



# SILENT & ROBUST

Hi-tech alternative Uninterruptable Power Supplies

# UPS BACKUP

A powerfull complete all-in-one solution which delivers unsurpassed clean true SINE WAVE output. Designed for a 24 hour operation capability



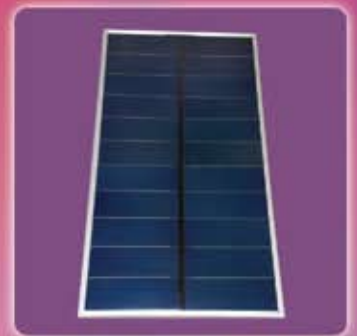
**1.2 KVA**



**2.4 & 3.6 KVA**



**5K, 6K & 8KVA**



**SOLAR INPUT**



**BAT-C6(OPEN)**



**BAT-C6(CLOSED)**



**BAT-C20(OPEN)**



**BATTERIES**



## *Current Automation*

POWER SOLUTION PROVIDERS

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# HOME UPS



## FEATURES

- Built in programmable charger
- 24 hour operation from inverter
- Self diagnostic on start-up
- Controllable, programmable and removable LCD panel
- Parameters pre-settable for different battery sizes
- THD less than 3%
- High Efficiency design to save electricity
- Low Heat dissipation over a long time operation
- Designed to operate under harsh environments
- Automatic transfer when power fails (10msec)

## SPECIFICATIONS

Capacity	VA/Watt	1.2KVA/800W	2.4KVA/1600W	3.6KVA/2400W	5KVA/4000W	6KVA/6000W	8KVA/8000W	
Input	Nominal Input Voltage		220/230/240 Vac					
	Voltage Range	Acceptable Voltage range	120~270 Vac					
		Frequency	45Hz ~70 Hz Auto sensing					
		Under voltage Transfer	120 Vac $\pm$ 2%					
		Under voltage Return	130 Vac $\pm$ 2%					
		Overvoltage Transfer	270 Vac $\pm$ 2%					
		Overvoltage Return	260 Vac $\pm$ 2%					
Output	Nominal Voltage Selection		220/230/240 Vac re-settable via LCD panel					
	Voltage Regulation (Battery mode)		< 3% RMS for entire battery voltage range					
	Frequency Regulation	Line Mode	50 Hz or 60 Hz					
		Battery Mode	$\pm$ 1%					
	Power Factor		0.67	0.8		1.0		
	Wave Form		Pure Sinewave					
	Efficiency		> 75%	> 80%				
	Overload Protection	Line Mode	Circuit Breaker					
		Battery Mode	Microprocessor Monitoring					
	DC Start	Cold Start		Yes				
Transfer Time	Typical		< 10ms					
Battery	Battery Voltage		12Vdc	24Vdc	24Vdc	24Vdc	48Vdc	48Vdc
	Minimum Load drawn during inverter mode		3.8A	2.8A	3.3A	4A	2.8A	4.3A
	Maximum current drawn from battery		89A	84A	125A	208A	156A	208A
Backup Time		See discharge curve calculation table						
Recharging current		> 40A	> 50A (See multi-stage charging curve)		> 60A (See multi-stage charging curve)			
Display	LCD		UPS Status, I/P & O/P Voltage Frequency, Load Level, Battery Voltage & Level, Temperature					
	LED		Normal: Green, Warning (Amber), Fault (Red)					
Audible Alarm	Battery Mode		Beeping every 4 seconds					
	Low Battery		Beeping every second					
	UPS Fault		Beeping continuously					
	Overload		Beeping twice per second					
Environment	Operational Temperature		0~40 Degrees Celcius					
	Relative Humidity		0~95% Non condensing					
	Audible Noise		Less than 55dBA (at 1m)					
Physical	Dimensions (W*H*D) mm		298 x 400 x 150	298 x 450 x 190		415 x 600 x 260		
	Weight (Kgs)		12 kg	24kg	31.5kg	49.2 kg	51.4 kg	53.6 kg
Safety Conformance	Safety Standard		EN62040-1-1					
	EMC		EN62040-2					
	Marks		CE, CUL, UL					

### Microprocessor control & pure sinewave output

The Home UPS is a microprocessor-based UPS with remarkable features and performance, which may be used widely in different applications, such as home appliances, air conditioners, water pumps, heating systems, lighting systems, security systems and sensitive consumer electronics as well as office equipment, etc.

### Super durable

With input power factor correction design, the charger of the home ups may offer you different charging currents for 100A/h, 200A/h, 300A/h, 400A/h or 600A/h respectively. You may simply select the battery type installed in the UPS via LCD panel settings. In addition, the charger itself provides a multi-stage charging method to extend the life of the batteries and protect a greener environment.

### Intelligent fan speed control and detection

4-Stage fan speed control according to the load connected creates a

calm and quiet environment. In addition, the Home UPS series also provides fan failure detection and sends warning messages to the LCD panel.

