

机柜热交换器 Heat Exchanger



操作和安装手册

Operation and Installment Manual

重要

Important

提示：请仔细阅读此手册，按照本系统操作说明安装和使用该系统。请保留此手册，以便将来参考。某些内容可能并不适用于全部系统。

Tips: Please read this manual carefully, install and use this system based on this system operation instruction. Keep this manual for further reference. Some contents may not be suitable for this system.

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1. 介绍 Introduction

齐力的热交换器是一款可以对现代化电子设备箱的内部环境实现冷却、加热等功能控制的新一代产品。我们的产品是高效节能，外形美观的。科学严谨的封闭循环系统设计可有效的防止空气中的灰尘和污染物对您设备造成损坏。

Rimedyne Heat Exchanger is a new product which fulfills to control cooling and heating inner ambient of modern electrical enclosure. Our products are high efficiency, energy saving and aesthetic appearance. Scientific precise closed circulative system design makes it possible to protect your equipments from dust and pollutants.

2. 工作原理及设备描述 Operation Principles and Equipment Description

2.1. 工作原理 Operation Principles

热交换器装置是一种利用交叉,逆流热交换核芯作为散热基础，在机柜内部温度高于柜外温度形成内外温差时，机柜外部空气通过热交换器的外循环通道带走机柜通过内循环的高温柜内温度，而达到降低机柜内空气温度。

Heat exchanger device is based on cross and counter current heat exchange core by radiating. When inner temperature of the enclosure is higher than the outside temperature, it forms temperature difference. The outside air will take away heats which are from inner circulative cabinet through outside circulative path of heat exchanger.

机柜热交换器是一种专为密闭工业电柜、通讯机柜的散热而设计的热交换器，主要用于排除机柜内电子设备（PLC/变频器、继电器、驱动系统、通讯模块等）通电工作产生的热量；本产品为机柜提供理想的温度、湿度运行环境，同时采用机械密封隔离环境中的灰尘和湿气进入柜内。使用该产品可大大的延长电子产品的使用寿命和提高系统的可靠性。

Enclosure heat exchanger which is specially designed for radiating of closed industrial power cabinet and communicative enclosure is used for driving away heats from enclosure electrical equipments (PLC/ frequency converter, relay, driven system, communicative module and so on). This product offers enclosure ideal temperature and moisture running environment, meanwhile utilizing mechanical seal to prevent dust and humidity into enclosure. This product will extend electrical products life cycle and enhance system reliability.

2.2. 功能特点 Function Features

1) 独特的热交换芯，高效的热交换率；

Unique heat exchanger core, high efficiency;

2) 密闭式循环冷却系统，内外空气隔绝，有效隔离外部空气中的污染源，保持柜内清洁干燥；

Closed circulative cooling system, air isolated, protecting from outside pollutants effectively, keeping inside clean and dry;

3) 选用优质部件，运行稳定可靠；

Choose quality accessories, running stably and reliably;

4) 外形紧凑，安装方便；

Size compact, convenient installment;

5) 运转部件少，寿命长，免维修；

Less running components, long life cycle, free maintain;

6) 产品出厂前均通过严格测试，性能指标具有可靠保证。

Pass rigorous testing before leaving factory, performance index is credible assurance.

2.3. 设备结构 Equipment Construction

2.3.1 换热器

Heat exchanger

热交换器采用耐海水腐蚀的优质亲水铝箔做传热导体，采用特殊工艺加工而成，具有换热效率高，易于维护，寿命长等特点。可采用自来水或中性洗涤液直接清洗，使用方便，维护简单。热交换器传热表面做了强化传热冲压成形处理，传热面积增大约 10%。空气通道采用冲压凸圆体作支撑，保证通道的高强度及紧固性，承受新排风压差能力强。

Heat Exchanger uses aluminum foil which is anticorrosion and closed-water as heat conductor. It is made by special process so that has features of high efficiency heat exchange, easy to maintain and long life cycle. It can be cleaned directly by tap water or neutral washing liquid, easy to use and maintain. The surface of heat exchanger processes reinforced heat transfer punching, the area for heat transfer increases about 10%. Air path uses convex circular punching as support, to ensure path's high intensity and fastening, high ability to bear air pressure.

2.3.2 箱体

Enclosure

采用冷轧板，机箱钣金均采用数控机床加工，保证了机箱的美观及严密性，减少结构误差造成的设备漏风率。

Enclosure and metal plate all are processed by numerical control machine and cold-rolled sheet. It ensures enclosure aesthetic and rigorous which will decrease leaking risk because of structural error.

2.3.3 风机 Fan

低噪音离心风机，每台经严格测试，寿命长，噪音低。

Centrifugal fan has passed strict test, long life cycle and low noise.

2.3.4 安装注意事项 Installment cautions

1) 不可安装在可能有易燃性气体泄漏的地方，若有泄漏的燃气在机组周围积聚，会导致火灾事故；

Should not install the place where may happen flammable gas leak easily. If enclosure surrounding leaking gas, it will cause fire accident.

2) 不可安装在直对热源或明火的地方，否则可能引起发热或火灾。排气进口请勿放置在能够吸入高温、高湿空气的位置；

Should not install the place where opens to heat source or fire, otherwise it will cause fire accident. Exhaust inlet should not be placed in the location high temperature and moisture.

3) 不可用湿手对机组进行操作，否则可能有触电危险；

Should not touch enclosure with wet hand, otherwise it will cause electric shock hazard.

4) 电气安装注意事项

Electric mounting cautions

只有专业人员才允许电气连接和维护；

Only specialized person allow connecting and maintaining electric.

必须使用对应的电源，如果使用不同的电源电机可能会烧坏；

Must use right power supply, machine may be burnout if using different power supply.

