

Symor Instrument Equipment Co.,Ltd

(China Science & Technology University Climatic Simulation R&D Center)



Temperature Humidity Test Chamber

Contact:

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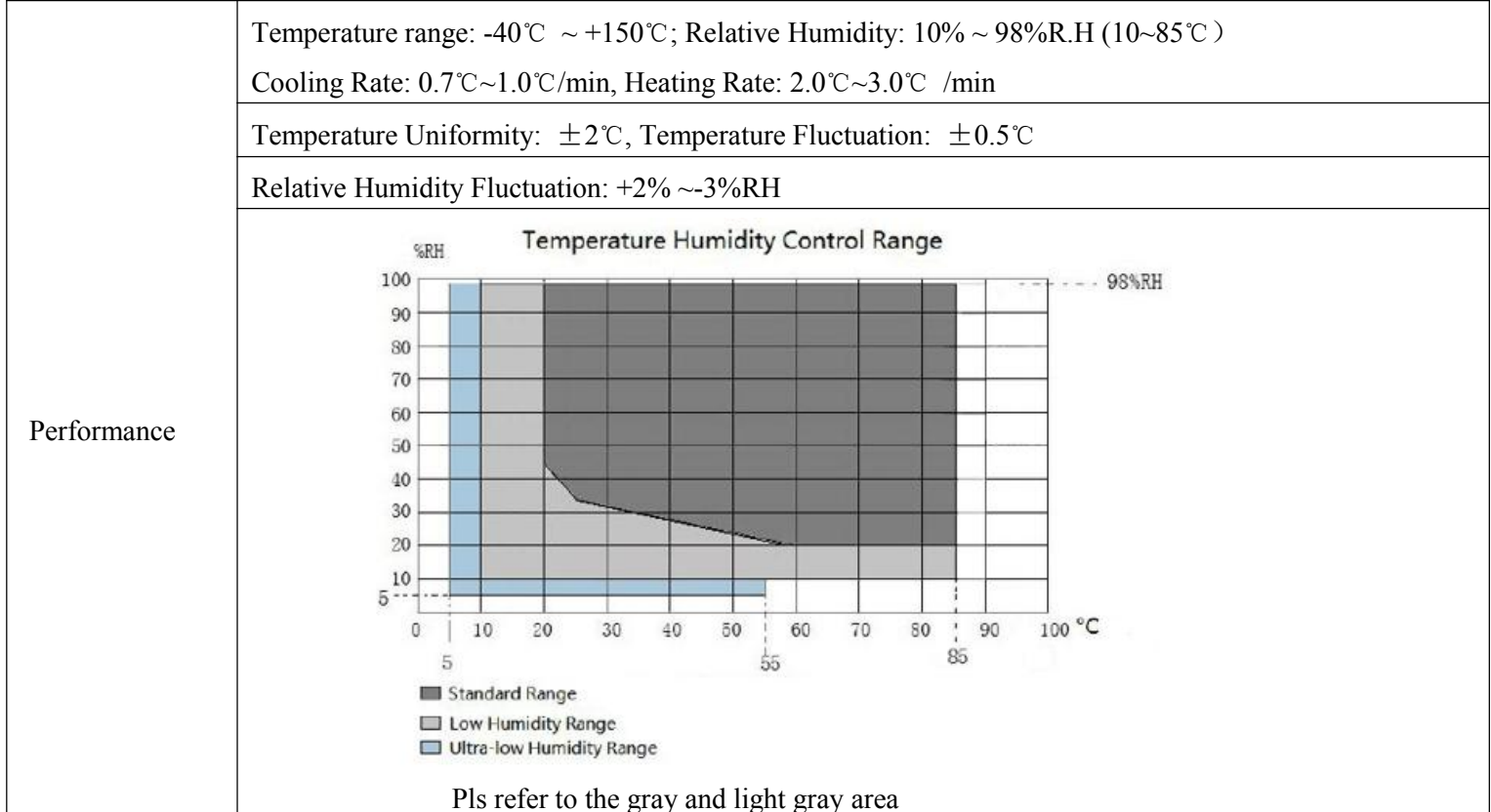
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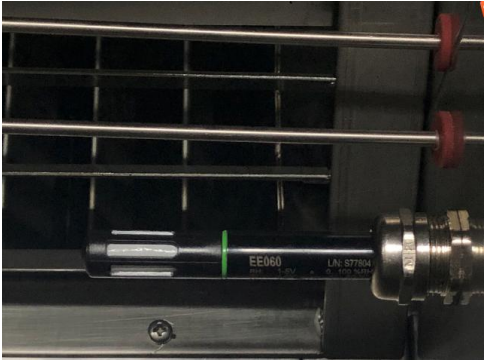
**Dayang Industrial Park,Luyang Zone,Hefei City,
Anhui ,China**

