General Catalogue

AIR COOLED CHILLER - HQN Series

ACHIEVE YOUR VISION

CHILLER
FAN COIL
ICE TERMAL STORAGE SYSTEM
CHU & AHU
BOILER

R-410A

AFRA
HVAC SYSTEM

INDEX

INTRODUCTION

The modular air cooled chiller unit is a central air conditioning using the air as cold and heat source and the water as refrigerant carrier, which can be integrated with various air side units such as fan coil unit, air handling unit to form a central air conditioning system. The environment-friendly modular unit has complete functions and various specifications, with basic modules of any combination available for different models, including 66 kW, 100 kW, 130 kW, and at most 16 modules can be connected in parallel, providing combination products of 66 kW - 2080 kW. The unit is easy to install, with a system without cooling water, with simple pipelines, moderate cost, short construction period, allowing staged investment, widely applied in such commercial, industrial and civil buildings as villas, hotels, hospitals, office buildings, restaurants, supermarkets, movie theaters.

NOMENCLATURE

H Q N F 20 B 2 S H

Feature Mode
H = Heat Pump
HF = Heat Pump-4pipe
HR = Heat Recovery
L = Cooling Only
HE = High-Heat Efficiency
HA = Cooling Year Round

Evaporator
B = Brazed Heat Exchanger
S = Shell and Tube Heat Exchanger

Number of Compressor
1
2
4

Number of Circuit
A = 1
B = 2
C = 3

Capacity (HP)
20
30
⋮
⋮
100
140

Refrigerant
C = R22
D = R407C
E = R134a
F = R410a

Manufacturing Series
N
S
A
R
G

Model
Q = Quantum (Scroll Compressor Series)
P = Pro
T = Typhon
TL = Tesla

Unit Type
H = Air Cooled
W = Water Cooled
A = Absorption
M = Micro

R410A CLASSICAL MODULAR UNIT (Heat Pump - Cooling only)

The new generation environment-friendly modular air cooled unit, which is greatly improved in aspects of the structure, system and microcomputer control technology, providing wider operation range of refrigeration and heating, and higher adaptability to applications with requirements on comfort and technology. There are basic modules of any combination available for different models, including 66 kW, 100 kW, 130 kW and at most 16 modules can be connected in parallel, providing combination products of 66 kW - 2080 kW.

Excellent Capacity

Units of the same model or different models can be combined freely. Each group can combine up to 16 modules.

Free master Module Design

Any single unit can operate as the master once connected with the wired controller. It overcomes the problem that the whole system would fail to work properly when the fixed master unit malfunctions.

Intelligent Defrosting Technology, Non Stop When Defrosting

The unit control system can determine whether defrosting is necessary according to the ambient temperature in heating mode, evaporating temperature and running time; when defrosting conditions are met, the unit will automatically activate the defrosting program to complete defrosting within a short time and provide heating operation efficiency up to over 90%, ensuring the optimum heating capacity and high EER.

Compact Design and Less Occupied Area

Unique and compact structure results in small size and occupied area, significant reductions in installation space and cost; the unit is compact and easy to install. A 130 KW unit covers floor space of only 2.42 m^2, a 50% reduction compared to its equivalents.

Famous Hermetic Scroll Compressor

Unit adopt famous brand hermetic scroll compressor, which is high-efficient, energy saving and operates stably, with low noise, vibration and long service life.

Efficient Shell and Tube Heat Exchanger

The waterside efficient shell and internal thread heat exchanger is of helical baffle type, with better heat transfer performance and higher resistance to freezing than plate heat exchanger, lower water resistance and lower requirements for water quality.

V-Shaped Condenser

The V-shaped condenser has used an integral reinforcing metal frame, internal thread and triple anti-frosting features (patented design of open-window hydrophilic aluminum foil + bottom elevated + one way valve), providing higher structural stability and corrosion resistance; with heat exchange efficiency improved through full use of heat exchange area, low tendency to dust accumulation and frosting in winter, low loss of pressure, smoother drainage and higher reliability.

Intelligent Air Volume Regulation

The shared duct system is adopted to greatly expand the operating range. The single-module unit can automatically increase or reduce fans based on the ambient temperature to achieve optimal matching between air volume and load and deliver outstanding performance.

High Precision Electronic Expansion Valve

The electronic expansion valve achieves 480 regulating range, precision throttle control technology to realize dynamic matching in refrigerating system, fully improve the optimum efficiency of each component and ensure the optimum condition of system operation pressure and temperature.

Saw-shaped Fan Impeller

Compared to plastic impellers, the saw-shaped impellers provide large air volume, high durability and high air supply efficiency with low noise.

Widely Operation Range

Low temperature cooling
5 °C to + 48 °C

High temperature heating
-15 °C to - 48 °C

Intelligent Energy Regulation Technology

Unique intelligent energy regulation technology in multi-module combination ensures that each module loads or unloads a refrigerant circuit before loading or unloading other refrigerant circuits in the single module, thereby providing higher efficiency, stability and IPLV.

Self-developed Microcomputer Control Panel

Control panel is fully upgraded based on original control panels with years of experience in R&D and design, which com bines more functions including phase sequence detection, current detection, RS- 485 communication interface, delivering stronger performance, utility, standardization, convenience and universality. The USB interface is also provided to facilitate later-stage maintenance and upgrade of control function and developed control program which offers full operation control and multiple safety protection functions.

Multiple Protection Functions, Providing Safety and Stability

The unit has multiple safety protection functions which ensure safety and stable operation of the unit and systems. The water flow switch and multiple anti-freezing program designs protect the unit and systems in an all-round way.

Model No.				HQNF20B2SH	HQNF30B2SH	HQNF40B2SH
1	Cooling capacity		KW	66	100	130
			RT	18.8	28.4	37
	Total input power		KW	23.6	35.9	46.3
	Total rated current		A	46.2	69	92.9
	EER		-	2.80	2.78	2.80
2	Heating capacity		KW	70	110	140
			RT	19.9	31.3	39.8
	Total input power		KW	24.1	38	48.1
	Total rated current		A	46.6	71	93.8
	EER		-	2.90	2.89	2.91
Evaporator		Type	-	Shell and tube		
		Water flow rate	gpm	50.2	75.7	98.6
			m^3/h	11.4	17.2	22.4
		Water pressure drop	kPa	45	30	45
		Water pipe connection	-	DN65 (Flange)		
Condenser		Type	-	V shaped		
		Heat exchanger	-	Hydrophilic Aluminium fin		
		Fins per inch	FPI	12		
Fan		Type	-	Axial fan		
		Number	-	2		
		Air flow rate	m^3/h	28000	43000	48000
		Discharge	Side/Top	Top		
Compressor		Type	-	Hermetic Scroll		
		Brand	-	EMERSON		
		Combination	Pieces	2		
Refrigerant		Type	-	R410A		
Input power		Maximum	KW	30.2	43.6	57.6
Current		Maximum	A	50	80	100
		Starting	A	140	125	266.1
Power supply			Ø , V , Hz	3 , 380 , 50		
Sound pressure level			dB(A)	~65	~68	~69
Dimension		WxHxD	mm	2200x2000x860	2200x2205x1100	2200x2205x1100
Weight		Net	kg	580	900	1000
		Operating		640	980	1100

1 : Chilled water inlet / outlet : 12 °C / 7 °C
Outdoor ambient temp. : 35 °C DB
Sea level : 4000 ft
Fan input power included
Pump input power not included

2 : Hot water outlet : 45 °C
Outdoor ambient temp. : 7 °C DB
Sea level : 4000 ft
Fan input power included
Pump input power not included

- Water side fouling factor : 0.000043 m^2 . °C / KW
- Measuring sound pressure level at 2m away and ±2dB tolerance
- The characteristics of water flow rate and water pressure drop are given based on case "1".
- Each system can combine up to 12 modules.

Model No.				HQNF20B2SL	HQNF40B2SL
1	Cooling capacity		KW	66	130
			RT	18.8	37
	Total input power		KW	23.6	46.3
	Total rated current		A	42.6	87.6
	EER		-	2.80	2.80
Heating capacity			KW	-	-
			RT	-	-
Total input power			KW	-	-
Total rated current			A	-	-
EER			-	-	-
Evaporator		Type	-	Shell and tube	
		Water flow rate	gpm	50.2	98.6
			m^3/h	11.4	22.4
		Water pressure drop	kPa	45	48
		Water pipe connection	-	DN65 (Flange)	
Condenser		Type	-	V shaped	
		Heat exchanger	-	Hydrophilic Aluminium fin	
		Fins per inch	FPI	12	
Fan		Type	-	Axial fan	
		Number	-	2	
		Air flow rate	m^3/h	28000	48000
		Discharge	Side/Top	Top	
Compressor		Type	-	Hermetic Scroll	
		Brand	-	DAIKIN	EMERSON
		Combination	Pieces	2	
Refrigerant		Type	-	R410A	
Input power		Maximum	KW	30.2	57.6
Current		Maximum	A	50	100
		Starting	A	172	266.1
Power supply			Ø , V , Hz	3 , 380 , 50	
Sound pressure level			dB(A)	~70	~74
Dimension		WxHxD	mm	2200x2000x860	2200x2205x1100
Weight		Net	kg	570	850
		Operating		690	1040

1 : Chilled water inlet / outlet : 12 °C / 7 °C
Outdoor ambient temp : 35 °C DB
Sea level : 4000 ft
Fan input power included
Pump input power not included

- Water side fouling factor : 0.000043 m^2 . °C / KW
- Measuring sound pressure level at 2m away and ±2dB tolerance
- The characteristics of water flow rate and water pressure drop are given based on case "1".
- Each system can combine up to 12 modules.