接线结束后，在开电源之前要再次检查连接有无错误；

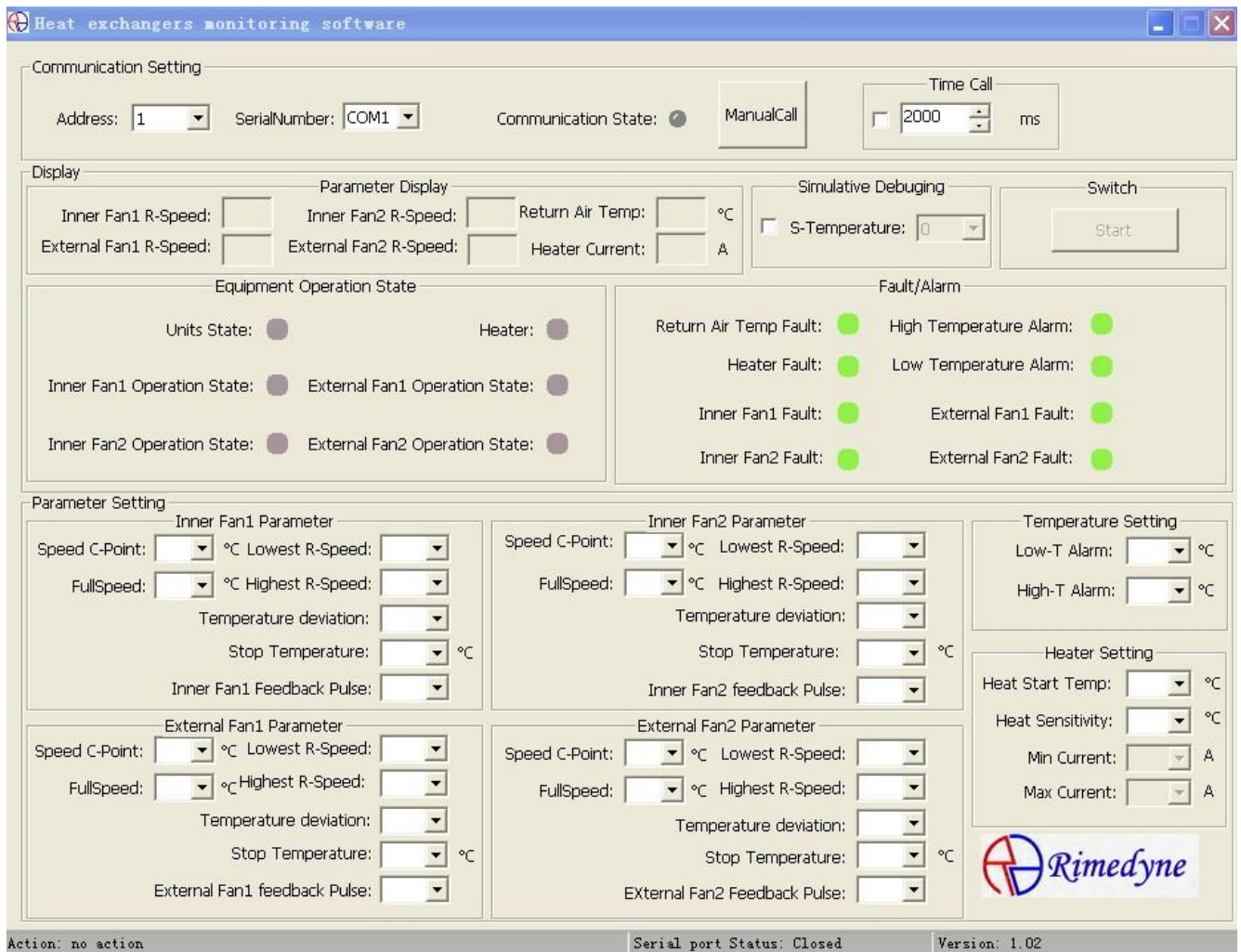
Finishing lines connecting, check twice to see any mistakes or not before switching on power supply.

电源接入设备前应安装保护器确保人身及设备安全。

Should install protector to ensure body and equipment safety before connecting equipment into power supply.

3 监控软件操作 Monitoring Software Operation

3.1 监控软件启动 Monitoring Software Start



3.1.1 软件第一次启动时会读取热交换器的所有状态参数和设置参数

Software will display heat exchanger all status parameter and settings parameter at 1st time start.

3.1.2 如果没有连接热交换器或通讯故障，最底下的状态栏显示‘串口状态：已关闭’，所有的状态显示不作参考，参数显示、设置参数为空白。

If there is no heat exchanger connecting or communicating fault, the lowest status blank will display “Serial Status: Closed”, all status display are not for reference, parameter display and settings parameter are blank.

3.1.3 如果热交换器与上位机已连接，通讯地址设置正确，且热交换器已通电，热交换器的状态与设置参数会正确读出并显示在相应的区域。

If heat exchanger has been connected with computer, communication address setting is correct and heat exchanger has been in charged, the heat exchanger status and settings parameter will correctly read and display in the relevant place.

3.2 通讯设置区 Communication Settings



- 3.2.1** 地址需与热交换器的地址一致，系统默认地址为 1，关于热交换器的地址请参考表 5 ‘热交换器地址定义’。

The address should be accordance with the address of heat exchanger. System default address is 1. Please refer to table5 “heat exchanger address definition”.

- 3.2.2** 串口号的设置应该与 RS232-RS485 转换器插入的串口号对应，如果电脑主机无串口，可使用 USB 转 RS232 串口。

Serial number settings should be corresponding with RS232-RS485 switch plugging serial number. If there is serial port of the computer case, use USB shift RS232 serial port.

- 3.2.3** 通讯状态：监控软件有数据交换时指示灯会闪灯。

Communication status: Indicating light will flash when monitoring software is in data exchange.

- 3.2.4** 定时召唤复选框可选，打勾监控软件会定时读取刷新热交换器的相关数据和状

态，定时时间可选，单位为毫秒；不打勾定时召唤数据功能不启用，可点

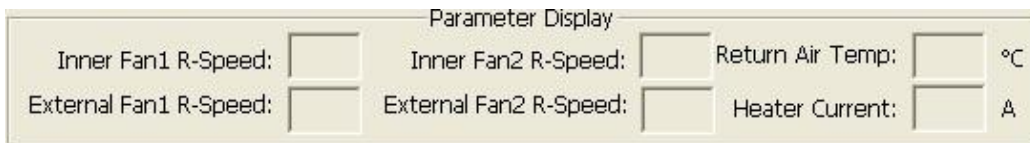
按钮手动刷新数据，不按此键数据不会刷新。

Timing call check box is optional. Tick it, monitoring software will read and refresh heat exchanger related data and status at regular time. Timing time is optional, unit is

ms. No ticking it, data function of timing call will not work. You can click “

press-button, refresh data by hand. Data will not refresh without clicking this button.”

