VacuumTechnologyInc.

Super Purified Glove Box Gas Purification System

About Us

Vacuum Technology Inc. is a US based manufacturer that is committed to developing innovative products for clients around the world.

With its North American facility in Gloucester, Massachusetts USA, VTI offers Super Purified Glove Boxes, Gas Purification Systems and ancillary products and accessories. In addition to the standard product lines, we are proud of our technical team's ability to work together with our clients to create custom solutions.

VTI's high-quality products and dedicated service have been developed to earn the confidence of our clients and the respect of our colleagues world-wide.

Through collaboration with various international market-leading manufacturers and comprehensive technology sharing with Mikrouna (over 19 years of Glove Box innovations and engineering), VTI has become an industry leader integrating research, manufacturing, sales, and customer service.

Vacuum Technology, Inc. continues to develop innovative high-quality products while providing exemplary service to fulfill our goal of "Achieving Social Goals through Advancing Technology."

* Achieving Social Goals
Through Advancing Technology

Product Features

- **High Capacity Purifier**
  Rapid removal of H_2O and O_2 to less than 1ppm
  Long intervals between regeneration cycles.

- **PLC Control and Color Touchscreen HMI**
  Automatic Purge; Circulation; Regeneration; Pressure control; User Friendly Interface.

- **Machined Manifold Style Valve Block**
  Our engineered, all stainless steel, valve seat has fewer connections and lower leakage risk.

- **Long Life Moisture and Oxygen Analyzers**
  P_2O_5 Moisture Sensor: Corrosion resistant, Renewable by acid-cleaning
  if the probe is contaminated by HF or other corrosive environmental exposure.
  ZrO_2 Oxygen Sensor: Solid sensor, long life, can be exposed to air without consumption.

- **Components Sourced from Global “Best in Class” Suppliers**

- **Customize a glove box specially for your application**
  Our engineering team can help to turn your idea into a solution.

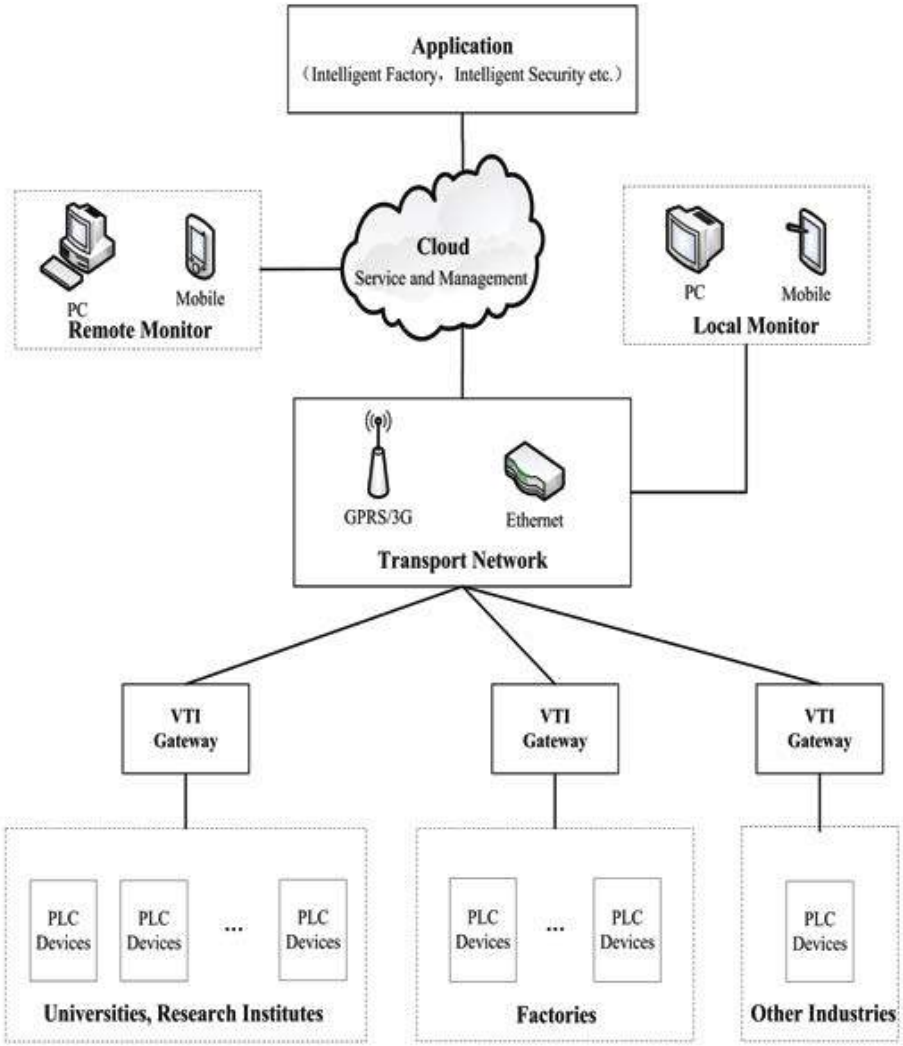
- **Wide Applications**
  Lithium Battery/Physical Chemistry/OLED&PLED/Organometallic/
  Solar Cell/Semi-Conductor/Catalyst/Material Handling/ Fine Chemicals/Polymeric Materials/
  Powder Metallurgy/Special Welding/Special Lamps/ Nuclear Technology/Pharmaceutical/
  Many other applications

