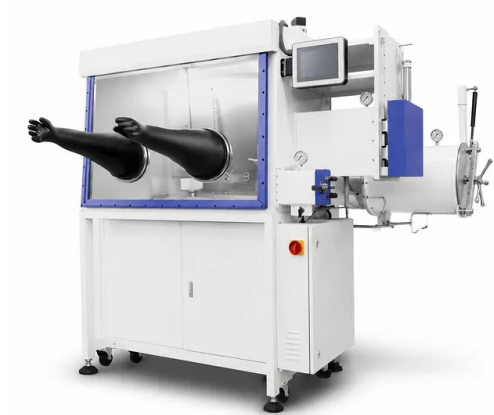


Single Station Touchscreen Glovebox Inert Atmosphere Purification System

Item Number: ST14



Introduction

This single station touchscreen glovebox delivers ultra pure inert atmosphere conditions below one ppm moisture and oxygen. Engineered with integrated hydrogen sulfide removal automated regeneration and precision PLC control for advanced solid state battery and chemical synthesis research workflows.

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Application	Description	Key Benefit
Solid-State Battery Assembly	Enclosing sulfide- and halide-based solid electrolyte synthesis, pellet pressing, and solid-state cell stacking.	Prevents moisture-triggered hydrolysis and toxic gas release while maintaining high ionic conductivity in assembled cells.
Sulfide Electrolyte Synthesis	Formulating, milling, and annealing volatile sulfide precursor materials (\$Li_2S\$, \$P_{2S_5}\$) with inline H ₂ S absorption.	Traps corrosive sulfurous volatiles to protect internal hardware, catalyst beds, and laboratory operators.
Lithium & Sodium Metal Processing	Handling, cutting, laminating, and encapsulating highly reactive alkali metal anodes and thin foils.	Eliminates oxidation and passivation layers, ensuring uniform interfacial contact and prolonged cycle life.
Organometallic & Catalyst Chemistry	Synthesizing air-sensitive coordination compounds, Grignard reagents, and radical polymerization catalysts.	Delivers a consistent sub-ppm inert environment that eliminates moisture-induced catalyst degradation.
Perovskite & Optoelectronic R&D	Spin-coating, thermal annealing, and packaging organic-inorganic hybrid perovskite precursor films.	Protects moisture-labile halides from degradation, ensuring high film uniformity and reproducible device efficiency.
Hazardous Powder Containment	Controlled dispensing, weighing, and mechanical transfer of reactive, toxic, or hygroscopic nanomaterials.	Interlocked dual antechambers and sealed HEPA filtration prevent environmental release and external contamination.

System Component	Parameter / Specification	Engineering Detail (Item Number: ST14)
Model Identifier	Model Item Number	ST14
Workstation Geometry	Workstation Configuration	Single station, single-sided operation (2 glove ports)
	Internal Dimensions (\$L \times D \times H\$)	\$1220\text{ mm} \times 750\text{ mm} \times 900\text{ mm}\$
	Enclosure Material	304 Stainless Steel, 3.0 mm wall thickness, acid-resistant
	Surface Treatment	Internal: Brushed stainless finish; External: Powder-coated white
Atmosphere Performance	Working Gas Compatibility	High-purity Nitrogen (\$N_2\$), Argon (\$Ar\$), or Helium (\$He\$)
	Baseline Gas Purity	\$H_{2O} < 1\text{ ppm}\$, \$O_2 < 1\text{ ppm}\$ (at \$20^\circ\text{C}\$, 1 atm, 99.999% inert supply)
	Leakage Rate	\$\le 0.05\text{ vol}\%/\text{h}\$
	Operating Pressure Range	User-configurable within \$\pm 15\text{ mbar}\$; auto-safety trip at \$\pm 16\text{ mbar}\$
Front Window & Optics	Pressure Adjustment	Automated PLC control via solenoid manifold and auxiliary foot pedal
	Window Construction	Inclined ergonomic design, 8.0 mm tempered safety glass
	Window Sealing Mechanism	Solid continuous O-ring flange structure (vacuum-rated hermetic seal)

System Component	Parameter / Specification	Engineering Detail (Item Number: ST14)
	Glove Ports	High-strength aluminum alloy, dual O-ring seal, 8-inch diameter
	Gloves	Heavy-duty Butyl rubber, 8-inch (203 mm) cuff diameter, 32-inch (812 mm) length
	Illumination	High-efficiency external LED lighting fixture mounted above front viewing pane
Gas Purification Unit	Column Design	Single-column 304 stainless steel regenerative containment vessel
	Purification Charge	5.0 kg High-Activity Copper Catalyst; 5.0 kg Molecular Sieve
	Removal Capacity	Oxygen capacity: 60 L; Moisture capacity: 2.0 kg
	Gas Circulation Blower	Integrated high-flow blower, $90\text{ m}^3/\text{h}$ throughput with Variable Frequency Drive (VFD)
	Regeneration Cycle	Fully automated PLC sequence using N_2/H_2 or Ar/H_2 (5–10% H_2) forming gas
	Valve Architecture	DN40 KF electro-pneumatic main angle valve; 6-valve integrated stainless manifold block
Antechamber Systems	Large Antechamber Dimensions	Cylindrical, $\text{Diameter } 360\text{ mm} \times \text{Length } 600\text{ mm}$ (Right-hand mount)
	Large Chamber Construction	304 Stainless steel body; interior brushed finish, exterior powder-coated white
	Large Chamber Doors & Tray	Dual 10 mm anodized aluminum doors with vertical-lift mechanism; 304 SS sliding tray
	Small Antechamber Dimensions	Cylindrical, $\text{Diameter } 150\text{ mm} \times \text{Length } 300\text{ mm}$ (enters box 100 mm)
	Small Chamber Construction	304 Stainless steel with dual clamp-action compression doors; 304 SS sliding tray
	Antechamber Evacuation/Refill	Automated touchscreen solenoid valve control with digital vacuum/pressure readouts
Specialized Scrubber Units	Hydrogen Sulfide (H_2S) Trap	Dimensions: $\varnothing 238\text{ mm} \times 407\text{ mm}$; 3.0 mm 304 SS shell with active adsorbent
	H_2S Circuit Integration	Direct inline connection to main recirculation loop; includes vacuum-purge capability
	Hydrofluoric Acid (HF) Trap	Dedicated inline chemical neutralization trap for fluoride-containing electrolytes
Analytical Sensors	Moisture Analyzer (H_2O)	Range: $0\text{--}500\text{ ppm}$; Resolution: 0.1 ppm ; Regenerable/cleanable P_{20_5} sensor
	Oxygen Analyzer (O_2)	Range: $0\text{--}1000\text{ ppm}$; Resolution: 0.1 ppm ; High-selectivity electrochemical cell
Vacuum System	Rotary Vacuum Pump	Heavy-duty oil-sealed rotary vane pump, $12\text{ m}^3/\text{h}$ displacement rate
	Ultimate Vacuum Rating	$2 \times 10^{-1}\text{ Pa}$ ($2 \times 10^{-3}\text{ mbar}$)
	Vacuum Control Integration	Automated PLC pump demand control and manual override mode
Fittings & Internal Utility	Gas Filtration	Dual $0.3\text{ }\mu\text{m}$ HEPA particulate filters (1 gas inlet / 1 gas outlet)
	Spare Utility Interfaces	4 blind feedthrough flanges (DN40 KF) on side/rear panels
	Internal Electrical Feedthrough	1 integrated 220V power supply interface
	Storage Shelving	Integrated 3-tier adjustable stainless steel shelving system
	Base Structure	Rigid structural steel support stand equipped with heavy-duty leveling casters