

HFM SERIES

DC Inverter DX Air Handling Unit

Heat Recovery and Purification Type

MAKE AIR TREATMENT MORE HEALTHY AND ENERGY SAVING

HOLTOP

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* Data is subject to changes without notification due to product improvement



Everyone needs to breathe
25,000 times
 per day

- Clean and fresh air is essential
- HOLTOP keeps working on providing you with integrated fresh, clean, comfortable and intelligent air solutions.
- HOLTOP delivers fresh and clean air, just for your healthy breathing!

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ABOUT HOLTOP

2002
 HOLTOP WAS FOUND

200000+
 Units Production Capacity

70000+
 m² Area

100+
 Countries Exportation

30+
 Sales Organizations



ISO Certifications



Dozens of National Patents Owner



Industrial Standards Participated



World Leading Manufacturer



Zhongguancun&National High-tech Enterprise



Equipment Supplier for Beijing Olympics and The Shanghai World Expo



DC Inverter DX Air Handling Unit

Heat Recovery and Purification Type

Holtop HFM series DX outdoor unit includes DC inverter and fixed frequency type. The cooling capacity of DC inverter unit is 10~20P, while the fixed frequency unit is 5~18P. On the basis of fixed frequency unit, the newly developed DX inverter unit adopts the enhanced vapor injection refrigerant technology to guarantee the super heating performance when at low ambient temperature condition. The advance air-conditioning system design and self-developed control program guarantee the product performance and bring user a more comfortable indoor air quality.



Combined Type Heat Recovery Indoor Unit

Air-cooled Outdoor Unit



Item/Series		DC Inverter Series	Constant Frequency Series
Cooling Capacity (kw)		25 - 509	12 - 730
Heating Capacity (kw)		28 - 569	18 - 420
Airflow (m ³ /h)		5500 - 95000	2500 - 80000
Frequency Range of Compressor (Hz)		20 - 120	/
Allowable pipe length (m)		70	50
Height difference (m)		25	25
Operating Range	Cooling	Outdoor DB Temperature (°C)	-5 - 52
		Indoor WB Temperature (°C)	15 - 24
	Heating	Indoor DB Temperature (°C)	15 - 27
		Outdoor WB Temperature (°C)	-20 - 27

Features of Indoor Unit



Core heat recovery technologies

Holtop heat recovery technology can effectively reduce the heat and cold load caused by ventilation, it's energy saving and environmental protection.



Breath healthy air

Say no to indoor and outdoor dust, particles, formaldehyde, peculiar smell and other harmful substances, enjoy the natural fresh and health air.



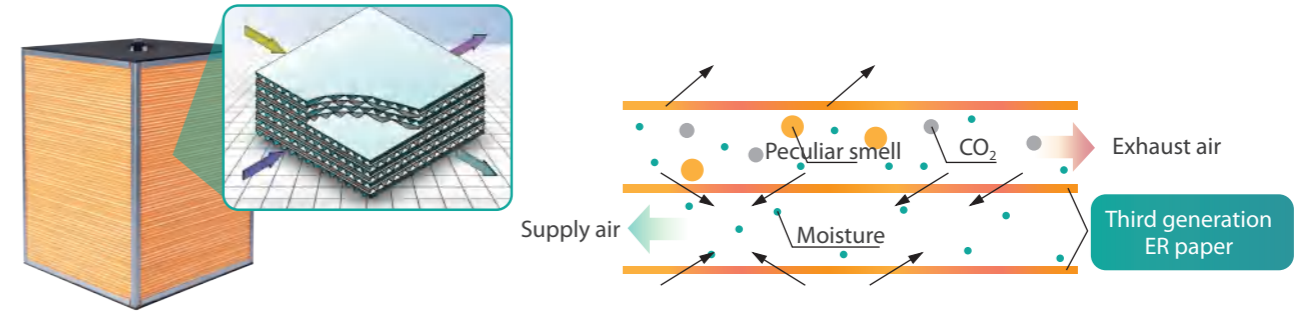
Comfortable ventilation

Our goal is to bring you the comfortable and clean air.



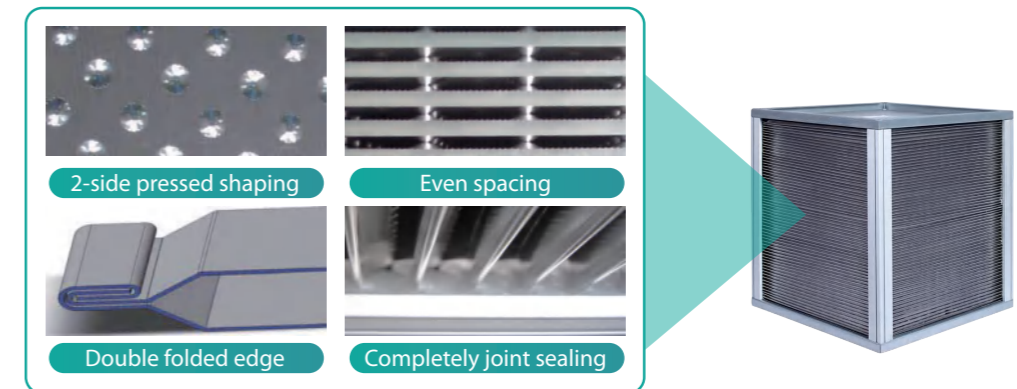
CROSSFLOW TOTAL HEAT EXCHANGER

Holtop crossflow total heat exchanger was made of imported ER paper, the thin corrugated paper produced with special technology will make sure the higher heat transmissibility, fire resistance(grade up to B2) stronger tire resistance and mold prevent(grade up to level 0).



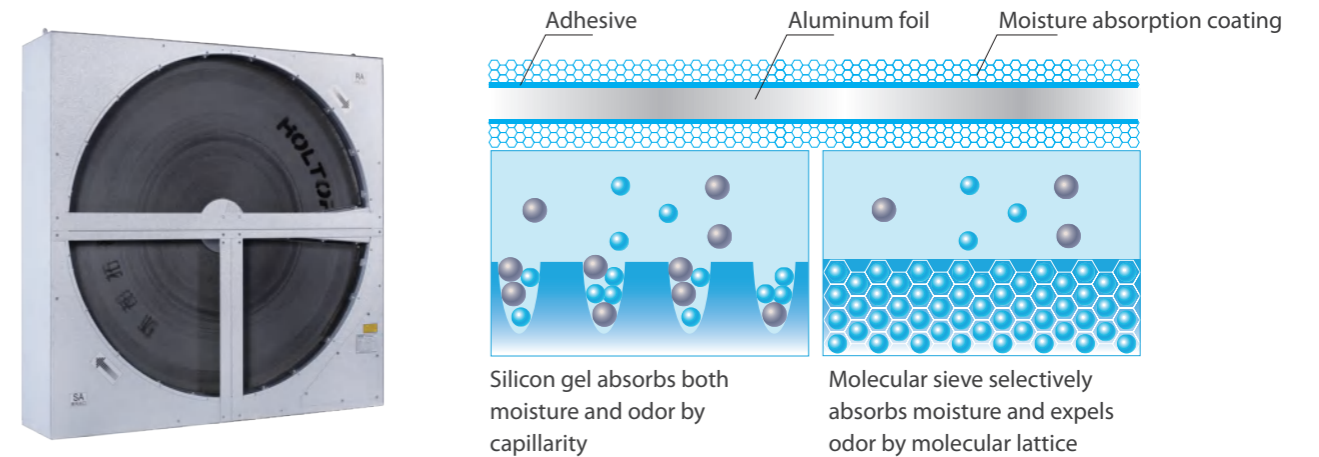
CROSS FLOW PLATE HEAT EXCHANGER

Holtop cross flow plate heat exchanger was made of aluminum foils with 0.12mm thickness. In order to avoid the two airflows come cross without touch, Holtop have been committed to the research of cross-flow plate heat exchangers for many years. Multiple special processes are adopted to ensure the air tightness and improve the heat exchange performance, so that the heat exchange efficiency is highly improved.



ROTARY HEAT EXCHANGER

The surface of the wheel is coated with a 3A molecular sieve coating, which has the functions of heat storage and moisture adsorption (total heat), and exchanges energy with the fresh air and exhaust air passing through, to realize the energy recovery and saving.



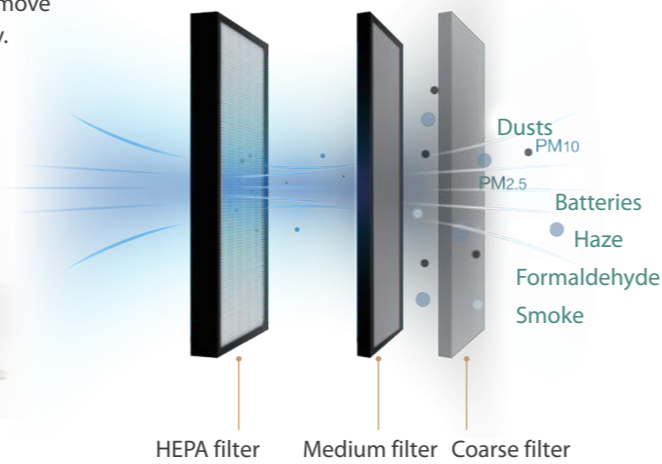
PM2.5 SOLUTION

High Efficiency to Remove The Haze

Equipped with a high-efficiency filtration filters, it can effectively remove PM2.5 particles carried by the air and ensure clean indoor air quality.



*Take MCCO28WP as an example, and the efficiency is obtained from the test of BEET-33139A "Air Purification Device PM2.5 Purification Performance Testing Method".



CONSTANT TEMPERATURE AND HUMIDITY

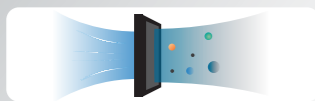
Precisely control the outlet air condition, with tolerance within $\pm 2^{\circ}\text{C}$ on temperature, and $\pm 5\%$ on humidity.



INDOOR FORMALDEHYDE REMOVAL SOLUTION

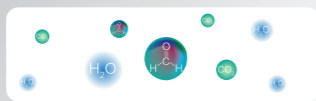
The indoor unit can optionally be equipped with a formaldehyde removal module, which can effectively filter and decompose formaldehyde molecules; coupled with fresh air replacement and dilution, double removal of formaldehyde.

Efficient adsorption



The activated carbon filter can efficiently adsorb formaldehyde and other harmful substances, and the purification degree can reach 90%.

Powerful disintegration



The cold catalyst filter quickly decomposes formaldehyde into water and carbon dioxide through the catalyst.

Easy installation



The formaldehyde removal module is easy to install and can be replaced by side-drawing, which is simple and convenient.

BRING OUTDOOR FRESH AIR

With this FAHU, the outdoor air is introduced into the room, and the indoor air quality will be highly improved by increasing oxygen concentration, decreasing carbon dioxide and remove the peculiar smell and other harmful gas.

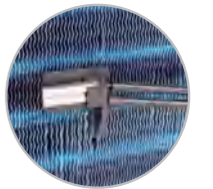


ANTI-COLD WIND DESIGN

When the heating is turned on, the heat exchanger fins of the indoor unit will start to supply air after preheating; during the defrosting, the indoor unit will shut down according to the judgement of smart program to prevent the cold air being sent into the room.

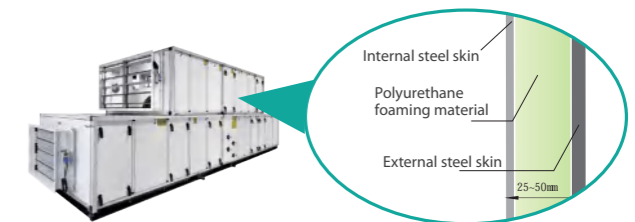
HIGH PRECISION SENSOR

Using high-quality temperature and pressure sensors, it can accurately detect subtle temperature and pressure changes, and adjust the fan speed and compressors, in time and precise, making temperature control more accurate.



PATENTED CASING STRUCTURE

1. Double skin panel with high-density PU injection, the thermal transmittance is T2 Class.
2. Unique cold bridge structure, with cold bridge factor TB2 Class.
3. Proprietary frame structure makes casing mechanical strength D1 Class (Highest class of EU standard).

