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制冷机组系列
A15

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首批荣获国家质检总局颁发全国工业产品生产许可证
First got the refrigeration equipment
production permit issued by National Quality Testing Bureau

Integrated water cooled cold water unit

一体化水冷冷水机组



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We knew the world before, the world knows us now.

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亚太的品牌理念

全力推动创新科技的应用

致力于人类生活品质的提升、让科技引领生活

创世界满意品牌

THE CONCEPT OF YATAI BRAND

Promotes,with full strength,the application of innovative technology.Strives for the extension of living quality for human being,let the science and technology lead the new life and creates world satisfactory brand.

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德州亚太集团是国内大型暖通空调、洁净技术系统集成供应商。

集多年潜心研究，博采众长自成体系，打造出一流的暖通空调、洁净技术全套设备和众多精品工程。国内以中央电视台新址、酒泉卫星发射中心、北京大兴国际机场、国家质检总局、北京小汤山医院、武汉火神山医院、武汉雷神山医院、三峡工程及近二十个北京奥运场馆等为代表，国外以巴基斯坦乌奇电厂、柬埔寨金边市大都会广场、印度帕帕多拉工程为代表的重点项目，采用了亚太中央空调设备，长期稳定，节能环保，获得了广泛的赞誉。

ISO9001、14001、3C、UL、CE、CRAA 等一系列认证；主机列入节能产品政府采购清单、数十项国家专利、国家级高新技术企业、中国驰名商标，充分标明了亚太集团的管理水平和产品水平。

与荷兰阿波罗合资，以欧洲标准制造的洁净设备全部返销发达国家、中央空调设备相继进入十几个国家和地区，展示亚太集团已经步出国门，与国际接轨。

植根齐鲁大地，秉持“以人为本”的经营理念，崇尚“以德待人”的儒家文化，亚太集团愿与您共同开创明天的辉煌。

Dezhou Yatai Group is a supplier of large HVAC and clean system in China.

Yatai has developed whole set of advanced HVAC and clean technology equipment and lots of wonderful projects based on long-term research and features of the others.

Many famous projects adopted Yatai central air conditioners that run smoothly, save energy, protect environment and have won good reputation widely like the New CCTV, the Jiuquan Satellite Launching Center, Beijing Daxing International Airport, the General Bureau of National Quality Inspection, Beijing Xiaotangshan hospital, Wuhan Huoshenshan hospital, Wuhan Leishenshan hospital, Three-gorge Engineering Project, and over 20 Beijing Olympic Stadiums in China; the UCH Power Plant in Pakistan, the Phnom Penh Capital Squire in Cambodia, the Priyadarshini Jurala Project in India and others across the world.

Yatai has been certified by ISO9001, 14001, 3C, UL, CE, CRAA, etc.; its chiller names have been put on the government purchasing list as energy saving products and obtained dozens of national patents, titles of National High-technology Enterprise and Chinese Famous Trademark, which fully show the high management levels and product qualities of Yatai Group.

The filtering equipment made according to the European Standards by the joint venture, which is co-invested by Dutch Afpro Company and Yatai, are all exported to the developed countries; our central air conditioners have been exported to over 10 countries or regions, which show that Yatai Group has stepped into oversea markets and been in line with the world.

Located at Shandong Province, insisting on business idea of "humanism" and advocating the Confucianism of "getting along with people by morality", Yatai Group wishes to create a brilliant future with you.



中国德州亚太集团
CHINA DEZHOU YATAI GROUP



以一流技术研制全方位产品

Developing the omni-directional products by the first-class technology

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世界著名制造商生产的最现代化装备和领先同行业的高科技含量是亚太始终保持竞争优势的强力保证

Using high-quality goods Making high-quality goods

The modernized equipment produced by world famous manufacturers And the high content leading in the same profession

Are Yatai's guarantee of maintaining his competitive advantage all the time

全球信赖品质

World Trusted Quality



CRAA产品认证
Certified by CRAA
ISO9001质量管理体系认证
Certified by ISO9001 quality system
ISO14001环境管理体系认证
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首批荣获国家质检总局颁发全国工业产品生产许可证
First got the refrigeration equipment
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Honorable Qualification



CHILLERS

制冷机组系列

Integrated water cooled cold water unit

一体化水冷冷水机组

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离心式水冷冷水机组
Centrifugal water cooled water chiller



水冷冷水机组
Water-cooling chiller system



一体化水冷冷水机组
Integrated water cooled cold water unit



地下水式水源热泵机组
Underground water circulating type water source heat pump unit



风冷冷（热）水机组
Air cooled cold/hot water chiller



超低温风冷冷（热）水机组
Ultra-low temperature air cooled cold/hot water chillers



低环境温度空
Low ambient temperature

INTEGRATED WATER COOLED COLD WATER UNIT

一体化水冷冷水机组

CHILLERS

制冷机组系列





产品概述

Product overview

一体化水冷冷水机组是将环保型满液式螺杆冷水机组、冷却设备、冷冻水泵、冷却水泵、水侧管路、阀门、水系统配件、水处理装置、隔音装置及控制系统等装置有机结合，置于模块化框架内的机房系统，可以替代常规机房并可以整体放置于室外的新型冷冻系统。

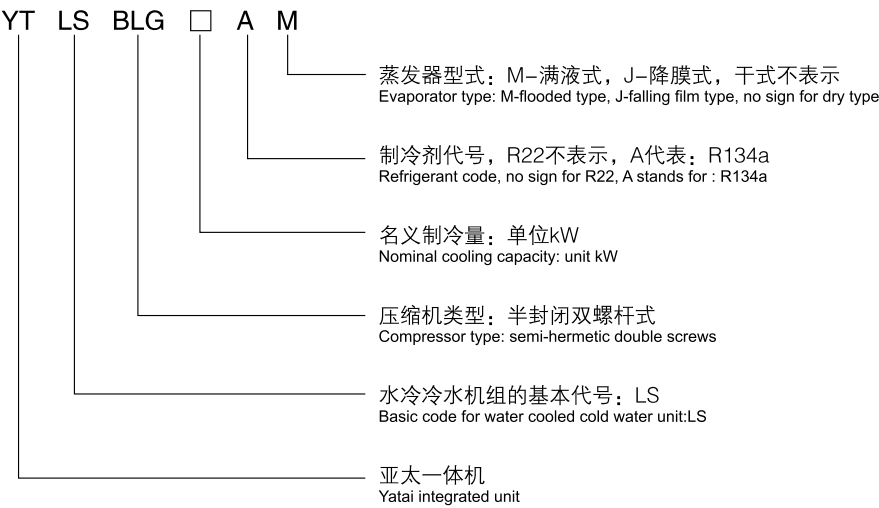
该机组具有无需专用机房、结构紧凑、节能高效、低噪音、低振动及生命周期长等特点。可以广泛应用于公共建筑、工业工艺冷却等场合。

Integrated water-cooled cold water unit is an organic combination of environment-friendly flooded screw chiller, cooling equipment, chilled water pump, cooling water pump, water side pipeline, valve, water system accessories, water treatment device, sound insulation device and control system. It is a new type of freezing system which is put in a module-frame machine room system to replace conventional machine room and placed in the outdoor environment.

The unit has the characteristics of no need for special machine room, compact structure, energy saving and high efficiency, low noise, low vibration and long life cycle. It can be widely used in public buildings, industrial process cooling and other occasions.

机组型号说明

Explanation of unit models



机组运行能力范围

Unit operating capacity range

项目 item	冷冻水 chilled water		环境温度 ambient temp.	
	进口温度 (℃) inlet temp.	出口温度 (℃) outlet temp.	干球温度 (℃) dry bulb temp.	湿球温度 (℃) wet bulb temp.
标准型 standard type	10~20	5~15	20~43	15~29
全年制冷型 annual cooling type	10~20	5~15	-10~43	-11~29

标准机组的运行范围如上表所示，如果实际运行工况超过上表范围，需根据实际的应用工况，对机组或系统进行特殊设计，以保证机组能够正常运行。

The operating range of the standard unit is shown in the table above. If the actual operating condition exceeds the range in the table above, the unit or system should be specially designed according to the actual application condition to ensure the normal operation of the unit.

