KSTAR

Data CenterIntegrated Solution

IDU | IDM | IDB | IOU Series

Company Profile

Founded in 1993, Shenzhen KSTAR Science and Technology Co., Ltd. (Stock code: 002518) is a global leader in the smart energy field. Kstar focused on the R&D and manufacturing of UPS, Precision Cooling and MDC (Modular Data Center), Battery, PV, ESS and EV Charger.

Founded in: 1993 **30⁺ years**

Listed in: 2010 **Stock Code:002518**

Key Products

UPS | Cooling & MDC | Battery | PV | ESS | EV Charger

Listed
Listed on SZSE

2
R&D Centers

8
Facilities

180+
180+ Markets

670+
R&D Employees

4300+
4300+ Employees

Market Achievement

TOP 5
Global UPS Supplier

Data source: Omdia 2024

TOP 1
China UPS Selling Local Brands

Data source: CCID Consulting
Annual Research Report on China's UPS
Product Market in 2023-2024

TOP 1
China Single-rack Modular Data Center Market Share

Data source: ICT research
Annual Report on China's Modular Data
Center Product Market in 2023-2024

TOP 1
China Lead-acid Battery Market Share

Data source: ICT research
Report on China's UPS Supporting Lead-Acid
Battery Product Market in 2023-2024
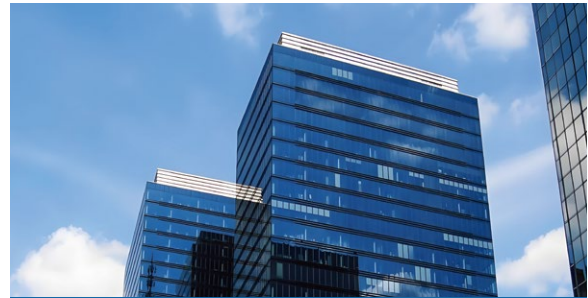
They Are Using Kstar

Beijing Olympic Games

Agricultural Bank of China Inner Mongolia Data Center

Shanghai Securities Waigaoqiao Earth Station

China's Leading Internet & E-commerce Giant A

Shanghai Telecom Data Center

Peking University Biomedical Imaging Technology Cluster Large Facility

Jinan Metro

Ruili to Menglian Expressway Electromechanical Project

Contents

IDU Data Center Solution

Product Introduction

Introduction

The Kstar IDU intelligent micro-unit data center integrates the cabinet system, power distribution system, UPS system, cooling system, monitoring system, fire fighting system and other subsystems. Occupied small footprint, the IDU integrated solution is flexible to expand and can be deployed quickly due to the pre-fabricated. To realize the energy-saving target of lower PUE, IDU is equipped with sealed cold aisle and hot aisle standardly while short cooling path reducing the loss of cold air dramatically.
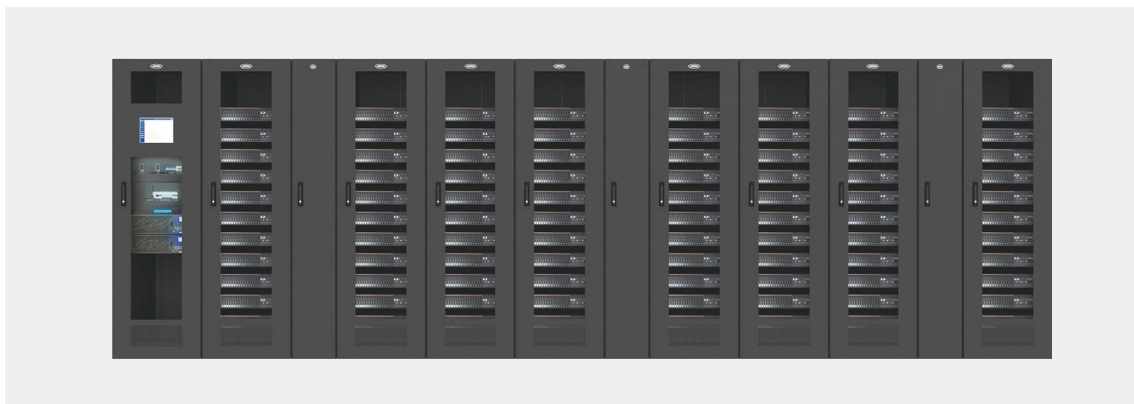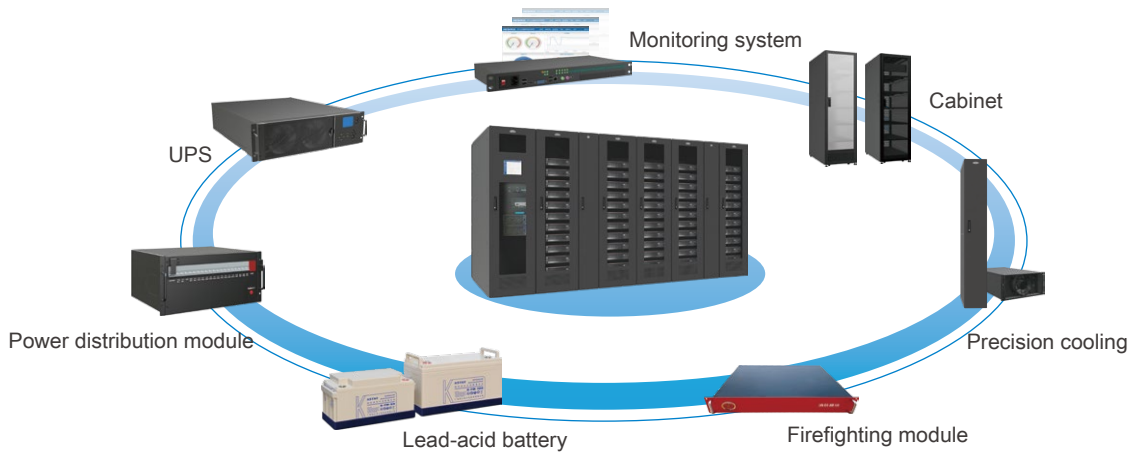
Single cabinet

Double cabinets

Multiple cabinets (3-9)

Application Scenarios

- Small/micro data center
- Small branches of financial industry
- Government computer room
- Computer room < 30m²

- 5G telecom station
- Small and medium-sized enterprise self-use computer room
- Other computer room of service facilities

Main architecture and composition of the system

Monitoring system

UPS

Cabinet

Power distribution module

Precision cooling

Lead-acid battery

Firefighting module

Cabinet system	Power distribution system	UPS system	Battery system
• 19-inch standard cabinet with meshes for ventilation • 19-inch standard cabinet with closed aisles • LED strip	• ATS module (Optional) • Rack-mounted mains module • Rack-mounted UPS distribution module • Rack-mounted expansion module (Optional) • Battery switch module (Optional) • PDU	• Rack-mounted single-phase input single-phase output high-frequency UPS • Rack-mounted three-phase input single-phase output/three-phase input three-phase output high frequency UPS • Subrack UPS • Capacity: 10 kVA~150 kVA	• Lead-acid battery • Capacity: 7AH~250AH

Cooling system	Monitoring system	Other accessories
• Rack-mounted cooling unit • Inrow cooling unit	• Monitoring server • 7-inch/10-inch touch screen • UPS/cooling/power distribution • T&H sensor, smoking sensor, water leakage sensor and door sensor	• Cable tray • Tray • Blind panel

Product features

Cabinet system

- The cabinet is of integrated form, with better compatibility and sealing performance
- Complete hot and code aisle containment, with high utilization rate of cooling capacity
- The static load bearing capacity of the cabinet reaches the industry-leading level
- By adopting the safety patent of the unique bounce-open door, safety of the power distribution system is ensured

Distribution system

- High-efficiency UPS with the power factor 0.9 (1.0 optional)
- Lead-acid battery, with patented technology of the leak-proof tray, safety of the battery during use is ensured
- Intelligent lithium battery, meeting the power backup requirements for high density and high circulation ratio

Cooling system

- With a wide cooling range of the rack-mounted or inrow cooling, meeting the requirements for nearby cooling as well as and consumption reduction

Monitoring system

- Intelligent monitoring all-in-one machine, meeting the requirements for streamlined monitoring of single and double cabinet (s)
- Intelligent access control system, supporting face recognition, with higher security

Firefighting module

- Rack mounted fire fighting module, better protect the equipments inside the cabinet

Customer Value

Safe and reliable

Professional platform and resources

Self-developed and manufactured	Good services	Focused and professional
• Strong team for full product R&D • More than 210 domestic and foreign core patents • 300,000㎡ intelligent manufacturing park	• Domestic professional service team • 7×24 round the clock response	• Being focused on deep cultivation for nearly 30 years • Provision of one-stop solutions

Characteristics and values

- When a fault occurs in the cooling system, the emergency ventilation system will be automatically turned on to ensure the normal operation of interior equipment
- By adopting the rack-mounted firefihgting module, the requirements for rapid fire extinguishing nearby can be met; and when there is no fire protection equipment in the cabinet, the smoke detector can directly trigger the bounce-open door system to ensure the fast access of the firefihgting module and the sensing system, so as to realize rapid fire extinguishing
- With the unique patent of the leak-proof tray for the battery, ensuring the safety protection against collisions and electrolyte leakage during transportation and handling
- With the self-developed intelligent battery management system (BMS), power backup in the data center is safer and more reliable
- The load bearing capacity of the cabinet reaches the industry-leading level
- With the national-level laboratory accredited by CNAS, the product quality is effectively guaranteed, and the design level of the researched and developed new product is represented
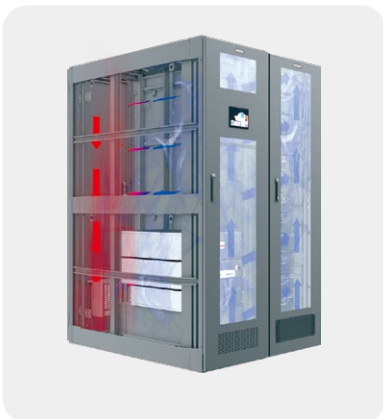
Efficient and energy-saving

Solution-level hot and cold aisle containment	+	Dual EC variable-frequency precision cooling units	+	Efficient UPS

Characteristics and values

- By closing the aisles, hot and cold airflow are isolated, the loss of cooling capacity is avoided, and the efficiency of the cooling unit is greatly improved
- By adopting the nearby air supply method with the closed aisles for the high-efficiency rack-mounted or inrow cooling units, the energy-saving effect is further improved
- With the output power factor of 1.0, the overall efficiency is as high as 96%, which greatly saves power consumption and reduces operating costs
- With intelligent monitoring supported energy efficiency monitoring, energy efficiency analysis and energy efficiency optimization, energy efficiency utilization is comprehensively improved

Rapid deployment

1 Factory prefabrication, pre-installation, and pre-commissioning
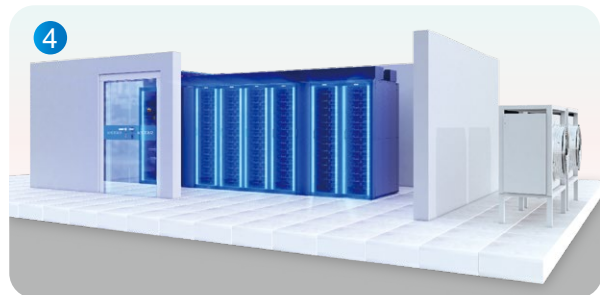
2 Overall packaging and transportation

3 Only by simple cabinet combination, line termination and cooling unit pipeline connection can complete the installation
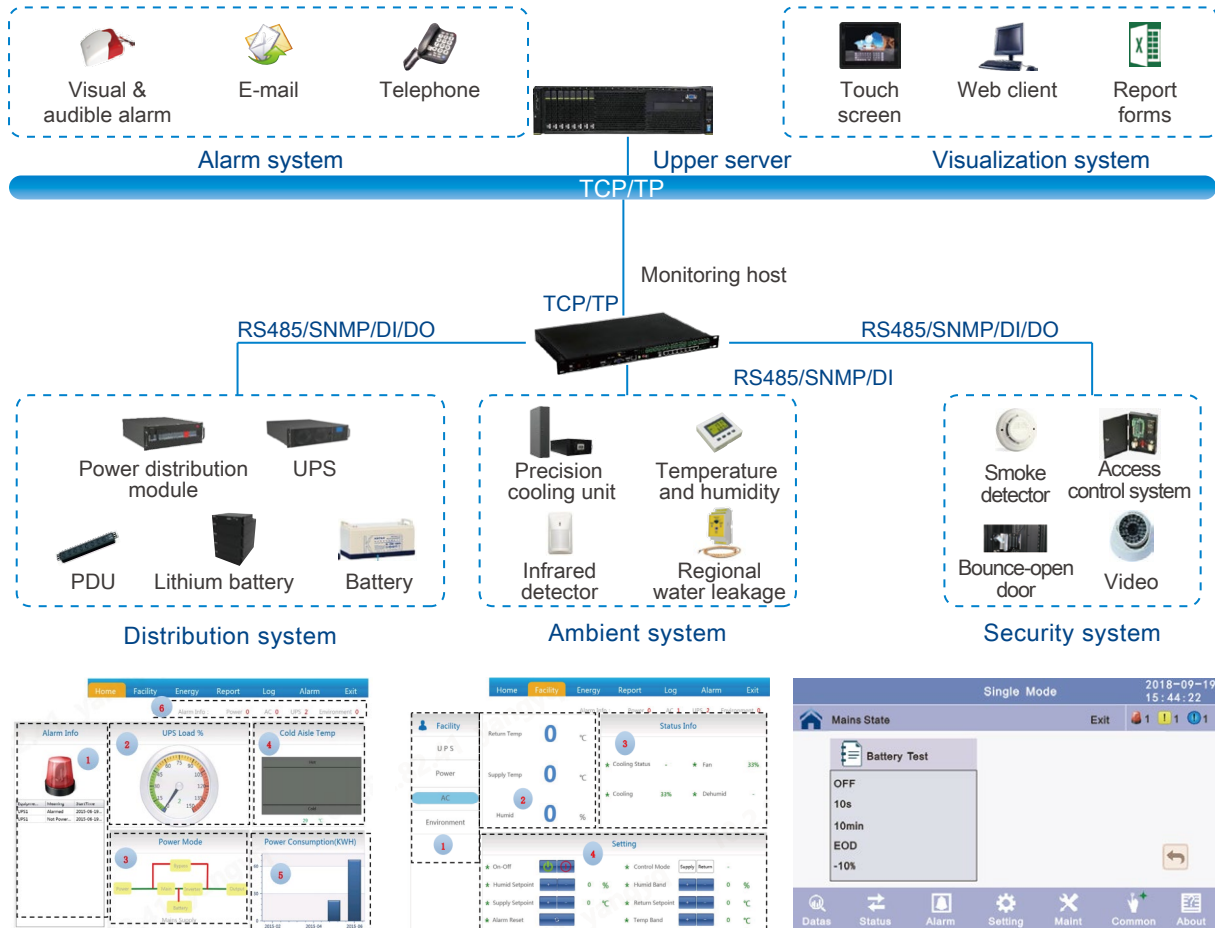
4 Power-on test, delivery and acceptance

