CULTURAL RELICS TECHNOLOGY PROTECTION EQUIPMENT

Sensor · Environment control equipment · Cultural relics display showcase · Storage equipment
Disinfection equipment · Environment monitoring cloud platform

HUATO ELECTRIC CO., LIMITED

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🌐 Welcome to Visit our Website: www.huato.cn

CULTURAL RELICS TECHNOLOGY PROTECTION EQUIPMENT

SENSOR/ENVIRONMENT CONTROL EQUIPMENT/CULTURAL RELICS DISPLAY SHOWCASE /
STORAGE EQUIPMENT/DISINFECTION EQUIPMENT/ENVIRONMENT MONITORING CLOUD PLATFORM

CATALOG

COMPANY PROFILE

HUATO ELECTRIC CO.,LTD was established in 2008 and located in Shenzhen City. HUATO is a group company with five business segments: Museum Showcase, Environmental Monitoring Equipment, Lighting,Acid-free Capsule, and Digital Exhibition Displays. Our factory covers an area of more than 45,000 ㎡. We have 600 employees, 68 various design engineer, sales revenue is USD60million per year.The Chinese government's measures for "contract abiding and trustworthy enterprises". Our main business scope is: various display showcase, micro environment control equipment and lighting; Main application : museums, art galleries, libraries, and various high-end collection display . We are providing products, technical services, design solutions, and construction solution for more than 2000 clients .

Our goal is to enable museums, exhibition halls, and cultural and artistic exhibitions to create low-carbon, environmentally friendly, artistic, ultra clear, and high-quality displays, presenting the most perfect visual effects and effective cultural heritage protection.
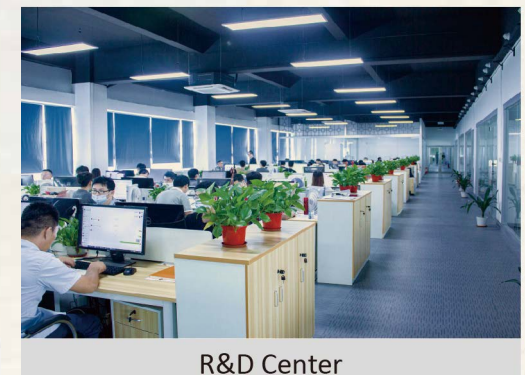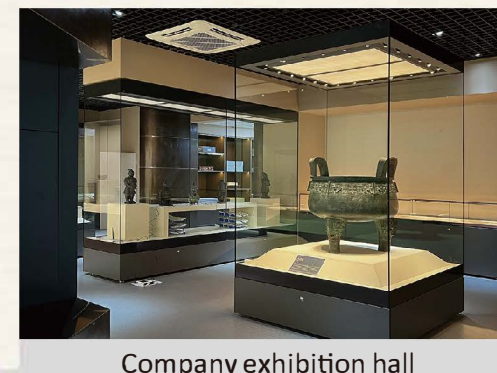
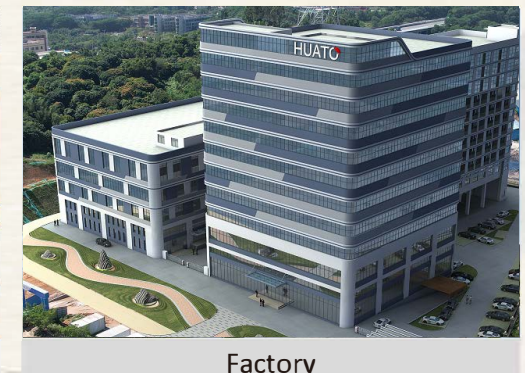Sheet metal workshop

Sheet metal factory

Production process

R&D Center

Company exhibition hall

Factory

Equipment category　　**Software Category**　　**Functional Category**

01 Wall showcase

02 Table showcase

03 Independent showcase

04 Center showcase

05 Alcove showcase

06 Low oxygen and constant humidity display showcase

07 Purification and constant humidity machine

08 Multimedia projection

09 Digital sandtable

10 Scene model

11 Smart Museum Visualization Platform

12 Spliced interactive display system

13 Smart warehouse visualization system

14 Multimedia interactive system

15 Smart Museum Comprehensive Information System

16 Smart Museum Navigation System

DIGITAL MUSEUM

17 Standard cultural relic storage showcase

18 Intensive cultural relic storage showcase

19 Heavy-duty cultural relic storage showcase

20 Drawer type constant humidity storage showcase

21 Partition type constant humidity storage showcase

22 Constant temperature and humidity storage showcase

23 Low oxygen and constant humidity storage showcase

24 Hypoxic-constant humidity insecticidal system

25 Humidification and dehumidification all-in-one machine

26 Air purification and disinfection machine

27 Cultural relics cart

28 Cultural relic transfer box

29 Cultural relics climbing ladder

30 Cultural relics box

31 Cultural Relics Restoration Room

32 Constant temperature and humidity machine room

33 Cultural Relics Information Collection Room

34 Exhibition hall

35 Hypoxic sterilization room

36 Standard cultural relics warehouse

37 Boutique cultural relics warehouse

38 Smart Museum Decision Center

Standalone type showcase | Lastronics

MAIN PRODUCT

- Showcase

- Environment control equipment

- Constant temperature and humidity storage cabinet

- Storage cabinet rack

- Sensor

- Acid free paper bag box

- Environment monitoring cloud platform

800
100
2200
800

- Upper access door panel
- Museum specific locks
- Special aluminum profiles for exhibition cabinets
- Small spotlights
- Gas spring
- Ultra white or low reflection laminated glass
- Wrapping booth
- Heavy rail
- Electric system
- Lower skeleton
- Lower door panel
- Damping spring
- Environmental ventilation pipeline
- Movable casters
- Adjustable feet
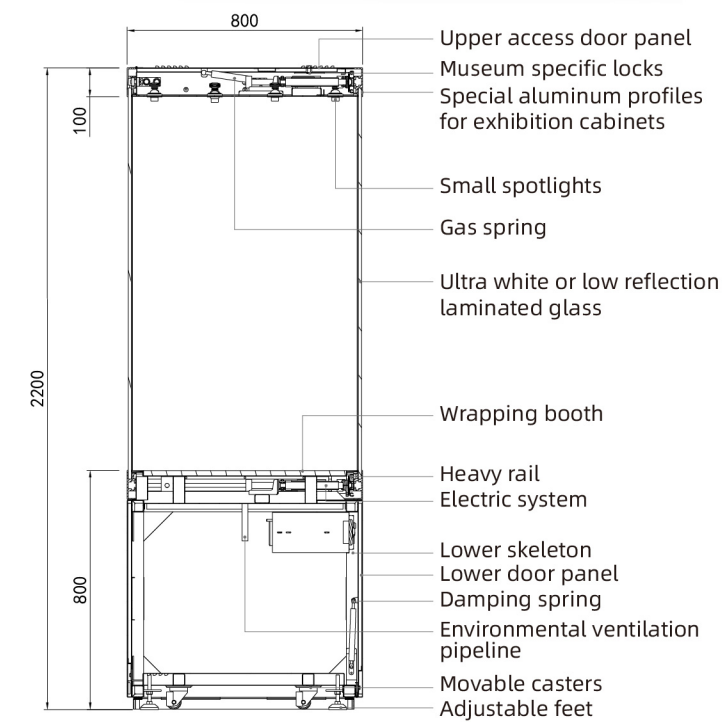
Structure diagram of standalone type showcase
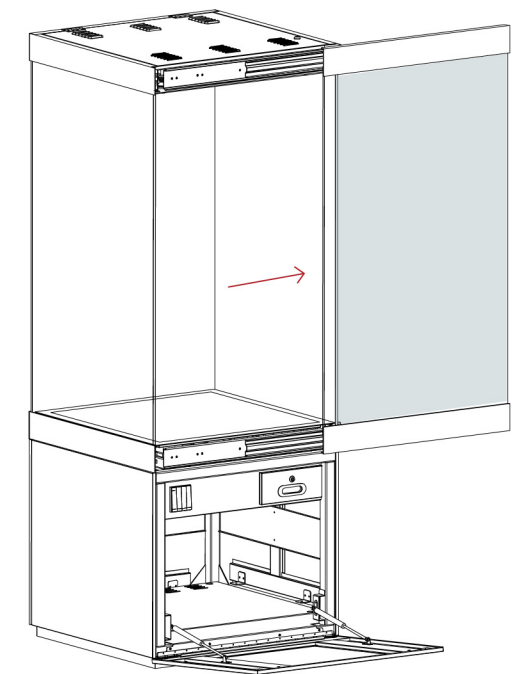
Opening diagram of standalone type showcase

■ Opening method: Electric push left and right translation type.

■ Opening glass: The display cabinet is made of ultra white or low reflective laminated glass, with a glass thickness of 6+0.76+6 (m) and above, and has explosion-proof function.

Ultra self or low reflection laminated glass
LED long pole lamp
Wrapping booth
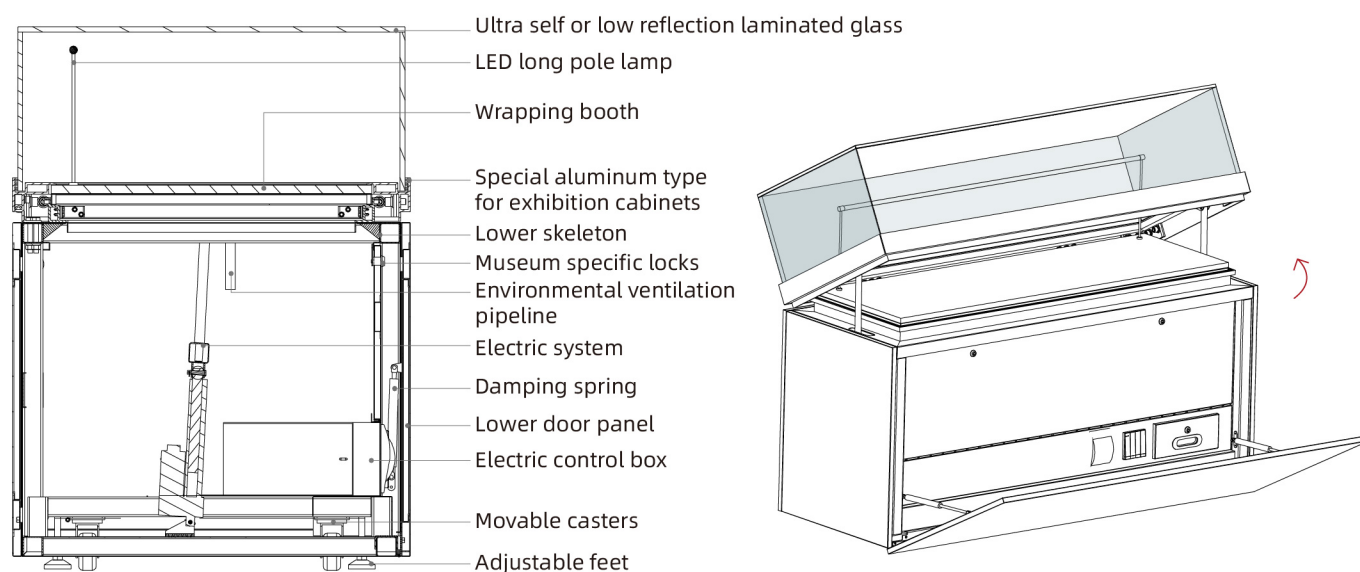Special aluminum type for exhibition cabinets
Lower skeleton
Museum specific locks
Environmental ventilation pipeline
Electric system
Damping spring
Lower door panel
Electric control box
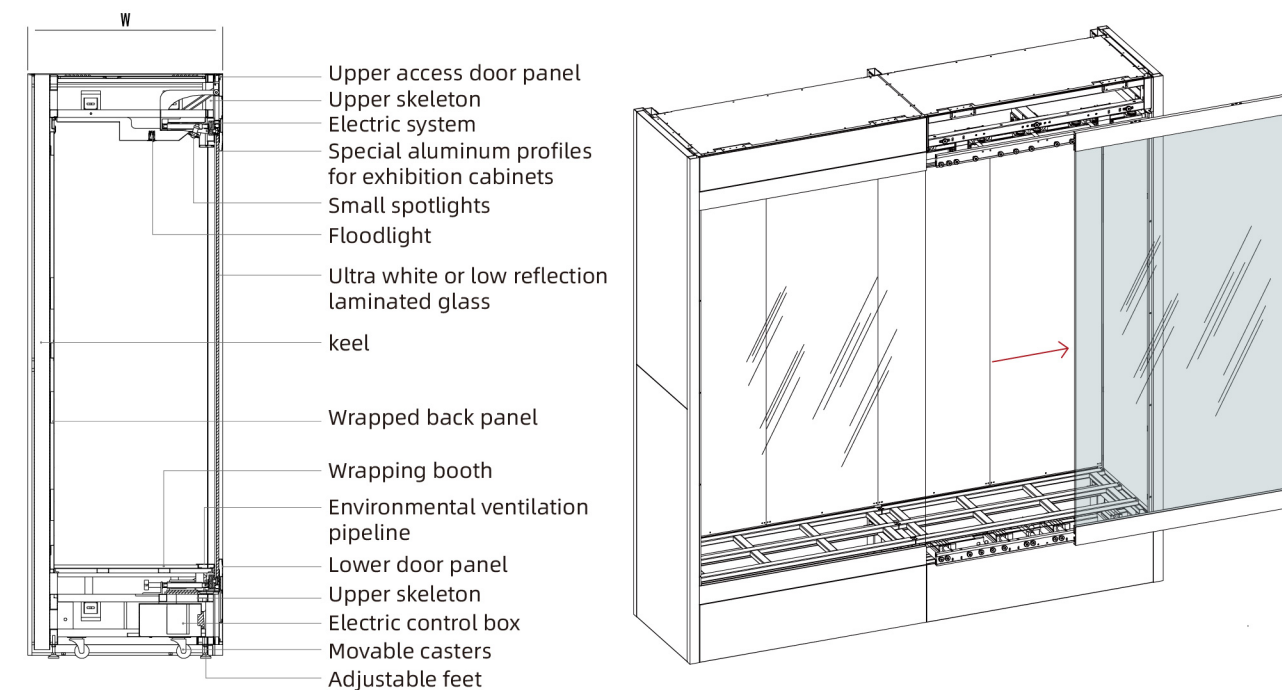Movable casters
Adjustable feet

