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.deltaww.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:

ProductFamily	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 - Agilon Family

VX Series, Single Phase
600VA

The Agilon VX line-interactive UPS is a best value product designed for PCs, laptops, and POS equipment used in home offices and small businesses. Friendly LED indicators display real-time power and UPS status that users can see in a glance. Automatic voltage regulation (AVR) ensures all electronics are receiving stable power while providing higher availability. Even under severe power conditions, the wide input voltage range of the Agilon VX can adapt and reduce the probability of using the battery.

Applications:

PC
Fax
Monitor
ADSL
Home Appliances
POS

Features:

- Wide input voltage range reduces battery discharging occurrences and prolongs battery life.
- Automatic voltage regulation (AVR) delivers stable voltage and provides higher availability.
- Smart charger shortens battery recharging time.
- Battery-start function when utility power is not present.
- UPS is able to restart automatically while utility power is recovering.
- Automatic battery charging in off mode.
- LED indicators provide the UPS status at a glance.
- Audible alarms provide indication of UPS and utility power conditions.
- Automatic self-test ensures battery condition.
- Provides 24/7 protection from surges, lightning and other power events.
- Equipped with network line RJ45 surge protection.
- Overload and over-charge protection.
- Surge protection outlet for less-essential equipment.
- Well-designed microprocessor control provides higher reliability.

Delta UPS - Amplon Family

Applications:

Server

Network

Security

Medical

POS

Banking

E Series, Single Phase

1/2/3 kVA

The Amplon E series is a true on-line, double-conversion UPS housed in a compact tower and recommended for workstations, POSs, ATMs and home appliance.

The Amplon E series is designed for long backup time applications with the addition of a battery source. An inbuilt high level charger shortens the recharging period and increase the availability.

Features:

- Double-conversion technology provides 24/7 full-time protection.
- Automatic input frequency (50 or 60 Hz) Auto-detection.
- AC-start and battery-start capabilities.
- Input voltage bears up to 330 Vac. Suitable for severe utility conditions.
- High charging capability increases availability.
- Suitable for long backup time applications with customized battery source.
- Optional external battery pack for longer backup time.
- Smart slot for mission critical applications.
- High input power factor (pf > 0.97) saves installation costs.
- Wide input voltage range and stable power supply extends battery lifetime.

Delta UPS - Amplon Family

Applications:

Server
Network
Security
Medical
POS
Banking

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

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.

Applications:

Server
Telecom
Industrial
Network
VoIP
Storage
Medical

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.

Delta UPS - Amplon Family

Data Center
Telecom
Industrial
Network
Security
Lab
Medical
Metro

IN Series, Single Phase
1-3 kVA

The Amplon IN series is a True Online Double-ConversionUPS in tower configuration with in-built Galvanic Isolation Transformer Galvanic isolation is recommended for all critical IT application Galvanic Isolation is also useful for installations at sites with poor power condition with weak neutral

The Amplon IN series with inbuilt galvanic isolation acts as a barrier to all raw mains power quality problems and provides clean uninterrupted supply to the critical load. Amplon IN series is designed for short as well as long backup time requirements with the addition of external batteries. An in-built high level charger shortens the recharging period & increase the availability.

Features:

- Double-conversion technology.
- In-built galvanic isolation transformer
- Automatic input frequency.
- AC-start and battery-start capabilities
- Comprehensive LC Display for monitoring of all UPS Parameters and operating mode / status
- Suitable for severe utility conditions (Commercial, Residencial & Rural sites)
- High recharging capability increases availability.
- Suitable for short (in-built batteries) as well as long (external batteries) backup
- Additional in-built battery charging capabilities upto 12A
- Smart slot to support Mini SNMP /Mini ModBus /Mini Relay I/O Interface for mission critical applications
- In-built maintenance bypass switch for online maintenance in Addision to static bypass (automatic)
- Option of Air filters for dusty environment.
- High input power factor (IPF> 0.97) and low iTHD saves on installation cost
- Wide input voltage range and stable power supply extends battery life
- High energy efficiency saves on operative cost and electricity bill.

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.

Delta UPS - Amplon Family

Server
Telecom
Industrial
Network
VoIP
Storage
Medical

J Series, Single Phase Three Phase

11 kVA

Delta Amplon J Series is a futuristic design using True Online Double Conversion topology (VFI). This UPS comes with highest power density and Rotating LCD Display for easy Rack or Tower convertibility.

Features:

- True online double conversion topology provides 24*7 ful time protections
- Smart Economy Mode: operation results in greater energy saving using energy optimizer for lesser critical applications
- Dual Feed Input allows installation of two independent power sources with option of Hot Standby to provide redundancy.
- Remote Emergency Power Off (REPO) for remote shutdown in case of emergency.
- Programmable front panel Interface allows user to set up important functions like Output Parameters & Mode of operation.
- Lightning and Surge Protection is a superior to separate surge suppressors
- Alarms & Indications provide real time parameters on the LCD Display
- reducing resolution time by 70%.
  SNMP Management Capability: Enables to monitor and control remote UPS's from Web browser
- Input Power Factor Correction up to unity reduces input current resulting in low electricity bills.
- High AC to AC Efficiency with load dependent fan speed technique results in lower running costs
- Widest Input Voltage Range to operate on mains mode at voltages as low as 120V (single phase) 280V (three phase) to provide conditioned supply during long brownout conditions
- Smallest Footprint: Our R&D centers have developed design using advancements in micro-computing techniques and power devices delivering smallest footprint.