TOTAL HEAT RECOVERY MODULAR UNIT

Total heat recovery modular air-cooled chiller (heat pump) unit uses the environment-friendly refrigerant R410A and combines the features of air-cooled chiller (heat pump) unit and air-source heat pump water heater unit. It has five modes: A/C cooling, A/C heating, heat recovery, heat pump water heating, A/C heating + heat pump water heating, widely applied in places requiring central air conditioning and water heating, such as hotels, schools, restaurants, hospitals, villas, bath centers.

Free Domestic Hot Water (DHW)

In the A/C cooling mode, the unit can recover waste heat and provide free domestic hot water up to 55°C. The unit replaces the boiler to meet the user needs for hot water, saves initial investment, eliminates the need for machine room, and saves the building area and energy for environmental protection.

Less Occupied Area

A single module covers a floor area of only 1.89 md which is the smallest in the industry, leaving larger valuable space for customers. The unit can substitute the boiler, eliminates the need for machine room, and saves initial investment and building area.

Efficient Components Providing Higher Efficiency

The unit employs efficient shell and tube heat exchanger, fan, and heat recovery unit, with optimized pipeline design, providing comprehensive energy efficiency up to 8.24 under conditions of cooling + heat recovery.

Compact Design and Complete Functions

The compact structural design does not impair strong functions and five modes are more widely applied, including refrigeration, heating, heat recovery, heat pump water heating, A/C heating + heat pump water heating.

Cooling Mode

In summer or transition season needing cooling but not hot water, this mode can be used. In such case, the unit operates for cooling only, just like a standard air-cooled heat pump unit.

Heat Recovery Mode

In circumstances where both cooling and production of domestic hot water are needed, this mode can be used. In such case, the unit automatically selects the optimal operation mode based on the needs for air conditioning and water heating to produce chilled water for air conditioning and domestic hot water for everyday use.

Heat Pump Water Heating Mode

In circumstances where only domestic hot water is needed instead of cooling or heating, this mode can be used. In such case, the unit only provides domestic hot water, just like a standard air source heat pump water heater unit.

Heating Mode

In circumstances where only domestic hot water is needed instead of cooling or heating, this mode can be used. In such case, the unit only provides domestic hot water, just like a standard air source heat pump water heater unit.

Heating + Heat Pump Water Heating Mode

In winter or other circumstances where both heating and domestic hot water are needed, this mode can be used. In such case, the water heating mode is preferred by default to ensure use of domestic hot water; then at the “idle time" when the demand for hot water is satisfied, the unit automatically switches to the heating mode to meet the needs for heating. Users may set the heating mode as the priority as required to ensure heating effect.

Model No.				HQNF20B2SHR
1	Cooling capacity		KW	66
			RT	18.8
	Total input power		KW	22.3
	Total rated current		A	45
	EER		-	2.96
2	Heating capacity		KW	70
			RT	19.9
	Total input power		KW	23.3
	Total rated current		A	46.1
	EER		-	3.00
3	Domestic hot water mode	Rated water flow	gpm	57.7
			m^3/h	13.1
		Nominal heating capacity	KW	76
		Heating power input	KW	18.4
		Current	KW	40.6
		Nominal water output	gpm	7.2
			m^3/h	1.63
4	Cooling + heat recovery mode	Nominal cooling capacity	KW	60
		Nominal heat recovery capacity	KW	76
		Nominal input power	KW	16.5
		Current	KW	35.6
		Nominal water output	gpm	7.2
			m^3/h	1.63
		Water flow (air conditioner side)	gpm	45.4
			m^3/h	10.3
		Water flow (hot water side)	gpm	57.7
			m^3/h	13.1

1 : Chilled water inlet / outlet : 12 °C / 7 °C
Outdoor ambient temp. : 35 °C DB
Sea level : 4000 ft
Fan input power included
Pump input power not included

2 : Hot water outlet : 45 °C
Outdoor ambient temp. : 7 °C DB
Sea level : 4000 ft
Fan input power included
Pump input power not included

- Water side fouling factor : 0.000043 m^2 . °C / KW
- Measuring sound pressure level at 2m away and ±2dB tolerance
- The characteristics of water flow rate and water pressure drop are given based on case "1".
- Each system can combine up to 12 modules.

3 : Heating water outlet : 45 °C
Inlet water temp. : 15 °C
Outdoor ambient temp. : 20 °C DB
Sea level : 4000 ft

4 : Chilled water inlet / outlet : 12 °C / 7 °C
Hot water outlet : 45 °C
Outdoor ambient temp. : 35 °C DB
Sea level : 4000 ft

Model No.			HQNF20B2SHR
Evaporator	Type	-	Shell and tube
	Water flow rate	gpm	50.2
		m^3/h	11.4
	Water pressure drop	kPa	20
	Water pipe connection	-	DN65 (Flange)
Condenser	Type	-	V shaped
	Heat exchanger	-	Hydrophilic Aluminium fin
	Fins per inch	FPI	12
Fan	Type	-	Axial fan
	Number	-	2
	Air flow rate	m^3/h	26000
	Discharge	Side/Top	Top
Compressor	Type	-	Hermetic Scroll
	Brand	-	EMERSON
	Combination	Pieces	2
Refrigerant	Type	-	R410A
Input power	Maximum	KW	30.2
Current	Maximum	A	50
	Starting	A	140
Power supply		Ø , V , Hz	3 , 380 , 50
Sound pressure level		dB(A)	~70
Dimension	WxHxD	mm	2200x2000x860
Weight	Net	kg	650
	Operating		710

1 : Chilled water inlet / outlet : 12 °C / 7 °C
Outdoor ambient temp. : 35 °C DB
Sea level : 4000 ft
Fan input power included
Pump input power not included

2 : Hot water outlet : 45 °C
Outdoor ambient temp. : 7 °C DB
Sea level : 4000 ft
Fan input power included
Pump input power not included

- Water side fouling factor : 0.000043 m^2 . °C / KW
- Measuring sound pressure level at 2m away and ±2dB tolerance
- The characteristics of water flow rate and water pressure drop are given based on case "1".
- Each system can combine up to 12 modules.

3 : Heating water outlet : 45 °C
Inlet water temp. : 15 °C
Outdoor ambient temp. : 20 °C DB
Sea level : 4000 ft

4 : Chilled water inlet / outlet : 12 °C / 7 °C
Hot water outlet : 45 °C
Outdoor ambient temp. : 35 °C DB
Sea level : 4000 ft

4-PIPE MODULAR CHILLER

The 4-pipe modular air cooled chiller (heat pump) adopts R410A eco-friendly refrigerant, and supports cooling, heating, and cooling heat recovery operations. It is widely applied in places with higher requirements for temperature and humidity, such as hospitals, art galleries, and equipment rooms. When cold water is used for dehumidification, re-heating is obtained free of charge. The unit can also be applied in building complexes which require both cooling and heating, to greatly save operating cost and initial investment in equipment. Without the need for a dedicated equipment room and cooling tower, the 4-pipe modular air cooled chiller unit is the best choice in prosperous areas and the water shortage areas.

Maximized Energy Utilization

In places where both coo ling and heating are required and specific temperature and humidity limits are set, separate configuration for cooling and heating is not required. The waste heat emitted during cooling can be recovered for producing hot water, which will be used by air side products. The ICOP can reach up to 7.78, substantially reducing initial investment and later-phase operating costs.

Auto Balance of Cooling and Heating

With a modular design and self-adapting cooling and heat balancing technologies, the unit can automatically adjust the output of cooling and heating capacity based on actual conditions, and fast switch the operating status and control the water outlet temperature to achieve continuous balancing that enables "output on demand". Both temperature and humidity are controlled more accurately to provide enhanced comfort.

Wide Operation Range

The unit adopts well-known multi-speed fans to further reduce operation noise and implement smart air flow adjustment, so as to support stable cooling and heating within a wide range of -15°C to +48°C.

Model No.				HQNF20B2SHF
1	Cooling	Capacity	KW	66
			RT	18.8
		Total input power	KW	22.3
		Total rated current	A	45
		EER	-	2.96
		Water flow rate	gpm	50.2
			m^3/h	11.4
		Water pressure drop	kPa	40
		Water pipe connection	-	DN65 (Flange)
2	Heating	Capacity	KW	70
			RT	19.9
		Total input power	KW	23.3
		Total rated current	A	46.1
		EER	-	3.00
		Water flow rate	gpm	50.2
			m^3/h	13.9
		Water pressure drop	kPa	60
		Water pipe connection	-	DN65
1 , 2	Cooling and heating	Cooling Capacity	KW	63
			RT	17.9
		Heating Capacity	KW	81
			RT	23
		Total input power	KW	22
		Total rated current	A	46
		Cooling Water flow rate	gpm	11.4
			m^3/h	40
		Heating Water flow rate	gpm	50.2
			m^3/h	13.9

1 : Chilled water inlet / outlet : 12 °C / 7 °C
Outdoor ambient temp. : 35 °C DB
Sea level : 4000 ft
Fan input power included
Pump input power not included

2 : Hot water outlet : 45 °C
Outdoor ambient temp. : 7 °C DB
Sea level : 4000 ft
Fan input power included
Pump input power not included

- Water side fouling factor : 0.000043 m^2 . °C / KW
- Measuring sound pressure level at 2m away and ±2dB tolerance
- The characteristics of water flow rate and water pressure drop are given based on case "1".
- Each system can combine up to 12 modules.

