

**COMMERCIAL
AIR SOURCED
HEAT PUMP CHILLER**

2022

**FOR PROFESSIONAL USE
2022 CATALOGUE**



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TOWARDS A GREENER & HEALTHIER WORLD

SMART & ECO-FRIENDLY TECHNOLOGICAL-DRIVEN SOLUTIONS FOR GREENER & HEALTHIER WORLD

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CORPORATE PROFILE

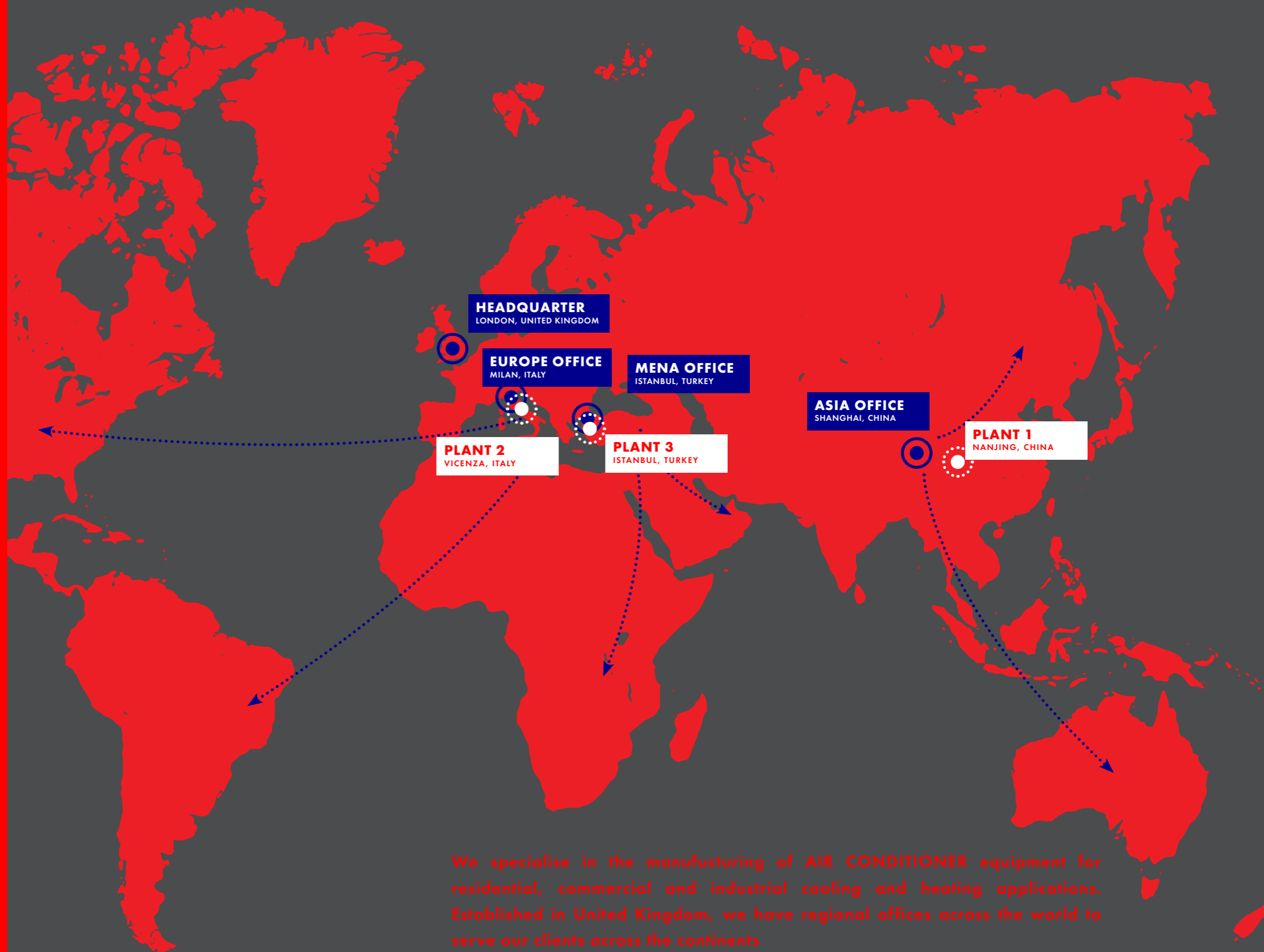
Our eco° global industries is an enterprise specialising in products and services across: Energy Sector, Heavy Industries, Technology Sector, Education Sector, Transportation Sector and Lifestyle Sector such as Appliances, Health & Food

eco° focuses on delivering eco-friendly and smart solutions and services to improve lives and safeguard our environment

eco° is committed towards our clients to always deliver design and engineering solutions with great consideration given to our environments. We focus greatly on solving design and engineering challenges with sustainable solutions

MANUFACTURING PLANTS

Our AIR SOURCED HEAT PUMP-CHILLER manufacturing plants are located in: Turkey, China and Italy, serving our distributors and partners across the continents. With our innovative R&D network, our equipment features latest technology and capable of delivering cooling and heating to challenging climates around the world



We specialise in the manufacturing of AIR CONDITIONER equipment for residential, commercial and industrial cooling and heating applications. Established in United Kingdom, we have regional offices across the world to serve our clients across the continents

INVERTER

AIR COOLED SCROLL HEAT PUMP CHILLER

**UP TO 16 MODULES
CONNECTION**

**33.5KW - 1040KW
COOLING CAPACITY**



MODULAR

AIR COOLED SCROLL HEAT PUMP CHILLER

**UP TO 16 MODULES
CONNECTION**

**66KW - 2080KW
COOLING CAPACITY**

**66KW - 1056KW
HEAT RECOVERY CAPACITY**

**70KW - 840KW
HIGH HEAT TYPE**

**66KW - 792KW
ALL YEAR COOLING TYPE**

**63KW - 1008KW
4-PIPE TYPE**

MODULAR TYPE

- + STANDARD TYPE
- + FULL HEAT RECOVERY TYPE
- + 4 PIPE DESIGN
- + HIGH & LOW AMBIENT TYPE
- + COOLING ALL YEAR TYPE
- + HEATING ALL YEAR TYPE

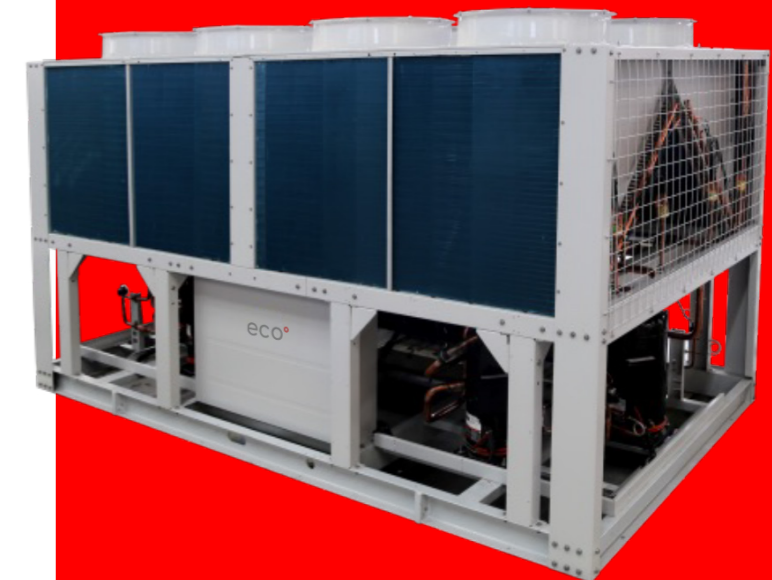


LARGE

AIR COOLED SCROLL HEAT PUMP CHILLER

**UP TO 8 MODULES
CONNECTION**

**35KW - 1040KW
COOLING CAPACITY**



INVERTER AIR COOLED SCROLL HEAT PUMP CHILLER

PRODUCT CODE

065	Specification Code	300 / 400 / 500...
B	Design Code	A / B / C / D...
H	Design Mode	H - Heating & Cooling C - Cooling Only

**UP TO 16 MODULES
CONNECTION**

CONCISE DESIGN

Fully concealed engineering with four-way air return

SIMPLIFIED SYSTEM

Single compressor design with optimised refrigerant pipeline

USER FRIENDLY

Modular configuration with easy to use control panels, one-key operation, data control and easy maintenance features



OPERATION RANGE

Operate at -26°C to +55°C. Performance improved by 20% in extreme conditions

FULL INVERTER

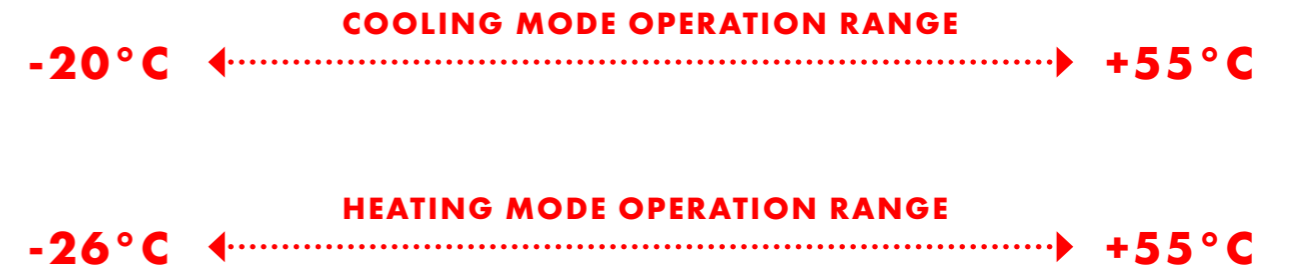
Dual Grade-1 IPLV for cooling and heating. IPLV technology provides energy saving up to 26%

APPLICATION RANGE

Solutions for a wide range of applications: cooling only, low temperature, strong heat, heating & cooling

MODULAR INVERTER, with integrated EVI TECHNOLOGY

Performance Improved by 20% at Extreme Conditions



#1

DYNAMIC CONTROL OF CONDENSATION PRESSURE

Efficient inverter fan with 15% - 100% stepless capacity control to match changes in the pressure in real time

#2

INVERTER EVI TECHNOLOGY

Inverter compressors allow for partial load operation, and EVI technology ensures stable performance under extreme conditions

#3

SELF DEVELOPED DRIVE CONTROL PROGRAM

Stepless sine-wave permanent magnet motor driving technology provides computing at 8000 times per second and double filtering to ensure power disruption is minimised

#4

EXCELLENT IPLV

IPLV is above 4.55 in cooling mode, exceeding industrial standard. IPLV is above 3.10 in heating mode, meeting industrial standard

#5

ENERGY SAVING RATE AT 26%

Equipped with inverter compressor that supports 15% - 100% stepless regulation, our units able to provide smooth performance curve, even under partial load operation

#6

BALANCED CONTROL

When combining in modular configuration, the system prioritises balanced control to boost system efficiency and extends system lifetime operation

