Datasheet

ATxTel

TSD-68A RF Isolated Temperature Chamber

Conduct wireless device testing with temperature control in a compact RF-isolated chamber.

ATxTel proudly introduces the TSD-68A RF-Isolated Temperature Chamber, now part of the ShieldMax family of RF test chambers. Featuring a compact, floor-standing design, the TSD-68A delivers full-range temperature testing with unmatched RF isolation from external signal sources across a broad frequency range, effectively minimizing RF interference. Its sophisticated design incorporates high-rejection filters, ensuring optimal performance with minimal disruption. The TSD-68A's advanced filters confidently support multi-gig Ethernet, USB 2.0 (USB-A), USB 3.0 (USB-C), and AC power.

Additionally, the TSD-68D temperature chamber serves as an economical and space-efficient solution for various temperature testing requirements. It boasts an impressive 68 liters of interior volume and operates seamlessly on standard 115V power without the need for special hookups. With a high-performance compressor that operates quietly at under 60 dBa, the TSD-68D sets the standard for reliable and efficient temperature testing.

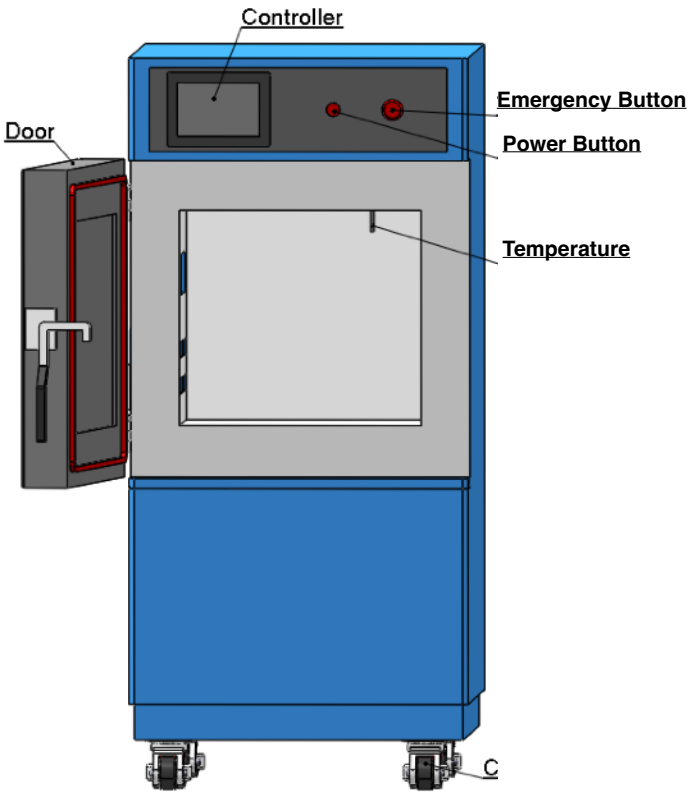
Applications

- **Wi-Fi Testing (support Wi-Fi 5, 6, 6E and 7)**
- **Cellular Testing (LTE, 4G/5G)**
- **Product Engineering Development**
- **Certification Testing**
- **Quality Assurance**
- **Network Optimization**
- **Production Testing**

