



# Air Cooled Modular Chiller

King / king Plus / Aqua Tempo Super Series

MIDEA BUILDING TECHNOLOGIES **2024**

# Midea King Plus & King Series Air Cooled Heat Pump Modular Chiller

Eight core advantages:



**Stylish  
appearance**



**Energy control  
technology**



**Flexible  
installation**



**Environment-  
friendly**



**Energy-  
efficient**



**Stable  
Performance**



**Module  
combination**



**Smart  
control**

# Outline

The air cooled heat pump modular chiller is a central air conditioning unit that uses air as its cooling and heating source and water as the heat transfer medium. The unit can form a centralized air conditioning system together with FCU and AHU for cooling in summer and heating in winter. Midea King Plus series air cooled heat pump units employ a modular design. Up to 16 units of 130kW (8 units of 260kW) can be connected in parallel to form a combination product from 130 kW to 2,080 kW.

This unit is widely used in newly built and rebuilt large and small industrial and civil construction projects, places with high requirements for operating noise and surrounding environment, and places with water shortage or inconvenient to install cooling towers. The unit is especially suitable for buildings like hotels, restaurants, supermarkets, shopping malls, office buildings, cinemas and theatres, and factories.

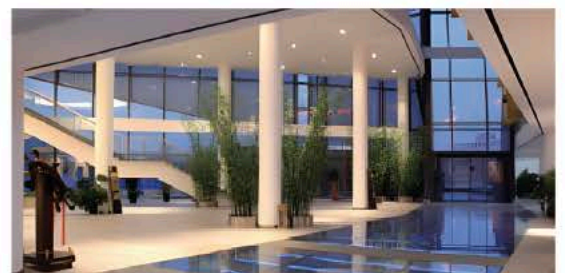
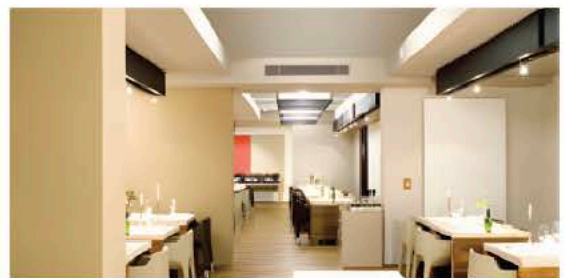
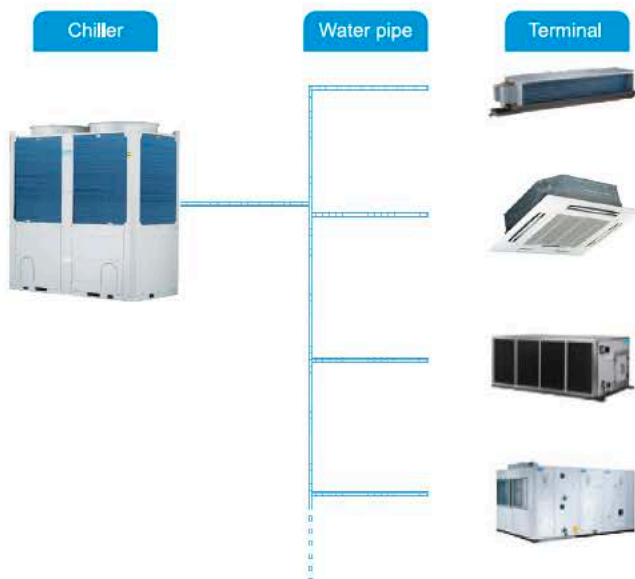
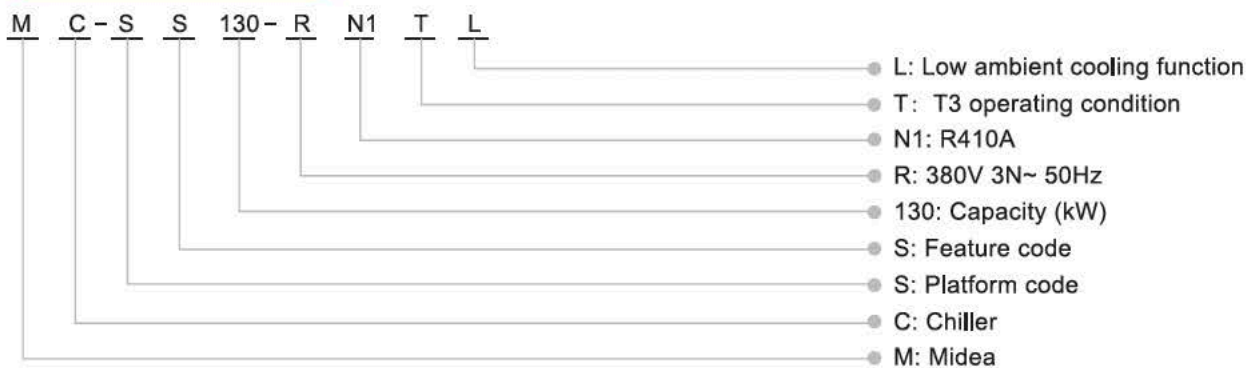


