The power behind competitiveness

Delta UPS Solutions

Uninterruptible Power Supply

www.deltapowersolutions.com

Contents

Delta Group

Delta Group is the world's leading provider of power management and thermal management solutions, as well as a major source for components, visual displays, industrial automation, networking products, and renewable energy solutions. Delta Group is focused on three main businesses: power electronics, energy management, and smart green life. Delta Group has sales offices worldwide and manufacturing plants in Taiwan, China, Thailand, Japan, Mexico, India, Brazil and Europe.

As a global leader in power electronics, Delta's mission is, "To provide innovative, clean and energy-efficient solutions for a better tomorrow." Delta is committed to environmental protection and has implemented green, lead-free production and recycling and waste management programs for many years.

More information about Delta Group can be found at www.deltapowersolutions.com

About MCIS

With its expertise and experience in power management and energy efficiency, the Mission Critical Infrastructure Solutions (MCIS) business of Delta Electronics Inc. positions itself as:"The power behind competitiveness". MCIS plays an important role in making our customers' businesses more competitive. We fulfill this role by providing highly reliable and efficient power management products and datacenter infrastructure solutions to ensure the continuity of our customers' mission critical operations while reducing their Total Cost of Ownership (TCO). Delta MCIS is a powerful and trustworthy partner to companies that strive to outperform the competition.

With more than 15 years of experience in the UPS industry, Delta Electronics is a leading brand, commanding a market share ranked top 10 in the market and featuring complete professional capacities ranging from product development, design and manufacturing for all UPS product lines. Our client base covers world class enterprises in the areas of semiconductors, optoelectronics, food processing, finance, petrochemicals and telecommunications. Additionally, our UPS solutions have been adopted extensively at major Asia events in recent years, including the World Expo 2010 Shanghai, the Guangzhou Asian Games and Universiade Shenzhen, just to name a few. Delta's UPS solutions play a critical role in power management for a number of public mega projects, including the Taipei Mass Rapid Transit System, that has been rated number one in reliability by Nova/CoMet five years in a row since 2004; the Russia Railway Control System, that controls the operations of the second longest railway system in the world (85,500 km); and the recently launched Tiangong-1 Spacecraft in China. The most competitive companies in the world choose Delta because our products are designed to enhance competitiveness.

Delta UPS

Our clients are most concerned about power issues such as power failure, power sag, power surge, under voltage or over voltage, frequency variation, harmonic distortion and line noise. Delta Electronics emphasizes the areas of redundant power supply, voltage regulation, equipment protection and adjustment and has designed and developed four UPS product families - Agilon, Amplon, Ultron and Modulon. Their power range, applications and the equipment they protect are listed below:

Product Family	Power	Topology	Applications
Agilon	Under 1kVA	Single-Phase UPS	PC and Peripherals
Amplon	1kVA or higher	Single-Phase UPS	Server and Network Equipment
Ultron	15kVA or higher	Three-Phase On-Line UPS	Datacenter and Industrial Equipment
Modulon	20kVA or higher	Three-Phase modular On-Line UPS	Modular. Unit expansion and Redundant power supply can be achieved within a single rack.

Delta UPS systems feature the following:

- Leading AC-AC Efficiency
- Fully redundant design and configuration
- High input and output power factors
- Easy expansion without additional hardware
- Supports to seamless operations at low level of TCO (Total Cost of Ownership)

Customers can choose suitable UPS systems based on their needs to maintain seamless operations and ensure their long term competitiveness.

Agilon Family

In the Delta UPS product line, the Agilon family are single phase UPS systems for power rating requirements under 1kVA, that can support PC products, peripherals and small POS systems. The word Agilon (Agile + on), denotes agility and precision, which describe the features of this UPS system – small yet efficient; they are the perfect power management solution for residential users, SOHO workers or small enterprises.

Amplon Family

In the Delta UPS product line, the Amplon family are single phase UPS systems for power rating requirements above 1kVA that support medium to small network devices, security and surveillance systems and POS systems. The word Amplon (Ample + on), represents ample stability, which describes this UPS system – it maximizes space and economic benefits. Amplon systems are the perfect power management solution for small to medium enterprises, such as financial institutes, government departments and medical centers, and offer the power protection solution with the highest space and cost benefits.

Ultron Family

In the Delta UPS product line, the Ultron family are three-phase UPS systems for power rating requirements above 15kVA that support mission critical applications including industrial equipment, datacenters, traffic control facilities, broadcast stations and backbone networks. The word Ultron (Ultra + on), signifies ultimate performance, which describes the features of this UPS system – outstanding stability and insurance for mission critical applications.

Modulon Family

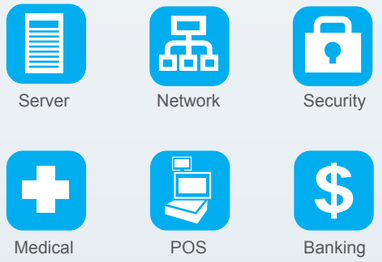
In the Delta UPS product line, the Modulon family features a three-phase modularization architecture for power rating requirements above 20kVA and supports datacenters, mid-large network equipments, data storage centers and financial balance centers. The word Modulon (Modular + on) highlights its core feature – modularization. Customers can purchase UPS systems with greater flexibility based on their initial unit needs and future needs for scalability to lower their TCO and maximize system benefits.

UPS Management Applications and Supported NIC Cards

In addition to high efficiency and reliable UPS systems, Delta Electronics also offers the following value added services: UPSentry and InsightPowerUPS management applications. By adding supported NIC cards, customers can remotely monitor UPS operations, perform initial diagnoses on abnormal conditions and power on or off the control systems remotely when necessary.

Delta UPS - Amplon Family

Applications:



N Series, Single Phase
1/2/3 kVA

The Amplon N series is a true on-line, double-conversion UPS housed in a compact tower. It is designed to eliminate disturbances and supply superior power quality to workstations, POSs, ATMs or home appliances.

The Amplon N series has inbuilt batteries to provide continuous and stable power to critical loads when power events occur. For longer backup time requirements you can add an external battery pack to enhance availability.

Features:

- Double-conversion technology provides 24/7 full-time protection.
- Battery-start capability without utility power.
- Automatic bypass ensures continuous output power when fault occurs.
- Automatic input frequency detection.
- Optional external battery pack for longer backup time.
- RS232 port with power management software.
- Wide input voltage range reduces battery discharging occurrence and prolongs battery lifetime.
- Intelligent management prevents battery from over-discharge.

Delta UPS - Amplon Family

Applications:

Server
Telecom
Industrial
Network
VoIP
Storage
Medical

R Series, Single Phase
1/2/3 kVA

The Amplon R series is a true on-line, double-conversion UPS that protects devices from potential power problems such as spikes, surges and brownouts. It is available in either a rack or tower configuration and is recommended for servers, VoIP, telecommunications and networking.

The Amplon R series is designed for long backup time applications with the addition of a customized battery source.

The inbuilt high level charger shortens the recharging period and increases availability.

Features:

- Double-conversion technology provides 24/7 full-time protection.
- Automatic input frequency detection.
- Additional charger board can be added to reduce recharging time.
- AC-start and battery-start capabilities.
- Rail kit is included in the package.
- Rack or tower configuration in 2U size cabinet.
- Fulfill long backup time demand for mission critical applications.
- Remote management over network via software.
- High input power factor (pf > 0.97) saves installation cost.
- Wide input voltage range reduces battery discharging occurrence and prolongs battery lifetime.

Applications:

Server
Telecom
Industrial
Network
VoIP
Storage
Medical

GAIA Series, Single Phase
1/2/3 kVA

The Amplon GAIA series is a true on-line, double-conversion UPS designed in a rack or tower configuration and recommended for servers, VoIP, telecommunications and networking.This versatile UPS combines features such as full-time protection and high input power factor in the small footprint of a 2U cabinet.

The Amplon GAIA series UPS has inbuilt batteries to provide continuous and stable power to your critical loads when power events occur. With an external battery pack, it can fulfill longer backup time requirements.

Features:

- Double-conversion technology provides 24/7 full-time protection.
- Built-in batteries for basic runtime demands.
- Battery-start capability without utility power.
- RS232 and USB connectivity with power management software.
- Built-in data line surge protector for phone/fax/network.
- Rack or tower configuration in 2U size cabinet.
- Optional external battery pack for longer backup time.
- SNMP slot for mission critical applications.
- Programmable output saves energy for important loads.
- Wide input voltage range and stable power supply extends battery lifetime.
- High input power factor (pf > 0.97) saves installation cost.
- Intelligent management prevents battery from over-discharge.

Delta UPS - Amplon Family

Applications:

Server
Telecom
Industrial
Network
VoIP
Storage
Medical

RT Series, Single Phase
5/6/10 kVA

The Amplon RT series delivers double-conversion on-line technology, high power density and input power factor, and low current harmonics with its advanced architecture. Designed in a rack or tower configuration with an LCD display, Amplon RT offers advanced performance for servers, data centers, networking, VoIP and telecommunications.

The Amplon RT has 1+1 parallel redundancy function to provide higher reliability. Optional external battery pack can be added to fulfill longer backup time for mission critical applications.

Features:

- True online double-conversion topology provides 24/7 full-time protection.
- 1+1 parallel redundancy or expansion without requiring additional hardware.
- AC-start and battery-start capabilities.
- Additional charger board can be added to reduce recharging time.
- Optional maintenance bypass box for parallel redundancy with manual bypass switch.
- External charger box enhances battery charging ability.
- Rack or tower configuration.
- Multi-language LCD display with blue backlight.
- Optional external battery pack for longer backup time.
- Output factor 0.9 delivers more real power.
- High input power factor (pf > 0.99) and low harmonic distortion (iTHD < 5%).
- Common battery installation enables two UPS in parallel to share one battery source for cost savings.
- Wide input voltage range reduces battery discharging occurrence and prolongs battery lifetime.

Applications:

Data Center
Network
Security
Medical
Industrial
Banking

Note: Available in South America and South East Asia (excluding India)

N series, Single Phase
6-12 kVA

The Amplon N series is a true on-line, double-conversion UPS designed for workstations, POS, ATMs, home appliances, small server rooms or production equipment.

Features:

- Single phase 110/220 Vac dual output power supply
- Wide input range (120V-280V)
- High overall efficiency (>88%), 94% under Eco Mode
- High power factor (>0.99) for greater power utilization rate
- Ideal as hot-standby to increase system reliability
- Class H output isolation transformer design
- Built-in maintenance switch
- Convenient control panel and LCD indicator
- Optional charger to effectively shorten battery charging duration
- Support REPO
- Optional external battery to extend standby duration
- Centralized remote monitoring possible with Vista-compatible power management applications

Delta UPS – Ultron Family

Applications:

Data Center
Telecom
Industrial
Network
Security
Lab
Medical
Metro

H Series, Three Phase
15/20/30 kVA

The Ultron H series is an on-line three phase UPS which provides quality power for IT rooms, SMBs, telecommunications, banking and industry. With dual mains input, it guarantees higher reliability for your mission critical applications.