Internet of Things Glove Box System

Vacuum Technology Inc. is launching the Internet of Things Glove Box System. You will be able to remotely operate, monitor, and diagnose problems with your glove box.

Features

- **Remote Monitoring and Control of Glove Box**
  Users can monitor the working conditions of the glove box from their computer or smart phone.
- **Data Encryption and Backup**
  When there is a data transmission error, interruption, corruption, or loss occurs because of network failure, Users can restore and track historical data of the equipment through our system. You can configure the firewall to ensure data integrity and security.
- **Failure Alarm**
  When 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.
- **Users Online Help**
  Users can access online learning resources for the operation of the Monitoring and Control System. Users can also solve problems themselves using our Online Help site.
- **Free Customer Service Online**
  We offer online communication tools (email, chat, video conference, etc.) with our service staff or engineers to solve issues if they arise.



U2 Glove Box

We have added Remote Operation and Monitoring (based on the Internet of Things concept) and an HMI-Controlled Automatic Antechamber Door Control System

Remote Monitoring Scenarios

- Users can remotely monitor the environment within their glove boxes.
- Users can 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.

Production Equipment

Laser cutting machine

CNC Turning Center

Gantry CNC Machining Center

CNC Press Brake

ABB Welding Robot

Helium Mass Spectrometer Leak Detector

Machining Center

Testing Room

3D CMM

Wire-cut EDM

Glove Box Gallery

U2(1220/750/900)

Super(1220/750/900)

Upure(1220/750/900)

Universal(1220/1000/900)

With Refrigerator

With Oven

Glove Box Gallery

With Quick Released Sight Glass

Universal(1800/750/900)

Universal(2440/750/900)

For Welding

For Solar Energy

For Sodium Battery Energy Storage

Glove Box Gallery

For the Electrolyte Field

Vacuum Glove Box

For MOCVD

"All-In-One" Super Capacitor/Lithium Battery System

For Solar Cell

Glove Box Gallery

Isolator for Pharmaceutical Industry

For Nuclear Material

For Lithium Ion Battery

Super Capacitor Production Line

For Lithium Ion Battery Production

Type and Size

Standard Glove Box

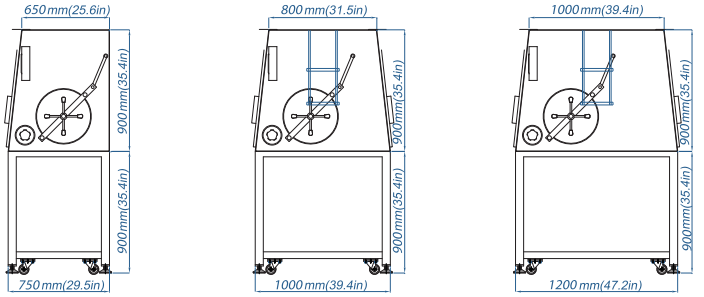
Items \ Type		Super/Upure	Universal	Advanced
Dimension (mm) L/W/H Workstation	Single	1220/750/900	1220/750/900	1220/750/900
	Double(side by side) Double(face to face)		2440/750/900 1800/750/900 1200/1000/900	2440/750/900 1800/750/900 1220/1000/900
	Tri-glove(side by side)		1500/750/900 1800/750/900	1500/750/900 1800/750/900
	Four(side by side) Four(face to face)		4800/750/900 2400/1000/900	4800/750/900 2400/1000/900
	Six(face to face) Eight(face to face)		3600/1000/900 3660/1200/900 4800/1000/900 4800/1200/900	3600/1000/900 3660/1200/900 4800/1000/900 4800/1200/900
	Twelve(face to face)		7320/1000/900	7320/1000/900
Control unit		Siemens S7	Siemens S7	Siemens S7
Touch screen		7″ Screen	7″ Screen	7″ Screen
Purifier		Single	Single	Double
Blower		90m^3/h	90/145/180m^3/h	90/145/180m^3/h
Vacuum pump		8m^3/h	8/12/16m^3/h	8/12/16m^3/h
Moisture		< 1ppm	< 1ppm	< 1ppm
Oxygen		< 1ppm	< 1ppm	< 1ppm
Application		R&D type For R & D in university and Laboratory	Universal type For both R&D and small-scale production	Production type For large-scale production