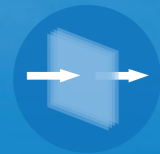


VARIOUS FILTRATION CLASS

By selecting the plate type, bag type, chemical type, electronic purification type and other filters, it can meet the requirements of different filtration level ranging from G3-H13. At the same time, It provides the fresh air and a comfortable breathing environment by filtering, absorbing and decomposing the harmful substances.



Features of Outdoor Unit



High efficiency heat exchange

Multiple leading technologies, building a stronger, more stable and efficient cooling system



Silence operation

Innovative noise control technology, minimizing the operation noise for both indoor and outdoor unit, creating a silent environment



Compact design

New casing design with better stability and appearance. The inner refrigerant components is from world famous brands to ensure high quality.



NEWLY DEVELOPED U-SHAPED HEAT EXCHANGER

Based on many years of outdoor unit development and manufacturing experience and user feedback, Holtop has developed a new generation of U-shaped heat exchanger with three-sided heat exchange. The heat exchanger is the core component of the refrigeration system, and its performance directly determines the reliability and energy efficiency of the air conditioning system.

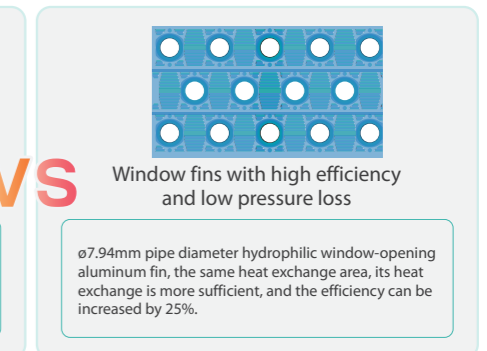
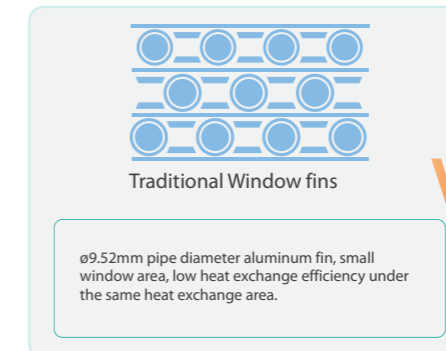
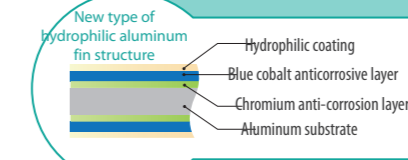
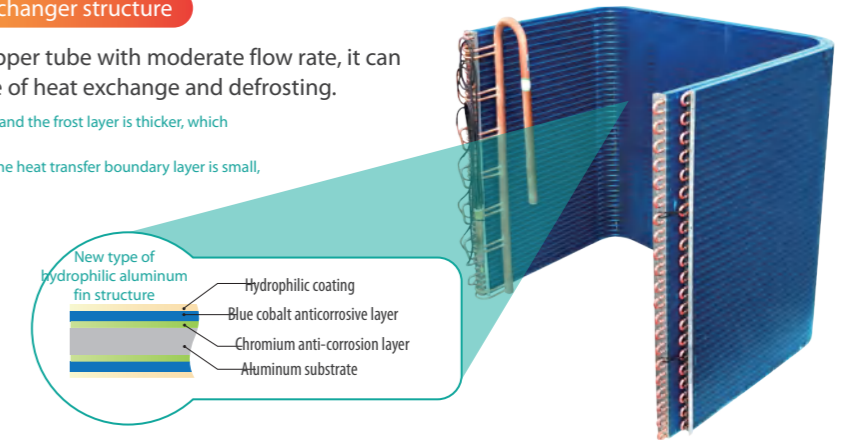
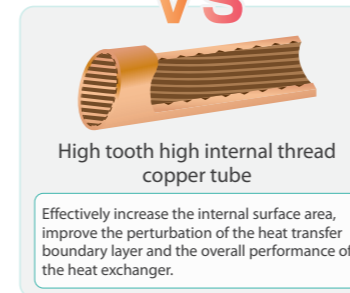
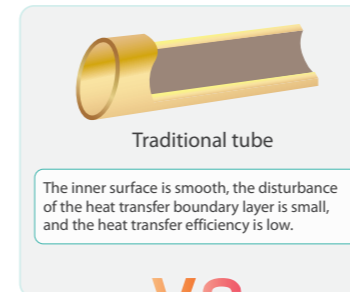
- The U-shaped heat exchanger with three-sided heat exchange can effectively use the airflow of the fan, maximize the heat exchange area and greatly improve the heat exchange efficiency without increasing the size of the unit.
- Compact structure, high strength, more convenient for installation and maintenance.
- The hydrophilic aluminum fin is used to improve the heat transfer coefficient of the heat exchange wet film and the overall heat transfer coefficient of the unit.

Three-sided heat exchange U-shaped heat exchanger structure

- Adopting $\phi 7.94$ high-tooth high-threaded copper tube with moderate flow rate, it can achieve the best comprehensive performance of heat exchange and defrosting.

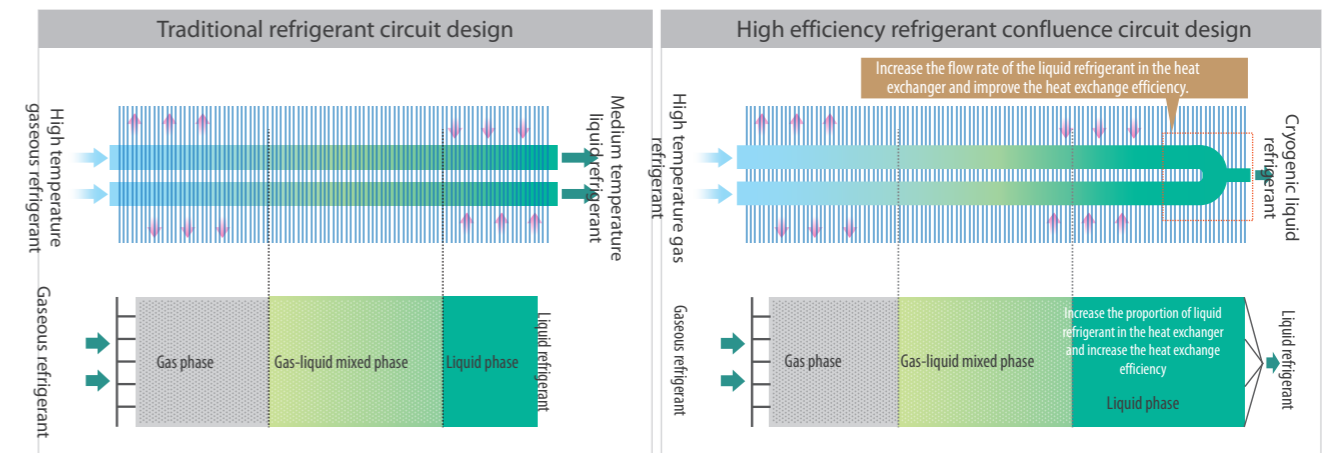
The distance between $\phi 7$ copper pipes is small, frost is easy to form, and the frost layer is thicker, which affects the defrosting time and heat exchange efficiency.

The diameter of the $\phi 9.52$ copper pipes is large, the disturbance to the heat transfer boundary layer is small, and the heat transfer efficiency is low.



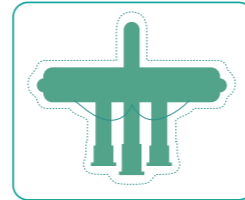
HIGH-EFFICIENCY REFRIGERANT HEAT EXCHANGE FLOW PATH

The high-efficiency 2in1 refrigerant confluence technology reduces the space occupied by the liquid-phase refrigerant on the heat transfer pipeline, and at the same time increases the degree of subcooling, making the long connecting pipe more efficient.



UPGRADED FOUR-WAY VALVE

The new four-way valve has better design to improve its pressure relief capability, so to avoid liquid hammering. Under same conditions, its capability is 25% higher than other brands. The sider material upgrade to PPS which allowing the valve to work under -25~120°C, and max 130°C. (Other brands is using PA and PTFE material, which can stand -25~100°C, and max 120°C.)



STREAMLINED FAN

The cooling fan of the top discharge outdoor unit adopts 750mm large-diameter axial fan, and the contact between the airflow and the blades is smoother, reducing the noise caused by eddy currents, increasing the air volume and significantly reducing the operating noise.



The side-discharge outdoor units HFM05 and HFM06 adopt 460mm axial fan blades, and HFM08 adopts 470mm axial fan blades, and HFM30 and HFM60 use 850mm streamlined fan blades.

ENVIRONMENTAL-FRIENDLY REFRIGERANT

Better performance

HOLTOP DX AHU is using R410A refrigerant, which do not contain any tritium, so its ODP equals to 0. It can lower the CO2 emission, so to avoid damaging the ozone layer.

Moreover, R410A is not flammable, has great thermal stability and volumetric refrigeration capacity, making the unit more energy saving and environmental-friendly.

Refrigerant Type	R22	R407C	R410A
Volumetric cooling capacity	1.0	0.9	1.4
ODP	0.05	0	0



MODULE ASSEMBLY

Through outdoor unit alternate operation technology, the operation time of each outdoor unit is balanced, the safety and reliability of the system are improved, and the service life of the unit is prolonged.



HUMANIZED FREE COMBINATION OF OUTDOOR UNIT

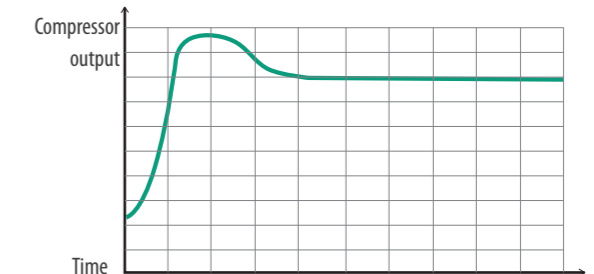
- The outdoor unit is modular design, when multiple units are arranged in a neat and consistent area, can effectively save space.
- The outdoor unit has a complete range of specifications, which can be adjusted to match various cooling requirements through the combination of modules.
- The unit can reasonably select a combination of modules according to the limitations of transportation and installation space to meet on-site installation requirements.



INHERENT FEATURES OF INVERTER DX AHU

FULL DC INVERTER DESIGN, QUICK RESPONSE TO COOL DEMAND

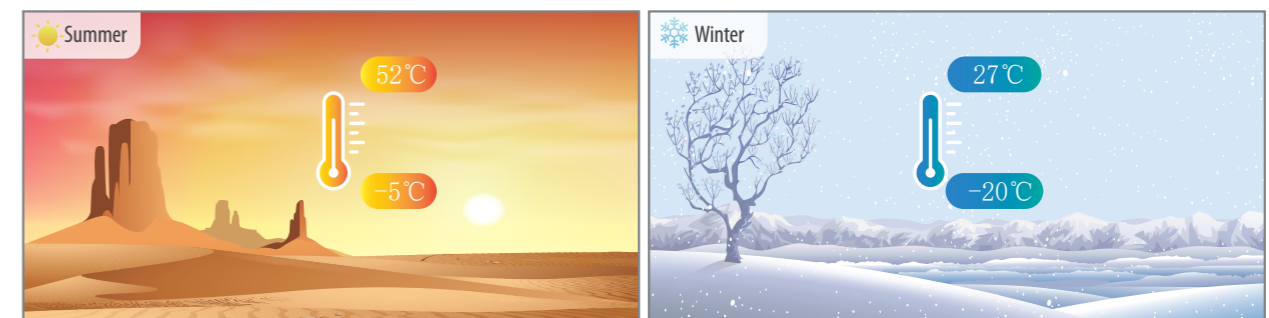
The compressor as well as the condensing fan motor has been upgraded to DC inverter type, and the cooling or heating capacity can be rapidly adjust according to the working condition of the indoor unit, thus to meet variable cooling and heating needs.



