

Dual Station Face To Face Operation Glove Box Inert Gas Purification System

Item Number: ST05



Introduction

Engineered for demanding research and pilot manufacturing this dual station face to face operation glove box delivers an ultra pure inert gas environment with moisture and oxygen levels below 1 ppm for advanced battery assembly and sensitive chemical workflows

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Application	Description	Key Benefit
Lithium & Solid-State Battery R&D	Assembly of coin, pouch, and cylindrical cells using reactive lithium metal, sulfide electrolytes, and moisture-sensitive cathode active materials.	Eliminates electrolyte degradation and moisture-induced lithium oxidation, ensuring repeatable electrochemical cycling data.
Organometallic & Catalysis Synthesis	Synthesis and handling of pyrophoric catalysts, Grignard reagents, metal hydrides, and moisture-labile precursors.	Guarantees sub-1 ppm ambient safety, preventing explosive decomposition and batch contamination.
Perovskite & Photovoltaic Fabrication	Spin-coating, thermal annealing, and encapsulation of halide perovskite thin-films and flexible optoelectronic devices.	Shields moisture-vulnerable perovskite precursor solutions from ambient humidity to maximize power conversion efficiency.
Supercapacitor & Energy Storage Assembly	Filling of organic electrolytes and vacuum sealing of advanced carbon/graphene supercapacitor electrodes.	Maintains low volatile organic solvent contamination while keeping residual moisture levels near zero.
Specialized Semiconductor & OLED Packaging	Handling of organic light-emitting polymers, quantum dots, and microelectronic passivation layers.	Low-particulate gas delivery and stable ultra-pure atmosphere prevent pinhole defects and premature device degradation.
Nuclear & Hazardous Materials Processing	Containment and manipulation of toxic or radioisotope powders requiring strict atmosphere isolation and zero external leakage.	Hermetic 3 mm 304 stainless steel construction with an ultra-low 0.05 vol%/h leak rate ensures total operator safety.

System Category	Parameter / Feature	Specification (Model: ST05)
Core Performance	Moisture Purity Level	< 1 ppm (Standard condition: 20°C, 1 atm, 99.999% inert gas)
	Oxygen Purity Level	< 1 ppm (Standard condition: 20°C, 1 atm, 99.999% inert gas)
	Leak Rate	≤ 0.05 vol%/h
	Working Gases	Nitrogen (N ₂), Argon (Ar), Helium (He)
Main Chamber	Internal Dimensions (L x D x H)	1220 mm x 750 mm x 900 mm
	Chamber Material	304 Stainless Steel (Acid-resistant), 3.0 mm thickness
	Surface Finish	Interior: Brushed stainless steel; Exterior: Powder-coated white
	Front Window	Sloped 8 mm tempered safety glass with protective film, removable
	Glove Ports	Solid aluminum rings with dual O-ring compression seals
	Gloves	Ansell Butyl rubber, 0.4 mm thickness, 8" port diameter, 32" length
	Filtration	0.3 µm particulate filters on gas inlet and gas outlet
	Shelving & Lighting	Multi-tier adjustable 304 stainless steel shelf; LED lighting strip
	Feedthrough Ports	3x DN 40 KF blind flange spare ports; 1x internal 220V power socket (1.2 kW)

System Category	Parameter / Feature	Specification (Model: ST05)
Large Antechamber	Dimensions & Location	Diameter 360 mm, Length 600 mm (Right-side mounted)
	Material & Finish	304 Stainless Steel; Polished interior, powder-coated white exterior
	Door Mechanism	Dual 10 mm anodized aluminum doors, vertical sliding lift mechanism
	Tray & Gauge	304 Stainless steel sliding tray; Analog pressure gauge
	Actuation & Control	Touchscreen-controlled electro-pneumatic solenoid valve operation
Small Antechamber	Dimensions & Location	Diameter 150 mm, Length 300 mm (100 mm chamber intrusion, Right-side)
	Material & Finish	304 Stainless Steel; Brushed interior, powder-coated white exterior
	Door Mechanism	Dual latch-clamp style doors with sliding tray; Analog pressure gauge
	Actuation & Control	Manual 3-way ball valve actuation
Purification System	Column Configuration	Single-column hermetic purification unit (304 Stainless Steel container)
	Catalyst Capacity	5 kg BASF Copper Catalyst (O ₂ capacity: 60 L)
	Adsorbent Capacity	5 kg UOP Molecular Sieve (H ₂ O capacity: 2 kg)
	Regeneration Mode	Fully automated PLC-controlled thermal cycle using working gas + H ₂ (5-10%)
	Circulation Blower	High-efficiency blower, 90 m ³ /h throughput (Dargang)
Vacuum System	Vacuum Pump Type	Rotary vane pump with integrated oil mist filter and gas ballast (Edwards)
	Pumping Speed & Vacuum	8 m ³ /h displacement rate; Ultimate vacuum ≤ 2x10 ⁻¹ Pa
	Valves & Piping	DN 40 KF electro-pneumatic angle main valve; Burket solenoid valves; Legris fittings
Control & Instrumentation	PLC & Interface	Siemens PLC controller with color touch screen graphic interface
	Pressure Regulation	Automatic box pressure control (±10 mbar setpoint); Safety cut-off at ±12 mbar
	Auxiliary Pressure Control	Foot pedal switch for hands-free chamber pressure adjustment
	Moisture Analyzer	VTI P205 sensor (0-500 ppm), cleanable and regenerable platinum electrode
	Oxygen Analyzer	VTI Zirconia (ZrO ₂) sensor (0-1000 ppm), non-depleting solid electrolyte
Specialized Traps	Solvent Adsorber Unit	Ø237 mm x 407 mm (304 SS), 9 kg activated carbon, manual bypass valves
	HF Acid Removal Unit	Ø237 mm x 407 mm (304 SS), 9 kg active alumina balls, manual bypass valves
Physical & Mobility	Support Stand	Heavy-duty structural steel frame with leveling feet and locking casters