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.

Delta UPS – Ultron Family

Data Center
Telecom
Industrial
Network
Security
Lab
Medical
Metro

NT Series, Three Phase
20 - 4000kVA

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 160/1600kVA

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
20-480 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.

Product Application Matrix

	Agilon		Amplon		
	VX- 0.6 kVA (line-interactive)	E Series 1/2/3 kVA (on-line)	N Series 1-3 kVA (on-line)	IN Series 1-3 kVA	R Series 1-3 kVA (on-line)
Configuration1:1	O	O	O	O	O
Configuration3:1					
Configuration3:3					
Rackmountable					O
Standalone	O	O	O	O	O
Isolationtransformer				O	
Backup ’	S	L	S, L	S, L	L
Homeandoffice*	O	O	O		
Smallenterprise,ITand medical**			O	O	O
Mediumenterprice, telecom,IT,media***					
Heavyindustry,telecom, IT,Industrial******					

’ 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, governmen use, automatic control, oil, gas and power utilities, industrial equipment, automation and control

			Ultron			Modulon
	RT Series 5-10 kVA (on-line)	J Series 11 kVA	H Series 15-30kVA (on-line)	NT Series 20-4000kVA (on-line)	DPS Series 160-1600kVA (on-line)	NH Plus Series 20-480kVA (on-line)
	O					
		O	O	O		
			O	O	O	O
	O	O				
	O	O	O	O	O	O
				O	O	
	L	S, L	L	L	L	L
	O	O				
	O	O	O	O	O	O
			O	O	O	O

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

10/100MRJ45connector	
Operationtemperature	0 ~ 40°C
Operationhumidity	10 ~ 80 %
Inputpower	9 ~ 24 VDC
Powerconsumption	< 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

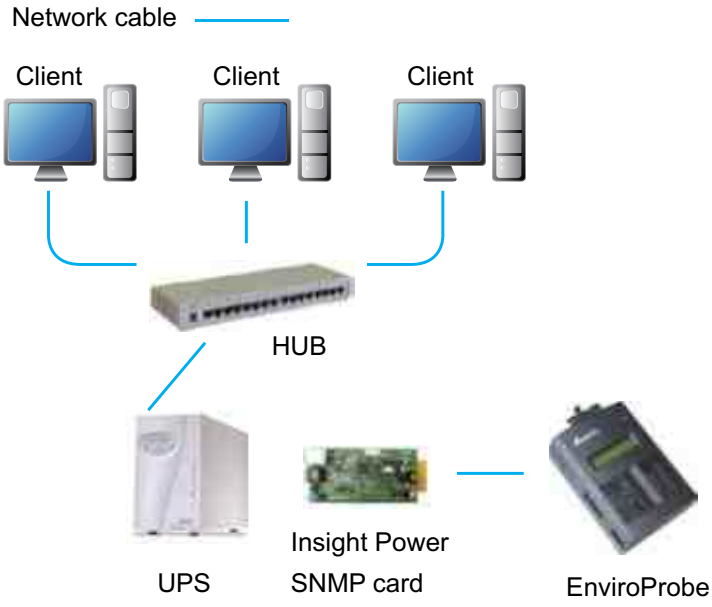
10/100MRJ45connector	
Operationtemperature	0 ~ 60° C
Operationhumidity	0~90% (Non- condensing)
Inputpower	12 Vdc
Powerconsumption	< 2W
Dimensions	130 X 60 mm
Weight	75 g

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(WxDxH)	66 x 99 x 30 mm
Weight	120g
Temperature	±1°C @15 ~ 35ºC ±2ºC @ 0 ~ 15ºC and 35 ~ 45ºC
Relativehumidity	20 ~ 90%
Humidityaccuracy	± 10% from 15 ~ 35ºC
Height	0 ~ 10,000 feet
Safetyregulationcompliance	CE, EN55022 Class B, EN55024

Programmable Relay I/O card

Technical specifications

5port10/100MRJ45connector	
Operationtemperature	0 ~ 40°C
Operationhumidity	10 ~ 80 %
Inputpower	8 ~ 20 VDC
Powerconsumption	< 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

10/100MRJ45connector	
Operationtemperature	0 ~ 40°C
Operationhumidity	10 ~ 80 %
Inputpower	8 ~ 20 VDC
Powerconsumption	< 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

NetworkConnection	RJ-45 jack connector
OperatingTemperature	0 ~ 40° C
OperatingHumidity	10 ~ 80 %
PowerInput	3.3V DC
PowerConsumption	1 Watt Maximum
Size	60.5 mm x 40 mm (L x W)
Weight	30 g

Pin1	GND	**Pin2**	DC (3.3V)
Pin3	Txd→UPS	**Pin4**	Rxd←UPS
Pin5	NC	**Pin6**	NC
Pin7	NC	**Pin8**	NC
Pin9	NC	**Pin10**	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
OperatingTemperature	0 ~ 40° C
OperatingHumidity	10 ~ 80 %
PowerInput	12V DC
PowerConsumption	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
OperatingTemperature	0 ~ 40° C
OperatingHumidity	10 ~ 80 %
PowerInput	8 ~ 20V DC
PowerConsumption	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”

