

Specification Sheet

Upure2 (1220/750/900) Glovebox – Remote operation and diagnose

Upure2 Glovebox is the latest R&D model with Remote Operation and Monitoring (based on the Internet of Things concept) and an HMI-Controlled Automatic door system. Attainable purity of this system is H₂O < 1ppm, O₂ < 1ppm



1. Features

Remote Monitoring Scenarios - Users can remotely monitor the environment within their glove boxes and remotely view the history of the environment within their glove boxes. Users can remotely control multiple glove boxes from a central location. VTI service personnel can remotely diagnose and adjust your glove boxes.

Mode of Antechamber Door Control System - Manual (Step-by-step) Mode: Menu driven question and answer-style operation. Automatic Mode: One touch operation executes all processes with hints and safety prompts.

Closed Loop Gas Circulation – Inert gas in a closed loop. The gas is circulated by the blower and purifier, H₂O, O₂ can be removed continuously.

Auto Purging – The replacement of the atmosphere inside the glove box can be achieved automatically by the purging valves.

Automatic Regeneration – H₂O and O₂ removal material can be regenerated. The regeneration process can be program controlled.

Pressure Control in the Glove Box – The pressure in the glove box is controlled automatically by the Programmable Logic Controller (PLC). Working pressure can be set between +12mbar and -12mbar. If the pressure goes over +/- 15mbar, the system will be protected automatically.

Automatic Vacuum Pump Control – The vacuum pump will be activated automatically when necessary, and will turn off after a period of idle time.

ECO Mode - The vacuum pump will be activated automatically when necessary, and will turn off after a period of idle time. Blower frequency will be switched to 25Hz when moisture and oxygen level reaches to less than 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")
- 1 - Sight glass with 2 glove ports (each)
- 2 - Glove Ports – POM (Polyoxymethylene Plastic) 220mm (8.7") diameter – Double O-ring sealed on each glove
- 2 - Gloves – Butyl – 8" cuff diameter - .015" Thick – 32" Length
- 2 - Dust Filter – HEPA 0.3 μ m – 1 gas inlet and 1 gas outlet filter
- 2 - Shelving: Stainless Steel, adjustable
- 1 - External Fluorescent Lights
- 4 - Feedthroughs: One power feedthrough, Seven KF40 blind- flanges
- 4 - Roller for Stand
- 1 - Foot Switch

Large Antechamber

- 360mm (14.2") Diam. – 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

Small Antechamber

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

Gas Purification

- Removal of H₂O and O₂
- Gas Container – 304 Stainless Steel



- Absorber Unit: Copper Catalyst: 5Kg – Molecular Sieve: 5Kg
Capacity to remove oxygen, 60L. Capacity to remove moisture, 2000g
- Attainable Purity: H₂O - Less than 1ppm; O₂ - Less than 1ppm
- Capsulated Blower – 90 cubic meters/hour with frequency converter
- Regeneration – PLC controls all processes including heating, filling mixed gas (working gas / 5-10% H₂ mixture), etc.

System Control

- SIEMENS PLC (Programmable Logic Controller)
- Features include: Circulation Control, Purging Control, Regeneration Control, Pressure Control, as well as self-diagnosis, power failure re-start and password protection
- Siemens 7-inch color touch screen with operation interface, indication of status, box pressure, moisture and oxygen value and system records
- The pressure in the glove box can be controlled with either the foot pedals or the PLC. The pressure can be set between +/- 12mbar. If the pressure goes over +/- 15mbar the system will protect itself automatically
- Various solenoid valves to be integrated into a valve-seat made of stainless steel, less pipe connectors to reduce leakage
- All piping and fitting are made of 304 Stainless Steel which has high corrosion resistance

Vacuum Pump

- EDWARDS Rotary Vane Vacuum Pump (RV8/RV12) with oil mist and gas ballast control. Capacity is 12/17 cubic meters/hour. Dual stage portion with ultimate vacuum at 3×10^{-2} mbar

3. Accessories

Moisture Analyser

- Measuring range: 0~500ppm
- P₂O₅ Sensor: Corrosion resistant, widely used in field of Lithium battery and organometallic, the sensor can be renewed by acid-cleaning while contaminated by HF or other corrosive atmosphere.

