

7.5 kVA to 25 kVA

HV SERIES

Uninterruptible Power Systems

Designed to be used with linear or non-linear loads including:

- Distributive Networks
- Extensive LAN / WAN Systems
- Midrange Computing
- Information Technology
- CAD / CAM Systems
- Industrial Controls
- Computer-Controlled Manufacturing Systems



CONTROLLED POWER COMPANY

"World's recognized authority in power treatment"



Controlled Power Company engineers and manufactures the industry's highest quality power conditioning equipment, capitalizing on three decades of experience. We have an enviable reputation for quality, which is reflected in the design, workmanship, and performance of our products.

We provide the widest range of power equipment for regulating, conditioning, isolating, purifying, and distributing incoming electrical power. All products incorporate state-of-the-art technology, optimizing performance characteristics for various applications. Our products protect sensitive electronic systems from erratic operation and failure due to power line transients, noise, brownouts, sags, surges, and total power outages.

HV Series UPS

The overall function of the **HV Series** UPS's is to take polluted, fluctuating, and erratic electrical power that exists in all areas today and purify or replace it (in the case of complete power outages) with well-regulated, computer grade power.

The **HV Series** UPS's maintain electrical power to the critical load for approximately 10 minutes to several hours. The backup time is a function of the amount of battery reserve that is purchased with the system.



Features & Benefits

The **HV Series** products are designed to maximize backup time, protect your computer or critical load, and monitor all the key parameters of electrical power including a log of events.

Features include:

- Steady, Regulated Voltage to $\pm 3\%$ – Extends Equipment Life
- Highest Level Performance Sine Wave Output
- 100% Power Conditioning
- No-break, Continuous Power Provides Seamless Switching to Battery Backup
- Optional Extended Backup Time
- DataGuard – Optional Automatic Unattended Computer Shutdown
- Audible Noise As Low As 50dB
- Field Expandable Power Rating and Battery Run Time
- Eliminates Unwanted Harmonic Frequencies From Incoming Line
- >94% Efficiency – Proven Performance
- K-Factor 30 or More

HV Series Display Monitor & Diagnostics Provide System Status

LED's Provide System Status

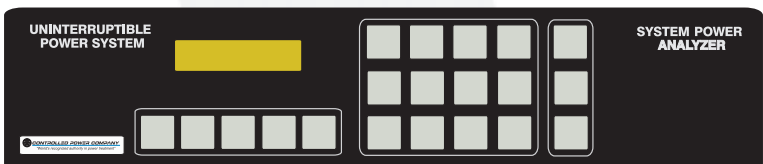
- Line Power ON (Green)
- Battery Charging (Green)
- Reserve Battery Power – 10 Segment LED Bar Graph (Red)
- Conditioned Power ON (Green)

Alarms

- On Battery Power
- Low Battery
- Charger Failure
- High Temperature
- Bypass
- Alarm Silence (Pushbutton)

Shutdown

- Battery Discharged
- Remote / Emergency Power Off
- DataGuard
- Over Temperature
- Manual Restart Required
- Manual Restart (Pushbutton)



Note: This illustration is an optional panel configuration for the HV Series. Actual panel configuration may vary.

SYSTEM DESCRIPTION

Total Power Security

Built-In Isolation

It is a common fact that isolation transformers provide electrical security for the load, eliminate electrical noise, and produce a new clean ground for digital and communication signals. All **HV Series** UPSs include a power purifying isolation transformer (not commonly found in 7.5 kVA to 25 kVA UPSs), which protects your equipment from the most damaging power disturbances. This standard isolation transformer offers the user a choice of input and output voltage selections: 120, 208, or 240.

Input Power Factor Correction With Less Than 10% Total Harmonic Distortion (ITHD)

The **HV Series** goes beyond the traditional UPS. Double magnetic conversion prevents damaging load-generated harmonics from backing-up into the utility lines.

User-Friendly Full Monitoring Features

The **HV Series** has a full complement of diagnostic indicators, including "Alarm" and "Shutdown" (see Page 2). Status LEDs include: Line Power ON, Battery Charging, Reserve Battery Power, and Conditioned Power ON.

Product Specifications:

Input

208 or 240 VAC at 60 Hz; 220 VAC at 50 Hz

Operating Range: +10% to -15% typical

Frequency Range: ± 2.5 Hz

Power Factor: Self-correcting to >0.95 (approaching unity)

Input Harmonics: $<10\%$ ITHD (Input Total Harmonic Distortion)

Spike Attenuation: 3000:1

Performance

Overload Capability: 125% for ten minutes

Surge Capability: 150% of rated output

Frequency Stability: ± 0.2 Hz

Inner Winding Capacitance: 0.01 picofarads (primary to secondary coupling)

Common Mode: 120 dB (10^6 : 1 ground noise attenuation)

Transverse Mode: 70 dB (3160 : 1 line noise attenuation)
(-3 dB at 1 kHz; -20 dB per decade)

Reactive Power Correction: Typical non-linear load corrected to $>.95$ at input (automatically self-correcting)

Output

Sine Wave Voltage: Typical 3% harmonic distortion, any single harmonic

At 60 Hz:

120 VAC; 120/208 VAC; 120/240 VAC

At 50 Hz:

220 VAC; 110/220 VAC

Crest Factor: 3.5:1

K-Factor: 30 or better

Power Factor: 0.7 switch mode rated

Harmonic Attenuation: Load generated harmonics are attenuated 400% at the input

Line Regulation: Typically $\pm 3\%$

Load Regulation: Typically better than $\pm 3\%$

Isolation: Galvanic isolation

Environmental

Isolation: NEC article 250-5d; complies with this standard that specifies a separately derived power source

Operating Temperature: 0°C to 40°C without derating in any mode

Storage Temperature: -20°C to 50°C

Relative Humidity: 95% non-condensing

Elevation: 5,000 feet, 1500 meters

Agencies

- IEEE 587 Category B Guide for surge suppression; exceeds by 33%
- ANSI / IEEE C62.41 and .45 Category A and B
- FAA - G - 201e power factor specifications
- CBEMA and ANSI C84.1; exceeds specifications and recommendations
- IEEE 519

MTBF

Total System: 100,000 hours

Transformer: 200,000 hours

Mean Time to Repair: Less than one hour

Safety

- U/L Listed 1778 Standard for UPS Equipment
- CSA Certified
- FCC Article 15, Section J, Class A, will not cause harmful interference with any other electronic devices.

HV10500 Guarantees Broadcasting Signal From Radio Stations

A major radio station was having difficulty remaining on-the-air due to extreme voltage fluctuations. This particular station broadcast 24 / 7, so "dead-air" was an enormous cost, as well as market-ratings loss. The station leased space in a multi-floor commercial office building. Power was distributed to two panels — one handled the on-air studio, newsroom, and the microwave link to the remote transmitter site; the other panel handled the advertising / commercials studio and the phone and voicemail network.

Because of space restrictions and in order to support both panels, all the loads were measured and evaluated separately. The HV10500 was installed to supply back-up power to existing applications and allow for any future expansion. The radio station was impressed with Controlled Power Company's solution. They referred their sister station with similar power problems to Controlled Power and another HV was installed there.

HV13000 Provides Back-up Power To Industrial Manufacturing Application

A steel galvanizing company's production was suffering from voltage regulation problems and periodic power outages. The critical component of their operation was a device that measured the thickness of the galvanization applied to the steel.

The unsurpassed voltage regulation, power conditioning, and battery back-up of the HV13000 was the perfect solution for their galvanizing operation. Productivity returned because the device was protected from any kind of power disturbance, including a full outage.

HV14000 Assures Fire Door Operation In Commercial Buildings

A major financial institution required a particular type of UPS to provide fire door operation in the event of a fire or power outage. While the bank's large, steel, roll-up fire doors closed automatically via de-energized magnets, they required electric motors to be raised.

The HV14000 solved the bank's fire safety requirements. In the event of a fire, the fire department would cut power to the building, which would close the fire doors and trap people in the building. The proven reliability and overload capability of the HV14000 enabled the fire doors to re-open to let the people vacate the facility.



HV20000 Supports I.T. Computer Room

A manufacturing firm needed a UPS for their AS/400™ mid-range computer network. They were looking for complete redundancy and security in the event of a power outage and also during routine UPS maintenance.

With its superior ferroresonant design, the HV20000 met the AS/400™ needs by supplying uninterrupted, regulated, conditioned power. When maintenance was required, the technicians switched the HV20000's make-before-break bypass switch to isolate the UPS from the rest of the system. The AS/400™ continued to receive conditioned power even in maintenance mode.

AS/400™ is a registered trademark of IBM.

COMMUNICATIONS

DataGuard Advanced

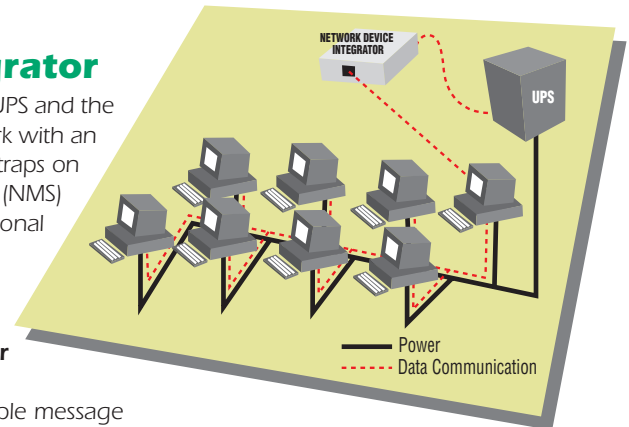
DataGuard Advanced is a feature-rich unattended operating system shutdown software package. Each computer which has DataGuard Advanced installed, is capable of successfully shutting down that computer's operating system. DataGuard Advanced is also capable of shutting down other servers connected to the 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 **HV Series** 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.

MODEL SELECTION GUIDE

All (13) models in the **HV Series** are packaged in either or both of two compact cabinets. We have developed custom outlet packages for any configuration necessary to deliver power to any equipment within the output voltage range of the model selected. This includes flush mounted, field wired, or sealed cable receptacles.