Technicals pecifications

Size	46 x 43 mm
Weight	25g
OperatingTemperature	0 ~ 40° C
OperatingHumidity	10 ~ 80 %

Delta UPS Management Software

Communications mechanism

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

Key functions

	ShutdownOS	Centralized management	Remotecontrol
InsightPower Client	•		•
UPSentry Smart 2000	•		•
InsightPower Manager		•	•
Shutdown Agent	•		

Operating system support

	Windows	Linux	FreeBSD	SunSparc	HP-UX	IBM AIX
InsightPower Client	•					
UPSentry Smart 2000	•	•	•	•	•	•
InsightPower Manager	•					
Shutdown Agent	•	•	•	•	•	•

UPS Management

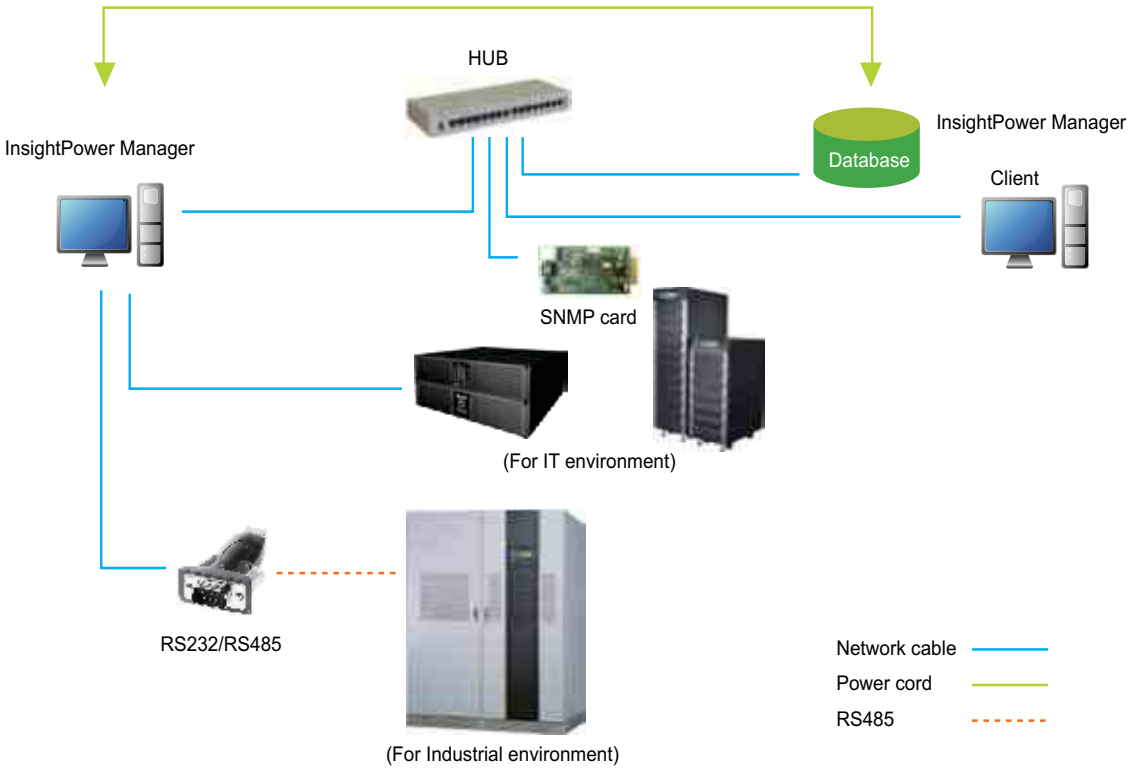
Insight Power Manager

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

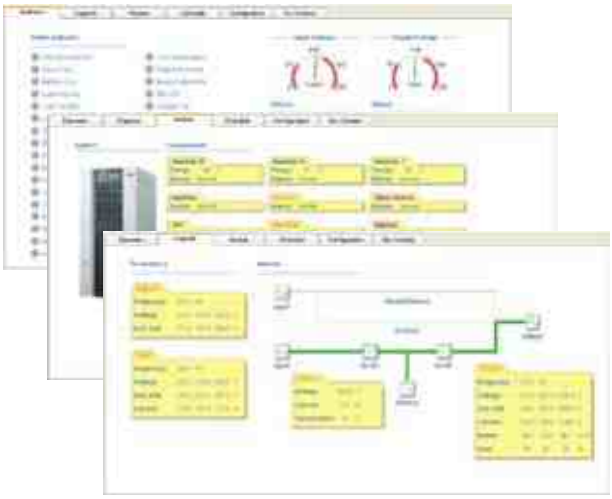
Operating systemsupport

- 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

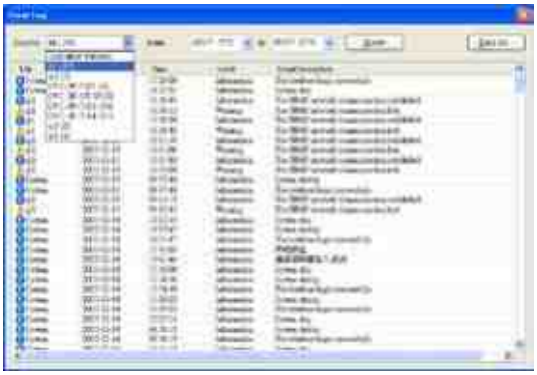


