



SMART CABINET DATA CENTER



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SMART CABINET DATA CENTER

• MICRO DATA CENTER

PRODUCT INTRODUCTION

- Relying on its rich experience and technology accumulation in the data center industry, HAIRF has launched a cabinet-level micro data center solution, turning data center infrastructure into a product as a whole, and deeply integrating UPS power supply and distribution, cooling, cabinets, wiring, monitoring and fire protection. It provides safe, reliable and efficient operation support for IT equipment, realizes one-stop deployment and unified operation and maintenance management of data room, and creates a cabinet-based micro data center - CADC (Cabinet as a Data Center).
- HAIRF Micro Data Center solutions have a variety of specifications and models, which can fully cover various application scenarios!



PRODUCT SOLUTION

- With the advent of the era of big data, industries such as cloud computing, mobile internet and the internet of things are booming. The scale of data centers continues to increase and presents a trend of polarized development. There are more and more micro data centers at the end. Due to the differences in geography, environment and architecture, the scattered micro data centers have been facing the dilemma of difficult unified planning, construction and operation and maintenance management, which has brought great challenges to the rapid launch of services.

SMART CABINET DATA CENTER

• PRODUCT SOLUTION

APPLICATION

- Business outlets (Industry like: telecommunications, finance, energy, radio and television, retail...)
- Small enterprise
- Branches and networks of large enterprises, government, education.
- Healthcare
- Edge Data Center

VALUE



EASIER

- To integrate the infrastructure through the idea of productization and modularization, it is only necessary to select the appropriate product specifications according to the space capacity requirements of the IT equipment, and there is no need to calculate and design the subsystems, which greatly simplifies the design process.



SAVING MORE TIME

- The productized design enables the IC series rack-type smart data center to be installed and delivered on site within one day, which is more than 2 times faster than the traditional construction mode.



SAFER

- The in-depth integration of integrated products and the factory pre-validation test are more standardized, safe and reliable than on-site construction;
- The fully sealed design eliminates the harm of external air dust and corrosive gases to IT equipment;
- The dynamic environment monitoring system monitors the infrastructure in an all-round way, alerts abnormal conditions in time, and is safe and secure.



LOWER COST

- The minimum floor area is only 0.7 square meters, the closed design, strong environmental adaptability, no need for decoration, flooring and other supporting projects, effectively reducing CAPEX, fully enclosed refrigeration improves the energy efficiency of the whole machine, reduces OPEX, and significantly reduces the total cost of ownership (TCO).

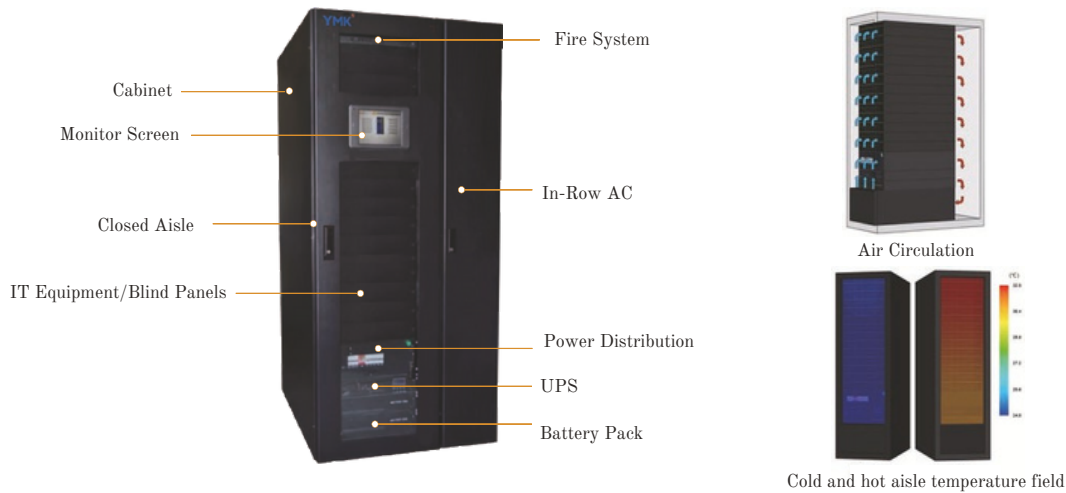


BETTER MANAGEMENT

- One-stop after-sales service can deal with various equipment failures in time, saving time and worry;
- Equipped with a dynamic monitoring system as standard, it can monitor and manage locally and remotely, and it can also access the upper management platform for unified supervision by multiple outlets, and support diversified choices.