产品特性

Product characteristics

中央空调系统一体化解决方案

Integrated solution for central air conditioning system

- 1、一体化水冷冷水机组是将水冷冷水机组、冷却水泵、空调泵、冷却塔、控制系统、水管路及水管路附件等整合成一台完整的机组；
- 2、不需要专业机房，露天安装；
- 3、机组启动后整个制冷系统根据制冷负荷完全自动化运行，各系统部件（主机、水泵、水塔）自动联动通讯控制协调运行；
- 4、工厂内完成全部的部件安装、调试，用户只需水路及电路的连接即可投入使用，大大减少了现场安装及调试时间。

1. Integrated water-cooled cold water unit is consisted of water-cooled chiller, cooling pump, air conditioning pump, cooling tower, control system, water pipe and water pipe accessories;
2. No need for specialized machine room, it can be installed outdoors.
3. After starting the unit, the whole refrigeration system runs completely automatically according to the refrigeration load, and system components (air handler, water pump, water tower) automatically connect to communication control and operate coordinately.
4. The installation and commissioning of all components are completed in the factory. Users only need to connect its waterway and circuit to put it into use, which greatly reduces the installation and commissioning time on site.



外观篇

Appearance chapter

- 1、平顶柜式设计，简洁大气，外形美观；
- 2、模块式结构设计，占地面积小，节省机房空间；
- 3、箱体采用最新科技双面镀锌铝锌板，表面呈现金属花纹，或钣金表面喷塑处理；具有长效防日晒、防雨淋、防锈蚀功能；
- 4、整机钣金防雨设计可直接放置室外，不需要专用机房，省去机房建设费用；
- 5、机组管路简单，便于检修。

1. Flat top cabinet design, simple and good-looking;
2. Modular structure occupies less area, saving room space;
3. The box adopts the latest double-sided aluminum-zinc plate. Its surface shows metal pattern. Or spraying plastics on the sheet metal surface; with long-term anti-sun, anti-rain, anti-rust functions;
4. Because of the rain-proof design of its sheet metal, the unit can be directly placed outdoors, without the need for a dedicated room, saving the room construction cost.
5. The pipeline of the unit is simple and easy to repair.



水系统部件篇

Water system component chapter

- 1、自主研发高效冷却塔，结构先进，高效风机配置，循环热水与进入塔内的冷空气进行逆向的热交换过程，使其达到最佳的热交换效果，出水温度更低，有效降低制冷系统的冷凝温度；
- 2、采用国内一流厂家的水泵，振动小，噪音低；电机F极绝缘，提高了电机的最大允许温升，抗过载能力高，耐力强，使用安全可靠，寿命延长；IP54全封闭结构，防尘、防水；保障系统安全、长期运行；
- 3、应用膨胀罐平衡冷冻水系统的水量及压力，避免安全阀频繁开启和自动补水阀频繁补水。可以减少水泵的频繁起动，吸收系统因阀门、水泵等开和关所引起的水锤冲击，延长水泵的使用寿命。

- 1.Self-developed and researched highly efficient cooling towers have advanced structure and highly efficient fan. The heat exchange process between the circulating hot water and the cold air entering the tower is reversed, so that it can achieve the best heat exchange effect. The water outlet temperature is lower, which effectively reduces the condensation temperature of the refrigeration system.
- 2.The water pump made by domestic first-class manufacturers has small vibration and low noise; The insulation class F motor increases the maximum allowable temperature rise of the motor. Advantages include high resistance to overload, strong endurance, safe and reliable use, and extended life. The dust-proof and water-proof IP54 fully enclosed structure guarantees safe and long period operation of the system.
- 3.The expansion tank is used to balance the water volume and pressure of the chilled water system to avoid frequent opening of the safety valve and frequent water refill of the automatic water refill valve. It can reduce the starting times of water pump and absorb water hammer impact of the system caused by opening and closing of valves and water pumps to extend water pump's service life.



配置篇

Configuration chapter

提供多种机型配置，满足不同用户对功能与结构搭配个性化定制需求。

Provide a variety of model configurations to meet the needs of different users for personalized customization of function and structure.

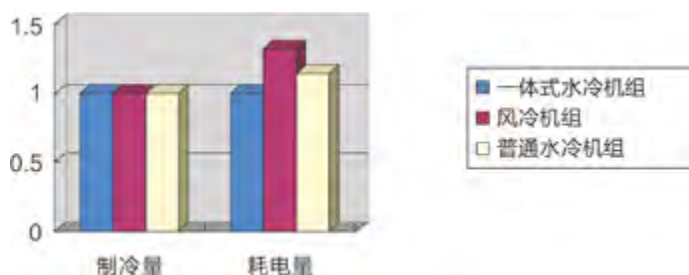
非标准型机组设计选项 Non-standard unit design options	非标准型机组设计选项 Non-standard unit design options
<div><input type="checkbox"/> 冷冻水泵1用1备 One in-service chilled water pump and one backup</div> <div><input type="checkbox"/> 冷却水泵1用1备 One in-service cooling water pump and one backup</div> <div><input type="checkbox"/> 冷冻水泵变频控制 Frequency conversion control of chilled water pump</div> <div><input type="checkbox"/> 冷却水泵变频控制 Frequency conversion control of cooling water pump</div>	<div><input type="checkbox"/> 压缩机变频控制 Frequency conversion control of compressor</div> <div><input type="checkbox"/> 全年制冷型 annual cooling type</div> <div><input type="checkbox"/> 带RS485通讯 Have RS485 communication</div> <div><input type="checkbox"/> 水泵扬程定制 Customization of water pump head</div>

节能篇

Energy conservation chapter

1、一体化水冷冷水机组减少了冷却水管的连接长度，降低了冷却水泵的扬程，以及换热器效率的提升，比风冷机组节能30%以上，比普通水冷机组节能15%以上；

1.The integrated water-cooled cold water unit reduces connection length of the cooling water pipe and head of the cooling pump, and improves the efficiency of the heat exchanger. It saves more than 30% energy than the air-cooled unit and more than 15% energy than the ordinary water-cooled unit.



制冷量
cooling capacity
耗电量
power consumption
一体式水冷机组
integrated water cooled unit
风冷机组
air cooled unit
普通水冷机组
ordinary water cooled unit

2、作为可选项，机组可以配置变流量控制系统，部分负荷时水泵低频运行，大大降低了系统输入能耗。

3、高效满液式蒸发器采用新型低翅蒸发管，独特的制冷剂分配器优化设计，合理的布管排列以及高效的浓缩回油结构设计，使换热器的温度场分布更为均匀，沸腾换热更为充分，有效提高了换热器换热性能。

4、高效“针齿形”冷凝管设计，能有效减缓冷凝膜的形成，增大换热面积，强化管外换热效率；

5、采用国际知名品牌的高精度电子膨胀阀与阀体驱动器，确保机组根据空调负载精确地自动调整蒸发器进液量、反应迅速，控制精确，保持蒸发器液位稳定。

6、超大空间卧式高效油分离器设计，通过重力、离心、滤网过滤的作用，保证油分效率高达99.99%。

2.As an option, the unit can be configured with a variable flow control system to enable the low frequency operation of the part loaded water pump, which can greatly reduce the system input energy consumption.

3.Highly efficient flooded evaporator adopts a new type of low-fin evaporation tube, optimally designed unique refrigerant distributor, and reasonable pipes distribution and highly efficient condensed oil return structure. The temperature field distribution of heat exchanger is more uniform, boiling heat exchange more sufficient. The heat exchange performance of heat exchanger is effectively improved.

4.Highly efficient "tooth shape" condensing tube design can effectively slow down the formation of condensing film, increase heat exchange area, and strengthen tube external heat transfer efficiency;

5.The internationally famous brands of high-precision electronic expansion valve and valve body driver have ensured the unit to automatically regulate the liquid intake of the evaporator according to air conditioning load. They act rapidly and control precisely, which keeps the evaporator liquid level stable.

6.Through functions of gravity, centrifugation, and screen filter, large space horizontal highly efficient oil separator ensures oil separation efficiency up to 99.99%.



安全篇

Safety chapter

1、采用满液式专用双螺杆压缩机、高优化、高精度的转子、轴承与结构设计，以及多重压缩机内部保护，保证机组安全稳定运转；

2、蒸发器、冷凝器、油分离器按照压力容器规范设计、生产，经过严格的探伤和压力试验，确保机组的安全可靠性，并且三者均配有安全阀，保证机组安全使用。

3、换热器采用加大污垢系数设计提高机组长久运行的可靠性，从而有效延缓机组在长时间运行过程中的冷量衰减，并延长了用户清洗维护周期。

4、国际品牌的电子膨胀阀能更准确的控制机组压力、温度，使机组安全、稳定的运行。



- 5、多机头分步空载Y-Δ转换启动，极大的降低了机组开机对电网的冲击，同时采用智能均衡型压缩机轮换控制，延长机组使用寿命。
- 6、每台机组严格按照国家标准规定的检测项目，通过由国家权威机构设计制造的全性能测试中心检测，符合或优于国家标准，做到机组100%检验，100%合格方可出厂。

1.The safe and stable operation of the unit is guaranteed by flooded type dedicated double-screw compressor, optimized and precise rotor and bearing, and multiple inside protection of the compressor.

