

## Specification for Programmable Temperature and Humidity Test Chamber



(The photo is only for reference, specification is subject to the physical chamber)

**Model: KMH-150L**

## I . Product Overview

Able to accurately simulate a wide range of complicated natural environments, and is suitable for reliability test in industrial products. Meet GB5170.2.3.5.6-95 standard requirements of environmental testing equipment and test methods for the basic parameters of electric and electronic products under the condition of humidity, low temperature, high temperature, and constant heat.

## II . Application

It is suitable for tests the products of electrical, electronic, mechanical and other products, parts and materials under the conditions of high and low temperature and high temperature and humidity. For quality and reliability test of simulating temperature and humidity changes in electrical, electronic, mechanical and other products, parts and materials.

## III. Features

- GB-2423.1-2008 (IEC68-2-1)Test A: Low Temperature Test
- GB-2423.2-2008(IEC68-2-2)Test B: High TemperatureTest
- GJB360.8-2009(MIL-STD.202F) High Temperature Life Test
- GJB150.3-2009(MIL-STD-810D) High Temperature Test
- GJB150.4-2009 (MIL-STD-810D) Low Temperature Test
- GB2423.3-2008(IEC68-2-3)Test Ca: Constant Heat Test
- GB2423.4-2008(IEC68-2—30) Test Db: Damp Heat Alternative Test
- GJB150.9-2009 (MIL-STD-810D) Damp Heat Test

<b>1. Energy conservation</b>	Bypass mode to adjust cooling capacity to achieve a constant temperature and humidity effectively
<b>2. Easy Operation</b>	※Using company owned brand KOMEG KM-5166 LCD touch screen controller with PID control parameters setting ※Flexible approach for data collection and recording
<b>3. High reliability</b>	※Key parts are imported, ensuring the service life and high reliability ※Efficient oil separator to ensure the service life of the compressor

## IV. Main Technical Parameters (Air cooled, room temperature +25°C, no load)

### 1. Temperature

1.1 Temperature range	-40°C ~ +150°C
1.2 Temp Deviation	≅ ± 2.0°C
1.3 Temp Fluctuation	±0.5°C
1.4 Temp Uniformity	±2.0°C
1.5 Ramping and soaking rate	Heating up rate: -40°C ↑ +100°C about 45min (no-load, ambient temperature +25°C) Cooling rate: 20 °C to -40°C about 60min (no-load, ambient temperature +25°C)

### 2. Humidity

2.1 Humidity range	20%R.H ~ 98%R.H
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3.2 Control range	<p>The graph plots Relative humidity (%rh) on the y-axis (0 to 100) against Temperature (°C) on the x-axis (0 to 100). A shaded region indicates the control range. The upper boundary is a horizontal line at 98% RH from 20°C to 85°C. The right boundary is a vertical line at 85°C from 20% RH to 98% RH. The bottom boundary is a curve starting at (20, 20) and ending at (85, 20). The left boundary is a vertical line at 20°C from 20% RH to 98% RH.</p>
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3.3 Humidity deviation	±3.0% RH
3.4 Humidity uniformity	3.0% RH (no-load)
3.5 Humidity fluctuation	±2.0% RH

Temperature and humidity performance test is in accordance with the relevant provisions of the IEC60068 -3 standard measurement; sensor placed in the unit outlet.

## V. Chamber Structure

Overall structure and chamber was composed of three parts as below.  
Insulation box, separate refrigeration units, and electrical control cabinet.

