Huawei UPS2000-G Series 1-20kVA Uninterruptible Power Systems

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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.
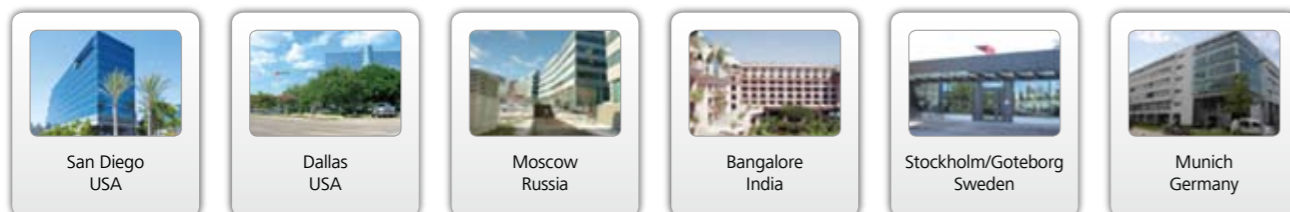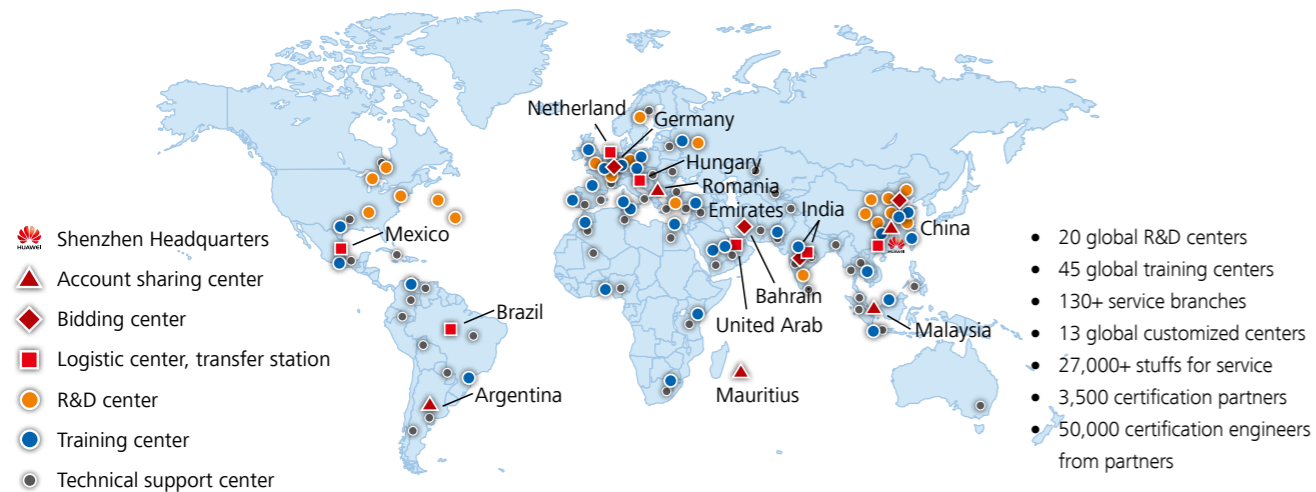
Sales revenue (CNY 0.1 billion)

2007	2008	2009	2010	2011	2012
922	1231	1466	1825	2039	2202
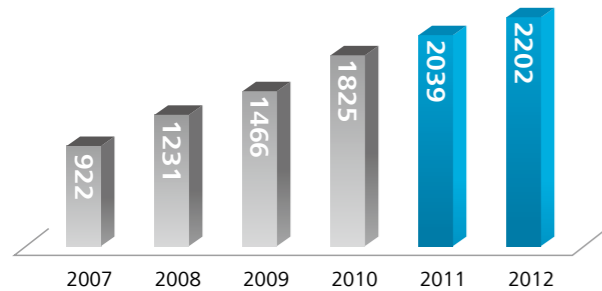
Market & Management