2.The evaporator, condenser and oil separator are designed and produced according to the pressure vessel specifications, and have undergone strict flaw detection and pressure test to ensure the safety and reliability of the unit, and the three are equipped with safety valves to ensure the safe use of the unit.

3.The heat exchanger adopts the design of increasing fouling coefficient to improve the reliability of the unit's long-term operation, so as to effectively delay the cooling capacity attenuation of the unit during long-term operation, and extend the user's cleaning and maintenance cycle.

4.The international brand of electronic expansion valve can control the pressure and temperature of the unit more accurately, so that the unit can operate safely and stably.

5.The multi-head no load Y-Δ conversion starting up greatly reduces the impact of unit's power on to power grid. At the same time, adoption of intelligent balanced compressor rotation control extends the unit's service life.

6.Each unit is tested strictly in accordance with the national stipulated testing standards. These tests are performed by full performance test center designed by national authorities. Quality of the unit should meet national standards or better. All units should be tested and only 100% qualified units can leave the factory.



控制篇

Control chapter

- 1、机组采用可编程控制器，稳定性高，抗电磁干扰能力强，有效避免了极端工况下数据漂移，逻辑失效等缺陷。
- 2、采用大屏彩幕触摸屏，功能强大，操作方便直观，信息量大，触摸屏带USB接口，可以方便连接USB设备（如鼠标、键盘、打印机等）。
- 3、机组具有完善的状态显示、参数设定、能量模糊控制、故障查询、警报记录等多项控制功能。
- 4、机组容量能在较宽范围内无级调节，以匹配实际空调负载，提高部分负荷工作性能。
- 5、机组具有系统高压保护、系统低压保护、机组高低压压差保护、冷冻水流量保护、出水温度过低保护、电源相序保护、电源“过压”保护、电源“欠压”保护、压缩机电机过热保护、压缩机油温保护、压缩机油位保护、压缩机排气温度过高或过低保护、压缩机频繁启动保护、传感器故障保护、火灾紧急泄压保护等达30多项保护功能，对于极端工况可超前反应，规避风险，遇故障可自动停机，并锁定故障，提供故障显示、工况记录等功能。
- 6、机组具备定时开关机功能，方便管理操作。
- 7、控制系统预留专用接口，可与消防接口实现连锁，避免机组断水运行，并可实现紧急安全停机。

1.The unit adopts programmable controller, which has high stability and strong anti-electromagnetic interference ability, effectively avoiding the defects of data drift and logic failure under extreme working conditions.

2.Large color touch screen, powerful function, easy operation, large amount of information. USB interface of the touch screen enables its convenient link to USB equipment (such as mouse, keyboard, printer)

3.The unit has many control functions such as perfect status display, parameter setting, energy fuzzy control, fault query, and alarm record.

4.The capacity of the unit can be adjusted steplessly in a wide range to match the actual air conditioning load and improve work performance of part of the load.

5.The unit has more than 30 protection functions such as system high pressure protection, system low pressure protection, unit high and low pressure differential pressure protection, chilled water flow protection, low outlet water temperature protection, power supply phase sequence protection, power supply "overvoltage" protection, power supply "under-voltage" protection, compressor motor overheating protection, compressor oil temperature protection, compressor oil level protection, compressor exhaust temperature too high or too low protection, compressor frequent start protection, sensor fault protection and fire emergency pressure relief protection.

For extreme operating conditions, this unit can react in advance, avoid risks, automatically stop operating in case of failure, lock the fault, and provide fault display, working condition record.

6.The unit has the function of scheduled power on/off, which is convenient for operation management.

7.The dedicated interface reserved for the control system can be interlocked with the fire interface to avoid the unit running without water and realize emergency and safe shutdown.

控制系统非标订制功能

Non-standard ordering functions of control system

机组预留的控制接点（标准配置）：

Reserved control contact of the unit (standard configuration)

亚太一体化水冷冷水机组控制系统配置了机组开关机、共同警报、运行状态等多个有源或者无源控制接点供用户使用，方便客户以最简单的方式实现远程管理机组。

Yatai integrated water cooled chiller control system is equipped with multiple active or passive control contacts such as unit power-on/shut down, common alarm, and running status for users, which is convenient for customers to achieve remote management of the unit in the simplest way.

机组第二显示器（供选件）：

Second display for the unit (optional):

- 1、高清真彩触摸屏，LED背光显示，分辨率高达800×480，超薄超轻机身设计；
 - 2、该触摸屏可作为远程显示器，与机组最大布线长度为500米；
 - 3、配置第二显示器后，可实现任一显示器对机组进行监控。
- 1.Hd true color touch screen, LED backlight display, resolution up to 800×480, ultra-thin and ultra-light unit body;
 2.The touch screen can be used as a remote display with a maximum wiring length of 500 meters with the unit;
 3.After the second display is configured, either display can be used to monitor the unit.

标准远程通讯接口（选配件）：

Standard telecommunication interface (optional):

亚太提供选配的RS485（MODBUS RTU通讯协议）、RJ45（MODBUS TCP/IP通讯协议）通讯接口接入集中控制系统后，可实现集中监控管理。

The optional RS485 (MODBUS RTU communication protocol) and RJ45 (MODBUS TCP/IP communication protocol) communication interfaces chosen by Yatai are connected to the centralized control system for centralized monitoring and management.

集中控制柜（选配件）：

Centralized control cabinet (optional):

如有需要多台机组实现集中管理，亚太可提供集中控制柜，配置彩色触摸屏、PLC、通讯接口，在客户现场只要进行简单的连线，就可以实现多台机组及外围设备的集中管理。

If there is a need for multiple units to achieve centralized management, Yatai can provide a centralized control cabinet, equipped with color touch screen, PLC, and communication interface. As long as a simple wire connection is made on site, centralized management of multiple units and peripheral equipment can be achieved.

智能化运维监控平台

Intelligent operation and maintenance monitor platform



亚太制冷智能化运维平台是利用物联网技术，结合智能网关(感知设备)，实时监控空调设备的电气参数，将数据实时传输至物联网云平台进行大数据分析。一旦检测到异常现象，系统精确定位设备位置，并立即发出告警，利用电话、短信、微信、移动App等多种方式通知指定管理人员，提醒和督促用户及时排查，消除隐患；再由专业技术人员提供专业的故障分析、工作指导，提升用户体验。管理平台将传统的被动模

式（由用户发现问题再通知厂商进报修处理）转变为主动模式（公司第一时间发现问题并主动服务客户），提升用户体验。亚太空调经过多年的发展，注重技术创新以降低产品价格，提高产品品质；注重人材培养以提升服务质量，为客户解决难题，已在空调制冷行业积累了丰富的行业经验。将经验数字化，让平台运营监控更加智能。

Combined with intelligent gateways (sensing devices), Yatai refrigeration intelligent operation and maintenance platform uses the Internet of Things technology to realize real-time monitor of the electrical parameters of air conditioning equipment and transmit these data to the Internet of Things cloud platform for big data analysis. Once abnormal phenomena are detected, the system accurately locates the device and immediately sends an alarm, notifies the designated management personnel by phone, SMS, Wechat, and mobile App, reminds and urges users to check timely and eliminate hidden dangers. Then professional technicians provide professional fault analysis and work guidance to improve user experience. The management platform changes the traditional passive mode (the user finds the problem and then notifies the manufacturer to repair and deal with it) to the active mode (the company finds the problem at the first time and actively serves customers) to improve the user experience. After years of development, Yatai pays attention to technological innovation to reduce product prices and improve product quality; Focusing on talent training to improve service quality and solve problems for customers, Yatai has accumulated a lot of industry experience in the air conditioning refrigeration industry. Digitalized experience enables the operation and monitoring of the platform more intelligent.

水质管理

Water quality management

- 1、冷冻水和冷却水水质不良引起传热效率降低和机组性能的衰减，还会腐蚀传热管引发机组重大事故。冷冻水系统为闭式时建议采用软水。机组在运转期间应定期对冷却水（包括开式系统的冷却水）进行抽样分析，水质应符合下表要求；
- 2、如果达不到水质要求，应进行水质处理。本公司不承诺可以使用处理不当或未经处理的水，不承诺本系列机组可以使用盐水；
- 3、冬天长时间不用时，应把水放掉，以防止换热管冻裂而损坏。
- 1.The poor quality of chilled water and cooling water will cause the decrease of heat transfer efficiency and the attenuation of unit performance, and will also corrode the heat transfer tube and cause major accidents of the unit. If the chilled water system is closed type, soft water is recommended.The cooling water (including the cooling water of the open system) shall be sampled and analyzed regularly during the operation of the unit, and the water quality shall meet the requirements in the following table;
- 2.If the water quality requirements are not met, water quality treatment should be carried out. Our company does not promise that the improperly treated or untreated water or salt water can be used;
- 3.When the unit is not used for a long time in winter, water within should be discharged to prevent the heat exchange tube from freezing and damage.

