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TECKA Purified Modular Air Handling Unit

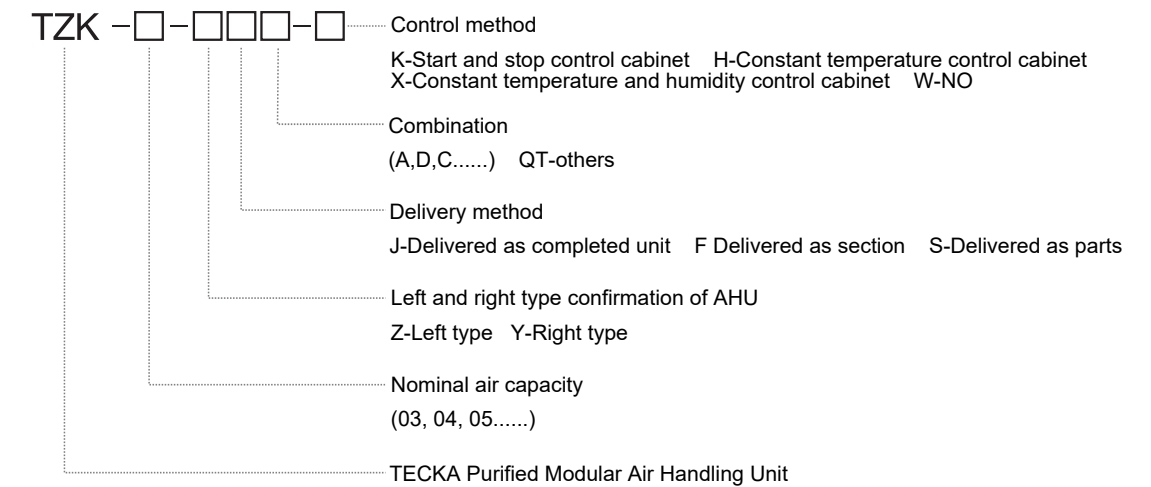


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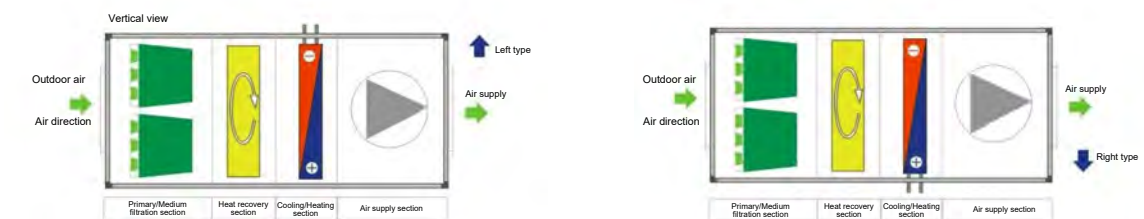
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Model introduction



Left and right type confirmation of AHU



Instruction

1. In the direction of airflow, if the cooling and heating medium tube are on the right, the AHU is the right type. If the cooling and heating medium is on the left, the AHU is the left type.
2. When the AHU does not connect the tube, in the airflow direction, if the inspection door is on the right, the AHU is right type. If the inspection door is on the left, and the AHU is left type.
3. For the standard model AHU in the brochure, the inspection door, the motor outlet hole, and the cooling medium tube are on the same side. Please specify when ordering if customization is required.

AHU delivery specification

- In this brochure, the units with air capacity which are lower than 50000m³/h (inclusive) are delivered as complete units or sections (This section refers to the structural section composed of several connected functional sections). Units above 50000m³/h will be delivered as parts. Please specify when ordering if customization is required.
- When the AHU is delivered as a complete unit or sections, the user should ensure that there is a passage in the site for moving the equipment.
- When the AHU is shipped as sections, the external length is calculated as:
The sum of the length of each functional section + (sections numbers -1) * 70 = AHU total length.

AHU features

Main design concept

1. The design is strictly in accordance with the national standard "GB / T14 294-2008 modular air conditioning unit" and the European standard "EN 1886-1998 Mechanical performance of air handling units for building ventilation", which not only focusing on the AHU aerodynamic and thermal performance but also paying attention to the mechanical performance of the unit structure.

2. Adopt the "lengthened" optimized design concept to ensure that the steam in the humidification section is fully absorbed and the airflow in the flow equalization section and other sections is fully expanded, the airflow rate of the AHU cross-section is more uniform, the heat exchange is more sufficient, and the filtration is more efficient.

3. The AHU cabinet adopts a "screw-free" structure, high-quality "wear-resistant belt, stainless steel for wet-resistant parts" and other technology to prevent secondary pollution.

4. Adopting technologies such as "fluorine-free polyurethane", "three-dimensional vibration reduction", "low noise", "self-extinguishing", and "voltage-drop start" to ensure the unit's excellent environmental performance.



Cabinet structure features



Rivet-free structure

Adopting the patented technology of "Broken-bridge material for air-conditioning frame" (Patent No. ZL20032 0108849.8), without any connecting parts such as bolts and steel nails. It can not only ensure excellent sealing and thermal insulation performance but also avoid "leakage", "cold bridge", "rust" and other phenomena.



"Sandwich" panel structure

"Sandwich" panel structure, filled with 48-53kg/m³ fluorine-free polyurethane foam insulation material in combination with "constant temperature and constant flow" foaming technology, effectively avoid the occurrence of "over-foaming" and "under-foaming" and ensure the panel has a lower heat transfer coefficient and higher structural strength. Tested by authoritative institutions, the thermal insulation performance index is much higher than the national standard.



High-quality organic components

The organic components of the cabinet adopt world famous brands and are resistant to UV (ultraviolet), VHP (hydrogen peroxide), and ozone corrosion.

Filter section features



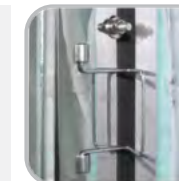
Adopt a world famous brand filter, high filtration efficiency.



Install a filter before the outdoor air enters the mixing section to prevent the outdoor air enters the cleanroom without filtering due to the outdoor air pressure is higher than the cleanroom pressure when the machine is shut down.



Install differential pressure sensors or differential pressure gauge on both sides of the filter to facilitate the detection of filter dust accumulation.



The filter installation is positioned by a quick clamping device for easy installation and removal.