RELIABLE OPERATION AND FLEXIBLE APPLICATION

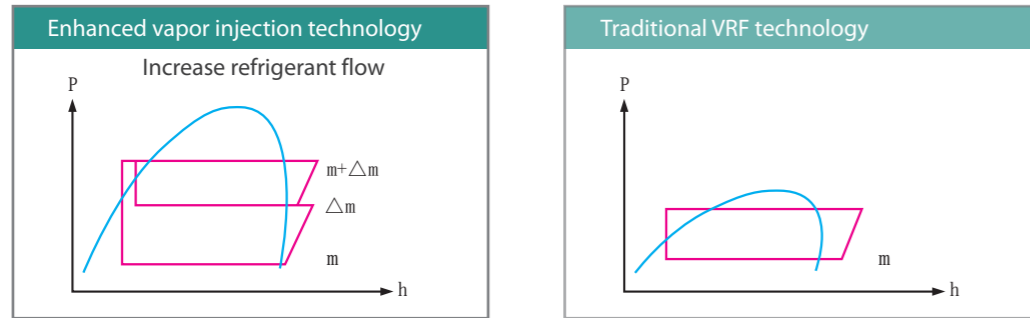
Wide range of operating conditions, satisfying cooling and heating under extreme ambient temperature

The DC inverter outdoor unit is still capable of cooling even the ambient temperature as low as -5°C. And it still capable of heating even the ambient temperature as low as -20°C.



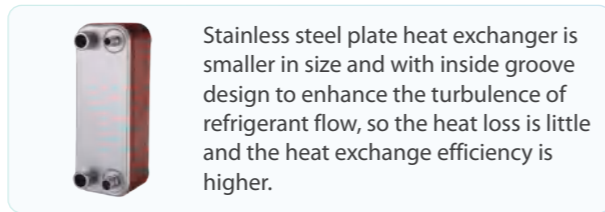
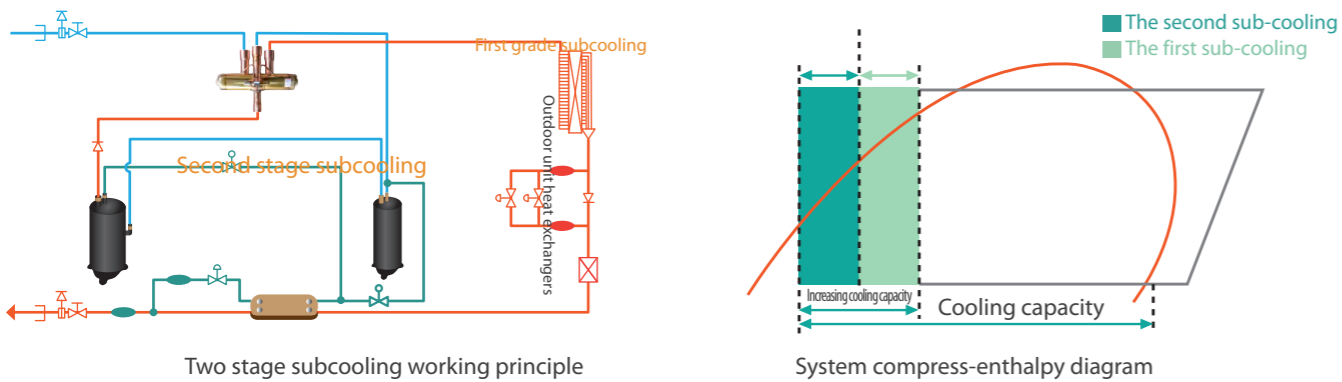
ENHANCED VAPOR INJECTION (EVI) TECHNOLOGY

EVI high pressure chamber scroll compressor adopt expansion valve throttling and air injection technology in the middle of the compression chamber to achieve enthalpy increase effect. After passing through the plate heat exchanger, the refrigerant is supplemented into the middle of the compressor, and after mixing and recompression, the refrigerant flow in the main flow is increased, and the heating capacity of the unit is greatly improved.



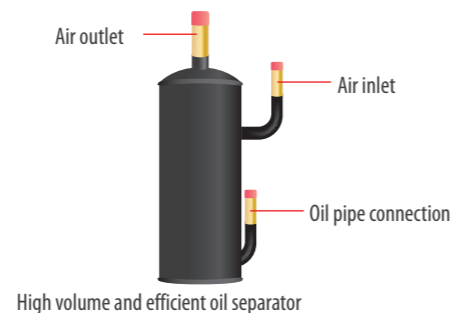
DOUBLE SUBCOOLING TECHNOLOGY

Upgrade the outdoor unit heat exchanger to lower the subcooling class, and to use a high efficiency subcooling plate heat exchanger, in this way to achieve double subcooling and max the subcooling temperature to 28°C, thus increasing the pipe connection length and guarantee the whole unit efficiency.



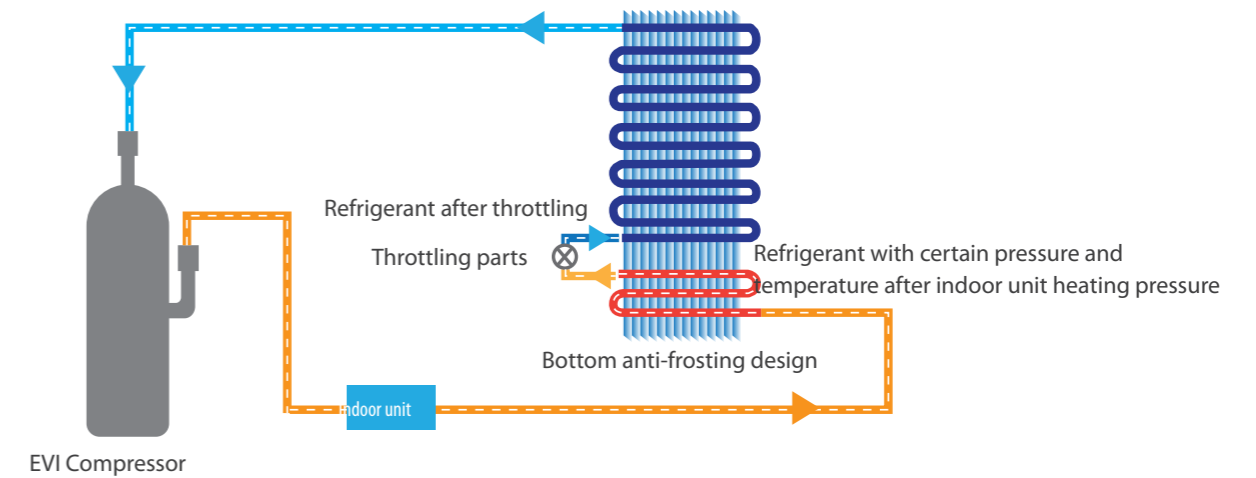
HIGH EFFICIENT OIL SEPARATOR

The coil separator adopts the high efficiency centrifugal steerable rotary design, forcing the high pressure gas to form a high speed rotary air steam. Under the force of centrifugal and gravity, the lubricating coil will be separated and running down on the cylinder wall, and return to the compressor via the coil pipe.



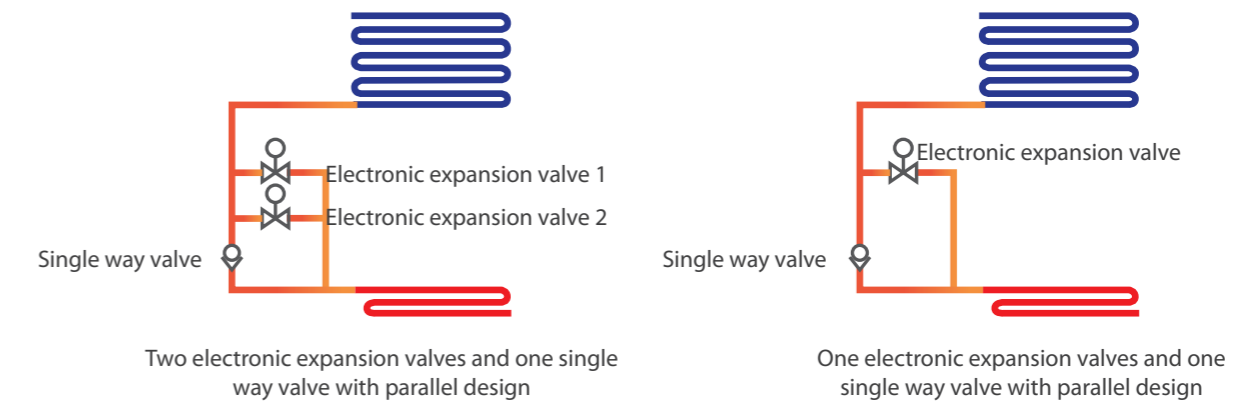
BETTER ANTI-FROSTING DESIGN

New heat exchanging flow design ensuring high heat exchange efficiency. Bottom anti-frosting design making defrosting and heating more efficient.



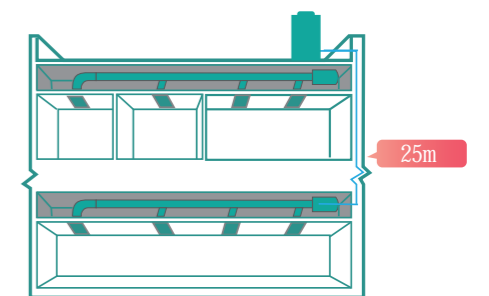
STABLE AND EFFICIENT INNOVATIVE THROTTLING DESIGN

Adopt parallel two electronic expansion valves design for those big cooling capacity outdoor units. With combined electronic expansion control, the refrigerant flow can be precisely controlled.



LONG PIPING DESIGN

The equivalent length of the piping connection between the DC inverter outdoor unit and the indoor unit is 70m, and the maximum height different is 25m. The on-site installation and layout of indoor and outdoor units are more flexible.

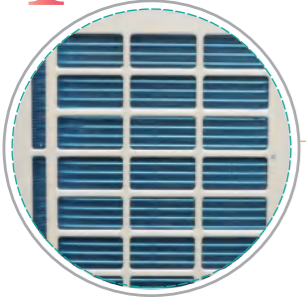


MULTIPLE SENSORS FOR RELIABLE HEATING

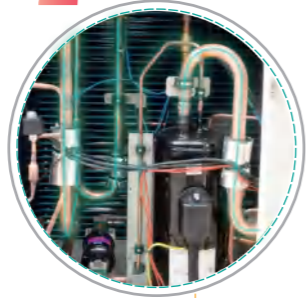
There are 12 temperature sensors and 2 pressure sensors to detect the real-time status. With these data and our self-developed control program, the compressor and all other parts will be adjusted accordingly, ensuring running stability and efficiency.

8 Standard designs of inverter DX AHU

1 High ventilation rate grille



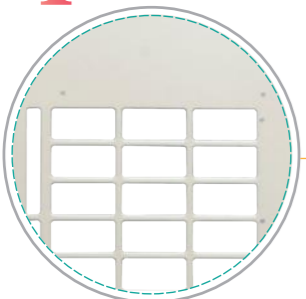
2 Low pressure drop pipeline design



3 Environmental friendly weather-proof material



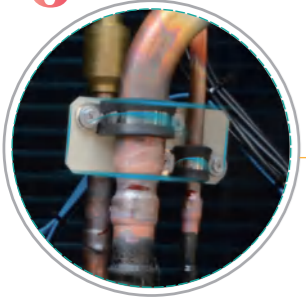
4 One time molding design



5 Reinforced membrane tendon design



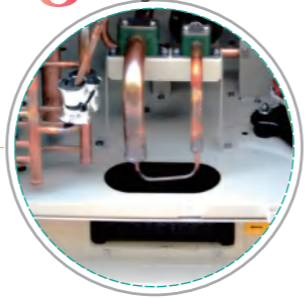
6 High-standard piping stress countermeasures



7 Maintenance-friendly design



8 Installation-friendly design

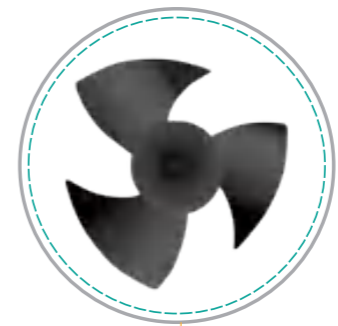


9 Low-noise technologies

1 Low-speed high-efficiency motor



4 New vortex axial fan blade



5 Large size outlet grille



6 Low noise wind deflector design

7 Analysis of outlet air flow simulation

2 Hermetic scroll compressor



3 Special rubber shock pad for ompressor



8 Optimized design of pipe shock absorption, fixed in proper position to avoid vibration noise

9 Reducing refrigerant flow rate noise



Humanized Design



Intelligent control

Plentiful, practical and user-friendly control functions, making operation easier and more reliable.



