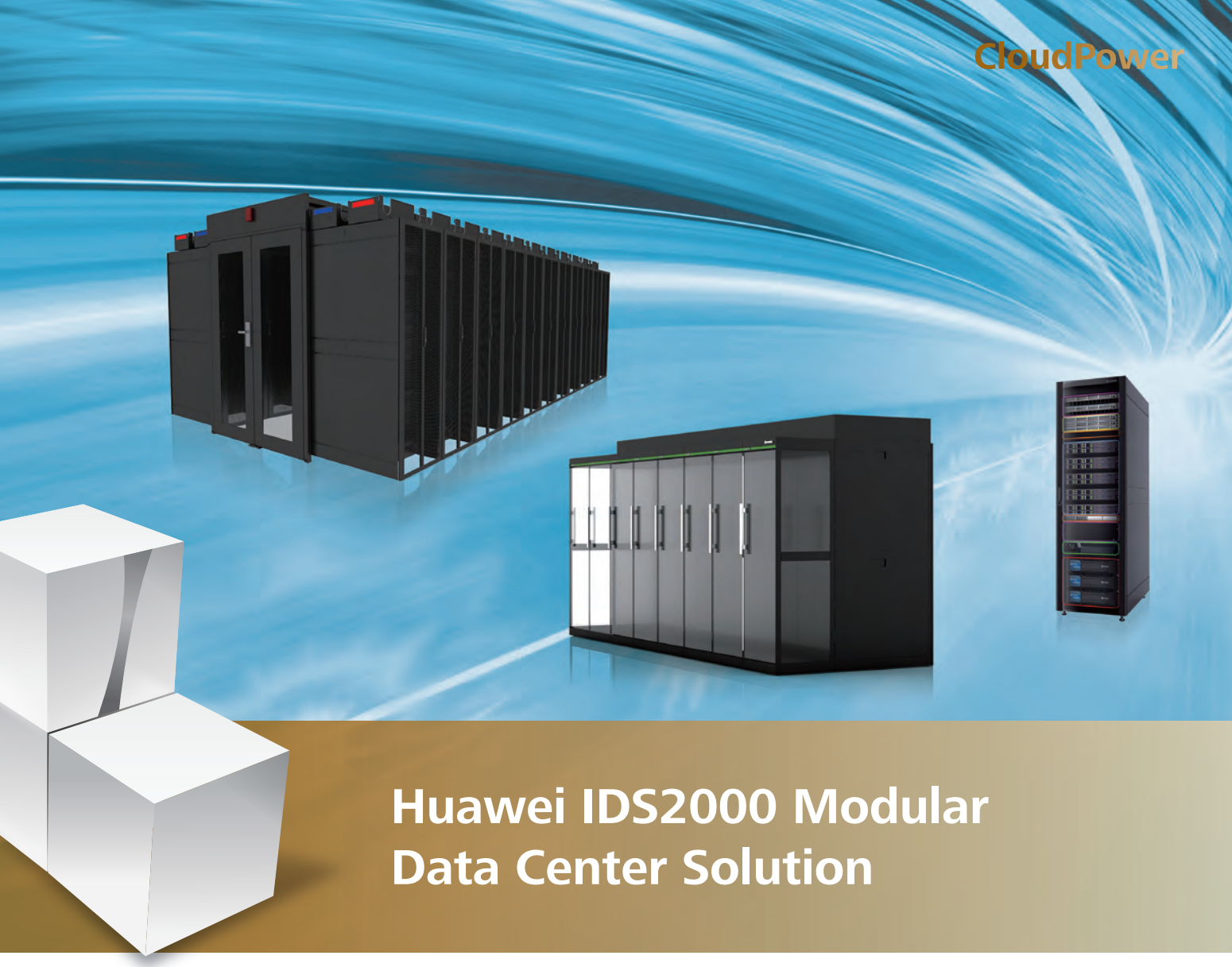
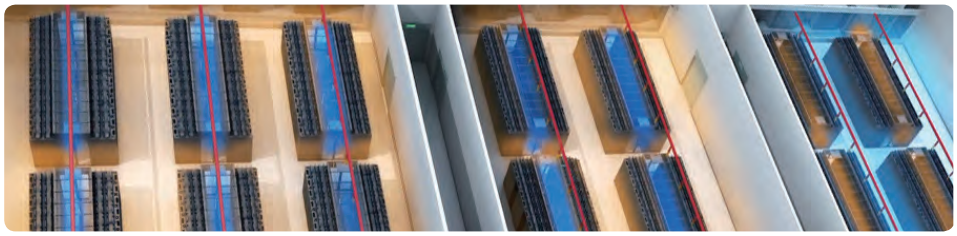
CloudPower



Huawei IDS2000 Modular Data Center Solution

HUAWEI TECHNOLOGIES CO., LTD.