3.3 显示区 Display



- 3.3.1** 当定时召唤打勾时，可实时刷新显示热交换器的参数和状态，也可手动刷新热交换器的状态参数

When ticking timing call, it will refresh and display heat exchanger parameter and status real-timely; also can refresh heat exchanger status index by hand.

- 3.3.2** 显示四个风机的转速，当某一位置的风机未连接时，风机转速显示为 0；风机转速与风机反馈脉冲个数的设置有关，请了解您使用的风机每转一圈反馈的脉冲个数并正确设置，否则显示的风机转速可能不正确。

Display four fans rotate speeds; fan rotate speed will display “0” when one fan fails to connect. Fan rotate speed is related with the settings of fan feedback pulse number. Please make sure the number of feedback pulse per round of operating fan and correct settings, otherwise the display of fan rotate speed will be incorrect.

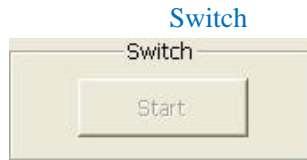
3.3.3 显示室内回风温度。

Display indoor return air temperature.

3.3.4 当加热器启动时可以显示加热器的电流，用户可以监控该参数防止加热器过流引致火灾危险。

It will display heater's electric current when the heater starts. Customer can monitor this parameter to avoid heater over current result in fire hazard.

3.4 机组打开或关闭 Open or Close



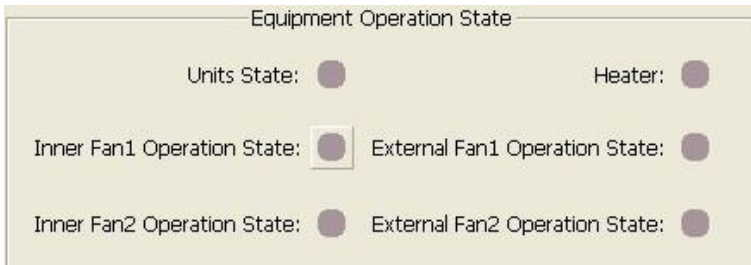
3.4.1 可以通过点此按钮打开或关闭热交换器，热交换器打开时按钮显示‘关闭机组’，点击该按钮可以关闭热交换器，热交换器关闭时按钮显示‘启动机组’，点击该按钮可以启动热交换器。热交换器运行或停止状态可以在设备运行状态的

Units State: 查看。

Open or close heat exchanger by clicking this press-button. When open heat exchanger, it will display “close”, click this press-button and it will close heat exchanger. When close heat exchanger, it will display “open”, click this press-button and it will open heat exchanger. The running or stopping status of Heat exchanger

can be visible in Units State: of Equipment Operation State.

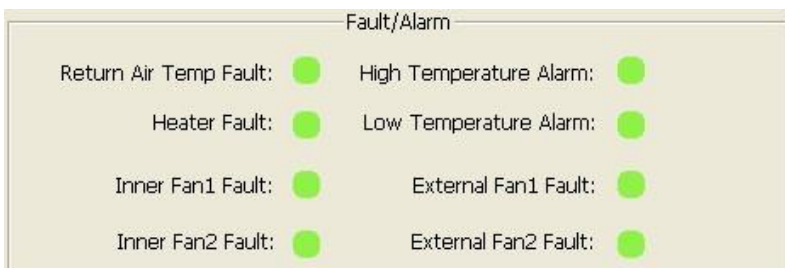
3.5 设备运行状态 Equipment Operation State



3.5.1 指示当前热交换器或组件是运行还是停止状态，灰色为停止或未启用，绿色为运行。

Indicating present heat exchanger or assembly is running or stopping. Grey is stopping or not start, green is running.

3.6 故障/告警区 Fault/Warning





3.6.1 故障或告警为红色，绿色为正常。



Fault or warning is red, green is normal.



3.6.2 回风温感故障：当温度传感器短路或损坏时。

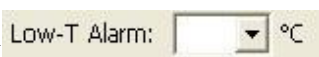
Return air temperature detector fault: when temperature sensor is in short circuit or damaged.


3.6.3 高温告警：温度值高于  时报警。

High temperature warning: temperature value higher than “”, it will alarm.

3.6.4 加热器告警：加热器启动后电流低于  或电流高于  报警。

Heater warning: electric current lower than “” or higher than “”, after starting heater, it will alarm.

3.6.5 低温告警：温度低于  报警。

Low temperature warning: temperature lower than “”, it will alarm.

3.6.6 内风机 1 故障：内风机 1 未接或损坏时告警。

Inner fan1 fault: inner fan1 disconnect or damage, it will alarm.

3.6.7 内风机 2 故障：内风机 2 是可选的(参考《热交换器拨码开关定义》), 当选择使用内风机 2(热交换器拨码开关 3 拨到 ON)时，内风机 2 未接或损坏时告警。如果未选择使用内风机 2(热交换器拨码开关 3 拨到 OFF)，内风机 2 不会启动也不会告警。

Inner fan2 fault: inner fan2 is optional (refer to “heat exchanger dial switch definition”). When select inner fan2 (heat exchanger dial switch 3 dial to ON), fan2 disconnect or damage will alarm. If do not select inner fan2 (heat exchanger dial switch 3 dial to OFF), inner fan2 will not start nor alarm.

3.6.8 外风机 1 故障：外风机 1 未接或损坏时告警。

External Fan1 fault: fan1 disconnect or damage will alarm.

3.6.9 外风机 2 故障：外风机 2 是可选的(参考《热交换器拨码开关定义》), 当选择使用外风机 2 时(热交换器拨码开关 4 拨到 ON)，外风机 2 未接或损坏时告警。如果未选择使用外风机 2(热交换器拨码开关 4 拨到 OFF)，外风机 2 不会启动也不会告警。

External Fan2 fault: inner fan2 is optional (refer to “heat exchanger dial switch definition”). When select external fan2 (heat exchanger dial switch 4 dial to ON), external fan2 disconnect or damage will alarm. If do not select external fan2 (heat exchanger dial switch 4 dial to OFF), external fan2 will not start nor alarm.

