



# COMMERCIAL AIR CONDITIONERS

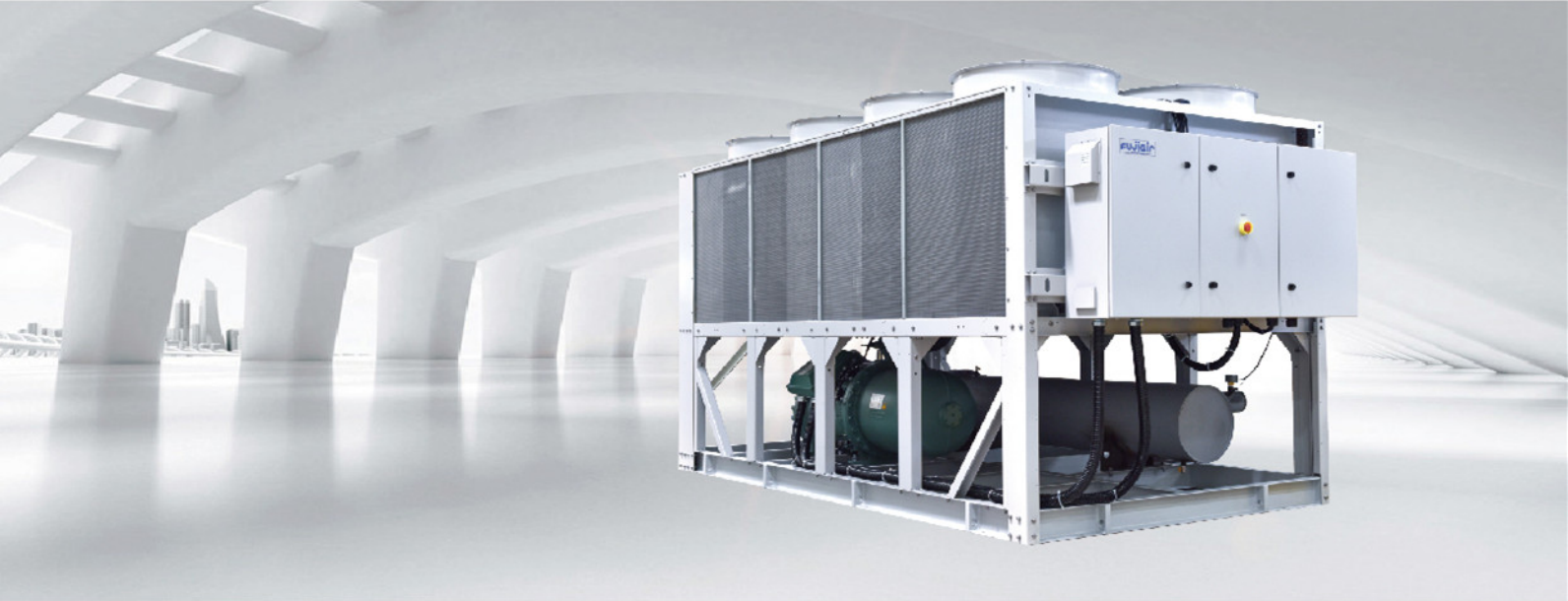
PRODUCT CATALOGUE

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**AIR COOLED SCREW CHILLER**



## AIR COOLED SCREW CHILLER



### FEATURES

#### *Modular design*

- The unit adopts the modular design. Each microcomputer controller of the unit reserves the interface for connecting the combined control module. Networking control between units can be implemented by cable connection and simple master-slave settings. A maximum of 8 main units can be controlled in a combined manner, which means that the unit capacity can be easily expanded to meet various air-conditioning requirements in different places.
- The main unit can be used to manage all modules in a centralized manner, select the number of modules, and monitor the operating data and status.
- Modules are independent of each other. A single failure of a module in a unit does not affect the operation of the other modules.
- The unit is provided with standard RS485 interface and supports the MODBUS-RTU protocol. It can implement centralized control and remote monitoring of the unit, and regulate other chiller auxiliaries as required by the BAS.