Characteristics and values

- The only enterprise with the self-owned brand and with all main equipment being researched and manufactured on our own, ensuring complete compatibility of all systems and components
- Factory pre-installation, pre-commissioning power distribution, UPS, cooling, monitoring, aisle and other systems

- With modular design and manufacturing for all products, deployment in phases can be realized, ensuring quality and rapid delivery
- On-site installation of single and dual cabinet(s) only takes 4 hours, saving installation costs, and meeting the need for rapid business launch

Intelligent management

Monitoring Solution for IDU Micro-unit Data Center

Alarm system	Upper server	Visualization system
Visual & audible alarm — E-mail — Telephone		Touch screen — Web client — Report forms

TCP/TP

Monitoring host

TCP/TP

RS485/SNMP/DI/DO — RS485/SNMP/DI — RS485/SNMP/DI/DO

Distribution system	Ambient system	Security system
Power distribution module — UPS — PDU — Lithium battery — Battery	Precision cooling unit — Temperature and humidity — Infrared detector — Regional water leakage	Smoke detector — Access control system — Bounce-open door — Video

Characteristics and values

- The self-developed UPS is fully compatible with the battery, and the battery self-inspection system maintains battery activity, so that the battery life is greatly improved

- By adopting the intelligent face recognition system, monitoring and management are facilitated, while improving system security

- With the two-color LED strip design, the O&M personnel can visually distinguish the operation status of the system

- With the editable strategy design, the continuous optimization of energy saving is promoted through the statistics and display of power consumption data in peaks and valleys

- Local data is uploaded in real time, ensuring centralized monitoring and unified management for outlets by the upper management server

Specifications

Configuration	Single/Double cabinets	Multiple cabinets
General		
Number of cabinets	1/2	3-9
Sealed aisle	Hot and cold sealed aisles/Cold sealed aisle/No sealed aisle	
Cooling	Rack-mounted/In-row	
Battery deployment mode	Battery pack/Battery cabinet/Battery box/Battery rack	Battery cabinet/Battery box/Battery rack
Installation	Deploy on flat ground or deploy on raised floor	
Nominal voltage (Vac)	220/230/240, 1Ph+N+PE	380/400/415, 3Ph+N+PE
Fire fighting module (Optional)	Rack-mounted	
Wiring system (Optional)	Power cable tray/Signal cable tray	
Power Distribution System		
Input	Single input/Dual input (ATS optional)	
Input breaker	63/1P×1	125/1P or 125/3P or 160/3P or 250/3P or 320/3P
UPS capacity (kVA)	3/6/10	10/15/20/30/40/60/80/90/120
UPS system redundancy	N/N+1	N/N+1/2N (N=1)
Lightning protection level	Class C	
Maintenance bypass	32A/2P	63A/2P or 100A/2P or 40A/4P or 80A/4P or 125A/4P
Air conditioner switch (Standard)	40A/1P×2 or 63A/1P×2	40A/3P×(2~4) or 63A/3P×(2~3)
Output branch (Standard)	32A/1P×8 or 32A/1P×10	1. UPS distribution module : 1) 32A/1P×(3~14) 2) 12V DC power (12.5A/29A) 2.Expansion module: 32A/1P×(8/12/16/20)
Intelligent power meters	Standard	
Battery type	Lead-acid battery/Lithium battery	
Cooling System		
Power supply	Utility power	
Cooling system redundancy	N/N + 1	
Single cooling capacity (kW)	3.5~12.5	7.5~12.5
Compressor type	Inverter	Fixed speed/inverter
Monitoring System		
LCD display	7 inch touch screen (10.4 inch optional)	
Audible & Visual alarm	Optional	
T&H sensor	Standard	
Smoke sensor	Standard	
Water leakage sensor	Optional	
Door sensor	Standard	
Centralized monitoring of power distribution and cooling	Standard	
Electronic password lock	Optional	
Face recognition	Optional	
Fingerprint reader	Optional	
CCTV	Optional	
BMS	Optional	

Typical configuration

Single cabinet

+

Optional unit

RT Series
(3kVA)

RT Series
(6kVA)

Integrated power
distribution module
(3kVA/6kVA)

Rack-mounted cooling unit
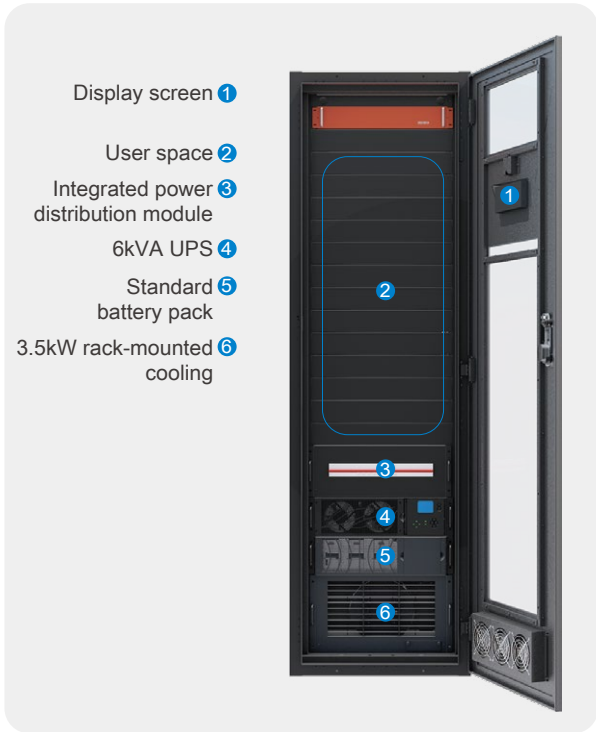(3.5kW)

Supporting battery pack
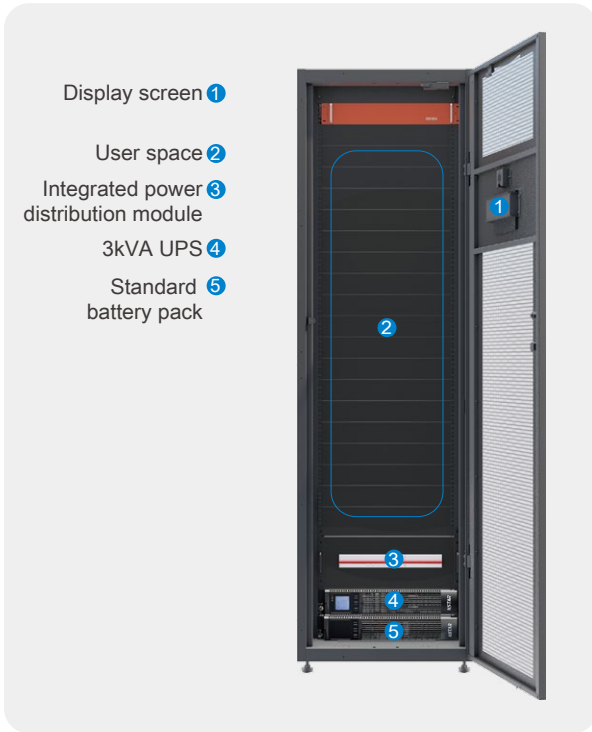(3kVA)

Supporting battery pack
(6kVA)

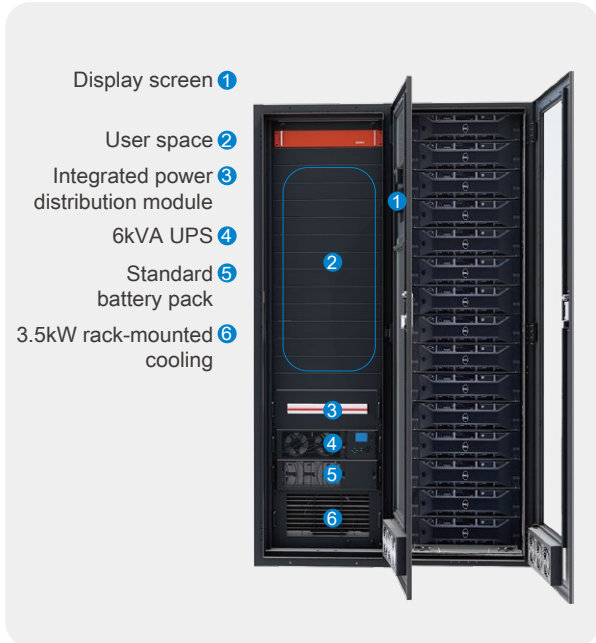## Dual cabinets

7-inch display screen

LED light strip

Layout of IDU single-cabinet series

Display screen **1**

User space **2**

Integrated power **3**
distribution module

3kVA UPS **4**

Standard **5**
battery pack

Display screen **1**

User space **2**

Integrated power **3**
distribution module

6kVA UPS **4**

Standard **5**
battery pack

3.5kW rack-mounted **6**
cooling

Layout of IDU dual cabinet series

Display screen **1**

User space **2**

Integrated power **3**
distribution module

3kVA UPS **4**

Standard **5**
battery pack

Display screen **1**

User space **2**

Integrated power **3**
distribution module

6kVA UPS **4**

Standard **5**
battery pack

3.5kW rack-mounted **6**
cooling
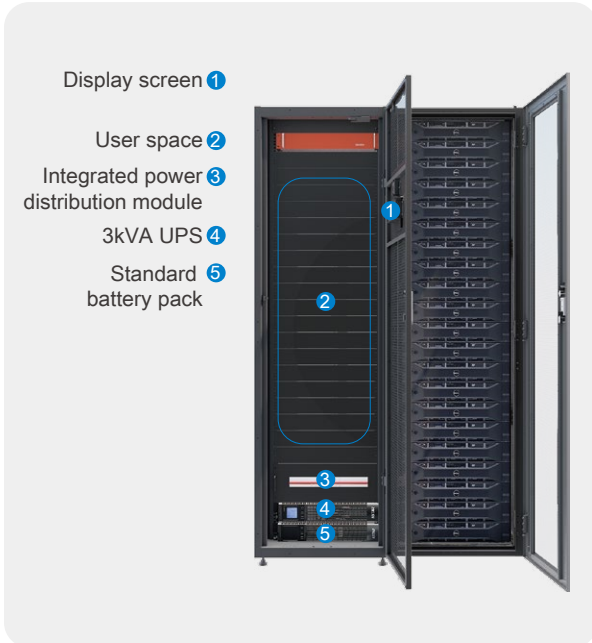
IT cabinet	+	7.5/12.5/25.5kW inrow cooling unit	+	Power cabinet
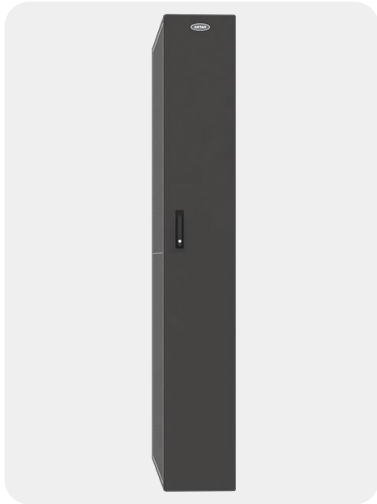
+ Optional unit

Mains module
(15~40kVA)

UPS distribution module
(15~40kVA)

Expansion module
(8 circuits~12 circuits)

15/20kVA-RT

30kVA-RT

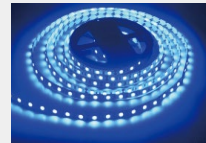40kVA-RT

Lead-acid battery
65Ah/100Ah

7-inch display screen

LED light strip

Layout

Airflow

❶ UPS distribution module ❷ Mains distribution module ❸ 20kVA UPS

Hot air flow   Cold air flow

❶ UPS distribution module ❷ Mains distribution module ❸ 30kVA UPS

Hot air flow   Cold air flow

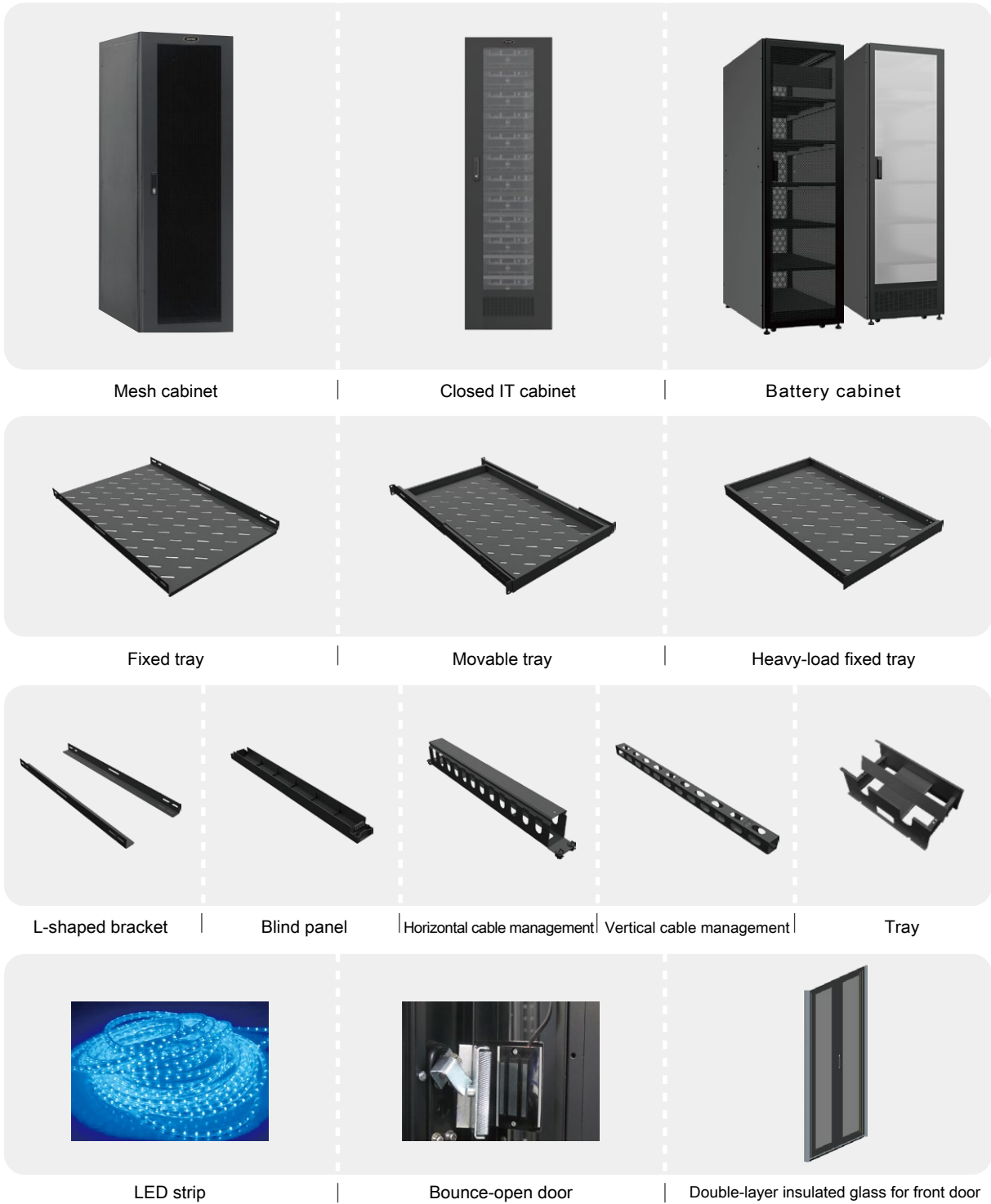❶ Expansion module ❷ UPS distribution module ❸ Mains distribution module

