

Dual Purification Series Laboratory Vacuum Glove Box System

Item Number: ST12



Introduction

Engineered for continuous inert atmosphere research and mass production, this dual purification laboratory vacuum glove box maintains moisture and oxygen levels below 1 ppm with intelligent PLC control, automated regeneration, and modular industrial grade stainless steel construction.

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Application	Description	Key Benefit
Lithium & Solid-State Battery Assembly	Processing lithium metal foils, sulfide/oxide solid electrolytes, and moisture-sensitive pouch cell chemistries.	Prevents electrolyte degradation and lithium passivation by maintaining ultra-dry H2O < 1 ppm and O2 < 1 ppm conditions.
Organometallic & Air-Sensitive Synthesis	Handling pyrophoric reagents, Grignard compounds, transition metal catalysts, and moisture-reactive precursors.	Eliminates oxidation risks and hazardous atmospheric exposure during multi-step chemical reactions and transfers.
Perovskite Solar Cell Fabrication	Spin-coating, thermal annealing, and encapsulation of halide perovskite absorber layers.	Ensures uniform crystallization and prevents rapid degradation caused by ambient relative humidity.
Advanced Powder Metallurgy & 3D Printing	Sifting, handling, and blending reactive titanium, aluminum, or spherical alloy powders.	Prevents surface oxidation and explosive hazards during powder handling and laser sintering preparation.
Specialty Welding & Laser Processing	Inert gas sealing, micro-welding, and hermetic encapsulation of electronic and aerospace components under pure argon.	Delivers pristine, void-free weld joints without oxide inclusions or atmospheric contamination.
Semiconductor & Optoelectronic Packaging	Precision assembly, wire bonding, and sealing of moisture-sensitive microelectronics and OLED displays.	Maximizes device operational lifespans by mitigating moisture ingress and interfacial degradation.

Subsystem	Parameter	Specification (ST12 Series)
Model Identification	Standard Series Identifier	ST12
Atmospheric Purity	Moisture Concentration (H2O)	< 1 ppm
	Oxygen Concentration (O2)	< 1 ppm
Main Enclosure	Box Material	304 Stainless Steel (Thickness: 3 mm)
	Exterior Surface Finish	304 Stainless Steel
	Interior Surface Finish	Oil-film brushed surface
	Modular Length Options	1500 mm, 1800 mm, 2440 mm, 3660 mm, 4880 mm, 7320 mm
	Chamber Depth Options	750 mm, 1000 mm, 1200 mm
	Chamber Height	900 mm
	Viewing Window	Tilted transparent tempered safety glass, 8 mm thickness
	Glove Port Material	POM or Aluminum Alloy with O-ring seal
	Gloves	Butyl rubber, 0.4 mm thickness, 7" or 8" diameter
	Shelving Unit	304 Stainless steel, 2-tier built-in, height adjustable
	Internal Lighting	Integrated LED lighting enclosed within protective fixture

Subsystem	Parameter	Specification (ST12 Series)
Purification Unit	Feedthrough Ports	Standard DN40KF blank flanges, auxiliary ports, 1x 220V power interface
	Dust Filtration	Dual 0.3 µm particulate filters (1x gas inlet, 1x gas outlet)
	Purification Column Configuration	Dual-column (continuous non-stop purification and alternating regeneration)
	Column Vessel Construction	304 Stainless Steel
	Purification Media per System	5 kg Copper Catalyst (O2 removal), 5 kg Molecular Sieve (H2O removal)
	Total Purification Capacity	Oxygen removal: 60 L, Water absorption: 2 kg
	Compatible Working Gases	Nitrogen (N2), Argon (Ar), Helium (He)
	Circulation Blower Flow Rate	Standard: 90 m3/h (Optional: 145 m3/h, 180 m3/h)
	Regeneration Mode	Fully automatic PLC-controlled heating and purge sequence
	Regeneration Gas Requirement	Working gas blended with 5% to 10% Hydrogen (H2)
Large Antechamber	Main Angle Valves	DN40KF electro-pneumatic angle valves
	Directional Control Valves	Integrated solenoid manifold valves
	Chamber Dimensions	Diameter: 360 mm, Length: 600 mm (Optional Diameter: 400 mm)
	Chamber Material & Finish	304 Stainless steel; brushed interior, painted or mirror exterior
	Antechamber Door	Vertical lifting mechanism, 10 mm anodized aluminum dual doors
	Internal Tray	Smooth-sliding 304 stainless steel loading tray
Small Antechamber	Pressure Indication	Analog dial pressure gauge
	Evacuation & Refill Control	Automatic PLC control
	Chamber Dimensions	Diameter: 150 mm, Length: 300 mm (Optional Diameter: 100 mm)
	Chamber Material & Finish	304 Stainless steel; brushed interior, painted or mirror exterior
	Antechamber Door	Dual manual swinging doors with positive latching
	Pressure Indication	Analog dial pressure gauge
Control & Instrumentation	Evacuation & Refill Control	Manual valve control
	System Controller	Siemens PLC with high-resolution color touchscreen
	Operating Functions	Self-diagnostics, auto-restart on power loss, password security, auto-cycling
	Pressure Regulation Range	User-configurable within +/- 10 mbar; auto-cutoff protection at +/- 12 mbar
	Foot Switch	Standard dual-action pedal for manual pressure adjustment
	Data Management	Automated system parameter logging and historical trend recording
	Oxygen Analyzer	Electrochemical sensor, measurement range: 0 to 1000 ppm
	Moisture Analyzer	Dew point transmitter, measurement range: 0 to 500 ppm
	Vacuum Pump Options	Rotary vane pump with oil mist filter and gas ballast: 8 m3/h, 12 m3/h, 16 m3/h
	IoT Connectivity (Optional)	Mobile app control, cloud reporting, remote debugging, proactive alerts