Model No.			HQNF20B2SHF
Condenser	Type	-	V shaped
	Heat exchanger	-	Hydrophilic Aluminium fin
	Fins per inch	FPI	12
Fan	Type	-	Axial fan
	Number	-	2
	Air flow rate	m^3/h	26000
	Discharge	Side/Top	Top
Compressor	Type	-	Hermetic Scroll
	Brand	-	EMERSON
	Combination	Pieces	2
Refrigerant	Type	-	R410A
Dimension	WxHxD	mm	2200x1980x860
Weight	Net	kg	650
	Operating		710

1 : Chilled water inlet / outlet : 12 °C / 7 °C
Outdoor ambient temp. : 35 °C DB
Sea level : 4000 ft
Fan input power included
Pump input power not included

2 : Hot water outlet : 45 °C
Outdoor ambient temp. : 7 °C DB
Sea level : 4000 ft
Fan input power included
Pump input power not included

- Water side fouling factor : 0.000043 m^2 . °C / KW
- The characteristics of water flow rate and water pressure drop are given based on case "1".
- Each system can combine up to 12 modules.

High-Heat Efficiency Modular Unit

Featuring the most advanced EVI compressor from EMERSON and applicable for a wider range of heating.

Precision Throttle Control Technology of Electronic EXV

The electronic expansion valve achieves 480 regulating range, precision throttle control technology to realize dynamic matching in refrigerating system, fully improve the optimum efficiency of each component and ensure the optimum condition of system operation pressure and temperature.

EVI Compressor

The high-heat efficiency modular unit employs the efficient EVI technology, with a secondary suction port fitted on the scroll plate. The refrigerant volume is increased through the secondary suction loop and the enthalpy difference of refrigerant in the major cycle is increased to improve the efficiency of cooling and heating.

Wide Operation Range of Heating

The unit adopts well-known multi-speed fans to further reduce operation noise and implement smart air flow adjustment, so as to support stable cooling and heating within a wide range of -15°C to +48°C.

Low Carbon and Environmental Protection

The unit uses the environment-friendly refrigerant R410A, and combines air source heat pump and EVI technologies. It can be used in the northern area for cooling in summer and heat pump heating in winter, providing lower-carbon and more environment-friendly applications.

Model No.				HQNF20B2SHE	HQNF40B2SHE
1	Cooling capacity		KW	70	150
			RT	19.9	42.6
	Total input power		KW	23.7	47.4
	Total rated current		A	46.6	88
	EER		-	2.95	3.16
2	Heating capacity		KW	78	160
			RT	22.2	45.5
	Total input power		KW	24.1	47.6
	Total rated current		A	46.5	88.7
	EER		-	3.24	3.36
Evaporator		Type	-	Shell and tube	
		Water flow rate	gpm	53	114
			m^3/h	12	25.8
		Water pressure drop	kPa	50	54
		Water pipe connection	-	DN65 (Flange)	DN80 (Flange)
Condenser		Type	-	V shaped	
		Heat exchanger	-	Hydrophilic Aluminium fin	
		Fins per inch	FPI	12	
Fan		Type	-	Axial fan	
		Number	-	2	4
		Air flow rate	m^3/h	30000	60000
		Discharge	Side/Top	Top	
Compressor		Type	-	Hermetic EVI Scroll	
		Brand	-	EMERSON	
		Combination	Pieces	2	
Refrigerant		Type	-	R410A	
Input power		Maximum	KW	31	58
Current		Maximum	A	60	105
		Starting	A	127	260.2
Power supply			Ø , V , Hz	3 , 380 , 50	
Sound pressure level			dB(A)	~70	~78
Dimension		WxHxD	mm	2200x2135x860	2200x2135x1720
Weight		Net	kg	665	1150
		Operating		710	1250

1 : Chilled water inlet / outlet : 12 °C / 7 °C
Outdoor ambient temp. : 35 °C DB
Sea level : 4000 ft
Fan input power included
Pump input power not included

2 : Hot water outlet : 45 °C
Outdoor ambient temp. : 7 °C DB
Sea level : 4000 ft
Fan input power included
Pump input power not included

- Water side fouling factor : 0.000043 m^2 . °C / KW
- Measuring sound pressure level at 2m away and ±2dB tolerance
- The characteristics of water flow rate and water pressure drop are given based on case "1".
- Each system can combine up to 12 modules.

YEAR-ROUND COOLING MODULAR UNIT

Year-round cooling modular unit is applicable for industrial applications, and requirements on energy saving and environment protection. It can operate for refrigeration at the ambient temperature of -10°C to +48°C all the year round, with environment-friendly refrigerant R410A, advanced electronic expansion valve control technology, efficient shell and tube heat exchanger, DC fan with stepless speed regulation, fully meeting the requirements of various industry applications for chilled water throughout the year.

High Precision Electronic Expansion Valve

The electronic expansion valve achieves 480 regulating range, precision throttle control technology to realize dynamic matching in refrigerating system, fully improve the optimum efficiency of each component and ensure the optimum condition of system operation pressure and temperature.

Dry-type Shell and Tube Heat Exchanger

The unit employs efficient dry-type heat exchanger as the waterside heat exchanger which has excellent anti-freezing performance and higher tolerance to impurities in water system, ensuring more reliable and stable operation of the unit.

Wide Operation Range of Banging

The modular water chiller unit is specially designed and can run in all weathers at the ambient temperature of -10°C to +48°C.

DC Fan With Stepless Speed Regulation

The condensate fan employs the DC brushless motor of which the speed is variable between 20%-100% to ensure that condensing pressure is within the range of safe operation under all conditions for longer service life.

Model No.				HQNF20B2SHA
1	Cooling capacity		KW	66
			RT	18.8
	Total input power		KW	23.1
	Total rated current		A	45.5
	EER		-	2.86
2	Heating capacity		KW	70
			RT	19.9
	Total input power		KW	23.7
	Total rated current		A	46.6
	EER		-	2.95
Evaporator		Type	-	Shell and tube
		Water flow rate	gpm	50
			m^3/h	11.4
		Water pressure drop	kPa	45
		Water pipe connection	-	DN65 (Flange)
Condenser		Type	-	V shaped
		Heat exchanger	-	Hydrophilic Aluminium fin
		Fins per inch	FPI	12
Fan		Type	-	Axial fan
		Number	-	2
		Air flow rate	m^3/h	26000
		Discharge	Side/Top	Top
Compressor		Type	-	Hermetic Scroll
		Brand	-	EMERSON
		Combination	Pieces	2
Refrigerant		Type	-	R410A
Input power		Maximum	KW	30.2
Current		Maximum	A	50
		Starting	A	140
Power supply			Ø , V , Hz	3 , 380 , 50
Sound pressure level			dB(A)	~70
Dimension		WxHxD	mm	2200x1980x860
Weight		Net	kg	620
		Operating		680

1 : Chilled water inlet / outlet : 12 °C / 7 °C
Outdoor ambient temp. : 35 °C DB
Sea level : 4000 ft
Fan input power included
Pump input power not included

2 : Hot water outlet : 45 °C
Outdoor ambient temp. : 7 °C DB
Sea level : 4000 ft
Fan input power included
Pump input power not included

- Water side fouling factor : 0.000043 m^2 . °C / KW
- Measuring sound pressure level at 2m away and ±2dB tolerance
- The characteristics of water flow rate and water pressure drop are given based on case "1".
- Each system can combine up to 12 modules.

Large Air-cooled Scroll Chiller

Our 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 nontoxic. 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.

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 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.

High efficiency & energy saving

EER of air cooled scroll chiller (heat pump) at full load is greater than 3.3, reaching and exceeding national grade 2 energy efficiency standard. Air cooled scroll chiller (heat pump) has achieved the Energy Conservation Certification issued by the authoritative detection institute certified by China National Accreditation Service for Conformity Assessment (CNAS). The whole unit adopts air cooled mode without the need of large external equipment such as boiler and cooling tower, thereby reducing initial investment.

Efficient 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.

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 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.

Unique energy regulation

When air cooled scroll chiller (heat pump) is deployed in a modular system, with smart energy regulation technology, the first system of each modular unit is loaded before loading the corresponding second system. In this 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.

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.

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.

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.

Improved protection functions

The unit programs have multiple protection functions to guarantee stable and reliable running. This unit 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.

Model No.				HQNF50B4SH	HQNF80B4SH
1	Cooling capacity		KW	165	260
			RT	46.9	73.9
	Total input power		KW	50	78
	Total rated current		A	101	159
	EER		-	3.30	3.33
2	Heating capacity		KW	180	280
			RT	51.2	79.6
	Total input power		KW	54	84
	Total rated current		A	103	166
	EER		-	3.33	3.33
Evaporator		Type	-	Shell and tube	
		Water flow rate	gpm	125	198
			m^3/h	28.4	45
		Water pressure drop	kPa	45	45
		Water pipe connection	-	DN80 (Victaulic)	DN100 (Victaulic)
Condenser		Type	-	V shaped	
		Heat exchanger	-	Hydrophilic Aluminium fin	
		Fins per inch	FPI	12	
Fan		Type	-	Axial fan	
		Number	-	4	
		Air flow rate	m^3/h	66000	112000
		Discharge	Side/Top	Top	
Compressor		Type	-	Scroll	
		Brand	-	DANFOSS	
		Combination	Pieces	4	
Refrigerant		Type	-	R410A	
Input power		Maximum	KW	73.2	123.4
Current		Maximum	A	135	220
		Starting	A	203	274
Power supply			Ø , V , Hz	3 , 380 , 50	
Sound pressure level			dB(A)	~72	~75
Dimension		WxHxD	mm	1720x2000x2200	2400x2235x2200
Weight		Net	kg	1460	2050
		Operating		1590	2250

1 : Chilled water inlet / outlet : 12 °C / 7 °C
Outdoor ambient temp. : 35 °C DB
Sea level : 4000 ft
Fan input power included
Pump input power not included

2 : Hot water outlet : 45 °C
Outdoor ambient temp. : 7 °C DB
Sea level : 4000 ft
Fan input power included
Pump input power not included

- Water side fouling factor : 0.000043 m^2 . °C / KW
- Measuring sound pressure level at 2m away and ±2dB tolerance
- The characteristics of water flow rate and water pressure drop are given based on case "1".
- Each system can combine up to 8 modules.

