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BLACK BOX[®]

NETWORK SERVICES

SERVSWITCH UPS



Key Features

- ▶ **Self-configuring battery pack**
- ▶ **Dual mains input**
- ▶ **Multi-format design**
- ▶ **Rotating back-lit LCD**
- ▶ **Load segment control**
- ▶ **5 to 10 year design life battery**

Industry Leading Design

Central to the Black Box range of power management products is the new ServSwitch UPS series. This is a true on-line, double conversion topology with power rating from 1KVA to 6KVA. Its multi format design enables rack mounting or free standing orientation of the same product straight out of the box. The ServSwitch UPS range has been in development for close to two years and offers greater flexibility than any other product in this power range.

Self configuring battery pack

All UPS' utilise batteries and, depending on the power rating of the UPS, the internal DC "string" voltage will be different: the higher the voltage, the lower the current needs to be in order to deliver the same power and consequently the UPS is less

bulky and more efficient. To optimise efficiency, the higher the kVA rating of the UPS, the higher the "string" voltage used.

In the ServSwitch UPS design, the battery pack is configured in multiples to achieve the required string voltages at higher kVA ratings.

The advantages of this are:

1. The right battery packs are always available.
2. The blocks are "plug and play" so installation is very fast.
3. Specialist technical installation staff are not needed to install/change the batteries
4. The packs are small enough that they are considered a "one man lift" so handling is much easier and safer.

Dual mains input

Most UPS' have one mains input, however the ServSwitch UPS has 2. It is common for

communications rooms to be fed from 2 supplies (possibly 2 phases of the same supply) so that if there is a problem on one supply the other can take over and prevent the UPS from needing to discharge its batteries until there is no other option. In order to do this, ordinarily, a static switch is required which selects "Mains 1" or "Mains 2" as the input to the UPS depending upon which is available. Since ServSwitch UPS has 2 mains inlets, it is not necessary to have a static switch.

The advantages of this are:

1. Cost. An additional static switch may cost an extra £600 depending on the power rating.
2. Less rack space. A typical static switch would be either 1U or 2U in height, once installed in the rack this takes away space which could be used by more communications equipment such as servers, routers etc.

3. The UPS is never running from battery (which has a finite life to it) when there is another mains supply available. Extended "uptime" for the load and extended lifetime for the batteries..

Multi format

All models are multi-format design and can be rack mount or standalone straight from the box; this achieves 3 important objectives:

1. Cost reduction by standardisation of packaging.
2. Cost reduction by minimisation of stock levels (the right format is always available !)
3. Fits all standard (600x600) racks, as all models (UPS and Battery Modules) are only 510mm deep.

This also gives the flexibility to remove an UPS from a rack when space becomes limited and give the option of free standing it, without the need to purchase a different model.

Simple monitoring and control

The ServSwitch UPS has a fully rotating back-lit LCD (which shows load, voltage, temperature etc) which is simply twisted to be the right way up. This makes the UPS much more user friendly, especially if it's in a poorly lit room (i.e. during power failure conditions).

Naturally, options to provide SNMP and remote alarms through relay contacts etc. are features of the design.

Load Segment Control

To extend runtime it is possible to

select a load segment control function from the front panel, which will shut down a non-critical output of the UPS (on mains fail) to extend the runtime on the critical output. This feature is available on 2500VA + 3000VA models.

Black Box ServSwitch UPS Shutdown Software

All models within the ServSwitch range are provided as standard with shutdown & monitoring software. This software is supplied on a CD and covers all windows based platforms. The software offers all of the functionality of standard shutdown packages with some additional features for remote monitoring and control.

Monitoring is achieved either locally through the RS232 cable

supplied or remotely via a connected network. This can provide information back to the user of major input and output parameters with alarm information as and when it appears.

Control is via the console in the software and allows the user again, locally via serial connection or remotely via network connection, to schedule remote system shutdown (password controlled) and general UPS house keeping.

In combination with its very flexible shutdown features, the software also lets the user know which programs were shutdown at last mains failure, to ensure no files are overlooked.

