



# 30RAM/RHM

## MODULAR AIR-COOLED CHILLER



## Turn To The Experts

Inheriting a rich legacy of innovation including inventing modern air-conditioning, Carrier has been a global leader in innovations for Heating Ventilation Air Conditioning (HVAC) and refrigeration solutions. Carrier is a part of UTC Climate, Controls & Security, a unit of United Technologies Corp., a leading provider to the aerospace and building systems industries worldwide.

With a broad portfolio of advanced technical patent awards, our global R&D center in Shanghai develops innovative heat, ventilation and air-conditioning (HVAC) solutions.



In 1998, Time magazine named Dr. Carrier one of its 20 most influential builders and titans of the 20<sup>th</sup> century.



# DIRECTORY

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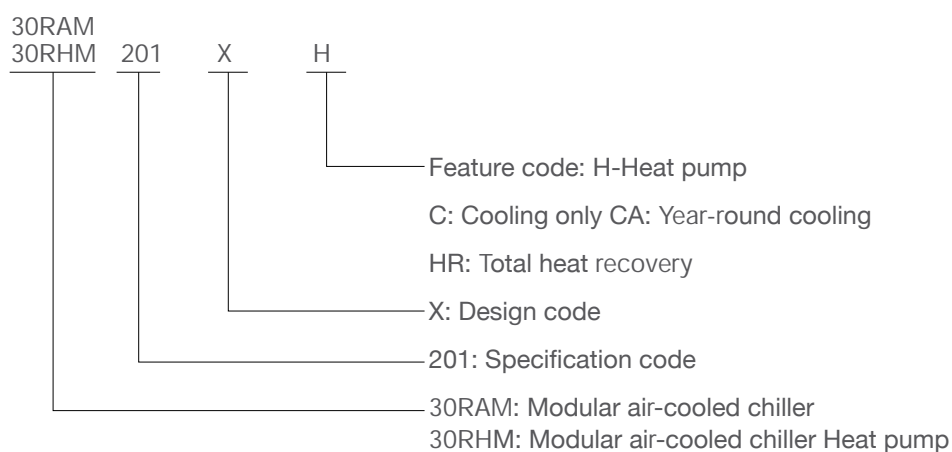
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## PRODUCT NOMENCLATURE



The modular air-cooled chiller (heat pump) unit is a central air conditioning using the air as cold & 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. With 115 years of experience in R&D, design and application, Carrier constantly launches new environment-friendly modular units, which improves the structures, systems and programs based on original products, and designs special series of comfortable and technological units. The environment-friendly modular unit has complete functions and various specifications, with basic modules of any combination available for different models, including 66kW, 100kW, 130kW, and at most 16 modules can be connected in parallel, providing combination products of 66kW- 2080kW. 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 such as villas, hotels, hospitals, office buildings, restaurants, supermarkets, movie theaters.





## R410A CLASSICAL MODULAR UNIT

The new generation of X series environment-friendly modular air-cooled unit is based on years of experience in R&D and design, 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 66kW, 100kW, 130kW, and at most 16 modules can be connected in parallel, providing combination products of 66kW - 2080kW.

### Excellent Capacity

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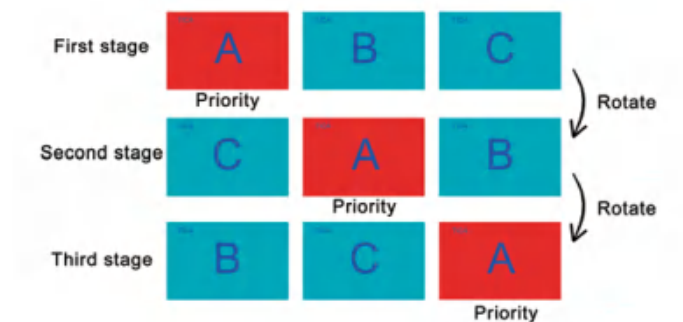
Units of the same model or different models can be combined freely. Each group can combine up to 16 modules.