Structure diagram of desktop type showcase

Opening diagram of Desktop type showcase

■ Opening method: Unilateral electric lifting opening.

■ Glass: The exhibition cabinet adopts ultra white or low reflection laminated glass, with a glass thickness of 6+0.76+6 (mm) and above, and has explosion-proof function.

W

Upper access door panel
Upper skeleton
Electric system
Special aluminum profiles for exhibition cabinets
Small spotlights
Floodlight
Ultra white or low reflection laminated glass
keel
Wrapped back panel
Wrapping booth
Environmental ventilation pipeline
Lower door panel
Upper skeleton
Electric control box
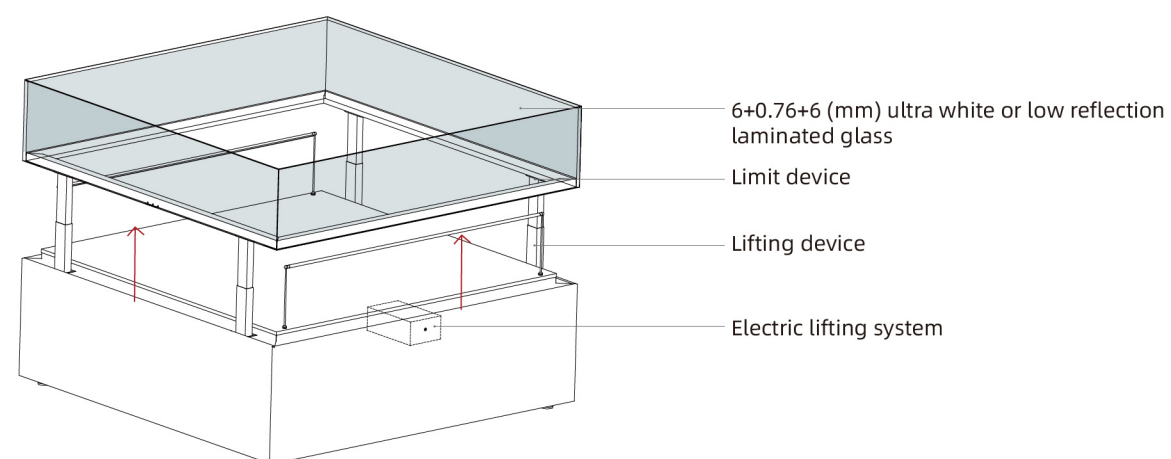Movable casters
Adjustable feet

Structure diagram of wall-mounted type showcase

Opening diagram of wall-mounted type showcase

■ Opening method: Electric spin out manual sliding to open.

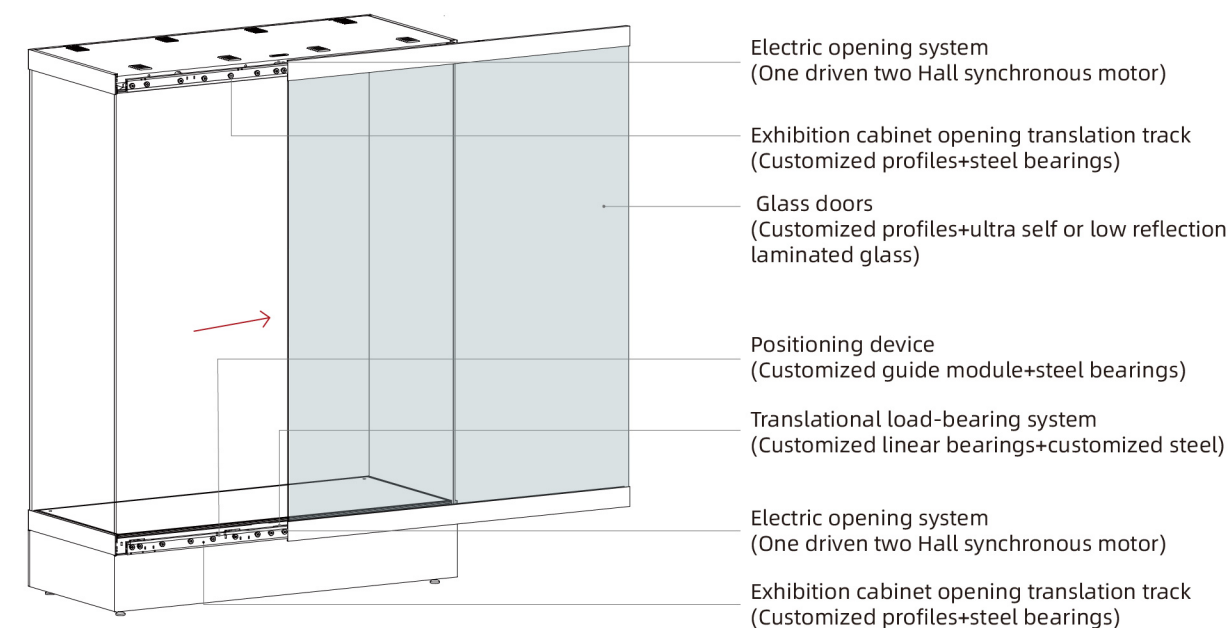■ Glass: The display cabinet adopts ultra white or reflective adhesive, with a glass thickness of 6+0.76+6 (mm) or above, and has explosion-proof function. The light box partition glass is made of high-quality laminated safety glass with a thickness of 3-+0.76+3mm, and can be treated with clear glass or sandblasting according to the actual display needs of users.

Ultra white or low reflection laminated glass
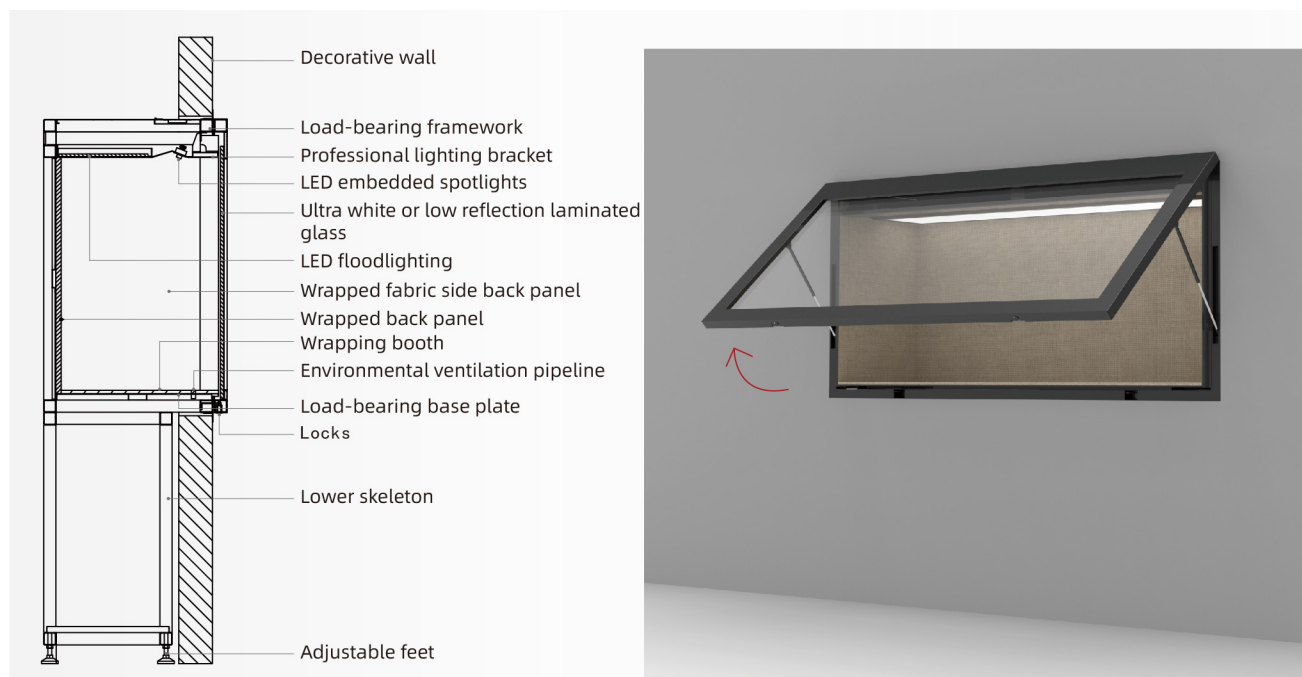
LED long pole lamp

Special aluminum profiles for exhibition cabinets

Lower skeleton

Electric lifting system

Exterior decorative door panel

Electric control box

Locks

Movable casters

Adjustable feet

Structural diagram of five sided lifting showcase

6+0.76+6 (mm) ultra white or low reflection laminated glass

Limit device

Lifting device

Electric lifting system

Schematic diagram of opening the five sided lifting showcase

■ Opening method: electric lifting opening

Electric opening system
(One driven two Hall synchronous motor)

Exhibition cabinet opening translation track
(Customized profiles+steel bearings)

Glass doors
(Customized profiles+ultra self or low reflection laminated glass)

Positioning device
(Customized guide module+steel bearings)

Translational load-bearing system
(Customized linear bearings+customized steel)

Electric opening system
(One driven two Hall synchronous motor)

Exhibition cabinet opening translation track
(Customized profiles+steel bearings)

Schematic diagram of opening the central cabinet

■ Opening method: electric spin out manual side slip opening

■ The glass of the showcase is made of high-performance safety ultra white or low reflection laminated glass, with a transmittance of>92%, UV barrier rate of>99.9%, and color rendering index of>99.5%. Using 1.14mm thick PVB film, it has the characteristics of impact resistance, collision resistance, explosion resistance, and high safety. The exhibition cabinet adopts laminated explosion-proof, UV resistant ultra white or low reflection laminated glass, and all four edges of the glass must be finely polished. The accuracy error of all appearance and diagonal dimensions is less than ± 1mm/m, the flatness error is less than 0.1mm/m, and the glass thickness is 6+0.76+6 (mm) or above.

