User Manual



Photostability Chamber

NPSC-100

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1. Introduction

Photostability Chamber NPSC-100 offers a 210L capacity with a flat shelf design for flexible sample arrangement. It uses a water-cooled xenon arc lamp for stable and uniform light exposure. This unit performs reliably in ambient conditions from 5°C to 35°C with up to 85% RH. It ensures excellent thermal insulation with polyurethane foam and cotton layers. Our chamber includes a 7-inch programmable color LCD touchscreen for intuitive control.

2. Features

- Uniform air circulation
- Double-layer observation window
- USB/Ethernet connectivity
- Real-time data display
- Quiet operation
- Adjustable spray cycle

3. Specifications

Model No.	**NPSC-100**
Chamber capacity	210L
Chamber type	Flat shelf
Chamber temperature range	Ambient to +100°C ± 2°C
Black panel temperature	+35°C to +100°C ± 2°C
Humidity range	20% to 98% RH
Humidity deviation	±5%RH
Water spray cycle	1 to 9999 hours 59 mins (adjustable)
Environmental condition	5°C to +35°C, ≤ 85%RH
Irradiation source	1 piece of 4500W water-cooled xenon arc lamp
Filter	Daylight filter
Controller	Programmable color LCD touchscreen controller, RS232 interface
Water supply system	Automatic water supply Water purification system
Air circulation	Centrifugal wind fan
Radiometer	Radiometer, Tolerance: ±5%
Heating element	Nichrome heater
Cooling element	Mechanical compression refrigeration system
Humidification system	External isolation, stainless steel surface, evaporation humidifier
Safety features	Over-temperature protection, over-current protection, water shortage protection, earth leakage protection, phase sequence protection
Built-in water tank	270×300×900mm
View window size	250×330mm
External material	Steel plate with protective coating
Internal material	SUS304 stainless steel
Thermal insulation	Polyurethane foam and cotton insulation
Observation window	Interior lighting, double-layer thermostable silicone rubber sealing
Noise	65 dBA
Standards	ASTM G155, ASTM G151, ISO16474-2
Power supply	AC220V, 60Hz 1P
Internal dimension	500×600×700 mm
Overall dimension	1000×2450×1990 mm
Package dimension	1380×1310×2180mm
Net weight	402 kg
Gross weight	586 kg

4. Applications

Photostability Chamber NPSC-100 is used to simulate sunlight and environmental conditions to evaluate materials' light stability and aging behavior. It is commonly used in pharmaceutical labs, research institutions, and quality control departments.