HUAWEI



With the rapid development of cloud computing and mobile Internet business, the growth of IT density and energy consumption bring a lot of challenges to the traditional data center. For complying with the requirements of cloud computing and virtualization in future, as well as improving the efficiency of data center and controlling the cost of investment, Huawei launched CloudPower IDS2000 modular data center solutions. IDS2000 is a new generation modular data center solution with integration of cabinet system, power supply and distribution system, cooling system, cabling system, management system, etc.

Huawei CloudPower IDS2000 series modular data center solution includes three solutions of IDS2000L Series (Medium & Large) , IDS2000S Series (Small) and IDS2000M Series (Micro), covering all of indoor scenes of data center in order to meet the diverse needs of customers.

Customer Value:

Quick Deployment

- Factory prefabricated components can be rapidly assembled on-site, deployment cycle is reduced to 8-12 weeks, and the construction period is shortened by 50% or more.
- Less site restrictions, using row-level air conditioner that provide cool air horizontally, without a raised floor.

Energy Saving

- Cold aisle/ hot aisle containment technology avoids the mixture of cold and hot air, thereby significantly reduces energy consumption.
- For high-density scene, the row-level air conditioners are used to close heat sources, which observably improve the cooling efficiency.
- Comparing with the traditional data center, energy consumption of IDS2000 solution is reduced by 30 % to 50 % and PUE is as low as 1.25 with free cooling.

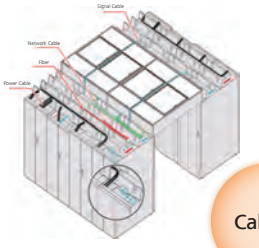
Flexible Expandability

- Modular components and a unified-standard interface make flexible expansion based on rack-unit or module-unit, and avoidance of over investment.
- On-demand deployment, the rated-power density can be smooth upgraded from 1W to 11kW, even up to 30kW by customization.

Smart Management

- Huawei NetEco management system can monitor all data center infrastructure uniformly including electricity, environment, video, access control etc.
- The comprehensive intelligent management platform provides functions such as alarm management, report management, work order management, energy efficiency management.
- Opening standard northern interface can be rapidly integrated with mainstream NMS or layer-2 management systems.

IDS2000L Series Medium & Large Modular Data Center Solution

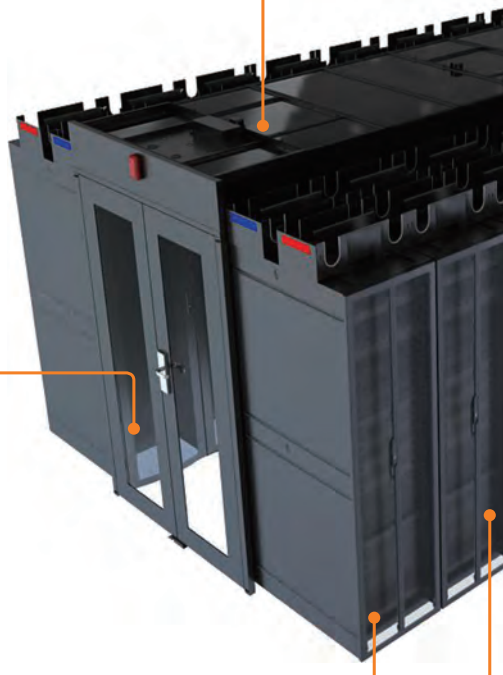


Cabling

- Two types of cable troughs: signal cable troughs and power cable troughs. Cables insulation reduces system interference and increase reliability.
- Cable holes are located in the center of each cabinet top cover to simplify cable-routing into the cabinet.
- The expansion of length direction can be achieved.

Skylight

- A flat roof ceiling consists of side panels, top frames, and revolving ceiling panels.
- The temperature detector and smoke alarm are installed in containment aisle , and are linked with skylight controller. After the action of electromagnetic switch, the rotate skylight automatically opens by gravity, ensuring the fire extinguishing gases into the aisle.



End Door

- The end door of a confined channel can be a sliding door or a double door.
- Tempered glass is used as the door panel, which ensures channel visibility and meets fire fighting requirements.
- Sealed brushes are installed at the bottom of the door panel, making the date center module sealed in an enhanced manner.