MODULAR INVERTER HEAT PUMP DATA CHART

Model		035BHE		065BHE		
Nominal cooling	Cooling capacity	kW	33.5	65.0		
	Power consumption	kW	12.0	21.2		
	COP	W/W	2.79	3.06		
	IPLV	W/W	4.60	4.55		
Nominal heating 1	Heating capacity	kW	24.0	48.0		
	Power consumption	kW	10.2	20.5		
	COP	W/W	2.35	2.34		
	IPLV	W/W	3.20	3.10		
Nominal heating 2	Heating capacity	kW	34.0	75.0		
	Power consumption	kW	10.5	23.4		
	COP	W/W	3.24	3.20		
Power supply	-		380 V 3N-50 Hz			
Water flow	m3/h	5.76	11.2			
Water resistance	kPa	30	45			
Water inlet and outlet pipe connection type	-		DN40 external thread connection	DN65 flange connection		
Operating mode	-					Automatic operation controlled by microcomputers
Compressor	Type	-				Scroll type DC inverter EVI
	Qty	Set	1	1		
Fan	Type	-				DC inverter low-noise axial flow fan
	Air flow	m3/h	13000	26000		
	Qty	Set	1	2		
Refrigerant	Type	-				R410A
External Dimensions (Length * Width * Height)	mm	1170×846×1694	2000×950×2020			
Weight	Net weight	kg	285	600		
	Operating weight		300	660		
Noise	dB(A)	50 - 61	50 - 67			
Maximum total power	kW	20	31.5			
Maximum operating current	A	30.5	50			

- The nominal cooling capacity and nominal cooling consumption 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 1 is tested at the rated water flow, water outlet temperature of 41°C, and outdoor dry-bulb temperature of -12°C and wet-bulb temperature of -14°C. 1. The nominal heating capacity 2 is tested at the rated water flow, water outlet temperature of 45°C, and outdoor dry-bulb temperature of 7°C and wet-bulb temperature of 6°C.
- 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 applications.
- Parameters listed in the above tables are for a single module. Up to 16 modules can be used together.
- The control accessory box needs to be purchased separately, which contains the wired controller, wired controller communication cable, user manual, temperature sensor, etc. The box content may change. Please refer to the actual factory configurations.

OPERATING RANGE

Ambient temperature range in cooling mode	°C	-20 - 55
Ambient temperature range in heating mode	°C	-26 - 55
Cooling return water temperature	°C	10 - 25
Cooling water outlet temperature	°C	5 - 20
Heating return water temperature	°C	25 - 50
Heating water outlet temperature	°C	30 - 55

COOLING CAPACITY DATA CHART

MODEL 035BHE																
Water outlet temperature °C	Ambient Temperature (°C)															
	55		52		48		44		40		35		30		25	
	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)
5	6.9	5.8	12.0	9.3	16.1	10.6	25.8	12.5	30.8	13.5	32.2	11.8	32.8	11.0	34.5	10.5
7	7.2	6.0	12.6	9.3	18.3	10.9	26.8	12.6	32.1	13.5	33.5	12.0	34.7	11.1	36.3	10.6
9	7.8	6.2	13.6	9.4	20.5	11.2	27.8	12.7	33.4	13.6	35.4	12.2	36.6	11.2	38.1	10.6
12	8.4	6.5	15.3	9.6	22.8	11.5	29.3	12.8	35.3	13.6	38.4	12.5	39.4	11.4	40.8	10.7
15	9.5	6.8	18.0	9.8	25.0	11.8	30.8	13.0	37.2	13.7	41.3	12.8	42.3	11.6	43.4	10.8
20	11.0	7.1	22.7	10.2	29.9	12.1	35.0	13.1	43.0	13.9	44.6	13.2	47.0	11.8	48.8	10.9

MODEL 035BHE																
Water outlet temperature °C	Ambient Temperature (°C)															
	15		5		0		-5		-10		-15		-20			
	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)		
5	34.3	9.0	36.1	8.6	36.3	8.6	36.4	8.4	34.2	7.9	36.4	8.0	38.6	8.0		
7	36.0	9.1	37.2	8.6	37.3	8.7	37.4	8.6	35.7	8.0	37.9	8.2	40.1	8.3		
9	37.8	9.1	38.2	8.7	38.3	8.8	38.3	8.8	37.1	8.2	39.4	8.4	41.6	8.7		
12	40.3	9.2	39.7	8.7	39.8	8.8	39.8	8.9	39.3	8.4	41.6	8.8	43.9	9.1		
15	42.9	9.3	41.3	8.8	41.3	8.7	41.3	9.0	41.5	8.6	43.8	9.1	46.1	9.6		
20	48.1	9.5	44.4	8.9	44.3	9.0	44.3	9.1	45.8	9.0	48.2	9.8	50.6	10.6		

COOLING CAPACITY DATA CHART

MODEL 065BHE																
Water outlet temperature °C	Ambient Temperature (°C)															
	55		52		48		44		40		35		30		25	
	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)
5	12.1	10.9	23.2	16.4	31.2	18.8	50.0	22.0	58.1	23.1	62.5	20.9	63.6	19.5	67.0	18.6
7	12.8	10.9	24.4	16.5	35.5	19.3	52.0	22.2	60.5	23.2	65.0	21.2	67.3	19.7	70.4	18.7
9	13.8	11.1	26.4	16.6	39.9	19.9	53.9	22.4	62.9	23.2	68.8	21.5	71.0	19.9	73.9	18.8
12	15.5	11.2	29.6	16.9	44.2	20.4	56.8	22.6	66.4	23.4	74.5	22.0	76.5	20.1	79.1	18.9
15	18.3	11.5	35.0	17.3	48.5	20.9	59.8	22.9	70.0	23.5	80.2	22.6	82.1	20.4	84.3	19.1
20	23.0	12.0	44.0	18.0	58.0	21.3	68.0	23.1	81.0	23.9	86.5	23.2	91.3	20.9	94.7	19.3

MODEL 065BHE																
Water outlet temperature °C	Ambient Temperature (°C)															
	15		5		0		-5		-10		-15		-20			
	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)		
5	66.5	16.0	70.1	15.2	70.3	14.8	70.6	14.4	66.4	14.0	70.7	14.1	74.9	14.2		
7	69.9	16.1	72.1	15.3	72.3	14.9	72.5	14.5	69.2	14.2	73.5	14.5	77.8	14.7		
9	73.2	16.2	74.1	15.3	74.2	15.0	74.4	14.6	72.0	14.5	76.4	14.9	80.8	15.3		
12	78.3	16.3	77.1	15.5	77.2	15.1	77.3	14.7	76.2	14.8	80.7	15.5	85.1	16.2		
15	83.3	16.5	80.1	15.6	80.1	15.2	80.1	14.9	80.5	15.2	85.0	16.1	89.5	17.0		
20	93.4	16.8	86.1	15.8	86.0	15.5	85.9	15.2	88.9	16.0	93.6	17.3	98.2	18.7		

HEATING CAPACITY DATA CHART

MODEL 035BHE																
Water outlet temperature °C	Ambient Temperature (°C)															
	-26		-20		-15		-10		-5		0		7		10	
	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)
30	16.0	8.1	20.0	8.7	24.0	9.2	26.9	9.0	30.5	9.0	34.0	8.5	35.7	8.5	40.0	8.8
35	15.9	9.0	19.8	9.1	23.7	9.7	26.9	9.9	30.1	10.1	33.0	9.3	34.3	9.0	39.2	9.1
40	15.5	10.2	19.6	9.7	23.4	10.8	26.9	11.0	30.3	11.2	32.8	10.1	33.6	9.5	38.9	10.0
45			19.3	11.6	22.6	11.9	26.3	12.1	29.9	12.3	32.2	11.2	34.0	10.5	38.5	11.1
50			19.2	13.3	21.8	13.5	25.7	13.5	29.5	13.4	31.8	12.2	32.4	11.6	38.2	12.2
55											31.3	12.0	32.0	11.1	38.0	12.6

MODEL 035BHE																
Water outlet temperature °C	Ambient Temperature (°C)															
	15		20		25		30		35		48		55			
	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)		
30	40.5	9.0	40.1	7.8	39.8	6.7	42.9	6.4	46.1	6.5	49.0	5.9	51.0	6.1		
35	40.4	9.1	40.1	7.9	39.7	6.7	42.8	6.4	46.0	6.5	49.0	5.6	51.0	5.8		
40	40.4	10.4	39.0	9.1	37.5	7.9	40.4	7.6	43.3	7.7	43.5	6.7	45.5	6.9		
45	40.4	11.6	39.5	9.4	38.6	7.3	41.6	7.0	44.5	7.1	44.8	6.2	46.8	6.4		
50	40.3	12.9	38.4	10.7	36.5	8.5	39.3	8.2	42.1	8.3	42.1	8.1	44.1	8.3		
55	40.3	14.1	37.8	11.9	35.4	9.6	38.1	9.4	35.4	9.5	36.2	7.2	37.0	7.3		