### Integrates with a Generator set

The Home-ups series may be integrated with a generator set easily to increase backup time as well as provide an immediate backup during the startup time of the generator

### Super durable

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# COMPLETE BATTERY ENCLOSURES



**BAT-C6**



**BAT-C8**



**BAT-C12**



**BAT-C20**



**BAT-C6 (CLOSED)**



**BAT-C8 (CLOSED)**



**ACCESSORIES**

Model	No. of 105A/h batteries from ROYAL	Suggested enclosure	Backup Time offered
Home-ups 1k2	3	BAT-C4	800 Watt for 180 minutes
Home-ups 2k4	6	BAT-C6	1600 Watt for 180 minutes
Home-ups 3k6	8	BAT-C8	2400 Watt for 180 minutes
Home-ups 5k	16	BAT-C20	4000 Watt for 180 minutes
Home-ups 6k	20	BAT-C20	6000 Watt for 180 minutes
Home-ups 8k	20	BAT-C20	8000 Watt for 120 minutes

Model	No. of 170A/h batteries from Norhstar	Suggested enclosure	Backup Time offered
Home-ups 1k2	2	BAT-C4-N170	800 Watt for 240+ minutes
Home-ups 2k4	4	BAT-C4-N170	1600 Watt for 240 minutes
Home-ups 3k6	4	BAT-C4-N170	2400 Watt for 240 minutes
Home-ups 5k	8	BAT-C8-N170	4000 Watt for 180 minutes
Home-ups 6k	12	BAT-C20-N170	6000 Watt for 180 minutes
Home-ups 8k	16	BAT-C20-N170	8000 Watt for 180 minutes

Model	Batteries per cabinet	Dimension		
	105A/h	Height (h) mm	Length (l) mm	Width (w) mm
BAT-2	2	330	482	368
BAT-4	4	593	482	368
BAT-8	8	800	567	567
BAT-C6	6	605	623	450
BAT-C8	8	605	793	450
BAT-C12	12	902	793	450
BAT-C20	20	1190	983	450

# HOW TO CALCULATE YOUR BACKUP TIME

## 1) Determine you load requirement

Each product you want to backup has it's power consumption usually printed on the rating label of the unit. For example a laptop will use 90 Watt, Desktop computer 250 Watt; Kettle 1500 Watt or a microwave 1500 Watt etc. Add all of the wattages together to obtain the total peak output power required to be backed up. For example 1600 Watt

## 2) Choose your UPS inverter model

Allways choose a UPS one size up from your requirement. For example if you need 1600 Watt, go for our 2400 Watt model

## 3) Determine the average wattage according to your personal requirements

A kettle may require 1500 Watt, but will not be required to be backed up for 3 hours. However you LCD TV screen or lights will consume power continuously. Therefore guess you average consumption around your lifestyle. For example a 1000 Watt continuously

## 4) Calculate your current demand

After guessing 1000 Watt, determine the actual power consumed from the Batteries This value is always higher due to inefficiencies, losses etc. If you use the 2400 Watt model the efficiency is rated at 80%, therefore  $2400/0.8 = 3000$  Watt being consumed out of the batteries at full load. The input of the Home UPS 3K6 (2400 Watt) is 24 Vdc. Therefore using our guess example consumption  $(1000 \text{ Watt}/0.8)/24 = 52$  Amps

## 5) Check the performance table of a UPS battery

Not any battery is suitable for a UPS applications and you get what you pay for. Below is the discharge curves of two of the suggested batteries, the CSB GP121000 as well as the NSB-170FT battery. Each battery has six internal cells and the inverter will cut-out when the battery voltage falls below the 10.5 Vdc level per battery. This precaution is implemented to avoid permanent damage to the battery by the inverter. Therefore the cut-out voltage per cell is rated at  $10.5 \text{ Vdc} / 6 = 1.75 \text{ Vdc}$  per cell. For our example, if we only use two batteries in series we will draw 52 Amps. If 52 Amps is being drawn continuously a backup of more than 60 minutes but less than 120 minutes will be offered. However if we use 2 strings of two batteries in series = 4 batteries, the amps drawn per string drops to 25 Amps. Therefore the backup time for an average 1000 Watt's being supplied to the load with 4x 105A/h batteries is calculated at just above 3 hours using this specific battery.

We can determine a backup time for any load requirement and customise a solution for your specific demand.

Constant Current Discharge Characteristics of the CSB GP121000 Battery / 100A/h 260 cycles at 100% discharge @ 25°C

F.V/Time	5 MIN	10 MIN	15 MIN	30 MIN	1HR	2HR	3HR	4HR	5HR	8HR	10HR	20HR
1.75 Vdc	305 Amps	222 Amps	175 Amps	113 Amps	66.8 Amps	38.4 Amps	27.9 Amps	21.7 Amps	17.9 Amps	11.8 Amps	9.72 Amps	5.10 Amps

Constant Current Discharge Characteristics of the NSB 170 FT Battery / 170A/h 500 cycles @ 20°C

F.V/Time	2 MIN	5 MIN	10 MIN	15 MIN	20 MIN	30 MIN	45 MIN	60 MIN	120 MIN	180 MIN	240 MIN	300 MIN	480 MIN	600 MIN
1.75 Vdc	773.3 Amps	577.9 Amps	406.8 Amps	317.5 Amps	262.1 Amps	196.2 Amps	144.2 Amps	114.8 Amps	65 Amps	46.3 Amps	36.4 Amps	30.3 Amps	20.6 Amps	17.3 Amps



## SUGGESTED BATTERIES

Model	Nominal Voltage	A/h rating	Life time	Weight (Approx. kg)	Dimension		
					Height (h) mm	Length (l) mm	Width (w) mm
NSB90	12	90	260 cycles or 10 year float life @ 25°C	34.94	215	345	175
GP121000	12	100 A/h	260 cycles or 5 year standby service @ 25°C	31.2	217	342	170
HRL12390W	12	98 A/h	260 cycles or 10 year standby service @ 25°C	33.62	225	450	170
NSB-170FT	12	170A/h	500 cycles to 80% depth of discharge. 10 year standby service @ 25°C; 15 years @ 20°C	57.42	325	560	125
1150K	12	105A/h	220 cycles or 3 year standby service @ 25°C	24.78	240	335	175
N120	12	120A/h	220 cycles or 3 year standby service @ 25°C	34.16	235	510	185
N150	12	150A/h	220 cycles or 3 year standby service @ 25°C	41.50	230	510	220
N200	12	200A/h	220 cycles or 3 year standby service @ 25°C	55.70	245	520	280