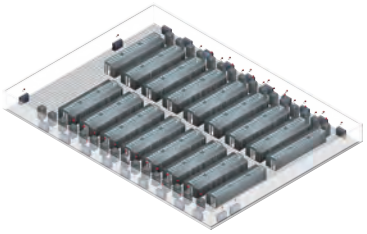
Power System

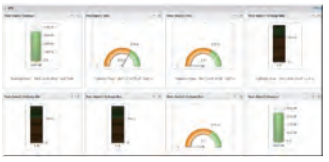
Power Distribution - PDF

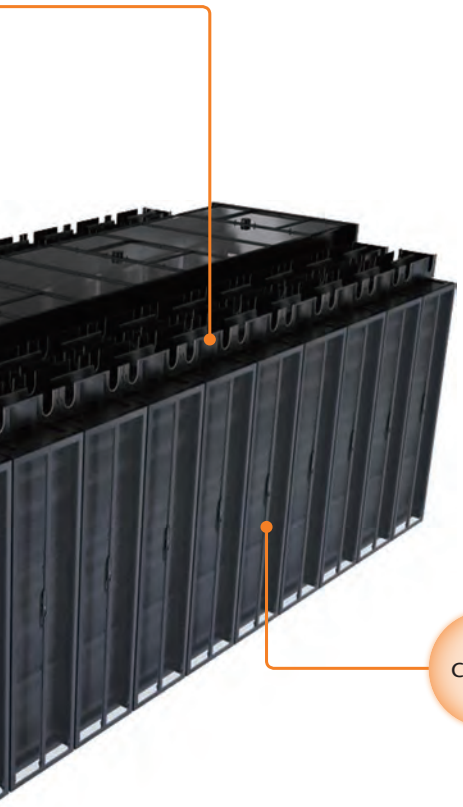
- PDF includes precise PDF and air conditioner PDF.
- 380/220 V 50Hz, 480/277 V 60Hz are all supported.
- Modular design applies in PDF, the reasonable electricity margin is reserved for upgrading to 30kW/R as the max power density.

Power Supply - UPS

- The UPS provides an uninterruptible power supply for the modular data center, 15 minutes backup is as default.
- 380/220 V 50Hz, 480/277 V 60Hz are all supported.
- Power supply system is in the 'N+X' backup, which complies 'Tier III', and for higher reliability, the 'Tier IV' could be also customized.







NetEco System

- NetEco system manages the real-time data and status of data center infrastructures, including power, environment, video, and door status.
- Handling emergencies automatically, improving management efficiency greatly, reducing the cost of O&M.
- Dynamic PUE management, optimizing important power and cooling services, smart interaction with cloud-platform.

Cooling

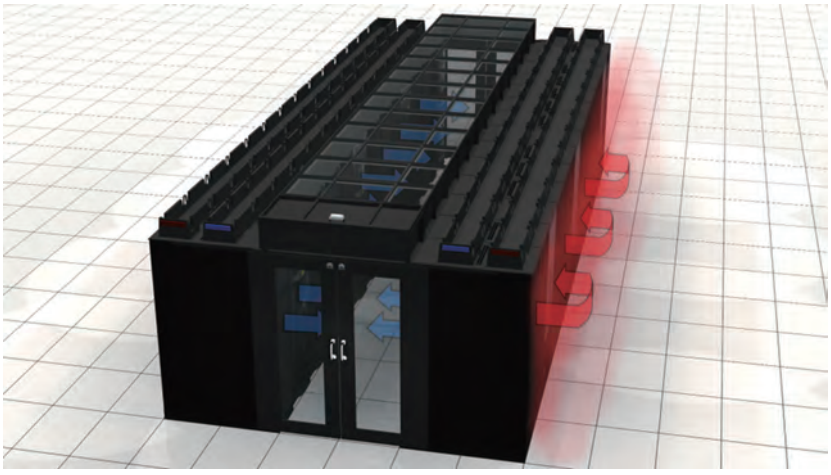
- In a modular data center, air conditioners and racks form cold (hot) aisles for isolation between cold air and hot air.
- Row-level ACs are close to the heat sources, which reduces the air pressure losses and minimizes cold air leakage to maximize the use of cold air.
- Room-level ACs with bottom air supply are also supported.
- Cooling supply system is in the 'N+X' backup, which complies 'Tier III', and for higher reliability, the 'Tier IV' could be also customized.

Rack

- One modular data center consists of 42 server racks at most.
- Racks are unified in dimension, and complied with 19in. standard, and the air ventilation is front-to-rear, and doors' perforation rate is 70%.
- Super bearing load: static load is1500 kg, dynamic load is 1050 kg.
- All racks are pre-installed in factory, which make on-site implementation much faster.

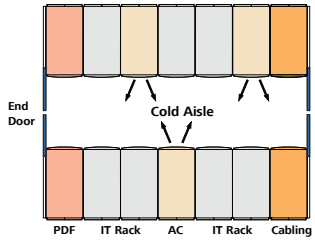
IDS2000L series modular data center—High density solution

IDS2000L series modular data center high density solution, is adopting cold aisle / hot aisle containment, efficient modular UPS and row level precision air conditioner, as well as no need raised floor. The rated power density can be up to 11kW. It can be applied for new medium scale or large scale high density data centers or reformation and expansion of traditional data centers.

