Simplewell昇微

Dust-free and oxygen-free high temperature chamber introduction

东莞市升微机电设备科技有限公司
SIMPLEWELL THCHNOLOGY CO., LTD

Address：No. 221, Shuixin Road, Dalang town, Dongguan city, Guangdong province, China.
Tel：0769-88887909 Fax：0769-88885229
Website：www.simplewell.com.cn
Email：sales01@simplewell.com.cn

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Part

Product presention

1.1 Product Description (Uses)

Dust-free, oxygen-free product applications

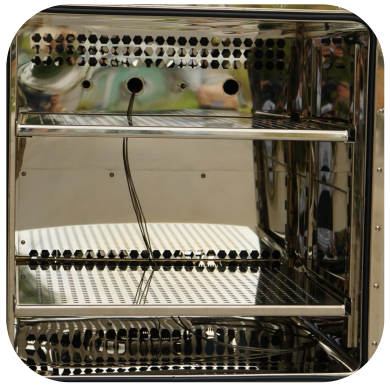
- Clean and oxidation-free high-temperature chamber is a kind of box that can inhibit the generation of particles and prevent the oxidation of products in high-temperature situations; it is suitable for semiconductors, liquid crystals, electronic products, precision appliances and other industries.
- Oxidation-free high-temperature chamber is one that can prevent products from oxidizing under high-temperature conditions; applicable to semiconductors, liquid crystals, electronic products, precision appliances and other industries.
- Clean high-temperature chamber is a high-temperature chamber that can inhibit the generation of particles. Mainly applicable to the need for a dust-free environment for semiconductors, liquid crystals, electronic products, precision appliances and other high-temperature test.