SMART CABINET DATA CENTER

• RACK DATA CENTER



Advantages

Integration

- In-depth integration of data center infrastructure products, including UPS, power distribution, refrigeration, cabinets, monitoring, fire protection and other subsystems, through the monitoring system to achieve overall management of all subsystems, creating an integrated product, simplifying design and procurement and the construction process!

Integration

- The reliable UPS power supply and distribution system can continuously escort IT equipment, and can customize the high-reliability system to meet the availability requirements of different users. A rack-type precision cooling system is configured to ensure that IT equipment operates in a stable and reasonable temperature and humidity environment.
- It adopts a fully sealed design and has low dependence on the environment. It can be used in a variety of environments, and it is no longer necessary to set up a separate computer room.
- Equipped with emergency ventilation device, in the event of air conditioning failure, it can turn on natural ventilation and heat dissipation, providing time for users to back up; it can also linked with the fire protection system to allow the fire extinguishing gas to enter the cabinet smoothly.
- The dynamic monitoring system monitors the working status of the equipment in real time, does not miss any abnormal conditions, quickly locates faults, and eliminates hidden dangers.

Save TCO

- Area saving: the integrated design saves more than 40% of the floor space compared to the traditional construction mode;
- Saving supporting investment; fully enclosed design, can be installed in various environments (computer room, utility room, office, etc.), no need to invest in the construction of computer room and supporting facilities;
- Save construction time: Integrated products, on-site installation time can be completed within one day, when large-scale deployment, the construction period is greatly shortened;
- High efficiency and energy saving: high frequency UPS, the whole machine efficiency is up 92%; cabinet-level refrigeration + fully enclosed cold and hot aisle refrigeration can save energy by more than 30% compared with traditional refrigeration methods, and the PUE of the whole machine can be lower than 1.45.

Simplify Operations

- The dynamic environment monitoring system of comprehensive product operation data, provides alarms and various reports, and realizes unattended, remote operation and maintenance; it can also be integrated into the upper management system for centralized management;
- The cabinet-type structure with transport casters makes the data center moveable and convenient;
- one-stop after-sales service, one phone call to solve all problems.

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• RACK DATA CENTER - TECHNICAL DATA

STANDARD

Series		Conventional Air Conditioning Version				
System	Index	ICS103C	ICS206C	ICS310C	ICS520C	ICS520B
Power Distribution And Distribution	UPS Capacity	3KVA	6KVA	10KVA	20KVA	20KVA+20KVA
	Power Factor	0.8	0.8	0.8	0.9	0.9
	Total Power Input	220V/40A	220V/63A	220V/125A	380V/125A	380V/125A
	Height	4U	4U	4U	6U	9U
	Lightning Protection	C Class				
	Others	ATSModie (optional)				
Cabinet	Recommended Number of IT Cabinets	1	2	3	5	5
	Available Space	28U	33U+42U	29U+2*42U	30U+4*42U	21U+4*42U
	Number of PDU in a Single Rack	1*8bit10A	1*12bit10A		1*(12bit10A+4bit16A)	2*(12bit10A+4bit16A)
	Closed Aisle	Fully Enclosed Cold And Hot Aisle				
	Emergency Ventilation	Fan-type emergency ventilation system, support maximum 5KW heat dissipation, automatic start and stop				
	IT Space Expansion	Standard IT Cabinet with 42U usable space (optional)				
Refrigeration	Type	Rack Mount	In-Row	In-Row	In-Row	In-Row
	Cooling Capacity (kW)	3.5	7.5	12.5	2*12.5	3*12.5
	Sensible Heat Ratio	1				
	System	Compression System + EC Fan				
Monitoring	Monitoring Volume	UPS, Power Distribution, AC, Water Leakage, Temperature & Humidity, Smoke, Door Sensor				
	Function	Data Collection and Storage, Alarm Management, Energy Consumption Analysis, Remote Access, Sound and Light Alarm (optional), SMS Alarm (optional), APP (optional)				
	Display	10-inch Touch Screen				
Fire	Heptafluoropropane	1U Rack-Mounted Gas Fire Extinguishing System (optional)				
Battery	Standard Number of Batteries	8	16	16	20	2*20
	Backup Power of 15 minutes	2U Battery Pack	3U Battery Pack	6U Battery Pack	-	-
	Backup Power of 40 minutes	-	-	-	External 20 100A/12V	-
	Backup Power of 90 minutes	-	-	-	-	External 2*20 100A/12V
	Longer Time Delay	Can be replaced with high-capacity batteries or increase the number of battery packs (not more than 4)				
Size	W*D*H-mm	600*1200*2000	1500*1200*2000	2100*1200*2000	3600*1200*2000	3900*1200*2000
Environment	Environment Temperature	0~45°C				
	Environment Humidity	Relative Humidity 0-95%, No Condensation				
	Altitude	<1000m, The excess part is derated according to relevant standards				

