



## Huawei Energy , Powering the Future Huawei UPS Solutions

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HUAWEI TECHNOLOGIES CO., LTD.



Huawei Energy

Powering the Future



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## Huawei UPS 4s Design Concept

### —Building a secure, stable, and highly efficient power supply platform



#### Stable

Being carefully designed, Huawei UPSs provide comprehensive protection for power input, storage, and output terminals and ensure equipment security.

- Comprehensive reliability system enables millions of Huawei power systems to operate properly in severe outdoor environments
- Are tested according to more than 1000 test cases and use automatic test equipment in various scenarios
- Pass tests under extreme conditions, such as wet dust, LLT
- Use key components provided by the top three manufacturers and generate alarms for potential failures



#### Saving

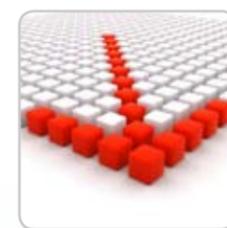
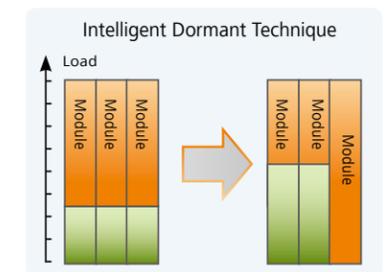
Adopting patented algorithm and exclusive technologies, Huawei UPSs remain high AC-AC efficiency at low load and are designed to be more compact and lighter. High-efficiency design with low heat dissipation extends the component service life by 30%.

- Improve the efficiency to up to 96%
- Support high power density of 17.5 W/inch<sup>3</sup>
- Adopt power walk-in technology to improve the proportion of UPS capacity to D.G. capacity and maximize return on investment (ROI)
- Improve the power utilization by minimizing the input current harmonic distortion



#### Smart

Provide the in-house real-time operating system that enables high reliability and flexibility, real-time battery parameter monitoring and automatic temperature compensation, and NetEco network management system that covers all power supply nodes.



#### Simple

Thanks to the flexible design concept, UPSs, battery packs, PDUs, and intelligent monitoring units can be installed easily. Adaptive load detection and dynamic parallel parameter detection enable simple UPS expansion.

- Modular design, easy expansion
- Standardization design, easy identification
- Integration design, easy delivery
- Fault-tolerant technology, easy maintenance

# UPS2000-G (1/3/6/10/15/20 kVA)



## Features

### Multi-Aspect Protection and High Reliability

- Use 5 kA lightning protection design, which ensures high reliability
- Report alarms for key components including bus capacitance, fans, and batteries to eliminate potential failures
- Work at a wide input voltage range (80~280 Vac), applicable for the worst electrical conditions
- Require no derating when operating in 0~40°C and have a high overload capacity
- Have an output power factor of 0.9 and require no derating for non-linear load, capacitive load, and inductive load whose power factor is greater than 0.5

### Smart, and Simple, Flexible Expansion

- Support hot-swap when working in parallel mode and support online capacity expansion
- Support remote online upgrade for the monitoring unit
- Support various communication modes, including RS485, SNMP, USB, and dry contact

### High Efficiency and Environment-Friendly

- The UPS2000-G-6K/UPS2000-G-10K efficiency is higher than 93.5%, and the UPS2000-G-6K/UPS2000-G-10K efficiency is higher than 94.5%
- Support a high power density of up to 8 W/inch<sup>3</sup>, taking less space
- Have an input power factor of greater than 0.99 and a THDi of less than 5%, which minimizes the impact on transformer or generator upstream
- Provide an LED and LCD in standard configuration, which supports seven display languages and is user-friendly

## Application Scenarios

- Medium and small data centers
- Medium/small enterprises
- Offices
- Financial branches
- Automatic devices

## Optional Components

- Isolation transformer
- Modbus card
- Battery rack
- Ambient temperature and humidity sensor
- PDU
- SNMP card
- Dry contact card
- Temperature sensor
- STS
- Storage Battery Module