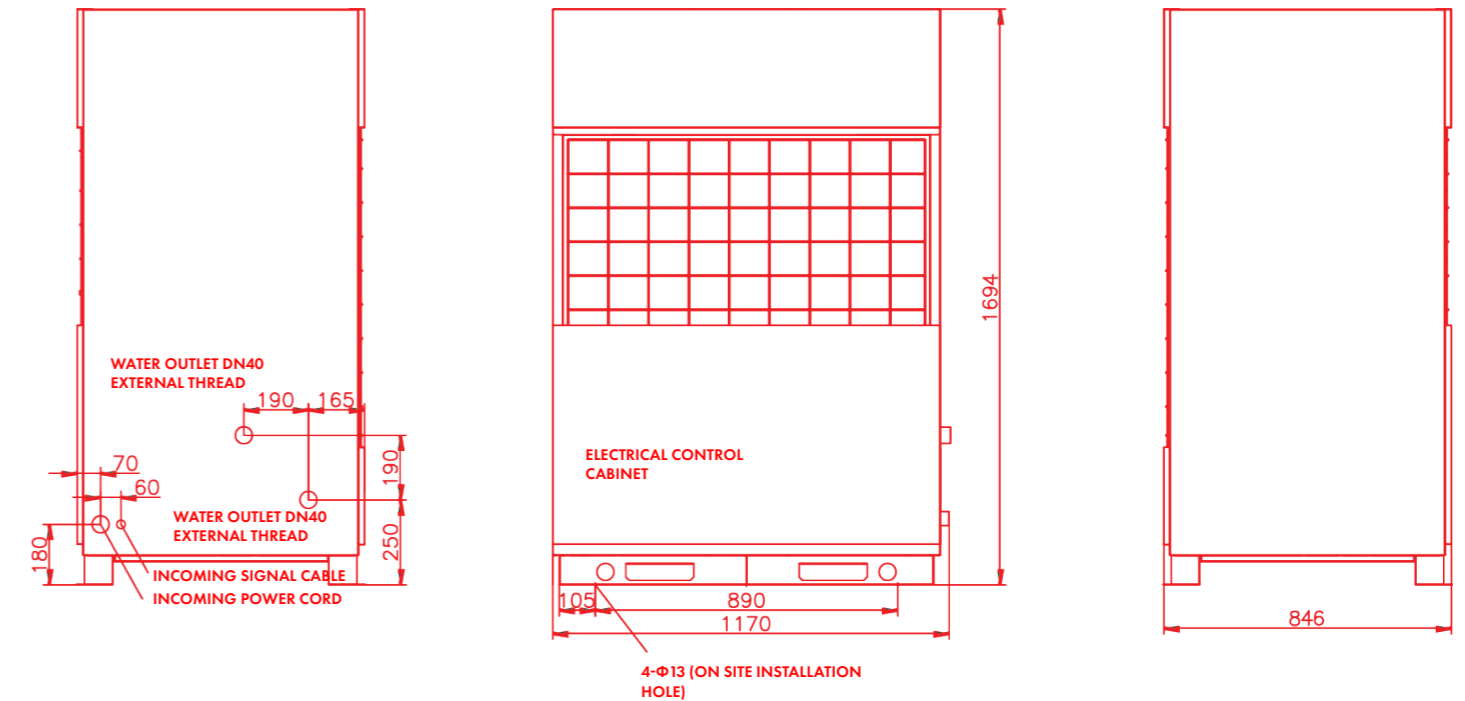
HEATING CAPACITY DATA CHART

MODEL 065BHE																
Water outlet temperature °C	Ambient Temperature (°C)															
	-26		-20		-15		-10		-5		0		7		10	
	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)
30	31.2	15.9	39.0	16.5	44.7	16.8	50.2	17.3	59.2	17.9	67.8	18.3	75.9	18.4	81.0	18.5
35	30.9	17.7	38.5	18.4	44.7	18.3	49.7	18.8	59.2	19.6	67.2	20.1	75.9	19.9	80.8	20.5
40	31.0	19.4	37.6	20.2	44.9	19.8	49.2	20.8	59.2	21.3	66.1	21.9	75.9	21.4	80.6	22.1
45			36.6	22.0	44.7	21.6	48.6	23.0	58.9	23.8	65.5	23.7	75.0	23.4	80.4	23.6
50				45.2	23.6	49.7	25.2	58.9	26.1	65.0	25.5	73.8	25.1	80.1	25.8	

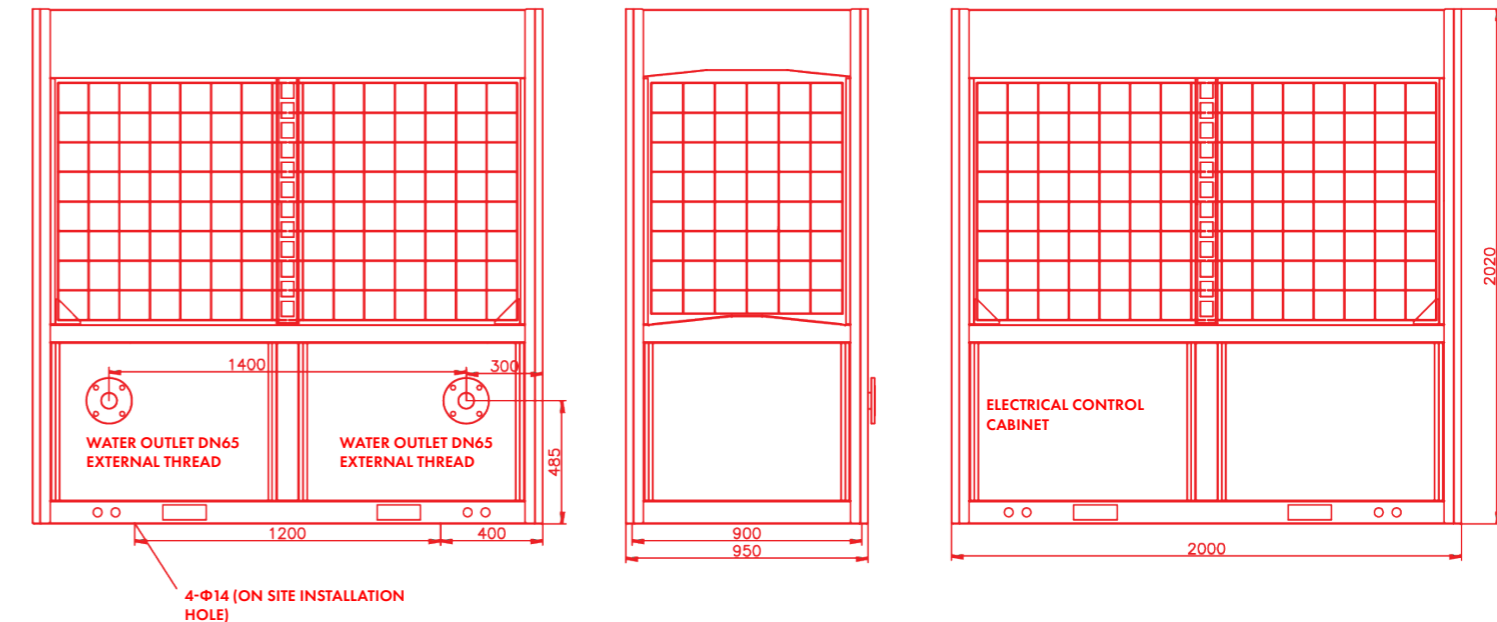
MODEL 065BHE																
Water outlet temperature °C	Ambient Temperature (°C)															
	15		20		25		30		35		48		55			
	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)	Capacity (kW)	Power (kW)		
30	81.8	18.2	81.9	16.5	65.0	11.5	70.2	11.0	75.4	11.2	80.1	10.2	82.1	10.4		
35	81.8	20.0	82.6	17.6	65.7	12.6	70.9	12.1	76.1	12.3	81.1	10.6	83.1	10.8		
40	81.8	21.8	81.3	18.9	67.9	13.9	73.1	13.4	78.3	13.6	78.6	11.8	80.6	12.0		
45	81.8	23.5	82.0	20.1	68.1	15.1	73.3	14.6	78.5	14.8	79.0	12.8	81.0	13.0		
50	81.9	25.3	80.7	21.4	67.6	16.4	72.8	15.9	78.0	16.1	78.1	13.8	80.1	14.0		
55	81.6	27.4	78.1	22.7	67.1	17.7	72.3	17.2	67.1	17.4	78.0	14.8	80.0	15.0		

MODULAR INVERTER HEAT PUMP UNIT DIAGRAM

MODEL 035BHE



MODEL 065BHE



FIXED SPEED

AIR COOLED MODULAR HEAT PUMP CHILLER

DESIGN TYPE

- + STANDARD TYPE
- + FULL HEAT RECOVERY TYPE
- + HIGH & LOW AMBIENT TYPE
- + COOLING ALL YEAR TYPE
- + HEATING ALL YEAR TYPE

R410A MODULAR

Based on 20 years of R&D and continuous development, our new generation of PRO X CHP features a wide range of capacities and operational type, suitable for many applications around the world. With basic models available from 66kW to 130kW, our PRO X series can achieve at up to 2080kW cooling per system, with 16 modules configuration

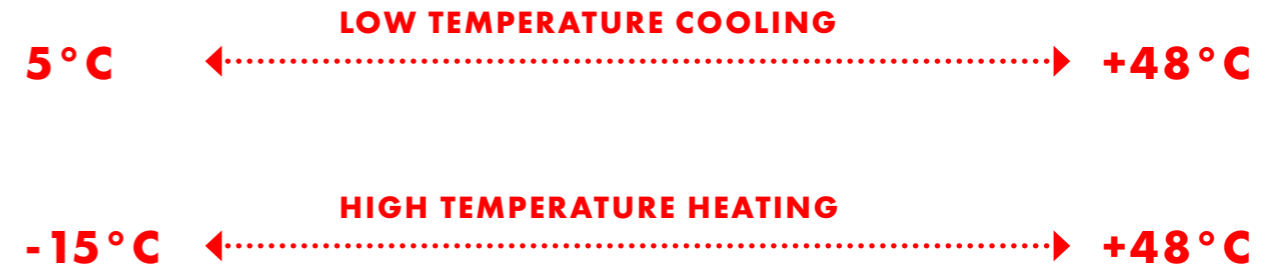
16 UNITS CONNECTION

Units of the same series can be connected easily, reaching at up to 16 combinations to achieve a wide range of requirement

INTELLIGENT DEFROSTING TECHNOLOGY

The control system can determine whether de-frosting is required in accordance to the ambient temperature, evaporating temperature and running time. When the de-frosting condition is reached, the unit will automatically start the de-frosting program to achieve de-frosting in the shortest period of time possible, achieving at up to efficiency level of over 90%, ensuring optimum heating and high EER.

MODULAR STANDARD, with FIXED FREQUENCY hermetic scroll compressor



INTELLIGENT AIR VOLUME REGULATION

The shared duct system is adopted to greatly expand the operation range of the unit. The single-module unit can automatically increase or decrease fans operation based on ambient temperature to achieve optimal air volume and load performance.

INTELLIGENT ENERGY REGULATION TECHNOLOGY

The unique intelligent energy regulation in multi-module combinatino ensures that each module loads or unloads a refrigerant circuit before loading or unloading the next refrigerant circuits in the single module. This technique provides higher efficiency, higher stability and better IPLV

COMPACT DESIGN

Our 130kW unit module only requires 2.42m² footprint, allowing for less space consumption while still delivering great performance.

HERMETIC SCROLL COMPRESSOR

Adopting world-class hermetic scroll compressor, our units offer high efficiency, energy-saving protocol, high stability and long-service lifespan

V SHAPED CONDENSER

Our units feature V-shaped condenser, with integral reinforced metal frame, internal thread and triple anti-frosting features (patented design of open-window hydrophilic aluminium foil, bottom elevated, one way valve). All features are engineered to provide higher structural stability, better corrosion resistance, improved heat exchange efficiency and improved resistance towards dust and frosting in winter.

FLEXIBLE MASTER DESIGN

Any unit can operate as the master once connected, the stage-rotation mechanism also extends the lifespan of the system by rotating the master unit every cycle.



SAW SHAPED IMPELLER

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

EFFICIENT SHELL & TUBE HEAT EXCHANGER

Featuring helical baffle type design, our waterside shell and internal thread heat exchanger offers better heat transfer performance and higher resistance to cold temperature than conventional plate heat exchanger.

HIGH PRECISION ELECTRONIC EXPANSION VALVE

Our electronic expansion valve can achieve 480 regulating range, supplemented by patented precision throttle control technology to dynamically optimise efficiency of every components, ensuring optimal operation condition under all climates.

SELF DEVELOPED MICROCOMPUTER CONTROL PANEL

Our control panel is fully upgraded based on years of R&D, to provide more functions to included: phase sequence detection, current detection, RS-485 communication interface and performance optimisation.

