

MK-732A Reach-In Incubator

Specifications



Photo is for reference only



1. Application and Specimen Restriction	2
2. Volume and Dimensions	4
3. Main Characteristics	4-5
4. Construction	5-6
5. Air Conditioning System	6-7
6. Control System	8
7. Safety Device	9
8. Surrounding Environment	9-10
9. Acceptance Criteria and Third Party Verification	11
10. Main Material List	12

1. Application and Specimen Restriction

1.1 Application	This chamber is a single slot structure, test area and supporting system (such as
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	<p>controller) are 1 set!</p> <p>This series of products are used for reliability testing for industrial products. It offers high accuracy and wide range of temperature and humidity, which meet for GB5170.2.3.5.6-95 Environmental testing, including Cold, heat, heat soak, Heat Damp etc.</p> <p>Testing condition exceed the above listed may cause sample, device or human damage.</p>								
1.2 Sample Restriction	<p>Corrosive substance</p> <p>Biological substance</p> <p>Strong magnetic emitting resource substance</p>								
1.3 Sample Requirement	<p>You should use the testing chamber based on following principals in order to get real and effective data:</p> <p>Loading weight in each cubic meet should not exceed 80Kgs.</p> <p>Loading volume should not exceed 1/5 of the total inner chamber volume</p> <p>The sample cross section on the wind flowing direction should not exceed 1/3 of the total chamber, to ensure air flow fluently.</p>								
1. 1 Special project configuration	<p>The special configuration or optional parts included are as follows: (refer to each slot)</p> <p>(J— structural configuration, D-electrical configuration, Z-refrigeration configuration)</p> <table border="1"> <thead> <tr> <th>Serial Number</th><th>Configuration component description</th></tr> </thead> <tbody> <tr> <td>J1</td><td>Punching type sample racks 10pcs Size: 330mmX280mmX130MM</td></tr> <tr> <td>J2</td><td>Mechanical thermostatic system: one</td></tr> <tr> <td>J3</td><td>Tuyere filter: one</td></tr> </tbody> </table>	Serial Number	Configuration component description	J1	Punching type sample racks 10pcs Size: 330mmX280mmX130MM	J2	Mechanical thermostatic system: one	J3	Tuyere filter: one
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2. Volume and Dimensions



(If not specifically noted -Are the parameters of the single slot)

2. 1 .Useful Volume	About732L
2. 2 Chamber Inner Dimensions	W750 mm*H1500 mm*D650 mm
2. 3 Chamber Outer Dimensions	W980mm*H2050mm*D850 mm
2. 4 .Foot Print	Abou 0.5.m ² ;

3. Main Characteristics

3. 1 Device cooling method	New Natural Air Cool	
3. 2 Temperature Range	RT +8℃ ~ +80℃	Test conditions: All values will be measured at ambient temperature of 25℃, The temperature and humidity performance test shall be conducted according to the relevant
3. 3 Temperature Fluctuation	±0.2℃	
3. 4 Temperature Uniformity	±0.3℃ (RT+8 ~ +80℃) ±0.3℃ (37℃ Constant temperature)	
3. 5 Temperature change rate	Ramp Up Time: RT+8℃ ~ +80℃ 1℃/min average Please refer to item 3.6 for load	
3. 6 Max Loading	Total weight of chamber inner load: 150kg (Material: PC material, plastic) , without heating value Heat dissipation of each Incubator to environment as set at 37℃ with ambient temperature of 25℃ , will be lesser than 600 BTU/hr.	



3. 7 Noise	$\leq 68(\text{dB})$ Tested at 1 meter distance from the front door, 1.2m above the ground and in free space	provisions of IEC60068-3 standard, and sensors will be placed at air outlet inside the chamber.
3. 8 Standards Complied	GB-2423.2-89(IEC68-2-2) Test B: High Temperature Test Methods GJB360.8-87(MIL-STD.202F)High temperature life test Methods GJB150.3(MIL-STD-810D)High Temperature Test Methods	

4. Construction (The following configurations are single-slot configurations)




4. 1 Construction	Integrated Construction The chamber is made of three main parts: Heat insulation chamber、separate air supply system、control cabinet
4. 2 Thermal insulation enclosure structure	3. 9 Outer layer 45# Plate baked with computer white 3. 10 The intermediate insulation layer is polyurethane insulation material 3. 11 Inner case SUS316 Mirror 8K stainless steel plate
4. 3 Chamber Outer material	3. 12 Outer layer 45# Steel plate paint
4. 4 Chamber inner material	3. 13 SUS316Stainless Steel 8K one-level mirror plate
4. 5 Floor load-bearing capacity	3. 14 Floor load-bearing $\geq 100\text{KG}$
4. 6 Insulation	$\geq 50\text{mm}$ polyurethane, Fire resistance grade A1