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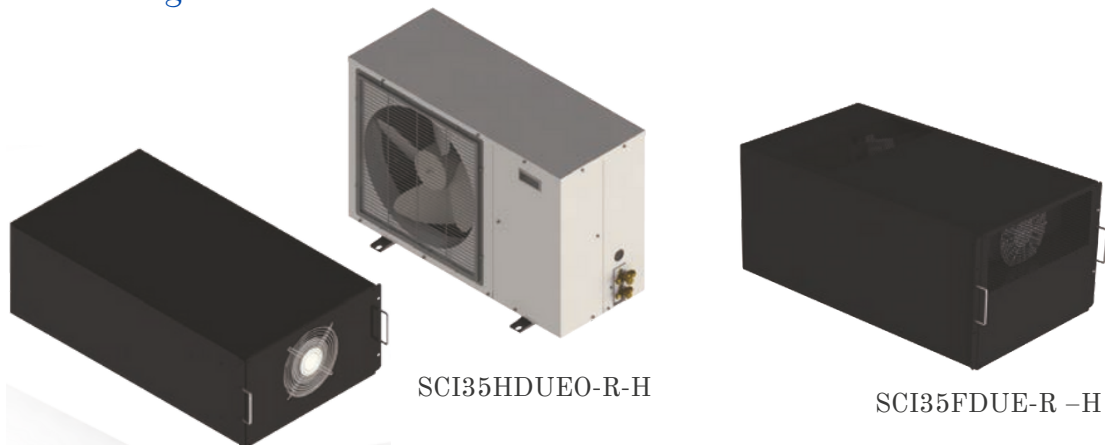
• COOLING SYSTEM

With more than ten years of experience in the field of data center refrigeration, HAIRF has developed SCI series air conditioners according to the application characteristics of smart cabinets. It adopts 3 structural forms, and users can choose according to their needs and different application occasions: rack-mounted air conditioners. It can be used in the cabinet to directly cool the server; the in-row air conditioner is used in combination with the cabinet, the integrated air conditioner integrates the outdoor unit, which can be flexibly arranged.

Energy Efficient

- The air conditioner and the server cabinet form an enclosed space. The air supply distance of the air conditioner is short, and it is directly delivered to the server air inlet, reducing the loss of air flow and cooling capacity, high efficiency and energy saving, and reducing the PUE value of the computer room.
- The EC fan is used, which is suitable for independent local high-density heat dissipation, adjust the air volume output in time, and keeps the temperature and humidity in the confined space constant.

Rack Mounting AC



TYPE	SCI35HDUEO-R-H	SCI35FDUE-R-H
Significant Cooling Capacity (KW)	3.5	3.5
Air Volume (m ³ /h)	650	650
Energy Efficiency Ratio	≥3.0	
Temperature Control	±1°C	
Humidity Control	/	
Unit Size (D*W*H)	800*442*264mm	800*442*352mm
Indoor Installation Method	Standard 19" Rack Mount	Standard 19" Rack one-piece installation
Protective Function	With compressor protection, fan alarm, temperature and humidity sensor failure and other protection functions	

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• COOLING SYSTEM

High Reliable

- Adopt high-quality components that have been rigorously tested, such as compressors, fans, expansion valves, filter driers, etc.
- Steel structure frame, high-quality steel panel, and the interior of the panel is affixed with sound insulation, heat insulation, fireproof insulation cotton;
- Full frontal maintenance to reduce maintenance difficulty