项目 item		单位 unit	补充水 replenished water	冷冻水 chilled water	腐蚀 corrosion	结垢 fouling
基本项目 basic item	PH值（25℃） PH value	μ S/cm	6.5~8.0	6.5~8.0	0	0
	导电率（25℃） conductivity	mgCl-/L	<200	<800	0	0
	氯离子 Cl ⁻	mgSO4 ²⁻ /L	<50	<200	0	
	硫酸根离子 SO4 ²⁻	mgCaCO3/L	<50	<200	0	
	酸消耗量（PH4.8） acid consumption	mgCaCO3/L	<50	<100		0
	全硬度 full hardness	mgFe/L	<50	<100		0
参考项目 referenced items	铁 Fe	mgS ²⁻ /L	<0.3	<1.0	0	0
	硫离子 S ²⁻	mgNH ⁴⁺ /L	检查不出 not checked out	检查不出 not checked out	0	
	铵离子 NH ⁴⁺	mgSiO2/L	<0.2	<1.0	0	
	二氧化硅 SiO2		<0.3	<50		0
注:0表示腐蚀或结垢倾向的有关因素 Note: 0 indicates factors related to corrosion or scaling tendency						

机组冬季制冷的使用

Cooling operation in winter

对于需要机组冬季制冷的用户，亚太根据机组使用环境温度全系统冷却水侧电加热等配件（此配置需另计成本），实现低环温制冷。

注意：低环温季节长时间不使用时，须将水系统及冷却塔的存水排放干净，防止存水结冰造成设备损坏。

For customers who need cooling in winter, Yatai uses ambient temperature whole system cooling water side electric heating and other accessories (this configuration requires additional cost) to achieve low ambient temperature cooling.

Note: When the unit is not used in the low temperature season for a long time, the water in the water system and cooling tower must be discharged clean to prevent the frozen water from causing damage to the equipment.



机组性能技术参数（单压缩机）

Unit performance technical parameters (single compressor)

机组型号 YTLSBLG-AM Model			240	310	350	390	420	440	500	540	570
额定制冷量 Rated cooling capacity		kW	241	305	345	388	420	444	499	539	574
		10 ⁴ kcal/h	20.7	26.2	29.7	33.4	36.1	38.2	42.9	46.4	49.4
电气参数 Electrical parameter	额定运行总功率 Rated operation gross power	kW	54.5	70.5	81.5	89.5	96	100.5	114.5	120.5	127.5
	水系统运行总电流 Water system operation total current	A	24.8	32.9	42.4	42.4	45.2	47.3	54.7	54.7	59.3
	电源 power supply	三相五线制 AC380V 50Hz three-phase five-wire system									
压缩机 compressor	型式 type	半封闭螺杆式 semi-hermetic screw type									
	启动方式 start mode	Y-Δ									
	输入功率 input power	kW	43	55	61	69	74	78	88	94	99
	螺杆最大运行电流 maximum operation current of the screw	A	101	123	137	151	163	172	201	210	231
	数量 No.	台	1	1	1	1	1	1	1	1	1
冷冻水系统 Chilled water system	水流量 water current	m ³ /h	41	52	59	67	72	76	86	93	99
	水泵电机功率 water pump motor power	kW	5.5	7.5	11	11	11	11	15	15	15
	机外扬程 unit external head	m	20	20	20	20	20	20	20	20	20
	膨胀罐容量 expansion tank capacity	L	100	100	100	100	150	150	150	150	150
	进出水管管径 diameter of water inlet/outlet pipes	DN	100	100	100	100	100	100	125	125	125
冷却水系统 cooling water system	水流量 water flow capacity	m ³ /h	52	66	74	83	90	95	107	116	123
	水泵电机功率 motor power of water pump	kW	3	4	4	4	5.5	5.5	5.5	5.5	7.5
	轴流风机功率 axial fan power	kW	3	4	5.5	5.5	5.5	3x2	3x2	3x2	3x2
	风机数量 No. of fans	台	1	1	1	1	1	2	2	2	2
	冷却补水量 replenished cooling water capacity	m ³ /h	0.50	0.64	0.71	0.80	0.87	0.92	1.03	1.12	1.19
	冷却塔补水管径 replenished water pipe diameter of cooling tower	DN	25	25	25	25	25	25	25	25	25
制冷剂类型 refrigerant type			R134a								
外形尺寸 overall dimension	长 L	mm	6500	6500	6500	6500	6500	10000	10000	10000	10000
	宽 W	mm	2600	2600	2600	2600	2600	2600	2600	2600	2600
	高 H	mm	2800	2800	2800	2800	2800	2800	2800	2800	2800
主机段运输重量 transportation weight of air handler segment		kg	4800	5100	5200	5300	5600	5900	6300	6700	6900
冷却塔运输重量 transportation weight of cooling tower		kg	1300	1300	1300	1300	1300	2500	2500	2500	2500
机组运行重量 operation weight of unit		kg	9400	9700	9800	9900	10200	12100	12500	12900	13100

说明：1、机组以GB/T18430.1-2007进行设计、制造、检验。 2、以上规格型号制冷能力基于冷冻水出水温度7℃，温差5℃，干球温度35℃，湿球温度24℃。如设计工况与机组名义工况偏差较大时，请向我公司索取相应数据。 3、设计工况所需冷冻水泵扬程与技术参数表提供数据偏差较大时，可向公司提出要求，匹配相应的水泵。

Note: 1. The unit is designed, manufactured and tested according to GB/T18430.1-2007. 2. For the above models, the water outlet temperature of chilled water is 7℃ temperature difference 5℃, dry bulb temperature 35℃ wet bulb temperature 24℃. If there is a large deviation between the designed working condition and the nominal working condition of the unit, please request the corresponding data from our company. 3. If chilled water pump head required by designed working conditions are largely different from the data provided by the technical parameter table, you can request the company to match the corresponding pump.

机组性能技术参数（单压缩机）

Unit performance technical parameters (single compressor)

机组型号 YTL5BLG-AM Model			630	710	770	810	840	920	940	1060	1080	1160	1230
额定制冷量 Rated cooling capacity		kW	626	707	765	811	835	916	939	1055	1081	1160	1230
		10 ⁴ kcal/h	53.8	60.8	65.8	69.7	71.8	78.8	80.8	90.7	93.0	99.8	105.8
电气参数 Electrical parameter	额定运行总功率 Rated operation gross power	kW	137.5	162	173	181	185	199	204	232	235	252	261
	水系统运行总电流 Water system operation total current	A	64.5	82.7	82.7	94.8	94.8	94.8	94.8	111.1	111.1	118.8	118.8
	电源 power supply	三相五线制 AC380V 50Hz three-phase five-wire system											
压缩机 compressor	型式 type	半封闭螺杆式 semi-hermetic screw type											
	启动方式 start mode	Y-Δ											
	输入功率 input power	kW	107	121	132	139	143	157	162	182	185	198	207
	螺杆最大运行电流 maximum operation current of the screw	A	241	269	280	316	329	343	352	390	401	410	442
	数量 No.	台	1	1	1	1	1	1	1	1	1	1	1
冷冻水系统 Chilled water system	水流量 water current	m ³ /h	108	122	132	139	144	158	162	181	186	200	212
	水泵电机功率 water pump motor power	kW	15	22	22	22	22	22	22	30	30	30	30
	机外扬程 unit external head	m	20	20	20	20	20	20	20	20	20	20	20
	膨胀罐容量 expansion tank capacity	L	200	200	200	200	200	300	300	300	300	300	300
	进出水管管径 diameter of water inlet/outlet pipes	DN	125	150	150	150	150	150	150	200	200	200	200
冷却水系统 cooling water system	水流量 water flow capacity	m ³ /h	135	152	164	175	180	197	202	227	232	249	264
	水泵电机功率 motor power of water pump	kW	7.5	11	11	11	11	11	11	11	11	15	15
	轴流风机功率 axial fan power	kW	4x2	4x2	4x2	3x3	3x3	3x3	3x3	3x3	3x3	3x3	3x3
	风机数量 No. of fans	台	2	2	2	3	3	3	3	3	3	3	3
	冷却补水量 replenished cooling water capacity	m ³ /h	1.30	1.47	1.58	1.68	1.74	1.90	1.95	2.19	2.24	2.40	2.55
	冷却塔补水管径 replenished water pipe diameter of cooling tower	DN	25	25	25	32	32	32	32	32	32	32	32
制冷剂类型 refrigerant type			R134a										
外形尺寸 overall dimension	长 L	mm	10000	10000	10000	13000	13000	13000	13000	13000	13000	13000	13000
	宽 W	mm	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
	高 H	mm	2800	2800	2800	3000	3000	3000	3000	3000	3000	3000	3000
主机段运输重量 transportation weight of air handler segment		kg	7000	7500	7800	8400	8600	8700	8800	9400	9900	10100	10300
冷却塔运输重量 transportation weight of cooling tower		kg	2500	2500	2500	4100	4100	4100	4100	4100	4100	4100	4100
机组运行重量 operation weight of unit		kg	13200	13700	14000	19200	19400	19600	19700	20300	20800	21100	21300