Decorative wall

Load-bearing framework
Professional lighting bracket
LED embedded spotlights
Ultra white or low reflection laminated glass
LED floodlighting
Wrapped fabric side back panel
Wrapped back panel
Wrapping booth
Environmental ventilation pipeline
Load-bearing base plate
Locks

Lower skeleton

Adjustable feet

Structure diagram of alcove

Schematic diagram of opening the alcove

This product uses capacitive meter touch and OLED high-definition display for the first time.The combined technical route perfectly solves the problem of OLED electromagnetic interference, improves touch sensitivity and enhances user experience.

◀

Features

- OLED high-definition display with high color reproduction.
- Clear display, light transmittance ≥95%.
- Touch response speed: 8 milliseconds/frame second.
- The cabinet has strong sealing performance.
- The cabinet dissipates heat evenly and is suitable for long-term operation.
- Constant temperature and humidity, suitable for storage of cultural relics.
- Comply with environmental safety standards for cultural relic storage

■ Frame structure: High quality cold drawn steel pipe profiles such as 100 * 50 * 3.0mm, 80 * 40 * 2.0mm, 50 * 50 * 2.0mm0 * 40 * 1.5mm are used for cutting, passivation, straightening, surface calibration, and mold calibration. After gas shielded welding (with no oxidation phenomenon at the welding junction) is used to increase welding strength. After welding and forming, the aging treatment state reaches T6 or above. After performance is completed, professional equipment is used for grinding and polishing. After rust prevention treatment, electrostatic nitrogen carbon spraying process is used. The level and verticality of the cabinet structure are ≤ mm, And designed with a horizontal adjustment device.

■ The exhibition showcase is supported by the base framework, which can transfer all the pressure it bears to the support in the base area, and then the support transfers the pressure to the building. When placing bulky items in the display cabinet system, the display cabinet skeleton can withstand all the pressure applied to it.
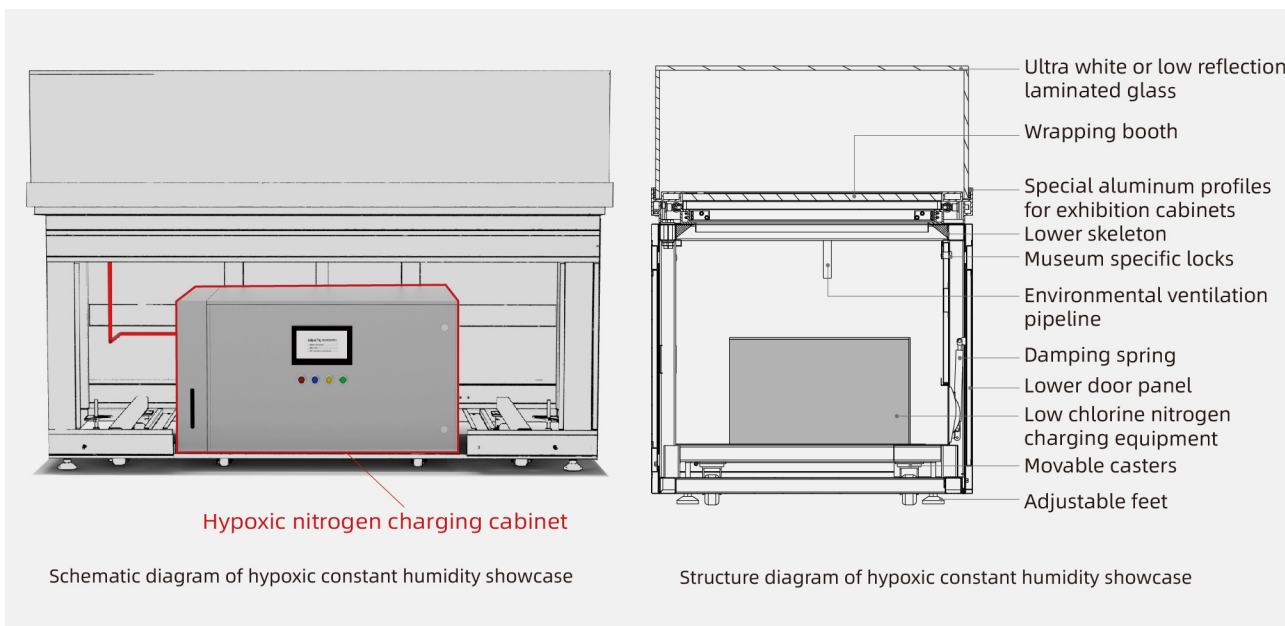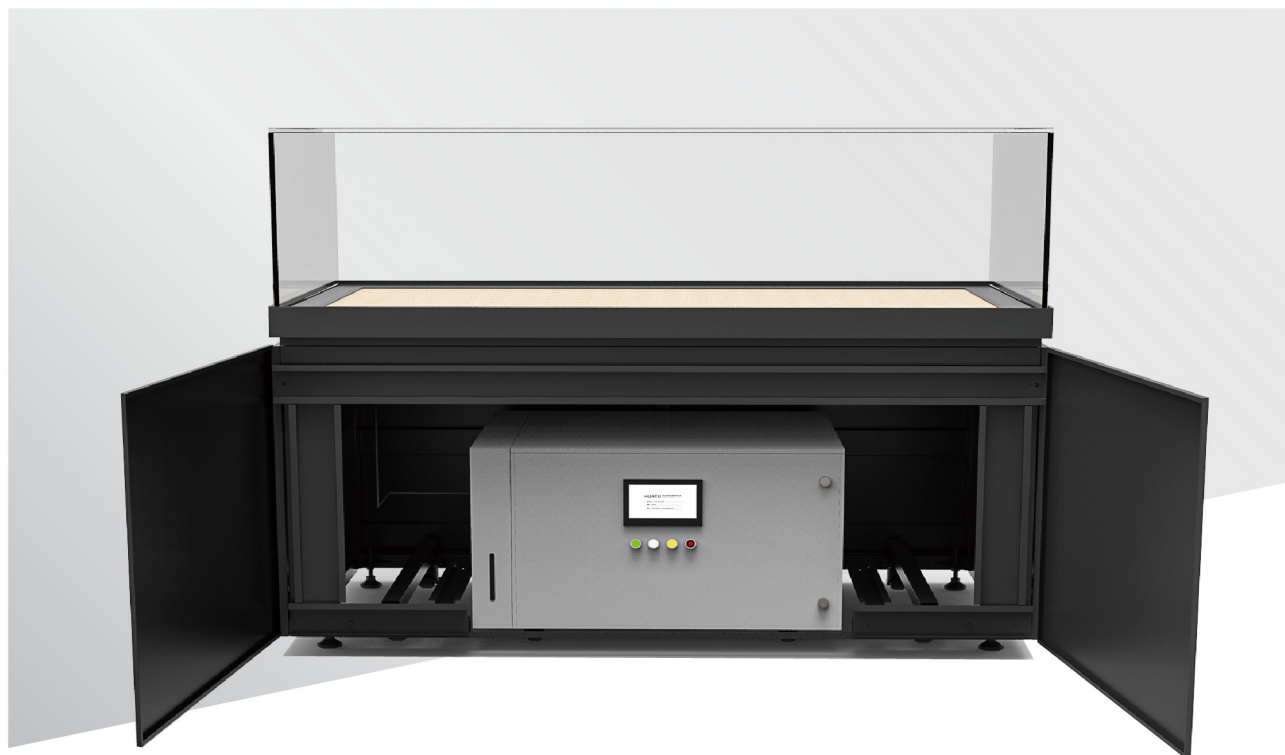
Hypoxic constant humidity showcase

Ultra white or low reflection laminated glass
Wrapping booth
Special aluminum profiles for exhibition cabinets
Lower skeleton
Museum specific locks
Environmental ventilation pipeline
Damping spring
Lower door panel
Low chlorine nitrogen charging equipment
Movable casters
Adjustable feet

Hypoxic nitrogen charging cabinet

Schematic diagram of hypoxic constant humidity showcase

Structure diagram of hypoxic constant humidity showcase

■ Control range of oxygen content in the exhibition cabinet: 1%~21.0%

■ Hydrogen reduction replacement time: ≤ 18h (hydrogen concentration drops from 21% to 1%)

■ Humidity regulation range: 20%~60% RH (5-30c)

■ Nitrogen source: produced by a nitrogen generator (without adding any consumables, environmentally friendly and energy-saving)

■ Power supply: AC220/50Hz/≤ 5kW

■ Cleanliness of the cabinet environment: The nitrogen production system should ensure a high level of cleanliness in the airtight space, with a maximum filtration accuracy of micrometers, effectively filtering out oxygen, harmful gases, dust particles, spores, eggs, etc. in the air.

■ Prduct features

Structure

Using dedicated aluminum profiles for exhibition cabinets, the structure of the connection between the profiles and the glass meets the requirements of high-performance exhibition cabinets, without any gaps, and the connection is stable and reliable. The surface of the material has undergone electrostatic spraying treatment, with a reflectivity of no more than 30 °.
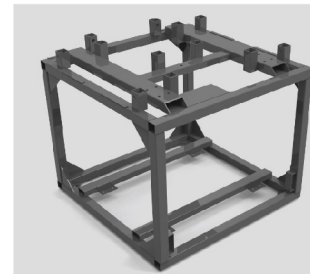

Glass

1. Use ultra white laminated glass. The glass flatness, side bending parameters, squareness, and deviation parameters all comply with relevant specifications.
2. Low reflective glass is also used, with high performance and the ability to filter over 99% of outward radiation, with a transparency of over 90%.

Opening method

1. Electric push out left and right translation opening
2. Unilateral electric lifting opening
3. Electric spin out manual sliding opening
4. Electric lifting opening
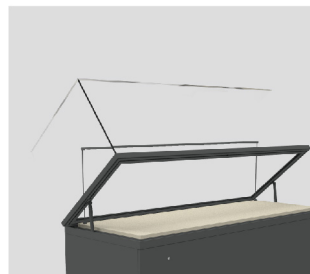
Lighting fixtures

All exhibition cabinets adopt LED lighting system. Color temperature and illumination can be adjusted. The illumination level shall not be less than 350Lux, and the lamp head type shall be uniform lighting. The lamps shall be hidden as much as possible while ensuring the safety and display effect of cultural relics.

Lock

The lock used is a museum specific lock, and the lock body and key materials are made of ultra hard abrasive and rust resistant materials, which can be used and stored for a long time.
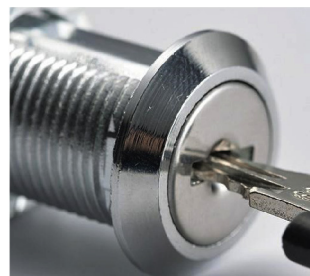
sealing material

Special sealing profiles and silicone sealing strips are used for sealing. The bonding between glass and aluminum alloy frame is a complete sealing bonding of no less than 30m, with a coagulant index of 2500-6000P5 and a melting point greater than 150 ℃.

■ Applications

Applied in museums, art museums, memorial halls, wax museums, cultural relics exhibition halls, cultural heritage centers, and archaeological research institutes.

Nanjing Museum
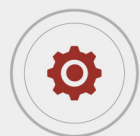
National Museum of China

The Palace Museum

Inner Mongolia Museum

Wireless communication function

The showcase has a wireless communication function and can exchange data with peripheral wireless communication equipment. It uses 2.4G free and open frequency band which is specified by the State Radio Commission.

Parameter setting function

The display cabinet has parameter setting functions according to different situations and objects. It can also be remotely controlled by staff, and this makes it highly operable.
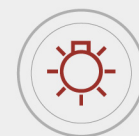
Lighting control function

The display cabinet has the function of filtering ultraviolet and infrared rays, and the ultraviolet radiation intensity is ≤ 10μw/lm. The illumination of the showcase is adjustable, and the adjustment range is: 151x ~ 4501x. The color temperature of the display cabinet is adjustable, the color temperature adjustment range is 2700K ~ 5000K, and the angle of the display cabinet lamps is adjustable.

Real-time monitoring function

The display cabinet has the function of real-time data monitoring of environmental parameters. Monitoring parameters include: temperature, relative humidity, illumination, ultraviolet intensity, total volatile organic compounds (VOC), etc. All data can be viewed and saved in real time through the ToClient, and necessary analysis can also be carried out by it.
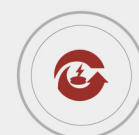
Automatic humidity control function

Equipped with automatic humidity control function, humidity control range: 25%RH～70%RH, accuracy ≤±2%RH.

