EAST
SINCE 1989

EAST “Module Cube”
Modular Data Center Solutions

EAST GROUP CO., LTD.

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Company profile »»»

Established in 1989 with 2.329 billion CNY registered capital, East Group is an excellent listed company(stock code 300376) and a global digital industry and smart energy system integrated solution provider. As one of the Global Top 500 new energy enterprises, East has focused on high-tech innovation and is a UPS power supply leading enterprise. East's service has covered more than 140 countries' partners and customers around the world.

Innovative strength

The headquarters is located in Songshan Lake High-Tech Industrial Development Zone, with additional R&D centers based in Guangzhou, Shenzhen, Xi'an, Nanjing, and Chengdu, and employing nearly 600 researchers. East undertaking 30+ national/provincial major projects, participating in the drafting of national industrial standards for formulating 30+ items, accumulating authorization 800+ patents, acquiring 200+ software copyright, possessing 90+ core technology, constructing an advanced research and intellectual property innovative system.

Core business

East is engaging in 3 strategic business sectors covering smart power supply(UPS/EPS, communication power supply, rail transit power supply, special power supply), data center(modular data center, edge computing data center, IT infrastructure, precision air conditioner), new energy(energy storage system, PCS, EMS, BMS, photovoltaic inverter, sodium-ion/lithium-ion battery, charging piles and system, micro-grid network and smart distribution network), and is a provider of global digital industry and smart energy integrated solution.

Contents

About Module Cube

In order to meet the needs of cloud computing and virtualization and improve the efficiency of data center infrastructure solution, EAST launches the new generation of data center infrastructure solution "Module Cube". This series of solutions consist of MC2000 single-row modular data center, MC6000 single/dual-row modular data center and MC8000 container-type modular data center.

Each modular data center solution of Module Cube integrates cabinet system, power supply and power distribution system, refrigerating system, generic cabling system and intelligent management with the advantages of energy conservation and environmental protection and rapid construction. Module Cube series solution makes the occupied area reduced by more than 30%, which effectively reduces the capital expenditure and operating expense of the data center.

Module Cube modular data center construction has the characteristics of safety, reliability and saving time and money, enables achieving optimal total cost of ownership of data center.

Highlights

Safe and reliable

- All series of modular data center solutions adopt the third generation of intelligent UPS of EAST. This series of UPS adopts DSP full digital control technology and integrates short circuit, overload, overtemperature, output overvoltage/undervoltage and cycle-by-cycle current limit protection.
- The power distribution unit can adopt dual power input to further improve the reliability of the system.

Short construction period

- MC2000 adopts single-cabinet or multiple-cabinet assembly mode. It can be put into use simply by assembling cabinets, connecting pipes and wiring on site.
- MC6000 adopts sub-module prefabricated production and on-site assembly, making the construction period very short.
- MC8000 adopts the overall container system factory prefabrication, boot operation only requires on-site pipe connection and wiring.

Low investment

- It can be constructed in batches by modules while operating to reduce the initial amount of money invested.

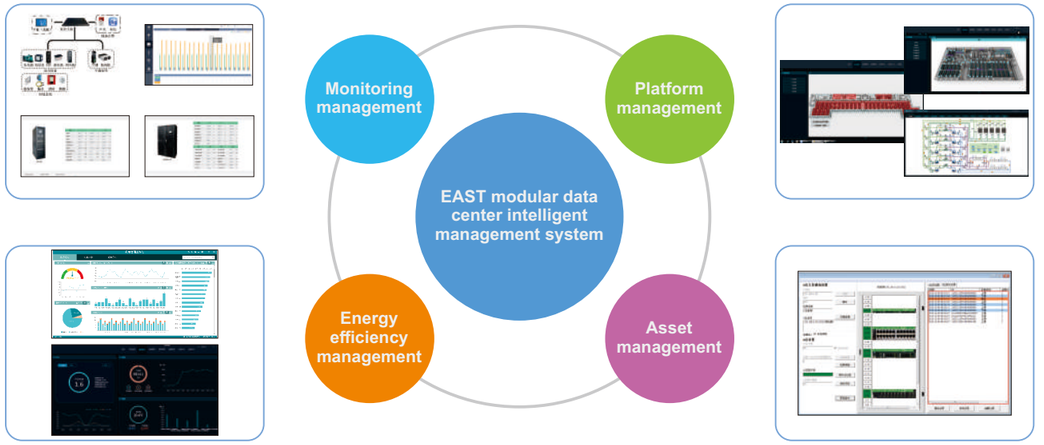
Easy maintenance

- It adopts integrated monitoring and management platform to manage multiple subsystems of air conditioner, UPS, power supply and power distribution, access control, temperature and humidity and video in the module.
- It adopts standard modular design and common parts, making maintenance easy.
- Only one manufacturer, EAST, provides all components in the module center and is responsible for operating, maintenance and management.