Flexible combination

Beyond imagination, simplified design, let our DX air handling unit more convenient and flexible.



CUSTOMIZED MODE SELECTION FUNCTION

Multiple running mode can be selected according to customer's requirements. Both cooling and heating mode have 3 options: air-conditioning function, fresh air function, and comfortable air function, improving user experience and making users more comfortable.



SELF-DEVELOPED CONTROLLER

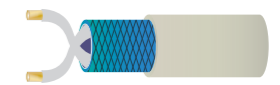
The self-developed HFM series controller has advanced control logic. It has the intelligent functions including system protection, safety, comfort, alarm, etc., to make the system running more reliable and safety.



DC inverter controller Standard controller

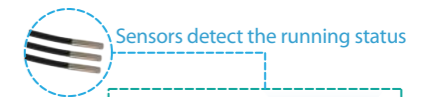
RS485 COMMUNICATION

MODBUS RTU communication protocol is available with strong compatibility, making the connection more convenient



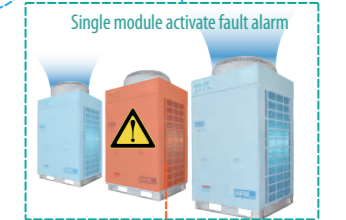
AUTOMATIC JUDGMENT OF REFRIGERANT CHARGE

The system is equipped with high precision sensor to judge automatically the charge conditions of refrigerant, and monitor the running status in real time.



FULL REDUNDANCY WITH EASY PARTS MANAGEMENT

A central controller allows you to decide the quantity of modules active at any time. If a module requires maintenance, other modules in the system will continue to operate, ensuring minimal capacity loss.



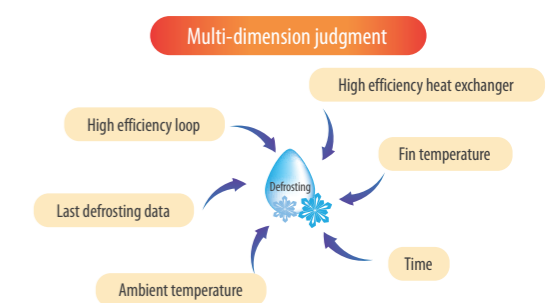
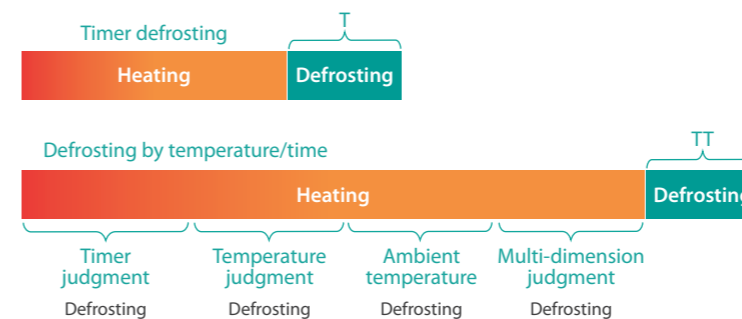
INTELLIGENT FAULT ALARM FOR BOTH INDOOR UNIT AND OUTDOOR UNIT

The controller for indoor unit and outdoor unit can display fault information in text, which is convenient for users and service personnel to know about the fault information and make fast maintenance.



EFFICIENT DEFROSTING

With the self-developed high efficiency, low pressure heat exchanger and low-noise large-impeller fan, it can improve the heat exchange efficiency of outdoor unit, which can postpone the frosting process, and reduce defrosting time effectively. The defrosting logic will judge the device defrosting condition according to multiple aspects, like fin temperature, environmental temperature and running time, etc., precisely get the right timing to enter or exit defrosting process, reduce defrosting frequency and time, to ensure the indoor comfort.



PROPOSAL 1. COMFORT CONTROL SYSTEM

Dedicated controller, combines the convenience of independent controller and the functions of group control in centralized controller, can control multiple outdoor units in the same time, it is flexible and widely used in medium or small office-level business space.

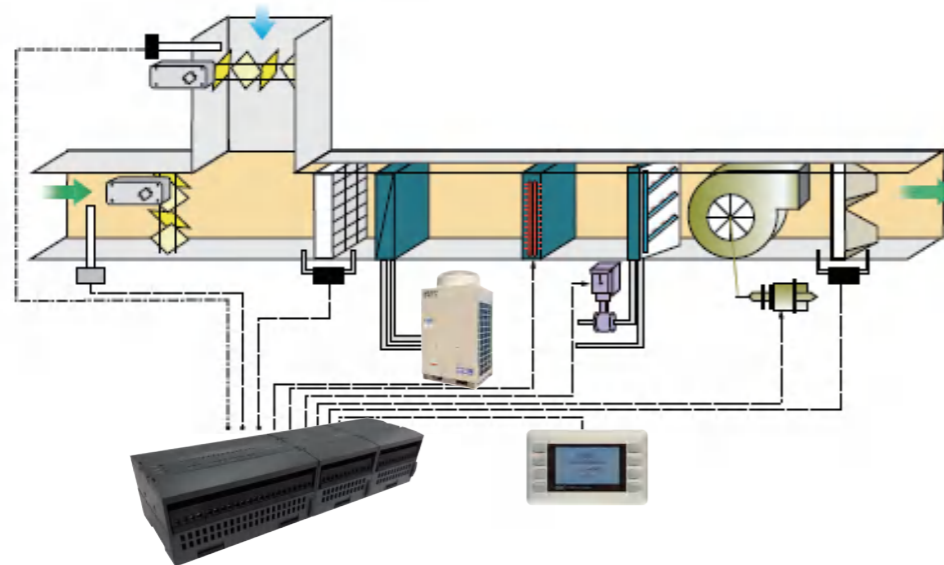
Functions and Explanation

- Heat pump type: cooling/heating/supply air/ Constant temperature and humidity
- LCD control panel can display setting temperature, working mode, system Real-Time Clock(optional), week(optional), ON/OFF status and fault display, etc.
- Timer ON/OFF
- Power to restart(optional)
- Auxiliary electric heating



PROPOSAL 2. FUNCTIONAL CONTROL SYSTEM

Building management systems based on the MODBUS protocol, can be directly connected to the centralized control system through the standard MODBUS communication interface of the unit, it can achieve centralized intelligent monitoring without access to conversion equipment, which is suitable for large and medium-sized air-conditioning places.



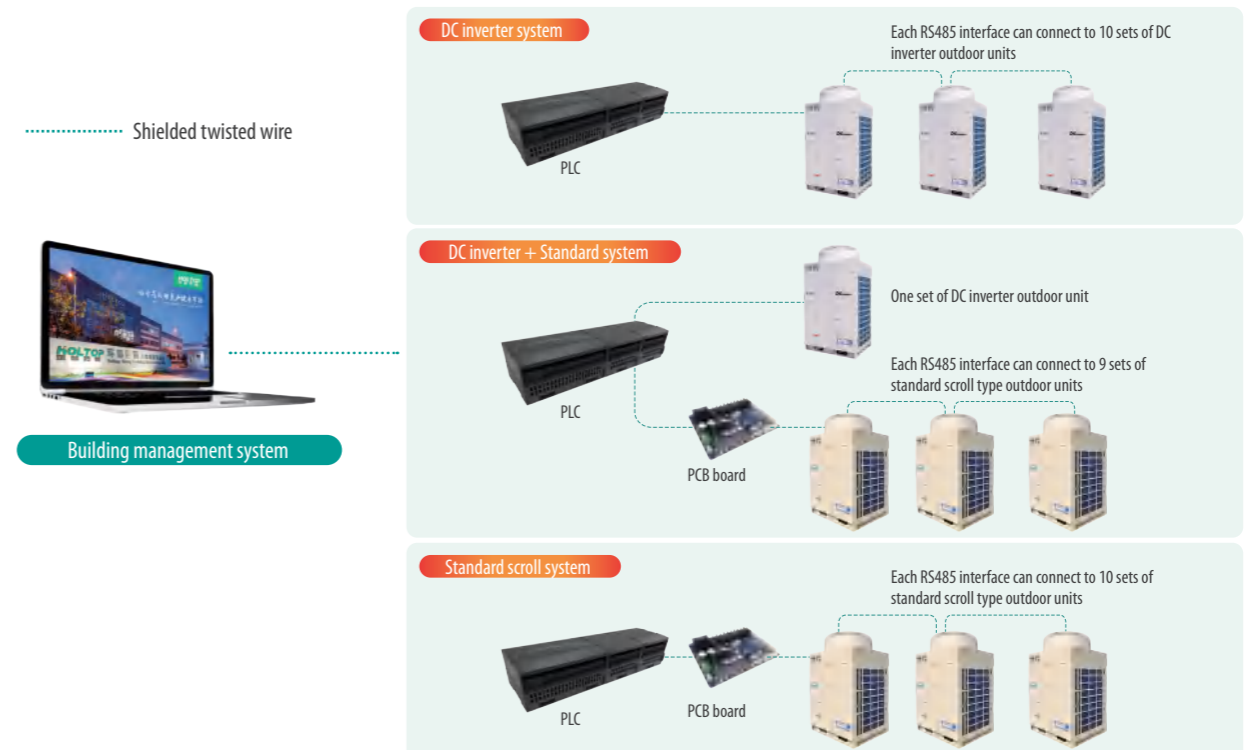
PLC CONTROLLER

The functions and explanation for PLC controller

The PLC controller with 485 communication function has the ability to access the same layer of network to communicate with other PLCs and share data information through its communication module. It can also access into a distributed system to form substations, complete substation monitoring tasks, and communicate with the central control station or building management system at the same time. Each PLC controller can handle more data points through the I/O extension card, and can connect up to 32pcs indoor units and 320pcs outdoor units to meet the air conditioning needs of most projects. At the same time, it can be connected to the building management system through MODBUS.

- Display the current running, stopping or fault status of the fans and units.
- Monitoring the pressure drop of primary, secondary and HEPA filters. When the resistance value exceeds the standard, it prompts to replace or clean the filter.
- Remotely monitor the operation of each unit (such as remote on/off of the unit, fault alarm, etc.).
- Monitor the temperature and humidity of supply air, return air, and each air-conditioning room, and the system can give the value and status for each monitoring point.
- When the unit is turned off, the fresh air valve will close immediately while the fan will stop after a while. The return air will dry the coil and equipment with air to ensure the dryness of inside AHU
- Monitor the working condition of the fire damper and connect it with the fire signal. If a fire alarm occurs, the valves of the unit can be closed, the supply fan and exhaust fan will stop, and the exhaust fan will start.
- The air damper of fresh air, return air, and supply air can be regulated according to the enthalpy value of supply air, return air and indoor target temperature and humidity, so as to reduce energy consumption as much as possible while ensuring indoor air quality.
- When the unit is running, the corresponding signal can be output through the PID program calculation in the controller to achieve the purpose of adjusting the start or stop of the compressor, modulating the steam valve, opening of the humidifier etc, so as to keep the temperature of the air-conditioning area within the required range.
- All parameter information can be automatically stored through the computer. The operation plan of the unit can be optimized by analyzing the operation fault alarm information of the unit to realize intelligent and low-power operation.

