



CHILLERS
制冷机组系列
A5

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机电设备安装工程专业承包壹级资质
The First-grade Certification of Electromechanical Equipment Installation
ISO9001质量管理体系认证
Certified by ISO9001 quality system
ISO14001环境管理体系认证
Certified by ISO14001 environment system
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

Ultra-low Temperature Air Cooled Cold (Hot) Water Chillers

超低温风冷冷（热）水机组



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以前我们认识世界，现在世界认识我们
We knew the world before, the world knows us now.



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Dezhou YATAI Group CHINA

德州亚太集团有限公司

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Dezhou Yatai Glass Fiber Reinforced Plastic Equipment Co.,Ltd

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DEZHOU YATAI GROUP

CHINA

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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.

全球信赖品质

World Trusted Quality



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 central air conditioning and refrigeration system in China.

Yatai has developed whole set of advanced central air conditioner 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 won good reputation widely like the New CCTV, the Jiuquan Satellite Launching Center, the General Bureau of National Quality Inspection, Three-gorge Engineering Project, over 20 Beijing Olympic Stadiums and others 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 certified by ISO9001, 14001, 3C, UL, CE, CRAA and others; its chiller names have been put on the government purchasing list as energy saving products and obtained dozens of national patents, National High-technology Enterprise and Chinese Famous Trademark, which show the managements and product qualities of Yatai Group.

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

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

使用精品 造就精品

世界著名制造商生产的最现代化装备和领先同行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



机电设备安装工程专业承包壹级资质
The First-grade Certification of Electromechanical Equipment Installation
ISO9001质量管理体系认证
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First got the refrigeration equipment
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Honorable Qualification



CHILLERS

制冷机组系列

Ultra-low Temperature Air Cooled Cold/Hot Water Chillers

超低温风冷冷（热）水机组

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水冷冷水机组
Water-cooling chiller system



地下环路式(地埋管)水源热泵机组
Underground water circuit (embedded pipeline) water source heat pump units



地下水式水源热泵
Underground water circulating type Water source heat pump



超低温风冷冷(热)水机组
Ultra-low Temperature Air Cooled Cold/Hot Water Chillers



户式风冷冷
Air-cooling residential

AIR COOLED COLD/HOT WATER CHILLER

风冷冷(热)水机组

CHILLERS

制冷机组系列





热水机组
Chiller/heater system



柜式恒温恒湿机组
Cabinet constant temperature/humidity



屋顶组合式空调机组
Roof combined air-handling unit



柜式冷风型风冷机组
Cabinet Cooled Air Type Air Conditioning Units





产品概述

Product Outline

热泵作为一种节能技术受到了世界各国的普遍重视，尤其是空气源热泵机组因其以随处可得的空气为低温热源而成为热泵诸多型式中应用最为广泛的一种。然而空气源热泵的应用范围受到气候条件的约束，在我国使用范围曾一度被划定在长江中下游地区，目前指导工程设计的各种文献将冬季室外计算温度 $t_w = -3^{\circ}\text{C}$ 定作最低线。但是，在过去的十多年里风冷热泵机组应用范围向北扩展的趋势是显而易见的。

为了拓宽风冷热泵的应用区域，亚太集团自2002年以来，投入大量资金研究、设计、开发能满足低温工况的新型风冷热泵机组。经过亚太集团有限公司技术人员的不懈努力，终于在2004年成功推出超低温风冷螺杆冷热水机组系列产品，并于2010年初成功将喷气增焐技术应用到成熟的模块化风冷热泵机组中研发了超低温风冷模块冷(热)水机组系列，彻底拓宽了风冷热泵机组的应用区域。

经国家级检测中心检测，亚太超低温风冷冷热水机组以及超低温风冷模块冷(热)水机组可在 -25°C 的低温工况下正常运行，在环境温度为 -15°C 时机组COP值不低于2.2，完全解决了风冷热泵低温运行困难和能效比偏低等技术难题，将风冷热泵机组的应用区域拓展到黄河流域和华北地区，在华北地区真正实现了一套主机冷暖两用，投资省、运行费用低。

亚太超低温螺杆式风冷冷热水机组及低温强热风冷模块机组两大系列产品严格按照国家行业标准设计和制造，采用世界著名制造商生产的高品质、高效率的半封闭螺杆压缩机或进口新型全封闭喷气增焐涡旋压缩机、冷凝风机、制冷系统元件及智能电脑控制器，通过合理的系统匹配和设计，确保机组良好、平稳运行。同时，通过对进出水温度的控制，自动进行能量调整，使用方便，节约能源。耗水少、无排放、没污染、没废弃物，真正达到了环保的要求。

Heat pump, due to its energy-saving technology, has received an adequate attention, especially the air source heat pump, takes air got everywhere as low temperature heat source, is very popular. However applied range of air source heat pump is bound by climatic condition. In China, once thought it only suit for Middle and Lower Yangtze River. At present, all documentations that guide project designing say the minimal winter outdoor temperature for calculation is $t_w = -3^{\circ}\text{C}$. But the trend of its application is spreading towards north in the last dozen years is obvious.

In order to expand the application, Yatai invested lots of money to research, design and develop new type air cooled heat pump which can meet the low temperature condition requirements since 2002. By enduring efforts of Yatai technicians, finally in 2004, ultra-low-temperature air cooled screw cold/hot water chiller was down from production line successfully. In early 2010, successfully applied air-jet enthalpy-increasing technology to matured modular air cooled heat pump, and developed Ultra-low-temperature air cooled modular cold/hot water chiller, thus expanded the air cooled heat pump's application.

Inspected by National Testing Center, Yatai ultra-low-temperature air cooled cold/hot water chiller and Ultra-low-temperature air cooled modular cold/hot water chiller can run at -25°C . Their COP is more than 2.2 when running at -15°C of outdoor temperature, thus solved the problems of air cooled heat pump difficult running at low temperature and lower energy efficiency ratio completely. The application of air cooled heat pump has been expanded to Yellow River Valley and North China. And the dream of one set of unit heating cooling double purposes has come true in North China, small investment, low running cost.

Yatai ultra-low-temperature screw air cooled cold/hot water chiller and low-temperature heat-flash modular chiller are designed and made according to national industry standards, adopted world famous high-quality high-efficiency half-closed screw compressor or new type wholly-closed air-jet enthalpy-increasing scroll compressor, condensate fan, refrigeration parts and intelligent PLC by reasonable arrangement to guarantee chiller runs healthily. Meanwhile can regulate energy automatically by controlling inlet/outlet water temperature. Less water consumption, no discharge, no pollution, no waste and real environment friendly.

机组特点

Chiller features

机组设计环境干球温度为 -12°C ，极限工作温度为 -25°C ，超低温风冷螺杆冷热水机组基本单元为150-840kW共计14个规格，可任意组合，提供不同的制冷量；低温强热风冷模块机组是以YFM-V-R-60DA为基本单元，可进行模块化组合以满足不同需要，从几百平米到几万平米的商务写字楼、自用办公楼、商场、超市、宾馆酒店、体育馆、娱乐城、影剧院、医院等各类建筑均可采用本系列产品。

- ★ -12°C 环境下高效运行，并可在 -25°C 正常运行。
- ★智能动态除霜功能。
- ★采用进口半封闭螺杆式压缩机或全封闭涡旋压缩机，性能可靠，寿命长。



- ★采用大通道式壳管换热器或高效板式换热器，换热效率高。
- ★采用高级喷塑钣金和框架，抗腐蚀能力强。
- ★适用于黄河流域以北地区。

The chiller designed environment dry-bulb temperature is -12°C , ultimate working temperature is -25°C . The cooling capacity of basis element of ultra-low-temperature air cooled screw cold/hot water chiller is from 150KW to 840KW, and 14 specifications in total. You can combine them at will according to different cooling capacity. Low-temperature heat-flash air cooled modular chiller. Takes YFM-V-R-60DA as its basis element, can be combined modular by modular according to different requirements. This series chillers can be used to every kinds of building, area from hundreds to thousands square meters, like commercial office building, private office building, shopping mall, supermarket, hotel, restaurant, gymnasium, entertainment city, theatre, hospital and so on.

▲High efficiently runs at -12°C , and runs normally at -25°C .

▲Intelligent dynamic defrost.

▲Adopts imported half-closed screw compressor or wholly-closed scroll compressor, authentic performance and long serving life.

▲Adopts big-channel type shell tube heat exchanger or high-efficient plate heat exchanger, its heat exchanging capacity is high.

▲Adopts advanced spray painting sheet metal and frame, its anti corrosion is good.

▲Suitable for Yellow River Valley and its North.

机组保护装置

Chiller protection devices

公司主机除选用了高品质的制冷配件外，为了保证机组良好、稳定运行，在进行制冷剂系统匹配时还装备了以下主要保护装置，并通过电控系统对机组进行控制：

1)高低压压力开关

- ★为防止过度的冷媒回收运转等引起的压缩机损伤，设置了低压压力为0.1MPa以上动作的低压压力保护装置。
- ★在高压压力异常上升超过设定值（4.5MPa），为保证系统的安全而使压缩机停机。

2)曲轴箱加热器

- ★用来防止机组停机时制冷剂的迁移，在机组长时间停机再运行时必须先预热12小时才能启动机组。

3)油压差控制器

★油压差控制器是安全开关，用来防止制冷压缩机润滑油油压过低。如果油压力下降到设定值以下，在一定的时间间隔后，油压差控制器动作，使压缩机停机。

4)排气温度控制器

★为防止因过负荷、缺制冷剂而引起排气温度异常上升，在排气口15cm以内的位置安装一个排气温度传感器，有效防止排气温度过高而损伤压缩机。

5)三相电源保护器

★如果因外界因素而导致的逆相、缺相、过流、欠压等电气故障，三相电源保护器都会及时动作切断电源，避免压缩机故障。

Besides most of components are high quality, the following protection devices have be equipped to control the chillers and guarantee the chiller has good performance:

1)High/low pressure switch

▲In order to prevent excessive refrigerant from recovering and damage the compressor, low pressure, 0.1Mpa, protectin device has been equipped.

▲If the high pressure rises abnormally and outnumber set value, 2.8Mpa, comprssor will stop to protect the system.

2)Crank heater

▲In order to prevent refrigerant from migrating when chiller dead, must pre-heat chiller for 12 hours before starting if it is dead for long time.

3)Oil pressure difference controller

▲Oil pressure difference controller is a safety switch to prevent compressor lubricant pressure from being too low. If lubricant pressure drops below set value, the controller will run and stop the compressor after a interval.

4)Exhaust temperature controller

▲In order to exhaust temperature rises abnormally caused by over-load and refrigerant-lack, a exhaust temperature sensor shall be fixed within 15cm from gas outlet to prevent exhaust temperature from being too high and damage the compressor.