www.climatechambers.com



Summary

Product		Model		Internal Dimension (W*D*H) mm		External Dimension (W*D*H) mm	
Temperature Humidity Chamber		TGDJS-1000		1000×1000×1000		1560×1610×2240	
Production lead-time (Days)							
Design	Drawing	Metal Plate	Refrigeration	Electronics	Quality Control	Package	
4	3	7	5	5	5	1	
TOTAL							30 days
Country of Origin: China							



Material A	<p>Exterior Chamber: Reinforced (thickness=1.5mm) cold rolled steel plates with laser/CNC processing, imported AkzoNobel powder, Germany Wagner automatic coating line to spray the steel plate inside and outside, to improve the service life of the product.</p> <p>Working Chamber: Reinforced brushed stainless steel SUS#304 (thickness=1.2mm) .</p> <p>Insulation Material: High-density superior fiber glass cotton (thickness=120 mm).</p> <p>Sealing: Double layers of reinforced aging resistant rubber sealing.</p>  <p>Test Hole: ϕ 50mm\times1, lead holes are located at right side on the chamber, with soft plugs and covers.</p> <p>Door: Single door, with double-side conductive multi-layer hollow glass window.</p> <p>Door Connection Frame: Stainless steel integral connection frame, equipped with heating defrosting and anti-condensation devices.</p> <p>LED Lighting: Philips LED lighting, high temperature and corrosion resistant.</p>
Material B	<p>Heater: Nickel-chromium naked wire heating.</p> <p>Humidifying Way: Shallow water bath with immersed heater/sensor system to generate uniform humidity.</p> <p>Sensor: PT-100Ω for temperature & Electronic sensor for humidity</p>  <p>Water Tank: Automatic water supply/water shortage alarm</p> <p>Viewing Window</p> <p>4 PU Casters with brakes, single door with explosion proof handle</p>
Cooling	<p>Air-cooling</p> <p>Tecumseh (France original imported) Refrigeration Compressors (cascade system), with DuPont R404A &R23 (fluoride-free)</p> <p>Condenser: Air Cooled-Fins with fan</p> <p>Fin with several segments</p>
Controller	<p>Japan UNIQUE UMC1200, Programmable Touch-screen,see “operation manual”</p> <p>Ethernet, Remote-controlling by computer, USB Port, Data Store/Upload/Download, Curve, etc</p>
Others	<p>EMO, Tri-color indicator, Cable Access Port ϕ 50mm\times1</p> <p>Some Fuses; Documents (Manual, drawings, etc.)</p> <p>Fast acting fuse; Compressor Overload and High Pressure Protector; Absence and Phase Reverse Voltage Protector (for 3 phase); Lack of Water Protector; Humidifier Thermal Overshoot Protector; Circuit breaker; Fire Protection; Alarms; Leakage Protection; Pressure Relief/Equalization Vent</p>

