

Air-Cooled Modular Chiller (Heat Pump) Full Series

- ◆ R410A Unit
- ◆ Low Ambient Temp Heat Pump



EKAC300BR1/ EKAC300BRLH



We help our customers

SUCCEED

EUROKLIMAT Air Conditioner, Environmental & Energy-saving Technology from Europe.



EK Italy Headquarters



EK EUROKLIMAT®
Forty-six years of Air-conditioning

EUROKLIMAT (EK), established in 1963 in Italy, which has been growing for the past half a century, and has become one of the most famous, energy-saving air conditioning manufacturers in Italy, Spain and the whole of Europe. Continuous innovation on new product development and top manufacturing quality are the driving force behind this growth.

EUROKLIMAT (EK) pursues the ideals of environmental friendly-providing physical comfort and energy-saving into the whole process of product R&D, manufacturing and service. All our 50 product series which covers residential, commercial and close control air-conditioners are manufactured according to European production standards. EK product incorporates the most advanced energy saving air-conditioning technology in Europe.

Guangdong EUROKLIMAT Air-Conditioning & Refrigeration Co., Ltd. (EK China), is the R&D, manufacturing, sales, marketing and service center for EK Group in Asia. EK Industrial Park with over 200,000 square meters of factory land is strategically located in Dongguan City, Guangdong, China. There are over 20 sales branches providing full scale service and support for the whole of China market. EK China exports its products to European, Australian, South American, South-East Asian and Middle Eastern markets.



Overview and Nomenclature

Overview



EKAC series of air-cooled chilled/hot water units combines more than 40 years of Italian air-cooled heat pump design experience and the application practices of modular units in China, so as to meet customers' requirements on product efficiency, safety, smartness and comfort. This full series of units have diversified models and are applicable to various environments. The full series include total heat recovery unit, environment-friendly refrigerant (R410A) unit, Low ambient temperature heat pump, and common R22 unit etc.

High efficiency, energy saving and one unit for three purposes: namely providing low-cost air conditioning and free hot water for villas, hotels, recreation centers, hospitals, dining halls, office buildings, supermarkets, etc., and providing cooling for various industrial processes.

2

Nomenclature

EKAC **300** **B** **R** **1** **LH** **M - F** **AA**
1 2 3 4 5 6 7 8 9

- | | | |
|----|------|--|
| 1. | EKAC | EK Air-Cooled Modular Chiller (Heat Pump) Unit |
| 2. | 230 | Cooling capacity code: |
| 3. | B | Design S/N |
| 4. | R | Functional type—R: heat pump; omitted in cooling-only unit |
| 5. | 1 | Refrigerant code—1: R410A; R22 by default. |
| 6. | LH | Special features—omitted in standard model; LH: low ambient temperature heat pump;
SR: Total heat recovery unit |
| 7. | M | M: master unit; S: slave unit |
| 8. | F | Power supply features—F: 380V/3N~/50Hz |
| 9. | AA | Detailed description on product specification changes |

High Efficiency and Energy Saving

- Based on leading-edge European design philosophy of air-cooled and heat pump units and the application of air-cooled units in China, EK has launched a full series of innovative modular air-cooled chilled water (heat pump) units. The full-load energy efficiency ratio (EER) of this series of units is higher than that of first-class energy-saving products (according to national regulation, first-class EER is 3.4). Therefore, they meet the energy-saving certification criteria of China.
- Each model has two separated refrigerant circuits, when it's in modular application, then whole system will have more load/unload steps for energy saving. Fully-optimized unit system design and high efficient components been used ensures that the system can always save as much energy as possible. When operating in a partial load (99% of system operation time), the EER is even 4% higher.
- With an optional 2-way valve control in water line, indoor unit can send out signals to turn off corresponding chilled water valves. This enables automatic flow control for pumps in line with the transducer, which helps saving more energy.

Precise electronic flow control technology

The unit uses a 500-step PMV electronic expansion valve for precise PID control, dynamic and real-time adjustment of the cooling system, and water temperature control with higher precision. This makes every part of the system work at its peak performance. The unit can work reliably under any load and automatically adapt to changing ambient temperature, completely eliminating cooling system vibration.

Flexible Installation

- The unit needs no special equipment room, and can be mounted on the floor, building roof, etc. Modular design makes each unit small in dimension and suitable for transportation by cargo elevator, thus saving hoist cost during construction. The unit can also be installed step by step to shorten the construction period.
- Each unit has a separate refrigerant circuit. This reduces the probability of refrigerant leakage which could damage the ozoneosphere.

One Unit for Three Purposes

Air-cooled heat pump units of the full heat recovery model feature brand-new European design and R&D technology. They are a perfect combination of air-cooled chilled/hot water unit and air source heat pump hot water unit. Besides providing cooling in summer and heating in winter for buildings, units of this series can also provide around-the-clock hot water of 50°C~60°C no matter in what climate. Therefore, they can completely replace boilers and save customers a sum of investment.

Reliable Operation

- The unit features modular design and starts up in steps to ease the shock on the power grid caused by startup current.
- The unit undergoes stringent long-time test performed according to European standards, and can work reliable no matter in cooling mode in hot summer (48°C) or in heating mode in cold winter (-20°C). Leading-edge system design greatly improves the high-temperature cooling and low-temperature heating capacity of the unit, making the unit an ideal heating solution with no or less need for auxiliary heaters for northern and eastern China.
- The system features built-in high/low pressure protection, cooling freezing protection, winter freezing protection, compressor overload protection and water pressure-drop switch etc. to maximize the safety of the unit. In case of any failure, the controller provides alarms on a real-time basis.

Quiet Operation

The entire unit features vibration isolation design and multiple noise reduction processes. Both noise level and vibration level of the unit take the lead in the industry thanks to its name-brand quite hermetic volute compressors and two-gear quiet fans. The noise level of the unit is significantly reduced using professional noise reduction practices, such as comparing, choosing and improving fans, motors, structures and pipelines based on noise spectrum analysis results. Innovative smart silencing mode can automatically adjust the fan rev (high/low) according to outdoor temperature and the operation status of the unit. This makes the unit even quieter in operation mode.