The Ultron H series has an inbuilt manual bypass switch to keep power uninterrupted during maintenance. It is available in 3p-3p and 3p-1p models depending on your power needs.

Features:

- Independent bypass input system supports hot standby installation for higher reliability.
- Internal automatic bypass offers sustainable power to loads while UPS fault.
- 3p-3p and 3p-1p models are available.
- Multi-connectivity with power management software.
- Inbuilt manual bypass switch for maintenance safety.
- Remote and local emergency power off functions.
- Optional external battery cabinet for longer backup time.
- High input power factor saves installation cost.
- 97% high efficiency in economy mode saves energy and operating cost.
- Wide input voltage range reduces battery discharging occurrence and prolongs battery lifetime.

Applications:

Data Center
Telecom
Industrial
Network
Security
Lab
Medical
Metro

NT Series, Three Phase
20 - 500kVA

The Ultron NT series is a three phase UPS featuring customized I/P-O/P ratings for various applications. With N+X parallel redundancy or expansion, it guarantees high availability and reliability for your critical loads.

The Ultron NT series offers continued seamless protection for your business even under 100% unbalanced loading conditions. Its economy mode improves efficiency by 4% to 7% and saves operating cost.

Features:

- Available from 20 to 4,000 kVA (8 x 500 kVA in parallel).
- Parallel redundancy without requiring extra hardware to increase reliability.
- Optional harmonic filter and 12-pulse rectifier.
- Redundant auxiliary power and control circuit ensures higher reliability.
- Inbuilt maintenance and static bypass switch.
- Multi-language LCD display and LED status indicators.
- RS232, RS485 and six programmable dry contact outputs.
- Compatible with generator installation and unbalanced loads.
- Optional external battery cabinet for longer backup time.
- Parallel expansion as your business grows and consequently saves initial investment.
- Wide input voltage range extends battery lifetime.
- Economy mode saves energy and operating cost.
- Common battery installation saves initial investment.

Delta UPS – Ultron Family

Applications:

Data Center | Telecom | Industrial

Network | Security | Lab

Medical | Metro

DPS Series, Three Phase
160/200kVA

Delta's Ultron DPS is a double-conversion and IGBT-rectifier three phase UPS. With state-of-the-art TLI (Triple Level Inverter) and three phase PFC (power factor correction) topology, the Ultron DPS features industry leading performance of up to 96 % AC-AC efficiency, input power factor > 0.99, output power factor of 0.9 and low iTHD < 3%. Aiming to achieve the highest availability possible, Delta has enhanced special designs for battery management, hot-swappable fans and ease of maintenance.

Features:

- Double-conversion and IGBT-rectifier design.
- N+X redundancy or hot-standby configuration.
- Wide input voltage range reduces battery discharging occurrence.
- Advanced battery management optimizes battery performance and lifetime.
- Field programmable sequential start-up 2 to 99 seconds even without paralleling.
- Redundant fan design (optional).
- System efficiency up to 96% saves operating cost.
- High input power factor (> 0.99) and low input harmonic distortion (iTHD < 3%) save upstream investment.
- Easy parallel expansion for future business growth.
- Multi-language mimic LCD display and LED status indicators.
- AC-start and battery-start capabilities.
- Inbuilt maintenance and static bypass switch.
- Hot-swappable fans for easy replacement.
- Optional model with built-in transformer.

Delta UPS – Modulon Family

Applications:

Data Center | Telecom | Industrial

Network | Security | Lab

Medical | Metro

NH Plus Series, Three Phase
20-120 kVA

The Modulon NH Plus series is Delta's next generation UPS featuring high efficiency, hot-swappable modular structure and N+X redundancy. With its industry leading 94% high efficiency, the NH Plus series delivers remarkably low total cost of ownership in terms of both capital expense and operating expense.

With N+X module and system redundancy to guarantee reliability and availability, the Modulon NH Plus series sets a new milestone for UPS protection in mission critical applications.

Features:

- Available from 20 to 480 kVA (4 units x 120 kVA in parallel).
- Redundancy at module and system level.
- Hot-swappable function ensures uninterrupted operations during maintenance.
- Redundant auxiliary power and control circuit ensures higher reliability.
- Inbuilt maintenance and static bypass switch.
- Modular design provides easy maintenance and scalability.
- Multi-language LCD display and LED status indicators.
- Two smart slots and six programmable dry contact outputs.
- Optional external battery cabinet for longer backup time.
- Low harmonic distortion (iTHD<3%) optimized generator size to save initial investment.
- High input and output power factor (I/P pf >0.99; O/P pf up to 0.9) and 94% high efficiency reduce operating costs.

Delta UPS – Modulon Family

Applications:

Data Center
Telecom
Industrial
Network
Security
Lab
Medical
Metro

NHV Plus Series, Three Phase
40-120 kVA

Power to build a lasting competitive advantage

The Modulon NHV Plus series is Delta's next generation UPS featuring high efficiency, hot-swappable modular structure and N+X redundancy. With its industry leading 94% high efficiency, the NH Plus series delivers remarkably low total cost of ownership in terms of both capital expense and operating expense.

With N+X module and system redundancy to guarantee reliability and availability, the Modulon NH Plus series sets a new milestone for UPS protection in mission critical applications.

Availability:

- Available from 40 to 240 kVA (2 units x 120 kVA in parallel).
- Redundancy at module and system level.
- Hot-swappable function ensures uninterrupted operations during maintenance.
- Redundant auxiliary power and control circuit ensures higher reliability.
- Inbuilt maintenance and static bypass switch.

Flexibility:

- Modular design provides easy maintenance and scalability.
- Multi-language LCD display and LED status indicators.
- Two smart slots and six programmable dry contact outputs.
- Optional external battery cabinet for longer backup time.

Low Total Cost Of Ownership:

- Low harmonic distortion (iTHD<3%) optimized generator size to save initial investment
- High input and output power factor (I/P pf >0.99; O/P pf up to 0.9) and 94% high efficiency reduce operating costs

Applications:

Data Center
Telecom
Industrial
Network
Security
Lab
Banking
Medical
Metro

DPH Series, Three Phase
25-800 kW

Ultimate Availability Without Compromising Power Efficiency

The Modulon DPH supports ultimate availability for datacenter operations and provides the benefit of "pay as you go" without over-sizing the UPS. While achieving ultimate availability, the Modulon DPH does not compromise on power efficiency performance. When availability, efficiency and expanding according to business needs are essential, the Modulon DPH is the ideal UPS system to provide power protection and total cost of ownership (TCO) savings.

Ultimate Availability:

- Advanced fault tolerance design achieved by self redundancy to guarantee operation continuity
- Self-synchronization of power and control modules for continuous on-line operation even in the event of control module failure to avoid downtime caused by single point failure
- Hot-swappable key modules and components to ensure Mean Time To Repair (MTTR) close to zero without downtime risk

High Scalability:

- Vertical expansion from 25kW to 200kW supporting N+X redundancy in a single rack enclosure to save footprint
- Parallel expansion up to four units without requiring additional hardware
- Variable configurations possible providing the scalable flexibility up to Tier 4 level

Excellent Power Performance and Efficiency:

- Full rated power (kVA=kW) to maximize power availability
- High operating efficiency of 95% at 30% light load and 96% from 50% load resulting in marked energy cost savings
- Low harmonic pollution (iTHD<3%) to reduce upstream investment costs and meet demanding power requirements

Easy Maintenance:

- Built-in manual bypass features to eliminate maintenance-related downtime
- Proactive detection of fan failure and switch fault for early diagnosis on UPS malfunction
- Plug and play modularity to simplify the maintenance process

Product Application Matrix

	Amplon					Ultron			Modulon		
	N Series 1-3 kVA (on-line)	N Series 6-12 kVA (on-line)	R Series 1-3 kVA (on-line)	GAIA Series 1-3 kVA (on-line)	RT Series 5-10 kVA (on-line)	H Series 15-30kVA (on-line)	NT Series 20-500kVA (on-line)	DPS Series 160-200kVA (on-line)	NH Plus Series 20-120kVA (on-line)	NHV Plus Series 40-120 kVA (on-line)	DPH Series 25-800 kW (on-line)
Configuration 1:1	O	O	O	O	O						
Configuration 3:1						O	O				
Configuration 3:3						O	O	O	O	O	O
Rack mountable			O	O	O						
Stand alone	O	O	O	O	O	O	O	O	O	O	O
Isolation transformer		O					O	O			
Backup ’	S, L	S, L	L	S	L	L	L	L	L	L	L
Home and office *	O			O							
Small enterprise, IT and medical **	O	O	O	O	O						
Medium enterprice, telecom, IT, media ***		O			O	O	O	O	O	O	O
Heavy industry, telecom, IT, Industrial ******						O	O	O	O	O	O

’ S: Standard model, L: Long back-up mode
* PCs, laptops, modems, printers, wifi and audio equipment
** Computers, servers, networking, medical control and diagnostics, education, banking, industrial automation
*** Telecom base stations, data centers, backbone networks, broadcasting, projection systems
**** Telecom centers, data centers, medical equipment at hospitals, government use, automatic control, oil, gas and power utilities, industrial equipment, automation and control

UPS Management

SNMP card

Functions and features

■ Network

SNMP	SNMPv1 protocol support; accepts NMS monitoring as well as actively sends Trap packets to target hosts.
HTTP	Monitor and set up through network browser with built-in web server.
Others	Telnet, TFTP, FTP, BOOTP, SMTP, SNTP and WOL.
MIB	Supports RFC1628 and custom defined UPSv4 MIB.

■ Management

Regular power on and off	Can set up UPS power on and off time.
Regular testing	Battery discharge test to ensure the battery is in good condition.
Smart power off	Can send power off signal to connected host actively if the host computer has the InsightPower Client or SNMP power off proxy installed.
Sensor	Optional environment sensor can integrate ambient temperature and humidity for total cabinet monitoring.

■ Diagnosis

Event log	Keep date, time, and event sequence in event log file.
History records	Keep date, time, and UPS parameter data. Can be exported into XLS file for further processing.

■ Reaction to events

UPS shutdown	Define delay time for UPS power off to avoid deep discharge.
Email	Send email notification to predefined recipients in case of power event.