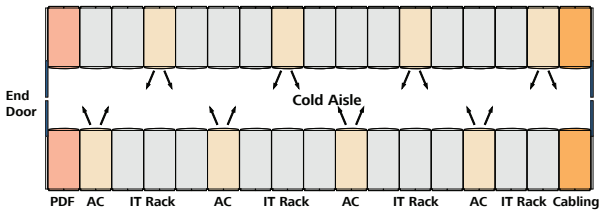


Horizontal air supply mode is used for high density application, air-cooled type CRAC and cooling water type CRAC are optional.

Compact deployment, flexible and exquisite

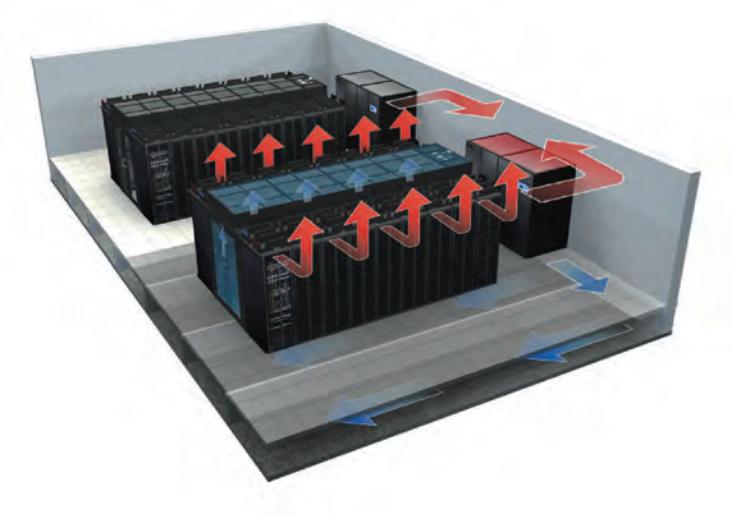


Multi-racks deployment, huge scale



IDS2000L series modular data center—Low density solution

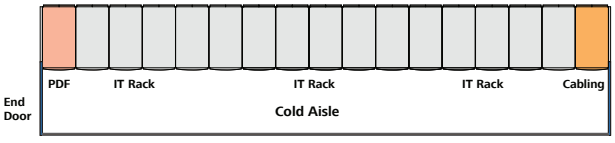
IDS2000L series low density modular data center solution, is adopting cold aisle / hot aisle containment, flexible deployment by single row or dual row, and room-level precision air conditioners. The rated power density can be smooth upgraded from 1kW to 7kW per rack. It is adapted to new data centers of carriers and large enterprise and the reformation and expansion of the traditional data centers.



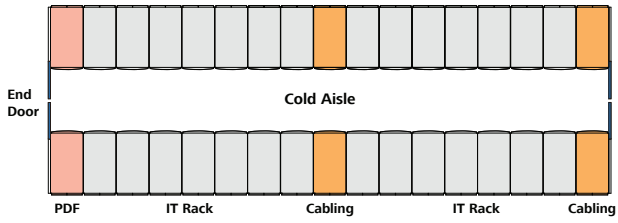
Bottom air supply mode is used for low density application,

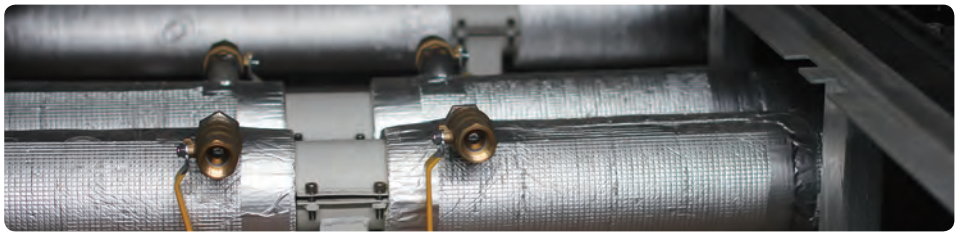
air-cooled type CRAC and cooling water type CRAC are optional.