Smart Control System

The unit uses a micro-computer controller with a large LCD screen to facilitate operation. Each controller can control and dynamically monitor the operation of up to 16 units. This facilitates centralized management.

Healthy and Environment-friendly

- Units of the low-temperature heat pump model make heating more energy-efficient and environment friendly, and overcome imperfections of traditional centralized heat supply, such as fixed heating period and capacity, harmful to environment, etc.
- EK does everything necessary to fulfill its obligation of environment protection. The newly developed model which uses R410A refrigerant (no chlorine element) is environment friendly and does not deplete the ozoneosphere (ODP = 0).

Functions

Basic Functions

- Cooling mode
- Heating mode
- Heat recovery mode (heat recovery model)

Parameter Setting Functions

- Time setting
- Timed ON/OFF for one week
- Inlet/outlet water temperature in cooling mode
- Inlet/outlet water temperature in heating mode
- Anti-freezing temperature , defrosting temperature
- Dew cleaning temperature for point A and B

Parameter Display Functions

- Unit Working Status Display
- Configured and actual inlet water temperature
- Configured and actual outlet water temperature
- Timed adjustment, anti-freezing temperature
- Anti-freezing temperature in winter, defrosting temperature

Alarm and Protection Functions

- Thirteen protections and failure alarm function
- Indoor controller lockup function

Defrosting Function

- Auto defrosting
- Manual defrosting

Memory Functions

- Operation data remains in case of power failure
- Permanent storage for user parameters

Other Functions

- Failure History Query Function
- Average wear and tear of compressors
- Remote startup and shutdown
- 2-way valve control for water system
- Control for auxiliary heater

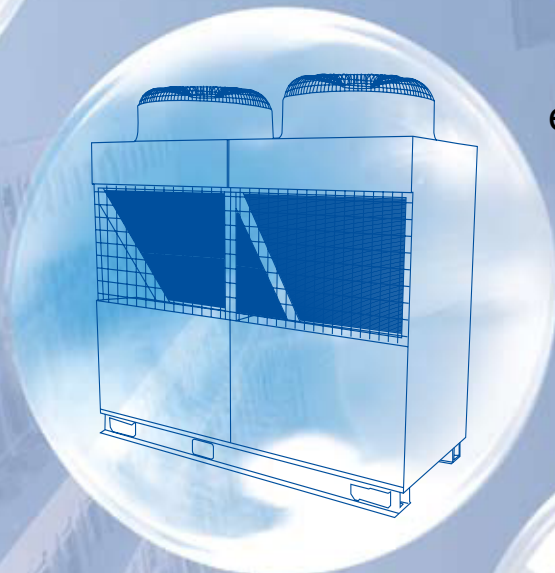
Full Series Modular Air-cooled Water Chiller (Heat Pump) Units



Common model (R22)



Low-temp high-efficiency model



Total heat recovery model



5



Environment-friendly model (R410A)



Modular Air-cooled Heat Pump Unit with Environment Friendly Refrigerant Model



EKAC Series

**Environment Friendly Refrigerant
Air-cooled Heat Pump Unit**

The modular air-cooled heat pump unit with environment friendly refrigerant model uses new-generation R410A refrigerant which does not cause ozone depletion. The unit features optimized system design and an excellent COP. The unit is not only cost effective but also environment friendly, easy to operate, reliable in performance, and can be installed flexibly. Therefore, units of this series are widely used in dining halls, bars, hotels, offices, top-tier clubs, hospitals, etc.

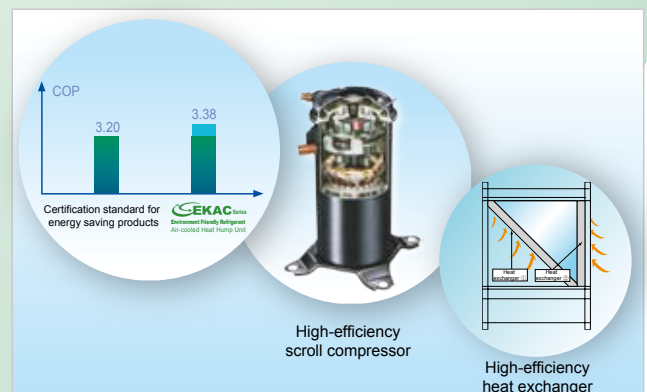


Environment Friendliness and Excellent Performance

- The unit uses environment friendly refrigerant R410A.
- The R410A refrigerant does not cause any ozone depletion.
 - The heat exchange performance is excellent, improving the COP.
 - Less refrigerant is used, reducing the green house effect.

Efficient and Energy Saving, Greatly Cutting Down Operation Cost

The unit features an efficient scroll compressor and heat exchanger. Modules of the system are best matched to improve heat exchange efficiency. The unit uses efficient and environment friendly refrigerant R410A, providing a higher COP. Multi-loop compressors are used to provide multiple capacity adjustment gears. This reduces startup current and electric investment. Excellent COP greatly reduces energy consumption and operation cost.



Easy Installation and Simple Maintenance

Before powering on and turning on the unit, you just need to connect the water pipe of each module to the main water pipe. A special access door is provided so that any inter parts of the unit can be conveniently serviced.

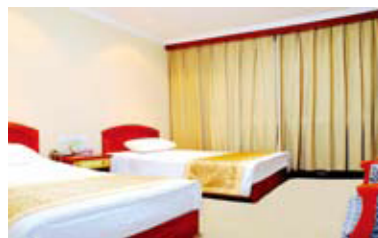


The unit is quiet and comfortable during operation

- A low-sound fan generates little operation sound and vibration.
- R410A scroll compressor generates little operation sound and vibration.
- A flexible installation base further reduces operation vibration.
- Air outlet pipes of the compressor are optimized to reduce vibration passed to the unit.