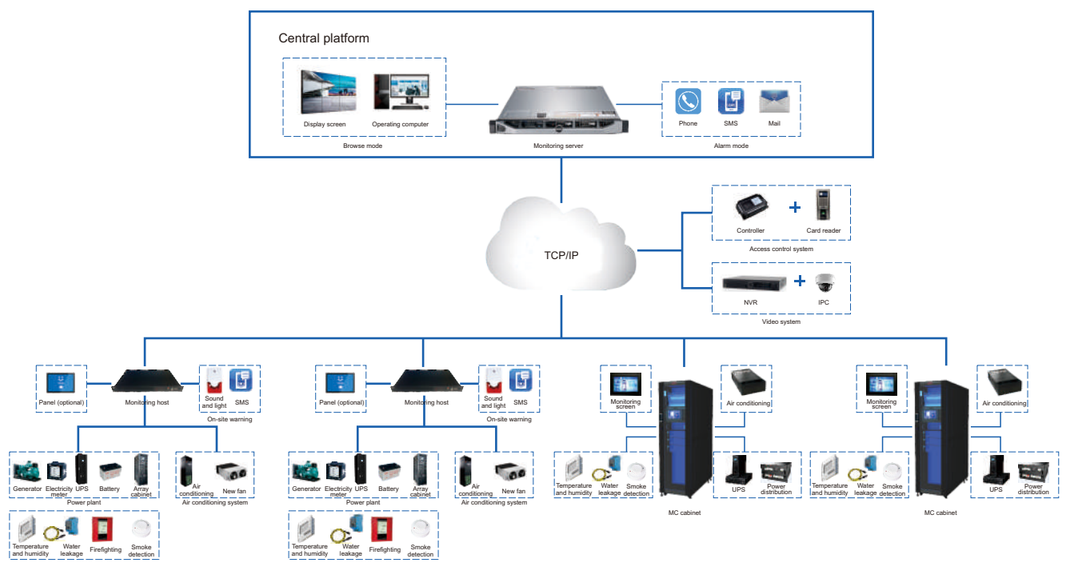
High energy efficiency

- It adopts the method of hot and cold aisle containment to avoid the mixing of hot and cold air and improve the utilization of refrigerating capacity.
- It adopts high-efficient precision air conditioner with the features of high energy efficiency ratio and sensible heat ratio.
- It adopts high frequency modular UPS/HVDC with the features of high efficiency and high power factor.

Intelligent Monitoring and Management Functions of Modular Data Center



Network Monitoring Topology of Modular Data Center



MC2000

MC2000 series is a new generation of small and medium modular data center solution which integrates the basic data center equipment of the power supply and distribution system, UPS system, refrigeration system, emergency ventilation module, cabinet and airflow management, wiring and monitoring management system into one or multiple closed cabinets. One set of cabinet is a complete data center. Each subsystem forms its own sub-module, and each sub-module is factory prefabricated and installed in each cabinet unit. In the single cabinet mode, the system is highly integrated and no assembly is required on site; in the multi-cabinet mode, the cabinet units can be assembled on site to form a row of modular data center.

MC2000 has three types of aisle containment: hot-cold aisle containment (recommended), cold aisle containment and natural cooling. Users can select one type of them according to the actual use. It is flexible and applicable for various occasions.

MC2000 row-based modular data center is one of the ideal solutions of small and medium data center, which reduces the construction complexity of small data center and solves the problem of the specialization, standardization, construction speed and expansion of small data cneter construction. Moreover, it has the advantages of fast construction, high energy efficiency, various configurations and easy maintenance.

Multiple cabinet

Single cabinet

Applications

Small and medium-sized data centers

Distributed business network rooms

Small and medium-sized network equipment rooms

Information centers of township-level state organs and public institutions

Branches' device rooms of large companies

Data centers of small and medium-sized enterprises

Features

Simplification

- MC2000 overall system standard modular structure design, each sub-module is highly versatile. The sub-modules of MC2000 are prefabricated by factory and can be assembled on site, which has low requirement for installation place. The equipment can be put into use immediately after the arrival. In the process of utilization, it only needs one monitoring and management system during use with no need of facing multiple interfaces.

High efficiency

- MC2000 has three types of aisle containment: hot-cold aisle containment(recommended), cold aisle containment and natural cooling. Thereinto, cold aisle containment can significantly improve the utilization of refrigerating capacity, hot aisle containment can improve the refrigerating efficiency of air conditioner, hot-cold aisle containment can improve the utilization of refrigerating capacity as well as the refrigerating efficiency of air conditioner. Its PUE(Power Usage Effectiveness) is industry-leading.

