



Specification Sheet

Glovebox **Pro Upgrade** for Super (1220/750/900) featuring Rectangular Antechambers and **Dual Automated Large Antechamber Doors**

This single workstation system features an integrated gas purification system (Single Purifier-MK100), a PLC controller with touchscreen HMI, an electronics enclosure, large and small antechambers, replaceable flange window, and a vacuum pump. Attainable purity of this system is H₂O < 1 ppm, O₂ < 1 ppm.

1. Function Highlights

Dual Automated Antechamber Doors - The large antechamber dual doors are PLC-automated, equipped with an interlock system to prevent errors and maintain the glovebox atmosphere. This ensures quick and easy operation, particularly for the inner door, eliminating the need to access the glovebox interior.

Closed Loop Gas Circulation – Inert gas is maintained in a closed loop and continuously circulated through the blower and purifier. This allows for the continuous removal of H₂O and O₂, maintaining levels of less than 1 ppm for both.

Auto Purging –The glovebox atmosphere is automatically replaced with inert gas from the gas tank by activating the purge valves.

Automatic Regeneration – The purifier material for absorbing moisture and oxygen can be periodically regenerated to restore its adsorption capacity, with the entire process controlled by a PLC.

Pressure Control in the Glovebox – The glovebox pressure is automatically regulated by a PLC within the set range of +15 mbar to -15 mbar

ECO Mode - The vacuum pump transitions to standby mode after a period of inactivity and reactivates automatically as required.

The blower frequency modulates to 15Hz when both moisture and oxygen drop below 1 ppm.



2. Specifications

Main Chamber

- 1 – Main Chamber made of 3mm thick. 304 stainless steel, acid resistant
1220mm (48") wide x 750mm (30") deep x 900mm (35.4") high
Stand 900mm (35.4") high
- 1 - Sight glass with 2 glove-ports (each)
- 2 – Glove-ports – Aluminum Alloy 220mm (8.7") diameter
Double O-ring sealed on each glove
- 2 - Gloves – Butyl – 8" cuff diameter - .015" Thick – 32" Length
- 2 - Dust Filters – HEPA 0.3 μm – 1 gas inlet and 1 gas outlet filter
- 3 - Shelves: Stainless Steel, adjustable
- 1 - External LED Lights Set
- 4 – KF 40 flange back up ports: used for adding feedthroughs
- 4 - Rollers for Stand
- 1 - Foot Switch

Large Antechamber (**Rectangular**)

- 500mm (19.7") long, 254mm (10.0") deep, 262mm (10.3") High
- 304 Stainless Steel
- **Dual Automated Antechamber Doors**
- Interlock system prevents maloperation

Small Antechamber (**Rectangular**)

- 300mm (11.8") long, 120mm (4.7") deep, 150mm (5.9") High
- 304 Stainless Steel
- Hinge Door
- Manual Operation via Hand Valve

Gas Purification

- H₂O and O₂ removal
- 304 Stainless Steel canister
- Purifier: 5kg Copper Catalyst, 5kg Molecular Sieve
- Capacity: 60L for O₂ removal, 2000g for moisture removal
- Purity: H₂O < 1ppm; O₂ < 1ppm
- Encapsulated blower – 90 m³/h with frequency converter
- Regeneration – PLC controls all processes, including heating, filling mixed gas (working gas/5-10% H₂), evacuation, and pressure balancing.

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System Control

- SIEMENS PLC (Programmable Logic Controller)
- Features: Automatic control of circulation, purging, regeneration, and pressure adjustment; self-diagnosis, power failure restart, password protection
- Siemens 7-inch color touch screen displaying status, pressure, moisture, oxygen levels, and system records
- Pressure adjustable via foot pedals or PLC, range +/- 15 mbar
- Stainless steel valve seat with minimal connectors to reduce leakage
- 304 Stainless Steel piping and fittings for high corrosion resistance

Vacuum Pump

- EDWARDS RV12 Rotary Vane Pump
- Capacity: 12/17 m³/h
- Dual-stage, ultimate vacuum 3×10^{-2} mbar
- Includes oil mist filter and gas ballast control

3. Accessories Included

Moisture Analyzer

- Measuring range: 0–500 ppm.
- P2O5 sensor: Corrosion-resistant, ideal for lithium battery and organometallic use; Renewable by acid-cleaning when contaminated by HF or other corrosive atmospheres.