Responsive actions

- 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

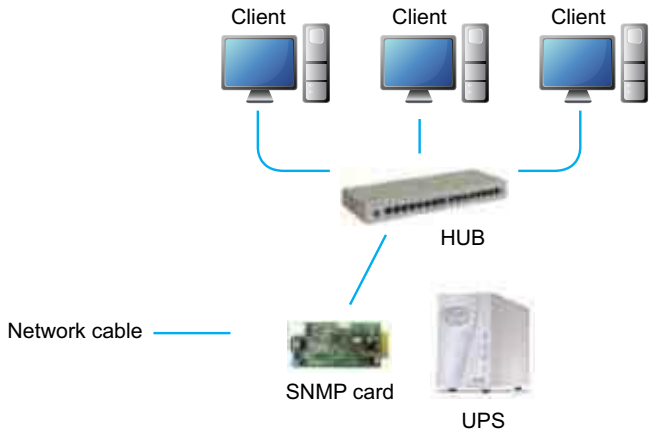


UPS Management

Insight Power Client

Functions and features

- SNMP agent and web server implemented for UPS
- Supports the Delta SNMP communications protocol
- Does multi hosts sleep/wakeup when combined with the InsightPower SNMP card
- Monitors software exclusively designed for Insight Power 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

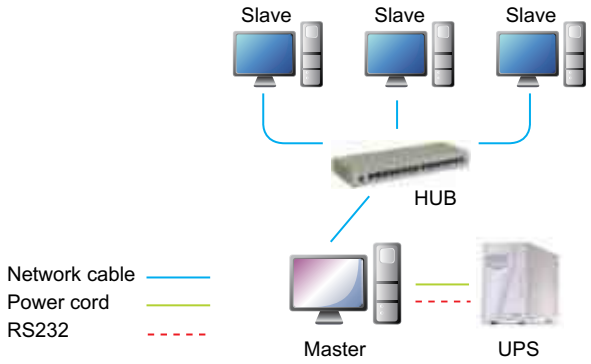
- Press the smart power off button in web page of SNMP card to turn off any operating system installed with Insight Power Client and Shutdown Agent programs
- Smart power off shares the same settings with battery capacity low

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
- 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