## Specifications

Type		UPS2000-G-1K	UPS2000-G-3K	UPS2000-G-6K	UPS2000-G-10K	UPS2000-G-15K	UPS2000-G-20K				
Rated Capacity		1kVA/0.7kW	3kVA/2.1kW	6kVA/5.4kW	10kVA/9kW	15kVA/13.5kW	20kVA/18kW				
Input	Mains Input	Rated Voltage (Vac)		220/230/240		208/220/230/240					
		Input Voltage Range (Vac)		125~275		80~280					
		Input Wiring		Ph+N+PE		Ph+N+PE/3Ph+N+PE		3Ph+N+PE			
	Input Frequency Range (Hz)		45~66		40~70						
	Input Power Factor		0.95		0.99						
	Bypass Input		Rated Voltage (Vac)		220/230/240		208/220/230/240				
		Input Frequency Range (Hz)		50/60 ± 10%		50/60 ± 6					
		Frequency range with inverter synchronized to the bypass mains (Hz)		50/60 ± 10%		50/60 ± 6					
		Input Wiring		Ph+N+PE		Ph+N+PE		Ph+N+PE/3Ph+N+PE			
Output	Voltage (Vac)		220/230/240 ± 2%		208/220/230/240 ± 1%						
	Frequency (Hz)		be synchronized to the bypass input(Online Mode), 50/60 ± 0.1%(Battery Mode)								
	Waveform		Sine wave, THDv < 3%		Sine wave, THDv < 2%						
	Switching Time (ms)		0								
	Efficiency		>88%		>91%		>93.5%		>94.5%		
Overload Capacity		130% load: transferred to bypass after 60s; 150% load: transferred to bypass after 30s		125% load: transferred to bypass after 5min; 150% load: transferred to bypass after 1min							
Batteries	Rated Voltage(Vdc)		36		96		192~240 ( the number of batteries can be selected )				
Environment	Operating Temperature		0°C~40°C								
	Storage Temperature		-20°C~55°C		-40°C~70°C						
	Relative Humidity		0%-95% ( No condensing )								
	Maximum Operating Altitude		≤1500m. Above 1500m, derating according to GB/T 3859.2		≤1000m. Above 1000m, derating according to IEC62040-3						
Audible Noise(dB)		< 45		< 55		< 58					
Certification	EMC		CE/CB(EN/IEC 62040-2)								
	Safety Certification		CE/CB(EN/IEC 62040-1)								
Mechanical Parameters	Dimensions Height × Width × Depth (mm)		86 × 440 × 500		85 × 430 × 550		130 × 430 × 650				
	Weight (kg)		7		11		20		25		35
Others	Alarms		Support various history alarm record download, such as output overload, input abnormal, UPS faulty, battery under voltage protection, etc.		Support various history alarm record download, such as output overload, input abnormal, UPS faulty						
	Protections		Overload protection, short circuit protection, over temperature protection, battery under voltage protection		Overload protection, short circuit protection, over temperature protection, battery under voltage protection						
	Communications		RS232, NetEco express(RS232)		USB, RS485, SNMP, Dry contacts, Neteco 1000						

# UPS5000-P (20/40/60/80/120kVA)



## Features

### Redundancy Design, Stability, and Reliability

- Provide built-in output isolation transformers that ensure high adaptability to impulse load and stable output even in the most severe load disturbance
- Design the fan system and auxiliary power source in redundancy mode
- Work at a maximum altitude of up to 1500 m without derating
- Have a high overload capacity, which minimizes the bypass switchover
- Use industrial dust-proof design and can work under dusty conditions

### Smart, Simple, and Flexible Expansion

- The LCD displays the real-time UPS status parameters in Chinese or English, which facilitates management
- Support hot-swap when working in parallel mode and support online capacity expansion
- Support various communication modes including dry contact, RS232/485, and SNMP
- Use built-in maintenance bypass, without interrupting power supply when maintaining

### High Efficiency and Environment-Friendly

- Support a high efficiency of up to 97% in ECO mode and minimize the power usage
- Provide intelligent fan control, which extends the fan service life
- Provide intelligent battery management, which extends the battery lifespan by 30%~50%

## Application Scenarios

- Medium data centers
- Enterprise equipment rooms
- Large office regions
- Automatic devices
- Control centers