MULTI PROTECTION FUNCTIONS

Built-in protection functions to include: compressor overloading protection, high and low voltage protection, water shortage protection, compressor frequent start and stop protection, fan motor overheating protection, power supply protection, exhaust temperature protection, outlet water temperature protection



CASE STUDY UKRAINE

Netherland Embassy Building in Ukraine, with modular CHP system

CASE STUDY INDONESIA

Dexa Medica, pharmaceutical building, in Indonesia, installed with modular CHP system



MODULAR STANDARD HEAT PUMP DATA CHART

Model		201XH	301XH	401XH	201XC	401XC	301XC/B	401XC/A	
Power supply	V-ph-Hz	380-3-50	380-3-50	380-3-50	380-3-50	380-3-50	460-3-60	380-3-60	
Cooling	Cooling capacity	kW	66	100	130	66	130	100	
	Cooling power input	kW	21.29	32.25	41.9	21.29	41.9	32.25	
	Cooling current	A	40.3	59.9	75.5	37.9	75.5	54.1	
Heating	Heating capacity	kW	70	110	140	/	/	/	
	Heating power input	kW	21.85	34.37	43.7	/	/	/	
	Heating current	A	41.4	61.9	76.5	/	/	/	
Maximum power input	kW	30.2	43.6	57.6	30.2	57.6	42	55	
Maximum input current	A	50	80	100	50	100	65	100	
Starting current	A	140	125	266.1	172	266.1	185.6	300	
Energy regulation	%	0-50-100	0-50-100	0-50-100	0-50-100	0-50-100	0-50-100	0-50-100	
Compressor	Type	-	Hermetic scroll compressor						
	Brand	-	Emerson	Emerson	Emerson	Emerson	Emerson	Emerson	Emerson
	Qty	-	2	4	2	2	2	2	2
Evaporator	Type	-	High-efficiency shell-and-tube heat exchanger						
	Water flow	m ³ /h	11.4	17.2	22.4	11.4	22.4	17.2	22.4
	Water pressure drop	kPa	45	30	45	45	45	50	60
Connection pipe dimension	-	DN65(Flange)							
Fan	Qty	-	2	2	2	2	2	2	
	Air flow	m ³ /h	28000	43000	48000	28000	48000	36000	47000
	Current	A	2.35	4.5	5.3	2.35	5.3	3.3	5
	Power	kW	1.13	1.8	2.2	1.13	2.2	1.5	2
Unit dimensions (L*W*H)	mm								
Packaging dimensions (L*W*H)	mm								
Net weight	kg	580	850	900	570	850	820	850	
Operating weight	kg	640	930	1000	630	950	900	950	
Refrigerant	Type	-	R410A	R410A	R410A	R410A	R410A	R410A	

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.
2. 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.
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 eco°.
4. 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.
5. The specifications above are based on a single module. Multiple modules can be used in combination. A maximum of 16 modules can be combined.
6. 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

TOTAL HEAT RECOVERY TYPE, with FIXED FREQUENCY hermetic scroll compressor

COMBINING ASHP & ACHP

Our TOTAL HEAT RECOVERY series combines the feature of Air Cooled Chiller Heat Pump (ACHP) with Air Sourced Chiller Heat Pump (ASHP) to provide COOLING, HEATING, HEAT RECOVERY, HEATING HOT WATER & DOMESTIC HOT WATER. This series is widely used in commercial and industrial applications such as: hotels, schools, hospitals, factories and manufacturing plants.

FREE HOT WATER

In COOLING MODE, our unit can recover waste heat and provide free domestic hot water up to 55°C. The unit can replace conventional boilers to meet the occupants need for hot water, saving investment and provide a greener solution to heating and cooling.

SMALL FOOTPRINT

Each unit requires only 1.89m², which is one of the smallest size in the industry. Our unit can replace conventional chiller and boiler configuration entirely.

COMPLETE FUNCTIONS

Inside this compact design, we offer 5 OPERATION MODES: air conditioning, heating, heat recovery, heat pump water heating, heating + heat pump water heating.

EFFICIENT COMPONENTS

Every unit employs efficient shell and tube heat exchanger, with optimised pipeline design, providing comprehensive energy efficiency up to 8.24 under the conditions of cooling + heat recovery mode.

GREEN TECHNOLOGY

We adopt the 100% recycling of the heat of the condenser in the refrigeration cycle to produce hot water, reducing the thermal pollution caused by the condensation heat to the environment, and the power consumption of the cooling fan. In addition, this unit can run the heat pump hot water mode alone in winter, and it can meet the demand for hot water in winter without adding other hot water equipment, which greatly reduces the initial investment.

HIGH EFFICIENCY HEAT EXCHANGER

Our heat exchanger features 5 BENEFITS: 1) high heat exchange efficiency using high efficiency finned heat exchanger tubes nad spiral coil tube structure, 2) small size 3) excellent water quality, water pipes are made of pure copper), 3) strong frost resistance, large cross-sectional area of water circulation, not easy to block or freeze, 5) stable and reliable performance, with no solder joints in internal copper pipe

MODULAR HEAT RECOVERY HEAT PUMP DATA CHART

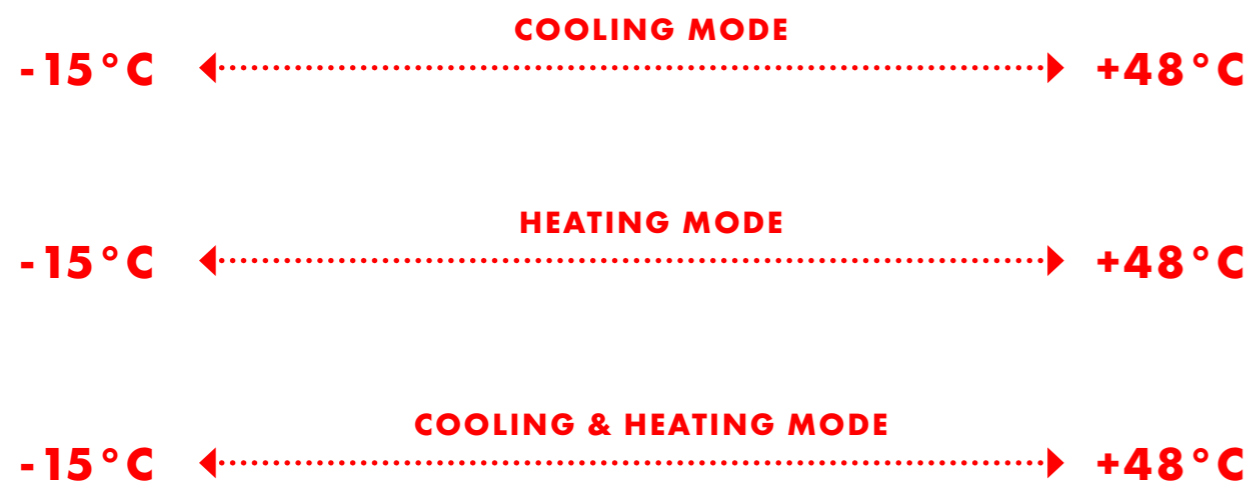
Model		201XHR/1	
Power supply		V-ph-Hz	380-3-50
Cooling	Cooling capacity	kW	66
	Cooling power input	kW	20
	Cooling current	A	40.3
Heating	Heating capacity	kW	70
	Heating power input	kW	21
	Heating current	A	41.4
Maximum power input		kW	30.2
Maximum input current		A	50
Starting current		A	140
Energy regulation		%	0-100
Compressor	Type	-	Hermetic scroll compressor
	Brand	-	Emerson
	Qty	-	1
Evaporator	Type	-	High-efficiency shell-and-tube heat exchanger
	Water flow	m ³ /h	11.4
	Water pressure drop	kPa	18
	Connection pipe dimension	-	DN65 flange connection
Fan	Qty	-	2
	Air flow	m ³ /h	26000
	Current	A	2.35
	Power	kW	1.13
Unit dimensions (L*W*H)		mm	2200x860x1980
Packaging dimensions (L*W*H)		mm	2260x920x1980
Net weight		kg	650/710
Operating weight		kg	650/710
Refrigerant	Type	-	R410A
Domestic hot water mode	Rated water flow	m ³ /h	13.1
	Nominal heating capacity	kW	76
	Heating power input	kW	18.4
	Current	A	40.6
	Nominal water output	m ³ /h	1.63
Cooling+heat recovery mode	Nominal cooling capacity	kW	60
	Nominal heat recovery capacity	kW	76
	Nominal input power	kW	16.5
	Current	A	35.6
	Nominal water output	m ³ /h	1.63
	Water flow at air conditioner side	m ³ /h	10.3
	Water flow at hot water side	m ³ /h	13.1

1. Cooling mode: Nominal cooling operating conditions: water flow volume 11.4m³/h, chilled water outlet temperature 7°C, ambient temperature 35°C Nominal heating operating conditions: water flow 11.4m³/h, hot water outlet temperature 45°C, ambient dry/wet bulb temperature 7°C/6°C.
2. Heating water mode: Nominal conditions: water flow volume 13.1m³/h, hot water outlet temperature 45°C, ambient dry/wet bulb temperature 20/15°C.
3. Cooling + heat recovery mode: Cooling mode cooling water flow volume 10.3m³/h, LWT 7°C, heat recovery mode: hot water water flow volume 13.1m³/h, hot water outlet temperature 45°C
4. Nominal heating operating conditions: initial water temperature 15°C, cadence water temperature 55eC, ambient dry/wet bulb temperature 20/15°C.
5. In actual use, the cooling/heating loss should be considered after the installation of the system piping, pumps, valve, dirt, etc. about 6%.
6. The units can be combined freely. Each system can combine up to 16 modules.
7. There will be no further notice if the parameters changes due to product optimization.
8. The controllers need to be ordered separately, including wired controller, communication line, IOM, temperature sensor. Manufacturer reserves the right to make changes to above specifications without prior notice, please refer to the factory configuration when purchasing.

4-PIPE MODULAR HEAT PUMP TYPE, with FIXED FREQUENCY

SOLUTION FOR HIGH SPECIFICATION DESIGN

Our 4-PIPE MODULAR air cooled heat pump adopts R410a eco-friendly refrigerant, providing supports for COOLING, HEATING and HEAT RECOVERY operations. Most suited for applications that requires continuous heating and cooling, this series eliminates the need for additional mechanical equipment to provide the required complex indoor conditions.



MAXIMISED ENERGY

In the instance, where both cooling 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 to produce 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 BALANCING 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.