### Free master Module Design

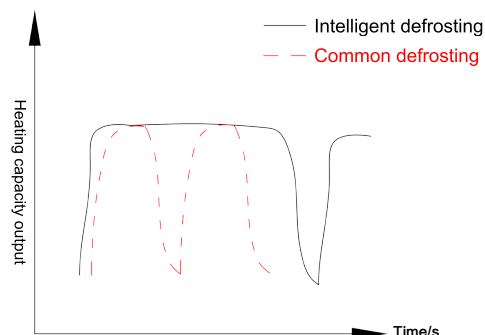
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Any single unit can operate as the master once connected with the wired controller. It overcomes the problem that the whole system would fail to work properly when the fixed master unit malfunctions.



## 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.



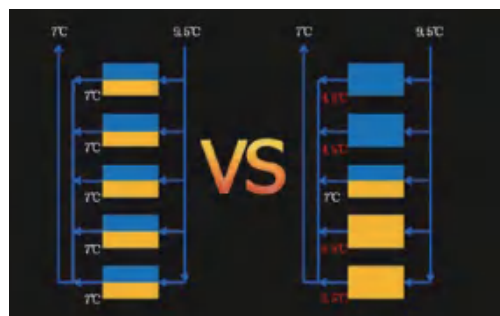
## Intelligent Air Volume Management

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.



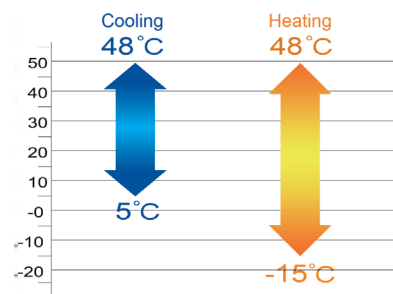
## Intelligent Energy Management Technology

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.



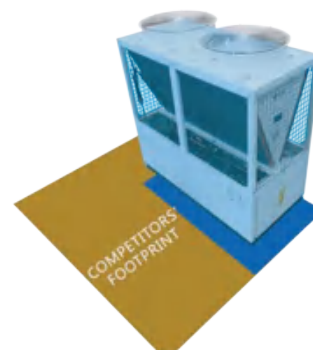
## Widely Operation Range

Low temperature cooling  
5°C- 48°C  
High temperature heating  
-15°C- 48°C



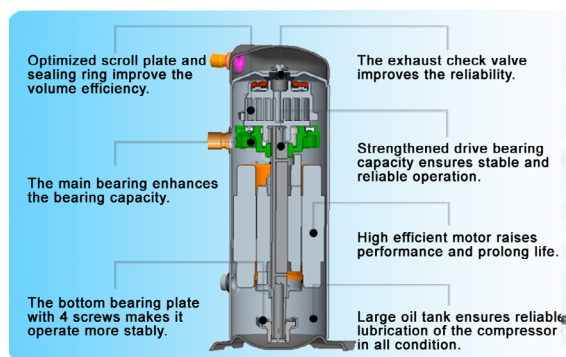
## Compact Design And Smaller Footprint

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 130KW unit covers floor space of only 2.42m<sup>2</sup>, a 50% reduction compared to its equivalents.



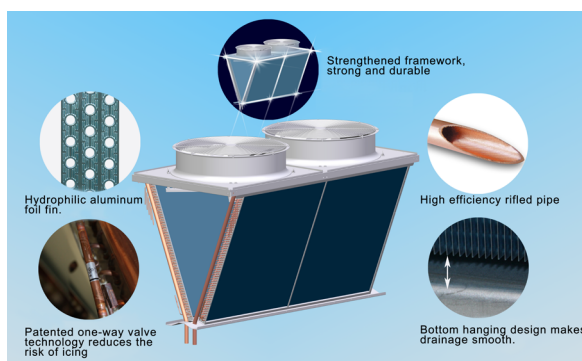
## Reliable Hermetic Scroll Compressor

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



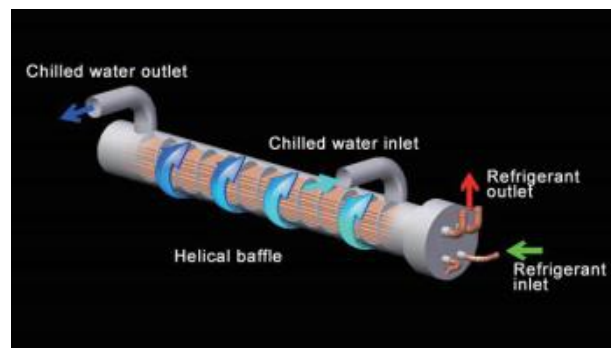
## V-Shaped Condenser

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.