- 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
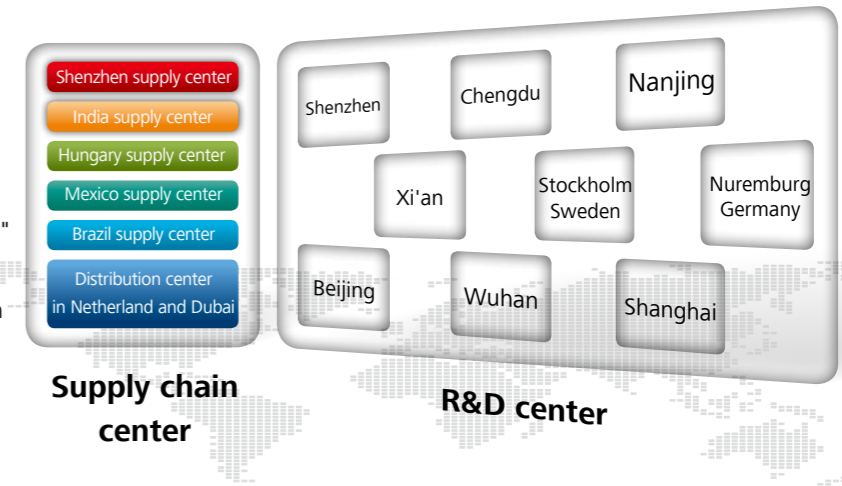
Globalization and Localization

- Shenzhen Headquarters
- Account sharing center
- Bidding center
- Logistic center, transfer station
- R&D center
- Training center
- Technical support center

Netherland
Germany
Hungary
Romania
Emirates India
China
Mexico
Bahrain
United Arab
Malaysia
Brazil
Argentina
Mauritius

- 20 global R&D centers
- 45 global training centers
- 130+ service branches
- 13 global customized centers
- 27,000+ stuffs for service
- 3,500 certification partners
- 50,000 certification engineers from partners

San Diego USA	Dallas USA	Moscow Russia	Bangalore India	Stockholm/Goteborg Sweden	Munich Germany

Huawei Network Energy

Network energy product line is one of the four product lines in Carrier BG. Its products include site power, hybrid power, data center, UPS, and CRAC, etc. We are committed to provide efficient, reliable and intelligent network energy, help our customers build strong infrastructures for network and protect long-term investment in energy. We have more than 20 years of R&D experience and 9 R&D centers around the world. Our philosophy and quality have been accepted by the industry and our 2012 sales revenue is USD 1 billion.

- 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

Shenzhen supply center
India supply center
Hungary supply center
Mexico supply center
Brazil supply center
Distribution center in Netherland and Dubai

Supply chain center

Shenzhen
Chengdu
Nanjing
Xi'an
Stockholm Sweden
Nuremburg Germany
Beijing
Wuhan
Shanghai

R&D center

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

High-frequency, small online UPS —— UPS2000-G Series

Reliable. Efficient. Flexible. Intelligent

>> UPS2000-G Series

Capacity: 1/3/6/10/15/20 kVA

Voltage: 220/230/240V AC (L-N)

Frequency: 50/60 Hz

>> Power protection for:

- Small & medium data centers
- Storage, IT, Networking, VoIP, Telecom, Office terminals
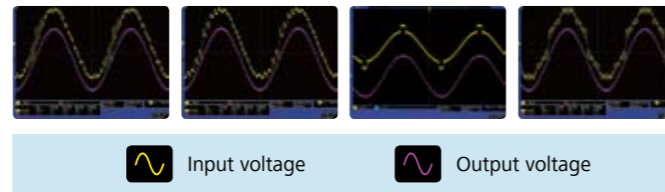- Precision instruments and facilities

UPS2000-G, the true on-line double conversion UPS, can efficiently protect loads against the abnormal grid to ensure stable and reliable supply. 6-20kVA can easily realize the parallel expansion and redundancy, offering a more reliable and flexible power supply.