Technical specifications

10 / 100M RJ45 connector	
Operation temperature	0 ~ 40°C
Operation humidity	10 ~ 80 %
Input power	9 ~ 24 VDC
Power consumption	< 1W
Dimensions	130 x 60 mm
Weight	58 g

SNMP IPv6 Card

Functions and features

■ Network

SNMP	SNMPv1/v3 protocol support; accepts NMS monitoring as well as actively sends Trap packets to target hosts.
HTTP/HTTPS	Monitor and set up through network browser with built-in web server.
Others	Telnet, SSH, FTP, SFTP, BOOTP, DHCP, SMTP, SNTP and RADIUS, Syslog.
MIB	Supports RFC1628 and custom defined UPSv4 MIB.

■ Management

Regular power on and off	Can set up UPS power on and off time.
Regular testing	Battery discharge test to ensure the battery is in good condition.
Smart power off	Can send power off signal to connected host actively if the host computer has the InsightPower Client or SNMP power off proxy installed.
Sensor	Optional environment sensor can integrate ambient temperature and humidity for total cabinet monitoring.

■ Diagnosis

Event log	Keep date, time, and event sequence in event log file.
History records	Keep date, time, and UPS parameter data. Can be exported into XLS file for further processing.

■ Reaction to events

UPS shutdown	Define delay time for UPS power off to avoid deep discharge.
Email	Send email notification to predefined recipients in case of power event.

Technical specifications

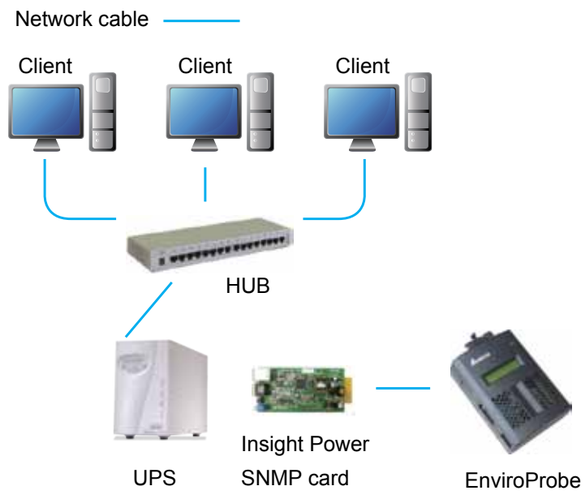
10 / 100M RJ45 connector	
Operation temperature	0 ~ 60° C
Operation humidity	0~90% (Non- condensing)
Input power	12 Vdc
Power consumption	< 2W
Dimensions	130 X 60 mm
Weight	75 g

UPS Management

EnviroProbe

Functions and features

- LCD display
- Ambient temperature and humidity monitoring
- Four dry input signal connectors
- Supports both RS232 or RS485 communications
- Supports series connections for up to 10 EnviroProbes
- Supports SNMP communications protocol



Technical specifications

Model	EMS1000
Input	Connect to UPS SNMP card: 12Vdc (pin 1 & 4) with PDU SNMP card: 5Vdc (pin 2 & 4)
Dimensions (W x D x H)	66 x 99 x 30 mm
Weight	120g
Temperature	±1°C @15 ~ 35ºC ±2ºC @ 0 ~ 15ºC and 35 ~ 45ºC
Relative humidity	20 ~ 90%
Humidity accuracy	± 10% from 15 ~ 35ºC
Height	0 ~ 10,000 feet
Safety regulation compliance	CE, EN55022 Class B, EN55024

Programmable Relay I/O card

Technical specifications

5 port 10/100M RJ45 connector	
Operation temperature	0 ~ 40°C
Operation humidity	10 ~ 80 %
Input power	8 ~ 20 VDC
Power consumption	< 1.2W
Dimensions	130 x 60 mm
Weight	200g

Functions and features

- Output

Programmable	6 output relays, each of them can be configured to represent one of the 20 UPS events respectively
NC/NO	6 output relays, each of them can be configured to either NC (Normal Close) or NO (Normal Open)

- Input

Programmable	The input signal can be configured to turn off the UPS or to issue battery test command

Modbus card

Convert status and parameter data of your UPS to comply with the standard Modbus protocol

Technical specifications

10/100M RJ45 connector	
Operation temperature	0 ~ 40°C
Operation humidity	10 ~ 80 %
Input power	8 ~ 20 VDC
Power consumption	< 1.2W
Dimensions	130 x 60 mm
Weight	150g

Functions and features

Communications interface	1 x RS232 port; 1 x RS485 or RS422 port
■ ID	Device ID can be set to any number between 0~255
■ Terminating resistor	Terminating resistance of RS485 / 422 can be set by dip switch
■ Modbus communications format	Supports RTU format
■ Baud rate	2400, 4800, 9600 or 19200
■ Data bit	7 or 8
■ Parity check	Null, even or odd

UPS Management

Mini-SNMP Card

Functions and features

- SNMP agent and web server implemented for UPS
- Supports the following protocols: ARP, IP, ICMP, SNMPv1, SNMPv3 USM, UDP, TCP, HTTP, FTP, TFTP, SMTP, BOOTP, SNTP, DN and Telnet
- Security login by MD5
- Users level management
- Firmware upgrade for new features through TFTP
- Batch configuration through FTP
- Saves UPS event log and history values in EEPROM
- Schedules shutdown, restart and test UPS
- Wake On LAN packet to wakeup PC
- Sends e-mail and SNMP trap to notify users
- Provides InsightPower Client software to protect public operating systems
- Provides InsightPower Manager to monitor all of the UPS information in the network
- Provides InsightPower EzSetting software to easily configure the first time and upgrade firmware

Technical specifications

Network Connection	RJ-45 jack connector
Operating Temperature	0 ~ 40° C
Operating Humidity	10 ~ 80 %
Power Input	3.3V DC
Power Consumption	1 Watt Maximum
Size	60.5 mm x 40 mm (L x W)
Weight	30 g

Pin 1	GND	**Pin 2**	DC (3.3V)
Pin 3	Txd→UPS	**Pin 4**	Rxd←UPS
Pin 5	NC	**Pin 6**	NC
Pin 7	NC	**Pin 8**	NC
Pin 9	NC	**Pin 10**	NC

Mini USB Card

Functions and features

- Communication Protocol
  SCI: Delta Regular v1.51
  USB: Delta HID Protocol v3.4
- Support HID (Human Interface Device) protocol
  The UPS can communicate with Windows 2000/XP/Vista/2003 without monitoring software
- Compatible with Delta UPS standard software: UPSentry Smart 2000

Technical specifications

Size	68 x 43 mm
Weight	30 g
Operating Temperature	0 ~ 40° C
Operating Humidity	10 ~ 80 %
Power Input	12V DC
Power Consumption	0.5 Watts

Mini Dry Contact Card

Functions and features

- SNMP agent and web server implemented for UPS
- UPS status information presented as 3 contact closures
- Configurable input signal as shutdown UPS or battery test
- Programmable output contacts, monitors UPS events that users are most concerned about for various applications
- Configurable UPS shutdown delay time
- Protects up to 3 computers
- Unattended graceful shutdown

Technical specifications

Size	68 X 43 mm
Weight	35g
Operating Temperature	0 ~ 40° C
Operating Humidity	10 ~ 80 %
Power Input	8 ~ 20V DC
Power Consumption	0.8 Watts

UPS Management

Mini TVSS Card

Functions and features

- This connection is optional but highly suggested as network lines often carry dangerous surges and spikes
- Connect the Network Protection Lines
  Connect the network line from the wall to the connector marked “IN”, then connect the device (Ethernet card) to be protected to the connector marked “OUT”

Technical specifications

Size	46 x 43 mm
Weight	25g
Operating Temperature	0 ~ 40° C
Operating Humidity	10 ~ 80 %

Delta UPS Management Software

Communications mechanism

	RS232	USB	RS485	SNMP
InsightPower Client				●
UPSentry Smart 2000	●	●		
InsightPower Manager	●		●	●
Shutdown Agent				●

Key functions

	Shutdown OS	Centralized management	Remote control
InsightPower Client	●		●
UPSentry Smart 2000	●		●
InsightPower Manager		●	●
Shutdown Agent	●		

Operating system support

	Windows	Linux	FreeBSD	Sun Sparc	HP-UX	IBM AIX
InsightPower Client	●					
UPSentry Smart 2000	●	●	●	●	●	●
InsightPower Manager	●					
Shutdown Agent	●	●	●	●	●	●

UPS Management

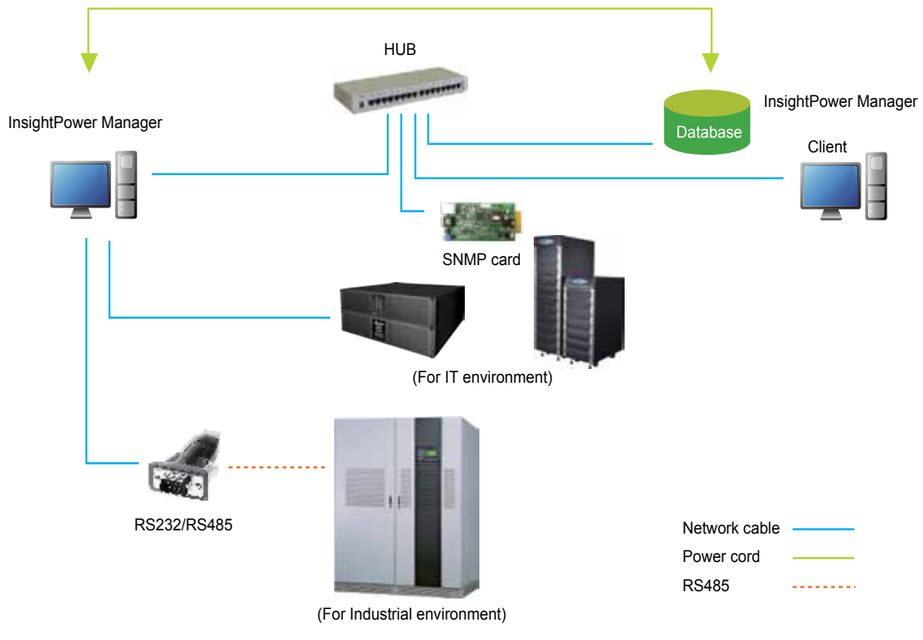
InsightPower Manager

Functions and features

- SNMP agent and web server implemented for UPS
- Centralized UPS management system
- Supports RS232, RS485 and network SNMP communications
- Supports backend database connections
- Hierarchical design for limitless connection nodes
- Configurable response action
- SNMP card setup in batch
- Remote and local UPS on-the-spot monitoring and management
- Provides statistical reports
- Can set up timed power on/off and testing time
- Supports inquiring events and historical data in database from other workstations with the accompanying InsightPower Manager Client program