Air cooler section features



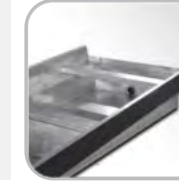
Professional calculation and verification software for a heat exchanger to ensure more accurate parameter design and more convenient geometric parameter combination.



The air cooler is made of high-quality copper tubes with aluminum fins and is tightened by advanced tube expansion technology.



Each air cooler has passed the sealing test of >2.5MPa, and the design working pressure of the AHU is >1.6MPa. The anti-freezing type air cooler adopts the "self-weight drainage" patent technology (patent number CN201020279596.0) to prevent the air cooler from freezing cracking in the winter.



Stainless steel inclined "dry" water plate design can effectively avoid water accumulation in the water tray, and prevent microbial growth and scale formation.



A high-efficiency water baffle is equipped behind the air cooler to prevent the "water-drift" phenomenon under extreme working conditions.



The water (steam) collection tube is equipped with sealing rings which resistant to high temperature, low temperature, UV, hydrogen peroxide and ozone. It has good sealing performance and long service life.

Heating section features



Seamless steel tube winding steel sheet (Without the inconsistency of the heat shrinkage rate of the aluminum fin traps the steel tube, thereby improving the heat exchange efficiency).



Adopt the special structure design, which is a benefit to drain the condensate and prevents the heater from freezing during the shutdown.

Fan section features

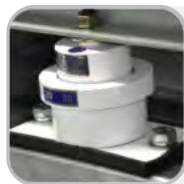


Adopt High efficiency & Low noise double inlet centrifugal fan. The fans have passed the rigorous dynamic and static balance tests, with the types of forwarding, backward and wing type. The reasonable selection is based on the parameters of air capacity, air pressure, noise, power, etc.

Adopt the "natural curve" principle to ensure that the centrifugal fan is always in an efficient operation.



The fan and the motor are installed on the base with a three-dimensional shock absorber, and the tension slide rail is used to adjust the belt.



Equipped with a safety device to avoid damage to the shock absorber during shipping.



The outlet of the fan is equipped with a flow equalization plate and a flow equalization section, which highly improves the efficiency of the fan and the uniformity of the airspeed of the cross-section of the cabinet.



Adopt well-known brand motors, IP54 protection class, F insulation class, according to different work conditions, VFD motor or explosion-proof motor is available for option.



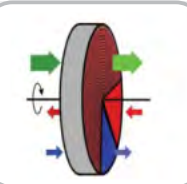
Equipped with a pressure-proof and anti-cold bridge sealing observation window, it is convenient for users to observe the fan operation at any time.

Humidifier section features



- According to different work conditions, the dry steam type, electrode type, electric heating type, high pressure spray type, high pressure micro-mist type and wet film type (not recommended for clean places) humidifiers are optional for the AHU.
- When the air temperature is lower than 15°C or the humidification capacity is higher than 240kg/h, the quick absorption humidifier should be equipped.
- When a medium-efficiency filter in the downstream of the humidifier, an intermediate section should be equipped between the humidification section and the medium-efficiency filter section to improve the steam absorption efficiency.
- Adopt the "lengthened" to optimize the design concept, and the design of the lengthened humidification section is ensured that the steam is fully absorbed.

Heat recovery section features



The AHU can be equipped with an energy recovery device to recover the heat in the exhaust system, and different types of heat recovery devices are optional as per the requirement:

- (1) Plate heat recovery heat exchanger
- (2) Runner heat recovery heat exchanger
- (3) Heat tube heat recovery heat exchanger
- (4) Liquid connected heat recovery heat exchanger

Inspection door features



The positive pressure section of the unit adopts an internally opened inspection door, and the negative pressure section uses an externally opened inspection door, which effectively reduces air leakage and extends the service life of the inspection door.



The high-elastic heat-resistant sealing material is used for double-layer sealing to ensure that the air leakage rate of the inspection door is "0".



The multi-point distributed locking mechanism can effectively improve the sealing performance of the unit, and can effectively prevent the deformation of the inspection door caused by uneven pressure.

Control System

Users can choose different control systems according to their needs.

Optional control systems include the ordinary start-stop control cabinet, Automatic control system, PLC control system and centralized control system.

Start-stop control cabinet

The ordinary control cabinet can realize manual control of starting and stopping of motor, electric heater and other equipment. The control cabinet includes circuit breaker, electromagnetic contactor, overload protector, time relay, indicator light, etc.

Automatic Control System

It is suitable for general comfort air-conditioning system. It is a control system composed of a DDC controller or single-chip microcomputer, sensors, actuators, transmitters, electric valves, and various electrical components. It can realize automatic control of ordinary accuracy of temperature and humidity. At the same time, it has a complete system protection function to ensure the safe operation of the AHU.

PLC control system

Adopt industrial PLC programmable controller, and integrated software, power distribution device, sensors, actuators, transmitters, etc. to form a complete intelligent control system, which can independently and flexibly complete automatic collection, processing, and transmission of unit parameters. With the features of high-precision automatic control of temperature, humidity, pressure, flow, energy-saving operation and others. It is suitable for places with high requirements for temperature and humidity control accuracy or places where the air treatment process needs to be highly automated, especially for the cleanroom workshop, which can ensure that the AHU operates automatically and safely according to the predetermined requirements, realize unmanned management, and reduce management costs.

Centralized control system

PC

It has a variety of models for options. Different models can manage different numbers of devices, up to 120 devices, the length of wired wiring is up to 10km, also the wireless communication is available to achieve the communication between PC and PLC.



IPC

There are 3 screen sizes for option from 7", 10", 12", which can manage up to 8 devices, the wiring length is up to 2km. Adopting true color touch IPC, WINCE operating system, which can connect USB devices (mouse, keyboard, printer, U disk, etc.)



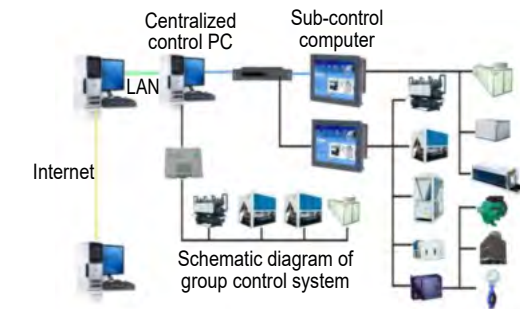
Centralized control system features

Powerful energy-saving management function

Time control program	Setting value optimization
Energy trend record	Start-stop optimization procedure
AC sub-area management	Logic alarm

Operation status monitoring and management function

User management	Security management
Transmission data exchange	History records
Event management	Alarm management
Real-time data and curve	Animation effect



Communication function

Through wireless connectors, users can access the central air-conditioning centralized control system from anywhere in the world.