1.1 Product presentation (appearance)

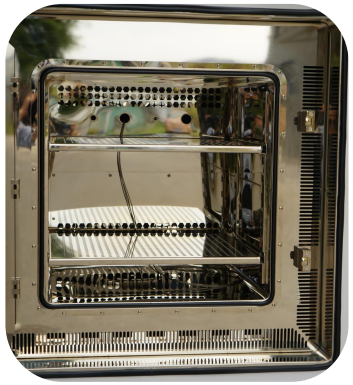
Front Appearance

Electricity box

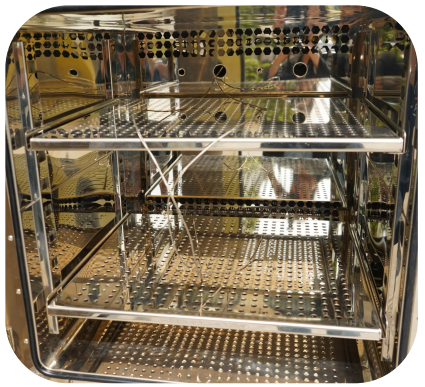
Actual picture



Inner box



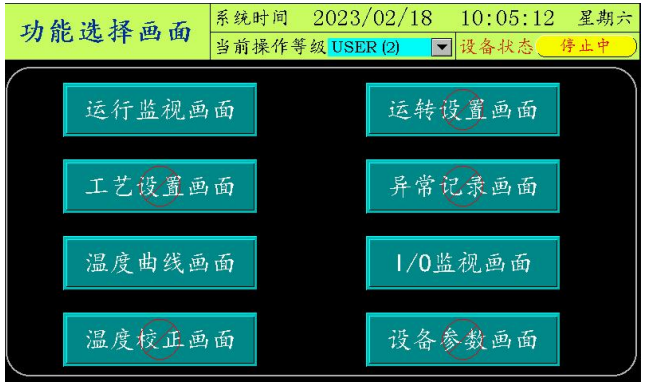
Jacketed



Shelf for storage

1.1 Product presentation (Operating System)

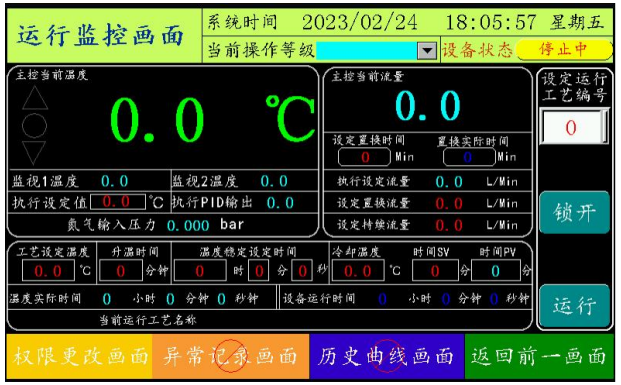
Controller main interface



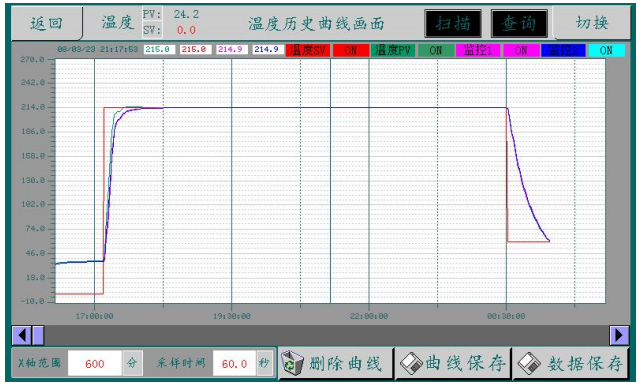
Function Selection Screen

Process Setting Interface

Operation Setting Screen



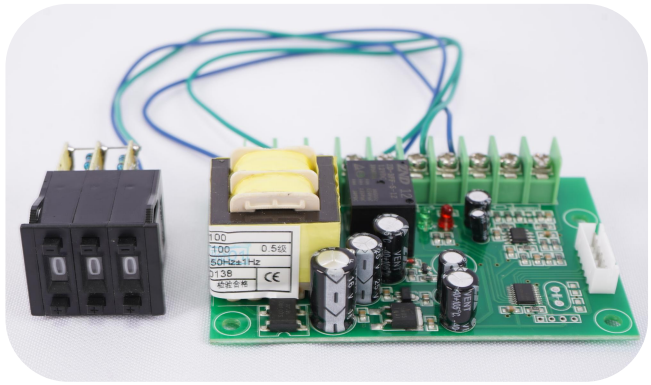
Operating interface



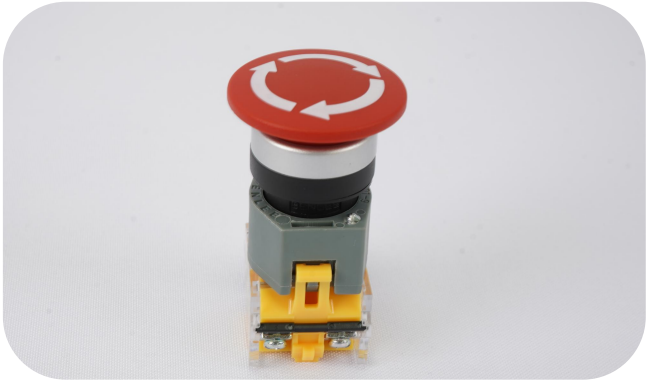
Curve Interface

1.1 Product Presentation (electric control panel)

Control Screen



Over-temperature protector



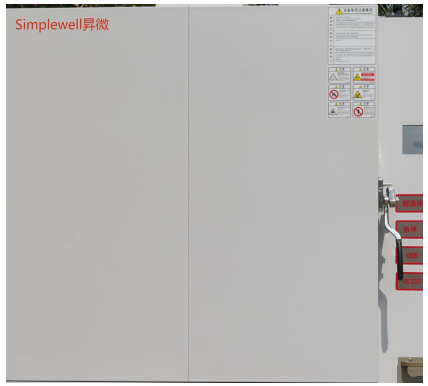
Emergency stop button

USD Interface

RS232-C interface

Tri-color light

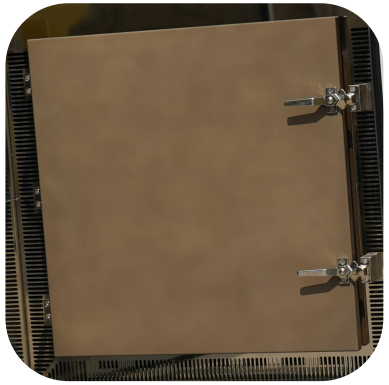
1.1 Product Presentation (Door)



Chamber door

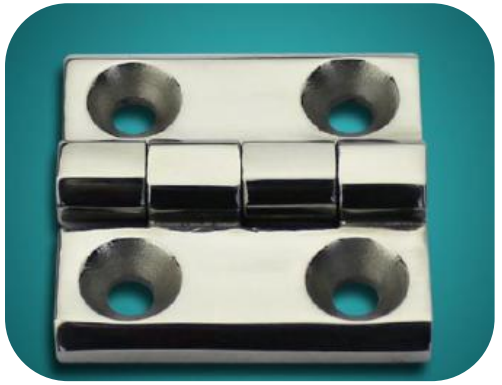
Chamber door handle

Chamber door Hinges



Inner door

Inner Door Handle



Inner door hinges

1.1 Product presentation (Circulation System)

Motor

Wind wheel

Blower

Damper actuator

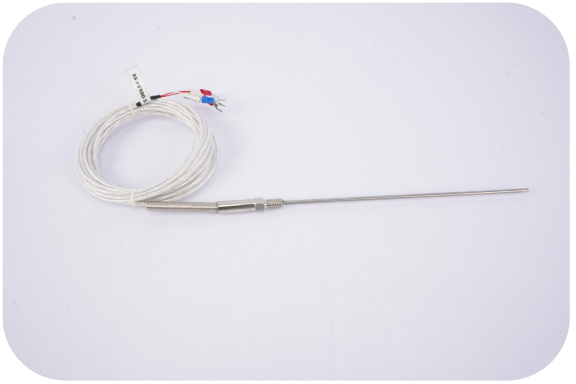
High Temperature Resistant Pipe

Solenoid lock

1.1 Product presentation (Heating System)

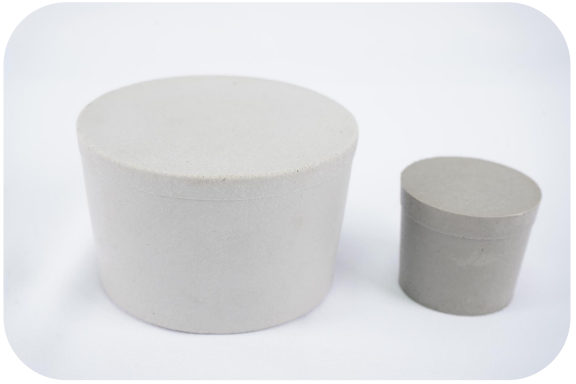
Heating Tube

Gas switches



Temperature Sensors

Pipe seals



Silicone Plugs

Solid State Relay

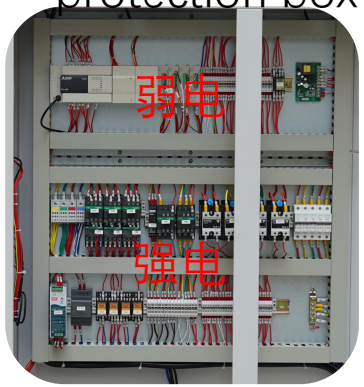
1.1 Product presentation (Electrical & Protection)

