Gplus

چیلر اسکرال ماژولار جی‌پلاس

Large Air-Cooled Scroll Chiller 2023

گلدیران
روی خوش زندگی

Large Air-Cooled Scroll Chiller

Features

- High Efficiency (IPLV = 3.33)
- Heat Pump
- Operation Range -10°C to +30°C Heating mode
- Operation Range +5°C to +54°C Cooling mode
- High Ambient (suitable for tropical regions)
- Available cooling capacities 47, 74, 96 and 100 RT
- Shell and Tube Heat Exchanger
- Electronic Expansion Valve
- Environmental Friendly Refrigerant – R410a
- Equipped with 4 compressors and 4 circuits (47, 74 RT)
- Equipped with 3 compressors and 3 circuits (96, 100 RT)
- Module 8 units to expand capacities
- Automatic support function in case of failure in each module
- Compact design and less occupied area
- CE Standard
- Goldiran Company Guarantee

Nomenclature

GLC 165 A H

- H: C: Cooling only- H: Heat Pump
- A: Design code: A, B ...
- 165: Cooling capasity (KW): 165...
- GLC: Gplus Air-cooled Scroll Chiller

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Enviromental friendly

Gplus 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 good in heat exchanging, which could help boost the unit performance and lower energy consumption.

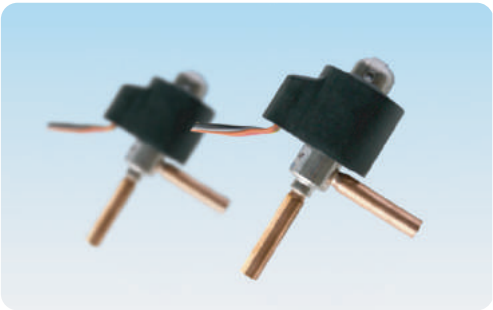
High-end configuration

Efficient flexible scroll copmressor

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.

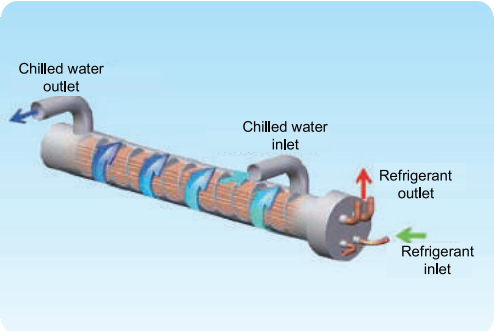
High-precision electronic expansion valve

The unit adopts the 480-step electronic expansion valve of premium brand (for total heat recovery: 500 steps) for precise adjustment of refrigerant flow.



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 requirments for water quality and is equipped with more powerful anti-freezing capability.



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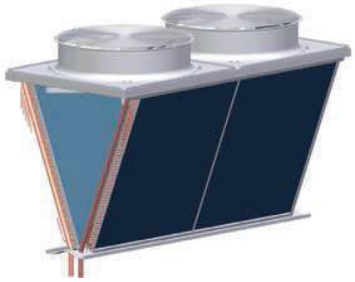

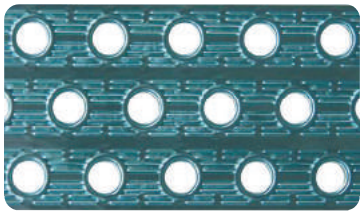

High-performance fan

The air cooled scroll chiller (heat pump) is installed with IP54-rated (or higher) fan motor, to ensure safe and reliable running in the most severe weather conditions..