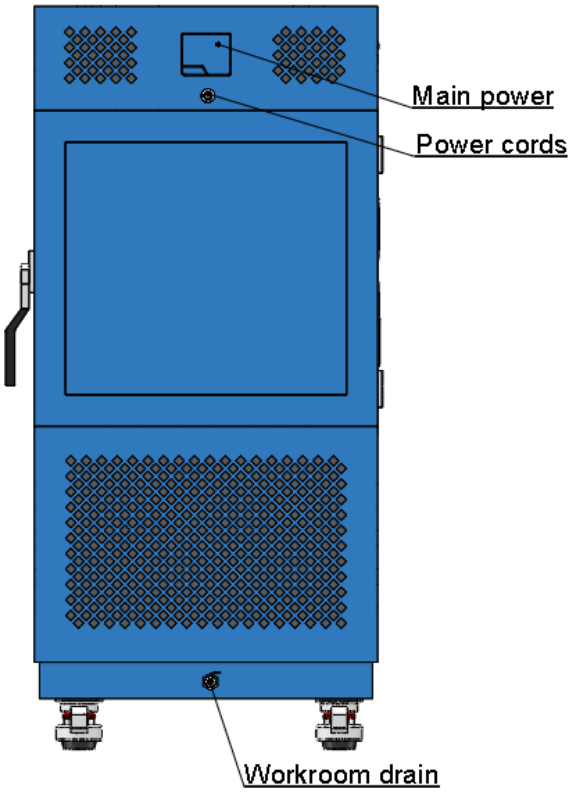
Features

- **Temperature Range:** -20 - 80°C
- **High performance and quiet operation:** <65 dBa
- **Custom-machined Stainless Steel RF isolated enclosure**
- **Interior Volume:** 68L
- **Frequency Range:** 10 MHz to 18 GHz
- **Touch-screen programmer/ controller**
- **USB or Ethernet control**
- **Compact and stackable size**
- **Dimensions: 210 x 82 x 23mm**

