



## **Huawei UPS5000-A Series 200-800kVA Uninterruptible Power Systems**

HUAWEI TECHNOLOGIES CO., LTD.

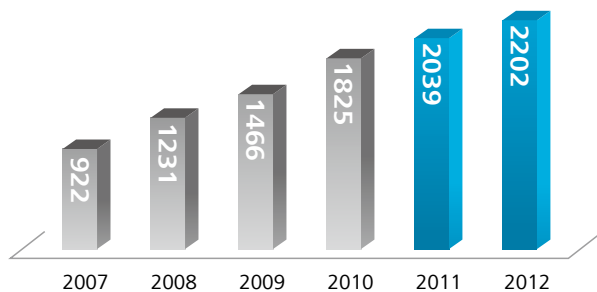


# About Huawei Network Energy

## Corporate Information

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. Huawei is among the world top 500 enterprises, our products and solutions have been deployed in over 140 countries, serving more than one third of the world's population. There are total 155,000 employees working here.

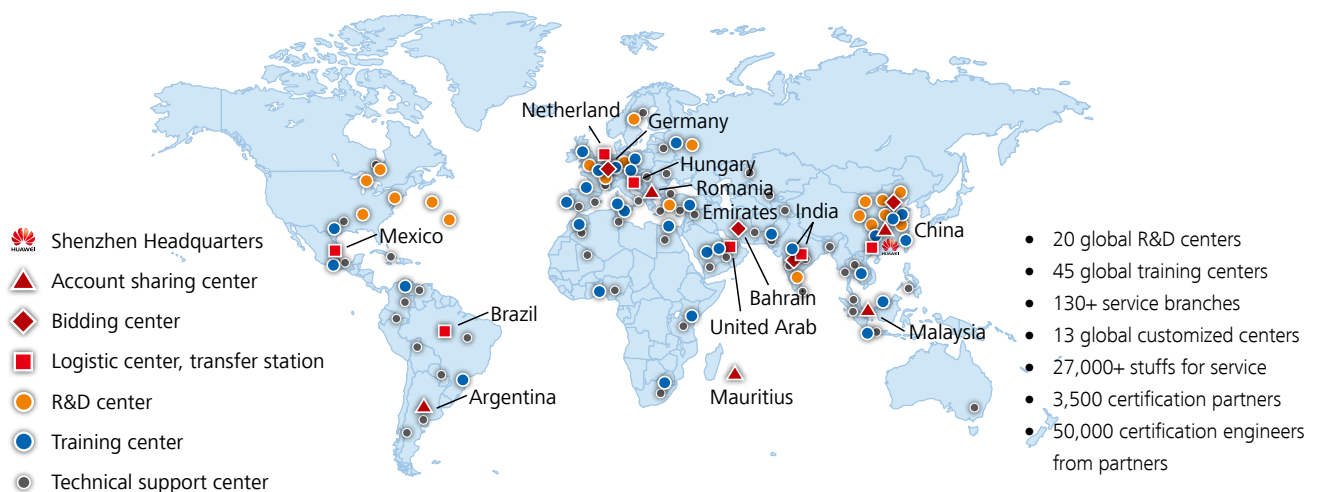
Sales revenue (CNY 0.1 billion)



## Market & Management

- Leading global ICT solution provider
- Major contributor of telecom standard, first share of many products and solutions
- Create value for customers continuously for 20 years, grow steadily for 20 years
- Sales revenue reached CNY 220.2 billion in 2012
- There BGs (carrier BG, enterprise BG, consumer BG) were founded in 2011, the enterprise BG and consumer BG grow fast and become two new and stable economic growth points of the group