130 kW



260 kW

## Nomenclature





## Excellent design

### Air-side heat exchanger

The ring-type air return heat exchanger makes the airflow distribution uniform and heat exchange sufficient.



### Fan and motor

The large-air-flow and low-noise fan and large-torque and high-efficiency motor achieve high efficiency and low noise.



### Electric control box

The electric control box adopts professional components to ensure quality. The electric control box is designed on the front side to make installation fast and maintenance convenient.



### Water-side heat exchanger

The new type of spiral baffle plate evaporator increases the efficiency.



### Compressor

The compressor is large in capacity, efficient, and durable.



### Liquid storage tank

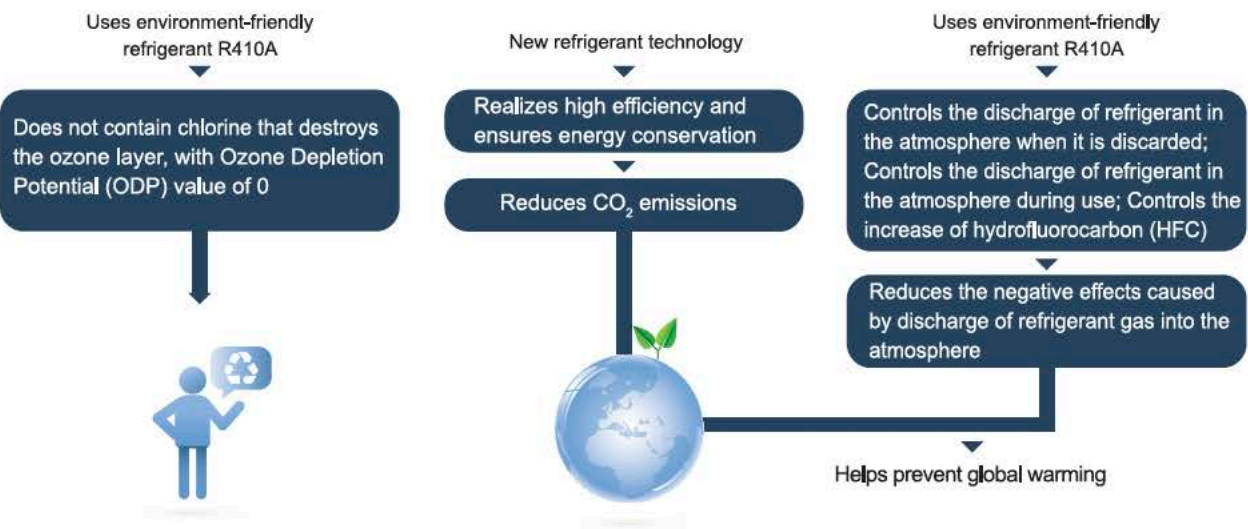
The large-sized low-pressure liquid storage tank is used to ensure that the system operates reliably.



