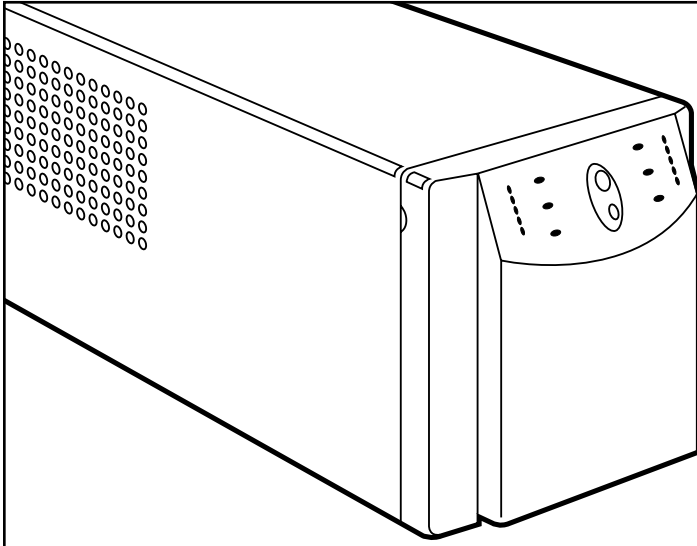




# BLACK BOX<sup>®</sup>

## NETWORK SERVICES

### SMART-UPS SERIES



*Protect your equipment and your data with reliable backup power and orderly shutdowns.*

#### Key Features

- ▶ **APC \$25,000 lifetime equipment protection.**
- ▶ **Lightning and surge protection.**
- ▶ **Automatic shutdown protection should your primary utility input fail.**
- ▶ **Instant emergency backup power.**
- ▶ **Network interface facilitates automatic shutdown for file servers.**
- ▶ **EMI/RMI filtering, SmartBoost™ to correct brownouts, and SmartTrim™ to correct overvoltages.**

With the APC line of uninterruptible power supplies (UPSs), your sensitive computer systems will be protected in the event of power blackouts, brownouts, swells, sags, surges, and interference.

Each UPS provides enough backup power for you to perform an orderly shutdown, should a power failure occur. In addition, each UPS is equipped with high-grade surge suppression and noise filtering to give your equipment a constant supply of clean power — whether from utility or battery power.

Under normal conditions, the UPS supplies power from the

utility input to the load. But if the utility fails, the converter supplies AC power to the load and the disconnect switch opens. The load continues to operate normally until shutdown or until the battery wears down. Once the line voltage returns to normal, the UPS automatically transfers the load back to utility power.

Visual and audible indications keep track of the battery's capacity and current condition, including when it is low or overloaded, or needs to be replaced. The UPS performs a self-test on the battery during power-up and every 14 days — which gives you enough time to

replace it before a problem develops. You can also manually perform a self-test with the on/test button. And batteries can be replaced without removing power from loads or sending the UPS in for service.

The Smart-UPS Series has numerous varieties of backup power supplies. Choose the one that offers the most protection to fit your needs from standalone, rackmount, and extra-run-time models. All include PowerChute® Plus management software.

## Operation: Smart-UPS Standalone Models

	SU420NET	SU620NET	SP540A	SP541A	SP542A	SP543A	SP544A	SU5000T
Includes PowerChute Plus software	Supports Windows® 95/98/2000/NT, Windows for Workgroups, Novell® NetWare® SCO UnixWare®, SCO OpenServer, and Linux. Includes agent plug-ins for Compaq® Insight Manager, HP® Top Tools, and more.							
Normal Input Voltage	120 VAC, single phase, 50 or 60 Hz (auto-sensing)							
Transfer Time	2 ms typical, 4 ms maximum							
SmartBoost and SmartTrim	On-line operation for input between 90–145 VAC. Output is 103–132 VAC. SmartBoost increases voltage 12% if input is 90–103 VAC. SmartTrim reduces voltage 12% if input is 145–132 VAC. Transfer points are user-adjustable with software.							
Rated Power/Nom. Input Voltage	420 VA/260 W	620 VA/390 W	700 VA/450 W	1000 VA/670 W	1400 VA/950 W	2200 VA/1600 W	3000 VA/2250 W	5000 VA/3750 W
Load Power Factor Range, Crest Factor Range	0.5 to 1.0 < 5							
Surge Energy Rating	320 joules, 6.5 kA							480 joules
Normal Mode Surge Voltage Let-Through	<0.7% of peak typical			<0.3% of peak typical				

