

Specification for Programmable Constant Temperature Test Chamber



Model: KMT-225R

Manufacturer: KOME EG Technology Ind Co., Limited

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

Applicable to environmental adaptability and reliability test in such industrial units as electronics, electrical appliance, battery, plastics, food, paper product, vehicle, metal, chemistry, building material, research institution, inspection and quarantine bureau, university etc..

III. Features

- GB-2423.1-2008(IEC68-2-1)Test A: Low Temperature Test
- GB-2423.2-2008(IEC68-2-2)Test B: High Temperature Test
- GJB360.8-2009(MIL-STD.202F High Temperature Life Test
- GJBI50.3-2009(MIL-STD-810D) High Temperature Test
- GJBI50.4-2009(MIL-STD-810D) Low Temperature Test

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

IV. Main Technical Parameters(Performance: air-cooled, room temperature +25 °C, no-load)

1. Temperature

1. Temperature range	+20°C ~ +180°C
2. Temp Deviation	≅ ± 2.0°C
3. Temp Fluctuation	±0.5°C
4 .Temp Uniformity	≅ 2.0°C
5. Heating rate	+20°C ↑ +150°C within 30min(no-load, environmental temperature +25°C)

Performance test of temperature and humidity is according to the relevant provisions of the IEC 60068-3 standard; the sensor is 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.Dimension of the chamber	Interior size: W 700 × H700 × D 480 mm Exterior size: W 900 × H 1735 × D 1505 mm External dimensions excluding protruding parts
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, open on the left, heating wire was installed at the door frames to prevent condensation at low temperatures.
4.Observation window	With 1 sets 380 × 500mm (width × height) observation window, multi-hollow electric insulation coated glass prevent condensation effectively
5. Lighting device	1 LED lighting device located on observation window
6. Heater	High quality nickel - chromium alloy wire electric heater, Contactless control mode (SSR)
7.Water outlet hole	Available for drain the condensate water
8. Threading hole	Φ 50mm located on both sides(each*1) with rubber stopper and plastic cover
9.Sample holder	Two layers of sample holder, height is adjustable, Load weight 30kg / layer
10.Mobile Casters	Mobile Casters *4 with foot cups
11. Electric control box	Total power circuit breaker, over-temperature protection.

VI. Air-conditioning system

1.Working mode	Mechanical compression refrigeration
2.Refrigeration compressor	Hermetic compressor imported from Europe and the United States
3. Evaporator	Automatic load capacity adjustment of high performance of fin type, able to use in low temperature and high humidity in a long term and without frost.
4. Cooling	Sine wave pattern aluminum finned copper tube air heat exchanger (air-cooled)
5. Refrigerant	R404A Environmental friendly high temperature level of refrigerant

6.Other attachment	High-precision expansion valve, desiccant, and other components are imported internationally imported brands.
7.Refrigerant flow control	Refrigeration system of energy consumption output control by automatic adjustment
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>

VII. Control System

1. Sensor	High precision DIN A class, dry ball $\phi 4.8\text{mm}$ SUS # 304 PT 100 Ω
2. Controller	<p>KOMEG brand KM-5166 LCD Touch screen controller with PID control parameters setting</p>  <p>The screenshot shows a blue interface titled 'KM-5166 CONTROL SYSTEM' and 'TEMP AND HUMI CONTROL'. It features a central graph with a red and yellow wave. On the right, there are several touch-sensitive buttons: 'FUNC. & FIX', 'PROGRAM SET', 'OPER. SCREEN', 'CURVE DIR', 'ALARM HIST', and 'SYSTEM SET'. At the bottom, there are six numbered circles (1-6) and a copyright notice: 'Copy right (C) KOMEG V3. 619'.</p>
3. Display	<p>Temperature and humidity settings (SV) Actual (PV) value can be displayed directly,</p> <p>Execution of the program can display numbers, Paragraphs, remaining time and cycles, running time display,</p> <p>Program editing and graphic curve display,</p> <p>Fixed or program operation status display,</p> <p>7-inch TFT display screen. Resolution: 800*480</p>
4. Resolution	Temperature: + 0.01 $^{\circ}\text{C}$; Humidity: + 0.1%; Time: 0.01min
5. Setting range	<p>Temperature: - 100~200 $^{\circ}\text{C}$;</p> <p>Temperature can be adjusted based on the working temp of the equipment(the upper limit +5 $^{\circ}\text{C}$, the lower limit -5 $^{\circ}\text{C}$)</p> <p>Humidity: 0~100 %RH.</p>

6. Running mode	programmable running ,constant running and booking boot
7. Program capacity	The operating time can be set up to 999999 h 59 m(Set 0 to constant operation without time limit) Available program capacity: max 269 groups ,13450steps Available memory capacity: 50step/group Repeatable command: Each command can be cycles to 32000.
8. Setting mode	Man-machine dialogue mode, Touch mode input and control.
9. Communication interface	Data collection when connected to a computer Can be used as monitoring and remote control system, Multiple machines synchronization control available. RS-232、RS-485 and Ethernet.
10. U disk Memory card	1G-8G disk is available with history curve, historical data download hot-swappable function
11. Data collection	RAM with battery protection settings, data can be saved, curve recording period can be set 30 ~ 300 sec, maximum historical data memory storage is 90 days (when the sampling time is 1min) 10 years of data are not used continuously
12. Power off memory	Power recovery mode can be set as hot start, cold start and stop.
13. Pre-set function	boot time can be set freely and machine runs automatically when turning on power
14. Software environment	Windows 7/WIN8 or Windows XP
15. Network Connection	Can be connected to Ethernet, remote control function, data collection, can simultaneously control multiple machines.

VIII. Electrical control system

1. Control panel	<ul style="list-style-type: none"> a. Emergency stop switch b. Power switch c. Over temperature protector d. RS-485 interface
2. Protection System	<ul style="list-style-type: none"> a. Heater burning protection switch b. Heater over current circuit breaker c. Circulating fan over current and overload protection d. Compressor high voltage protection switch

	<ul style="list-style-type: none"> e. Compressor over temperature protection switch f. Compressor over current protection switch g. Overvoltage under-phase protection switch h. Circuit breaker i. Leakage switch j. Zero-crossing guillotine fluid power controller
3. Alarm	Equipment stops running and sends audible alarm when the above protection appears, meanwhile, fault, causes and solutions will be displayed on the screen.





IX. Installation











1. Surrounding environment	Operation temperature range: 5~35°C
2. Power	AC 1ψ 2W 230V 50Hz (R, N phase+ground wire)(Voltage fluctuation ≅ ± 10%)
3. Ground protection	Grounding resistance ≅ 4Ω

PS:

1. The machine standard power cord 3 meters
2. The above power requirements should be assigned to the chamber control box terminal block, special use non-fuse switch is necessary.
3. Please ensure whether the chamber can be access to the entrance or passageway.

Main Material List

	Name	Brand	Remarks
1	Refrigerant Compressor	Hermetic compressor	French Tecumseh
2	Pressure Switch	DANFOSS	
3	Condenser	Guangzhou Yongqiang	
4	Evaporator	Yongqiang	
5	Dry filter	Denmark DANFOSS	

6	Capillary tube	KOMEEG	
7	Expansion valve	Denmark DANFOSS	
8	Solenoid valve	Denmark DANFOSS	
9	Controller	KOMEEG	
10	Breaker	French Schneider	
11	AC contactor	French Schneider	
12	Thermal relay	French Schneider	
13	Phase sequence relay	Carlo Gavazzi	
14	Time relay	Autonics	
15	AC relay	OMRON	
16	Solid-state relay	Carlo Gavazzi	