



Compact Air Conditioner – AC version

一体空调器用户手册

User Manual

Reading this manual carefully before installation and using!

在产品安装使用前请仔细阅读本手册！

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This manual especially writhed for:

HRUC A 015/S/A-AU

本手册适用如下型号:

HRUC A 015/S/A-AU

QMS 007

1. General Info / 基本事项.



Important

- 1.1. This air conditioner is specially designed for telecommunication industry. It is powered by 230VAC,50Hz or 60Hz.

该产品是专为通讯或相关工业设备应用场合而设计的高性能交流型空调器，可用于 AC230V，50Hz 或 60Hz 的电源供电。

- 1.2. The other parts of system as well as the cooling principle are exactly same with traditional air conditioner.

该产品制冷系统原理和传统的空调产品相同，利用制冷剂压缩式制冷。

- 1.3. Thanks for choose this model product, it is a high efficiency, high reliability and just designed for shelter cooling product.

非常感谢选用该产品，该产品是专为通讯机柜、电气机柜设计的高性能、高可靠性交流空调产品。



Warning

- 1.4. Don't use the product under condition of high oli, burning gas, explosive gas, strong corrosivity condition area. Otherwise the product warrantee service is not been offered by manufacture.

为了更好的使用本产品，请勿在高油污、高腐蚀性环境、含爆炸易燃气体环境使用，否则，将会造成对该产品严重的损害，我们将不会提供正常的售后服务。

- 1.5. This appliance is not intended for use by persons(including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for ther safety.

严禁未成年人、身体或心理存在严重缺陷及不具有相关该产品知识的人员操作该产品。

- 1.6. Children is forbid to play with or use this product. 严禁儿童玩弄或使用该产品。

- 1.7. If the power supply cord is damaged, it must be replaced by the manufacturer, or service agency or similarly qualified person in order to avoid a hazard.

若是电源线损坏，为了避免风险，请一定使用同一公司或使用同规格的有质量认证的产品。



Important

- 1.8. Transportation: when removal of this product, please do not turned up, turn around, or slant it excessively.

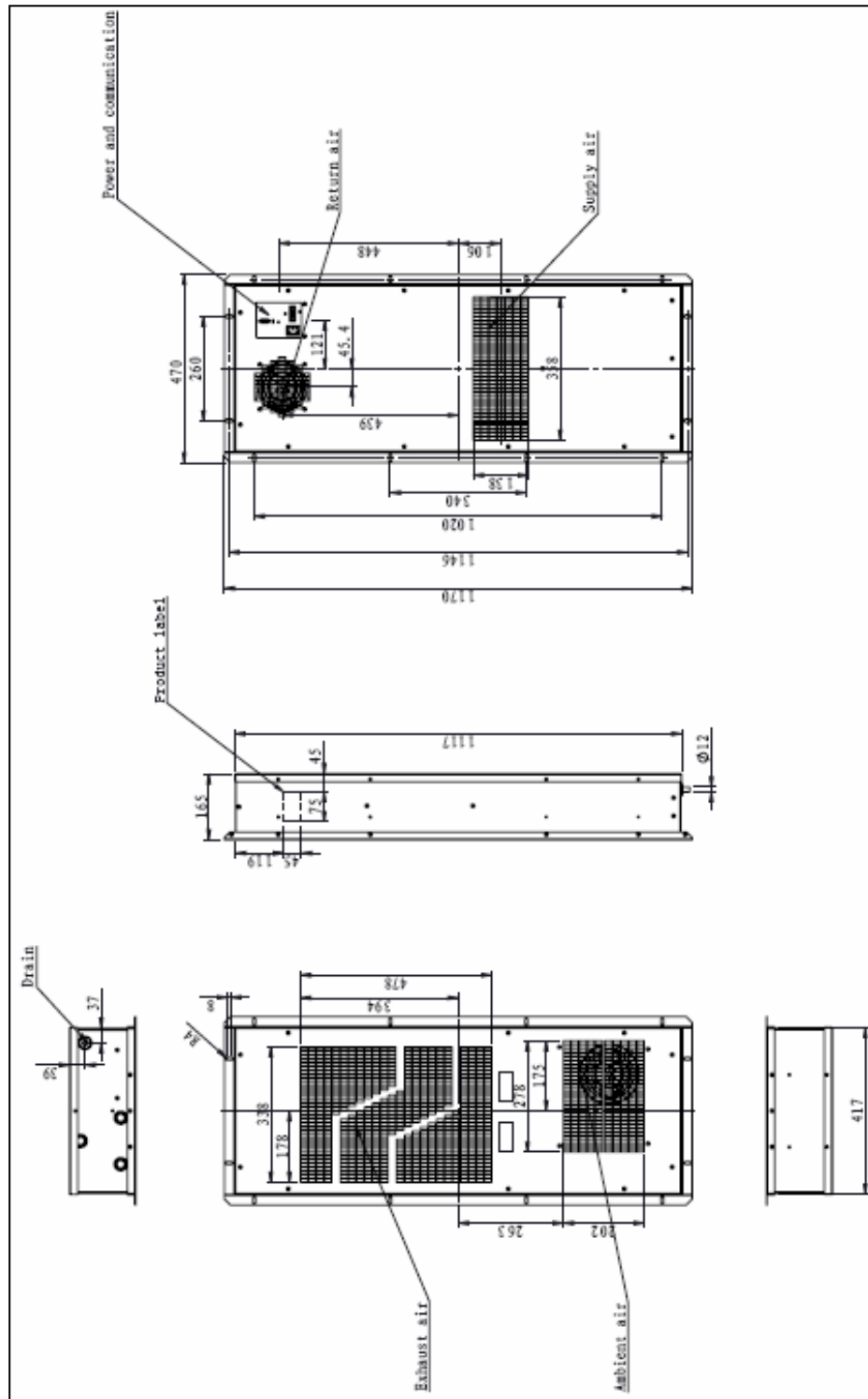
运输：搬运或运输该产品过程中，请勿翻倒或过度倾斜该产品。

- 1.9. storage: Don't put product at an open space, or put into a high temperature/high humidity (70℃,95%) conditions.