## Operation: Smart-UPS Extra Run-Time Models

	SP550A	SP551A	SP552A
Includes PowerChute Plus software	Supports Windows® 95/98/2000/NT, Windows for Workgroups, Novell® NetWare® SCO UnixWare®, SCO OpenServer, and Linux. Includes agent plug-ins for Compaq® Insight Manager, HP® Top Tools, and more.		
Normal Input Voltage	120 VAC, single phase, 50 or 60 Hz (auto-selectable)		
Transfer Time	(Includes detection time) 2 ms typical, 4 ms maximum		
SmartBoost and SmartTrim	On-line operation for input between 90–145 VAC. Output is 103–132 VAC. SmartBoost increases voltage 12% if input is 90–103 VAC. SmartTrim reduces voltage 12% if input is 145–132 VAC. Transfer points are user-adjustable with software.		
Rated Power/Nom. Input Voltage	700 VA/450 W	1000 VA/670 W	2200 VA/1600 W
Load Power Factor Range, Crest Factor Range	0.5 to 1.0 < 5		
Surge Energy Rating	480 joules, 39 kA		
Normal Mode Surge Voltage Let-Through	<0.2% of peak typical		
Nominal/Common Mode Noise Suppression at 1-, 3-, and 10-MHz	68/50, 57/50, 50/27 dB		63/74, 54/48, 47/35 dB
Sealed, maintenance-free lead acid batteries with 3–6 year typical life	(2) 12 V, 17 AH	(2) 12 V, 17 AH	(4) 12 V, 17 AH

## Operation: Smart-UPS Rackmount Models

	SP545A-R2	SP546A-R2	SP547A-R2 SU1400RMXL3U	SU2200RM3U SU2200RMXLNET	SU3000RM3U SU3000RMNET SU3000RMXL3U	SU5000RMT5U
Includes PowerChute Plus software	Supports Windows® 95/98/2000/NT, Windows for Workgroups, Novell® NetWare® SCO UnixWare®, SCO OpenServer, and Linux. Includes agent plug-ins for Compaq® Insight Manager, HP® Top Tools, and more.					
Normal Input Voltage	120 VAC, single phase, 50 or 60 Hz (auto-selectable)					
Transfer Time	2 ms typical, 4 ms maximum					
SmartBoost and SmartTrim	On-line operation for input between 90–145 VAC. Output is 103–132 VAC. SmartBoost increases voltage 12% if input is 90–103 VAC. SmartTrim reduces voltage 12% if input is 145–132 VAC. Transfer points are user-adjustable with software.					
Rated Power/Nom. Input Voltage	700 VA/450 W	1000 VA/670 W	1400 VA/950 W 1400 VA/1050 W	2200 VA/1600 W 2200 VA/1600 W	3000 VA/2250 W 3000 VA/2250 W 3000 VA/2400 W	5000 VA/3750 W
Load Power Factor Range, Crest Factor Range	0 to < 5 nanoseconds					
Surge Energy Rating	Models 2200 to 3000: 320 joules, 6.5 kA; Model SU5000RMT5U: 480 joules, 6.5 kA					
Sealed, maintenance-free lead acid batteries with 3–6 year typical life	(2) 12 V, 4.5 AH	(2) 12 V, 7 AH	(2) 12 V, 11 AH (4) 12 V, 9 AH	(2) 12 V, 17 AH (4) 12 V, 17 AH	(8) 12 V, 7 AH (4) 12 V, 17 AH (4) 12 V, 17 AH	(4) 12 V, 17 AH

## Determining On-Battery Run Time

Knowing the on-battery run time of your UPS is important—especially if your protected devices use an operating system that needs time to shut down without losing valuable information.

To determine on-battery run time, find out the load time protected by the UPS in Volt-Amps. Load figures can be found on the protected equipment itself or in the manuals that came with it.

Multiply the figure by 1.4 for loads specified in watts; multiply the specified figure by 120 for loads specified in amps.