Electric Leakage Switch

Power supply insulation protection box

Power supply insulation safety lock

Grounding protection



Separation of strong and weak power

Fault alarm fan

1.1 Product Presentation (Optional)

Industrial Control Machine

Computer display

Anti-static keyboard and mouse

Network cable interface

Scanner gun

High Temperature High Efficiency Filter

1.1 Product presentation (Optional)

Stop Valve

Air Source Handling

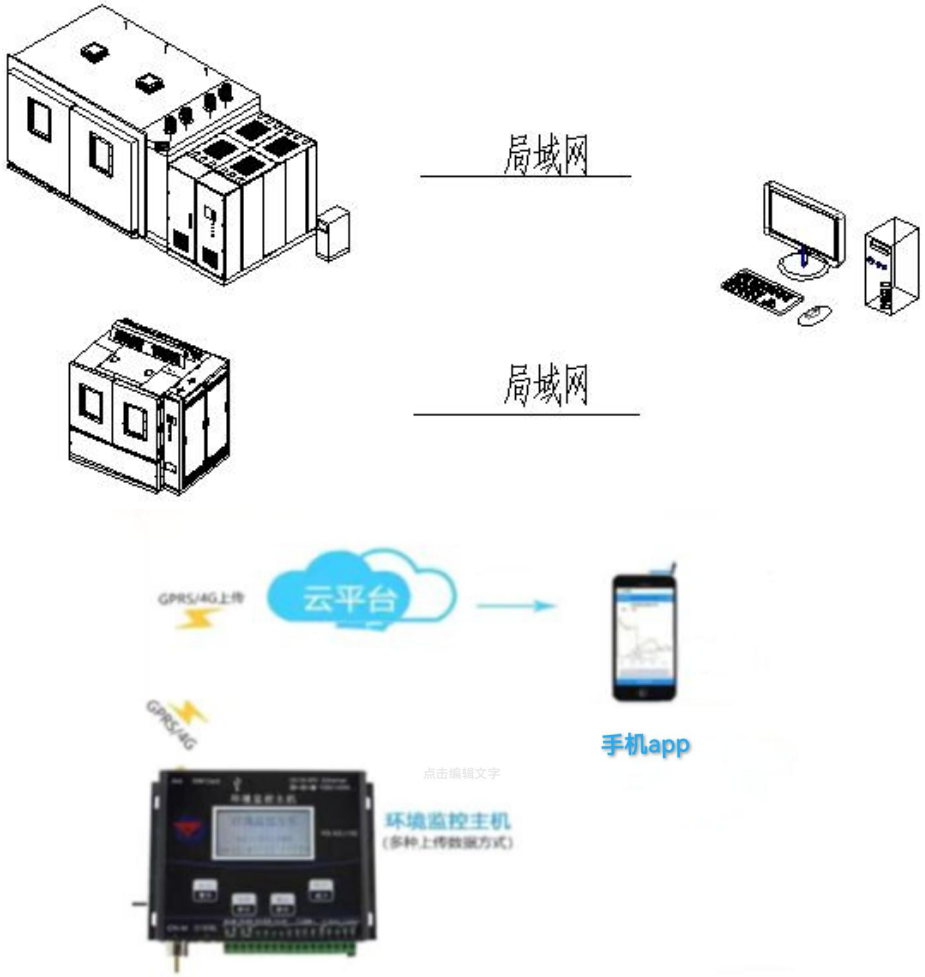
Digital display pressure sensor

Electronic flow meter

High temperature solenoid valve

Resistant gas pipe

1.1 Product presentation (Optional)



Remote monitoring

Through the PC can monitor the operating status of the device from a browser connected via LAN.

By connecting the device and PC via LAN, only set the IP address, no special software or driver is required.

1.2 Product standard introduction

Dust-free and oxygen-free high temperature chamber meets the standard

●GB/T2423.2-2008	Environmental test for electrical and electronic products Part 2: Test B: High temperature test method
●GJB150.3A-2009	Military equipment laboratory environmental test methods Part 3: high temperature test
●IEC68-2-2	Test B: Dry heat
●GB/T 25915.1-2021	Clean room and related controlled environment Part 1: Air cleanliness level

1.2 Product standard introduction

Suspended Particle Cleanliness Classes for Selected Cleanrooms and Clean Zones						
ISO等级序数（N）	Maximum concentration limits greater than or equal to the particle sizes considered in the table（pc/m3 alculated by the formula in air concentration limit value 3.2）					
	0.1μm	0.2μm	0.3μm	0.5μm	1μm	5μm
ISO Class 1	10	2				
ISO Class 2	100	24	10			
ISO Class 3	1000	237	102	35	8	
ISO Class 4	10000	2370	1020	352	83	
ISO Class 5	100000	23700	10200	3520	832	29
ISO Class 6	1000000	237000	102000	35200	8320	293
ISO Class 7				352000	83200	2930
ISO Class 8				3520000	832000	29300
ISO Class 9				35200000	8320000	293000
Note: Due to the uncertainties involved in the measurement process, help requires three valid data to determine the concentration level.						
Formula	$C_n=10^N*(0.1/D)^{2.08}$					

ISO 14644-1:2015(E) excerpt（IS）

美国联邦标准（USA Federal Standard）209E（1992年）

洁净度等级	粒径 (um)				
	0.1	0.2	0.3	0.5	5.0
1	35.0	7.50	3.00	1.00	NA
10	350	75.0	30.0	10.0	NA
100	NA	750	300	100	NA
1000	NA	NA	NA	1000	7.0
10000	NA	NA	NA	10000	70.3
100000	NA	NA	NA	100000	700
Unit: number of dusts/ft^3(Notes: $1ft^3=0.0283m^3=28.3L$)					

209E excerpt（IS）

1.3 Equipment manufacturing process and requirements

1. Pipe welding process: the use of high-quality copper pipe nitrogen protection welding method, to avoid the traditional welding method caused by the inner wall of the copper pipe to produce oxide impurities into the refrigeration system damage to the compressor.

2. Shock absorption measures: compressor and pipeline bottom installed vibration damping springs and vibration soft pads combination for vibration damping.

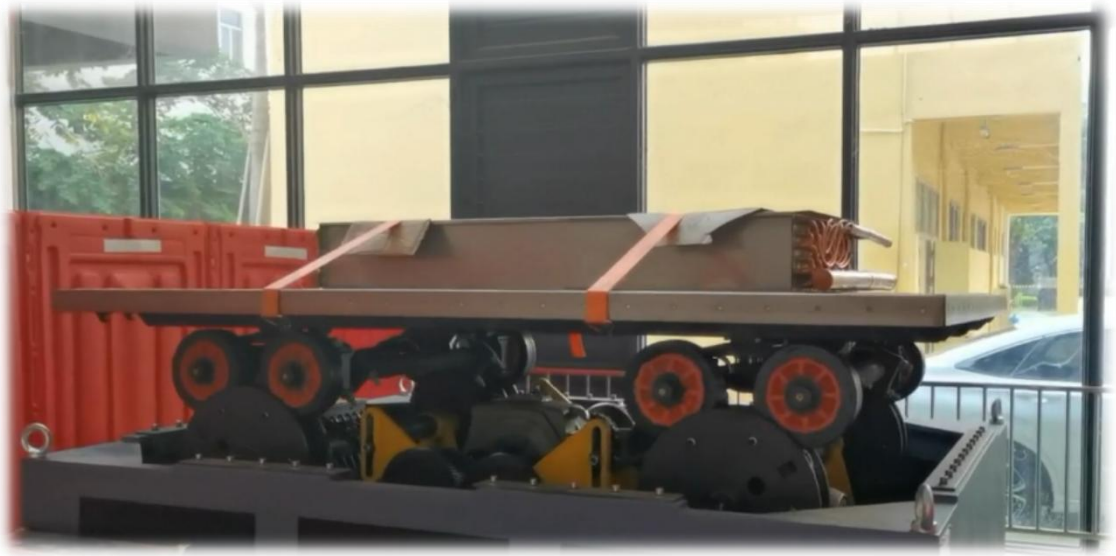
3. Pipeline protection measures: the refrigeration system pipeline adopts the way of adding vibration-proof hose and C-type elbow to avoid copper pipe and rupture caused by vibration and temperature change.