Single row deployment, space saving



Dual row deployment, large-scale copy



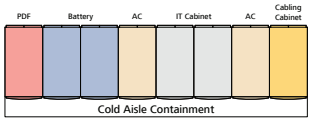


IDS2000L Series Specifications

Items		Specifications	
		High density solution	Low density solution
Maximum number of server cabinets of single module		28	Dual row: 42 Single row: 21
Maximum IT capacity of single module		300kW	Dual row: 294kW Single row: 147kW
Cabinet	Dimensions (H × W × D)	2000mm × 600mm × 1100mm	
	Effective depth	900mm	
	Installing space	42U	
Aisle Containment	Skylight Dimensions (H × W × D)	350mm × 1350mm × 600mm	
	Sliding door Dimensions (H × W × D)	2050mm × 1500mm × 42mm	
	Double door Dimensions (H × W × D)	2050mm × 1600mm × 42mm	
Precision Power Distribution Frame	Voltage	Three-phase380V, 50Hz /Three-phase 480V, 60Hz	Three-phase 380V, 50Hz
	Input	Two three-pole 250 A switches(380V, 50Hz) One three-pole 480 V 200 A switch (480V, 60Hz)	Two 3-pole 250 A circuit breakers
	Output	30 three-pole 20 A switches(380V, 50Hz) 15 three-pole 40 A switches(208V, 60Hz)	Forty-eight 1-pole 40 A circuit breakers and two 1-pole 16 A circuit breaker
UPS	Type	Modular UPS	Traditional Tower UPS
	Voltage	Three-phase 380V, 50Hz/Three-phase 480V, 60Hz	Three-phase 380V, 50Hz
	Capacity	Maximum 360kVA (380V, 50Hz) Maximum 500kVA (480V, 60Hz)	200kVA/300kVA/400kVA/500kVA/ 600kVA
Precision Air Conditioner	Type	Row level precision air conditioner	Room level precision air conditioner
	Input Voltage	380V/50Hz, 480V/60Hz	380V/50Hz
	Refrigerating capacity	30kW	Computing room: 60kW/100kW/110kW/120kW Power room: 30kW/60kW/70kW

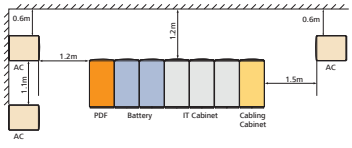
IDS2000S Series Small Modular Data Center Solution

With the development of network technology and communication technology, data center has become the core of enterprise information construction. In order to meet requirements of various business as well as the upcoming era of cloud computing, Huawei launched the IDS2000S small modular data center solution based on the deeply understanding of the traditional small-scale data centers. It is designed as innovative concept of 'All-In-Room', and features high density modularization, optimal reliability and security, fast deployment, cost effectiveness, energy saving, and excellent monitoring.



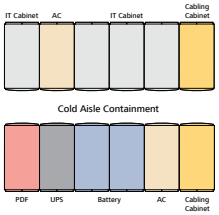
Single-Row with Aisle Containment

Applies to the scenario of 2-4 IT racks as high power density of 7-11kW per rack



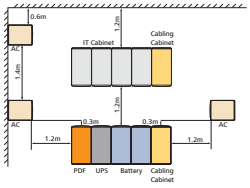
Single-Row without Aisle Containment

Applies to the scenario of 2-4 IT racks as low power density of 1-7kW per rack



Dual-Row with Aisle Containment

Applies to the scenario of 4-16 IT racks as high power density of 7-11kW per rack



Dual-Row without Aisle Containment

Applies to the scenario of 4-16 IT racks as low power density of 1-7kW per rack

As an All-In-Room solution, IDS2000S small modular data center features high density modularization, optimal reliability and security, fast deployment, cost effectiveness, energy saving, and excellent monitoring.

High Density Modularization

- Single rack supports rated power from7 kW to11 kW, which meets various customer requirements.

Simple and Low Consumption

- The small data center is installed on a concrete floor rather than on a raised floor. By using in-row air conditioners, which are close to heat sources, the cooling efficiency is improved greatly.

Excellent Monitoring

- Various sensors monitor modules in the small data center constantly. The web-based monitoring system enables the modules to be remotely monitored.

Optimal Reliability and Security

- Modular UPS works in N+1 redundancy mode with long time battery backup to improve the reliability of the small data center.

IDS2000S Series Specifications

Items	Specifications	
Cabinet	Standards	IEC60297-1
	Dimensions (H x W x D)	2000mm×600mm×1100mm
	Installation space	42U
	Protection level	IP20
Power Distribution Frame	Type	125A/250A/400A
	Voltage	Three-phase 380 V or 220 V
	Frequency	50 Hz or 60 Hz
	Input	One three-pole 125A/250A/400A
	Protection level	IP20
In-row Air Conditioner (T1condition)	Cooling capacity	30kW or 20kW
	Coolant	R410A
	Power	380V/50Hz
	Operating temperature	Indoor AC: 5-45°C outdoor AC: -30°C to +45°C
	Storage temperature	-40°C to +65°C
In-row Air Conditioner (T3condition)	Cooling capacity	30kW
	Coolant	R407C
	Power	380V/50Hz
	Operating temperature	Indoor AC: 5-45°C outdoor AC: -30°C to +55°C