# Features

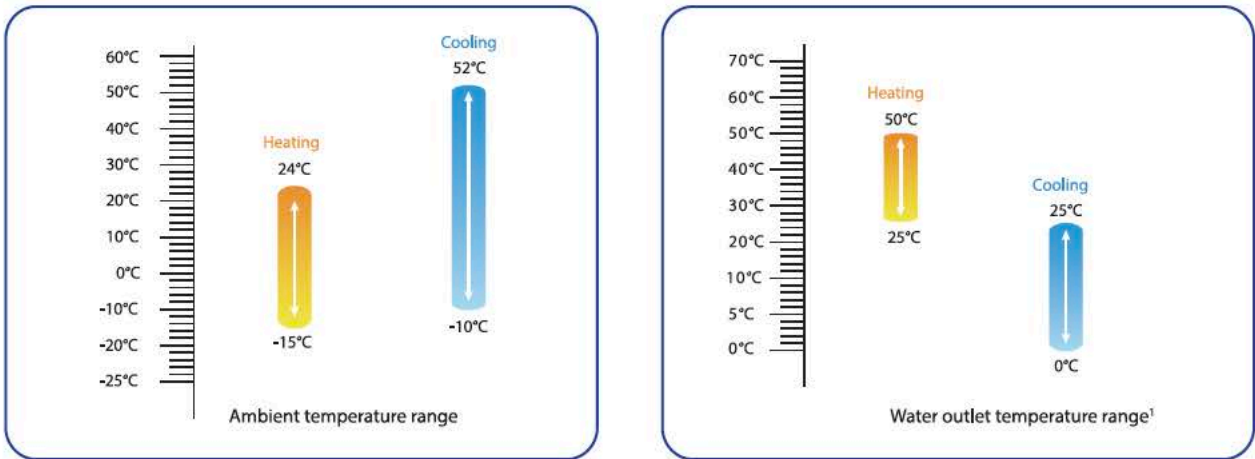
## Environment-friendly

Eco-friendly refrigerant R410A is used, with a higher cooling efficiency. R410A does not contain chlorine that destroys the ozone layer, and its Ozone Depletion Potential (ODP) value is 0. R410A also effectively reduces CO<sub>2</sub> emission.



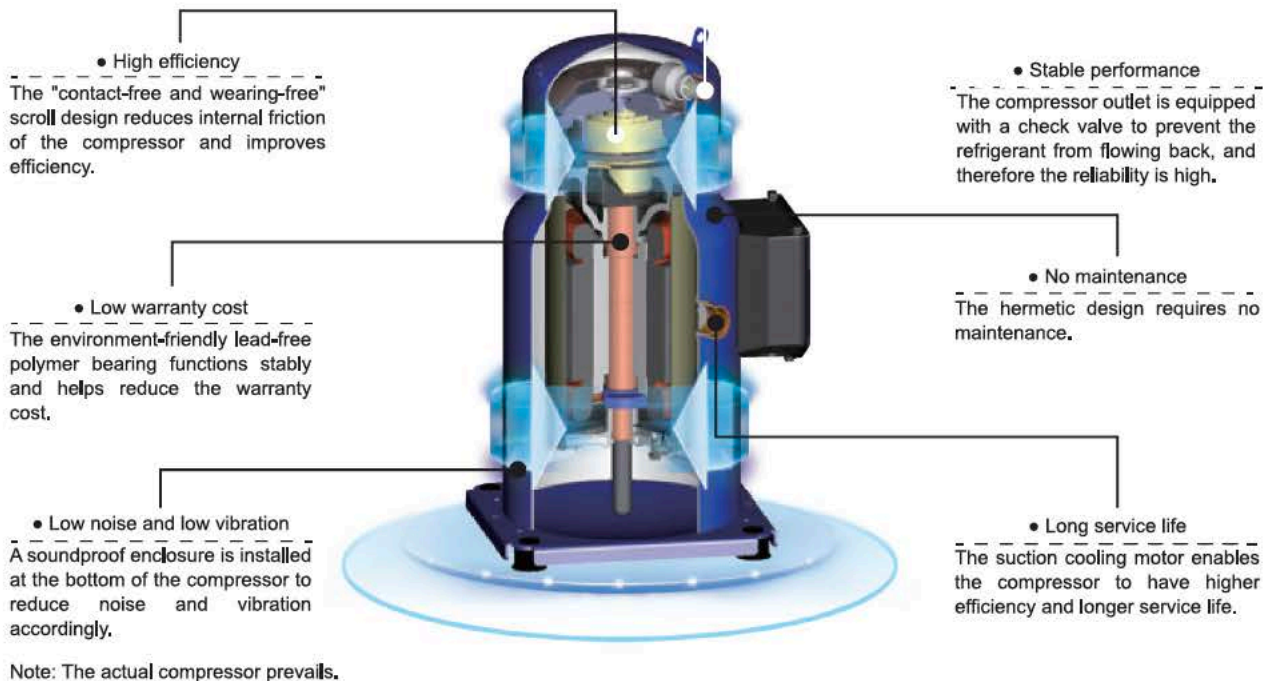
## Wide operation range

Midea King Plus & King series modular chiller integrates an efficient compressor, a new-generation efficient heat exchange system, a high-precision electronic expansion valve, and other professional components. The COP of the full series units reaches the leading level in the industry.