High Reliable



TYPE	SCI70TDYEO-R-H	SCI120TDYEO-R-H
Significant Cooling Capacity (KW)	7.5	12.5
Air Volume (m ³ /h)	1800	2800
Energy Efficiency Ratio	≥3.0	
Temperature Control	±1°C	
Humidity Control	/	
Unit Size (D*W*H)	300*1200*2000mm	
Indoor Installation Method	Side Vertical Installation	
Protective Function	With compressor protection, fan alarm, temperature and humidity sensor failure and other protection functions	

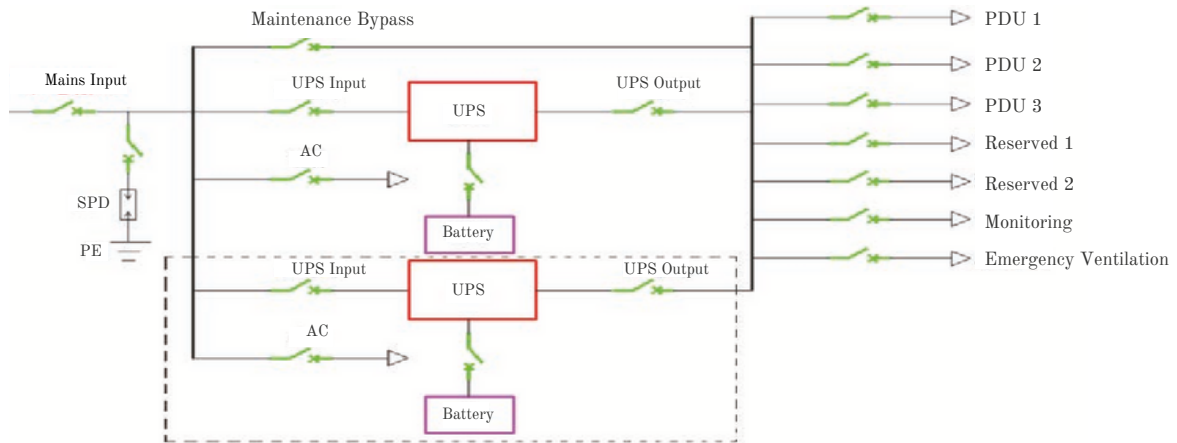
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• POWER DISTRIBUTION AND SUPPLY SYSTEM

The power supply and distribution system of the smart cabinet is mainly composed of UPS, battery, power distribution unit and PDU, etc. All products are integrated and installed inside the cabinet, the overall style is consistent, neat and beautiful.

System Topology

- The standard topology of the power supply and distribution system of the intelligent cabinet, and the system architecture meets the C/B Class computer room standards specified in GB 50174-2017.



UPS

Features

- The UPS products with rack-mounted design can be directly installed on a 19" standard rack, and the appearance style is consistent with the cabinet.
- Wide range of input voltage and frequency, able to adapt to various complex power usage environments compatible generator access.



3-6KVA



10KVA



20KVA

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• POWER DISTRIBUTION AND SUPPLY SYSTEM