Mechanical Format

RMUPS1000 & RMUPS1500

Standard unit with internal batteries 2U
Each additional battery adds 2U



RMUPS2500 & RMUPS3000

Standard unit with battery 4U
Each additional battery adds 2U



RMUPS4000, RMUPS5000 & RMUPS6000

Standard unit with battery 8U
Each additional battery comprises 2 x BM (2 x 2U)



Specifications

Input:

Input Voltage: 176-276 VAC full load, 125-276 VAC 25% load, without using battery.
 Input Frequency: 50/60 Hz autosensing (45-65 Hz).
 Input Power Factor: >0.98 at full load.
 Crest factor: 3:1
 Input Protection: Fuse/breaker.

Output:

Output Voltage: 208/220/230/240 VAC selectable via front panel LCD.
 Output Regulation: $\pm 2\%$ of nominal.
 Output Waveform: Sine wave.
 Output THD: < 3%.
 Output Protection: Electronic

overload sensing.
 Efficiency (AC-AC): 87% up to 1.5 kVA, 90% up to 6 kVA.
 Overload Capacity: 105% for 120 secs, 150% for 10 secs.
 Output Frequency: 50/60 Hz autosensing to input.

General: Input Receptacles: 2 x IEC320-10A ≤ 1.5 kVA, 2 x IEC320-16A 2.5 kVA to 3 kVA, Hardwired 4 kVA to 6 kVA, Dual feed.
 Output Receptacles: 2 x IEC320-10A ≤ 1.5 kVA, 2 x IEC320-16A 2.5 kVA to 3 kVA, Hardwired 4 to 6 kVA, Load segment control via LCD 2.5 kVA & 3KVA.
 display/Alarm: Front panel LCD menu driven, audible alarms.
 Interface: 2 x RS232 (Rear Panel),

option slot for SNMP/USB or VFC. Software: Supplied bundled to support Windows 95, 98, Me, 2000, XP & NT, & Novell.

Environmental: Operating Temperature: 0 °C to + 40 °C.
 Storage Temperature: -15 °C to +50 °C.
 Relative Humidity: 0-95% RH non-condensing.
 Altitude: 3000m without derating.
 Acoustic Noise: <45 dBA at 1 metre.

Battery: Internal Battery Type: VRLA
 5 year design life, 10 year option add suffix "X" to model number.
 Battery Replacement: Hot swap all models.
 Recharge: <4 hours to 90%,

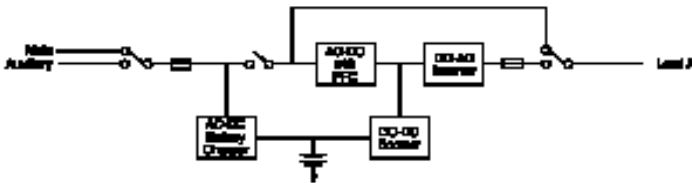
standard battery only.
 Battery String Voltage: 48 V up to 1.5 kVA, 96 V 2.5 kVA to 3 kVA, 192 V 4 kVA to 6 kVA.
 Temperature: Autonomy, recharge & battery life based on 25 °C ambient.

EMC & Safety:

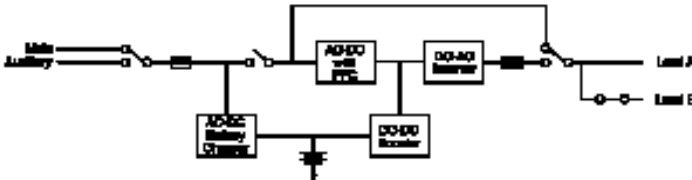
Safety: EN50091-1-1 & EN60950.
 EMI: EN50091-2 Class B, EN55022B.
 Immunity: IEC61000-4-2, -3, -4 & -5.
 Approvals: CE, TUV/GS.
 Ingress Rating: IP20.

UPS Topology

RMUPS1000 & RMUPS1500



RMUPS2500 & RMUPS6000



The Black Box ServSwitch series of On line UPS provides a high integrity AC power source with zero transfer time on mains fail conditions to battery. This On line double conversion topology ensures that the load is protected against noise and transients.

They also offer dual input feeds ensuring that even if the main input fails, and the auxiliary supply is available, the load will continue to be protected against power failure.

The ServSwitch UPS series also incorporates (2.5 kVA and 3kVA) load segment control - allowing the user to turn off (via the LCD front panel menu) any load that is surplus to the critical part of the system. This then ensures that any critical component connected can achieve the longest run time available.