5. Instrument Introduction

5.1 Instrument Structure

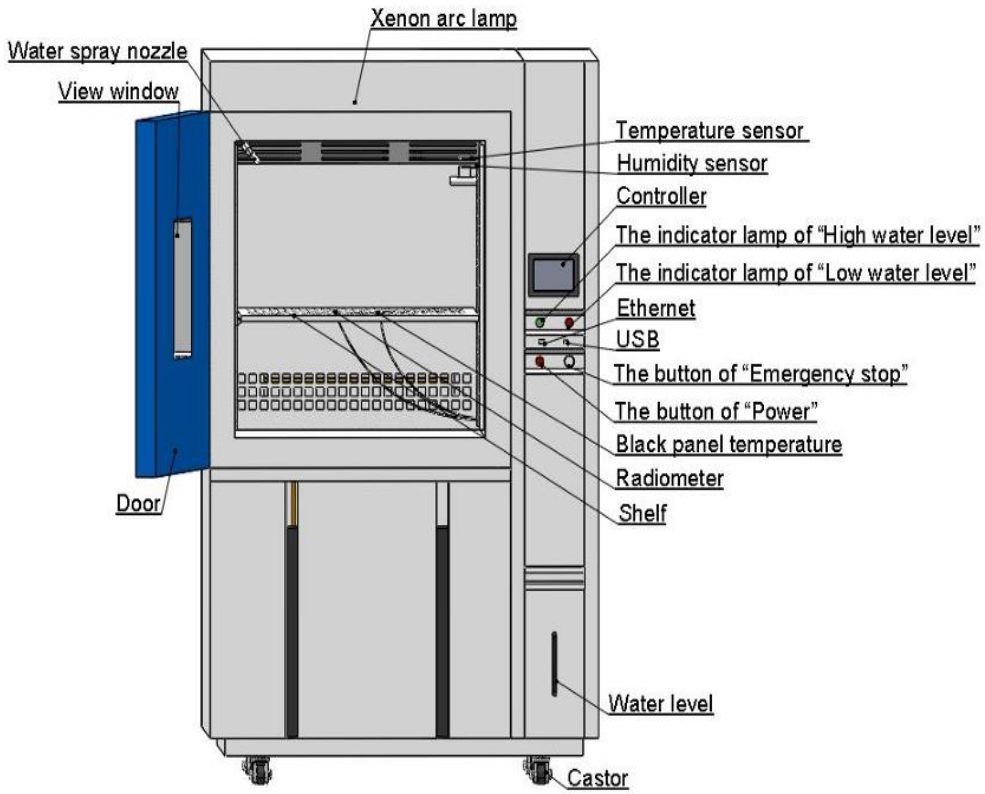


Figure-1

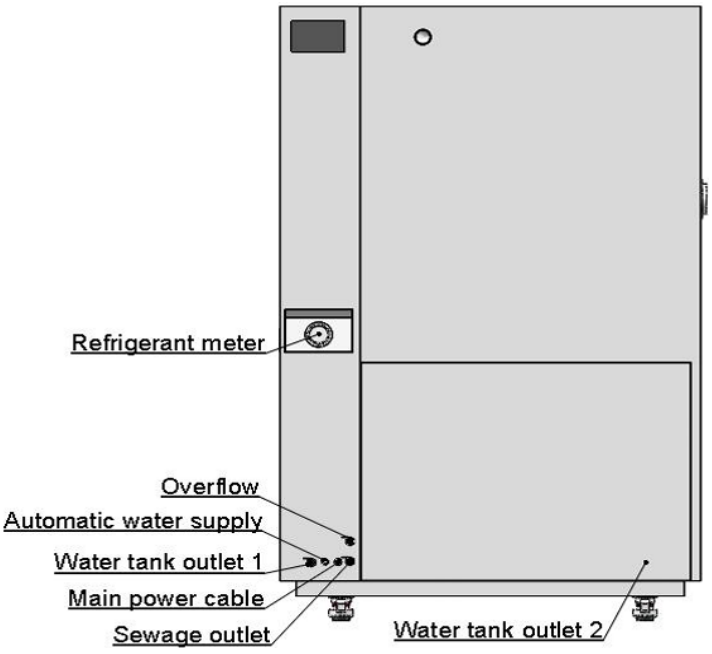


Figure-2

5.2 Instrument composition

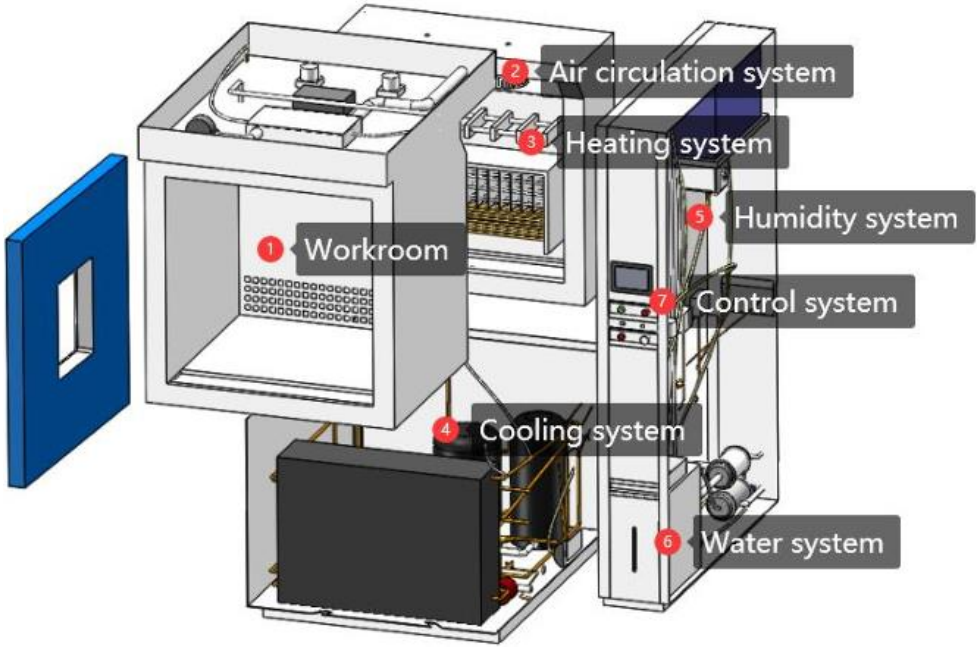


Figure-3

5.2.1 Workroom

1) The internal material is 304 stainless steel, mirror surface, rust-proof to high and low temperature and moisture corrosion resistance, nice