

3 & 5 kVA SINGLE PHASE

UltraUPS

Uninterruptible Power Systems

SERIES 21C

Designed For The 21st Century
Digitally Controlled – On-Line Double Conversion
3 & 5 kVA Single Phase Sizes
Modular or Rackmount Configurations

Applications:

- Midrange Computing
- Telecommunications
- Industrial Automation
- Instrumentation and Testing
- Emergency Lighting
- Medical



CONTROLLED POWER COMPANY

"World's recognized authority in power treatment"

POWER PROBLEMS

UltraUPS SERIES 21C



Power—Your Lifeline

In the Digital Age, the need for reliable, clean power has never been greater. Your company depends on electronic commerce as a bond to your customers for sales orders, customer inquiries and technical questions. Imagine the power goes out. Suddenly you are cutoff from your lifeline (the power), drowning without a lifeboat. Sales orders are not recorded, orders are not shipped on time, customers' technical questions go unanswered, and invoices are not sent. If you cannot service your customers, who will...your competition? This is just one of many scenarios that disastrous power outages produce without proper electrical protection.

To keep your competitive advantage in business today, your company must run at peak efficiency. The pursuit of optimum efficiency exponentially increases the number of computers and sensitive electronic equipment in all critical aspects of business. As these mission-critical electronic systems move out of the computer room and into all areas of your business, they have become much more susceptible to the severe chaos of a power outage.

Loss of electricity is not the only power related problem that affects business. Other power disturbances such as sags, surges, voltage fluctuations, and brownouts occur on a daily basis. These power problems are just as costly over time as a power outage. In addition, electric utility industry forecasts indicate declining power quality in the future. This forecast, combined with the

proliferation of electronic equipment in all areas of your facility, plays havoc on your overall power quality. While modern systems are tolerant to occasional electrical disturbances, your risk increases daily as power quality declines. You may already be noticing some of these symptoms:

- System restarts
- Lost or unreadable data
- Computer lockup
- Shortened equipment or component life
- Excessive maintenance

Partial Solutions

Everyone has a solution to power problems. On the market today, there are surge suppressors, voltage regulators, power conditioners, standby and line-interactive uninterruptible power systems (UPS). The "quick fix" solution applied to most power problems is usually surge suppression. Assuming your power problems are confined to line noise, then surge suppressors may be all that is needed. Unfortunately, surge suppressors will do nothing for fluctuating voltages, power outages, brownouts, and ground noise which bring their own chaotic misery to your operation's profitability. Standby and line-interactive UPS's at best are nothing more than surge suppressors with batteries. Some may include one or two taps that only correct fluctuating voltages within the CBEMA Curve (130v - 104v). This falls short of the tolerances of most of today's sensitive electronic equipment. On the other hand, premium power conditioners take care of virtually all power problems. They retain tight voltage regulation, great common mode noise attenuation, and superior brownout protection. However, they cannot give you extended power outage protection.

Any of these technologies can begin to resolve power problems; although some are a long way from the total solution your mission-critical applications deserve.

Attributes For A Total Power Quality Solution

A UPS should have both performance-driven attributes and unparalleled versatility. The right UPS will grow with your application, have multiple uses, protect your operations, and be user-friendly.

Look for these features on your UPS system:

Performance-Driven Attributes:

- On-Line Double Conversion Technology
- N+1 Battery Redundancy
- Automatic Static Bypass
- Secure Maintenance Bypass
- $\pm 1.5\%$ Voltage Regulation
- +15%, -50% Input Voltage Range*
- Automatic Battery Extension Cutoff
- Input Power Factor Greater Than .99
- Input Current THD Typically Less Than 5%
- Less Than 3 Hour Battery Recharge Time**

Versatility:

- 120v to 600v Standard Input Range
- Field Modifiable Receptacles
- Standard: Plug and Hardwired
- Serial Communications (RS232)
- Hot Swap Battery Modules
- Modular Design
- Flexible Distribution Capability

The features and attributes of the UltraUPS propel total power protection into the 21st Century.