Centralized control system type

Class A: Chiller Centralized control system

The chiller centralized control system achieves the effects of energy-saving, precise control, and convenient operation and maintenance through the automatic control of multiple chillers and peripheral equipment (water pumps, cooling towers, valves, etc.). The system collects and controls various input and output signals to achieve remote management control of multiple chillers, and also incorporates chains of chilled water pumps, cooling water pumps, cooling towers, and valves into management. The monitoring computer in the chiller centralized control system detects and controls various important parameters of these devices, and serves as the operating interface. On the monitoring computer, you can check the operating status of the equipment and set or modify various operating parameters. For example, you can directly modify the AHU parameters, including outlet temperature, return air humidity temperature, defrost temperature, cooling tower fan control temperature, compressor use setting, chiller operation schedule, etc.

System main functions

- Automatically control the working chiller's number according to the system load.
- Automatically adjust the number of working pumps and cooling towers according to the system load.
- Balance the running time of each unit to extend the life of the unit.
- Can manually open and close the specified unit, water pump, cooling tower. Multi-machine rotation and standby unit duty function.
- Display the system running status and main parameters.
- PLC module realize the incorporates chains control of water pumps, cooling towers and valves, and start as required.
- Automatic reminder function for maintenance time.

Class B: AHU centralized control system

By detecting the temperature, humidity, pressure, and gas concentration of the room, it can dynamically control the outdoor air valve, water valve, steam valve, humidifier, motor inverter, etc., fully coordinate the operation of the equipment and energy management, and work with the system communicate monitoring workstation together, which let users know the various parameters of the air in the control area and realize centralized control.

Main functions of the system

- Monitor indoor temperature, humidity, pressure, and other parameters.
- Linkage control all the AHU in the system.
- Adjust the ratio of the outdoor and return air valve to achieve the function of less loading in the free cooling and ventilation in the excessive season.
- Adjust the temperature and humidity settings in different seasons.
- Automatically adjust the number of ventilation according to the CO₂ concentration.
- It has detailed and rich various alarm signals feedback to the monitoring terminal.
- Automatically record system data, and save data according to practical requirements.
- Standard communication interface which could be connected with BAS system

AHU&chillers centralized control system

This system can realize centralized control of chillers, water pumps, waterway valves, and AHU, with all the functions of Class A systems and Class B systems.



AHU cross section for model selection

Table 1

Unit specifications	Nominal air capacity (m ³ /h)	Cabinet width (mm)	Cabinet height (mm)
03	2000	796	815
	2500		
	3000		
04	4000	1001	815
05	5000	966	1002
06	6000	1096	1002
07	7000	1307	1002
08	8000	1356	1002
09	9000	1398	1015
10	10000	1398	1115
13	12500	1616	1165
15	15000	1645	1315
18	17500	1922	1308
20	20000	2023	1358
23	22500	1922	1614
25	25000	2060	1614
28	27500	2251	1634
30	30000	2109	1948
33	32500	2251	1968
35	35000	2251	2074
38	37500	2251	2251
40	40000	2381	2246
43	42500	2381	2328
45	45000	2557	2328
48	47500	2557	2455
50	50000	2557	2557
55	55000	2890	2479
60	60000	2890	2606
65	65000	3196	2606
70	70000	3196	2733
75	75000	3196	2987
80	80000	3196	3196
90	90000	3505	3188
100	100000	4330	3312
120	120000	5040	3312
140	140000	5193	3656
160	160000	5600	3656
180	180000	5652	4266
200	200000	5890	4482

Description

- The table shows the nominal air capacity, please contact us if the user requirement exceeds the selection range of the above table.
- A water baffle should be set behind the air cooler.
- The bottom height of the unit cabinet does not include the height of the unit's base. The standard height of the unit base with the air capacity of 90,000m³/h and below is 100mm, and the standard height of the unit base with air capacity is above 90,000m³/h is 140mm.
- When the air capacity of the unit is above 100,000m³/h, we will provide customization design for specific projects.

Schematic diagram of AHU functional sections

Name	Schematic diagram	Note
Mixing section		Inspection door is added when mixing section is behind the filtration section.
Plate type primary filtration section		An inspection section is required in front of this section.
Bag type primary/medium filtration section		An inspection section is required in front of this section.
Air cooler water baffle/Wet film section		The water baffle could be removed when the wet film humidifier is installed behind the air cooler.
Hot water heating section		Thickening copper tubes are used for heaters with hot water above 70 °C to below 90 °C.
Steam heating section		
Electric heating section		Electric heater needs to be chain controlled with the fan.
Dry steam/electrode/electric heating humidification section		The humidifying section needs to be equipped with a water tray, the electrode and the electric heating humidifier must be placed in the negative pressure area.
Runner heat recovery section		Inspection space is required in front and behind the section.
Plate-fin heat recovery section		
Electronic dust filtration/UV sterilization section		An inspection section is required in front of this section.
Wet film humidification section		It can be installed behind the air cooler to form a cooling and wet film section without occupying space alone.
High-pressure spray/micro mist humidifying section		Equipped with a water tray. It can be adjacent to the air cooler and share the water baffle.
Air supply fan section		When air is supplied in the middle, the flow equalization section needs to be set behind, and the air supply fan section needs to be equipped with inspection doors.
Return air/second air return/exhaust section		
Silencer section		
Air supply section		
Middle section		Normally it was used for inspection, can also be used for flow equalization section (if the fan outlet does not need to add a flow equalization plate).
Flow equalization section		Normally installed behind the fan section.
Runner dehumidifier section		
Cabinet type high efficiency filtration section		Normally, it not equipped in the AHU, if the cross-section of the unit needs to be enlarged, an inspection section must be set up in front of this section.
Activated carbon filtration section		An inspection section is required in front of this section.

