Technical Specification for High and Low Temperature Low Pressure Test Chamber

Model: KU-1000S

Company: KOMEG Technology Ind. CO., Limited

Ⅰ. Product Overview

High precision microcomputer control temperature and humidity system, with PID control the refrigerant flow to make the system's heating and humidification reduction, to achieve low power consumption, energy saving, carbon reduction effect, cooling, heating, humidity control intelligent electronic control, long-term stable use.

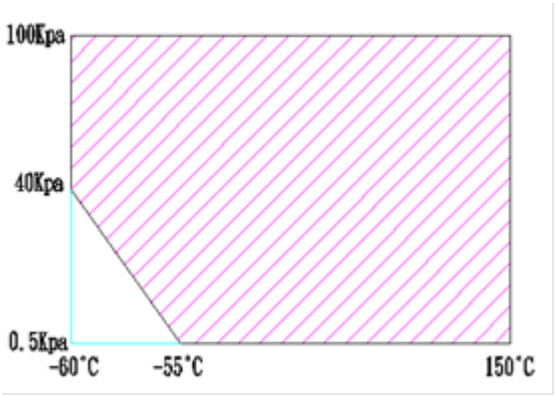
Ⅱ. Application

Applicable to high and low temperature test for aerospace products, information electronic instruments, electrical, electronic products, machinery and other products, parts, materials, etc. simulation of temperature changes on the products, parts, materials for quality and reliability testing. For product design, improvement, identification and factory inspection use.

Ⅲ. Features

1. Product performance standards	GB / T2423.1-2008 Low temperature test method Ab GB / T2423.2-2008 High temperature test method Bb GB / T2423.21-2008 Low pressure test method M GB / T2423.25-2008 Low temperature / low air pressure comprehensive test Z/AM GB / T2423.26-2008 High temperature / low pressure comprehensive test Z/BM GJB150.2A-2009 Low atmospheric pressure (height) test (Test procedure I / II / III) GJB150.3A-2009 High temperature test GJB150.4A-2009 Low temperature test GJB150.6A-2009 Temperature and altitude test
2. Easy Operation	※Using company owned brand KOMEG 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 ※Efficient oil separator to ensure the service life of the compressor

Ⅳ. Main Technical Parameters

Water-cooled, water temperature at +25 ℃, no load.	
1. Temperature range	-70℃～+150℃
2. Temperature fluctuation	≤±0.5℃ (normal pressure, without load)
3. Temperature deviation	≤±2.0℃ (normal pressure, without load)
4. Heating time	From -20°C to +150°C within 60 min (normal pressure, without load)
5. Cooling time	From +20°C to -65°C within 90 min (normal pressure, without load)
6. Pressure range	From normal to 0.15 kPa
7. Pressure deviation	≦ ±2kPa (≧40kPa) ≦ ±5% (2～40kPa) ≦ ±0.1kPa (≦2kPa)
8. Pressure – temperature control range	
9. Pressure changing rate	Pressure DOWN: normal pressure to 1.0 kPa, within 30 min(no load, dry inside)
The above specifications is measured in the environment of + 20 ℃, temperature and humidity performance measurement comply with related regulation of IEC60068-3 standard; Sensors placed in the air outlet.	

Ⅴ. Chamber Structure

1. test space dimension	W 1000 × H 1000 × D 1000 mm
2. external dimension	1810 × H 2090 × D2800 mm PS: not including external dimensions protruding part
3. Internal material	Stainless steel plate (SUS # 304)

4. External material	External material use high-quality carbon steel with static color spray
5. Insulation material	High-density rigid Polyurethane foam + glass wool, (high strength, non-flammable, no deformation)
6. Door	Single open door, sealed by silicone rubber, the electric heater installed in the door to prevent the formation of condensation and frost. Observation window of W210 X H270mm (width × height), located on the door, with multi-hollow electric insulation coated glass prevent condensation effectively, with lighting lamp inside.
7. Cable Holes and binding post	One Φ100mm cable hole, on the left; with glass sintered sealing binding post (24 core - 10A) flange *1.
8. Manual charging valve	Manual inflation valve for manual pressure relief during power failure.
9. Shelf	Stainless steel shelf *2 layer, load-bearing 40 kg/ layer.
10. Air heater in the box	Fin type heat pipe stainless steel electric heater.
11. Heating control mode	SSR (solid state relay) non-contact pulse width modulation.
12. Vacuum pump	VD601 ULVAC (oil mist filter filter) 1 set.
13. Vacuum sensor	Vacuum Sensors: UNIK 5072 (UAS GE) Measuring range: 0 ~ 200KPa Comprehensive accuracy: ± 0.2% FS. BSL Output: 4 ~ 20mA Pressure interface: G1 / 4 internal thread
14. Condensate water drain hole	Condensate water produced by refrigeration system will be collected by the water tray, and drained out together with the condensate generated by test chamber through pipe automatically.
15. Noise	Chamber noise≦80dB
Ⅵ. Air-conditioning system	
1. Working Mode	Mechanical compression refrigeration
2. Compressor	Germany GEA Bock semi-hermetic compressor
3. Refrigerant	Non-fluorine environmentally friendly refrigerant, R404A
4. Condenser	Water-cooled, shell and tube type condenser