* @ 35% load ** based on 100% load for 30 minutes

THE TOTAL POWER SOLUTION

UltraUPS - The 21st Century's UPS

Controlled Power Company has engineered and manufactured power treatment products for over a quarter century. The UltraUPS Uninterruptible Power System continues this product legacy. Being a true on-line UPS, the UltraUPS provides a seamless transition to battery power during an electrical power outage. With its totally digital high-frequency design, the UltraUPS offers unprecedented accuracy and speed of correction through its IGBT power circuitry that even the most demanding customers appreciate.

UNIVERSAL APPLICATION MODULARITY

Unparalleled flexibility was the challenge for the designers of the UltraUPS. They started by making the UPS modular so the user could opt for extended battery runtime, configurable distribution panels, an isolation transformer, or all three. No tradeoffs. Whether the application calls for the UltraUPS to be stacked on the floor or configured in a rack; no compromises need to be made. The UltraUPS is especially flexible regarding its physical environment by being quiet enough for the front office and rugged enough for the industrial plant floor. Whatever your application may be, the UltraUPS is a total cost-effective solution. Mission accomplished!

Modules

The core of the UltraUPS's flexibility is its modularity. A complete unit consists of the control module, distribution module, and battery modules. Additional battery modules can be connected to increase battery runtime. All modules are easily linked together with daisy-chain connectors for easy installation in the field. For additional convenience, each module is lightweight so it can be shipped overnight for quick delivery.



The **control module** is the brains of the UltraUPS. Besides the full-featured monitoring system and multiple programmable features, the totally digital, double conversion unit continually takes the input power and recreates an entirely new true sinewave for the load. Additionally, the standard automatic static bypass switch assures your equipment is never without power.



The **distribution module** is an integral part in the overall power package. In a single matching enclosure, it provides user-configurable electrical distribution, an optional make-before-break wrap-around maintenance bypass switch, and a voltage matching transformer. The automatic and maintenance bypass systems are pre-configured and pre-wired to your voltage requirements.



There would be no UPS without batteries. The UltraUPS **battery module** houses the smartest battery management system in the industry. The Fuzzy Battery Intelligence System™ continually monitors the input voltage and the percentage of load to determine the optimal point to use battery power. After restoration of AC power, the Smart Charging rapidly recharges the batteries efficiently back to full power.



SYSTEM DESCRIPTION

BATTERY MANAGEMENT SYSTEM-WE DO IT SMARTER

Batteries are the life line of a UPS and the key to the uptime of your systems. Getting the greatest performance from your batteries requires knowing when to use the batteries, how low to discharge, and how to properly charge the batteries to quickly regain the stored energy for the next emergency. Controlled Power Company looked at what others offered in battery management systems and decided to do it smarter and better.

Fuzzy Battery Intelligence System™

Most UPS systems switch to battery at a fixed input voltage which causes premature battery usage. The UltraUPS **Fuzzy Battery Intelligence System™** logically determines the optimum input voltage point to transfer to battery. This preserves battery power during deep brownout conditions while maintaining tight $\pm 1.5\%$ output voltage regulation. Dependent upon load, the UltraUPS can go as low as 50% below nominal voltage before resorting to battery power, thereby prolonging battery life.

Other advantages of the Fuzzy Battery Intelligence System™ are the manner in which it analyzes the rate the batteries are discharged and the automatic adjustment of the cutoff voltage. Fuzzy Battery Intelligence calculates the discharge characteristics and automatically sets the cutoff to the optimum voltage. This guarantees the longest runtime from your batteries possible, providing you with that extra back-up time needed during power outages.

Smart Charging

Bringing batteries back to life quickly after a power outage is essential to the security of your operation. Charging them too fast will destroy the batteries; charging too slow may destroy your operation. The UltraUPS's powerful 720 watt **Smart Charging** works in conjunction with the N+1 redundancy feature, providing distinct benefits. The Smart Charging identifies the battery modules, and automatically sets the charge to the highest rate recommended by the battery manufacturer. The higher the N+1 redundancy, the lower the recharge/discharge ratio. These benefits work together to bring the batteries to full charge 2.5 times faster than the competition. Now there is no need to wait 4 to 6 hours to complete recharging. The powerful battery charger in the UltraUPS can recover discharged batteries to 90% in a little over one hour!