ruggedness and long life; Inside the workroom, it is installed.
   - Xenon arc lamp
   - Radiometer
   - Black Panel thermometer
   - Daylight Filter
   - Spray nozzles

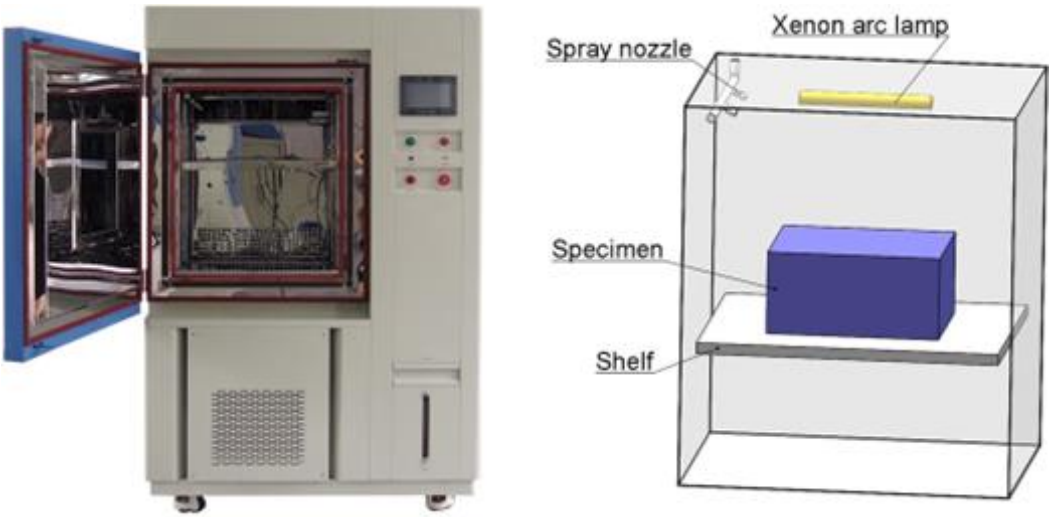


Figure-4

2) **Sample Holder**
   - Adjustable and removable SUS304 stainless steel punching sample shelves.
   - Standard load of 50 Kgs for each layer of the sample shelf.