*Note:Upure is a special type of glove box, specially made for application of highly corrosive environment, such as Organic, Organometallic, Petrochemical etc.

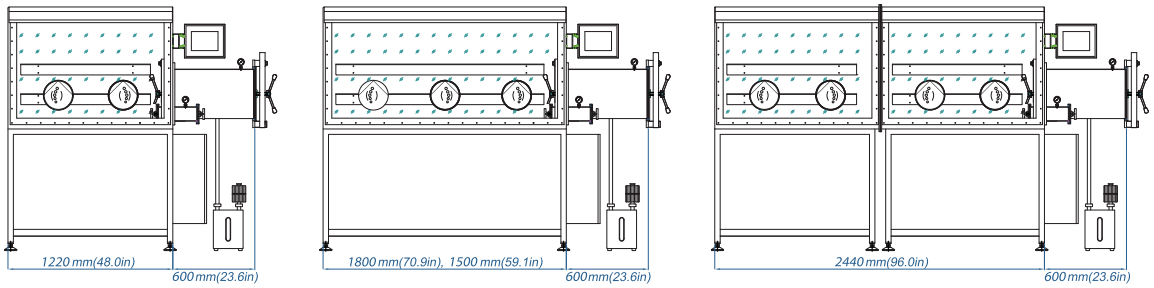
Dimensions

Standard Glove Box

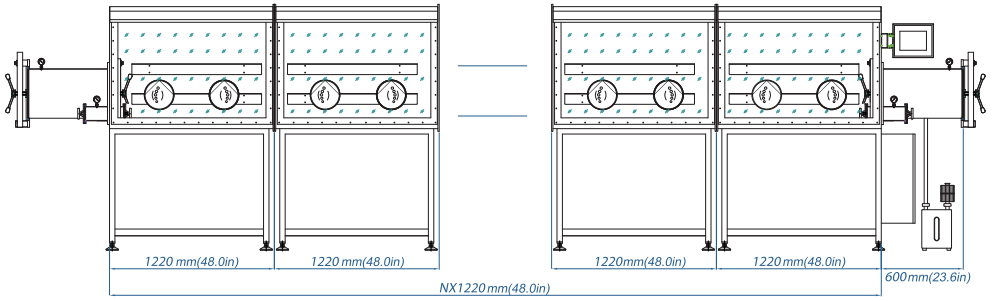
Depth and height size



Length size



Module combination



Specifications

Glove Box

Main Glove Box Chamber

Material:	Stainless steel type 304, thickness 3mm(1/8")
External surface:	White Paint(Brushed Stainless Steel available)
Internal surface:	Brushed Stainless Steel
Inside dimension:	Modular length:1220mm/1500mm/1800mm/2440mm 48.0"/59.1"/70.9"/96.0" Modular depth: 750mm/1000mm/1200mm 29.5"/39.4"/47.2" Modular height:900mm 35.4"

Sight Windows

Inclined, Safety Glass, thickness 8mm(1/3") (Polycarbonate available)

Gloves Ports

POM(Polyoxymenthylene),double O-ring seal, 220mm(8.7") Diameter

Gloves

Butyl, 7" or 8 " cuff dia., 0.015"thick , 32" long (many other materials and sizes available specific to your needs)

Dust Filter

HEPA 0.3μm, one gas inlet, one gas outlet

Shelving

Stainless Steel material, two fixed shelves (adjustable shelves available)

Box Light

Fluorescent lamp ,front and top mounted

Feed-throughs

KF40, One Power cord feedthrough, 3~4 standby blind flanges (BNC, USB, Post Connector, VGA, Liquid/Gas feedthroughs etc. available)