Model No.				HQNF100C3SH	HQNF140B4SH
1	Cooling capacity		KW	340	460
			RT	96.7	130.8
	Total input power		KW	105	142
	Total rated current		A	191	257
	EER		-	3.24	3.24
2	Heating capacity		KW	370	485
			RT	105.2	137.9
	Total input power		KW	111	147
	Total rated current		A	202	272
	EER		-	3.33	3.30
Evaporator		Type	-	Shell and tube	
		Water flow rate	gpm	257	333
			m^3/h	58.5	75.7
		Water pressure drop	kPa	52	56
		Water pipe connection	-	DN125 (Victaulic)	
Condenser		Type	-	V shaped	
		Heat exchanger	-	Hydrophilic Aluminium fin	
		Fins per inch	FPI	12	
Fan		Type	-	Axial fan	
		Number	-	6	8
		Air flow rate	m^3/h	123000	164000
		Discharge	Side/Top	Top	
Compressor		Type	-	Scroll	
		Brand	-	COPELAND	
		Combination	Pieces	3	4
Refrigerant		Type	-	R410A	
Input power		Maximum	KW	146	198
Current		Maximum	A	255	340
		Starting	A	319	417
Power supply			Ø , V , Hz	3 , 380 , 50	
Sound pressure level			dB(A)	~75	
Dimension		WxHxD	mm	2250x2450x3500	2250x2520x4700
Weight		Net	kg	3100	3700
		Operating		3550	4200

1 : Chilled water inlet / outlet : 12 °C / 7 °C
Outdoor ambient temp. : 35 °C DB
Sea level : 4000 ft
Fan input power included
Pump input power not included

2 : Hot water outlet : 45 °C
Outdoor ambient temp. : 7 °C DB
Sea level : 4000 ft
Fan input power included
Pump input power not included

- Water side fouling factor : 0.000043 m^2 . °C / KW
- Measuring sound pressure level at 2m away and ±2dB tolerance
- The characteristics of water flow rate and water pressure drop are given based on case "1".
- Each system can combine up to 8 modules.

Performance Data

Cooling Capacity Correction factor for units; HQNFXXXXXH / HQNFXXXXXC / HQNFXXXXXHR / HQNFXXXXXHF / HQNFXXXXXHE

LWT (°C)	Ambient Temp. (°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 factor for units; HQNFXXXXH / HQNFXXXXHR / HQNFXXXXHF / HQNFXXXXHE

LWT (°C)	Ambient Temp. (°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	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	1.06	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

- Excluding the data under the ambient temperature of -15 (°C).

Cooling Capacity Correction factor for unit; HQNFXXXXHA

LWT (°C)	Ambient Temp. (°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	1.38	0.86	1.41	0.88	1.43	0.85	1.42	0.92	1.37	0.99	1.34	1.04	1.27	1.12	1.21	1.15	1.14	1.23

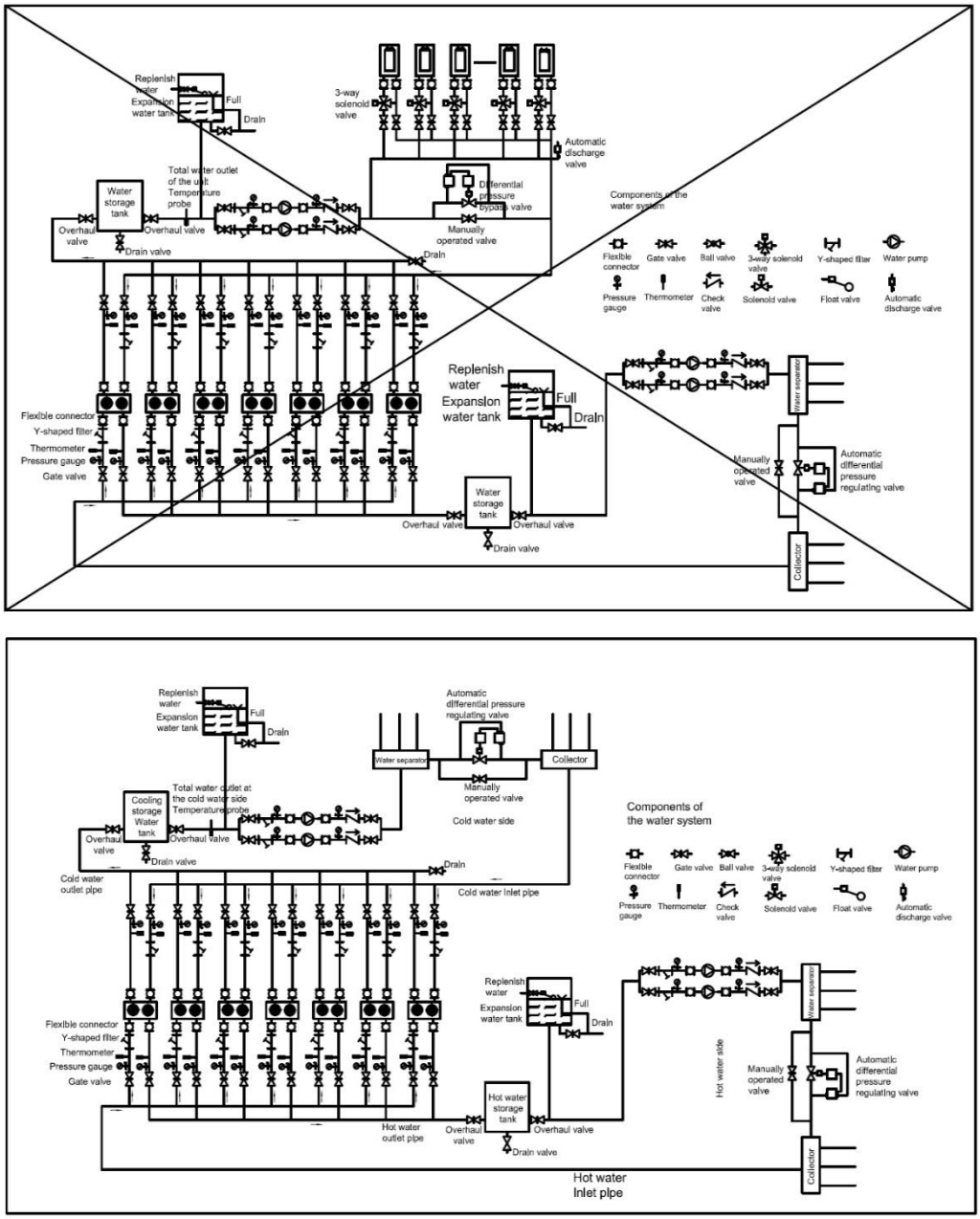
Cooling Capacity Correction factor for unit; HQNFXXXXHA

LWT (°C)	Ambient Temp. (°C)									
	-20		-15		-10		-5		0	
	Cooling	Power Input	Cooling	Power Input	Cooling	Power Input	Cooling	Power Input	Cooling	Power Input
5	1.15	0.43	1.12	0.49	1.09	0.57	1.06	0.63	1.09	0.66
7	1.20	0.44	1.18	0.50	1.16	0.58	1.14	0.66	1.17	0.69
9	1.24	0.45	1.23	0.51	1.22	0.59	1.21	0.69	1.24	0.72
12	1.27	0.46	1.27	0.52	1.27	0.60	1.28	0.72	1.31	0.75
15	1.32	0.47	1.33	0.53	1.33	0.60	1.35	0.75	1.38	0.78
20	1.34	0.49	1.35	0.55	1.35	0.62	1.39	0.78	1.43	0.81

Precautions for users

- The water system shall be provided with safety valves and automatic water-refilling valves.
- The automatic air bleeding valve shall be provided at the highest point of water system.
- A proper water drain valve shall be set at the lowest point of the water system.
- The water system pipes shall be provided with expansion water tanks which can adapt to volume changes caused by water temperature changes.
- The water system pipes shall be provided with bypass pipes which can be connected with water lines of the main machine only after the water system is confirmed to be clean.
- The water system shall be clean frequently to prevent impurities from entering the evaporator and damage the unit.
- The unit should be equipped with the special power supply. The supply voltage fluctuates +10%. The automatic air switch should be used. setting current is 1.5 times of the running current of the unit. Inverse phase protection devices are installed. Never apply the knife switch unit.
- at the time of the first application every season, the unit must be electrified and preheated for 24 hours and start later. If the single cooling unit will stay for a long period of time, the water in the unit and the pipeline must be drained completely. After the heat pump type units stop, the master controller should correspond with the host and the power supply can never be disconnected to avoid the water pipelines or the unit frozen (the controller in accordance with the environment temperature and the temperature of the incoming water and the outgoing water automatically implement the anti-freezing functions).
- The host switch can not be operated quite often. It can be operate 6 times per hour at most. electric control cabinet should avoid humidity.
- Keep the unit in good ventilation environment constantly. Air side heat exchanger should be cleaned regularly.
- The water system should be equipped with the expansion tank. Recycling water should be clean and tidy. at the time of operation, a sufficient water flow (as for details, see the nameplate) should be maintained, or the water side heat exchanger would be frozen. and the filter should be cleaned regularly.
- Appoint the specific person to maintain and record.

