Thermal Abuse Test Chamber For Lithium Battery Safety Testing

Item Number: DA05

Introduction

Thermal abuse test chamber for lithium battery safety testing with 150°C operation, precise PID control, forced airflow, smoke exhaust, and reinforced construction for dependable cell evaluation in laboratories and production quality programs supporting repeatable compliance focused safety assessments.

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Application	Description	Key Benefit
3C Single-Cell Safety Testing	Heat individual 3C battery cells below 10 Ah under defined temperature ramp and holding conditions.	Supports repeatable assessment of thermal response, including the required no-fire and no-explosion acceptance criteria.
3C Battery Pack Evaluation	Conduct controlled heating tests on compact 3C battery packs below 10 Ah.	Provides a contained and observable environment for pack-level safety screening.
Lithium Battery Certification Preparation	Reproduce heating conditions associated with UL 1642 and UL 2054 procedures, including heating to 150°C and holding for 10 minutes.	Helps engineering and quality teams prepare samples and verify performance before formal certification work.
Portable Device Battery Testing	Apply the IEC 62133-2012 heating profile to fully charged cells, including a 5°C/min ±2°C/min rise to 130°C ±2°C and a 10-minute hold.	Delivers controlled temperature exposure for portable-equipment battery safety assessments.
Traction and Industrial Cell Research	Support thermal safety investigations aligned with IEC 62660 and IEC 62619 requirements.	Offers programmable control, data-visible operation, and forced airflow for structured research workflows.
Battery Research and Development	Compare cell designs, materials, protection strategies, and manufacturing changes under consistent elevated-temperature conditions.	Improves test-to-test comparability and helps identify thermal risks earlier in development.
Quality Assurance and Failure Analysis	Examine abnormal samples or production-lot variations using controlled heating and smoke exhaust.	Provides a robust test platform for documenting behavior and supporting corrective-action decisions.

Parameter	Specification
Product Item Number	DA05
Primary Use	Furnace thermal testing and heating tests for battery safety performance evaluation
Applicable Samples	3C single cells or 3C battery packs below 10 Ah
Applicable Standards	UL 1642; UL 2054; IEC 62133-2012; IEC 62660; IEC 62619
Internal Chamber Dimensions	W600 mm × D500 mm × H780 mm
External Dimensions	W940 × D1250 × H1620 mm; final design dimensions apply
Test Area	One independent test area
Controller Position	Located above the machine
Controller Interface	PLC touchscreen control system
Inner Chamber Material	SUS304 mirror-finish stainless steel
Inner Chamber Construction	Clean, smooth, corrosion-resistant interior; low-pollution internal materials; seamless argon-arc welding

Parameter	Specification
Outer Cabinet Material	SECC steel sheet with fine powder coating
Base Structure	Welded 45# channel steel, 6 mm thickness
Door Construction	Reinforced front door with external left hinge and strong right-side locking mechanism
Door Lock Reinforcement	5 mm steel plate reinforcement; one-way load capacity ≥20 kN
Door Seal	Double-layer silicone rubber seal; high-temperature resistant and aging resistant; service life ≥10 years
Insulation Layer	100 mm thickness throughout the chamber body
Insulation Material	Fire-resistant, high-strength PU foamed insulation material
Insulation Coefficient	<0.0212 kcal/m·hr
Circulation System	Forced horizontal air circulation
Circulation Motor	Stainless-steel extended-shaft motor with special moisture-resistant and heat-dissipation design
Fan Blade	High- and low-temperature-resistant aluminum multi-wing fan blade
Airflow Direction	Horizontal airflow
Temperature Range	RT+10 to +150°C, freely adjustable
Temperature Accuracy	±0.5°C
Temperature Deviation	±2.0°C, empty chamber
Heating Rate	5°C ±2°C/min from RT+10 to 150°C; linear setting available
Temperature Control	PID microcomputer automatic calculation; PV/SV displayed simultaneously; PID parameters adjustable; automatic system calculation available
Heating System	PID + S.S.R
Current Controller	SSR contactless relay for high current stability
Heating Element	Stainless-steel finned nickel-chromium alloy electric heating tube
Temperature Sensor	High-precision T-type temperature sensor
Timer Setting	99H59M59S maximum setting
Timer Function	Power disconnect and alarm indication when the set temperature hold time is reached
Cooling Method	Natural cooling
Over-Temperature Protection	Automatic over-temperature protection
Overload Protection	Automatic power interruption under overload conditions
Observation Window	Internal observation window for viewing test samples during operation
Smoke Exhaust System	Top-mounted blower for exhausting smoke from the test area
Exhaust Pipe	Rear outlet, φ100 mm diameter
Casters	Four bottom casters for movement and fixation
Power Supply	AC 220 V, 50 Hz, single phase
Rated Power	5.0 kW
Approximate Weight	Approximately 250 kg