Batteries are an essential part of any UPS. Proper care of these batteries is a must to prolong their life and protect your valuable operation and data. A smart UPS should do this for you. The UltraUPS is the only UPS with the Fuzzy Battery Intelligence System™ and Smart Charging which are designed to take special care of your mission-critical operations.

Back up Time in Minutes

		UB1012 Battery Module			
		Load	Number of Modules		
			1	2	3
3 kVA	100%	14	35	60	
	75%	23	50	90	
	50%	40	90	150	
	25%	90	180	320	

		UB1007 Battery module			
		Load	Number of Modules		
			1	2	3
3 kVA	100%	6	19	36	
	75%	10	28	50	
	50%	19	50	100	
	25%	45	110	180	

		100%	20	35
5 kVA	75%	10	28	45
	50%	15	45	80
	25%	45	110	160

N+1 Run Time Modules

A universal truth for all UPS systems is that battery backup is only as strong as the weakest link. The UltraUPS transforms this fact into a decided advantage. The design of the battery module furnishes an N+1 redundancy with the use of two or more battery modules. This offers your application N+1 security while providing a crucial by-product of extended battery runtime. Extended run times are available up to 72 hours.

Hot-Swap Battery Modules

The UltraUPS features **hot-swap battery modules**. The battery modules are simple to change with daisy chain connectors. Just plug the battery module into the module on top of it, and you're off and running. No additional floor space is necessary. The battery modules are stacked on each other, and come pre-wired with their own quick plug-in connector and cable. Changing batteries has never been so easy. The UltraUPS stays on-line, so your equipment remains protected.



Stack or Rack

Separate UPS systems for floor and rackmount installations are no longer required. The UltraUPS stack modules fit directly into standard 19" rack cabinets with minimum modification. Simply mount the optional slide hardware to the modules. Rack guides provide the drawer-like action to easily insert or retract the module from the rack assembly to gain easy access to the unit.

TOTAL POWER SECURITY

True On-Line—Double Conversion with Static Bypass

The UltraUPS's **true on-line double conversion topology** supplies the load directly from the inverter. This is the only UPS topology that offers seamless, no break transfer to battery operation, because the inverter carries the load 100% of the time. Line interactive, double redundant or standby systems simply cannot provide the reliability of double conversion technology. Because the double conversion system reproduces its own regulated sinewave output, the load is no longer at the mercy of the input distortions and frequency variations. A true on-line, double conversion UPS is the only system that provides 100% reliability.

Wide Range of Voltages

All applications are not created equal. When a site must be rewired to meet the needs of the UPS, both time and money must be invested. Once the time and money are spent to rewire, they cannot be recouped if relocation of the UPS becomes necessary in the future. The investment then becomes wasted.

The distribution module offers an extremely wide selection of input voltages, providing an exact voltage match to your site. Whether on the plant floor, in the office, or at a remote site, the UltraUPS connects directly to the voltage available. It is no longer necessary to spend an inordinate amount of time and money to reconfigure your electrical system.

The UltraUPS system handles standard input voltages from 120v to 600v.

Input Power Factor Correction with Less Than 5% THD

The UltraUPS goes beyond the traditional double conversion UPS. The advanced bi-directional input power factor correction circuitry and independently generated sinewave reference, guarantee that the input current is free of harmonics regardless of input voltage distortion.