Add the individual loads to determine the total load. Compare

the total load of your system to the appropriate run-time table below or on the following pages.

### Typical On-Battery Run Time versus Load, in Minutes—Smart UPS

Time (unless noted is in minutes)								
Model	420	620	700	1000	1400	2200	3000 w/ External Battery	5000
100 VA/65 watts	40	1 hr. 14 min.	1 hr. 35 min.	2 hr. 25 min.	3 hr. 55 min.	7 hr. 5 min.	7 hr. 10 min (11 hr. 9 min)	9 hr. 27 min.
200 VA/130 watts	14	30	43	1 hr. 14 min.	2 hr. 7 min.	4 hr. 15 min.	4 hr. 20 min. (7 hr. 41 min.)	6 hr. 17 min
300 VA/195 watts	6	15	23	46	1 hr. 22 min.	2 hr. 58 min.	3 hr. 3 min. (5 hr. 36 min.)	4 hr. 39 min.
400 VA/260 watts	—	9	14	30	58	2 hr. 14 min.	2 hr. 19 min. (4 hr. 44 min.)	3 hr. 38 min.
500 VA/325 watts	—	6	9	21	43	1 hr. 45 min.	1 hr. 50 min. (3 hr. 50 min.)	2 hr. 58 min.
600 VA/390 watts	—	—	6	15	33	1 hr. 25 min.	1 hr. 29 min. (3 hr. 18 min.)	2 hr. 29 min.
700 VA/455 watts	—	—	—	11	26	1 hr. 10 min.	1 hr. 14 min. (2 hr. 53 min.)	2 hr. 7 min.
800 VA/520 watts	—	—	—	9	21	60	1 hr. 4 min. (2 hr. 15 min.)	1 hr. 50 min.
900 VA/585 watts	—	—	—	7	17	51	53 (2 hr. 4 min.)	1 hr. 36 min.
1000 VA/650 watts	—	—	—	6	14	44	46 (1 hr. 47 min.)	1 hr. 25 min.
1200 VA/780 watts	—	—	—	—	9	34	37 (1 hr. 31 min.)	1 hr. 8 min.
1400 VA/910 watts	—	—	—	—	7	26	28 (1 hr. 15 min.)	56
1600 VA/1040 watts	—	—	—	—	—	21	22 (57)	47
2000 VA/1300 watts	—	—	—	—	—	14	15 (37)	34
2200 VA/1430 watts	—	—	—	—	—	11	12 (27)	29
2500 VA/1625 watts	—	—	—	—	—	—	—	23
3000 VA/1950 watts	—	—	—	—	—	—	—	17
5000 VA/3500 watts	—	—	—	—	—	—	—	6

### Typical On-Battery Run Time versus Load, in Minutes—Rackmountable Options

Model	700RM	1000RM	1400RM	2200RM	3000RM	5000RM
100 VA/65 watts	85	100	125	268	228	430
200 VA/130 watts	38	58	69	170	152	303
300 VA/195 watts	20	36	44	121	110	227
400 VA/260 watts	14	24	30	91	84	177
500 VA/325 watts	9	18	22	71	67	142
600 VA/390 watts	6	13	16	57	54	115
700 VA/455 watts	5	11	13	46	44	97
800 VA/520 watts	—	9	11	38	36	84
900 VA/585 watts	—	7	9	32	31	73
1000 VA/650 watts	—	6	8	27	26	64
1200 VA/780 watts	—	—	6	21	20	50
1400 VA/910 watts	—	—	5	17	16	39
1600 VA/1010 watts	—	—	—	14	13	33
2000 VA/1300 watts	—	—	—	10	10	23
2200 VA/1430 watts	—	—	—	8	8	20
2500 VA/1625 watts	—	—	—	—	7	16
3000 VA/1950 watts	—	—	—	—	5	11
5000 VA/3500 watts	—	—	—	—	—	6