## Globalization, localization



San Diego  
USA



Dallas  
USA



Moscow  
Russia



Bangalore  
India



Stockholm/Goteborg  
Sweden

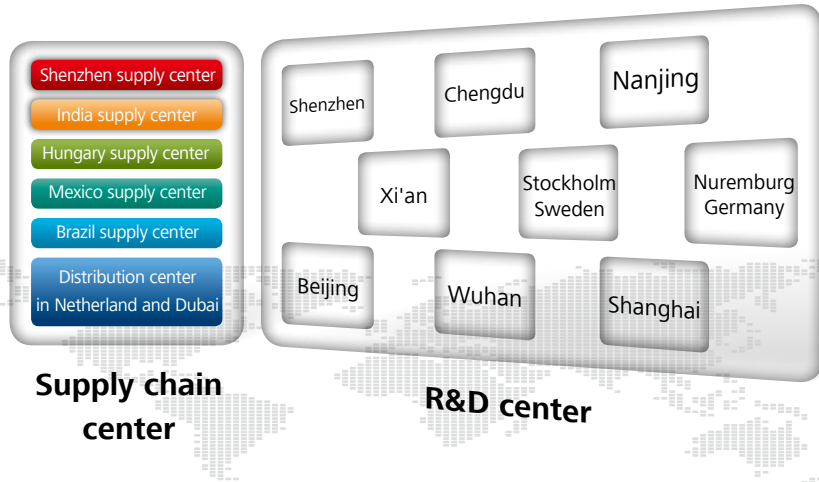


Munich  
Germany

## Huawei Network Energy

Network energy productline is one of four main productlines in Carrier BG. We are committed to help our customer build strong infrastructures for network and protect the long-term investment in energy infrastructure through providing efficient, reliable and intelligent network energy. Huawei network energy productline takes full advantage of the Global intellectual resources and 9 R&D centers have been set up at Germany (Nuremberg), Sweden (Stockholm) and China. As far as the end of 2012, network energy productline had filed 550+ patent applications and the sales revenue had reached 1 billion US dollars.

- Huawei 5000-E "Data Center Product Excellence Award"
- CommunicAsia "Green science and Technology Award"
- DCD Data Center "The blueprint Award"
- "Energy star" certification
- Deutsche Telekom "The best site design award"
- "Desktop cloud container data center" Uptime Institute TIER3 certification



## Network Energy Product

### Data center UPS & air conditioner



Modular and container DC



UPS (1~800kVA)



Row/room level precision air conditioner (20~150kw)



### Hybrid power



Embedded power (30~400A)



Outdoor power (30~600A)



Indoor power (100~24000A)

### Site power



Diesel hybrid



Solar hybrid



Grid hybrid

### Intelligent management system



NetEco

# Contents



Huawei UPS5000-A Series .....	1
Multiple Reliable Design .....	2
Industry-leading High Efficiency .....	3
High Power Density, Small Footprint, High Availability ....	4
Easy Management .....	5
The Optional Components.....	6
Specification .....	7



*Up to 96% Higher Efficiency*

*and a Footprint of Only 1.02m<sup>2</sup>*



## >> UPS5000-A Brief Introduction

Rated Capacity: 200-800kVA

Rated Voltage: 380/400/415V AC

Rated Frequency: 50/60Hz

Input/output Wiring: 3Ph+N+PE

Topological Structure: Double Conversion Online UPS

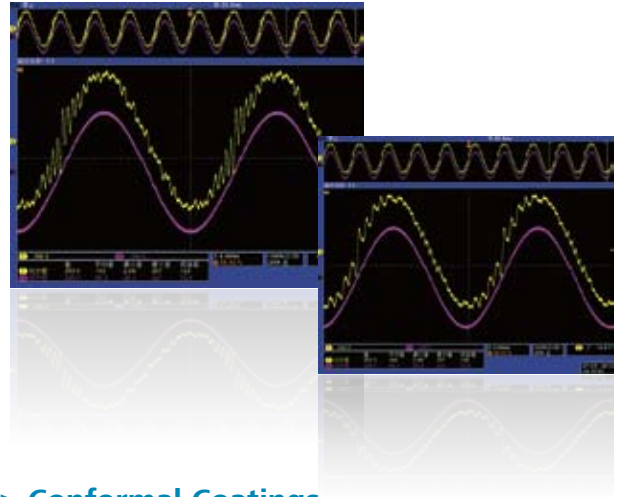
## >> UPS5000-A Design Concept

With the rapid evolution of IT technology, power supply system require high reliability and high efficiency. As a leader in communications equipment, Huawei provides reliable, efficient, convenient, and intelligent Uninterruptible Power Supply (UPS) systems to customers.

