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Technical Specification

Unsaturated accelerated life test chamber

Model: HAST-55 (Unsaturated)

Manufacturer: Guangdong Keming Industrial Co.,Ltd

Issued By: Engineering Department



1. Application and sample limits

- 1.1 Application This high and low pressure damp heat test chamber is suitable for IC packaging, semiconductors, microelectronic chips, magnetic materials and other electronic parts for high-pressure, high-temperature, unsaturated/saturated damp heat, and other accelerated life reliability tests. It is used in the product design stage. To quickly expose product defects and weaknesses. Test the sealing and aging properties of its products.
- *Note that other uses may result in personal injury and damage to the equipment!
- 1.2 Sample limits Testing and storage of samples of flammable, explosive and volatile substances
Testing and storage of corrosive substance samples
Testing or storage of biological samples
Test and storage of strong electromagnetic emission source samples
- 1.3 Sample requirements In order to make your test data more realistic and effective, the test chamber should be used reasonably while satisfying the following principles:
The total mass of the load is not more than 80Kg per cubic meter of chamber volume
The total volume of the load is not more than 1/5 of the working chamber volume
In any section perpendicular to the dominant wind direction, the sum of the load areas should be no more than 1/3 of the cross-sectional area of the working chamber. Do not block the flow of airflow when the load is placed

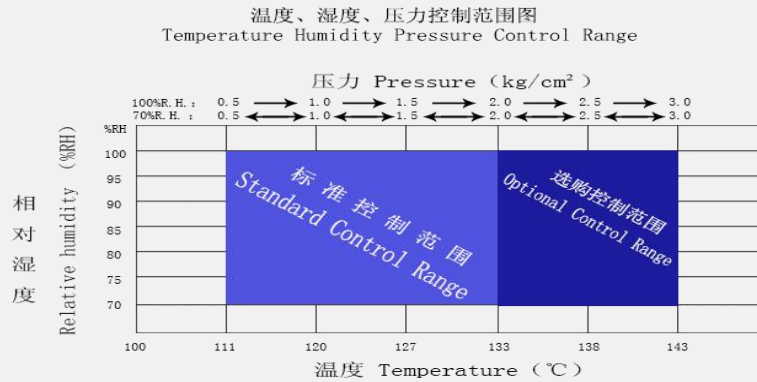
2. Volume and dimension

- 2.1 Volume About 155L
- 2.2 Interior size Ø550 mm*D650mm (Drum type pressure inner box)
- 2.3 Exterior size W900 mm*H1552mm*D1500 mm(Excluding the protruding part of the machine!)
- Tips: For external dimensions, please confirm the three views according to the final design!

3. The main technical parameters

3.1	Test Conditions	Cool method: : Natural cooling or air purging Measured at a room temperature of +25 °C under no load, Measured at normal pressure 101.3Kpa, the temperature and humidity performance test is measured according to the relevant regulations according to GB/T 2424.5 or IEC60068 -3; the sensor is placed at the air outlet of the air handling unit.
3.2	Temperature range	+105 °C ~ +135 °C (At 100% relative humidity)
3.3	Temp. fluctuation	±0.5 °C
3.4	Temp. uniformity	≤±3.0 °C
3.5	Temp. deviation	≤±3.0 °C
3.6	Humidity range	1) HUM unsaturated test mode: 65~100%RH 2) STD saturation test mode: 100%RH
3.7	Humidity Fluctuation	±3.0% RH
3.8	Humidity Deviation	±5.0% RH
3.9	Temperature change rate	Heat up rate: +25 °C ~ +135 °C, full range average speed approx 45 min (no-load, no heating)
3.10	Load	no Note: Measured at a room temperature of +25 °C under no load, the temperature and humidity performance test is measured according to the relevant regulations according to GB/T 2424.5 or IEC60068 -3; the sensor is placed at the air outlet of the air handling unit.
3.11	Pressure range	Gauge pressure: +0.2 ~ 230Kpa *Absolute pressure: 100 ~ 330Kpa
3.12	Pressure deviation	≤±2 kPa
3.13	Pressure rise time	Atmospheric pressure to 230Kpa 20min

3.14 Ability range



3.15 Noise ≅ 65 (dB) (The noise detection device is measured 1m away from the door of the chamber)

3.16 Meet the test standard IEC-60068-2-66
JESD22-110 ,JESD22-A102 ,

4. Chamber construction

- 4.1 Construction type Integral drum pressure vessel structure
Comply with national safety container standards
The inner box design of the drum prevents condensation on the top and dripping water
- 4.2 Insulation enclosure structure Outer spray plastic anti-corrosion electrolysis plate - intermediate insulation layer is temperature resistant foam insulation material - inner box SUS316 stainless steel plate
- 4.3 Exterior material High-quality anti-corrosion electrolytic board, surface electrostatic powder baking paint., KOMEG standard color.
- 4.4 Interior material SUS316 stainless steel; inner wall full-welded
- 4.5 Insulation Superfine glass wool insulation layer, flame retardant grade A1
- 4.6 Door Single open the door, open to the left;
Flush-mounted rotary handle
- 4.10 Unit Water storage tank, cooling air outlet, automatic water replenishment pump, water replenishment solenoid valve, water level box, drain hole
- 4.11 Manual Manual pressure relief valve for emergency pressure relief

pressure relief

- 4.12 Standard configuration Sample shelf: 2 layers of stainless steel sample shelf (reconfirm after signing the contract) Moving casters (with foot cups): 4 ea