### 700 VA XL Typical On-Battery Run Time versus Load, in Minutes

Load (VA)	Int. Battery	w/1 Battery Pack	w/2 Battery Packs	w/3 Battery Packs	w/4 Battery Packs	w/5 Battery Packs	w/6 Battery Packs	w/7 Battery Packs	w/8 Battery Packs	w/9 Battery Packs	w/10 Battery Packs
50	250	870	1510	2150	2790	3430	4070	4710	5360	6000	6640
100	160	560	1000	1430	1870	2310	2740	3180	3620	4060	4490
200	80	320	570	830	1100	1360	1630	1900	2160	2430	2690
300	51	220	390	570	760	950	1140	1330	1520	1710	1900
400	36	160	300	430	570	710	860	1010	1150	1300	1450
500	27	120	230	340	450	560	680	800	920	1040	1160
600	21	100	190	280	370	470	560	660	760	860	960
700	17	76	150	230	310	390	470	550	640	720	810

### 1000 VA XL Typical On-Battery Run Time versus Load, in Minutes

Load (VA)	Int. Battery	w/1 Battery Pack	w/2 Battery Packs	w/3 Battery Packs	w/4 Battery Packs	w/5 Battery Packs	w/6 Battery Packs	w/7 Battery Packs	w/8 Battery Packs	w/9 Battery Packs	w/10 Battery Packs
50	250	870	1510	2150	2790	3430	4070	4710	5360	6000	6640
100	160	560	1000	1430	1870	2310	2740	3180	3620	4060	4490
200	80	320	570	830	1100	1360	1630	1900	2160	2430	2690
300	51	220	390	570	760	950	1140	1330	1520	1710	1900
400	36	160	300	430	570	710	860	1010	1150	1300	1450
500	27	120	230	340	450	560	680	800	920	1040	1160
600	21	100	190	280	370	470	560	660	760	860	960
700	17	76	150	230	310	390	470	550	640	720	810
800	14	65	130	200	270	340	410	480	550	630	700
900	12	56	110	170	240	300	360	420	490	550	610
1000	10	48	100	150	210	260	320	380	430	490	540

### 1400 VA XL Typical On-Battery Run Time versus Load, in Minutes

Load (VA)	Int. Battery	w/1 Battery Pack	w/2 Battery Packs	w/3 Battery Packs	w/4 Battery Packs	w/5 Battery Packs	w/6 Battery Packs	w/7 Battery Packs	w/8 Battery Packs	w/9 Battery Packs	w/10 Battery Packs
50	300	726	1224	1721	2219	2717	2717	3463	4210	4708	5206
100	173	436	744	1052	1359	1667	1975	2283	2591	2898	3206
200	86	234	408	582	757	931	1106	1280	1455	1629	1804
300	52	154	275	397	518	640	762	883	1005	1127	1249
400	35	111	204	297	391	484	577	670	764	873	982
500	24	85	160	235	311	387	463	538	614	690	766
600	18	67	130	193	257	320	384	448	512	576	640
700	13	55	108	163	217	272	327	382	437	492	548
800	10	46	92	140	188	236	284	332	381	429	478
900	8	38	79	121	164	207	250	293	337	380	423
1000	7	32	69	107	145	184	223	262	301	340	379

## 2200 VA XL Typical On-Battery Run Time versus Load, in Minutes

Load (VA)	Int. Battery	w/1 Battery Pack	w/2 Battery Packs	w/3 Battery Packs	w/4 Battery Packs	w/5 Battery Packs	w/6 Battery Packs	w/7 Battery Packs	w/8 Battery Packs	w/9 Battery Packs	w/10 Battery Packs
50	370	730	1180	1630	2090	2540	2990	3450	3900	4350	4800
100	270	530	860	1210	1550	1890	2230	2570	2910	3250	3590
200	160	340	550	770	1000	1220	1450	1680	1900	2130	2360
300	110	240	400	550	720	890	1060	1230	1390	1560	1730
400	80	180	310	430	550	690	820	950	1090	1220	1360
500	63	140	250	350	450	550	660	770	880	1000	1110
600	51	120	200	290	380	460	550	640	740	830	930
700	41	90	170	240	320	390	470	540	620	710	790
800	35	78	140	210	280	350	410	480	550	620	690
900	29	68	120	180	240	300	360	420	480	540	600
1000	26	59	110	160	220	270	320	380	430	480	540
1200	20	47	83	130	170	220	260	310	350	400	440
1400	16	37	67	100	140	180	220	260	290	330	370
1600	13	29	55	82	110	150	180	210	250	280	310
1800	11	25	47	71	100	130	160	190	220	240	270
2000	9	22	40	61	83	110	130	160	190	210	240
2200	8	19	34	53	72	90	120	140	160	190	210