## 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.





## Saw-shaped Condenser Fan Blades

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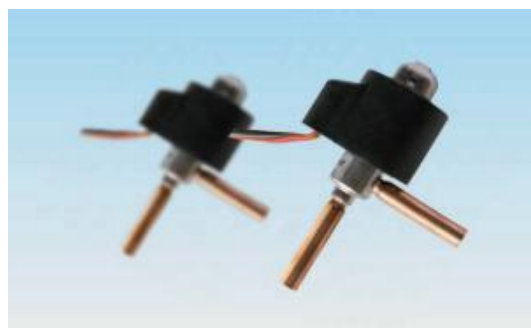
Compared to plastic impellers, the saw-shaped condenser fan blade provide large air volume, high durability and high air supply efficiency with low noise.



## High Precision Electronic Expansion Valve

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The electronic expansion valve achieves 480 regulating range, supplemented by Carrier's patented 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.



## In House Engineered Microprocessor Control

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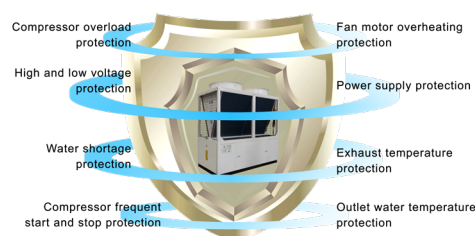
Carrier control panel is fully upgraded based on original control panels with years of experience in R&D and design, which combines more functions including phase sequence detection, current detection, RS-485 communication interface, delivering stronger performance, utility, standardization, convenience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



## Multiple Protection Functions, Providing Safety And Reliable

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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.



## Specifications

Model			30RHM201XH	30RHM401XH	30RAM201	30RAM401
Power supply		V-ph-Hz	380-415-3-50	380-415-3-50	380-415-3-50	380-415-3-50
Cooling	Cooling capacity	kW	66	130	66	130
	Cooling power input	kW	21.29	41.9	21.29	41.9
	Cooling current	A	40.3	75.5	37.9	75.5
Heating	Heating capacity	kW	70	140	/	/
	Heating power input	kW	21.85	43.7	/	/
	Heating current	A	41.4	76.5	/	/
Maximum power input		kW	30.2	57.6	30.2	57.6
Maximum input current		A	50	100	50	100
Starting current		A	140	266.1	172	266.1
Energy regulation		%	0-50-100	0-50-100	0-50-100	0-50-100
Compressor	Type		Hermetic scroll compressor			
	Qty		2	2	2	2
Evaporator	Type	-	High-efficiency shell-and-tube heat exchanger			
	Water flow	m³/h	11.4	22.4	11.4	22.4
	Water pressure drop	kPa	45	45	45	45
	Connection pipe dimension	-	DN65(Flange)			
Fan	Qty		2	2	2	2
	Air flow	m³/h	28000	48000	28000	48000
	Current	A	2.35	5.3	2.35	5.3
	Power	kW	1.13	2.2	1.13	2.2
Unit dimensions (L*W*H)		mm	2200x860x2000	2200x1100x2205	2200x860x2000	2200x1100x2205
Packaging dimensions (L*W*H)		mm	2260x920x2000	2260x1160x2205	2260x920x2000	2260x1160x2205
Net weight		kg	580	900	570	850
Operating weight		kg	640	1000	630	950
Refrigerant	Type	-	R410A	R410A	R410A	R410A

\*CE: 380-415V/3N/50Hz

## Combined Capacity Parameter Table(Total Heat Recovery)

Model and modular quantity	30RAM201 30RHM201XH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Cooling capacity	kW	66	132	198	264	330	396	462	528	594	660	726	792	858	924	990	1056
Heating capacity	kW	70	140	210	280	350	420	490	560	630	700	770	840	910	980	1050	1120
Water flow volume	m³/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

Model and modular quantity	30RAM401 30RHM401XH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Cooling capacity	kW	130	260	390	520	650	780	910	1040	1170	1300	1430	1560	1690	1820	1950	2080
Heating capacity	kW	140	280	420	560	700	840	980	1120	1260	1400	1540	1680	1820	1960	2100	2240
Water flow volume	m <sup>3</sup> /h	22.4	44.8	67.2	89.6	112	134.4	156.8	179.2	201.6	224	246.4	268.8	291.2	313.6	336	358.4

