

# Specification for Rapid-rate Temp Change Test Chamber (Environmental Stress Screening)



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

**Model: ESS-1000S-C15**

**Manufacturer: KOMEG Technology Ind Co.,Ltd**

**I . Control method and characteristics**

High precision microcomputer temperature and humidity systems by PID controlling SSPR reduce the system’s heating and humidification amount, to achieve low power consumption, energy saving, carbon reduction effect. Intelligent electronic control of cooling, heating, humidity control, so it could be used long-term stability.

**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) Life of high temperature test
- GJBI50.3-2009(MIL-STD-810D) high-temperature test
- GJBI50.4-2009(MIL-STD-810D) low-temperature test
- GB2423.3-2008(IEC68-2-3) test Ca: constant damp heat test
- GB2423.4-2008(IEC68-2—30) test Db: Alternating hot and humid test method。
- GJBI50.9-2009(MIL-STD-810D) Damp heat test method.

1.Energy conservation	Bypass mode to adjust cooling capacity to achieve a constant temperature and humidity effectively
2.Easy Operation	※Using company owned brand KOME G 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 +25℃, no load )**

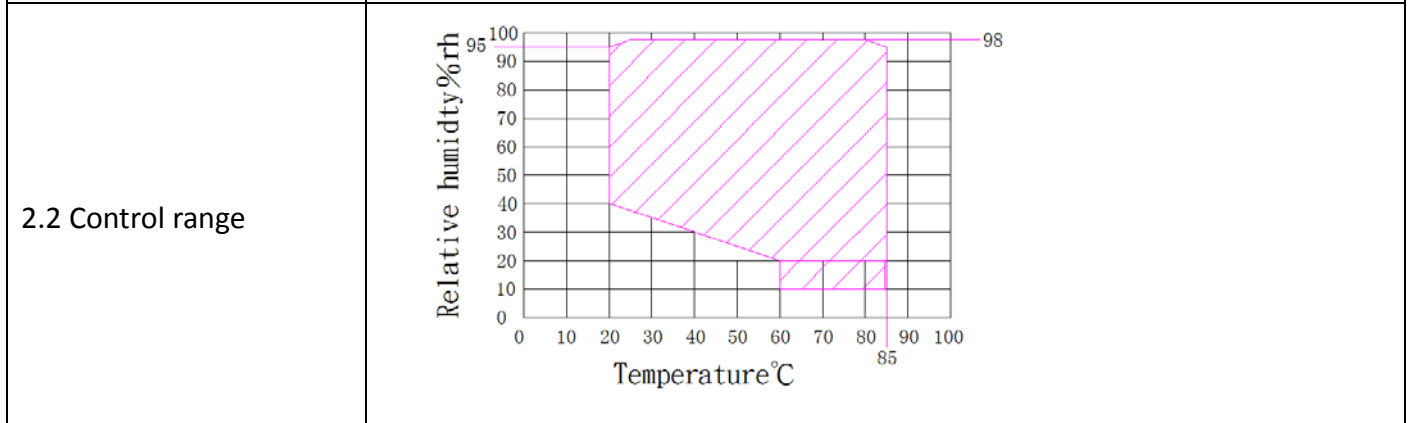
**Temperature**

1.1 Temperature range	-75℃ ~ +150℃
1.2.Temperature deviation	≅ ± 2.0℃
1.3.Temperature fluctuation	±0.5℃
1.4.Temperature uniformity	≅ 2. 0℃

1.5. Temperature change rate	Temperature change rate designed according to IEC 60068-3-5 standard, Sensors in the outlet  Heating rate: from -75°C to +150°C linear 15°C/min no load Cooling rate: from +150°C to 75°C linear 15°C/min no load
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**Humidity**

2.1 Humidity range	10%R.H. ~ 98%R.H
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2.3 Humidity deviation	$\pm 3.0\%RH$ ( $> 75\%RH$ ) $\pm 5.0\%RH$ ( $\leq 75\%RH$ )
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2.4 Humidity uniformity	3.0%RH (no load)
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2.5 Humidity fluctuation	$\pm 2.0\%RH$
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**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 1000 × H 1000 × D 1000 mm Exterior size: W 1200 × H 2030 × D 3095 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. Heating wire was installed at the door frames to prevent condensation at low temperatures.
4. Observation window	Observation window on the door. Multi-layer hollow electro-thermal coating glass can effectively heat insulation and prevent condensation.
5. Lighting device	11W/AC220V lamp on the observation window
6. Heater	High-quality nickel-chromium alloy wire electric heater, non-contact control