说明：1、机组以GB/T18430.1-2007进行设计、制造、检验。 2、以上规格型号制冷能力基于冷冻水出水温度7℃，温差5℃，干球温度35℃，湿球温度24℃。如设计工况与机组名义工况偏差较大时，请向我公司索取相应数据。 3、设计工况所需冷冻水泵扬程与技术参数表提供数据偏差较大时，可向公司提出要求，匹配相应的水泵。

Note:1.The unit is designed, manufactured and tested according to GB/T18430.1-2007. 2.For the above models, the water outlet temperature of chilled water is 7℃ temperature difference 5℃, dry bulb temperature 35℃ wet bulb temperature 24℃. If there is a large deviation between the designed working condition and the nominal working condition of the unit, please request the corresponding data from our company. 3.If chilled water pump head required by designed working conditions are largely different from the data provided by the technical parameter table, you can request the company to match the corresponding pump.



机组性能技术参数（双压缩机）

Unit performance technical parameters (double compressors)

机组型号 YTLSBLG-AM Model			480	610	690	770	840	890	1000	1080
额定制冷量 Rated cooling capacity		kW	481	610	690	774	840	888	997	1078
		10 ⁴ kcal/h	41.4	52.5	59.3	66.6	72.2	76.4	85.7	92.7
电气参数 Electrical parameter	额定运行总功率 Rated operation gross power	kW	106	138.5	155	170	190	197	218	238
	水系统运行总电流 Water system operation total current	A	44.5	63.5	69.8	69.8	93.6	93.6	94.8	111.1
	电源 power supply	三相五线制 AC380V 50Hz three-phase five-wire system								
压缩机 compressor	型式 type	半封闭螺杆式 semi-hermetic screw type								
	启动方式 start mode	Y-Δ								
	输入功率 input power	kW	85	108	121	136	148	155	176	188
	螺杆最大运行电流 maximum operation current of the screw	A	101x2	123x2	137x2	151x2	163x2	172x2	201x2	210x2
	数量 No.	台	2	2	2	2	2	2	2	2
冷冻水系统 Chilled water system	水流量 water current	m ³ /h	83	105	119	133	144	153	171	185
	水泵电机功率 water pump motor power	kW	11	15	18.5	18.5	22	22	22	30
	机外扬程 unit external head	m	20	20	20	20	20	20	20	20
	膨胀罐容量 expansion tank capacity	L	150	150	200	200	200	300	300	300
	进出水管管径 diameter of water inlet/outlet pipes	DN	125	125	150	150	150	150	150	150
冷却水系统 cooling water system	水流量 water flow capacity	m ³ /h	103	131	148	166	181	191	214	232
	水泵电机功率 motor power of water pump	kW	4	7.5	7.5	7.5	11	11	11	11
	轴流风机功率 axial fan power	kW	3x2	4x2	4x2	4x2	3x3	3x3	3x3	3x3
	风机数量 No. of fans	台	2	2	2	2	3	3	3	3
	冷却补水水量 replenished cooling water capacity	m ³ /h	0.99	1.26	1.43	1.60	1.75	1.84	2.06	2.24
	冷却塔补水管径 replenished water pipe diameter of cooling tower	DN	25	25	25	25	32	32	32	32
制冷剂类型 refrigerant type			R134a							
外形尺寸 overall dimension	长 L	mm	10000	10000	10000	10000	13000	13000	14500	14500
	宽 W	mm	2600	3000	3000	3000	3000	3000	3000	3000
	高 H	mm	2800	2800	2800	2800	3000	3000	3000	3000
主机段运输重量 transportation weight of air handler segment		kg	7200	7800	8400	8600	9300	9400	10700	11400
冷却塔运输重量 transportation weight of cooling tower		kg	2500	2500	2500	2500	4100	4100	4100	4100
机组运行重量 operation weight of unit		kg	13400	14000	14700	14900	20200	20300	21700	22400

说明：1、机组以GB/T18430.1-2007进行设计、制造、检验。 2、以上规格型号制冷能力基于冷冻水出水温度7℃，温差5℃，干球温度35℃，湿球温度24℃。如设计工况与机组名义工况偏差较大时，请向我公司索取相应数据。 3、设计工况所需冷冻水泵扬程与技术参数表提供数据偏差较大时，可向公司提出要求，匹配相应的水泵。

Note: 1. The unit is designed, manufactured and tested according to GB/T18430.1-2007. 2. For the above models, the water outlet temperature of chilled water is 7℃ temperature difference 5℃, dry bulb temperature 35℃ wet bulb temperature 24℃. If there is a large deviation between the designed working condition and the nominal working condition of the unit, please request the corresponding data from our company. 3. If chilled water pump head required by designed working conditions are largely different from the data provided by the technical parameter table, you can request the company to match the corresponding pump.





离心式水冷冷水机组
Centrifugal water cooled water chiller

水冷冷水机组
Water-cooling chiller system

一体化水冷冷水机组
Integrated water cooled cold water unit

地下水式水源热泵机组
Underground water circulating type water source heat pump unit

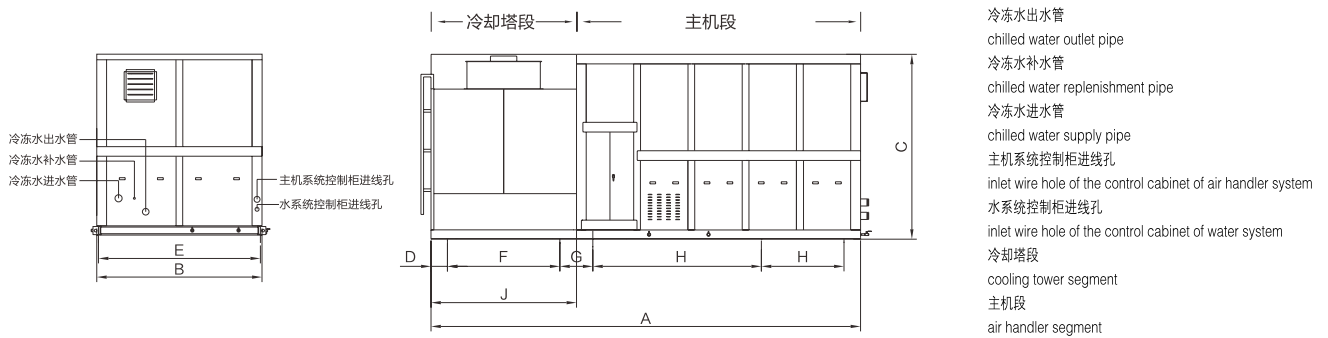
风冷冷（热）水机组
Air cooled cold/hot water chiller