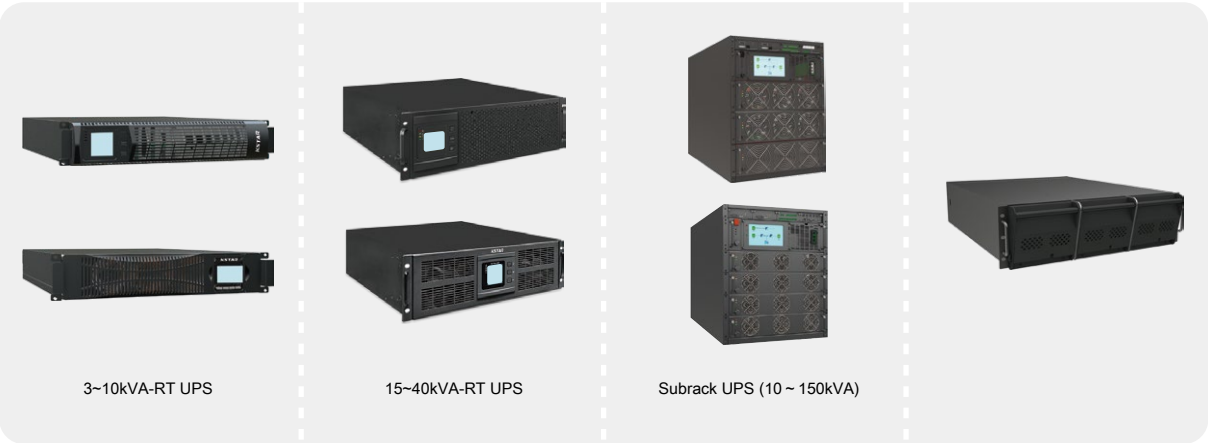❹ 40kVA UPS

Hot air flow   Cold air flow

Accessories

Options for cabinet system

Mesh cabinet

Closed IT cabinet

Battery cabinet

Fixed tray

Movable tray

Heavy-load fixed tray

L-shaped bracket

Blind panel

Horizontal cable management

Vertical cable management

Tray

LED strip

Bounce-open door

Double-layer insulated glass for front door

Options for power distribution system

Integrated power distribution module
(For 3/6kVA UPS)

Integrated power distribution module
(For 10kVA UPS)

Mains module
(For 10/15/20/30/40kVA UPS)

UPS distribution module
(For 10/15/20/30/40kVA UPS)

Expansion module
(8/12/16/20 circuits)

Power distribution module

3~10kVA-RT UPS

15~40kVA-RT UPS

Subrack UPS (10 ~ 150kVA)

UPS

Battery pack
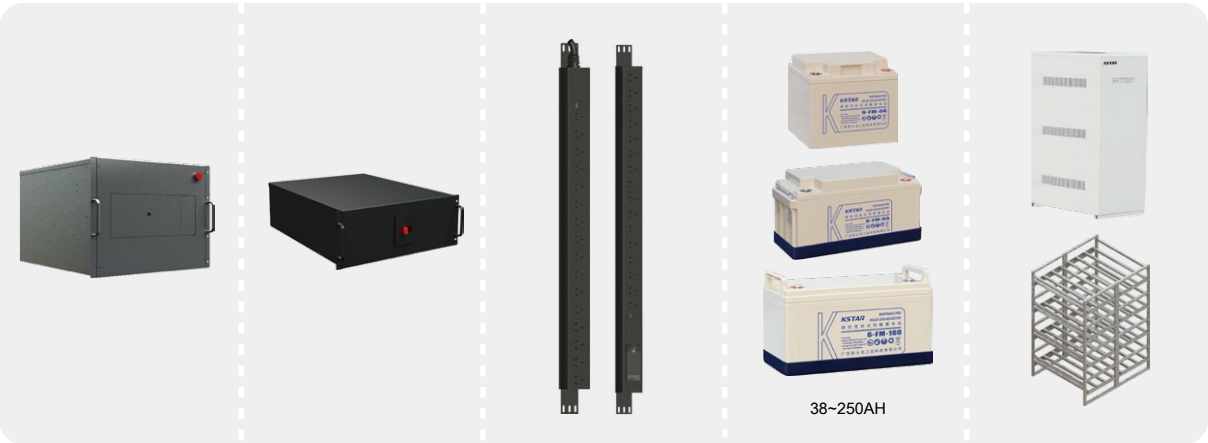
ATS

Battery switch

PDU

38~250AH

Lead-acid battery

Battery rack
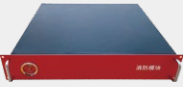
Options for cooling system

3.5/7/12.5kW	7.5/12.5/25kW			
Rack-mounted cooling	Cooling	Low temperature kit	Extension kit	Drainage pump

Options for monitoring system

Monitoring host	Smart door lock, supporting facial recognition	Water leakage sensor

Temperature and humidity sensor	Smoke detector

Options for fire protection

Rack-mounted
fire extinguisher

IDM Integrated Data Center Module Solution

Product Introduction

Thirty years of ingenuity
Create a full-scenario efficient intelligent data center solution

Kstar ITCube series IDM Integrated Data Center Module Solution integrates cabinets and sealed channel component systems, power distribution systems, cooling systems, monitoring systems and integrated wiring systems. It is prefabricated in the factory to achieve rapid deployment and flexible expansion. It is simple, intelligent, efficient and energy-saving to ensure reliable and safe operation of the data center.

Fully self-developed and produced, providing one-stop service

- Main device such as UPS, cooling, cabinets, power distribution cabinets, and batteries are independently developed and produced
- Possess the copyright of monitoring system software to meet the specific needs of customers

Data Center Infrastructure Integrated Solutions

| UPS | Precision Cooling | Lead-acid/ Lithium Battery | ITCube™ Data Center Solution | Precision Distribution Cabinet | Network/Server Cabinet | Monitoring System |
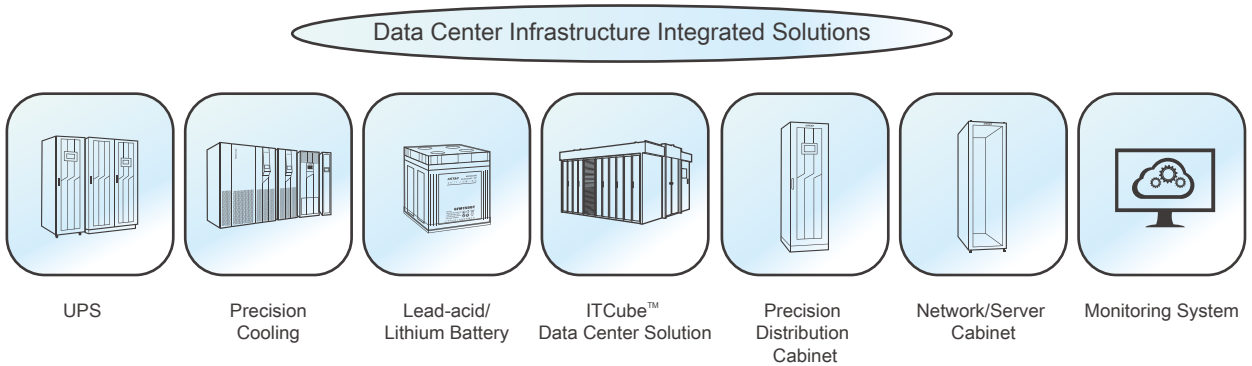
Safe and reliable

- The Integrated Data Center Module Solution passed the 8th and 9th level seismic performance test to ensure stable operation of the system
- The distribution can be designed to meet the requirements of data centers at level Tier 1~4 to ensure reliable operation of the data center
- The movable skylight can be linked with the fire protection system and open automatically. It has emergency one-click opening function and emergency glass break switch to effectively ensure the fire safety of the data center

Fire protection system linkage

Skylight opens automatically

High efficiency and energy saving

- Sealed hot and cold air flow isolation
- The average annual PUE value is less than 1.25
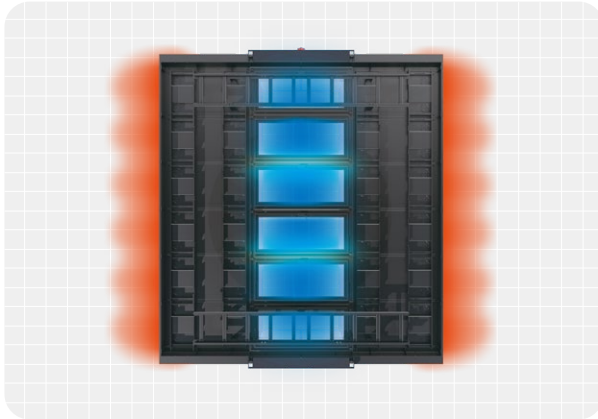
- Modular UPS system efficiency can reach 96%, 97% (100k module)

Efficient IT device | Efficient cooling | Efficient power supply and distribution | Efficient assistance

PUE<1.25

·Intelligent monitoring

·Efficient and reliable UPS
·Various power distribution modules
·High density lithium battery

·Channel closure system
·High-efficiency inrow-cooling

·Modular data center

Average annual PUE value ≤1.25
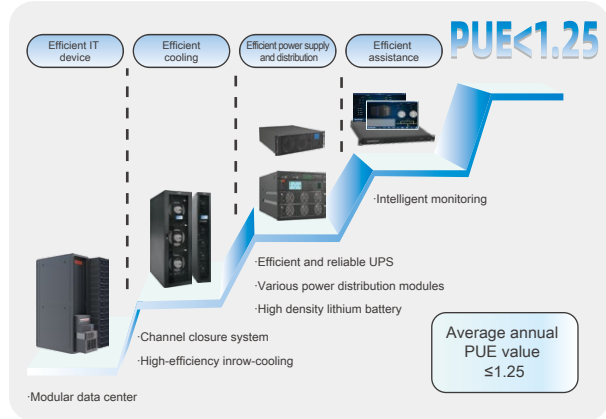
Simple and smart

- Rapid on-demand deployment and flexible expansion
- Prefabricated products, plug and play, simplifying installation and shortening delivery cycle
- Real-time monitoring system, supporting email alarm

24 hours real-time monitoring

Email alarm

Prefabricated, pre-assembled and pre-commissioned in factory

①

Packaged and transported as a whole

②

Simple cabinet combination, line termination and air-conditioner pipeline connection are completed

③

Power on test, delivery and acceptance

④

7×24 hours uninterrupted after-sales service response

- More than 220 technical service stations around the world to quickly respond to customer service needs

Technical service personnel
900+

Technical service center
43

Technical service station
214+

Response service
7×24 hours
(*Only apply to China Mainland)
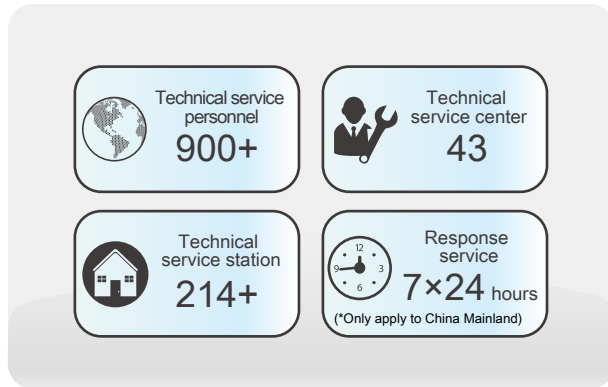
Certification guarantee

- The IDM Integrated Data Center Module as a whole has passed level 8 and level 9 seismic test certifications, device level TLC, energy saving and other certifications

TLC   CNAS   Energy Conservation Certification
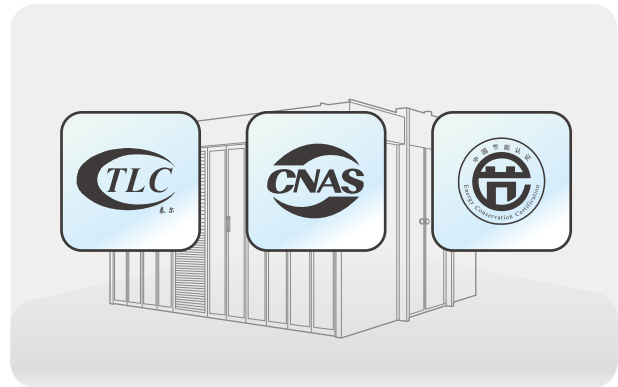
Market share and awards

- Integrated Data Center Module sales have ranked among the top for many consecutive years (ICT Research)