Air quality purification function

It can purify formic acid, formaldehyde, acetic acid and volatile compounds, etc., and the purification efficiency after purification by the device is greater than 50%.

Power-down data storage function

The showcase should have a power-down data storage function. When the power is off, the data and dynamic operating parameters in the showcase should be automatically saved. After powering on again, it should be able to automatically restore the data parameters before the power failure and work normally.
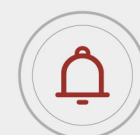
Anti-theft alarm function

The display cabinet has an anti-theft alarm function. When the alarm device is triggered, the device can automatically sound an alarm and at the same time alert the preset personnel through phone calls, text messages, etc. according to the settings.

Intelligent control, precise constant humidity

Small size/low noise/low power consumption/no need to add water/no need to drain water
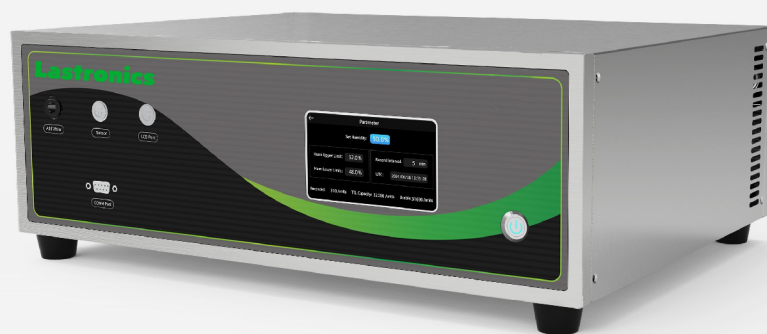
Purification and constant humidity machine

01	Wide humidity control range

The effective humidity control range is 25%~70%RH, which can better meet the requirements of cultural relics made of different materials for various humidity environments.

02	High humidity control accuracy

The micro-positive pressure air transmission method is used to maintain the micro-positive pressure in the showcase relative to the outside world, ensuring the uniformity of air humidity in the showcase, and the control accuracy is ≤±3%RH.

03	Wireless communication

Built-in 2.4GHz wireless communication module; staff can remotely monitor the operating status of the purification and humidifier and remotely modify parameters as needed.

04	No drainage

Equipped with fans and automatic control systems, the dehumidified condensed water can be automatically evaporated into the air, eliminating the need for manual drainage (pouring) of water.

05	No need to add water

Equipped with an automatic water intake module, under applicable environmental conditions, it automatically condenses water vapor in the air and replenishes it in the constant humidity machine.Liquid level, provides water source for humidification function,No need to manually add (replenish) water.

06	Small and beautiful

The equipment is small in size, low in power consumption, and easy to install. It can be installed on the base of various showcases and only requires certain ventilation requirements.

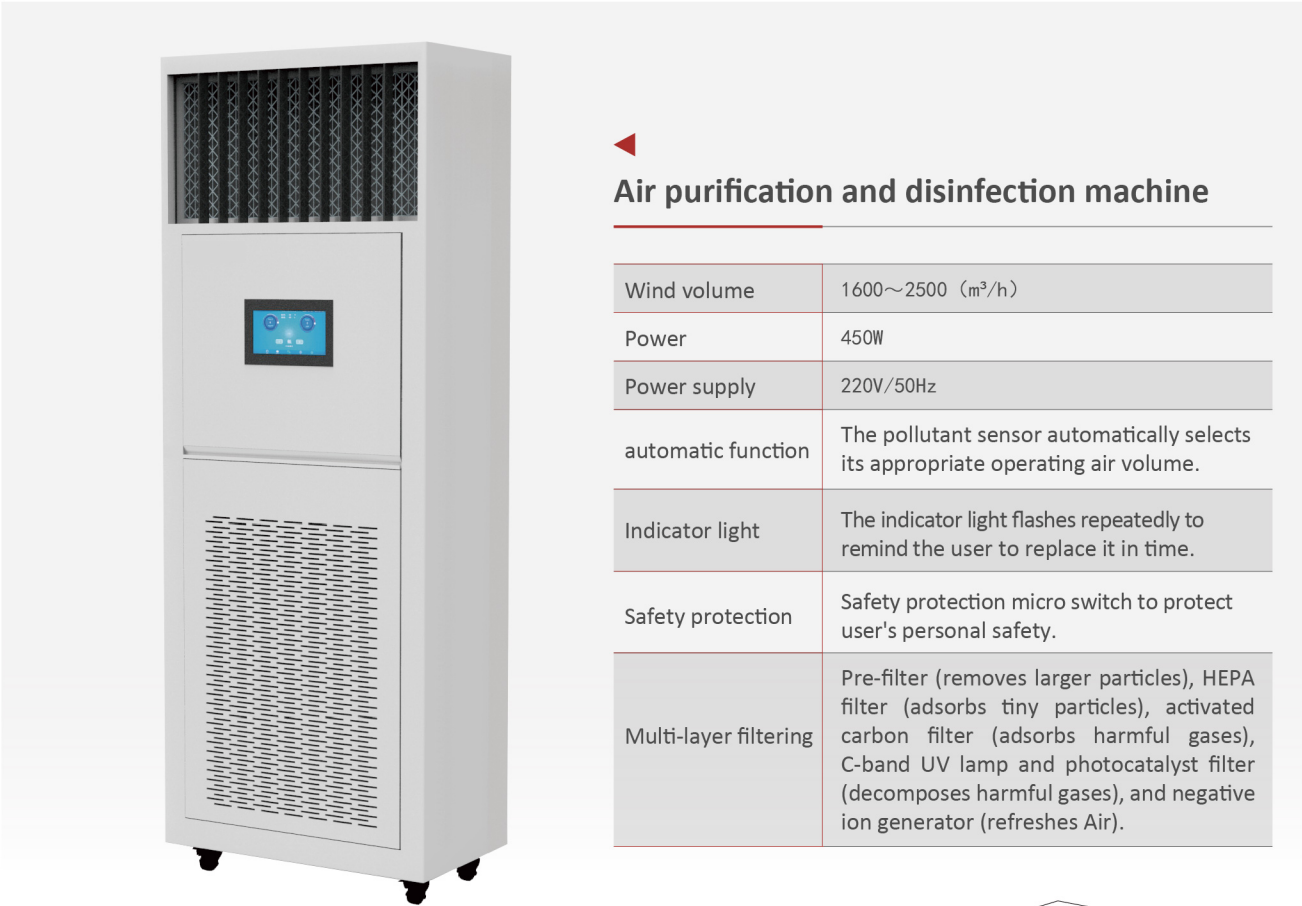| Regulating volume	≥8m³	Humidity control accuracy	≤±3%RH
power supply	AC220V/50Hz	rated power	≤145W
air distribution	Micro positive pressure air supply	Purification method	Activated carbon filter screen adsorption
Installation method	Install the bottom of the display cabinet and secure it with brackets	size	450x305x150mm
Humidity control range	When the temperature inside the exhibition cabinet is below 30 ° C, the effective humidity control range is 25%~70% RH.		
Communication method	Reserved communication port RS485/RJ45, built-in 24GHZ wireless communication module		
Safety protection performance	Equipped with automatic and remote diagnosis functions, multiple security protection systems		

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Humidification and dehumidification all-in-one machine

| Humidification amount	7~9kg/h
Dehumidification capacity	60~120L/24h
Scope of application	90~150m²
Air volume	1600/2200m³/h
Power	200/1300 (W)
Power supply	220V/50Hz
Purification module	G4 metal filter-wet membrane
Add water method	Manual/automatic, optional large-capacity 90L external water tank.
Drainage method	Water tank/automatic, optional large-capacity 90L external water tank
Control Panel	8-inch color touch screen control panel
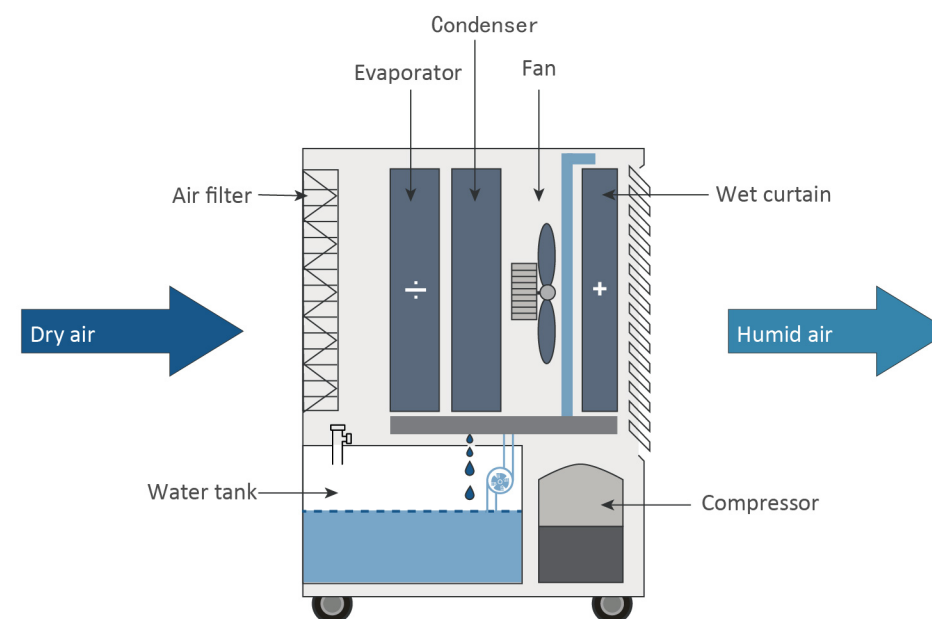
Humidification:

Start the water pump to add water and pour it down from the upper part of the curtain. The fan starts, allowing dry air to enter and moist air to exit; The compressor is not working.

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Air purification and disinfection machine

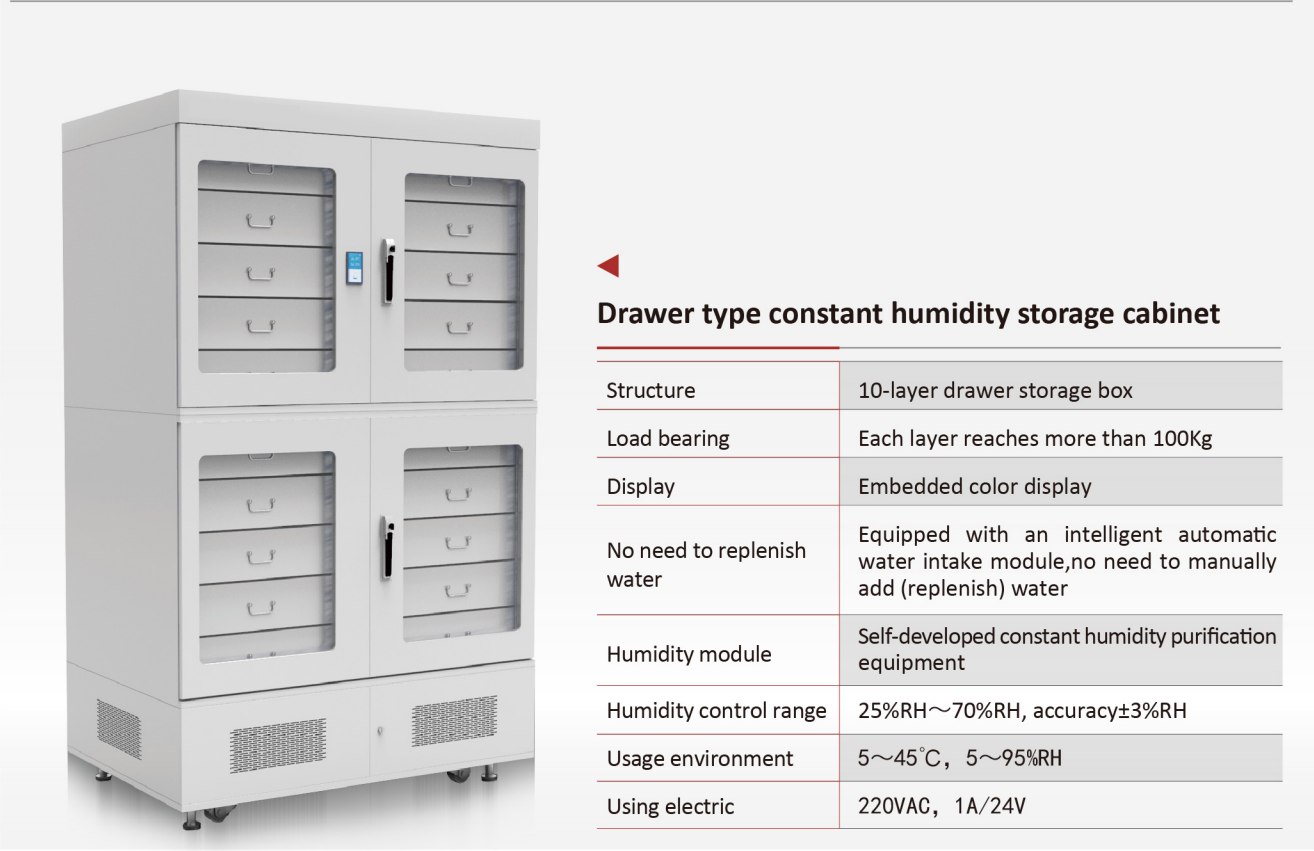| Wind volume	1600～2500 （m³/h）
Power	450W
Power supply	220V/50Hz
automatic function	The pollutant sensor automatically selects its appropriate operating air volume.
Indicator light	The indicator light flashes repeatedly to remind the user to replace it in time.
Safety protection	Safety protection micro switch to protect user's personal safety.
Multi-layer filtering	Pre-filter (removes larger particles), HEPA filter (adsorbs tiny particles), activated carbon filter (adsorbs harmful gases), C-band UV lamp and photocatalyst filter (decomposes harmful gases), and negative ion generator (refreshes Air).