3.7 风机参数设置 Fan parameter settings

The screenshot shows a 'Parameter Setting' window with four panels for different fans. Each panel contains the following settings:

- Speed C-Point: [dropdown] °C
- Lowest R-Speed: [dropdown]
- FullSpeed: [dropdown] °C
- Highest R-Speed: [dropdown]
- Temperature deviation: [dropdown]
- Stop Temperature: [dropdown] °C
- [Fan Name] feedback Pulse: [dropdown]

3.7.1 有四个风机的参数设置，下面只说明内风机 1 的参数设置，其它风机的参数设置方法与内风机 1 相同。

Four fans parameter settings. The following is the explanation of inner fan1 parameter settings, other fans parameter settings are the same as fan1.

3.7.2 内风机调速点：室内回风温度低于该设置点的温度时风机以最低转速运行，最低转速可在 **Lowest R-Speed: [dropdown]** 下拉框设置，温度超过此温度点随温度的变化风机速度也跟着变化。

Inner fan speed adjust-point: indoor return air temperature lower than this setting point, fan will run at the lowest speed, select the lowest speed on this dropdown list “Lowest R-Speed: [dropdown]”, the temperature higher than this point, the fan speed will change along with the change of temperature.

3.7.3 内风机全速点：室内回风温度等于或高于该设置点的温度时风机调至最高转速运行，最高转速可在 **Highest R-Speed: [dropdown]** 下拉框设置。

Inner fan full speed point: indoor return air temperature equal to or higher than this point, fan will run at the highest speed, select the highest speed on this dropdown list “Highest R-Speed: [dropdown]”.

3.7.4 内风机由停止到启动温度偏差：温度高于 ‘内风机停止温度+内风机由停止到启动温度偏差’ 时风机启动。

The temperature difference of inner fan from start to stop: temperature higher than “inner fan stop temperature + inner fan temperature difference from stop to start”, fan will start.

3.7.5 内风机停止温度：室内温度低于该设置点时，风机停止。

Inner fan stop temperature: indoor temperature lower than this setting point, fan will stop.

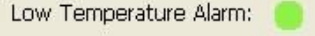
3.7.6 内风机反馈脉冲个数：不同型号风机可能运转一圈时反馈的脉冲个数不一样，请了解您使用的风机的反馈脉冲参数并正确填入，否则显示区中风机转速可能不正确。

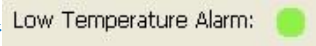
Inner fan feedback pulse number: different type fans running may get different feedback pulse number per round. Please know well the running fan feedback pulse parameter and fill in correctly, otherwise the display of fan rotate speed may be incorrect.


3.8 温度设置


Temperature settings



3.8.1 低温报警温度值：室内温度低于该设置值时  告警。

Low temperature alarm value: indoor temperature lower than this setting point“  ”, it will alarm.

3.8.2 高温报警温度值：室内温度高于该设置值时  告警。

High temperature alarm value: indoor temperature higher than this setting point
“  ”, it will alarm.

3.9 状态栏 Status

Action: no action	Serial port Status: Closed	Version: 1.02
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Current Action: no

Serial Status: Closed

Version:1.02

3.9.1 当前动作：显示监控软件进行的一些操作和操作结果。

Current Action: Display monitoring software the processing and result.

3.9.2 版本：显示软件版本号。

Version: display software version number

4 参数设置 Parameter settings

4.1 标准参数设置 Standard parameter settings

项目 Item	默认值 Default	范围 Scope	描述 Description
高温报警温度 High Temperature Alarm Value	60	25~60	环境温度大于等于此温度报警，内外风机全速运行，温度下降到设定值，故障自动复位，此值断电后不记忆。 Ambient temperature higher than this temperature will alarm, inner and external fans will run at full speed. Temperature will descend to the setting value, fault will reset automatically. The value will not memorize after cutting off power supply.
低温报警温度值 Low Temperature Alarm Value	0	-40~20	环境温度小于等于此温度报警，温度大于设定值，故障自动复位，此值断电后不记忆。 Ambient temperature lower than or equal to this temperature will alarm, when temperature is higher than setting value, fault will reset automatically. The value will not memorize after cutting off power supply.
加热开启温度 Heating Start Temperature	5	-40~10	当环境温度小于此设定值，开电加热 When ambient temperature is lower than this setting value, open electric heater.
加热灵敏度 Heating Sensitivity	10	5~20	当环境温度大于“加热开启点+加热灵敏度”，关闭电加热 When ambient temperature is higher than “heating start point + heating sensitivity”, close electric heater.

4.2 自定义参数设置 Custom parameter settings

(以下数据为工厂调试，出厂设置使用)

(The following data is factory debugging, for factory settings using)

项目 Item	默认值 Default	范围 Scope
内风机调速点温度 Inner fan speed regulation point temperature	30	15~35
内风机调速点转速 Inner fan speed regulation point rotate speed	1500	800~1900
内风机全速点温度 Inner fan full speed point temperature	40	30~60
内风机全速转速 Inner fan full speed rotate speed	2300	2000~3500
内风机由停止到启动温度偏差 Inner fan temperature difference from stop to start	1	1~10
内风机停止温度 Inner fan stop temperature	-40	-40~10
内风机反馈脉冲 Inner fan feedback pulse	3	1~5
外风机调速点温度 External fan speed regulation point temperature	30	15~35

