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Model: 3TS-100A

SHOCK TEMPERATURE

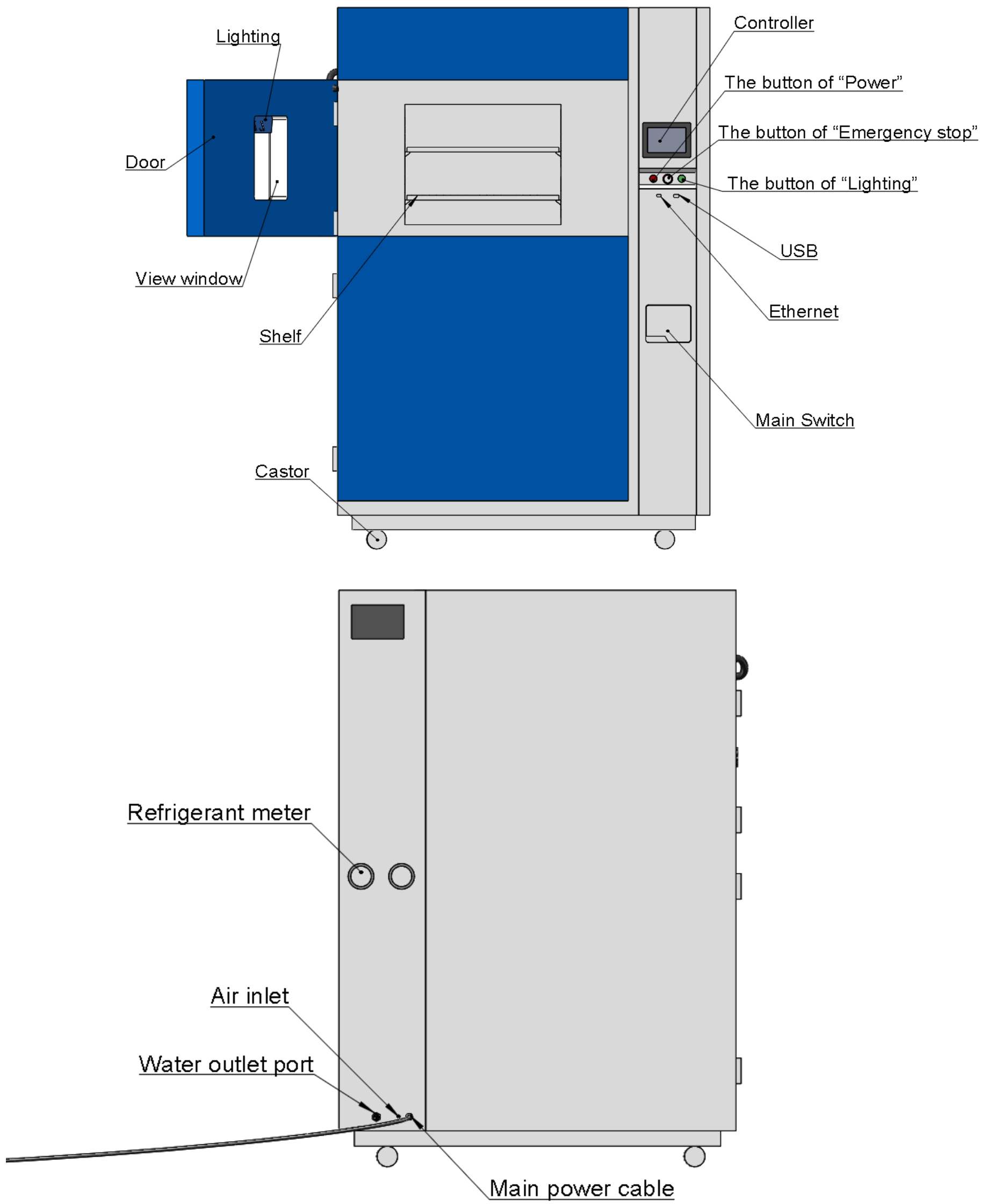
High temp: Ambient+20°C ~+200°C

Low temp: -45°C ~ -5°C

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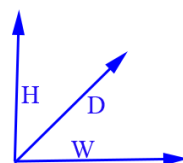
1. Diagram