5. Detect the temperature of the distribution cabinet line when the equipment is running.

4. Noise control: The condenser is equipped with low-speed, high-volume condensing fan from Germany MAER, and wave-type sound-absorbing sponges are installed around the refrigeration unit to achieve a lower noise effect.

1.3 Equipment manufacturing process and requirements

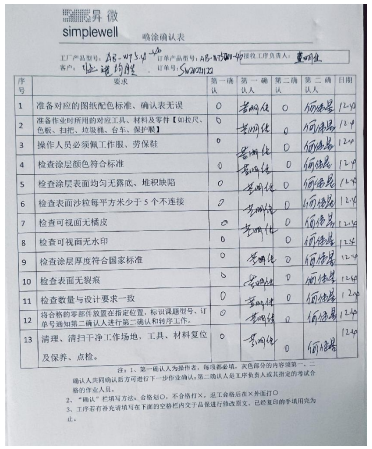
Simulated road vibration test

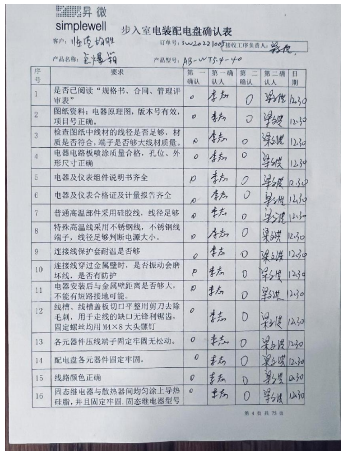


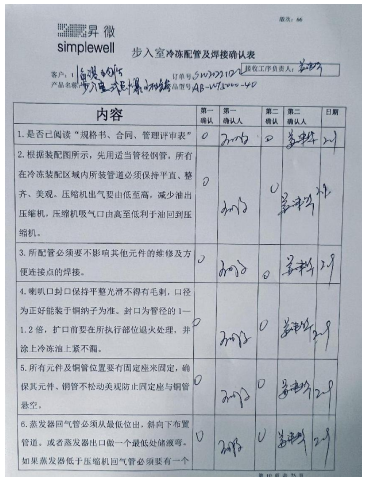
6. Vibration testing of components such as refrigeration evaporators prior to installation

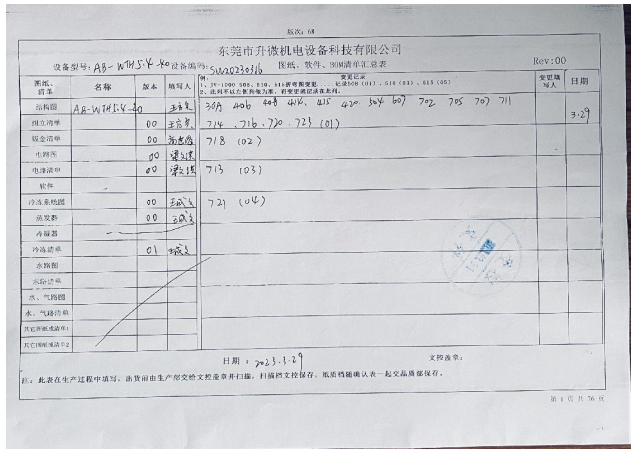
7. Vibration testing of small equipment prior to shipment

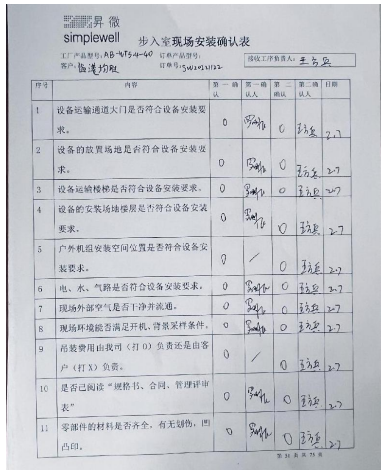
1.3 Equipment manufacturing process and requirements





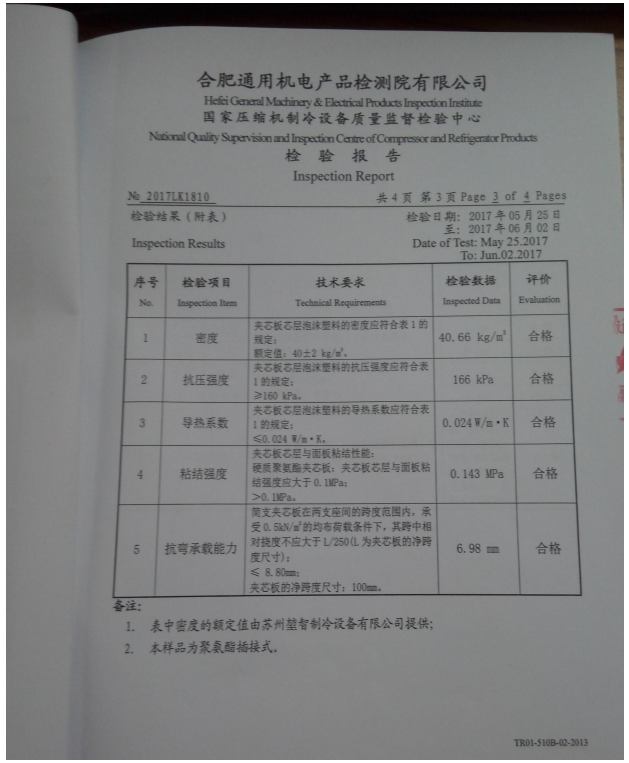






8. Production process confirmation: after equipment production starts, each link by the person in charge fill out the confirmation form, timely correction of problems in the production process, and trace the root cause of the problem, optimize the production