DIMENSIONS & WEIGHTS

Model Number	Dimensions			Weight (Total kg)
	Height	Depth	Width	
RMUPS1000	88.9 mm	510 mm	426 mm	22 kg (22)
RMUPS1500	88.9 mm	510 mm	426 mm	22 kg (22)
RMUPS2500	177.8 mm	510 mm	426 mm	20+28 kg (48)
RMUPS3000	177.8 mm	510 mm	426 mm	20+28 kg (48)
RMUPS4000	355.6 mm	510 mm	426 mm	28+28+28 kg (84)
RMUPS5000	355.6 mm	510 mm	426 mm	28+28+28 kg (84)
RMUPS6000	355.6 mm	510 mm	426 mm	28+28+28 kg (84)
RMUPS-BM	88.9 mm	510 mm	426 mm	4+12+12 kg (28)
RMUPS-BP	-	-	-	12 kg (12)

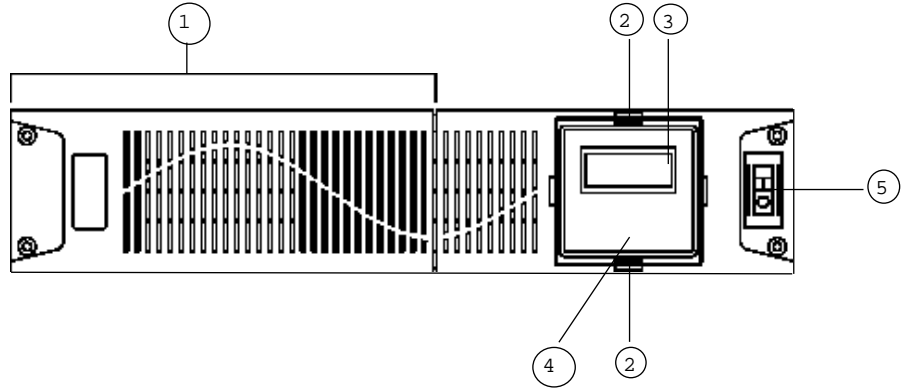
BLACK BOX SERVSWITCH UPS RUN TIME (IN MINUTES)

UPS Model	Autonomy vs Load											
	200 VA (140 W)	400 VA (280 W)	600 VA (420 W)	800 VA (560 W)	1000 VA (700 W)	1500 VA (1050 W)	2000 VA (1400 W)	2500 VA (1750 W)	3000 VA (2100 W)	4000 VA (2800 W)	5000 VA (3500 W)	6000 VA (4200 W)
RMUPS1000	59	32	18	12	8							
+1BM	260	134	83	58	50							
+2BM	466	247	166	124	91							
+3BM	-	358	250	183	146							
RMUPS1500	63	34	19	13	9	5						
+1BM	274	142	88	62	53	31						
+2BM	491	260	175	131	96	60						
+3BM	-	377	264	193	154	92						
RMUPS2500	167	85	59	47	34	15	9	6				
+1BM	371	212	152	107	78	46	29	20				
+2BM	589	337	244	179	144	66	54	41				
+3BM	-	478	334	255	198	104	68	58				
RMUPS3000	140	66	51	38	26	15	10	6	5			
+1BM	313	175	121	83	63	46	29	21	16			
+2BM	-	285	196	153	118	67	54	42	31			
+3BM	-	391	280	211	169	106	69	59	49			
RMUPS4000	-	130	88	63	54	37	23	16	13	8		
+2BM	-	290	214	166	137	84	57	50	40	26		
+4BM	-	467	339	269	221	149	104	76	60	48		
+6BM	-	-	479	374	305	208	151	119	93	61		
RMUPS5000	-	133	90	65	56	38	24	17	13	8	6	
+2BM	-	297	219	170	140	86	59	51	41	26	19	
+4BM	-	477	346	275	226	152	106	78	61	49	37	
+6BM	-	-	489	382	311	212	154	121	96	62	54	
RMUPS6000	-	140	95	68	59	40	25	18	14	9	6	5
+2BM	-	313	231	179	148	91	62	54	44	28	20	15
+4BM	-	503	365	290	238	161	112	82	65	52	39	28
+6BM	-	-	515	403	328	224	163	128	101	66	57	46

