

Container Environment Control Solution Provider

FREEDOM (ZHENGZHOU) INDUSTRY CO., LTD

Email: info@freedom-hvac.com

Website: <https://freedom-hvac.com>

Mobile Tel: +86 150 8312 8898

Main Tel: +86 371 6358 2158

Main Fax: +86 371 6358 2158 Ext:605

Address: NO.3 Building, NUST, NO. 11 Changchun Rd, High-tech District, Zhengzhou,
China



CONTAINER AIR CONDITITIONER


PRODUCT INTRODUCTION

Overview

The factory-level container modularization technology has the advantages of low operating cost, high efficiency and energy saving, rapid deployment, and on-demand expansion. According to the different use environments, occasions, the technical requirements for the internal temperature and humidity, cleanliness, ventilation, noise, rain protection, lightning protection, remote control and installation space of the module are also different. Flexible structural form and broad climate adaptability are also applied to meet the requirements of unattended, IoT-level data and information interoperability. The container air conditioner is specially developed for factory prefabricated modules. It's suitable for all walks of life that require factory prefabrication and modularization, such as energy, electricity, communication, experimental research, plant cultivation, and new retail.



PRECISION COOLING, TAILORED MANUFACTURING



Widely environment and climate adaptation, tailor-made container air conditioner solution provider

HIGHLIGHTS

High EER (Energy Efficiency Ratio)

The product adopts high-efficiency fully sealed compressor, external balance thermal expansion valve with extremely stable performance, and high-efficiency heat exchanger with strong environmental adaptability.

High Sensible Heat Ratio

In a relatively closed container space, the operation of high-density electronic and electrical equipment releases a large amount of sensible heat. According to this situation, the air conditioner is carefully designed with the characteristics of large air volume and small enthalpy difference, and the sensible heat ratio reaches more than 90%, so that the room cannot be maintained. Rapid ambient cooling in dry conditions.

Assistant Heating Function

When the container is used in a cold area, it also needs a small amount of heating operation in winter. The special air conditioner can provide the original PTC electric heating element, which has the advantages of no attenuation of heat generation, stability and reliability, and no influence of environmental conditions.

Cooling and Heating Dual Function

The special air conditioner has the independent preset temperature control function of cooling and heating, which can set their own control temperature, and the air conditioner automatically switches the mode according to the indoor temperature without control.

Assistant Heating Function

When the container is used in a cold area, it also needs a small amount of heating operation in winter. The special air conditioner can provide the original PTC electric heating element, which has the advantages of no attenuation of heat generation, stability and reliability, and no influence of environmental conditions.

Dehumidification Function

When the container is used in the south, southeast Asia or near the river and sea areas, the surrounding environment has high humidity, which will lead to the high humidity in the container. The special air conditioner is reserved with extended professional-level deep dehumidification function with humidity sensor and electric heater can be installed that can realize the dehumidification.

Rainproof Ability

The outdoor side enclosure of the integrated container air conditioner adopts an integrated box structure design. No rains can enter the container through the outdoor side heat dissipation cavity when the flange is sealed and fixed, which can meet IP65 standards.

Lightning/Thunderstroke Protection capability

The control system of our container air conditioner is designed strictly according to the EMC regulations and has excellent resistance to 4kV power supply and signal pulse and surge capability, as well as good lightning protection capability. Additional accessories can also be installed to meet the lightning protection and over-voltage protection in YD 5098-2005 ability.

Corrosion Resistance

The anti-corrosion specialized air conditioner adopts the anti-corrosion design concept of marine air-conditioning, combined with years of anti-corrosion field experience and self-developed anti-corrosion materials. We can provide corresponding anti-corrosion solutions and products according to different corrosion scenarios and expand the lifespan of the unit and improve value.

Power Down and Automatically Restart

The auto-restart function after power-down function is especially suitable for regions or urban areas where with unstable power grids. The device will restart automatically and keeping original state with the memory function as soon as the power is on.