Flexibility

- Overall system standard modular structure design, each sub-module is highly versatile. Multiple solutions can be implemented by combining them as needed.
- The later stage can realize expansion easily.
- Rack-mounted or row-mounted air conditioners can be installed.
- It can be powered by either lead-acid or lithium batteries.
- It supports single or dual power supply.

Reliability

- The hot and cold aisles are fully enclosed and self-contained, adapting to various environments.
- Overall system standard modular structure design can avoid system design problems.
- System fault-tolerant design helps high reliability.
- Strong and weak current separation design can make less electromagnetic interference.
- Pass 8, 9 intensity electrified seismic performance test.

Intelligence

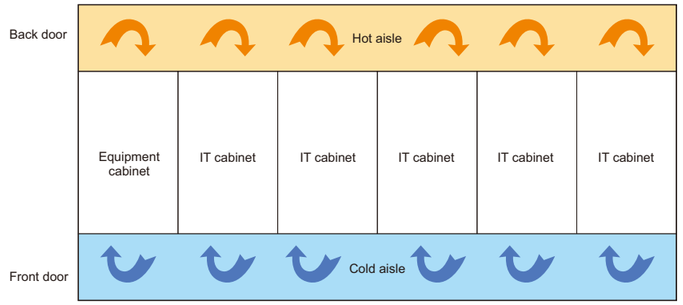
- MC2000 has built-in monitoring and management system and is configured with 10.1-inch industrial touch screen that can be used not only to view the parameters of the power supply and distribution, air conditioner, environmental variable and UPS but also to remotely monitor the operating parameters inside MC2000. Moreover, it can be connected to the superior monitoring platform via the internet for multi-network centralized monitoring and efficient management.
- The MC2000 cabinet is equipped with intelligent LED ambient lights. When the temperature is 18~27°C, the light will be blue (normal work). When the temperature exceeds 27°C, the color of the light will gradually change from yellow to red(warning effect). When the front door is opened, the white light is on for operation and maintenance. At the same time, the LED ambient light is linked with the infrared sensor on the top of the cabinet. When the infrared sensor detects that a person is approaching the device, the smart LED ambient light starts up normally, and automatically turns off after 5 minutes away from the device.

Technical Data

Overall system parameters	Power mode	380/400/415VAC, 50/60Hz, 3Ph+N+PE
	Aisle type	Cabinet type, single row aisle, hot-cold aisle containment
	System protection grade	IP 50(glass door)
	Operating temperature	-20°C~+45°C
	Number of IT cabinets	1~12
	Max. power consumption of IT loads	50kW
	Max. power density per cabinet	7kW
	Installation	Concrete ground, raised flooring
	Dimension	(600~7800)×1400×2000(W×D×H)(mm)
Refrigeration system	Input power supply	220Vac; 380Vac
	Refrigerating capacity	Rack-mounted air conditioner: 3.5kW(5U)/7.5kW(8U)/12.5kW(10U); Row-mounted air conditioner: 25kW(300mm)
	Air conditioner configuration	N, N+1
	Sensible heat factor(sensible cooling capacity/total cooling capacity)	1
	Refrigerant	R410A
	Air supply method	Supply air in front and return air in the rear
	Installation	Rack-mounted, Row-mounted
Power supply and distribution system	Power input	Single-phase three-wire/Three-phase five-wire
	UPS capacity	3kVA/6kVA/10kVA/20kVA/30kVA
	UPS configuration	N, N+1, 2N
	UPS rated input voltage	220/230/240Vac single-phase, 380/400/415Vac three-phase
	UPS input voltage range	80~280Vac single-phase, 228 ~ 485Vac three-phase
	UPS output power factor	1
	UPS rated output voltage	220/230/240Vac single-phase, 380/400/415Vac three-phase
	UPS overall efficiency	≥95%
	Maintenance bypass	Support
	Battery type	Lead-acid battery, lithium battery
	Battery deployment	Battery pack, battery cabinet, battery rack
	Battery backup time	15min~240min, configure according to actual needs
	Mains power feed-out ways	4/9/12 ways IT+air conditioner+fire-fighting systems+lighting+communication
	UPS feed-out ways	4/9/12 ways IT
	AC lightning protection	Class C
	PDU	Ordinary/Intelligent: support IEC or national standard socket
Monitoring system	Monitoring system host	Support Web direct access and centralized monitoring of multiple sites
	Local interface	10.1-inch industrial touch screen
	Standard configuration	Water leak detector, smoke detector, temperature and humidity sensor, cabinet light strip, door sensor, SMS alarm/router, power supply and distribution/UPS/air conditioner monitoring
	Optional configuration	Automatic spring door device, fresh air module, camera/audible and visual alarm/infrared, firefighting module, mobile APP
	Protocol format	Modbus TCP/IP
Firefighting system	Installation	Rack-mounted installation
	Starting mode	Smoke and temperature sensor dual interlock pre-action system
	Gas type	Heptafluoropropane