Reliable and Saving

>> High Reliability

- Wide input voltage and frequency range:
  80V to 280V AC (L-N), 40 Hz to 70 Hz, adapts to unstable grids and harsh environments; minimizes battery use and extends battery life
- 5kA /6kV lightning protection: prevents lightning-related failures
- Provides pre-failure alarms for bus capacitors, battery, and fans to eliminate potential power offs due to component failures
- Comprehensive reliability tests ensure stable and reliable power

| Input voltage | Output voltage |

| Lightning test	1,000 hours , 40℃		-40° C to 70℃ HALT	Open field
5 kA lightning	High temperature test	Temperature shock sampling test	Global Certification Test Center	Shenzhen open field
Rocket-triggered lightening	THB Temperature: 40℃ Humidity: 95%, 1,000h	LLT Long life test Temperature: 40℃, 6 months	Highly accelerated life test -60 ℃ to 110 ℃, 5 cycles	Hainan open field High temperature, dust, salt and fog

Huawei UPS comprehensive reliability tests

>> High Efficiency

- Batch 1 Energy star certification: first in the UPS field globally
- High efficiency: 6kVA: 94%, 10kVA: 94.5%, 15kVA/20kVA: up to 95%; significantly reduces TCO
- Eco-Efficiency up to 98%: highly rated for resource efficiency

- Input power factor (PF) > 0.99: high grid utilization
- The lowest ratio of matching D.G can be 1:1.5, reducing D.G investment

UPS2000-G efficiency figure (Efficiency-Load ratio)

Efficiency vs Load ratio

- 6KVA
- 10KVA
- 15KVA
- 20KVA
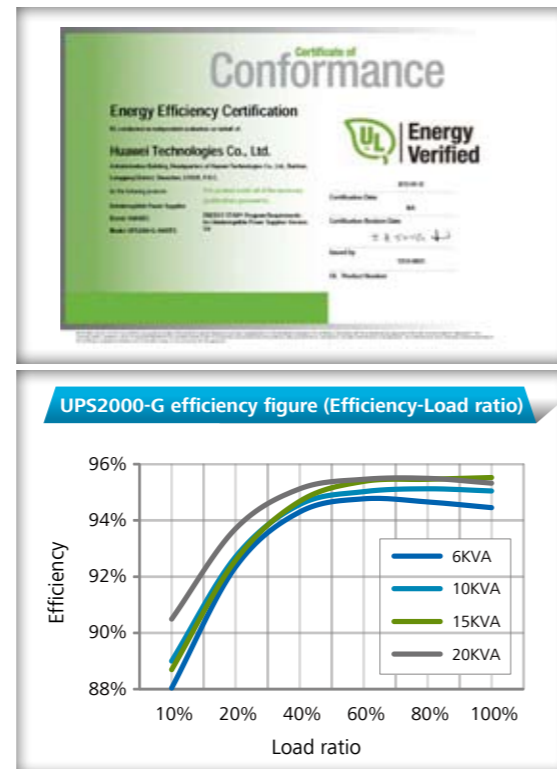
Friendly and Flexible

>> User-friendly LCD

- Displays real-time status
- Supports multiple languages
- Stores UPS history for easy lookups or inquiries

>> Compact, flexible design

- Space-saving design: 6/10 kVA only 2U in height, 15/20 kVA only 3U
- Supports rack and tower installation, easily converted
- Supports multiple formats for input and output, neatly regulating power according to on-site power distribution
- Supports hierarchical power distribution to protect the primary load

SL   PL

Primary load   Secondary load

Hierarchical power outage

>> Multiple formats for input and output

| UPS format	Input format	Output format	1 kVA	3 kVA	6 kVA	10 kVA	15 kVA	20 kVA
1 ph input 1 ph output			√	√	√	√	√	√
3 ph input 1 ph output			X	X	X	√	√	√
3 ph input 3 ph output			X	X	X	X	√	√

Expandable and Easy to Manage

>> Easy to deploy and expand

- Highly expandable: up to 4 units connected in parallel
- Automatic synchronization of parallel parameters
- No need to set parallel addresses
- One communication card can monitor the whole parallel system: reduces TCO
- 15/20kVA parallel system supports sharing of battery modules.