Functional section length

Unit: mm Table 3-1

Model		03	04	05	06	07	08	09	10	13	15	18	20
Section dimensions (mm)	Width	796	1001	966	1096	1307	1356	1398	1398	1616	1645	1922	2023
	Height	815	815	1002	1002	1002	1002	1015	1115	1165	1315	1308	1358
Mixing section		665	665	665	665	665	665	665	665	665	665	685	685
Plate type primary filtration section		100	100	100	100	100	100	100	100	100	100	100	100
Second air return section		640	640	640	640	640	640	640	640	640	640	660	660
Exhaust section		640	640	640	640	640	640	640	640	640	640	660	660
Bag type primary filtration section		350	350	350	350	350	350	350	350	350	350	350	350
Bag type medium filtration section		500	500	500	500	500	500	500	500	500	500	500	500
Primary and medium mixing filtration section		500	500	500	500	500	500	500	500	500	500	500	500
Cabinet type high efficiency filtration section		300	300	300	300	300	300	300	300	300	300	300	300
Electronic dust filtration/UV sterilization section		400	400	400	400	400	400	400	400	400	400	400	400
Activated carbon filtration section		350	350	350	350	350	350	350	350	350	350	350	350
Air cooler water baffle section	2, 4 rows air cooler	617	617	617	617	617	617	617	617	617	617	627	627
	6, 8 rows air cooler	707	707	707	707	707	707	707	707	707	707	737	737
Air cooler wet film section	2, 4 rows air cooler	617	617	617	617	617	617	617	617	617	617	627	627
	6, 8 rows air cooler	707	707	707	707	707	707	707	707	707	707	737	737
Hot water heating section		460	460	460	460	460	460	460	460	460	460	460	460
1 row steam heating section		350	350	350	350	350	350	350	350	350	350	350	350
2 rows steam heating section		400	400	400	400	400	400	400	400	400	400	400	400
Electric heating section		460	460	460	460	460	460	460	460	460	460	460	460
Dry steam humidification section		700	700	700	700	700	700	700	700	700	700	700	700
Electrode/electric heating humidification section		700	700	700	700	700	700	700	700	700	700	700	700
Wet film humidification section		600	600	600	600	600	600	600	600	600	600	600	600
High-pressure spray humidifying section		800	800	800	800	800	800	800	800	800	800	800	800
High-pressure micro mist humidifying section		1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
Flow equalization section		840	840	840	840	840	840	840	840	840	840	840	840
Middle section		640	640	640	640	640	640	640	640	640	640	640	640
Silencer section		1018	1018	1018	1018	1018	1018	1018	1018	1018	1018	1018	1018
Air supply section		665	665	665	665	665	665	665	665	665	665	685	685
Heat recovery section		The length of the function section is determined according to the actual situation											
Runner dehumidifier section		The length of the function section is determined according to the actual situation											

Unit: mm Table 3-2

Model		23	25	28	30	33	35	38	40	43	45	48	50
Section dimensions (mm)	Width	1922	2060	2251	2109	2251	2251	2251	2381	2381	2557	2557	2557
	Height	1614	1614	1634	1948	1968	2074	2251	2246	2328	2328	2455	2557
Mixing section		685	685	698	698	728	728	728	728	728	728	728	728
Plate type primary filtration section		100	100	100	100	100	100	100	100	100	100	100	100
Second air return section		660	660	668	668	698	698	698	698	698	698	698	698
Exhaust section		660	660	668	668	698	698	698	698	698	698	698	698
Bag type primary filtration section		350	350	350	350	350	350	350	350	350	350	350	350
Bag type medium filtration section		500	500	500	500	500	500	500	500	500	500	500	500
Primary and medium mixing filtration section		500	500	500	500	500	500	500	500	500	500	500	500
Cabinet type high efficiency filtration section		300	300	300	300	300	300	300	300	300	300	300	300
Electronic dust filtration / UV sterilization section		400	400	400	400	400	400	400	400	400	400	400	400
Activated carbon filtration section		350	350	350	350	350	350	350	350	350	350	350	350
Air cooler water baffle section	2, 4 rows air cooler	627	627	647	757	757	757	757	757	757	757	757	757
	6, 8 rows air cooler	737	737	757	867	867	867	867	867	867	867	867	867
Air cooler wet film section	2, 4 rows air cooler	627	627	647	757	757	757	757	757	757	757	757	757
	6, 8 rows air cooler	737	737	757	867	867	867	867	867	867	867	867	867
Hot water heating section		460	460	460	460	460	460	460	460	460	460	460	460
1 row steam heating section		350	350	350	350	350	350	350	350	350	350	350	350
2 rows steam heating section		400	400	400	400	400	400	400	400	400	400	400	400
Electric heating section		460	460	460	460	460	460	460	460	460	460	460	460
Dry steam humidification section		700	700	700	700	700	700	700	700	700	700	700	700
Electrode/electric heating humidification section		700	700	700	700	700	700	700	700	700	700	700	700
Wet film humidification section		600	600	600	600	600	600	600	600	600	600	600	600
High-pressure spray humidifying section		800	800	800	800	800	800	800	800	800	800	800	800
High-pressure micro mist humidifying section		1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
Flow equalization section		840	840	850	850	850	850	850	850	850	850	850	850
Middle section		640	640	650	650	650	650	650	650	650	650	650	650
Silencer section		1018	1018	1038	1038	1038	1038	1038	1038	1038	1038	1038	1038
Air supply section		685	685	698	698	728	728	728	728	728	728	728	728
Heat recovery section		The length of the function section is determined according to the actual situation											
Runner dehumidifier section		The length of the function section is determined according to the actual situation											