2. Test Requirements

- 3-Zone Thermal Shock Test Chamber
- High Temperature Exposure Range : Ambient +20 ~ +200° C
- Low temperature Exposure Range : -45 ~ -5° C
- Transfer time from T min to T max : Within 15s
- Recovery time : Within 15 mins

3. Technical Parameters



3.1 【Technical Parameter】

Model		3TS-100A	3TS-210A	3TS-300A	3TS-500A	
Internal Dimensions (mm) D*W*H		500*500*400	700*600*500	700*780*550	900*800*700	
Overall Dimension (mm) D*W*H		1150*1950*2100	1350*2100*2200	1350*2250*2300	2500*2250*2150	
Interior Volume (mm)		100L	210L	300L	500L	
Loading Capacity		10kg	15kg	25kg	35kg	
Parameter	Pre-heat Room	Upper limit Temperature	+220°C			
		Heating Time	Ambient ~ + 200°C, within 30 minutes			
	Pre-cool Room	Lower limit Temperature	-45°C			
		Cooling time	Ambient ~ -45°C, within 30 minutes			
	Test Room	High Temperature Exposure Range	Ambient ~ +180°C			
		Low temperature Exposure Range	-40 ~ -5°C			
	Transfer time		Within 15s			
	Recovery time		Within 15 mins			
	Temperature Fluctuation		≤±0.5°C			
	Temperature Deviation		≤±3 °C			
Structure	Cooling	Cooling System	Mechanical compression refrigeration system			
		Refrigerating Unit	French TECUMSEH compressor			
		Refrigerant	R404A, R23			
	Heating Element		Nichrome heater			
	Controller		Programmable color LCD touch screen controller			
			Ethernet connection, PC Link			
	Temperature Sensor		PTR Platinum Resistance PT100Ω/MV A-class, accuracy 0.001°C			
	View Window Size(mm)		130*150	180*230	250*280	300*330
	Air Circulation		Centrifugal wind fan			
	Safety Device		Over-temperature protection, Over-current protection; Refrigerant high-pressure protection; Earth leakage protection			
Material	Exterior Material		Steel Plate with protective coating			
	Interior Material		SUS304 stainless steel			
	Thermal Insulation		Polyurethane foam and insulation cotton			
	Observation Window		Interior lighting, double-layer thermo stability silicone rubber sealing			
Standard Configuration		1 Cable hole (Φ 50,) with plug; 2 shelves				
Power Supply		415V 50Hz 3P				
Maximum Noise		65 dBA				

3.2 【Construction】

3.2.1. Workroom

- The internal material is 304 stainless steel, mirror surface, rust-proof to high and low temperature and moisture corrosion; Nice ruggedness and long life.
- It is just one chamber for test room, it circulates cold and hot air through the pneumatic damper on the left and right sides
- This design makes external size smaller.



3.2.2. Sample Shelf

- SUS304 stainless steel punching sample shelf 2pcs;
- Standard load of 20KGS for each layer of sample shelf;
- The height of the shelf is adjustable and can be removed directly to facilitate the various sizes of test samples.
- Conducive to the air circulation.



3.2.3. Cable Hole

- A standard test hole, located at top of the work room, is provided with a sleeve inside to prevent moisture from entering the insulation layer, and equipped with flange
- The standard inner hole diameter is 50mm
- Soft silicone plug seal
- Metal enclosure closed, beautiful designed



3.2.4. 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, can clearly observe samples.
- The light control button is located below the controller.