存放：不要露天存放，或者长时间存放在高温、高湿的环境下(70℃,95%)。

1.10. Shut down: please power off the main source when product need to be stand by for a long period. 关机：若长时间不使用该产品，请关掉主电源。

2. Drawing/外形图



Important

3. Installation/安装

Below picture indicate way of mounted :

下图为安装方式示意图:



3.1. Preparation steps for mounting on a shelter/安装准备

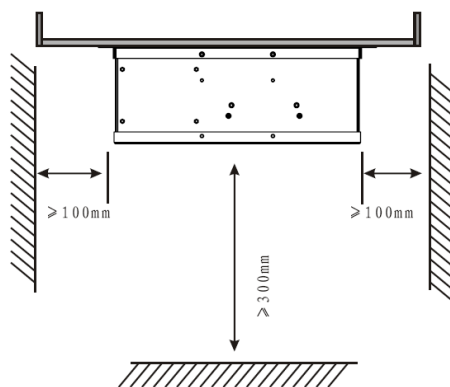


figure 1

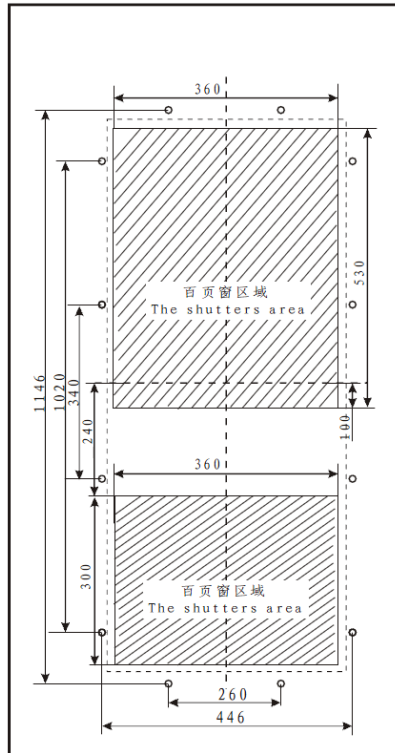


figure 2

- 3.1.1. Check the surrounding obstacles to make sure the product get enough space for air circulation, please refer to figure 1.

本产品安装前，请注意留给外循环足够空间以便外循环空气流通，如图（figure1）

- 3.1.2. select the right wall and According to the installation method （ side, door, half embedded ） in the panel of the installation out the cut line accordingly, as in figure （ figure2 ） .

选择正确的安装固定面，根据相应的安装方式（侧装、门装、半嵌入安装）在此面板上画出相应切开线，如图（figure2）

- 3.1.3. Open the holes on the panel, and make sure the hole is right square and all edges are smooth.

根据划线，切处安装孔，确保开孔平整、光滑。

3.2. Installation of product/安装

- 3.2.1. Make sure the packing is good before unpacking, do not perform the installation if there are some oil or distortion on the packing

产品打开包装前确认产品包装完好，若发现包装破损现象请不要再进行安装。

- 3.2.2. Make sure the bracket surface sealed with gasket to avoid water penetrate into shelter through mounting interface.

确保安装法兰面上密封条密封良好，以避免外界的水分通过安装面进入机柜内部。

- 3.2.3. Against the product mounting bracket back surface to wall, and make sure external circulation toward to outside of shelter.

安装机器，并确保该产品外循环侧朝向外界。

- 3.2.4. Fix the product onto the panel with right size screws or rivets, depends the the shelter construction status. Make sure the product is fixed rigidly. !!!

选用合适的螺母或螺钉于安装法兰的固定孔处固定产品，确保牢固。

- 3.2.5. Connect drain pipe in the bottom of the unit to drainage system (to outside of shelter) , the drainage pipe and pipe clip provided as accessories

连接产品底部的排水管，以排出该产品运行时产生的冷凝水(排水软管和管卡作为附件提供)。

- 3.2.6. Mount the out cover to the shelter---only side and half embeded needed. (the purpose of the out cover is provent rain penetrate into the product also protection the product access from external side).

!! Note: the out cover is not a standard part of product, normally it is provided by an engineering company who install the product.

安装外罩以保护产品或机柜免受雨水进入-----侧装式安装和半嵌入安装需要外罩（该外罩非标配件，需要用户自行制作）。

- 3.2.7. The mechanical part of installation is finished till now. please double check.

以上安装步骤完成后，请再次确认检查。

3.3. Double check lists/安装确认检验项:

- 3.3.1. Don't apply this unit in high oli, burning gas, explosive gas, strong corrosivity condition, the ambient air must be under 60℃, and the humidity not higher than 95%.

请勿在高油污、易燃气体、高腐蚀性及环境温度超过 60℃、湿度超过 95%的环境下使用该产品。

- 3.3.2. Make sure that the lean of the product not more than 3°.

确保产品安装后倾斜度不大于 3°。

- 3.3.3. Make sure that the cabinet should be sealed well to avoid the cooling losing and avoid ambient moisture penetrate into cabinet, this will avoid produce more condensate water.

确保机柜密封良好以免漏入空气产生不必要的冷量损失和产生过多的冷凝水。

- 3.3.4. Don't power on the unit immediately after finish the installation until the uint keep up stand for more than 30 min.