1. Chamber size	Workspace volume: W 600 × H 600 × D 460 mm Exterior size: W 800 × H 1635 × D 1485 mm (about)
2. Insulation box	※ Wall material: high-quality carbon steel with static color spray ※ Inner wall material: SUS304 # matte stainless steel plate

	※ Insulation materials: rigid polyurethane foam insulation layer + glass fiber.
3. Door	Single door, left open. Heating wire was installed at the door frames to prevent condensation at low temperatures.
4. Observation window	With observation window W 330×H 450mm, multi-hollow electric insulation coated glass prevent condensation effectively
5. Lighting device	LED Lighting device *1 located on observation window
6. Heating	High quality nickel-chromium alloy wire electric heaters, Non-contact control mode(SSR)
7. Humidifier	Water basin heating and humidification method; Stainless steel sheathed heater; Heater control: no-contact control (SSR); Water level control device, heater anti-dry device.
8. Water outlet hole	Available for drain the condensate water
9. Cable port	Φ50mm*1 located on each side of chamber, with rubber stopper and stainless steel cover
10. Shelf for samples	Two layers of stainless steel sample holder. Adjustable, load capacity 30kg/ layer
11. Mobile Casters	Mobile Casters with foot cups
12. Electric control box	Total power circuit breaker, over-temperature protection.
13. Water supply system	Water pump automatic supply

## VI. Cooling System

1. Working mode	Mechanical compression refrigeration
2. Compressor	Europe and the United States imported hermetic compressor
3. Refrigerant	Environmental-friendly refrigerant: R404A
4. Condenser	Shell and Tube condenser(air -cooled)
5. Evaporator	Fin-type multi-stage automatic load capacity adjustment, No frost in long-term use of low temperature and humidity conditions
6. Other accessories	Use internationally-known brand, such as high precise expansion valve, oil extractor, dryer and many other accessories.
7. Refrigerant flow control	Adjust energy consumption output and control automatically to the refrigeration system.

8.Refrigeration Technology	<p>※ Nitrogen welding, two-stage rotary vane vacuum pump, ensure that the internal cooling system clean and reliable.</p> <p>※water tray located at the bottom of the compressor to ensure condensate water drain through pipe freely at the rear of the chamber.</p>
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## VII. Control System

1. Temp. &Humidity Tester	High precision DIN class A, dry ball $\phi$ 4.8mm SUS # 304 PT 100 $\Omega$ .
2. Controller	KOMEK Technical Programmable KM-5166 TFT Touch Screen Controller with PID control
3. Display function	Temp.& humidity Setting (SV) Practical (PV) value can be displayed directly Execution of the program can display numbers, paragraphs, remaining time and cycles, running time display, Program editing and graphic curve display, Fixed or program operation status display, Resolution: 800 * 480, 7-inch TFT display screen.
4. Display resolution	Temperature: $\pm 0.01^{\circ}\text{C}$ ; Humidity: $\pm 0.1\%$ ; Time: 0.01min.
5. Setting range	Temperature condition:-100~200 $^{\circ}\text{C}$ Temperature can be adjusted based on the working temperature of the equipment (the upper limit:+5 $^{\circ}\text{C}$ , the lower limit:-5 $^{\circ}\text{C}$ ) Humidity condition:0~100 %RH
6. Operating mode	Programmable running, constant running
7. Program Capacity	Set the running time up to 999999 h 59 m (can also be set to continuous operation without time limit); Available program capacity: up to 269 groups, total 13450 segments; Memory capacity that can be used: 50 steps per group;

	Repeatedly executed commands: Each command can be up to 32,000 cycles.
8. Interface	Can be connected to the computer display curve, data acquisition; Can be used as monitoring and remote control system; Can do more than one machine synchronization control; RS-232, RS-485 and Ethernet.
9. USB function	1G-32G available for downloading historical curve and data, control system parameters, pluggable
10. Record way	RAM with battery protection, setting (SV), Practical(PV) and sampling time can be saved; curve recording cycle can be set 30 ~ 300 sec, Maximum historical data and curve memory continuous storage is 90 days (when the sampling time is 1 min) no continuous use 10 years data are available.
11. Power off memory	Power recovery mode can be set as hot start, cold start and stop
12. Pre-set function	Boot time can be set freely and machine runs automatically when turning on power
13. Software environment	Windows XP or Windows 7 / WIN8 operating system
14. Network Connection	Can be connected to Ethernet via professional software, Remote control & assistance function and data collection can be achieved through network, Multi machine can be controlled simultaneously
15. Function	Fault alarm and cause handling prompts, power failure protection, the temperature upper and lower limit protection, timer function (automatic start and automatic stop running), self-diagnostic function.