- Won multiple awards for excellence in data center solution innovation

Application scenarios

- Wide range of applications, suitable for data centers in various industries

Government   Medical   Education   Finance   Enterprise   Communication   Transportation   Electricity   Other data center
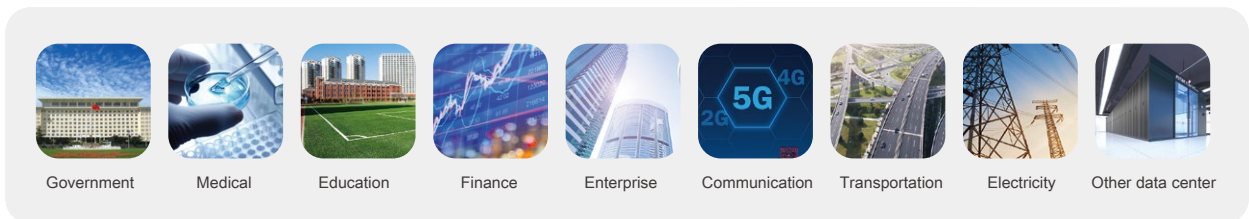
Product features

Modular integration

- Standardized integration of power distribution systems, cooling systems, cabinet systems and other subsystems, saving time and efforts for on-site installation

- The channel component system is easy to assemble, flexible to disassemble, and easy to transport
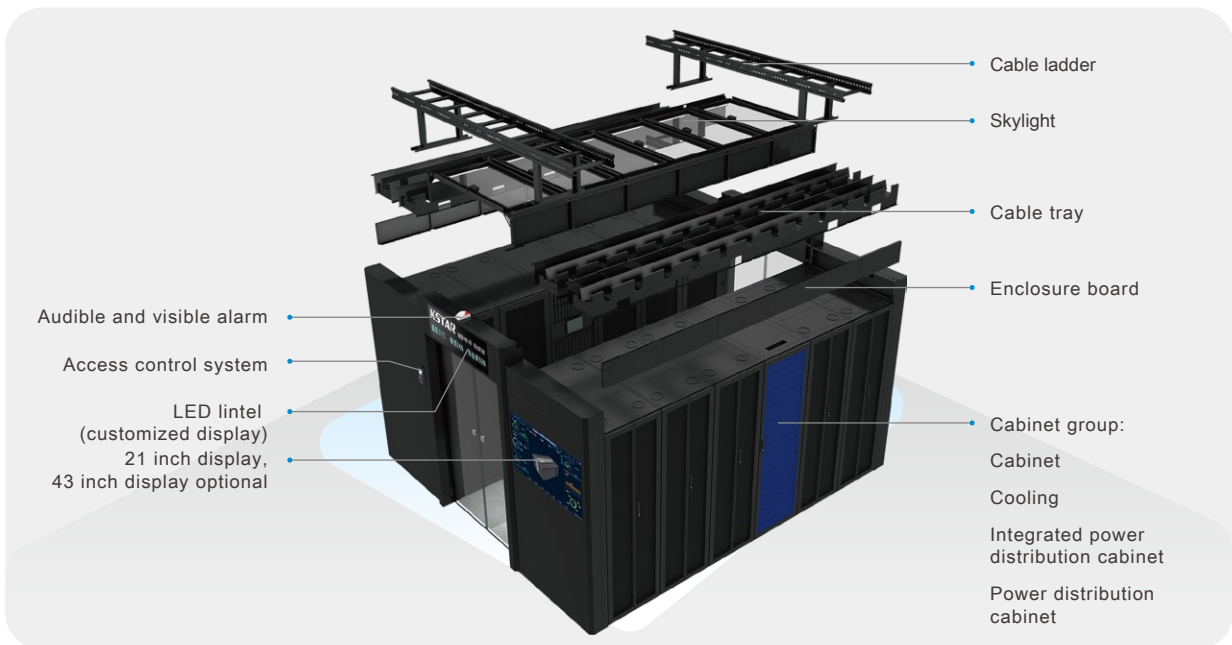
Standardized and flexible design

- The distribution subsystem supports multiple power distribution architectures such as 2N/N+1 to meet the requirements of different levels of level Tier 1~4 data centers

- The UPS subsystem supports integrated cabinets, Integrated Data Center Modules in-line, external and other forms to meet the needs of different scenarios; the modular UPS uses hot-swappable power modules, and the module power supports 10/15/20/25/30/40/50kVA, and supports hot-swappable bypass modules and monitoring modules

Mains power module, supports dual/single input

Power distribution module, integrating cooling, lighting and other power distribution

IT power distribution, providing uninterrupted power supply for cabinet device and monitoring systems

Monitoring module
Bypass module
Power module

In-line UPS cabinet

- Frame-type UPS, 60/90/150/200kVA frame capacity optional
- Hot-swappable monitoring modules, bypass modules, and power modules
- 7 inch LCD display

External modular UPS

Integrated UPS power distribution cabinet

- Standardized intelligent small bus system simplifies engineering installation, real-time monitoring, safe and reliable

Standardized intelligent small bus system
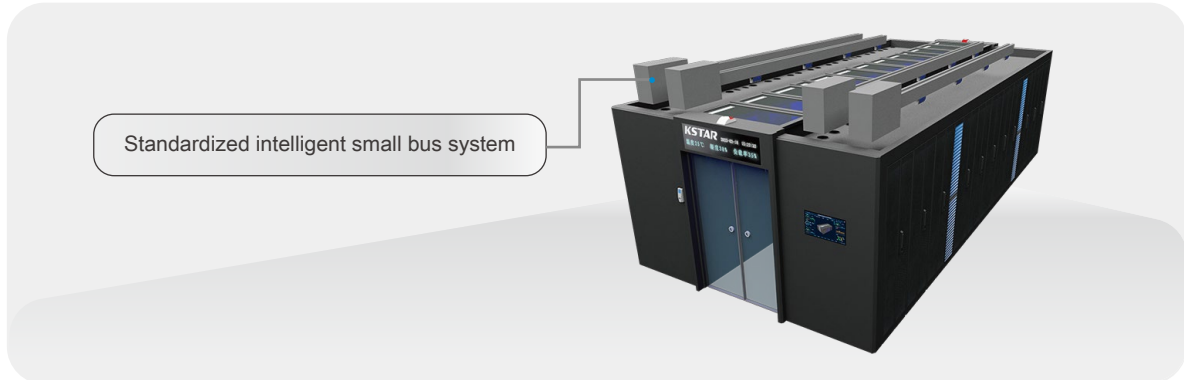
- Adopt high-efficiency cooling, modular closed channel components, and hot and cold air flow isolation

Inrow cooling airflow

The patented design of the sinking fan
effectively improves the air flow direction

Room-level cooling airflow
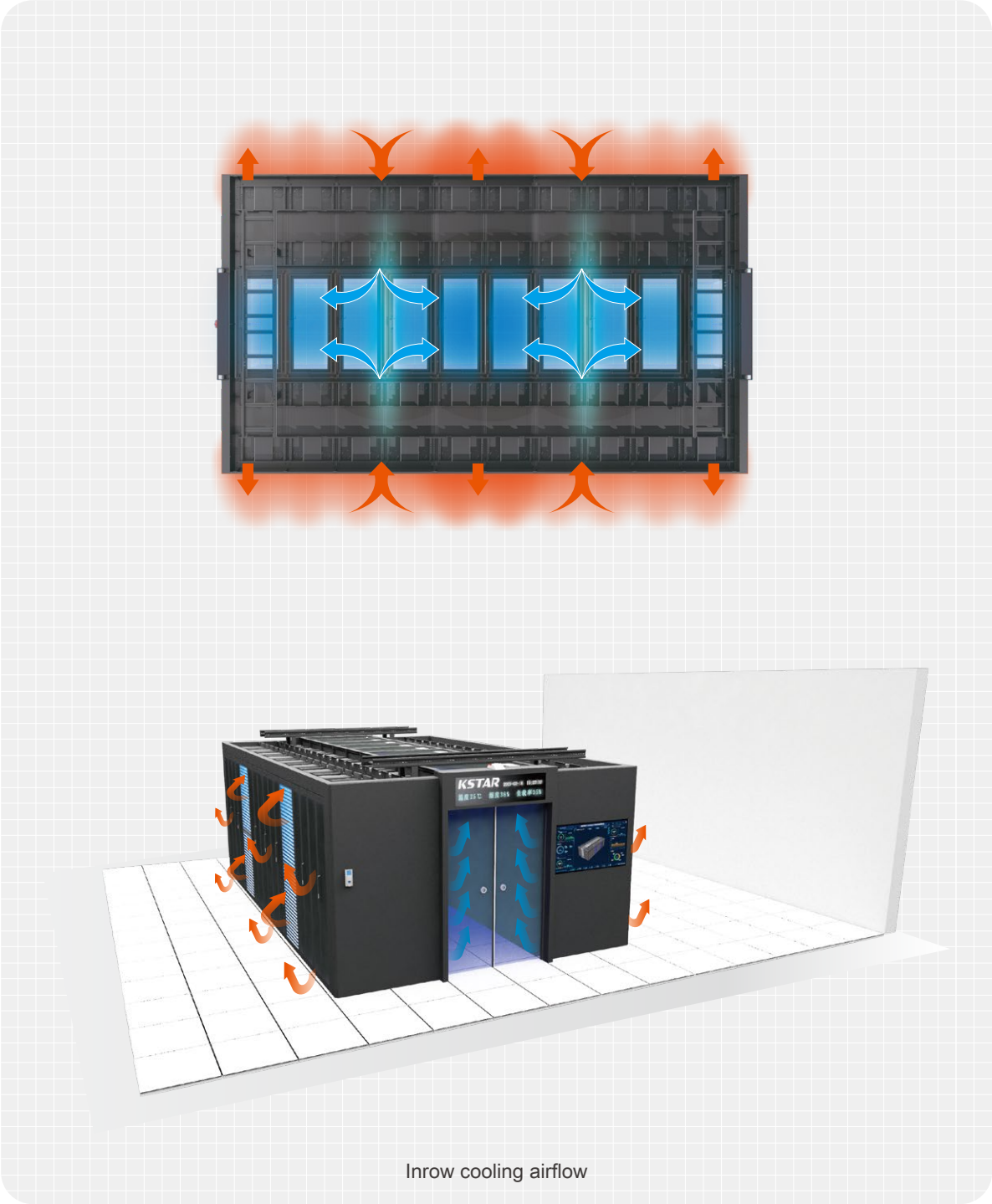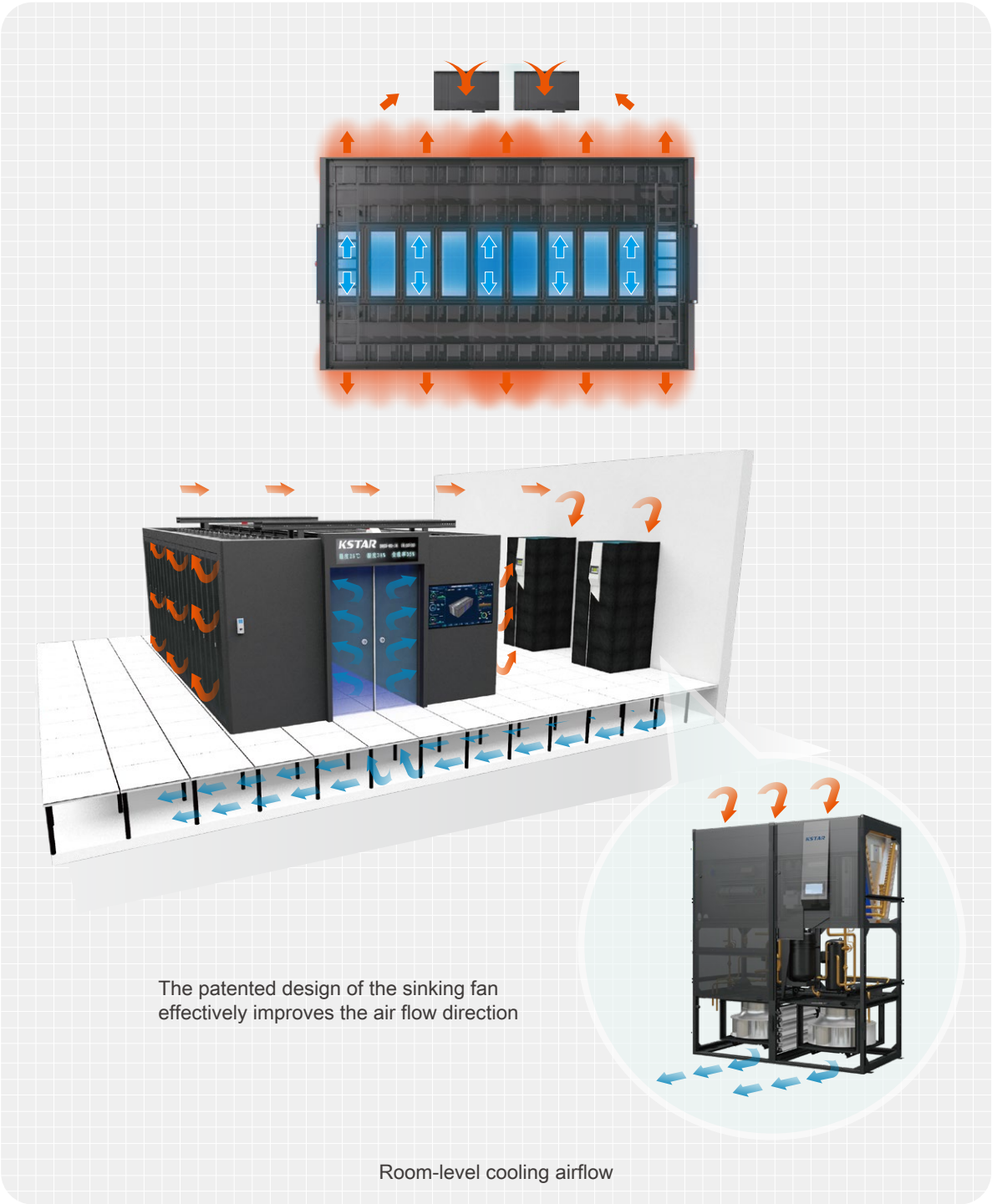
- Diversified application scenarios