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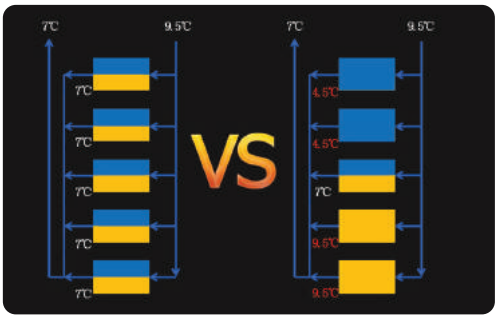
Unique energy regulation

When Gplus air cooled scroll chiller (heat pump) is deployed in a modular system, the energy control part employs Gplus smart energy regulation technology, and based on which, the first system each modular unit is loaded before loading the corresponding second system. Inthis way, the inlet and outlet water temperature difference of the modular unit at part load can be effectively balanced with less water temperature fluctuation, to raise the energy efficiency ratio of the modular unit at part load and enhance the anti-freezing capability of the water-side heat exchanger in winter, making the multi-modular unit a compact and easy-to-use system that features high efficiency and automatic energy regulation.



Smart air flow regulation

With the common air system, the new-generation air cooled scroll chiller (heat pump) implements hierarchical control of fans. The unit with a single module can automatically adjust the number of active fans based on the ambient temperature so that the air flow change of the unit best matches the load change without frequently powering on or off fans. therefore, the pressure of the system is stable with small water temperature fluctuation and the modular unit can run more reliably. Moreover, the common air system and hierarchical fan control design greatly increases the temperature ranges of the unit in cooling and heating modes.

Improved protection functions

The unit programs have multiple protection functions to guarantee stable and reliable running. Gplus air cooled scroll chiller (heat pump) is equipped with a water flow switch, which does not need to be installed and debugged during installation. This makes the unit running safer, simplifies the installation process, and reduces the costs, thus providing a cost-effective and convenient solution to customers.

Communication failure protection
Protection of too high air discharge temperature
Compressor high-current protection
Compressor low-current protection
Protection of too low outlet water temperature
Protection of too high outlet water temperature
Phase sequence protection
Automatic anti-freezing protection

Sensor fault protection
Frequent startup protection
Balancing wear during hardware usage
High pressure protection
Low voltage protection
Fan overload protection
Protection against insufficient water flow
External interlocking protection

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Reliable running

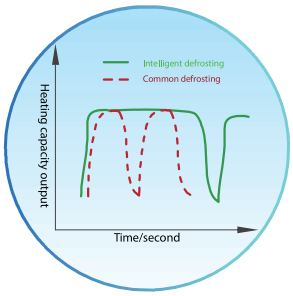
Three guarantee

With three technologies resolving specific problems, the defrosting feature of air cooled scroll chiller (heat pump) is further improved to guarantee efficient defrosting in winter and excellent heating capacity of the unit.

First guarantee

With the defrosting technology, the system determines the defrosting conditions according to the ambient temperature, evaporation temperature, and running time in heating mode. Meanwhile, the defrosting technology ensures that the unit can be efficiently defrosted when there is frost, and stably supply heat when there is no frost. The running efficiency of the unit in heating mode is more than 90%. The EER in heatin mode significantly increases.

1



Second guarantee

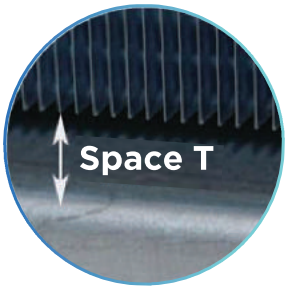
The unidirectional valve technology refers to deployinga unidirectional valve at the last refrigerant loop at the bottom of the heat exchanger to prevent the refrigerant at low temperature in heating mode from entering the last loop at the bottom, without blocking the flow of the refrigerant at high temperature during defrosting. This technology not only prevents frost, but also greatly reduces the risk of being frosted and frozen at the bottom.

2

Third guarantee

The suspended bottom design refers to reserving space between the bottom of the fin heat exchanger and the horizontal plate sheet without affecting water flow after defrosting. Therefore, water can more easily drain and the possibility of water accumulation and freezing is reduced.