## Optional Components

- SNMP card
- Passive filter
- Battery switch box



## Specifications

Type		UPS5000-P-20K	UPS5000-P-40K	UPS5000-P-60K	UPS5000-P-80K	UPS5000-P-120K
Rated Capacity		20kVA/16kW	40kVA/32kW	60kVA/48kW	80kVA/64kW	120kVA/96kW
Input	Mains Input	Rated Voltage (Vac)	380/400/415			
		Input Voltage Range (Vac)	285~475			
		Input Wiring	3Ph+N+PE			
		Input Frequency Range (Hz)	40~66			
		Input Power Factor	0.9			
	Bypass Input	Rated Voltage (Vac)	380/400/415			
	Frequency range with inverter synchronized to the bypass mains (Hz)	50/60 ± 10%				
	Input Wiring	3Ph+N				
Output	Voltage (Vac)	L-L: 380/400/415 ± 1%				
	Frequency (Hz)	be synchronized to the bypass input(Online Mode), 50/60 ± 0.2%(Battery Mode)				
	Waveform	THDv < 3%				
	Output Wiring	3Ph+N+PE				
	Efficiency	≥89%	≥91%	≥90%	≥91%	≥90%
	Switching Time (ms)	0				
	Overload Capacity	125% load : transferred to bypass after 10min; 150% load : transferred to bypass after 1min				
Batteries	Rated Voltage(Vdc)	348V(the number of batteries can be selected)				
Environment	Operating Temperature	0°C ~ 40°C				
	Storage Temperature	-20°C ~ +55°C				
	Relative Humidity	0%-95%(No condensing)				
	Maximum Operating Altitude	The allowed altitude under full load should be below 1500m. Above 1500m, derating according to GB/T 3859.2				
	Audible Noise(dB)	< 65				
Certification	EMC	CE/CB(EN/IEC 60240-2)				
	Safety Certification	CE/CB(EN/IEC 60240-1)				
Mechanical Parameters	Dimensions Height × Width × Depth (mm)	1180 × 500 × 800	1600 × 800 × 800		1800 × 1000 × 800	
	Weight (kg)	240	450	490	690	775
Others	Alarms	Support various history alarm record download, such as output overload, input abnormal, UPS faulty, battery under voltage protection, etc.				
	Protections	Overload protection, short circuit protection, over temperature protection, battery under voltage protection				
	Communications	Dry contacts, RS232/RS485, SNMP, NetEco express(RS232), NetEco express(Network)				

# UPS5000-E

(80/100/120/160/200kVA)



## Features

### Redundancy Design, Stability, and Reliability

- The output power factor is up to 1
- Owing to the redundant fan system, 30% rated load can be driven even when two fans fail
- Work at a wide input voltage range (125~275 Vac), applicable for the worst electrical conditions
- Require no derating when operating in 0~40°C and have a high load-bearing capacity

### High Efficiency and Environment-Friendly

- Support the efficiency of up to 96% and 95% for 20% rated load
- Support high power density of up to 17.5 W/inch<sup>3</sup>
- Support a THDi of less than 3% and an input power factor of up to 0.99, minimizing the harmonic pollution on the power grid
- Reduce the UPS power loss efficiently thanks to the intelligent shift sleep technique

### Intelligent and Flexible

- Provide SNMP/ModBus/Relay I/O monitoring ports in standard configuration
- Support intelligent battery management, which extends the battery lifespan by 30%-50%
- Use modular design and support hot-swap, which facilitates capacity expansion and maintenance
- Provide a 7-inch colored LCD that enables graphic display and supports various display languages



## Application Scenarios

- Large data centers/communication centers
- Large/medium enterprise equipment rooms
- Financial system equipment rooms
- Large offices
- Automatic devices
- Scheduling centers

## Optional Components

- IP21 component
- Battery control box
- System dry contact
- Monitor dry contact extension board
- Input PDF
- Battery detecting system
- Insulation detection instrument
- Battery switch box
- Shockproof component
- Top air outlet component
- Output PDF
- Battery cabinet