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	High precision expansion valve, oil separator, desiccant and so on components are using international famous brands imported
7. Refrigeration Technology	※ Nitrogen welding, two-stage rotary vane vacuum pump, ensure that the internal cooling system clean and reliable. ※ Water tray located at the bottom of the compressor to ensure condensate water drain through pipe freely at the rear of the chamber.
Ⅶ. Control System	
1. Controller	7 - inch TFT Programmable Touch Screen Controller
2. Operation mode	Program mode, constant value mode.
3. Operating language	Chinese and Russian optional, touchscreen input
4. Program Capacity	Maximum 20, maximum 1000 steps, maximum 20 cycles (the maximum number of steps per cycle 99).
5. Display Function	Temperature / humidity / presure settings (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,
6. Display Resolution	Temperature: ± 0.01ºC; Humidity: ± 0.1%; time: 1min.
7. The upper and lower temperature protection function	The lower limit alarm temperature can be set.
8. Input	Thermocouple / Platinum Resistance / Voltage / Current.
9. Control mode	Anti-integral saturation PID, BTHC (temperature and humidity test equipment), BTPC (temperature and pressure equipment).
10. Curve recording function	With battery protection of the RAM, you can save the device settings value, time of sampling value and sampling time; Maximum recording time of 60 days (when the sampling period is 1.5min).

11. USB function	With a USB (capacity of not less than 1G, no warranty) one, PC-specific software CD-ROM. Through the PC software for the preparation of test procedures and save to USB, and then transferred from the USB test program and stored in the controller; can also be transferred to the controller program to USB, and then stored in the PC for analysis and management. Can be stored in the controller records the test curve data dump to the USB. Display and print the test data / curve directly with PC-specific software (the data can not be modified); or convert the recorded data to an Access data file that can be read by Microsoft Office
12. Communication interface	Data collection and curve display when connected to a computer Can be used as monitoring and remote control system Multiple machines synchronization control available R232, RS485,and Ethernet
13. Power Off Memory Function	Power recovery mode can be set as hot start, cold start and stop
14. Calendar timer function	Automatic start and automatically stop running.
15. Network Connection	Can be connected to Ethernet via professional software, remote control & assistance function and data collection can be achieved through network, multiple machine can be controlled simultaneously
16. Accessory (Standard configuration)	Fault alarm code prompt function, power protection, self-diagnostic function.

Ⅷ. Control system

1. Emergency stop switch
2. Power switch
3. Over-temperature protection *1
4. RS-485 interface *1
5. USB interface

Ⅸ. Safety protection device

1. Refrigerating system	a. Compressor overheat protection switch b. Compressor over-current protection switch c. Compressor high voltage protection switch

2. Test chamber	a. Adjustable over-temperature protection b. Test space temperature fuse c. Air conditioning channel limit over-temperature protection d. Fan motor overheating protection e. Heater over-current quick break tester
3. Other security protection	a. Total power phase sequence and phase failure protection b. Leakage protection, overload and short circuit protection c. Vacuum pump motor over-current, overload protection

Ⅹ. Installation Environment

1. Power Supply	AC 3ψ4W 480V 50HZ (R, S, T, N phase + ground wire) (voltage fluctuation ± 10%)
2. Grounding resistance	Grounding resistance: ≦4Ω
3. Operating temperature range	Ensure operating environmental: 5～35℃,10% to 95%R.H.
4. Use compressed air source	Please provide 4 ~ 7kg / cm^2 compressed air source

XI. Warranty

one year (Excluding natural disasters, power anomalies, human mal-operation, damage caused by improper maintenance, etc.) the Company completely free maintenance

Ⅹ. Technical Documentation

※Product certificate*1
※Operation Manual*1
※Maintenance Manual*1 (Refrigeration & electric schematic diagram)

P.S.

1. 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.
2. Please equip the above water source to the test chamber.
3. Please confirm whether it can enter the door or access elevators, etc.
4. This offer is only the price of the machine, not include the power cord, cooling towers, and outside piping engineering cost. (if not mentioned)

Main Material List

SN	Name	Brand	Remarks
1	Compressor	Germany GEA Bock	Semi-hermetic compressor 
2	Oil separator	American Emerson, ALCO, Temprite	EMERSON ALCO CONTROLS Temprite
3	Plate heat exchanger	GEA, Xingsuneng, Guoxing	GEA
4	press switch	Denmark DANFOSS, Saginomiya	Danfoss SAGINOMIYA
5	Condenser	Guangzhou Yongqiang, Klean Air	
6	Evaporator	Yongqiang	
7	Dry filter	Denmark DANFOSS, USA SPORLAN	Danfoss SPORLAN MECHATRONICS
8	Capillary tube	KOMEG	KOMEG
9	Expansion valve	Denmark DANFOSS, USA SPORLAN	Danfoss SPORLAN MECHATRONICS
10	Magnetic valve	SAGLNOMLYA or Nickideu /DANFOS	SAGINOMIYA Danfoss
11	Controller	KOMEG	KOMEG
12	Residual current circuit breaker	Taiwan SHIHLIN	
13	No-fuse switch	French Schneider	Schneider Electric
14	AC contactor	Japan French Schneider	富士电机 Fuji Electric Schneider Electric
15	Thermorelay	French Schneider	Schneider Electric
16	Phase sequence relay	Carlo Gavazzi	CARLO GAVAZZI

17	Time relay	Autonics, Omron	Autonics Sensors & Controllers OMRON
18	AC relay	French Schneider	Schneider Electric
19	Solid-state relay	Carlo Gavazzi	CARLO GAVAZZI
20	Intermediate Relay	Omron	OMRON
21	Cycle motor	Taiwan Teco	TECO
22	Vacuum pump	ULVAC VD601 3ϕ 380V	
23	Vacuum valve	Highlight AVB-KF-40-P	
24	Vacuum sensor	GE UNIK 5072	
Note: Two options listed is for alternate choice and backup purpose			