产品安装固定结束后，确保产品直立 30 分钟后再加电运行。



4. Electrical Installation/电气接线

4.1. Preparation for electrical connection/接线准备

**!!! Only skilled people is allowed to do the wiring connection work
and power on the product**

仅允许专业技术人员进行接线操作！

4.1.1. The power supply must be according with the technical specification of the unit. Power supply cable size and circuit breaker size recommended as below:

所供电源、电源线缆及断路器应该满足以下表格要求：

MODEL	HRUC A 015/S/A-AU
Power supply / 电源	AC230V 50Hz
Power supply range / 电源范围	AC230V \pm 10%
Power supply capacity 电源容量	It is suggest to not less than 15Amps @ 230VAC 建议主电源能力不小于 15A@ 230VAC
Calbe size 电缆规格	1.5 mm ² or 16AWG (UL 1015)
Voltage loss along power supply cable 电源电缆线电压降	Max. 1.0 V. (不大于 1V)
Circuit breaker size	30 ~40 Amps

**The installation of a residual current device(RCD)having a rated residual operating current
not exceeding 30mA is advisable.**

建议选用的漏电保护器（RCD）动作电流不要超过 30mA。

4.1.2. There must be a breaker before the power supply cable to product, refer to above table for size.

电源和产品间必须要通过一个断路器。

4.1.3. All lines must be connected well to relevant terminals since the operation current is big!

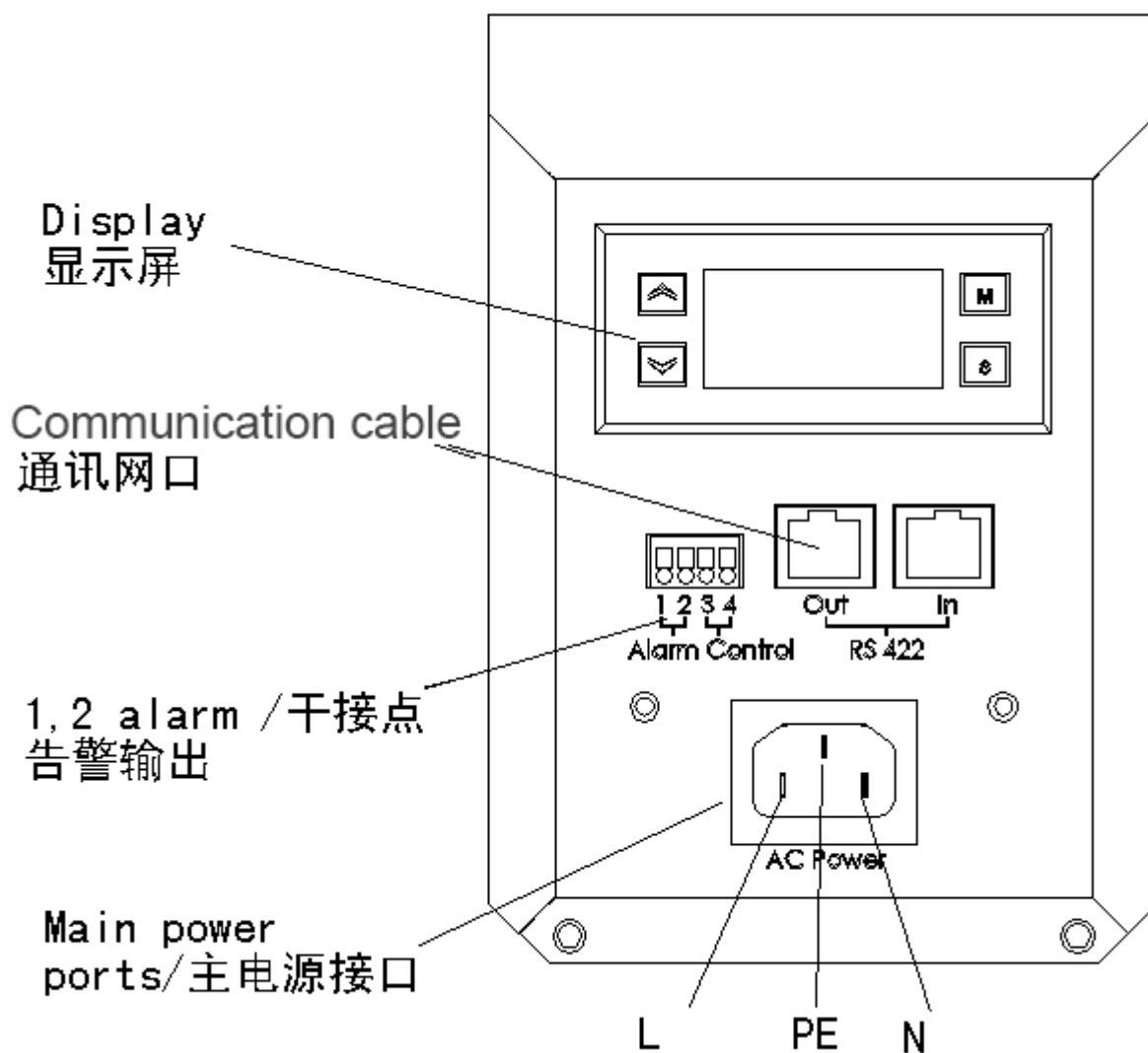
所有电缆必须连接极性正确并确保牢靠。

4.1.4. The appliance shall be installed in accordance with national wiring regulations.

该产品的电源电缆连接需符合当地规则要求。

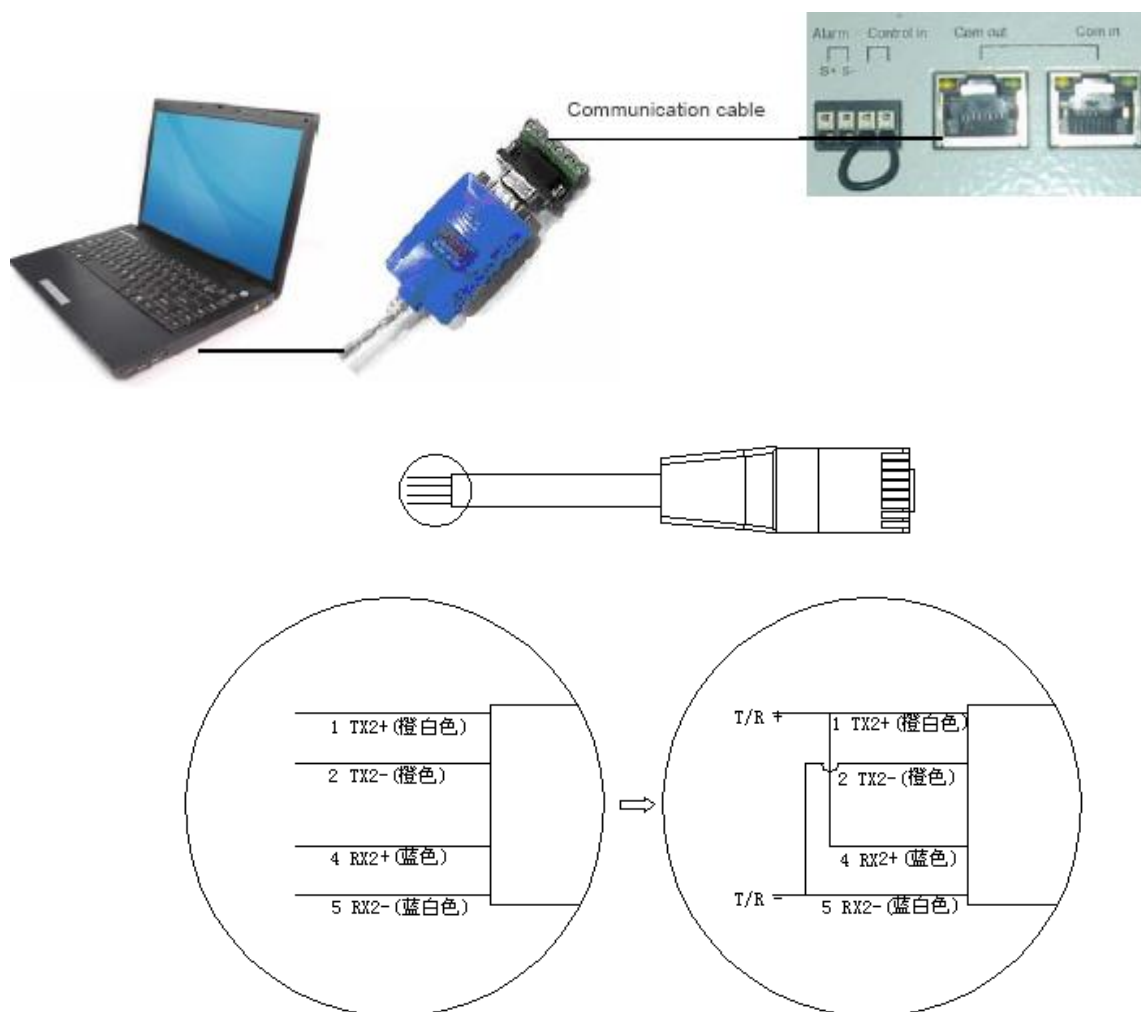
4.2. Power and communication connection

Interface/接口界面



General alarm out, RS485/RS422 and control in cable connection:

总告警干接点告警输出，RS485/RS422 通讯接口，运行控制输入。



- Alarm: dry contact type, normal close,

告警输出：干接点方式，常闭状态（正常时闭合，告警时断开）。

- RS485/RS422:

如上图所示，将带标签“TX2+”的线和带标签“RX2+”的线短接在一起作为“T/R+”线。将带标签“TX2-”的线和带标签“RX2-”的线短接在一起作为“T/R-”线，然后作为 RS485 通讯线

As shown above, The line labeled "TX2+ " and The line labeled "RX2+ " are shorted together as "T/R+ " line ; The line labeled "TX2- " and The line labeled "RX2- " are shorted together as "T/R- " line ;then the "T/R+ " line and "T/R- " line can be connected as RS485 communication line