TOPOLOGY DIAGRAM FOR CONTROL NETWORK



SPECIFICATIONS OF DC INVERTER DX AIR HANDLING UNIT

Specifications	Indoor unit	HZN-10	HZN-12	HZN-15	HZN-18	HZN-20	
	Outdoor unit	HFM-10HA1-DC	HFM-12HA1-DC	HFM-15HA1-DC	HFM-18HA1-DC	HFM-20HA1-DC	
Nominal cooling capacity	kW	25.5	28.3	33.8	40.4	50.9	
Nominal heating capacity	kW	28.3	31.8	37.9	45.4	56.9	
Power supply	/	380V/3PH/50Hz					
Indoor unit	Dimensions	/ Subject to specific functional module					
	Airflow	m ³ /h	5500	6500	8000	8500	11000
	External pressure	Pa	150	250	350	350	350
	Fan type	/	High efficiency variable frequency axial fan				
	Fan power	kW	1.5	2.2	3	4	4
Outdoor unit	Compressor type	/	DC inverter compressor				
	Input power (cooling)	kW	6.34	7.36	10.21	11.61	15.82
	Input power (heating)	kW	6.83	7.81	10.42	12.93	17.14
	L*W*H	mm	990×850×1810	990×850×1810	990×850×1810	1345×850×1810	1345×850×1810
	N.W	kg	210	216	225	270	280
Refrigerant	Type	R410A					
	Charge volume (kg)	8.3	8.4	8.5	9.2	12	
Connecting pipe	Connection mode	Welding					
	Liquid pipe diameter (mm)	ø15.88					
	Gas pipe diameter (mm)	ø25.4			ø28.58		
	Drainage pipe	DN32					

Specifications	Indoor unit	HZN-24	HZN-30	HZN-36	HZN-40		
	Outdoor unit	HFM-12HA1-DC×2	HFM-15HA1-DC×2	HFM-18HA1-DC×2	HFM-20HA1-DC×2		
Nominal cooling capacity	kW	56.6	67.6	80.8	101.8		
Nominal heating capacity	kW	63.6	75.8	90.8	113.8		
Power supply	/	380V/3PH/50Hz					
Indoor unit	Dimensions	/ Subject to specific functional module					
	Airflow	m ³ /h	12000	15000	18000	21000	
	External pressure	Pa	350	450	450	450	
	Fan type	/	High efficiency variable frequency axial fan				
	Fan power	kW	5.5	7.5	7.5	11	
Outdoor unit	Compressor type	/	DC inverter compressor				
	Input power (cooling)	kW	7.36×2	10.21×2	11.61×2	15.82×2	
	Input power (heating)	kW	7.81×2	10.42×2	12.93×2	17.14×2	
	L*W*H	mm	(990×850×1810)×2	(990×850×1810)×2	(1345×850×1810)×2	(1345×850×1810)×2	
	N.W	kg	216×2	225×2	270×2	280×2	
Refrigerant	Type	R410A					
	Charge volume (kg)	8.4×2	8.5×2	9.2×2	12×2		
Connecting pipe	Connection mode	Welding					
	Liquid pipe diameter (mm)	ø15.88*2					
	Gas pipe diameter (mm)	ø25.4*2			ø28.58*2		
	Drainage pipe	DN32					

- Note:**
- Nominal cooling capacity is tested under the conditions of indoor dry/wet bulb temperature 27°C/19°C and outdoor dry/web bulb temperature 35°C/24°C;
 - Nominal heating capacity is tested under the conditions of indoor dry/wet bulb temperature 20°C/15°C and outdoor dry/web bulb temperature 7°C/6°C;
 - All indoor and outdoor units are not charged with refrigerant out of factory;
 - The above charging volume of refrigerant is based on the distance of the indoor and outdoor connecting pipes of 8 meters. The charging volume is only for reference, please adjust it according to the actual situation on site.

SPECIFICATIONS OF DC INVERTER DX AIR HANDLING UNIT

Specifications	Indoor unit	HZN-54	HZN-60	HZN-72	HZN-80		
	Outdoor unit	HFM-18HA1-DC×3	HFM-20HA1-DC×3	HFM-18HA1-DC×4	HFM-20HA1-DC×4		
Nominal cooling capacity	kW	121.2	152.7	161.6	203.6		
Nominal heating capacity	kW	136.2	170.7	181.6	227.6		
Power supply	/	380V/3PH/50Hz					
Indoor unit	Dimensions	/ Subject to specific functional module					
	Airflow	m ³ /h	24000	30000	35000	45000	
	External pressure	Pa	450	550	550	550	
	Fan type	/	High efficiency inverter axial fan				
	Fan power	kW	11	15	15	15	
Outdoor unit	Compressor type	/	DC inverter compressor				
	Input power (cooling)	kW	11.61×3	15.82×3	11.61×4	15.82×4	
	Input power (heating)	kW	12.93×3	17.14×3	12.93×4	17.14×4	
	L*W*H	mm	(1345×850×1810)×3	91345×850×1810)×3	(1345×850×1810)×4	(1345×850×1810)×4	
	N.W	kg	270×3	280×3	270×4	280×4	
Refrigerant	Type	R410A					
	Charge volume (kg)	9.2×3	12×3	9.2×4	12×4		
Connecting pipe	Connection mode	Welding					
	Liquid pipe diameter (mm)	ø15.88*3			ø15.88*4		
	Gas pipe diameter (mm)	ø28.58*3			ø28.58*4		
	Drainage pipe	DN32					

Specifications	Indoor unit	HZN-100	HZN-120	HZN-140	HZN-160	HZN-200	
	Outdoor unit	HFM-20HA1-DC×5	HFM-15HM-DC×6	HFM-20HA1-DC×7	HFM-20HA1-DC×8	HFM-20HA1-DC×10	
Nominal cooling capacity	kW	254.5	305.4	356.3	407.2	509	
Nominal heating capacity	kW	284.5	341.4	398.3	455.2	569	
Power supply	/	380V/3PH/50Hz					
Indoor unit	Dimensions	/ Subject to specific functional module					
	Airflow	m ³ /h	50000	60000	70000	80000	95000
	External pressure	Pa	600	600	750	750	800
	Fan type	/	High efficiency inverter axial fan				
	Fan power	kW	22	22	30	37	45
Outdoor unit	Compressor type	/	DC inverter compressor				
	Input power (cooling)	kW	15.82×5	15.82×6	15.82×7	15.82×8	15.82×10
	Input power (heating)	kW	17.14×5	17.14×6	17.14×7	17.14×8	17.14×10
	L*W*H	mm	(1345×850×1810)×5	(1345×850×1810)×6	(1345×850×1810)×7	(1345×850×1810)×8	(1345×850×1810)×10
	N.W	kg	280×5	280×6	280×7	280×8	280×10
Refrigerant	Type	R410A					
	Charge volume (kg)	12×5	12×6	12×7	12×8	12×10	
Connecting pipe	Connection mode	Welding					
	Liquid pipe diameter (mm)	ø15.88×5	ø15.88×6	ø15.88×7	ø15.88×8	ø15.88×10	
	Gas pipe diameter (mm)	ø28.58×5	ø28.58×6	ø28.58×7	ø28.58×8	ø28.58×10	
	Drainage pipe	DN32					

- Note:**
- Nominal cooling capacity is tested under the conditions of indoor dry/wet bulb temperature 27°C/19°C and outdoor dry/web bulb temperature 35°C/24°C;
 - Nominal heating capacity is tested under the conditions of indoor dry/wet bulb temperature 20°C/15°C and outdoor dry/web bulb temperature 7°C/6°C;
 - All indoor and outdoor units are not charged with refrigerant out of factory;
 - The above charging volume of refrigerant is based on the distance of the indoor and outdoor connecting pipes of 8 meters. The charging volume is only for reference, please adjust it according to the actual situation on site.

SPECIFICATIONS OF DX AIR HANDLING UNIT

Specifications	Indoor unit	HZN-5	HZN-6	HZN-8	HZN-10	HZN-12	
	Outdoor unit	HFM-05HA1	HFM-06HA1	HFM-08HA1	HFM-10HA1	HFM-12HA1	
Nominal cooling capacity	kW	12	13.9	19	25.5	30	
Nominal heating capacity	kW	14.9	16.9	21.9	30.7	33.6	
Power supply	/	380V/3PH/50Hz					
Indoor unit	Dimensions	Subject to specific functional module					
	Airflow	m ³ /h	2400	2800	4000	5500	6500
	External pressure	Pa	100	100	100	150	250
	Fan type	/	High-efficient multi blade centrifugal fan				
	Fan power	kW	0.6	0.6	1	1.5	2.2
Outdoor unit	Compressor type	Hermetic scroll type					
	Input power (cooling)	kW	4.4	4.9	5.4	7.6	8.8
	Input power (heating)	kW	4.5	4.9	5.5	7.8	8.6
	L*W*H	mm	903×393×1225	903×393×1225	903×393×1357	990×850×1545	990×850×1545
	N.W	kg	110	110	125	190	200
Refrigerant	Type	R410A					
	Charge volume (kg)	3.6	3.7	5	7.8	8	
Connecting pipe	Connection mode	Welding					
	Liquid pipe diameter (mm)	ø9.52	ø9.52	ø9.52	ø15.88	ø15.88	
	Gas pipe diameter (mm)	ø15.88	ø15.88	ø22.22	ø28.58	ø28.58	
	Drainage pipe	DN25		DN32			

Specifications	Indoor unit	HZN-15	HZN-18	HZN-20	HZN-24	
	Outdoor unit	HFM-15HA1	HFM-18HA1	HFM-10HA1×2	HFM-12HA1×2	
Nominal cooling capacity	kW	35.4	42	51	60	
Nominal heating capacity	kW	38.3	48.2	61.4	67.2	
Power supply	/	380V/3PH/50Hz				
Indoor unit	Dimensions	Subject to specific functional module				
	Airflow	m ³ /h	8000	8500	11000	12000
	External pressure	Pa	350	350	350	350
	Fan type	/	High-efficient multi blade centrifugal fan			
	Fan power	kW	3	4	4	5.5
Outdoor unit	Compressor type	Hermetic scroll type				
	Input power (cooling)	kW	10.4	12.6	7.6×2	8.8×2
	Input power (heating)	kW	10	11.5	7.8×2	8.6×2
	L*W*H	mm	990×850×1810	1345×850×1810	(990×850×1545)×2	(990×850×1545)×2
	N.W	kg	225	260	190×2	200×2
Refrigerant	Type	R410A				
	Charge volume (kg)	10.5	11	7.8×2	8.0×2	
Connecting pipe	Connection mode	Welding				
	Liquid pipe diameter (mm)	ø15.88	ø15.88	ø15.88×2	ø15.88×2	
	Gas pipe diameter (mm)	ø28.58	ø28.58	ø28.58×2	ø28.58×2	
	Drainage pipe	DN32				

- Note:**
- Nominal cooling capacity is tested under the conditions of indoor dry/wet bulb temperature 27°C/19°C and outdoor dry/web bulb temperature 35°C/24°C;
 - Nominal heating capacity is tested under the conditions of indoor dry/wet bulb temperature 20°C/15°C and outdoor dry/web bulb temperature 7°C/6°C;
 - All indoor and outdoor units are not charged with refrigerant out of factory;
 - The above charging volume of refrigerant is based on the distance of the indoor and outdoor connecting pipes of 8 meters. The charging volume is only for reference, please adjust it according to the actual situation on site.