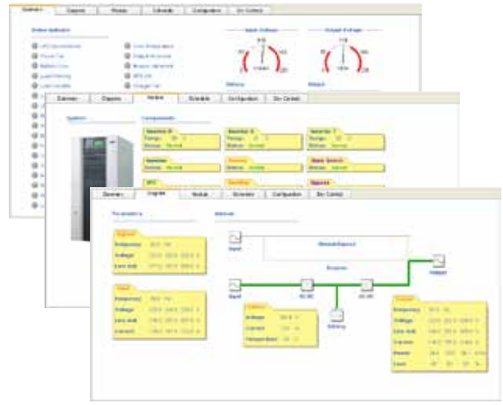
Operating system support

- Supports Microsoft Windows, 2000, XP, 2003, Vista, Win7, 2008
- Diagrammatic sketch of operating system :



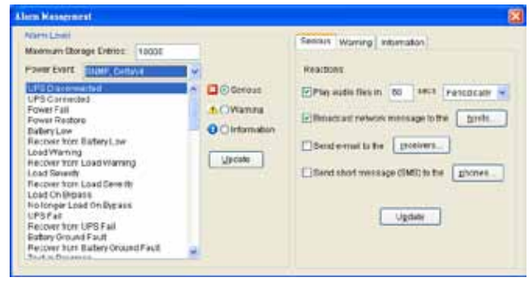
Display

- Table: Displays UPS status in all or by group
- Hierarchical graph: Displays location of UPS object for fast review of status indicator, block diagram and real time data in selected region



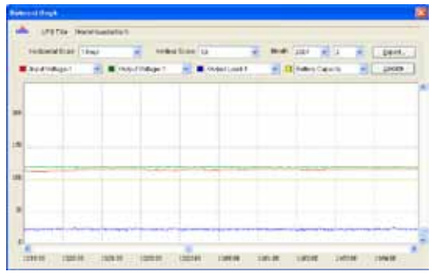
Responsive actions

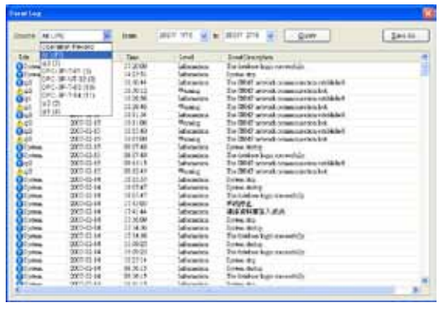
- Event log
- Network broadcasting
- Voice alert
- Email
- SMS



Event tracking

- Log UPS events and operation record in sequence of date and time
- Supports historical data and curve display as well as exporting as files in Excel format
- Supports statistical report generation in a specified time range



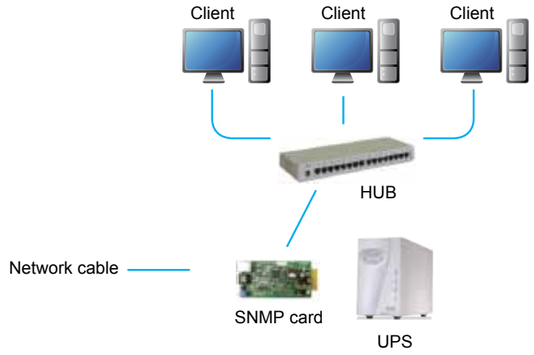


UPS Management

InsightPower Client

Functions and features

- SNMP agent and web server implemented for UPS
- Supports the DeltaSNMP communications protocol
- Does multi hosts sleep/wakeup when combined with the InsightPower SNMP card
- Monitors software exclusively designed for InsightPower SNMP card
- Human-free automatic operating system close and archive
- Supports the Windows sleep function
- Mandatory setup response action
- Remote UPS on-the-spot management



Power off time settings

- Input power failure
- Battery capacity lower than setup value
- UPS battery voltage low
- Timed power off

Responsive actions

- Keep power events in sequence of date, time, and event description
- Voice alert
- Network broadcasting
- Email
- SMS
- Executes external programs and commands

Scheduling

- Weekly or by given dates
- Power on and off time setups
- Fast battery test
- Deep battery test

Display

- On-the-spot digital monitoring
- Multiple display format including: dashboard, scale, indicator and graph
- Fast event and historical data inquiry
- Automatic historical data statistics

Event tracking

- Keeps power events in sequence of date, time, and event description
- Keeps digital records for power quality analysis

Smart power off

- Press the smart power off button in web page of SNMP card to turn off any operating system installed with InsightPower Client and Shutdown Agent programs
- Smart power off shares the same settings with battery capacity low

UPSentry Smart 2000

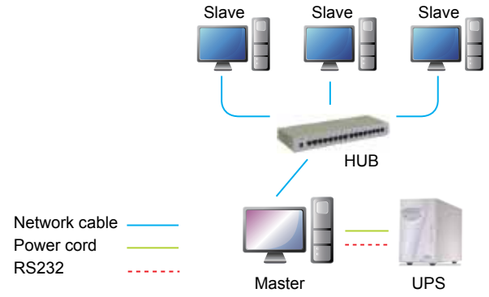
Functions and features

- Supports RS232 and USB communication
- Multi-language design (English, French, German, Spanish, Portuguese, Italian, Polish, Chinese and Japanese)
- Support multi-hosts sleep/wakeup by cross platform software Master/Slave structure without SNMP card
- Human free automatic operating system close and archive

Operating system support

- Microsoft Windows, 2000, XP, 2003, Vista, Win7, 2008
- FreeBSD
- Sun Sparc and x86
- HP-UX
- IBM AIX

- Multi-language design (English, French, German, Spanish, Portuguese, Italian, Polish, Chinese and Japanese)
- Support multi-hosts sleep/wakeup by cross platform software Master/Slave structure without SNMP card
- Human free automatic operating system close and archive



Display

- Real-time digital monitoring
- Multiple display format including: dashboard, scale, block diagram, indicator and graph

Event tracking

- Keeps power events in sequence of date, time, and event description
- Keeps digital records for power quality analysis

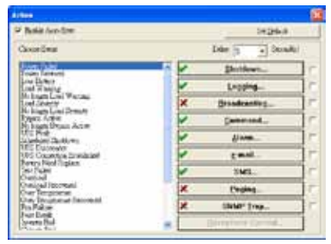
Scheduling

- System power on/off
- 10 seconds test and deep discharge test
- Socket group control

Response protection mechanism

- System power off
- Event log
- Network broadcasting
- Execute external programs and commands
- Voice alert
- System power off

- Event log
- Network broadcasting
- Execute external programs and commands
- Voice alert



UPS Management

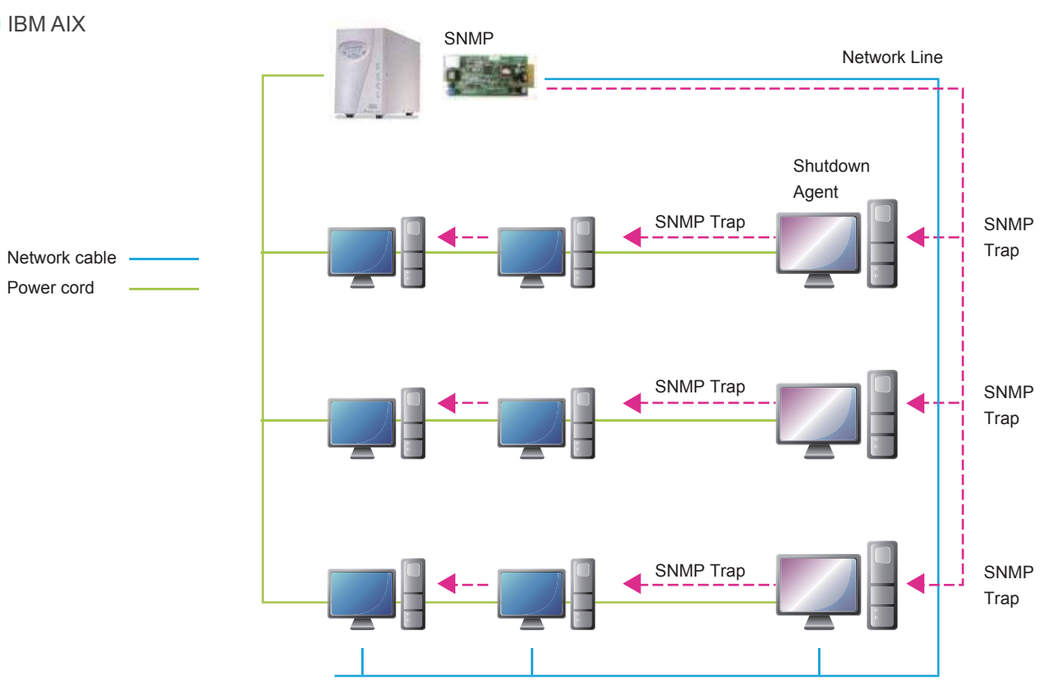
Shutdown Agent

Functions and features

- Supports SNMP trap
- Supports cross platform multi-hosts power off when combined with an SNMP card
- Human-free automatic operating system turn off, sleep
- Supports predefined external program execution before power off
- Can transmit SNMP trap packets to an unlimited number of hosts
- Can change UDP port to avoid conflicting with an existing SNMP management system
- Provides a test button to verify networking capability
- Logical AND power off to receive machine connection message
- Logical OR power off to receive backup message

Operating system support

- Microsoft Windows, 2000, XP, 2003, Vista, Win7, 2008
- Linux
- FreeBSD
- Sun Sparc and x86
- HP-UX
- IBM AIX