4.2.1. Pull the wire to confirm whether it is locked tightly or not.

拉动连接电缆线，确保紧固牢靠。

4.2.2. Bind all the wire with cable ties.

用扎带捆牢电缆线。



Dangrous

5. Safety Reminder before running of the product/安全检查

5.1. Don't touch the product with wet hands

严禁用湿手触摸该产品。

5.2. Power off the unit before carry out the clearance, maintance or disassembly.

在对该产品进行清洁、维护或拆卸前务必断掉主电源。

5.3. Don't touch the inlet and outlet of the unit with finger or stick, to avoid damage to the machine or cause hurt .

严禁用手或棍棒插入到机器进风口或出风口，以免造成机器损坏或对人员的伤害。

5.4. If abnormity appearance(such as:abnormal sound, smoking, not cooling), should be power off it immediately, and report to the professional responsibilities.

若出现异常现象（如：异响、烟雾、不制冷），应该及时关闭该产品电源，并报告给专业人员。



Important

6. Running of product/运行

6.1. Check list before switch on the circuit

开机前请按下表各项进行确认：

	Item/项目
1	There is no barrier around the inlet and outlet of ventilation 机器进出风口周围无阻挡
2	Vertical installation, and all the mounting screw have been tightening 产品垂直安装，且固定牢固
3	The drain pipe has been connected. 排水管已经连接
4	Power supply has been connected and make sure the polarity is correct. 电源线已经连接，并确保电源电压及极性正确

6.2. Running/运行

6.2.1. Power on the switch, the product will perform a self-test running program firstly for about 3 min., and then the unit will run normally.

Self-test steps:

First: inner fan running (running). →

Second: inner fan and outer fan both running (both inner fan and outer fan are all running). →

The third: cooling running (inner fan running, outer fan running, compressor running).

If there is heater in system configuration, the heater self-test running will add in the self-test program (after the first step; inner fan running, and heater running).

During self-test running, the green led will keep flashing rapidly till to normal running (normal running: the green led will be flashing slowly).