Unit: mm Table 3-3

Model	55	60	65	70	75	80	90	
Section dimensions (mm)	Width	2890	2890	3196	3196	3196	3196	3505
	Height	2479	2606	2606	2733	2987	3196	3188
Mixing section	913	913	913	913	1113	1113	1113	
Plate type primary filtration section	100	100	100	100	100	100	100	
Second air return section	878	878	878	878	1078	1078	1078	
Exhaust section	878	878	878	878	1078	1078	1078	
Bag type primary filtration section	350	350	350	350	350	350	350	
Bag type medium filtration section	500	500	500	500	500	500	500	
Primary and medium mixing filtration section	500	500	500	500	500	500	500	
Cabinet type high efficiency filtration section	300	300	300	300	300	300	300	
Electronic dust filtration/UV sterilization section	400	400	400	400	400	400	400	
Activated carbon filtration section	350	350	350	350	350	350	350	
Air cooler water baffle section	2, 4 rows air cooler	757	757	757	757	757	757	
	6,8 rows air cooler	867	867	867	867	867	867	
Air cooler wet film section	2, 4 rows air cooler	757	757	757	757	757	757	
	6,8 rows air cooler	867	867	867	867	867	867	
Hot water heating section	460	460	460	460	460	460	460	
1 row steam heating section	350	350	350	350	350	350	350	
2 rows steam heating section	400	400	400	400	400	400	400	
Electric heating section	460	460	460	460	460	460	460	
Dry steam humidification section	700	700	700	700	700	700	700	
Electrode/electric heating humidification section	700	700	700	700	700	700	700	
Wet film humidification section	600	600	600	600	600	600	600	
High-pressure spray humidifying section	800	800	800	800	800	800	800	
High-pressure micro mist humidifying section	1500	1500	1500	1500	1500	1500	1500	
Flow equalization section	860	860	860	860	860	860	860	
Middle section	660	660	660	660	660	660	660	
Silencer section	1060	1060	1060	1060	1060	1060	1060	
Air supply section	913	913	913	913	1098	1098	1098	
Heat recovery section	The length of the function section is determined according to the actual situation							
Runner dehumidifier section	The length of the function section is determined according to the actual situation							

AHU cooling capacity, heating capacity, water capacity, water resistance

Return air condition

Unit: mm Table 4

Specification	Nominal air capacity	Two rows parameters				Four rows parameters				Six rows parameters				Eight rows parameters			
		Cooling capacity	Heating capacity	Water capacity	Water resistance	Cooling capacity	Heating capacity	Water capacity	Water resistance	Cooling capacity	Heating capacity	Water capacity	Water resistance	Cooling capacity	Heating capacity	Water capacity	Water resistance
		kW	kW	t/h	kPa	kW	kW	t/h	kPa	kW	kW	t/h	kPa	kW	kW	t/h	kPa
03	2000	2.3	4.0	0.4	2	7	14	1.2	16	11	20	1.9	15	12	21	2.1	10
	2500	2.8	6.0	0.5	3	9	18	1.6	20	14	24	2.4	18	15	27	2.6	13
	3000	3.4	7.0	0.6	3	11	22	1.9	20	17	29	2.9	16	18	32	3.1	13
04	4000	5.2	10.0	0.9	5	15	30	2.6	22	20	38	3.4	17	23	42	3.9	21
05	5000	6.5	13.0	1.1	5	19	38	3.3	24	25	47	4.3	17	29	53	4.9	21
06	6000	8.0	16.0	1.4	8	23	46	4.0	27	30	58	5.2	19	34	64	5.9	22
07	7000	10.0	21.0	1.8	12	25	50	4.4	17	35	66	6.0	20	40	74	6.9	25
08	8000	12.0	20.0	2.0	12	30	59	5.1	23	40	76	6.9	20	46	85	8.0	28
09	9000	14.0	27.0	2.4	18	34	67	5.8	25	45	85	8.0	22	51	95	9.0	16
10	10000	15.0	30.0	2.6	17	36	72	6.2	23	50	94	9.0	23	57	106	10.0	16
13	12500	19.0	38.0	3.3	19	45	90	8.0	25	64	118	11.0	28	71	132	12.0	21
15	15000	23.0	47.0	4.0	23	56	112	10.0	28	77	142	13.0	27	85	159	15.0	22
18	17500	30.0	61.0	5.2	14	70	131	12.0	18	87	165	15.0	26	104	185	18.0	26
20	20000	36.0	70.0	6.1	17	80	151	14.0	20	99	189	17.0	21	119	212	20.0	22
23	22500	39.0	78.0	6.7	14	90	168	16.0	18	112	212	19.0	26	133	238	23.0	26
25	25000	44.0	89.0	7.6	17	100	190	17.0	22	125	236	22.0	26	148	265	25.0	30
28	27500	50.0	99.0	9.0	21	110	211	19.0	25	137	260	24.0	27	163	291	28.0	15
30	30000	54.0	105.0	9.0	18	120	228	21.0	22	150	283	26.0	28	178	318	31.0	13
33	32500	59.0	118.0	10.0	22	130	249	22.0	25	162	307	28.0	26	193	344	33.0	15
35	35000	63.0	122.0	11.0	21	140	268	24.0	25	175	331	30.0	27	207	371	36.0	15
38	37500	68.0	132.0	12.0	21	150	288	26.0	25	187	354	32.0	30	222	397	38.0	15
40	40000	74.0	149.0	13.0	25	160	309	28.0	28	200	378	34.0	31	237	424	41.0	17
43	42500	79.0	158.0	14.0	25	170	328	29.0	28	212	401	37.0	31	252	450	43.0	17
45	45000	85.0	170.0	15.0	28	180	348	31.0	26	231	425	40.0	32	267	476	46.0	18
48	47500	89.0	178.0	15.0	28	190	370	33.0	27	237	449	41.0	33	281	503	48.0	18
50	50000	93.0	187.0	16.0	24	200	388	34.0	26	249	472	43.0	25	296	529	51.0	20
55	55000	88.0	176.0	15.0	8	220	433	38.0	31	274	519	47.0	27	326	582	56.0	24
60	60000	96.0	192.0	17.0	8	235	470	40.0	31	299	567	52.0	22	356	635	61.0	25
65	65000	107.0	214.0	18.0	10	255	512	44.0	32	324	614	56.0	26	385	688	66.0	29
70	70000	117.0	230.0	20.0	11	275	549	47.0	32	349	661	60.0	27	415	741	71.0	30
75	75000	128.0	253.0	22.0	11	294	588	51.0	31	374	708	64.0	34	445	794	76.0	28
80	80000	135.0	268.0	23.0	11	308	620	53.0	32	399	755	69.0	35	473	847	81.0	29
90	90000	157.0	306.0	27.0	14	346	693	60.0	33	449	850	77.0	43	533	953	92.0	31
100	100000	182.0	363.0	31.0	18	400	767	69.0	21	499	944	86.0	32	592	1059	102.0	32
120	120000	226.0	440.0	39.0	27	472	927	81.0	29	598	1131	103.0	43	714	1270	123.0	17
140	140000	264.0	521.0	45.0	28	549	1090	94.0	30	729	1318	125.0	49	830	1482	143.0	18
160	160000	308.0	614.0	53.0	28	622	1245	107.0	37	833	1505	143.0	30	948	1695	163.0	23
180	180000	349.0	695.0	60.0	31	707	1406	122.0	37	938	1700	161.0	30	1068	1906	184.0	23
200	200000	391.0	778.0	67.0	23	786	1562	135.0	41	1042	1906	179.0	32	1185	2118	204.0	25

Note

- Cooling condition: dry bulb temperature 24 °C, wet bulb temperature 18 °C, inlet water 7 °C, outlet water 12 °C.
- Heating condition: dry bulb temperature 18 °C, inlet water 60 °C, water capacity is the same as the cooling condition (Heating and the cooling coil are shared).