5)Three phase power supply protector

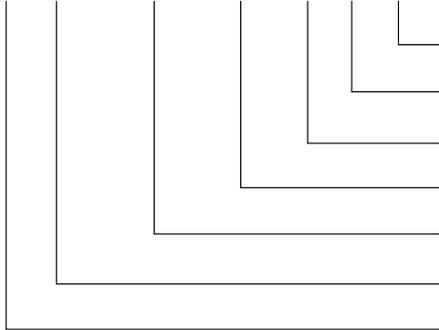
▲If electrical break down like inverse phase, phase-lack, over-current, low-voltage and so on caused by extraneous factor, Three phase power supply protector will run and cut off the power and in case compressor damages.



型号说明

Model explanation

Y FM - V(W) - R - □ D □



制冷剂代号: A-R410a、C-R407c、R22不予标注
Refrigerant code: A-R410a, C-R407c, no code for R22

低温系列
Low temperature series
名义制热量
Nominal heating capacity
热泵型机组
Heat pump type
冷凝器结构
Condenser structure
风冷模块机组
Air cooled modular chiller
亚太集团
Yatai group

主要技术特点

Main technical features

(1) 精选名牌配件, 机组高效、节能、耐用:

① 机组的压缩机、冷凝风机、热力膨胀阀、热气旁通阀、控制电脑等关键元器件均选用知名品牌厂家的产品, 确保机组高效、节能、耐用。

② 机组保温材料为阻燃材料, 避免人为因素而造成的火灾事故, 确保机组安全运行。

(2) 完备的机组控制功能, 多重安全保护措施、确保机组安全运行。

A、机组具备的控制功能:

- | | |
|--------------|-------------|
| ★ 机组启停控制 | ★ 压缩机启停程序管理 |
| ★ 远程、近程控制选择 | ★ 压缩机手动管理 |
| ★ 机组程序设定 | ★ 机组定时管理 |
| ★ 回水温度控制设定 | ★ 水泵管理 |
| ★ 能量调节自动控制 | ★ 可编程温度管理 |
| ★ 高水温低水温限定报警 | ★ 全功能运行参数显示 |
| ★ 防冰冻保护设定 | ★ 故障报警及诊断功 |

B、机组具备的安全保护功能:

- | | |
|--------------------------------|---------------|
| ★ 压缩机相序过欠压保护 | ★ 电器元件具有防触电保护 |
| ★ 压缩机过载、过热保护 | ★ 防冻保护 |
| ★ 冷凝风机、电机设置过热保护 | ★ 系统设有断水保护 |
| ★ 系统设有高、低压力保护装置 | |
| ★ 系统设有必备的安全阀、放气阀、排污阀 | |
| ★ 热泵机组配备了能量调节阀, 确保机组低温运行安全、可靠。 | |

(3) 机组控制系统智能化, 具有集中监控和远程监控接口:

① 机组采用进口微电脑控制触摸控制屏, 中文显示, 界面友好。

② 自动化程度高, 功能齐全, 能实现机组启停程序管理、定时控制、水泵管理、全功能故障报警及故障自我诊断功能等。同时配备RS485/RS232通讯接口, 方便用户实现的机组的集中监控和远程监控。

③ 采用三级密码保护, 防止程序和设定参数被随意更改。





④ 当机组发生故障时，立即自动停止运行，报警输出故障信号并显示故障原因及故障所处的地方，以便于故障排除和机组的及时维护。

⑤ 电机的启停由电脑控制，并与压缩机、冷凝风机进行联锁控制；压缩机受电脑控制，供液阀和压缩机同步动作。

(4) 制冷系统多回路设计，提高机组的可靠性和抗干扰能力

该系列机组如采用二台或二台以上的压缩机时，均按每一台压缩机为一个制冷回路进行设计。各台压缩机之间互为备份，从而提高了机组的可靠性和抗干扰能力。

(5) 依托先进的性能测试装备，确保机组性能稳定，运行安全、可靠：

亚太集团公司拥有先进的《国家级检测中心》，每一台空调机均在厂内进行严格运转试验，确保机组在恶劣的工况下安全、可靠地运行，出厂的产品都是合格品。经过严格的模拟运行测试：亚太超低温风冷螺杆冷热水机组及低温强热风冷模块机组制冷运行时最高环境温度可达到50℃，制热运行时最低环境温度可达到-20℃。

(6) 产品型号、制冷剂选择多样性

由于R22制冷剂对大气臭氧层具有破坏作用，同时还是温室气体，为了更好的保护环境，亚太集团投入大量的研发力量对环保制冷剂的替代进行开发设计和反复的测试。经过两年时间的研发，亚太风冷热泵系列产品已经可以应用新型环保制冷剂。现在超低温风冷冷热水机组的制冷剂除R22外，还有R410a、R407c等环保制冷剂可供用户选择。单台机组制冷、制热量自60kW-840kW可供用户选择。

(1) Choice famous parts, high efficiency, energy saving and long serving life.

① Key components are world famous ones like compressor, condensate fan, thermal expansion valve, hot-gas by-pass valve, PLC and so on.

② The internal insulation is flame-retarded, in case fire caused by human elements and make sure chiller runs safely.

(2) Perfect control functions and multi-protection measurements guarantee chiller runs safely.

A、Control functions:

▲ Starting/stopping control

▲ Option of field, remote control

▲ Program setting

▲ Return water temperature control setting

▲ Energy regulation auto-control

▲ High/low water temperature limited alarm

▲ Anti-freeze protection setting

B、Safety protection functions:

▲ Compressor phase-order, pressure-over/lack protection

▲ Compressor over-load, over-heat protection

▲ Condensate fan, motor setting over-heat protection

▲ Equipped with high/low pressure protection device

▲ Equipped with necessary valves like safety valve, air-escape valve and low down valve

▲ Heat pump equips with energy regulation valve to make sure it runs safely and reliably at low temperature condition.

(3) Adopts intelligent control, has centralized and remote monitoring interfaces

① Equipped with imported micro-computer PLC touch screen, displayed in Chinese and English, its operation interface is friendly.

② High automaticity and complete functions like start/stop management, timing control, pump management, breakdown alarm and fault diagnosis automatically. Meanwhile, RS485/RS232 communication interface is available for centralized or remote monitoring.

③ Adopts three-stages password protection, in case program and setting parameters are changed at will.

④ If break down happened, stop chiller at once, output break down signal and break down reason and place will display to debug and maintenance in time.

⑤ Motor starting and stopping are controlled by computer and chain controlled with compressor and condensate fan. Compressor is controlled by computer and liquid supply valve move with compressor synchronically.

(4) Multi-return design at refrigeration system increases reliability and anti-interference capability.

If equipped with 2 or more than 2 compressors, each compressor has one circuit of its own, and is spared each other, thus increases its reliability and anti-interference capability.

(5) Yatai Group owns advanced "national testing center", each chiller must be tested in its factory strictly to guarantee it runs safely and reliably at bad working conditions and all of them are qualified before delivery. After strict simulation running: The maximal environment temperature of Yatai ultra-low-temperature air cooled screw cold/hot water chiller and low-temperature heat-flash air cooled modular chiller is upto 50℃, the minimal nevironment temperature when heating is upto -20℃.

(6) Diversity of model and refrigerant

Due to R22 damages ozone layer and is greenhouse gas, in order to protect environment further, Yatai has done its best to use environment friendly refrigerant to replace the R22. After 2 years of research, Yatai air cooled heat pump serial products have adopts new model of environment friendly refrigerant already. At present, ultra-low-temperature air cooled cold/hot water chiller adopts R22, R410a and R407c. Cooling/heating capacity is from 60KW to 840KW.



产品结构特点

Product structure features

1、匹配名牌优质、高效压缩机，确保机组高能效比

1) 超低温风冷螺杆冷热水机组采用进口半封闭螺杆式压缩机，该类型压缩机具有以下特点：

- ★与活塞机相比，具有转速高，重量轻，体积小，占地面积小以及排气脉动低等一系列优点；
- ★无往复质量惯性力，动力平衡性能好，运转平稳，机座振动小
- ★结构简单，机件数量少，易损件少
- ★采用滑阀调节，可实现能量25%~100%范围内四级或无级调节
- ★对湿行程不敏感，可采用喷油冷却，在相同压比下，排温比活塞式低得多，单级压比高
- ★稳定性：双螺杆压缩机中没有易损件，无故障运行时间可达4~8万小时。

1. Adopts famous high quality compressor to make sure the energy efficiency ratio is high

1) Ultra-low-temperature air cooled screw cold/hot water chiller adopts imported half-closed screw compressor, this compressor has the following features:

- ★ Have lots of features compared with piston type like high speed, light, small size, low air exhaust pulsation and so on.
- ★ No reciprocating mass inertial force, dynamic balance is good, so it runs smoothly and its base vibration is little.
- ★ Simple structure, less components and wearing parts.
- ★ Adjusted by slide-valve, so can realize 4 steps or stepless regulation from 25% to 100% energy range
- ★ Un-sensible to wet stroke, can adopt oil-spraying for cooling. The exhaust temperature is much lower than that of piston type at the same pressure ratio, single-stage pressure ratio is high.

★ Stability: Double screw compressor has no wearing part, it can run trouble-free for 40-48 thousands of hours.

2) 超低温风冷模块冷(热)水机组采用进口全封闭强热型柔性涡旋

压缩机，该类型压缩机具有以下特点：

- ★运动部件的减少改善了整机的可靠性；
- ★具有两个吸气口和一个排气口；
- ★当蒸发温度与冷凝温度相差最大时会产生最好的效果；
- ★轴向和径向柔性容许涡旋双向分开，提供出色的抗液击能力；
- ★内置式过热，过压和过电流保护；
- ★柔性喷气增焓设计；
- ★全面彻底的材料兼容性和时效试验；
- ★喷气增焓过程提供了充分的涡旋冷却。



2) Ultra-low-temperature air cooled modular cold/hot water chiller adopts imported wholly-closed heat-flash type flexible scroll compressor, This kind of compressor has the following features:

- ★ Reducing kinematic components improves chiller's reliability
- ★ Owns two air entries and one air exhaust opening
- ★ The biggest difference between evaporating temperature and condensing temperature is, the best effect is.
- ★ Axial and radial flexible permissible scroll is separated into two ways, thus makes its anti-liquid-hammer capability be outstanding

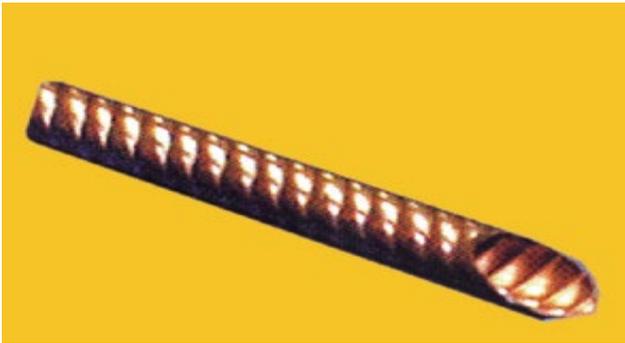
- ★ Internal over-heat, over-pressure, over-current protections
- ★ Flexible air-jet enthalpy-increasing design
- ★ Complete material compatibility and aging tests
- ★ Offer complete scroll cooling during air-jet enthalpy-increasing course.