开机后，该产品将先运行自检程序（历时约3分钟），自检结束后，进入正常运行。

自检步骤：

第一步：内风机运行(低速运行)→

第二步：内外风机同时运行（内风机低速、外风机高速运行）→

第三步：制冷运行（内风机低速、外风机高速、压缩机低速运行）→

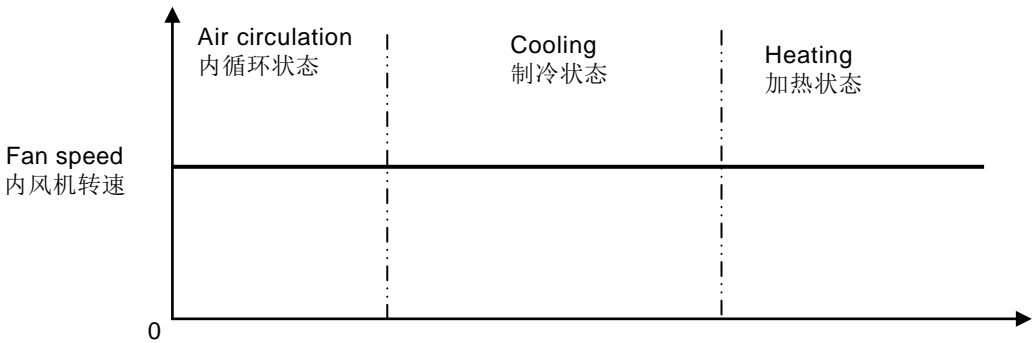
如果系统中配置有加热器，则自检过程中会增加（第一步后面）加热器的自检运行（内风机运行、加热器开启）

机器自检运行期间，绿色指示灯不停的闪烁(快闪)，自检结束后进入正常运行时，绿色指示灯将进入慢闪状态。

6.2.2. Control mode of inner fan / 内风机运行方式

Inner fan always keep running since AC power on.

内风机一直保持运行状态。



6.2.3. Control mode of outer fan 外风机运行方式

Air circulation mode: outer fan keep in stop.

Cooling mode: its running will follow the compressor, the compressor on, the outer fan on, the compressor off, the outer fan off.

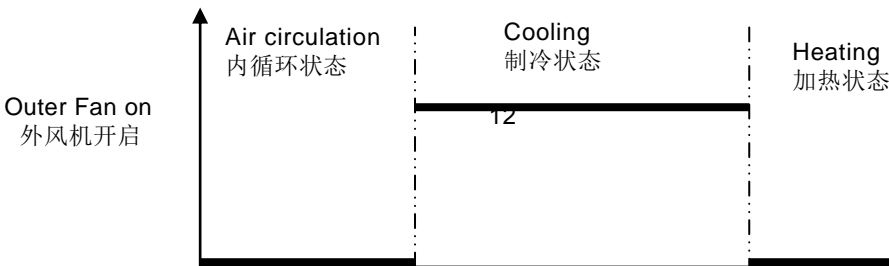
Heating mode: outer fan keep in stop.

产品正常运行时：

内循环状态：外风机保持停止。

制冷状态：外风机将跟随压缩启动而启动，压缩机停止而停止。

加热状态：外风机保持停止。



Control mode of compressor/压缩机运行方式

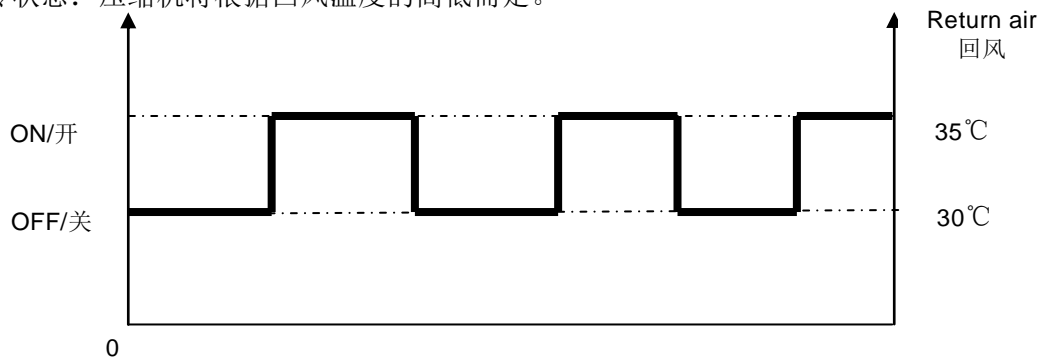
Air circulation mode: the compressor keeps in stop.

Cooling mode: the running of compressor will accord to the temperature of return air.

产品正常运行时:

内循环状态: 外风机保持停止。

制冷状态: 压缩机将根据回风温度的高低而定。



Control mode of Heater/加热器运行方式

If there is heater in configuration, the heater will runing as below scripion:

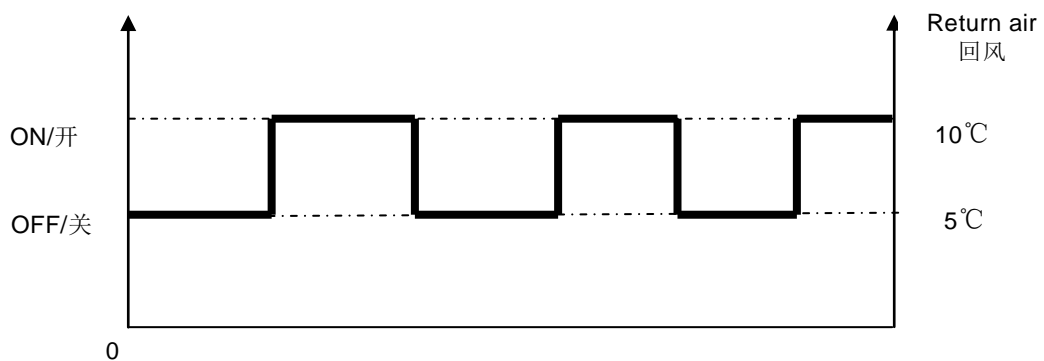
Air circulation mode and cooling mode: the heater keeps in off.