Clean air

Stage 6

Stage 5

Air pollution

Stage 4

Stage 3

Stage 1   Stage 2
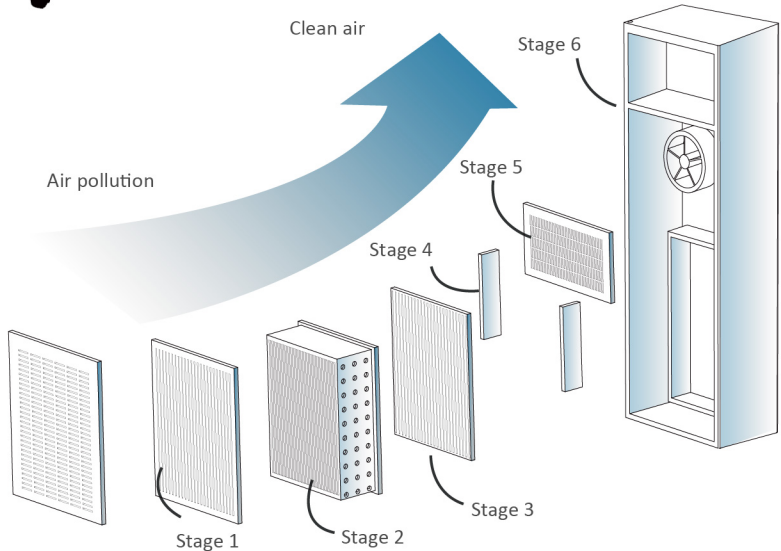
Working principle diagram of air purification and disinfection machine

The air purifier equipment is equipped with a wireless intelligent environmental sensor module to detect the air quality status in the warehouse in real time. It can effectively and quickly purify the air, ensure the clean air quality of the environment where cultural relics are preserved, and truly automate and balance the management of air quality inside the warehouse. Humanized design with rollers, convenient for staff to use, efficient purification, can remove a variety of harmful indoor gases, and provide a clean environment for cultural relics preservation.
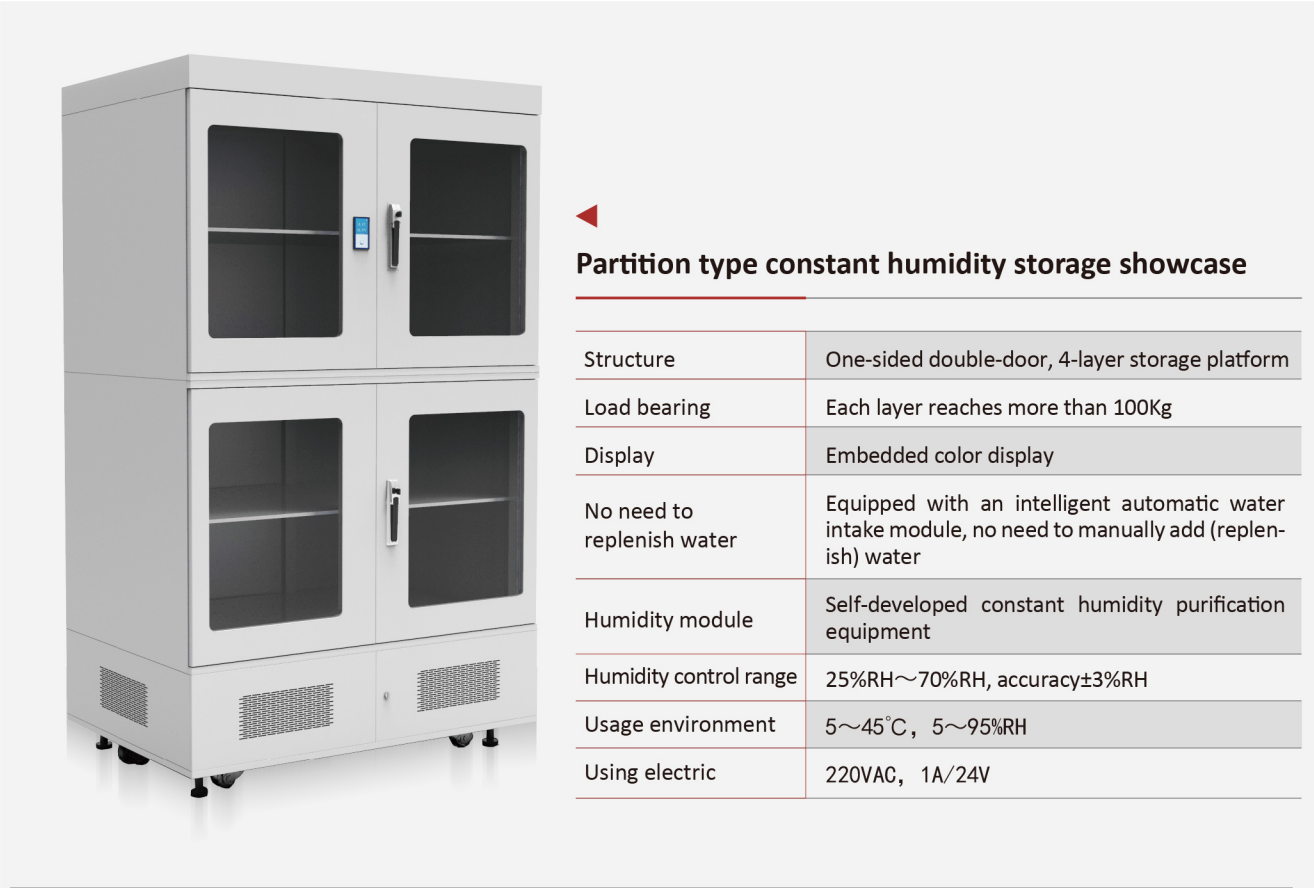
Partition type constant humidity storage showcase

Structure	One-sided double-door, 4-layer storage platform
Load bearing	Each layer reaches more than 100Kg
Display	Embedded color display
No need to replenish water	Equipped with an intelligent automatic water intake module, no need to manually add (replenish) water
Humidity module	Self-developed constant humidity purification equipment
Humidity control range	25%RH～70%RH, accuracy±3%RH
Usage environment	5～45℃，5～95%RH
Using electric	220VAC，1A/24V

Drawer type constant humidity storage cabinet

Structure	10-layer drawer storage box
Load bearing	Each layer reaches more than 100Kg
Display	Embedded color display
No need to replenish water	Equipped with an intelligent automatic water intake module,no need to manually add (replenish) water
Humidity module	Self-developed constant humidity purification equipment
Humidity control range	25%RH～70%RH, accuracy±3%RH
Usage environment	5～45℃，5～95%RH
Using electric	220VAC，1A/24V

Constant temperature and humidity storage cabinet

It is widely used in the long-term constant temperature and humidity storage of Chinese medicinal materials, museum and art gallery collections, and the maintenance of warehouse collections.

Features

- Improve the overall air-tightness and thermal insulation performance, and reduce the disturbance of the external environment to the micro-environment inside the cabinet.
- Solve the uniformity of the temperature field and humidity field in the cabinet.
- The refrigeration and constant humidity module is newly upgraded to provide stable and reliable temperature and humidity control effects.
- The air circulation in the cabinet adopts innovative methods such as uniform air, air supply, and return air, which effectively improves the uniformity of the temperature field and humidity field in the cabinet.
- When the fan blows air at the maximum air volume, the air flow speed in the cabinet is stable and the temperature and humidity flow,Remain stable with small fluctuations. Make it less disruptive to items.

Internal volume of storage showcase	0. 85m³	Temperature control stability	Set temperature value ±2℃
Air exchange rate of showcase	≤0. 15/d	Humidity control stability	Set humidity value ±3%RH
Temperature control range of showcase	15℃～30℃	Showcase temperature uniformity	≤2℃
Humidity control range inside the showcase	40%RH～70%RH	Humidity uniformity inside the showcase	≤5%RH

Energy-saving constant humidity storage showcase

"Can be used for calligraphy and painting, books, archival silk fabrics, leather products, animal and plant specimens,lacquerware, engravings, bronzes,Long-term storage of luxury goods and other collections to achieve preventive protection of collections"

Features

Active and passive regulation, energy conservation and environmental protection
- Support a combined humidity control method of constant humidity module (active) and fiber humidity control sheet (passive)
- Support the humidifying method of pure fiber humidifying sheets (passive)
- Compared to pure active regulation, the energy-saving rate of active and passive joint regulation is much greater than 50%

Constant humidity and long-term stability
- Customizable humidity control pads with any humidity value within the range of 30% to 70% RH
- The humidity inside the cabinet remains constant for a long time, with daily fluctuations less than ± 2%
- The humidity inside the cabinet exceeds the limit, the constant humidity module is activated, and the humidifying pad is activated, with a lifespan of more than 5 years

High air tightness and clean air
- The air change rate inside the cabinet is ≤ 0.05 times/day, with high air tightness and little external interference
- Clean the air inside the cabinet, effectively removing particulate matter, gaseous pollutants, microorganisms, etc
- Unattended, power outage, constant humidity, safety

Low oxygen and constant humidity storage showcase

Through gas replacement, the purity of clean and constant-humidity nitrogen in the storage cabinet can reach 99.5%, effectively preventing oxidation and insect damage of items stored in the cabinet.

◄
Features

- Highly integrated integrated design, the system is compact and small in size, suitable for a small amount of hypoxic storage needs, with low initial cost and no need to build a machine room, low maintenance, low energy consumption and high reliability.
- Electronically controlled adjustable light transmittance glass
- Integrated nitrogen and constant humidity machine, no need to add water, no need to drain water
- Functional industrial-grade high-reliability electronic control

Specification	1～2m³	Oxygen content control	0.5%～21%	Humidity stability	Set humidity value ±3%RH
Nitrogen purity	99.5%	Humidity control	20%～70%RH	Noise	Operating noise 1m directly in front 50dB(A)
operating system	One-touch operation, simple and convenient				

High system integration, low power consumption, and low operating noise
Constant humidity and oxygen reduction/high efficiency air tightness/intelligent control/green environmental protection

The new environmentally friendly low-oxygen and constant-humidity sterilization system uses the principle of physical separation to produce nitrogen with a purity of up to 99.99%. It accurately regulates humidity and effectively filters out external air.Impurities such as insect eggs, mold spores, and harmful dust in the external environment are then sent into the nitrogen-filled cabinet to establish a long-term low-oxygen and constant-humidity environment in the nitrogen-filled cabinet, which can effectively prevent cultural relics from being infested by insects, mildew, and bacteria, and prevent biological The role of infringement.