Model	Cooling capacity	Compressor Number	Circulation loop	Main Board Number	Maximum Combination Number	Maximum Combination Capacity
30RAM201 30RHM201XH	66	2	2	1	16	1040
30RAM401 30RHM401XH	130	2	2	1	16	2080

★ Notes;

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



## CAPACITY CORRECTION FACTOR

### Cooling Capacity Correction Factor

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

★ Note: Above correction factors adapt to 30RAM201/401, 30RHM201/301/401XH, 30RHM201XHR.

### Heating Capacity Correction Factor

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
35	0.48	0.77	0.63	0.78	0.74	0.79	0.87	0.85	1.03	0.89	1.05	0.91	1.10	0.93	1.15	0.95	1.20	0.97
40	0.46	0.83	0.61	0.84	0.72	0.85	0.85	0.91	1.01	0.95	1.03	0.97	1.08	0.99	1.13	1.01	1.18	1.03
45	-	-	0.60	0.89	0.71	0.90	0.84	0.96	1.00	1.00	1.01	1.03	1.06	1.05	1.11	1.07	1.16	1.09

★ Note: Above correction factors adapt to 30RHM201/301/401XH, 30RHM201XHR.

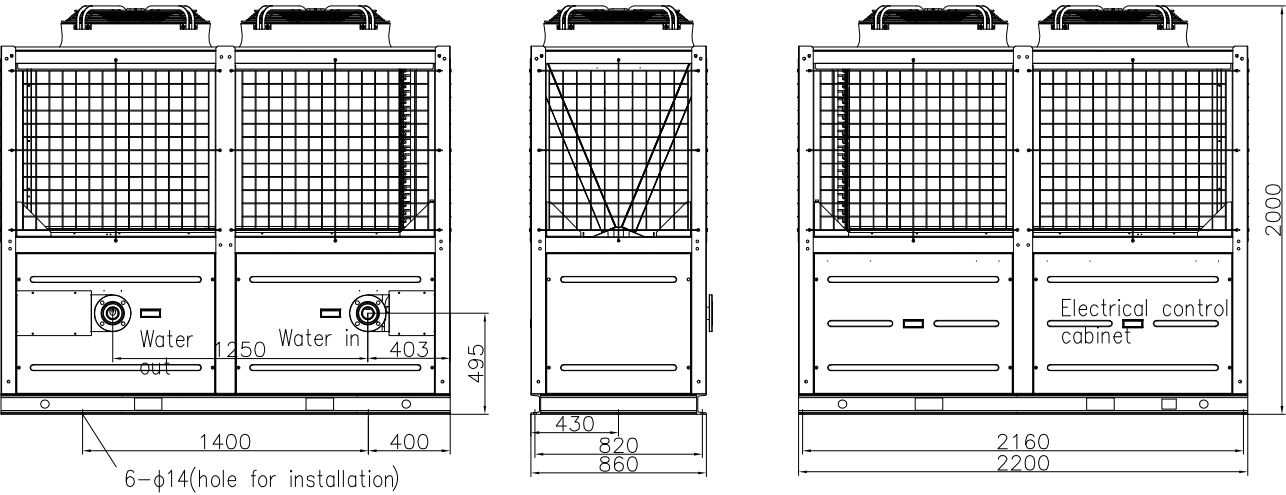
### Year-round Cooling Capacity Correction Factor

Leaving Water Temperature °C	Ambient Temperature °C																	
	-10		-5		0		7		15		25		35		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
0	1.01	0.65	0.99	0.73	0.97	0.69	0.96	0.69	0.98	0.72	0.92	0.82	0.84	0.94	0.68	1.12	0.68	1.12
5	1.11	0.68	1.09	0.76	1.07	0.72	1.06	0.72	1.08	0.75	1.02	0.85	0.94	0.97	0.78	1.15	0.78	1.15
7	1.17	0.71	1.15	0.79	1.13	0.75	1.12	0.75	1.14	0.78	1.08	0.88	1.00	1.00	0.84	1.18	0.84	1.18
10	1.25	0.75	1.23	0.83	1.21	0.79	1.20	0.79	1.22	0.82	1.16	0.92	1.08	1.04	0.92	1.22	0.92	1.22
15	1.35	0.80	1.33	0.88	1.31	0.84	1.30	0.84	1.32	0.87	1.26	0.97	1.18	1.09	1.02	1.27	1.02	1.27
20	1.43	0.84	1.41	0.92	1.39	0.88	1.38	0.88	1.40	0.91	1.34	1.01	1.26	1.13	1.10	1.31	1.10	1.31