Technical Data

Type	SUA1103L	SUA1106L	SUA1110L	SUA3320L	
Capacity	3KVA/2.4KW	6KVA/4.8KW	10KVA/8KW	20KVA/18KW	
INPUT					
Power Specifications	L+N+PE			3L+N+PE	
Voltage Range	50 Load	110-300VAC		190-520VAC	
	100% Load	160-280VAC	176-300VAC	305-478VAC	
OUTPUT					
Output Voltage	208V/220V/2330V/240V (Single-Phase)			400V (Three-Phase)	
Voltage Accuracy	±1%				
Frequency Accuracy	±0.25Hz	±0.1Hz			
Overload Capacity	Main Mode	105%~110%: 10 min; 110%~130%: 1 min; > 130%: 3s	100%~110%: 30 min; 110%~130%: 5 min; >130%: After 10s of overload, switch to bypass	10%~110%: 10 min; 110%~130%: 1 min; >130%: 1s overload, transfer to bypass mode	
Current Peak Ratio	3:1 (max)				
Harmonic	≤3% (Linear Load), ≤5% (Non-Linear Load)				
Switching Time	0ms				
Output Power Factor	0.8			0.9	
Waveform	Pure Sine-Wave				
Inverter Mode	IGBT				
Efficiency	AC Mode	>90%	>92%	>93%	>91%
BATTERY					
Standard-V	8*12V	16~20*12V		18~20*12V	
Recharging Current-A	1A, 2A, 4A, 6A Optional			4A	
SHOW DESCRIPTION					
LCD	Visually display the load size, battery capacity, mains mode, battery mode, fault indication, etc. through images. The output voltage can be adjusted through the on-screen display menu, the output voltage can adjusted through the on-screen display menu when the frequency bypass is enabled, the output voltage can be adjusted through the on-screen display menu when the frequency bypass is enabled, and the frequency bypass can be enabled.				
PHYSICAL PROPERTIES					
Size: DxWxH (mm)	410*438*88	530*438*88	580*438*133	668*438*266	
Weight (kg)	14.2	15	18	45	
ENVIRONMENT CONDITIONS					
Operating Temperature	0~40°C				
Operating Humidity	20-90% (no condensation)				
Operating Altitude	<1000m (The excess part is derated by 1% every time is exceeds 100m)				
Operating Noise	<50dB	<55dB	<58dB	<65dB	
MANAGEMENT					
Smart RS-232 or USB	Support Windows/XP/Vista/2008, Window® 7/8, Linux, Unix and MAC				
Optional SNMP	Supports Power Management by SNMP Manager and Web Browser				

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• POWER DISTRIBUTION AND SUPPLY SYSTEM

Battery

- According to the application requirements of small and medium-sized data centers and large IDC computer rooms, HAIRF has launched SBA series valve-regulated lead-acid batteries. SBA Series lead-acid batteries are similar but different application requirements of different data computer rooms and UPS applications. With the advanced design technology concept and advanced automated production process, the product design, performance requirements, reliability and process control are closer to the actual application of customers, and the optimal configuration of the system is realized from the perspectives of comprehensive technical indicators, cost performance and compatibility. Compared with the same type of batteries in the industry, Yimikang SBA series VRLA batteries have better rate characteristics and better quality assurance, and provide the best configuration solutions for different backup application requirements of data rooms and UPS systems.



Product Features

- HAIRF SBA Series sealed valve-regulated lead-acid batteries are maintenance-free and acid-spill-free batteries, safe and reliable;
- The battery adopts an optimized ratio of Pb-Ca-Sn alloy grid design, which can adapt to floating charging applications in various working conditions;
- The design life is up to 12 years, and the optimized oxygen circulation channel design and electrolyte ratio can effectively reduce thermal runaway risk of long-term use of the battery while ensuring the battery life; the specific active material formula takes into account the specific energy and specific power requirements of the battery;
- Comply with UL94-V0 flame retardant requirements, effectively ensure the safety of customers' systems, and the use is more secure.

Parameters

Designed Life	12 years (SBA)
Working Temperature	-20°C~55°C
Recommended Working Temperature Charge	0°C~35°C; Discharge: -20°C~55°C; Standard for Storage: -15°C~50°C
The effect of temperature on capacity	103% C ₁₀ @ 40°C; 100% C ₁₀ @ 25°C; 86% C ₁₀ @ 0°C
Float Voltage	13.6V-13.8V; suggest value 13.7V
Equalizing Voltage	14.1V-14.4V, suggest value 14.1V
Float charge temperature compensation co-efficient	-21mV/°C
Cycle use of temperature compensation co-efficient	-30mV/°C
Recommended maximum charge current	0.25CA (SBA) / 0.3CA (SBH)
Self-discharge	<3% (20°C)

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• POWER DISTRIBUTION AND SUPPLY SYSTEM

Battery Specifications

Battery Model	Rated Voltage (V)	C10 (Ah)	Battery Size				Internal Resistance		
			Length (L)	Width (W)	Height (H)	Thickness (TH)	Weight (kg)	(mΩ)	Terminal Options
SBA12-40Z	12	40	198	166	169	169	12.4	8	F11 (M6)
SBA12-65Z	12	65	350	167	182	182	20.0	7	F11 (M6)
SBA12-100Z	12	100	328	172	215	220	29.0	5.5	F12 (M8)
SBA12-120Z	12	120	407	177	225	225	34.0	4.5	F12 (M8)
SBA12-150Z	12	150	483	170	241	241	43.7	4.4	F12 (M8)
SBA12-200Z	12	200	522	240	219	224	59.0	4	F10 (M8)
SBA12-240Z	12	240	522	240	219	224	67.5	3.6	F10 (M8)