1.3 Equipment manufacturing process and requirements



合肥通用机电产品检测院有限公司
Hefei General Machinery & Electrical Products Inspection Institute
国家压缩机制冷设备质量监督检验中心
National Quality Supervision and Inspection Centre of Compressor and Refrigerator Products
检 验 报 告
Inspection Report

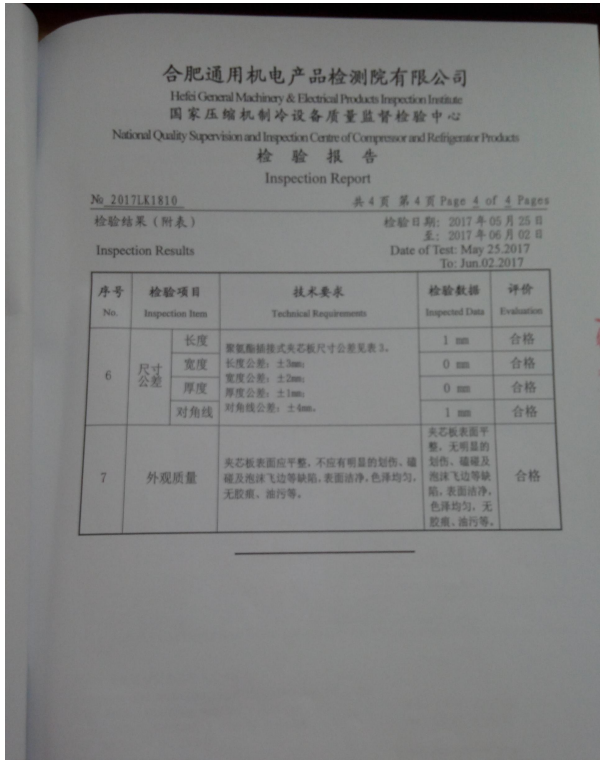
No. 2017LK1810 共 4 页 第 3 页 Page 3 of 4 Pages

检验结果（附表） 检验日期：2017 年 05 月 25 日 至：2017 年 06 月 02 日
Inspection Results Date of Test: May 25.2017 To: Jun.02.2017

序号 No.	检验项目 Inspection Item	技术要求 Technical Requirements	检验数据 Inspected Data	评价 Evaluation
1	密度	夹芯板芯层泡沫塑料的密度应符合表 1 的规定；额定值：40±2 kg/m³。	40.66 kg/m³	合格
2	抗压强度	夹芯板芯层泡沫塑料的抗压强度应符合表 1 的规定：≥160 kPa。	166 kPa	合格
3	导热系数	夹芯板芯层泡沫塑料的导热系数应符合表 1 的规定：≤0.024 W/m·K。	0.024 W/m·K	合格
4	粘结强度	夹芯板芯层与面板粘结性能：硬质聚氨酯夹芯板：夹芯板芯层与面板粘结强度应大于 0.1MPa；>0.1MPa。	0.143 MPa	合格
5	抗弯承载能力	简支夹芯板在两支座间的跨度范围内，承受 0.5kN/m² 的均布荷载条件下，其跨中相对挠度不应大于 L/250(L 为夹芯板的净跨度尺寸)：≤ 8.80mm；夹芯板的净跨度尺寸：100mm。	6.98 mm	合格

备注：
1. 表中密度的额定值由苏州堃智制冷设备有限公司提供；
2. 本样品为聚氨酯插接式。

TR01-510B-02-2013



合肥通用机电产品检测院有限公司
Hefei General Machinery & Electrical Products Inspection Institute
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No. 2017LK1810 共 4 页 第 4 页 Page 4 of 4 Pages

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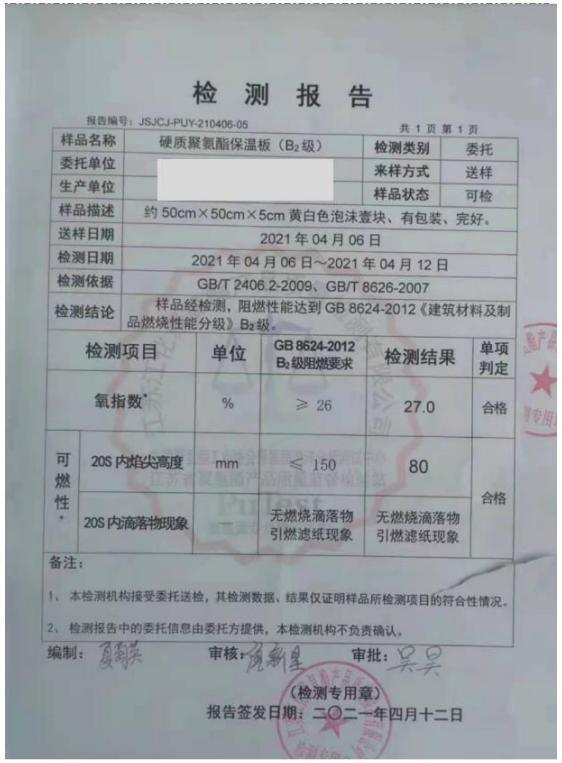
序号 No.	检验项目 Inspection Item		技术要求 Technical Requirements	检验数据 Inspected Data	评价 Evaluation
6	尺寸公差	长度	聚氨酯插接式夹芯板尺寸公差见表 3。长度公差：±3mm；宽度公差：±2mm；厚度公差：±1mm；对角线公差：±4mm。	1 mm	合格
		宽度		0 mm	合格
		厚度		0 mm	合格
		对角线		1 mm	合格
7	外观质量		夹芯板表面应平整，不应有明显的划伤、磕碰及泡沫飞边等缺陷。表面洁净，色泽均匀，无胶痕、油污等。	夹芯板表面平整，无明显的划伤、磕碰及泡沫飞边等缺陷，表面洁净，色泽均匀，无胶痕、油污等。	合格