>> Intelligent Web browser management (with SNMP card)

- Query real-time UPS status and operate the UPS system online
- Update the SNMP application and monitor software
- Configure the SNMP card
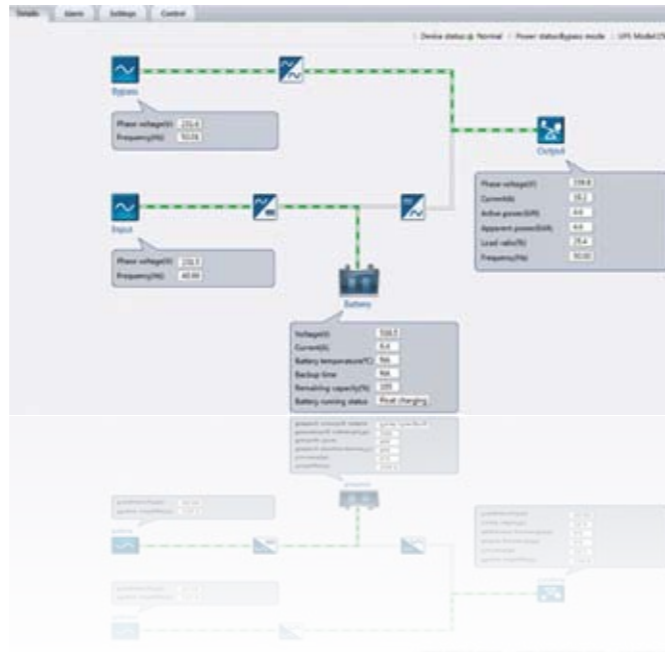
### >> NetEco intelligent power system management

- Online real-time monitoring system with dynamic visual layouts of run states and UPS operation
- Supports delayed shutdown and graceful, safe shutdown of the application and operating system
- Supports USB, SNMP, and Modbus network interfaces
- Supports multi-mode alarm notifications, such as email and SMS

>> Intelligent battery management

- Flexible battery configuration: 16 to 20 cells per string for 6/10kVA, 32 to 40 cells per string for 15/20kVA.
- Automatic adjustment of float and equalized charging, intelligent hibernation , and temperature compensation effectively extend battery life, reducing TCO
- Automatic adjustment of discharge termination voltage according to load condition and discharging time
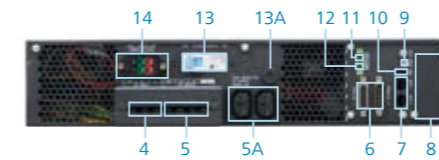
Battery discharging curve

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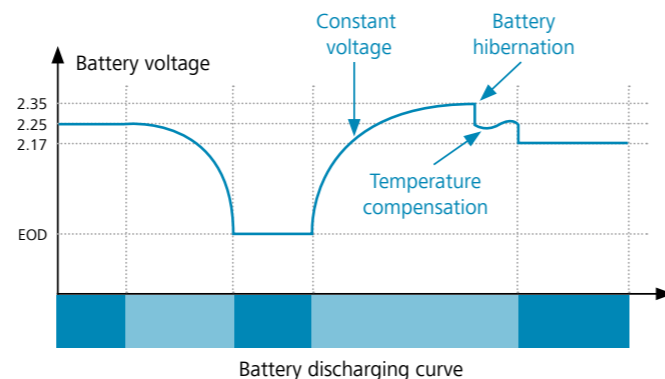
6 kVA to 20 kVA front panel
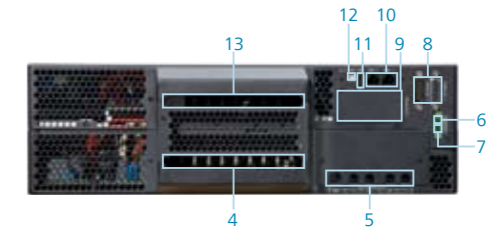
15/20 kVA rear panel

1	Indicators	2	LCD	3	Function buttons	4	AC input terminals	5	Battery terminals
6	Emergency Power-Off (EPO) port	7	Maintenance Bypass Switch (MBS) port	8	Parallel ports	9	Optional card slot	10	Control Area Network (CAN)
11	USB port	12	Temperature sensor port	13	AC output terminals (pL&sL)				