Place



Specification Table (R410A Environment-friendly Refrigerant Model, EKAC300)

Specifications (Partial) for Combined Units Taking EKAC300 as Basic Module

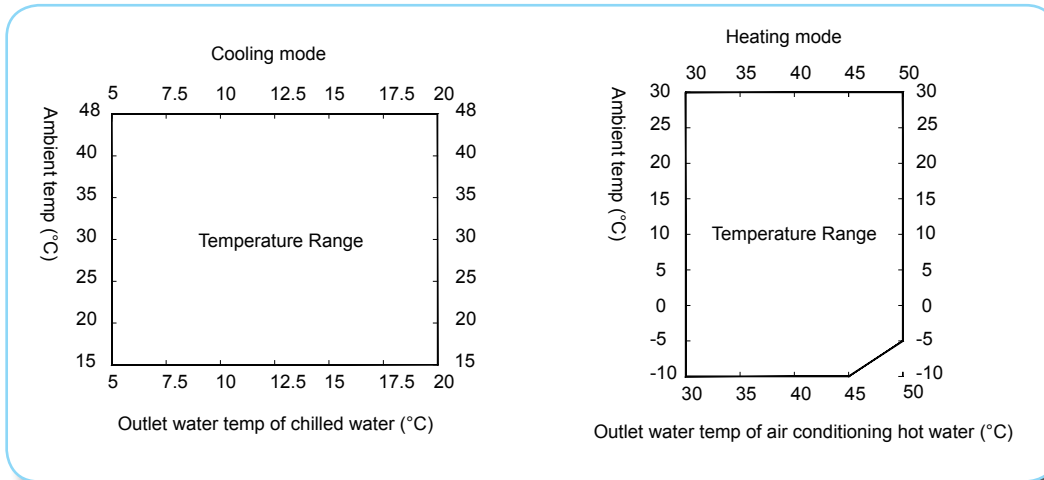
Model		EKAC 300BR1	EKAC 600BR1	EKAC 900BR1	EKAC 1200BR1	EKAC 1500BR1	EKAC 1800BR1	
Unit combination	Master unit	EKAC300BR1M	EKAC300BR1M	EKAC300BR1M	EKAC300BR1M	EKAC300BR1M	EKAC300BR1M	
	slave unit	--	EKAC300BR1S	2EKAC300BR1S	3EKAC300BR1S	4EKAC300BR1S	5EKAC300BR1S	
Nominal cooling capacity	kW	93	186	279	372	465	558	
	USRT	26.5	53.00	79.50	106.0	132.5	159.0	
	×10 ⁴ kcal/h	8.00	16.0	24.0	32.0	40.0	48.0	
Nominal cooling capacity	kW	94	188	282	376	470.0	564.0	
	USRT	26.80	53.60	80.4	107.0	134.0	160.8	
	×10 ⁴ kcal/h	8.00	16.0	24.0	32.0	40.0	48.0	
Total power of nominal cooling capacity	kW	26.0	52.0	78.0	104.0	130.0	156.0	
Total power of nominal heating capacity	kW	26.1	52.2	78.3	104.4	130.5	156.6	
Power supply		380V/3N~/50Hz						
Refrigerant	Type	R410A						
	Control	Electronic expansion valve						
Compressor	Type	Fully hermetic volute compressor						
	Lubricant	Grease (POE-160SZ)						
	Qty.	Set	2	4	6	8	10	12
Fan	Type	High-efficiency vacuum braze-welded panel type						
	Qty.	Set	2	4	6	8	10	12
Water side heat exchanger	Type	High-efficiency vacuum braze-welded panel type						
	Water flow for cooling	m ³ /h	16.0	32.0	48.0	64.0	80.0	96.0
	Water flow rate in heating mode	m ³ /h	17.0	34.0	51.0	68.0	85.0	102.0
Water resistance	kPa	45	45	45	45	45	45	
Recommended diameter for general inlet/outlet water pipe	inch	≥21/2	≥3	≥4	≥4	≥5	≥5	
Power cable specification	Section area of live line	mm ²	≥16	≥35	≥70	≥95	≥120	≥150
	Qty. of live lines		3					
	Section area of null line	mm ²	≥4					
	Qty. of null lines		1					
	Section area of grounding line	mm ²	≥16	≥25	≥35	≥50	≥60	≥75
	Qty. of grounding lines		1					
Dimensions	L x H	mm	2615×1840					
	Width	mm	880	2125	3370	4615	5860	7105
Unit weight	Net weight	kg	635	1270	1905	2540	3175	3810
	Operating weight	kg	665	1330	1995	2660	3325	3990

Note:

- Test conditions for nominal cooling capacity: outlet water temperature 7°C; water flow: 0.172m³/(h·kW); outdoor ambient temperature 35°C.
- Test conditions for nominal heating capacity: outlet water temperature 45°C; water flow: 0.172m³/(h·kW); outdoor dry/web bulb temperature 7°C/6°C.
- Water resistance at the air conditioner side includes water pressure drop of the unit and the attached Y-shaped filter.
- Main Pipes of combined units need to be customized and installed on site. The diameter of the pipes must meet design requirements. EK does not provide the pipes.
- Modular units can be formed using the 1 - 16 basic modules of same type or of different types as per practical needs. The above table lists the parameters for common module combinations.
- For on-site electric wiring, see the name plate or installation menu of the unit.