◄
Features

Oxygen reduction and humidity control performance
- Oxygen content control range: 0.1%~21%
- Normal pressure nitrogen filling, constant humidity and oxygen reduction, with a precision of constant humidity control within 2.5%

High airtightness of the cabinet body
- High airtightness cabinet design and process, with a ventilation rate less than 0.02d⁻¹

Remote monitoring/multi machine linkage
- Supports wireless communication methods such as ZIGBEE, LORA, and 4G, making networking more convenient and flexible
- Can display oxygen content, nitrogen purity, humidity, temperature data, and operating status in the system
- Information can be uploaded to the cloud and remotely monitored through mobile devices
- Support multi host linkage to expand host nitrogen production capacity

Easy to use and maintain
- The entire series of products adopt oil-free air compressors, greatly reducing maintenance workload
- The operation interface is simple and easy to use
- The nitrogen generating humidity machine in the low oxygen and constant humidity display and storage system has functions of no drainage and no water addition

Hypoxic disinfection and sterilization cabinet   Low oxygen host
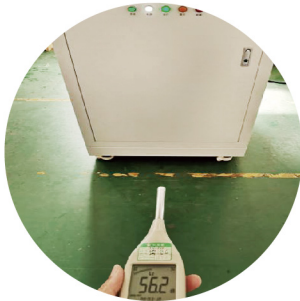
Technical Parameter	
Working environment conditions	Ambient temperature: 5℃~35℃, good ventilation; Ambient humidity: ≤80%RH;
Regulate volume	1~10m³
Cabinet pressure control range	±200Pa (gauge pressure)
Nitrogen supply flow	2~5m³/h
Nitrogen purity	99.99%
Cabinet ventilation rate	≤0.02d⁻¹
Oxygen content control range	0.1%~21%
Oxygen reduction time	≤8h (oxygen content dropped from 21% to 0.5%)
Relative humidity control range	30%~65%RH (ambient temperature: 20℃; control space tightness ≤0.02d⁻¹)
Humidity control stability	Set humidity value ±2.5% RH
Cleanliness of the cabinet environment	Effectively filter out oxygen, harmful gases, dust particles, mold spores, insect eggs, etc. in the air.
Air flow purification method	Adsorption and filtration of nitrogen production systems.
humidification water tank	The water tank has a capacity of 10L, with liquid level indicator and liquid level switch, and manual water addition.
Humidification water tank liquid level detection	Side-mounted liquid level switch provides water shortage alarm.
Power supply	AC380V±10%/3-phase/50Hz±2Hz
Power consumption	3200W (single host)
Noise	Operating noise 1m directly in front is 56dB(A)

**High airtight nitrogen-filled cabinet**   **Highly integrated systems and controls**   **Ultra-low operating noise on site**

- The self-developed highly integrated system adopts internationally renowned brand oil-free air compressors. The structure is compact and the power consumption is only 50% of competing products. It releases less waste heat and waste water to the environment and requires very little maintenance.
- Low operating noise, leading the industry.
- All electrical components adopt industrial grade and industrial automation wiring technology.
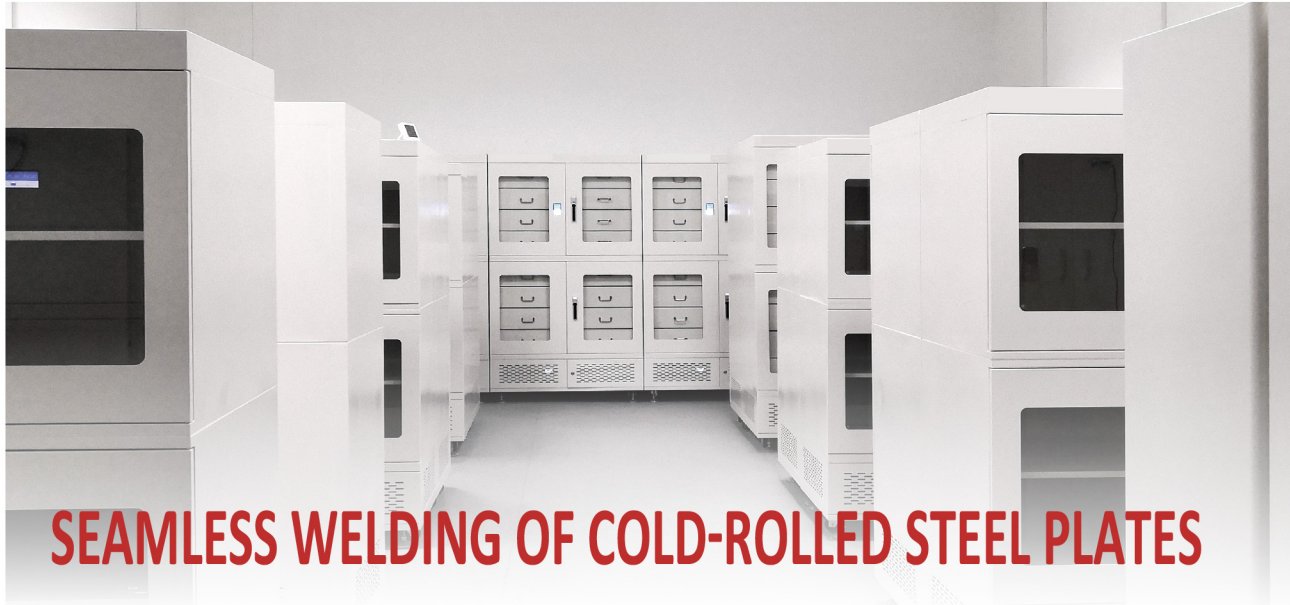
SEAMLESS WELDING OF COLD-ROLLED STEEL PLATES

Smooth surface, not easily deformed, high strength, multi-layer protection, longer lifespan

laser cutting	Electrostatic spraying	Strict selection and thickening	Integrated molding
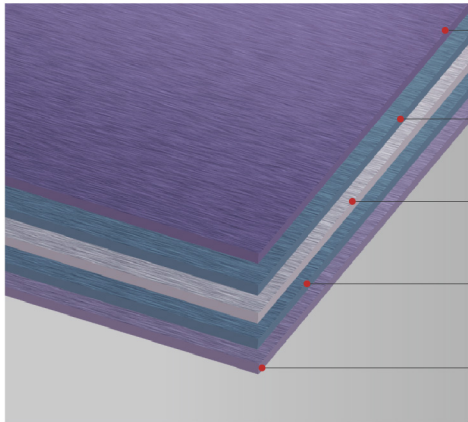
Environmentally friendly electrostatic powder coating
Electrostatic powder coating, strong adhesion, smooth surface, and anti-corrosion.

Rust proof phosphating layer
Phosphating spray provides anti-corrosion protection for base metal

Just at the grassroots level
Selected National Standard Grade 1 Cold Rolled Steel Plates

Rust proof phosphating layer
Double sided strengthening treatment effectively prevents metal from being corroded

Environmentally friendly electrostatic powder coating
Double sided reinforced spraying, consistent inside and out, beautiful and elegant.

Common storage cabinets

Multi functional cultural relic storage cabinet	Mobile mesh cultural relic storage cabinet
Combination cultural relic storage cabinet	Partition type constant humidity storage cabinet
Heavy duty cultural relic storage cabinet	Drawer style constant humidity storage cabinet
Drawer style cultural relic storage cabinet	Constant temperature and humidity storage cabinet
Mobile standard cultural relic storage cabinet	Low oxygen constant humidity storage cabinet

Multi functional cultural relic storage cabinet			
Structure	Single side up and down doors, 5-storey storage platform	**Workmanship**	Phosphating treatment and electrostatic spraying technology
Material Science	GB3280 Domestic High Quality Cold Rolled Steel Plate	**Stability**	Optional anti tipping device
Bearing	Each layer reaches over 100kg	**Scope of application**	Bronze ware, ceramics, minerals, etc

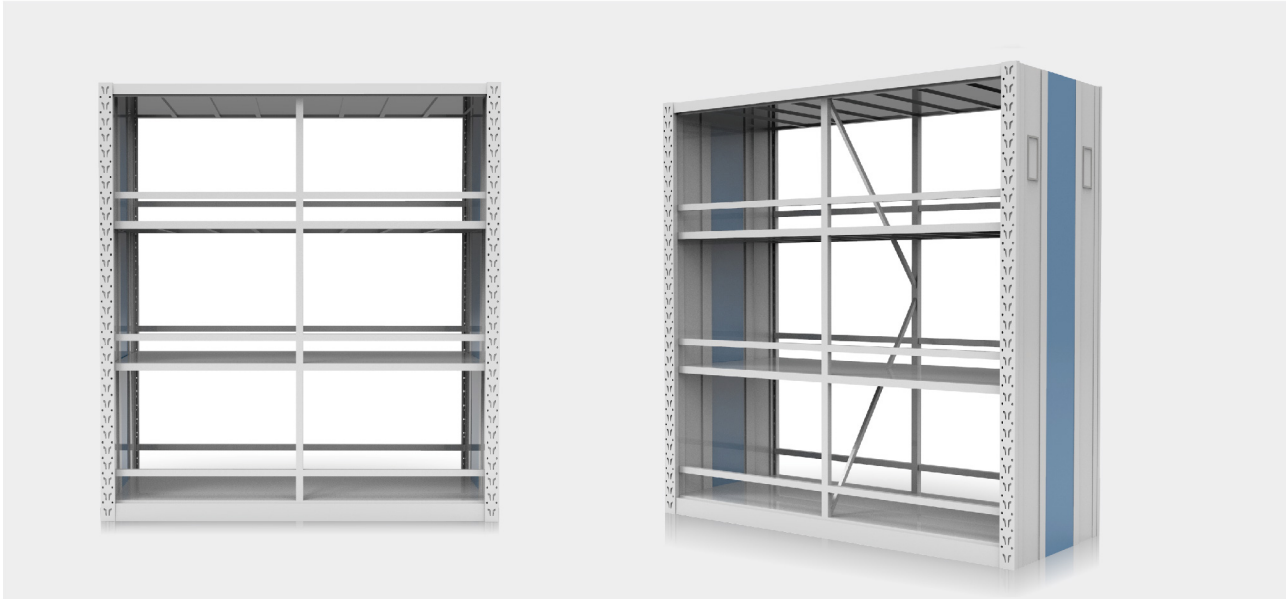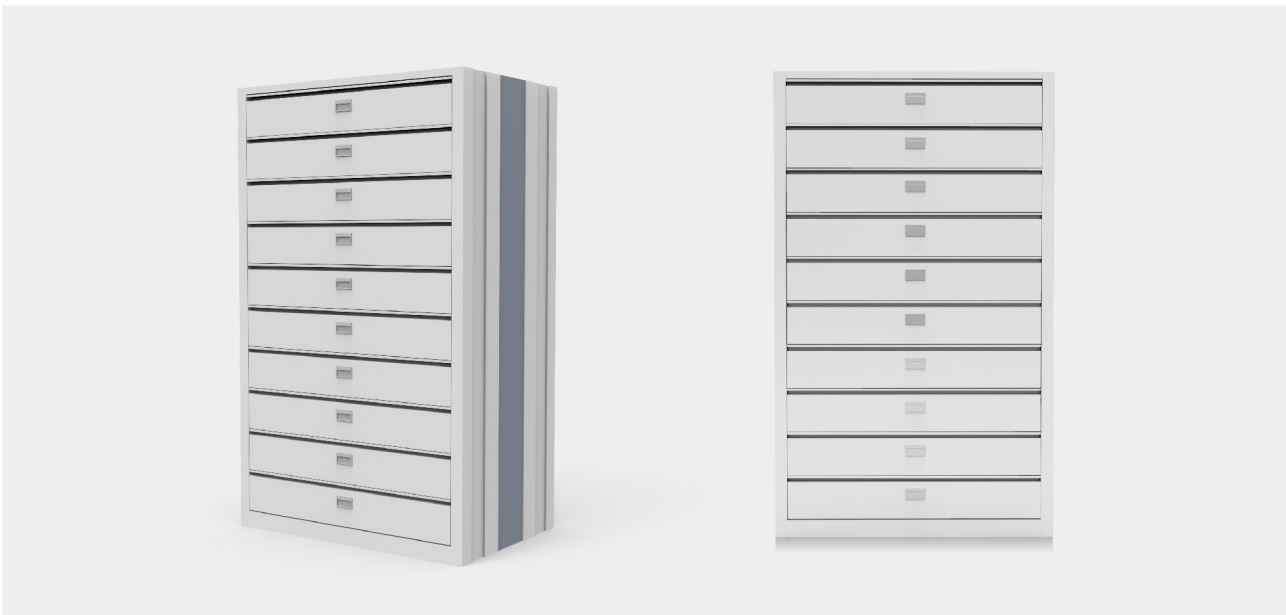| Combination cultural relic storage cabinet			
Structure	Combination type, upper partition, bottom 6-story drawer	**Workmanship**	Phosphating treatment and electrostatic spraying technology
Material Science	GB3280 Domestic High Quality Cold Rolled Steel Plate	**Stability**	Optional anti tipping device
Bearing	Each layer reaches over 100kg	**Scope of application**	Bronze ware, ceramics, minerals, etc