Technical Specifications

N Series, Single Phase

Model		N-1K	N-2K	N-3K
Power Rating		1kVA/700W	2kVA/1400W	3kVA/2100W
Input	Nominal Voltage	230 Vac (single phase)		
	Voltage Range	80 ~ 280 Vac (full load) *		
	Frequency	40 - 70 Hz		
	Power Factor	> 0.97		
	Electrical Connection	Power cord (IEC320 C14)	Power cord (IEC320 C20)	Power cord (IEC320 C20)
	Voltage	230 Vac (single phase)		
Output	Voltage Regulation	± 2%		
	Frequency	50 / 60 ± 0.05 Hz		
	Wave Form	Pure sine wave		
	Transient Response	< 8%		
	Voltage Harmonic Distortion	< 3% (linear load)		
	Overload Capability	105 ~ 125%: 3 minutes; 125 ~ 150%: 30 seconds; > 150%: 1 second		
	Receptacle	IEC320 C13 x 4	IEC320 C13 x 8	IEC320 C13 x 8
Battery	Rating	12V/7Ah, 3 pcs	12V/7Ah, 6 pcs	12V/9Ah, 6 pcs
	Typical Backup Time	14 minutes (half load); 5 minutes (full load)		
	Recharge Time	≥ 8 hours to 80 ~ 90%		
	Electrical Connection	Exclusive cable		
Interface	Standard	RS232 x 1, Smart slot x 1	RS232 x 1, SNMP slot x 1	RS232 x 1, SNMP slot x 1
Conformance	Safety & EMC	EN62040-1; CISPR 22 Class A		
Other Features	Data Line Protector	Optional (RJ11/RJ45, phone and network)		
	External Battery Pack	Optional		
Efficiency	AC-AC	> 87% (full load)		
Environment	Operating Temperature	0 ~ 40ºC		
	Relative Humidity	5 ~ 95% (non-condensing)		
	Audible Noise (at one meter)	40 dBA	47 dBA	47 dBA
Physical	Dimensions (WxDxH)	140 x 366 x 242 mm	140 x 425 x 373 mm	140 x 425 x 373 mm
	Weight	14 kg	30.5 kg	30.5 kg

* Lower range 80 ~ 176 Vac is acceptable under 50 ~ 100% loading condition.
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IECQ Certificate of Hazardous Substance Process Management

Technical Specifications

N Series, Single Phase , 120V

Model		N-1K	N-2K	N-3K
Power Rating		1kVA/700W	2kVA/1400W	3kVA/2100W
Input	Nominal Voltage	120 Vac, single phase		
	Voltage Range	50 ~ 140 Vac (full load) *		
	Frequency	50 or 60 ± 5 Hz		
	Power Factor	> 0.97		
	Electrical Connection	Power cord (NEMA 5-15P)	Terminal	Terminal
Output	Voltage Regulation	± 2%		
	Frequency	50 / 60 ± 0.05 Hz		
	Wave Form	Pure sine wave		
	Transient Response	< 8%		
	Voltage Harmonic Distortion	< 3% (linear load)		
	Overload Capability	<105% : Continuous ; 105~125% : 3 minutes		
		125~150% : 30 seconds ; >150% : 0.5 second		
	Receptacle	NEMA 5-15Rx2x2	NEMA 5-15Rx2x2 ; Terminal	NEMA 5-15Rx2x2
Battery	Rating	12V/7Ah, 3 pcs	12V/7Ah, 6 pcs	12V/9Ah, 6 pcs
	Typical Backup Time	14 minutes (half load); 5 minutes (full load)		
	Recharge Time	≥ 8 hours to 80 ~ 90%		
	(Loading Level<75%)			
	Electrical Connection	Cable		
Display	LED	Online, Bypass, On-battery, Overload, Battery low, Fault,		
		Replace battery, Battery level, Loading level		
Interface	Standard	RS232 x 1, SNMP slot x 1		
	Optional Accessories	SNMP card, Modbus card, Relay I/O control card,		
		EnviroProbe, SNMP+5 ports hub		
Conformance	Safety	UL1778	UL1778	UL1778
		CSA 22.2-107	cUL	cUL
	EMC	FCC CLASS B	FCC CLASS A	FCC CLASS A
Efficiency	AC-AC	> 87% (full load)		
Other Features	Battery Start	Yes		
	Data Line Protector	Optional (phone and network)		
	Extended Battery Cabinet	Optional		
Efficiency	AC-AC	> 87 % (full load)		
Environment	Temperature	0 ~ 40 ºC		
	Relative Humidity	5 ~ 95 % (non-condensing)		
	Noise (at one meter)	40 dBA	47 dBA	47 dBA
Physical	Dimensions (WxDxH)	140 x 366 x 242 mm	140 x 425 x 373 mm	140 x 425 x 373 mm
	Weight	14 kg	29 kg	30.5 kg

* Lower range 50~80Vac is acceptable under 50~100% loading condition.
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R Series, Single Phase

Model		R-1K	R-2K	R-3K
Power Rating		1kVA/700W	2kVA/1400W	3kVA/2100W
Input	Nominal Voltage	220/230/240 Vac (single phase)		
	Voltage Range	80 ~ 280 Vac *		
	Frequency	40 - 70 Hz		
	Power Factor	> 0.97		
	Electrical Connection	Power cord (IEC320 C14)	Power cord (IEC320 C20)	Power cord (IEC320 C20)
Output	Voltage Regulation	± 2%		
	Frequency	50 / 60 ± 0.05 Hz		
	Wave Form	Pure sine wave		
	Transient Response	< 8%		
	Voltage Harmonic Distortion	< 3% (linear load)		
	Overload Capability	105 ~ 125%: 3 minutes; 125 ~ 150%: 30 seconds; > 150%: 1 second		
	Receptacle	IEC320 C13 x 4	IEC320 C13 x 8	IEC320 C13 x 8
			IEC320 C19 x 1	IEC320 C19 x 1
Battery & Charger	Nominal Voltage	36 Vdc	72 Vdc	72 Vdc
	Charge Current	Built-in: max. 5A	Built-in: max. 4.5A	Built-in: max. 4.5A
		Additional charger (optional): max. 4A (internal installation)		
	Electrical Connection	Exclusive cable		
Interface	Standard	RS232 x 1, SNMP slot x 1		
Conformance	Safety & EMC	CE, EN62040-1 ; CISPR 22 Class A		
Other Features	Rail Kit	Included		
	Tower Stand Kit	Optional		
	Data Line Protector	Optional		
	External Battery Pack	Optional		
Efficiency	AC-AC	> 87% (full load)		
Environment	Operating Temperature	0 ~ 40 ºC		
	Relative Humidity	5 ~ 95% (non-condensing)		
	Audible Noise (at one meter)	46 dBA	47 dBA	55 dBA
Physical	Dimensions (WxDxH)	440 x 450 x 89 mm	440 x 450 x 89 mm	440 x 450 x 89 mm
	Weight	6.7 kg	9.2 kg	9.2 kg

* Lower range 80 ~ 175 Vac is acceptable under 50 ~ 100% loading condition.
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Technical Specifications

GAIA Series, Single Phase

Model			GAIA-1K	GAIA-2K	GAIA-3K
Power Rating			1kVA/800W	2kVA/1600W	3kVA/2100W
Input		Nominal Voltage	200/208/220/230/240 Vac (single phase)		
		Voltage Range	130 ~ 275 Vac**		
		Frequency	50 or 60 ± 5 Hz		
		Power Factor	> 0.97		
		Electrical Connection	Power cord (IEC320 C14)	Power cord (IEC320 C20)	Power cord (IEC320 C20)
Output		Voltage	200/208/220/230(default)/240 Vac (single phase)*		
		Voltage Harmonic Distortion	< 3% (linear load); < 6% (computer load)		
		Voltage Regulation	± 2%		
		Frequency	50 or 60 ± 0.05 Hz		
		Wave Form	Pure sine wave		
		Overload Capability	105 ~ 125%: 3 minutes; 125 ~ 150%: 30 seconds; > 150%: 0.5 second		
		Receptacle	IEC320 C13 x 3 x 2	IEC320 C13 x 3 x 2 IEC320 C19 x 1	IEC320 C13 x 3 x 2 IEC320 C19 x 1
Battery & Charger		Rating	12V/8.5Ah, 2 pcs	12V/8.5Ah, 4 pcs	12V/8.5Ah, 6 pcs
		Charge Current	0.6 ~ 1.2A (default 0.8A)	0.6 ~ 1.2A (default 0.8A)	0.74 ~ 1.38A (default 1A)
		Typical Backup Time	12 minutes (half load) 4 minutes (full load)	13 minutes (half load) 4 minutes (full load)	15 minutes (half load) 5 minutes (full load)
Interface		Standard	RS232 x 1, USB x 1, SNMP slot x 1		
Conformance		Safety	CE, EN62040-1		
		EMC	EN62040-2 Class B	EN62040-2 Class A	EN62040-2 Class A
Other Features		Data Line Protector	Built-in (RJ11/RJ45, phone and network)		
		REPO	RJ11 connector		
		Rail Kit	Optional		
		Tower Stand Kit	Included in package		
		External Battery Pack	Optional		
Efficiency		AC-AC	> 87% (full load)		
Environment		Operating Temperature	0 ~ 40ºC		
		Relative Humidity	5 ~ 95% (non-condensing)		
		Audible Noise (at one meter)	45 dBA	50 dBA	60 dBA
Physical	Dimensions (WxDxH)	UPS	440 x 335 x 89 mm	440 x 432 x 89 mm	440 x 610 x 89 mm
		Battery Pack	440 x 333 x 89 mm	440 x 430 x 89 mm	440 x 608 x 89 mm
	Weight	UPS	13 kg	21 kg	31 kg
		Battery Pack	16 kg	29 kg	43 kg

* For 200 Vac rating, UPS capacity will de-rate 10%.
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GAIA Series, Single Phase , 120V

Model			GAIA-1K	GAIA-2K	GAIA-3K
Power Rating			1kVA/800W	2kVA/1600W	3kVA/2100W
Input	Nominal Voltage		120 Vac (single phase)		
	Voltage Range		80 ~ 138 Vac (full load)*	90 ~ 138 Vac (full load)	
	Frequency		50 or 60 ± 5 Hz		
	Power Factor		> 0.97		
	Electrical Connection		Power cord (NEMA 5-15P)	NEMA 5-20P (Re-Wireable)	NEMA L5-30P
NEMA L5-30P	Voltage		120 Vac (single phase)		
	Voltage Harmonic Distortion		< 3% (linear load) ; < 6% (computer load)		
	Voltage Regulation		± 2%		
	Frequency		50 or 60(default) ± 0.05 Hz		
	Wave Form		Pure sine wave		
	Transient Response		<10% (10~90% Linear load)		
	Overload Capability		<105% : Continuous ; 105~125% : 3 minutes 125~150% : 30 seconds ; >150% : 0.5 second		
	Receptacle		NEMA 5-15Rx2x3	NEMA L5-20Rx1 NEMA 5-15/20Rx6	NEMA L5-30Rx1 NEMA 5-15/20Rx6
Battery	Rating		12V/8.5Ah, 2pcs	12V/8.5Ah, 4pcs	12V/8.5Ah, 6pcs
	Charge Current		0.74 ~ 1.38 (default 1A)		
	Typical Backup Time		13 minutes (half load) 4 minutes (full load)	13.5 minutes (half load) 4 minutes (full load)	15 minutes (half load) 5 minutes (full load)
	Extended Battery Connector		Anderson connector		
Display	LED		Online, Bypass, On-battery, Overload, Battery low, Fault, Replace battery, Battery level, Loading level		
Interface	Standard		RS232 x 1, USB x 1, SNMP Slot x 1		
	Optional Accessories		SNMP card, Modbus card, Relay I/O control card, EnviroProbe, SNMP+5ports hub		
Other Features	Battery Start		Yes		
	Data Line Protector		Built-in (RJ11/RJ45, phone and network)		
	REPO		RJ11 connector		
	Rail Kit		Optional		
	Tower Stand Kit		Included in package		
	Extended Battery Cabinet		Optional		
Efficiency	AC-AC		> 87% (full load)		
Environment	Temperature		0 ~ 40 ºC		
	Relative Humidity		5 ~ 95% (non-condensing)		
	Noise (at one meter)		45 dBA	50 dBA	60 dBA
Physical	Dimensions (WxDxH)	UPS	440 x 335 x 89 mm	440 x 432 x 89 mm	440 x 610 x 89 mm
		Battery Cabinet	440 x 333 x 89 mm	440 x 430 x 89 mm	440 x 608 x 89 mm
	Weight	UPS	13 kg	21 kg	31 kg
		Battery Cabinet	16 kg	29 kg	43 kg