#### *Stable and reliable operation*

- The unit compressor adopts the high-efficiency semi-hermetical twin-screw design. Therefore, it can be used without concern for refrigerant leakage, when compared to the hermetical compressor, it boasts easier maintenance and less pay for any repairs; and when compared to the single-screw compressor, it features fewer vulnerable parts, zero energy loss, and higher reliability.
- The compressor motor directly connects to the rotor with no gearbox involved, which avoids energy loss caused by gear transmission; moreover, fewer moving parts can ensure lower noise and a more reliable operation.

## FUJIAIR AIR-CONDITIONERS

- The unit uses the stand-alone pass and in particular, the two stand-alone passes for twin-compressor units. In this way, the unit can guarantee reliable operations, and there is no requirement for the oil balance pipeline between units, ensuring better backup and substantially improving the unit reliability.
- The unit control system features high efficiency, reliability, and intelligence through constant optimization by FUJIAIR engineers. All cooling parts and control components of the unit are provided by world-famous reliable suppliers to make the unit compact, highly efficient, energy saving, and reliable.
- The performance, reliability and structure of the unit are verified and optimized by the long-term simulation tests under various changing conditions and extreme conditions, as well as transportation experiment on actual tertiary roads.

### **Reliable performance**

- FUJIAIR designers conduct optimal design for critical components and system pipelines of the chiller on the basis of existing theories and in combination with internationally advanced design concepts and always put the stability of the chiller in the first place.
- The chiller adopts international famous brand with high stability.
- Original control by electronic expansion valve effectively solves problems of carrying liquid, throwing oil and system oscillation, etc. during defrosting and enables stable operation of the chiller.
- Balanced design of high precision for distribution pipe of refrigerant in heat exchanger on air side of the chiller guarantees uniform distribution of refrigerant in heat exchanger on air side, enhances heating capacity and improves frosting condition.
- External oil cooler controls oil temperature of compressor and enables more stable and reliable heating operation of the chiller at low temperature.
- Long-term simulation tests: including tests for various variable working conditions, extreme working conditions, defrosting of heat pump and practical tertiary highway transportation, etc. to verify and optimize performance, reliability and structure of the chiller.

### **Silent operation**

- The unit adopts the low-noise type outer rotor axial flow fan with long type air duct for diversion to effectively reduce the airflow noise. Before delivery, the fan has undergone strict tests for static and dynamic equilibrium to ensure stable and low-noise operation.
- The silencer built in the compressor reduces noise effectively.
- The compressor uses the precision machined rotor and the surface of the rotor is hardened by laser. The correction of static and dynamic equilibrium can minimize the vibration.
- The compressor feet are equipped with shock pads to reduce unit vibration and substantially lower the unit noise.

### **Convenient installation and Lowest total cost of ownership**

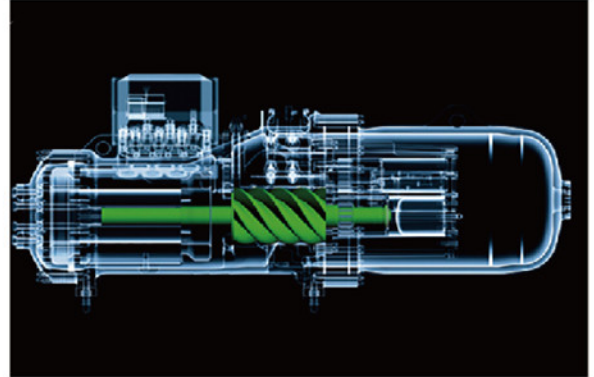
- No need cooling tower, Low initial investment. Compact size and module design save the transportation, lifting and installation cost.
- Inlet and outlet pipes are clamped, the water pipe of the water-side heat exchanger has been equipped with the water flow switch. The unit comes with the startup cabinet and control cabinet and has been filled with refrigerant and refrigeration oil before delivery. Each unit was extensively tested to verify its operational reliability and to ensure a smooth startup. The unit can be placed in service after being connected with power supply and water supply during field installation.
- The built-in hydraulic module of the unit is optional. This module integrates all necessary hydraulic components such as the water pump, filter, expansion tank, flow switch, safety valve, pressure gauge, and drainage valve. Customers can debug the running after connecting the water pipes at ends.