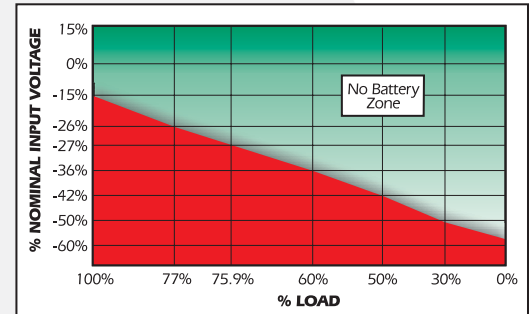


User-Friendly Full Monitoring Features

The UltraUPS monitoring system comes fully featured with the following functions: self test diagnostics, auto battery test, audible alarms, protected on/off switch, and a push-to-test. The UltraUPS also has a full complement of indicators that include: percent load, percent line voltage, on battery, percent of battery, replace battery, bypass status, and alarm.

Fuzzy Ranging™

Fuzzy Ranging™, a patented technology solution, uses fuzzy logic to automatically broaden the input operating range as a function of load. This feature provides added security during deep brownout conditions, without battery consumption. Fuzzy Ranging assures the batteries will be at full capacity for a real emergency...a power outage.



Secure Maintenance Bypass System

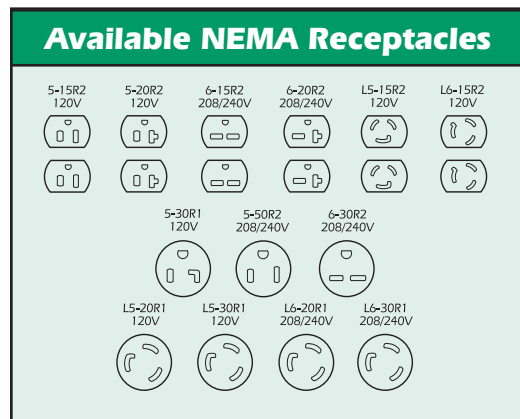
Maintenance bypass systems insure that critical loads are never disrupted during maintenance or in any emergency situation. Traditionally, maintenance bypass switches are activated manually; connecting the critical load directly to an alternate power source without synchronization. Activating an out-of-sync bypass drops or damages the load and causes damage to the UPS. The **"Secure Bypass System"**, exclusive to the UltraUPS, automatically invokes a synchronization command that forces the UPS to activate the static bypass first, and displays a "safe-to-continue" signal before continuing to maintenance bypass mode. The "Secure Bypass System" feature comes standard with all maintenance bypass systems in the distribution module. The UltraUPS brings large system UPS features to mid-sized applications.



SPECIAL FEATURES

Field Modifiable Connections

The UltraUPS is quickly and easily modifiable in the field. The control module comes standard with a main output breaker, premium twist-lock power cord connector, and a hardwire terminal strip. Each module installs easily in the field without the need for an electrician. The user can plug their loads directly into the UltraUPS's distribution module using an assortment of receptacle configurations, or they can hardwire the unit into their facility's electrical distribution system. Either way, your UltraUPS is up and protecting your load in no time at all.



Computer-Grade Power Conditioning And More

The specially designed **computer-grade isolation transformer**, available in the distribution module, defends your equipment from spikes, transients and detrimental effects of common mode noise. The transformer generates a new ground for your system; maintaining the integrity of a clean, noise-free reference for your critical loads. Installations are simplified. The transformer converts 4 wire input requirements to 3 wire, which eliminates the need to re-wire and also maintains the typical plug configurations consistent throughout your system.



High Efficiency

An efficient UPS is essential to long-term energy cost savings. The total design of the UltraUPS is conducive to low cost of ownership and is validated by its high efficiency rating.

Designed with Multiple Server Handling Protection Capability

Space in the office and on the plant floor is scarce. Because of this, centralized power protection is an increasingly popular alternative to a one-to-one equipment power protection scheme. Whether you need to protect a single piece of equipment or a whole cluster of computers, the UltraUPS handles your application. The UltraUPS's centralized protection assures the benefits of true power conditioning, online technology, and lower cost of ownership.

Overnight Service with Modular Exchange

Whether you need another battery module for extended runtime or need to exchange any module for service, Controlled Power Company delivers it to you overnight. With the UltraUPS, just plug it in without missing a beat.