SPECIFICATIONS OF DX AIR HANDLING UNIT

Specifications	Indoor unit	HZN-30	HZN-36	HZN-42	
	Outdoor unit	HFM-30HA1	HFM-30HA1+HFM-06HA1	HFM-30HA1+HFM-12HA1	
Nominal cooling capacity	kW	73.0	86.9	103.0	
Nominal heating capacity	kW	78.0	94.9	111.6	
Power supply	/	380V/3PH/50Hz			
Indoor unit	Dimensions	Subject to specific functional module			
	Airflow	m ³ /h	15000	18000	21000
	External pressure	Pa	450	450	450
	Fan type	/	High-efficient multi blade centrifugal fan		
	Fan power	kW	7.5	7.5	11.0
Outdoor unit	Compressor type	Hermetic scroll type			
	Input power (cooling)	kW	22.5	22.5+4.9	22.5+8.8
	Input power (heating)	kW	21.9	21.9+4.9	21.9+8.6
	L*W*H	mm	1310×1080×2200	Refer to the size of a single outdoor unit	Refer to the size of a single outdoor unit
	N.W	kg	390	390+110	390+200
Refrigerant	Type	R410A			
	Charge volume (kg)	19.5	19.5+3.7	19.5+8.0	
Connecting pipe	Connection mode	Welding			
	Liquid pipe diameter (mm)	22.22	22.22+9.52	22.22+15.88	
	Gas pipe diameter (mm)	34.93	34.93+15.88	34.93+28.58	
	Drainage pipe	DN32			

Specifications	Indoor unit	HZN-48	HZN-60	HZN-70	
	Outdoor unit	HFM-30HA1+HFM-18HA1	HFM-60HA1	HFM-60HA1+HFM-10HA1	
Nominal cooling capacity	kW	115.0	146.0	171.5	
Nominal heating capacity	kW	126.2	156.0	186.7	
Power supply	/	380V/3PH/50Hz			
Indoor unit	Dimensions	Subject to specific functional module			
	Airflow	m ³ /h	24000	30000	35000
	External pressure	Pa	450	550	550
	Fan type	/	High-efficient multi blade centrifugal fan		
	Fan power	kW	11.0	15.0	15.0
Outdoor unit	Compressor type	Hermetic scroll type			
	Input power (cooling)	kW	22.5+12.6	45.0	45.0+7.6
	Input power (heating)	kW	21.9+11.5	43.8	43.8+7.8
	L*W*H	mm	Refer to the size of a single outdoor unit	2180×1110×2200	Refer to the size of a single outdoor unit
	N.W	kg	390+260	760	760+190
Refrigerant	Type	R410A			
	Charge volume (kg)	19.5+11.0	19.5×2	19.5×2+7.8	
Connecting pipe	Connection mode	Welding			
	Liquid pipe diameter (mm)	22.22+15.88	22.22×2	22.22×2+15.88	
	Gas pipe diameter (mm)	34.93+28.58	34.93×2	34.93×2+28.58	
	Drainage pipe	DN32			

- Note:**
- Nominal cooling capacity is tested under the conditions of indoor dry/wet bulb temperature 27°C/19°C and outdoor dry/web bulb temperature 35°C/24°C;
 - Nominal heating capacity is tested under the conditions of indoor dry/wet bulb temperature 20°C/15°C and outdoor dry/web bulb temperature 7°C/6°C;
 - All indoor and outdoor units are not charged with refrigerant out of factory;
 - The above charging volume of refrigerant is based on the distance of the indoor and outdoor connecting pipes of 8 meters. The charging volume is only for reference, please adjust it according to the actual situation on site.

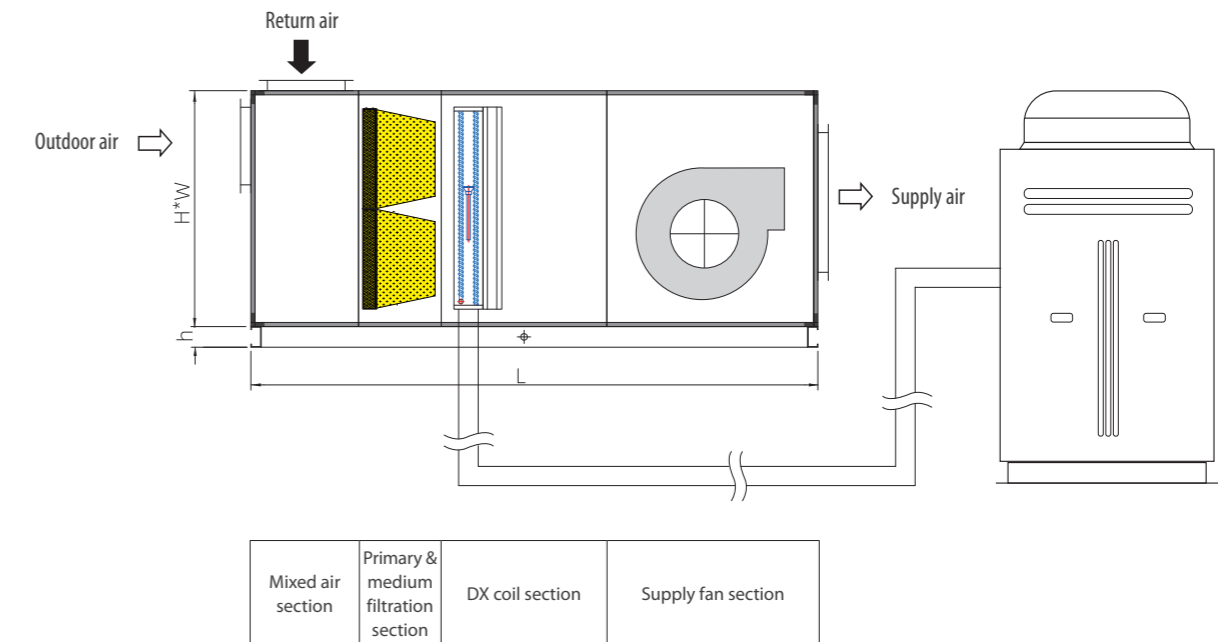
SPECIFICATIONS OF DX AIR HANDLING UNIT

Specifications	Indoor unit		HZN-80	HZN-90	HZN-100
	Outdoor unit		HFM-60HA1+HFM-10HA1×2	HFM-60HA1+HFM-30HA1	HFM-60HA1+30HA1+10HA1
Nominal cooling capacity	kW		197.0	219.0	244.5
Nominal heating capacity	kW		217.4	234.0	264.7
Power supply	/		380V/3PH/50Hz		
Indoor unit	Dimensions	/ Subject to specific functional module			
	Airflow	m ³ /h	40000	45000	50000
	External pressure	Pa	550	550	600
	Fan type	/ High-efficient multi blade centrifugal fan			
	Fan power	kW	15.0	15.0	22.0
Outdoor unit	Compressor type	/ Hermetic scroll type			
	Input power (cooling)	kW	45.0+7.6×2	45.0+22.5	45.0+22.5+7.6
	Input power (heating)	kW	43.8+7.8×2	43.8+21.9	43.8+21.9+7.8
	L*W*H	mm Refer to the size of a single outdoor unit			
	N.W	kg	760+190×2	760+390	760+390+190
Refrigerant	Type	R410A			
	Charge volume (kg)	19.5×2+7.8×2		19.5×3	19.5×3+7.8
Connecting pipe	Connection mode	Welding			
	Liquid pipe diameter (mm)	22.22×2+15.88×2		22.22×3	22.22×3+15.88
	Gas pipe diameter (mm)	34.93×2+28.58×2		34.93×3	34.93×3+28.58
	Drainage pipe	DN40			

Specifications	Indoor unit		HZN-120	HZN-140	HZN-160
	Outdoor unit		HFM-60HA1×2	HFM-60HA1×2+HFM-10HA1×2	HFM-60HA1×2+30HA1+10HA1
Nominal cooling capacity	kW		292.0	343.0	390.5
Nominal heating capacity	kW		312.0	373.4	420.7
Power supply	/		380V/3PH/50Hz		
Indoor unit	Dimensions	/ Subject to specific functional module			
	Airflow	m ³ /h	60000	70000	80000
	External pressure	Pa	600	750	750
	Fan type	/ High-efficient multi blade centrifugal fan			
	Fan power	kW	22.0	30.0	37.0
Outdoor unit	Compressor type	/ Hermetic scroll type			
	Input power (cooling)	kW	45.0×2	45.0×2+7.6×2	45.0×2+22.5+7.6
	Input power (heating)	kW	43.8×2	43.8×2+7.8×2	43.8×2+21.9+7.8
	L*W*H	mm Refer to the size of a single outdoor unit			
	N.W	kg	760×2	760×2+190×2	760×2+390+190
Refrigerant	Type	R410A			
	Charge volume (kg)	19.5×4		19.5×4+7.8×2	19.5×5+7.8
Connecting pipe	Connection mode	Welding			
	Liquid pipe diameter (mm)	22.22×4		22.22×4+15.88×2	22.22×5+15.88
	Gas pipe diameter (mm)	34.93×4		34.93×4+28.58×2	34.93×5+28.58
	Drainage pipe	DN50			

- Note:**
- Nominal cooling capacity is tested under the conditions of indoor dry/wet bulb temperature 27°C/19°C and outdoor dry/web bulb temperature 35°C/24°C;
 - Nominal heating capacity is tested under the conditions of indoor dry/wet bulb temperature 20°C/15°C and outdoor dry/web bulb temperature 7°C/6°C;
 - All indoor and outdoor units are not charged with refrigerant out of factory;
 - The above charging volume of refrigerant is based on the distance of the indoor and outdoor connecting pipes of 8 meters. The charging volume is only for reference, please adjust it according to the actual situation on site.

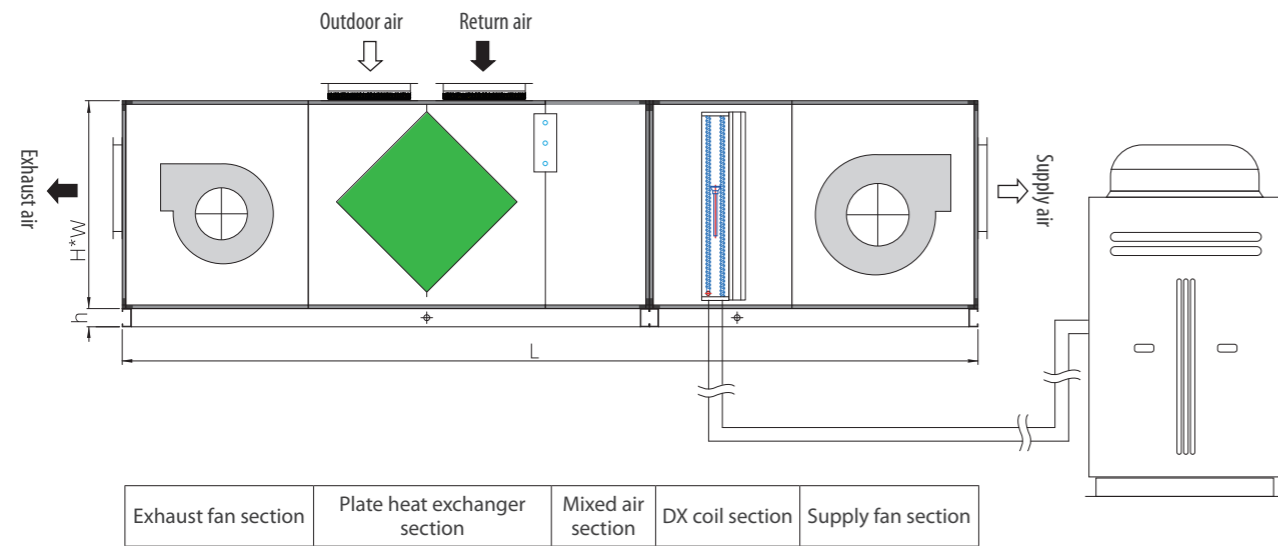
STANDARD COMBINATION INDOOR UNITS



Indoor unit	Machine dimensions (mm)		Duct size (mm)			Weight (kg)
	L	H*W	OA	RA	SA	
HZN-5	2480	740*1140	970*175	975*275	315*315	475
HZN-6	2480	740*1140	970*175	975*275	325*325	490
HZN-8	2480	840*1140	970*175	975*275	375*375	515
HZN-10	2580	840*1240	1075*175	1075*275	475*475	545
HZN-12	2580	940*1240	1075*175	1075*275	475*475	564
HZN-15	2680	940*1340	1175*175	1175*375	575*575	575
HZN-18	2680	1040*1340	1175*175	1175*375	575*575	638
HZN-20	2880	1140*1740	1575*175	1575*375	575*575	767
HZN-24	2880	1340*1740	1575*175	1575*375	675*675	818
HZN-30	3080	1440*1840	1675*175	1675*375	775*775	1045
HZN-36	3180	1440*1840	1675*175	1675*375	775*775	1082
HZN-40	3380	1640*2240	2075*175	2075*375	775*775	1681
HZN-48	3580	1740*2240	2075*175	2075*475	875*875	1796
HZN-60	3680	1940*2240	2275*175	2275*475	975*975	1992
HZN-72	3780	2240*2340	2175*175	2175*475	975*975	1958

- Note:**
- The above dimensions are only for the unit size with 25mm panels, when equipped with 50mm panels, sizes are L+50mm, W+50mm.
 - H = 100mm.