## 3000 VA XL Typical On-Battery Run Time versus Load, in Minutes

Load (VA)	Int. Battery	w/1 Battery Pack	w/2 Battery Packs	w/3 Battery Packs	w/4 Battery Packs	w/5 Battery Packs	w/6 Battery Packs	w/7 Battery Packs	w/8 Battery Packs	w/9 Battery Packs	w/10 Battery Packs
50	478	1136	1904	2672	3440	4208	4976	5744	6512	7280	8048
100	313	759	1639	1799	2319	2839	3360	3880	4400	4920	5441
200	178	448	764	1081	1397	1713	2029	2345	2662	2978	3294
300	119	313	540	767	994	1221	1448	1675	1903	2141	2379
400	87	237	414	591	768	945	1123	1300	1477	1654	1832
500	66	189	334	479	624	769	915	1060	1205	1350	1496
600	53	156	278	401	524	647	770	893	1016	1139	1262
700	43	131	237	344	450	557	664	770	877	984	1091
800	35	112	206	300	394	488	582	676	771	865	959
900	29	98	181	265	349	433	518	602	687	771	855
1000	24	86	161	237	313	389	466	542	618	694	771
1200	18	68	131	194	258	322	386	450	515	579	643
1400	13	55	109	163	218	273	329	384	440	495	550
1600	10	46	92	140	188	236	285	334	383	431	480
1800	8	38	79	122	165	208	251	294	338	381	425
2000	7	33	69	107	146	185	224	263	302	341	380

# Specifications

**Batteries:** Sealed, maintenance-free lead acid with 3–6 year typical lifetime

**Cord Length:** 1.8 m with NEMA 5-15P

**Diagnostics:** All: LEDs, Audible Alarms, PowerChute® Plus software (LS780V–LS784V, FaxBack document #17202)

**Number of Outlets:**  
 SU420NET, SU620NET, SP540A:  
 (4) NEMA 5-15R;  
 SP541A–SP542A,  
 SP545A–R2–SP547A–R2,  
 SP550A–SP551A,  
 SU1400RMXL3U:  
 (6) NEMA 5-15R;  
 SP543A–SP544A, SP552A,  
 SU2200RM3U,  
 SU2200RMXLNET,  
 SU3000RM3U, SU3000RMNET,  
 SU3000RMXL3U:  
 (8) NEMA 5-15R;  
 SU5000RMT5U, SU5000T:  
 (1) NEMA L6-30R (30 amp),  
 (2) NEMA L6-20R (20 amp),  
 (2) NEMA 5-15R (15 amp)

**Interface:**  
 SU420NET, SU620NET:  
 (1) RS-232 DB9, RJ-11  
 SP540A–SP544A,  
 SP545A–R2–SP547A–R2,  
 SP550A–SP552A,  
 SU1400RMXL3U, SU2200RM3U,  
 SU2200RMXLNET,  
 SU3000RM3U, SU3000RMNET,  
 SU3000RMXL3U:  
 (1) RS-232 DB9, (1) SmartSlot;  
 SU5000RMT5U: (1) RS-232 DB9,  
 (1) SmartSlot, (1) RJ-45  
 10BASE-T Ethernet for Web/  
 SNMP/Telnet™ management;  
 SU5000T: (1) RS-232 DB9,  
 (2) SmartSlots, (1) 10BASE-T  
 Ethernet for Web/SNMP/  
 Telnet management

**Indicators:** SU420NET, SU620NET:  
 LEDs: On Line, On Battery,  
 Replace Battery, Overload,  
 Site Wiring Fault;  
 Audible Alarms: On Battery,  
 Low Battery;  
 SP540A–SP544A,  
 SP545A–R2–SP547A–R2,  
 SP550A–SP552A,  
 SU1400RMXL3U, SU2200RM3U,  
 SU2200RMXLNET, SU3000RM3U,  
 SU3000RMNET, SU3000RMXL3U,  
 SU5000RMT5U, SU5000T:  
 LEDs: On Battery, Replace  
 Battery, Overload, Site  
 Wiring Fault, Load and  
 Volt Meters, Automatic