Power Distribution Unit

- Adopt rack-type design, including mains power distribution, UPS, air conditioning and load power distribution, manual maintenance bypass, convenient on-site maintenance;
- Detect the input power of the main circuit, including important parameters such as voltage, current, and active power, and provide Modbus communication protocol to access the upper-layer monitoring system to realize energy consumption statistics;
- Optional ATS dual power input module and N+1, 2N and other high-reliability power supply and distribution modules, the main switching devices are all of Schneider brand, with reliable quality;
- Contains C-Level lightning protection module to improve safety.



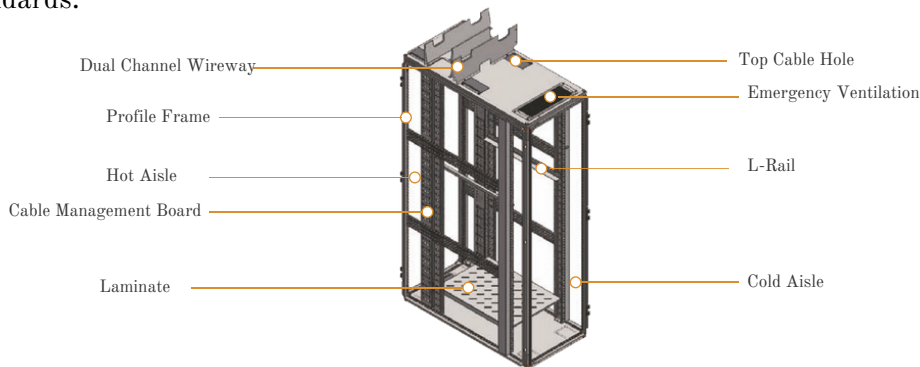
Distribution Cabinet Specifications

Type	SPG03R	SPG06R	SPG10R	SPG20R	SPG20R-X
Rated Input Voltage	220V			380V	
Rated Input Current	40A	63A	125A	125A	
Power Frequency	50Hz				
Load Output Branch	5*16A (IT) + 2*10A (Monitoring + Emergency Ventilation)			8*32A (IT) + 2*10A (Monitoring + Emergency Ventilation)	15*32A (IT) + 2*10A (Monitoring + Emergency Ventilation)
System Structure	Stand-Alone System				Parallel System
Monitoring Function	Main input power detection (voltage, current, frequency, power, etc.)				
Surge Protection	Class C Lightning Arrester				
Wiring	Rear Terminal Strip				
Installation Method	Rack Mount				
Installation Height	4U		6U		9U
Display	NO				
Communication	RS485 Interface, Modbus-RTU Communication Protocol				

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• CABINET SYSTEM

- IC series cabinets adopt standard 100% profile frame welded as a whole, with high strength, stable and reliable, static load capacity of 1500kg;
- Fully enclosed design of cold and hot aisle, dustproof and noise reduction, high efficiency and energy saving;
- The front door of the cabinet adopts a double-layer vacuum insulated glass door to prevent condensation
- At the same time, it supports upper and lower cable entry and pipe routing to meet the needs of different installation scenarios;
- Comply with ANSI/AIARS-310-D, DIN41491, PARTE, IEC60297-2, GB/T3047.2-92S and other standards.



Emergency Ventilation System

- Standard emergency channel system, through the monitoring system to automatically control the fan start and stop, safe and intelligent;
- In the event of air conditioner failure, it can ensure natural heat dissipation and prolog the running time in the event of air conditioner failure;
- It is linked with the fire protection system to keep the air flow inside and outside the cabinet circulating when a fire occurs, so that the fire extinguishing gas can smoothly enter the cabinet.