In the above figure, the four units on the left are 4-pipe units, which are controlled independently; while the three units on the right are common units, which are controlled independently.



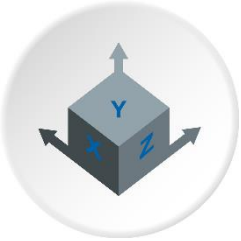
The figure shows the installation of the water system. The installation is subject to the construction drawings of the design institute.

Water flow switches have be installed inside the unit and they do not need to be installed on site.

The water system of the unit should ensure that water flow each unit is allocated reasonably.

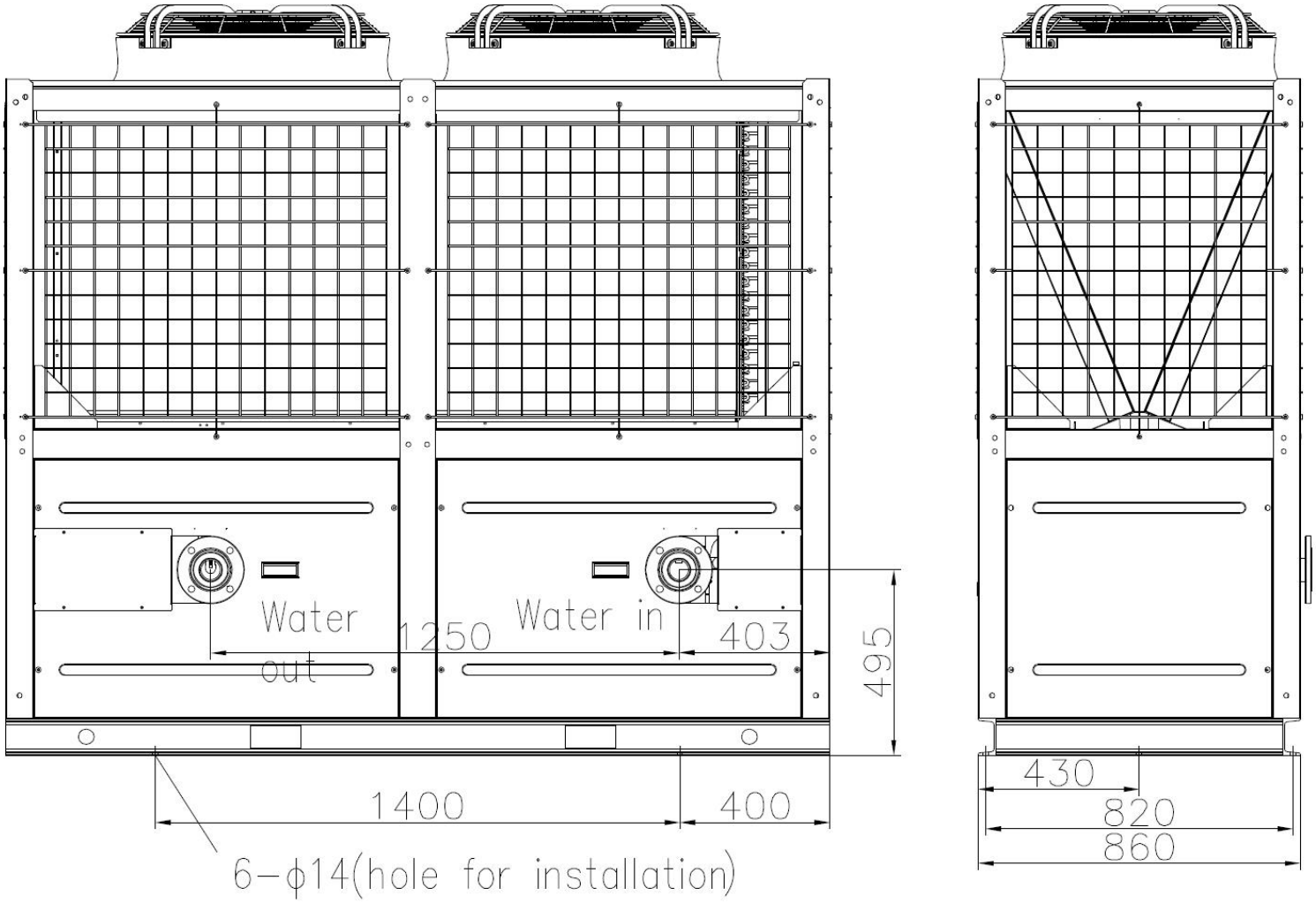
At any time as long as the unit is running, the water flow of the unit cannot be less than the value marked on the nameplate. Pay special attention to the water flow in transition seasons to avoid frequent start and stop of the unit due to over-low water outlet temperature as a result of the low condensation temperature.

Reserve sufficient space between modular chillers to guarantee ventilation.