4-PIPE MODULAR HEAT PUMP DATA CHART

Model		201XHF	
Cooling only	Nominal cooling capacity	kW	66
	Rated input power for cooling	kW	20
	Water flow	m ³ /h	11.4
	COP	-	3.3
Heating only	Nominal heating capacity	kW	70
	Rated input power for heating	kW	20
	Water flow	m ³ /h	13.9
Cooling and heating	Nominal cooling capacity	kW	63
	Nominal heating capacity	kW	81
	Total nominal power	kW	18.5
	Rated water flow	Cold water side	m ³ /h
Hot water side		m ³ /h	13.9
Power supply	-	-	380 V 3N ~ 50 Hz
Water resistance	Cold water side	kPa	40
	Hot water side	kPa	60
Water inlet/outlet pipe diameter	Cold water side	-	DN65 (flange connection)
	Hot water side	-	DN65 (internal thread)
Fan	Type	-	Low-noise axial fan
	Qty	Set	2
	Air flow	m ³ /h	26000
Compressor	Type	-	Hermetic scroll compressor
	Qty	Set	1
Operating mode	-	-	Automatic operation controlled by microcomputers
Refrigerant	Type	-	R410A
Unit weight	-	kg	650
Operating weight	-	kg	710
Dimensions	Length	mm	2200
	Width	mm	860
	Height	mm	1980

- The nominal cooling capacity is tested under the following conditions: water flow of 11.4 m³/h; water outlet temperature of 7°C; outdoor environment DB temperature of 35°C. The nominal heating capacity is tested under the following conditions: water flow of 13.9 m³/h; water outlet temperature of 45°C; outdoor environment DB/WB temperature of 7°C/6°C.
- The nominal cooling+heating capacity is tested under the following conditions: water flow at cold water side of 11.4 m³/h; water outlet temperature of 7°C; water flow at hot water side of 13.9 m³/h; water outlet temperature of 45°C.
- The operation range in cooling mode, heating mode, and cooling+heating mode is -15°C to +48°C.
- 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 applications.
- Parameters listed in the above tables are for a single module. Up to 16 modules can be used together.
- The specifications are subject to change due to product improvement without prior notice.
- The control accessory box needs to be purchased separately, which contains the wired controller, wired controller communication cable, user manual, temperature sensor, etc. The box content may change. Please refer to the actual factory configurations.

Model and Quantity		201 XHF	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Cooling Only	Cooling capacity	kW	66	132	198	264	330	396	462	528	594	660	726	792	858	924	990	1056
	Water flow at cold water side	m ³ /h	11.4	22.8	34.2	45.6	57	68.4	79.8	91.2	102.6	114	125.4	136.8	148.2	159.6	171	182.4
Heating only	Heating capacity	kW	70	140	210	280	350	420	490	560	630	700	770	840	910	980	1050	1120
	Water flow at hot water side	m ³ /h	13.9	27.8	41.7	55.6	69.5	83.4	97.3	111.2	125.1	139	152.9	166.8	180.7	194.6	208.5	222.4
Cooling and heating	Cooling capacity	kW	63	126	189	252	315	378	441	504	567	630	693	756	819	882	945	1008
	Heating capacity	kW	81	162	243	324	405	486	567	648	729	810	891	972	1053	1134	1215	1296

HIGH HEAT EFFICIENCY MODULAR HEAT PUMP, with FIXED FREQUENCY

SOLUTION FOR HIGH HEAT

Adopting the most advanced EVI compressor, this series is designed to operate in the widest range of heating ambient temperature from -25°C to +25°C



HIGH PRECISION THROTTLE CONTROL

Our electronic expansion valve can achieve 480 regulating range, supplemented by patented precision throttle control technology to dynamically optimise efficiency of every components, ensuring optimal operation condition under all climates.

EVI COMPRESSOR

This series adopts our 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 overall efficiency of the unit.

LOW CARBON

This series adopts the environment-friendly refrigerant of R410a, and when combining it with air source heat pump technology and EVI technology, maximum efficiency operation is achieved in both winter and summer conditions.

HIGH HEAT MODULAR HEAT PUMP DATA CHART

Model			201XHE	401XHE
Power supply		V-ph-Hz	380-3-50	380-3-50
Cooling	Cooling capacity	kW	70	150
	Cooling power input	kW	20.4	43.8
	Cooling current	A	41.4	77.5
Heating	Heating capacity	kW	78	160
	Heating power input	kW	20.8	44
	Heating current	A	41.3	78.3
Maximum power input		kW	31	58
Maximum input current		A	60	105
Starting current		A	126.6	260.2
Energy regulation		%	0-50-100	0-50-100
Compressor	Type	-	Hermetic EVI scroll compressor	
	Brand	-	Emerson	Emerson
	Qty	-	2	2
Evaporator	Type	-	High-efficiency shell-and-tube heat exchanger	
	Water flow	m ³ /h	12	25.8
	Water pressure drop	kPa	50	54
	Connection pipe dimension	-	DN65 flange connection	DN80 flange connection
Fan	Qty	-	2	4
	Air flow	m ³ /h	30000	60000
	Current	A	2.6	2.6
	Power	kW	0.9	0.9
Unit dimensions (L*W*H)		mm	2200x860x2190	2200x1720x2190
Packaging dimensions (L*W*H)		mm	2260x920x2190	2260x1780x2190
Net weight		kg	665	1150
Operating weight		kg	710	1250
Refrigerant	Type	-	R410A	R410A

1. Nominal cooling operating conditions: leaving water temperature 7°C, ambient temperature 35°C; Nominal heating operating conditions: leaving water temperature 45°C, outdoor dry bulb temperature 7°C, wet bulb temperature 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 applications.
3. Parameters listed in the above tables are for a single module. Up to 12 modules can be used together.
4. The specifications are subject to change due to product improvement without prior notice.
5. The control accessory box needs to be purchased separately, which contains the wired controller, wired controller communication cable, user manual, temperature sensor, etc. The box content may change. Please refer to the actual factory configurations.

YEAR ROUND COOLING MODULAR HEAT PUMP, with FIXED FREQUENCY

SOLUTION FOR INDUSTRIAL APPLICATIONS

Our new generation of YEAR-ROUND cooling modular heat pumps series is most suited for industrial applications, where continuous operation is required. Featuring R410a refrigerant, advanced electronic expansion valve control technology, efficient shell and tube heat exchanger and EC fan with stepless speed regulation, this series meets and exceeds industrial standard.



DC FAN WITH STEPLESS SPEED REGULATION

Our condensate fan employs DC brushless motor, offering speed variable between 20% - 100%. This ensures the condensing pressure is always within the safe operation range, providing longer system lifespan

HIGH PRECISION THROTTLE CONTROL

Our electronic expansion valve can achieve 480 regulating range, supplemented by patented precision throttle control technology to dynamically optimise efficiency of every components, ensuring optimal operation condition under all climates.

DRY-TYPE SHELL AND TUBE HEAT EXCHANGER

Featuring dry-type heat exchanger design, our waterside shell and internal thread heat exchanger offers better excellent anti-freezing performance, higher tolerance to impurities in the water henceforth delivers much more reliable and stable operation.

YEAR ROUND MODULAR HEAT PUMP DATA CHART

Model		201XHA	
Power supply		V-ph-Hz	380-3-50
Cooling	Cooling capacity	kW	66
	Cooling power input	kW	20
	Cooling current	A	40.3
Heating	Heating capacity	kW	70
	Heating power input	kW	21
	Heating current	A	41.4
Maximum power input		kW	30.2
Maximum input current		A	50
Starting current		A	140
Energy regulation		%	0-50-100
Compressor	Type	-	Hermetic scroll compressor
	Brand	-	Emerson
	Qty	-	2
Evaporator	Type	-	High-efficiency shell-and-tube heat exchanger
	Water flow	m3/h	11.4
	Water pressure drop	kPa	45
	Connection pipe dimension	-	DN65 flange connection
Fan	Qty	-	2
	Air flow	m3/h	26000
	Current	A	2.6/1.2
	Power	kW	0.9/0.25
Unit dimensions (L*W*H)		mm	2200*860*1980
Packaging dimensions (L*W*H)		mm	2260*920*1980
Net weight		kg	620
Operating weight		kg	680
Refrigerant	Type	-	R410A

ID	ITEM	STANDARD	OPTIONAL
1	Auxiliary electric heating	NO	Optional electric heating: 12kw, 15kw, 18kw, 20kw, 27kw, 32kw, 40kw, 45kw, 50kw, 54kw, 63kw, 72kw
2	Wiring controller	STANDARD TYPE	TOUCH TYPE
3	Wiring controller wire length	30m	60m or 120m
4	External sheet metal	NO	YES
5	Heat Exchanger anticorrosion	NO	YES

- Nominal cooling operating conditions: leaving water temperature 7°C, ambient temperature 35°C; Nominal heating operating conditions: leaving water temperature 45°C, outdoor dry bulb temperature 7°C, wet bulb temperature 6°C
- 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 applications.
- Parameters listed in the above tables are for a single module. Up to 12 modules can be used together.
- The specifications are subject to change due to product improvement without prior notice.
- The control accessory box needs to be purchased separately, which contains the wired controller, wired controller communication cable, user manual, temperature sensor, etc. The box content may change. Please refer to the actual factory configurations.

COOLING CORRECTION FACTOR DATA SHEET

Leaving Water 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

The above correction factors adapt to 201/301/401XH/G/S, 201/401XC, 201/401XHE, 201XHR, 301XC/B, 401XC/A, 201XHF

HEATING CORRECTION FACTOR DATA SHEET

Leaving Water 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	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

The above correction factors adapt to 201/301/401XH/G/S, 201/401XC, 201/401XHE, 201XHR, 301XC/B, 401XC/A, 201XHF (excluding the data under the ambient temperature of -15°C)

COOLING CORRECTION HIGH HEAT TYPE FACTOR DATA SHEET

Leaving Water 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	1.07	0.71	1.09	0.72	1.10	0.70	1.10	0.77	1.05	0.83	1.00	0.89	0.93	0.97	0.87	1.00	0.80	1.07
7	1.15	0.74	1.17	0.75	1.18	0.73	1.17	0.80	1.12	0.86	1.07	0.92	1.00	1.00	0.94	1.03	0.87	1.10
9	1.22	0.77	1.24	0.78	1.25	0.76	1.24	0.83	1.19	0.89	1.14	0.95	1.07	1.03	1.01	1.06	0.94	1.13
12	1.30	0.80	1.32	0.81	1.33	0.79	1.32	0.86	1.27	0.92	1.22	0.98	1.14	1.06	1.08	1.09	1.01	1.16
15	1.37	0.83	1.39	0.84	1.40	0.82	1.39	0.89	1.34	0.95	1.29	1.01	1.21	1.09	1.15	1.12	1.08	1.19
20	1.42	0.86	1.45	0.87	1.46	0.85	1.44	0.92	1.40	0.98	1.34	1.04	1.26	1.13	1.20	1.15	1.13	1.22