Microcomputer Control

We have developed specialized LCD controller features with excellent human-computer interaction ability. Language switch navigated user interface menu, and any settings such as the operation parameters, port status readability can be realized through the screen. The high-reliability microcomputer controller features strong anti-interference ability and EMC compatibility.

The treated surface can effectively prevent the erosion of moisture, salt fog, weak alkali and weak alkali to the controller. The powerful function driving ability and communication port of the controller can realize the remote centralized monitoring data exchangeability of multi-unit network.



Widely environment and climate adaptation, tailor-made container air conditioner solution provider

HIGHLIGHTS

High and Low Temperature Environment Cooling

Energy or power containers generate a lot of heat and need to maintain a uniform temperature throughout the year. Most conventional air conditioners are designed and matched only according to the temperature in summer. Cooling in transitional seasons and winter environments will seriously endanger the life of the air conditioner. The container air conditioners are specially designed with countermeasure accessories to enable stable and reliable operation in cold environments.

Dual unit Switching

The dual unit switching function is very suitable for some remote places and important scenarios that require uninterrupted air environment control. Users will adopt the design of the main unit and the standby unit for safety reasons, which can realize the automatic rotation and alternating cooling operation of the dual units, and at the same time, it has the function of automatically putting the standby unit into operation during peak hours, to meet the needs of energy-saving and high-security purposes.

Micro Positive Pressure

In certain situations that require positive air pressure inside the container, our container air conditioner can be treated to realize the adjustment of 5-35 pa positive air pressure according to the requirements. In cold regions, a small amount of heating and supplementary fresh air is also required to run at a slight positive pressure in winter. To ensure the stability of the fresh air supply. The container air conditioner can be designed for electric heating with stainless copper finned tube, which features no attenuation of heat generation, stability and reliability, and no influence of environmental conditions. A filter module can be added when there is corrosive gas in the fresh air.

Explosion-Proof Ability

The Explosion-proof container air conditioner is designed and produced according to the national explosion-proof standards and is suitable for explosive environments with different explosion-proof levels such as energy storage, petroleum, chemical industry, military, and offshore oil platforms.

High Altitude Operation Availability

The high-altitude specialized air conditioner is developed to meet the environment of thin plateau air, cold temperature and perennial snow. The device features a larger heat exchange area, preheating start and low-temperature refrigeration, which fully meets the requirements of energy storage in high altitude areas.

Power Down and Automatically Restart

The auto-restart function after power-down function is especially suitable for regions or urban areas where with unstable power grids. The device will restart automatically and keeping original state with the memory function as soon as the power is on.

Remote Monitoring

The unit provides RS-485 communication interface, which can be connected with the host computer for remote monitoring and management. Local and remote control modes and additional communication functions:

Remote detection: To detect the container room temperature remotely.

Remote communication: The operating status and parameters and fault information can be acquired remotely.

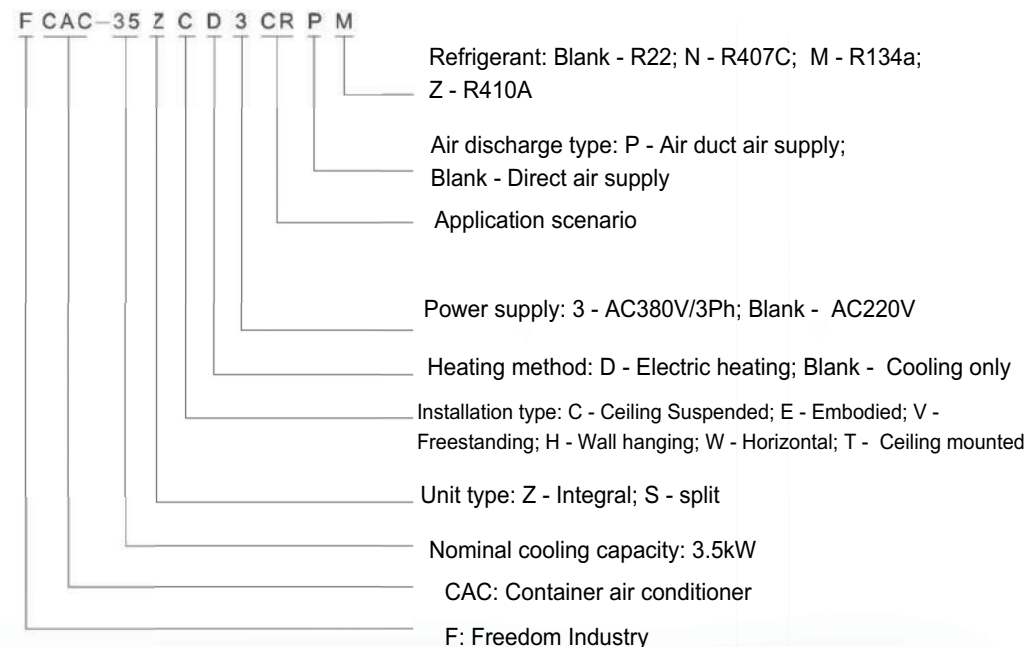
Remote control: The switch on/off of the air conditioner and parameter settings can be realized remotely.