Specification Table (R410A Environment-friendly Refrigerant Model, EKAC300)

Operating Temperature Range



Cooling Capacity Variation Table

Model	Outlet water temp. (°C)	Ambient temp. (°C)															
		48°C		45°C		40°C		35°C		30°C		25°C		20°C		15°C	
		Cooling capacity (kW)	Power (kW)	Cooling capacity (kW)	Power (kW)	Cooling capacity (kW)	Power (kW)	Cooling capacity (kW)	Power (kW)	Cooling capacity (kW)	Power (kW)	Cooling capacity (kW)	Power (kW)	Cooling capacity (kW)	Power (kW)	Cooling capacity (kW)	Power (kW)
EKAC300BR1	5°C	71.8	29.7	75.4	28.40	80.4	27.10	85.4	25.5	89.4	24.5	93.9	23.7	97.8	22.4	102.0	21.2
	7°C	79.6	30.4	83.5	29.33	88.7	27.8	93.0	26.0	97.0	25.2	101.5	24.2	103	23.0	107.1	21.8
	9°C	85.3	31.0	89.6	29.81	93.6	28.46	98.6	26.9	102.6	26.1	106.1	25	108.5	23.5	112.6	22.4
	12°C	90.2	31.9	94.0	30.7	98.0	29.3	103	27.7	107.0	26.9	111.5	25.8	114.8	24.0	118.3	23.0
	15°C	94.3	33.1	98.7	31.6	102.7	30.2	107.7	28.9	111	27.7	116.2	26.5	119	24.7	122.3	23.8

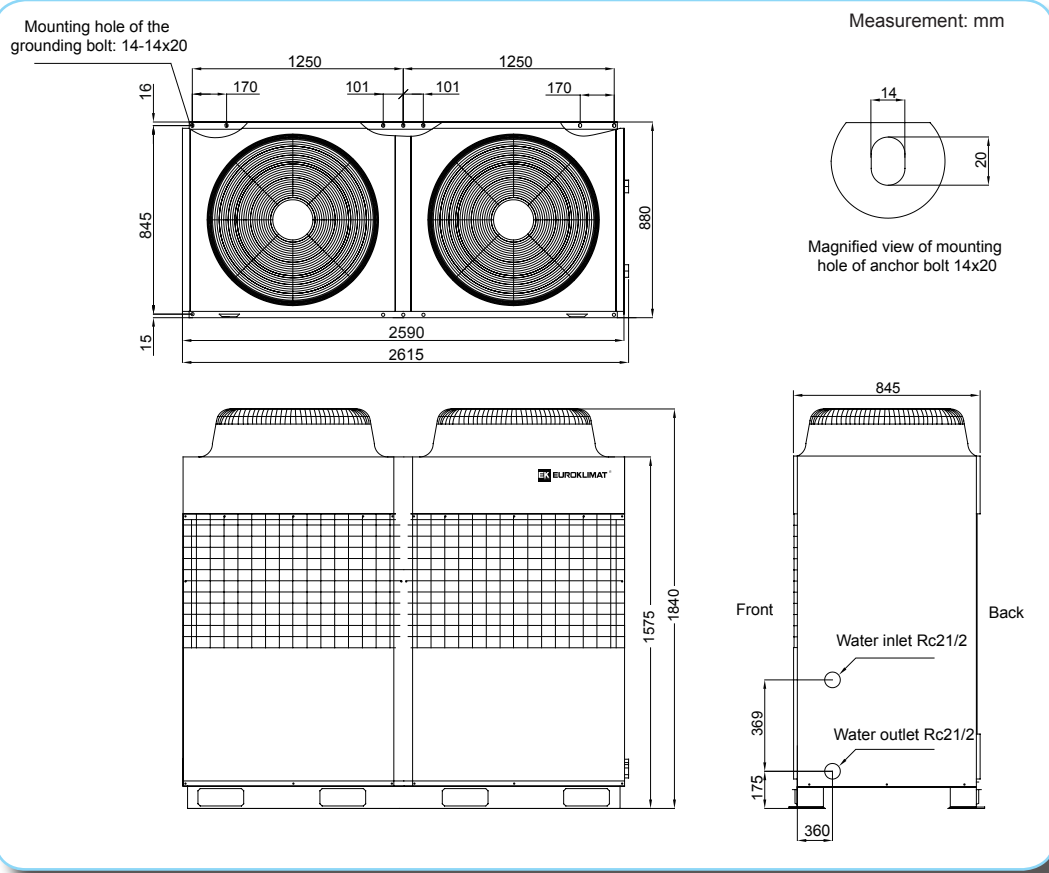
Heating Capacity Variation Table

Model	Outlet water temp. (°C)	Ambient temp. (°C)													
		-10°C		-5°C		0°C		7°C		10°C		15°C		21°C	
		Heating capacity (kW)	Power (kW)	Heating capacity (kW)	Power (kW)	Heating capacity (kW)	Power (kW)	Heating capacity (kW)	Power (kW)	Heating capacity (kW)	Power (kW)	Heating capacity (kW)	Power (kW)	Heating capacity (kW)	Power (kW)
EKAC300BR1	35°C	60.6	21.1	68.9	21.4	78.6	21.7	96.7	22.1	99.8	22.5	102.8	22.9	106.9	23.5
	40°C	57.9	23.5	65.3	23.8	76.7	24.0	95.1	24.3	97.6	24.6	100.3	25.1	104.5	25.7
	45°C	55.8	25.2	63.7	25.4	73.8	25.7	94.0	26.1	95.2	26.4	98.6	26.9	102.2	27.6
	50°C	--	--	60.2	28.3	71.4	28.6	89.5	28.9	92.1	29.2	95.7	29.6	99.3	30.1