MODEL SELECTION GUIDE										
MODEL	KVA	WATTS	EXPANDABLE TO KVA	*FULL LOAD BATTERY RUNTIME	HALF LOAD BATTERY RUNTIME	**UNIT WEIGHT	CABINET SIZE	EFFICIENCY	BTU/HR	AUDIBLE NOISE
HV7500	7.5	5250	8.0	15 min.	35 min.	828 lbs.	B	92%	1432	50dB
HV8000	8.0	6000	9.0	13 min.	31 min.	828 lbs.	B	91%	1841	50dB
HV9000	9.0	7000	—	12 min.	26 min.	828 lbs.	B	91%	2148	52dB
HV10500	10.5	7500	11.5	12 min.	31 min.	872 lbs.	B	93%	1790	52dB
HV11500	11.5	8000	13.0	11 min.	27 min.	956 lbs.	B	92%	2182	52dB
HV13000	13.0	8500	—	9 min.	24 min.	956 lbs.	B	92%	2319	54dB
HV14000	14.0	10000	16.0	12 min.	30 min.	1348 lbs.	K	94%	2046	54dB
HV16000	16.0	12000	17.0	9 min.	25 min.	1348 lbs.	K	93%	2864	54dB
HV17000	17.0	14500	—	18 min.	42 min.	1601 lbs.	K	93%	3461	55dB
HV18000	18.0	16000	20.0	15 min.	36 min.	1631 lbs.	K	93%	3819	55dB
HV20000	20.0	18000	—	12 min.	32 min.	1721 lbs.	K	93%	4297	55dB
HV20E	20.0	18000	25.0	15 min.	34 min.	2013 lbs.	B & K	93%	4297	55dB
HV25000	25.0	20000	—	11 min.	27 min.	2013 lbs.	B & K	93%	4774	55dB

* Maximum internal runtimes shown. Shorter internal and extended external runtimes available.

** Add 50lbs. for total shipping weight.

CABINET SIZES: B = 21.5" W x 32" D x 44" H
K = 33.25" W x 35.75" D x 52.8" H

Where "Cabinet Size" indicates "B & K", both units are required.

EXPANDABILITY: Field expandability is a special feature of the HV Series UPS. The chart above indicates each model's level of expandability for future requirements.

INPUT VOLTAGES ACCEPTED BY THE HV SERIES						
MODEL	INPUT VOLTS	AMPS	INPUT VOLTS	AMPS	INPUT VOLTS	AMPS
HV7500	120	66	208	38	240	33
HV8000	120	72	208	41	240	36
HV9000	120	84	208	48	240	41
HV10500	—	—	208	54	240	47
HV11500	—	—	208	49	240	51
HV13000	—	—	208	64	240	58
HV14000	—	—	208	72	240	62
HV16000	—	—	208	82	240	71
HV17000	—	—	208	87	240	79
HV18000	—	—	208	92	240	83
HV20000	—	—	208	103	240	90
HV20E	—	—	208	103	240	90
HV25000	—	—	208	129	240	113

OUTPUT VOLTAGES FROM THE HV SERIES				
MODEL	OUTPUT VOLTS	AMPS	OUTPUT VOLTS	AMPS
HV7500	240 / 120	31 / 62	208 / 120	36 / 62
HV8000	240 / 120	33 / 66	208 / 120	38 / 66
HV9000	240 / 120	38 / 76	208 / 120	43 / 76
HV10500	240 / 120	44 / 88	208 / 120	50 / 88
HV11500	240 / 120	48 / 96	208 / 120	55 / 96
HV13000	240 / 120	54 / 108	208 / 120	63 / 108
HV14000	240 / 120	58 / 116	208 / 120	67 / 116
HV16000	240 / 120	67 / 134	208 / 120	77 / 134
HV17000	240 / 120	71 / 142	208 / 120	82 / 142
HV18000	240 / 120	75 / 150	208 / 120	86 / 150
HV20000	240 / 120	83 / 166	208 / 120	96 / 166
HV20E	240 / 120	83 / 166	208 / 120	96 / 166
HV25000	240 / 120	104 / 208	208 / 120	120 / 208

Battery

Runtime: Listed at full and half load for each model number with extended runtimes available. (See Model Selection Guide above)

Type: Sealed, maintenance-free, gas recombinant, self-venting, suspended electrolyte with no gel contaminant

Charger: 5 amp, two stage

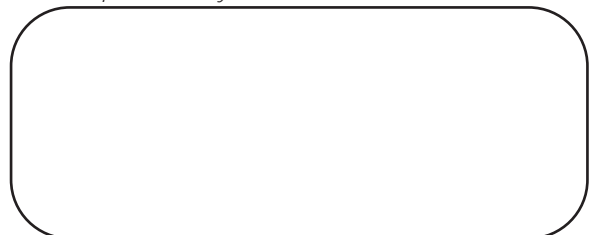
Recharge Time: Typically 3 hours to full charge

Factory Tested: With specific inverter before shipping

Projected Life: 5 years service

Capacity: Batteries are sized with the inverter to support the load at rated kVA with a 0.7 power factor

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