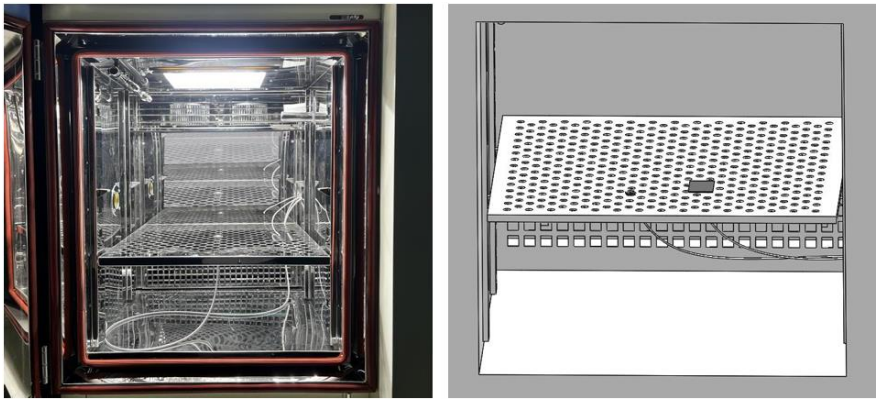


Figure-5

3) **Irradiation Source – Xenon arc lamp**
   - Irradiation Source with 1 piece of 4500 W water-cooled xenon lamp with inner quartz and outer borosilicate filter.
   - Average Lamp Life is 1600 hours.
   - Daylight B/B.

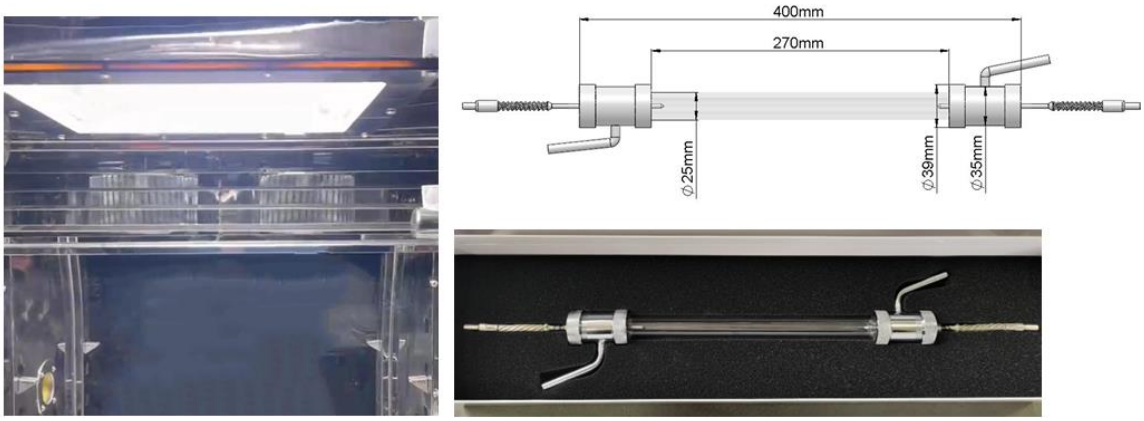


Figure-6

5.2.2 Air Circulation System

- The high-quality centrifugal fan is used to supply air circulation, making the temperature distribution in the test area uniform.
- Air circulation adopts an air outlet at the top and an air return at the bottom, and the wind speed and pressure follow the test standard, and the temperature is stabilized now of switching.
- The high-quality centrifugal fan is used to supply air circulation, making the temperature distribution in the test area uniform.