Large data center: Internet/Colo cloud data center

Small and medium-sized data centers: Government/enterprise-level data centers

Single row scene/column scene
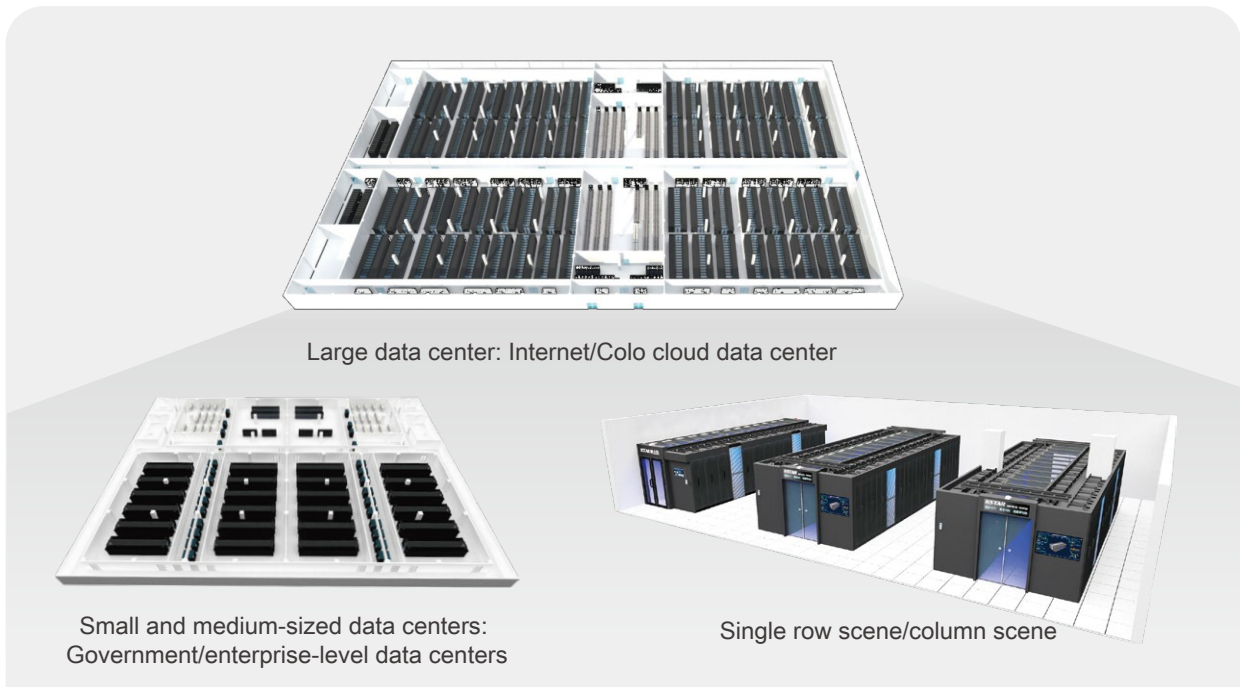
Rich channel components

- The movable sunroof can be automatically reset, linking with the fire protection system, opened with one click in an emergency
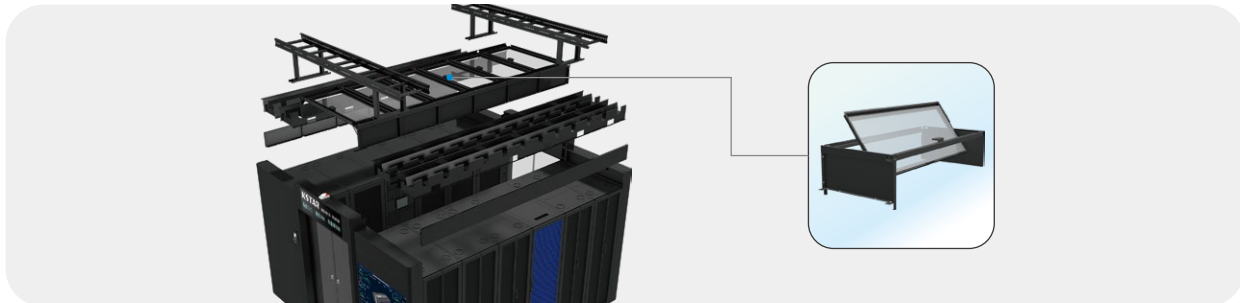
- Hidden passage door adopts a threshold-free passage door that supports sliding, manual, automatic, rotation and other forms; it can be configured with an LED screen and can be linked with the monitoring host; it is compatible with a variety of unlock methods

Editable LED screen, real-time display of key device parameters such as temperature, humidity, UPS load rate, etc

3D laser engraving LOGO

Simple and intuitive silk screen LOGO
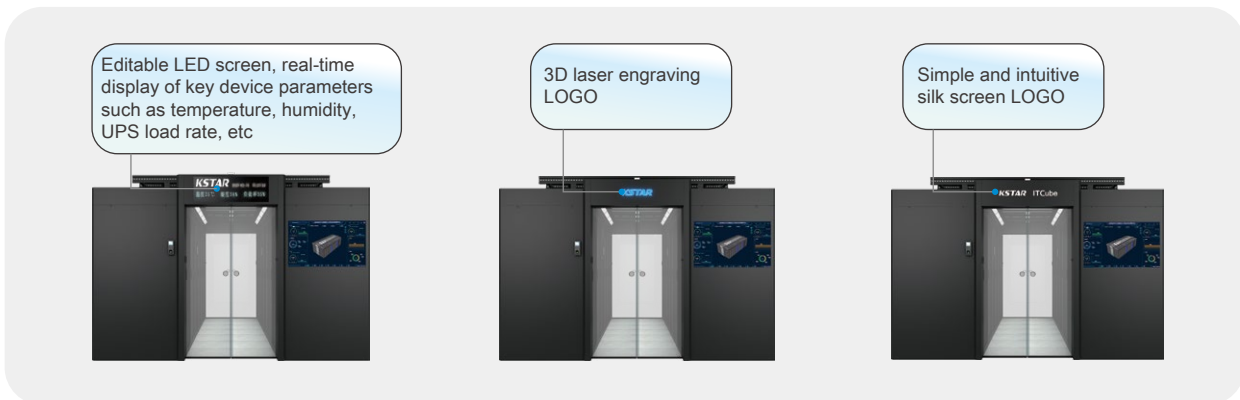
● Built-in channel lighting system, light illumination ≥300Lu

● Four-color light strip alarm system, intuitive insight into the operating status of the Integrated Data Center Module, four-color graded alarms

| Normal display | General alarm | Critical alarm | Emergency alarm |
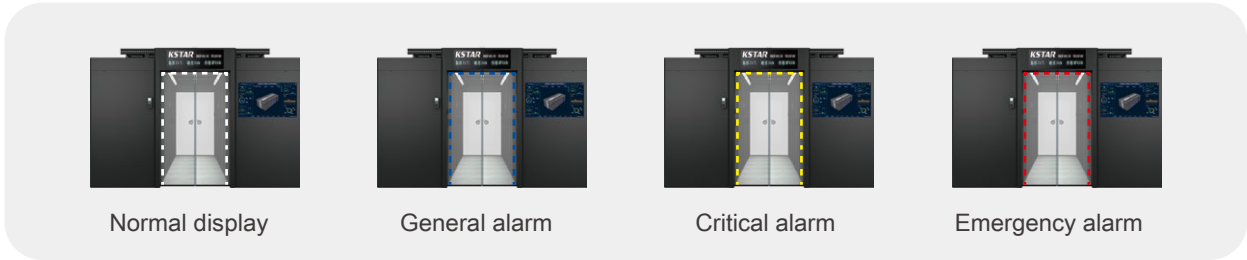
● Cable tray and cable ladders make power electric cable and network cable separated

● Cabinet-level light strip, which can be linked with alarms to create a more aesthetically pleasing display
● Other accessories

Cabinet-level ambient lighting effect

Tray:
Fixed, movable, and heavy-load trays are available, with a maximum load-bearing capacity of up to 120kg

Blank panel:
Anti-leakage baffle, plug and play, beautiful and dustproof

Cable management components:
Supports vertical and horizontal installation in various forms
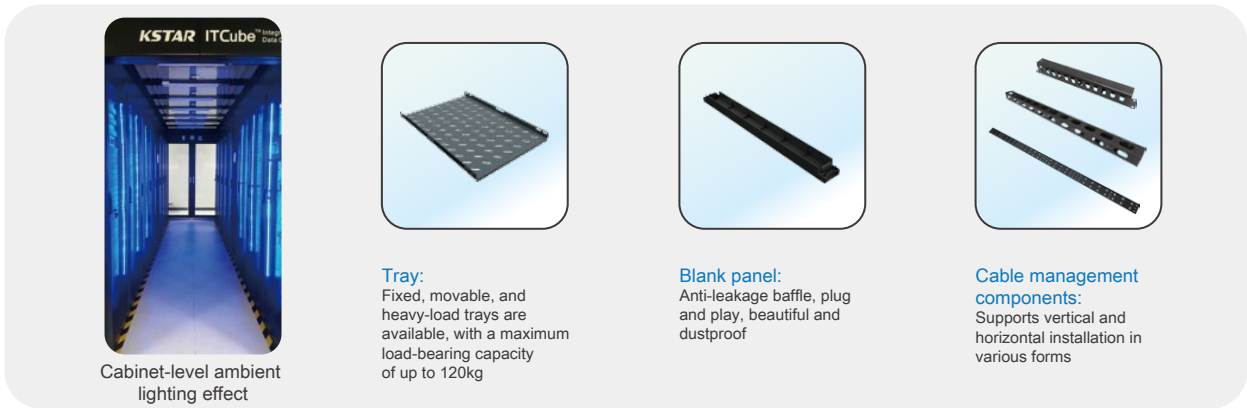
● Cabinet PDU supports IEC and other output sockets, optional industrial connectors, lightning protection, and intelligent monitoring functions

IEC output socket

Industrial connector
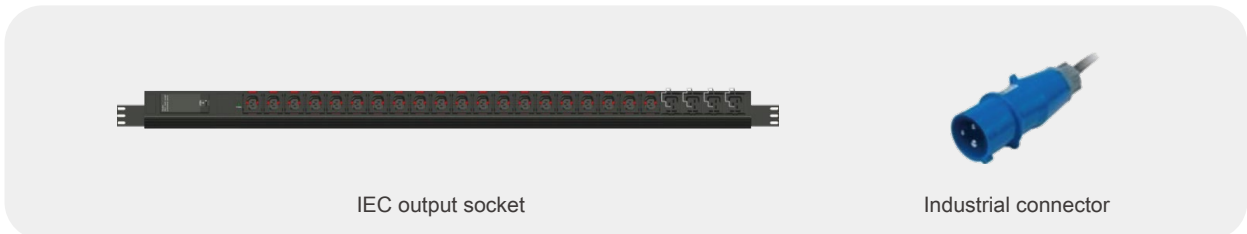
Intelligent management

- Real-time visibility into the status of the data center, intelligent monitoring, centralized management, and simplified maintenance

- The system supports multiple monitoring and management scenarios, such as IDC data center, power distribution room, cooling room, distributed outlets, etc.

- Northbound interface available, integrate existing management system

- Support configuration architecture design, convenient and flexible function expansion

- Based on TCP/IP networking architecture, flexible expansion, safe and reliable

- 2D/3D visual HMI, real-time display of operational views, integrating important indicators and information such as PUE, temperature, humidity, mains voltage, etc.

- Three-in-one password, fingerprint, card swiping or face recognition smart access control system, simple and convenient

IDM Integrated Data Center Module Monitoring Topology Diagram

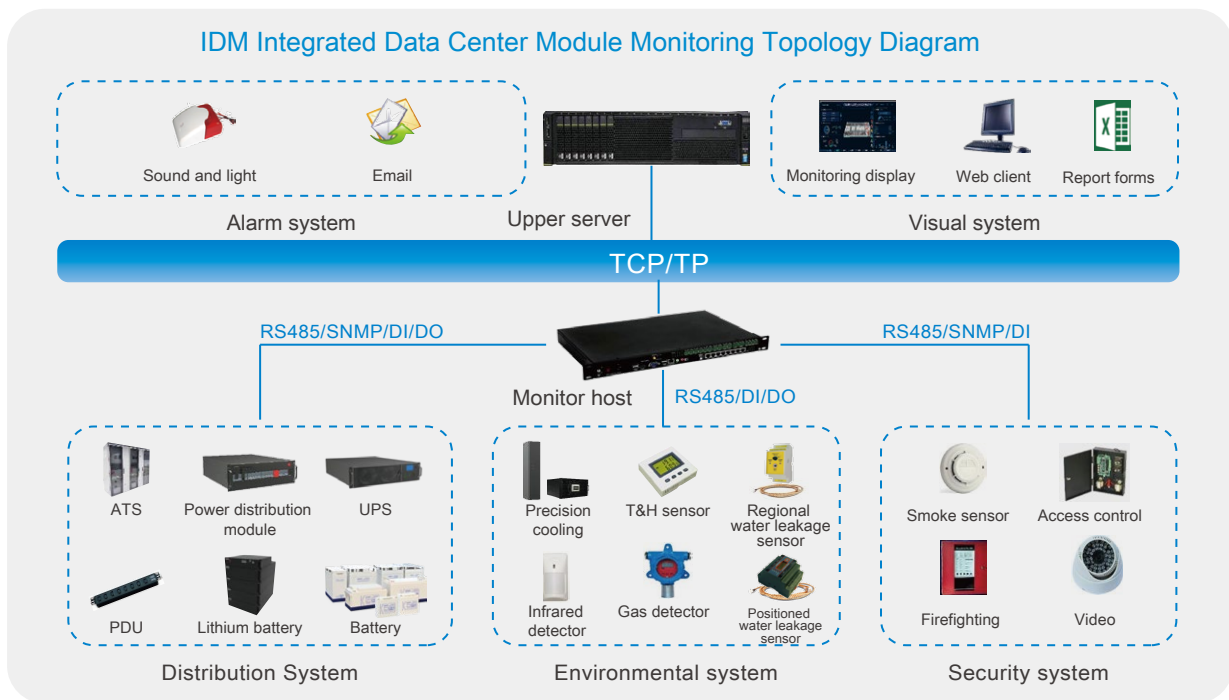| Alarm system	Upper server	Visual system
Sound and light / Email		Monitoring display / Web client / Report forms

TCP/TP

RS485/SNMP/DI/DO — Monitor host — RS485/DI/DO — RS485/SNMP/DI

Distribution System: ATS, Power distribution module, UPS, PDU, Lithium battery, Battery

Environmental system: Precision cooling, T&H sensor, Regional water leakage sensor, Infrared detector, Gas detector, Positioned water leakage sensor