Specifications

Main Antechamber

Size:	Diameter: 360mm (14.2”) or 400mm (15.7”), Length 600mm (23.6”) (other sizes available)
Material:	304 Stainless Steel
External surface:	White paint (Polished Stainless steel available)
Internal surface:	Brushed Stainless Steel
Sliding tray:	304 Stainless Steel
Double door:	Anodized Aluminum, 10 mm thick(2/5”); Vertical operation with lifting mechanism(Interlocked door available)
Manometer:	Analog display
Operation:	Touch Screen Automatic operation via solenoid valves

Mini Antechamber

Size:	Diameter 150 mm (5.9”) or 100mm (3.9”), Length 300mm(11.8”)
Material:	304 Stainless Steel
External surface:	White paint (Polished Stainless Steel available)
Internal surface:	Brushed Stainless Steel
Double door:	Hinged (Interlocked double door available)
Manometer:	Analog display
Operation:	Manual operation via hand valve

Specifications

Gas Purification Unit

Purifier

Function:	Airtight Seal, Removal of H_2O and O_2
Container material:	304 Stainless Steel
Absorber material:	5kg Copper catalyst
	5kg Molecular sieve
Capacity:	60L Oxygen
	2Kg Moisture
Attainable purity:	Less than 1 ppm moisture and oxygen

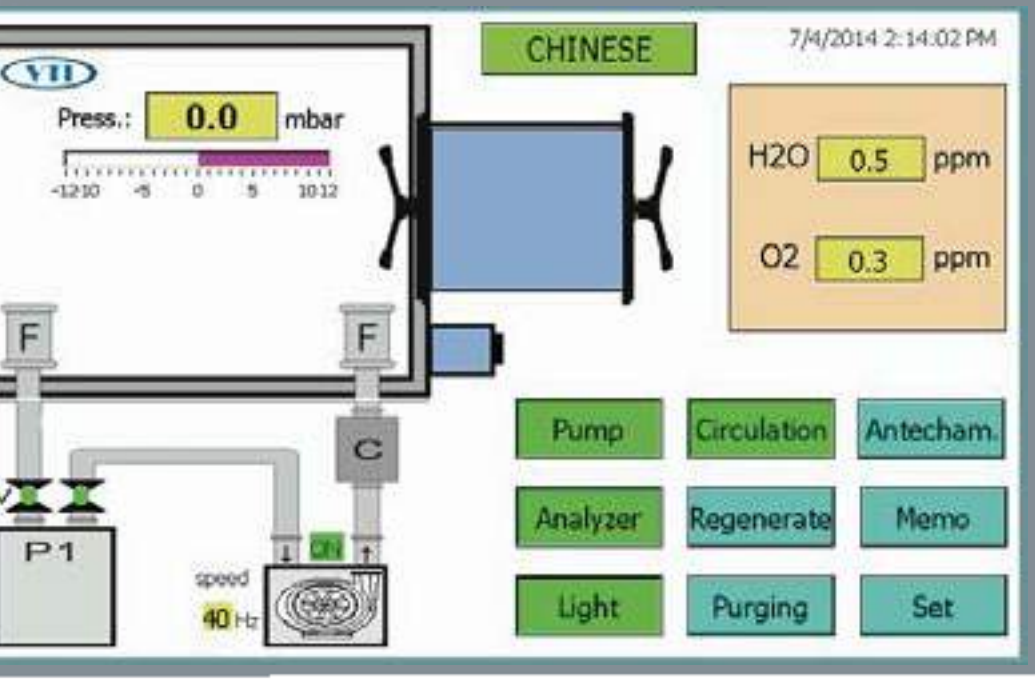
Gas Circulation

Working gas:	Nitrogen, Argon or Helium
Encapsulated Blower:	90m^3/h(145m^3/h or 180m^3/h available)

Regeneration

Operation:	PLC automatically controlled
Regeneration Gas:	Working gas mixed with Hydrogen(5-10%)

Specifications



System Control

PLC and HMI:	Siemens S7
Touch Screen:	Siemens 7", color
Features:	Automatic control of Purging, Circulation Control, Regeneration, Pressure,as well as Self-Diagnosis, Power Failure Re-Start and Password Protection.
Box Pressure set:	between +/- 10mbar,over +/- 12mbar system automatic protection.