Heating mode: the running of heater will accord to the temperature of return air.

产品正常运行时:

内循环状态和制冷运行状态: 加热器保持关闭。

加热状态: 加热器将根据回风温度的高低而定。



6.3. Temperature setting/温度设置

The default set point of cooling is 35°C, the deviation of temperature is 5°C (the start cooling point will be 35 °C, the stop point will be 35 - 5 °C).

If there is heater in system configuration, the default set point of heating is 5℃, the deviation of temperature is 5℃ (the start heating point will be 5℃, the stop point will be 5 +5℃).

You can change the temperature setting of cooling and heating, and the deviation of temperature of cooling and heating, by RS485 (connect the DB9 connector with PC or Upper machine), we can provide the software and Communication protocol (MODBUS-RTU) 默认设置制冷温度为 35℃，温度回差为 5℃，（制冷起始温度为 35℃，制冷停止温度为 35 - 5℃）。

如果系统中配置有加热器组件，则默认设置加热温度为 5℃，其回差温度为 5℃（加热开启温度为 5℃，加热停止温度为 5+5℃）。

如果需要更改设置温度或回差温度，需要电脑连接通过 RS485/RS422 进行后台更改设置，我们可提供后台软件及通讯协议(MODBUS-RTU)。

6.4. Monitor/监控

6.4.1. Connecting the monitor with this unit through RS485 COM port can get all the running information, alarm information and also can change the default set point of cooling (通过机器上的RS485/RS422通讯接口可以和上位机监控连接，可获得所有机器运行信息，告警信息及更改制冷设置温度。

6.5. Lighting indication/指示说明

显示器界面如下：The interface of the monitor is as follows:

图 6-1 显示器操作界面 Figure6-1 Interface of the monitor




面板上的指示灯从左到右排列的功能含义如下表：

The definition of the symbols from left to right are as follows:

表 6-2 面板指示灯含义 Table6-2 Definition of the symbols

指示灯 Indicator	指示灯含义 Definition	亮 Light	闪烁 Flicker
	设定温度 Point setting	正在温度设置状态 Under setting	自检 Self test
	制冷 Cooling	正在制冷 Cooling running	压缩机故障 Compressor alarm

	制热 Heating	正在制热 Heat running	加热器故障 Heat Alarm
	外风机 External fan	外风机运转 Extrenal fan running	外风机故障 External fan Alarm
	告警 Alarm	告警发生 Alarm Occurs	-----
	除湿 Desiccant	-----	-----

● 参数设置: Parameter setting

长按“M”键 5 秒，进入参数设置状态，显示参数代码，用“▲▼”键选择参数代码，选择一个代码后按“Set”键则显示该代码对应的参数值，这时再用“▲▼”键即可对参数值进行设置，设置完成后再按“Set”键，回到显示参数代码状态。在显示参数时按“M”键可退出参数设置状态，在设置参数值过程中按“M”键表示放弃，退出但不改变参数值。

Long press "M" key for 5 seconds, enter the parameter setting mode, then display the code of parameters, with "▲▼" key to select the code of parameters, select a code and press "Set" button will display corresponding parameter values of the code, then re-use "▲▼" button can set the parameters, after finished the setting, press "Set" button, back to display states. During the setting mode, Press "M" key to exit the parameter setting mode, in the process of the parameter values setting by pressing "M" button that give up, quit, but does not change the parameter value.

● 柜内湿度查询: moisture contained in the query

在主界面，同时按下“▲”和“Set”键，将显示柜内湿度(显示格式为-XX-)，按“M”键返回到显示回风温度的主界面。

At the same time in the main interface, press the "5" and "Set" button, will show the moisture contained in the (display format - XX -), press the "M" key to return to the return air temperature is the main interface.

● 压缩机（或加热器）的当前运行电流查询: compressor (or heater) currently running current query:

在显示回风温度状态（主界面），同时按下“▲▼”键，将显示压缩机（或加热器）的当前运行电流，按“M”键返回到显示回风温度的主界面。

In return air temperature status display (main) interface, press the "56" button at the same time, will show the current running current of the compressor (or heater), press the "M" key to return to the return air temperature is the main interface.

● 电流查询: Current query

在主显示界面，按一次“▼”键，将显示内风机的当前运行电流，再按一次“▼”键，显示外风机电流、再按一次“▼”键或按一次“M”键返回到显示回风温度的主界面。

Under the return air temperature interface, press“▼”once will show internal fan current, press again ,the monitor will show external fan current, press the third time or press "M", the monitor will return the main interface.

在主显示界面，同时按住“▼”键和“▲”键，将显示当前压缩机或加热器的电流值。按一次“M”键，返回到显示回风温度的主界面。

Under the main interface, press both“▼” and“▲”button will show the compressor or the heater current. Press “M” to return the main interface.

● 交流电输入电压查询: Voltoge query

在主显示界面，按“set”键，将显示当前交流输入电压值，单位 V。按一次“M”键，返回到显示回风温度的主界面。

Under the main interface, press “set” button will show the voltage, the unit is V. Press “M” to return the main interface.