Specification

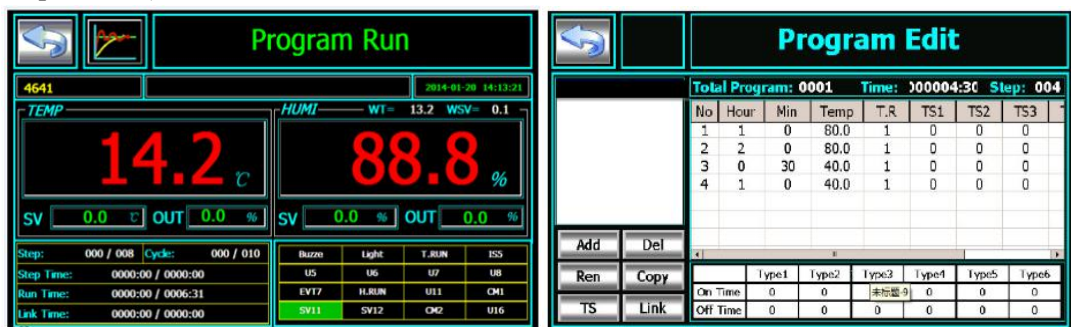
Product	Programmable Temperature Humidity Test Chamber
Principle/Application	Programmable Temperature Humidity Test Chamber is a must-have testing machine for industries like aerospace, automotive, home appliances, scientific research, etc. It is used to test and determine the parameter and performance of specimen bearing the high low temperature and humid environmental condition.
Advantages	<ol style="list-style-type: none"> 1. With independent intellectual property rights and design patents and master the environmental test chamber core technology. 2. The control instrument is the easy-to-operate UNIQUE (Japan) UMC1200 which can be remotely controlled. 3. The refrigeration system uses Tecumseh (France) compressor and is equipped with condensate water tray. 4. The core electrical components are Schneider and other well-known brands. 5. Advanced design concept: water and electricity layouts are separated. 6. Innovative shallow groove humidification method, drawer-style water, large water tank design. 7. The bottom of the working room (test area) is drainage slot for the purpose of preventing condensation, to maximize the protection of the specimen. 8. Lighting system is Philips kit, the viewing window is of funnel-shaped design with defrosting glass for a wide and clear visual sight. 9. Unique leakage protection with more secure operations.
1. Structure & Material	
Standard Configuration	<p>Working Chamber: The backside of the working chamber is the air duct, the upper part of the air duct is an outlet, the lower part is a return air outlet, equipped with a long axial flow air supply motor, a centrifugal fan blade, a heater and a refrigeration evaporator inside.</p>  <p>The core electrical components are Schneider and other well-known brands. Testing hole (Cable Access Port) is located at the right side of the machine with rubber stopper and stainless steel cover to ensure sealing performance, it (ø50mm) is used to connect testing power cord or signal wire to the outside.</p> 

Temperature & Humidity Circulation	Specially-customized air-conditioning low-noise long-axis fan motor and high/low temperature resistant stainless steel multi-swing impeller to achieve strong air convection and vertical diffusion and circulation.
Auxiliary Structure	<p>Sealing: The double-layer high temperature resistant high-tension sealing strip between door and chamber of the equipment can ensure obturation of testing area.</p> <p>Door handle: Introduce explosion proof double door handle, the door handle without counteraction for easy operation.</p> <p>Caster: High-quality fixable PU active wheels with brakes are installed on the bottom of the machine.</p>
Viewing Window	Viewing window introduces multi-layer insulated tempered glass and has glue flake conducting film on the inner side for defrosting (so as to observe the whole test course at any time).
Standard Configuration	One test hole (Cable Access Port) allocated at right side of the machine (ø50mm, or changeable as per requirement) is used to connect testing power cord or signal wire to the outside. Attached with condensate receiving tray to drain water to the outside of the chamber.

2. Controlling System

Function	<p>Fixed Value Model and Ramp Rate Setting</p> <p>Hold, Skip, Standby and Signal Output of two groups of time</p> <p>With cold / heat machine start selection function</p> <p>With temperature display value correction function</p> <p>With a temperature sensor correction function</p> <p>With the compressor automatically stop function</p> <p>With the scheduled start / stop operation function</p> <p>Has a pause recording function</p> <p>With power failure memory function: When power off, the program data memory can be maintained for 6 months</p>
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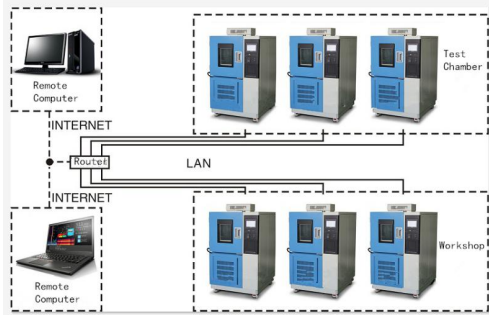
LCD Controller Display	<p>UNIQUE (Japan) temperature and humidity controller</p> <p>7'' HD true color LCD touch display to bring you dignity and comfort in touch and vision.</p> <p>Real-time monitoring (Monitor the real-time data of the controller, status of signal point and actual output status)</p>
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Japan UMC 1200 Programmable Touch-Screen Controller