* 65-80 (linearly de-rating between 70% ~ 100% loading)
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Technical Specifications

RT Series, Single Phase

Model		RT-5K	RT-6K	RT-10K
Power Rating		5kVA/4.5kW	6VA/5.4kW	10kVA/9kW
Input	Nominal Voltage	200/208/220/230/240 Vac (single phase)		
	Voltage Range	100 ~ 300 Vac*		
	Current Harmonic Distortion	< 5% (full load)		
	Power Factor	> 0.99 (full load)		
	Frequency	40 ~ 70 Hz		
	Electrical Connection	Terminal block		
Output	Voltage	200/208/220/230(default)/240 Vac (single phase)		
	Voltage Harmonic Distortion	< 2% (linear load)		
	Voltage Regulation	± 1% (static); ± 2% (typical)		
	Frequency	50 or 60 ± 0.05 Hz		
	Overload Capability	106 ~ 110%: 10 minutes; 111 ~ 125%: 5 minutes; 126 ~ 150%: 30 seconds		
	Electrical Connection	Terminal block		
	Crest Factor	3:1		
Battery & Charger	Nominal Voltage	192 Vdc	192 Vdc	192 Vdc
	Charge Current	Built-in: maximum 4A (adjustable);		
		Additional charger board (optional): maximum 4A (internal installation)		
	Electrical Connection	Exclusive cable		
Interface	Standard	RS232 x 1, SNMP slot x 1, Smart slot x 1, Parallel port x 1		
Conformance	Safety & EMC	CE, TUV, EN62040-1; CISPR 22 Class A		
Other Features	Parallel Redundancy	1+1		
	Remote Control	REPO; Remote On/Off		
	Common Battery Installation	Yes		
	under Data Line Protector:	Optional		
	External Battery Pack			
Efficiency	AC-AC	92% (full load)		
	ECO Mode	96% (full load)		
Environment	Operating Temperature	0 ~ 40ºC		
	Relative Humidity	0 ~ 95% (non-condensing)		
	Audible Noise (at one meter)	54 dBA**		
Physical	Dimensions (WxDxH) UPS	440 x 671 x 89 mm	440 x 671 x 89 mm	440 x 623 x 131 mm
	Dimensions (WxDxH) Battery Pack	440 x 638 x 89 mm	440 x 638 x 89 mm	440 x 595 x 131 mm
	Weight UPS	15kg	15.5 kg	21.3 kg
	Weight Battery Pack	36 kg	36 kg	66 kg

* For 5 and 6 kVA models, lower range 100 ~ 155 Vac is acceptable under 50 ~ 100% loading condition.
  For 10 kVA model, lower range 100 ~ 180 Vac is acceptable under 50 ~ 100% loading condition.
** Audible Noise is at 70% load.
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N Series, Single Phase

Model		N-6K	N-12K
Rated Capacity		6KVA / 4.2KW	12KVA / 8.4KW
Input	Rated voltage	220V / 230V / 240V	
	Voltage Range	120 ~ 280Vac (≤70% Rated Load)	
	Frequency Range	60Hz	
	Input Power Factor	>0.99	
Output	Voltage Range	120V / 220V	
	Voltage Stability Margin	±2%	
	Frequency Range	60Hz	
	Frequency Stability Margin	±0.05Hz	
	Wave	Sine wave	
	Overload capacity	102%~125% for 1 minute	
		125%~150% for 30 seconds	
		> 150% immediately	
	Overall Efficiency (normal input voltage)	AC-AC : >88%	
		ECO Mode : >94%	
Battery	Type	Lead-acid, Maintenance-free Battery	
	Standby Duration(Full Load)	≥7 minutes	≥3 minutes
Interface	LED Display	AC Status, Bypass Power Supply, Powered by Battery, Fault Status, UPS status Input/Output Voltage, Frequency, Loading Status, Battery Status, Fault Message	
	Alarm Sound	Buzzer	
Communication interface	Standard	RS232 x 1, SNMP slot x1	
Environment	Noise (1m away)	<53dB	<65dB
	Temperature	0~40˚C	
	Humidity	5%~95% (without dew)	
Miscellaneous	Regulatory Compliance	EN50091-1-1 / CE	
	Electromagnetic Compatibility	CNS 13438 Class A/ EN62040-2 Class A	
	EMC	IEC61000-2-2 / IEC61000-4-2 Level 3 / IEC61000-4-3 Level 3 /IEC61000-4-4 Level 4 / IEC61000-4-5 Level 4	
	Battery Activation	Yes	
Physical	External Battery Pack Dimensions (WxDxH) (mm)	Optional 280 x 581 x 783.8 mm	
	Weight (Kg)	133Kg	165

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Technical Specifications

H Series, Three Phase

Model		H15K 3/1	H15K 3/3	H20K 3/1	H20K 3/3	H30K 3/3
Power Rating - kVA		15	15	20	20	30
Power Rating - kW		12	12	16	16	24
Input	Nominal Voltage	380/220, 400/230, 415/240 Vac (3 phase, 4-wire + G)				
	Voltage Range	270 ~ 485 Vac (line-line)/156 ~ 280 Vac (line-neutral)				
	Power Factor	> 0.95				
	Frequency	50 or 60 ± 3 Hz				
Output	Voltage	3/3 model: 220/380, 230/400, 240/415 Vac (3 phase, 4-wire + G)				
		3/1 model: 220/230/240 Vac (single phase)				
	Voltage Harmonic Distortion	≤ 3% (linear load)				
	Voltage Regulation	± 2%				
	Frequency	50 or 60 ± 0.1 Hz				
	Overload Capability	102 ~ 125%: 1 minutes; 125 ~ 150%: 30 seconds; > 150%: 2 seconds				
Battery & Charger	Nominal Voltage	240 Vdc				
	Charge Current	2.6A	2.6A	5.2A	5.2A	5.2A
	Electrical Connection	Terminal block				
Interface	Standard	RS232 x 1, SNMP slot x 1, AS400 x 1, Dry contact x 1				
Conformance	Safety & EMC	CE, EN62040-1 ; CISPR 22 Class A				
Other Features	Parallel Redundancy	Local and remote				
	Remote Control	Built-in				
	Common Battery Installation	Optional (two types: 26 Ah or 40 Ah)				
Efficiency	AC-AC	3/3 model: 90% (full load)	3/1 model: 90% (full load)			
	ECO Mode	3/3 model: 97% (full load)	3/1 model: 97% (full load)			
Environment	Operating Temperature	0 ~ 40ºC				
	Relative Humidity	5 ~ 95% (non-condensing)				
	Audible Noise (at one meter)	< 60 dBA				
Physical	Dimensions (WxDxH) UPS	380 x 650 x 860 mm				
	Battery Pack	380 x 650 x 860 mm				
	Weight UPS	108 kg	108 kg	108 kg	108 kg	108 kg

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H Series, Three Phase , 120V

Model			H20K 3/3	H20K 3/3	H30K 3/3
Power Rating - kVA			20	20	30
Power Rating - kW			16	16	24
Input	Nominal Voltage		190/110, 208/120, 220/127 Vac		
			3 phase, 4-wire plus ground		
	Voltage Range		96~144Vac (line-line) / 166~250Vac (line-neutral)		
	Power Factor		> 0.95		
	Frequency		50 or 60 Hz ± 3 Hz		
Output	Voltage		110/290V, 120/208V, 127/220V		
			(3 phase, 4-wire + G)		
	Voltage Harmonic		< 3 % (linear load)		
	Voltage Regulation		± 2%		
	Frequency		50 or 60 Hz ± 0.1 Hz		
	Overload Capability		≦102% : Continuous ; 102~125% : 1 minute ; 125~150% :		
			30 seconds ; ≧150% : 2 seconds		
Battery	Rating Voltage		240 Vdc		
	Recharging Capability		Built-in : 5.2 A		
			Optional extra charger : 5 A (external installation)		
	Electrical Connection		Terminal Block		
Display	LED		UPS status : Mains input, Bypass input, AC-DC, DC-AC, Backup, Bypass, Output		
	LCD		Input/Output, Bypass, Inverter, Frequency, Loading and battery voltage,		
			Abnormal message and intelligent self diagnosis		
Interface	Standard		RS232 x 1, SNMP slot x 1, AS400 x 1, Dry contact x 1		
	Optional Accessories		SNMP card, Modbus card, Relay I/O control card, EnviroProbe, SNMP+5 ports hub		
Other Features	Emergency Power Off		Local and remote		
	Maintenance Bypass Switch		Built-in		
	Extended Battery Cabinet		Optional (Two types : 26Ah or 40Ah)		
	Battery Start		Yes		
Efficiency	Normal (AC-AC)		90%		
	ECO Mode		97%		
Environment	Temperature		0 ~ 40 ºC		
	Relative Humidity		5% ~ 95% (non-condensing)		
	Audible Noise (at one meter)		< 60 dBA		
Physical	Dimensions (WxDxH)	UPS	380 x 650 x 860 mm		
		Battery Pack	380 x 650 x 860 mm		
	Weight		108 kg	111 kg	118 kg