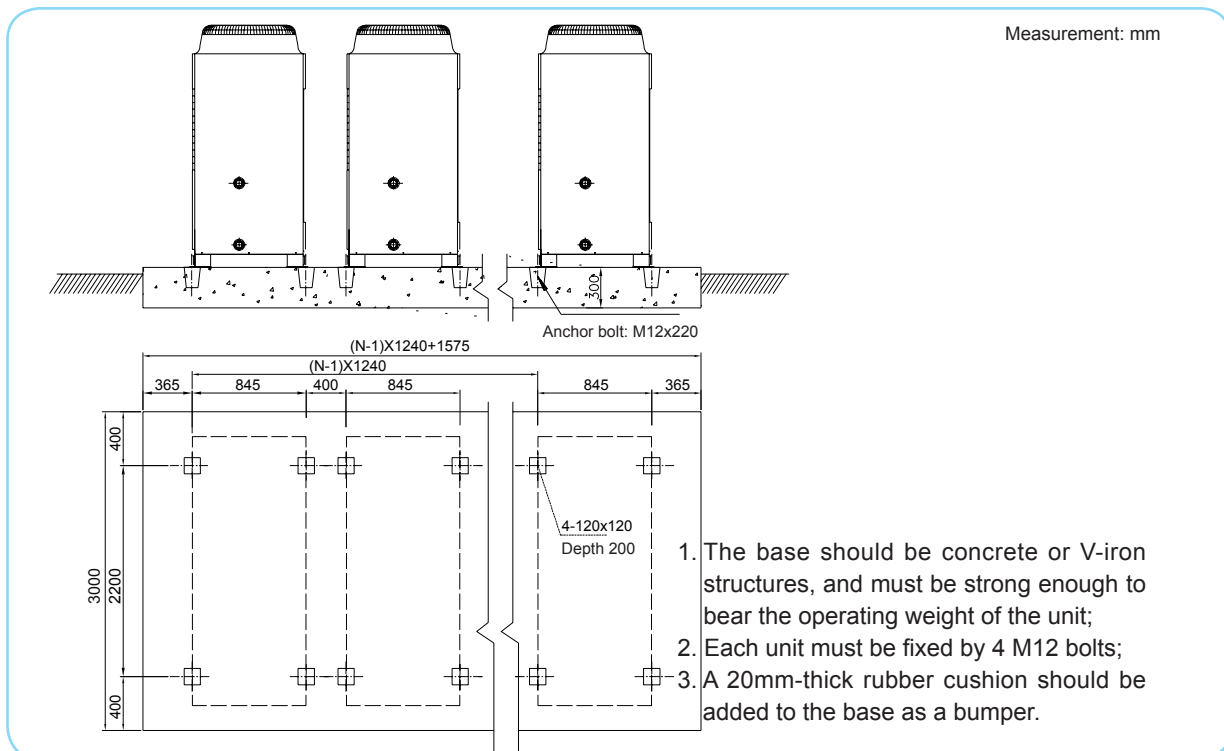
Note: parameters in the above table are measured when the unit operates at the rated water flow.

Dimensions (R410A Environment-friendly Refrigerant Model)

Dimension Diagrams for EKAC300



Installation Base Diagrams for EKAC300



Installation Space Requirement Illustration

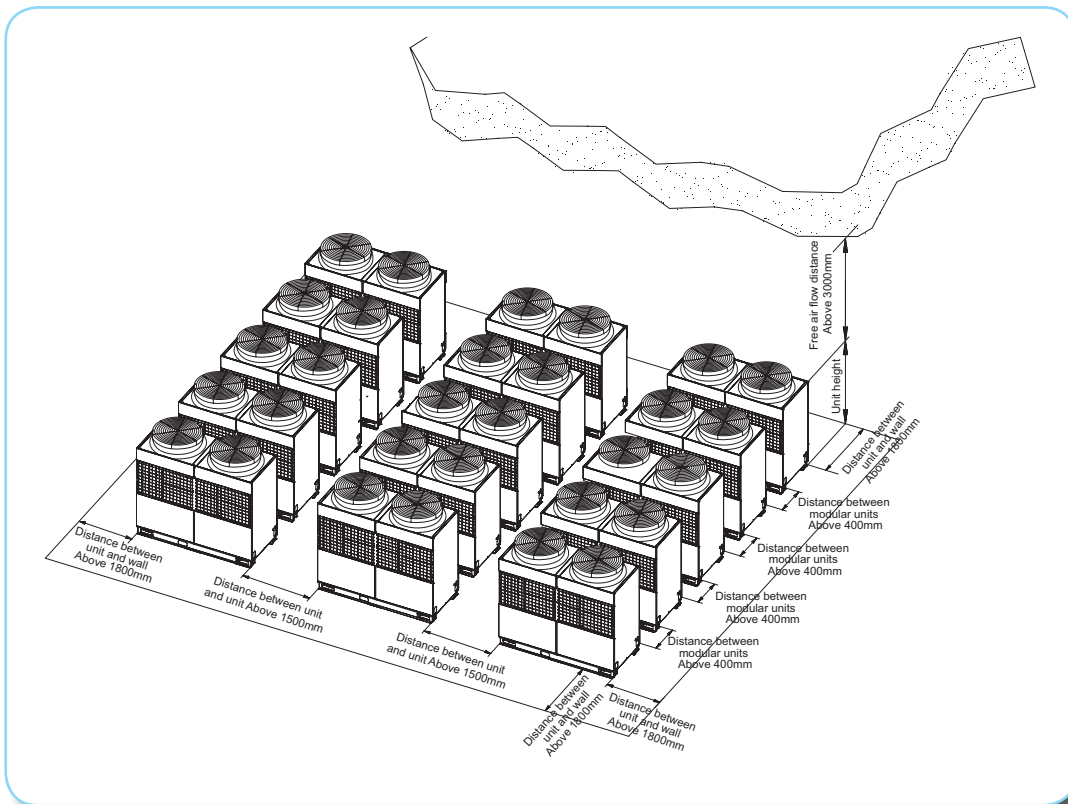


Illustration for variable flow rate water system which adjusts indoor temperature by adjusting flow rate of chilled water

