



(Photos are for reference only, please in kind)

Technical Proposal for Precision Drying Oven

Model: KOV-290B

Manufacturer: KOMEG Technology Ind Co., Limited

Issued By: Engineering Department



1. Use and sample restrictions

- 1.1 Product Usage This series is suitable for reliability testing / production of industrial products. It has the characteristics of temperature control accuracy and wide control range. The performance pointer meets the requirements of GB5170.1.2 -2017 "Electrical and Electronic Products Environmental Test Equipment Basic Parameter Verification Method High Temperature Test Equipment" standard
*Note that other uses may result in personal injury and damage to the equipment!
- 1.2 Sample limit Testing and storage of samples of flammable, explosive and volatile substances
Testing and storage of corrosive substance samples
Testing or storage of biological samples
Test and storage of strong electromagnetic emission source samples
- 1.3 Sample requirements In order to make your test data more realistic and effective, the test chamber should be used reasonably while satisfying the following principles:
The total mass of the load is not more than 80Kg per cubic meter of studio volume
The total volume of the load is not more than 1/5 of the working chamber volume
In any section perpendicular to the dominant wind direction, the sum of the load areas should be no more than 1/3 of the cross-sectional area of the working chamber. Do not block the flow of airflow when the load is placed

2. Volume and size

- 2.1 Volume About 290L
- 2.2 Inner size W600 mm*H950 mm*D500 mm
- 2.3 Outer size W840 mm*H1490 mm*D905 mm(Not including the protruding part)
Tips: For external dimensions, please confirm the three views according to the final design!
- 2.4 Floor area About 0.76m²; (Confirm after signing the contract)

3. The main technical parameters

3.1	Test Conditions	Equipment cooling method: fresh air type Measured at room temperature +25 ° C under no load, Temperature and humidity performance measurement comply with related regulation of IEC60068-3-5 standard; Sensors placed in the air outlet.
3.2	Temp. range	RT+20°C ~ +250°C
3.3	Temperature fluctuation	±0.5°C
3.4	Temperature uniformity	±1.0°C (RT ~ +100°C) ±2.0°C (101 ~ +200°C) ±3.0°C (201 ~ +250°C)
3.6	Temperature change rate	Heating rate: RT+20°C ~ +250°C about 60min no load
3.7	Load situation	Without
3.8	Noise	≤75(dB) (The noise detection device is measured 1m away from the door of the device)
3.9	Meet the test standard	GB-2423.2-89(IEC68-2-2) Test B: High Temperature Test GJB360.8-87(MIL-STD.202F) High Temperature Life Test GJB150.3(MIL-STD-810D) High Temperature Test
4. Chamber Structure		
4.1	Structural features	Overall chamber structure The test chamber was composed of three parts as below: The main insulation box, the air conditioning system, and the electrical control cabinet.
4.2	Thermal insulation structure	Outer spray plastic anti-corrosion electrolysis plate - intermediate insulation layer is glass fiber cotton insulation material - inner chamber SUS201 stainless steel plate
4.3	Outer chamber material	High-quality anti-corrosion electrolytic board, surface electrostatic powder baking paint, color is KOMEG standard color

- 4.4 Inner chamber material **SUS201** stainless steel plate
- 4.5 Insulation Hard polyurethane foam insulation layer, thickness = 100mm, flame retardant grade A1
- 4.6 Door Full-size single door, open to the left, explosion-proof handle
Silicone rubber sealing strip
- 4.7 Control panel Temperature controller, start switch, emergency stop switch,
- 4.8 Unit part Include:
Motor, fresh air device piping, cooling fan, power distribution control cabinet
- 4.9 Distribution Cabinet Switchboard
Cooling fan
Total power leakage circuit breaker
- 4.10 Standard configuration Sample holder: 2 layers of stainless steel, bearing capacity 30kg / layer
Moving casters (with foot cups) 4

5. Air conditioning system

- 5.1 Feature Adjustment and control: forced convection thermostat; heating PID + SSR adjustment
- 5.2 Air circulation External motor driven high power fan with stainless steel shaft, fan motor external mode; The air is driven by the motor and flows through the heater. After being fully heated to the required temperature value, the air circulates inside the chamber, and the heat exchange is performed on the test piece by convection.
- 5.3 Fan motor Fan motor



- 5.4 Centrifugal wind wheel Multi-blade centrifugal circulation fan, aluminum alloy blade



5.5 Heater

Stainless steel armored fin heater, SSR control, with independent over temperature protection temperature switch

When the heater is energized, the surface temperature will rise.

After the convective air passes through the heating wire, the temperature rises, and the heat is extended to the air in the box and the test piece to play the role of heating and heating.