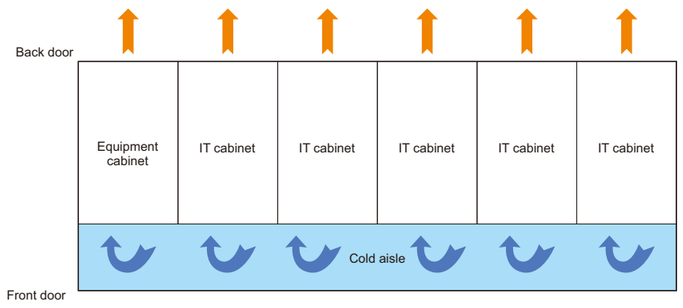
MC2000 Hot-cold Aisle Containment Solution

MC2000 hot-cold aisle containment solution is the solution that closes both cold aisle and hot aisle. It has the both advantages of high utilization of refrigerating capacity when closing cold aisle and improving refrigerating efficiency of air conditioner when closing hot aisle. This solution has the better energy saving effect. MC2000 hot-cold aisle containment solution uses variable capacity computer room air conditioner with load following technology, which can be used to adjust the output of refrigerating capacity and air capacity according to actual load calorific value for further improving energy saving effect. The independent micro modules of MC2000 hot-cold aisle containment solution has not much requirement for ambient environment and has stronger adaptability. This solution is applicable for most applied occasions.



MC2000 Cold Aisle Containment Solution

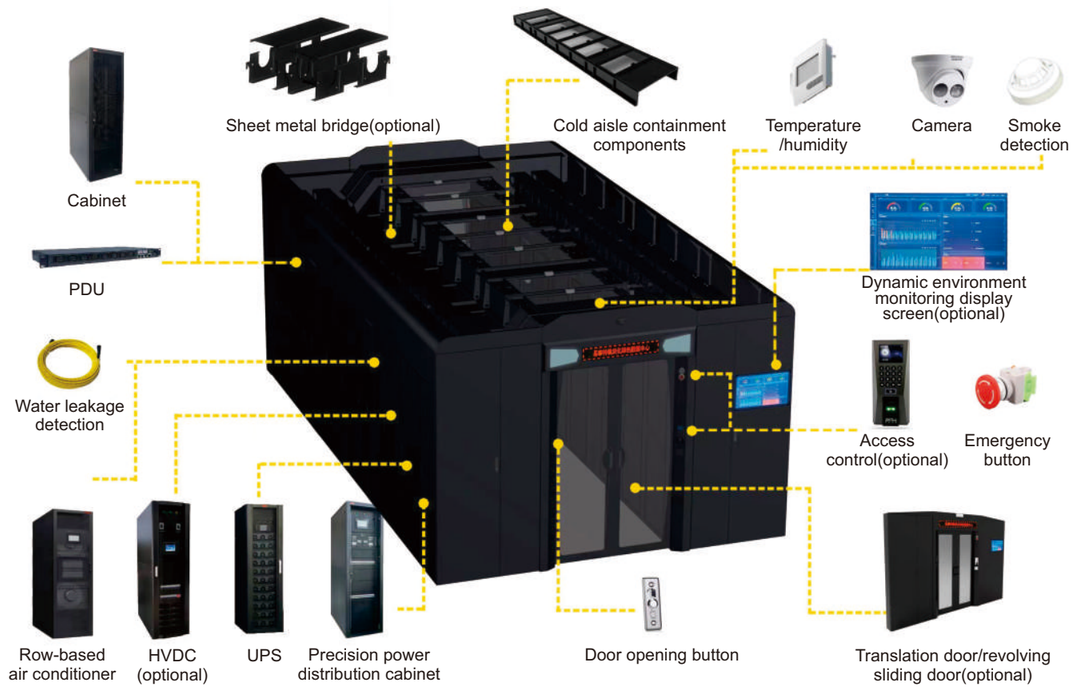
MC2000 cold aisle containment solution manages the output refrigerating capacity of computer room air conditioner, it only cools the device with no need of cooling the ambient environment to improve the utilization of refrigerating capacity. This cold aisle containment solution is better used in the computer rooms which have more cables at the back side of the cabinet or have relatively large area.