4. 7 Chamber tightness	1) The door sealing adopts special high and low temperature resistance of silicone rubber sealing strip; 2) It also adopts convenient detachable design, which is convenient for later maintenance.
4. 8 Door	Single door opening with full size, can be installed to open to the left and right sides, explosion-proof handle, silicone rubber seal strip
4. 9 Unit Part	The machine contains: Motor, fresh air pipeline, cooling fan, distribution control cabinet
4. 10 Castors	3 inch castors、M20 Adjusting castors 4pcs
4. 11 Punching type sample racks	Punching type Stainless steel sample racks (Install the ladder type stainless guide bar) 10pcs
4. 12 Trolley and Cart	One: Made according to actual size, SUS317L with high temperature wheels
4. 13 Intake and exhaust valve	Install air inlet and exhaust valve 1pcs

5. Air conditioning system (The following configurations are single-slot configurations)

5. 1 Characteristic	Adjusting and Controlling: Force air circulation air conditioning;; Independent cold end and hot end PID regulation, heat and cold capacity can be adjusted continuously, to avoid the cooling capacity and heat hedging caused by energy waste
5. 2 Air Conditioning	High efficiency fan driven by stainless axis and motor fixed outside. The air is driven by air to flow over heater and condenser horizontally. When the air is cooled or heated to certain temperature, it will be driven into the chamber to heat or cool the samples.


5.3 Fan motor	<p>Use the long shaft motor with low voltage asynchronous high temperature resistance to drive the forced air circulation</p> 
5.4 centrifugal blowers	<p>Multi-wings centrifugal blowers with the high temperature resistant aluminum alloy blades to mix the air</p> 
5.5 Principle of Temperature Control	<p>Stainless steel armored fin heater, SSR control, equipped with independent overtemperature protection temperature switch ,When the heater is energized, the surface temperature will rise. After the convection air passes through the heating wire, the temperature rises, and the heat is extended to the air in the box and the specimen, playing the role of heating up.</p> <p>Cooling by aluminum cooling panel with fan on top of oven, which only works in case temperature inside oven higher than the target temperature. Once temperature inside oven reaches target temperature, the fan on top will stop.</p> <p>The heating power is precisely controlled by PID algorithm, and the output power is adjusted by solid state relay.</p> 
5.6 Cooling method	<p>The ambient air is brought in by the fresh air system to cool the chamber (when the optimal room temperature is less than 30 ° C). There is no requirement for cooling time.</p> <p>*Note: the door can only be opened when the temperature in the box is below +90°C ! Prevent scalding!</p>
5.7 Device Sensor (Single temperature type)	<p>Temperature sensor: device temperature control sensor</p> <p>* Location in the air outlet</p>

6. Control System (The following configurations are single-slot configurations)

6.1 Characteristic	Adjustment and control: forced convection temperature regulation type, heating PID+SSR adjustment mode
6.2 Temperature Controller	<p>Adopt 6 inch microcomputer touch screen controller</p> <ul style="list-style-type: none"> *Operating system: Oming 880 system *Achieve high precision (0.1%), high performance *Support multiple inputs (T/C, RTD, DCV) *Can complete multiple output and simultaneous output (Max 4 points) *The operation of parameters is simple and can be set with text *Supports Overshoot function *Alert output 1 point * Running screen display of auxiliary output state * Input adjustment function for each interval (Max 4 Zone) * Realize the function of controlling heating and cooling *PID automatic adjustment function (AT Gain) * Support multiple communication protocols (Modbus, etc.)
6.3 Program capacity	<ul style="list-style-type: none"> * Achieve high quality, high reliability (CE,CUL,ISO, etc.) Operation time can be set to unlimited duration or timing mode of 99 h 59 m <p>Available program capacity: up to 50 groups; Available memory capacity: 30 steps per group (step); Repeatable commands: Each command can run up to 999 cycles.</p>
6.4 communication	<p>Can connect computer, used to display the curve data acquisition;</p> <p>Can be used as monitoring and remote control system;</p> <p>Can do multiple machine synchronous control;</p> <p>RS-485 and Network port LAN(optional)</p>