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Technical Specifications

NT Series, Three Phase

Model		NT-20K	30K	40K	50K	60K	80K	100K	120K	160K	200K	260K	320K	400K	500K
Power Rating - kVA		20	30	40	50	60	80	100	120	160	200	260	320	400	500
Power Rating - kW		16	24	32	40	48	64	80	96	128	160	208	256	320	400
Input	Nominal Voltage	208/120, 380/220, 400/230, 415/240, 480/277 Vac (3 phase, 4-wire + G)													
	Voltage Range	± 20%													
	Current Harmonic	< 3% (with optional rectifier or filter, full load)													
	Distortion	50 or 60 Hz ± 5Hz													
	Frequency														
Output	Voltage	208/120, 380/220, 400/230, 415/240, 480/277 Vac (3 phase, 4-wire + G)													
		220, 230, 240 Vac (1 phase, 2-wire + G) *													
	Voltage Harmonic	≤ 3% (linear load)													
	Distortion	± 1% (static)													
	Voltage Regulation	50 or 60 Hz													
	Frequency	± 0.01% (interior oscillator); ± 1% (synchronized)													
	Frequency Regulation	≤ 110%: 60 minutes; 110 ~ 125%: 10 minutes; 126 ~ 150%: 1 minute													
	Overload Capability														
Interface	Standard	RS232 x 1, RS485 x 2, SNMP slot x 1, Status dry contact output x 6													
Other Features	Parallel Redundancy	Up to 8 units													
	Emergency Power Off	Local and remote													
	SRAM Event Log	500 records													
	Input Harmonic Improvement	Optional harmonic filter and 12-pulse rectifier													
	External Battery Pack	Optional													
Efficiency	AC-AC	90%	91%		91.5%		92%		92.5%			93%			
	ECO Mode	>97%	>97.5%												
Environment	Operating Temperature	0 ~ 40 ºC													
	Relative Humidity	0 ~ 90% (non-condensing)													
	Audible Noise (at 1.5 meters)	≤ 60 dBA			≤ 65 dBA					≤ 68 dBA		≤ 72 dBA			≤ 77dBA
Physical	Dimensions** (WxDxH)	600 x 800 x 1400 mm						800 x 830 x 1700 mm		1200 x 830 x 1700 mm		1600 x 995 x 1950 mm			1900 x 995 x 1950 mm
	Weight ***	365 kg	365 kg	425 kg	460 kg	506 kg	525 kg	700 kg	745 kg	1050 kg	1085 kg	1680 kg	1720 kg	1920 kg	2410 kg

* Single phase output voltage: 220/230/240 is only for 20 ~ 120 kVA models.
** Standard rating is 380/220 Vac with 6 pulse rectifier. For models: (1) different rating (2) with 12 pulse rectifier or filter, dimensions and weight would be different
from standard models. Please contact your local supplier for more information.
*** 500 kVA model is assembled into two cabinets: Inverter (width=1100 mm, 1760 kg) and Rectifier (width=800 mm, 650 kg).
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DPS Series, Three Phase

Model		DPS-160K	DPS-200K
Power Rating - kVA		160	200
Power Rating - kW		144	180
Input	Nominal Voltage	380/220, 400/230, 415/240 Vac (3 phase, 4-wire + G)	
	Voltage Range	-40% ~ 20% (242 ~ 477/140 ~ 276 Vac) *	
	Current Harmonic Distortion	≤ 3%	
	Power Factor	> 0.99	
	Frequency	50/60 ± 5 Hz	
Output	Voltage	380/220, 400/230, 415/240 Vac (3 phase, 4-wire + G)	
	Voltage Harmonic Distortion	≤ 1.5% (linear load)	
	Voltage Regulation	± 1% (static)	
	Frequency	50/60 ± 0.05 Hz (with internal oscillator)	
	Overload Capability	≤ 125%: 10 minutes; ≤ 150%: 1 minute	
Display		Mimic LCD supports multi-language and LED indicators	
Interface	Standard	RS232 x 1, SNMP slot x 2, Dry contact output x 6, Dry contact input x 2, Battery cabinet temperature x 4, Battery cabinet status detection x 1, Parallel port x 2, REPO x 1	
	Management Peripherals	SNMP card, Modbus card, Relay I/O control card, EnviroProbe, SNMP hub,	
Conformance	Safety & EMC	CE, TUV, EN62040-1; CISPR 22 Class A	
Efficiency	AC-AC	96% (TÜV tested)	
	ECO Mode	99% (TÜV tested)	
Battery	Nominal Voltage	± 240 Vdc	
	Charger Voltage	± 272 Vdc (adjustable from 254 to 291 Vdc)	
Environment	Operating Temperature	0 ~ 40°C	
	Relative Humidity	0 ~ 95% (non-condensing)	
	Audible Noise	< 70 dBA (at one meter)	
	IP Degree of Protection	IP20	
Other Features	Parallel Redundancy & Expansion	Yes (up to 8 units)	
	Emergency Power Off	Yes (local and remote)	
	under Data Line Protector:	Optional	
	External Battery Pack		
Physical Dimensions (WxDxH)	UPS	850 x 865 x 1950 mm	
	UPS with Transformer	1400 x 865 x 1950 mm	
Weight	UPS	697 kg	
	UPS with Transformer	1461 kg	

* When input voltage is 242 ~ 324/140 ~ 187 Vac, the sustainable loading is from 70% to 100% of the UPS capacity.
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TÜVRheinland® Precisely Right.

The Ultron DPS Efficiency is Tested by TÜV

Technical Specifications

NH Plus Series, Three Phase

Model		NHP-20K	NHP-40K	NHP-60K	NHP-80K	NHP-100K	NHP-120K
Power Rating - kVA		20	40	60	80	100	120
Power Rating - kW*	< 25°C*	18	36	54	72	90	108
	< 40°C	16	32	48	64	80	96
Input	Nominal Voltage	380/220, 400/230, 415/240 Vac (3 phase, 4-wire + G)					
	Voltage Range	208 ~ 477 Vac (line-line)/120 ~ 276 Vac (line-neutral) **					
	Current Harmonic Distortion	< 3% (full load)					
	Power Factor	> 0.99					
	Frequency	50 or 60 ± 5 Hz					
Output	Voltage	380/220, 400/230, 415/240 Vac (3 phase, 4-wire + G)					
	Voltage Harmonic Distortion	< 3% (linear load)					
	Voltage Regulation	± 1% (static)					
	Frequency	50 or 60 Hz					
	Frequency Regulation	± 0.05 Hz (interior oscillator)					
		± 5 Hz (synchronized, adjustable in steps of 0.1 Hz)					
	Overload Capability	≤ 125%: 10 minutes; ≤ 150%: 1 minute					
Interface	Standard	RS232 x 1, SNMP slot x 2, Dry contact output x 6, Dry contact input x 2, Battery cabinet temperature x 4, Battery cabinet status detection x 1, Parallel port x 1, REPO x 1					
	Management Peripherals	SNMP card, Modbus card, Relay I/O control card, EnviroProbe, SNMP + 5 ports hub, Battery cabinet temperature sensor, Battery cabinet status cable					
Conformance	Safety & EMC	CE, EN62040-1, EN62040-2 Class A					
Other Features	Parallel Redundancy and Expansion	Module and system redundancy; Maximum 4 units in parallel up to 480 kVA					
	Emergency Power Off	Local and remote					
	SRAM Event Log	500 records					
	External Battery Pack	Optional					
Efficiency	AC-AC	94%					
	ECO Mode	97%					
Environment	Operating Temperature	0 ~ 40ºC					
	Relative Humidity	0 ~ 90% (non-condensing)					
	Audible Noise (at one meter)	65 dBA	68 dBA	68 dBA	70 dBA	72 dBA	73 dBA
Physical	Dimensions (WxDxH) UPS	520 x 910 x 1165 mm				520 x 975 x 1695 mm	
	Dimensions (WxDxH) Battery Pack	520 x 850 x 1165 mm (26 Ah x 40 pcs)				520 x 975 x 1695 mm (40 Ah x 40 pcs)	
	Weight	170 kg	200 kg	230 kg	260 kg	350 kg	380 kg

* Subject to reconfiguration of the UPS; Delta provides the configuration service.
** When input voltage is 208~300/120~173 Vac, the sustainable loading is from 70% to 100% of the UPS capacity.
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NHV Plus Series, Three Phase

Model		NHVP-40K	NHVP-60K	NHVP-80K	NHVP-100K	NHVP-120K
Capacity	kVA	40	60	80	100	120
	kW*	36	54	72	90	108
Input	Nominal Voltage	120/208Vac, 127/220Vac (3 phase, 4-wire + G)				
	Voltage Range	-25% ~ +20%				
	Current Harmonic Distortion**	<3%				
	Input Power Factor	>0.99				
	Frequency	50/60 Hz				
	Input Frequency Range	45~65 Hz				
Output	Voltage	120/208Vac, 127/220Vac (3 phase, 4-wire + G)				
	Voltage Regulation	±1%				
	Frequency	50 or 60 Hz				
	Frequency Regulation	± 0.05 Hz				
	Voltage Harmonic Distortion	<3%				
	Overload	≤125%: 10mins; ≤150%: 1min				
Audible Warning	Battery Backup	Intermittent				
	UPS Abnormal	Continuous				
Display	LED	UPS status: Normal, Battery, Bypass and Fault				
	LCD	Input/Output, Bypass, Inverter, Frequency, Loading and battery voltage ,Current, UPS Abnormal message and Intelligent selg diagnosis				
Interface	Standard	RS232 x1, Smart card slot x2, Input dry contact x2,Output dry contact x 6				
	Optional	SNMP IPv6 card, ModBus card, Relay I/O control card				
Other Features	Parallel Redundancy	Yes, up to 2 units				
	EPO	Standard (Local & Remote)				
	SRAM Event Log	Yes (500 records)				
	Parameter Configulation	Yes				
	Hot Standby Installation	Feasible				
	Battery Start	Standard				
	Battery Temperature Compensation	Optional				
Efficiency	AC-AC	94%				
	ECO Mode	97%				
Environment	Temperature	0~40ºC				
	Humidity	0 ~ 90 % (non-condensing)				
	Noise	<70 dBA				
Physical	Dimensions (WxDxH)	520 x 910 x 1696 mm			1080 x 970 x 1696 mm	1080 x 970 x 1696 mm
	Weight	488 kg	570 kg	665 kg	959 kg	1064.5 kg