Outdoor air condition

Unit: mm Table 5

Specification	Nominal air capacity	Two rows parameters				Four rows parameters				Six rows parameters				Eight rows parameters			
		Cooling capacity	Heating capacity	Water capacity	Water resistance	Cooling capacity	Heating capacity	Water capacity	Water resistance	Cooling capacity	Heating capacity	Water capacity	Water resistance	Cooling capacity	Heating capacity	Water capacity	Water resistance
		kW	kW	t/h	kPa	kW	kW	t/h	kPa	kW	kW	t/h	kPa	kW	kW	t/h	kPa
03	2000	9	11	1.6	15	21	22	3.7	22	30	27	5.1	35	36	30	6.2	15
	2500	12	14	2.0	19	27	28	4.6	27	36	34	6.1	41	45	37	7.7	18
	3000	14	17	2.4	19	32	33	5.5	27	42	40	7.2	39	49	44	8.5	16
04	4000	18	24	3.2	31	43	44	7.4	45	61	54	10.6	38	68	59	11.6	27
05	5000	23	31	4.0	31	54	56	9.2	45	77	67	13.2	38	85	74	14.6	27
06	6000	27	33	4.6	12	59	67	10.1	15	92	81	15.8	52	102	89	17.5	37
07	7000	32	40	5.5	17	68	78	11.8	20	107	94	18.5	68	118	104	20.4	49
08	8000	34	47	5.9	19	83	89	14.3	28	114	108	19.6	75	135	119	23.0	62
09	9000	41	55	7.1	23	93	100	16.1	31	128	121	22.0	83	152	133	26.0	68
10	10000	46	61	7.9	23	104	111	17.8	31	142	135	25.0	81	169	148	29.0	66
13	12500	58	78	9.9	31	134	139	23.0	44	192	170	33.0	41	212	185	36.0	29
15	15000	69	93	12.0	33	161	167	28.0	46	230	205	40.0	45	254	222	44.0	36
18	17500	88	103	15.0	17	188	194	32.0	21	268	239	46.0	60	296	259	51.0	43
20	20000	107	121	18.0	22	215	222	37.0	24	307	273	53.0	68	339	296	58.0	49
23	22500	117	136	20.0	18	242	250	42.0	21	345	307	59.0	59	381	333	66.0	42
25	25000	134	152	23.0	23	268	278	46.0	25	383	341	66.0	71	423	370	73.0	51
28	27500	151	167	26.0	28	295	306	51.0	29	422	375	73.0	84	466	407	80.0	60
30	30000	165	182	28.0	25	322	333	55.0	25	460	409	79.0	73	508	444	87.0	52
33	32500	181	197	31.0	29	349	361	60.0	29	499	443	86.0	78	550	481	95.0	55
35	35000	195	212	34.0	29	376	389	65.0	29	537	477	92.0	83	592	518	102.0	58
38	37500	209	234	36.0	29	403	417	69.0	29	575	511	99.0	81	635	556	109.0	57
40	40000	223	249	38.0	32	429	444	74.0	33	614	545	106.0	91	677	593	116.0	64
43	42500	237	265	41.0	32	456	472	78.0	33	652	579	112.0	95	719	630	124.0	67
45	45000	251	280	43.0	36	483	500	83.0	36	665	614	115.0	99	762	667	131.0	74
48	47500	265	296	46.0	35	510	528	88.0	36	702	648	121.0	95	804	704	138.0	71
50	50000	279	315	48.0	38	537	556	92.0	39	*739	682	127.0	*74	846	741	146.0	79
55	55000	319	354	55.0	49	591	611	102.0	44	*813	750	140.0	*89	931	815	160.0	94
60	60000	348	386	60.0	51	644	667	111.0	45	*887	818	153.0	*92	1016	889	175.0	97
65	65000	377	427	65.0	59	659	722	113.0	47	*961	886	165.0	*80	*1100	963	189.0	*80
70	70000	406	460	70.0	61	709	778	122.0	48	*1035	954	178.0	*81	*1185	1037	204.0	*82
75	75000	435	497	75.0	58	760	833	131.0	49	*1109	1023	191.0	*83	*1270	1111	218.0	*83
80	80000	464	525	80.0	60	811	889	139.0	45	*1183	1091	204.0	*76	*1354	1185	233.0	*76
90	90000	522	597	90.0	74	911	1000	157.0	49	*1331	1227	229.0	*94	*1524	1333	262.0	*95
100	100000	581	612	100.0	26	1073	1112	185.0	25	1533	1364	264.0	70	1692	1482	291.0	49
120	120000	697	752	120.0	36	1289	1334	222.0	34	1841	1636	317.0	98	2031	1778	349.0	69
140	140000	812	872	140.0	38	1504	1556	259.0	36	2147	1908	369.0	98	2369	2074	408.0	69
160	160000	928	1024	160.0	48	1718	1778	295.0	45	*2455	2182	422.0	*67	2708	2370	466.0	89
180	180000	1045	1158	180.0	47	1932	2000	332.0	44	*2761	2454	475.0	*65	3047	2666	524.0	86
200	200000	1162	1292	200.0	51	2148	2222	370.0	49	*3067	2728	528.0	*71	3386	2962	582.0	94

- Note
- Cooling condition: dry bulb temperature 35°C, wet bulb temperature 28°C, inlet water 7°C, outlet water 12°C.
 - Heating condition: dry bulb temperature 7°C, inlet water 60°C, water capacity is the same as the cooling condition (Heating and cooling coil is shared).
 - * means the inlet/outlet water temperature difference is higher than 5°C to control the pressure drop of the water pipeline.

Air cooler cooling capacity/water capacity correction coefficient table

Correction coefficients for cooling capacity, water capacity (K1) and water resistance (K2) at different inlet air temperature and water temperatures.