The heating power is precisely controlled by the PID algorithm and the output power is regulated by a solid state relay.



5.6 Cooling method

The ambient air is introduced by the fresh air system (optimal room temperature <30 degrees) to cool the inside of the chamber, no cooling time requirement.

***Note: The temperature inside the box is below +90 °C to open the door! Prevent burns!**

6. Control System

6.1 Feature

Adjustment and control: forced convection thermostat, heating PID + SSR adjustment mode

6.2 Controller

- Korea imported thermostat ST-590
- * High precision (0.1%), high performance
- * Support multi-input (T / C, RTD, DCV)
- * Multi-output and simultaneous output (Max 4 points)
- * Parameter operation is simple, the text can be set
- * Supports suppression of Overshoot function
- * Alarm output 1 point
- * Operation display of auxiliary output status
- * Input adjustment function for each zone (Max 4 Zone)
- * Control the heating and cooling functions
- * PID automatic adjustment function (AT Gain)
- * Supports multiple communication protocols (Modbus, etc.)
- * To achieve high quality, high reliability (CE, CUL, ISO, etc.)

7. Security system










- 7.1 Over temp. protection The test chamber is independently adjustable over temperature protection device.
- 7.2 Circulation fan Overheat protection relay, overload protection.
- 7.3 Heater Air conditioning channel over temperature protection
- 7.4 Main power switch Phase sequence protection, phase loss protection, equipment leakage protection, overload and short circuit protection
- 7.5 Control circuit Overload and short circuit protection
- 7.6 Alarm action When the above protection occurs, the device stops running and an audible and visual alarm is issued.



8. Use site conditions

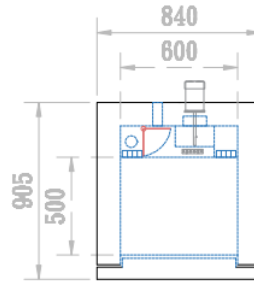
- 8.1 Use environment
 - 1. Ambient temperature: 5°C-35°C;
 - 2. Relative humidity: $\cong 85\%R.H$
 - 3. Atmospheric pressure: 80kPa~106kPa
 - 4. Flat, vibration-free ground;
 - 5. Choose good ventilation, no direct sunlight or direct radiation from other heat sources;
 - 6. There is no strong airflow around: when the surrounding air needs to flow, the airflow should not be blown directly onto the cabinet.;
 - 7. No strong electromagnetic field around;
 - 8. No high concentration of dust and corrosive substances around
- 8.2 Power Specifications
 - 1. Connected to power supply 380V AC($\pm 10\%$)
Three-phase line + ground wire, grounding resistance $\leq 4\Omega$
 - 2. Power frequency: 50 \pm 0.5Hz
- 8.3 Ground protection
 - Grounding resistance $\leq 4\Omega$
- 8.4 Power wiring
 - 1. This machine comes standard with a power cord of 3 meters;
 - 2. The customer needs to prepare a special fuseless switch for this device;

9. Main Material List

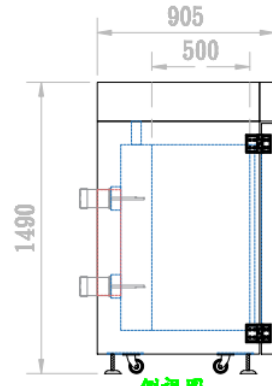
Controller	ST590	
Leakage switch	France Schneider	
Breaker	France Schneider	
AC contactor	France Schneider	
Thermal relay	France Schneider	
Phase sequence relay	Carlo Gavazzi	
Intermediate relay	Omron or Carlo Gavazzi	 
Solid-state relay	Carlo Gavazzi	

10. Equipment outline drawing

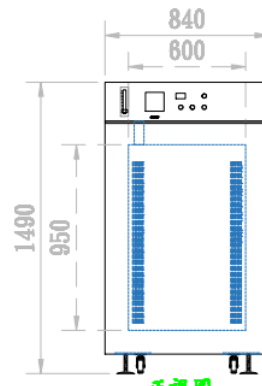
此图仅供参考，如有变更将另行通知



俯视图



侧视图



正视图

.I	0.00		零件名称:	设备机箱	科明环境仪器工业有限公司	
.II	0.15		单位:	mm	客户型号:	209-200通用
.III	0.10		材料:		客户型号:	标准
.X	±1°	表面粗糙:	公差:	日期:	图号:	
.X	±1°	公差:	公差:	日期:	项目:	
.XI	±0.00°	公差:	公差:	日期:	比例:	
			制图:	日期:	审核:	
					批准:	