Chart Recording Function	<p>The controller can store 600 days of historical records (under 24-hour operation conditions, recording interval is longer than 1 minute, recording temperature and humidity data at the same time), and have the function of playback of controller historical data chart uploaded.</p> <p>It is allowed to export or upload data with U disc, and access to the data on computer or convert them to Excel format through attached software.</p> <p>The controller has a USB port so that the data can be browsed or printed through ITAG printer under drive of the port (optional).</p>
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Resolution Ratio	<p>Temperature: 0.1°C (display range)</p> <p>Time: 1Min</p> <p>Humidity: 0.1% R.H (temperature & damp heat test equipment)</p>
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Temperature Sensor	PT100 platinum resistance thermometer
Control Method	Air-cooling Balance temperature and humidity adjusting method Temperature and humidity control introduces the same channel coordination control method of P.I.D + S.S.R system. Have the function of automatic calculus, and can revise temperature & humidity change conditions to realize more accurate and stable temperature & humidity control.
Program Capacity	Have 1000 sections of programs Every section is capable of circulating 999 steps The longest duration of every section is 99 hours and 59 minutes. Have the function of linking of 10 sets of programs
Communication Function	<p>The standard configuration of control panel includes a 10M/100M Ethernet port to obtain IP address automatically for remote control. Support various functions such as real-time monitoring, playback of historical chart, program editing, FTP uploading and downloading, examination of historical faults, remote value fixing/programme control,etc.</p>  <p>The equipment has powerful network monitoring and control functions, so that you can conduct operation and monitoring through computer real-timely and know the operation situation of the equipment even if you are not near the machine.</p>
Subsidiary Function	Fault alarming and cause, resolution reminding function Power failure protection function Calendar timing function (Automatic starting and stopping) Self-diagnosis function

3. Main BOM for Reference:

Name	Brand	Origin
Controller	UNIQUE (UMC)	Japan
Compressors	Tecumseh	France
Refrigeration solenoid valve	Castel	Italy
Drier filter	Danfoss	Denmark
Refrigerant	Dupont	USA
Pressure gauge	REFCO	China
AC contractor	Schneider	France
Overload protector	Schneider	France
Miniature circuit breaker	Schneider	France
Miniature relay	Schneider	France
Phase Sequence Protector	Omron	Japan

Oil separator	Guanya	Taiwan
Over-temperature Protector	RAINBOW	South Korea
Switch	Light Country	Taiwan
Silicone rubber seal	ShinEtsu	Japan
Illumination Lamp	Philips	Netherlands
Humidify System	Shanghai	China
Enclosure	Baosteel	China
Test Room	Baosteel	China

4. Heating System

Heating Structure	<p>IR Ni-Cr alloy high-speed heating electric heater</p> <p>Totally independent high-temperature system don't affect low temperature test, high temperature test and alternating hot and humid test.</p> <p>The output power of temperature & humidity control is calculated by microcomputer to achieve electricity use benefits of high precision and high efficiency.</p>
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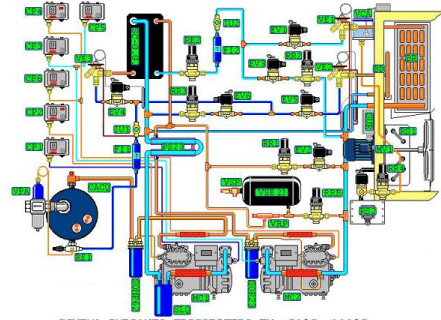
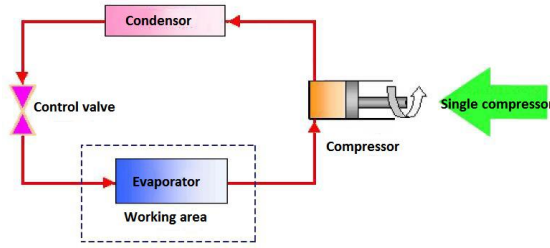
5. Humidification System

Humidification Method	<p>Humidifier control method: Contact-less equal-period pulse-width modulation, SSR (Solid State Relay)</p> <p>Water level automatic compensation and water shortage alarming system</p> <p>Humidity control introduces the same channel coordination control method of P.I.D +S.S.R system.</p>
Heating Humidification	IR stainless steel fast heating nickel chromium alloy electric heating pipe
Air drying filter (Air compressor self-provided)	<p>The air drying filter uses the principle of pressure swing adsorption to dry compressed air.</p> <p>It consists of 2 drying towers, 2 prismatic valves, 2 solenoid valves, 1 regeneration gas regulating valve and electric control cabinet, program is controlled by the controller. When the wet air enters a tower, the water vapor is adsorbed, while the other tower is regenerated, immediately followed by a filling process. This process is repeated after a certain time to continuously provide the purified compressed air with constant pressure .</p>