2、符合中国国情，匹配高效翅片式冷凝器

- 1) 为了适合空气含尘量大、粉尘偏多的中国国情，风冷冷凝器采用独特的翅片形状及结构，强化波纹式铝翅片由进口专用加工设备整体冲压制作而成，在使传热效果显著提高的同时，表面不易积灰，也便于清洗。
- 2) 换热器翅片表面经过特殊处理，提高了翅片的耐腐蚀性能，使换热器的耐用度大大提高。
- 3) 风冷式冷凝器采用铜管套铝翅片结构，其铝翅片、换热管均采用进口材料，抗污垢、耐腐蚀。紫铜管、波纹型铝翅片经机械胀管结合紧密，换热效率高，传热系数大；换热器管板支承板均采用优质不锈钢板，抗腐蚀能力强、耐用度高。
- 4) 冷凝器加工过程中采用先进的清洗技术，提高了热交换器的表面清洁度，从而确保了换热器的高效换热能力。
- 5) 采用独特的换热器制冷流程，合理的匹配风量与迎面风速，确保制冷流程与风侧冷量的平衡，充分发挥了压缩机的制冷能力和换热器的换热能力，使机组高效节能。
- 6) 冷凝器采用独特“倒M”型布置，结构紧凑，占地面积小、过风均匀，克服冷凝器气流短路现象，充分发挥冷凝器换热能力。

2.To meet Chinese actual condition, equipped with high efficient fin type condensor

- 1) To meet Chinese actual condition of large air dust content, air cooled condensor adopts special shape and structure of fin, corrugated aluminum fin is punched and shaped integrally by imported special process equipment, not only increases heat exchanging but also is washed easily and difficult for dust gathering on its surface.
- 2) The surface of heat exchanger is finished specially, thus increases its anti-corrosion capability and endurance greatly.
- 3) Air cooled condensor adopts structure of copper pipe passing through aluminum fin, its aluminum fin and heat exchanging pipe are both imported, so they are anti-dust and anti-corrosion. The copper pipe and the corrugated fin can be joined together by expanding the copper pipe mechanically to guarantee heat exchange of the air cooled condensor is wonderful. The support of heat exchanger is made of fine stainless steel plate, so anti-corrosive and durable.
- 4) Adopts advanced washing skill during condensor manufacturing procedure, thus increases cleanliness of heat exchanger surface and guarantee its good capacity.
- 5) Heat exchanger adopts special refrigeration circuit and design reasonable air flow rate and approach air velocity to guarantee the balance between refrigeration circuit and cooling capacity at air side, thus let compressor and condensor to play their roles greatly
- 6) Condenser is fixed like M-upside-down, compact, small and air flow is even. Thus overcomes the short-circuit of air flow and let the heat exchanger to play its role greatly.



3、匹配高效能换热管的干式壳管蒸发器

- 1) 采用目前最先进的DAE高效蒸发传热管，管内表面的多头螺旋细肋以及螺旋形突起，使换热系数和换热能力大幅度提高。
- 2) 蒸发器内部结构采用流体优化设计，配置高效均液器，解决了系统制冷工质分配的均匀性问题，换热效率较常规的强化换热器提高5%；
- 3) 改进冷媒水折流板的密封结构，解决了折流板泄漏等问题，极大地提高了蒸发器的换热效率，同时降低了水流程阻力，从而保证机组达到较高的性能水平；
- 4) 采用独特的换热器制冷流程设计技术，合理进行系统匹配，确保制冷流程与水侧冷量的平衡关系，充分发挥换热器的高效能；同时合理的系统匹配，使机组更加节能。
- 5) 在干式蒸发器上还安装防冻保护开关，放水阀等，确保干式蒸发器的安全以及清洗、维护的方便性。



3. Equipped with high efficient dry type shell-tube evaporator

- 1) Adopts advanced DAE high efficient evaporating heat exchanging pipe, spiral thin ribs and spiral tubercles on the inside wall increase heat exchanging capacity and coefficient greatly.
- 2) Inside evaporator, adopts fluid optimum design and equipped with high efficient liquid distributor which solves the problem of refrigerant not distributing evenly, the heat exchanging efficiency increases as much as 5% than the conventional heat exchanger.
- 3) Improved sealing structure of chilled water baffle board, thus solve the problem of baffle board leakage and increase heat exchanging efficient of evaporator greatly, meanwhile reduce water resistance, thus guarantee the chiller performance is at top-class;
- 4) Adopts special refrigeration circuit skill, arranges system reasonably to guarantee the balance between refrigeration circuit and cooling capacity at water side and let the heat exchanger to play its role greatly. Meanwhile, the reasonable arrangement will make the chiller save more energy.
- 5) Equipped with anti-freeze protection switch and drainage valve at dry type evaporator to guarantee dry type evaporator is safe and is easy for maintenance.

4、匹配高效、低噪风机

- 1) 冷凝风机:采用名牌厂家的轴流风机,其风机运行参数准确,机械效率高,振动小、噪声低,无故障运行时间长。
- 2) 耐用的风机电机:冷凝风机电机外壳为铸铝合金,耐腐蚀、寿命长;整机经过严格的动、静平衡试验,效率高,振动小、噪声低。
- 3) 为了保证热泵式机组在低温环境下正常运行,冷凝风机采用变风量控制,即在低温环境下电脑根据冷凝压力的变化,相应地调节冷凝风机转速,保证机组的系统运行参数稳定,节能效果好。

5、匹配高效板式换热器

低温强热风冷模块机组选用高效板式换热器作为蒸发器和经济器,板式换热器具有相对阻力较小、结构紧凑、金属消耗量低等优点。

6、机组避振设计,确保机组低噪声,低振动

- 1) 机组压缩机的下面设置弹簧或橡胶减振器,减振效率在85%以上,即振动传递率小于0.15,降低机组振动及系统振动,从而降低机组噪声。
- 2) 机组系统所有管道均有避振塑料管夹固定,避免因机组及系统振动,而产生的噪声。

7、匹配名牌制冷系统配件

- 1) 机组所用制冷系统配件全部选用名牌厂家的产品,如可拆式干燥过滤器、外平衡式热力膨胀阀、供液电磁阀、视液镜、高、低压力控制器、排气温度控制器等均采用世界一流的名牌厂家的产品,确保机组具有较高的性能水平。
- 2) 机组所有材料经100%检验合格后方可进厂,确保机组制冷系统工作的高可靠性。

8、匹配先进、高可靠性的智能控制系统及控制技术

- 1) 多机控制系统除具备单机自动化配置及功能外,还具备多机组运行情况显示,根据回水温度情况电脑自动判断空调系统是部分机组运行还是全部机组运行,并备有RS485/RS232通讯接口,方便用户实现集中控制。
- 2) 机组具有控制多台压缩机的均衡运行功能,确保机组高效运行。

9、机组能量调节方式

机组根据冷冻水回水温度进行逻辑计算,控制机组的运行状态及启停机。每台机组采用四级或无级能量调节,实现机组的高效节能运行。

10、机组结构合理,机组具有良好的抗腐蚀能力

- 1) 机组采用框架结构形式,结构紧凑,牢固,具有良好的机械强度,体积小,占地面积小、过风均匀,无气流短路现象。
- 2) 机组外表采用彩色喷塑钢板,防腐防锈,表面光滑、整齐、流畅,造形美观。
- 3) 采用模块化设计,产品适应性广,零部件互换性强,能灵活的进行多种机型组合,以最快捷的方式为用户提供最周到服务。



4) 机组内布局合理, 根据人机工程, 优化设置安装及检修空间, 方便日常清洗、保养及检修。

11. 安装调试, 维护管理方便快捷

1) 机组以整机形式出厂, 低压部分出厂前包好了保温层, 系统已经充氟加油, 运抵现场后只需进行水管路的连接。接通电源后, 即可开启机组。

2) 电脑将按程序自动启动水泵电机、压缩机和冷凝风机, 并对机组的制冷、制热、延时、联锁、保护和温度的自动调节等进行协调控制。

3) 机组在电脑控制下按设置的温度进行, 并根据蒸发器进水温度的变化自动进行制冷、制热的能量调节。

4) 机组安装灵活, 既可现场控制也可远程控制, 其压缩机、制冷配件及电控系统均置于机组下部为开放式结构, 没有任何面板, 容易进行检查及维护。

4. Equipped with high-efficient and silent fan

1) Condensate fan: Adopts famous axis fan, its running parameters is accurate, mechanical efficient is high, vibration is small, noise is lower, trouble-free running time is long.

2) Endurable fan motor: Its house in made of cast aluminium alloy, anti-corrosive and durable. Strict dynamic and static balance test have been done, high efficient, small vibration and low noise.

3) To guarantee heat pump type chiller runs normally at low-temperature condition, condensate fan adopts variable air volume control, that is, PLC will regulate condensate fan speed according to condensate pressure varying at low-temperature condition to guarantee system running parameters are stable and save energy.

5. Equipped with high efficient plate heat exchanger

Low-temperature heat-flash air cooled modular chiller takes high efficient plate heat exchanger as evaporator and economiser. The plate heat exchanger has lots of features like small resistance, compact structure, less metal consumption and so on.

6. Equipped with damper to guarantee noise and vibration are low:

1) Spring and rubber damper are fixed below compressor, its damping efficient is more than 85%, that is, vibration transmissibility is less than 0.15. Reduces chiller vibration and system vibration, thus reduce chiller noise.

2) All pipeline of the system are fixed by damping plastic pipe clamps to keep chiller and system from vibrating.

7. Equipped with famous refrigeration parts

1) All refrigeration parts equipped with chiller are imported from oversea like dismountable dry filter, liquid-supply solenoid, balanced thermal expansion valve, check valve, liquid level view, high/low pressure controller, exhaust temperature controller, thus guarantee our chiller's performance is high.

2) All material must be inspected, only qualified can be accepted to guarantee chiller's reliability.

8. Equipped with advanced intelligent control system:

1) Multi-chiller control system can display multi-chillers running modes besides single chiller automatic functions, PLC will decide either some chillers running or all chillers running according to water return temperature, and with RS485/RS232 communication interfaces for centralized monitoring and controlling.

2) Can control many compressors equilibrium operating to make sure chiller can runs high efficiently.

9. Energy regulation modes:

PLC will calculate logically according to chilled water return temperature and control chiller running modes and starting/stopping. Each chiller adopts 4-steps or steplessness of energy control to let the chiller run high efficiently.