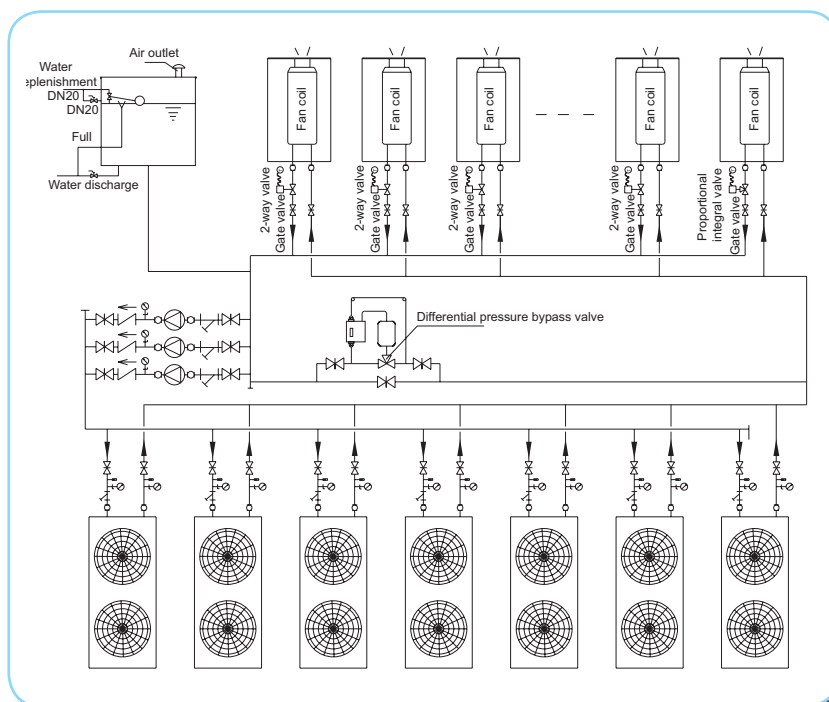


Illustration for constant flow rate water system which adjusts indoor temperature by adjusting terminal unit air flow.

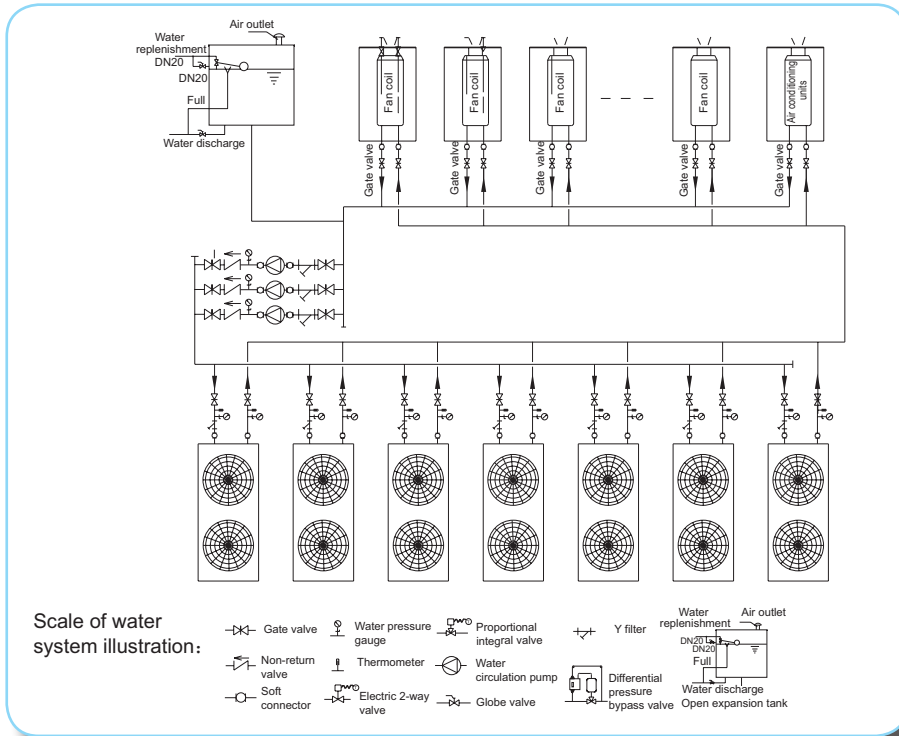


Illustration for variable flow rate water system which adjusts indoor temperature by adjusting flow rate of chilled water which adjusts indoor (total heat recovery)

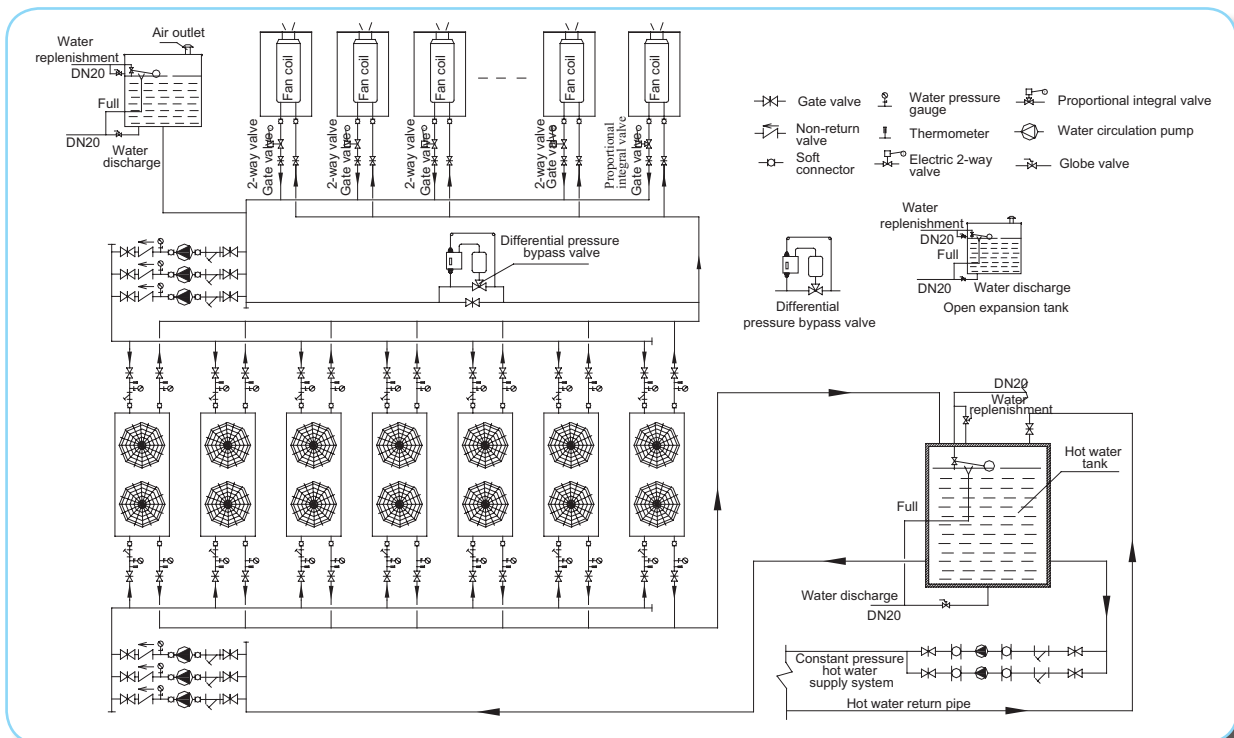


Illustration for variable flow rate water system which adjusts indoor temperature by adjusting flow rate of chilled water (partial heat recovery)