# Multiple Reliability Design

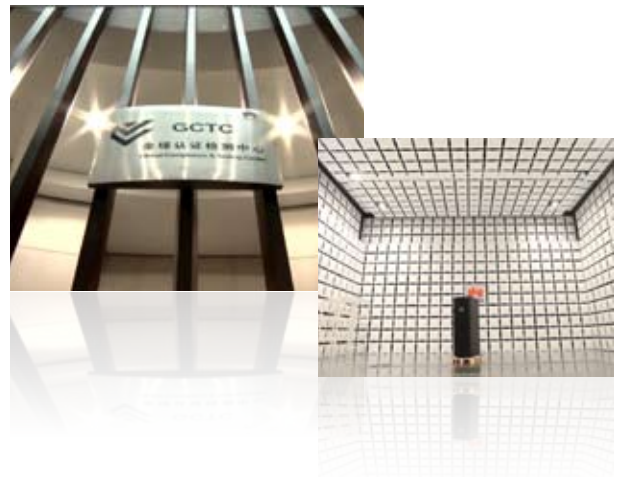
## >> Wide Input Voltage and Frequency Range

The input voltage range of UPS5000-A is from 138 V AC to 485 V AC and the frequency range is from 40 to 70 Hz, so the UPS5000-A improves power supply reliability even in the worst grid conditions.



## >> Conformal Coatings

With its conformal coatings, the UPS5000-A is resistant to salt spray, dust, high humidity, high temperature, and other harsh environments, extending the lifespan of key components.



## >> 1400+ Strict Tests, Ensure High Reliability

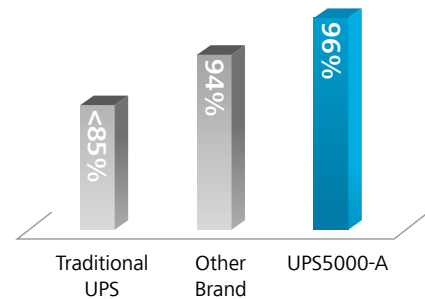
Huawei UPS's R&D and testing include the industry-leading Global Compliance and Testing Center and Hainan's high temperature, high humidity, and salt spray test field. Huawei's UPS has passed more than 1,400 strict tests, including salt spray testing, halt testing, and long-life testing to ensure high reliability.



# Industry-leading High Efficiency

## >> High Efficiency: Up to 96%

In addition to high quality components and patented technology, Huawei UPS5000-A uses an algorithm to detect load, power grid, and UPS status, ensuring minimum power consumption.

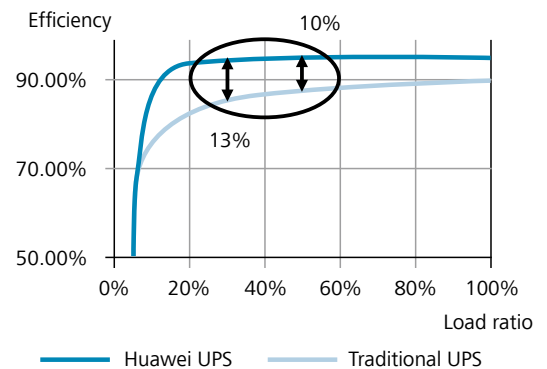


	Traditional UPS	Other Brand			Huawei UPS5000-A
Efficiency	85%	90%	92%	94%	96%
Annual UPS Energy Consumption (kWh)	309, 176	194, 667	152, 348	111, 830	73, 000
Annual Cooling System Energy Consumption (kWh)	103, 059	64, 889	50, 783	37, 277	24, 333
Total Energy Consumption (kWh)	412, 235	259, 556	203, 130	149, 106	97, 333

Load: 200kW, EER(Energy Efficiency Ratio) of Cooling System: 3

## >> Efficiency up to 95% at 30% Load and 96% at 50% Load

Most data center UPS systems run at a low load rate. For traditional tower UPSs, the lower load rate means lower efficiency, increasing Operating Expenditures (OPEX) and decreasing profit. The Huawei UPS focuses on customer needs; the most commonly used load rate provides the highest efficiency.



## >> Efficiency in ECO Mode: Up to 99%

The UPS5000-A has an efficiency level of up to 99% in ECO mode, significantly reducing OPEX. Transfer rate in normal mode is only 2 ms to 4 ms.