10. Reasonable structure and fine anti-corrosion capability

1) Chiller adopts frame structure, compact, firm and fine mechanical strength, small, even air flow and no air short-circuit.

2) External housing adopts colour painting steel, smooth, clean, beautiful and anti-corrosive.

3) Modular design, wide application, its parts can exchange each other, many chillers can be combined together, so can offer good service to customers quickly.

4) Internal arrangement is reasonable, perfect installation and maintenance space is available for future's daily cleaning and maintenance.

11. Installation, commission and maintenance are easy and convenient:

1) Chiller is delivered in complete appliance, low pressure system has been wrapped by insulation, and freon and oil have been charged before delivery. On construction site, only connect water pipeline. Switch on power supply, chiller will start.

2) PLC will start water pump, compressor, condensate fan automatically according to the program, and control coordinately chiller's cooling, heating, relay, chain, protection, temperature auto-regulation.

3) Chiller will run according to the setting temperature controlled by PLC, and cool/heat automatically according to evaporator water inlet/outlet temperature.

4) Chiller installation is smart, not only realize field control but also remote. Its compressor, refrigeration parts and electric control system are all at the lower part and are open, there are no any panel and easy to check and maintain.



超低温风冷螺杆冷(热)水机组性能参数表

Standard performance table of ultra-low-temperature air cooled screw cold/hot water chiller

项目 Item				YFM-W-R-()D														
名称 Name	单位 Unit	环境温度°C Environment temperature°C	能效比COP Energy efficient rate COP	150	180	220	250	280	350	380	420	450	500	560	700	760	840	
制冷量 Cooling capacity	KW	35	3.1	150	180	225	250	282	358	377	422	451	499	564	716	753	843	
制热量 Heating capacity	KW	7	3.35	162	195	244	270	305	387	407	456	487	539	610	774	814	911	
	KW	0	2.87	139	167	209	231	261	331	349	390	417	462	522	663	697	781	
	KW	-5	2.59	126	150	188	208	236	299	315	352	377	417	471	598	629	704	
	KW	-10	2.46	119	143	179	198	224	284	299	335	358	396	448	568	598	669	
	KW	-15	2.24	109	130	163	180	204	259	272	305	326	361	408	517	544	609	
	KW	-20	2.16	104	125	156	173	196	248	261	292	313	346	391	497	522	585	
压缩机 Compressor	型式 Type	/			半封闭双螺杆压缩机 Half-closed double screw compressor													
	功率 Power	KW	/	56.7	64.7	73.9	88.4	99	56.7×2	60.7×2	64.7×2	65.3×2	69.3×2	77.8×2	81.8×2	88.4×2	93.7×2	
冷凝风机 Condenser fan	功率 Power	KW	/	1.3×4	1.3×4	1.3×6	1.3×6	1.5×6	1.5×8	2.2×8	2.2×8	1.3×12	1.3×12	1.5×12	1.5×16	2.2×16	2.2×16	
	转速 Speed	r.p.m	/	930	930	930	930	930	930	930	975	930	975	930	930	975	975	
蒸发器 Evaporator	水流量 Water flow rate	m3/h	/	26	31	39	43	49	62	65	73	78	86	97	123	130	145	
	阻力 Resistance	KPa	/	45~50				45~65				45~65						
	进出管径 Pipe diameter (in/out)	DN(mm)	/	100	100	100	125	125	125	125	125	125	125	150	150	150	150	
制冷剂 Refrigerant	种类 Species	/			R22													
	充注量 Incharged	Kg	/	43	51	63	71	80	100	110	120	63×2	71×2	80×2	100×2	110×2	120×2	
噪音 Ordinary type	dB(A)	/	67	67.5	68	69	70.5	71	72.5	73	73.5	75	77	78.5	79	81		
外形尺寸 External size	长 L	mm	/	2302	2650	3023	3480	3480	3880	4176	5800	5800	6800	6800	7400	8352	9000	
	宽 W	mm	/	2170	2170	2170	2170	2170	2170	2170	2170	2170	2170	2170	2170	2170	2170	
	高 H	mm	/	2307	2307	2307	2307	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	
总电源 Main power supply	/			3φ~380V~50Hz														
总功率 Total power	KW	/	48.5	58.1	72.7	80.5	91	115.5	121.5	136	145.4	161.6	182	231	243	272		
重量 Weight	Kg	/	2250	2400	2570	2950	3320	4500	4750	4920	4920	4970	5670	5720	5600	6270		

注:

1. 机组制冷量及压缩机的消耗功率标定工况: 室外环境干球温度35°C, 湿球温度24°C; 蒸发器进水温度12°C, 出水温度7°C。
2. 机组制热量及压缩机的消耗功率标定工况: 室外环境干球温度7°C, 湿球温度6°C; 冷凝器进水温度40°C, 出水温度45°C。
3. 我公司可按用户要求设计相应的非标机型。
4. 所有机型可进行模块化组合, 并可根据用户需要提供其他环保制冷剂系列产品。

Note:

1. Calibration working condition of chiller cooling capacity and compressor consumed power is: Outdoor environment dry-bulb temperature is 35°C, wet-bulb temperature is 24°C; Water temperature at evaporator input is 12°C, at output is 7°C.
2. Calibration working condition of chiller heating capacity and compressor consumed power is: Outdoor environment dry-bulb temperature is 7°C, wet-bulb temperature is 6°C; Water temperature at condenser input is 40°C, at output is 45°C.
3. Our company can design non-standard chillers according to customer requirements.
4. All kinds of chillers can be combined modular by modular, and can produce other environment-friendly refrigerant chillers according to customer requirements.



风冷模块冷热水机组技术参数表 (R22)

Technical performances table of air cooled modular cold (hot) water unit (R22)

机组型号 Unit model	YFM-	U-R-30	V-R-65	W-R-90	V-R-130
制冷 Cooling	制冷量 (kW) Cooling capacity	33	66	99	132
	制冷功率 (kW) Cooling power	10.50	21.00	31.50	42.00
	性能系数 (EER)	3.14	3.14	3.14	3.14
	综合能效 (LPLV)	3.59	3.59	3.59	3.59
	出水温度 Water leaving temp.	7 °C			
制热 Heating	制热量 (kW) Hheating capacity	35	70	105	140
	制热功率 (kW) Heating power	10.10	20.20	30.30	40.40
	能效比 (COP)	3.47	3.47	3.47	3.47
	出水温度 Water leaving temp.	45 °C			
水侧换热器 water side heat exchange	水流量 (m ³ /h) Water flow	5.68	11.35	17.03	22.70
	型式 Type	壳管式换热器 Shell and tube heat exchanger			
	水阻力 (kpa) Water resistance	45	48	50	55
	接管规格 Specification of connecting pipes	DN50	DN50	DN65	DN65
风侧换热器 Air side heat exchanger	型式 type	紫铜管串铝片, 机械胀接 Red copper pipes strung by aluminum plates, mechanical expansion			
	冷凝风机 Condensate fan	高效率轴流风机 High efficiency axial fan			
压缩机 Compressor	类型 Type	全封闭涡旋式压缩机 Fully enclosed scroll compressor			
	数量 No.	1	2	3	4
电源 (三相五线) Power source(three-phase five wire system)	380V / 3P / 50Hz				
安全保护 Safety protection	高低压保护、断水保护、防冻保护、电机过载、相序保护、排温保护等。 High low voltage protection water shortage protection anti-freeze protection motor overload protection phase sequence protection exhaust temp. protection				
运行范围 Operation range	环境温度 Ambient temp.	制冷: 20°C ~ 43°C; 制热: -12°C ~ 25°C; cooling: 20°C ~ 43°C; heating: -12°C ~ 25°C;			
	出水温度 Water leaving temp.	制冷: 5°C ~ 20°C; 制热: 35°C ~ 55°C cooling: 5°C ~ 20°C; heating: 35°C ~ 55°C			
制冷剂 Refrigerant	种类 Type	R22			
	充注量 (kg) Charge Qty	10	20	30	40
外形尺寸 (mm) Physical dimensions	长 Length	1056	2210	2510	2510
	宽 Width	1056	1055	1350	1350
	高 Height	1900	2100	2100	2100
机组噪音 dB(A) Unit noise	62, 65, 66, 68				
机组重量 (kg) Unit weight	400, 710, 1200, 1295				

注: 1. 名义制冷工况: 出水温度: 7 °C, 水流量0.172m³/(h · kw); 环境干球温度35°C, 湿球温度24°C。

2. 名义制热工况: 出水温度 45°C, 水流量0.172m³/(h · kw); 环境温度: 干球温度7°C、湿球温度6°C。

Note:

1. Nominal cooling working condition: water leaving temp.: 7 °C, water flow rate 0.172m³/(h · kw); dry bulb ambient temp.: 35°C, wet bulb ambient temp.: 24°C.

2. Nominal heating working condition: water leaving temp.: 45 °C, water flow rate 0.172m³/(h · kw); dry bulb ambient temp.: 7°C, wet bulb ambient temp.: 6°C.



低环境温度空气源冷水(热泵)机组技术参数表(R22)

Technical performances table of low ambient temp. air source cold water(heat pump) unit(R22)

机组型号 Unit model	YFM-	V-R-70D	W-R-100D	V-R-140D
制热 Heating	制热量(kW) Heating capacity	70	105	140
	制热功率(kW) Heating power	20.20	30.30	40.40
	能效比(COP)	3.47	3.47	3.47
	出水温度 Water leaving temp.	45℃		
低环境制热 Low ambient temp. heating	制热量(kW) Heating capacity	40.6	60.9	100
	功率(kW) Power	17.36	26.04	42.7
	能效比(COP)	2.34	2.34	2.34
	综合能效(LPLV)			
出水温度 Water leaving temp.	41℃			
制冷 Cooling	制冷量(kW) Cooling capacity	66	99	132
	制冷功率(kW) Cooling power	21.00	31.50	42.00
	性能系数(EER)	3.14	3.14	3.14
	综合能效(LPLV)	3.59	3.59	3.59
	出水温度 Water leaving temp.	7℃		
水侧换热器 Water side heat exchanger	水流量(m ³ /h) Water flow	11.35	17.03	22.70
	型式 Type	壳管式换热器 Shell and tube heat exchanger		
	水阻力(kpa) Water resistance	48	50	55
	接管规格 Specification of connecting pipes	DN50	DN65	DN65
风侧换热器 Air side heat exchanger	型式 Type	紫铜管串铝片, 机械胀接 Red copper pipes strung by aluminum plates, mechanical expansion		
	冷凝风机 Condensate fan	高效率轴流风机 High efficiency axial fan		
压缩机 Compressor	类型 Type	全封闭涡旋式压缩机 Fully enclosed scroll compressor		
	数量 No.	2	3	2
电源(三相五线) Power source (three-phase five wire system)	三相 / 380V / 50Hz			
安全保护 Safety protection	高低压保护、断水保护、防冻保护、电机过载、相序保护、排温保护等。 high low voltage protection water shortage protection anti-freeze protection motor overload protection phase sequence protection exhaust temp. protection			
运行范围 Operation range	环境温度 Ambient temp.	制冷: 20℃~43℃; 制热: -25℃~25℃; Cooling: 20℃~43℃; heating: -25℃~25℃;		
	出水温度 Water leaving temp.	制冷: 5℃~20℃; 制热: 35℃~55℃ Cooling: 5℃~20℃; heating: 35℃~55℃		
制冷剂 Refrigerant	种类 Type	R22		
	充注量(kg) Charge Qty	16	24	35
外形尺寸(mm) Physical dimensions	长 Length	2210	2510	2510
	宽 Width	1055	1350	1350
	高 Height	2100	2100	2100
机组噪音 dB(A) Unit noise	65	66	68	
机组重量(kg) Unit weight	740	1250	1340	