Note: 1. Antifreeze liquid is needed when water outlet temperature reaches 0°C

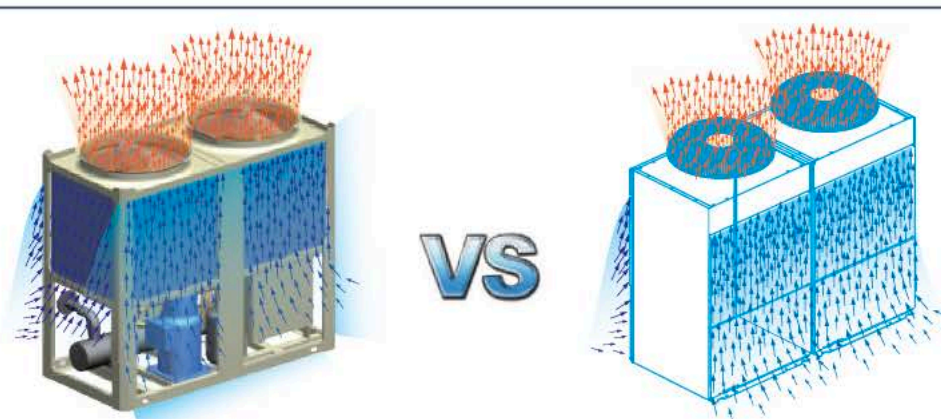
## ◆ Hermetic scroll compressor technology, stronger in power



## ◆ Efficient heat exchanger, greatly improving heat exchange efficiency

### • High-efficiency air-side heat exchanger

Based on the professional analog calculation of temperature field, heat exchangers are deployed in the upper part near the fan. With air inlet on all sides, the airflow is more uniform, and the utilization efficiency of heat exchangers is higher. Moreover, the bottom of the unit is not easy to frost in winter.



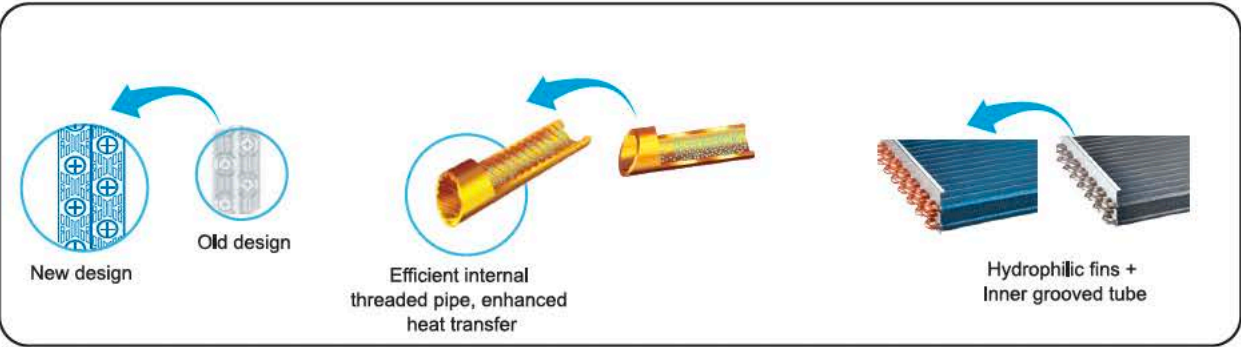
Heat exchangers are centralized in the upper part of the unit. Heat exchange is concentrated, and the air is evenly supplied on all sides to maximize the effective heat exchange area of the unit.

The utilization of heat exchangers at the bottom is low. The air inlet is uneven, causing waste. In addition, the bottom is easy to frost, affecting the heat exchange efficiency.