注:空调出厂时已经进行过参数设置，默认参数请参考表 6-3；部分参数需要密码才能设置，请联系华瑞客服；

Attention: Air conditioner has been setting parameters, The default parameters refer to table 6-3; Part of the parameters need to password, please contact our customer service

显示器正常时显示回风温度值，告警时交替显示回风温度和告警代码，告警代码定义如下表：

The monitor displays return air temperature at normal, If the alarms, temperature and alarm codes are displayed alternately, the alarm code as follows:

表 6-3 告警代码 Table 6-3 Alarm code

告警代码 Alarm code	含义 Signification	说明 Explanation
E01	回风温度传感器故障 Return air temperature sensor fault	
E02	冷凝盘管温度传感器故障 Condensing coil temperature sensor fault	
E03	外部温度传感器故障 External temperature sensor failure	
E05	压缩机欠流故障告警 Compressor undercurrent fault alarm	
E06	压缩机过载故障告警 Compressor overload fault alarm	
E07	加热器欠流故障告警 Heater undercurrent fault alarm	
E08	加热器过载故障告警 Heater failure alarm overload	
E09	内风机告警 Within the fan alarm	
E10	外风机告警 Outside the fan alarm	
E11	系统高压故障告警 High fault alarm system	
E12	系统低压故障告警 Low fault alarm system	
E13	柜内高温告警 Cabinet temperature alarm	
E14	柜内低温告警 Cabinet temperature alarm	
E17	电源电压超限告警 Supply voltage overrun alarm	

7. Cooling cycle/制冷循环

7.1. Main elements/系统配置

7.1.1. This air conditioner contains AC compressor, condenser, evaporator, control system, expansive valve and AC fans.

本产品由交流压缩机、冷凝器、蒸发器、控制系统、膨胀阀、交流风机等组成。

7.2. Cooling principle/制冷原理

7.2.1. Compressor suck refrigerant gas from evaporator, and compressed, the compressed refrigerant gas pushed into condenser to cooled into refrigerant liquid, then pass the expansive valve, the refrigerant into evaporator and evaporate to cool air.

压缩机抽取从蒸发器过来的低温低压的气态制冷剂并压缩成高温高压的气态制冷剂，流入到冷凝器中，和外界空气进行热交换后由气态的制冷剂冷凝成液态的制冷剂，流经膨胀阀减压进入蒸发器内蒸发，内循环空气流经蒸发器时被蒸发器中的制冷剂吸取了热量变成冷空气。

7.2.2. Condenser fan vent ambient air to cool the refrigerant and the evaporator fan is vent internal air pass the evaporator to be cooled.

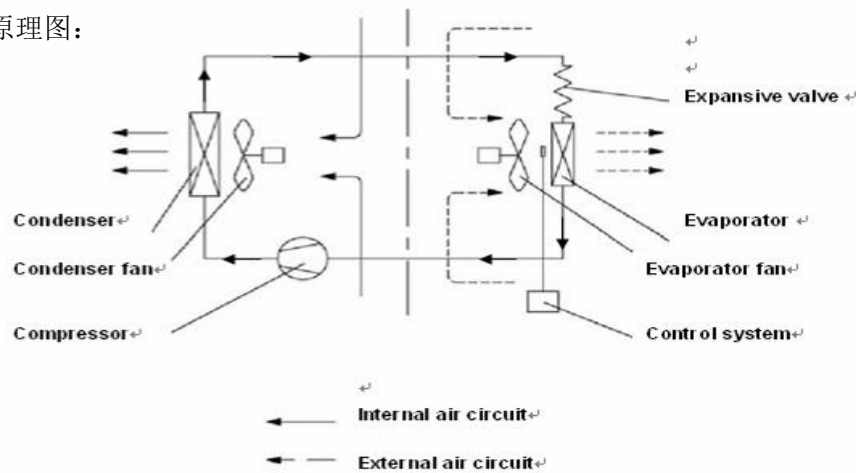
冷凝风机为冷凝器提供循环空气以冷却冷凝器内部的制冷剂，蒸发风机提供内循环空气流经蒸发器以被冷却。

7.2.3. Control system is just arranging all the elements running coordinately.

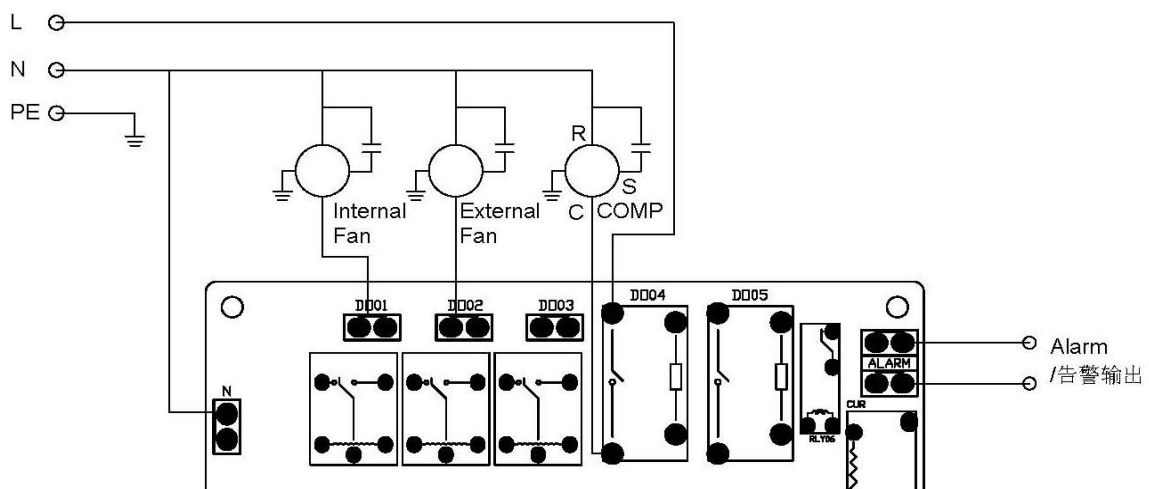
控制系统则合理的安排系统各个组件安全合理的运行。

7.2.4. Cooling cycle diagram as below:

制冷系统原理图：



8. Electrical wiring diagram/电气原理图





Important

9. Repair and maintains/维护和维修

9.1. Condenser clearance/冷凝器清洗

- 9.1.1. To assure the cooling system running perfectly, the condenser should be cleared once annually, this unit IP grade is IP55, so can clear the condenser with water directly.

