Air-cooled Scroll Chiller (Heat Pump)

Product Introduction

Air-cooled scroll chiller (heat pump) is a central air conditioning unit that uses air as cooling or heating source, and water as secondary refrigerant. It can be combined with multiple air side equipment, like fan coil and AHU, to form a centralized air conditioning system.

Air-cooled scroll chiller (heat pump) uses cooling parts and control components provided by world-famous manufacturers, together with the most cutting-edge intelligent control system, to make it highly efficient, energy conserving, stable and reliable. With a wide variety of specifications and functions, it supports the control over up to 8 units at the same time; it can also be connected to the building automation system (BAS) to easily meet various air-conditioning requirements in different places.

Without a cooling water system, air-cooled scroll chiller (heat pump) is simple in its pipeline network, easily installed, cost effective, and short in construction period and can be invested by stages. The system is widely applied to various situations for comfortableness and arts and crafts, such as villas, hotels, hospitals, office buildings, restaurants, supermarkets and theaters.

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Model Nomenclature

TAS 165 A H

- H — Feature code: C – Cooling only; H – Heat pump
- A — Design code: A, B…
- 165 — Specification code: 165, 260
- TAS — Air-cooled Scroll Chiller

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Features

Environmental friendly

TICA air cooled scroll chiller (heat pump) uses eco-friendly refrigerant R410A. Such chlorine-free refrigerant does not harm the ozone layer (zero-ODP), and is stable and non-toxic. Therefore, it is environmental friendly and is unlikely to be replaced. In addition, it is environmental friendly and is unlikely to be replaced. In addition, it is good in heat exchanging, which could help boost the unit performance and lower energy consumption.

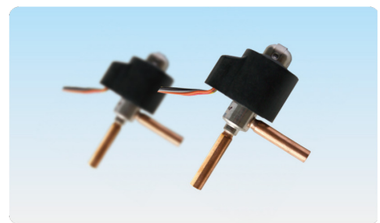
High-end configuration

Efficient flexible scroll compressor

The unit uses the well-known hermetic efficient scroll compressor and the optimized scroll and sealing ring so that the refrigerant compressor features axial and radial flexibility. This not only effectively reduces refrigerant leakage, but also raises the volumetric efficiency of the compressor. Moreover, each compressor is equipped with a unidirectional discharge valve to avoid backflow of the refrigerant and ensure that the compressor can run stably in the full operating condition.

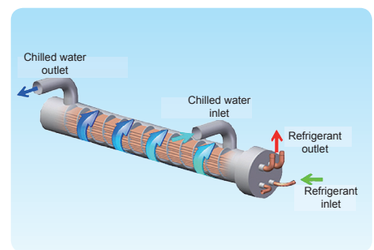
High-precision electronic expansion valve

The unit adopts the 480-step electronic expansion valve of premium brand (for total heat recovery: 500 steps) for precise adjustment of refrigerant flow. And with TICA's patented control technology, refrigerant in the system is dynamically adjusted to suit the load demands in a fast and accurate way, to greatly improve the unit energy efficiency.
(Patent No.: ZL 2013 2 0345187.X)



Efficient water-side shell-and-tube heat exchanger

The water-side heat exchanger employs the efficient shell-and-tube heat exchanger. Compared with the plate heat exchanger, the shell-and-tube heat exchanger provides wider water-side channels and produces less water resistance and scale, with less possibility of being blocked by impurity. Therefore, the shell-and-tube heat exchanger raises lower requirements for water quality and is equipped with more powerful anti-freezing capability.



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Specifications

Model			TAS165AH	TAS260AH	TAS330AH	TAS440AH
Capacity	Cooling	kW	165	260	330	440
	Heating	kW	180	280	360	475
Power Input	Cooling	kW	53.2	83.8	106.4	141.9
	Heating	kW	56.2	87.4	112.5	148.4
Running Current	Cooling	A	100.8	158.7	184.5	245.6
	Heating	A	102.67	165.11	196.11	266.4
Power supply		V/N/HZ	380-3-50			
Maximum Input Power		kW	73.2	123.416	137.2	192
Maximum Input Current		A	135	220	240	330
Starting Current		A	203	274	319	417
Energy Regulation		%	0-25-50-75-100			
Water Side Heat Exchanger	Type	-	High efficient shell & Tube heat exchanger			
	Water flow	m^3/h	28.4	44.8	56.8	75.7
	Pressure drop	kPa	45	45	40	52
	Inlet/Outlet DN	DN	80	100	125	125
	Connection method	-	Victaulic connection			
Compressor	Brand	-	Danfoss		Copeland	
	Type	-	Scroll			
	Quantity	-	4	4	4	4
Fan	Type	-	Axial fan			
	Air flow	m^3/h	60000	112000	120000	172000
	Quantity	-	4	4	8	8
Refrigerant	Type	-	R410A			
Unit Dimensions (L*W*H)		mm	2200×1720×2000	2200×2400×2235	4440×2260×2460	4440×2260×2460
Packaging Dimensions (L*W*H)		mm	2260×1780×2000	2260×2460×2235	4440×2260×2460	4440×2260×2460
Net weight		kg	1460	2050	2930	3700
Running weight		kg	1590	2250	3380	4200
Sound Level		dB	72	75	74	74