Vacuum Pump

8m³/h or 12m³/h (16 m³/h available)

Rotary vane pumpwith oil mist filter and gas ballast control unit

(Dry pump is available)

Valves

Main valves:	Electro-pneumatic angle valves DN 40 KF
Control valves:	Integrated solenoid(Brass)

Research and Production of Lithium Battery/Super Capacitor

Lithium Battery Research Glove Box

- Renewable Solvent Trap
- HF (hydrofluoric acid) Absorber
- Heated Antechamber

Circulation system (blower)

Purification system (molecular sieve and copper-based catalyst)

Renewable organic solvent absorber

HF (hydrofluoric acid absorber)

Super Capacitor Production Line

- Movable oven, PLC Controlled to 200°C
- Exclusive docking system between oven and antechamber prevents capacitor exposure to ambient air
- Fully automated transfer between oven, cooling antechamber, glove box, and discharge chambers
- Cooled antechamber reduces energy use and speeds productivity
- One glove box used sequentially with multiple ovens saves capital cost
- Best for small batches of various samples

“All-In-One” Super Capacitor/Lithium Battery System

- Large capacity oven, PLC controlled, integrated with glove box
- Fully automated transfer system smoothly transfers between oven, glove box, and discharge chamber
- Cooling system inside the glove box
- Automatically transfers between Injecting, Sealing and Standby processes
- High volume throughput
- Best for large batches of similar products

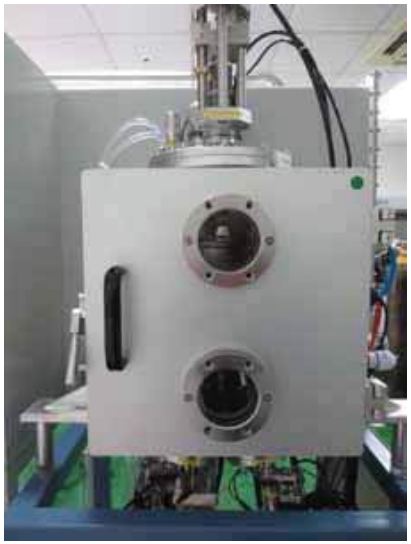
Glove Box Integrated Evaporator

Application

Applicable for preparation of Metal, Semi-conductor, Oxidizing, and Organic films.

Technical Data

Pressure Limit:	6 x10^{-5}Pa
Pumping time:	≤40min (from atmosphere to 8 x 10^{-4} Pa)
Substrate holder unit:	Maximum substrate size of 120*120mm. Lifting mechanism, vertical axis range of 50mm. Rotating mechanism, 5~30rpm, continuously adjustable Maximum temperature of substrate: 300℃.
Organic evaporation source:	Two Beam source furnaces: Single quartz crucible capacity≥2cc; Maximum temperature: -500O, continuously adjustable
Thermal evaporation source:	Two thermal evaporation boats with four electrodes and water-cooling 10V, 300A, maximum output power 3kW.
FTM-V quartz crystal oscillation film thickness monitor:	Thickness display range: 0--99μ9999Àº



Glovebox Integrated Vacuum Deposition System

Application

Organic electroluminescent display screen

Preparation of High uniform film

Synthesizing of semi-conductor material

Deposition of refractory metal

Technical Data

Dimensions of pretreatment chamber(mm):	Ø300-500 × H300-450
Dimensions of organic and metal chamber(mm):	Ø500-800 × H600-1000
Chamber material:	304 Stainless Steel
	Size: 2”-10”
Substrate:	Running speed: 5-20rpm
	Temperature: 300°C
Ultimate vacuum pressure:	1.3 × 10^{-5} pa
Number of organic deposition source:	4-8sets, power: 600W
Number of metal deposition source:	2-6sets, power: 2000W~5000W
Distance from source to substrate(mm):	260-600(adjustable)
Integrated Glove box with antechamber:	Size: 1220 × 750 × 900mm
	H_2O,O_2 less than 1ppm

Nuclear Power Series

Typically designed for disposal of radioactive substances, our Nuclear Power industry glove boxes adhere to International Safety Standards for operator safety, environmental protection, and quality control.

Features

- Automatic discharge and disposal of radioactive substances
- Lifting and moving mechanisms are inside the glove box

3D Printing Series

3D printing glove box (rapid prototyping glove box) is designed for manufacturing special components and parts used in aerospace engineering. 3D printing by Powder Feeding Molding and Laying Powder Molding are common configurations in a glove box. Each molding technique uses a specially designed glove box based on the requirements.

Features

- Large volume sealing, with high reliability.
- Signal wires and Power wires are highly integrated into the sealing box, avoiding interruptions.
- Large-size doors on the glove box, air-tightness, easy operation

Welding Series

Features

- Avoid the effect of humidity and impurities in the air on the laser welding
- The glove box has two rectangular chambers, one Heated Chamber (Maximum 200 C with water cooling unit), one Regular Antechamber.
- The outside door of rectangular chamber is manually operated and the inside door is automatically operated.
- The glove box purge is controlled by flow meter; the glove box can also be connected with a purification system.
- The system has a dust removal unit.