Oxygen Analyzer

- Measuring range: 0–1000 ppm
- ZrO2 sensor: Durable, solid-state sensor with a long lifespan; can be exposed to air without degradation.

Power Cord Feedthrough (15 A)

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4. Available Options

Internet Remote Control and monitoring

- Remote monitoring and control via PC or smartphone
- Data encryption and backup
- Failure alarm with user notification
- Remote troubleshooting, debugging, and restoration

Internal Solvent Trap

- Installed inside the glovebox for solvent vapor absorption
- Absorbent: 1.25kg activated carbon

Regenerable External Solvent Trap

- Removes solvent vapors
- Absorbent: 9 kg molecular sieves
- PLC-controlled regeneration process including heating, rinsing, and evacuation
- Inline installation with purifier effectively removes harmful solvents from the glovebox atmosphere

Replaceable External Solvent Absorber

- Removes solvent vapors
- Absorbent: 9 kg activated carbon
- Automatic purging and evacuation
- Dual KF40 ports for easy absorbent unloading and refilling
- Inline installation with purification system for effective solvent removal from glovebox atmosphere

HF Absorber

- Removes hydrofluoric acid and solvent vapors
- Absorbent: 4.5 kg activated carbon mixed with 4.5 kg activated alumina
- Automatic purging and evacuation
- Dual KF40 ports for easy absorbent unloading and refilling
- Inline installation with purification system for effective solvent and HF removal from glovebox atmosphere

H₂S Absorber

- Removes H₂S Acid and solvent vapors
- Absorbent: 4,5 Kg Activated Carbon mixed with 4.5Kg Impregnated NaOH Activated Carbon
- Automatic purging and evacuation
- Dual KF40 ports for easy absorbent unloading and refilling
- Inline installation with purification system for effective solvent and HF removal from glovebox atmosphere

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Heated Antechamber

- Max. 150°C, 200°C, or 250°C
(Chiller is not needed for 150°C)
- PID temperature controller
- Insulation layer

Cold Well

- Stainless steel well built into the glovebox floor
- Size: Ø150mm, Depth 190mm (custom sizes available) with cover
- Equipped with DEWAR for liquid nitrogen filling
- Includes lift platform

Freezer

- Left-mounted, door opens inside
- Volume: 30 liters
- Minimum temperature: -35°C
- Ground-installed compressor
- Temperature controller prevents frequent starts; cooling rate managed by controller or time relay.

Ionizer without fan

- Removes localized static charges effectively
- 12" ionization range
- Pulse rate and ionic balance controls for precise calibration of Counter SPI
- Ensures optimal ion balance and output

Heat Exchanger

- Fan and radiator with heat-dissipating ducts
- Water inlets/outlets
- 1kW or 2kW chiller required

Air Conditioner

- Top-mounted on GB
- Cooling capacity: 1kW, 2kW, 3kW
- Temperature range: 23–35°C

Nitrogen Removal System

- Effectively remove nitrogen inside the glovebox
- Using argon as working gas.

Glove-port Cover

- For gloves replacement

Water Trap

- for regeneration water exhaust)

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Feedthroughs

- Power Cord feedthrough
- Gas/fluid feedthrough (optional manual valve available)
- BNC feedthrough
- USB feedthrough
- HDMI feedthrough
- Binding Posts feedthrough
- Power Junction Box
- VTI Custom Feedthrough (per customer request)

5. Other Options and custom designs

- UL certification
- Dry scroll pump
- Customized glovebox and antechamber sizes
- Integration of customer instruments (e.g., evaporator, ALD system, spin coater)
- Safety relief valve on glovebox
- Polycarbonate windows
- Quick-release windows
- Antechamber with interlocking door
- Small chamber with sliding tray
- Antechamber purging without vacuum
- Antechamber refilled from gas cylinder, not box
- Rectangular antechamber
- Pull-out shelves

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