



## Specification Sheet

### Glovebox Super (1220/750/900) for R&D, Prototyping in University and Commercial Laboratory

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 H<sub>2</sub>O < 1ppm, O<sub>2</sub> < 1ppm.

### 1. Function Highlights

**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 H<sub>2</sub>O and O<sub>2</sub>, maintaining levels of less than 1ppm 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  $\mu\text{m}$  – 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

- 360mm (14.2") Dia. – 600mm (23.6") Long (Right or left sided)
- 304 Stainless Steel
- Sliding Tray on Stainless drawer slides
- Spindle Lock Door with Vertical Operation
- Automatic operation via touchscreen
- (Optional) Upgradeable to a T-shaped antechamber for connecting two glovebox units

### Small Antechamber

- 150mm (5.9") Dia. – 300mm (11.8") Long (Right or left sided)
- 304 Stainless Steel
- Hinge Door
- Manual Operation via Hand Valve

### Gas Purification

- H<sub>2</sub>O and O<sub>2</sub> removal
- 304 Stainless Steel canister
- Purifier: 5kg Copper Catalyst, 5kg Molecular Sieve
- Capacity: 60L for O<sub>2</sub> removal, 2000g for moisture removal
- Purity: H<sub>2</sub>O < 1ppm; O<sub>2</sub> < 1ppm
- Encapsulated blower – 90 m<sup>3</sup>/h with frequency converter
- Regeneration – PLC controls all processes, including heating, filling mixed gas (working gas/5-10% H<sub>2</sub>), evacuation, and pressure balancing.



## 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 m<sup>3</sup>/h
- Dual-stage, ultimate vacuum  $3 \times 10^{-2}$  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

### H<sub>2</sub>S Absorber

- Removes H<sub>2</sub>S 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: -30°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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