超低温风冷冷（热）水机组
Ultra-low temperature air cooled cold/hot water chillers

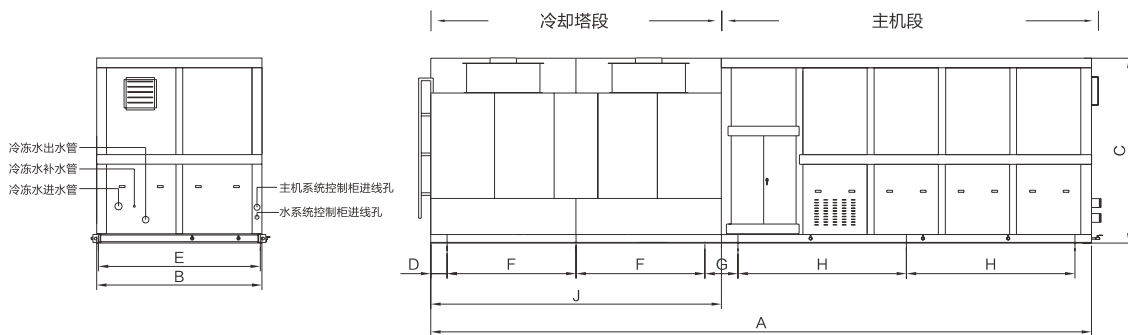
低环境温度空
Low ambient temperature

机组外形图 unit outline drawing

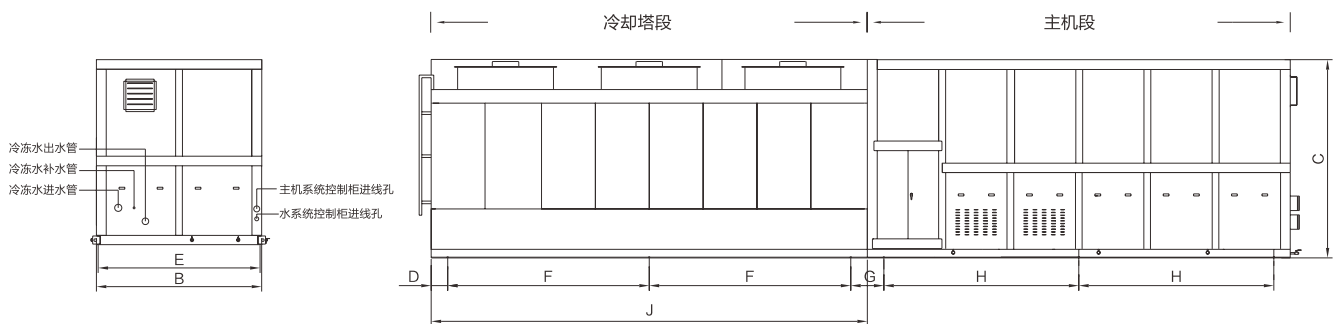
单风机系列 single fan series



双风机系列 double fans serie



三风机系列 triple fans series





气源热泵 (冷水) 机组
Air source heat pump (chilled water) unit

屋顶式空气调节机组
Rooftop air conditioning unit

机房专用空调机
Special air-conditioner for computer room

多联式空调 (热泵) 机组
Multi-connected air conditioner (heat pump) unit

单元式空气调节机-恒温恒湿型
Unit type air conditioner constant temperature and humidity type

单元式空气调节机-吊顶式冷热风型
Cellular air handling unit-suspension (ceiling) hot/cold type

单元式空气调节机-冷热风型
Unit Type Air Conditioner-Cooling And Heating Type

机组外形尺寸 unit overall dimension

机组型号 YTLSBLG-AM unit models	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)	J (mm)	冷冻水进出水管 Diameter of water inlet and outlet pipes of chilled water
240 (单风机) single fan	6500	2600	2800	250	2450	1700	500	1900	2200	DN100
310 (单风机) single fan	6500	2600	2800	250	2450	1700	500	1900	2200	DN100
350 (单风机) single fan	6500	2600	2800	250	2450	1700	500	1900	2200	DN100
390 (单风机) single fan	6500	2600	2800	250	2450	1700	500	1900	2200	DN100
420 (单风机) single fan	6500	2600	2800	250	2450	1700	500	1900	2200	DN100
440 (双风机) double fans	10000	2600	2800	250	2450	1950	500	2550	4400	DN100
500 (双风机) double fans	10000	2600	2800	250	2450	1950	500	2550	4400	DN125
540 (双风机) double fans	10000	2600	2800	250	2450	1950	500	2550	4400	DN125
570 (双风机) double fans	10000	2600	2800	250	2450	1950	500	2550	4400	DN125
630 (双风机) double fans	10000	3000	2800	250	2450	1950	500	2550	4400	DN125
710 (双风机) double fans	10000	3000	2800	250	2450	1950	500	2550	4400	DN150
770 (双风机) double fans	10000	3000	2800	250	2450	1950	500	2550	4400	DN150
810 (三风机) triple fans	13000	3000	3000	250	2950	3050	500	2950	6600	DN150
840 (三风机) triple fans	13000	3000	3000	250	2950	3050	500	2950	6600	DN150
920 (三风机) triple fans	13000	3000	3000	250	2950	3050	500	2950	6600	DN150
940 (三风机) triple fans	13000	3000	3000	250	2950	3050	500	2950	6600	DN150
1060 (三风机) triple fans	13000	3000	3000	250	2950	3050	500	2950	6600	DN200
1080 (三风机) triple fans	13000	3000	3000	250	2950	3050	500	2950	6600	DN200
1160 (三风机) triple fans	13000	3000	3000	250	2950	3050	500	2950	6600	DN200
1230 (三风机) triple fans	13000	3000	3000	250	2950	3050	500	2950	6600	DN200
480 (双风机) double fans	10000	2600	2800	250	2450	1950	500	2550	4400	DN125
610 (双风机) double fans	10000	3000	2800	250	2450	1950	500	2550	4400	DN125
690 (双风机) double fans	10000	3000	2800	250	2450	1950	500	2550	4400	DN150
770 (双风机) double fans	10000	3000	2800	250	2450	1950	500	2550	4400	DN150
840 (三风机) triple fans	13000	3000	3000	250	2950	3050	500	2950	6600	DN150
890 (三风机) triple fans	13000	3000	3000	250	2950	3050	500	2950	6600	DN150
1000 (三风机) triple fans	14500	3000	3000	250	2950	3050	500	3700	6600	DN150
1080 (三风机) triple fans	14500	3000	3000	250	2950	3050	500	3700	6600	DN150

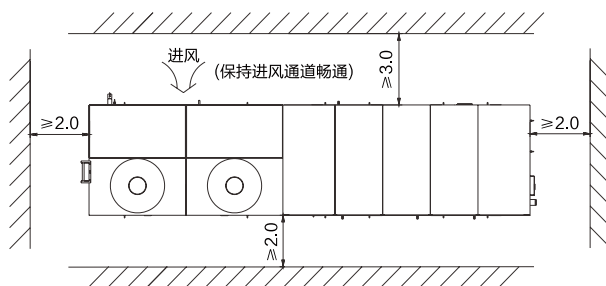


安装要求

Installation requirement



主视图



俯视图

安装示意图（单位：m）

installation schematic diagram

排风 air exhaust
保证顺利排风 ensure smooth air exhaust
主视图 front view

进风 air inlet
保持进风通道畅通 ensure smooth air inlet
俯视图 top view

- 1、机组可安装于屋顶、阳台、地面等通风良好的场所；
- 2、机组安装位置要求周围有足够的空间以备操作维修之用，同时也要保证机组安装位置必须有适当的环境温度和良好的通风条件，确保气流畅通。此外，机组最好不要安装在蒸汽、热空气、燃气和腐蚀性气体周围。
- 3、机组安装在坚实、牢固且表面平整的混凝土基础或金属钢架上，基础强度必须足以承受机组运行重量，基础四周应设置地漏，且机组安装应遵守相关规定。
- 4、为使设备能宁静运转，避免因振动和噪音的传递而影响机组所在位置的楼层，机组底座与基础之间应采取减震措施；
- 5、机组的出风口上至少要有3米以上的空间不能有阻碍物，以避免回风不良影响机组性能，如果需要搭建防晒棚，也应遵循上述要求；
- 6、机组附近应有足够排放能力的排水措施，以便系统停止运行或检修时排放系统中的水；机组与冷凝系统连接的补水和排污管上必须加水阀，排污和溢水管需连接到排水地漏，溢水管需保持畅通；
- 7、与机组连接的空调系统管道的安装，保温应由专业人员设计指导，并严格执行暖通空调安装规范的相应规定，为了便于观察机组及整个空调系统的运行情况和变化，管路上还应装设温度、压力指示仪表；
- 8、机组外部管路应有有效支撑，以免外部管路的重量损坏机组内部管路密封；
- 9、对于冷却塔的维护需要定期清洗水槽和吸入过滤器，防止堵塞和腐蚀。需要时刻检查自动供水装置，严禁缺水运行，影响冷凝质量，需要定期检查风机轴承，严禁缺油。需要定期冲洗换热器，保证无堵塞，保证风、水畅通，需要定期检查喷嘴是否有损坏或堵塞；
- 10、机组在投入使用之前应对系统管路进行清洗，去除管路中的杂质以避免对机组堵塞，在进行管路清洗中，应将机组与系统管路隔离。
- 11、向机组提供的动力电源，容量要足够，要严格按照设备动力接线要求中提供的数据配置动力线，机组应按要求妥善接地。
- 12、机组冬季不用时将冷冻水、冷却水放尽，以防管路冻结。