5. Air conditioning system

- 5.1 Characteristics Regulation and control: forced convection and humidity regulation of the fan blades;
- 5.2 Air circulation High-power fan driven by an external motor with a stainless steel shaft, external to the fan motor;
The air is driven by the motor and flows through the heater and the refrigerating evaporator.
After being fully heated/cooled to the required temperature value, the air circulates inside the tank and heat exchanges the test piece by convection
- 5.3 Fan motor Low-voltage asynchronous high temperature long axis motor



- 5.4 Centrifugal rotor Multi-blade centrifugal circulation fan, aluminum alloy blade



- 5.5 Heater Skid-mounted heater, PID+SSR control, with independent over-temperature protection temperature switch
When the heater is energized, the surface temperature will rise.
After the convective air passes through the heating wire, the temperature rises, and the heat is extended to the air in the box and the test piece to play the role of heating.
The heating power is precisely controlled by the PID algorithm and the output power is regulated by a solid state relay.


6. Control system

- 6.1 Characteristics Adjustment and control: forced convection temperature regulation and humidity adjustment;
- 6.2 Controller KOMEG 7 inch color touch screen intelligent fuzzy controller
*Operating system: KM-5166 cold output version



- 6.3 Screen display The temperature and humidity setting value (SV) and practical (PV) value is directly displayed;
It can display the execution program number, the number of times, the remaining time and the number of cycles, and the running time display;
Program editing and graphic curve display;
Fixed point or program action status display;
7-inch LED backlit display screen.
- 6.4 Resolution Temperature: + 0.01 °C; Humidity: + 0.1%; Time: 0.01 min.
- 6.5 Setting range Temperature setting range: -100 ~ 200 °C (note it is not the performance range of equipment);
Adjust according to the temperature working range of the equipment (upper limit +5 °C, lower limit -5 °C);
Humidity conditions: 0 to 100% RH.
- 6.6 Program capacity Program capacity that can be used: maximum 10 groups;
Usable memory capacity: 50 steps per group;
Commands can be executed repeatedly: each command can be cycled up to 99 times.
- 6.7 Communication Interface Can be connected to the computer to display curves and data acquisition;
Can be used as a monitoring and remote control system;
Can do multiple machines synchronous control;
RS-232, RS-485 and network port LAN(Optional)

7. Safety protection system

- 7.1 Over temperature protection Electronic over-temperature protection device.
- 7.2 Circulation fan Overheat protection relay, overload protection.
- 7.3 Heater **Air conditioning channel limit over temperature protection: mechanical double metal sheet principle of over temperature protector**
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- 7.4 Humidity system Humidification heating tube over-temperature protection (dry burning), abnormal water supply, and abnormal drainage protection.
- 7.5 Pressure protection in the box Automatic exhaust and pressure relief when the pressure in the box exceeds the maximum working value
- 1) Double protection of independent mechanical pressure gauge and upper limit pressure setting in controller
 - 2) Safety relief valve (automatic pressure relief valve, manual control)
- 7.6 Door lock protection The position sensor judges whether the door is closed in place and locked, otherwise the equipment cannot run
- 7.7 Main switch Phase sequence protection, phase loss protection, equipment leakage protection, overload and short circuit protection
- 7.8 Control circuit Overload and short circuit protection
- 7.9 Alarm action When the above protection occurs, the device stops running and an audible and visual alarm is issued, and the fault and its cause and solution are displayed on the screen.

8. Use site requirements

- 8.1 Operation environment
1. Environment temperature : 5°C-35°C;
 2. Relative humidity: ≤85%R.H;
 3. Atmospheric pressure: 80kPa~106kPa;
 4. Flat, vibration-free ground;
 5. well ventilated, without direct sunlight or direct radiation from other sources

of heat;

6. There is no strong airflow around: when the surrounding air needs to be forced to flow, the airflow should not be directly blown onto the cabinet;

7. There is no strong electromagnetic field around;

8. No high concentration of dust and corrosive substances around;

8.2 Power

Specifications

1. Single phase power supply 220V AC(±10%)

Single-phase wire + protective ground wire, grounding resistance $\leq 4\Omega$;

2. Power frequency: 50±0.5Hz

8.3 Ground

protection

Ground resistance $\leq 4\Omega$.

8.4 Power wiring









1. The equipment with a standard configuration power cord of **3 meters long**;

2. Customers need to prepare a dedicated no-fuse switch for this device;

8.5 Humidification water supply

Please provide pure water with conductivity below 20us/cm (manually add water)

9. Main material list

Touch screen	KOME [®]	 科明仪器为品质而生
Breaker	Schneider	
AC contactor	Schneider	
thermal relay	Schneider	
Phase sequence relay	CARLO GAVAZZI	
Intermediate relay	OMRON or CARLO GAVAZZI	 
solid state relay	CARLO GAVAZZI	

10. Equipment outline drawing