MC6000

MC6000 series micro modular data center is the latest generation of data center infrastructure solution, which integrates all the subsystems like cabinets, refrigeration, power supply and distribution system, airflow management, firefighting, cabling, security, monitoring and lighting into one. It adopts efficient and reliable modular precision power supply and distribution equipment and system standardization architecture design, which makes components and parts high versatile and factory prefabricated, makes construction period of data centers shorter and later maintenance more convenient and quicker. It is featured with high reliability and high security and enables rapid and flexible deployment and relocation for the whole system.

MC6000 has three types of aisle containment for choice: cold aisle containment, hot aisle containment and hot-cold aisle containment. The access door has a variety of options such as revolving sliding door, automatic or manual translation door, etc., to meet the different needs of customers.

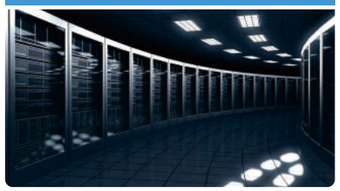


Applications

Medium and large data centers

Information centers of state organs and public institutions

Telecom data centers, information rooms



Data centers of higher education institutions

Data centers of financial institutions

Large educational institutions

Features

Reliability

- System standardization architecture design makes components and parts high versatile and avoids system design problems.
- System fault-tolerant design helps high reliability.
- Strong and weak current separation design makes less electromagnetic interference.
- Very early fire warning(option).
- Pass 8, 9 intensity electrified seismic performance test.

High efficiency

- Efficient integrated power supply and distribution, enclosed hot and cold aisles, high power density and energy efficiency.
- Support single-row or double-row hot-cold aisle containment in a variety of ways, isolate hot and cold air flow and eliminate local hot spots.

Energy conservation

- PUE can be maintained at a lower level through enclosed aisle design, and is more energy efficient than traditional computer room.
- Later expansion available, the capacity can be gradually upgraded and expanded according to the later development situation, saving the initial investment cost.

Intelligence

- Micro-module monitoring system performs all-round monitoring and unified management on the power distribution, environment, security, fire protection and other equipment inside the micro-module.
- Energy consumption of the micro-module can be analyzed precisely through the precise distribution system.

Simplification

- Standard modular structure design helps to realize modular combination in different sizes and different powers. Product delivery can be completed in 3-6 weeks.

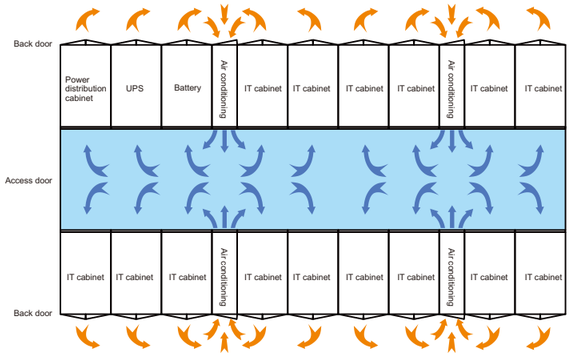
Technical Data

Micro modular system	Dimensions	Single row cold/hot aisle containment(L×W×H)
		L×2465×2550/2750mm, L≤15m, height 2550/2750mm is the total height of the system after the skylight is flipped
		L×2365×2550/2750mm, L≤15m, height 2550/2750mm is the total height of the system after the skylight is flipped
		L×2265×2550/2750mm, L≤15m, height 2550/2750mm is the total height of the system after the skylight is flipped
		Double row cold/hot aisle containment(L×W×H)
		L×3600×2550/2750mm, L≤15m, height 2550/2750mm is the total height of the system after the skylight is flipped
		L×3400×2550/2750mm, L≤15m, height 2550/2750mm is the total height of the system after the skylight is flipped
		L×3200×2550/2750mm, L≤15m, height 2550/2750mm is the total height of the system after the skylight is flipped
	Access doors	Revolving sliding door(concealed door closer, concealed electromagnetic locks design; two installations-access inside/outside are selectable for the power and environment monitoring display screen)
		Translation door(auto/manual are selectable, with 200mm deep cabinets on both sides, can hide the translation door, and can install dynamic environment equipment)
	Cabinet quantity of Single module	Single row: 3~24; Double row: 6~48
	Power mode	AC: 380/400/415Vac, 50/60 Hz, 3Ph+N+PE
		DC: -48/240/336Vdc, positive and negative+PE
	Single module IT power consumption	Max. 200kW(Confirm with an engineer for above 200kW)
	Max. power of single cabinet	18kW
	Operating environment	Ultra-low temperature condition: -40~45°C
		T1 condition: -25~45°C
		T3 condition: -5~45°C
	Reliability level	Tier II or Tier III(extendable to Tier IV)
	Altitude	0~1000m(derating for above 1000m)
Cabinet	Dimensions(W×D×H)	600/800×1200×2000/2200mm
		600/800×1100×2000/2200mm
		600/800×1000×2000/2200mm
	Available space	42U/47U
	IP rating	IP20
Air cooled in-row air conditioner	Refrigerating capacity(single air conditioner)	12kW/25kW/40kW
	Dimensions of internal machine	300/600×1000/1100/1200×2000/2200mm
	Input power supply	AC: 380/400/415Vac, 50/60Hz(optional DC: 240/336Vdc)
	Refrigerant	R410A
	Fluorine pump	Optional
Chilled water in-row air conditioner	Refrigerating capacity	12kW~70kW
	Dimensions of internal machine	300/600×1000/1100/1200×2000/2200mm
	Input power supply	AC: 380/400/415Vac, 50/60Hz(optional DC: 240/336Vdc)
	Refrigerant	Water/ethylene glycol aqueous solution
Integrated UPS (built-in UPS)	Input voltage	380/400/415Vac, 50/60Hz, 3Ph+N+PE
	Input power factor	>0.99(full load), >0.98(half load)
	Rated capacity	50~200kVA
	Efficiency	≥96%
	AC lightning protection	Class B, C
Modular power distribution cabinet (external UPS)	Input voltage	380/400/415Vac, 50/60Hz, 3Ph+N+PE
	Rated capacity	500A
	AC lightning protection	Class B, C