6. Refrigeration principle and configuration

Refrigeration Principle	<p>Refrigeration principle: The refrigeration circulation adopts reverse Carnot cycle, which consists of two isothermal processes and two adiabatic processes, the process of as follows: the refrigerant is adiabatic compressed to a higher pressure by the compressor, the exhaust temperature is increased by the work consumed, then the refrigerant is transferred to the surrounding medium by isothermal heat exchange of the condenser and the surrounding medium. This cycle is repeated to achieve the purpose of cooling.</p> <p>The design of refrigeration system uses energy regulation technology, an effective treatment method can not only ensure the normal operation of refrigeration units, but also effectively adjust the energy consumption and refrigerating capacity of refrigeration system. The operating cost of refrigeration system is reduced to be more economical.</p>
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Eco Design

In addition to taking into account the safety of the refrigeration unit, the efficient use of the various aspects, it also uses a number of energy-saving measures: automatic temperature compensation technology, cooling capacity adjustment of controlling system, gas-liquid bypass regulation, evaporation temperature adjustment, etc. At any points of low temperature constant temperature, the operating power can be reduced by 50% without heating balance, so that the cooling system's operating cost and breakdown rate will become lower.

Using intelligent automatic conversion expansion system, according to the load automatically adjust the refrigerant flow + intelligent electric power data value to match the temperature (load) automatic analog output power data output value.

This design can save more than 30% power compared with traditional design.

Compressor



Cooling System

Two France Tecumseh Compressors

Condenser

Fin tube heat exchanger

Condensation Method

Forced air cooling

Refrigerant

R404A & R23

Defrosting Method

Automatic defrosting in low temperature: the high-temperature and high-pressure gas from air outlet of the compressor shall be led into refrigerant evaporator upon automatic conversation of solenoid valve, so that the surface temperature of the evaporator shall increase and the condensate shall be drained to the outside.

Others

All system pipes shall go through the 48-hour ventilation and compression leak test.
Internal spiral efficient refrigerant copper pipe
Cooling circuit of return air of compressor
Evaporating pressure regulating valve (prevent freezing of evaporator)

7. Protection

Refrigeration System

Over-heating of compressor
Over-pressure of compressor
Over-heating of compressor motor
Over-current of compressor motor

Humidification System

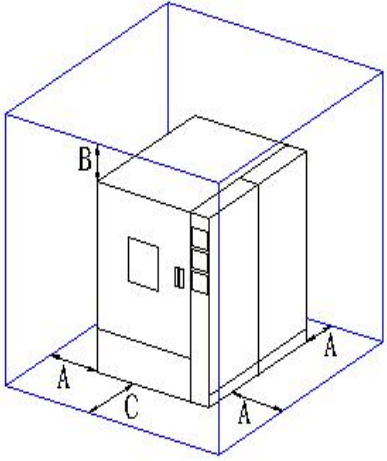
Drying burning of heating pipe
Abnormal water supply (water shortage)

	Abnormal water drainage
Test Chamber	Adjustable over-temperature protection Overheat of fan and motor Phase failure/reverse of the entire equipment.etc
Others	Power Leakage Protection Overload Protection,etc Phase sequence and phase missing protection

8. Attached Materials

- 8.1 Certificate of quality, warranty card, circuit diagram
- 8.2 Instructions: Operation method, cautions, basic accessories, notes for maintenance
- 8.3 Calibration certificate

9. Installation Requirement

Installation Site	Good air ventilation Flat floor No fierce vibration No electromagnetic No inflammable and explosive materials	
Requirement	A: ≥60cm B: ≥60cm C: ≥120cm Attention: inclination should not exceed 15°	
Ambient Environment	Temperature: 5°C~ +35°C Humidity: ≤85%RH Air Pressure:86kPa~106kPa	
Power Supply	AC (1±10%) 380V, (1±10%) 50HZ, 12KW, 3P+5W	
Water Supply	Pure Water, Distilled Water, Deionized Water.	
Gross Weight	850 KG	
Noise	≤65 decibels	

10. After-sales Service

Duration	One year with lifetime technical support
After-sales Methods	1. Via email, telephone, social software (wechat, skype, whatsapp, etc), video conference. 2. Engineers going to site for installation or troubleshooting with reasonable charges (especially for non-standard walk in climatic chambers)
Charges	If parts were broken not artificially during warranty, the new parts will be sent to you without charges or express cost (FedEx, DHL, TNT, etc). If parts were broken beyond warranty, reasonable cost (generally at a low price) will be charged for new replacements.

11. Contact

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ANNEX

Pls refer to the video about this model on our website

