromagnetic field, no flammable, explosive, corrosive materials or dust, and adequate operating and maintenance clearance
Environmental operating conditions	Temperature: 5°C to 40°C; relative humidity: ≤85%; atmospheric pressure: 86 kPa to 106 kPa
Prohibited specimens	Corrosive substances; specimens with strong electromagnetic emissions; radioactive substances; highly toxic substances; and specimens that may explode or volatilize during testing or storage