PROGRAMMABLE FEATURES

Many programmable functions allow the user to tailor the operations specific to their needs:

Auto-Restart

Following a long term outage, the UltraUPS automatically restarts, supplies power to the load, and begins to charge the batteries. Some situations mandate that the operator manage the power-up sequence. In these cases, the operator can select "Manual Restart" from the programmable features.

RS232 Protocol

Communications made to order. The UltraUPS delivers system status and operating parameters in user-friendly ASCII delimited code. With the flip of a DIP switch, the RS232 converts to an advanced protocol, providing graphic monitoring and MIB II compliant SNMP.

Simultaneous Communications

The powerful communication ability of the UltraUPS provides the means to function throughout all layers of the communication protocol decodes. Its unlimited connectability to multiple servers as well as platforms, while simultaneously providing auto-dial, remote alarms, early battery warning and power administration, make it the UPS for the present and future. No upgrades needed; they are all there.



DataGuard Advanced

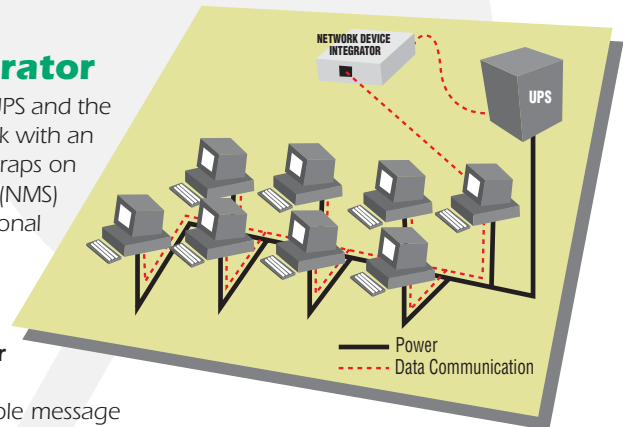
DataGuard Advanced is a feature-rich unattended operating system shutdown software package. Each computer which has DataGuard Advanced installed, is capable of successfully shutting down that computer's operating system. DataGuard Advanced is also capable of shutting down other servers connected to the network, without the need for expensive hardware. A Java-enabled web browser interface displays the alarm status and system settings. In the event of an alarm condition, DataGuard Advanced notifies the system administrator via e-mail or "SMS / mobile phone messaging".

Other user-definable features include:

- Timers and broadcast messages
- Monitors up to four different alarm conditions
- Internet monitoring capability
- "Master" and "Slave" configurations
- All communications performed by software, no additional hardware required
- Supports most major operating systems

"NetCom TH"™ SNMP — TCP / IP UPS Network Device Integrator

The "NetCom TH"™ is a communications interface between the UPS and the network which enables the UPS to become a node on the network with an exclusive IP address. The "NetCom TH"™ sends the UPS signals as traps on the network. Traps are viewed via a Network Management Station (NMS) or a server running the DataGuard Advanced software. An optional temperature and humidity sensor is available.



Automatic Message Dialer

When the utility power fails, the **Automatic Message Dialer** will call and leave a pre-recorded voice message.

- Dials up to three numbers and announces a user-configurable message
- Automatically dials on LOW BATTERY or ON BATTERY

Remote Annunciator

The **Remote Annunciator** is used for applications where the UPS will be installed in an area outside the computer room or outside the operator's visual range.

Monitors UPS status for:

- General Alarm
- System On Battery Power
- Bypass Active
- Impending Shutdown

Multi-Interface Unit – MIU 4

The **MIU 4** allows up to four different contact closure devices to be controlled from one UPS. Therefore, the UPS can communicate with a "NetCom TH"™, Automatic Message Dialer, and a Remote Annunciator without needing three additional computer ports.

NetSwitch™ Power Administrator

The **NetSwitch™ Power Administrator** is a 20-amp network power controller, which allows a network administrator to manage power to remotely located network elements using SNMP, Telnet, or the Internet. Devices attached to the NetSwitch™ can be turned on / off from anywhere on the network. In the event of network failure, the NetSwitch™ is equipped with out-of-band modem access.