Note:
1. Different batteries can be configured by customers for getting different backup time.
2. If choose air-cooled air conditioner, optional cryogenic components are needed when outside temperature is below -15°C.
3. Cabinet fire protection without piping system is selectable for hot-cold aisle containment solution.

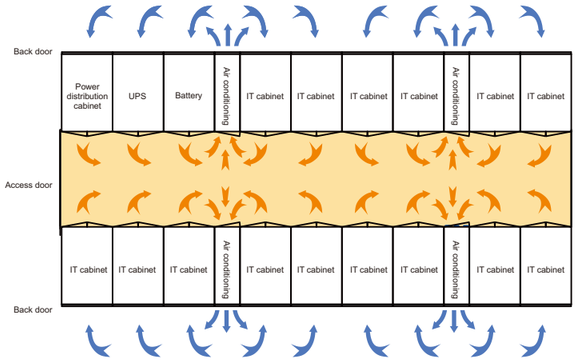
MC6000 Cold Aisle Containment Solution

MC6000 cold aisle containment solution places the cabinet face to face, closes the cold aisle on the front of the cabinets to make utilization of the refrigerating capacity higher. The external of MC6000 module is a thermal environment, there is no need to refrigerate the external environment to avoid cold waste. It is especially suitable for data centers built in batches.



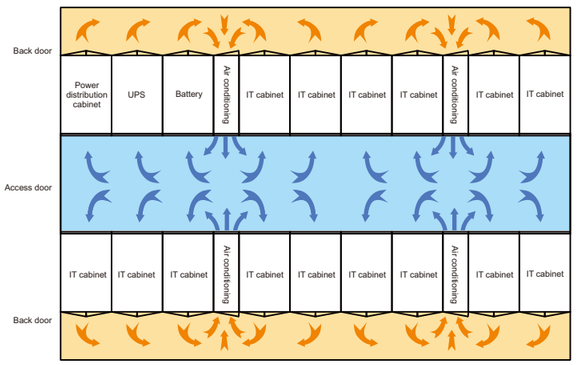
MC6000 Hot Aisle Containment Solution

MC6000 hot aisle containment solution places the cabinet back to back, closes the hot aisle on the back of cabinets to raise the return air temperature of the air conditioning in the machine room, so as to improve the cooling efficiency of the air conditioning. Meanwhile, the machine room is in cold environment, maintenance personnel feel more comfortable. It is suitable for machine room with low loads or high maintenance frequency.