- 1.The unit can be installed on the roof, balcony, ground and other well-ventilated places;
- 2.The installation location of the unit requires sufficient space around it for operation and maintenance, and it is also necessary to ensure that the installation location of the unit must have appropriate ambient temperature and good ventilation conditions to ensure smooth airflow. In addition, it is best not to install the unit around steam, hot air, gas or corrosive gases.
- 3.The unit should be installed on a solid, firm and flat concrete foundation or metal steel frame, whose strength can withstand the operating weight of the unit. The floor drain should be installed around the foundation. And the installation of the unit must comply with relevant regulations.
- 4.In order to enable the equipment to operate quietly so as not to affect the floor where the unit is located due to the transmission of vibration and noise, shock absorption measures should be taken between the base and the foundation of the unit.
- 5.There must be at least 3-meter high space above the air outlet of the unit without any obstructions in order to avoid bad return air affecting the performance of the unit. If there is need to set up a sunscreen shed, it should also follow the above requirements;
- 6.Drainage measures with sufficient discharge capacity should be provided near the unit to discharge water in the system when the system is stopped from operation or maintenance; Water valves must be added to the water replenishment and sewage pipes connecting the unit to the condensing system. The sewage discharge and overflow pipes must be connected to the floor drain, and the overflow pipes must be kept unblocked.
- 7.The installation and thermal insulation of air conditioning system pipes connecting to the unit should be designed and guided by professionals, strictly following HVAC installation regulations. In order to facilitate the observation of the operation and changes of the unit and the entire air conditioning system, temperature and pressure indicators should also be installed on the pipeline.
- 8.External pipes of the unit should be effectively supported to avoid the weight of the external pipes damaging the internal pipe seal of the unit;

9.Maintenance of cooling towers requires regular cleaning of sinks and suction filters to prevent clogging and corrosion. It is necessary to check the automatic water supply device at all times, and it is strictly prohibited to run without water, which will affect the condensation quality. It is required to check the fan bearing to ensure it is not lack of oil. To wash the exchanger regularly to ensure that there is no blockage, the wind and water are smooth, and check whether the nozzle is damaged or blocked periodically;

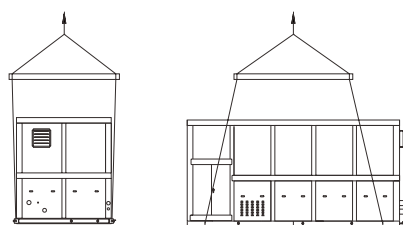
10.Before the unit is put into use, the system pipeline should be cleaned to remove impurities in the pipeline to avoid them blocking the unit. During pipeline cleaning, the unit should be isolated from the system pipeline.

11.Power supply provided to the unit should have sufficient capacity. Configure power lines in strict accordance with the data provided by the equipment power wiring requirements and properly ground the unit.

12.Fully discharge chilled water and cooling water in winter to prevent pipes from freezing.

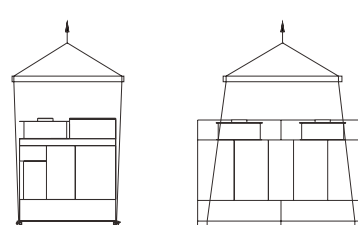
吊装示意图

Hoisting schematic drawing



主机段吊装示意图

Hoisting schematic drawing of air handler segment



冷却塔吊装示意图

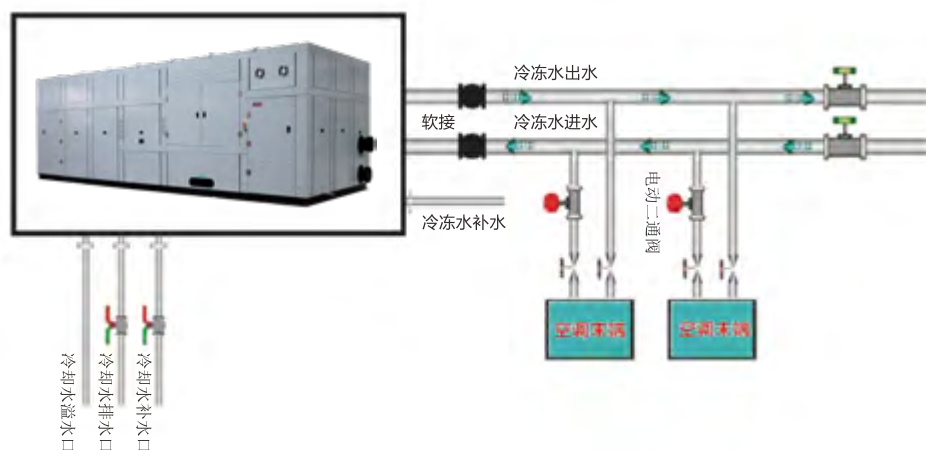
Hoisting schematic drawing of the cooling tower

机组搬运或吊装过程中，应保持机体平衡，确保钢缆牢固。机组底座设有吊耳，在吊升时请利用槽钢将吊装用的钢缆分开，避免钢缆接触到机组两侧。

During the moving or lifting of the unit, maintain the balance of the unit and ensure that the steel cable is firm. The base of the unit is provided with lifting lugs. When lifting, separate the steel cables used for lifting by using channel steel to avoid steel cables from touching the two sides of the unit.

水系统图

Water system drawing



冷却水补水口 cooling water replenishment opening
冷却水排水口 cooling water drainage opening
冷却水溢水口 cooling water overflow opening

冷冻水出水 chilled water outlet
软接 soft connection
冷冻水进水 chilled water inlet

冷冻水补水 chilled water replenishment
电动二通阀 electric two-way valve
空调末端 air conditioning terminal



离心式水冷冷水机组
Centrifugal water cooled water chiller

水冷冷水机组
Water-cooling chiller system

一体化水冷冷水机组
Integrated water cooled cold water unit

地下水式水源热泵机组
Underground water circulating type water source heat pump unit

风冷冷（热）水机组
Air cooled cold/hot water chiller

超低温风冷冷（热）水机组
Ultra-low temperature air cooled cold/hot water chillers

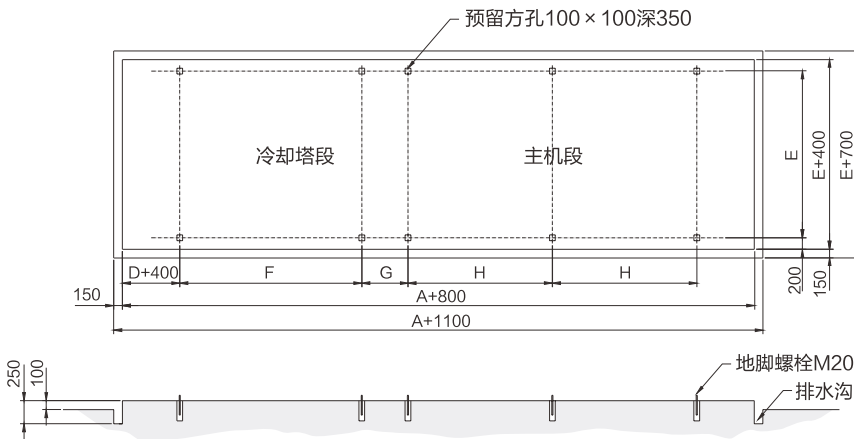
低环境温度空
Low ambient temperature

安装基础图

Foundation drawing for installation

单风机系列

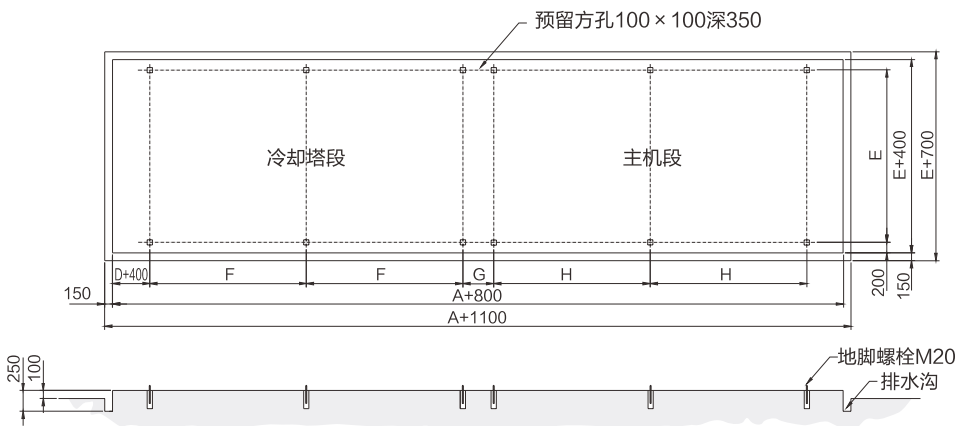
Single fan series



预留方孔 reserved square hole
冷却塔段 cooling tower segment
主机段 air handler segment
地脚螺栓 anchor bolt
排水沟 drainage ditch