## Specifications

Type		UPS5000-E-80K	UPS5000-E-100K	UPS5000-E-120K	UPS5000-E-160K	UPS5000-E-200K
Rated Capacity		80kVA/80kW	100kVA/100kW	120kVA/120kW	160kVA/160kW	200kVA/200kW
Input	Mains Input	Rated Voltage (Vac)	380/400/415			
		Input Voltage Range (Vac)	138~480V; 100%Load: 305V~480V; 50%Load: 190V~305V			
		Input Wiring	3Ph+N+PE			
		Input Frequency Range (Hz)	40~70			
	Total Harmonic Distortion	THDi<3% for linear load, THDi<5% for nonlinear load				
	Input Power Factor	0.99				
	Bypass Input	Rated Voltage (Vac)	380/400/415			
		Input Frequency Range (Hz)	50/60 ± 6			
Frequency range with inverter synchronized to the bypass mains (Hz)		50/60 ± 6				
Input Wiring	3Ph+N					
Output	Voltage (Vac)	380/400/415V ± 1%				
	Frequency (Hz)	be synchronized to the bypass input(Online Mode), 50/60 ± 0.25%(Battery Mode)				
	Waveform	Sine wave, THDv < 1% for linear load, THDv<4% for non-linear load				
	Output Wiring	3Ph+N+PE				
	Efficiency	≥96%				
	Switching Time (ms)	0				
	Overload Capacity	110% load : transferred to bypass after 60min; 125% load : transferred to bypass after 10min; 150% load : transferred to bypass after 1min; >150% load : transferred to bypass after 200ms				
Batteries	Rated Voltage(Vdc)	360V-480V ( the number of batteries can be selected from 30 to 40 )				
Environment	Operating Temperature	0°C~40°C				
	Storage Temperature	-40°C~70°C				
	Relative Humidity	5%~95%(No condensing)				
	Maximum Operating Altitude	The allowed altitude under full load should be below 1000m. Above 1000m, derating according to IEC62040-3				
	Audible Noise(dB)	< 65				
Certification	EMC	CE/CB(EN/IEC 62040-2; IEC61000-4-2; EN61000-4-3; EN61000-4-6)				
	Safety Certification	CE/CB(EN/IEC 62040-1; YD/T1095-2000; GB/T4715-93)				
Mechanical Parameters	Dimensions Height × Width × Depth (mm)	2000 × 600 × 850mm				
	Weight (kg)	160	195	195	230	265
Others	Alarms	Support various history alarm record download, such as ,Output over/under load, input abnormal, UPS faulty, battery under voltage protection, etc.				
	Protections	Overload protection, short circuit protection, over temperature protection, battery under/ voltage protection				
	Communications	Dry contacts, RS232/RS485, SNMP, NetEco 1000				

# UPS8000-D

(200/300/400/500/600kVA)



## Features

### Leading PFC-IGBT Technology

- Use built-in transformers, which enables higher overload and short circuit capacity
- Have a low THDi of less than 3%, which minimizes the harmonic effect on the power grid
- Work at wide input voltage range (240~480 V), applicable for worst electrical conditions
- Thermal overrating of the inverter to ensure an overload at 110% for 60 minutes, 125% load for 10 minutes, 150% load for 1 minute

### High Efficiency and Environment-Friendly

- Support high efficiency of up to 94.2% at 50% rated load and 93% at 25% rated load
- Have a high power factor of greater than 99% and high power usage rate
- Use intelligent sleep technology, which minimizes the system power loss
- Use power walk-in technology, which boosts the proportion of UPS capacity to D.G. capacity to 1:1.1 and reduces CAPEX for customers

### Smart and Simple, Flexible to Expansion

- Support system expansion of up to eight UPSs, hot-swap working in parallel mode, online capacity expansion
- Support intelligent battery management and provide different control parameters according to the battery type
- Provide a remote on-line monitoring system, which monitors capacity expansion flexibly
- Use modular design for fragile devices, which facilitates maintenance
- Provide an easy-to-operate LED and a graphic LCD that display the operating status and parameters in real time
- Provide a black box, which facilitates quick and easy fault location



## Application Scenarios

- Data centers
- Financial system equipment rooms
- Automation devices
- Large equipment rooms
- Scheduling centers

## Optional Components

- ISNMP cards
- Modbus cards
- Dry contact card
- Battery switch box
- Cable routing cables through the top
- Battery temperature sensor
- Dustproof net
- Mechanical parts for parallel connections
- UGS