MC6000 Hot-cold Aisle Containment Solution

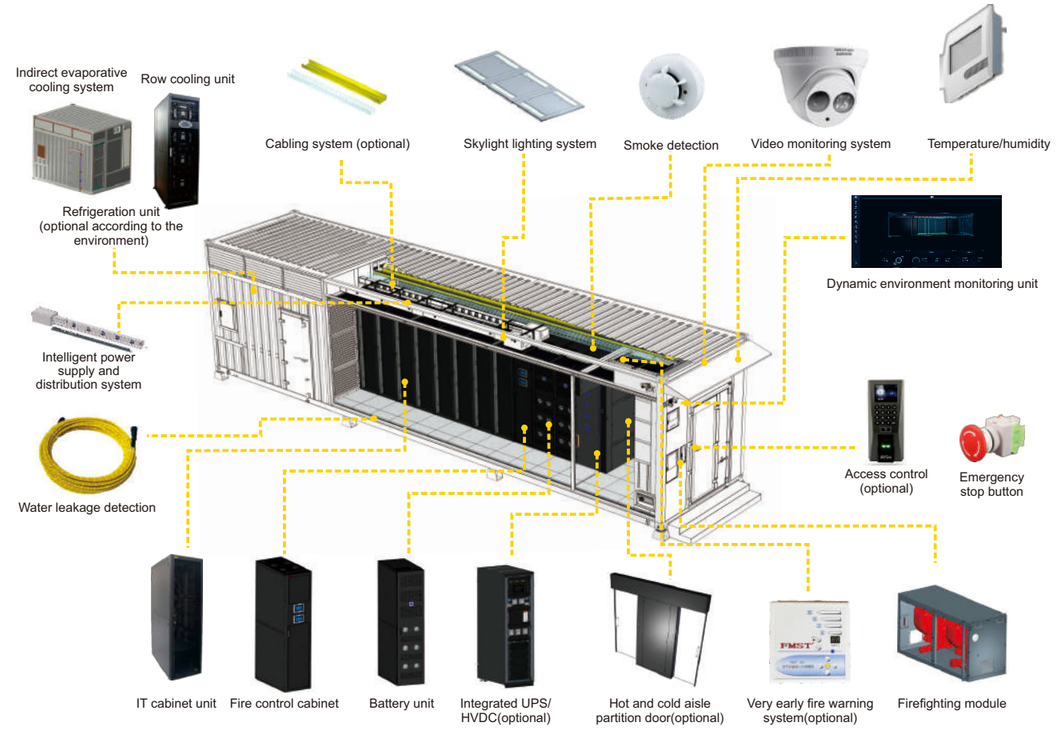
MC6000 hot-cold aisle containment solution is the solution that closes both cold aisle and hot aisle. It has the both advantages of high utilization of refrigerating capacity when closing cold aisle and improving refrigerating efficiency of air conditioner when closing hot aisle. This solution has the better energy saving effect.
MC6000 hot-cold aisle containment solution has not much requirement for ambient environment and has stronger adaptability. This solution is applicable for most applied occasions.



MC8000

The MC8000 series is a new generation of prefabricated modular data center infrastructure solution, which integrates all the subsystems like cabinets, refrigeration, power supply and distribution system, airflow management, firefighting, cabling, security, monitoring and lighting of the traditional data center into one container. Different from the traditional way of starting with architecture and then designing and constructing, it is container data center module prefabricated in the factory. All equipment and systems are pre-assembled in the factory. After positioning and the foundation laying, the container data center is transported to the site as a whole to be installed in place, and then it can be put into use after connecting the water, electricity and network.

The MC8000 container data center system prefabricated in the factory is featured with sufficient quality assurance, high reliability, low operating cost, high efficiency, low carbon, green energy saving, rapid deployment, capacity expansion on demand.



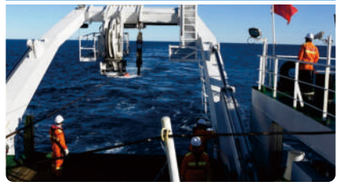
Applications

State grid

Post-disaster communications

Cloud computing, IDC

Marine research



Oil-gas exploration

Military cooperation

Features

Reliability

- 25-year cabinet design life, IP55 protection grade.
- Standardized design of the overall container system to avoid system design problems.
- The overall system is factory prefabricated, and all the assembly and commissioning pass the quality test of the factory, which greatly reduces the workload and the uncontrollable factors of on-site construction.
- Strong and weak current separation design makes less electromagnetic interference.
- Very early fire warning system (optional).

Flexibility

- The overall system is factory prefabricated. The container data center can be put into use after it is transported to the site and connected with the water, electricity and network.
- Container-type overall design, easy to move, can be deployed quickly and flexibly according to data center's needs.
- The container modules can be expanded one by one and constructed in phases.

High efficiency

- Efficient integrated power supply and distribution, enclosed hot and cold aisles, high power density and energy efficiency.
- Support single container or multi-container assembly mode, and increase land utilization rate through stacking.
- The cold and hot aisles inside the overall container are isolated from the outside to improve the utilization efficiency of refrigeration.

