

Automatic Large Antechamber Door Super Purification Glove Box With Iot System

Item Number: ST18



Introduction

Engineered for advanced battery research and materials processing, this super purification glove box features an automated large antechamber door and intelligent IoT monitoring, maintaining ultra-pure inert environments below one part per million moisture and oxygen for high-precision laboratory workflows.

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Application	Description	Key Benefit
Solid-State Battery Assembly	Handling reactive metallic lithium anodes, solid electrolytes (sulfides/oxides), and moisture-sensitive pouch cell stackings.	Prevents passivation and side reactions by maintaining <1 ppm moisture and oxygen during cell assembly.
Perovskite Photovoltaic Research	Spin-coating, thermal evaporation, and encapsulation of halide perovskite precursors and active layers.	Eliminates rapid environmental degradation, ensuring maximum power conversion efficiency and film reproducibility.
Air-Sensitive Organometallic Chemistry	Manipulation, storage, and catalysis of pyrophoric ligands, Grignard reagents, and low-valent transition metal complexes.	Eliminates flammable hazard risks while preventing premature catalyst poisoning and compound degradation.
OLED & Microelectronics Encapsulation	Deposition and packaging of organic semiconductor materials, conductive inks, and hygroscopic transport layers.	Extends device operational lifespan by guaranteeing an ultra-pure, moisture-free sealing environment.
3D Printing Powder Processing	Handling, sieving, and recovery of reactive spherical titanium, aluminum, and nickel superalloy powders.	Prevents powder oxidation, batch contamination, and dangerous dust ignition during powder handling.
Supercapacitor & Energy Storage R&D	Synthesis of high-surface-area porous carbon matrices and moisture-sensitive non-aqueous electrolytes.	Guarantees exact electrochemical window stability without trace water contamination causing parasitic gas evolution.

Subsystem / Assembly	Parameter	Specification (ST18)
Model Configuration	Base Identification	ST18
Chamber Body	Internal Dimensions (L × D × H)	1200 mm × 750 mm × 900 mm
	Structural Material	304 Stainless Steel, 3.0 mm Thickness
	Internal Surface Treatment	Oil-film brushed hygienic finish
	External Surface Treatment	Mirror-polished finish
	Viewing Window	Slanted 8.0 mm tempered safety glass
	Glove Ports	POM / Aluminum Alloy with O-ring hermetic seal
	Gloves	Butyl rubber, 0.4 mm thickness, 7" or 8" port diameter
	Internal Shelving	2-tier height-adjustable stainless steel shelf
	Chamber Illumination	Internal hood-mounted LED lighting system
	Utility Feedthroughs	Standard DN40KF blank ports + 1 × 220V internal power interface
	Particulate Filtration	Dual 0.3 μm gas inlet and outlet HEPA-grade filters

Subsystem / Assembly	Parameter	Specification (ST18)
Purification Unit	Purification Column Configuration	Single-column regenerative purifier
	Target Gas Removal Purity	H2O < 1 ppm, O2 < 1 ppm
	Purification Reactants	5 kg Copper Catalyst + 5 kg Molecular Sieve
	Chemical Adsorption Capacity	Deoxygenation: 60 L O2; Dehydration: 2.0 kg H2O
	Compatible Working Gases	Nitrogen (N2), Argon (Ar), Helium (He)
	Circulation Blower Flow Rate	90 m³/h integrated blower (Optional: 145 m³/h, 180 m³/h)
	Regeneration Cycle Control	Fully automated PLC sequence
	Regeneration Gas Requirement	Working gas blended with 5% to 10% Hydrogen (H2)
	Main Angle Valves	DN40KF electro-pneumatic angle valves
Main Large Antechamber	Process Control Valves	Integrated solenoid manifold assembly
	Chamber Dimensions	Diameter 360 mm × Length 600 mm (Optional: Diameter 400 mm)
	Material & Finish	304 Stainless Steel (Internal brushed, external mirror polish)
	Door Construction	10 mm anodized aluminum vertical-lift automated door mechanism
	Material Handling	Stainless steel sliding material tray
	Operational Control	Automatic PLC-managed evacuation and refill cycle
Secondary Mini Antechamber	Pressure Display	Integrated analog differential pressure gauge
	Chamber Dimensions	Diameter 150 mm × Length 300 mm (Optional: Diameter 100 mm)
	Material & Finish	304 Stainless Steel (Internal brushed, external mirror polish)
	Door Operation	Dual manual hinged doors with tight-seal clamping
Control & IoT System	Pressure Display	Integrated analog vacuum gauge
	Central Controller	Siemens PLC with high-resolution touchscreen HMI
	Pressure Regulation Range	User-configurable within ±15 mbar
	Overpressure Protection	Automatic active protection triggered at ±16 mbar
	Hands-Free Control	Bi-directional foot pedal for chamber pressure adjustment
	IoT Network Functions	Mobile remote control, multi-device management, real-time data sync
Analytical Sensors & Pump	Data & Diagnostics	Automated data report logging, historical query, remote diagnostic repair
	System Redundancy	Auto-diagnostic self-checks with power-failure auto-restart
	Oxygen Sensor Measurement Range	0 to 1000 ppm
	Dew Point / Moisture Sensor Range	0 to 500 ppm
	Vacuum Pump Specifications	Rotary vane pump (8 m³/h, 12 m³/h, or 16 m³/h options)
	Pump Protection Features	Integrated exhaust oil-mist filter and gas ballast control