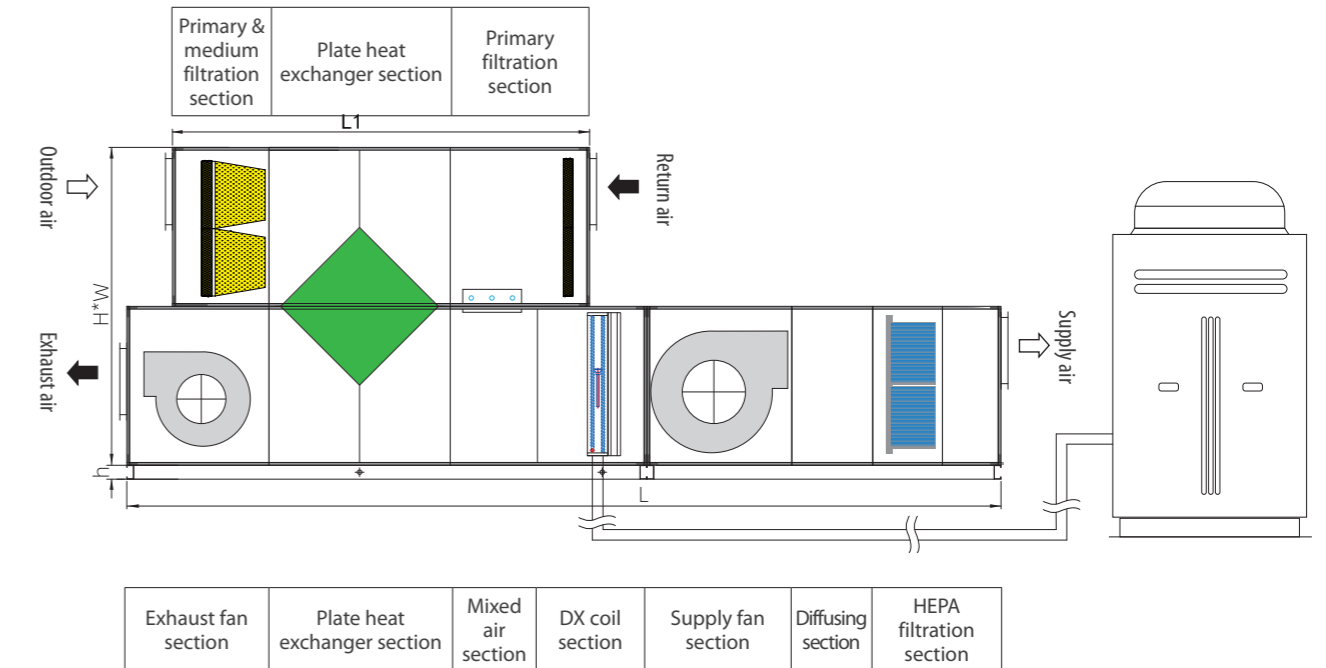
ENERGY RECOVERY INDOOR UNITS WITH PLATE HEAT EXCHANGERS 1



Indoor unit	Machine dimensions (mm)		Duct size (mm)		Weight (kg)
	L	H * W	OA / RA	SA / EA	
HZN-10	3680	840x1240	1075x275	475x475	793
HZN-12	3680	940x1240	1075x275	475x475	821
HZN-15	4080	940x1340	1175x275	575x575	914
HZN-18	4080	1040x1340	1175x375	575x575	1044
HZN-20	4380	1140x1740	1575x475	575x575	1327
HZN-24	4880	1240x1740	1575x475	675x675	1415
HZN-30	4880	1440x1840	1675x575	775x775	1855
HZN-36	5280	1440x1840	1675x575	775x775	2118

Note: 1. The above dimensions are only for the unit size with 25mm panels, when equipped with 50mm panels, sizes are L+50mm, W+50mm, H+50mm.
2. H = 100mm.

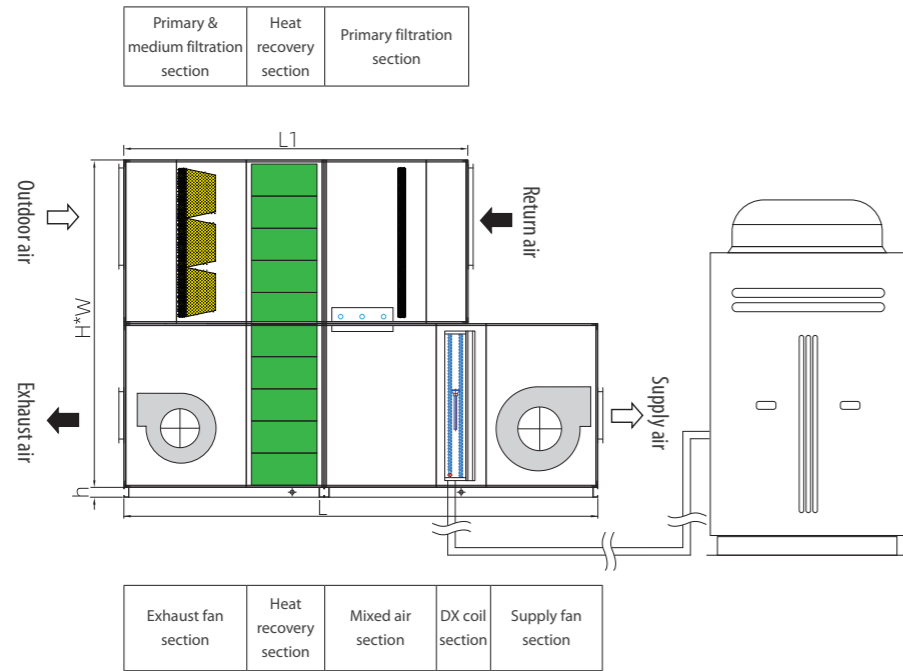
ENERGY RECOVERY INDOOR UNITS WITH PLATE HEAT EXCHANGERS 2



Indoor unit	Machine dimensions (mm)			Duct size (mm)		Weight (kg)
	L	L1	H * W	OA / RA	SA / EA	
HZN-10	5380	2540	1680x1240	1075x275	475x475	1575
HZN-12	5380	2540	1880x1240	1075x375	475x475	1630
HZN-15	5780	2740	1880x1340	1175x375	575x575	1775
HZN-18	5780	2740	2080x1340	1175x375	575x575	2110
HZN-20	6080	2740	2280x1740	1575x475	575x575	2576
HZN-24	6580	2940	2680x1740	1575x475	675x675	2916
HZN-30	6580	3940	2880x1840	1675x475	775x775	3661
HZN-36	6680	3240	2880x1840	1675x575	775x775	4181

Note: 1. The above dimensions are only for the unit size with 25mm panels, when equipped with 50mm panels, sizes are L+50mm, W+50mm, H+50mm.
2. H = 100mm.

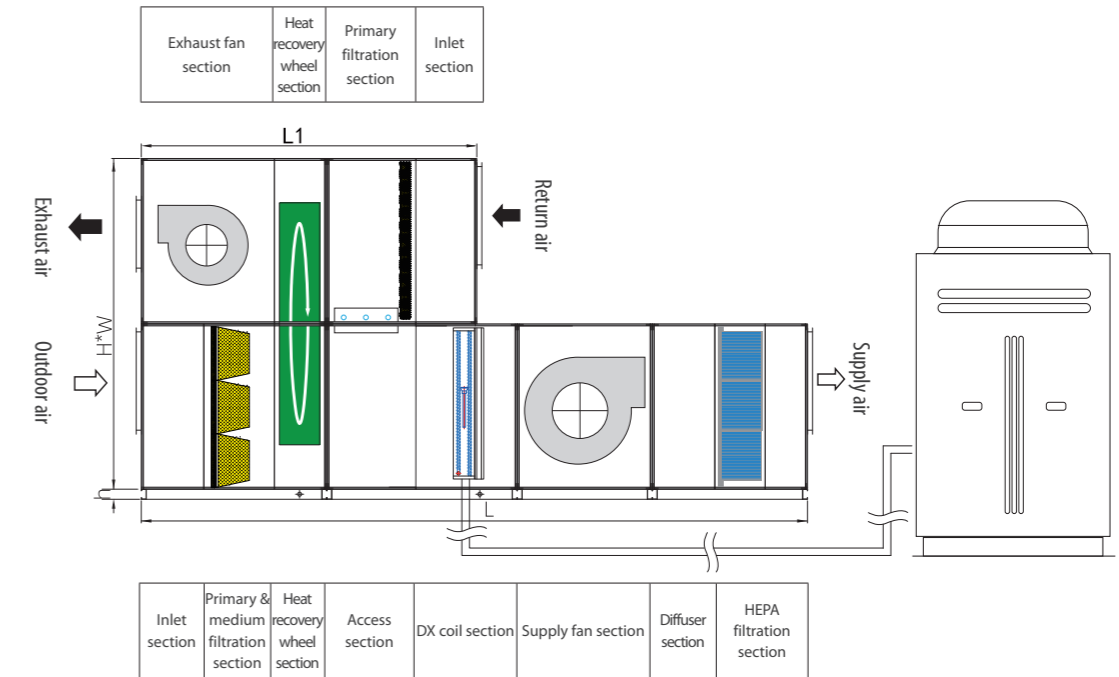
ENERGY RECOVERY INDOOR UNITS WITH PLATE HEAT EXCHANGERS 3



Indoor unit	Machine dimensions (mm)			Duct size (mm)		Weight (kg)
	L	L1	H * W	OA / RA	SA / EA	
HZN-40	5080	3480	3280×2240	1975×575	775×775	2753
HZN-48	5480	3780	3480×2240	2075×675	875×875	2954
HZN-60	6280	4380	3880×2440	2375×675	975×975	3504

Note: 1. The above dimensions are only for the unit size with 25mm panels, when equipped with 50mm panels, sizes are L+50mm, W+50mm, H+50mm.
2. H = 100mm.

ENERGY RECOVERY INDOOR UNITS WITH HEAT RECOVERY WHEEL

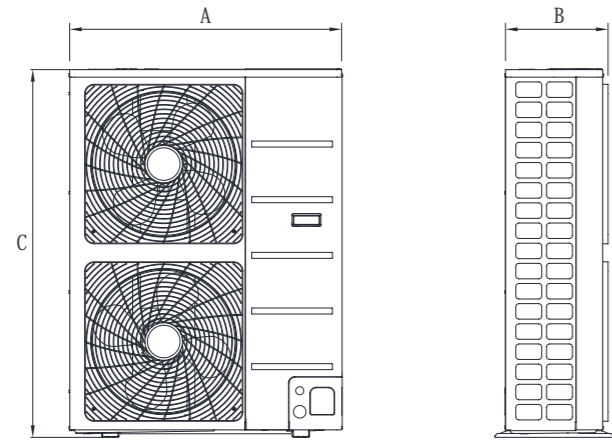


Indoor unit	Machine dimensions (mm)			Duct size (mm)		Weight (kg)
	L	L1	H * W	OA / RA	SA / EA	
HZN-10	5360	2780	1680×1240	1075×275	475×475	1537
HZN-12	5360	2780	1880×1240	1075×275	475×475	1590
HZN-15	5560	2880	1880×1340	1175×375	575×575	1715
HZN-18	5560	2880	2080×1340	1175×375	575×575	2050
HZN-20	5760	2980	2280×1740	1575×475	575×575	2238
HZN-24	5760	2980	2680×1740	1575×475	675×675	2536
HZN-30	5960	3080	2880×1840	1675×475	775×775	2986
HZN-36	6160	3180	2880×1840	1675×575	775×775	3410
HZN-40	6160	3180	3280×2240	2075×575	775×775	3813
HZN-48	6360	3280	3480×2240	2075×675	875×875	4041
HZN-60	6760	3480	3880×2440	2075×675	975×975	4447

Note: 1. The above dimensions are only for the unit size with 25mm panels, when equipped with 50mm panels, sizes are L+50mm, W+50mm, H+50mm.
2. H = 100mm.