The above correction factors adapt to 201/401XHE

HEATING CORRECTION HIGH HEAT TYPE FACTOR DATA SHEET

Leaving Water Temperature °C	Ambient Temperature °C																					
	-25		-20		-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	Heating	Power Input	Heating	Power Input
30	0.47	0.76	0.55	0.77	0.62	0.77	0.71	0.77	0.77	0.77	0.81	0.76	0.99	0.77	1.16	0.79	1.21	0.86	1.23	0.89	1.24	0.88
35	0.47	0.81	0.54	0.81	0.61	0.81	0.70	0.82	0.76	0.82	0.80	0.82	0.98	0.83	1.13	0.86	1.18	0.90	1.20	0.93	1.20	0.92
40	0.46	0.88	0.55	0.88	0.61	0.88	0.71	0.88	0.77	0.88	0.82	0.89	0.99	0.90	1.09	0.93	1.15	0.97	1.18	1.00	1.18	1.00
45	0.46	0.99	0.56	0.98	0.61	0.99	0.71	0.99	0.77	0.99	0.85	0.99	1.00	1.00	1.08	1.04	1.14	1.08	1.17	1.12	1.17	1.12
50	-	-	0.56	1.10	0.61	1.11	0.71	1.11	0.78	1.11	0.84	1.12	0.99	1.13	1.07	1.13	1.13	1.15	1.16	1.16	1.15	1.15
55	-	-	-	-	-	-	-	-	-	-	0.83	1.22	0.97	1.23	1.08	1.23	1.11	1.25	1.15	1.26	1.14	1.25

The above correction factors adapt to 201/401XHE

HEATING+HEAT RECOVERY CORRECTION FACTOR DATA SHEET

Leaving Water Temperature at Heat Recovery Side °C	Ambient Temperature °C											
	7			8			9			10		
	Cooling Capacity	Heat Recovery Capacity	Power Input	Cooling Capacity	Heat Recovery Capacity	Power Input	Cooling Capacity	Heat Recovery Capacity	Power Input	Cooling Capacity	Heat Recovery Capacity	Power Input
35	1.14	1.03	0.83	1.16	1.05	0.83	1.19	1.08	0.84	1.23	1.11	0.85
40	1.11	1.03	0.95	1.14	1.04	0.95	1.18	1.07	0.95	1.20	1.11	0.95
45	1.00	1.00	1.00	1.05	1.03	1.02	1.11	1.07	1.04	1.17	1.10	1.06
50	0.99	0.99	1.15	1.03	1.02	1.15	1.07	1.05	1.16	1.12	1.09	1.17
55	0.97	0.99	1.25	1.02	1.01	1.26	1.04	1.04	1.26	1.08	1.07	1.27

The above correction factors adapt to 201XHR

WATER HEATING CORRECTION FACTOR DATA SHEET

Leaving Water Temperature at Heat Recovery Side °C	Ambient Temperature °C											
	-10		-5		0		5		10		15	
	Heating Capacity	Power Input	Heating Capacity	Power Input	Heating Capacity	Power Input	Heating Capacity	Power Input	Heating Capacity	Power Input	Heating Capacity	Power Input
35	0.58	0.81	0.68	0.82	0.80	0.83	0.95	0.85	1.01	0.86	1.09	0.88
40	0.58	0.86	0.66	0.88	0.78	0.89	0.93	0.90	0.98	0.91	1.05	0.92
45	-	-	0.63	0.94	0.77	0.95	0.92	0.97	0.95	0.98	0.97	0.99
50	-	-	-	-	0.74	1.06	0.90	1.09	0.93	1.10	0.95	1.10
55	-	-	-	-	-	-	0.86	1.18	0.89	1.20	0.92	1.20

The above correction factors adapt to 201XHR

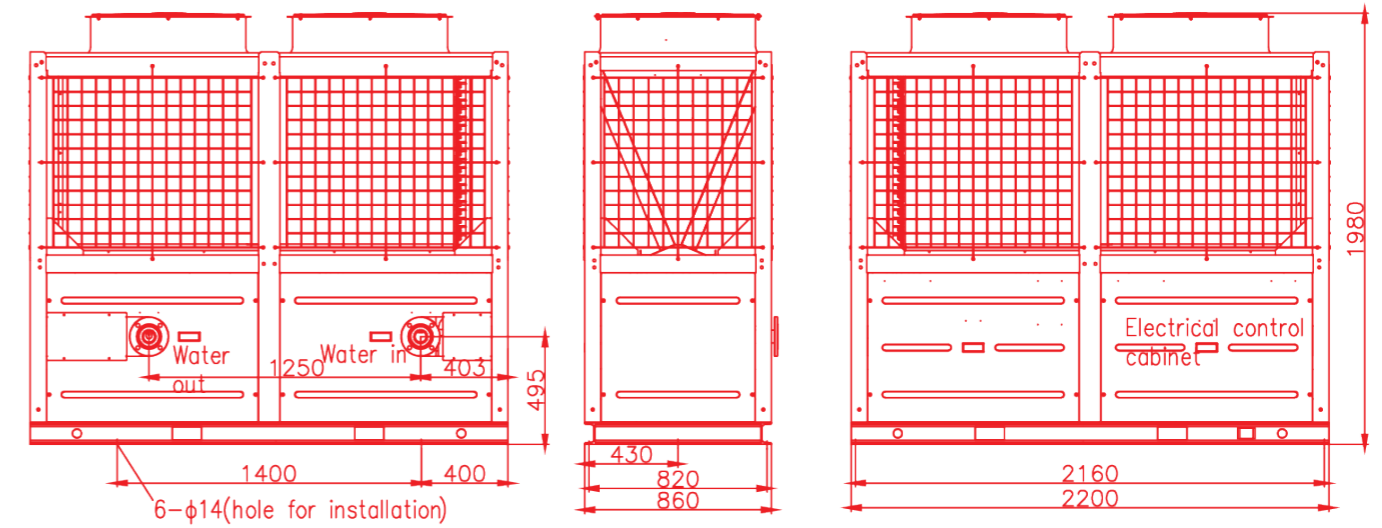
COOLING YEAR ROUND CORRECTION FACTOR DATA SHEET

Leaving Water Temperature °C	Ambient Temperature °C																											
	-20		-15		-10		-5		0		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	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	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	1.20	0.44	1.18	0.50	1.16	0.58	1.14	0.66	1.17	0.69	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	1.24	0.45	1.23	0.51	1.22	0.59	1.21	0.69	1.24	0.72	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	1.27	0.46	1.27	0.52	1.27	0.60	1.28	0.72	1.31	0.75	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	1.32	0.47	1.33	0.53	1.33	0.60	1.35	0.75	1.38	0.78	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	1.34	0.49	1.35	0.55	1.35	0.62	1.39	0.78	1.43	0.81	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

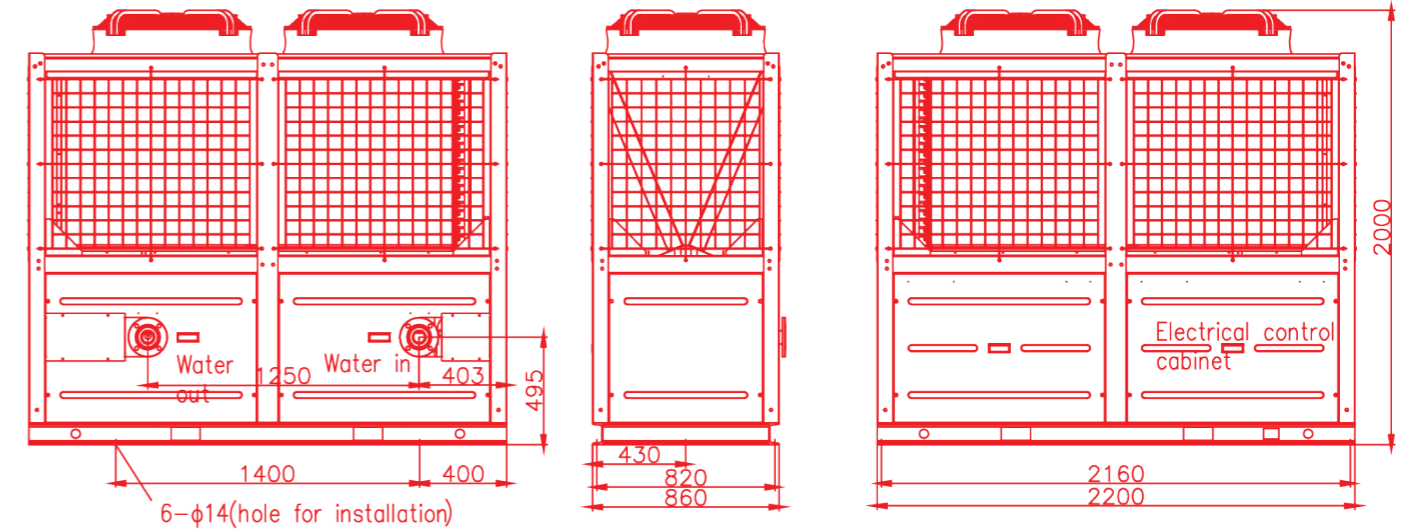
The above correction factors adapt to 201XHA