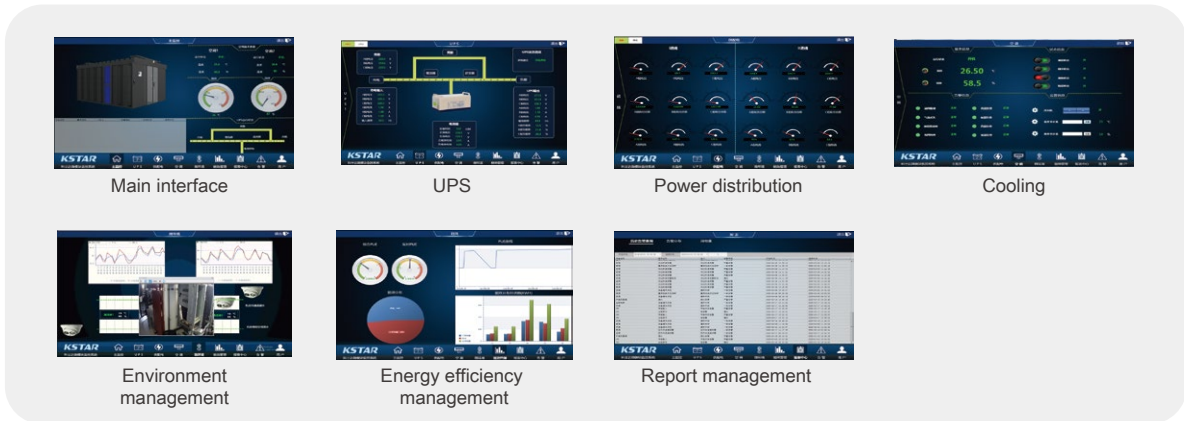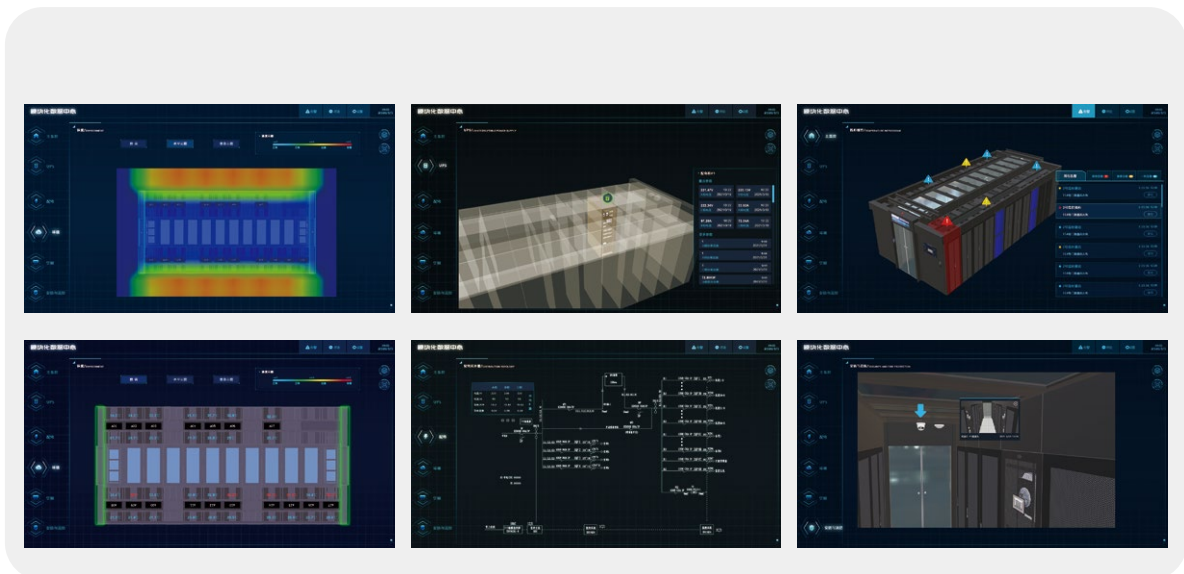**Security system**: Smoke sensor, Access control, Firefighting, Video

- Monitoring HMI

2D monitoring interface

- Configuration software: The monitoring system adopts full configuration architecture, and engineers can customize different interfaces according to customer needs without modifying the code

- Flexible client: Support both web page access (B/S) and client access (C/S), with strong flexibility

- Strong compatibility: Compatible with third-party smart devices with open protocols (UPS, cooling, etc.), supporting serial communication protocols, SNMP, MODBUS TCP and other communication protocols

- Friendly interface: Provide free northbound interface, support SNMP and Web Service northbound interface, for third-party monitoring system integration

Main interface   UPS   Power distribution   Cooling

Environment management   Energy efficiency management   Report management

3D visualization interface

- Real-time monitoring of system energy efficiency and timely acquisition of device operating status

- Real-time temperature cloud chart display, quickly and intuitively locates local hot spots, and supports remote adjustment of the cooling system to eliminate hot spots and ensure the normal operation of IT device

- Real-time display of the operating status of core infrastructure and device such as air conditioners, UPS, and power distribution cabinets, and supports visualization of power distribution topology

- Supports reverse visualization by clicking on alarms or power distribution components to reversely jump to 3D devices, making it easier for administrators to quickly locate faulty device

Specifications

System classification	Specification description
Overall characteristics	
Single row IDM size (L×W×H) mm	L×2400 (2300) ×2000/2200
Dual row IDM size (L×W×H) mm	L×3600 (3400) ×2000/2200
Installation method	Installed on raised electrostatic floor (Recommended) or direct cement floor
Wiring method	Up or down
Distribution system	
Integrated power distribution cabinet	
Input voltage	380/400/415Vac, 50/60Hz, 3Ph+N+PE
Input	Single/dual
Main input capacity (A)	250/400/630
Output	4~6*cooling input, 2*(24~34)*load branch
Lightning protection function	B+C lightning protection
Others	7-inch touch screen, supports main and branch monitoring and remote monitoring
Subrack UPS (matching integrated power distribution cabinet)	
Input voltage	380/400/415Vac, 50/60Hz, 3Ph+N+PE
Input power factor	≥0.99
Output power factor	1.0
Rated capacity (kVA)	60~200
In-line power distribution cabinets	
Input voltage (Vac)	380/400/415,50/60Hz,3Ph+N+PE
Input current (A)	100~630
Input	Single/dual/multiple multi-circuit optional
Output	Switching capacity 163A, maximum output 144P
Lightning protection function	Class B/C lightning protection
Others	LED touch screen, supports main and branch monitoring and remote monitoring
In-line modular UPS cabinet	
Input voltage	380/400/415Vac,50/60Hz,3Ph+N+PE
Input power factor	≥0.99
Output power factor	1.0
Rated capacity (kVA)	150~300
External modular UPS	
Input voltage	380/400/415Vac, 50/60Hz, 3Ph+N+PE
Input power factor	≥0.99
Output power factor	1.0
Rated capacity (kVA)	≥200
Battery	
Battery type	Lead-acid battery/lithium battery
Cooling System	
In-row precision cooling	
Air cooling capacity (kW)	25, 30, 40, 50, 60, 70
Chilled water cooling capacity (kW)	25, 30, 40, 50, 65
Dimensions (W×D×H) mm	600×1100/1200×2000/2200
Room-level precision cooling	
Air cooling capacity (kW)	25~120
Chilled water cooling capacity (kW)	30~250
Cabinet system	
Dimensions (W×D×H) mm	600×1100/1200×2000/2200, 800×1100/1200×2000/2200
Protection level	IP20
Standard configuration	Cabinet bottom plate; cabinet combining parts; cable binding board/cable management trough
Optional accessories	PDU; blank panel; fixed/movable tray; L-shaped brackets; cable management racks; light strips, etc.
In-line battery cabinet	
Dimensions (W×D×H) mm	600×1100/1200×2000/2200
Protection level	IP20
Monitoring system	
Alarm method	Sound and light alarm, Email alarm, light strip alarm;
Access method	Remote web access, local 3D/2D display
Functional module	Centralized management (UPS/cooling/power distribution, etc.), access control system, CCTV system, environmental system (including temperature, humidity, smoke sensor)
Certification	Earthquake-resistant, TLC

IDB Outdoor Container Data Center Solutions
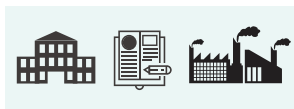
Product Introduction

Brief Introduction

Kstar IDB is an integrated solution for outdoor container data center infrastructure, which can be quickly deployed in a short time via factory pre-fabrication.

Kstar IDB can be used in various industries and scenarios, it can also be used as an independent disaster recovery data center, which is the best solution for outdoor small data center.

Application

|			
Small data centers for enterprises	Small data centers for government, energy, education and other industries	Backup data center for financial industry	Operator's small computer room and edge site

Product Features & Value

Quick deployment

- Integrated power distribution, cooling system, cabinets, sealed aisles, monitoring, firefighting and other major subsystems, factory pre-integration and pre-commissioning, shortening the delivery time
- All components is comply with domestic and international technical standards, support plug and play and easy to be installed. Also, it meets   the requirements of international transportation, and can be shipped all over the world

Highly integrated solution, factory pre-fabricated, realizing fast delivery and deployment.
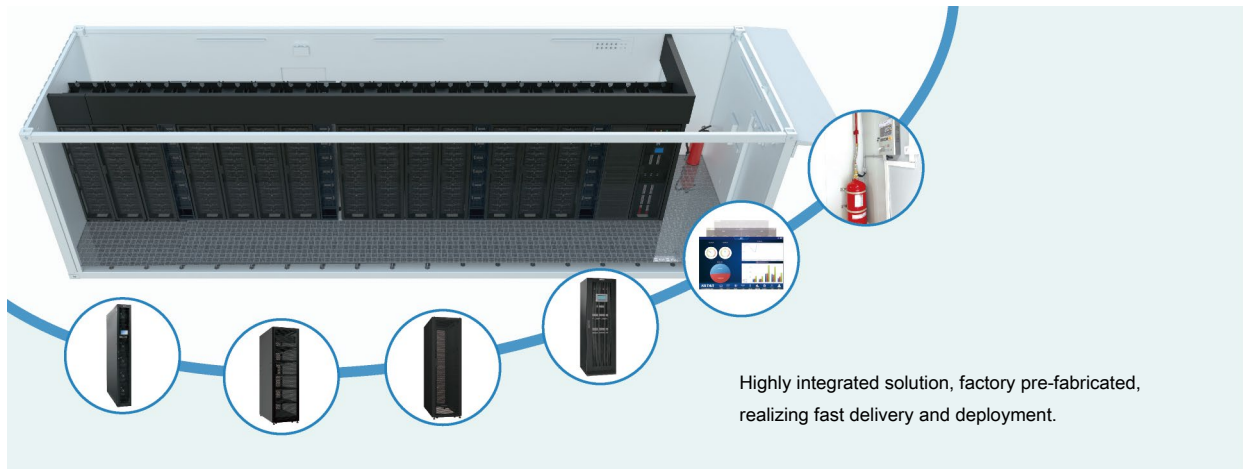
High efficiency and energy saving

- Fully enclosed structure, sealed hot and cold aisles, improving cooling usage, reducing consumption and saving energy
- Using high-efficiency power modular, the UPS system efficiency is up to 97%
- Self-developed row precision cooling with double EC fans and electronic expansion valve and variable frequency driver, more energy-saving

Sealed hot and cold aisles, greatly reduce the cooling loss of cooling, decrease the PUE value.
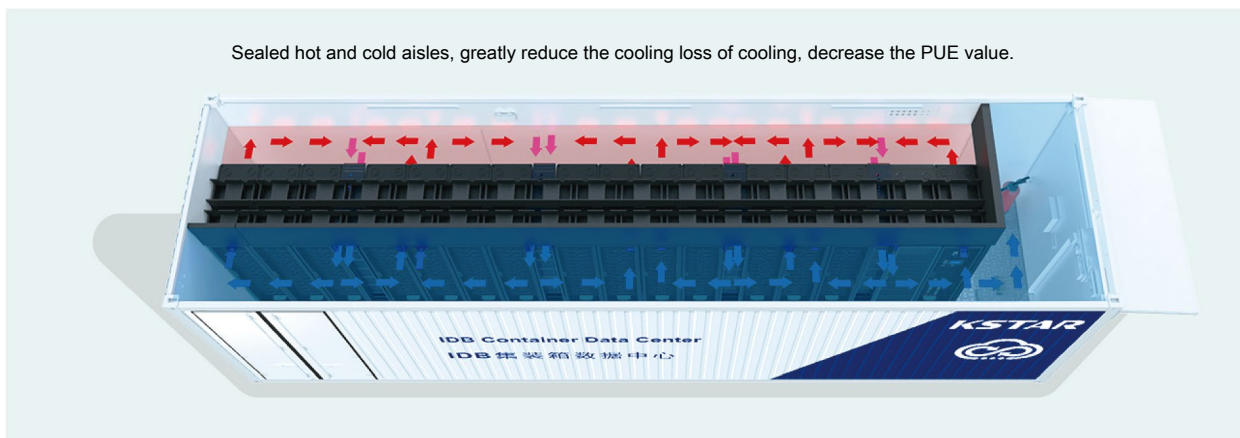
Intelligent Management

- The centralized monitoring system monitors the status of running, the mains,the ambient temperature, etc
- Support various alarms, including audible & visual alarms, telephone, email, etc
- Using the remote monitoring platform to realize unattended operation and minimize the operation and maintenance costs

Sound and light	Email	
Alarm System		

Host server

Touch screen	Web/Client terminal	Excel report
Visualization system		

TCP/IP

RS485/SNMP/DI/DO

RS485/SNMP/DI

Monitoring server

RS485/DI/DO

Power distribution module	UPS	
PDU	Lithium battery	Lead-acid battery
Power distribution system		

Cooling	Temperature & Humidity detector
Infrared detector	Water leakage detector
Environmental system	