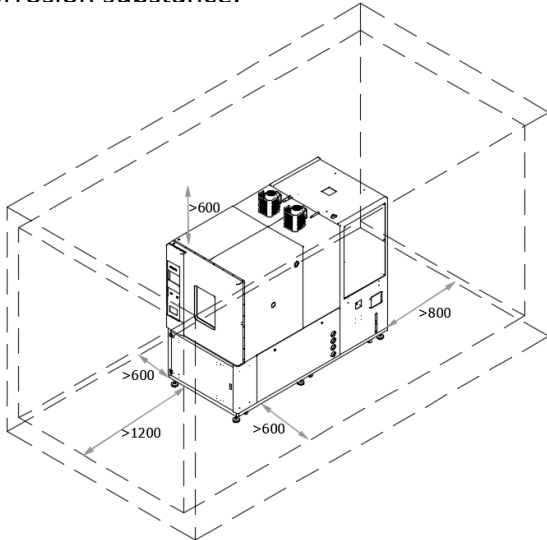
6.5 Record data	Collect real-time data and store 8G Can link connecting 485 interface with the corresponding computer software
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7. Safety Device (The following configurations are single-slot configurations)

7. 1 Over Temperature Protect	Separate adjustable over temperature protector The device will stop automatically when it exceeds the set high temperature alarm.
7. 2 Circulation Blower	Over heat relay, over loading protection
7. 3 Heater	Air circulation channel over temperature protection: Mechanical overtemperature protector based on bimetallic sheet principle 
7. 4 General Power supply	Phase Sequence protection, phase lack protection, electricity leakage protection, over loading and shortcut protection
7. 5 Control Current	Over load and shortcut protection
7. 6 Alarm	When above protection activity appears, the device will stop running, appear sound and light alarm, the defective reason and resolving methods will be appears on the screen.

8. Surrounding Environment (Double tank is only connected to a set of external water and electricity)

8. 1 Environment Condition	<ol style="list-style-type: none"> 1. Ambient Temperature: 5°C-35°C; (best performance temperature: 23±3°C) 2. Humidity: No higher than 85%R.H 3. Air pressure: 86kPa~106kPa 4. Flat and no vibration floor;
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	<p>5. Good air circulation, no direct sunshine or other direct heat resource radiation;</p> <p>6. No strong air flow on the device; when the surrounding air needs to be forced to flow, the airflow should not blow directly on the chamber;</p> <p>7. No Strong magnetic field around;</p> <p>8. No high concentration dust or corrosion substance.</p> <p>9. Reserve space for all sides</p>  <p>10. When the equipment is transported, please confirm whether it can enter the door or passage, elevator, etc., to avoid affecting the progress of your project.</p>
8. 2 Power Specification	<p>1. Power Supply 220V AC($\pm 10\%$)</p> <p>3 phases + Naught wire + Grounding., grounding resistance $\leq 4\Omega$</p> <p>2. Power Supply Frequency: $50 \pm 0.5\text{Hz}$</p>
8. 3 Ground protection	<p>Grounding resistance: $\leq 4\Omega$.</p>
8. 4 .Power Cable	<p>1. This chamber equipped a Standard Power cable, the customer need to link it with the device.</p> <p>2. Customer shall prepare on separate No-fuse switch for the device.</p>










9、Acceptance Criteria and Third Party Verification

10.1. Acceptance Criteria:

- 1.The technical indicators are in accordance with the methods specified in the "Technical Agreement" signed by both parties;
2. Acceptance method: Arrange the formal acceptance at the buyer's site;
3. Before leaving the factory, if the buyer needs to invite a third party (verified by the National Environmental Testing Equipment Quality Inspection Center and issued an inspection report with a valid period) to participate in the inspection and acceptance, the cost shall be borne by the buyer. If the first acceptance is unqualified, the cost of the second acceptance should be paid by the supplier after improvement.
4. The National Environmental Testing Equipment Quality Inspection Center for verification should be entrusted by the customer.



10. Main Material List

Controller	Korea Samwon	
Leakage switch	Schneider Or ABB	
Breaker	Schneider Or ABB	
Ac contactor	Schneider Or ABB	
Heat Relay	Schneider Or ABB	
Sequence Relay	Carlo Gawazzi Or ABB	
Inter-media Relay	Omron or Carlo Gawazzi	



Heat dissipation Test as set at 37°C with ambient temperature of 25°C:

Ambient Temperature		25°C	
Air -Heat Transfer Rate		25W/m ² K	
Machine Area No.	M ³	Temp (°C)	Heat Transfer (W)
A1	2.009	25	0
A2	2.009	25.5	25.1125
A3	1.7425	26.1	47.91875
A4	1.7425	26.1	47.91875
A5	0.833	26.1	22.9075
A6	0.833	25	0

Total Heat Transfer Rate: 143.86

Total Heat Transfer Rate(in BTU/hr) 490.55