	(SRR).
7. Humidification	Humidifying basin heating and humidifying method; Stainless steel sheathed heater; Heater control: non-contact pulse width modulation, SSR (solid-state relay); Water level control device, heater anti-dry device.
8. Condensate water outlet	Equipped with condensing water and condensate drainage unit
9. Cable port	Φ50mm*1 located on both sides(each*1) with rubber stopper and plastic cover
10. Sample holder	Two layers of stainless steel sample holder, load capacity 30kg/layer
11. Mobile casters	Containing mobile casters (with goblet)
12. Electric control box	Total power circuit breaker, over-temperature protection.
13. Water Pump System	Water pump of automatic water supply
<b>VI. Refrigeration system</b>	
1.Compressor	BOCK Semi-hermetic compressors
2.Refrigerant	R404A/R23 (Ozone damage index is 0) environmental friendly
3.Condenser	Air cooling fin condenser. (water cooled)
4. Evaporator	Copper aluminum finned evaporator.
5. Other accessories	High-precision expansion valve, oil separator, desiccant, etc. components are imported using internationally renowned brands
6.Refrigerant flow control	Automatic adjustment of energy consumption output of the refrigeration system.
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.
<b>VII. Control System</b>	
1. Sensor	high precision DIN A class, dry bulb φ 4.8mm SUS #304 PT 100 Ω

<p>2. Controller</p>	<p>KOMEG brand KM-5166 LCD Touch screen controller with PID control</p> 
<p>3. Display Function</p>	<p>Temperature settings (SV) Actual (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.</p>
<p>4. Display Resolution</p>	<p>Temperature: <math>\pm 0.01^{\circ}\text{C}</math>; Humidity: <math>\pm 0.1\%</math>; time: 1min.</p>
<p>5. Setting Range</p>	<p>Temperature conditions: <math>-100\sim 200^{\circ}\text{C}</math>          Temperature can be adjusted based on the working temp. range of the equipment (the upper limit: <math>+5^{\circ}\text{C}</math>, the lower limit : <math>-5^{\circ}\text{C}</math>)          Humidity conditions: <math>0\sim 100\% \text{RH}</math></p>
<p>Operation Mode</p>	<p>Programmable running, constant running and booking boot</p>
<p>7. Program Capacity</p>	<p>The setting running time can be set to 9999 h 59 m (setting 0 is no time limit for continuous operation);          Usable program capacity: up to 1000 groups;          Available memory capacity: 1000 steps per group;          Repeatable command: Each command can be up to 999 cycles.</p>
<p>8. Setting mode</p>	<p>Touch mode input</p>
<p>9. Operating language</p>	<p>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</p>
<p>10. Data Collection</p>	<p>1G-8G available for downloading historical curve, data, pluggable          Data can be converted to curves, such as Excel file format report.</p>
<p>10. Data collection</p>	<p>RAM with battery protection settings, data can be saved, maximum historical data memory storage is 90 days (when the sampling time is 1min)</p>
<p>11. Power Off Memory Function</p>	<p>Power recovery mode can be set as hot start, cold start and stop</p>
<p>12. Pre-set Function</p>	<p>Boot time can be set freely and machine runs automatically when turning on power</p>

13. Software environment	Windows2000 or Windows XP
14. 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
15. Fault handling	Fault alarm and causes handling prompts, power protection, the lower limit temperature protection, timer function (automatic start and automatic stop running), self-diagnostic function.

**VIII. Control Panel**

- a. Emergency stop switch
- b. Power switch
- c. Over temperature protection device
- d. RS-485 or RS-232 Interface

**XI. Safety protection device**

- A. Heater dry combustion protection switch
- B. Humidifier empty burn prevent protection switch
- C. Heater overcurrent circuit breaker
- D. Humidifier over-current circuit breaker
- E. circulation fan over current overload protection
- F. Compressor high pressure protection switch
- G. compressor over temperature protection switch
- H. compressor overcurrent protection switch
- I. Overvoltage open phase, reverse protection switch
- J. Circuit breaker
- K. No fuse switch
- L. Low humidifier protection
- M. Water tank low water level warning
- N. Controller noise isolation protection
- O. Zero-crossing gate fluid power controller

3. Alarm indication: When the above protection, the device stops running, and sound and light alarm, At the same time in the controller display fault location and its causes and solutions.

**X. Installation environment**

1. Power Supply	AC 3 $\psi$ 4W 380V 50Hz (R.S.T.N ground wire)( voltage fluctuation $\cong \pm 10\%$ )
2. Surrounding environment	Ensure operating environmental temperature range: 5~35°C

3. Ground protection ground resistance  $\leq 4 \Omega$


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. The above water source demand to match to the host machine and connected the host.

3. Please confirm whether it can enter the door or access elevators.

4. This offer is only the price of the machine, do not contain power cord outside the machine, gas supply, cooling towers and piping engineering cost.

**Main parts list**

Parts	Brand	Remarks
Compressor	Tecumseh compressor	
Oil separator	Emerson	
Plate heat exchanger	Germany GEA	
Press switch	DANFOSS	
Condenser	Yongqiang	
Evaporator	Yongqiang	
Dryer	Denmark DANFOSS	
Capillary	KOME G	
Expansion valve	Denmark DANFOS / HONEYWELL	
Expansion valve	HONEYWELL	
Magnetic valve	Japan SAGLNOMLYA or Nickideu	
Magnetic valve	Denmark DANFOS	
Controller	KOME G	
Residual current circuit breaker	Taiwan SHIHLIN	

	No-fuse switch	French Schneider	
	AC contactor	French Schneider	
	Thermorelay	French Schneider	
	Phase sequence relay	Carlo Gavazzi	
	Solid-state relay	Carlo Gavazzi	