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

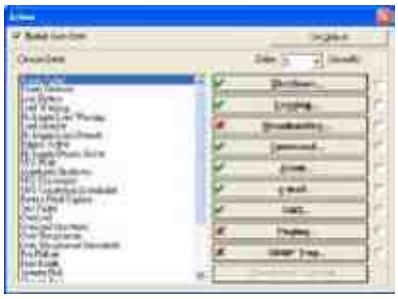
Scheduling

- 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

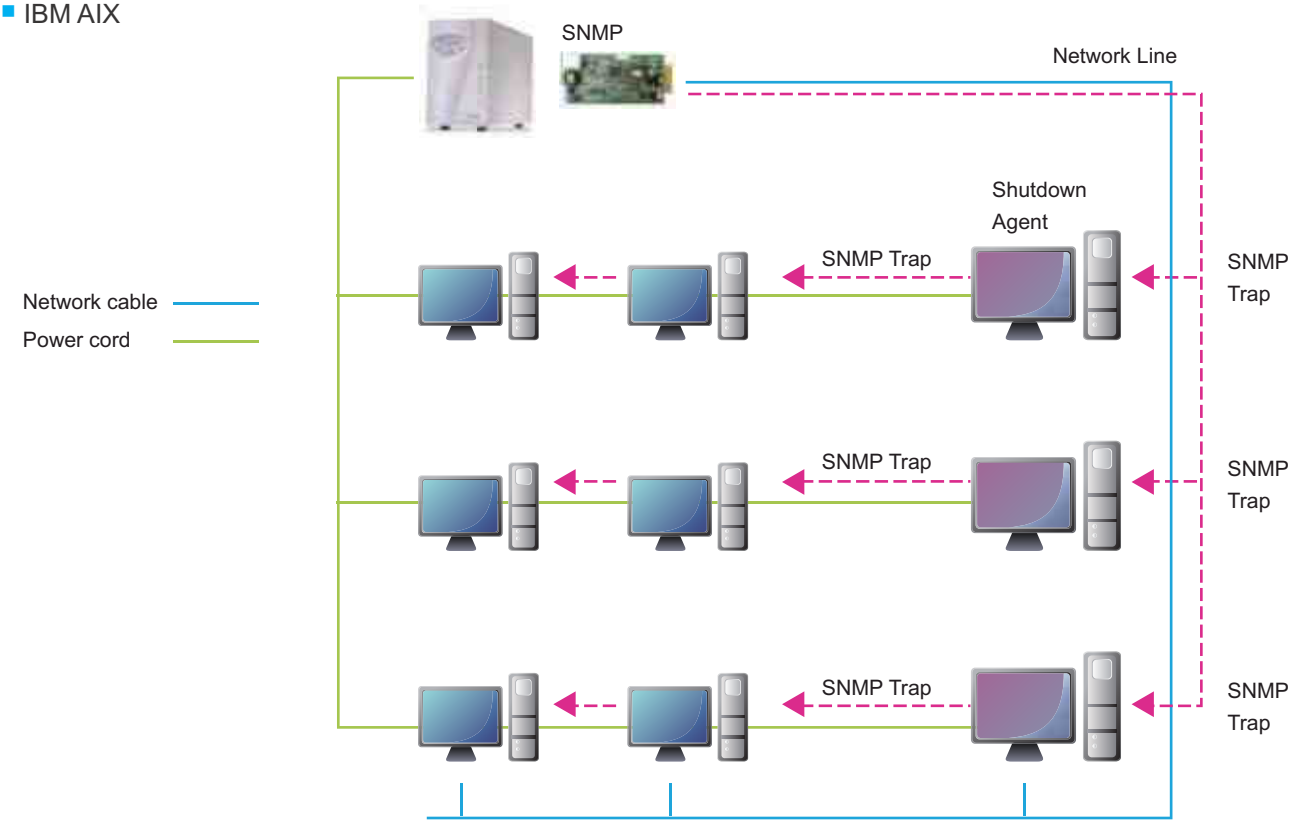
Shutdown Agent

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
- Free BSD
- Sun Sparc and x86
- HP-UX
- IBM AIX



Technical Specifications

VX Series, Single Phase

Model		VX-600
PowerRating		600VA/360W
Input	Nominal Voltage	230 Vac
	Voltage Range	140 ~ 300 Vac
	Line Conditioning	Buck: 255 ~ 300 Vac
		Boost 1: 170 ~ 195 Vac; Boost 2: 140 ~ 170 Vac
	Frequency	50 or 60 Hz (Auto-Detection)
Output	Voltage	230 Vac
	Voltage Regulation	± 10%
	Frequency	50 or 60 Hz (Auto-Detection)
	On-Battery Wave Form	Simulated sine wave
	Outlets	India type 5A x 3 (UPS x 2 + surge only x 1)
Battery	Type	12V/7Ah x 1, Lead-acid, Maintenance free
	Charging Time	4 ~ 6 hours recover to 90%
	Typical Backup Time	One set of PC: 15 minutes
DataLineProtection	Surge Protector	Network RJ45 (1 x in – 1 x out)
Environment	Operating Temperature	0 ~ 40ºC
	Relative Humidity	0 ~ 90% (non-condensing)
Physical	Dimensions (WxDxH)	100 x 287 x 142 mm
	Weight	4.25 kg

All specifications are subject to change without prior notice.

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Technical Specifications

E Series, Single Phase

Model		E-1K	E-2K	E-3K
PowerRating		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	IEC320 C14	IEC320 C20	IEC320 C20
	Voltage	230 Vac (single phase)		
Output	Voltage Regulation	± 2%		
	Frequency	50 or 60 ± 0.05 Hz		
	Transient Response	< 8% (10 ~ 90% linear load)		
	Voltage Harmonic Distortion	≤ 3% (linear load)		
	Overload Capability	105 ~ 125%: 3 minutes;		
		125 ~ 150%: 30 seconds; > 150%: ≥0.5 second		
	Receptacle	India type 10A x 2		
Battery	Rating Voltage	36 Vdc	72Vdc	72Vdc
	Charge Current	Built-in: 4A (adjustable)		
		Extra charger (optional): 4A (external installation)		
	Electrical Connection	Terminal block		
Interface	Standard	RS232 x 1, Smart slot x 1		
Conformance	Safety & EMC	CISPR 22 Class A		
OtherFeatures	AC-start & Battery-start	Yes		
	External Battery Pack	Optional		
Efficiency	AC-AC	> 87% (full load)		
Environment	Operating Temperature	0 ~ 40°C		
	Relative Humidity	0 ~ 90% (non-condensing)		
	Audible Noise (at one meter)	45 dBA	54 dBA	54 dBA
Physical	Dimensions (WxDxH)	140 x 362 x 267 mm		
	Weight	5 kg	7 kg	7 kg

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

N Series, Single Phase

Model		N-1K	N-2K	N-3K
PowerRating		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		
OtherFeatures	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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Technical Specifications

R Series, Single Phase

Model		R-1K	R-2K	R-3K
PowerRating		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)
	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
			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		
OtherFeatures	Rail Kit	Included		
	Tower Stand Kit	Optional		
	Data Line Protector	Optional		
Efficiency	AC-AC	> 87% (full load)		
Environment	Operating Temperature	0 ~ 40ºC		
	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