Heavy duty cultural relic storage cabinet

Structure	No door structure, with a total of 4 storage platforms	**Workmanship**	Phosphating treatment and electrostatic spraying technology
Material Science	GB3280 Domestic High Quality Cold Rolled Steel Plate	**Stability**	Optional anti tipping device
Bearing	Each layer reaches over 300kg	**Scope of application**	Heavy bronze ware, stone tablets, and stone carvings

Drawer style cultural relic storage cabinet
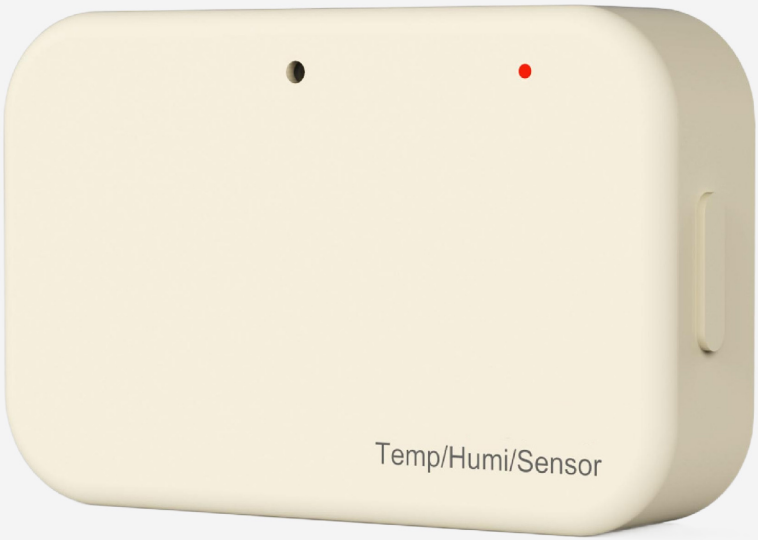
Structure	10 drawer levels, equipped with heavy-duty three section silent sliding rails	**Workmanship**	Phosphating treatment and electrostatic spraying technology
Material Science	GB3280 Domestic High Quality Cold Rolled Steel Plate	**Stability**	Optional anti tipping device
Bearing	Each layer reaches over 100kg	**Scope of application**	Small cultural relics such as books, inscriptions, coins, jade, etc

Dense multifunctional cultural relic storage cabinet			
Structure	Single side up and down doors, 6-story storage platform	**Workmanship**	Phosphating treatment and electrostatic spraying technology
Material Science	GB3280 Domestic High Quality Cold Rolled Steel Plate	**Stability**	There are buffering and sealing devices between columns
Bearing	Each layer reaches over 100kg	**Scope of application**	Bronze ware, ceramics, minerals, etc
传动方式	Central axis belt dual axis transmission mode		

Temperature and humidity sensor

Effectively used in environmental temperature and humidity monitoring in museums, libraries, archives exhibition environments and warehouses, as well as smart homes and other fields.

◄

Features

- Using Zigbee2 4G wireless network
- Line transmission rate: 115200 BPS
- LCD display resolution Temperature 0.1 ° C/Humidity 0.1% RH.
- Swiss original imported integrated temperature and humidity sensor Record interval 2s-24h custom setting.
- Record interval 2s-24h custom setting
- Support for record breakpoint continuation function
- Temperature and humidity sensor * 2 (button battery), with the rest equipped with 2 # 5 batteries

Temperature range	−40～85℃	Humidity range	0～100%RH
Temperature resolution	0.1℃	Humidity resolution	0.1%RH
Temperature accuracy	±0.3℃	Humidity accuracy	±2%RH

Temp/Humi/Light Sensor

illumination temperature and humidity sensor

Effectively used in environmental temperature, humidity and light intensity monitoring in museums, libraries, archives exhibition environments and warehouses, as well as smart homes and other fields.

◄

Features

- It adopts imported high-precision and high-sensitivity temperature and humidity sensors with fast response and high accuracy.
- Using (NDIR) non-dispersive infrared technology to measure illumination ensures low power consumption of the product.
- Ultra-low power consumption design, the instrument is powered by two 3.6V lithium batteries, and can last for more than 12 months under normal operation.
- Professional temperature and humidity gas circuit circulation structure design makes temperature and humidity sampling more sensitive and accurate.
- The compact and exquisite appearance design and carefully selected color combinations allow the instrument to form an organic unity with various exhibition environments.
- Wireless IoT data monitoring can centrally and effectively monitor the changes in temperature, humidity and light intensity of each placed node.
- TYPE-C USB communication interface and built-in multi-point accuracy calibration algorithm ensure the accuracy of the instrument.
- The professional analysis software is easy to use and provides multiple data protections to ensure that data will never be lost.
- It has the function of resuming transmission after power outage. As long as the network is restored, historical data can be effectively resumed to the server, effectively ensuring the continuity and integrity of data monitoring.

illumination range	0～3000lx	Temperature range	−40～85℃	Humidity range	0～100%RH
illumination resolution	0.1lx	Temperature resolution	0.1℃	Humidity resolution	0.1%RH
illumination accuracy	±4%rdg	Temperature accuracy	±0.3℃	Humidity accuracy	±2%RH

Temp/Humi/CO₂ Sensor

CO2 temperature and humidity sensor

This instrument adopts wireless data transmission to collect and record data, and can achieve remote real-time monitoring of temperature and humidity in indoor environments such as intelligent.

◄

Features

- Adopt imported high-precision and high-sensitivity temperature and humidity sensors, with fast response and high accuracy.
- Use (NDIR) non-dispersive infrared technology to measure carbon dioxide, ensuring low power consumption of the product.
- Ultra-low power consumption design, the instrument is powered by two 3.6V lithium batteries, which can last for more than 12 months under normal operation.
- Professional temperature and humidity air circuit structure design makes temperature and humidity sampling more sensitive and more accurate.
- The compact and exquisite appearance design and carefully matched color combinations allow the instrument to form an organic unity with various exhibition environments.
- Wireless IoT data monitoring can centrally and effectively monitor the temperature, humidity and carbon dioxide concentration changes of each placed node.
- TYPE-C USB communication interface, built-in multi-point precision calibration algorithm, making the instrument accuracy more guaranteed.
- Professional analysis software is easy to use and provides multiple data protections to ensure that data will never be lost.
- It has the function of resuming transmission after power outage. As long as the network is restored, historical data can be effectively resumed to the server, effectively ensuring the continuity and integrity of data monitoring.

CO2 range	0～5000ppm	Temperature range	−40～85℃	Humidity range	0～100%RH
CO2 resolution	1ppm	Temperature resolution	0.1℃	Humidity resolution	0.1%RH
CO2 resolution	3%±60ppm	Temperature accuracy	±0.3℃	Humidity accuracy	±2%RH

VOC Temperature and Humidity Sensor

Widely used for monitoring environmental temperature, humidity, and VOC concentration in museums, libraries, archives, exhibition environments, warehouses, and smart homes.

◄

Features

- Adopting imported high-precision and high sensitivity temperature and humidity sensors, it has fast response and high accuracy.
- The use of non dispersive infrared (NDIR) technology to measure VOC ensures low power consumption of the product.
- Designed with ultra-low power consumption, the instrument is powered by two 3.6V lithium batteries, and can operate normally for more than 12 months.
- Professional design of temperature and humidity air circulation structure makes temperature and humidity sampling more sensitive and accurate.
- The compact and exquisite exterior design, with carefully blended color combinations, allows the instrument to form organic unity with various exhibition environments.
- Wireless IoT data monitoring can centrally and effectively monitor the temperature, humidity, and VOC concentration changes of each placement node.
- The TYPE-C USB communication interface is equipped with a built-in multi-point accuracy calibration algorithm to ensure the accuracy of the instrument.
- Professional analysis software is simple and easy to use, with multiple data protections to ensure that data is never lost.
- Equipped with power outage continuation function, as long as the network is restored, historical data can be effectively transmitted to the server, effectively ensuring the continuity and integrity of data monitoring.

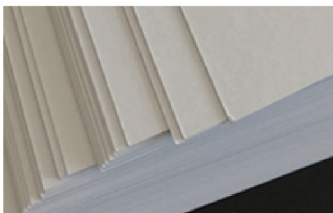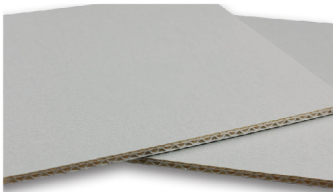| VOC range	0～20ppm	Temperature range	−40～85℃	Humidity range	0～100%RH
VOC resolution	0. 01ppm	Temperature resolution	0. 1℃	Humidity resolution	0. 1%RH
VOC accuracy	±3% FS	Temperature accuracy	±0. 3℃	Humidity accuracy	±2%RH

HE28R-UV Temperature and Humidity Sensor

Widely used for monitoring environmental temperature, humidity, and UV intensity in museums, libraries, archives, exhibition environments, warehouses, and smart homes.

◄

Features

- Adopting imported high-precision and high-sensitivity temperature and humidity sensors, with fast response and high accuracy.
- Using the photoelectric conversion principle of silicon photocells to measure ultraviolet intensity.
- The instrument is designed with ultra-low power consumption and is powered by two 3.6V lithium batteries. It can operate normally for more than 12 months.
- Professional design of temperature and humidity air circulation structure makes temperature and humidity sampling more sensitive and accurate.
- The compact and exquisite appearance design, along with carefully crafted color combinations, allows the instrument to form an organic unity with various exhibition environments.
- Wireless IoT data monitoring can effectively monitor the temperature, humidity, and light intensity changes of each placement node in a centralized manner.
- The TYPE-C USB communication interface is equipped with a built-in multi-point accuracy calibration algorithm, ensuring better instrument accuracy.
- Professional analysis software is simple and easy to use, with multiple data protections to ensure that data is never lost.
- Equipped with the function of power outage and continuous transmission, as long as the network is restored, historical data can be effectively transmitted to the server, effectively ensuring the continuity and integrity of data monitoring.