检 测 报 告

报告编号：JSJCJ-PUY-210406-05 共 1 页 第 1 页

样品名称	硬质聚氨酯保温板（B_2 级）	检测类别	委托
委托单位		来样方式	送样
生产单位		样品状态	可检
样品描述	约 50cm×50cm×5cm 黄白色泡沫壹块、有包装、完好。		
送样日期	2021 年 04 月 06 日		
检测日期	2021 年 04 月 06 日~2021 年 04 月 12 日		
检测依据	GB/T 2406.2-2009、GB/T 8626-2007		
检测结论	样品经检测，阻燃性能达到 GB 8624-2012《建筑材料及制品燃烧性能分级》B_2 级。		

检测项目		单位	GB 8624-2012 B_2 级阻燃要求	检测结果	单项判定
氧指数*		%	≥ 26	27.0	合格
可燃性*	20S 内焰尖高度	mm	≤ 150	80	合格
	20S 内滴落物现象	—	无燃烧滴落物引燃滤纸现象	无燃烧滴落物引燃滤纸现象	

备注：
1、本检测机构接受委托送检，其检测数据、结果仅证明样品所检测项目的符合性情况。
2、检测报告中的委托信息由委托方提供，本检测机构不负责确认。

编制： 审核： 审批：

（检测专用章）
报告签发日期：二〇二一年四月十二日

9. Adoption of fire-retardant library boards, the figure shows the performance test report of fire-retardant library boards, compressive strength, bending load capacity, etc.

1.3 Equipment manufacturing process and requirements

10. Adoption of flame-retardant electrical wires, the picture shows the certificate of flame-retardant electrical wires.

02
Part

Product Innovation Features

2.1 Simplewell Product Innovation Features

Safety door protection, electronic lock self-locking when the temperature inside box is higher than set value.

Nitrogen pressure protection, when nitrogen pressure is lower than set value, alarm prompt.

Minimum flow rate prompt, when flow rate is lower than set value, alarm prompt.

For calibration time

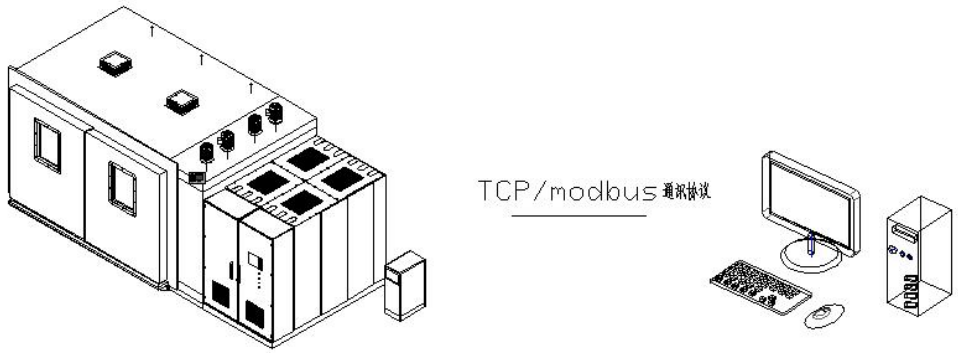
Specified time, the actual temperature is not in the set range (set temperature ± temperature increase rate protection deviation), alarm prompt

Temperature stability, actual temperature is not in the set range (set temperature ± high and low limit protection prompt deviation), power down alarm.

Actual temperature high pressure over temperature protection range (over temperature protection value + over temperature alarm shutdown deviation), stop and alarm

Exceeds the screen protection time not operate the screen, enter a dormant state.

2.1 Simplewell Product Innovation Features



- The equipment applies the modbus communication protocol, facilitate the interconnection of customer's equipment.
- The equipment can interconnect with Huawei Factory Computer Integrated Manufacturing System (optional).