MODULAR HEAT PUMP UNIT DIAGRAM

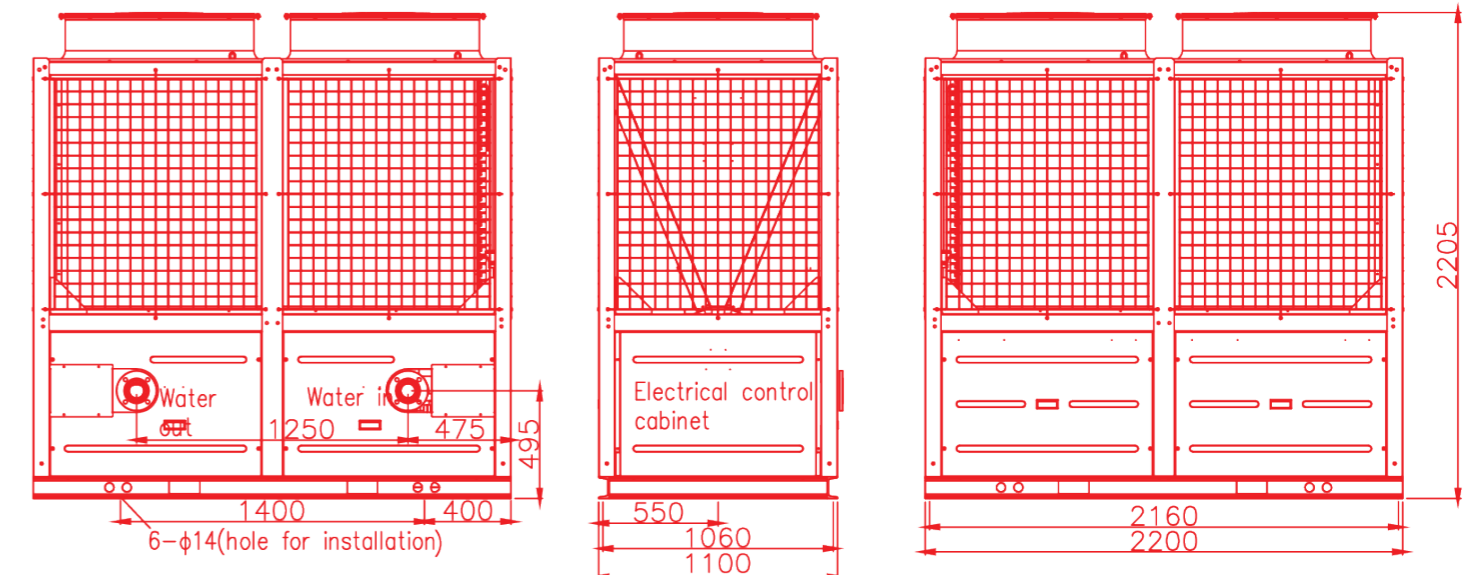
MODEL 0201XHA



MODEL 0201XH, 201XC

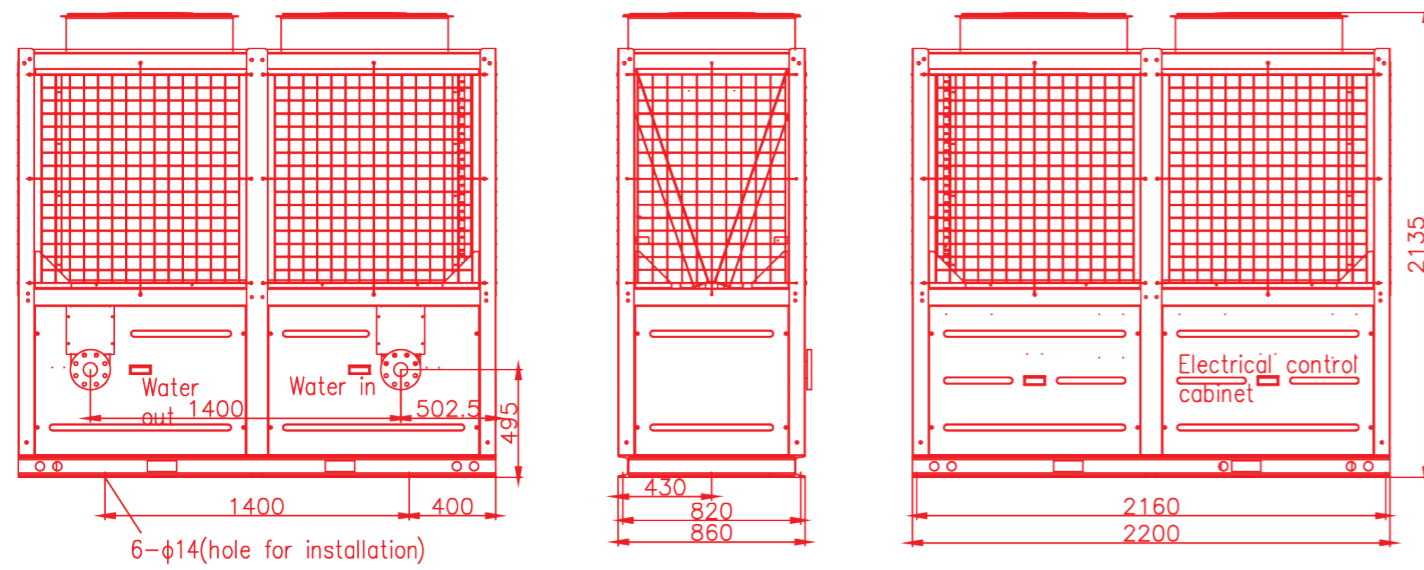


MODEL 301XH, 401XH, 401XC, 301XC/B, 401XC/A

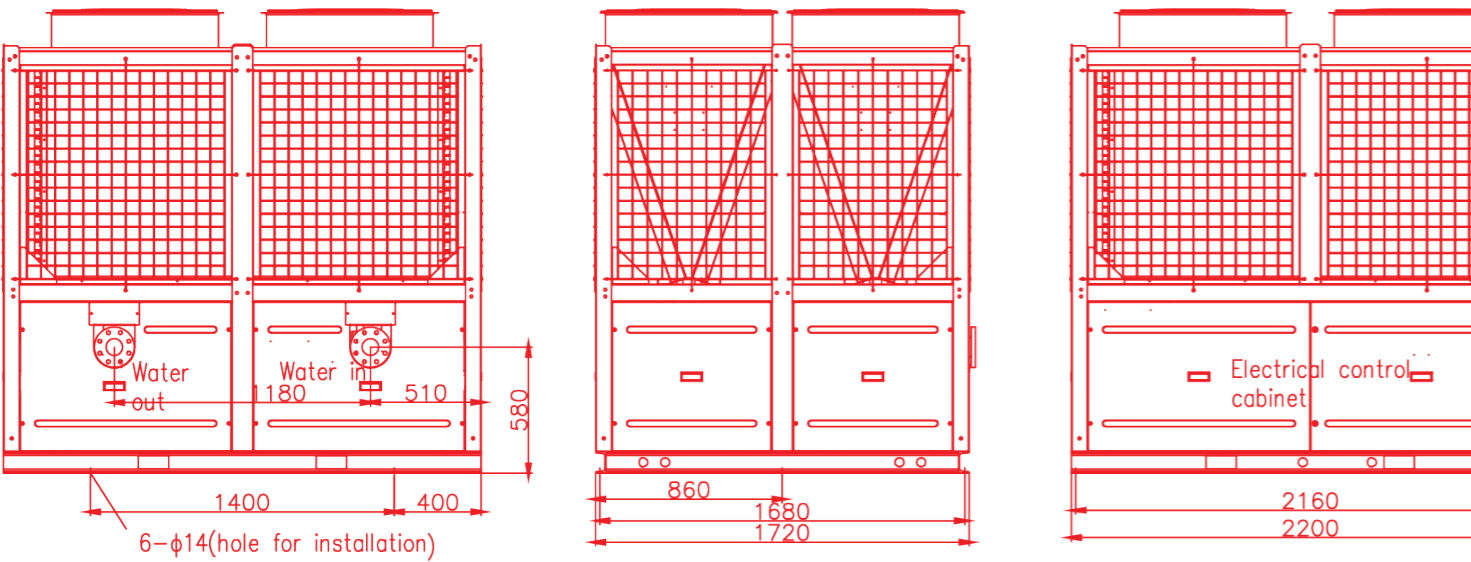


MODULAR HEAT PUMP UNIT DIAGRAM

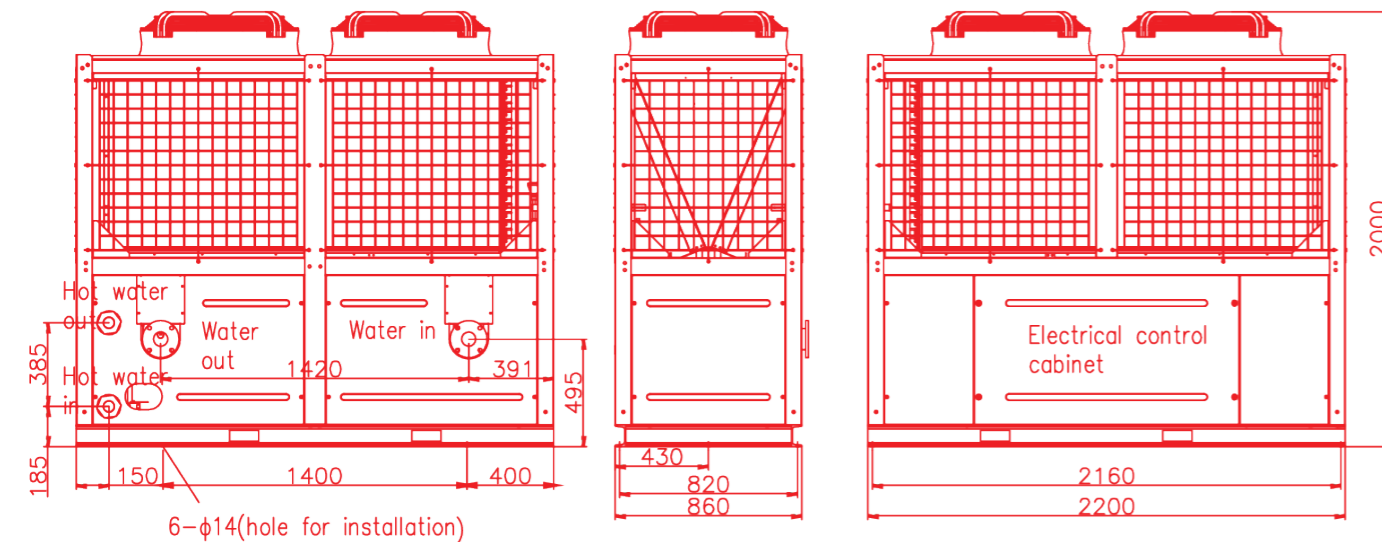
MODEL 0201XHE



MODEL 0401XHE



MODEL 201XHR/1, 201XHF



FIXED SPEED LARGE AIR COOLED MODULAR HEAT PUMP CHILLER

3250KW PER SYSTEM

Our PRO XL CHP air cooled scroll chiller (heat pump) series feature 4 MODULES, with starting cooling capacity from 165kW to 440kW. With modular configuration at up to 8 units, our large modular chiller heat pump series can reach up to 3520kW per system

R410A MODULAR

Based on 20 years of R&D and continuous development, our new generation of PRO XL CHP features a wide range of capacities and operational type, suitable for many applications around the world. With basic models available from 165kW to 440kW, our PRO XL series can achieve at up to 3520kW cooling per system, with 8 modules configuration

8 UNITS CONNECTION

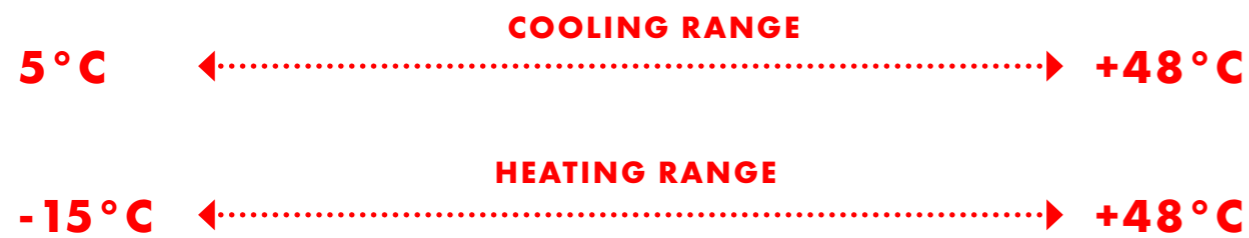
Units of the same series can be connected easily, reaching at up to 8 combinations to achieve a wide range of requirement



ENVIRONMENT FRIENDLY

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 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.

LARGE MODULAR, with FIXED FREQUENCY hermetic scroll compressor



EFFICIENT SCROLL COMPRESSOR

The series adopts world-class hermetic efficient scroll compressor and the optimised 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 THROTTLE CONTROL

Our electronic expansion valve can achieve 480 regulating range, supplemented by patented precision throttle control technology to dynamically optimise efficiency of every components, ensuring optimal operation condition under all climates.