Air Outlet

Rich Cabinet Accessories



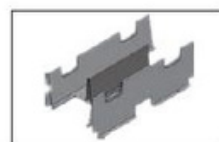
Cable management rack



Tool-free blind plate



Laminate



Dual channel wireway



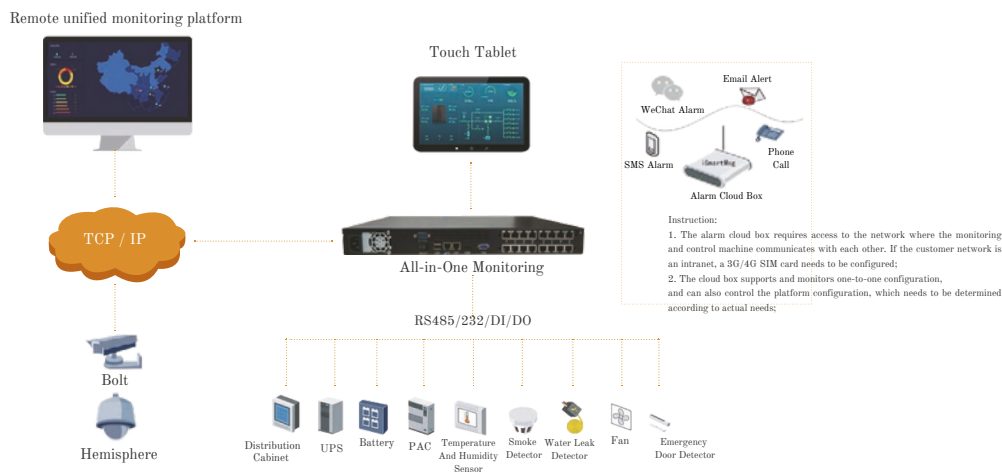
L-rail

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• MONITORING SYSTEM

The power environment monitoring system specially developed for integrated cabinet products can comprehensively monitor the power, cooling and environmental parameters in the cabinet. It has local display and remote monitoring capabilities, and provides safe, reliable and intelligent monitoring and management functions.

System Structure



System Features



- It adopts a highly integrated monitoring system, adopts an integrated collector, and a 10" touch screen is installed on the front of the cabinet.
- Control the start-up of the emergency ventilation system, set the operating parameters of the air-conditioning system and switch on and off the machine. Provide comprehensive alarm data, operating parameters, energy consumption analysis and linkage functions to meet daily unattended, remote operation and maintenance requirements.
- Support multi-site centralized management, customized operation and maintenance management platform, what you get is what you need.
- The networked monitoring platform provides unified monitoring and management, and provides monitoring and management of GIS electronic map interface.
- Provide android version APP software, know the status of the computer room anytime, anywhere, convenient, fast, safe and worry-free. Provides standard SNMP northbound interfaces and protocols, which can seamlessly access third-party operation and maintenance management platforms.
- Provides alerts vis SMS, WeChat, and email.

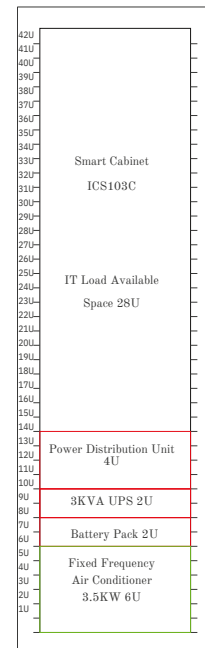
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• RECOMMENDED PLAN

PLAN 1

ICS103CARDMB

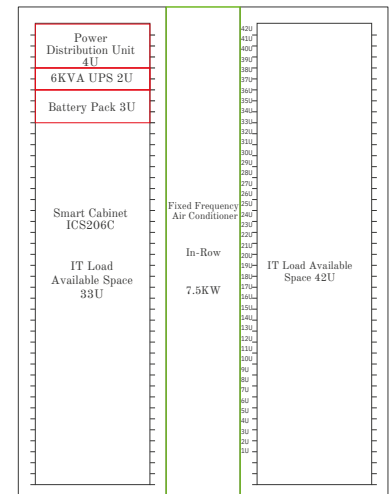
Total Number of Cabinets	1+0
Available space for IT equipment	28U
Power System	220VAC, 50Hz, 1PH+N+PE
UPS capacity	3KVA
Number of UPS	1
Supports maximum IT load power consumption	2.4KW
Battery deployment method	Battery Pack
Backup time	15 min
Air conditioning cooling capacity	3.5KW
Number of air conditioners	1
Air conditioner installation method	Rack Mounting
Air conditioning air supply method	Front Air Supply and Back Air Supply
Dimensions (W*D*H)	600*1200*2000mm