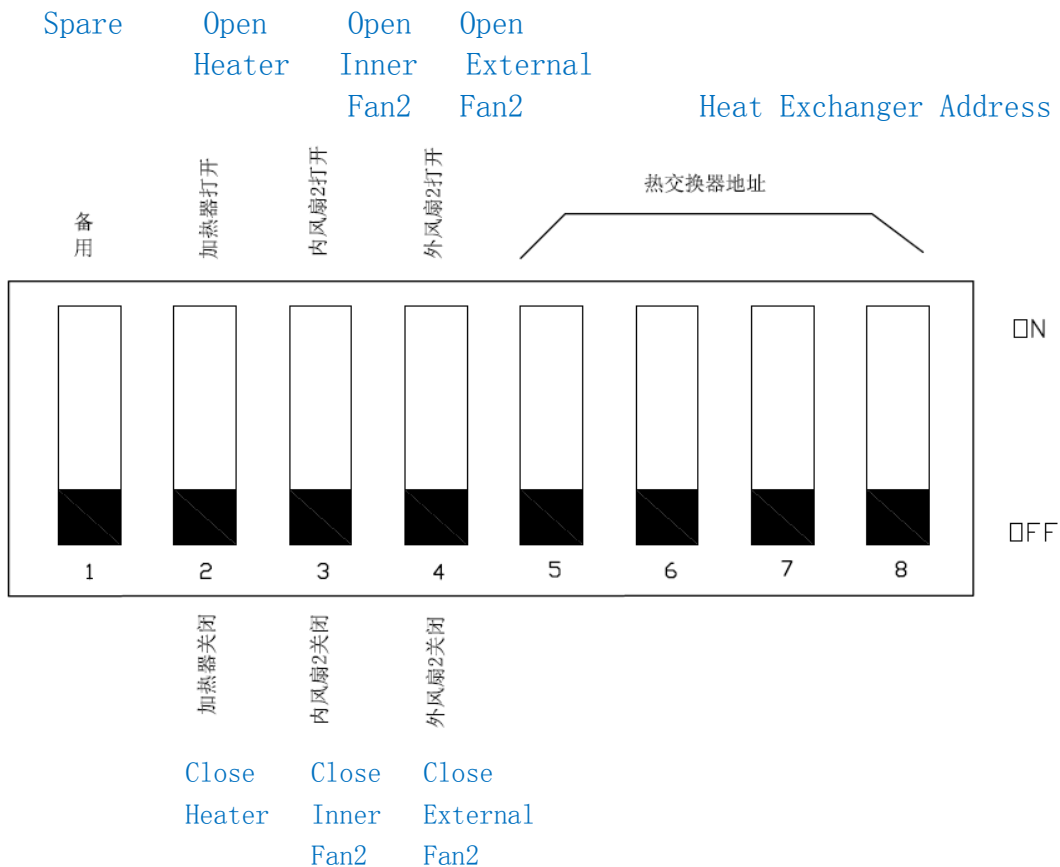
外风机调速点转速 External fan speed regulation rotate speed	1500	800~1900
外风机全速点温度 External fan full speed temperature	45	30~60
外风机全速转速 External fan full speed rotate speed	2300	2000~3500
外风机由停止到启动温度偏差 External fan temperature difference from stop to start	2	1~10
外风机停止温度 External fan stop temperature	28	-40~40
外风机反馈脉冲 External fan feedback pulse	3	1~5
加热器最小电流 Heater minimum electric current	2.0	0.4~4.0
加热器最大电流 Heater maximum electric current	6.0	2.0~10.0

5 系统控制说明 System Control Statement

5.1 系统设置 System Settings

单板有一个8位的拨码开关，用于风扇个数、加热器配置设置，具体定义如表4所示：

There are 8 dial switches in the single plate, it is used for fans number and heater configuration settings; specified definition is as table4:



拨码开关 Dial Switch	定义 Definition	OFF	ON	备注 Notes
1	预留备用 Spare			默认为: OFF Default: OFF
2	加热器配置 Heater Configuration	不配置 No Configuration	配置 Configuration	默认为: ON, 此时需要连接加热器控制板, 若电加热开启后检测到电流为0, 则报电加热故障, 若设置为OFF, 不检测电加热故障, 上位机电加热状态和电加热故障显示为灰色; Default: ON, need to connect heater control panel. If the detecting current is 0 after starting heating, electric heating is fault. If setting is OFF, no need to detect electric heating fault, ? electric heating status and electric heating fault will display in grey.
3	内循环风扇个数设置 Number of internal circulative fan settings	1PCS	2PCS	默认为: OFF Default: OFF
4	外循环风扇个数设置 Number of external circulative fan settings	1PCS	2PCS	默认为: OFF Default: OFF
5 6 7 8	热交换器地址 Heat exchanger address	见表5 Refer to table5	见表5 Refer to Table5	默认为: ON ON ON ON, 地址为1 Default: ON ON ON ON, address is 1

表1 拨码开关的定义

Table1 Dial Switch Definition

热交换器地址 Heat exchanger address	拨码开关5 Dial Switch 5	拨码开关5 Dial Switch 5	拨码开关5 Dial Switch 5	拨码开关5 Dial Switch 5
1	ON	ON	ON	ON
2	ON	ON	ON	OFF
3	ON	ON	OFF	ON
4	ON	ON	OFF	OFF
5	ON	OFF	ON	ON
6	ON	OFF	ON	OFF
7	ON	OFF	OFF	ON
8	ON	OFF	OFF	OFF
9	OFF	ON	ON	ON
10	OFF	ON	ON	OFF

11	OFF	ON	OFF	ON
12	OFF	ON	OFF	OFF
13	OFF	OFF	ON	ON
14	OFF	OFF	ON	OFF
15	OFF	OFF	OFF	ON
16	OFF	OFF	OFF	OFF

表2 热交换器地址定义

Table2 Heat exchanger address definition

5.2 指示灯 Indicating light

LED	Color 颜色	Status 状态	Definition 定义
Power indicator led 电源指示灯	Green 绿色	Constant on / 常亮	Normal operation & self testing / 正常运行与自检
		Off / 关	No power / 无电源供给
Alarming indicator led 告警指示灯	Red 红色	Flashing / 闪烁	Failure detected / 有故障，故障定义参考 表 7
		Off / 关	No alarming / 无告警