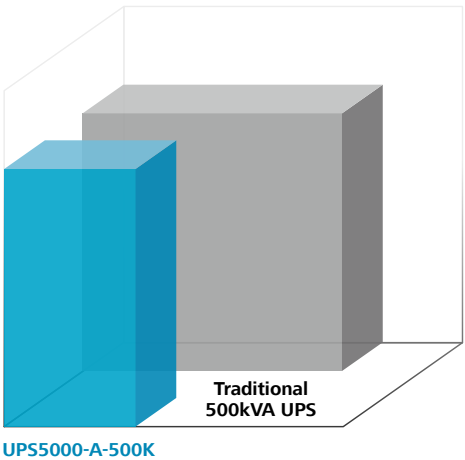
## >> Self-load Test

When a traditional UPS is deployed, customers must load the system to test it, increasing OPEX and slowing deployment. The Huawei UPS5000-A's self-load function helps customers realize fast deployment and significantly reduces OPEX.

# High Power Density, Small Footprint, High Availability

## >> High Power Density, Only 1.02m<sup>2</sup> Footprint of 500kVA

Due to the high cost of data center construction and rent, ICT equipment density increases. This means the power supply system must have a small footprint and high power density. Huawei's UPS5000-A-500K footprint is only 1.02m<sup>2</sup>, more than 50% smaller than a traditional UPS.



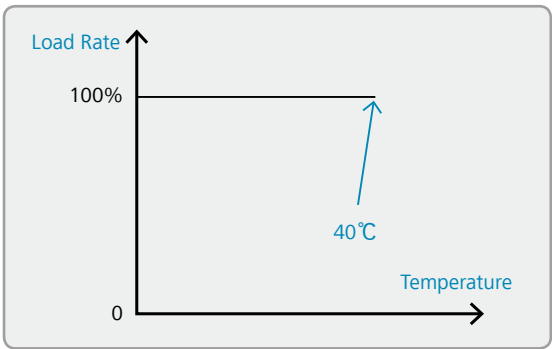
## >> High Output PF, Increasing Load Capacity by 30%

With the development of Power Factor Correction (PFC) technology, the IT load power factor can be 0.95 or higher. The Huawei UPS5000-A, with a high output power factor of up to 0.95, is more suitable for modern IT loads, increasing load capacity by 30%, even with no load derating, with a power factor from 0.5 lagging to 0.5 leading.

		Traditional UPS (100kVA/80kW)		Other Brand (100kVA/90kW)		UPS5000-A (100kVA/95kW)	
Load Type	Power Factor	S(kVA)	P(kW)	S(kVA)	P(kW)	S(kVA)	P(kW)
Capacitive Load	0.95	72	68	95	90	100	95
	0.9	68	61	100	90	100	90
	0.8	64	51	87	70	100	80

## >> Advanced Thermal Design, 40°C Without Derating

For every 10°C increase in temperature, the life-span of electronic devices will be decreased by 50%. The Huawei UPS5000-A has an advanced thermal design to extend key component lifespan. The UPS5000-A is not derated at a temperature of 40°C, which significantly improves system reliability.



## >> Input Power Factor>0.99, THDi<3%, Green and Clean

The traditional UPS, using a Silicon Controlled Rectifier (SCR), may pollute the grid and lead to cable heating, computer crashes, and even tripping fuses. With the fifth-generation Insulated-gate Bipolar Transistor (IGBT), the UPS5000-A Total Harmonic Current Distortion (THDi) is less than 3%, and the input power factor is as high as 0.99, which can significantly reduce power distribution investment and grid pollution.

# Easy Management

## >> Intelligent Battery Management

Battery costs account for a large part of UPS system investment. Due to the limitations of traditional UPS poor battery management, batteries are short lived, affecting customer CAPEX. The UPS5000-A supports intelligent battery management:

### Intelligent charging management

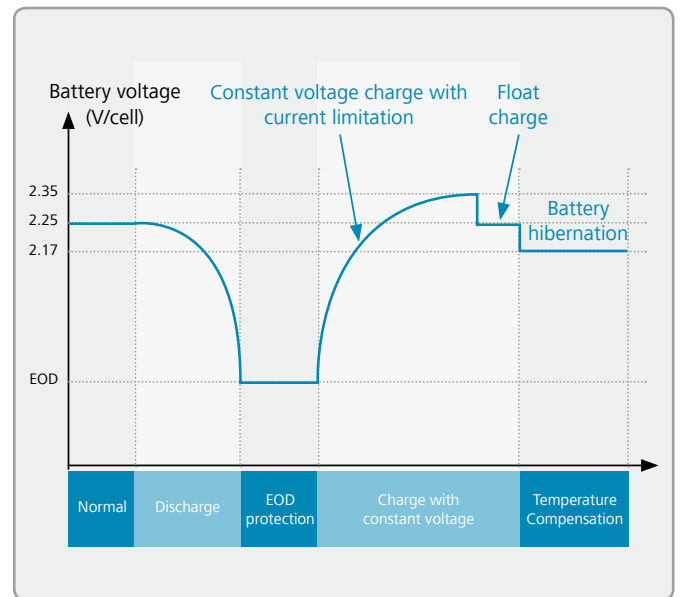
Supports automatic conversion of constant voltage charge, float charge, and temperature compensation function to prevent the battery from over or under charging.