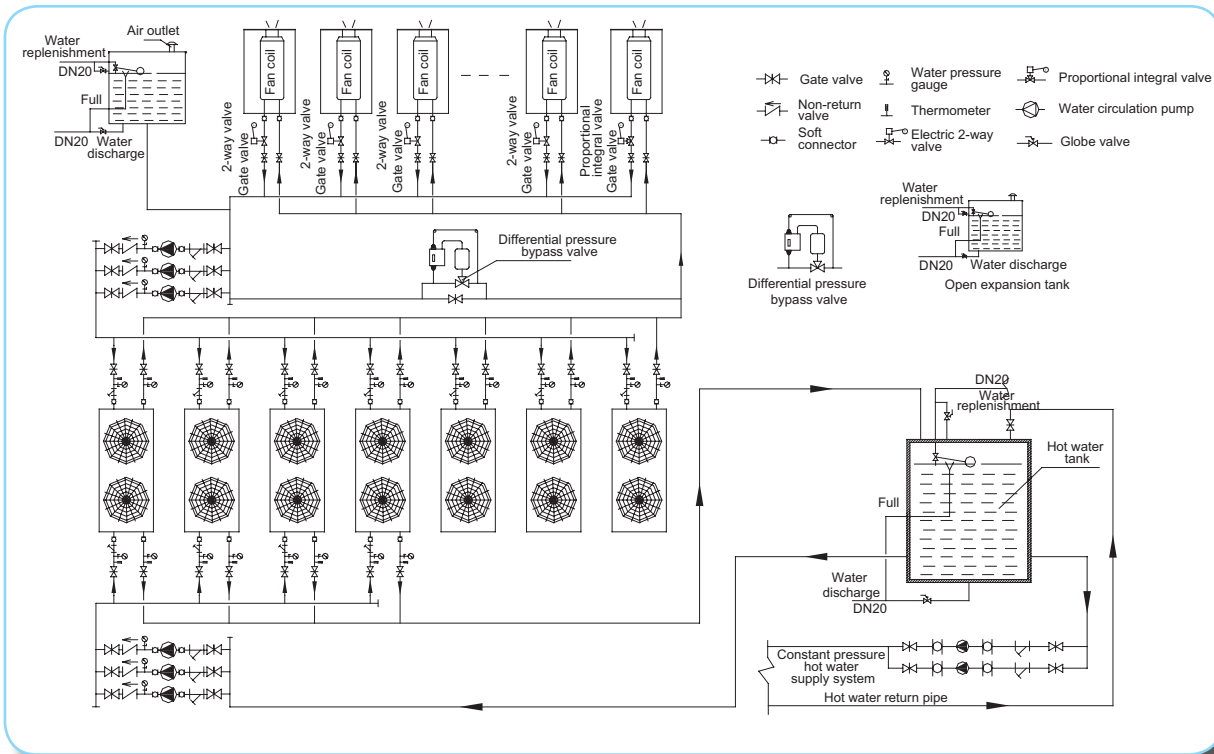


Illustration for constant flow rate water system which adjusts indoor temperature by adjusting terminal air rate (total heat recovery)