Diagnostic Testing:  
 Audible Alarms: On Battery,  
 Low Battery, Configurable  
 Delays

**Size:** SU420NET, SU620NET:  
 16.8 x 11.9 x 36.8 cm; SP540A:  
 15.7 x 13.7 x 35.8 cm;  
 SP541A–SP542A,  
 SP550A–SP551A:  
 21.6 x 17 x 43.9 cm;  
 SP543A–SP544A, SP552A:  
 43.2 x 19.6 x 54.6 cm; SP545A–  
 R2–SP547A–R2:  
 8.9 x 48.3 x 45.7 cm;  
 SU1400RMXL3U:  
 13 x 43.2 x 39.4 cm;  
 SU2200RM3U, SU3000RM3U:  
 13.3 x 48.3 x 63.5 cm;  
 SU2200RMXLNET,  
 SU3000RMNET:  
 22.2 x 48.3 x 45.1 cm;  
 SU3000RMXL3U:  
 13.3 x 48.3 x 66 cm;  
 SU5000RMT5U:  
 22.2 x 48.3 x 63.5 cm; SU5000T:  
 43.9 x 22.9 x 66.5 cm

**Weight:**  
 SU420NET: 10 kg; SU620NET:  
 12.2 kg; SP540A: 13.2 kg;  
 SP541A: 19.5 kg;  
 SP542A, SP550A: 24 kg;  
 SP543A: 50.8 kg; SP544A: 55.8 kg;  
 SP545A–R2: 21.8 kg; SP546A–R2:  
 28.1 kg; SP547A–R2: 28.6 kg;  
 SP551A: 27.2 kg;  
 SP552A: 54.9 kg;  
 SP552A, SU5000T: 104.3 kg;  
 SU1400RMXL3U: 31.8 kg;  
 SU2200RM3U: 46.7 kg;  
 SU2200RMXLNET,  
 SU3000RMXL3U:  
 56.2 kg;  
 SU3000RM3U: 51.7 kg;  
 SU3000RMNET: 58.5 kg;  
 SU5000RMT5U: 102.1 kg

# Ordering Information

ITEM	APC PART #	CODE
<b>Standalone</b>		
Smart-UPS 420*	SU420NET	SU420NET
Smart-UPS 620*	SU620NET	SU620NET
Smart-UPS 700	SU700NET	SP540A
Smart-UPS 1000	SU1000NET	SP541A
Smart-UPS 1400	SU1400NET	SP542A
Smart-UPS 2200	SU2200NET	SP543A
Smart-UPS 3000	SU3000NET	SP544A
3000 Battery Pack		BP544
Smart-UPS 5000	SU5000T	SU5000T
* Does not include a SmartSlot.		
<u>For the Smart-UPS 5000...</u>		
<b>SmartSlot UPS Accessories</b>		
Web/SNMP Management Card		AP9606
Expansion Chassis		AP9600
Smart-UPS Interface Expander		AP9607
Measure-UPS Temperature/Humidity		AP9612TH
Relay I/O Module		AP9610
<b>Rackmountable</b>		
Smart-UPS 700RM	SU700RM2U	SP545A-R2
Smart-UPS 1000RM	SU1000RM2U	SP546A-R2
Smart-UPS 1400RM	SU1400RM2U	SP547A-R2
Smart-UPS 1400RM3U	SU1400RMXL3U	
Smart-UPS 2200RM3U	SU2200RM3U	
Smart-UPS 2200RM5UXL	SU2200RMXLNET	
Smart-UPS 3000RM3U	SU3000RM3U	
Smart-UPS 3000RM5U	SU3000RMNET	
Smart-UPS 3000RM3UXL	SU3000RMXL3U	
Smart-UPS 5000RMT5U	SU5000RMT5U	
* For the Smart-UPS 5000RMT5U, choose SmartSlot cards listed above.		
<b>Extra Run-Time</b>		
Smart-UPS 700XL	SU700RMNET	SP550A
Smart-UPS 1000XL	SU1000RMNET	SP551A
Smart-UPS 2200XL	SU2200RMNET	SP552A
700XL /1000XL Battery Pack		
	SU24XLBP	BP551
2200XL Battery Pack	SU48XLBP	BP552