注: 1. 名义制冷工况: 出水温度: 7℃, 水流量0.172m³/(h·kw); 环境干球温度35℃, 湿球温度24℃。

2. 名义制热1工况: 出水温度 45℃, 水流量0.172m³/(h·kw); 环境干球温度7℃、湿球温度6℃。

3. 名义制热2工况: 出水温度 41℃, 水流量0.172m³/(h·kw); 环境干球温度-12℃、湿球温度-14℃。

Note: 1. Nominal cooling working condition: water leaving temp.: 7℃, water flow rate 0.172m³/(h·kw); dry bulb ambient temp.: 35℃, wet bulb ambient temp.: 24℃.

2. No.1 nominal heating working condition: water leaving temp.: 45℃, water flow rate 0.172m³/(h·kw); dry bulb ambient temp.: 7℃, wet bulb ambient temp.: 6℃.

3. No.2 nominal heating working condition: water leaving temp.: 41℃, water flow rate 0.172m³/(h·kw); dry bulb ambient temp.: -12℃, wet bulb ambient temp.: -14℃.



风冷模块冷热水机组技术参数表 (R410a)

Technical performances table of air cooled modular cold (hot) water unit (R410a)

机组型号 Unit model	YFM-	U-R-34A	V-R-65A	W-R-90A	V-R-130A	W-R-260A
制冷 Cooling	制冷量 (kW) Cooling capacity	32	64	96	128	256
	制冷功率 (kW) Cooling power	10.75	21.50	32.25	42.00	84.00
	性能系数 (EER)	2.98	2.98	2.98	3.05	3.05
	综合能效 (LPLV)	3.55	3.55	3.55	3.60	3.59
	出水温度 Water leaving temp.	7 °C				
制热 Heating	制热量 (kW) Hheating capacity	35	70	105	155	310
	制热功率 (kW) Heating power	10.10	20.20	30.30	40.40	80.80
	能效比 (COP)	3.47	3.47	3.47	3.84	3.84
	出水温度 Water leaving temp.	45 °C				
水侧换热器 water side heat exchange	水流量 (m ³ /h) Water flow	5.50	11.01	16.51	22.02	44.03
	型式 Type	壳管式换热器 Shell and tube heat exchanger				
	水阻力 (kpa) Water resistance	45	48	50	55	58
	接管规格 Specification of connecting pipes	DN50	DN50	DN65	DN65	DN80
风侧换热器 Air side heat exchanger	型式 type	紫铜管串铝片, 机械胀接 Red copper pipes strung by aluminum plates, mechanical expansion				
	冷凝风机 Condensate fan	高效率轴流风机 High efficiency axial fan				
压缩机 Compressor	类型 Type	全封闭涡旋式压缩机 Fully enclosed scroll compressor				
	数量 No.	1	2	2	2	4
电源 (三相五线) Power source(three-phase five wire system)	380V / 3P / 50Hz					
安全保护 Safety protection	高低压保护、断水保护、防冻保护、电机过载、相序保护、排温保护等。 High low voltage protection water shortage protection anti-freeze protection motor overload protection phase sequence protection exhaust temp. protection					
运行范围 Operation range	环境温度 Ambient temp.	制冷: 20°C ~ 43°C; 制热: -12°C ~ 25°C; cooling: 20°C ~ 43°C; heating: -12°C ~ 25°C;				
	出水温度 Water leaving temp.	制冷: 5°C ~ 20°C; 制热: 35°C ~ 55°C cooling: 5°C ~ 20°C; heating: 35°C ~ 55°C				
制冷剂 Refrigerant	种类 Type	R410A				
	充注量 (kg) Charge Qty	8	16	19	30	63
外形尺寸 (mm) Physical dimensions	长 Length	1056	2210	2400	2340	2807
	宽 Width	1056	1055	1065	1300	2150
	高 Height	1900	2100	2100	2260	2190
机组噪音 dB(A) Unit noise	62 65 66 68 69					
机组重量 (kg) Unit weight	400 710 1050 1270 2510					

注: 1. 名义制冷工况: 出水温度: 7 °C, 水流量0.172m³/(h · kw); 环境干球温度35°C, 湿球温度24°C。

2. 名义制热工况: 出水温度 45°C, 水流量0.172m³/(h · kw); 环境温度: 干球温度7°C、湿球温度6°C。

Note:

1. Nominal cooling working condition: water leaving temp.: 7 °C, water flow rate 0.172m³/(h · kw); dry bulb ambient temp.: 35°C, wet bulb ambient temp.: 24°C.

2. Nominal heating working condition: water leaving temp.: 45 °C, water flow rate 0.172m³/(h · kw); dry bulb ambient temp.: 7°C, wet bulb ambient temp.: 6°C.



低环境温度空气源冷水(热泵)机组技术参数表(R410a)

Technical performances table of low ambient temp. air source cold water(heat pump) unit(R410a)

机组型号 Unit model	YFM-	V-R-70DA	V-R-100DA	V-R-150DA	V-R-300DA
制热 Heating	制热量(kW) Heating capacity	70	105	155	310
	制热功率(kW) Heating power	20.2	30.3	40.4	80.8
	能效比(COP)	3.47	3.47	3.84	3.84
	出水温度 Water leaving temp.	45℃			
低环温制热 Low ambient temp. heating	制热量(kW) Heating capacity	50.6	75.9	120	240
	功率(kW) Power	21.6	32.43	51.3	102.6
	能效比(COP)	2.34	2.34	2.34	2.34
	综合能效(LPLV)	2.81	2.81	2.81	2.81
	出水温度 Water leaving temp.	41℃			
制冷 Cooling	制冷量(kW) Cooling capacity	64	96	128	256
	制冷功率(kW) Cooling power	21.50	32.25	42.00	84.00
	性能系数(EER)	2.98	2.98	3.05	3.05
	综合能效(LPLV)	3.55	3.55	3.60	3.59
	出水温度 Water leaving temp.	7℃			
水侧换热器 Water side heat exchanger	水流量(m³/h) Water flow	11.01	16.51	22.02	44.03
	型式 Type	壳管式换热器 Shell and tube heat exchanger			
	水阻力(kpa) Water resistance	48	50	55	58
	接管规格 Specification of connecting pipes	DN50	DN65	DN65	DN80
风侧换热器 Air side heat exchanger	型式 Type	紫铜管串铝片, 机械胀接 Red copper pipes strung by aluminum plates, mechanical expansion			
	冷凝风机 Condensate fan	高效率轴流风机 High efficiency axial fan			
压缩机 Compressor	类型 Type	全封闭涡旋式压缩机 Fully enclosed scroll compressor			
	数量 No.	2	2	2	4
电源(三相五线) Power source (three-phase five wire system)	三相 / 380V / 50Hz				
安全保护 Safety protection	高低压保护、断水保护、防冻保护、电机过载、相序保护、排温保护等。 high low voltage protection water shortage protection anti-freeze protection motor overload protection phase sequence protection exhaust temp. protection				
运行范围 Operation range	环境温度 Ambient temp.	制冷: 20℃~43℃; 制热: -25℃~25℃; Cooling: 20℃~43℃; heating: -25℃~25℃;			
	出水温度 Water leaving temp.	制冷: 5℃~20℃; 制热: 35℃~55℃ Cooling: 5℃~20℃; heating: 35℃~55℃			
制冷剂 Refrigerant	种类 Type	R410A			
	充注量(kg) Charge Qty	17	20	31	64
外形尺寸(mm) Physical dimensions	长 Length	2210	2400	2340	2807
	宽 Width	1055	1055	1300	2150
	高 Height	2100	2100	2260	2190
机组噪音 dB(A) Unit noise	65	66	68	69	
机组重量(kg) Unit weight	740	1100	1350	2680	

注: 1. 名义制冷工况: 出水温度: 7℃, 水流量0.172m³/(h·kw); 环境干球温度35℃, 湿球温度24℃。

2. 名义制热1工况: 出水温度 45℃, 水流量0.172m³/(h·kw); 环境干球温度7℃、湿球温度6℃。

3. 名义制热2工况: 出水温度 41℃, 水流量0.172m³/(h·kw); 环境干球温度-12℃、湿球温度-14℃。

Note: 1. Nominal cooling working condition: water leaving temp.: 7℃, water flow rate 0.172m³/(h·kw); dry bulb ambient temp.: 35℃, wet bulb ambient temp.: 24℃.

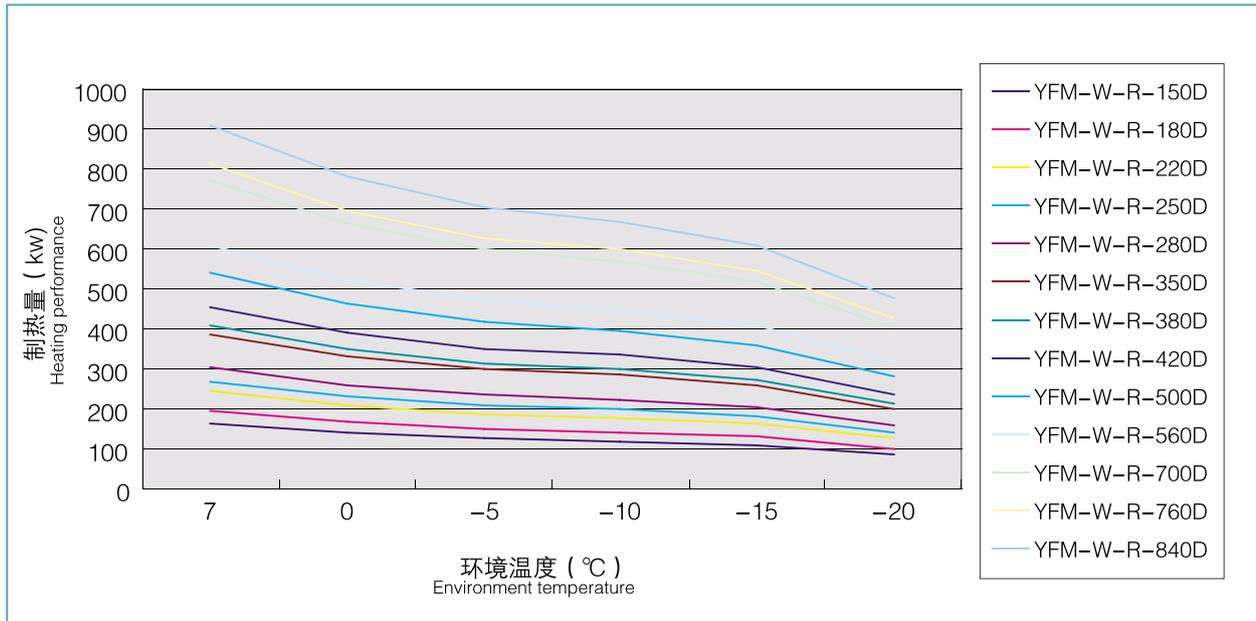
2. No.1 nominal heating working condition: water leaving temp.: 45℃, water flow rate 0.172m³/(h·kw); dry bulb ambient temp.: 7℃, wet bulb ambient temp.: 6℃.