Product Parameters

- Refrigeration method:** Compressor refrigeration
- Humidity mode:** Optional function, compressor and electric heating combination control
- Temperature control:** Temperature range: 18°C ~ 30°C, temperature sensitivity ±2°C
- Humidity control:** Humidity range: 45% ~ 70%, temperature sensitivity ±5%
- Power supply:** AC380V/3Ph/50Hz, AC460V/3Ph/60Hz
- Microcomputer controller:** Chinese/English LCD text controller
- Protection function:** High/Low-pressure protection, exhaust temperature protection, overcurrent protection
- Refrigerants:** R410A, R407C or R134a
- Performance:** EER≥2.5, Sensible Heating Rate≥90%
- Ambient range:** Standard is -15°C~+55°C. Special design with -35°C~+75°C is available
- Installation type:** Vertical cabinet, wall-mounted, top-mounted, ceiling-mounted, semi-embedded

Unit Type References



Cooling Parameters	
Purposes	Cooling Capacity
Working Condition	Outside Temp. DB=35°C, Max. DB=55°C; Indoor Temp. DB=27°C, WB=19°C
In Container Condition	Outside Temp. DB=35°C, WB=24°C; Indoor Temp. DB=24°C, WB=17°C
High Temp. Condition	Outside Temp. DB=43°C, Max. DB=65°C; Indoor Temp. DB=28°C, WB=20°C

Quality assurance and safety certification

The design, development, manufacture, installation and after-sales service of our products are carried out in full accordance with the 1S09001 standards. Both the components and the finished products are strictly inspected during the production and before shipment from our factory.

Item	Parameter	Model	Model			
			FCAC-35ZED	FCAC-50ZED	FCAC-80ZH3D	FCAC-125ZH3D
Specification	Cooling Capacity	kW	3.6	5.1	8.0	12.5
	Electric Heating Power	kW	1.0	1.5	3.0	6.0
	Cooling Power	kW	1.40	2.02	3.2	4.9
	Max. Current	A	6	10	9	13
	Max. Current (Dehumidification)	A	12	18	14	23
	Recirculation Air Volume	m³/h	850	1150	2500	4000
	Dehumidification Function	Optional				
	Micro Positive Pressure	N/A		Optional		
	Communication Interface	RS-485, MODBUS-RTU				
	Power Supply	1PH, 50Hz, 220V ± 10%		3PH, 50Hz, 380V ± 10%, N~		
	Protection Rate	IP54				
	Working Environment	-15°C~50°C		-25°C~50°C		
	Refrigerants Type	R22/R410A				
	Throttling Method	TXV (Thermostatic expansion valve)				
	Compressor	Type	Totally enclosed scroll compressor		Hermetic scroll compressors	
		Quantity	1	1	1	1
	Evaporator	Copper finned tube				
	Condenser	Copper finned tube				
	Blower	Type	Backward inclined centrifugal fan/ External rotor direct-drive motors			
Cooling Ventilator Fan	Type	Backward inclined centrifugal fan/ External Rotor Direct-Drive Motors		Low noise multi-blade axial fan / inner rotor direct drive		
Heating Elements	PTC motor					
Air Filter	Washable primary nylon filter					
Noise	dBA	≤59	≤61	≤66	≤68	
Weight	kg	68	86	140	215	
Drain Connection	G1/2"		G3/4"			
Dimension (L * W * H)	570*340*1200		620*380*1350	720*580*1895	890*633*2145	
Cooling Performance	L27 (47%) /L35					