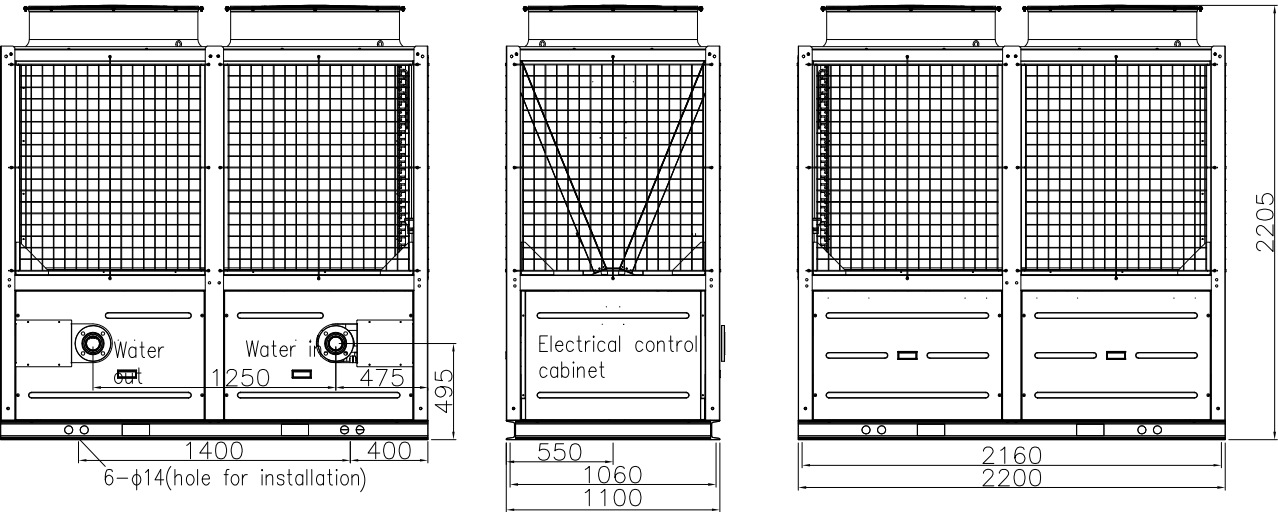
★ Note: Above correction factors adapt to 30RHM201XHA.

UNIT DIMENSION(mm)