双风机系列 / 三风机系列

Double fans series/triple fans series



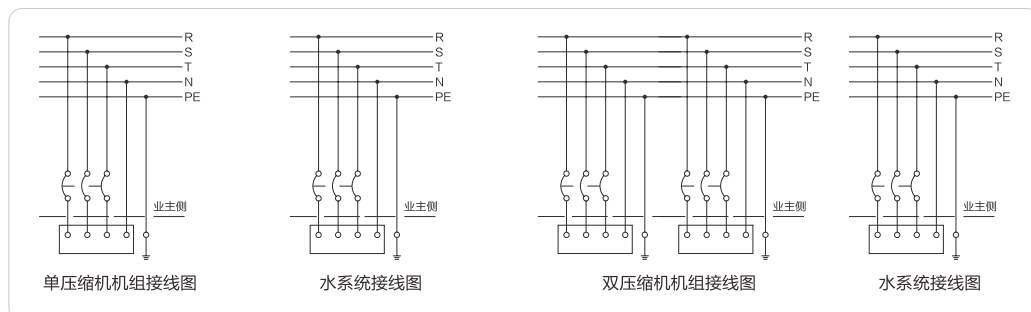
预留方孔 reserved square hole
冷却塔段 cooling tower segment
主机段 air handler segment
地脚螺栓 anchor bolt
排水沟 drainage ditch

- 1、基础强度必须能够承受机组的运行重量。
- 2、基础底座安装孔孔径为 $\Phi 22$ ，地脚螺栓现场自配。
- 3、做基础时应预留地脚螺栓锚坑，带机组定位后二次浇灌混凝土。

- 1.Strength of the foundation must be able to withstand the operating weight of the unit.
- 2.Diameter of the installation hole of the foundation base is $\Phi 22$. Anchor bolts are installed onsite.
- 3.The anchor bolt pit should be reserved when the foundation is made, and the concrete should be poured twice after the unit is positioned.

电气接线

Electric wiring



业主侧 customer's side

水系统接线图 water system wiring diagram

水系统接线图 water system wiring diagram

单压缩机机组接线图 Unit wiring diagram with single compressor

双压缩机机组接线图 Unit wiring diagram with double compressors

冷冻水冷却水系统安装说明

Installation instruction of chilled water and cooling water systems

- 1、机组运行时电源电压必须稳定，将所有压降因素考虑在内，机组工作电压需保持在额定值的 $\pm 10\%$ 以内，电压过高或过低均会对机组产生不良影响。
- 2、电源线的长度必须能够保证运转时电源线端部的电压和尾部电压的压差小于额定值的2%，否则将造成压缩机无法启动。若长度无法缩短，则电源线须加粗。
- 3、电源至机组间配线需严格按电工法规标准施工，且绝缘良好，机组接线后电气配件端子与机体间应以500V高阻表测定其绝缘，其绝缘电阻至少 $5M\Omega$ 以上。
- 4、为保护人体的安全，机组壳体应有良好、可靠的接地保护装置以防止触电事故。
- 5、配线采用三相五线制，只允许使用铜导线。
- 6、机组接地必须符合当地和国家相关规定。
- 7、不得将低压（ $< 30V$ ）控制线路和大于30V的电线穿在同一电线管内。
- 8、相间电压差不超过额定值的 $\pm 2\%$ ，且最高与最低相电流差值小于额定差值的3%。以免造成压缩机过热。
- 9、电源频率应保持在额定值 $\pm 2\%$ 以内。
- 10、机组最低启动电压需保持在额定值的85%以上。
- 11、为减少线路发生短路事故时变压器、配线等电器设备所受到的危害以及便于对各压缩机的开停机进行独立控制，机组每组电源进线 均需配备适当容量的无熔丝断路器（NFB）。即每台压缩机均需要一组独立电源进线，其动力配线如下。

1. When the unit is running, the power supply voltage must be stable. Taking into account all voltage drop factors, the unit operating voltage must be maintained within $\pm 10\%$ of the rated value. Voltage too high or too low will have an adverse effect on the unit.
2. The length of the power line must ensure that the difference between the voltages at the head and the tail is less than 2% of the rated value, or the compressor will not be able to start. If the length cannot be shortened, the power cable must be bolded.
3. The wiring between the power supply and the unit shall be constructed in strict accordance with the electrical regulations and standards, and the insulation must be good. After the unit is connected, the insulation between the electrical accessory terminal and the unit should be measured by a 500V high resistance meter, and the insulation resistance should be at least $5M\Omega$.
4. In order to protect the safety of the human body, the unit shell should have a good and reliable grounding protection device to prevent electric shock accidents.
5. The wiring adopts three-phase five-wire system, only allowing using copper wire.
6. Unit grounding must comply with local and national regulations.
7. Do not thread a low voltage ($< 30V$) control line and a wire whose voltage is higher than 30V in the same wire tube.
8. Phase-to-phase voltage difference does not exceed $\pm 2\%$ of the rated value, and the current difference between the highest phase and lowest phase should be less than 3% of the rated difference to avoid overheating of the compressor.
9. The power supply frequency should be kept within $\pm 2\%$ of the rated value.
10. The minimum starting voltage of the unit must be maintained higher than 85% of the rated value.
11. In order to reduce the damage to electrical equipment such as transformers in the event of short circuit, and facilitate the independent control of startup and shutdown of each compressor, each group of power supply lines must be equipped with a non-fuse circuit breaker (NFB) with appropriate capacity. That is, each compressor needs a set of independent power supply lines, and its power wiring is as follows.

用户侧电源进线参照表

User's side power supply inlet lines reference table

主机配线 air handler' s lines distribution					水系统配线 water system' s lines distribution				
机组型号 Unit model		极限电流（A） limiting current	电源主进线电缆 BVR(mm²) power supply main inlet wire cable	接地线电缆 BVR(mm²) ground cable	电源进线数量 power supply inlet wire No.	极限电流（A） limiting current	电源主进线电缆 BVR(mm²) power supply main inlet wire cable	接地线电缆 BVR(mm²) ground cable	电源进线数量 power supply inlet wire No.
单压缩机系 single compressor	240	101	50	25	一路电源进线 one-way power supply inlet wire	32	10	4 6	一路电源进线 one-way power supply inlet wire
	310	123	50	25		43	10	10	
	350	137	70	35		55	16	10	
	390	151	70	35		55	16	10	
	420	163	95	50		59	16	10	
	440	172	95	50		61	25	16	
	500	201	120	70		71	25	16	
	540	210	120	70		71	25	16	
	570	231	120	70		77	25	25	
	630	241	150	70		84	35	25	
	710	269	185	95		108	50	25	
	770	280	185	95		108	50	35	
	810	316	240	120		123	70	35	
	840	329	240	120		123	70	35	
	920	343	240	120		123	70	35	
	940	352	240	120		123	70	50	
	1060	390	300	150		144	70	50	
	1080	401	300	150		144	70	50	
双压缩机系 double compressors	480	101	50	25	两路电源进线 （左表所列仅为 一路电源进线） two-way power supply inlet wire (the left table only shows one-way power supply inlet wire)	58	16	25	
	610	123	50	25		83	35	25	
	690	137	70	35		91	35	25	
	770	151	70	35		91	35	35	
	840	163	95	50		122	50	35	
	890	172	95	50		122	50	35	
	1000	201	120	70		123	70	50	
	1080	210	120	70		144	70		

注：1、如果不采用“国标BVR型铜芯电线”，可采用相同载流量的电缆线替代。机组最大电流见参数表。

2、上表选用前提为：a.每路电源进线采用一专门PVC管配线，不可与其他路电源线共用一根PVC管。b.电线周围环境温度35℃。c.只考虑安全载流量因素，不考虑电压降因素。

3、用户选择电源进线规格不得低于上表要求，若因配线规格错误导致机组损坏和事故本公司概不负责。

Note: 1. If the "national standard BVR type copper core wire" is not used, the cable with the same carrying capacity can be used instead. The maximum current of the unit is shown in the parameter table.

2.The prerequisites for the above table are as follows: a. Each power supply inlet cable uses a special PVC pipe. Do not share the same PVC pipe with other power cables. b. The ambient temperature of the cable is 35℃. c. Consider only the safe current carrying capacity, do not consider the voltage drop.

3.The inlet wire specifications of the power supply selected by the user should not be lower than the requirements in the above table. The company shall not be responsible for any damage or accident caused by the wrong wiring specifications.



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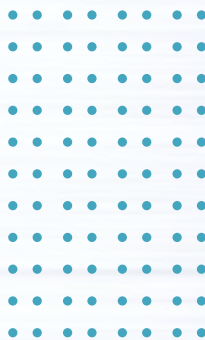
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