6 kVA rear panel

10 kVA rear panel

4	AC input terminals	5	AC output terminals (pL&sL)			5A	Output sockets	6	Parallel ports
7	Control Area Network (CAN)	8	Optional card slot	9	Temperature sensor port	10	USB port	11	Emergency Power-Off (EPO) port
12	Maintenance Bypass Switch (MBS) port	13	Input circuit breaker	13A	Fuse base	14	Battery terminals		
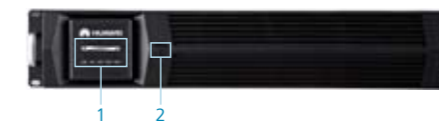
1 kVA to 3 kVA front panel
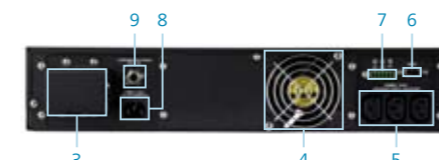
1 kVA rear panel

3 kVA rear panel

1	LED	2	Power on/off button	3	Battery port	4	Fan	5	Output sockets
6	RS232 serial port	7	Dry contacts and EPO port	8	Input socket	9	Input breaker		

Specifications

Rate Capacity (kVA/kW)	1 / 0.7	3 kVA/2.1 kW	6 kVA/5.4 kW[i]	10 kVA/9 kW[i]	15 kVA/13.5 kW	20 kVA/18 kW
Input : Output		1-in : 1-out			1-in : 1-out or 3-in : 1-out	1-in : 1-out , 3-in : 1-out or 3-in : 3-out

Input							
Mains	Input Wiring	Ph+N+PE			Ph+N+PE /3Ph+N+PE		
	Rated Voltage	220/230/240VAC			L-N: 220/230/240VAC		
	Input Voltage Range	125V to 275VAC		L-N: 80V to 280VAC			
	Input Frequency Range	45 Hz to 66 Hz		40 Hz to 70 Hz			
	Input Power Factor	0.95		0.99			
Bypass	Rated Voltage	220/230/240VAC		L-N: 220/230/240VAC			
	Frequency	50/60 ± 6 Hz					
Battery	Quantity x Voltage	3 x 12VDC	8 x 12VDC	(16 to 20) x 12VDC (Default 20 x 12VDC)		(32 to 40) x 12VDC [2] (Default 40 x 12VDC)	

Output					
Output wiring	Ph+N+PE			Ph+N+PE /3Ph+N+PE	
Output Sockets	3 IEC C13 (10A)		2 IEC C13 (10A)	--	
Rated Voltage	220/230/240VAC ± 2%		220/230/240VAC ± 1%	L-N: 220/230/240VAC ± 1%	
Rated Frequency	Same as bypass input (Online Mode); 50/60 ± 0.1 Hz (Battery Mode)				
Waveform	Sine wave, THDv < 3%		Sine wave, THDv < 2%		
Efficiency	88%	91%	94%	94.5%	95%
Overload Capacity	130% overload for 60s; 150% overload for 30s		125% overload for 5 min 150% overload for 1 min		

Environmental				
Operating Temperature	0℃ to 40℃			
Storage Temperature	-20℃ to 55℃		-40℃ to 70℃	
Relative Humidity	0% to 95% (Non-condensing)			
Maximum Operating Altitude	1,000 m. Above 1,000 m, derating 1% for each additional 100 m			
Audible Noise	< 45 dB		< 55 dB	< 58 dB

Others					
Height x Width x Depth (mm)	86 × 440 × 500		86 × 430 × 585		130 × 430 × 685
Weight	8.2 kg	11.2 kg	14 kg	16 kg	32 kg
Certifications	EN/IEC 62040-1; EN/IEC 62040-1; EN/IEC 62040-1; CE; CB; Rohs, Reach, WEEE				
Communications	RS232, dry contacts		RS485, USB, SNMP, dry contacts		

1   6 kVA & 10 kVA UPS has two versions: a standard version and a version with a longer backup time.
2   The battery modules have a natural connection .