为了确保制冷系统良好的运行，请每年清洗一次冷凝器，本产品内外循环间防护等级高达 IP55，可直接用水或压缩空气对冷凝器进行清洗。

9.2. Electrical system check/电气系统检查

- 9.2.1. Check the power supply and communication cable.

检查供电系统电压、电缆线及通讯线是否良好。

- 9.2.2. Check the unit running perfectly or not.

检查产品本身运行是否正常。

- 9.2.3. Check the cooling performance good or not.

检查产品制冷效果是否良好。

- 9.2.4. Check the air conditioner at least 2 times every year.

至少每年检查 2 次。

9.3. Maintance attention/注意

- 9.3.1. Don't clear air conditioner with organic solvent.

不要用有机溶剂清洗本产品。

- 9.3.2. PLS power off it before carry out maintains.

检修时请注意关闭电源。

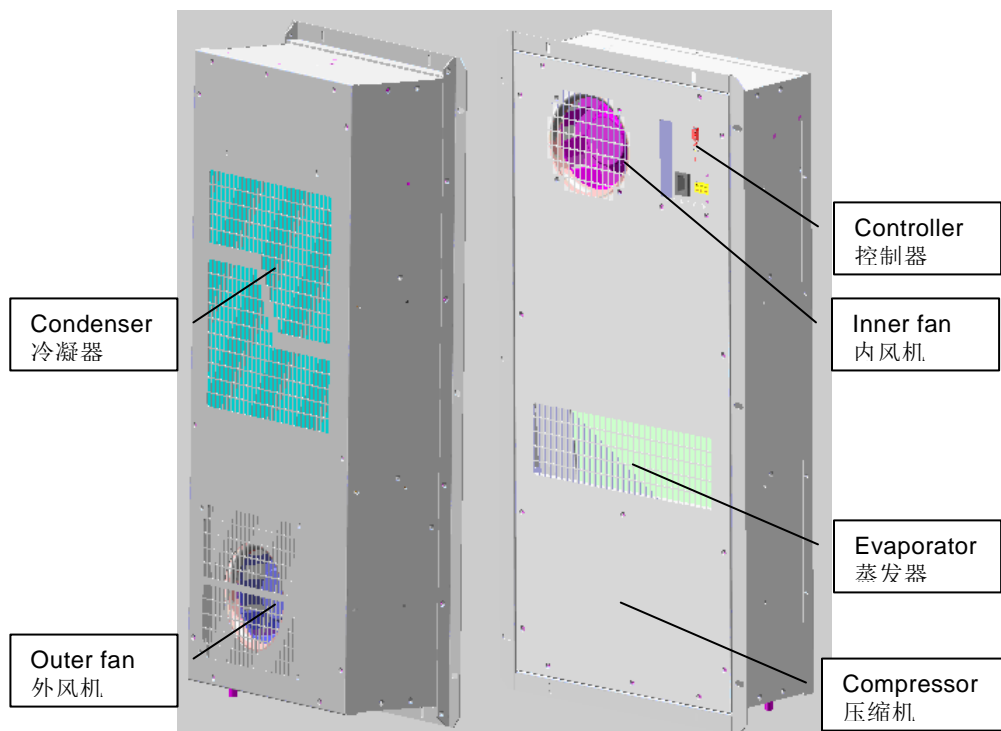
- 9.3.3. The external side fan can be cleaned with a brush if dust accumulated on fan blades.

若外风机风叶上积满了灰尘，可用毛刷清除。

9.3.4. Please power off the unit before long time stop running.

长时间不使用本产品时，请关闭电源。

9.4. Components drawing/ 组件名称



Important

QMS 007

10. Troubleshooting/故障处理

10.1. Common troubleshooting/普通故障处理

Failure appearance	Analysis of cause	Action need to be taken
No cooling effect	No power	Check power supply
	System failure	Call authorized people

	Temperature low	Change set point
	Voltage of power is out of range	Check the AC power supply
Cooling performance not good	Heat load not matching	Check the heat load situation
	The temperature of ambient very high	
	Other failure	Call authorized people

11.Reclarm/声明



At the end of the unit working life, the produce must not be disposed of as urban waste; it must be taken to a special local authority differentiated waste collection centre or to a dealer providing this service.

到本产品使用期限或不再使用该产品时，请勿将本产品直接作为垃圾处理，请交给当地政府认可的废物收集中心进行处理。

12.Product Datasheet/产品数据

Model	HRUC A 015/S/A-AU
Power supply	AC230V \pm 10%(50Hz/60Hz)
L35°C / L35°C	1500W(Cooling Capacity)
L35°C / L55°C	1000W(Cooling Capacity)
Dimension	
H	1170mm
W	470mm
D	165mm
Rating Power Consumption	
L35 – L35	570W/2.5A

L35 – L55	720W/3.1A
Max current	
Max current	10A
EER	
L35 – L35	2.6
L35 – L55	1.4
Control	Smart control
Temperature set range	-20~+40 °C
ambient	T3
Noise	Max: 63dB
Weight	40 Kg
Refrigent	R134a (650g)
IP grade(Internal)	IP55

13.Spare Parts list/备件列表

HRUC A 015/S/A -AU			
P/N	Name/名称	Model/型号	Quantity per unit
Xxxx	Internal fan/风机	FLH190/045A-1802D3-3	1
Xxxx	External fan/外风机	FLH190/045A-1802D3-3	1
Xxxx	AC Control V2.0/主控制板	HR	1
Xxxx	AC Pannel V2.0/显示板	HR	1



Important

14.Product Guarantee/质保

The product guarantee period is **12 months** from product up-running time or Max. **18 month** from product delivery date.

产品质保 12 个月（从产品开始运行时起），或最大 18 个月（从产品发货日时起）。

All user need to make sure **follow the instructions in this manual** to obtain manufacture product quality assurance service.

用户需按照本手册规定的内容执行才可享受到产品正常质保服务。

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