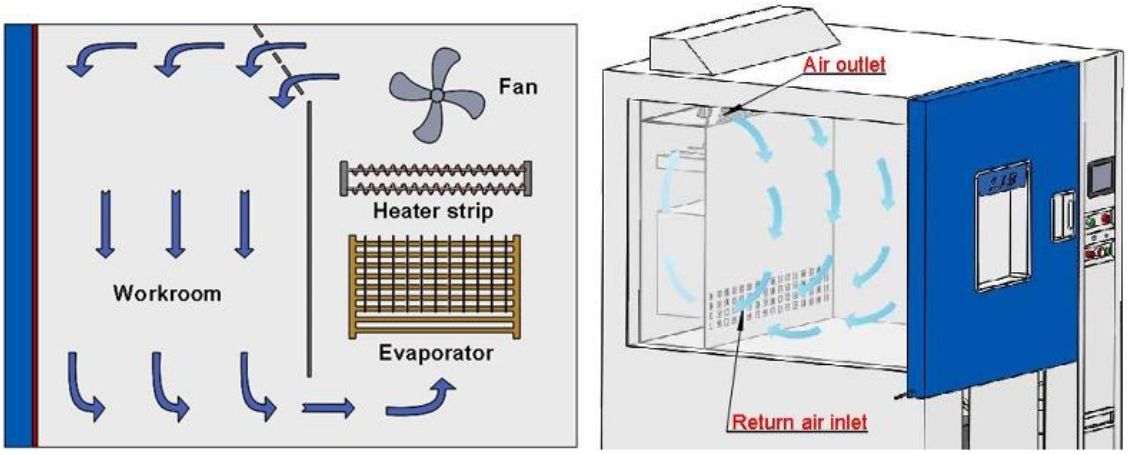


Figure-7

5.2.3 Heating System

- Nichrome alloy electric wire heater, which is located at the back of the workroom.
- The heating tube is made of corrosion-resistant material and is durable.

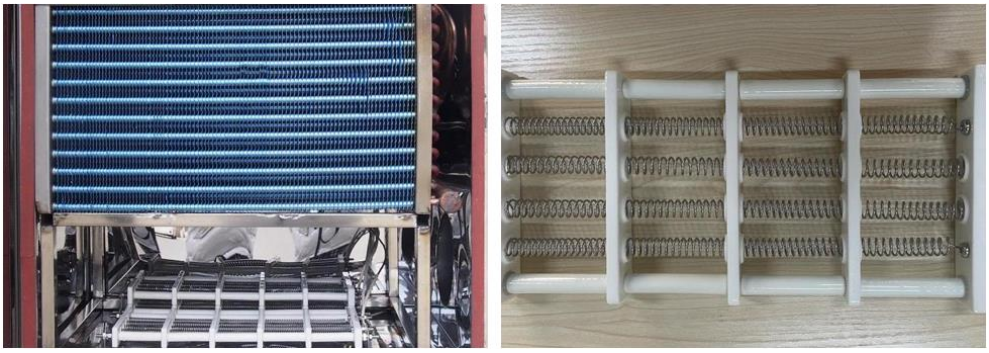


Figure-8

5.2.4 Cooling System

- Mechanical compression refrigeration system.
- The refrigerating unit is the compressor.
- Environment-friendly refrigerant.
- After the liquid refrigerant absorbs the heat of the cooled object in the evaporator, it is vaporized into low-temperature and low-pressure steam, sucked by the compressor, compressed into high-pressure high-temperature steam, discharged into the condenser, and radiated to the cooling medium in the condenser, condensed into a high-pressure liquid, throttling through a throttle valve into a low-pressure low-temperature refrigerant, and again entering the evaporator to absorb heat and vaporize, to achieve the purpose of cycle refrigeration. In this way, the refrigerant completes a refrigeration cycle through four basic processes of evaporation, compression, condensation, and throttling in the system.