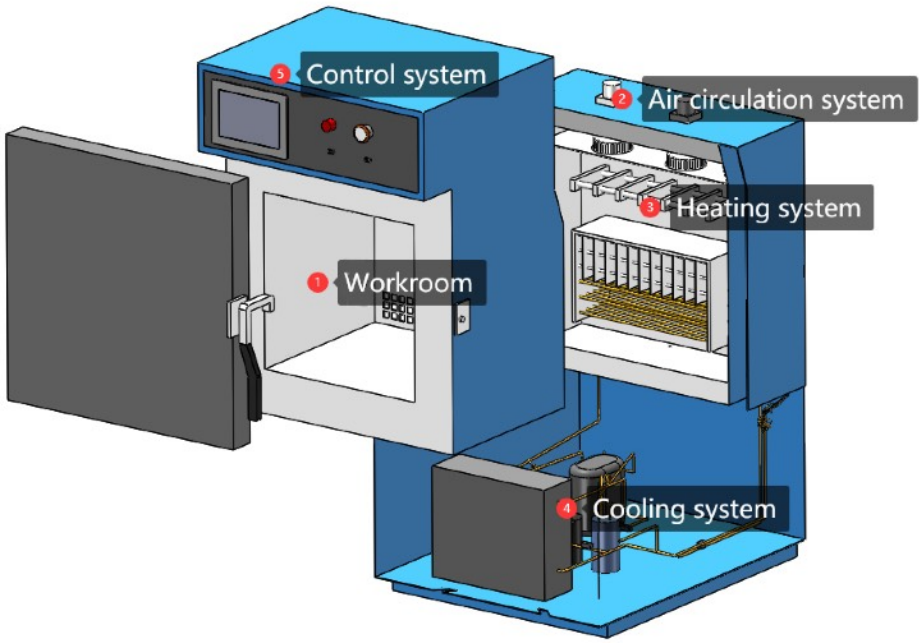
Construction



Front



Back



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Technical Specifications

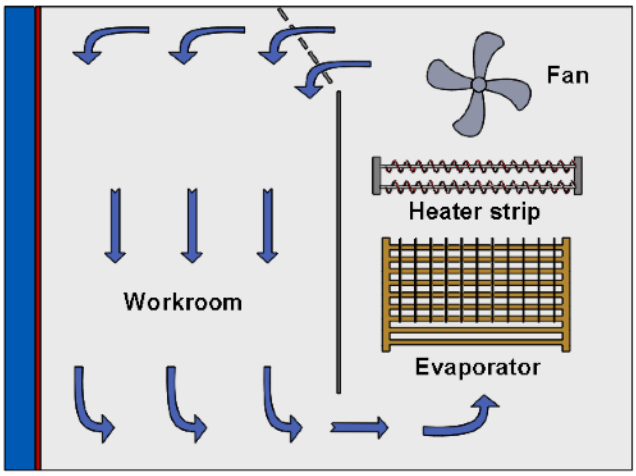
Parameters	Specifications	
SMA Ports	8	
RF Filter Type	HDC(1x), AC + DC + USB 2.0 (4x), RJ45 [10G] + USB3.0 (2x), SMA (8x), Exhaust Fans (2x)	
LED Light	1	
RF Isolation	≥ 75dB	
Isolation Foam	3cm	
Temperature Range	-20°C ~ +85 °C	
Cooling Rate	1 °C / min, average	
Heating Rate	3 °C / min, average	
Temperature Fluctuation	± 0.5 °C	
Temperature Deviation	± 1.0 °C	
Heat load	1000W	
Cooling	Cooling system	Mechanical compression refrigeration system
	Refrigerating unit	French TECUMSEH compressor
	Refrigerant	R449A
Heating	Nichrome heater	
Sensor	Temperature Sensor	PTR Platinum Resistance PT100Ω/MV A-class, accuracy 0.001°C
Controller	Programmable color LCD touch screen controller	
	Ethernet connection, PC Link	
Air Circulation	Centrifugal wind fan	
Safety Device	Over-temperature protection Over-current protection Refrigerant high-pressure protection Earth leakage protection	
Exterior Material	Steel Plate with protective coating	
Interior Material	SUS304 stainless steel	
Thermal Insulation	Polyurethane foam and insulation cotton	
Power Supply	115V 60Hz, 1 Phase and Max current 20A	
Maximum Noise	Less than 60 dBA (1m away from front)	
Environmental Condition	5°C～+35 °C ≤85% RH	
Noise Reduction Treatment	The bottom cooling part uses noise canceling cotton to reduce noise	
Internal Dimension (mm)	360*460*410 D*W*H	
Overall Dimension (mm)	860*660*1430 D*W*H	
Interior Volume (Liter)	68L	

Workroom (Interior Chamber)

- Stainless steel with a mirror finish and a rust-proof interior.
- RF-shielded interior chamber offers over 75dB of isolation.
- A PT-100 Class A sensor provides real-time temperature detection and display with a resolution of 0.001 degrees

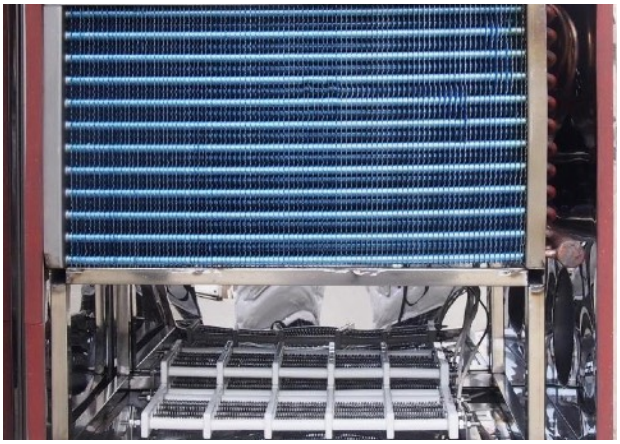
Air Circulation System

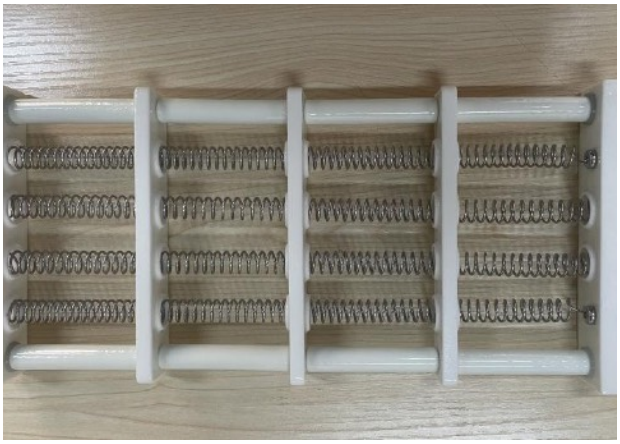
- A high-quality centrifugal fan provides effective air circulation, resulting in an even temperature distribution. The system features an air outlet located at the top and an air return at the bottom. Both the fan speed and pressure comply with the relevant testing standards, and the temperature stabilizes immediately upon switching on the fan. This powerful centrifugal fan ensures efficient air circulation, resulting in a uniform temperature distribution throughout the test area.