IN Series, Single Phase
1-3kVA

Model/Rating*		1kVA / 800W	2kVA / 1600W	3kVA / 2400W
Input	Nominal Voltage	230 Vac (single phase)		
	Voltage Range	80 ~ 280 Vac (full load) **		
	Frequency	50 or 60 ± 5 Hz		
	Power Factor	≥ 0.97		
	Electrical Connection	Input terminal block		
Output	Voltage	230 Vac (single phase)		
	Voltage Regulation	± 1%		
	Frequency	50or60 ± 0.05 Hz		
	Transient Response	< 4% (10~ 90% linear load)		
	Voltage Harmonic	≤ 2% (linear load)		
	Overload Capability	125% for 3 minutes 150% for 30 seconds		
	Crest Factor	3:1		
	Waveform	Pure Sine Wave		
	Receptacle	India type 5A/5-pin x 2 nos. Output terminal block		
Isolation	Galvanic Isolation Transformer	Provided as standard in UPS at input/output (configured as per customer requirement)		
	Rated Voltage	36 Vdc	72 Vdc	
	Charger Capacity	Standard built-in: 4A (adjustable) Additional built-in: 1kVA ~ 4A, 2/3kVA ~ upto 8A External charger: In steps of 4A (as per backup requirement)		
	Electrical Connection	Battery Terminal Block		
Display	LED	Online, Bypass, On-battery, Overload, Battery low, Fault Replace battery, Battery level, Load level		
	LCD	Input / Output (Voltage, Frequency), Output load kVA / kW Battery voltage, Battery charge / discharge current		
Interface	Standard	RS232 x 1, Smart Slot x 1		
	Management Peripherals	Mini SNMP card, Mini ModBus card, Mini relay I/O control card, Mini USB card, Mini TVSS card		
Conformance	Safety	EN62040-1-1		
	EMC	CISPR ClassA		
Others	Battery-start	Yes		
	AC-start	Yes		
	External Battery Pack	Optional		
	Maintenance Bypass	Optional		
Overall	Efficiency (AC-AC)	> 85% (full load)		
	Temperature	0 ~ 4 5ºC		
	Relative Humidity	0 ~ 95% (non-condensing)		
	Audible Noise (at one meter)	54 dBA		
	Dimensions (WxDxH)	225 x 425 x 400 mm	225 x 500 x 527 mm	
	Weight	25 kg	40 kg	45 kg

* Rated output at 25º C ** Lower range 80 ~ 176 Vac is acceptable under 50 ~ 100% loading condition. Customise variants can be offered against specific customer requirements. Product Developement is continuous process and all specifications are subject to change without prior notice.

Friendly LED Display

1 kVA Rear View

2 and 3 kVA Rear View

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Technical Specifications

RT Series, Single Phase

Model			RT-5K	RT-6K	RT-10K
PowerRating			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		
OtherFeatures		Parallel Redundancy	1+1		
		Remote Control	REPO; Remote On/Off		
		Common Battery Installation	Yes		
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
		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
		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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Technical Specifications

J Series, Single Phase Three Phase

11kVA

Model		J11K (3:1)
Capacity Input	11kVA/7700W	
Input		
	Rated Voltage	380V, 400V,415VAC,30
	Voltage Range	208V-288VAC (60% Linear De rating)
	Rated frequency	50Hz/ 60Hz
	Frequency range	±0.5, 1,2, 3, 4, 5Hz (Programmable)
	Power factor	>0.95
Output	Rated Voltage	200V, 208V, 220V, 230V, 240V (User selectable)
	Frequency	50Hz/ 60Hz
	Voltage Regulation	±2%
	Frequency Accuracy	±0.05Hz (Free Running)
	Wave Form	Pure Sine Wave
	Overload Capacity ⩽	102% continuous, 102-125% 1 Minutes, 125-150% 30 Seconds, 150% immediate
	Crest Factor	3:1
	Efficiency	92% (Overall): 97% (Eco Mode)
Battery	Battery Voltage	240VDC
	Battery Type	Sealed Maintenance Free Lead Acid
User Interface	LC Display	Yes (Rotating), 16*2 Character Display
		Normal, Battery, Bypass, Fault
	Audible	Alarm
	D89	Standard RS232, DRY contact
	SNMP	Internal (Optional)
Environment	Noise (At 1 meter)	<55dBA
	Operating Temperature	0-40®C/ -32F- 104F
	Ambient Temperature	-20C- 40®C/-32F- 104F
	Humidity	5-95% (Non condensing)
	Operating Elevation	0-3000 Meters
Safety Approvals		UL 1778, CSA 222-107, FCC Class A, IEEE C6241
		Category B EN50091-1-1, EN 50091-2 Class A
		EN 61000-4-2 level3, EN 61000-4-3 level 3, EN 61000-4 IEEE C6241
		4 level 4, EN 61000-4-5 level 4, CNS 13438 Class A Category B
Others	Battery Start	Yes
	Extended Battery Bank	Yes
	Bypass	Manual & Static
Physical	Dimension (W*D*H)	444.5 x 563.3 x 130.6
	U Height	3U
	Weight	27kg

Back Panel

Rotatable LC Display

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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
PowerRating-kVA			15	15	20	20	30
PowerRating-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				
OtherFeatures		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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Technical Specifications

NT Series, Three Phase

Model			NT-20K	30K	40K	50K	60K	80K	100K	120K	160K	200K	260K	320K	400K	500K
PowerRating-kVA			20	30	40	50	60	80	100	120	160	200	260	320	400	500
PowerRating-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 Distortion		< 3% (with optional rectifier or filter, full load)													
	Frequency		50 or 60 Hz ± 5Hz													
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 Distortion		≤ 3% (linear load)													
	Voltage Regulation		± 1% (static)													
	Frequency		50 or 60 Hz													
	Frequency Regulation		± 0.01% (interior oscillator); ± 1% (synchronized)													
	Overload Capability		≤ 110%: 60 minutes; 110 ~ 125%: 10 minutes; 126 ~ 150%: 1 minute													
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													
Efficiency	AC-AC	%	90	91		91.5		92		92.5			93			
	ECO Mode	%	>97	>97.5												
Environment	Operating Temperature		0 ~ 40ºC													
	Relative Humidity		0 ~ 90% (non-condensing)													
	Audible Noise (at 1.5 meters)	dBA	≤ 60			≤ 65					≤ 68		≤ 72			≤ 77
Physical	Dimensions ** Width	mm	600						800		1200		1600			1900
	Depth	mm	800						830		830		995			995
	Height	mm	1400						1700		1700		1950			1950
	Weight ***	kg	365	365	425	460	506	525	700	745	1050	1085	1680	1720	1920	2410

* 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).
All specifications are subject to change without prior notice.