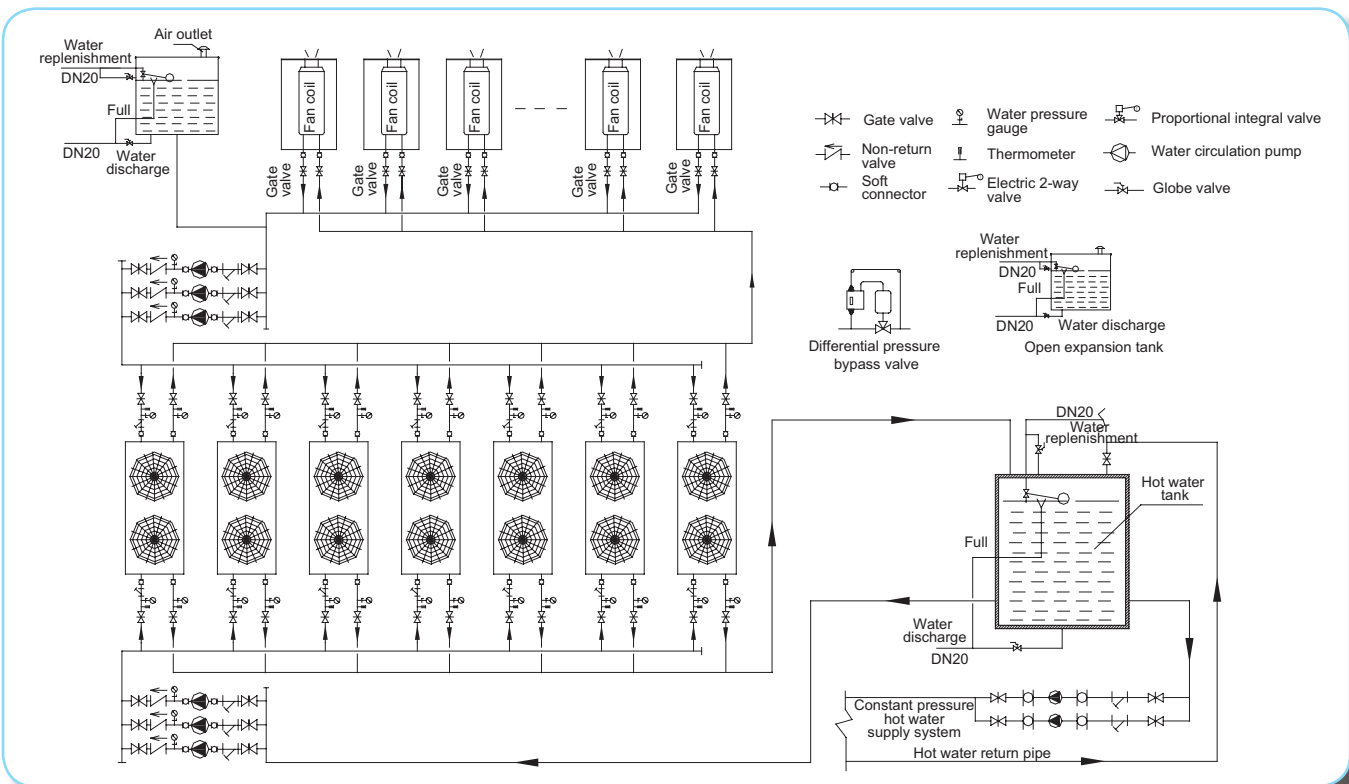
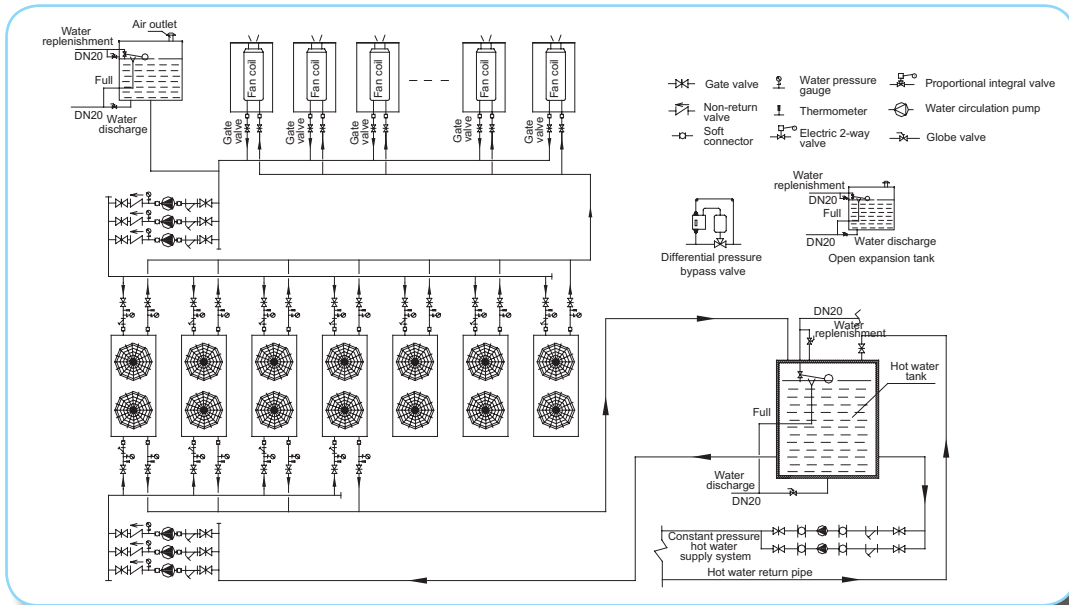


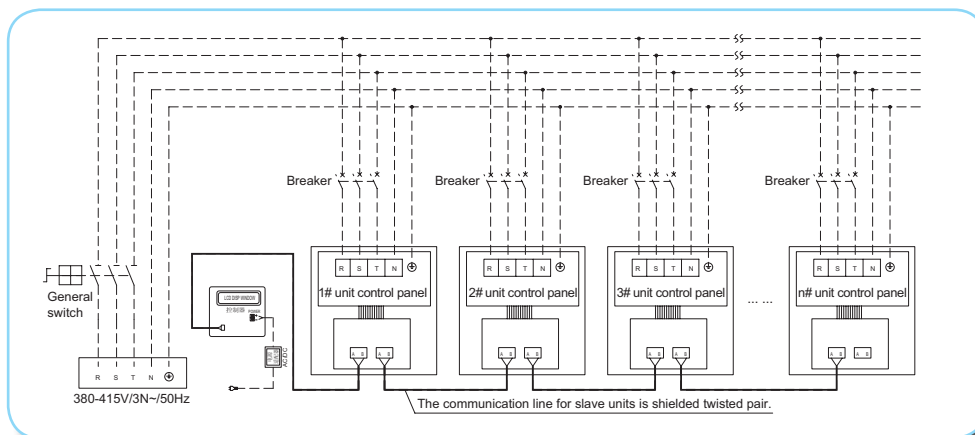
Illustration for constant flow rate water system which adjusts indoor temperature by adjusting terminal air rate (partial heat recovery)



Unit Water Supply Requirements

- Circulatory water should be softened;
- A relief valve must be installed for the water supply system;
- Water flow rate must not be lower than rated;
- An air outlet valve must be installed at the highest point in the water system;
- A suitable water discharge valve must be installed at the lowest point in the water system;
- It is recommended that an adiabatic tank with a proper capacity be installed to avoid frequent startup in case of low workload;
- An expansion water tank must be installed to accommodate water volume variations due to thermal expansion and contraction;
- A bypass must be installed for the water circuit. The water system must be fully cleaned before water infusion and system startup.
- Please replace the attached water filter after cleaning the system and pilot run;
- It is recommended that customers check the water system twice a month;
- For parallel pipes with the same pressure at both ends, there is no need to install a water pressure gauge at each water inlet/outlet.
- As the wire controller can be used to read the inlet/outlet water temperature of each module, there is no need for extra thermometers.

Wiring diagram for power cables and control lines of master and slave units



Note:

- General switch, breaker and dotted line sections are not attached with the unit. Customers need to prepare these parts.
- A wire controller is provided only for the master unit, not for slave units.
- The communication line between the master unit and the wire controller is 40m long, while the communication line for slave units is 5m long.



Cat EKAC-B0910

EuroKlimat products are subject to continuous improvements. EuroKlimat reserves the right to modify product design, specifications and information in this catalog without prior notice and without incurring any obligations.