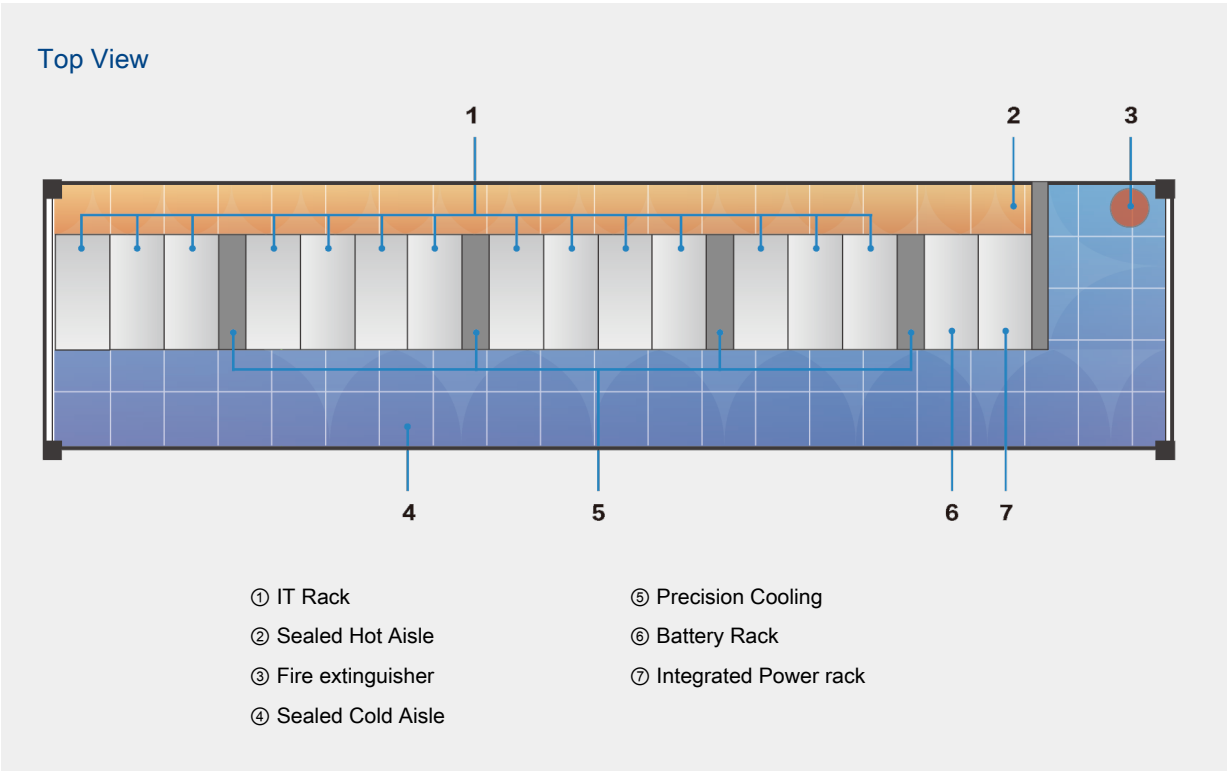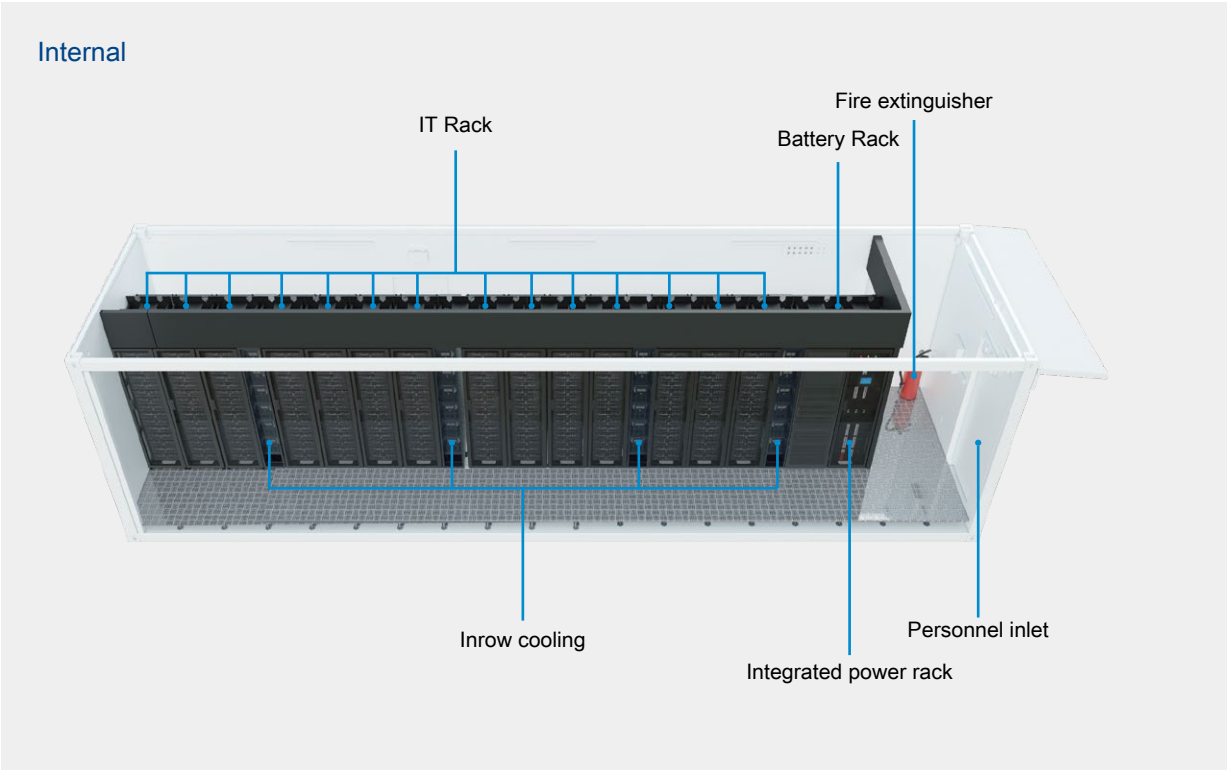|	
Smoke detector	Access control
Fire fighting system	Surveillance camera
Security system	

Safety and Reliability

- Fully enclosed design and compliance with IP55, apply to various working conditions
- Redundancy design of key equipment to ensure the system running stably
- With multi-level automatic alarm function, providing voice alarm, telephone voice alarm, network video surveillance, etc
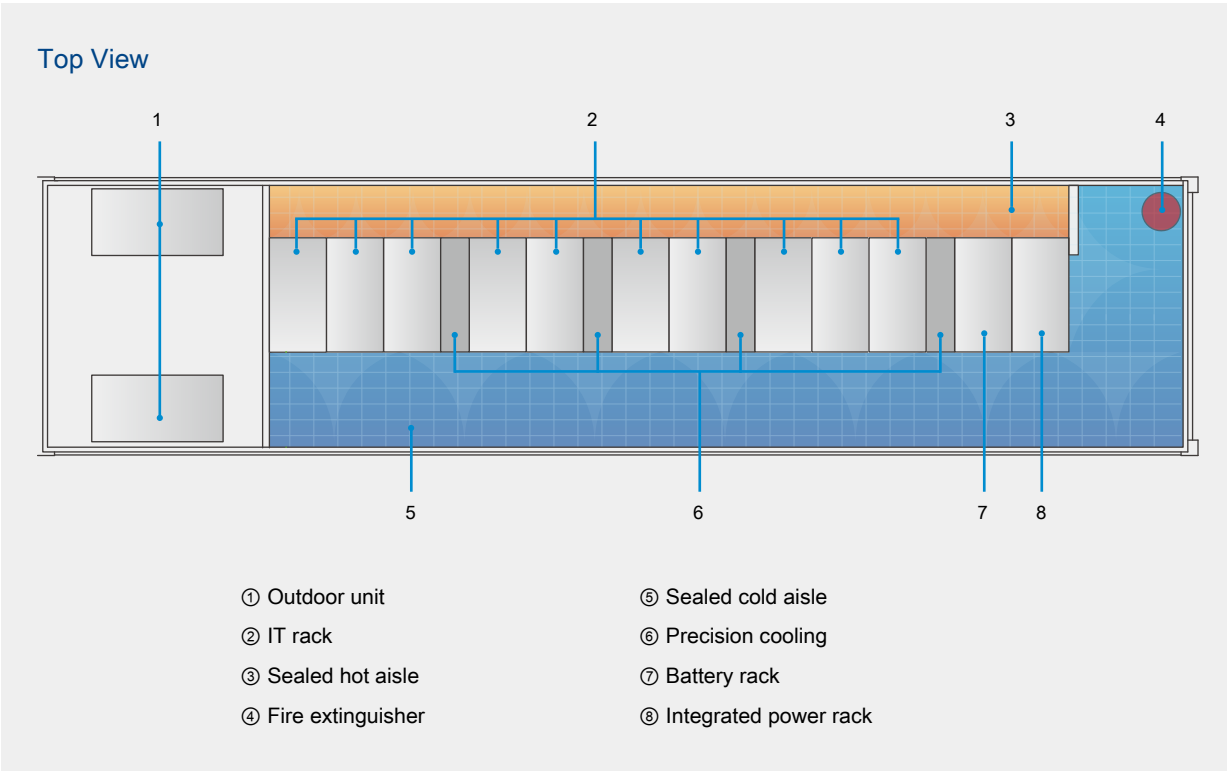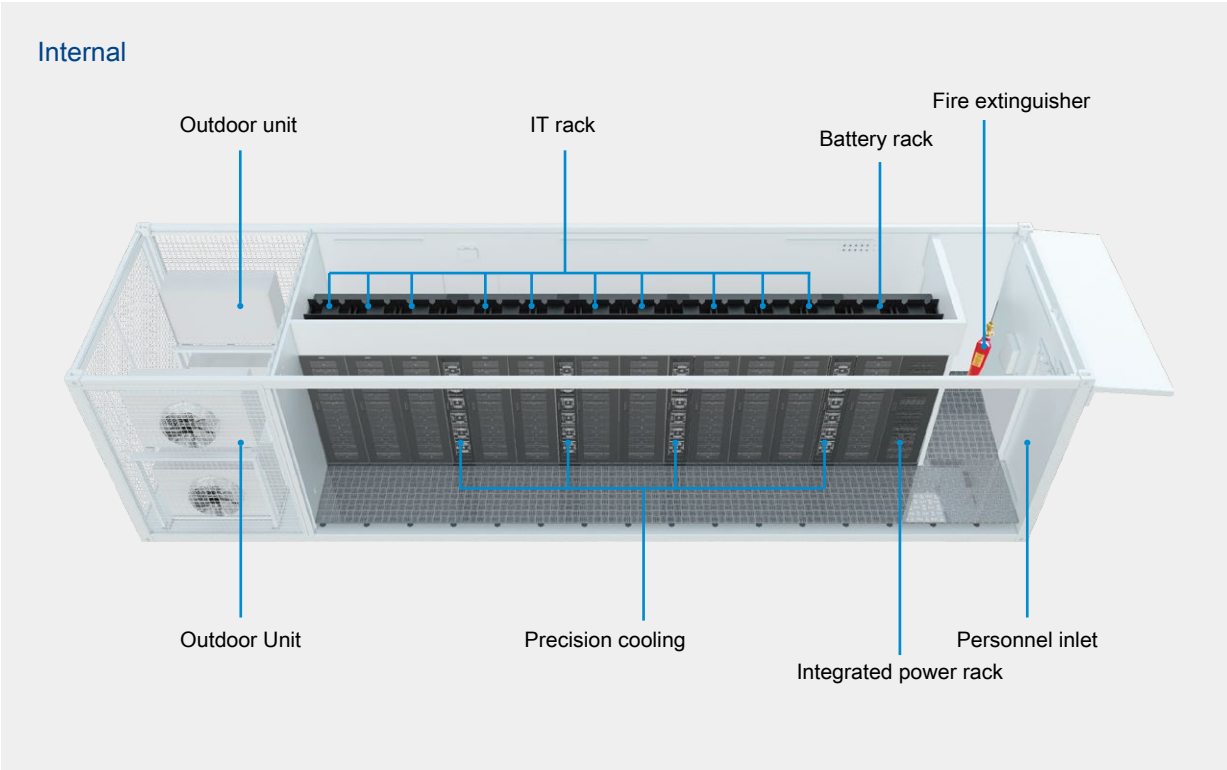- Built-in automatic fire alarm and fire extinguishing device to prevent and control fire in time

Deployed with comprehensive security system, including access control, video surveillance, fire extinguishing, automatic alarm, etc.

Technical Parameters

Recommended Solutions	Solution 1 (40ft)	Solution 2 (40ft)	Solution 3 (20ft)
Rack System			
Rack Dimension (W×D×H)mm	600×1100×2000	600×1100×2000	600×1100×2000
Rack Quantity (pcs)	14	10	5
Max Power per Rack (kW)	6	7	6
Total Power (kW)	84	70	30
Power Distribution System			
Power Supply System	Dual 400A Input/ATS (Optional); 380/400/415V, 50/60Hz, 3Ph+N+PE; Input lightning protection: 8/20us, In=20kA, Imax=40kA	Dual 320A Input/ATS (Optional); 380/400/415V, 50/60Hz, 3Ph+N+PE; Input lightning protection: 8/20us, In=20kA, Imax=40kA	Dual 125A Input/ATS(Optional); 380/400/415V, 50/60Hz, 3Ph+N+PE; Input lightning protection: 8/20us, In=20kA, Imax=40kA
UPS System	150kVA, N+1 module redundancy	120kVA, N+1 module redundancy	60kVA, N+1 module redundancy
Battery System	Battery rack: 1pcs Battery: 6-FM-120×36pcs Backup time: 10mins	Battery rack: 1pcs Battery: 6-FM-120×36pcs Backup time: 12mins	Battery rack: 1pcs Battery: 6-FM-65×34pcs Backup time: 15mins
Cooling System			
Cooling Type	In-row Inrow cooling cooling, 3+1 redundancy	Inrow cooling, 3+1 redundancy	Inrow cooling, 1+1 redundancy
Cooling Capacity	30kW for each, total 120kW	25kW for each, total 100kW	30kW for each, total 60kW
Sealed Aisle	Sealed Hot/Cold Aisle		
Monitoring System			
Monitoring Management	Centralized monitoring which includes UPS/CRAC/Power Distribution/CCTV/Access Control/Fire-fighting; Support audible & visual alarms and email alarm		
CCTV System	Supporting 4 or more HD cameras		
Access System	Three-in-one access control system (Card + Password+Fingerprint) and face recognition (Optional)		
Display System	Support local touch screen (10/21 inch), Web		
Fire Extinguishing System			
Fire Extinguishing	Automatic fire extinguishing system with audible & visual alarms, release the gas via fire linkage automatically		
Fire Extinguishing	FM200/NOVEC1230 (Optional)		
Structural System			
Container Size (H×W×L)mm	2896×3100×12192 (40ft)	2896×3100×12192 (40ft)	2896×3100×6058 (20ft)
Container Weight (kg)	14000 (Without racks)	14000 (Without racks)	7500 (Without racks)
Aisle Width (mm)	Cold aisle width: 1200; Hot aisle width: 600		
Protection	Waterproof, dustproof, mildew proof; Protection level: IP55		
Operating Environment			
Temperature (℃)	-40~50 (Below -20℃, low temperature kit and water pipe required)		
Altitude (m)	≤1000, derating above 1000m		