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Technical Specifications

DPS Series, Three Phase

Model		DPS-160K	DPS-200K
PowerRating-kVA		160	200
PowerRating-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	
OtherFeatures	Parallel Redundancy & Expansion	Yes (up to 8 units)	
	Emergency Power Off	Yes (local and remote)	
Physical	Dimensions (WxDxH) UPS	850 x 865 x 1950 mm	
	Dimensions (WxDxH) UPS with Transformer	1400 x 865 x 1950 mm	
	Weight UPS	697 kg	
	Weight 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.
All specifications are subject to change without prior notice.

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Technical Specifications

NH Plus Series, Three Phase

Model			NHP-20K	NHP-40K	NHP-60K	NHP-80K	NHP-100K	NHP-120K
PowerRating-kVA			20	40	60	80	100	120
PowerRating-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					
OtherFeatures		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					
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	
		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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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.

Powerissue	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?

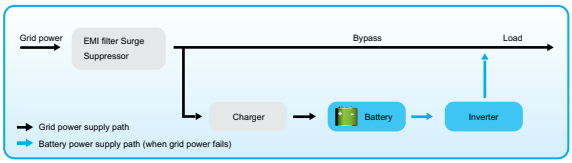
A There are three types of UPS: Off-Line On-Line and Line-Interactive.

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.

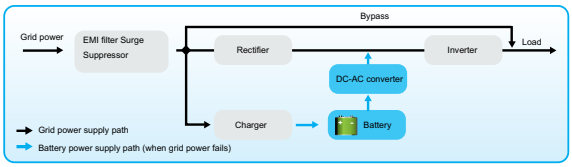


Q What is an On-Line UPS?

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.

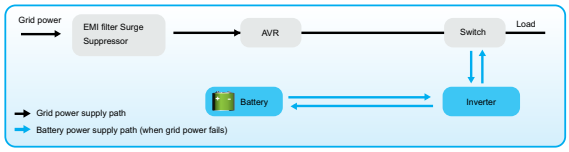


Q What is a Line-Interactive UPS?

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.

Delta Power Solutions (India) Pvt. Ltd

Client List: Delta UPS from 600VA to 4000kVA is installed at various locations all across India in major organizations and serve diversified industries:

Automobile Industry: Amtek Auto Limited, Federal Mogul Goetze Infia Ltd, International tractors, Overseas Business Corporation, Sona Koyo Steering Systems Limited, SPM Autocomp System Pvt. Ltd, Spray Technics, Mitsubishi Electric Automotive India Pvt. Ltd, etc.

Animation Industry and Media: HT Media Ltd, Department Of Post India, Basking Lions Animation Pvt Ltd, DQ Entertainment International Pvt. Ltd, Reliance Media Works Ltd etc.

BFSI: Bank of Baroda, Banking ATM Infrasolutions Ltd, ICICI Bank, Rentworks India Pvt Ltd, Stock Holding Corporation, Tata Communications Banking etc. Reserve Bank Of India, National Insurance Co. Ltd

Construction Industry: Ambuja Cement Ltd, Gujarat Ambuja Cement, IVRCL Infrastructure and Projects Ltd, Paharpur Cooling Towers Ltd, Navayuga Engineering Company Ltd, Gurind Glass Pvt Ltd, Anant Raj Industries Ltd, SVS Propmart Pvt Ltd etc.

Education: Indian Institute Of Technology, Central Institute of Post Harvest Engineering & Technology, Central Salt & Marine Chemicals Research Institute, CF Health Solutions Pvt Ltd, CHA Engineering & Construction Pvt Ltd, CMR Institute of Technology, CMR Jnanadhara Trust, CMR National Public School, Govt. Medical College, Indian Agriculture Static Research Institute, Indian Institute of Science, Indo American Cancer Institute & Research Center, Institute Of Himalayan Bioresourse Technology, Kendriya Vidyalaya Sangathan, Proudhadevaroya Institute of Technology, Rotary publics School etc.

Electrical Industry and Manufacturers: Aggressive Electronic Manufacturing Services Pvt. Ltd, Airkom Electronics Pvt. Ltd, Celltech India Pvt. Ltd, Cords Cables, Cosmic Micro Systems Pvt. Ltd, Datex Electronics Private Ltd, Delta Energy Systems (Brazil) S/A, Delta Technologies, Efftronics Systems Pvt Ltd, Electro Plast, Enertech UPS Pvt Ltd, Epsilon Energy Controls Pvt Ltd, Gandhi Infotech Pvt Ltd, HBL Power Systems Ltd, ICSA India Ltd, Indotech Industrial Solutions Pvt Ltd, Ishani Electronics Pvt Ltd, Kartik Electronics, Lam Power Technologies, Marathon Electric India Pvt Ltd, Microampere Technologies, Philips Electronics India Ltd, Nano Electrotech Pvt Ltd, Pinnacle Industrial Contrls Pvt Ltd, Powergun Systems Controls Pvt Ltd, Prachiths Infotech Marketers, Prompt UPS Sales & Services Pvt Ltd, Sahara Electronics Pvt Ltd, Samsung India Electronics Pvt Ltd, Sar Silicon Electronics India Pvt Ltd, Servomax India Limited, Servotech Power Systems Pvt Ltd, Sinetron Power Ltd, Vivitar Electronics, Xsis Power Systems Pvt Ltd, Zenelec Power System Pvt Ltd, Shilp Gravures Limited, Techno Doors Pvt Ltd etc.