表3 LED灯定义

Table3 LED definition

5.3 风机控制策略 Fan Control Strategy

温度：指热交换器回风温度

Temperature: Heat exchanger return air temperature

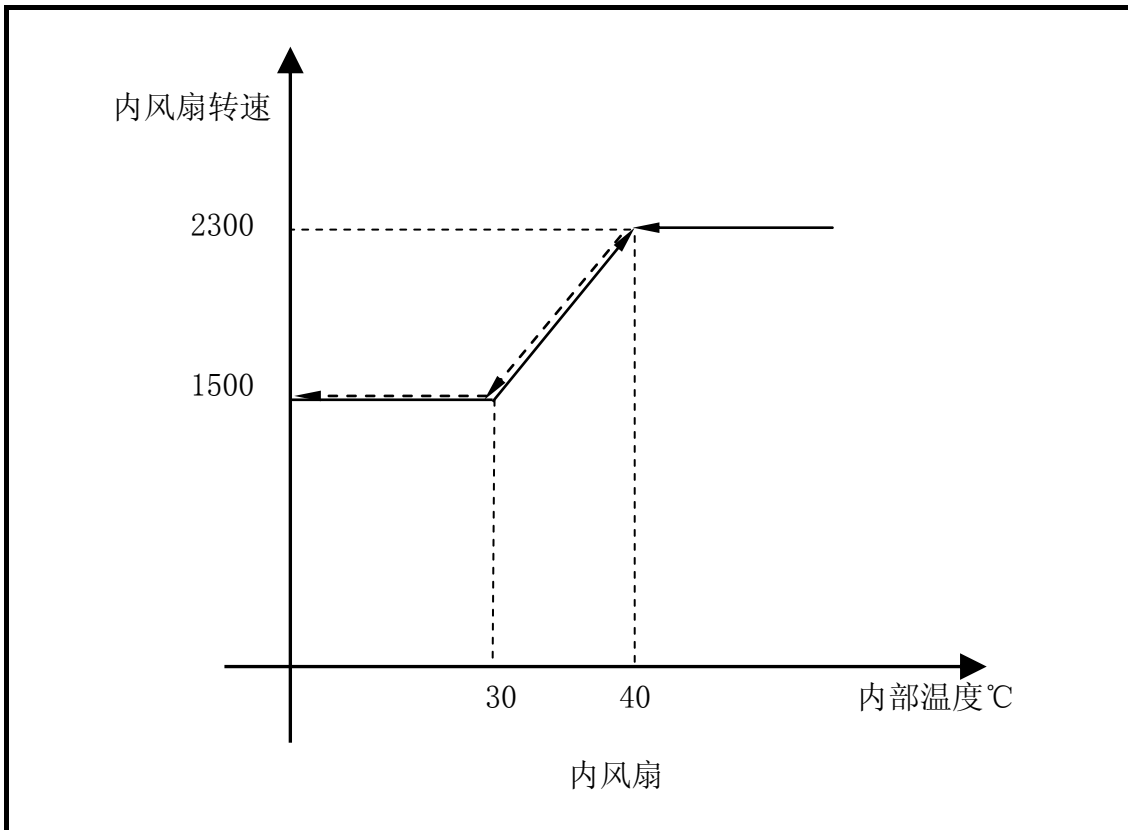
风机：指热交换器的内风机或外风机

Fan: Inner fan and external fan of heat exchanger

内风机转速随温度变化曲线：

Temperature Variation Curve of Inner fan rotate speed

Inner fan rotate speed



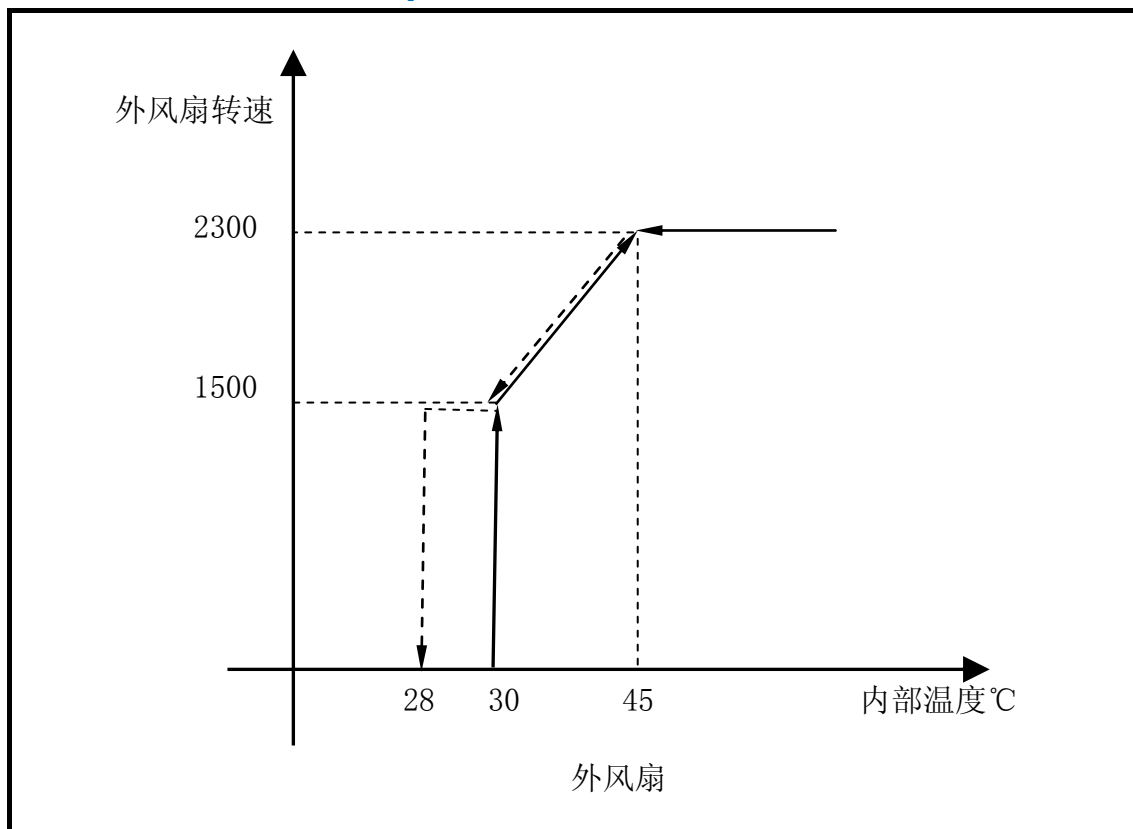
Inner fan

Inner temperature °C

外风机转速随温度变化曲线:

Temperature Variation Curve of External fan rotate speed

External Fan Rotate Speed



External Fan

Inner Temperature °C

6 热交换器端告警指示 Heat Exchanger Warning Indication

6.1 故障报警 Fault Alarm

用红色 LED 灯闪烁次数告警，可以上报的告警如下：

LED flash several times in red for alarming, the following is alarming details

闪烁次数 Number of flash	缺陷定义 Defection Definition
1 次	内风机 1 故障 Inner Fan1 Fault
2 次	内风机 2 故障 Inner Fan2 Fault
3 次	外风机 1 故障 External Fan1 Fault
4 次	外风机 2 故障 External Fan2 Fault
5 次	温度传感器故障 Temperature Sensor Fault
7 次	电加热故障 Electric Heating Fault
9 次	高温报警 High Temperature Alarm
10 次	低温报警 Low Temperature Alarm