Item	Parameter	Model	Model			
			FCAC-150ZH3D	FCAC-200ZH3D	FCAC-250ZH3D	FCAC-300ZH3D
Specification	Cooling Capacity	kW	15.0	20.0	25.2	30.0
	Electric Heating Power	kW	6.0	8.0	12.0	12.0
	Cooling Power	kW	6.5	8.5	10.5	13.0
	Max. Current	A	17	23	28	35
	Max. Current (Dehumidification)	A	27	36	48	54
	Recirculation Air Volume	m³/h	4500	6000	7500	9000
	Dehumidification Function	Optional				
	Micro Positive Pressure	Optional				
	Communication Interface	RS-485, MODBUS-RTU				
	Power Supply	3PH, 50Hz, 380V ± 10%, N~				
	Protection Rate	IP54				
	Working Environment	-25°C~50°C				
	Refrigerants Type	R22/R407C/R410A				
	Throttling Method	TXV (Thermostatic expansion valve)				
	Compressor	Type	Hermetic scroll compressors			
		Quantity	1	1	1	1
	Evaporator	Copper finned tube				
	Condenser	Copper finned tube				
	Blower	Type	<i>Backward inclined centrifugal fan/External Rotor Direct-Drive Motors</i>			
Cooling Ventilator Fan	Type	Low noise multi-blade axial fan/ inner rotor direct drive motor				
Heating Elements	PTC					
Air Filter	Washable primary nylon filter					
Noise	dBA	≤70	≤72	≤74	≤75	
Weight	kg	245	285	380	465	
Drain Connection	G3/4"					
Dimension (L * W * H)	890*633*2145		1090*663*2145	890*753*2370	1680*703*2195	
Cooling Performance	L27 (47%) /L35					

Item	Parameter	Model	Model			
			FCAC-80NV3DP	FCAC-125NV3DP	FCAC-150NV3DP	FCAC-200NV3DP
	Cooling Capacity	kW	8.0	12.5	15.0	20.0
	Electric Heating Power	kW	3.0	6.0	6.0	8.0
	Cooling Power	kW	3.5	5.3	7.4	9.7
	Max. Current	A	9	14	20	26
	Max. Current (Dehumidification)	A	14	24	30	39
	Recirculation Air Volume	m ³ /h	2500	4000	4500	6000
	Dehumidification Function		Optional			
	Micro Positive Pressure		Optional			
	External Circulation Rain Cover		Optional			
	Communication Interface		RS-485, MODBUS-RTU			
	Power Supply		3PH, 50Hz, 380V ± 10%, N-			
	Protection Rate		IP54			
	Working Environment		-25°C ~ 50°C			
	Refrigerants Type		R410A			
	Throttling Method		TXV (Thermostatic expansion valve)			
	Compressor	Type	Totally enclosed scroll compressor		Hermetic scroll compressors	
		Quantity	1	1	1	1
	Evaporator		Copper finned tube			
	Condenser		Copper finned tube			
	Blower		Backward inclined centrifugal fan/ External rotor direct-drive motors			
	Cooling Ventilation Fan		Backward inclined centrifugal fan/ External rotor direct-drive motors			
	Heating Element		PTC			
	Air Filter		Washable primary nylon filter			
	Noise	dBA	≤70	≤72	≤74	≤76
	Weight	kg	205	245	265	305
	Drain Connection		G3/4"			
	Dimension (L * W * H)		800*650*1850	800*650*1940	800*650*1940	800*650*2140
	Cooling Performance		L27 (47%) /L35			

