



**Qingdao Kybom Refrigeration and Air Conditioning Co., Ltd.**

No.713 Xiangjiang Road, Huangdao district, Shandong Province, P. R. China 266555

Email: info@kybomchina.com

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## AIR COOLED MODULAR CHILLER AND HEAT PUMP



**ASH-Series**

**Heat pump**

**Refrigerant: R410a**



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### Technology advantage

Optimised scroll compressor, Daikin brand

Highly efficient DX cooler and air cooled condenser

The latest generation, highly efficient copper tubes are incorporated in the cooler.

Electronic expansion valves

The advanced MCS Magnum Controller are also incorporated.

The units have very low input kW/TR and are tested in our state-of-the-art test lab to validate the performance.

### Major component

#### Compressor

The Screw Compressor is semi-hermetic in construction, which makes it serviceable. Due to geometrically symmetrical moving parts, the compressor has extremely low vibrations. The compressor is tested in accordance with ARI/European standards.

#### **The salient features of these compressors are:**

- Daikin brand
- Highly efficient and low noise levels.
- Tested in accordance with ARI/European standards.
- Due to its inherent characteristics, Screw Compressor has the highest volumetric efficiency, de-rating at higher temperature is negligible.

#### Liquid Injection

The refrigerant suction gas cools the winding of the semi-hermetic screw compressor motor. During part load operation where the suction gas circulation is less, as an abundant precaution, liquid refrigerant is injected into the suction side of the compressor to cool the motor winding. Liquid injection during this period keeps the motor winding temperature within limits. This is provided as a standard feature to enhance the life of the compressor.

#### Evaporator

The shell and tube evaporator has been built using imported, doubly enhanced and highly efficient finned copper tubes, and has been optimised for refrigerant and water velocities. The shell is manufactured from high-grade steel. The expansion of the tube is done with torque controlled process.

#### Air Cooled Condenser

Fin and tube condensers are manufactured using Super Slit aluminum fins. The copper tubes used are inner grooved type, with higher height trapezoidal cross section, to increase the internal surface area of heat transfer. Hydrophobic coated fins can be manufactured as an optional feature which gives corrosion resistance, typically 3 to 5 times more than the uncoated fins, depending upon the atmosphere in which the equipment is installed. The coated fins have been tested for 500 hours of salt spray test.



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### **Fans**

The chiller is fitted with 5-lobe, bird-wing design fans. This profile optimises both the noise level and power consumption against the required airflow and static pressure.

The fan motors are Totally Enclosed Air-Over, and are current protected. They feature ball bearings that are double sealed and permanently lubricated.

### **Electronic Expansion Valve**

The units are fitted with electronic expansion valves for precise control of refrigerant flow through the cooler to accurately maintain the desired super heat. The expansion valve is very sensitive to load variations and adjusts the flow of the refrigerant with short response times to achieve power savings. The microprocessor-based control panel provides the signals for accurate operation of the expansion valve based on the super heat.

### **Acoustic Enclosure**

An acoustic enclosure can be optionally provided for the compressor to reduce the noise levels.

All the units will be tested strictly before delivery.

The unit structure is heavy-gauge, galvanized steel. This galvanized steel is coated with baked-on powder paint, which, when subjected to ASTM B117 1000 hour, salt spray testing, yields a minimum ASTM 1654 rating of "6". Units are designed in accordance with GB25131 Safety code for mechanical refrigeration, GB150/151, and rated in accordance with AHRI Standard 550/590.

Prior to delivery, the packaged unit is pressure-tested, evacuated, and fully charged with Refrigerant R-410A and oil. After assembly, a complete operational test is performed with water flowing through the cooler to assure that the refrigeration circuit operates correctly

### **Flow Switch**

A thermal dispersion type flow switch provides accurate, low maintenance flow proving and is included standard. It is factory wired and installed in the extension pipe between evaporator outlet and edge of chiller. The extension pipe is secured to the chiller frame for shipping to avoid risk of damage to evaporator and is easily attached to the evaporator at startup using the supplied connector. The flow switch can be deleted if alternate or existing flow switch is field supplied.

### **Heat Recovery Condenser**

A partially condensing refrigerant to liquid condenser recovers heat off both refrigerant circuits and rejects into a single liquid circuit. Factory installed between the compressor discharge and the condenser (air) coils to capture the maximum amount of heat. Capable of recovering up to 85% total heat of rejection (cooling load plus work input); temperatures as high as 60°C (140°F) are possible.

### **Safety Feature**

High&Low pressure protection, anti-freezing and anti-heating protection, safety valve, overload protection, incomplete phase protection, opposite phase protection, lacking voltage and over voltage protection, water flow protection, etc



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## Specifications

Model		AMH68D-MO2	AMH90D-MO2	AMH136D-MO2
Unit nominal tonnage		19.3	25.6	38.7
Rated cooling Capacity	KW	68	90	136
Rated Heating Capacity	kW	69	91	138
Cooling/Heating Power Input	KW	23.5/23.7	28.6/28.4	41.8/41.2
Recovery capacity	KW	0	0	0
Electrical Power supply		400V/3N~/50Hz	400V/3N~/50Hz	400V/3N~/50Hz
EER/COP		2.89/2.91	3.15/3.20	3.25/3.35
Circulating medium		Water	Water	Water
Wide ambient temperature	℃	(-5C to 43)	(-5C to 43)	(-5C to 43)
Max. Pressure	Bar	1.9	1.9	1.9
Refrigerant	Type		R410a	R410a
	Charging amount	KG	8.5*2	11.5*2
	Control Method		Electronic expansion valves	
Compressor	Type		Scroll	Scroll
	Power input	KW	9.86*2	12.4*2
	Amount	unit	2	2
	Brand		Panasonic	Panasonic
	Energy Adjustment Step		2 steps	2 steps
Water system	Evaporator type		Shell and tube Heat Exchanger	
	Water flow	m3/h	11.7	15.5
	Water pressure drop	kpa	42	70
	Connection type		Clamp connection	Clamp connection
	Connection size	mm	DN50	DN50
	Chiller water in/out	℃	12/7	12/7
Air system	Condenser type		Fin Heat Exchanger	
	Coil type		Fin Heat Exchanger	
	Fan type		High efficiency axial fan	
	Motor power input	KW	2*0.75	2*1.25
	amount	unit	2	2
Water Circulation Pump(option)	Number		0	0
	Head	m	0	0
	Water flow rate	m3/h	0	0
Dimension	L×W×H	mm	2110*1080*1890	2110*1080*2200
Net weight	kg	700	750	980
Running Weight	kg	720	770	1020
Sound pressure level (10m)	dB(A)	70	70	80



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Performance values refer to the following conditions:

\*Cooling capacity is measured under the condition : Ambient temperature DB 35°C/ WB 24°C ,user side water inlet/outlet temperature 12°C/ 7°C;

\*Heating capacity is measured under the condition : Ambient temperature DB 7°C/WB 6°C ,user side water inlet/outlet temperature 40°C /45°C