3.2.5. Controller

- PID programmable color touch screen controller, Ethernet work connection computer, USB
- It can edit 100 programs 20 segments
- LIB also can preset program into the controller based on user testing requirements
- The set system language is English for standard



3.2.6. Insulation

- 10cm thick polyurethane foam and insulation cotton;
- Better insulation performance, degradation resistance, environmental protection, noise reduction.

3.2.7. External Materials

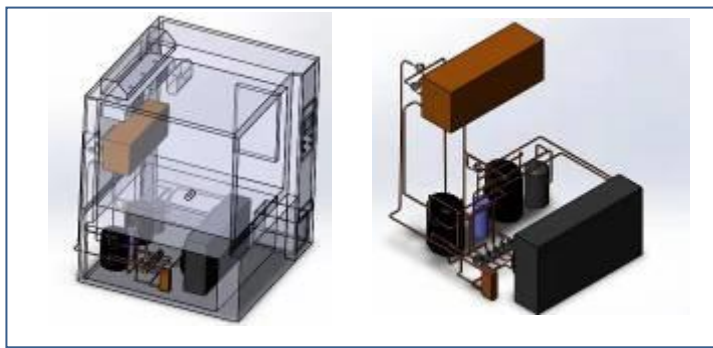
- A3 steel plate with galvanized coating; Electrostatic treatment; High and low temperature corrosion resistance; High hardness, anti - impact
- Very high safety factor;
- Color can be customized.



3.2.8 .Castor

- Install 4 castors for ease moving, and with brakes function.
- Caster height adjustable.

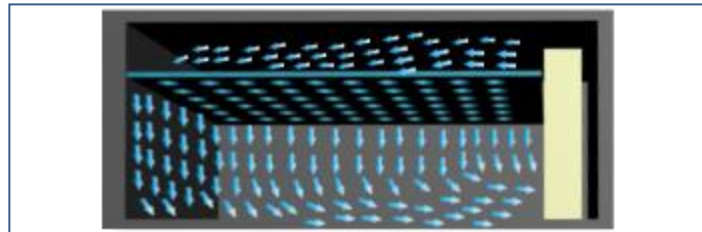
3.3 【Core Function】



Cooling System

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.



Air Circulation

The centrifugal fan is installed at the rear of the chamber body, and the air is uniformly distributed through the air outlet. Air circulation adopts air outlet at top and air return at bottom, and the wind speed and pressure are in compliance with the test standard, and the temperature is stabilized at the moment of switching. The high-quality centrifugal fan is used to strongly supply air circulation, making the temperature distribution in the test area uniform.



Controller System

The PID controller as the main control unit to command, operate, detect and redistribute the various components of the equipment to achieve maximum effective use.

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.

Screen display function: LCD display, which can display test conditions (including temperature section, cycle number, running time and remaining time, etc.).



Temperature Sensor

PT-100 Class A sensor, real-time accurate detection and display of temperature changes at 0.001 degrees.



Wiring System

Voltage 480V 60Hz 3 phase.

L1, L2, L3, PE, N, grounding protection.

Standard 2m long cable,

Over Temperature Protection Over Current Protection Refrigerant High Pressure Protection
 Earth Leakage Protection
 Phase Sequence Protection