Items	Specifications	
Precise air conditioner	Refrigerating capacity	30kW/12.5kW
	Coolant	R22/R407C
	Power	380V/50Hz
	Operating temperature	T1 condition: Indoor AC: 5-45°C outdoor AC: -30°C to +45°C
		T3 condition: Indoor AC: 5-45°C outdoor AC: -30°C to +55°C
UPS	Type	20kVA rack-mounted UPS 80kVA/120kVA Modular UPS
	Voltage	20kVA rack-mounted UPS: Three-phase AC 380, 400, or 415 V 80kVA/120kVA Modular UPS: Three-phase AC 380 V or 220 V
	Frequency	50 Hz or 60 Hz
	Power factor	0.8
	Efficiency with full load	≥94%
	Noise(1meter)	≤70dB
	Protection level	IP20

IDS2000M Series Micro Modular Data Center Solution

IDS2000M solution is a highly-integration design, including racks, monitor, power supply, battery, network connection, and it provides a complete micro data center infrastructure. The producing time is just 3 weeks. The micro data center adopts modular architecture, and the standard configuration is one rack, and battery rack and network cabling rack are available for extension functions.

The cabinet cools as the natural air-flowing and the maximum cooling capacity of a single cabinet is 3kW. The cabinet top is designed with heat dissipation holes or installed with fans. The perforation rate of front and rear doors is 70%.

The UPS provides stable power for the micro data centers by storage batteries when the mains fails.

When the mains and diesel generator (D.G.) fail, storage batteries supply DC power for the UPS. Then the UPS inverts the DC power into AC power for loads.

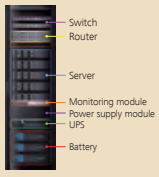
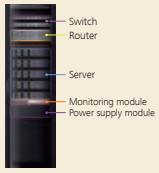
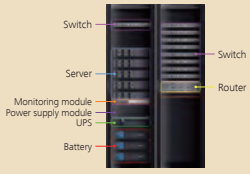
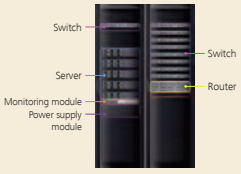
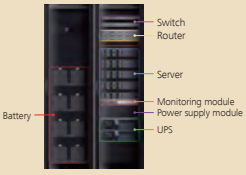
The front door is a single-swing door. The rear door is a double-swing door. IT main cabinet integrates power distribution, monitoring, cooling and cabling, KVM, etc.

The monitoring system collects and analyses cabinet environment data, manages the cabinet environment, and reports alarms. It monitors the micro-environment in the cabinet, UPS power distribution system, and fan control system.

For IDS2000M solution, the maximum rated IT power is 4.5kW.

IDS2000M Series Specifications

Items	Specifications
Dimension (H X LX W)	2000mmX600mmX1100mm
Power supply	220V commercial electricity access, UPS (Optional)
Operation condition	Temperature 5 to 30°C temperature, relative humidity of 10% to 90%
External interface	Local standard power interface
Power consumption	Rated IT power≤4.5kW, heat-dissipation capacity≤3kW
Structure composition	Single door is front; double doors is rear; side plate applied, Opening angle is 110°
Air flue	Open ratio of front and rear door is 70%, air flue is front and rear, the top cooling module is optional

