

Model ES Uninterruptible Power System

50Hz General Specifications

Technology

The Controlled Power Company Model ES is an on-line, double conversion, uninterrupted, sinewave output topology that provides the following product features and performance.

Standards

The Model ES is designed in accordance with applicable portions of the following standards:

American National Standards Institute (ANSI C57.110)
 Institute of Electrical and Electronic Engineers (IEEE 519-1992) (C62.41-1991)
 National Electrical Manufacturers Association (NEMA PE-1)
 IEC 62040-3, UPS Performance and Test Requirements
 National Electric Code (NEC 2008)
 National Fire Protection Association (NFPA 70)
 Federal Communications Commission (FCC Part 15, Subpart J, Class A)
 Listed UL Standard – UL 1778 Uninterruptible Power Systems
 C-UL Canadian National Standard C22.2, No. 107.1 M01

Standard Components

- * Main input CB.
- * Integral automatic static bypass switch.
- * Integral secure make before break manually operated bypass switch.
- * Integral switch to isolate rectifier and inverter module for maintenance while in manual bypass.
- * Battery system includes integral over current protection and quick connect / disconnect style DC connector for ease of service and added safety during maintenance.
- * NEMA 1 enclosure provided on lockable casters and leveling feet for permanent positioning.
- * Local monitor with a high resolution LCD touch-screen display for viewing and entering user-programmable periodic battery test time and date, alarm set points, system parameters, status, and alarms.
- * Hardwired input and output terminals.
- * Hardwire terminal connection for customer's remote emergency power off (REPO), normally open input contact.

Performance Specifications

- * Input Voltage: (220)(230)(240) VAC L-N; (380)(400)(415) L-L VAC.
- * Input Voltage Range: +12% to -15% at full load without battery usage.

Note: For input voltage excursions within +12 to -50%, UPS will incorporate Adaptive Input Range control, in conjunction with the load percentage, to accept this range without using battery, still maintaining specified output voltage regulation.

- * Input Frequency Range: 57 Hz to 63 Hz. Generator compatible.
- * Input Power Factor: Self corrected to >.98 (approaching unity).
- * Input Current Harmonics: < 5% THD (Total Harmonic Distortion).
- * Output VA Rating: (4500) (5500) (6500) (7500) (8300) (9000) (10000) (11000) (12000) (13500) (14500) (15500) VA.
- * Output Voltage: (120*)(220*)(230*)(240*) L-N VAC; (240/120) L-L-N VAC.
*Available output voltage on models 7500 VA and below.
- * Output Voltage Distortion: Sinewave with less than 3% THD under linear load.
- * Output Frequency: 50 Hz +/- 0.5% under full load during battery mode of operation.

- * Voltage Regulation: +/- 1.5%, no load to full load.
- * Output Power Rating: VA at 0.90 power factor. VA x PF = Watts.
- * Battery Time: Battery run times are specified at full rated output watts.
- * Battery Type: Integral, valve regulated, sealed lead calcium, maintenance free with 10 year design life.
- * Charger Type: Integral, 4 stage, temperature compensated.
- * Charger Ratings: 5 amp for battery options A and B
10 amp for battery options C through J
- * Recharge Time: <10 times the discharge period to 90% capacity.
- * DC Bus Voltage: 120 VDC
- * Overload Rating for system: 125% for 2 minutes, 150% for 30 seconds, 200% for 15 cycles when fed from AC power source.
- * On Battery Overload Rating: 125% for 30 cycles, 150% for 3 cycles.
- * Common Mode Attenuation: 70 dB minimum (models with internal shielded isolation transformer).
- * Transverse Mode Attenuation: 60 dB minimum at 100KHz (models with internal shielded isolation transformer).
- * Reactive Power Correction: Load @ .6PF automatically corrected to >.98 at input.
- * Efficiency: 87% at full load typical.
- * UPS Cabinet T Dimensions: 22.57"W x 36.5"D x 49"H

Battery Run Time Options

Output Power VA	Watt	UPS Cabinet T Internal Battery					UPS Cabinet T External Battery*		
		A	B	C	D	E	F	G	J
4500	4050	7	25	35	40	70	100	180	290
5500	4950	5	17	27	30	50	75	120	225
6500	5850		14	19	25	48	60	105	170
7500	6750		12	17	18	38	48	90	150
8300	7470		9	15	17	36	45	79	120
9000	8100		7	12	14	28	40	70	110
10000	9000		6	11	12	24	35	60	105
11000	9900			8	11	18	30	55	90
12000	10800			7	10	17	27	45	80
13500	12150			6	7	14	25	40	70
14500	13050				5	13	18	30	65
15500	13950					12	17	27	60

Battery run times provided in minutes.