30RAM201  
30RHM201XH

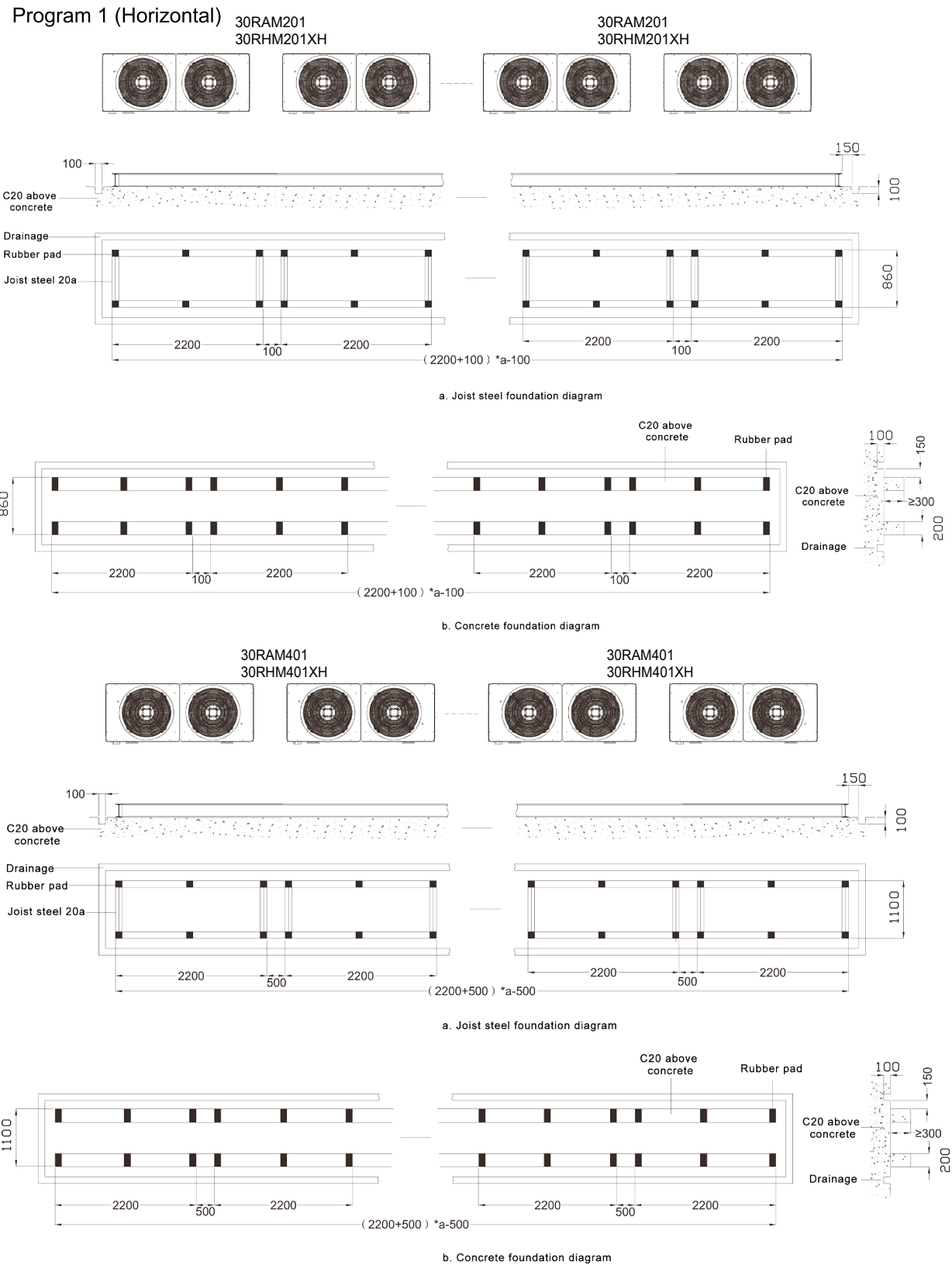


30RAM401



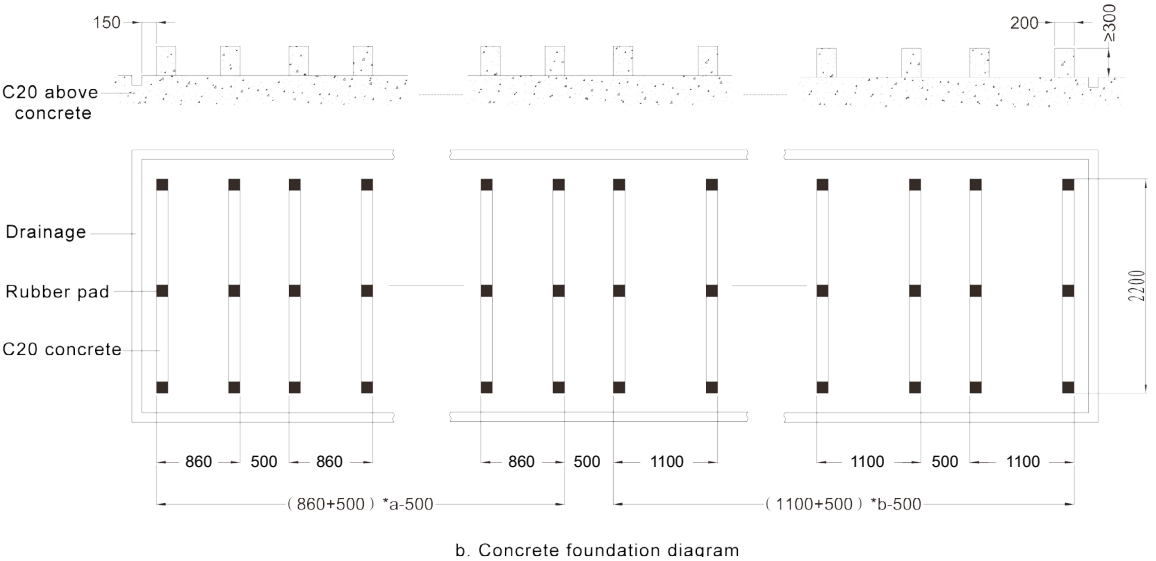
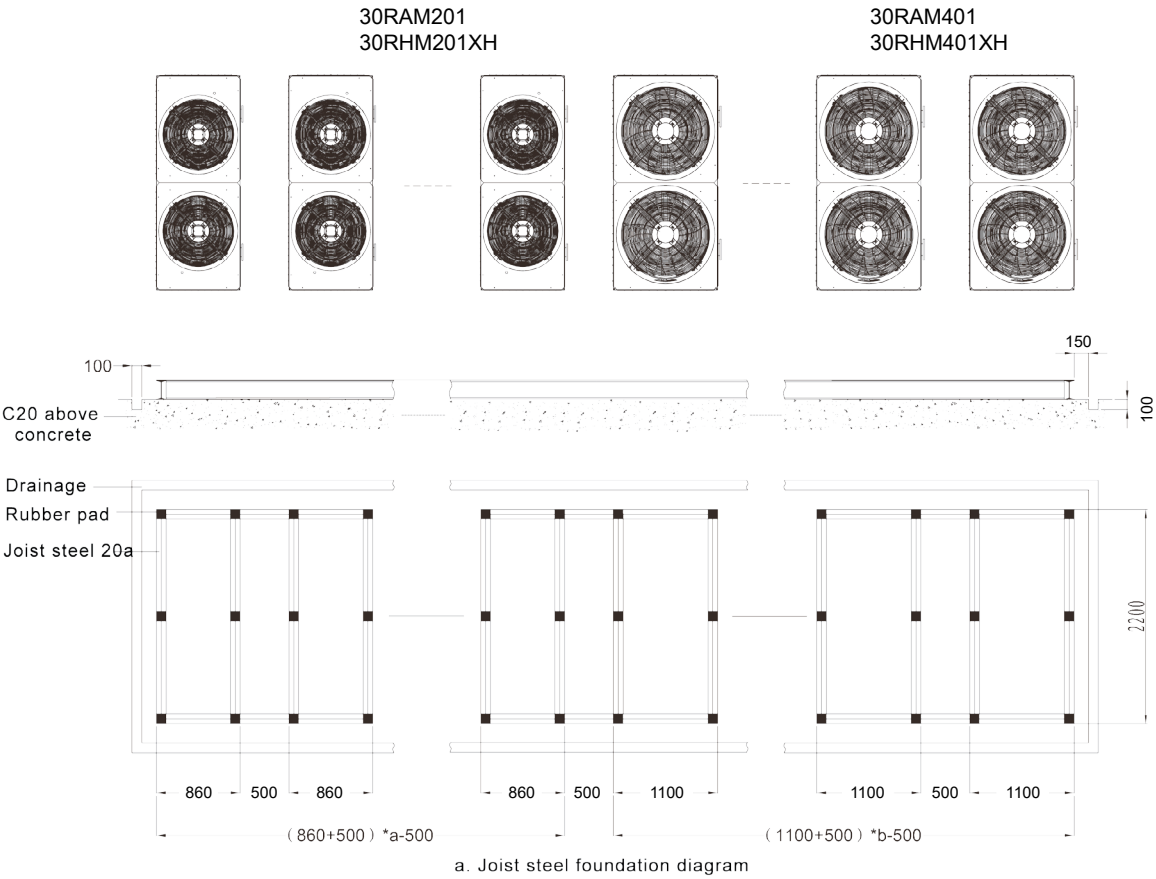
# FOUNDATION

## Program 1 (Horizontal)





Program 2 ( Vertical )





Carrier improves the world around us; Carrier improves people's lives; our products and services improve building performance; our culture of improvement will not allow us to rest when it comes to the environment.



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