UPS2000-G Optional Components

Intelligent communication cards*

UPS2000-G supports multiple interface options: standard USB port, plus an intelligent card slot that accommodates an SNMP card, Modbus card, or Dry-Contact Relay Card for enhanced UPS monitoring and control functionality.

>> SNMP card
■ Provides SNMP agent and web management functions
■ Supports an optional temperature and humidity module

Temperature and humidity sensor port

>> Modbus card
■ Provides an RS485 networking solution
■ Provides access to the NetEco intelligent management system for monitoring UPS operations

>> Dry-Contact Relay card
■ Provides six alarm dry contact outputs and two dry contract control inputs
■ The related output for each dry contact can be set in the LCD
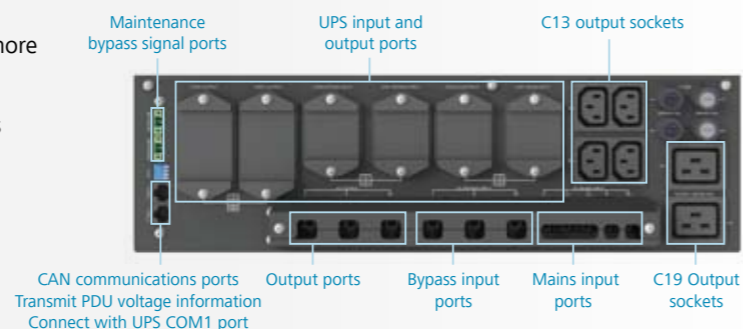
>> Wireless modem
■ Operates with NetEco system to convert GSM network alarms to SMS alarms.

* Suitable for 6kVA to 20 kVA modules only

20 kVA parallel PDU*

- Supports 2 units parallel, the total capacity no more than 20kVA
- Provides standard power input and output ports with trouble-free wiring
- Provides manual maintenance bypass and convenient online maintenance
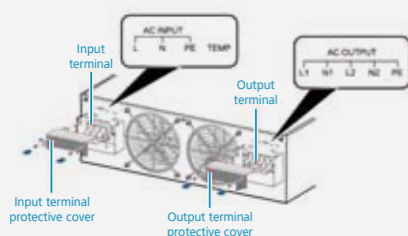- Provides multiple output ports

Maintenance bypass signal ports
UPS input and output ports
C13 output sockets

CAN communications ports
Transmit PDU voltage information
Connect with UPS COM1 port
Output ports
Bypass input ports
Mains input ports
C19 Output sockets

Battery module

- Suitable for IT data centers, available for integrated solutions

Transformer*

- Electronic insulation for UPS output
- Provides 220/110V AC voltage outputs

Input terminal
Output terminal
Input terminal protective cover
Output terminal protective cover

Other optional components

Battery Box
Battery breaker box

Guide rails
Temperature & humidity sensor *
(Operates with SNMP card)
Battery temperature sensor*