## ■ COMPONENTS DESCRIPTIONS

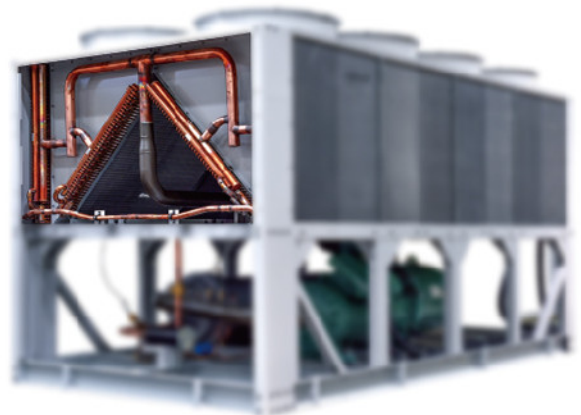
### High-efficiency compressor

- The highly efficient semi-hermetical twin-screw compressor adopts the world-class latest generation 5:6 patented asymmetric tooth-type rotor to greatly improve the adiabatic efficiency. This type of high-efficiency motor with large capacity can significantly enhance the energy efficiency.
- The compressor motor directly connects to the rotor with no gearbox involved, which avoids energy loss caused by gear transmission; moreover, fewer moving parts can ensure lower noise and a more reliable operation.
- The high-precision filter screen built in the compressor increases the oil separation efficiency up to 99.5%.
- The unit adopts the semi-enclosed twin-screw compressor and air suction cooling motor to ensure that the motor is fully cooled.
- The compressor adopts the slide valve for adjustment. A single compressor can precisely match 25% 100% load changes, and dual-compressor up to 12.5% 100% load changes, which reduces operating expenditure to the greatest extent.



### High-efficiency heat exchanger

- The patented counter-current water-side heat exchanger, combined with the inner-threaded efficient heat exchange pipe, can increase heat exchange efficiency by 20% to 30%.
- The wind-side heat exchanger adopts a unique process design to ensure that the refrigerant is in the best flow rate in any condition. In this way, the refrigerant pressure in the wind-side heat exchange copper pipe can be reduced to a minimum, which effectively decreases the power consumption of the compressor and improves the energy efficiency of the unit.
- The use of inverted "M" type heat exchanger reduces ventilation resistance, improves air flow velocity distribution, and increases heat exchange efficiency.
- The use of large air volume silent fan increases the air flow through the tube fins, which improves the heat exchange efficiency of the wind-side heat exchanger.
- The graded control of the unit fan effectively reduces the fan power consumption of the unit in the transitional ambient temperature.
- The use of new open-window aluminium fin greatly enhances the gas turbulence of the wind-side heat exchange tube and the surface of the fin. In this way, the heat exchange efficiency is increased by about 8%.



### Electronic expansion valve

- The unit uses the world's most advanced electronic expansion valve, which ensures excellent performance both under full load or partial load and higher control accuracy.
- When compared with the thermal expansion valve, electronic expansion valve reacts more quickly when the unit is partly loaded. In addition, the evaporator can be fully used in any condition, which ensures more adequate and higher efficient heat exchange.



### Unit microcomputer control center

- The industrial-level microcomputer controller, together with the LCD unique self-control technology and up-to-edge control technology in the world create powerful control functions of our controller.
- The leading intelligent control program ensures accurate management of water temperature under any condition and guarantees energy-saving, safe, and stable operation of the unit by automatic control. Meanwhile, the advanced pre-control function enables measures to be taken timely before actual failure occurs to avoid frequent shutdown of the unit.
- The unit supports the compiling of weekly operating schedules to implement comprehensive automatic start and stop control of the unit, which truly implements unattended and automatic operation.