3. No.2 nominal heating working condition: water leaving temp.: 41℃, water flow rate 0.172m³/(h·kw); dry bulb ambient temp.: -12℃, wet bulb ambient temp.: -14℃.



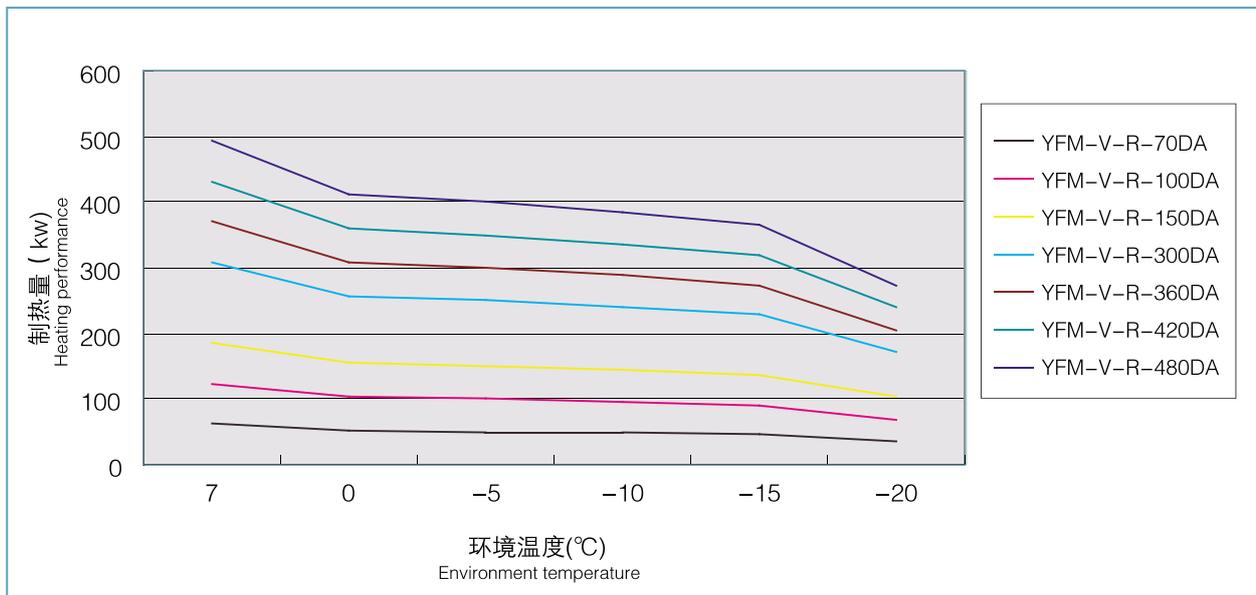
超低温风冷螺杆冷（热）水机组制热性能曲线图

Performance curve of ultra-low-temperature air cooled screw cold/hot water chiller



超低温风冷模块冷（热）水机组制热性能曲线图

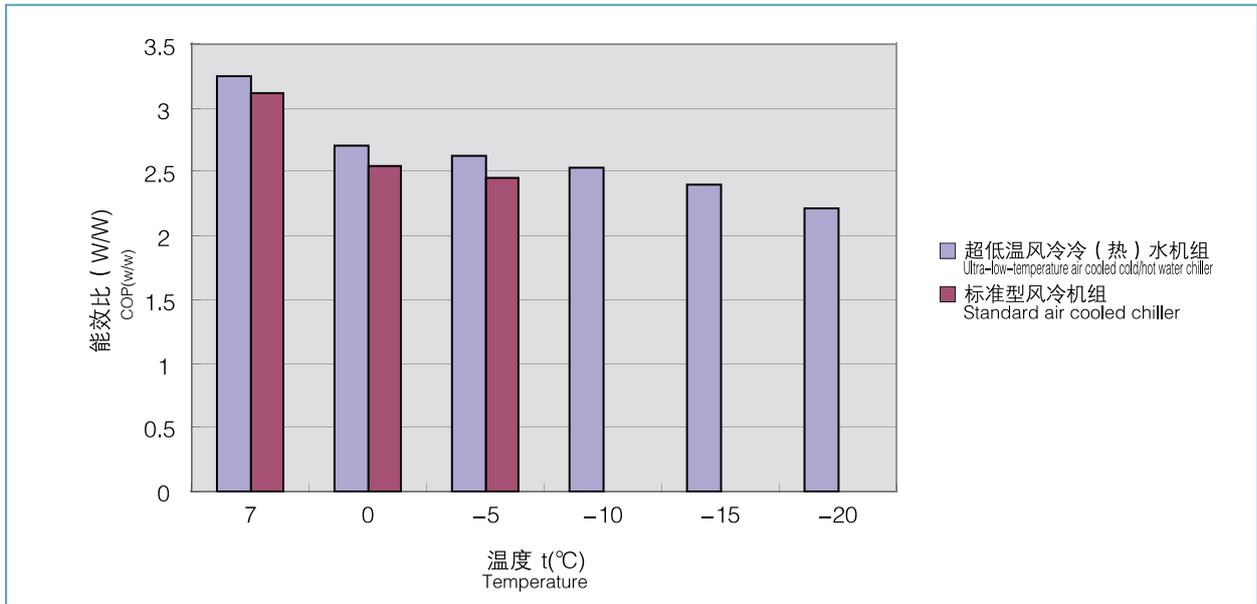
Performance curve of Ultra-low-temperature air cooled modular cold/hot water chiller





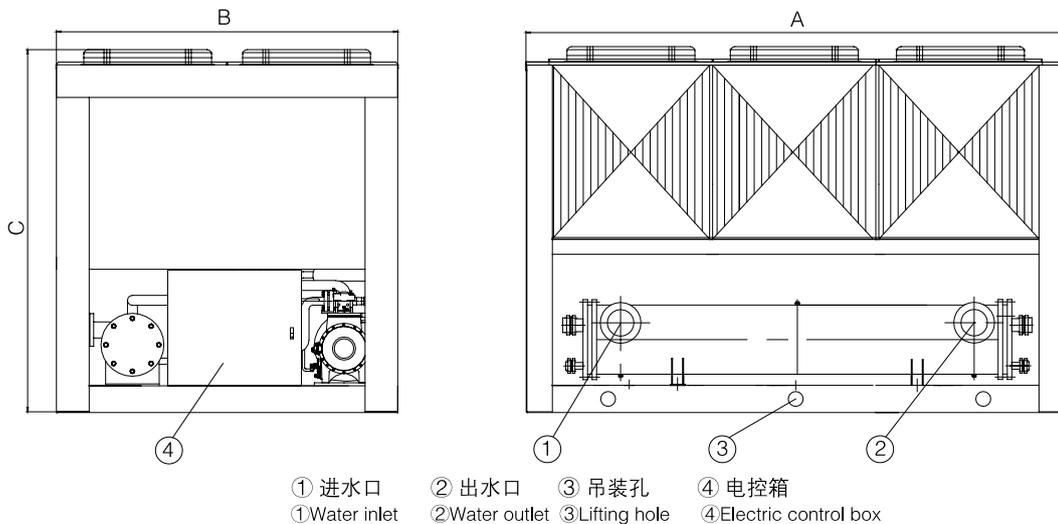
超低温风冷冷(热)水机组与标准型风冷机组制热能效比比较

Heating COP comparison between low-temperature heat-flash air cooled chiller and standard air cooled chiller



超低温风冷冷(热)水机组外形示意图(单系统)

Outline schematic plan of ultra-low-temperature air cooled cold/hot water chiller(Single system)

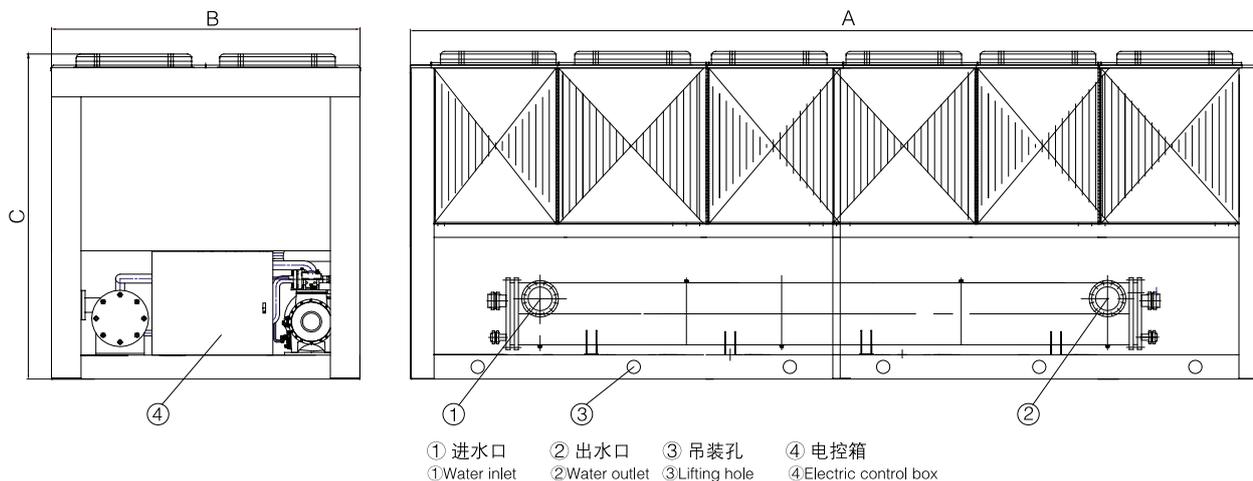


项目 Item	单位 Unit	YFM-W-R-150D	YFM-W-R-180D	YFM-W-R-220D	YFM-W-R-250D	YFM-W-R-280D
A	mm	2302	2650	3023	3480	3480
B	mm	2170	2170	2170	2170	2170
C	mm	2307	2307	2307	2307	2500