# Features

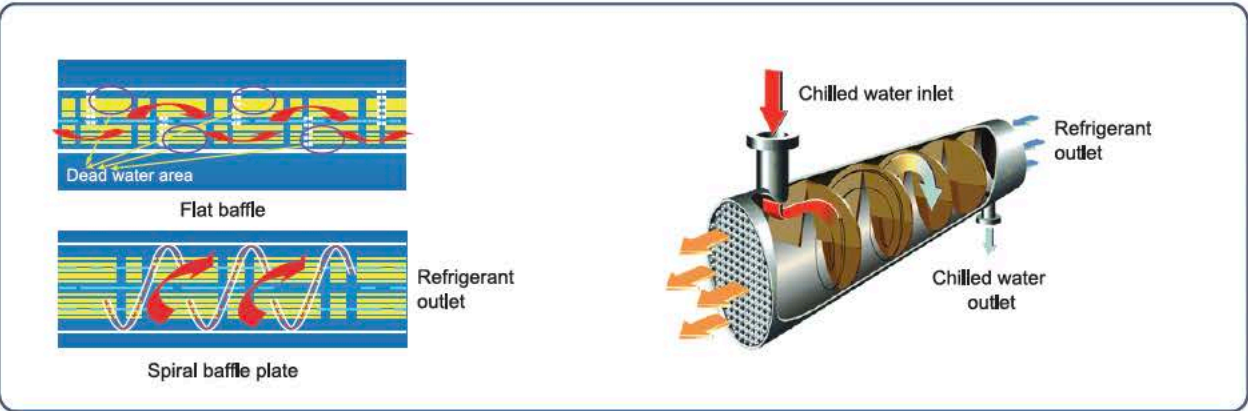
- High performance heat exchanger



The newly designed window fins and extended heat exchange area save more power and enhance the heat exchange performance. Hydrophilic aluminum foil fins and inner grooved copper tube optimize heat exchange efficiency. The specially coated blue fins can improve durability and prevent corrosion by air, water and other corrosive agents, ensuring a longer service life of the coil.

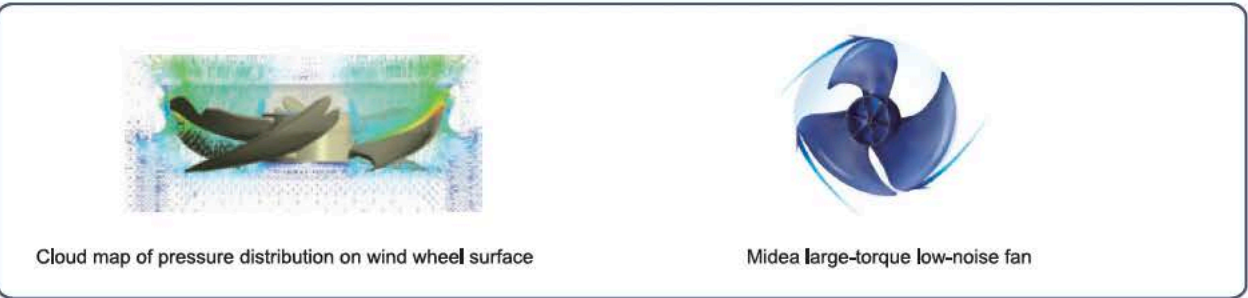
- Efficient water-side heat exchanger

For a shell-and-tube heat exchanger, the module adopts the new type of spiral baffle plate design to avoid the dead water area from forming a rectangular space, which greatly improves the heat exchange efficiency.



## ◆ High-efficiency low-noise fan, working with energy-saving motor

With CFD optimized impeller, the air-side heat exchange effect is better. Together with the excellent working speed of the motor, the airflow noise is lower and the sound quality is softer.

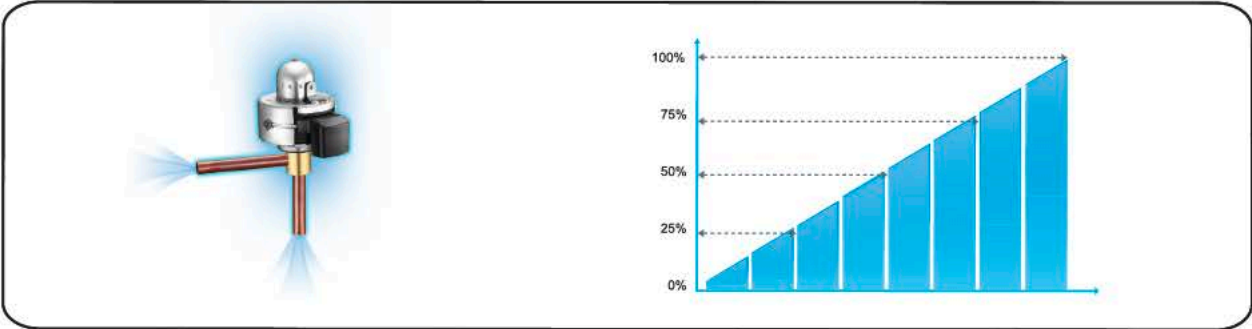


The energy-saving motor undergoes the optimization design of motor coil to reduce the loss effectively, improve operation efficiency, and guarantee low heat release of the motor, low power consumption and long operation life.