Solution 1

Internal

IT Rack

Fire extinguisher

Battery Rack

Inrow cooling

Integrated power rack

Personnel inlet

Top View

1

2

3

4

5

6

7
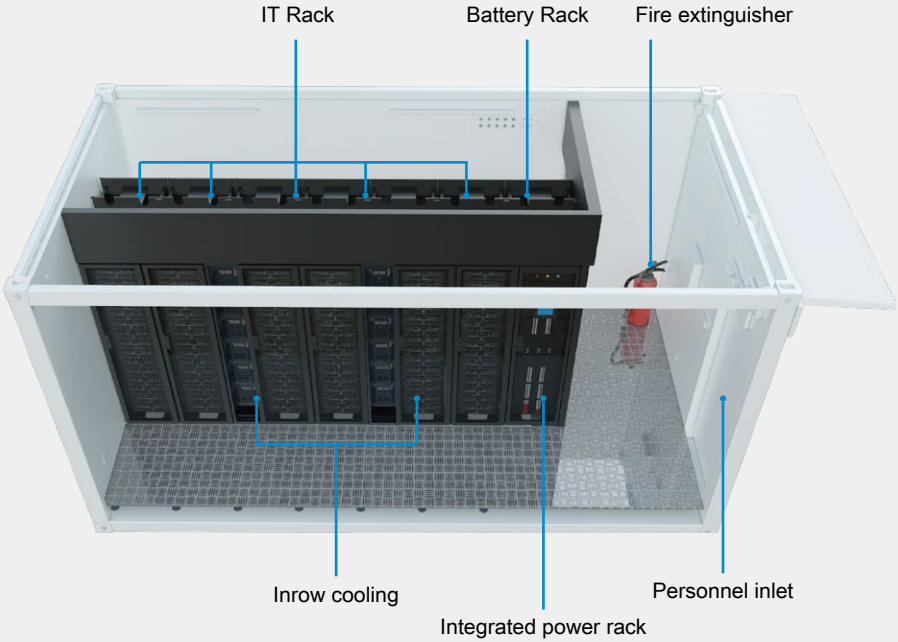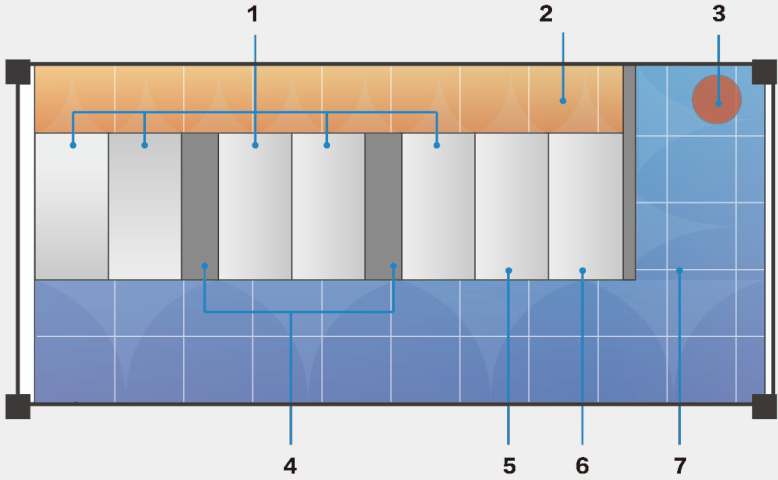
① IT Rack

② Sealed Hot Aisle

③ Fire extinguisher

④ Sealed Cold Aisle

⑤ Precision Cooling

⑥ Battery Rack

⑦ Integrated Power rack

Solution 2

Internal

Outdoor unit

IT rack

Fire extinguisher

Battery rack

Outdoor Unit

Precision cooling

Personnel inlet

Integrated power rack

Top View

1 2 3 4

5 6 7 8

① Outdoor unit   ⑤ Sealed cold aisle
② IT rack   ⑥ Precision cooling
③ Sealed hot aisle   ⑦ Battery rack
④ Fire extinguisher   ⑧ Integrated power rack

Solution 3

Internal

IT Rack   Battery Rack   Fire extinguisher

Inrow cooling

Integrated power rack

Personnel inlet

Top View

1   2   3

4   5   6   7

① IT Rack   ⑤ Battery Rack

② Sealed Hot Aisle   ⑥ Integrated power rack

③ Fire extinguisher   ⑦ Sealed Cold Aisle

④ Inrow cooling

Product Introduction

KSTAR intelligent integrated outdoor unit (IOU in abbreviation) consists of UPS, battery, fire-fighting, power panel and monitor unit, it reserves available space for IT equipment. IOU has the features that it includes power redundancy, constant cooling, Li-ion battery design, this increases the reliability of IT equipment.

Front side	Internal layout

UPS

Battery

Cooling

Fire fighting

Power panel

Monitor

Application

Application	Installation environment	Convenient maintenance
IOU can be used in the cell station of the remote area.	Outdoor installation, waterproof, dustproof heat - resistant, steal-preventive	High reliable power supply, long backup time,maintenance free, integrated monitor.

Transformer-less UPS and transformer-based UPS are optional

● Rack-mounted 3kVA/6kVA transformer-less / transformer-based UPS, the UPS can work in parallel and realize 1+1.

● Wide input voltage range and frequency, it can ensure the stable running of the generator.

● Transformer-based UPS is with the features that it can anti-impulse current, and it also contain outout isolation transformer inside, that can increase the reliability and safety of power supply.

6kVA
rack mounted tranformer-less UPS

3kVA
rack mounted tranformer-based UPS

6kVA
rack mounted tranformer-based UPS

Outdoor battery cabinet

Patent anti-leakage tray

Optional BMS

KSTAR Li-ion battery solution, it adopt KSTAR Li-ion battery cabinet, it's with the below features:

● High power density (Light weight and small dimension)
● Heat-resistant (Working temperature can be up to 45℃)
● Long life, environment friendly (Cycle life of cell of Lithium iron phosphate is from 2000-6000, it's 4 to 5 times of lead acid battery)
● It includes self-developed battery management system(BMS), it's with good compatibility and make the product more reliable.
● Maintenance free (Reduce the maintenance cost).
● Environment friendly and don't contain polluted metal such as lead.

Rack mounted lithium battery pack

Lithium battery / pack

Cabinet cooling

- It's embedded in the door of IOU, it don't occupy the acailable space, and increase the available soace for IT equipment.
- Single cabinet can be equipped with 1 or 2 air conditioner, the 2 air conditioner work as 1+1 redundancy, if one fails, the other can still work instead of the fault one immediately.
- AC/DC frequency conversion types air conditioners are optional. For 48Vdc freqiency conversion type, low start cyrrent, and it is feed by UPS and will not affect by public grid.
- Working temperature range: -40~55℃, wide temperature range for working.

Appearance of cabinet cooling

System structure chart
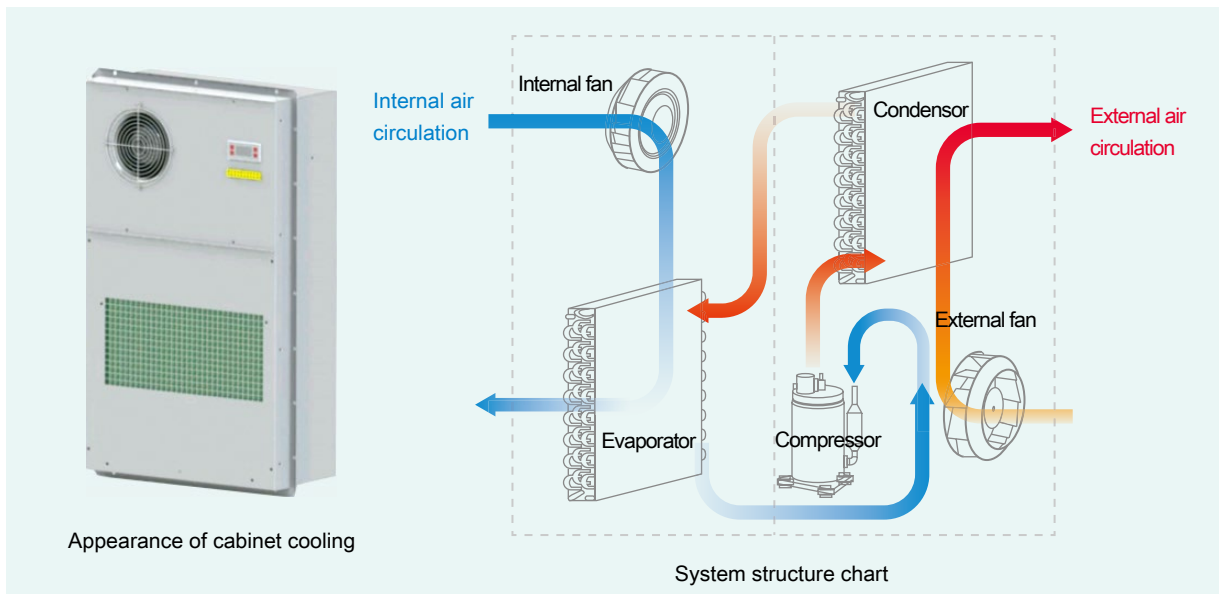
Rack mounted fire fighting

- It is special for data center, it's with FM200 suppression gas inside.
- Integrated with fire detection and fire extinguisher together.
- When it is working, it will release all the gas within 10 sec and put out the fire inside the cabinet immediately.
- Automatically temperature monitor, and it can set different alarm temperature.

Rack mounted power panel module

- Rack mounted design.
- Customer can choose 2 paths design, one is for public gird, the other is for generator, fast connector for generator.
- Schneider brand breakers are standard equipment in the power panel module.
- C level surge protection for main input.
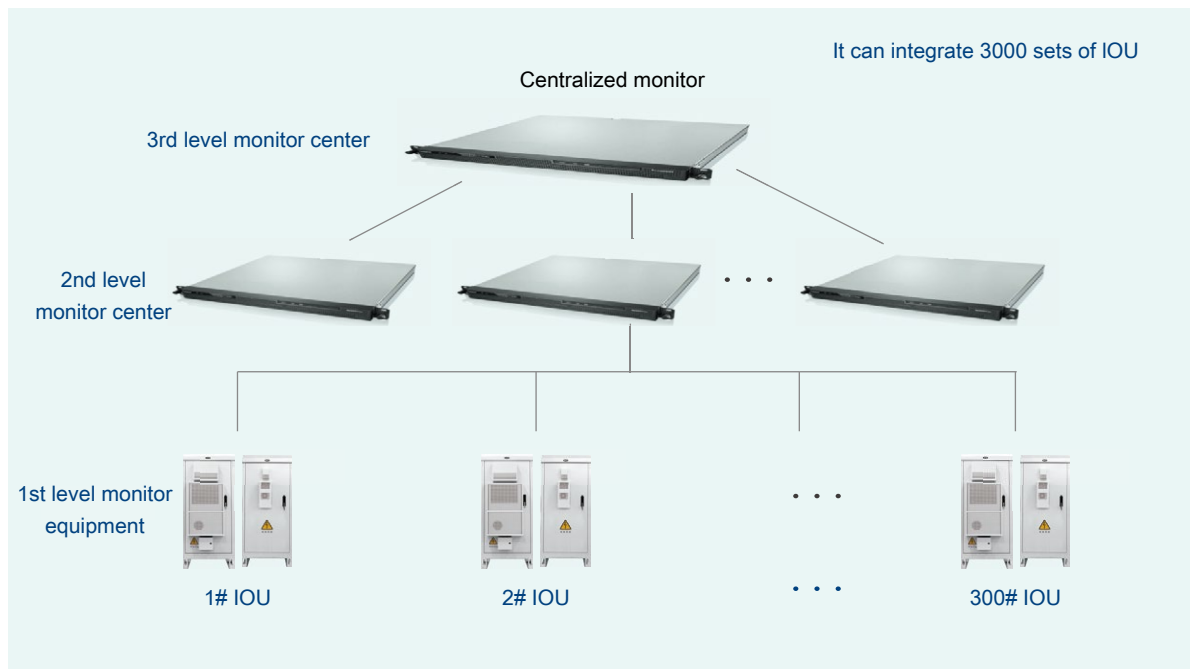- Power monitor for the main input.

Intelligent monitor system

Monitor unit

- Power supply: dual power input, automatic transfer between two path when power failure.
- Large equipment access: 1 unit can integrated 50 equipment at most.
- Multi-level monitor: Multi-level integration can confirm the exactly quantity of IT equipment.
- Wifi hotspot: It support Wifi hotspot and can realized movable operation and maintenance.
- Easy to expand: Reserve slot, it can expand IO port, switch card and telephone audible card.

Monitor software

- Software configuration: Customized sofware interface, no need to modify software code.
- Flexible : Support B/S and C/S browsing.
- Good compatibility: Compatible with the intelligent equipment from different supplier (UPS, cooling), support series port communication, SNMP, MODBUS TCP.
- Friendly communication interface: Monitor system can supply Northbound Interface free the third part can integrate monitor system through SNMP and Web Service.

It can integrate 3000 sets of IOU

Centralized monitor

3rd level monitor center

2nd level monitor center

1st level monitor equipment

1# IOU   2# IOU   · · ·   300# IOU

Cabinet of IOU

- IP55
- Sandwich panels (Color steel plate + Polystupid ethylene heat-insulationg material).
- Heat insulationg material, the depth is 45mm.

Case Presentation

Some Cases Show

Malaysian Prime Minister's Department Data Center

An enterprise datacenter in Singapore

Container data center in Nigeria

A data center in Jiangyou, Sichuan Province

An enterprise data center in Shaanxi Province

An enterprise data center in Gansu Province

Our Solution

**UPS Solution
Transformer-less
Memopower Series**
1~40kVA

**UPS Solution
Transformer-less
HPM3300E Series**
30~1200kVA

**UPS Solution
Robust Transformer-based
UPS Series**
1~800kVA

Precision Cooling Series
5~300kW

**Data Center Integrated
Solution**
IDU/IDM/IDB/IOU Series

Lead-acid Battery Series
3.5~250Ah (12V)
200~3000Ah (2V)

**UPS Solution
Line Interactive UPS Series**
0.4~3kVA

**UPS Solution
Transformer-less
YDC3300 Series**
10~200kVA

**UPS Solution
Transformer-less UL
Products Series**
1~100kVA

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Version number: KSD/C&C 2025-01