Heating System

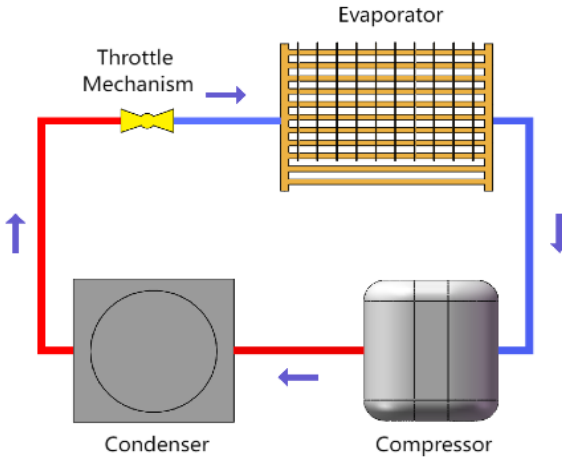
- Nichrome alloy electric wire heater located at the back of the interior chamber.
- The heating tube is made from corrosion-resistant material and is durable in the test area.





Cooling System

- The mechanical compression refrigeration system utilizes a French TECUMSEH compressor and an environmentally friendly refrigerant.
- In this system, the liquid refrigerant absorbs heat from the cooled object in the evaporator, causing it to vaporize into low-temperature, low-pressure steam. This steam is then drawn in by the compressor, where it is compressed into high-pressure, high-temperature steam. The compressed steam is discharged into the condenser, where it releases heat to the cooling medium and condenses back into a high-pressure liquid. This liquid refrigerant then passes through a throttle valve, where it experiences a drop in pressure and temperature, resulting in a low-pressure, low-temperature refrigerant. It then re-enters the evaporator to absorb heat and vaporize once again, completing the refrigeration cycle.
- Through this process, the refrigerant continuously undergoes four fundamental stages: evaporation, compression, condensation, and throttling, allowing for effective cooling in the system.



Control System

- This device features a 7-inch PID programmable color touch screen. The PID controller serves as the main control unit, managing, operating, detecting, and redistributing various components of the equipment to ensure maximum efficiency in use.
- The temperature control system uses synchronized P.I.D. S.S.R. (Solid State Relay) control, which enhances the stability and longevity of both the control components and the interface.
- The operating modes include Fixed and Program, allowing users to edit up to 120 programs, each with 100 segments.
- Display and control options include "Temperature" and "Run Time." Additionally, the device is equipped with an Emergency Stop button for safety.
- Ethernet and USB control connections.
  - **Ethernet:**
    RJ45 Ethernet control of the test chamber with included control software. Remote control through VNC.
  - **USB Port:**
    Connect via USB to download the test data directly.