### **VIII. Electrical Control System**

1. Control cabinet	A. Emergency stop switch B. Power switch C. Over-temperature protection D. RS-485 interface
2. Protection System	A. Heater protection switch if no water B. Humidifier protection switch if no water C. Heater over-current circuit breaker

	D. Humidifier over-current circuit breaker E. Circulating fan over-current overload protection F. Compressor high voltage protection switch G. Compressor overheat protection switch H. Compressor over-current protection switch I. Over-voltage under-phase protection switch J. Circuit Breakers K. Leakage switch L Low humidifier protection M. Water tank low water level warning Controller noise isolation protection O. Zero-crossing gate fluid power controller
3. Alarm indicator	Equipment stops running and sends audible alarm when the above protection appears, meanwhile, fault, causes and solutions will be displayed on the screen.



## IX. Installment & Using Condition

1. Ambient temp. and humidity	5 ~ 35°C
2. Power	AC 3φ4W 380V 50Hz (R, S, T, N plus ground) (voltage fluctuation $\cong \pm 10\%$ )
4. Grounding	Grounding resistance $\cong 4\Omega$

P.S.

- Please equip the above power demanded to the terminal box of the machine control, user must prepare an exclusively no-fuse switch for the machine.
- Please confirm whether it can enter the door or access elevators.

### Main material list

Name	Brand	Remarks
Compressor	TECUMSEH compressor	
press switch	Denmark DANFOSS, Saginomiya	

Condenser	Guangzhou Yongqiang,	
Evaporator	Yongqiang	
Dry filter	Denmark DANFOSS	
Capillary tube	KOMEG	
Expansion valve	Denmark DANFOSS	
Magnetic valve	SAGLNOMLYA or Nickideu /DANFOS	
Controller	KOMEG	
Residual current circuit breaker	French Schneider	
AC contactor	French Schneider	
Thermorelay	French Schneider	
Phase sequence relay	Carlo Gavazzi	
Time relay	Autonics	
AC relay	Omron	
Solid-state relay	Carlo Gavazzi	



此图仅供参考，如有变更将另行通知



俯视图

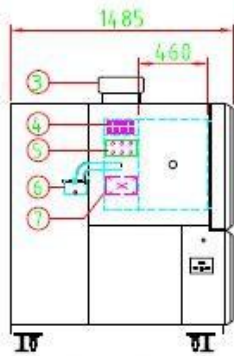
top view

说明:

- 1. 视窗 W330\*H450mm
- 2. 水箱
- 3. 循环马达
- 4. 循环风扇
- 5. 加热器
- 6. 加湿器
- 7. 蒸发器
- 8. 冷冻机组

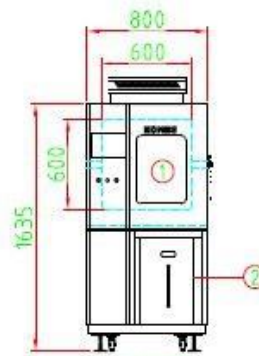
Notes:

- 1. observation window (W330\*H450mm)
- 2. water tank
- 3. cycle motor
- 4. circulating fan
- 5. heater
- 6. humidifier
- 7. evaporator
- 8. refrigerating unit



侧视图

side view



正视图

front view

temperature and humidity test chamber

图号	1.30	零件名称	温度及湿度试验箱		
图例	6/25	图例	昆明环境仪器工业有限公司		
物料	0.10	客户编号	E2011001		
物料		物料编号	图号	日期	设计人
物料		物料	日期	图号	设计
物料		物料	日期	图号	设计
物料		物料	日期	图号	设计

# More Pictures of Temperature Humidity Test Chamber