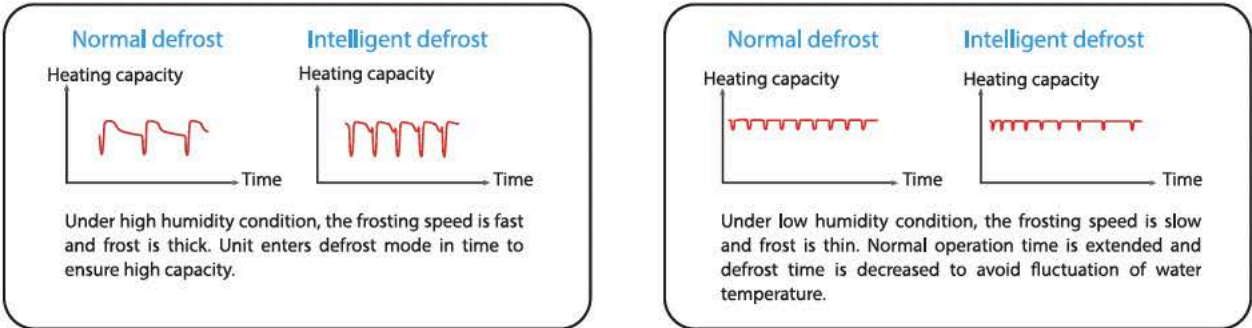
◆ EXV, more precise flow control

Liquid-phase distributed components maximize the performance and minimize the effects of defrosting. Together with capillary tube, 500-stage EXV can stably and precisely control airflow, with fast response, higher efficiency, and better reliability.



◆ Intelligent defrosting technology

Unit enters defrost mode and adjusts defrost period according to ambient temperature, frost forming speed etc to reduce capacity attenuation and fluctuation of water temperature,





## Features

**Stable and reliable**

◆ Alternate operation

Based on the system load, the unit sets the module that is started preferably in turn and equally allocates the running time of each module, greatly enhancing the reliability of the unit and prolonging its service life.

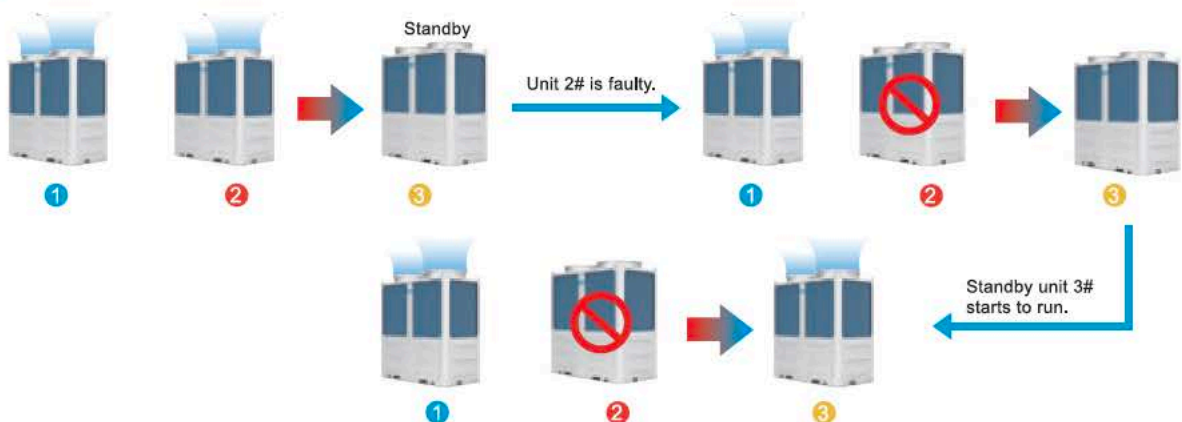


### Alternate technology between combined modules

Note: These figures take the combination of four modules as an example.

## ◆ Module Standby Operation

With the special standby operation technology, different modules in the same system are standby to each other, ensuring that the system can keep running in an emergency when one or more compressors or modular chillers fail.