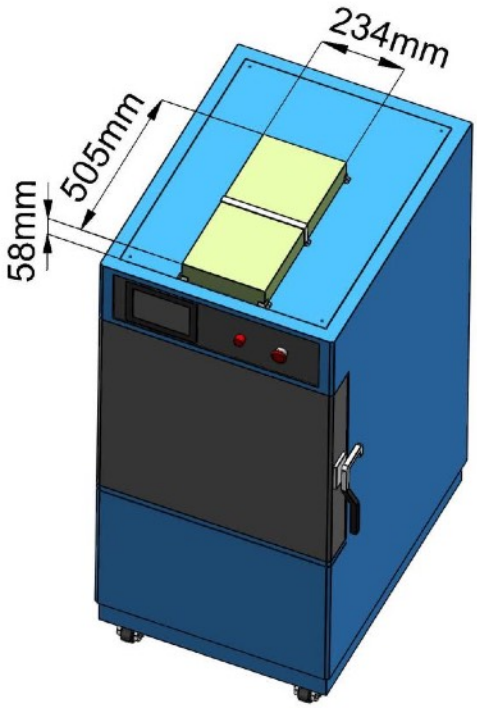
Other Parts

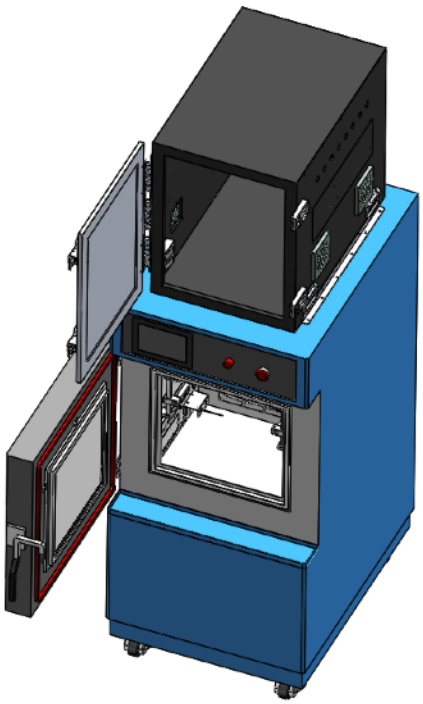
- **Door and lock**
  - The door is made of double-layer SUS304 stainless steel for corrosion protection.
  - The door is hinged on the left side, allows one-hand operation, and is lockable.

- **RF Filter**
  - SMA connectors, AC, DC, USB and Ethernet connections are on the left side of the temperature chamber

- **Ethernet + USB**
  - Ethernet port and USB port are located on the top left of the temperature chamber

- **Top of the Chamber**
  - Rails on top of the chamber to support an optional DC Power Supply or an additional RF shielded



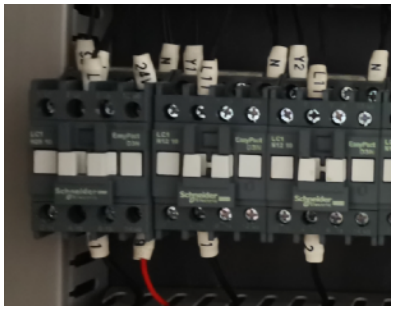


- **Castor**
  - Four height-adjustable casters with brake function to allow for easy mobility

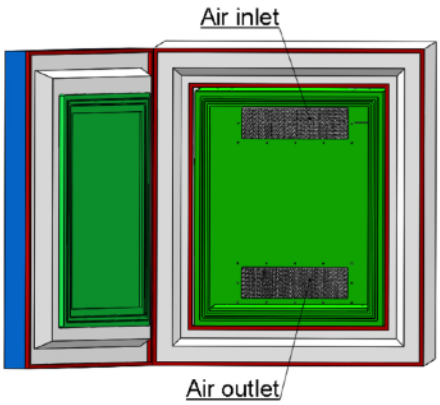
- **Insulation**
  - 10 cm thick insulation foam provides insulation performance, degradation resistance, environmental protection, and noise reduction.

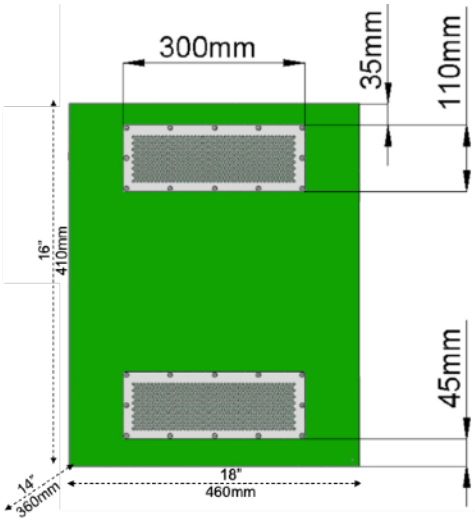
- **External Materials**
  - A3 steel plate with galvanized coating,
  - Electrostatic treatment.
  - High and low temperature corrosion resistance, high hardness, and anti-impact.

Accessories

Spare parts	Temperature sensor	Solid-state relay	Contactor
			

Dimensions





Installation

Before delivery, our team will complete all installation and commissioning work in the factory. After receiving the temperature, the user needs to connect the water and electrical outlets to start using it.

- **Power Requirements**
  - Voltage: 120V, 60Hz
  - Phase: Sing Phase

- **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.

- **Space Requirements**
  - At least 600mm from all sides