User-definable features include:

- Programmable logic which allows the network administrator to configure actions based on local events
- Network control via SNMP, Telnet, or the Internet
- Modem access
- Temperature and humidity sensing
- Programmable sequential power-up and power-down
- Dry contacts

Communications Interface

The **Status and Alarm Port** is used for network protection and unattended, automatic shutdown of most LAN / WAN operating systems.

The optional full duplex ASCII **RS/232 Serial Port** provides operating, performance, and diagnostic characteristics.

Computer display via Windows-compatible application software.

"NetCom TH"™ and NetSwitch™ are registered trademarks of Sinetica Corporation.

SPECIFICATIONS & PRODUCTS

PERFORMANCE SPECIFICATIONS 3kVA & 5kVA	
Type	On-Line Double Conversion
Output	Sinewave
Operating Frequency	60 Hertz \pm 2.5 Hertz
Voltage Input	1 ϕ 60 Hertz, 120, 208/120, 240/120
Input Voltage Range	Fuzzy Ranging +15% to -27% typical
Voltage Regulation	\pm 1.5%
Overload Rating	125% for 10 seconds, 1000% for 3 cycles
Efficiency	\sim 90%
Output THD	Typical 3% with linear load
Inrush Current	1/4 cycle, soft start
Input Current Distortion	Below 5%THD, 0.99pf
Back-up Time	10 minutes typical, up to 72 hours
Battery Charger	4 stage, Smart Charging, automatically adjusts to optimum charge rate
Surge Protection	Conforms to UL 1449 rating 330 volts; ANSI/IEEE C62.41 cat. B3 wave
Operating Temperature	-0°C to +40°C

Inverter Control Module							
Part #	Description	kVA	KW	Input	Output	Weight	Dimensions
UU3000	Inverter Control Module	3	2100	120	120	57 lbs	17"W x 21"D x 7"H
UU3240	Inverter Control Module	3	2100	208/120, 240/120		67 lbs	
UU5240	Inverter Control Module	5	3500	208/120, 240/120		67 lbs	
Battery Module							
Part #	Description	Battery Run-Time		Weight	Dimensions		
UB1007	Battery Module	See Chart on page 4		100 lbs	17"W x 21"D x 7"H		
UB1012	Battery Module			140 lbs			
Distribution Module							
Description		Weight			Dimensions		
Distribution Module		Without Isolation 42 lbs With Isolation 95 lbs			17"W x 21"D x 7"H		

STANDARDS

- Underwriters Laboratories CU/L 1778, 991, 544, 924, 1449
- FCC (Article 15 Cat. A)
- National Electric Code (NEC)
- National Fire Protection Association (NFPA Article 70)

CONTROLLED POWER PRODUCTS



THE ULTRA-K TRANSFORMER



THE POWER PROCESSOR



THE POWER PURIFIER

THE POWER COMMANDER Electronic Line Voltage Regulators

Series 900A
Single Phase—
15 kVA to 150 kVA
Three Phase—
15 kVA to 450 kVA

THE ULTRA-K TRANSFORMER K-Rated Isolation Transformers

Series 600K
Single Phase—
5 kVA to 25 kVA
Three Phase—
15 kVA to 500 kVA

THE POWER PROCESSOR Power Line Conditioners with Power Distribution

Series 700A
Single Phase—
5 kVA to 25 kVA
Three Phase—
6 kVA to 500 kVA

THE POWER PURIFIER Power Purification System

Series 800A, 800P1,
and 800P2
Single Phase—
250 VA to 25 kVA

THE POWER DELEGATOR Power Distribution Centers

Series 7000A
Three Phase—
10 kVA to 225 kVA

UNINTERRUPTIBLE POWER SYSTEMS

Series LTX, Series LT,
Series MD, Series HV
Single Phase—
400 VA to 25 kVA
Three Phase—
10 kVA to 150 kVA

Represented by:



CONTROLLED POWER COMPANY

"World's recognized authority in power treatment"

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