* Suitable for 6 kVA to 20 kVA modules only

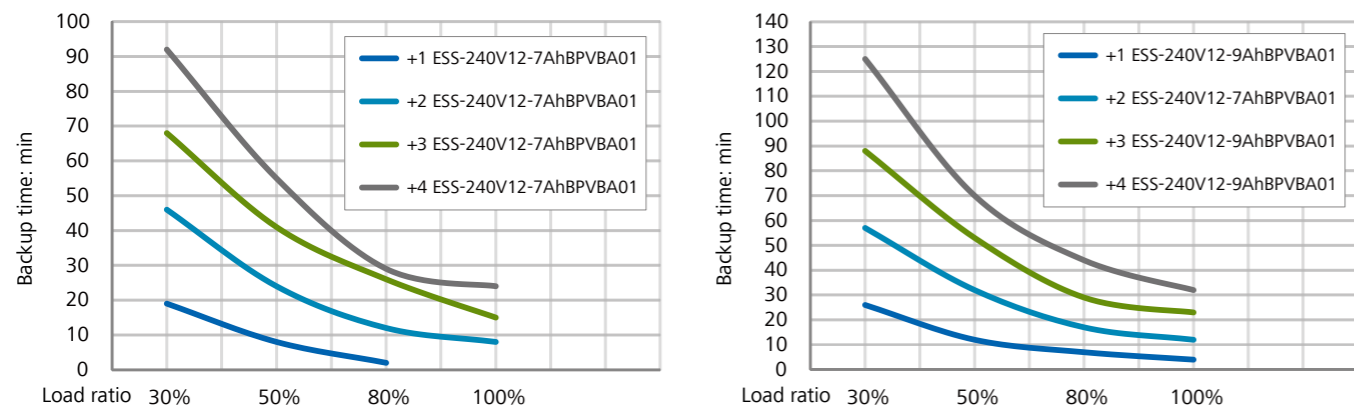| Optional component	Mode	Remarks
SNMP card*	RMS-SNMP01A	
Modbus card*	RMS-MODBUS01A	
Dry-contact relay card*	RMS-RELAY01A	
Wireless modem*	TD-8013	
36V DC 7 Ah battery module	ESS-36V7Ah(12V)*1-BPVBB	Built-in 3 pcs, 7 Ah serial batteries (for 1 kVA)
	ESS-36V7Ah(12V)*2-BPVBB	Built-in 2 group, 3 pcs, 7 Ah serial batteries (for 1 kVA)
96V DC 7 Ah battery module	ESS-96V7Ah(12V)*1-BPVBB	Built-in 8 pcs, 7 Ah serial batteries (for3 kVA)
240V DC 7Ah battery module*	ESS-240V12-7AhBPVBA01	Built-in 20 pcs, 7 Ah BB serial batteries
	ESS-240V12-7AhBPVBA02	Built-in 20 pcs, 7 Ah Panasonic serial batteries
240V DC 9Ah battery module*	ESS-240V12-9AhBPVBA01	Built-in 20 pcs, 9 Ah BB serial batteries
	ESS-240V12-9AhBPVBA02	Built-in 20 pcs, 9 Ah Panasonic serial batteries
36V DC 40 Ah battery box	ESS-36V40Ah(12V)*1-BBNBB	Batteries not included, can add 3 pcs, 40 Ah batteries
36V DC 65 Ah battery box	ESS-36V65Ah(12V)*1-BBNBB	Batteries not include, can add 3 pcs, 65 Ah batteries
96V DC 40 Ah battery box	ESS-96V40Ah(12V)*1-BBNBB	Batteries not included, can add 8 pcs, 40 Ah batteries
20 kVA 3/1 parallel PDU*	PDC-0091V2ACIOA	Suitable for two 6 kVA to 20 kVA parallel systems with 1 ph input and 1 ph output format, or 15/20kVA two parallel systems with 3 ph input and 1 ph output format; total power capacity is not more than 20 kVA.
20 kVA 3/3 parallel PDU*	PDC-0038V4ACIOA	Suitable for two 15/ 20 kVA parallel systems with 3 ph input and 3 ph output format; total power capacity is not more than 20 kVA.
6 kVA output isolation transformer*	DGL-6/0.22	
10 kVA output isolation transformer*	DGL-10/0.22	
63 A battery breaker box*	PDC-0063DC0440BBB	Battery Circuit Breaker Box-63A-3P-440V DC-Over Current Releases
125 A battery breaker box*	PDU8000-0125DCV8-BXA001	Battery Circuit Breaker Box-125A-4P-750V DC-Remote Control/Shunt Release
Battery temperature sensor*	TE820E10B / W103-B02-L1	Temperature Sensor, -40 ℃ to 80 ℃, +-1 ℃
Temperature & humidity sensor*	WS302M2A-5/RH811AC05D	With SNMP card, Temperature & humidity sensor, 12V DC to 24V DC, 0 ℃ to 50 ℃, 0% RH to 100% RH, DS OUTPUT
Parallel monitor and alarm cable*	UPSCU2KUMC00	UPS2000 merge cable, 1.5m, D15M, CC8P0.48B(S), D15F