## Specifications

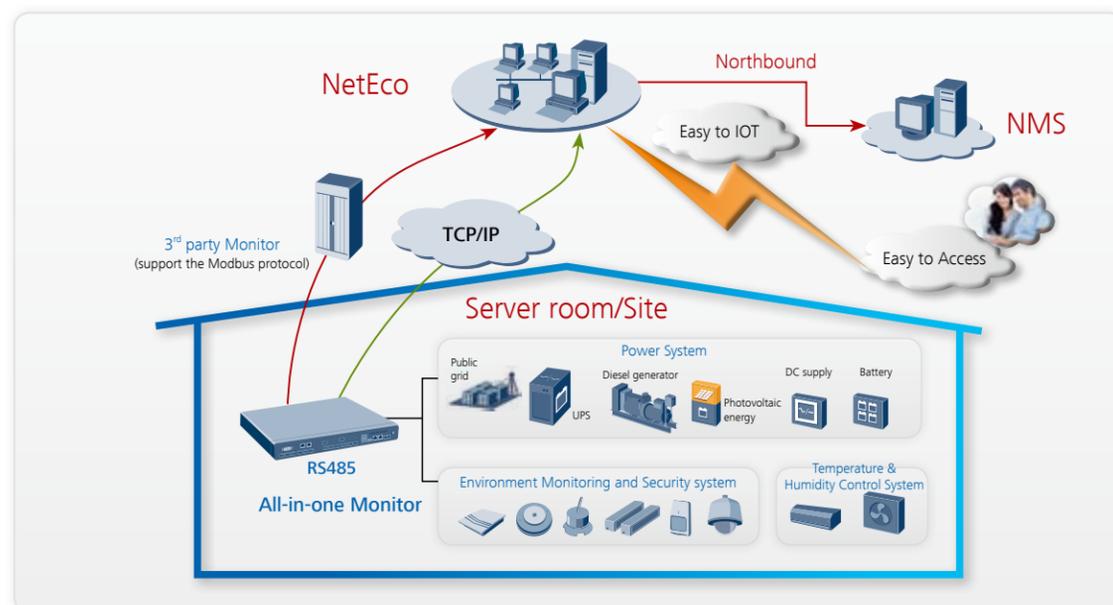
Type		UPS8000-D-200K	UPS8000-D-300K	UPS8000-D-400K	UPS8000-D-500K	UPS8000-D-600K
Rated Capacity		200kVA/180kW	300kVA/270kW	400kVA/360kW	500kVA/450kW	600kVA/540kW
Input	Mains Input	Rated Voltage (Vac)	380/400/415			
		Input Voltage Range (Vac)	240 ~ 480V; 100% load: 320 ~ 480V; 65% load: 240 ~ 480V			
		Input Wiring	3Ph			
		Input Frequency Range (Hz)	45 ~ 65			
		Total Harmonic Distortion	<3% for 100% load			
		Input Power Factor	0.99			
	Bypass Input	Rated Voltage (Vac)	380/400/415			
		Frequency range with inverter synchronized to the bypass mains (Hz)	50/60 ± 2% (± 1% to ± 6% adjustable)			
		Input Wiring	3Ph+N			
	Output	Voltage (Vac)	380/400/415			
Frequency (Hz)		be synchronized to the bypass input(Online Mode), 50/60Hz ± 0.05%(Battery Mode)				
Output Power Factor		0.9				
Waveform		Sine wave, THDv < 2%(linear load), THDv < 3%(non-linear load)				
Output Wiring		3Ph+N				
Efficiency		94%				
Switching Time (ms)		0				
Batteries	Overload Capacity	3Ph:125% load : transferred to bypass after 10min, 150% load : transferred to bypass after 1min; 1Ph:200% load : transferred to bypass after 6s				
	Rated Voltage(Vdc)	480				
Environment	Operating Temperature	0°C ~ 40°C				
	Storage Temperature	-°C ~ 70°C				
	Relative Humidity	0%-95%(No condensing))				
	Maximum Operating Altitude	≤1000m, Above 1000m, derating of 1,5% each 100 m between 1000 and 4000 m				
Mechanical Parameters	Audible Noise(dB)	< 72				
	Dimensions Height × Width × Depth (mm)	1900*1000*800	1900*1500*1000	1900*2100*1000		
Others	Weight (kg)	1000	1550	1720	2100	2700
	Alarms	Support various history alarm record download, such as ,Output over/under load, input abnormal, UPS faulty, battery under voltage protection, etc.				
	Protections	Overload protection, short circuit protection, over temperature protection, battery under/ voltage protection				
Others	Communications	SNMP, Modbus, Dry contacts				