## ◆ Various protection



High/low-pressure protection on the compressor



Reverse and phase loss protection of power supply



Unit anti-freezing protection under the cooling mode



Anti-freezing protection of the water system in winter



Frequent start protection



Compressor over-current protection



Compressor discharge temperature protection



Anti-overheating protection of the unit



Water flow switch protection



Sensor fault protection

## Convenient installation

### ◆ Modular design

- Unit modules of different capacities can be combined freely, and up to 16 units of 130kW (8 units of 260kW) can be connected in parallel, with strong compatibility and scalability. Based on the characteristics of the installation site, the user can select a variety of combination methods to connect 1-16 modules in parallel, with the cooling capacity up to 2,080 kW, which fully meets different needs.
- Air cooled modular chillers in the same system start up in stages, and operate in balance, reducing the impact of the unit startup current on the power grid.

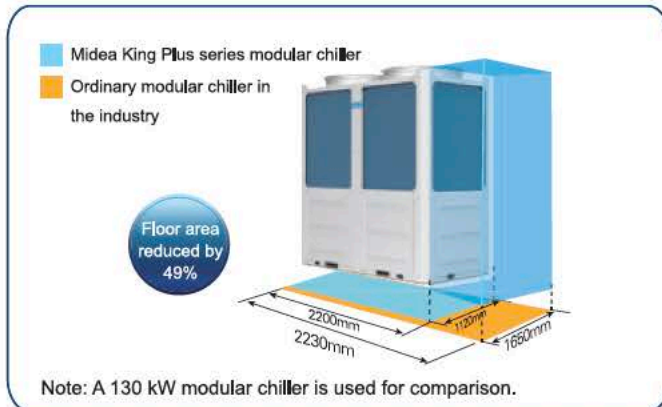


A maximum of 16 units can be connected in parallel, with capacity up to 2080 kW in a single system.

# Features

## ◆ Compact structure

The unit has a compact size and occupies a small area, truly saving space and effectively reducing transportation costs.



## ◆ Easy installation

All surrounding panels of the unit can be disassembled, facilitating daily maintenance.



## Smart control

### ◆ Micro PC control board

The micro PC control board features product operation control, safety protection, and many other functions. Among them, the high-speed processing chip can quickly obtain the operating parameters of the host system, and deliver control instructions in time to realize rapid processing, implement smart control of the unit, and ensure the stable operation of the unit.



### ◆ New touch wired controller

Stylish and elegant wired controller

Large LCD screen, backlit display, easier to read

Real-time clock display and timing

Setting of the temperature, mode, etc.