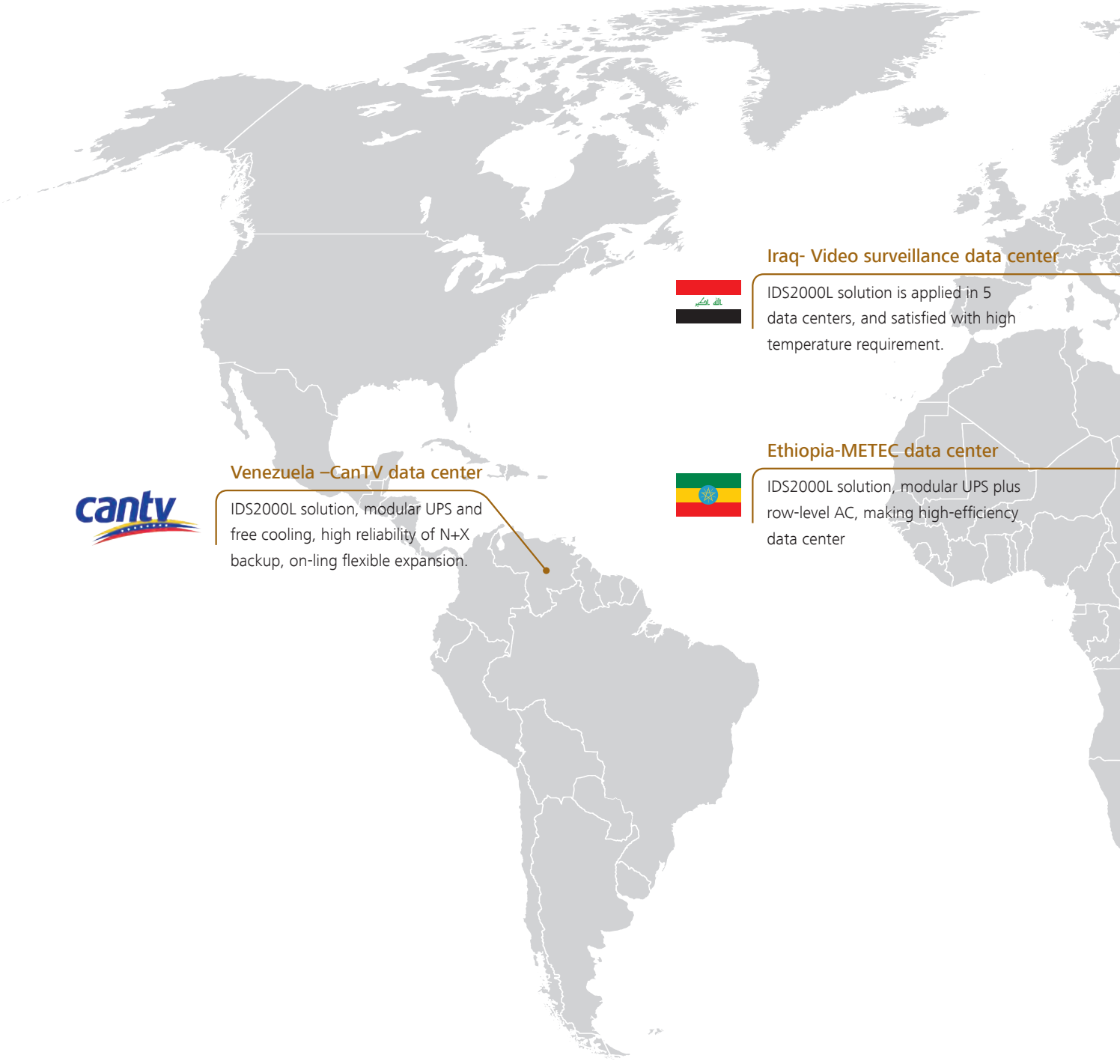
Typical Configurations		Main Cabinet User Space	Network Cabling Cabinet User Space	Battery Cabinet	UPS Module	Battery Backup Time
Main Cabinet with UPS		25U	×	×	√	30min
Main Cabinet without UPS		37U	×	×	×	×
Main Cabinet with UPS + Network Cabling Cabinet		25U	42U	×	√	30min
Main Cabinet without UPS + Network Cabling Cabinet		37U	42U	×	×	×
Main Cabinet with UPS * + Battery Cabinet		31U	×	√	√	30min/1h/2h/ 4h/8h Optional
Main Cabinet with UPS *+ Network Cabling Cabinet + Battery Cabinet		31U	42U	√	√	30min/1h/2h/ 4h/8h Optional

Note:

* For the configuation, UPS backup is 1+1.

- 'X' stands for no configuation, '√' stands for standard configuation. Switch, router or sever are not mandatory configuration.
- All above six configuations are designed based on condition of the maximum heat emission (3kW).
- Main cabinet standard configuation: One set of PDU, monitoring module, smoke detector, temperature and humidity sensor, water sensor, door magnetic switch.
- Network cabling cabinet standard configuation: One set of PDU, smoke detector and door magnetic switch.
- Battery cabinet standard configuation: One set of smoke detector and door magnetic switch.

Huawei CloudPwoer IDS2000 all-series modular data center solutions have been successfully applied in China Mobile southern base, China Telecom (ShangHai), Phoenix TV, HongKong Airlines, India NxtGen, Maldives smart-government, Venezuela CanTV, etc.



Iraq- Video surveillance data center

IDS2000L solution is applied in 5 data centers, and satisfied with high temperature requirement.