BLACK BOX SERVSWITCH UPS EXTENDED RUN TIME CHART (IN MINUTES)⁽¹⁾⁽²⁾

UPS Model	Autonomy vs Load									
	400 VA (280 W)	800 VA (560 W)	1000 VA (700 W)	1500 VA (1050 W)	2000 VA (1400 W)	2500 VA (1750 W)	3000 VA (2100 W)	4000 VA (2800 W)	5000 VA (3500 W)	6000 VA (4200 W)
RMUPS1000 +5 BMc	540	270	210							
RMUPS1000 +6 BMc	720	330	252							
RMUPS1000 +7 BMc	840	390	300							
RMUPS1500 +5 BMc	550	280	220	132						
RMUPS1500 +6 BMc	740	350	270	150						
RMUPS1500 +7 BMc	860	420	315	198						
RMUPS2500 +5 BMc	600	270	210	138	100	70				
RMUPS2500 +6 BMc	750	330	240	168	120	90				
RMUPS2500 +7 BMc	850	378	300	198	150	110				
RMUPS3000 +5 BMc	570	250	195	128	95	65	55			
RMUPS3000 +6 BMc	730	300	230	160	115	85	70			
RMUPS3000 +7 BMc	825	348	270	190	140	105	85			
RMUPS4000 +8 BMc	960	450	354	210	192	150	110	60		
RMUPS4000 +10 BMc	1200	570	432	270	210	180	150	70		
RMUPS4000 +12 BMc	-	720	510	330	270	210	168	100		
RMUPS5000 +8 BMc	970	460	360	220	200	155	115	65	70	
RMUPS5000 +10 BMc	1220	580	440	280	220	190	155	75	75	
RMUPS5000 +12 BMc	49	-	740	520	340	280	220	175	105	80
RMUPS6000 +8 BMc	980	470	370	230	210	160	120	70	72	50
RMUPS6000 +10 BMc	1230	590	450	290	230	200	160	85	79	65
RMUPS6000 +12 BMc	-	760	530	350	290	230	185	115	85	85