* Suitable for 6 kVA to 20 kVA modules only
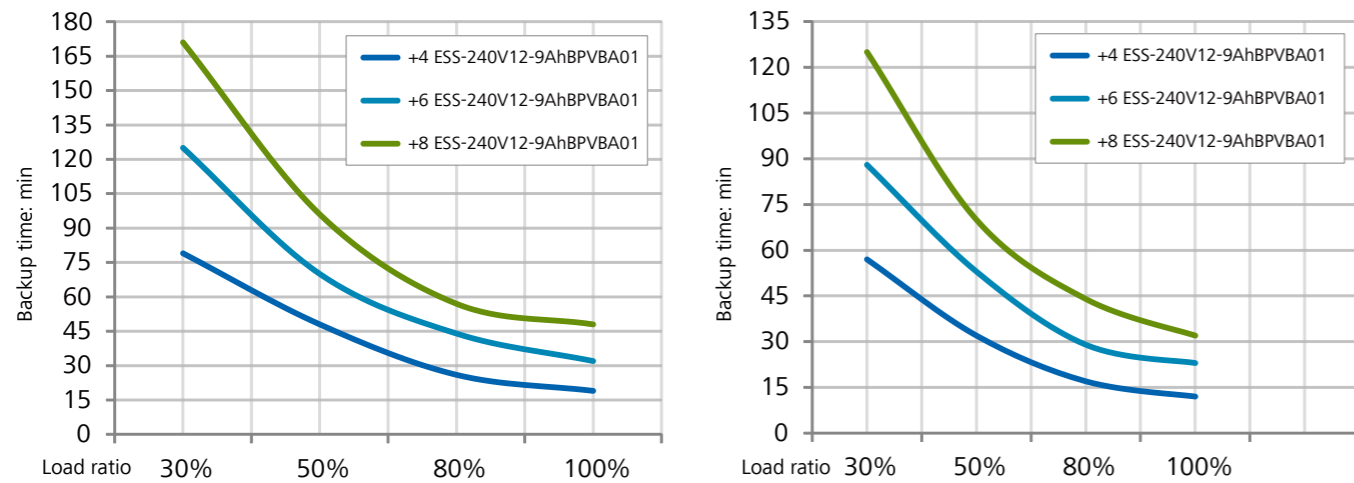
Battery module runtime reference charts

6 kVA Runtime

Backup time: min

- +1 ESS-240V12-7AhBPVBA01"
- +2 ESS-240V12-7AhBPVBA01"
- +3 ESS-240V12-7AhBPVBA01
- +4 ESS-240V12-7AhBPVBA01

Load ratio 30% 50% 80% 100%

Backup time: min

- +1 ESS-240V12-9AhBPVBA01
- +2 ESS-240V12-9AhBPVBA01
- +3 ESS-240V12-9AhBPVBA01
- +4 ESS-240V12-9AhBPVBA01

Load ratio 30% 50% 80% 100%

10 kVA Runtime

Backup time: min

- +1 ESS-240V12-7AhBPVBA01
- +2 ESS-240V12-7AhBPVBA01
- +3 ESS-240V12-7AhBPVBA01
- +4 ESS-240V12-7AhBPVBA01

Load ratio 30% 50% 80% 100%

Backup time: min

- +1 ESS-240V12-9AhBPVBA01
- +2 ESS-240V12-7AhBPVBA01
- +3 ESS-240V12-9AhBPVBA01
- +4 ESS-240V12-9AhBPVBA01

Load ratio 30% 50% 80% 100%

15 kVA Runtime

Backup time: min

- +4 ESS-240V12-9AhBPVBA01
- +6 ESS-240V12-9AhBPVBA01
- +8 ESS-240V12-9AhBPVBA01

Load ratio 30% 50% 80% 100%

20 kVA Runtime

Backup time: min

- +4 ESS-240V12-9AhBPVBA01
- +6 ESS-240V12-9AhBPVBA01
- +8 ESS-240V12-9AhBPVBA01

Load ratio 30% 50% 80% 100%