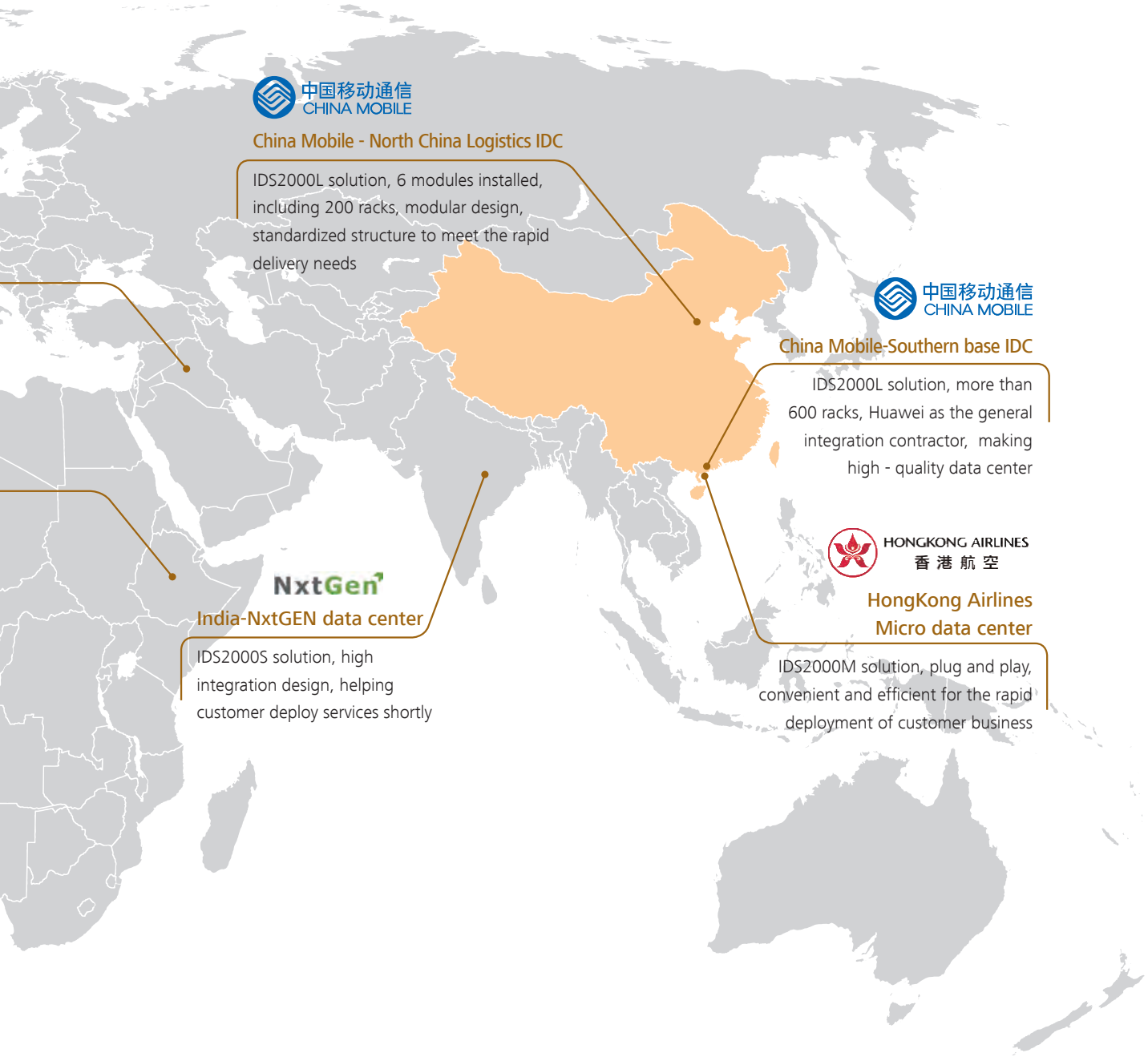
Ethiopia-METEC data center

IDS2000L solution, modular UPS plus row-level AC, making high-efficiency data center

Venezuela –CanTV data center

IDS2000L solution, modular UPS and free cooling, high reliability of N+X backup, on-ling flexible expansion.

- More than 10-year data center service experiences, more than 210 data centers and 20 'Cloud' data centers all around the world
- Mora than 30 global mainstream partners about data center, serving top-level customers



About Network Energy of Huawei

Based on the deep understanding about telecommunication in a long term of 20 years, and the construction and maintenance experience of more than 1.5 million global telecommunication sites, Huawei network energy product line adheres the '4S' concepts of 'Simple, Scalable, Smart, Saving', and commits to providing customers the world's leading network energy solutions.

The network energy product line has two main businesses of site energy and data center energy. We are making stable, green energy and infrastructure for customers in ICT field, building a solid foundation for excellence networks, protecting customers' long term investment on energy and infrastructure.

About Huawei

Huawei is a leading global ICT solutions provider. Through our dedication to customer-centric innovation and strong partnerships, we have established end-to-end capabilities and strengths across the carrier networks, enterprise, consumer, and cloud computing fields. We are committed to creating maximum value for telecom carriers, enterprises and consumers by providing competitive ICT solutions and services. Our products and solutions have been deployed in over 140 countries, serving more than one third of the world's population.

HUAWEI TECHNOLOGIES CO., LTD.

Huawei Industrial Base
Bantian Longgang
Shenzhen 518129, P.R. China
Tel: +86-755-28780808
Version No.: M3-308130201-201200825-C-2.0

www.huawei.com