3



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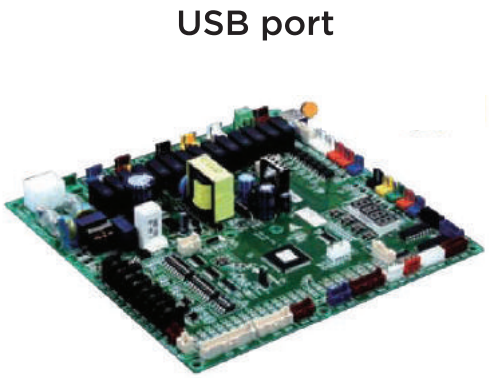
Intelligent control

Microcomputer control system

Air cooled scroll chiller (heat pump) employs the third-generation microcomputer control system and wired controllers that are upgraded.
The third-generation microcomputer control panel integrates phase sequence detection and current detection features and provides more USB ports to facilitate subsequent maintenance and upgrade of Gplus self-developed control program.
Moreover, the unit supports modular control, and up to 8 modules can be combined in parallel mode. When the unit is deployed in a modular system, the master and slave units can be set on demand. A faulty master unit can be easily replaced without affecting monitoring and running of the entire system.



Diversified control functions

Circulating water pump interlocking + Auxiliary electric heater interlocking + Fan coil interlocking

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Remote power-on/power-off/mode switchover+ Remote centralized control+Building automatic control

The control panel of the unit reserves the remote wired control switch/mode switchover interlocking interface. By adjusting the DIP switch, enable remote power-on/power-off/mode switchover. The reserved remote communication interface of the unit helps enable remote monitoring of the unit running and switch control. The unit is equipped with an RS485 communication interface that supports Modbus protocol.
The unit supports building managment control (BMS) system to enable centralized control and smart management of multiple modules.

User-friendly control

The unit is equipped with a perfect control program, providing the following functions: balanced running of the compressor, standby operation, smart anti-freezing running, manual defrosting, automatic fault judgment, automatic fault handling, and automatic alarm display. Additionally, the control part can use a multi-functional centralized controller (with keys/7" touch screen). The centralized controller can be customized to provide multiple functions, such as scheduled power-on/power-off, running on weekends/in holidays, memory upon power-off, and multi-level passwords.

Specifications

Model			GCL165AH	GCL260AH	GCL340BH	GCL460BH
Capacity	Cooling	Kw	165	260	340	460
	Heating	kW	180	280	370	485
Power Input	Cooling	Kw	50	78	105	141.9
	Heating	kW	54	84	111	145.6
Running Current	Cooling	A	100.8	158.7	190.3	256.6
	Heating	A	102.67	165.11	201.4	272
Power supply		V/N/HZ	380-3-50			
Maximum Input Power		kW	73.2	123.4	145.8	197.8
Maximum Input Current		A	135	220.0	255	340
Starting Current		A	203	274	319	417
Energy Regulation		%	0-25-50-75-100		0-33.3-66.7-100	0-25-50-75-100
Water Side Heat Exchanger	Type	-	High efficient shell & Tube heat exchanger			
	Water flow	m3/h	28.4	44.8	58.5	75.7
	Pressure drop	kPa	45	45	52	56
	Inlet/Outlet DN	DN	80	100	125	125
	Connection method	-	Victaulic connection			
Compressor	Brand	-	Danfoss		Copeland	
	Type	-	Scroll			
	Quantity	-	4	4	3	4
Fan	Type	-	Axial fan			
	Air flow	m3/h	66000	112000	123000	164000
	Quantity	-	4	4	6	8
Refrigerant	Type	-	R410A			
Unit Dimensions (L*W*H)		mm	2200x1720x2000	2200 2400 2235	3500 2250 2450	4700x2250x2520
Packaging Dimensions (L*W*H)		mm	2260x1780x2000	2260 2460 2235	3500 2250 2450	4760x2310x2520
Net weight		kg	1460	2050	3100	3700
Running weight		kg	1590	2250	3550	4200
Sound Level		dB	72	75	74	74