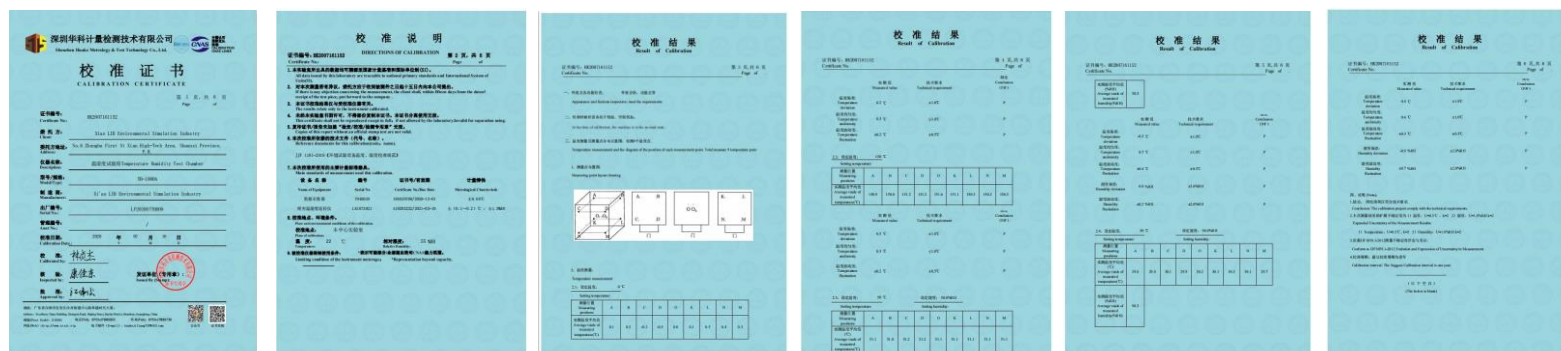
Protection System

4. Accessory

- Relay - 2 pc;
- PT-100 temperature sensor - 2 pc ;
- Heating tube - 1 pc
- Solid-state relay - 1 pc;
- Contactor - 1 pc

5. Calibration

- Before delivery, LIB engineer will calibrate it, and issue "Calibration Report";
- Calibration Items
 - ✓ Workroom temperature
 - ✓ Workroom humidity



6.Packing

- First, Seal chamber with waterproof plastic film. Protect chamber from seawater corrosion.
- Second, buffer foam is placed in the four corners of the chamber. It is used for fixing equipment to prevent shaking and damaging chamber during transportation.
- Plywood: standard wood export packaging.
- The wooden box is fixed by sheet metal to prevent damage during transportation.



Appendix

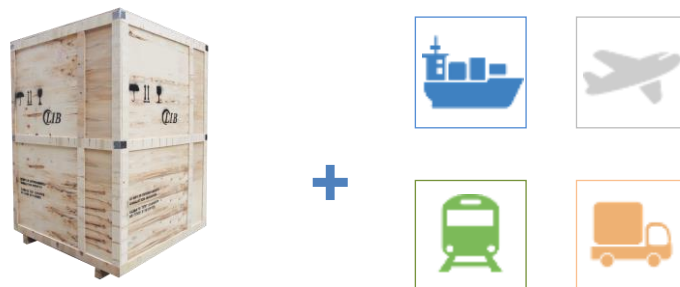
Documentation attached with the packing:

1. 1 set of Chamber;
2. Warranty Card;
3. Certificate of Qualification;
4. Calibration Report, issued by LIB (manufacturer);
5. Operation Manual;
6. Circuit diagram

7.Shipping

❖ **Material:** Export standard wooden box

*Can be used for Sea, Air, Railway, Truck and Multi modal transport.



3-Zone Thermal Shock Test Chamber Model 3TS-100A

Port of departure: Shanghai, China

8. Installation

- Before delivery, LIB team will finish all installation and commissioning works. When you receive, you can use it directly.

- **Environment Conditions**

- ◇ Temperature: $+5^{\circ}\text{C} \sim +35^{\circ}\text{C}$
- ◇ Relative humidity: $\leq 85\%$;
- ◇ Pressure: 86 KPa—106 KPa

- **Safety Instruction**

- ◇ Prohibited to test explosive, inflammable and high corrosive substance
- ◇ Chemical exposure to the equipment is prohibited
- ◇ Equipment must be safety on the ground to avoid electrostatic induction

- **Space Requirements**

- ◇ Door: larger than width and height of the equipment, ensure the goods can into the room successfully
- ◇ Distance from the front: 1000mm;
- ◇ Distance from the back: 800mm;
- ◇ Distance from the left: 600mm;
- ◇ Distance from the right: 600mm;
- ◇ Distance from the top: 600mm