Touch keys, elegant and durable, preventing dust from entering

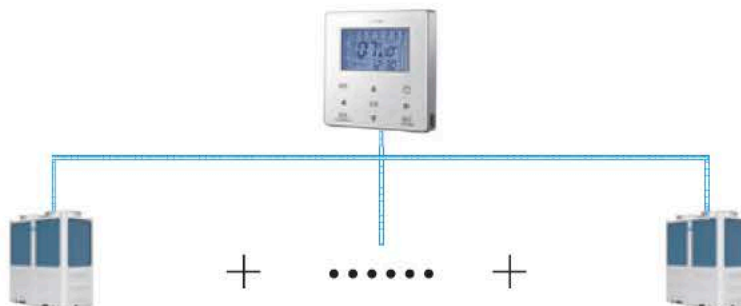


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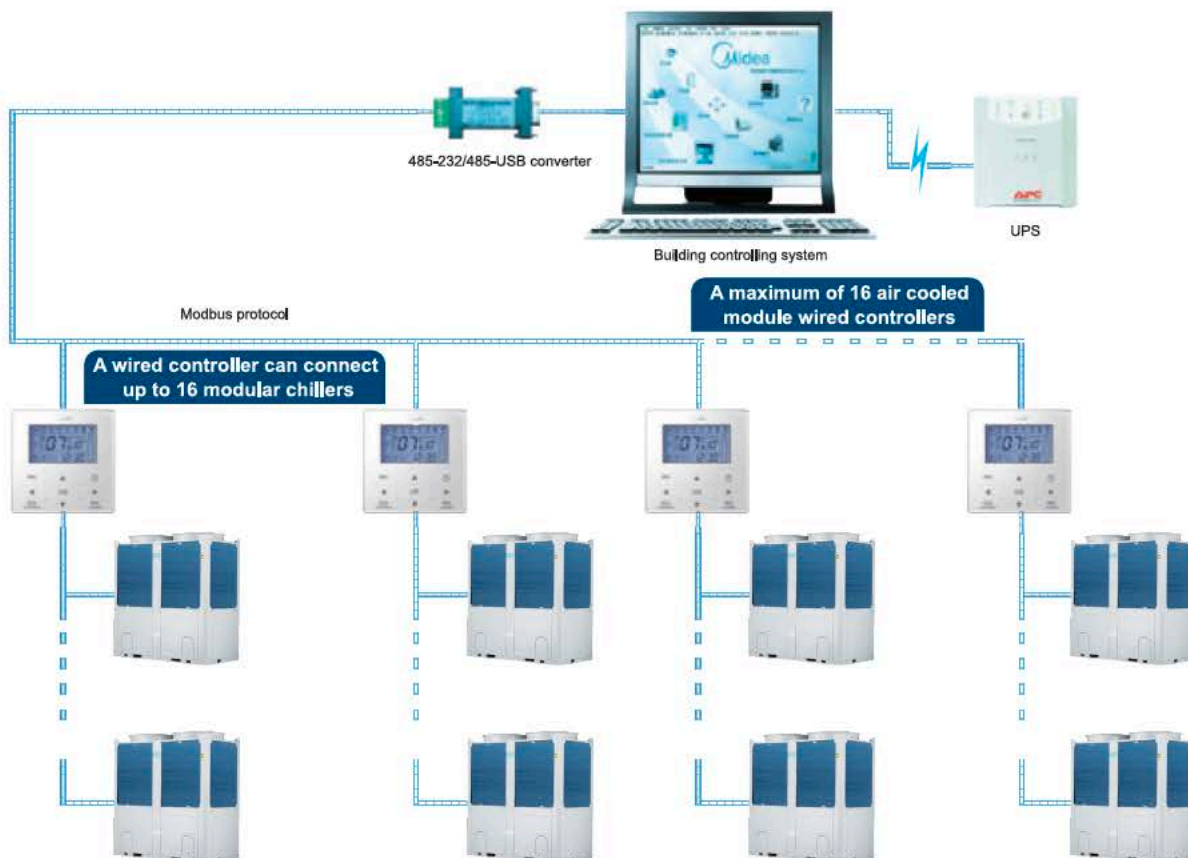
## ◆ Smart control system, user-friendly

A single wired controller can control up to 16 modular chillers in a centralized manner, manage the start and stop sequence of the units, and enable users to learn unit operating status and fault status in time.



## ● Smart building control, enhancing management reliability

Modbus is a widely used open protocol, especially in the building management system (BMS). Midea air cooled modular chillers can connect to the BMS in the Modbus protocol to realize remote control of up to 256 air cooled modules.



# Specifications

Model name			MC-SS65-RN1	MC-SS130-RN1TL	MC-SS260-RN1TL
Power supply		V/Ph/Hz	380-415/3/50	380-415/3/50	380-415/3/50
Cooling(A35W7)	Capacity	kW	65	130	265
	Rated input	kW	19.5	42.3	84.0
	EER		3.19	3.07	3.15
Heating(A7W45)	Capacity	kW	71	138	280
	Rated input	kW	20.4	43.0	84.8
	COP		3.33	3.21	3.30
Compressor	Type		Scroll(Fixed)	Scroll(Fixed)	Scroll(Fixed)
Air side heat exchanger	Type		Finned tube	Finned tube	Finned tube
Fan	Fan motor type		DC motor	DC motor	DC motor
Water side heat exchanger	Type		Shell-tube	Shell-tube	Shell-tube
	Rated water flow	m <sup>3</sup> /h	11.2	22.4	45.6
	Water pressure drop	kPa	48	40	60
Refrigerant system	Refrigerant type		R410A	R410A	R410A
	Refrigerant charge	kg	11.5	20	40
	Throttle type		EXV	EXV	EXV
Net dimensions (W×H×D)	mm		960*1770*2000	1120*2300*2200	2753*2415*2220
Packed dimensions (W×H×D)	mm		1030*1890*2090	1180*2445*2250	2810*2450*2290
Net weight	kg		525	831	1890
Gross weight	kg		560	852	1900
Pipe connections	Water inlet/outlet	mm	DN65	DN65	DN100
Water pressure range	MPa		1.0	1.0	1.0
Ambient temperature range	Cooling	°C	-10~52	-10~52	-10~52
	Heating	°C	-15~24	-15~24	-15~24
Water outlet temperature <sup>1</sup>	Cooling	°C	0~25	0~25	0~25
	Heating	°C	25~50	25~50	25~50

Note: 1.Antifreeze liquid is needed when water outlet temperature is below 5°C



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