*Notes: Battery options F through J require an external battery cabinet, together with UPS cabinet style T. External battery cabinet matches the dimensions of the UPS cabinet style T.

Output Distribution Options

- * UPS Cabinet Style T: Maximum of six (6) locking receptacles and four (4) non-locking duplex receptacles, each with their own circuit breaker, OR breakers only option for hardwired connection, maximum of 16 poles available.
Note: IEC 320 outlets and receptacle options up to 50 amp are available.

Environmental Specifications

- * Operating Temperature: 0°C (32°F) to 40°C (105°F) . Optimum battery performance and life are achieved at 25°C.
- * UPS Storage Temperature: -20°C (-4°F) to 50°C (122°F).
- * Battery Storage Temperature: 25°C (77°F) for 6 months. For each 9°C (16°F) rise, reduce storage time by half.
- * Relative Humidity: 95% non-condensing.
- * Elevation: 5000 feet, 1500 meters, without derating.

Advanced Intellistat Monitoring & Diagnostics

- * Display Monitor: High resolution TFT LCD touch-screen display provided for viewing and entering user-programmable periodic battery test time and date, alarm set points, system parameters, status, and alarms.
- * Electrical Measurements Input Voltage; Output Voltage; Output Current; Output Volt-Amperes Output Watts; Output Power Factor; Output Percent Load; Output Frequency; Battery Voltage; Battery Charger Current.
- * Status & Alarm Conditions Input Voltage High/Low; Output Voltage High/Low; Output Volt-Amperes High - Overload; Output Frequency High/Low; Battery Voltage High/Low; Battery Charger Current High; General Alarm; System On Battery; Low Battery Warning; Low Battery Shutdown; Over-temperature Warning; DC Charger Failure / DC Open; REPO Shutdown; System in Manual Bypass; System in Static Bypass; Battery Test Pass; Battery Test Fail.
- * Operating Conditions System Normal; Percent Battery Time Remaining; Battery Test In Process.
- * System Set Points System status for high/low alarm threshold set points; programming of periodic battery test date and time.
- * Manual Test Proprietary, password protected "Push to Test" feature to initiate a 30 second battery test.
- * Automatic Test User-programmable 30 second battery test, including the date, time, and frequency of the battery test.
- * Automatic Test Results Pass/fail indication, time and date stamped, accessed via the local monitor's touch-screen display.
- * Automatic Test Log Monitor maintains a historic log that sequentially records 25 battery tests which indicate time, date and pass/fail results. The log is available via the LCD touch-screen display of the monitor.
- * Status Alarm Log Monitor maintains a historic log that sequentially records 25 status alarms which indicate time and date of abnormal occurrences. The log is available via the LCD touch-screen display of the monitor.
- * Communications Serial Communications via a standard USB port is provided for authorized access to electrical parameters, system status, alarms, system set point programming, and the test and alarm logs.
- * Relay Contacts A hardwired terminal strip interface is available for remote indication of UPS on battery, low battery warning, on static bypass, and general alarm. Relay contacts are potential free, normally open, and rated for 120VAC @ .5 amps.

Optional Remote Communications

- * Network Communications Optional slot cards are available for remote monitoring and reporting of electrical parameters, system status, alarms, event logs, and automatic battery test results. Network communication options include Ethernet TCP/IP, MODBUS TCP, or MODBUS RS485.

Warranty

Controlled Power Company guarantees the UPS electronics and controls to be free from defects in material and workmanship for a period of (3) years following shipment from the factory. Battery warranty is 2-year full replacement, and an optional 3-year pro-rate with an applicable maintenance contract. On site labor for warranty repair in the United States and Canada is covered for 90 days following shipment from the factory.