Item	Parameter	Model	Model			
			FCAC-80ZT3D	FCAC-180ZT3D	FCAC-300ZT3D	FCAC-450ZT3D
	Cooling Capacity	kW	8.0	18.0	30.0	45.0
	Electric Heating Power	kW	3.0	6.0	12.0	18.0
	Cooling Power	kW	3.2	7.2	12	20.2
	Max. Current	A	9	18	30	50
	Max. Current (Dehumidification)	A	13	27	48	80
	Recirculation Air Volume	m ³ /h	2000	3600	6000	9000
	Dehumidification Function		Optional			
	Communication Interface		RS-485, MODBUS-RTU			
	Power Supply		3PH, 50Hz, 380V ± 10%, N-			
	Protection Rate		IP54			
	Working Environment		-25°C ~ 50°C, -25°C ~ 65°C			
	Refrigerants Type		R22/R410A/R407C/R134a			
	Throttling Method		TXV (Thermostatic expansion valve)			
	Compressor	Type	Hermetic scroll compressors			
		Quantity	1	1	1	2
	Evaporator		Copper finned tube			
	Condenser		Copper finned tube			
	Blower	Type	Frontward inclined centrifugal fan/ External rotor direct-drive motors			
	Cooling Ventilator Fan	Type	Low noise multi-blade axial fan / inner rotor direct drive			
	Heating Elements	Type	PTC			
	Air Filter		Washable primary nylon filter			
	Noise	dBA	≤68	≤70	≤72	≤73
	Weight	kg	180	245	330	485
	Drain Connection		G3/4"			
	Dimension (L * W * H)		1450*1000*515	1695*1300*565	1850*1300*1100	1850*1940*1100
	Cooling Performance		L27 (47%) /L35			

Item	Model		FCAC-10SV3D	FCAC-125SV3D	FCAC-200SV3D	FCAC-250SV3D
	Parameters					
Cooling Capacity	kW		8.3	12.5	20.0	25.2
Electric Heating Power	kW		3.3	6.0	8.0	12.0
Cooling Power	kW		3.2	4.9	8.5	10.5
Max. Current	A		9	13	23	28
Max. Current (Dehumidification)	A		14	23	36	48
Recirculation Air Volume	m ³ /h		2500	4000	6000	7500
Dehumidification Function	Optional					
Communication Interface	RS-485, MODBUS-RTU					
Power Supply	3PH, 50Hz, 380V±10%, N~					
Protection Rate	IP54					
Working Environment	-25℃ ~ 50℃					
Refrigerants Type	R22/R410A					
Throttling Method	TXV (Thermostatic expansion valve)					
Outdoor Unit Qty			1	1	1	2
Compressor	Installation Location	Indoor Unit				
	Type	Totally enclosed scroll compressor	Hermetic scroll compressors			
	Quantity	1	1	1	1	2
Evaporator	Copper finned tube					
Condenser	Copper finned tube					
Blower	Type	Frontward inclined centrifugal fan/ External rotor direct-drive motors				
Cooling Ventilator Fan	Type	Low noise multi-blade axial fan / inner rotor direct drive				
Heating Elements	Type	FTC				
Air Filter	Washable primary nylon filter					
Noise	dBA	≤65	≤65	≤67	≤66	
Weight -Indoor Unit	kg	122	136	195	265	
Weight -Outdoor Unit	kg	45	75	132	75	
Drain Connection	G3/4"					
Dimension (W*D*H) mm -Indoor Unit	600*522*1940		680*522*1940		800*650*1940	
Dimension (W*D*H) mm -Outdoor Unit	770*410*772		920*435*922		920*450*1527	
Dimension (W*D*H) mm -Outdoor Unit	770*410*772		920*435*922		920*435*922	
Cooling Performance	L27 (47%) /L35					

APPLICATION

Energy Storage



5G Telecommunication Data Center



APPLICATION

Ocean Platform



Military Work



Oil and Gas Exploration



Experimental Study



Planting and Breeding