### MAIN FUNCTIONS

Local and remote automatic control  
Start and stop control of the unit  
Real-time display of the operating status and parameters  
Display and settings of control parameters  
Self-test upon unit startup  
Adjustment and control of the energy  
Control of the balanced operation of the compressor  
Control to prevent frequent startup of the compressor  
Graded energy-saving control of the fan  
Water pump interlock control  
Multi-unit control  
Real-time displaying operation permission grading function  
Automatic shutdown upon alarm and failure display function  
Historical fault memory function  
RS485 communication interface (communication function)

### PROTECTION FUNCTIONS

Power overvoltage and under-voltage protection  
Protection of power supply default phase, reverse phase, and unbalanced phase  
Compressor oil level protection  
Compressor motor overheat protection  
Compressor motor overload protection  
Compressor overload protection  
Compressor start failure protection  
Protection of over high condensation pressure (exhaust)  
Protection of over low evaporation pressure (suction)  
Protection of air suction/exhaust pressure difference  
System pressure warning protection  
Protection of over low cooling outlet water temperature  
Water flow switch protection  
Protection of over high air exhaust temperature  
Communication failure protection  
EVD electronic expansion valve protection

### Unit options

- Year-round cooling unit: all-year-round cooling; lowest ambient cooling temperature of 5°C.
- Compressor noise enclosure: to reduce the compressor noise.
- Protection screen: to effectively protect the unit.
- Accessory: spring shock absorber.
- Process cooling unit: to provide customized inlet/outlet water temperature condition.
- Build-in hydraulic module: This module integrates all necessary hydraulic components such as the water pump, filter, expansion tank, flow switch, safety valve, pressure gauge, and drainage valve. Customers can debug the running after connecting the water pipes at ends.

## SPECIFICATIONS

Model FSRAW/T		400	500	600	750	800	900	1000	1200	1400	
Nominal Cooling Capacity*	kW	385	505	601	730	808	909	1001	1210	1425	
	Ton	110	145	170	210	230	260	285	345	410	
Cooling Power Input	kW	123	159	189	233	254	285	319	379	464	
Cooling Current	A	219	288	341	419	479	507	578	690	840	
Max.Starter Current	A	615	845	845	965	1102	1264	1358	1358	1486	
Max.Running Current	A	419	513	523	521	900	932	1026	1026	1042	
Evaporator	Type	Shell and tube heat exchanger									
	Flow Rate	m <sup>3</sup> /h	66	87	103	126	139	156	172	208	245
	Inlet/Outlet DN	DN	125	125	125	150	150	150	150	200	200
	Pressure Drop	kPa	40	53	56	57	68	72	73	70	68
	Max.Pressure	mPa	1.0								
Compressor	Type	Semi-hermetical screw compressor									
	Energy Adjusting	25%-100% four step control					12.5%-100% eight step control				
	Starter Mode	Y-Δ									
Fan	Air Flow Rate	m <sup>3</sup> /h	150000	200000	250000	250000	350000	350000	400000	400000	500000
	Quantity	Piece	6	8	10	10	14	14	16	16	20
Refrigerant	Type	R134a									
	System Quantity	1				2					
Dimension	Lenght	mm	3787	4792	5797	5797	8707	8707	9712	9712	11700
	Width	mm	2250								
	Height	mm	2420					2480			
Hydraulic Module (Option)	Built-in Hydraulic Module(Optional)	Water pump, expansion tank, filter, safety valve, pressure gauge, butterfly valve etc.									
	Water Pump Type	Centrifugal single pump or twin pump (option)									
Net Weight	kg	4350	4690	5500	6050	7850	7980	9200	9550	11800	
Running Weight	kg	4550	4910	5750	6340	8190	8340	9590	9980	12400	

### Note:

1. The performance values refer to the following conditions:

Cooling: ambient air temperature 35°C; evaporator water in/out temperature 12/7 °C;

Heating: ambient air temperature DB 7 °C, WB 6 °C; condenser water in/out temperature 40/45 °C.

2. Sound pressure measured at a distance of 1 m and a height of 1.5 m above the ground in a clear field.

Due to FUJIAIR's ongoing commitment to quality, the specifications and dimensions are subject to change without notice and without incurring liability.



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