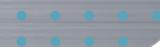


超低温风冷冷（热）水机组外形示意图（双系统）

Outline schematic plan of ultra-low-temperature air cooled cold/hot water chiller(Double systems)



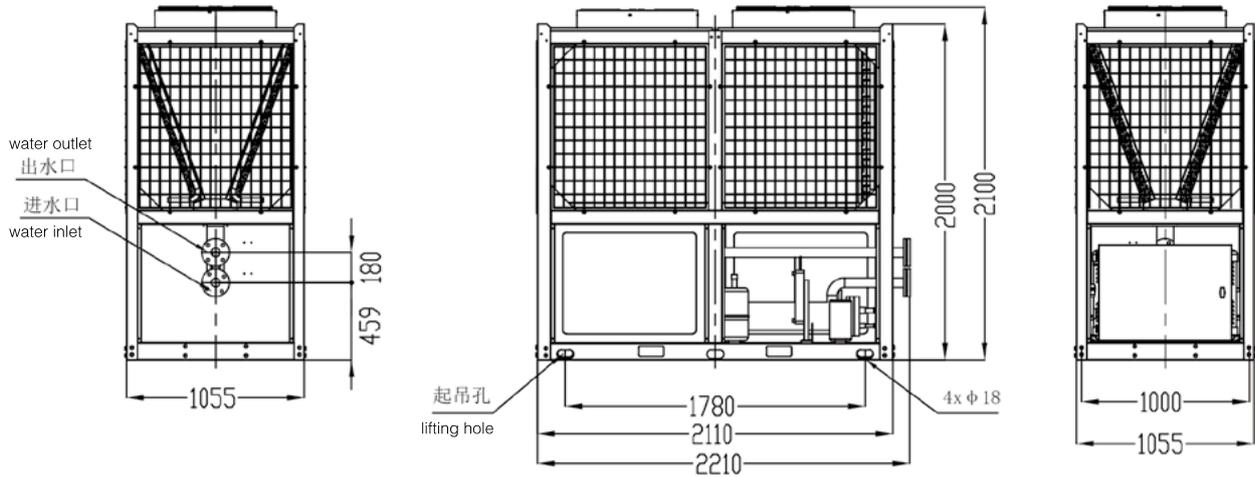
项目	单位	YFM-W-R-350D	YFM-W-R-380D	YFM-W-R-420D	YFM-W-R-450D	YFM-W-R-500D	YFM-W-R-560D	YFM-W-R-700D	YFM-W-R-760D	YFM-W-R-840D
A	mm	3880	4176	5800	5800	6800	6800	7400	8352	9000
B	mm	2170	2170	2170	2170	2170	2170	2170	2170	2170
C	mm	2500	2500	2500	2500	2500	2500	2500	2500	2500





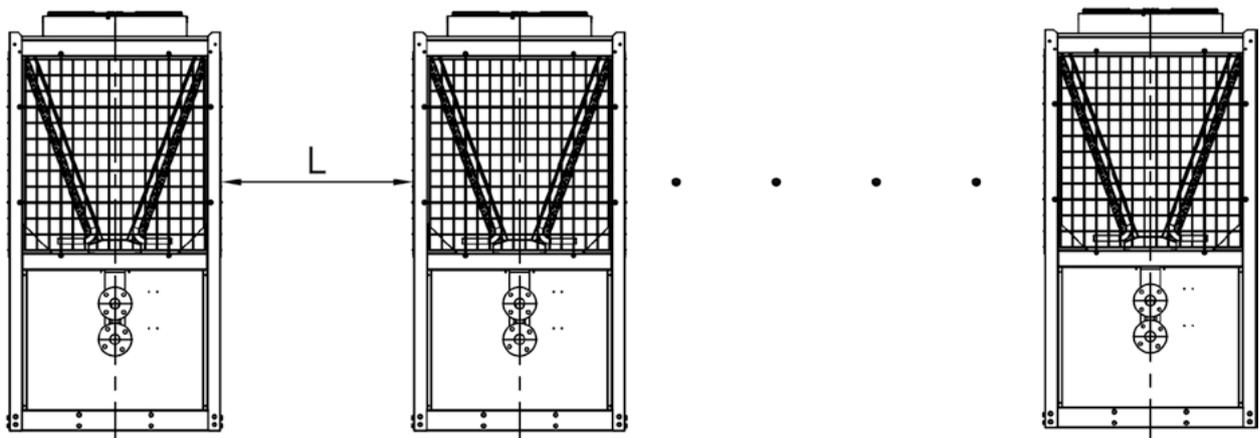
单模块外形图 (YFM-V-R-60/70系列)

Outline drawing of singular module (YFM-V-R-60/70)



多模块安装间隔及外形图

Spacing distance for installation of multi modules and their outline drawings



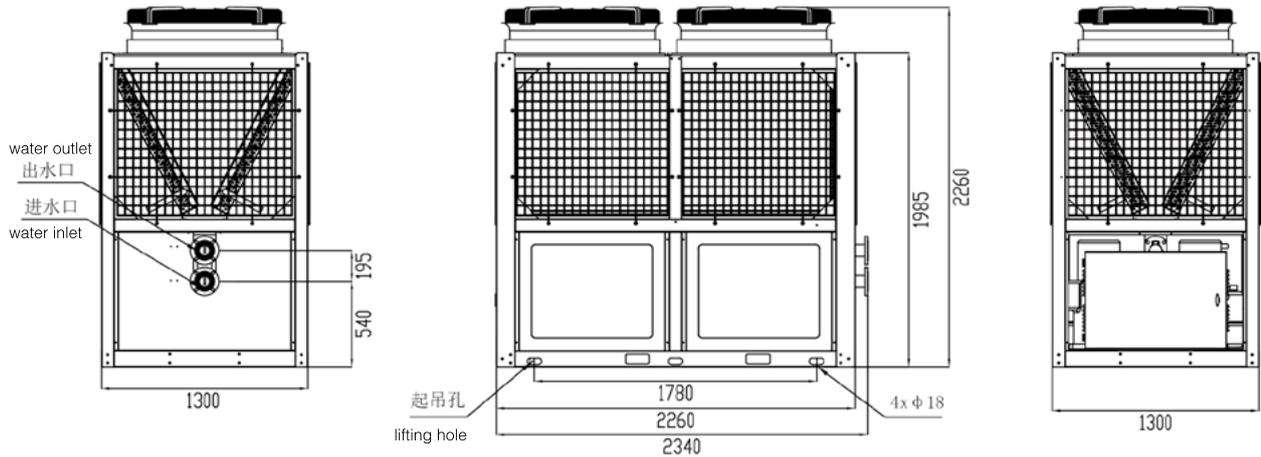
- 注：1、模块间距离“L”根据现场情况可由用户定，建议模块与模块之间留有500~800mm的维护空间，四周留有1000mm，上部2000mm以上空间，以保证空气流通；
2、图内零件外形只供参考，具体以实物为准；
3、无法满足安装空间要求，请与本公司技术部联系。

Note: 1. The spacing distance L between modules can be determined by users based on site conditions. It is recommended to reserve 500~800 mm of maintenance space between modules, 1,000 mm of space around modules, and more than 2,000 mm of space above modules to ensure air circulation.
2. The appearance of the parts in the drawing is for reference only.
3. If the installation space requirement can't be met, please contact our technical department.



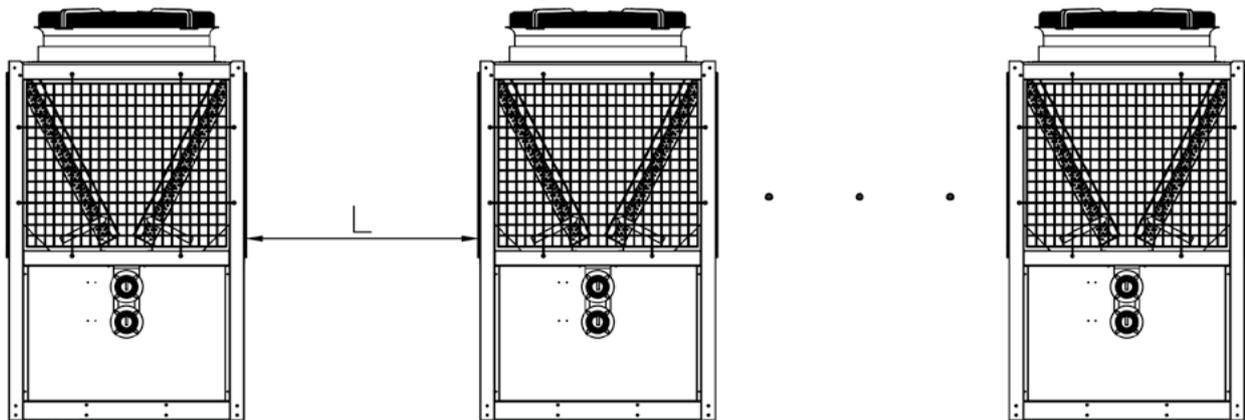
单模块外形图 (YFM-V-R-130/150系列)

Outline drawing of singular module (YFM-V-R-130/150)