Government: Airport Authority of India, National Insurance Company Limited, Border Security Force, Central Reserve Police Force, Headquarters Eastern Command, Indian Navy Services, Jammu & Kashmir Light Infantry Regimental Centre, Integral Coach Factory, Indian Coast Guard etc.

Hospital & Health Care: Apollo Hospital Enterprises Ltd, Dr Lal Path Labs Pvt Ltd, Lifecare Hospital, NU Hospitals, Shree Moolchand Khairati Ram Hospital, MYLAN, Vijaya Diagnostic Center Pvt Ltd etc.

IT/ ITes: Aargee Equipments Pvt Ltd, Bartronics India Pvt Ltd, CMS Computers Ltd, Department Of Information Technology, DIAC Services, Electro Sales Corporation, HP India Sales Pvt Ltd, HCL Comnet Ltd, IBM Daksh Business Process Services Pvt Ltd, Immence Technologies Ltd, Millenium Automation & System Ltd, Online IT Solutions Pvt Ltd, PCS Technology Ltd, Powerview Technologies, Prime Ki Software Solutions Pvt Ltd, SDS Power Technologies Pvt Ltd, Spanco Ltd, Byond Global Outsourcing Pvt Ltd, Tacket Technologies Ltd, Telserra India Pvt Ltd, Wipro India Ltd, Wise Men Consulting Service India Pvt Ltd etc. Amazon Development centre (India) Pvt Ltd. Amazon Seller services Pvt Ltd., NEC

Oil and Energy Industry: APS Technologies, Gas Authority of India Ltd, Oil and Natural Gas Corporation, India Petrochemicals Pvt Ltd, Reliance Industry Ltd, Samsung Engineering India Pvt Ltd, Windlass Engineers & Services Pvt. Ltd etc.

Pharmaceuticals Industry: Aptuit Laurus Pvt Ltd, Ashco Niulab Industries Ltd, Coronet Labs Pvt Ltd, Dr Reddy Laboratories Ltd, Labindia Instruments Pvt Ltd, Ogene Systems India Pvt Ltd, Sutures India Pvt Ltd, Suven Nishtaa Pharma Pvt Ltd, Mylan Laboratories Limited, Matrix Laboratories Limited, Gvk Bio Sciences Pvt. Ltd, Bigtec Private Limited, Bharat Biotech International etc.

Plastic & Polymer Industry: Arihant Poly Packs Ltd, Everest Polymers Pvt Ltd, Everest Vinyl Pvt Ltd, Kunnathan Polymers Pvt Ltd, Saffire International, Veekay Polycoats Ltd etc.

Suppliers & Manufacturers: Amco India Ltd, Sterlite Technologies Ltd, Auric Communication Pvt Ltd, Balkrishna Industries Ltd, Bhole Baba Diary Industries Ltd, BMW Industries Ltd, BPE India Pvt Ltd, Gujarat Cables and Enamelled Products Pvt Ltd, Halgona Radiators Pvt Ltd, New Holland Tractors India Pvt Ltd, Paliwal Exports, Pulraj Electronics Pvt Ltd, Siemens Public Communications Network Pvt Ltd, Sara Sae Pvt. Ltd etc.

Textiles: V-Tex Overseas Pvt Ltd, Kurshang Apparels Pvt Ltd, Weavetex Overseas, Xinda Non wovens, Wool Worths Wholesales India Pvt Ltd, Guru Kirpa Tex Fab, Aditya Nonwoven Fabrics Pvt. Ltd etc.

Telecom Industry: Vodafone India Pvt Ltd, Samsung Telecommunications India Pvt Ltd, Tata Teleservices, Aditya Birla Telecom Ltd, Aircel Cellular Ltd, Aircel Ltd, Alcatel Development India Pvt Ltd, Alcatel Lucent India Ltd, Bharat Sanchar Nigam Ltd (BSNL), Bharti Airtel Ltd, Bharati Cellular Ltd, Bharti Hexacom Ltd, Bharti Infratel Ltd, Bharti Tele Ventures Ltd, BPL Mobile Cellular Ltd, Commtel Networks Pvt Ltd, Ericsson India Pvt Ltd, Huawei Telecommunications India Co Pvt Ltd, Idea Cellular Ltd, India Mobility Reseach Pvt Ltd, Indus Towers Ltd, Mars Associates Pvt Ltd, Microqual Techno Pvt Ltd, Motorola India Pvt Ltd, Nokia Siemens Networks Pvt Ltd, Ortel Communication Ltd, Radius Synergies Pvt Ltd, Railtel Corportation Of India Ltd, Reliance Corporation of India Pvt Ltd, RN Infratech, Sistema Shyam Teleservices Ltd, Shyam Telecom, ZTE Telecom India Pvt Ltd, Viom Networks Ltd etc.

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