Special Lighting Production Series

Component Machines

- Bubble forming machine
- First and second sealing machine
- High-temperature vacuum dehydroxylation furnace
- Ceramic sealing furnace
- Pumping and Re-filling station,Plasma sealing machine
- Mercury and pill injection machine
- Electrode positioning
- Outer tube sealing machine

Separate Gas Purification System

Function

Operation: Easy access to the glove box
Control: Manual or PLC controlled
Power: 110V/50Hz or 220V/50Hz
Working gas: Nitrogen, Argon or Helium
Regeneration gas: Working gas mixed with Hydrogen(5~10%)

Items \ Type	Mk100	Mk200	Mk300	Mk400	Mk500	Mk600
Purifier	Single	Double	Single	Double	Single	Double
Main pipe	DN40	DN40	DN50	DN50	DN63	DN63
Circulation capacity	90 m³ / h	90 m³ / h	145 m³ / h	145 m³ / h	180 m³ / h	180 m³ / h
Copper catalyst	5 kg	5 kg	8 kg	2 x 8 kg	12 kg	2 x 12 kg
Molecular sieve	5 kg	5 kg	8 kg	2 x 8 kg	12 kg	2 x12 kg

Solvent purification System

- Applicable for solvent drying and purification by removing water, oxygen etc.
- Low purity grade industrial solvents can be purified into high purity grade.
- The following solvents can be purified alone or together:
  Hydrocarbon compound such as benzene, ethane, chlorine, ethylene dichloride. Dipolar, non-protonic, solvents such as acetonitrile, dimethyl amide, nitro methane, Alcoholates such as methane, ethanol, butanol, Ethers (ether), esters, amines, carbonate and their derivatives.

Accessories

Oxygen Analyzer

- Measuring range:0~1000ppm
- ZrO_2 Sensor:Solid sensor,long life to be exposed in the air without consumption

Moisture Analyzer

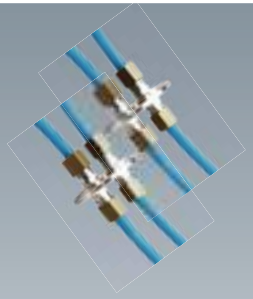
- Measuring range:0~500ppm
- P_2O_5 Sensor:Corrosion resistant, the sensor can be renewed by acid-cleaning while contaminated by HF or other corrosive atmosphere

Solvent Trap

- Single unit mounted on gas outlet port absorbs solvent vap
- Absorbent:Activated carbon 1.5

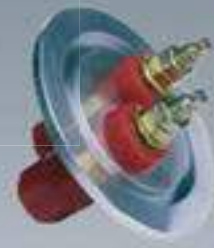
Aviation Plug

BNC Feedthrough



Gas/Fluid Feedthrough

USB Connection Port



Red Posts Feedthrou

Heated Antechamber

- Temperature range: Ambient temperature to 200 C
- With temperature controller

De-Electrostatic Unit

- 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 give optimum ion balance and output

Vacuum Pump

- Internal Automatic A
- Check Valves
- Pumps manufacture materials, new techn Less Vibration and L

Accessories

or
5kg/2.3kg

Refrigerator

- Left-mounted, door inside of box
- Inner dimension:
- L x W x H = 250mm x 200mm x 400mm
- Lowest temperature: -40 ℃ (-55 ℃ available)

Cold Well

- Fabricated through floor (bottom) of glove box
- Stainless steel well
- Size: Diameter: 160mm; Deep 200mm
  (customized sizes on request)
- DEWAR is filled with Liquid Nitrogen for low temperature work

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Power Cord Feedthrough

Oil Mist Filter

Dust Filter

- 0.30 μm

Angle Valve

- Bellows Seal Valve with Pilot

Hydrofluoric Acid Absorber

nti-Anti-Oil

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ow Noise

De-Dusting Unit

- With two filters, switchable
- Stainless steel shell
  Filter accuracy: 3μm
- High performance circulation unit
- Main pipe Stainless steel DN40 (KF40)

Microscope Unit

- Type: TV Microscope, 1/3” CCD color
- Magnification: Max. 300 times, continuously adjustable
- Monitor: PHILIPS 17”, with flexible support
- Up and Down lighting source: LED, ring
- Platform: Movable, easy to align the objective and lens center

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