UV range	0～1000uW/cm²	Temperature range	−40～85℃	Humidity range	0～100%RH
UV resolution	0. 1uW/cm²	Temperature resolution	0. 1℃	Humidity resolution	0. 1%RH
UV accuracy	±8%rdg	Temperature accuracy	±0. 3℃	Humidity accuracy	±2%RH

Name	Application	Acid-free	Corrosion resistance	Material	Others
Special acid free protective paper for cultural relics	Used for small cultural relic packaging envelopes, packaging paper inside the bag box	No acidification treatment, with a weak alkaline pH value, effectively protecting cultural relics	It can effectively resist corrosion and protect cultural relics from adhesive penetration.	Does not contain lignin, sulfides, or recycled pulp.	Resilience: Paper has strong tensile resistance and is easy to fold and cut.
Special acid free archival paper for cultural relics	Used for making packaging, compartments, cards, letter covers, etc.				
Special acid free corrugated cardboard for cultural relics protection - single-layer wavy pattern	Used for making small cultural relic packet box	Made from pure pulp with a weak alkaline pH value, effectively protecting cultural relics.			practicability: Single layer cardboard is easy to fold and cut, with a wavy design for higher strength.
Special acid free corrugated cardboard for cultural relics protection - double-layer staggered	Used for making medium to large cultural relic packet box				practicability: Easy to cut, double-layer staggered design with strong compressive strength, protecting cultural relics from accidental collisions.
Aosong board specially designed for cultural relics packet box	Used for making large and heavy wooden cultural relics packet box	The material has undergone non acidification treatment and is durable.		The board has high strength, strong pressure bearing capacity, and is not easily deformed.	No pests: After fumigation, disinfection, and insecticide treatment, it is not easy to mold and has no hidden danger of biological diseases.

| Name	Application	Acid-free	Material	Others
Environmentally friendly PE foam	Used for cushioning and filling materials inside the pouch.	The material has undergone non acidification treatment and is weakly alkaline.	To use flame retardant materials with strong resistance to high and low temperatures to ensure the safety of cultural relics.	Good seismic performance, strong toughness, and not easily deformed. Using physical foaming technology, it has good chemical stability.
Cotton wrapping material	Suitable for the wrapping material of the pouch, it can be used for filling and supporting the interior of the pouch.	After non acidification treatment, the pH value is above 7.	Made of 100% pure cotton.	Soft texture, pollution-free, not prone to mold growth, effectively isolating cultural relics.
Imitation of Song brocade packaging materials	Commonly used as a wrapping material for traditional wooden pouches to enhance their aesthetic appearance.		Traditional silk craftsmanship, non fading and pollution-free.	Soft texture, pollution-free, not prone to mold growth, effectively protecting cultural relics.
Acid free adhesive	Fix and shape the materials and components inside the cultural relic box.	Non toxic, odorless, non polluting, chemically stable, pH value.	High quality raw materials that do not cause mold growth, yellowing, discoloration, or delamination.	For liquid adhesive bonding, it has a smooth and fast drying adhesive strength, long durability, and is suitable for long-term use.
Main accessories of the pouch	The main accessories used for the production of cultural relic boxes.	Free from plasticizers, sulfides, copper ions, iron ions, oxidants, and other substances.	Plastic buckles, corners, labels, etc. are all made of ABS environmentally friendly materials.	The texture is sturdy and not easily damaged, which can effectively prevent the deformation or damage of the capsule.

Shake lid pouch
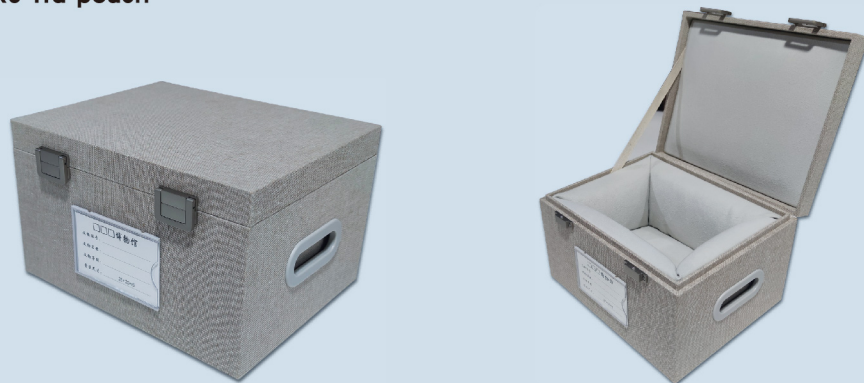
Scroll style pouch

Heaven and earth covered pouch
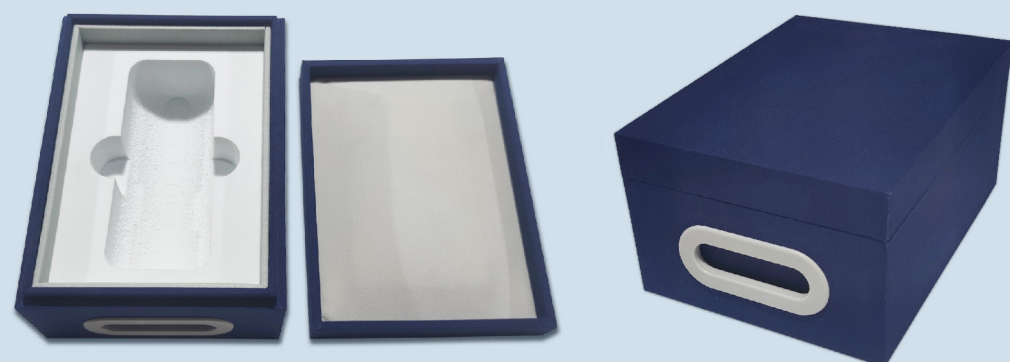
Foldable pocket
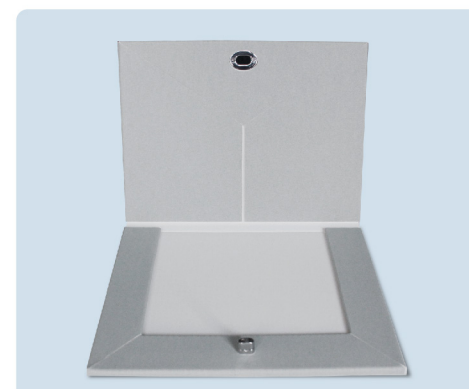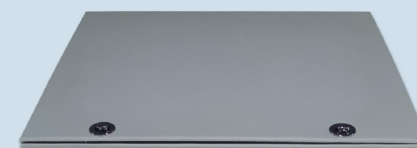
■ **Box type pouch**

■ **Duo Bao Ge style pouch**

Cabinet style pouch ■

Traditional handmade pouches ■

Providing the optimal environmental monitoring system for museums

The 8th National Top Ten Cultural Museum Technology Products and Services Promotion Event Final Review Meeting

Clairvoyance cloud platform system

Environmental real-time data

Environmental historical data

Preservation status of cultural relics

Equipment operation management

Alarm information

Cultural relics collection information

❶ **Data optimization and integration**

Data query

❷ **Measurement and control linkage**

Environmental measurement and control

❸ **Environmental information is processed in a timely manner**

Early warning system

❹ **Data fusion analysis**

Analysis and evaluation

SUCCESS CASES

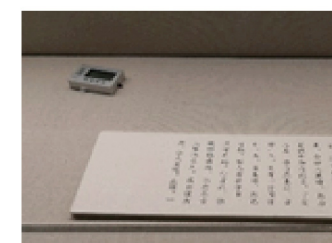- The Palace Museum

- National Museum of China

- Nanjing Museum

- Sanxingdui Museum

- Shandong Museum

- Guangdong Museum

- Anhui Museum

The Palace Museum

- In October 2015, the western area of the Palace Museum, where Cining Palace and Kangshou Palace are located, was opened to the public for the first time. 91 of them were national treasure-level cultural relics. HUATO provided real-time monitoring of the exhibition environment of this batch of precious cultural relics.

- In September 2017, the Palace Museum successfully held "A Thousand Miles of Rivers and Mountains - Special Exhibition of Green Landscape Paintings of Past Dynasties" and "Special Exhibition of Zhao Mengfu's Calligraphy and Paintings". HUATO provided purification and humidity control equipment for these eye-catching exhibitions to display precious cultural relics and created a stable and clean environment for them.

National Museum of China

Wireless temperature and humidity monitoring terminal

Wireless light and UV intensity monitoring terminal
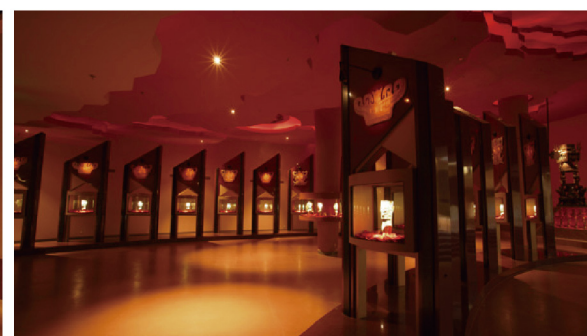
POE base station

- In 2011, when the National Museum of China added a new building, HUATO completed the construction of a wireless temperature and humidity monitoring system which is able to cover the entire museum.

- In 2016, an equipment update was carried out. HUATO ToMonitor distributed software system saves collected data information in real time and establishes a large-capacity "museum environment historical database".

Nanjing Museum

- In 2013, HUATO built a comprehensive real-time environmental monitoring system for the exhibition halls and warehouses of Nanjing Museum.

- In 2015, HUATO built a humidity environment control system for the calligraphy and painting hall of Nanjing Museum to provide continuous constant humidity control for key exhibition halls and showcases.

- In 2016, HUATO purification and constant humidity machines performed constant humidity control on key cultural relics in the "Pharaoh King" exhibition to meet the strict requirements of precious cultural relics for a low-humidity environment.
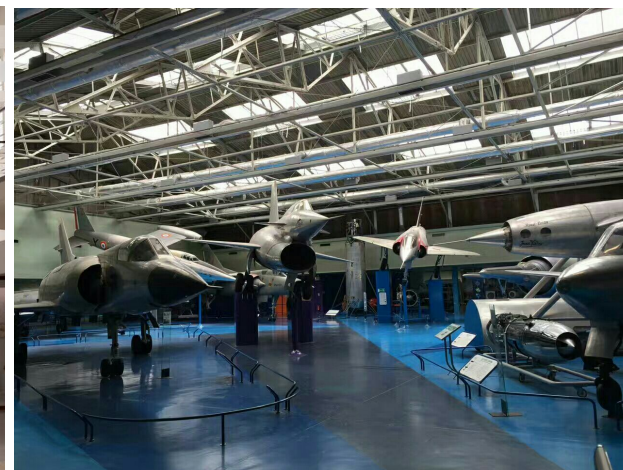
Sanxingdui Museum

- In 2018, HUATO upgraded the lighting in the exhibition hall of the Sanxingdui Museum in Guanghan, Sichuan. Some active micro-environment control equipments, cabinet racks and capsules were set, so that the exhibition hall and warehouse were regulated and controlled much better. Hence the condition of collection and exhibition equipment has been highly improved.

Shandong Museum

- In 2019, HUATO built an environmental control system in each exhibition hall of the Shandong Museum and carried out sealing modifications on the display cabinets.

- In 2021, HUATO equipped the exhibition hall of fine cultural relics unearthed from the Zhutan Tomb of the Ming Dynasty in the Shandong Museum with display cabinets, micro-environment control and other equipment to enable the cultural relics to achieve a stable, constant humidity micro-environment for the preservation of cultural relics.

France Musée de l'Air et de l'Espace

In January 2024, our company provided constant temperature and humidity storage cabinets, Hypoxic-constant humidity storage systems, energy-saving constant humidity storage cabinets, and micro environment humidity control integrated machines for some precious cultural relics to the French Musée de l'Air et de l'Espace.

Shenzhen Museum

- In October 2016, our company established a comprehensive environmental monitoring and evaluation system for the Shenzhen Museum. Not only wireless sensor detection network, but also multiple environmental monitoring terminals are configured and combined with various offline detection devices. At the same time, improve the airtightness of display cabinets, install display cabinet purification and humidity control machines, and renovate lighting. We have renovated the constant temperature and humidity air conditioning system for the protection of cultural relics in the warehouse and special exhibition hall.
- In 2017, we were responsible for upgrading and renovating the exhibition hall of Shenzhen Museum.
- In 2024, we will continue to assist and cooperate in a friendly manner.

Guangdong Museum

- In 2017, HUATO reinforced and upgraded the wall display cabinets in the temporary exhibition hall of the Guangdong Provincial Museum.
- In 2019, HUATO equipped the warehouse of the Guangdong Provincial Museum with constant humidity cabinets and cultural relic capsules.
- In 2020, HUATO modified and reinforced the airtightness of the display cabinets in the wood carving exhibition hall of the Guangdong Provincial Museum.
- In 2021,HUATO will provide constant humidity machine assembly services for the temporary exhibition hall of the Guangdong Provincial Museum.

Anhui Museum

- In 2015, HUATO conducted comprehensive real-time monitoring of the cultural relics preservation environment in the warehouses and exhibition halls of Anhui Museum, and equipped it with advanced environment control equipment and laboratory-related supporting equipment.

- In 2018, HUATO provided showcase purification and constant humidity machines for several exhibitions such as Anhui Museum's "Anhui Civilization History Exhibition" to purify and control the humidity in some precious cultural relic showcases.

- In 2020, HUATO supplied constant humidity storage cabinets for cultural relics to Anhui Museum.