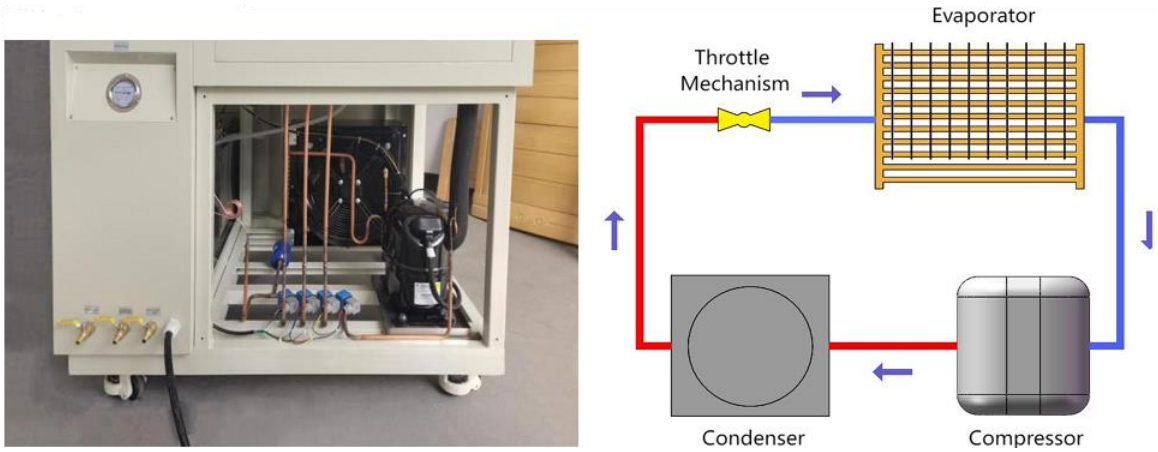


Figure-9

5.2.5 Humidity System

- When the current humidity is less than the set point humidity, the equipment is automatically humidified. The humidification is automatically heated by the humidification tank.
- When the water is heated, steam is generated, and then the steam is injected into the working room to increase the test humidity.

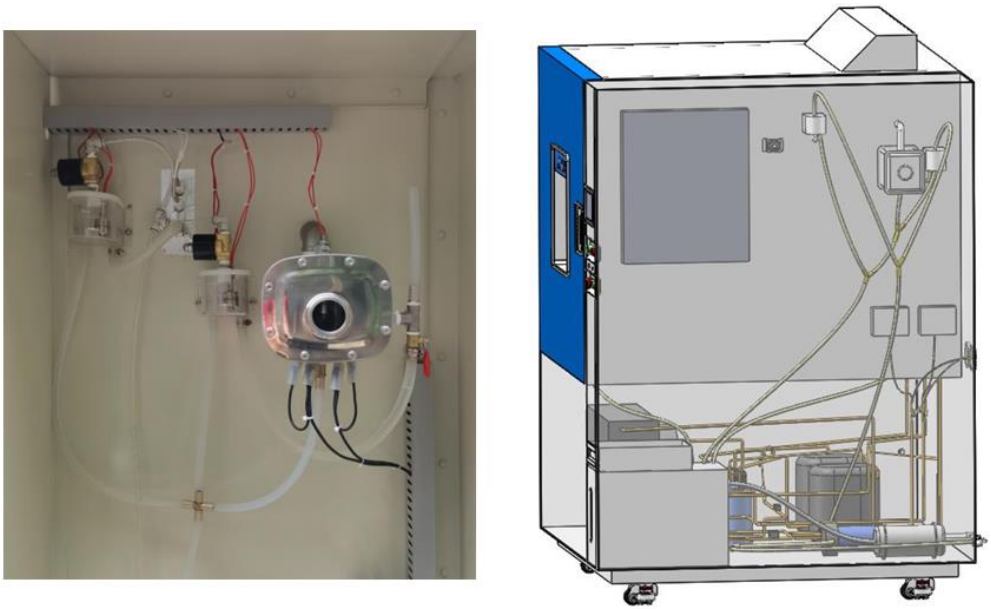


Figure-10

5.2.6 Water System

1) **There are two ways to add water:** One is to add water manually through the front drawer; the other is to connect the lab water source and automatically add water.
2) The chamber installed a water purification system that purified the water from the water source and transferred it to the water tank.
3) A water re-circulation system that reduced water use and a series of water pipes.

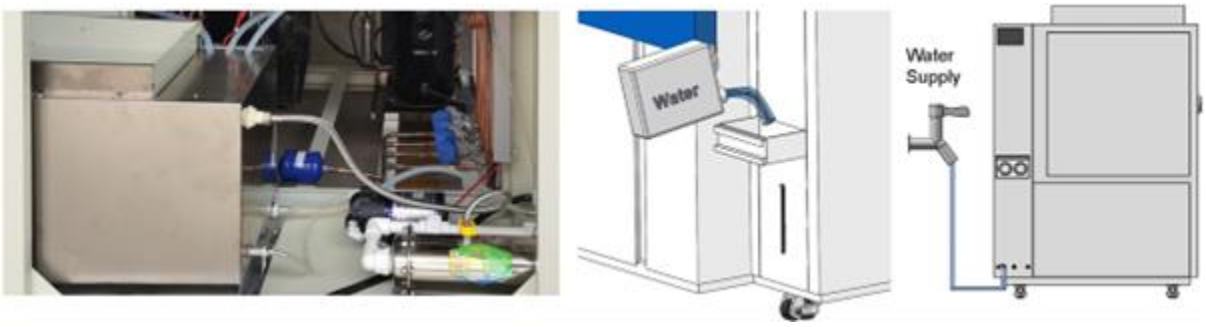


Figure-11

4) Two built-in water tanks are used for two different ways of water supply.
   - One water tank is used for humidity and water spray.
   - The other water tank is used for cooling the xenon arc lamp.