Notes:
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 web-bulb temoerature of 6°C.
2. About 6% loss caused by system pipelines, water pump, valves, and dirt after unit installation shall be conidered for the cooling (heating) capacity in actual application.
3. The operating range is 5°C to 54°C for cooling and -10°C to 30°C for heating. If the unit needs to run in cooling mode at an ambient temperature lower than 5°C, please contact Gplus factory.
4. The specifications above are based on a single module. Multiple modules can be used in combination. A maximum of 8 modules can be combined.
5. 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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Cooling capacity correction Table

Water outlet Temperature °C	Ambient Temperature °C																	
	5		10		15		20		25		30		35		40		48	
	Cooling	Power input	Cooling	Power input	Cooling	Power input	Cooling	Power input	Cooling	Power input	Cooling	Power input	Cooling	Power input	Cooling	Power input	Cooling	Power input
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

Heating capacity correction Table

Water outlet Temperature °C	Ambient Temperature °C															
	-15		-10		-5		0		7		10		15		20		25	
	Heating	Power input	Heating	Power input	Heating	Power input	Heating	Power input	Heating	Power input	Heating	Power input	Heating	Power input	Heating	Power input	Heating	Power input
30	0.50	0.71	0.65	0.72	0.76	0.73	0.89	0.79	0.11	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	0.80	0.96	1.00	1.00	1.01	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

Model			GCL165AH	GCL260AH	GCL340BH	GCL460BH
			Minimum/Maximum			
Cooling	Chilled Water outlet temperature	°C	5/20			
	Ambient temperature	°C	5/54			
Heating	Hot Water outlet temperature	°C	30/50			
	Ambient temperature	°C	-10/54		-15/54	
Water flow		m /h	28.4	44.8	58.5	79.1
Water pressure drop		Kpa	45	45	52	56
Maximum pressure on water side		Mpa	1			

Combined capacity parametr table

Model and modular quantity	GCL165AH	1	2	3	4	5	6	7	8
Cooling capacity	kW	165	330	495	660	825	990	1155	1320
Heating capacity	kW	180	360	540	720	900	1080	1260	1440
Water flow volume	m3/h	28	57	85	114	142	170	199	227

Model and modular quantity	GCL260AH	1	2	3	4	5	6	7	8
Cooling capacity	kW	260	520	685	850	1015	1180	1345	1510
Heating capacity	kW	280	560	740	920	1100	1280	1460	1640
Water flow volume	m3/h	45	90	134	179	224	269	314	358

Model	Cooling Capacity	Compressor Number	Circulation Loop	Main Board Number	Maximum Combination Number	Maximum Combination Capacity
GCL165AH	165	4	2	1	8	1320
GCL260AH	260					1510

Notes:
1. Nominai cooling operating conditions:leaving water temperature 7°C ambient temperature 35°C.
2. In actual use. the cooling/heating loss should be considered after the installation of the system piping, pump, valve, dirt, ect. about 6%
3. For other working conditions or capacity parameters. please contact goldiran offices for cooling ambient condition under 5°C.
4. There will be no further notice if the parameters changes due to product optimization.
5. The unit of the same model or different models can be combined freely. Each system can combine up to 16 modules.
6. The controllers need to be ordered separately, including wired controller, communication line, IOM, temperature sensor. Manufacturer reserves the right to make change to above specification without prior. please refer to the factory configuration when purchasing.