* Under operating temperature <25ºC
** When Input vTHD is < 1%

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DPH Series, Three Phase

Model		DPH-25K	50K	75K	100K	125K	150K	175K	200K
Power Rating - kVA		25	50	75	100	125	150	175	200
Power Rating - kW*		25	50	75	100	125	150	175	200
Input	Nominal Voltage	380/220V, 400/230V, 415/240V (3 phase, 4-wire +G)							
	Voltage Range	176~276 / 305~477 Vac *							
	Current Harmonic Distortion	<3% **							
	Power Factor	> 0.99							
	Frequency	50 or 60 Hz							
Output	Voltage	380/220V, 400/230V, 415/240V (3 phase, 4-wire +G)							
	Output Power Factor	1 (kVA = kW)							
	Voltage Harmonic Distortion	≤ 2% (linear load)							
	Voltage Regulation	±1% (static)							
	Frequency	50 or 60 Hz							
	Frequency Regulation	±0.05 Hz							
	Overload Capacity	≤ 125%: 10 minutes; ≤ 150%: 1 minute							
Interface	Standard	Parallel port x 2, Smart slot x 2, Dry contact output x 6, Dry contact input x 6, SNMP card x 2, Battery dry contact x 6							
	Optional	SNMP card IPv6, ModBus card, Relay I/O control card, EnviroProbe, Battery cabinet temperature sensor, Battery cabinet status cable							
Conformance	Safety & EMC	BSMI, CE, EN62040-1							
Other Features	Parallel Redundancy and Expansion	Module and system redundancy; Maximum 4 units up to 800 kW							
	Emergency Power Off	Local and remote							
	Battery start	Yes							
	Event Log	3000 records							
	External Battery Cabinet	Optional							
Efficiency	AC-AC	96%							
	ECO Mode	99%							
Environment	Operating Temperature	0 ~ 40 ºC							
	Relative Humidity	0 ~ 90% (non-condensing)							
	Audible Noise (at one meter)	< 70 dBA							
Physical	Dimensions (WxDxH)	600 x 1090 x 2000 mm							
	Weight	382 kg	414 kg	446 kg	478 kg	510 kg	542 kg	574 kg	606 kg

* When input voltage is 140/242~176/305 Vac, the sustainable loading is from 60% to 100% of the UPS capacity.
** When input harmonic distortion is less than 1%.
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UPS Q&A

Power issues

Q What are the power issues?

A

Based on a survey made by Contingency Planning, poor power quality is the key factor in computer data loss. In addition to black outs, other power quality problems are: voltage sag, spikes, voltage surges, noise, and voltage too low (high). These are the events that lead to damage and reduce the life of computer components as well as cause data loss and damage.

Q How can these power issues be solved?

A

There are quite a few methods for dealing with power problems. The three most commonly used are: a surge absorber, a regulator or a UPS.

Power issue	Solution		
	Surge absorber	Regulator	UPS
Black out	X	X	✓
Sag	▲	▲	✓
Surge	▲	▲	✓
Noise	X	X	✓
Spike	▲	▲	✓
Frequency drift	X	▲	✓

Q What is a voltage sag? What is its impact on computer equipment?

A

Voltage sag is the most common power problem we may encounter and it is responsible for 87% of all power issues. A voltage sag is a short period of voltage drop caused by some outside problem. This may result in operation failure of computer peripherals, such as the keyboard in minor cases, or it might lead to data loss and file damage in its more serious form. Voltage sag may also damage computer components and reduce their working lives.

Q What is a spike? What is its impact on computer equipment?

A

A spike is a great increase in voltage of very short duration. In most cases it is generated by lightning in nearby regions. It may damage computer hardware or precision equipment and result in data loss.

Q What is a voltage surge? What is its impact on computer equipment?

A

When powering off high-current equipment or a group of high load equipment connected to a single power source, an inertial voltage surge may be generated during power transmission. Most computers or precision equipment feature a certain range of operational voltage that accommodates such a situation. However, if the voltage surge is greater than the tolerance settings, some equipment or components may be damaged and this can lead to equipment failure and a reduced working life.

Q What is noise? What is its impact on computer equipment?

A

A score of factors are responsible for noise, including lightning, the powering on or off of nearby equipment, generators, and even wireless communications. Noise may cause precision equipment or computers to fail or result in program runtime errors.

UPS Q&A

Types of UPS

Q Why is a UPS needed?

A

Unsteady power quality can affect the normal operation of a computer. A UPS not only provides immediate power in case of blackout, but also provides stable and clean power under normal conditions. It improves the incoming power by regulation and filtration and also suppresses spikes caused by lightning. A UPS, is like a personal insurance policy and protects your computer equipment against power risks.

Q What kinds of UPS are there?

A

There are three types of UPS: Off-Line On-Line and Line-Interactive.

Q What is an Off-Line UPS?

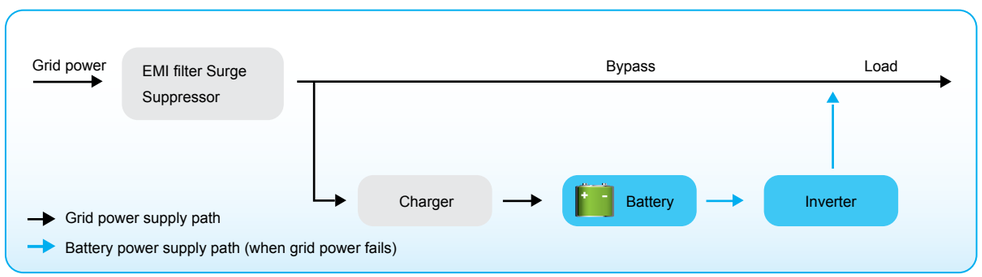
A

Please refer to the off-line system diagram.

Equipment is powered by the grid directly through a bypass line. In the event of a power failure it is powered by AC current generated by an inverter run by a battery in the UPS.

Features

1. When commercial power is normal, the UPS does nothing and the load is handled directly by the grid. This type does not improve grid power with respect to noise and surge suppression.
2. Provides the least protection as a certain conversion time is needed.
3. Simple in structure, compact in size, light in weight, easy to control and not very expensive.



Q What is an On-Line UPS?

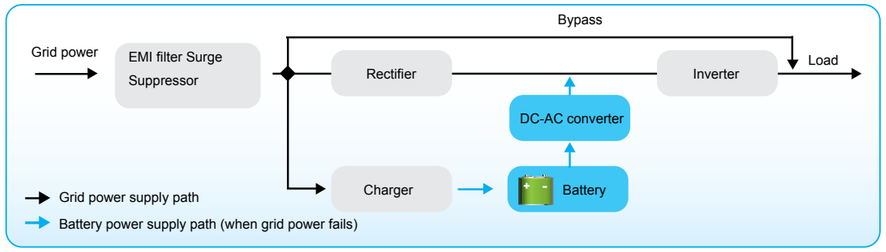
A

Please refer to the on-line UPS diagram.

The on-line UPS supplies power to the load by output from the inverter and uses the bypass path only in a case where the UPS itself fails, is overloaded, or overheats.

Features

1. Output power to the load is of the best quality as it is processed by the UPS.
2. No conversion time is required.
3. Complex in structure and expensive.
4. Gives the highest protection and has excellent noise filtering and surge suppression capacity.



Q What is a Line-Interactive UPS?

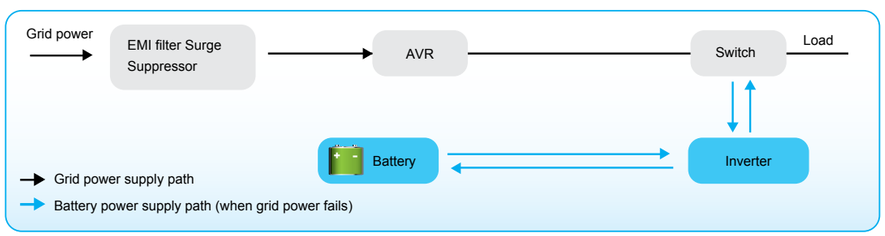
A

Please refer to the line-interactive UPS diagram.

The line-interactive UPS supplies power to the load through the bypass path with output from the inverter when grid power is normal. The inverter acts as a charger at this time. In the event of a black out, the inverter converts DC current from the battery to AC for output to the load.

Features

1. The bi-directional conversion design reduces the time required for charging the UPS battery.
2. Requires a certain conversion time.
3. The complex control mechanism makes it more expensive.
4. Has protection capacity between that of the on-line and off-line UPSs. It is less effective in noise filtering and surge suppression.



UPS Q&A

Common battery problems

Q What kinds of batteries are used in a UPS?

A

Most commercially available UPS use sealed lead-acid batteries that are water-and maintenance-free. The energy is generated by chemical reactions in a paste-like electrolyte. For most consumers, these batteries are not only easy to use and maintain but also simple to replace when necessary.

Q What is the life cycle of a battery?

A

The power provided by a UPS comes from the discharge of its batteries. Batteries age not only with use and external factors but also from the internal chemical reactions. Batteries will still age even when not in use. Generally speaking, the average life of a lead-acid battery is 2 years.

Q How should a battery be maintained?

A

Regular charging and discharging is very important for battery maintenance. You can regularly execute this function if your UPS has the battery detection feature. Otherwise, you can simply unplug the input to your UPS to simulate a grid power black-out and check the time the battery takes to discharge. Please replace your batteries with new ones when the discharge time becomes less than that given in the specification. This will ensure that there is enough discharge time for the system to save files and be shut down in case of grid power failure.

Q How is the capacity of a UPS determined?

A

Most commercially available UPS now express their capacity as VA. V stands for voltage and A for current in amps. In short, VA equals the power and capacity of a UPS. For example, a UPS of 500VA capacity with an output of 110V will provide a maximum current of 4.55A and more than this will lead to overload. The unit of power can be expressed in Watts. While the Watt indicates active power, VA indicates reactive power and Watt equals VA multiplied by the power factor (VA × pf = Watt). There is no common criterion for power factor (pf). Generally a value of between 0.6 and 0.8 is acceptable while a value of 0.5 may represent poor design. Pay attention to this value when purchasing a UPS. A high power factor implies better utilization and more economical use of power.

Q Where can we have our batteries replaced?

A

Please contact the service center or your UPS dealer when you need to replace your batteries.

Q Where can an appropriate UPS be bought?

A

1. Learn about the applicability of each type of UPS.
2. Appraise your needs for power quality.
3. Learn the required UPS capacity and appraise the total capacity required for future expansion.
4. Select a market proven brand and supplier.
5. Purchase an appropriate UPS that is suitable for your requirements.

Q Is a UPS really needed in places with very few black-outs?

A

Statistics indicate that black-outs are a minor power issue. Other, not so obvious power issues, like over-voltage, under-voltage and surges are the major ones. In addition to providing extended power for long stretches, a UPS is designed to provide customers with critical total power protection against voltage drift, surges, high frequency interference, and any other kind of power failure and drift.

Q How long should the UPS provide power?

A

The single most important function of a UPS is to provide adequate backup power for the equipment load. The time a UPS should provide power should be long enough for users to finish running reaction procedures in case of power failure. In general, 5 to 10 minutes should be enough. If longer than this is required, you can purchase a UPS that includes an external battery cabinet(s) that will increase the UPS backup time.

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