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.

HIGH PERFORMANCE FAN

Our 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.

INTELLIGENT ENERGY REGULATION TECHNOLOGY

The unique intelligent energy regulation in multi-module combinatino ensures that each module loads or unloads a refrigerant circuit before loading or unloading the next refrigerant circuits in the single module. This technique provides higher efficiency, higher stability and better IPLV.

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.

HIGH EFFICIENCY & ENERGY SAVING

The whole unit adopts air-cooled mode without the need of large external equipment such as boiler and cooling tower, thereby reducing initial investment and OPEX of users. eco° air cooled chiller (heat pump) efficiently saves energy, having safe and eco-friendly characteristics.

RELIABLE OPERATION

With three patented 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 1

With the patented defrosting technology, the system determines the defrosting conditions according to the ambient temperature, evaporation temperature, and running time in heating mode. Meanwhile, the patented 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 heating mode significantly increases.

SECOND GUARANTEE 2

The patented unidirectional valve technology refers to deploying a 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.

THIRD GUARANTEE 3

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.

MULTI PROTECTION FUNCTIONS

Built-in protection functions to include: compressor overloading protection, high and low voltage protection, water shortage protection, compressor frequent start and stop protection, fan motor overheating protection, power supply protection, exhaust temperature protection, outlet water temperature protection

SELF DEVELOPED MICROCOMPUTER CONTROL PANEL

Our control panel is fully upgraded based on years of R&D, to provide more functions to included: phase sequence detection, current detection, RS-485 communication interface and performance optimisation.

DIVERSIFIED CONTROL FUNCTIONS

CIRCULATING WATER PUMP INTERLOCKING + AUXILIARY ELECTRIC HEATER INTERLOCKING + FAN COIL INTERLOCKING

The control panel of the unit reserves the water pump interlocking control interface, auxiliary electric heater interlocking control interface, and the external interlocking interface. The unit supports interlocking control of the master water pump to prevent the unit from being damaged due to asynchronous startup of the water pump and unit. In winter, when the unit runs in heating mode, the switch of the auxiliary electric heater is controlled based on the load demand and the unit running status. The unit supports interlocking control of fan coil, controls unit power-on/power-off and loading/unloading according to the usage of the air side devices, thus enabling automatic running.

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 automatic control (BAS) 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.



WIRED THERMOSTAT

New functions added: silent mode, auxiliary electric heating forced enabling, and submodule disabling.



TOUCH THERMOSTAT

New functions added: silent mode, auxiliary electric heating forced enabling, and submodule disabling.

LARGE MODULAR HEAT PUMP DATA CHART

Model			165AH	260AH	330AH	440AH
Capacity	Cooling	kW	165	260	330	440
	Heating	kW	180	280	360	475
Power Input	Cooling	kW	50	78	101.8	135.8
	Heating	kW	54	84	108.1	142.6
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	123.4	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
Packaging Dimensions (L*W*H)		mm	2260×1780×2000	2260×2460×2235		4440×2260×2460
Net weight		kg	1460	2050	2930	3700
Running weight		kg	1590	2250	3380	4200
Sound Level		dB	72	75	74	74

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.
2. 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.
3. 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.
4. 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 eco°.
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.
7. The configuration is subject to changes, so please refer to actual unit upon delivery.

COOLING CORRECTION FACTOR DATA SHEET

Leaving Water 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 CORRECTION FACTOR DATA SHEET

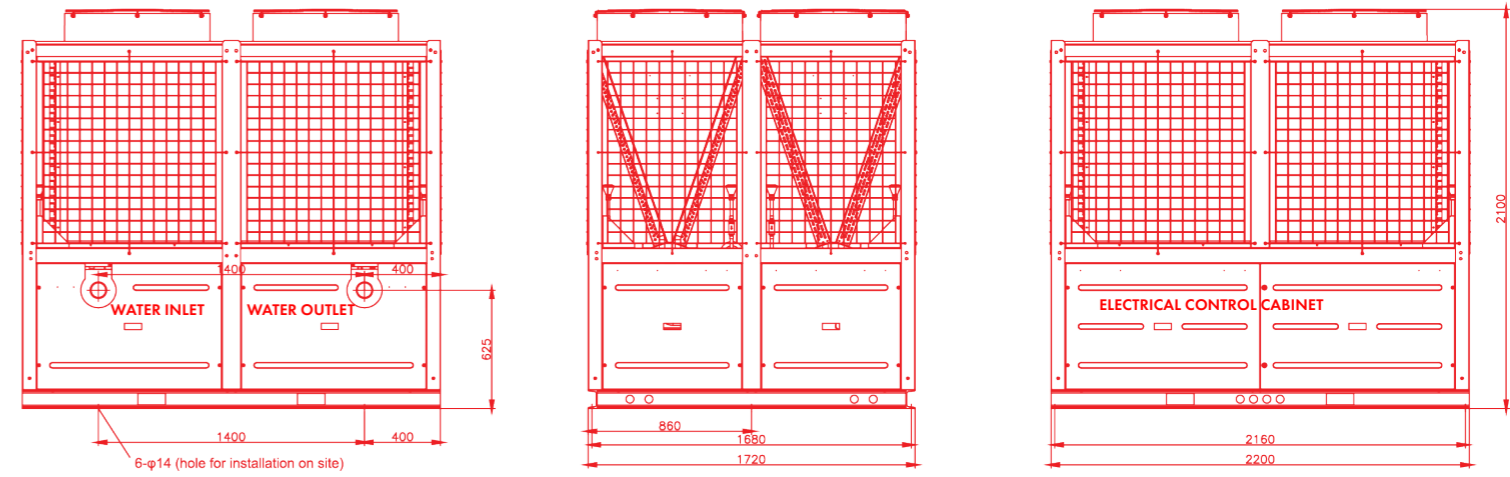
Leaving Water Temperature °C	Ambient Temperature °C																	
	-15		-10		-5		0		7		10		15		20		25	
	Heating	Power input	Heating	Power input	Heating	Power input	Heating	Power input	Heating	Power input	Heating	Power input	Heating	Power input	Heating	Power input	Heating	Power input
30	0.50	0.71	0.65	0.72	0.76	0.73	0.89	0.79	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 DATA SHEET

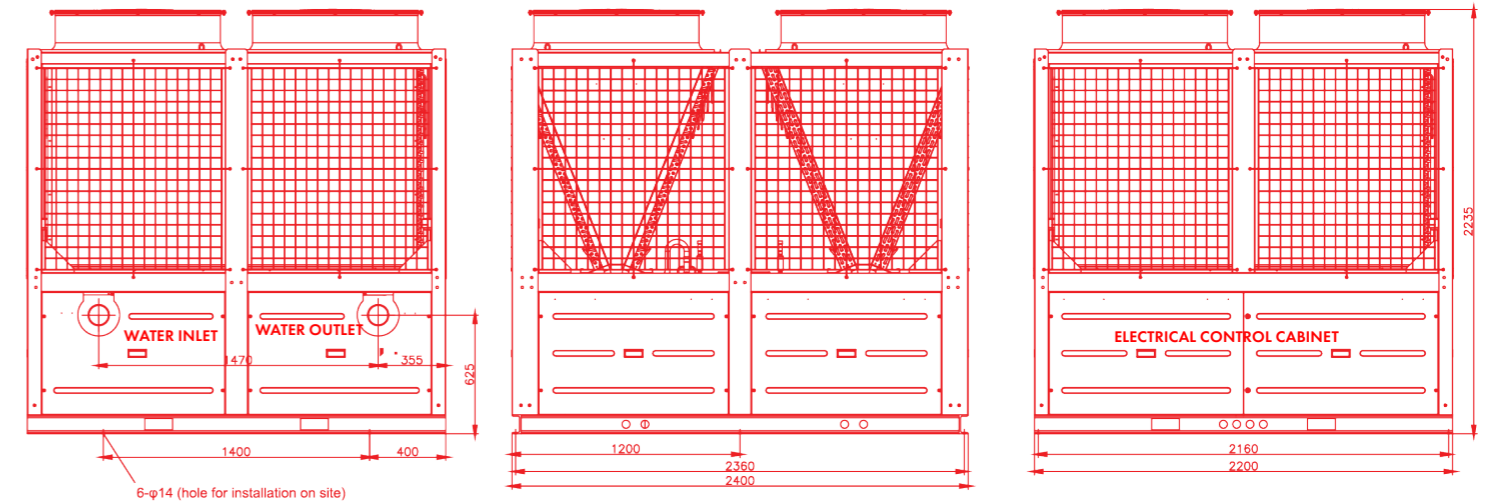
Model	165AH		260AH		330AH		440AH	
Cooling	Chilled Water Outlet Temperature	°C	5 / 20					
	Ambient Temperature		5 / 48					
Heating	Hot Water Outlet Temperature	°C	30 / 50					
	Ambient Temperature		-210 / 48					
Water Flow	m ³ /h	28.4	44.8	56.8	75.7			
Water Pressure Drop	°C	45	45	40	52			
Maximum Pressure on Water Side	°C	1						

MODULAR LARGE HEAT PUMP UNIT DIAGRAM

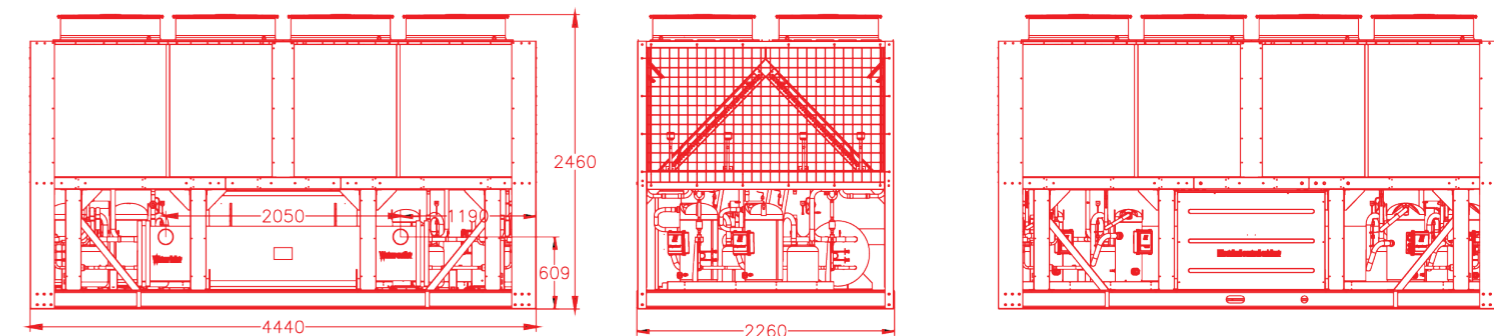
MODEL 165AH



MODEL 260AH



MODEL 330 / 440AH





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