Inlet air temperature		Inlet/outlet water temperature (°C)									
Wet bulb temperature	Dry bulb temperature	5/10		6/11		7/12		8/13		9/14	
		Cooling capacity/Water capacity (K1)	Water resistance (K2)	Cooling capacity/Water capacity (K1)	Water resistance (K2)	Cooling capacity/Water capacity (K1)	Water resistance (K2)	Cooling capacity/Water capacity (K1)	Water resistance (K2)	Cooling capacity/Water capacity (K1)	Water resistance (K2)
17	21-26	0.94	0.90	0.85	0.74	0.76	0.60	0.68	0.49	0.58	0.36
18	22-27	1.15	1.35	1.06	1.15	1.00	1.00	0.86	0.78	0.78	0.63
19	23-28	1.20	1.41	1.10	1.20	1.03	1.05	0.90	0.82	0.81	0.67
19.5	24-29	1.34	1.72	1.24	1.49	1.14	1.27	1.03	1.06	0.93	0.86
20	24.5-30	1.48	2.08	1.38	1.82	1.28	1.57	1.18	1.34	1.07	1.12
21	25-31	1.63	2.48	1.53	2.03	1.43	1.93	1.32	1.66	1.22	1.14
22	26-32.5	1.79	2.74	1.69	2.32	1.59	2.33	1.47	2.03	1.36	1.76
23	27-34					1.75	2.78	1.64	2.46	1.53	2.16
24	28.5-35					1.92	3.30	1.81	2.94	1.70	2.60
25	29.5-36					2.09	3.80	1.98	3.50	1.87	3.12
26	30.5-37.5					2.26	4.14	2.16	4.10	2.05	3.70
27	32-39					2.40	4.14	2.32	4.10	2.20	3.70
28	33-40					2.52	4.67	2.43	4.67	2.34	4.67
29	34-41.5					2.61	4.95	2.55	4.95	2.45	4.95

Correction coefficient (K3) for cooling capacity and water capacity at different oncoming airspeeds.

Oncoming air speed (m/s)	2.25	2.5	2.70
Coefficient	0.96	1.00	1.04

Correction coefficient (K4) of water resistance at different oncoming airspeeds.

Oncoming air speed (m/s)	2.25	2.5	2.70
Coefficient	0.92	1.00	1.07

Note

- Since the above correction coefficient is determined by the average value of various units, the coefficient of the small unit (03-15) is multiplied by 0.95, the coefficient of the large size unit (50-200) is multiplied by 1.08, and the coefficients of other unit multiplied by 1.0.
- In winter: if the inlet water temperature is 45°C and the outlet water is 40°C, the heating capacity is calculated by multiplying the AHU heat with the corresponding specifications in Table 4 and Table 5 by the factor 0.65.
- There is a certain error in the above correction factor.

Correction under the conditions of different air capacity, inlet air temperature and water temperature as follows:

Actual cooling capacity = Cooling capacity in Table 4 * K1 * K3
 Actual water capacity = Water capacity in Table 4 * K1 * K3
 Actual water resistance = Water resistance in Table 4 * K2 * K4

Example: Select TECKA TZK-20 AHU, the oncoming air capacity at the air cooler is 2.25m/s, the cooling capacity in table 4 (6 rows) is 99kW, water capacity is 17m³/h, and water resistance is 21kPa. Please calculate the actual cooling capacity, water capacity, and water resistance when the inlet air dry bulb temperature is 29°C, the wet bulb temperature is 21°C, the inlet water temperature is 6°C, the outlet temperature is 11°C and the air cooler is 6 rows.

Calculation: Check the correction coefficient K1 = 1.53 from Table 6-1, correction coefficient K2 = 2.03 from Table 6-1, correction coefficient K3 = 0.96 from Table 6-2, and check from Table 6-3 Correction factor K4 = 0.92.

The actual cooling capacity Q = cooling capacity at standard conditions * K1 * K3 = 99 * 1.53 * 0.96 = 145.4kW.
 Actual water capacity V = water capacity at standard conditions * K1 * K3 = 17 * 1.53 * 0.96 = 24.9t/h.
 Actual water resistance P = water resistance at standard conditions * K2 * K4 = 21 * 2.03 * 0.92 = 39.2kPa.

Steam heater heating capacity/Steam consumption

Specifications	Nominal air capacity (m ³ /h)	One row parameters								Two rows parameters							
		Steam pressure								Steam pressure							
		Heating capacity	Steam consumption	Heating capacity	Steam consumption	Heating capacity	Steam consumption	Heating capacity	Steam consumption	Heating capacity	Steam consumption	Heating capacity	Steam consumption	Heating capacity	Steam consumption		
03	2000	09	15	10	17	11	19	12	21	25	41	28	47	30	51	32	55
	2500	10	16	11	18	12	20	13	22	27	45	30	50	33	56	35	60
	3000	11	18	12	20	13	22	14	24	28	46	32	54	35	60	37	64
04	4000	14	23	15	25	17	29	18	31	40	66	45	76	49	83	52	89
05	5000	19	31	21	35	23	39	25	43	51	84	57	96	62	105	66	114
06	6000	23	38	26	44	28	48	30	52	61	101	69	116	75	128	80	138
07	7000	28	46	32	54	35	60	37	64	75	124	85	143	93	158	99	170
08	8000	30	49	34	57	37	63	40	69	82	135	92	155	100	170	107	184
09	9000	32	52	36	60	39	66	42	73	87	144	98	165	107	182	114	196
10	10000	37	61	42	71	45	77	48	83	100	165	113	190	122	207	130	224
13	12500	47	77	53	89	58	99	61	106	125	206	142	239	154	262	164	282
15	15000	56	92	63	106	68	116	73	126	151	249	170	286	185	315	197	339
18	17500	66	108	74	124	80	136	85	147	175	289	198	333	215	366	229	394
20	20000	74	121	84	141	91	155	97	168	200	330	226	380	246	418	262	451
23	22500	88	144	100	168	108	184	115	199	228	376	257	432	280	476	298	513
25	25000	97	159	109	183	119	202	126	218	250	413	282	474	306	520	326	561
28	27500	105	172	119	200	129	219	137	237	274	452	310	521	337	573	359	617
30	30000	102	167	116	195	126	214	142	246	299	493	338	568	367	624	391	673
33	32500	113	185	128	215	138	235	147	254	323	533	365	613	397	675	423	728
35	35000	124	203	139	234	151	257	161	279	342	564	387	650	420	714	447	769
38	37500	138	226	156	262	169	287	180	311	372	614	421	707	457	777	487	838
40	40000	146	239	164	276	179	304	190	329	398	657	449	754	488	830	520	894
43	42500	154	253	174	292	189	321	201	348	417	688	471	791	512	870	545	937
45	45000	168	276	190	319	206	350	219	379	450	743	509	855	553	940	589	1013
48	47500	181	297	204	343	221	376	236	408	484	799	546	917	594	1010	632	1087
50	50000	191	313	216	363	234	398	248	429	505	833	570	958	619	1052	660	1135
55	55000	206	338	232	390	252	428	268	464	555	916	626	1052	680	1156	725	1247
60	60000	222	364	250	420	272	462	289	500	600	990	677	1137	736	1251	784	1348
65	65000	246	403	278	467	302	513	321	555	664	1096	750	1260	815	1386	868	1493
70	70000	266	436	300	504	326	554	347	600	691	1140	787	1322	855	1454	910	1565
75	75000	295	484	333	559	362	615	385	666	762	1257	860	1445	934	1588	995	1711
80	80000	323	530	364	612	395	672	421	728	826	1363	933	1567	1013	1722	1079	1856
90	90000	358	587	402	675	437	743	466	806	895	1477	1011	1698	1098	1867	1169	2011
100	100000	430	705	485	815	528	898	561	971	1047	1728	1183	1987	1285	2185	1368	2353
120	120000	511	838	577	969	626	1064	668	1156	1257	2074	1419	2384	1542	2621	1642	2824
140	140000	555	910	614	1032	666	1132	710	1228	1453	2397	1640	2755	1782	3029	1898	3265
160	160000	598	981	674	1132	733	1246	780	1349	1617	2668	1826	3086	1983	3371	2113	3634
180	180000	738	1210	832	1398	904	1537	962	1664	1851	3054	2090	3511	2270	3859	2418	4159
200	200000	819	1343	924	1552	1003	1705	1068	1848	2082	3435	2351	3950	2553	4340	2720	4678