SIDE DISCHARGE OUTDOOR UNIT

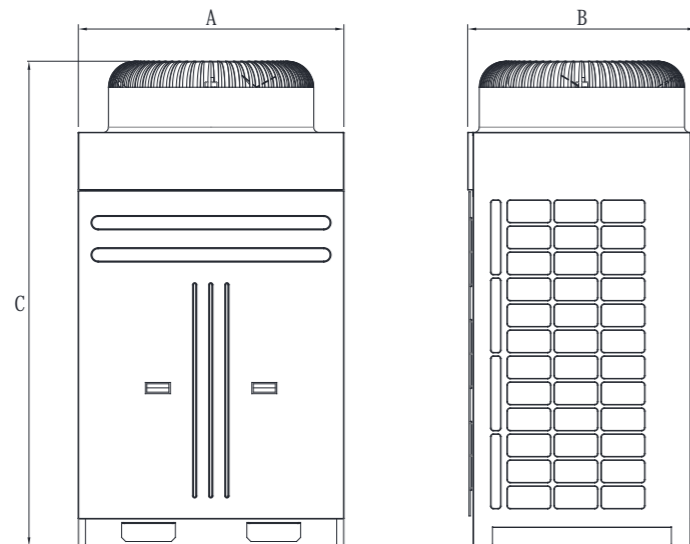
Model	A (mm)	B (mm)	C (mm)
HFM-05HA1、HFM-06HA1	903	393	1225
HFM-08HA1	903	393	1357



TOP DISCHARGE OUTDOOR UNIT

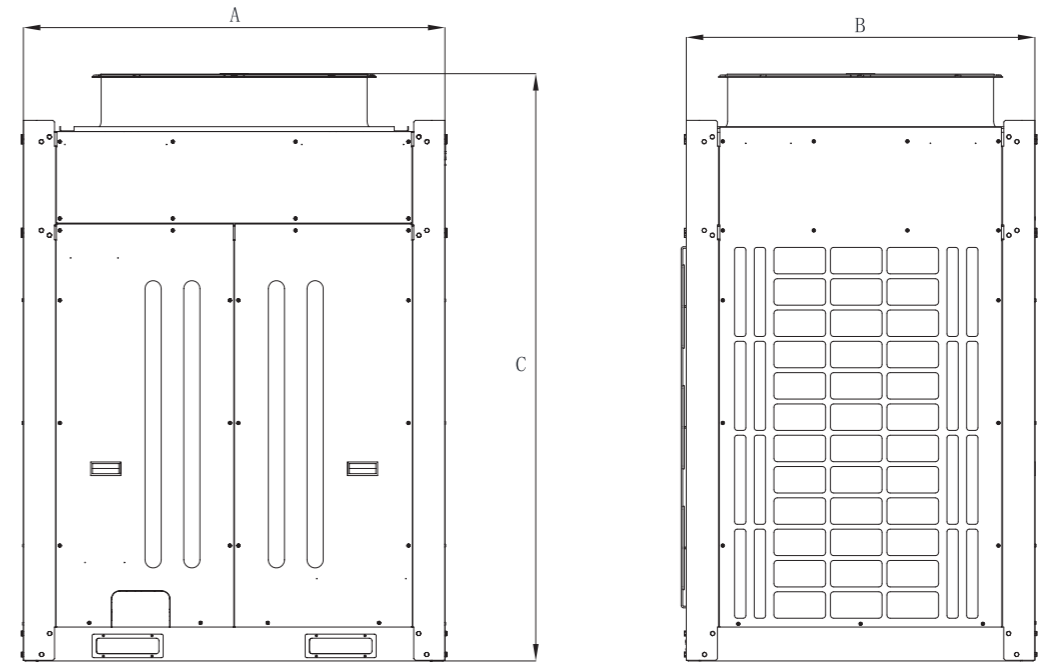
Standard model	A (mm)	B (mm)	C (mm)
HFM-10HA1、HFM-12HA1	990	850	1545
HFM-15HA1	990	850	1810
HFM-18HA1	1345	850	1810

DC inverter model	A (mm)	B (mm)	C (mm)
HFM-10HB1-DC	990	850	1545
HFM-12HB1-DC			
HFM-10HA1-DC	1345	850	1810
HFM-12HA1-DC			
HFM-15HA1-DC			
HFM-15HB1-DC	1345	850	1810
HFM-18HB1-DC			
HFM-20HB1-DC			

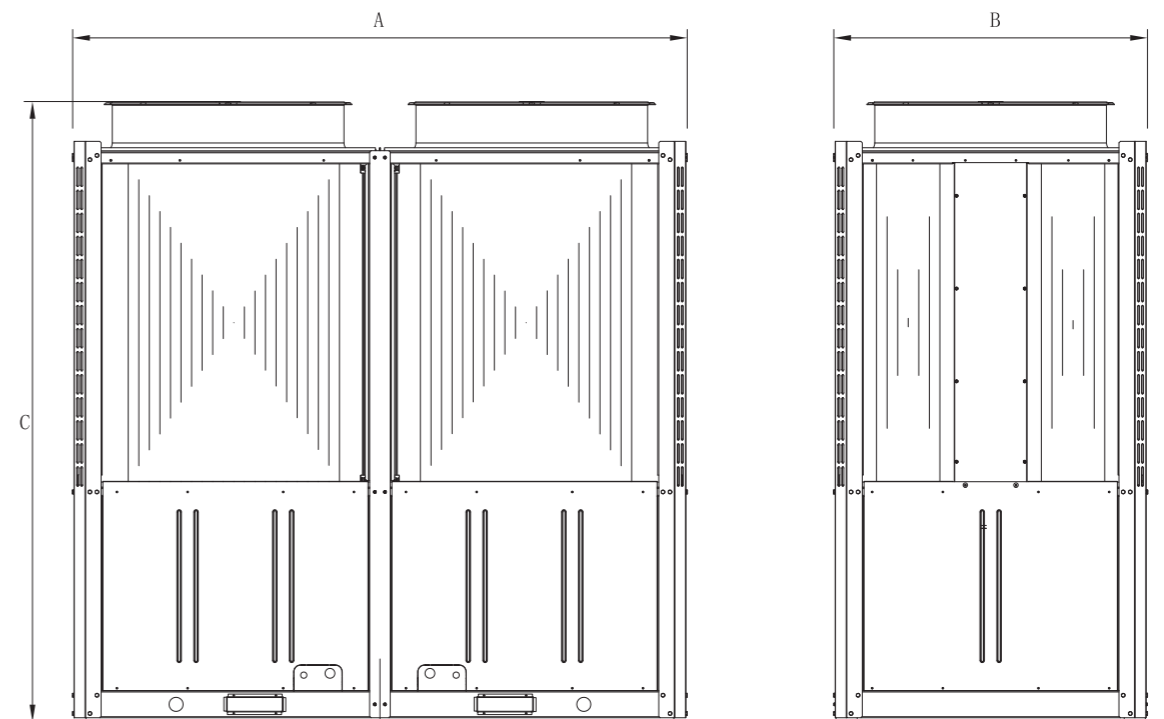


TOP DISCHARGE OUTDOOR UNIT

Model	A (mm)	B (mm)	C (mm)
HFM-30HA1	1306	1080	1820



Model	A (mm)	B (mm)	C (mm)
HFM-60HA1	2180	1110	2200



1. Table of correction coefficient of cooling capacity under different working conditions

Energy coefficient () Indoor wet bulb temp. (°C) Outdoor dry bulb temp. (°C)	17	18	19	20	21	22	23
25	1.07	1.10	1.14	1.15	1.17	1.23	1.32
30	1.05	1.07	1.09	1.11	1.14	1.18	1.25
35	0.98	0.99	1.00	1.03	1.06	1.09	1.13
40	0.89	0.91	0.93	0.95	0.97	0.99	1.00
43	0.86	0.88	0.90	0.92	0.94	0.96	0.97

2. Table of correction coefficient of heating capacity under different working conditions

Energy coefficient () Outdoor wet bulb temp. (°C) Indoor dry bulb temp. (°C)	14	12	10	8	6	4	2	0	-2	-4	-6	-8
10	1.23	1.18	1.12	1.07	1.01	0.95	0.89	0.83	0.78	0.74	0.70	0.67
15	1.23	1.17	1.11	1.05	1.00	0.94	0.89	0.83	0.78	0.73	0.69	0.66
20	1.20	1.15	1.10	1.05	1.00	0.94	0.89	0.83	0.77	0.72	0.68	0.65
25	1.15	1.13	1.10	1.05	0.99	0.93	0.88	0.83	0.77	0.72	0.67	0.63

3. Table of air volume impact on cooling capacity

Calculated airflow/Nominal airflow	0.6	0.7	0.8	0.9	1.0	1.2	1.4	1.6	2.0
Actual cooling capacity	0.87	0.91	0.95	0.98	1.00	1.04	1.08	1.12	1.2

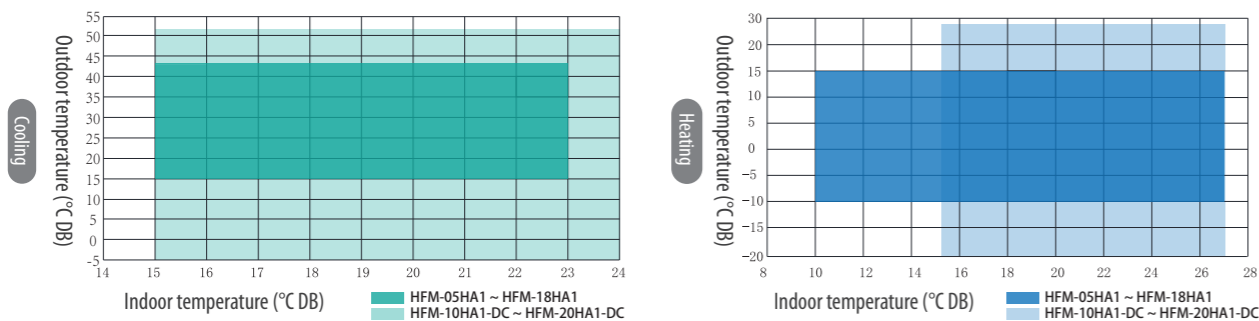
4. Correction table of the influence of the connecting pipe length and installation height difference between indoor and outdoor units on cooling capacity.

Factors		Correction coefficient of cooling capacity													
Total equivalent length of connecting pipes		5m	10m	15m	20m	25m	30m	35m	40m	45m	50m	55m	60m	65m	70m
Indoor units higher than outdoor units	0m	1.00	0.98	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.84	0.80	0.78	0.76	0.74
	5m	1.00	0.97	0.95	0.93	0.91	0.89	0.87	0.85	0.83	0.81	0.79	0.77	0.75	0.73
	10m	-	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.82	0.80	0.78	0.76	0.74	0.72
	15m	-	-	0.93	0.91	0.89	0.87	0.85	0.83	0.81	0.79	0.77	0.75	0.73	0.71
	20m	-	-	-	0.9	0.88	0.86	0.84	0.82	0.80	0.78	0.76	0.74	0.72	0.70
	25m	-	-	-	-	0.87	0.85	0.83	0.81	0.79	0.77	0.75	0.73	0.71	0.69
Indoor units lower than outdoor units	0m	1.00	0.98	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.82	0.8	0.78	0.76	0.74
	5m	1.00	0.98	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.82	0.8	0.78	0.76	0.74
	10m	-	0.98	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.82	0.8	0.78	0.76	0.74
	15m	-	-	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.82	0.8	0.78	0.76	0.74
	20m	-	-	-	0.94	0.92	0.90	0.88	0.86	0.84	0.82	0.8	0.78	0.76	0.74
	25m	-	-	-	-	0.92	0.90	0.88	0.86	0.84	0.82	0.8	0.78	0.76	0.74

Note: the equivalent total length of the connecting pipe is the sum of the total length of the straight pipe plus the equivalent length of the elbow and the oil storage bend. The equivalent length of elbow and oil storage bend is commonly shown in the following table:

Outer diameter of gas pipes	ø15.88	ø19.05	ø22.22	ø28.58	ø34.93	ø41.28
Elbow	0.25m	0.35m	0.45m	0.50m	0.55m	0.60m
Oil trap	2.0m	2.4m	2.9m	3.7m	4.1m	4.8m

ALLOWABLE OPERATION RANGE OF OUTDOOR UNIT



Note: The operating ranges of HFM-05HA1~ HFM-18HA1 and HFM-10HA1-DC ~HFM-20HA1-DC are shown above. If the air conditioning unit is used outside the scope of the above working conditions, the safety protection function will be activated and may lead to abnormal operation.