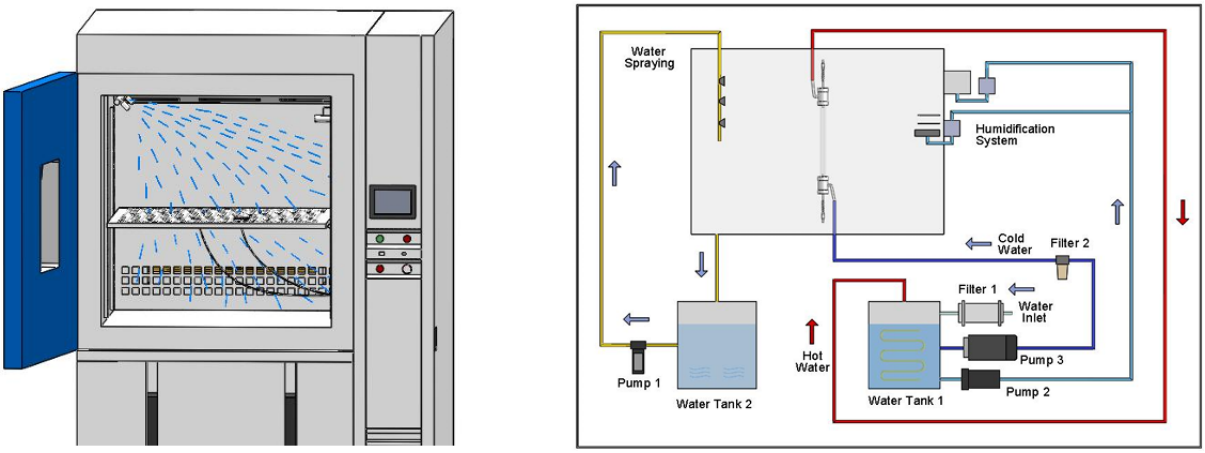


Figure-12

5) **Automatic Water Inlet & Outlet**
   - Automatic control of the water intake of equipment, the customer can be directly connected to the laboratory faucet, to achieve automated testing.
   - Automatic inlet diameter 1/2 inch (13.5mm); Standard 2-meter drainpipe.
   - Wastewater will be discharged from a dedicated pipeline.
6) High and low water level alarms, water shortage lights, and sound.



Figure-13

5.2.7 Control System

1) 7-inch PID programmable color touch screen.
2) The PID controller is the main control unit to command, operate, detect, and redistribute the various components of the equipment to achieve maximum effective use.
3) The temperature control adopts P.I.D. S.S.R. system synchronous coordinated control, which can improve the stability and life of the control components and interface.
4) Running mode: Fix + Program.
5) Language setting model: English
6) Control & Display: "Temperature", 'Black Panel Temperature', "Irradiance", "Run Time", "Water Spraying".
7) The voltage of each lamp will be displayed on the controller to facilitate troubleshooting.
8) The controller displays the total use time of each lamp tube, which is convenient for replacing the lamp tube later.
9) Emergency Stop Button.
10) Communication function: Ethernet + USB.
    - **Ethernet:**
      Use a computer network cable to connect to the test chamber, and download software (App) to operate and control the chamber.
    - **USBPort:** Use a USB port to download the test data directly.



Figure-14

5.2.8 Other Parts

1) **Viewing Window**
    - Double-layer insulating glass 8cm thick, made of tempered glass.
    - The conductive film is located on the interior glass to prevent window frosting, built-in LED light for the work room lighting; it allows for clear observation of samples.
    - The light control button is located below the controller.