★ Remarks:

1. The nominal cooling capacity and nominal cooling input power are tested at the rated water flow, water outlet temperature of 7°C, and outdoor dry-bulb temperature of 35°C.
   The nominal heating capacity is tested at the rated water flow, water outlet temperature of 45°C, outdoor dry-bulb temperature of 7°C or outdoor wet-bulb temperature of 6°C.
2. About 6% loss caused by system pipelines, water pumps, valves, and dirt after unit installation shall be considered for the cooling (heating) capacity in actual application.
3. The operating range is 5°C to 48°C for cooling and -15°C to 48°C for heating. If the unit needs to run in cooling mode at an ambient temperature lower than 5°C, please contact TICA factory.
4. The specifications are subject to change due to product improvement without a prior notice;
5. The specifications above are based on a single module. Multiple modules can be used in combination. A maximum of 8 modules can be combined.
6. As a separate item, control accessory box contains a wired controller, a wired controller communication cable, user manual, and temperature sensor. The configuration is subject to changes, so please refer to actual unit upon delivery.

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Specifications under Variable Operating Condition

Correction coefficient of cooling performance

Water outlet temperature °C	Ambient temperature °C																	
	5		10		15		20		25		30		35		40		48	
	Cooling	Input power	Cooling	Input power	Cooling	Input power	Cooling	Input power	Cooling	Input power	Cooling	Input power	Cooling	Input power	Cooling	Input power	Cooling	Input power
5	1.06	0.72	1.08	0.73	1.09	0.71	1.09	0.78	1.04	0.84	0.99	0.90	0.93	0.97	0.87	1.01	0.80	1.08
7	1.14	0.75	1.16	0.76	1.17	0.74	1.16	0.81	1.11	0.87	1.06	0.93	1.00	1.00	0.94	1.04	0.87	1.11
9	1.21	0.78	1.23	0.79	1.24	0.77	1.23	0.84	1.18	0.90	1.13	0.96	1.07	1.03	1.01	1.07	0.94	1.14
12	1.28	0.81	1.30	0.82	1.31	0.80	1.30	0.87	1.25	0.93	1.20	0.99	1.14	1.06	1.08	1.10	1.01	1.17
15	1.35	0.84	1.37	0.85	1.38	0.83	1.37	0.90	1.32	0.96	1.27	1.02	1.21	1.09	1.15	1.13	1.08	1.20
20	1.40	0.88	1.43	0.89	1.44	0.87	1.42	0.94	1.38	1.00	1.32	1.06	1.26	1.13	1.20	1.17	1.13	1.24

Correction coefficient of heating performance

Water outlet temperature °C	Ambient temperature °C																	
	-15		-10		-5		0		7		10		15		20		25	
	Heating	Input power	Heating	Input power	Heating	Input power	Heating	Input power	Heating	Input power	Heating	Input power	Heating	Input power	Heating	Input power	Heating	Input power
30	0.50	0.71	0.65	0.72	0.76	0.73	0.89	0.79	1.05	0.83	1.12	0.85	1.20	0.87	1.30	0.89	1.37	0.91
35	0.48	0.77	0.63	0.78	0.74	0.79	0.87	0.85	1.03	0.89	1.10	0.91	1.18	0.93	1.28	0.95	1.35	0.97
40	0.46	0.83	0.61	0.84	0.72	0.85	0.85	0.91	1.01	0.95	1.06	0.97	1.14	0.99	1.24	1.01	1.31	1.03
45	-	-	0.60	0.89	0.71	0.90	0.84	0.96	1.00	1.00	1.03	1.03	1.11	1.05	1.21	1.07	1.28	1.09
50	-	-	-	-	0.68	0.96	0.81	1.02	0.97	1.06	1.00	1.09	1.08	1.11	1.18	1.13	1.25	1.15

Operating range of units

Model			TAS165AH	TAS260AH	TAS330AH	TAS440AH
			Minimum/Maximum			
Cooling	Chilled water outlet temperature	°C	5/20			
	Ambient temperature	°C	5/48			
Heating	Hot water outlet temperature	°C	30/50			
	Ambient temperature	°C	-10/48			
Water flow		m^3/h	28.4	44.8	56.8	75.7
Water pressure drop		kPa	45	45	40	52
Maximum pressure on water side		Mpa	1			