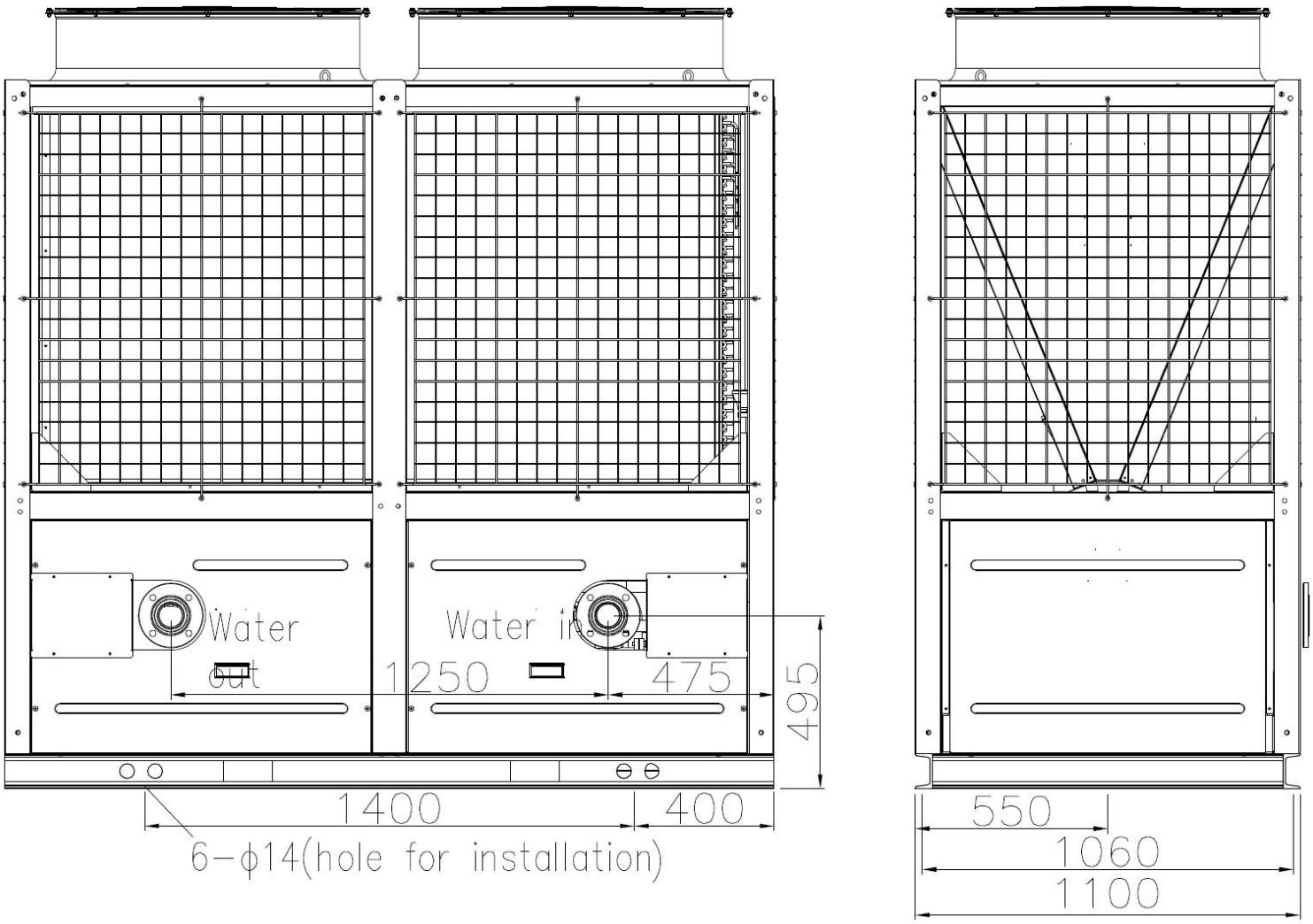
Dimensions

HQNF20B2SH - HQNF20B2SL



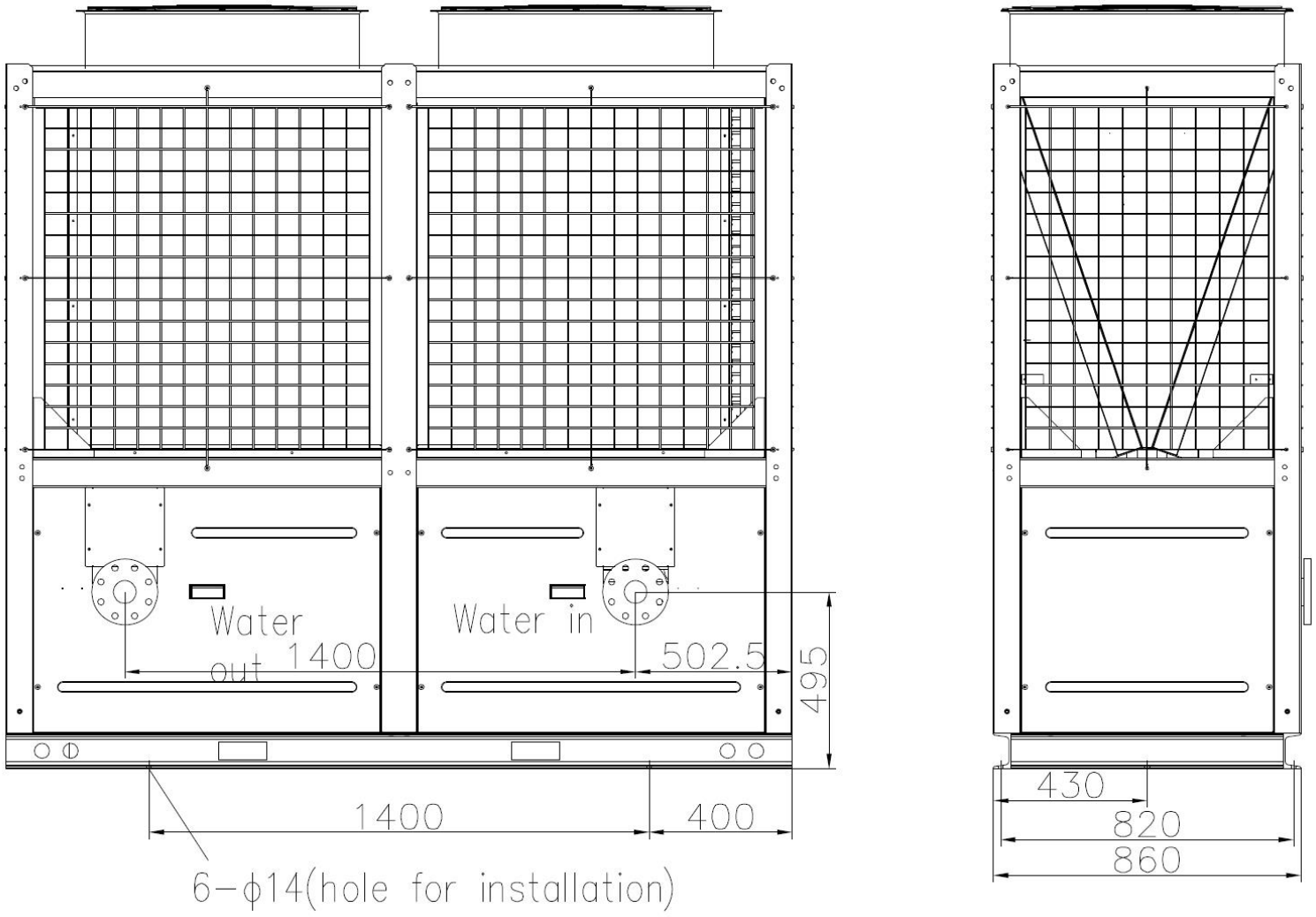
(unit : mm)

HQNF30B2SH - HQNF40B2SH - HQNF40B2SL



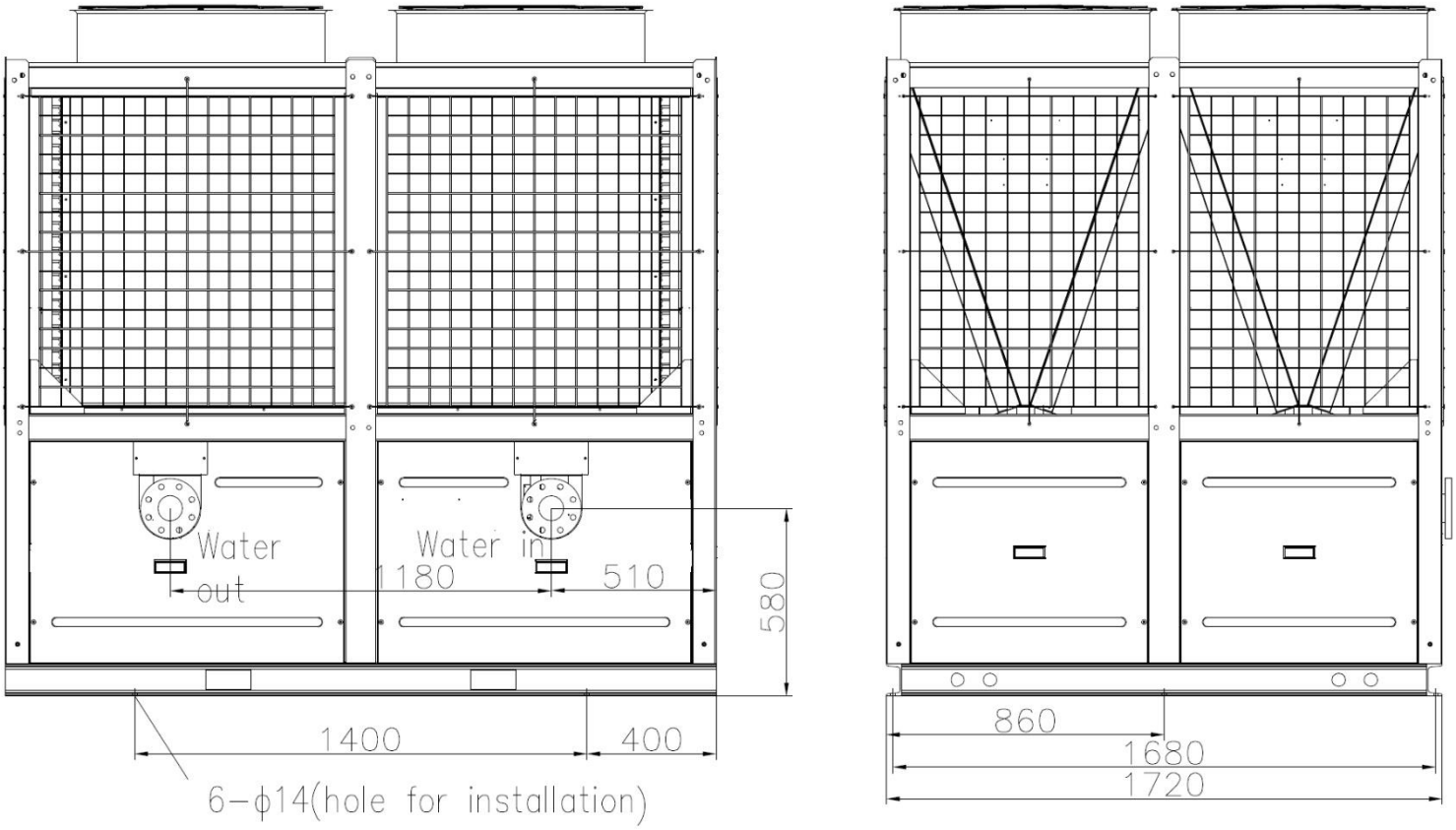
(unit : mm)

HQNF20B2SHE



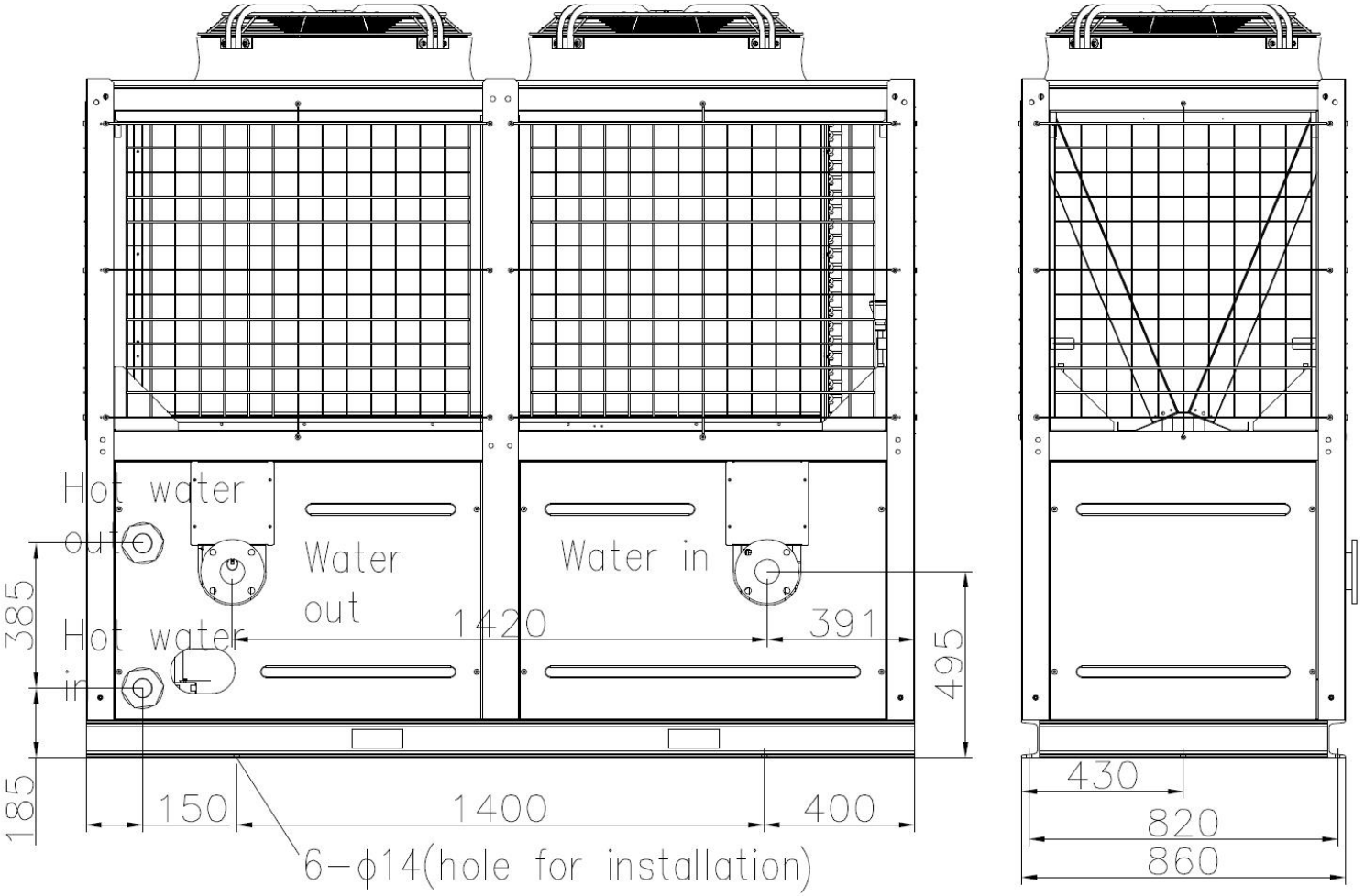
(unit : mm)