多模块安装间隔及外形图

Spacing distance for installation of multi modules and their outline drawings

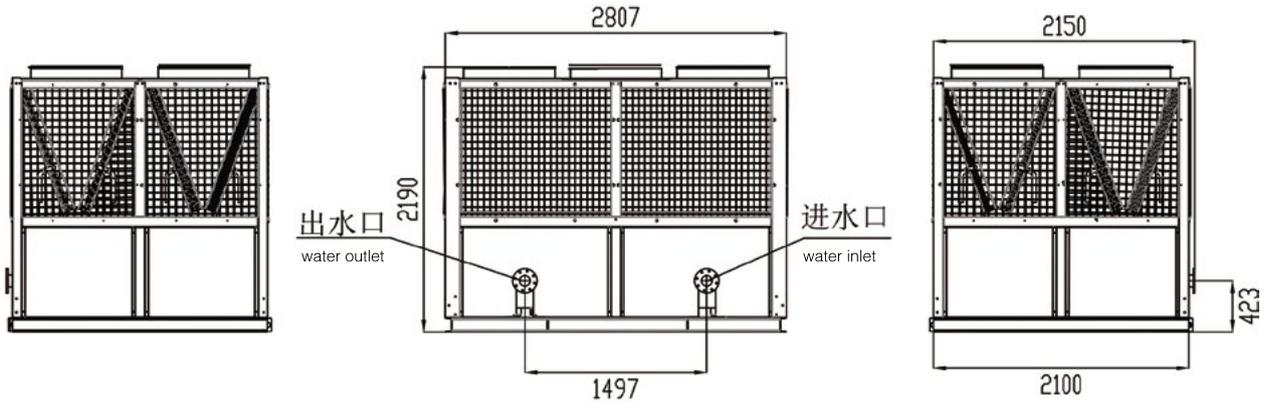


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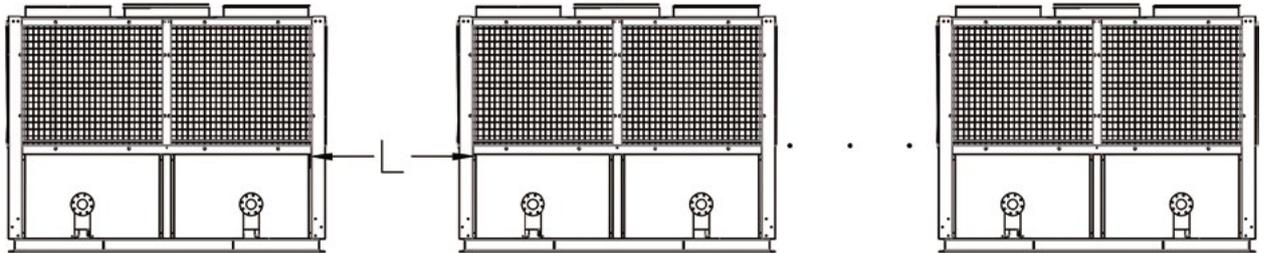
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单模块外形图 (YFM-V-R-260/300系列) Outline drawing of singular module (YFM-V-R-260/300)



多模块安装间隔及外形图 Spacing distance for installation of multi modules and their outline drawings



- 注：1、模块间距离“L”根据现场情况可由用户定，建议模块与模块之间留有500~800mm的维护空间，四周留有1000mm，上部2000mm以上空间，以保证空气流通；
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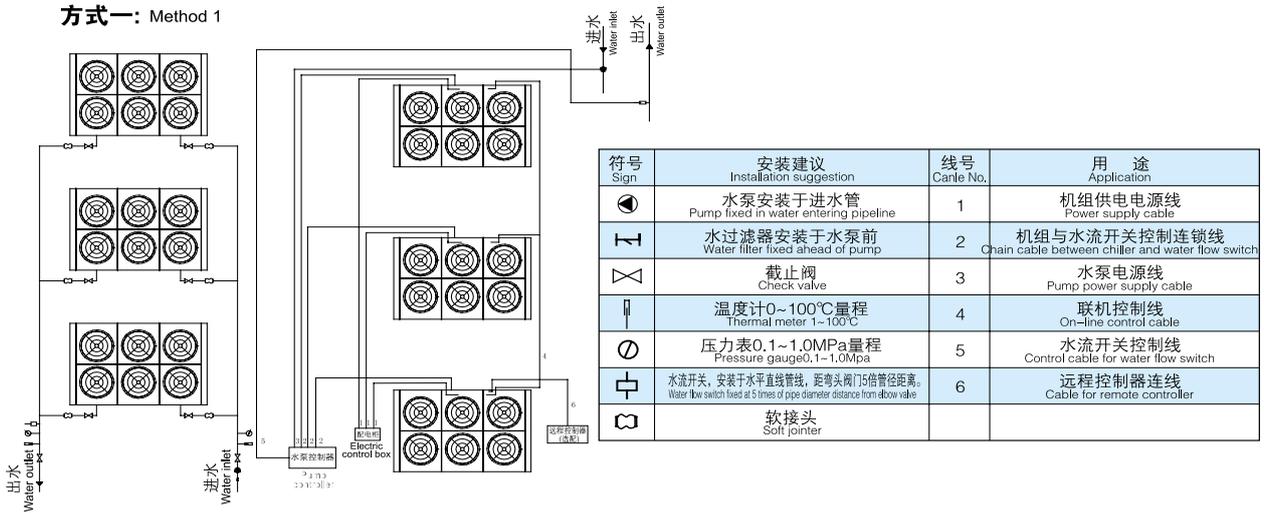


接线方式及管道 Wiring and pipeline

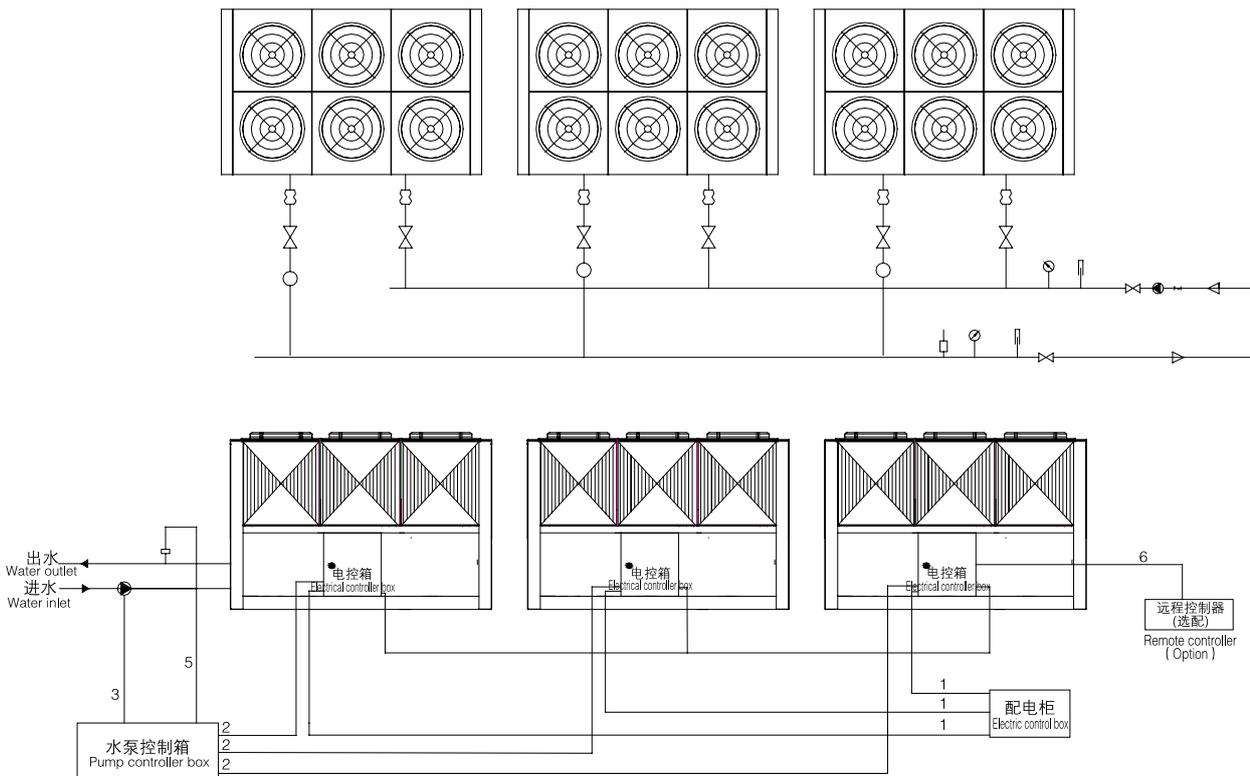
超低温风冷螺杆冷热水机组的连接方式及管道安装在实际工程中可以用以下两种方式:

There are two kinds of connection method of ultra-low-temperature air cooled cold/hot water chiller and its pipeline in actual projects :

方式一: Method 1



方式二: Method 2





线号 Canle No.	用途 Application
1	机组供电电源线 Power supply cable
2	机组与水流开关控制连锁线 Chain cable between chiller and water flow switch
3	水泵电源线 Pump power supply cable
4	联机控制线 On-line control cable
5	水流开关控制线 Control cable for water flow switch
6	远程控制器连线 Cable for remote controller

注：建设单位须将全部电缆电线敷设到机组电气箱，并做出线头标识符号。水泵控制箱与配电柜用户自备。

Note: Construction company should pave all cables to chiller electric control box and mark signs. Pump control box and electric cabinet should be offered by customer.

产品订货须知

Ordering instructions

- 1) 在合同中请按型号说明写清楚产品的详细技术要求、交货日期；
- 2) 要采用特殊品牌压缩机的请在合同中注明；
- 3) 产品的调试除特殊情况在合同中说明外，均由本公司授权的技术人员负责；
- 4) 特殊要求的非标产品请与本公司联系并在合同中注明；
- 5) 产品如有更新换代，相关技术参数恕不另行通知。

- 1) Please state in contract the detailed tech requirements and delivery date according to the model explanation;
- 2) If needing special brand of compressor, please state in contract.
- 3) Commission should be done by technician authorized our company except special case stated in contract
- 4) Non-standard products, please contact with our company and should state in contract
- 5) If the products have been updated, the relative tech data are subject to change without notice.



热水机组
Chiller/heater system



柜式恒温恒湿机组
Cabinet constant temperature/humidity



屋顶组合式空调机组
Roof combined air-handling unit



柜式冷风型风冷机组
Cabinet Cooled Air Type Air Conditioning Units



BUILD REPUTATION ON PROJECTS

只要努力满足客户的需求

继续引入更多的优质产品

我们一定能够培育出一个稳定的顾客群体

实现销售网络持续、稳定的增长

If we strive to meet the demands of the clients

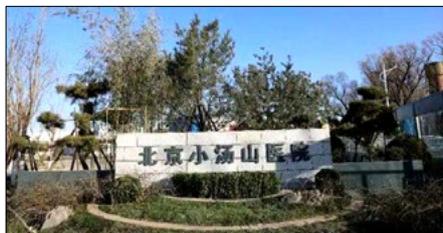
continue to produce more products with high quality

We will nourish and set up a steadfast client group

to realise the stable and steadfast expansion of the sales net

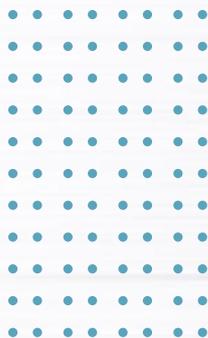
优良的品质和周到的服务，亚太集团取得了骄人的业绩。亚太洁净技术工程接连获得了北京小汤山医院、武汉火神山医院、武汉雷神山医院等近百家医院的青睐，以其洁净技术的杰出性能和净化实力，获得市场信任，树立用户口碑。

With excellent quality and considerate service, Yatai Group has made remarkable achievements. Its purification technology projects are successively favored by Xiaotangshan hospital in Beijing, Huoshenshan hospital and Leishenshan hospital in Wuhan. The outstanding performance of clean technology and purification strength have gained market trust for Yatai Group and established its reputation among users.



样本名称：超低温风冷冷（热）水机组 样本序号：SDYT-YB-A5 印刷时间：2022年08月（1000） 开本：1194-889竖16开





www.yatai.cc



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