# NetEco Intelligent Network Management and Services



## Neteco Intelligent Network Management System

System Diagram



Visualization	Controllability	Manageability
<ul style="list-style-type: none"> <li>Real-time data</li> <li>State and alarm</li> <li>Parameter display</li> </ul>	<ul style="list-style-type: none"> <li>Power system control</li> <li>Battery test</li> <li>Temperature control</li> </ul>	<ul style="list-style-type: none"> <li>Asset management</li> <li>PUE management</li> <li>Maintenance management</li> </ul>

## Comprehensive Service

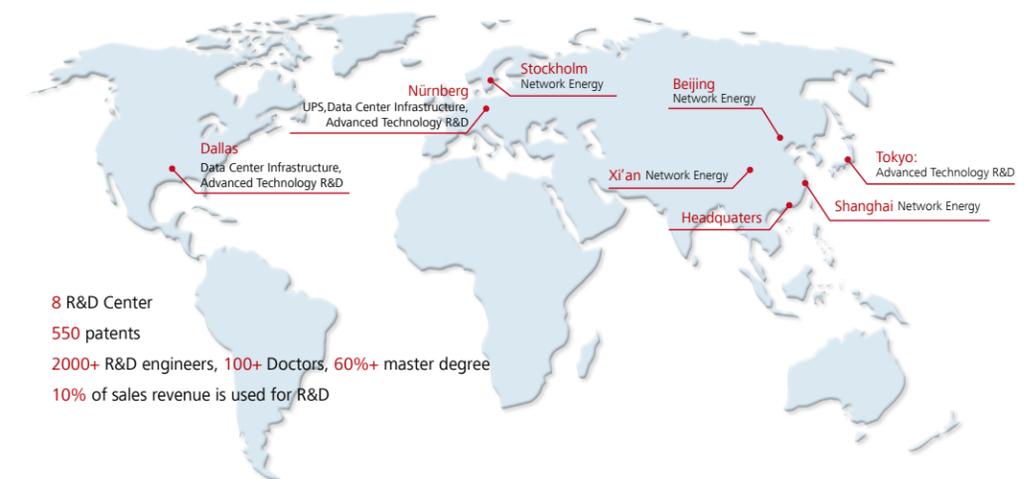
Huawei has professional UPS service engineers all over the world and provides global technical support with rapid response speed. Huawei provides customized services that include:

- 7\*24 remote support
- Software support
- Active prevention
- Hardware support
- Onsite support
- Others

## Huawei Network Energy

—Leading expert of energy management, reliable partners

Global R&D Team



Comprehensive reliability activities in the whole process are essential for the stable operation of millions of Huawei power systems in various severe conditions

Reliability design	Stress test	Reliability verification	EMC	Safety	Manufacturing reliability assurance	Aging test	The impact of temperature sampling test
	Thermal simulation		Environment	Thicken Three-proofing Lacquer			

	Site & Power	Data Center Infrastructure	Hybrid power	UPS
Huawei NetworkEnergy	<ul style="list-style-type: none"> <li>Embedded power system</li> <li>Indoor power system</li> <li>Outdoor power system</li> <li>Indoor Site Innovation Solutions</li> <li>Mini -shelter solution</li> </ul>	<ul style="list-style-type: none"> <li>All-in-one container date center</li> <li>Cluster container date center</li> <li>Medium &amp; Large modular date center</li> <li>Small modular data center</li> <li>Mini modular date center</li> </ul>	<ul style="list-style-type: none"> <li>PowerCube500</li> <li>PowerCube1000</li> <li>PowerCube5000</li> </ul>	<ul style="list-style-type: none"> <li>High power UPS8000 series</li> <li>Medium power UPS5000 series</li> <li>Small power UPS2000 series</li> </ul>