Intelligence

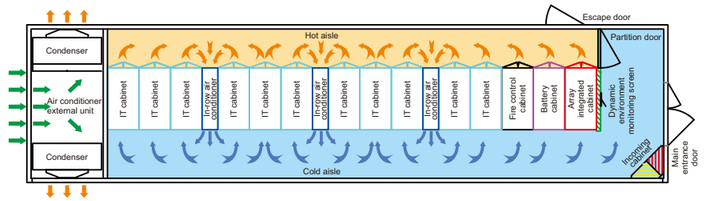
- MC8000 has built-in monitoring and management system and is configured with 21-inch industrial large touch screen that can be used to view the parameters of the power supply and distribution, air conditioner, environment and UPS. With its own unattended automatic operation platform, remote monitoring of the operating parameters inside MC8000 can be performed without leaving home. Moreover, it can be connected to the upper level monitoring platform via the internet for multi-network centralized monitoring and intelligent management.

Technical Data

Subsystem		Specification
Container system	Dimensions	40 feet(12192x2438/3000x2896/3000/3200mm)(L×W×H); Multiple container assembly solution needs to be customized
		20 feet(6058X2438/3000X2896/3000/3200mm)(L×W×H)
Power supply and distribution(Integrated UPS/HVDC)	Input voltage	380/400/415Vac, 50/60Hz, 3Ph+N+PE
	Input power factor	Full load>0.99, half load>0.98
	Rated capacity	50~200kVA
	Efficiency	≥96%
	AC lightning protection	Class B, C
Battery	Built-in battery cabinet	5~20 minutes backup time
Air cooled in-row air conditioner	Refrigerating capacity (single air conditioner)	12kW/25kW/40kW
	Dimensions of internal machine	300/600x1000/1100/1200x2000/2200mm(W×D×H)
	Input power supply	380/400/415Vac, 50/60Hz, 3Ph+N+PE
	Refrigerant	R410A
	Fluorine pump	Optional
Chilled water in-row air conditioner	Refrigerating capacity (single air conditioner)	12kW/25kW/40kW
	Dimensions of internal machine	300/600x1000/1100/1200x2000/2200mm(W×D×H)
	Input power supply	380/400/415Vac, 50/60Hz, 3Ph+N+PE
	Refrigerant	Water/Ethylene glycol aqueous solution
Indirect evaporative refrigeration unit	Refrigerating capacity	65kW/120kW
	Dimensions	2400X3000X3200mm/4100X3000X3200mm(L×W×H)
	Input power supply	380/400/415Vac, 50/60Hz, 3Ph+N+PE
	Refrigerant	R410A
Cabinet system	Dimensions	600x1000/1100/1200x2000/2200mm(W×D×H)
	20 feet Number of supported IT cabinets	5~6
	40 feet Number of supported IT cabinets	9~13
Firefighting system	Firefighting system	Automatic fire detection and fire extinguishing system
	Firefighting module	Rack-mounted firefighting module(13U), can be installed into a standard 19-inch
	Firefighting gas	Heptafluoropropane
	Very early smoke detection system	Optional
Security system	Access control	Standard access control system, optional fingerprint, password, swipe card and other multi-functional access control management methods
	Escape system	The container is equipped with fire escape door for quick escape from the inside
	Video monitoring	IP high-definition camera, connected to the dynamic environment system
Work environment	IP rating	IP55
	Temperature	-40 °C~+52 °C
	Humidity	10%~100%
	Altitude	Derating for above 1000 m

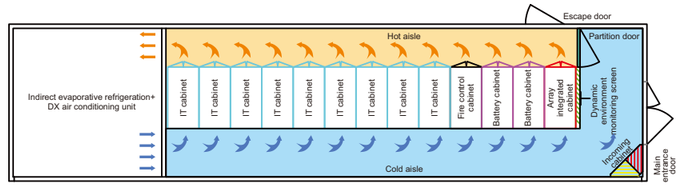
MC8000 Air-cooled Temperature Control Solution

The row air-cooled temperature control solution is recommended. When this solution is adopted, the air conditioner external unit or the centralized condenser is installed in the compartment, and all the subsystems are assembled in the factory to realize the prefabrication of the whole system, which is simple and convenient, and has a wide range of use; Fluorine pump can be selected according to needs, which is more energy-saving.



MC8000 Indirect Evaporative Temperature Control Solution

For areas with high air cleanliness and dust-free weather, indirect evaporative cooling temperature control solution is recommended. The solution is divided into three working conditions, indirect evaporative cooling(with spray)+DX refrigeration, indirect evaporative cooling(with spray, wet conditions), indirect cooling(no spray, dry conditions). The system can automatically change the working mode according to the change of external temperature and humidity environment, so as to save energy.



MC8000 Chilled Water Temperature Control Solution

For data center parks that have redundant chilled water resources available, chilled water temperature control solution is recommended. The original cooling tower and chiller are used to improve the utilization rate of resources. The chilled water solution can improve the maximum power density of a single cabinet, improve the utilization rate of containers and save resources.