03
Part

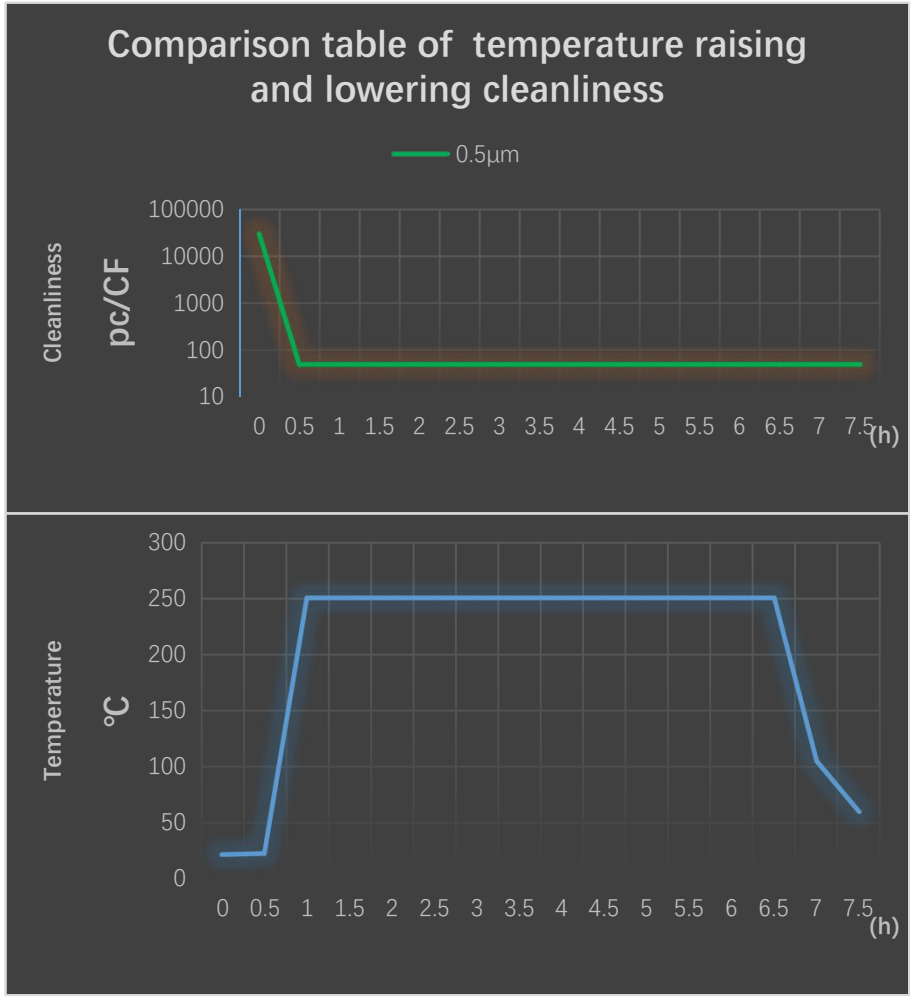
Technical superiority

3.1 Technical superiority

boot-up time	External environment (environment inside the box before switch on				Environment inside the box after switch on				Filtration efficiency
	Particle size(μm)	Cumulative value(pcs/m3)	Difference value(pcs/m3)	Grade before filtration	Particle size(μm)	Cumulative value(pcs/m3)	Difference value(pcs/m3)	Grade after filtration	
half hour	0.3	17559001	16729107	Cleanliness level satisfied ISO Class 8 ; Unsatisfied ISO Class 7	0.3	2955	1542	Cleanliness level satisfied ISO Class 5	99.99%
	0.5	829894	677809		0.5	1413	1284		99.81%
	1.0	152085	114559		1.0	129	129		99.89%
	3.0	37526	30600		3.0	0	0		100.00%
	5.0	6926	6784		5.0	0	0		100.00%
	10.0	142	142		10.0	0	0		100.00%

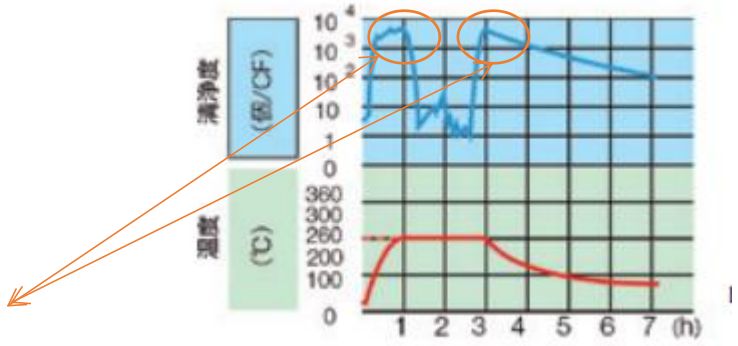
- Adopting high-temperature-resistant high-efficiency filters, through the vertical circulation method, internal cleanliness level of the high-temperature box (**in 10000 class workshop**) is always at class 100.
- The circular arc without dead angle design of the chamber to prevent accumulation.

3.1 Technical superiority



Simplewell measured Data

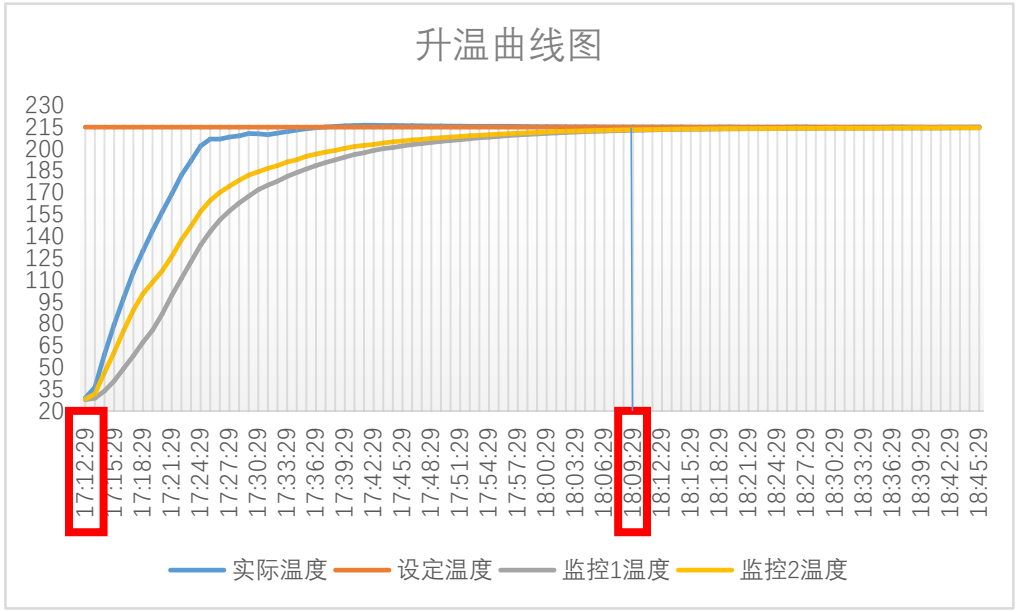
Other suppliers temperature raising and lowering cleanliness fluctuates greatly, go up to 10^3 pcs per cubic foot, our products without significant fluctuatation.



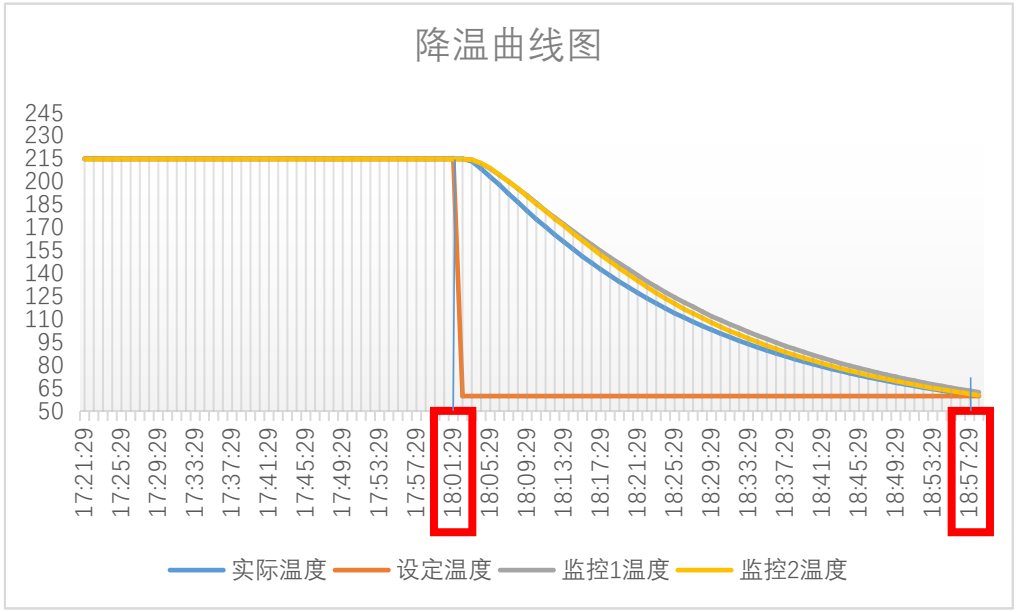
Other supplier data

A common problem of the dust-free high temperature box in the market, it is the unstable cleanliness in the process of raising and lowering temperature, and Simplewell has successfully solved this by adopting the jacket design with its own unique patented technology, it can effectively guarantee the cleanliness of the inner box when raising and lowering temperature.