HQNF40B2SHE



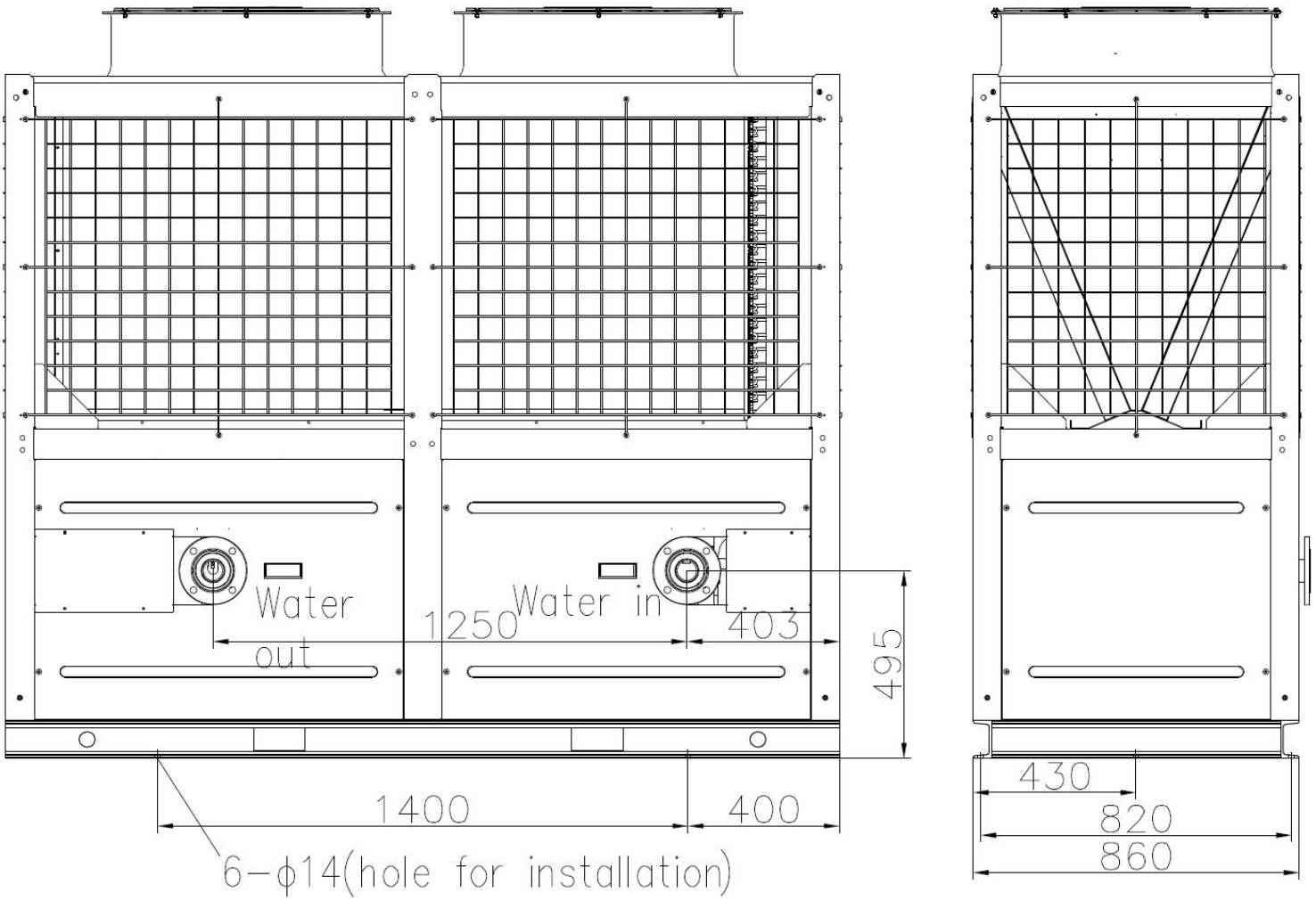
(unit : mm)

HQNF20B2SHR - HQNF20B2SHF



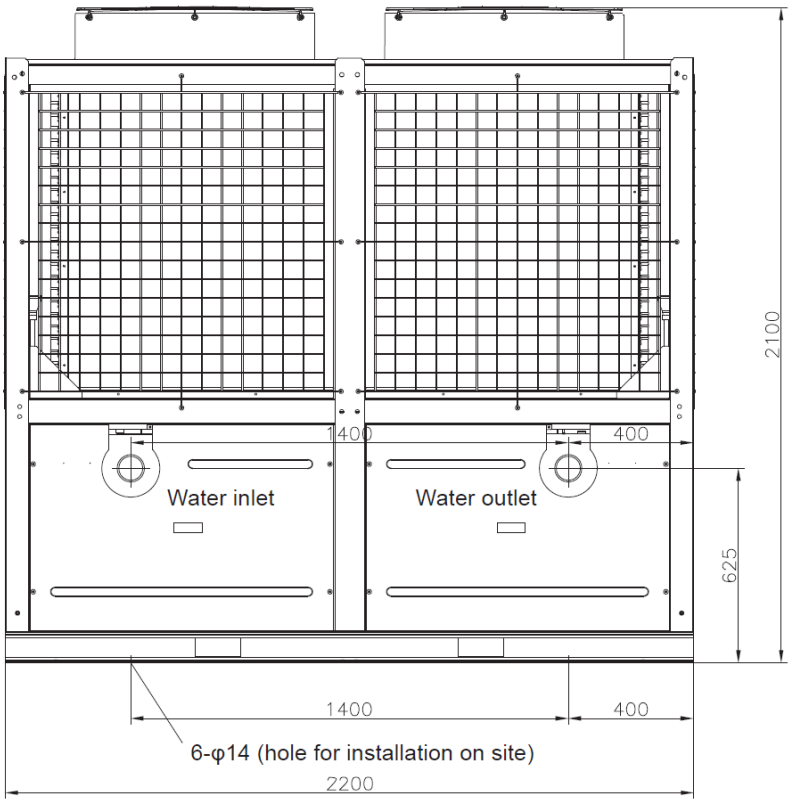
(unit : mm)

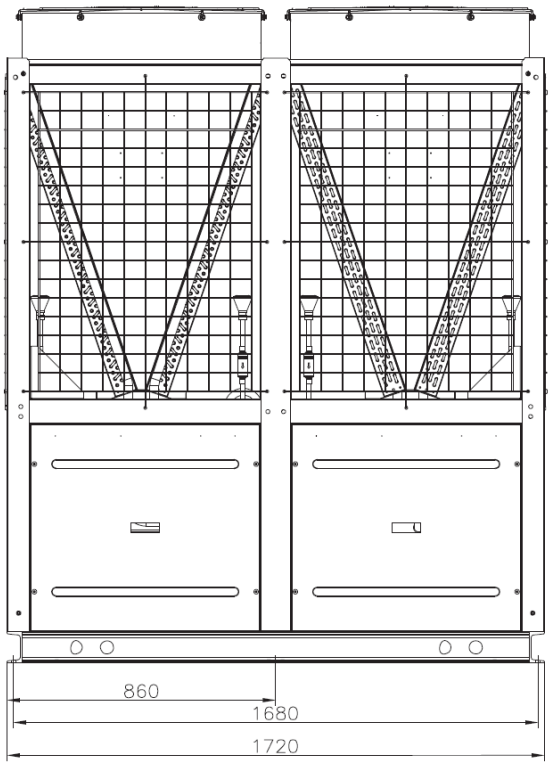
HQNF20B2SHA



(unit : mm)