表4 红色LED灯告警闪灯定义

Table7 LED Flash in Red Definition

故障解除时，告警灯熄灭。

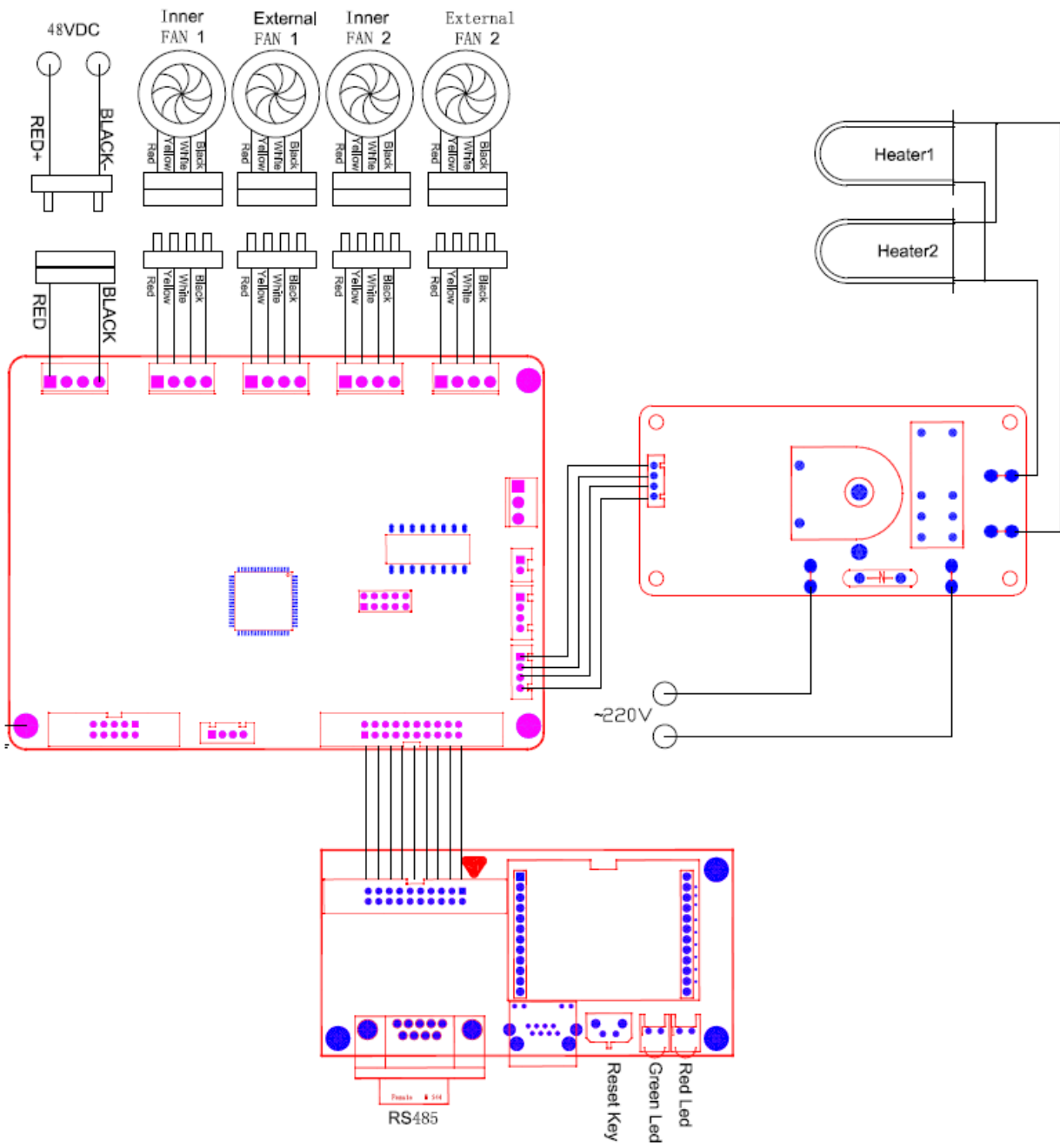
Remove fault, alarming light will stop working.

6.2 故障复位 Fault Reset

故障解除后，故障会自动复位，报警解除。

Fault will reset automatically after removing fault, alarming removing.

7 控制板接线示意图 Control Panel Wiring Schematic



8.故障分析:

Fault Analysis:

如果热交换器在运行的第一年中出现问题,请联系齐力公司。请不要在不联系齐力公司的情况下自行拆开热交换器,否则保修协议失效。

If there are some problems of heat exchanger in the first year, please contact Rimedyne. Please do not detach heat exchanger without contacting Rimedyne, otherwise maintain agreement is invalid.

如果有任何操作上的问题请参考下表中的故障排除表。如问题仍然存在,请联系齐力公司的技术支持。

Please refer to the below troubleshooting list if find there any problems during operation. If problems cannot be solved, please contact Rimedyne for technical support.

故障排除表
Troubleshooting List

型号: Type:		产品编号: Product Code:	
额定电压: Rated Voltage:	电流: Electric Current:	相位:	频率: Frequency:
热交换器供电电源是否满足要求 Whether power supply meets heat exchanger requirement.		YES	NO
热交换器电源线是否与供电电源连接正确 Whether power cords of heat exchanger connect to power supply correctly.		YES	NO
设备箱内温度是否在热交换器控制板温度范围内 Whether inner temperature of cabinet is within the temperature scope of heat exchanger control panel.		YES	NO
设备箱的门是否紧闭并密封 Whether the cabinet door is closed and sealed.		YES	NO
设备箱内是否有足够的空间让空气流动 Whether there enough space inside cabinet for air flowing.		YES	NO
设备箱外部是否有足够的空间让空气流动 Whether there enough space outside cabinet for air flowing.		YES	NO
最近是否有在设备箱内增加新的电子设备 Whether add new electronic device inside cabinet.		YES	NO
内外风机有无异响 Whether there any abnormal sounds in internal and external fans		YES	NO

热交换芯体进出风口是否有杂物堵住 Whether there any objects stuck air inlet and outlet of heat exchange core.	YES	NO
热交换器控制板电源指示灯有无亮 Whether indicating light of heat exchange control panel is light.	YES	NO

9. 零部件的更换:

Components Replace

(注: 更换零部件时必须先检查有无切断电源, 并做好了相关的应急措施)

(Note: make sure cut off power before replacing components, and prepare related emergency measures.)