3.1 Technical superiority



- The maximum temperature raising rate of the equipment is optional: the standard configuration is non-linear 3 ℃ / min, the maximum can be non-linear 5 ℃ / min.
- Short temperature stabilisation time



- The maximum cooling rate of the equipment is optional: standard 215 ℃ ~ 60 ℃ less than 120min; Maximum 215℃~60℃ less than 60min.
- The use of air rapid cooling, compared with traditional models can save a lot of nitrogen for customers.

3.1 Technical superiority

通道1	通道2	通道3	通道4	通道5
分度号:PT	分度号:PT	分度号:PT	分度号:PT	分度号:PT
149.57	149.38	149.46	149.41	149.53
通道6	通道7	通道8	通道9	通道10
分度号:PT	分度号:PT	分度号:PT	分度号:PT	分度号:PT
149.00	149.40	149.26	149.05	149.42

Simplewell measured uniformity at 150°C

通道1	通道2	通道3	通道4	通道5
分度号:PT	分度号:PT	分度号:PT	分度号:PT	分度号:PT
214.67	214.23	214.36	214.67	214.59
通道6	通道7	通道8	通道9	通道10
分度号:PT	分度号:PT	分度号:PT	分度号:PT	分度号:PT
213.94	213.91	213.98	213.91	214.33

Simplewell measured uniformity at 215℃

通道1	通道2	通道3	通道4	通道5
分度号:PT	分度号:PT	分度号:PT	分度号:PT	分度号:PT
250.17	249.96	249.53	249.88	249.33
通道6	通道7	通道8	通道9	通道10
分度号:PT	分度号:PT	分度号:PT	分度号:PT	分度号:PT
248.27	248.18	248.01	248.56	248.22

Simplewell measured uniformity at 250℃

GB标准	温度波动度	±0.5℃（150℃）
	温度均匀度	±3.0%（150℃）
JTM标准	温度调节精度	±0.5℃（at150℃）
	温度分布精度	±3.0℃（at150℃）

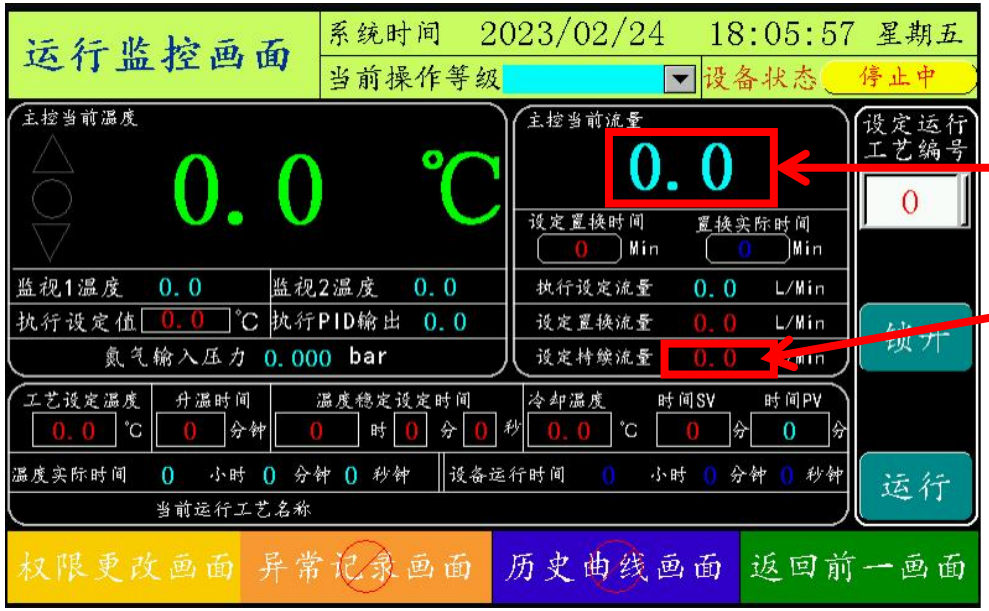
Other supplier data 1

性能	使用温度范围		室温+50～360℃
	GB标准	温度波动度	±0.3℃（360℃）
		温度偏差	±1.5℃（at100℃），±2℃（at200℃），±4℃（at300℃），±5℃（at360℃）
	JTM标准	温度调节精度	±0.3℃（360℃）
		温度分布精度	±4℃（360℃）

Other supplier data 2

The uniformity data of Dust-free oxygen-free high-temperature chamber from other suppliers is generally around 5 ℃, Simplewell with our unique patented technology, the uniformity of dust-free chamber to 3 ℃ or less, the uniformity of the oxygen-free chamber to 2 ℃ or less.

3.1 Technical superiority



Real-time flow control

Real-time flow control

- Adoption of special temperature controller, small temperature fluctuation and deviation.
- Use electronic flow meter to control the nitrogen flow directly through the central control screen, according to the equipment control needs to accurately control the nitrogen consumption, precise control.
- After the oxygen content is reached, the nitrogen flow rate decreases linearly to the set continuous flow rate, avoiding too big pressure change when the flow rate decreases.
- Adopt jacket design, consume as little nitrogen during the cooling process as during the stabilisation period

04
Part

Promotional Clients

4 Some clients’ case

Simplewell昇微

Thank you for watching

团队

合作

坚持

荣誉

东莞市升微机电设备科技有限公司
SIMPLEWELL THCHNOLOGY CO., LTD

Address: No. 221, Shuixin Road, Dalang town,
Dongguan city, Guangdong province, China.
Tel：0769-88887909 Fax：0769-88885229
Website: www.simplewell.com.cn
E-mail：sales01@simplewell.com