### Intelligent discharging management

According to the load and the backup time to set the EOD point

### Intelligent hibernation

Intelligent battery hibernation extends battery lifespan



## >> A Variety of Communication Interfaces

UPS5000-A supports ModBus, Simple Network Management Protocol (SNMP), and other communication protocols, and supports RS485, Fast Ethernet (FE), and Dry Contacts in Standard Configuration.



## >> NetEco 1000U Monitoring Software

- Supports NetEco 1000U management software to remotely monitor, manage, and control the UPS.
- Supports multi-mode remote alarm notification methods, such as via email and SMS.
- Supports NetEco 6000 management software to monitor fire protection, power distribution, entrance guarding, and other systems.

# The Optional Components

## >> Temperature and Humidity Sensor

Battery temperature sensor monitors battery temperature and provides a temperature compensation function.

Ambient temperature and humidity sensor detects environmental temperature and humidity.



## >> Dry Contact Extended Card

The dry contact extended card provides additional dry contacts, allowing users to monitor and control critical and minor alarms, that includes bypass and battery mode, low battery voltage, and diesel generator control.



## >> Backfeed Protection Card

When backfeed occurs in normal or bypass mode, the backfeed protection card sends alarm signals to trip the circuit breaker (provided by the customer).



## >> Battery Monitor Unit

The battery monitor unit (BMU) monitors the battery voltage, battery charge and discharge currents, and battery temperature.



## >> Battery Grounding Failure Detector

The battery grounding failure detector checks for leakage of current on the battery loop and reports battery grounding failure signals to the UPS.



# Specification



Model		UPS5000-A-200K	UPS5000-A-300K	UPS5000-A-400K	UPS5000-A-500K	UPS5000-A-600K	UPS5000-A-800K
Rated Capacity (kVA/kW)		200/200	300/300	400/380	500/475	600/570	800/760
Input							
Mains	Rated Voltage	380/400/415 V AC					
	Rated Voltage	380/400/415 V AC					
	Voltage Range	138-485 V AC					
	Rated Frequency	50/60 Hz					
	Frequency Range	40-70 Hz					
	Total Harmonic Distortion	≤3%					
	Input Power Factor	0.99					
Bypass	Rated Voltage	380/400/415 V AC					
	Input Frequency	50/60 ± 6Hz					
	Input wiring	3Ph+N+PE					
Battery	Rated Voltage	360-480 V DC (the number of batteries can be selected from 30 to 40; 32 batteries in default)					
Output							
Output Wiring		3Ph+N+PE					
Voltage		380/400/415 V AC ± 1%					
Frequency		Tracking the bypass input (Online Mode); 50/60 Hz ± 0.1% (Battery Mode)					
Waveform		Sine wave (THDv < 1% for linear load)					
Output Power Factor		1		0.95			
Efficiency		96%					
Overload Capacity		110% overload for 60 min; 125% overload for 10 min; 150% overload for 1 min*					
Environment							
Operating Temperature		0-40℃					
Storage Temperature		-40-70℃					
Relative Humidity		0%-95% (No condensing)					
Maximum Operating Altitude		1000 m. Above 1000 m, derating according to IEC62040-3					
Audible Noise		< 65dB	< 67dB	< 68dB			< 70dB
Others							
Dimensions (H × W × D)		2000 × 600 × 850		2000 × 1200 × 850		2000x2000x850	
Weight		360kg	550kg	900kg	1000kg	1470kg	2000 × 2400 × 850
Certifications		EN/IEC 62040-1; EN/IEC 62040-2; EN/IEC 62040-3; CE; CB; RoHS, REACH, WEEE					
Communications		Dry contacts, RS485, SNMP					

For linear load, the UPS5000-A-600K overload capacity is: 110% overload for 60 min; 125% overload for 10 min; 150% overload for 1 min

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