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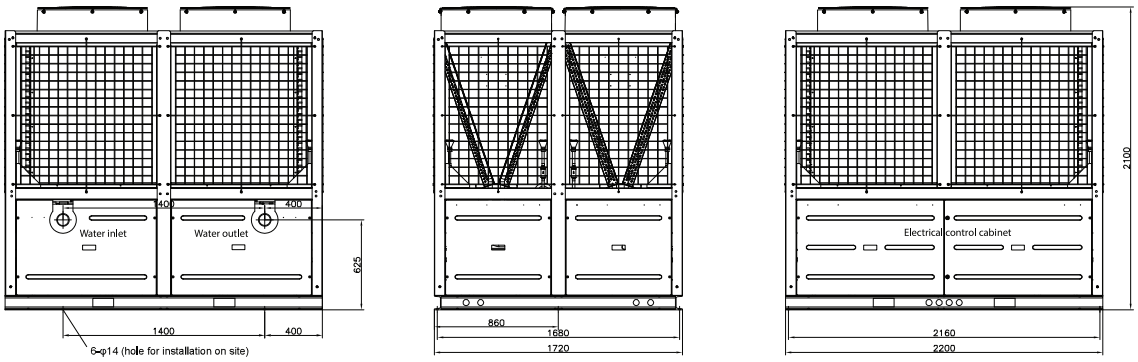
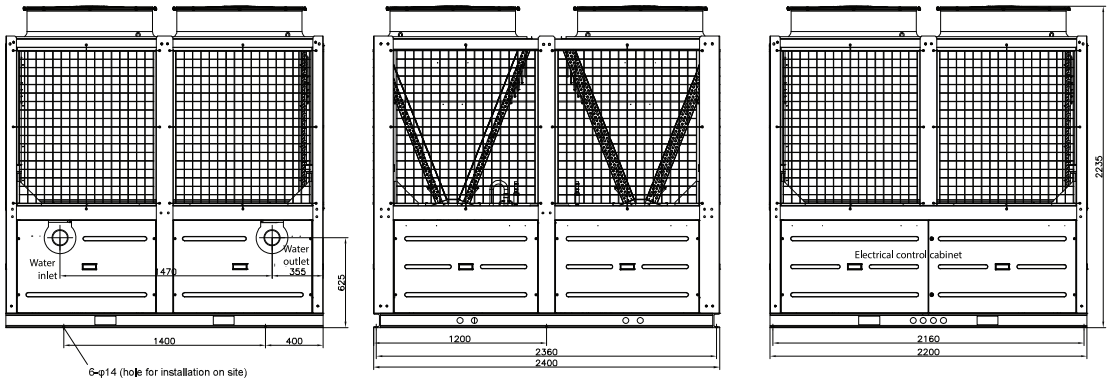
Unit Dimentions

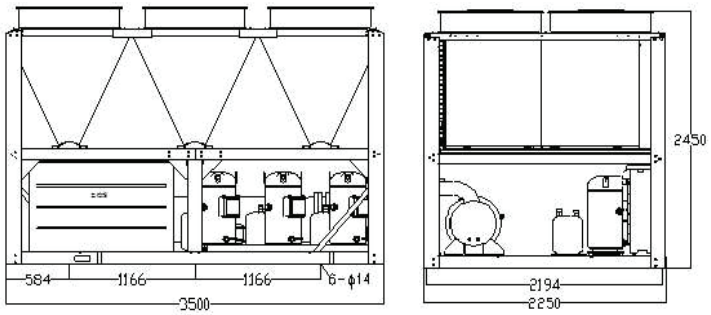
GLC165AH



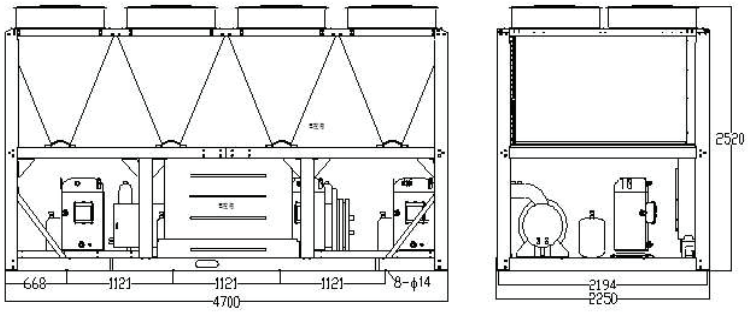
GLC260AH



GLC340BH



GLC460BH



شرکت مهندسی و مشاوره صنایع مبتکران گلدیران

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