Note

1. Heating condition: Inlet air dry bulb temperature 18 °C
2. The structure of the heat exchanger is a steel tube wound with steel sheets.
3. The above parameters are based on the value when the onboard wind speed of the heat exchanger is 2.5m/s.

AHU installation, use and maintenance

AHU installation

- The AHU is usually shipped as sections or parts, during shipping and lifting, the parts such as the cabinet panel can't be damaged, so as not to affect the unit performance and installation accuracy.
- The AHU should be placed on a flat concrete foundation (or channel steel welded foundation) higher than 200-250mm above the ground of the machine room. The length and width of the concrete foundation are 200mm bigger than the outer contour of the unit, also the drainage ditches and floor drain are required. The length and width of the channel steel foundation should be the same as the length and width of the unit base. The channel steel is prepared by the user.
- When selecting the unit installation location, reserving more than 1m of maintenance space and future installation.
- During the on-site assembly, the functional sections are sealed with rubber and plastic sealing strips, and are clamped from the locking screws on the inside and bottom base of the unit with a special clamping device to prevent air leakage, and the joint will be coated with a sealant if necessary.
- After assembling each component, the internal debris must be removed. The water pipe of the external pipeline must be cleaned before connecting with the water inlet and outlet pipes of the AC unit to avoid blocking the water circuit.
- The inlet and outlet pipes must be equipped with valves and movable joints outside the unit, but the weight of the externally connected valves, pipes and equipment should not be borne by the unit.
- The motor should be connected to the power supply with a protective device, the casing of the unit should be grounded, and the motor bigger than 15KW should adopt the voltage-drop start method.
- The condensate drain pipe of the air cooler should be equipped with a water seal, and ensure smooth drainage (see the picture), the water seal is prepared by the user.
- The heat exchanger which using chilled and hot water as the medium, the lower part is the inlet pipe, and the upper part is the outlet pipe. The heater is using steam as the medium, the upper part is the steam inlet pipe, the lower part is the condensate water outlet pipe. The design working pressure of the air cooler is 1.6MPa, and the steam heater is 1.0MPa.

AHU use and maintenance

- The power supply of the AHU motor is three-phase 380V/3PH/50HZ. Before starting, please check whether the fan rotates flexibly, whether the fan impeller and the chassis collide. All mechanical and electrical equipment should be checked by professionals before starting. Please check whether the direction of rotation of the fan impeller is correct before running.
- When the AHU has multiple functions, the incorporates chain interaction requirements of each functional section should be considered. For example, the electric heating section should be turned on after the fan is started, and the electric heater must be turned off before the fan was turned off.
- The fan should be adjusted before running. If the air conditioner is not on loading, the air outlet should be blocked by 3/4, and the current of the motor should be controlled to run at the rated current to prevent the motor from being burned out. The air valve of the air outlet and inlet should be opened to prevent the pressure inside the machine from being too high, and deformed the unit. If necessary, install the air valve and motor opening and closing incorporate chain device.
- In order to avoid blockage of the water channel of the heat exchanger, a water filter should be installed on the water inlet pipe of the heat exchanger and the strainer should be cleaned regularly. The cleaned and softened water should be used for the chilled and hot medium water and the spray water.
- The dust accumulation of the filter should be checked frequently. When the resistance reaches the specified value, the filter should be cleaned or replaced. When cleaning, take out the filter, and blowback with compressed air, and clean it with a cleaning agent, and then use it again after drying. Special care should be taken not to damage the filter during cleaning or replacement, and check that the seal between the filter and the frame is tight. A non-woven filter is not recommended to be cleaned and used again.
- The tightness and wear of the belt should be checked regularly. If the belt is too loose or slips during operation, the adjustment bolt at the bottom of the motor can be adjusted. Severely worn belts should be replaced in time. The bearings of fans and motors should be regularly inspected and refueled to improve operating efficiency and life.
- The air conditioner should be fully cleaned after 2-3 years of operation. The pipes can be descaled by chemical methods, and the heat exchanger fins should be cleaned by compressed air or water.
- If you need to shut down in winter when it working, you must keep the hot water in the heat exchanger continuous. If the heat exchanger is not used in winter, to prevent it from frost racking, please drain the water and do the insulation work for the pipe, also close the outdoor air valve.
- AHU should be controlled by professionals, establish strict job responsibility systems and operating procedures, establish regulations and files for equipment operation and maintenance, and strengthen daily maintenance and maintenance.