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Oxygen Analyser

- Measuring range: 0~1000ppm
- ZrO₂ Sensor: Solid sensor, long life, to be exposed in the air without consumption.

4. Option Accessories

Internet Remote Control and monitoring

- Remote Monitoring and Control of Glove Box: Users can monitor the working conditions of the glove box from their computer or smartphone.
- Data Encryption and Backup.
- Failure Alarm: If equipment fails, the system will send a notification to the user and automatically start the failure protection routine.
- Remote troubleshooting: Our engineers can access, debug, and restore the system remotely

Internal Solvent Absorber

- To be installed inside the Glovebox for absorbing solvent vapor
- Absorbent: Activated carbon 1.25kg

External Solvent Trap – 2 Types

Type1: Regenerable External Solvent Absorber

- Remove solvent vapors
- **Absorbent: Molecular Sieves**
- Can easily regenerate the absorbent by heating, no need to replace the material
- Control regeneration through PLC system using touchscreen
- Installed in line with purification system allowing removal of harmful solvents from the glove box atmosphere

Type2: Replaceable External Solvent Absorber

- Remove solvent vapors
- **Absorbent: Activated Carbon**
- Manual purging and evacuation control

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- Use two KF40 ports design allowing easy unload and refill of the absorbent
- Installed in line with purification system allowing removal of harmful solvents from the glove box atmosphere

HF Absorber

- Removal of Hydrofluoric Acid and other solvent vapors
- **Absorbent: Activated Carbon mix with Activated Aluminum Oxide**
- Manual purging and evacuation control
- Use two KF40 ports design allowing easy unload and refill of the absorbent
- Installed in line with purification system

Heated Antechamber

- Temperature range: From ambient temperature to 200°C
- Temperature controller
- Insulation layer
- Water cooling system

Refrigerator

- Left-mounted, door inside of Box
- Inside Volume: 20 liters or 30 liters
- Compressor power 1/2 HP; Lowest temperature: -30°C
- To be connected with glove box, compressor to be installed on the ground
- With temperature controller to Protect compressor from being initiated frequently; Temperature dropping amplitude can be controlled by temperature controller or time relay.

Cold Well

- Stainless steel well to be built on the bottom of glove box
- Size: Dia. 150mm, Deep 190mm, (customized size on request)
- DEWAR is filled with liquid Nitrogen coolant for low temperature work

Microscope Unit

- Type: TV Microscope, 1/3" CCD colourful
- Magnification: Max. 300 times, continuously adjustable
- Monitor: PHILIP 17", with flexible support
- Up and Down lighting source: LED Ring Light
- Platform: Movable, easy to align the objective and lens centre

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Ionizer without fan

- Effectively remove localized static charges
- Effective ionization range: 12"
- Pulse rate and ionic balance controls allow for effective calibration and adjustment of the Counter SPI
- To reach optimum ion balance and output

Feedthroughs

- Power Cord feedthrough
- Gas/Fluid feedthrough (with optional manual valve option)
- BNC feedthrough
- USB feedthrough
- Binding Posts feedthrough
- Power Junction Box
- VTI Custom Feedthrough (per customer request)

Others

- Gloveport Cover
- Water Trap (for regeneration water exhaust)
- Air Conditioner

5. Other Options

Customized Box Size

Customized Antechamber Size

Integrating customer's instruments into glovebox (like evaporator, ALD system and Spin Coater, etc.)

UL Certification

Safety Relief Valve on Glovebox

Polycarbonate Window(s)

Quick Release Window(s)

Antechamber with interlocking door

Small chamber with sliding tray

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Antechamber purging other than vacuum

Antechamber refilling from Gas cylinder instead of box

Rectangular Antechamber

Flexible shelves

Dry scroll pump

Prompt service

**All models can be made to custom specifications

**Contact us for more information

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