9.1 如何更换内外风机:

How to replace internal and external fans

在更换内外风机之前必须先切断电源, 并准备好以下设备和工具:

Cut off power before replacing internal and external fans, and prepare the following equipments and tools:

1. 一把十字螺丝刀

A cross screwdriver

2. 确认要更换的内外风机 (确保型号是相同的)

Make sure replaced internal and external fans (the type should be the same)

更换步骤如下:

Replace procedures as below:

1. 去掉风机上部盖子的固定螺丝, 取下盖子;

Move away fixed screw of the upper cover of fan, take off the cover

2. 拔掉风机的接线, 拆下风机的固定架子, 取下风机;

Pull out fan wirings, detach fan fixed shelf, and take off fan.

3. 将新的风机装在风机固定架上, 重新把风机的接线接好;

Install the new fan into the fan fixed shelf and reconnect fan wirings.

4. 将风机上部的盖子重新固定好, 检查无误后, 开机检测是否更换成功。

Put on the upper cover of fan, after carefully checking, starting up machine to check whether replacement successful or not.

9.2 如何更换电加热器:

How to replace electric heater:

在更换电加热器之前必须先切断电源, 并准备好以下设备和工具:

Before replacing electric heater, should cut off power and prepare the following equipments and tools:

1. 一把十字螺丝刀

A cross screwdriver

2. 一把活动扳手和一把 $\Phi 7$ 的套筒

An adjustable spanner and a $\Phi 7$ sleeve.

3. 电加热器一根 (确保功率和使用电源是一样的)

One piece electric heater (make sure power is the same as power supply)

更换步骤如下：

Replace procedures as below:

1. 去掉电加热器上部盖子的固定螺丝，取下盖子；
Move away fixed screw of the upper cover of electric heater and take off the cover.
2. 拔掉电加热器的接线，拆下电加热器固定架，从固定架上取出电加热器；
Pull out electric heater wirings, detach electric heater fixed shelf and take out electric heater from fixed shelf.
3. 将新的电加热器装在电加热器固定架上，重新把电加热器的线接好；
Install new electric heater into the fixed shelf and reconnect electric heater wirings.
4. 将电加热器上部的盖子重新固定好，检查无误后，开机检测是否更换成功。
Put on the upper cover of electric heater, after carefully checking, starting up machine to check whether replacement successful or not.

9.3 如何更换控制板：

How to replace control panel

在更换控制板之前必须先切断电源，并准备好以下工具：

Before replacing control panel, should cut off power and prepare the following tools:

1. 一把十字螺丝刀
A cross screwdriver
2. 一把 $\Phi 7$ 的套筒
A $\Phi 7$ sleeve
3. 控制板一块（确保和原来型号的是一样的）
One piece control panel
4. 控制板接线图一份
Control panel wiring diagram one copy

更换步骤如下：

Replace procedures as below:

1. 去掉控制板上部盖子的固定螺丝，取下盖子；
Move away fixed screw of the upper cover of control panel, and take off the cover.
2. 拔掉控制板上的接线，拆下控制板固定架，从固定架上取出控制板；
Pull out control panel wirings, detach control panel fixed shelf and take out control panel from the shelf.
3. 将新的控制板装在控制板固定架上，重新接好线并检查有无接错；
Install new control panel into the shelf and reconnect wirings and check whether connect correctly or not.
4. 将控制板上部的盖子重新固定好，检查无误后，开机检测是否更换成功。
Put on the upper cover of control panel, after checking, starting up machine to check whether replacement successful or not.

10. 保修

Warranty

齐力公司向用户保证，齐力生产的产品没有材料和工艺上的缺陷。如果用户在一年之内（保修期）发现产品有质量问题，可通知齐力公司，退回这个产品给齐力。用户可以选择维修该产品或是更换有同等价值的其它产品，但需支付货运费用。不管是哪一种选择，维修或是更换产品后的保修期都会按新购产品重新算起。如果用户没有通知齐力公司这类缺陷，不管保修期内是否存在潜在的问题，齐力公司对用户没有进一步尽责义务。因而在何种情况下，齐力对产品缺陷承担的责任上限不超过产品本身的价格，使用引起的间接损失本公司不承担连带责任。在任何情况下，对偶然因素或不可抗力因素造成的损失本公司不承担相关责任。上述的赔偿方式也只是在此次交易中卖方违反了质量保证后给予客户的唯一赔偿。

Rimedyne guarantee users, Rimedyne products have no materials and technology defective. If users find any quality problems from a product in a year (under warranty), contact Rimedyne immediately, return it to Rimedyne. User can choose maintain this product or replace other products of the same value, but need to pay for freight. No matter which choice, warranty will be renew as new product after maintaining or replacing products. If users do not inform Rimedyne such defectiveness, even there are some problems under warranty, Rimedyne have no further duty on users. As for this situation, compensation for defective products will not exceed its price; Rimedyne will not undertake joint liability if caused indirect loss. In any case, Rimedyne will not be obligated to any loss caused by accidents or irresistible force. The above compensation method is the only compensation if seller defaults quality guarantee during this transaction.

10.1 免责范围

Disclaimer Range

已超过保修期限的

Expire warranty period

不能提供产品出厂编号的（见机身贴示的铭牌）

Cannot provide product manufacturing number (refer to enclosure brand)

用户自行更换或拆装产品零部件造成损坏的，或由非授权服务拆修而造成损坏的

User replace or detach products caused components damaged at will, or without authorization.

因用户电源电压不稳，超过空调器使用范围或线路不规范，不符合国家安全用电标准造成空调损坏的

Use's power supply is not stable, exceeding air-condition usage range, wirings are unregulated, or not in accord with national security electric standard, as a result, damage air-condition.

由于运、装、用、管不当等导致空调物理损坏(如空调不能倒置)等

Because of improper shipment, package, usage, management, cause Air-condition physical damage (such as cannot upside down)

11. 制造商地址

Manufacturer Address:

齐力制冷系统（深圳）有限公司
中国广东省深圳市龙岗区横岗镇安良五村福坑路 172 号
网址: www.rimedyne.com.cn
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