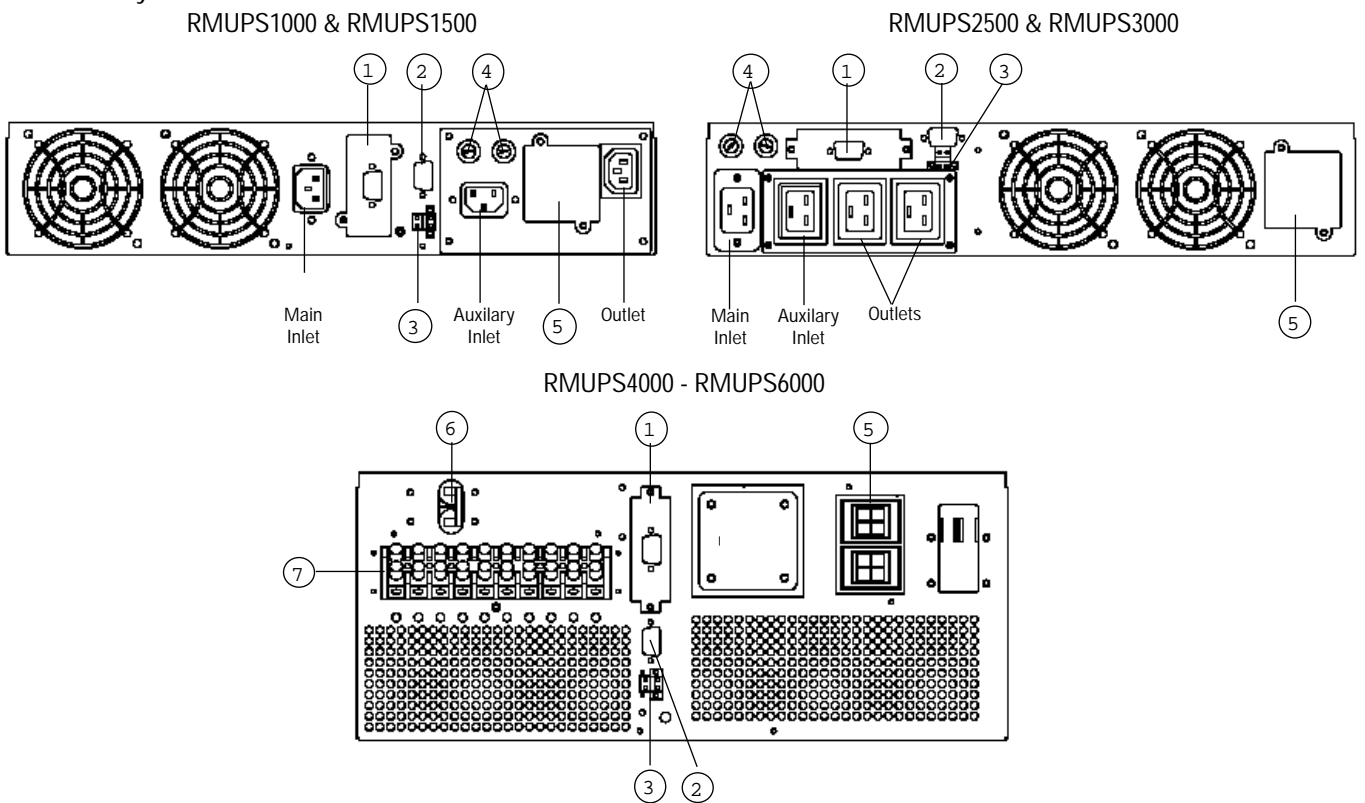
Front Panel Layout



FRONT PANEL LAYOUT

No.	Description
1	Remove panel to access battery compartment (up to 1.5 kVA only) other models have separate battery module
2	Top/bottom clips for releasing LCD display (to rotate through 90°) for standalone applications
3	Back lit full function LCD display
4	st Keys for menu selection, bypass and menu select button
5	Input breaker

Rear Panel Layout



REAR PANEL LAYOUT

No.	Item	Description
1	Option slot	Option slot allows user to fit RMUPS-VFC dry contact card or SNMP internal network adaptor
2	Comms port	Standard serial RS232 communications via 9 pin D type connector
3	Repo	Remote emergency power off (remove link to shutdown)
4	Input Fuses	Overload protection
5	External battery	Allows user to connect external battery packs
6	Input Breaker	Input breaker for 4, 5 & 6 kVA models
7	Hardwire terminals	Screw Terminals for input, output and battery (if required)

MODEL NUMBERS AND POWER OUTPUTS

Output Power		Output Current @ 230 VAC	Autonomy (Full Load)	Half Load	Model Number
1000 VA	700 W	4.3 A	8 Minutes	25 minutes	RMUPS1000
1500 VA	1050 W	6.5 A	5 Minutes	15 minutes	RMUPS1500
2500 VA	1750 W	10.8 A	6 Minutes	25 minutes	RMUPS2500
3000 VA	2100 W	13.0 A	5 Minutes	15 minutes	RMUPS3000
4000 VA	2800 W	17.3 A	8 Minutes	23 minutes	RMUPS4000
5000 VA	3500 W	21.7 A	6 Minutes	17 minutes	RMUPS5000
6000 VA	4200 W	26.0 A	5 Minutes	14 minutes	RMUPS6000

Ordering Information

ITEM

CODE

On-Line UPS - basic 5 year design life battery

Capacity UPS 1 kVARMUPS1000
 Capacity UPS 1.5 kVARMUPS1500
 Capacity UPS 2.5 kVARMUPS2500
 Capacity UPS 3 kVARMUPS3000
 Capacity UPS 4 kVARMUPS4000
 Capacity UPS 5 kVARMUPS5000
 Capacity UPS 6 kVARMUPS6000

On-Line UPS - extended 10 year design life battery

Capacity UPS 1 kVARMUPS1000-X
 Capacity UPS 1.5 kVARMUPS1500-X
 Capacity UPS 2.5 kVARMUPS2500-X
 Capacity UPS 3 kVARMUPS3000-X
 Capacity UPS 4 kVARMUPS4000-X
 Capacity UPS 5 kVARMUPS5000-X
 Capacity UPS 6 kVARMUPS6000-X

Additional battery module for extra capacity

Battery module (=2 x RMUPS-BP)RMUPS-BM
 Extra long run time battery moduleRMUPS-BMC
 Battery module (As above but 10 year design battery life)RMUPS-BMX

Spare/Replacement Battery Packs

Battery Pack 48VDCRMUPS-BP
 Battery Pack 48VDC - 10 year design battery lifeRMUPS-BPX

Mounting Options

Adds rail guide kit for each module in UPSRMUPS-RG

Other Options

Adds SNMP/Network adaptorRMUPS-MAN
 Adds USB option card to UPSRMUPS-USB
 Adds VFC option (relay contact) card to UPSRMUPS-VFC