Figure-15

2) **Door and lock**
   - One door is installed in the chamber.
   - The door material is a double-layer material made of SUS304 stainless steel for corrosion protection.
   - Hinged on the left-hand side, one-hand operation, lockable.

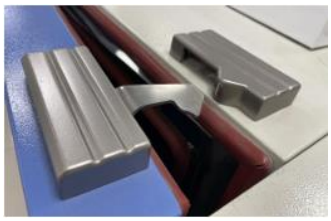


Figure-16

3) **Castor**
   - Install 4 castors for easy moving, and with a braking function.
   - Caster height is adjustable.

4) **Insulation**
   - 10 cm thick polyurethane foam and cotton insulation.
   - Better insulation performance, degradation resistance, environmental protection, and noise reduction.

5) **External Materials**
   - A3 steel plate with galvanized coating.
   - Electrostatic treatment.
   - High and low temperature corrosion resistance; high hardness, anti-impact.
   - Very high safety factor.



Figure-17

6. Installation

After receiving it, the user only needs to do simple connection work (connecting water and electricity) to use it.

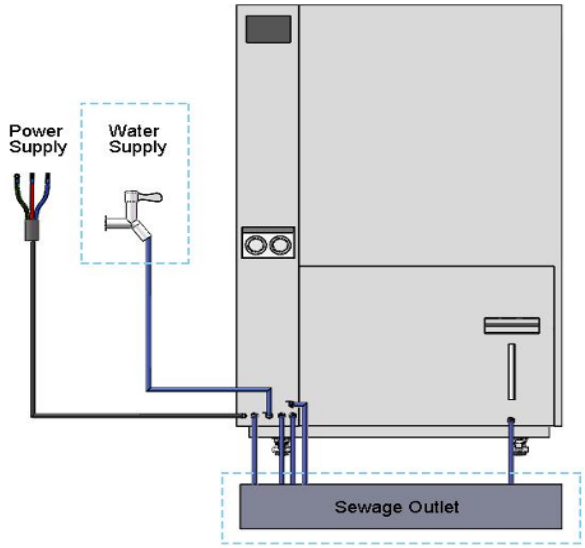


Figure-18

1) **Power requirements**
   - Voltage: 220V, 60Hz
   - Phase:1phase
   - Rated power: 16KW
   - Max current: 73Amps

2) **Water requirements**
   Purified water, distilled water, or demineralized water.

3) **Environment requirements**
   - Temperature: +5°C ~ +35°C.
   - Relative humidity: ≤85%.
   - Pressure: 86 KPa—106 KPa.
   - Prohibited from testing explosive, inflammable, and highly corrosive substances.
   - Chemical exposure to the equipment is prohibited.
   - Equipment must be safe on the ground to avoid electrostatic induction.

4) **Space requirements**
   - Door: Larger than the width and height of the equipment, ensure the goods can into the room successfully.
   - Distance from the front: 600mm
   - Distance from the back: 600mm
   - Distance from the left: 600mm
   - Distance from the right: 600 mm
   - Distance from the top: 600 mm

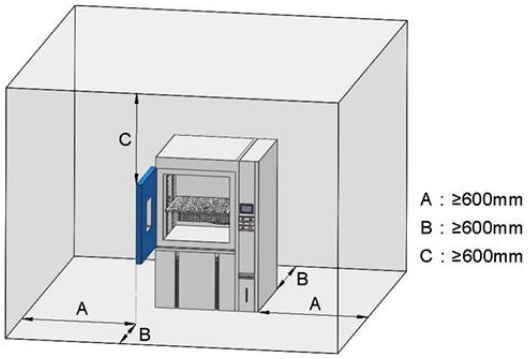


Figure-19

7. Accessories

Standard Accessories
Consumables:
Wet wick for humidity sensor
Filter Element
Xenon Lamp
Spare parts:
Temperature sensor
Solid-state relay
Contactor

Optional Accessories
Xenon lamp
Radiometer
Daylight or window Glass filter (additional filter)
Front and back water spray system (additional water spray)
Handheld Radiometer (For calibration equipment)
Custom thickened sample holder or rotate the sample holder