PLAN 2

ICS206CACDMB

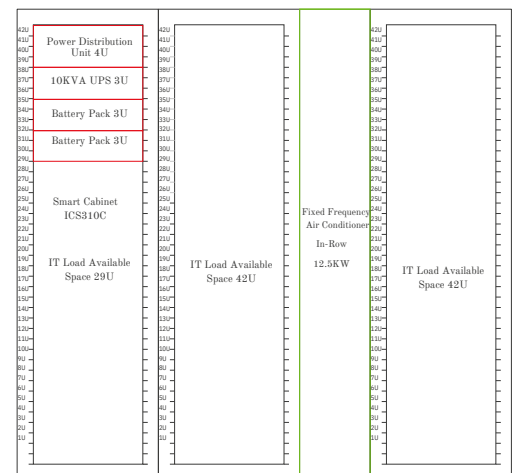
Total Number of Cabinets	2+1
Available space for IT equipment	75U
Power System	220VAC, 50Hz, 1PH+N+PE
UPS capacity	6KVA
Number of UPS	1
Supports maximum IT load power consumption	4.8KW
Battery deployment method	Battery Pack
Backup time	15 min
Air conditioning cooling capacity	7.5KW
Number of air conditioners	1
Air conditioner installation method	In-Row
Air conditioning Air Supply method	Air Supply from both sides at the front, Return Air from both sides at the back
Dimensions (W*D*H)	1500*1200*2000mm



PLAN 3

ICS310CACDMB

Total Number of Cabinets	3+1
Available space for IT equipment	113U
Power System	220VAC, 50Hz, 1PH+N+PE
UPS capacity	10KVA
Number of UPS	1
Supports maximum IT load power consumption	8KW
Battery deployment method	Battery Pack
Backup time	15 min
Air conditioning cooling capacity	12.5KW
Number of air conditioners	1
Air conditioner installation method	In-Row
Air conditioning Air Supply method	Air Supply from both sides at the front, Return Air from both sides at the back
Dimensions (W*D*H)	2100*1200*2000mm



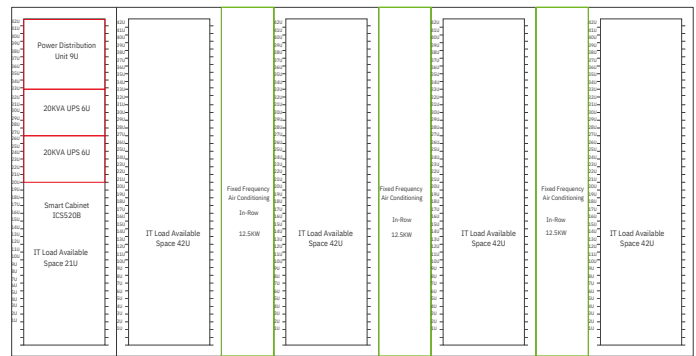
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• RECOMMENDED PLAN

PLAN 4

ICS520CACDMB

Total Number of Cabinets	5+2
Available space for IT equipment	198U
Power System	380VAC, 50Hz, 3PH+N+PE
UPS capacity	20KVA
Number of UPS	1
Supports maximum IT load power consumption	18KW
Battery deployment method	External Battery Cabinet
Backup time	40 min
Air conditioning cooling capacity	12.5KW
Number of air conditioners	2
Air conditioner installation method	In-Row
Air conditioning Air Supply method	Air Supply from both sides at the front, Return Air from both sides at the back
Dimensions (W*D*H)	3600*1200*2000mm



PLAN 5

ICS520BACDMB

Total Number of Cabinets	5+3
Available space for IT equipment	189U
Power System	380VAC, 50Hz, 3PH+N+PE
UPS capacity	20KVA
Number of UPS	1+1
Supports maximum IT load power consumption	18KW
Battery deployment method	External Battery Cabinet
Backup time	90 min
Air conditioning cooling capacity	12.5KW
Number of air conditioners	2+1
Air conditioner installation method	In-Row
Air conditioning Air Supply method	Air Supply from both sides at the front, Return Air from both sides at the back
Dimensions (W*D*H)	3900*1200*2000mm