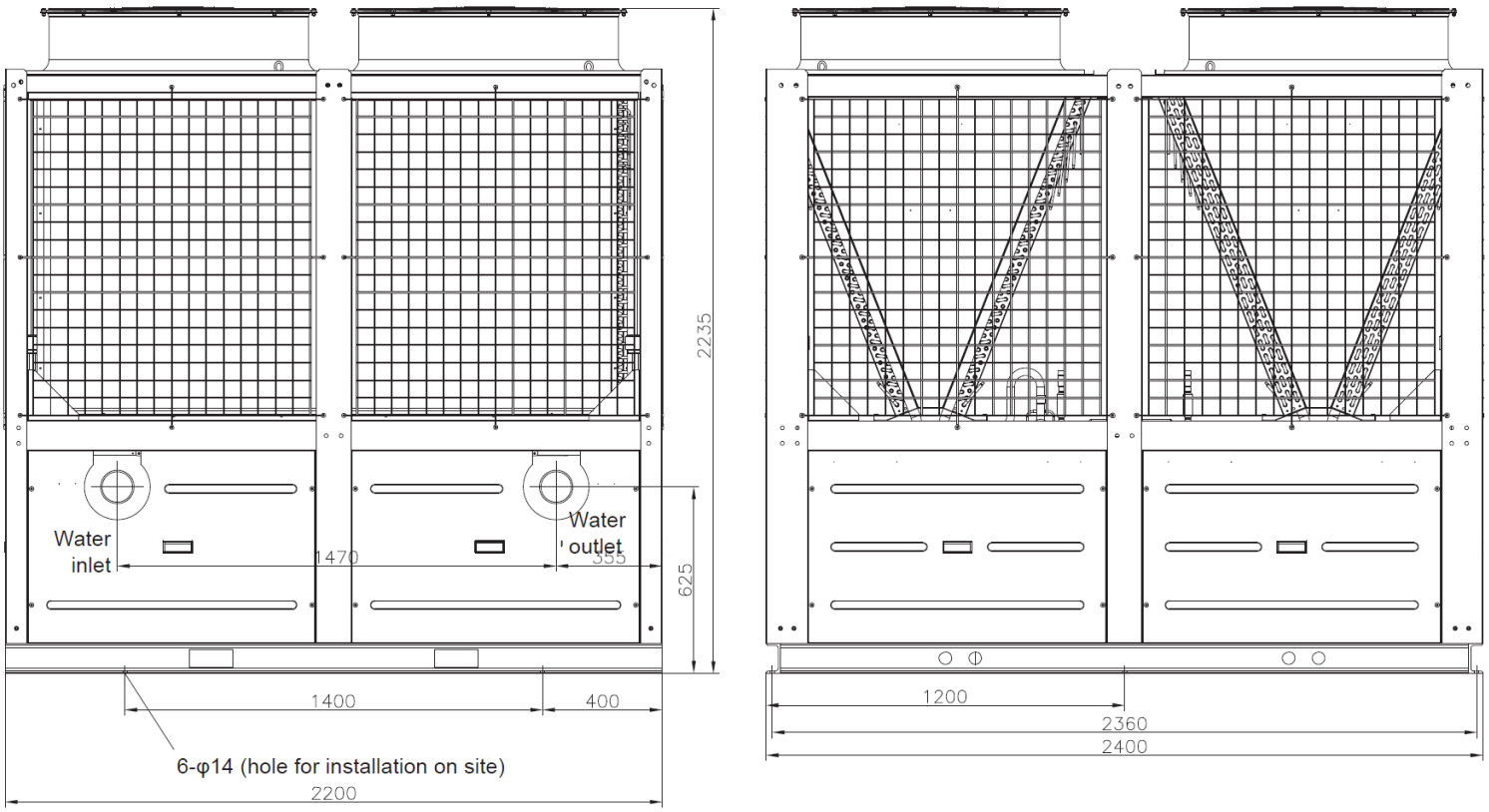
HQNF50B4SH





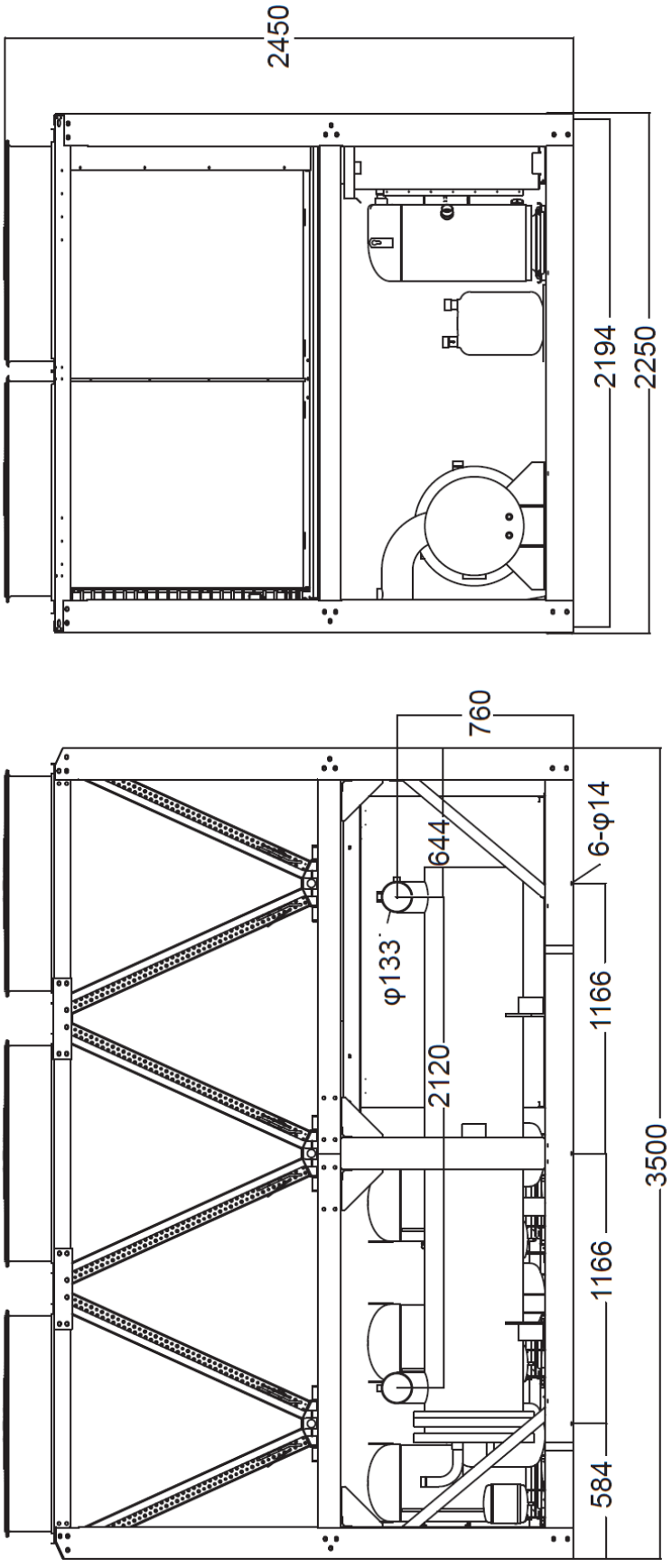
(unit : mm)

HQNF80B4SH



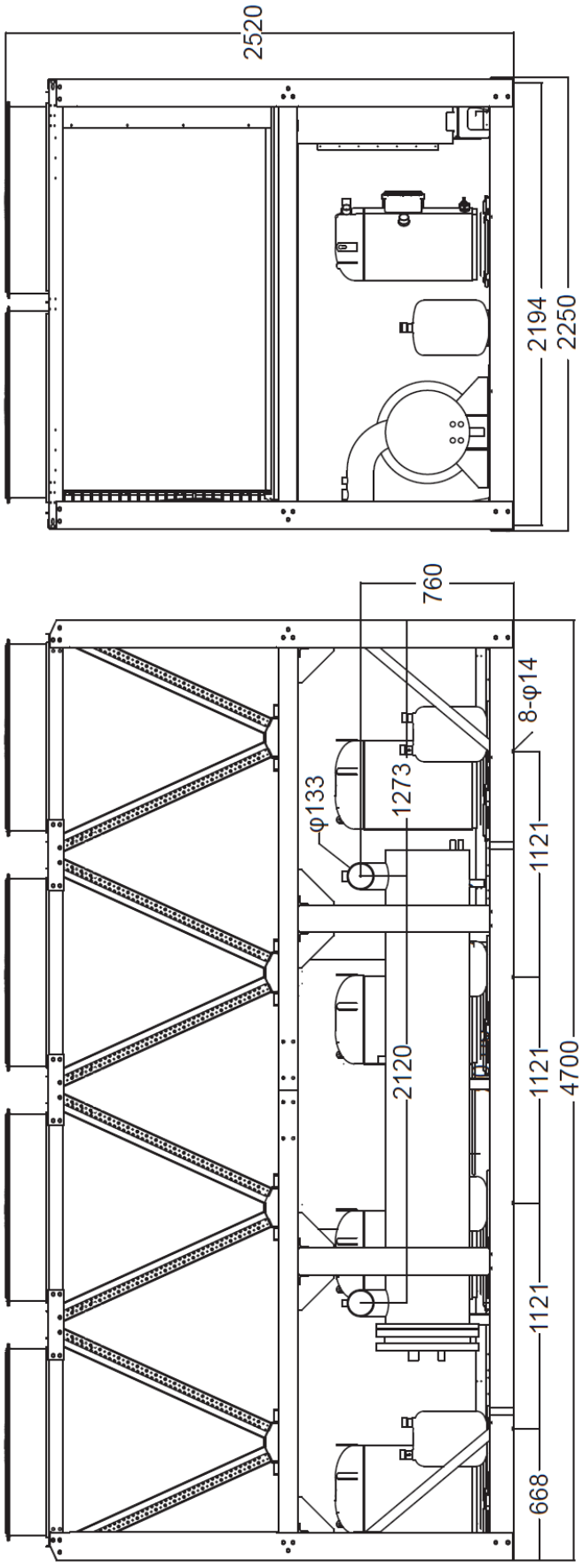
(unit : mm)

HQNF100C3SH



(unit : mm)

HQNF140B4SH



(unit : mm)

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